



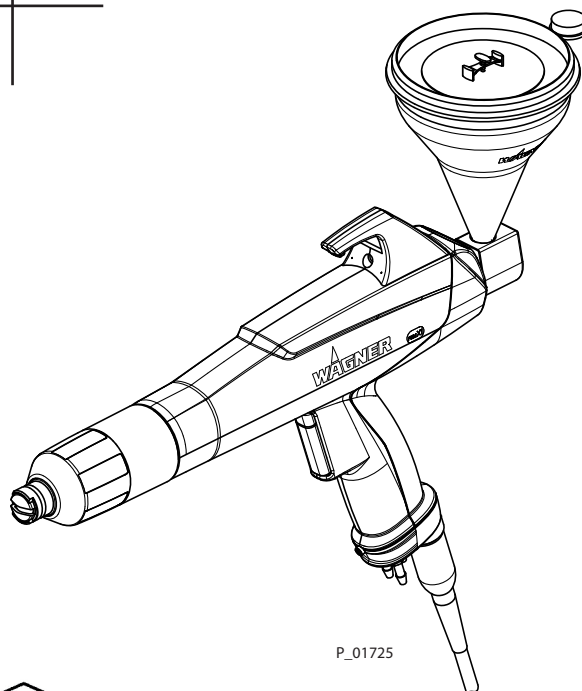
## Translation of the Original Operating Manual

For professional use.  
Always follow the information in this manual,  
particularly the safety instructions and the warning  
instructions. Store the manual in a safe place.

Version 05/2019

### PEM-X1 CG

### Powder Cup Gun



P\_01725





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## 1 ABOUT THESE INSTRUCTIONS

### 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 the operating and service personnel.

The device may only be operated by trained personnel and in compliance with this operating manual.

Operating and service personnel should be instructed according to the safety instructions. This equipment can be dangerous if it is not operated according to the instructions in this operating manual.

Electrostatic manual coating systems may only be operated by qualified personnel.

### 1.2 WARNINGS, NOTICES AND SYMBOLS IN THESE INSTRUCTIONS

Warning instructions in this manual highlight particular dangers to users and to the 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**

Potential danger.  
Non-observance may result in death or serious injury.

#### **CAUTION**

Potentially dangerous situation.  
Non-observance may result in minor injury.

#### **NOTICE**

Potentially dangerous situation.  
Non-observance may result in damage to property.

#### **Note:**

Provides information about particular characteristics and how to proceed.

#### **Explanation of warning notice:**

##### **LEVEL OF DANGER**

**This notice warns you of a danger!**

Possible consequences of not observing the warning notice.

→ The measures for preventing the hazard and its consequences.



### 1.3 LANGUAGES

The operating manual is available in the following languages:

#### Original operating manual

Language	Order no.
German	2326959

#### Translation of the original operating manual

Language	Order no.	Language	Order no.
English	2326960	Polish	2410120
French	2326961		
Italian	2326962		
Spanish	2326963		
Russian	2333347		
Chinese	2333348		

Additional languages on request or at: [www.wagner-group.com](http://www.wagner-group.com)

### 1.4 ABBREVIATIONS

Order no.	Order number
ET	Spare part
K	Marking in the spare parts lists
Pos	Position
Stk	Number of pieces
--	Item not available as spare part
/	Item does not exist

## 1.5 TERMINOLOGY FOR THE PURPOSE OF THIS MANUAL

<b>Cleaning</b>	
Cleaning	Manual cleaning of devices and device parts with cleaning agent
Flushing	Internal flushing of paint-wetted parts with compressed air
<b>Personnel qualifications</b>	
Trained person	Is instructed in the tasks assigned to him/her, the potential risks associated with improper behavior as well as the necessary protective devices and measures.
Electrically trained person	Is instructed by an electrician about the tasks assigned to him/her, the potential risks associated with improper behavior as well as the necessary protective devices and measures.
Electrician	Can assess the work assigned to him/her and detect possible hazards based on his/her technical training, knowledge and experience in relevant provisions.
Skilled person in the context of DGUV 209-052	A person who, based on his/her technical training, experience and recent vocational experience, has sufficient technical knowledge in the area of electrostatic coating and is familiar with the relevant and generally accepted rules of technology so that he/she can inspect and assess the status of devices and coating systems based on workplace safety. → Additional requirements for skilled persons can also be found in TRBS 1203 (2010/amendment 2012): Expert knowledge in the areas of protection against excessive pressure, electrical hazards, and explosion protection (where applicable).



## 2 CORRECT USE

### 2.1 DEVICE TYPE

Powder cup guns for manual coating of grounded work pieces.

### 2.2 TYPE OF USE

The PEM-X1 CG powder cup gun is designed for the electrostatic coating of work pieces with organic powders.

WAGNER explicitly prohibits any other use!

The powder cup gun may only be operated in a temperature range from 5–40 °C; 41–104 °F (FM scope of application 5–45 °C; 41–113 °F).

Electrostatic manual coating systems may only be used in spray areas equipped in accordance with EN 12981 or under equivalent ventilation conditions.

The device may only be operated under the following conditions:

- Use the device only to work with the products recommended by WAGNER.
- Do not deactivate safety fixtures.
- Use only WAGNER original spare parts and accessories.
- The operating personnel must be trained on the basis of this operating manual.
- Follow the instructions in the operating manual.

### 2.3 FOR USE IN POTENTIALLY EXPLOSIVE AREAS

This type A-P electrostatic powder spray gun is suitable for processing industrial powder lacquer for coating electrically conductive objects and can be used in potentially explosive areas (zone 22). (See Explosion Protection Identification, Chapter [3.1](#)). In explosion hazard areas, only use approved explosion-proof electrical devices.



### 2.4 PROCESSIBLE WORKING MATERIALS

- types of powder that can be charged electrostatically;
- metallic powder.

#### **Note:**

Contact your local WAGNER dealer and the lacquer manufacturer if you encounter application problems.

### 2.5 MISUSE

Misuse can lead to physical injury and/or property damage!  
Special attention must be paid that:

- liquid coating products, e.g., solvents or water-based lacquers are not processed;
- no food, medicine or cosmetics are processed.



### 3 IDENTIFICATION

#### 3.1 EXPLOSION PROTECTION IDENTIFICATION

Device type: PEM-X1 CG powder cup gun  
 Manufacturer: Wagner International AG  
 9450 Altstätten  
 Switzerland



**CE**<sub>0102</sub> II 2D 2mJ

CE European Communities  
 0102 Notified body: PTB  
 Ex Symbol for explosion protection  
 II Device class II  
 2 Category 2  
 D Ex-atmosphere dust  
 2 mJ Maximum ignition energy 2 mJ

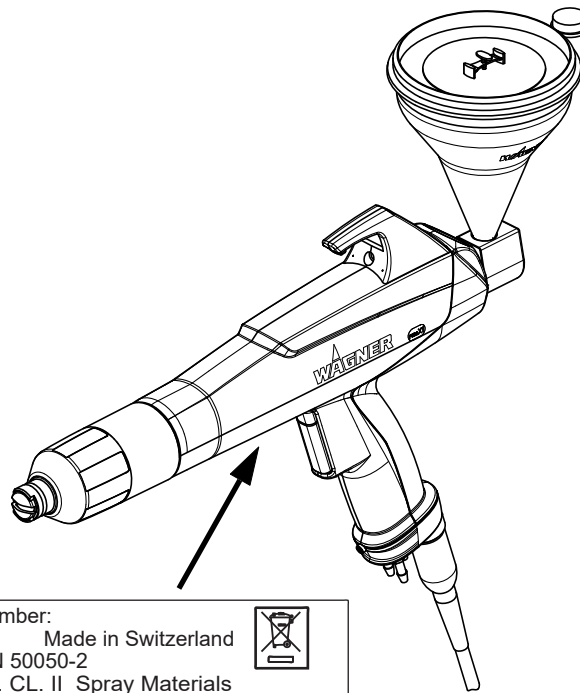


#### 3.2 FM APPROVAL

The PEM-X1 CG powder cup gun is FM approved in the USA and Canada using control document no. 2309729.



#### 3.3 TYPE PLATE



PEM-X1 CG Serial Number:	
<b>CE</b> <sub>0102</sub> II 2 D 2mJ	Made in Switzerland
PTB 12 ATEX 5002 EN 50050-2	
For Electro. Fin. Appl. CL. II Spray Materials	
	Output 100kV max.
	Ambient Temperature 45 °C
In accordance with control document: 2309729	

P\_03875

### 3.4 PERMISSIBLE DEVICE COMBINATIONS

#### **WARNING**

**Incorrect use!**

Risk of injury and damage to the device.

→ Only connect the powder cup gun to original WAGNER devices.



Only use the PEM-X1 CG powder gun cup with the following guns and control units:

<b>Guns</b>	<b>Control units</b>
– PEM-X1 CG	– EPG-Sprint X
	– EPG-Sprint XE
	– EPG-Sprint
	– EPG S2

## 4 BASIC 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 accident prevention regulations.



#### 4.1.1 ELECTRICAL DEVICES AND EQUIPMENT

##### **Danger of electric shock!**

Danger to life from electric shock.

- Prepare device in accordance with the local safety requirements with regard to the operating mode and ambient influences.
- May only be maintained by skilled electricians or under their supervision. With open housings, the mains voltage poses a danger.
- Operate device in accordance with the safety regulations and electrotechnical regulations.
- Must be repaired immediately in the event of problems.
- Decommission if device poses a danger or is damaged.
- Must be de-energized before work is commenced. Secure the device against being switched back on without authorization. Inform personnel about planned work. Observe electrical safety regulations.
- Ground all devices to a common grounding point.
- Only operate the device with a properly installed socket with a protective ground wire connection.
- Keep liquids away from electrical devices.



#### 4.1.2 A SAFE WORK ENVIRONMENT

##### **Danger due to dust formation!**

Severe or fatal injuries due to explosion hazard or inhalation, swallowing or contact with the skin or eyes.

- The floor in the working area must be electrostatically conductive (measurements according to EN 1081 and EN 61340-4-1).
- Paint mist extraction systems/ventilation systems must be fitted on site according to local regulations.
- Make sure that the ground connection and potential equalization of all system parts are reliable and continuous and can withstand the expected stress (e.g., mechanical stress, corrosion).
- Ensure that personal protective equipment (see Chapter 4.2.1) is available and is used.
- Ensure that all persons within the working area wear static dissipative shoes. Footwear must comply with EN 20344. The measured insulation resistance must not exceed 100 MΩ.
- Protective clothing, including gloves, must comply with EN 1149-5. The measured insulation resistance must not exceed 100 MΩ.
- Ensure that there are no ignition sources such as naked flames, sparks, glowing wires, or hot surfaces in the vicinity. No smoking.
- Maintain sufficient quantities of suitable fire extinguishers and ensure that they are serviceable.
- The powder release must be electronically interlocked with the powder spray system exhaust equipment.
- Excess coating product (overspray) must be collected up safely.
- The operating company must ensure that an average concentration of powder lacquer 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/m<sup>3</sup>.
- Ensure that maintenance and safety checks are performed regularly.
- In the event of defects, immediately bring the device or system to a stop and arrange to have repairs carried out immediately.



#### 4.1.3 PERSONNEL QUALIFICATIONS

##### **Danger due to incorrect use of device!**

Risk of death due to untrained personnel.

- Ensure that the operating personnel has been instructed by the operator in accordance with the operating manual and the operating instructions. The device must only be operated, maintained and repaired by trained personnel. Refer to the operating instructions for information about the required personnel qualifications.

## 4.2 SAFETY INSTRUCTIONS FOR THE PERSONNEL

- Always follow the information in this manual, particularly the safety instructions and the warning instructions.
- Always follow local regulations concerning accident prevention regulations.
  
- In electrostatics applications: Persons belonging to a risk group according to EMF guideline 2013/35/EU (e.g., carriers of active implants), must not enter the high-voltage area.



### 4.2.1 PERSONAL SAFETY EQUIPMENT

#### **Danger due to dust formation!**

Serious or fatal injuries due to inhalation, swallowing or contact with the skin or eyes.

- Observe the processing regulations laid down by the manufacturer of the powder lacquer being used, when preparing or processing the powder.
- Take note of the manufacturer's notification and the relevant environmental protection regulations when disposing of powder lacquers.
- Take the specified protective measures. In particular, wear safety goggles, protective clothing and gloves, as well as hand protection cream if necessary.
- Use a mask or breathing apparatus if necessary.
- For sufficient health and environmental safety: Operate the device in a powder coating booth or on a spraying wall with the ventilation (extraction) switched on.



### 4.2.2 SAFE HANDLING OF WAGNER POWDER SPRAY DEVICES

#### **Danger due to dust formation!**

- Do not point spray guns at people.
- Do not spray device parts using electrostatic equipment.
- Before any work on the device, in the event of work interruptions and malfunctions:
  - Switch off the energy/compressed air supply.
  - Relieve pressure on powder spray gun and device.
  - Secure the powder spray gun against actuation.
  - Disconnect the control unit from the mains.
  - In the event of functional faults: remedy the fault as described in the "Troubleshooting" chapter.



### 4.2.3 GROUNDING THE DEVICE

#### **Danger due to electrostatic charge!**

Explosion hazard and damage to the device.

The electrostatic charge may, in certain cases, give rise to electrostatic charges on the device. Flames or sparks can form during discharge.

Correct grounding of the entire coating system prevents electrostatic charges:

- Ensure that all devices and tanks are grounded before each coating process.
- All of the system's conductive elements, such as floors, walls, ceilings, protective grating, transport equipment, work pieces, powder tanks, automatic moving devices 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. Parts of the booth must be grounded in accordance with EN 12981.
- Ensure that all persons inside the working area are grounded, e.g., that they are wearing static dissipative shoes.
- Grounding cables must be checked regularly to ensure that they are serviceable (see EN 60204).



### 4.2.4 PRODUCT HOSES

#### **Danger due to damaged product hoses!**

The product hose may cause dangerous injuries.

- Use only an original WAGNER powder hose.
- Make sure that the hoses are laid only in suitable places. Hoses should not be laid in the following places under any circumstances:
  - in high-traffic areas,
  - on sharp edges,
  - on moving parts or
  - on hot surfaces.
- Ensure that the hoses are never run over by vehicles (e.g., fork lifts), or that the hoses are never put under pressure from the outside in any other way.
- Ensure that the hoses are never kinked. Observe maximum bending radii.
- Ensure that no work is ever performed with a damaged hose.
- Make sure that the hoses are never used to pull or move the device.



#### 4.2.5 ELECTRICAL CONNECTION CABLES

##### **Risk caused by improperly laid cables!**

Risk of injury and damage to the device.

- Properly lay connection cables and check them regularly.
- Immediately replace damaged connection cables.
- Ensure that no work is ever performed with a damaged connection cable.
- Do not lay connection cables on routes used by product handling vehicles and not through doors/gates.
- Do not route connection cables near aisles or walkways in order to avoid tripping.

#### 4.2.6 CLEANING AND FLUSHING

##### **Danger due to cleaning and flushing!**

Explosion hazard and damage to the device.

- 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 compressed air supply and decompress the device.
- Secure the device against being switched back on without authorization.
- Use only electrically conducting and grounded tanks for cleaning fluids.
- Preference should be given to non-ignitable cleaning fluids.
- If ignitable 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. Most ignitable solvents have an ignition energy of around 0.24 mJ or 60 nC.
- The cleaning agent's flash point must be at least 15 K above the ambient temperature.
- Note the details provided by the powder lacquer manufacturer.
- Only mobile industrial vacuum cleaners of design 1 (see EN 60335-2) may be used for getting rid of dust build-up.
- Take measures for workplace safety (see Chapter [4.1.2](#)).





#### **4.2.7 MAINTENANCE AND REPAIR**

##### **Danger due to improper maintenance and repair!**

Danger to life and equipment damage.

- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Do not change or modify the device; if change is necessary, contact WAGNER.
- Only repair and replace parts that are listed in Chapter [12](#) and Chapter [13](#) that are assigned to the device.
- Do not use any defective components.
- Before all work on the device and in the event of work interruptions:
  - Switch off the energy and compressed air supply.
  - Relieve pressure on powder spray gun and device.
  - Secure the powder spray gun against actuation.
- Observe the operating and service manual for all work.

#### **4.2.8 PROTECTIVE AND MONITORING EQUIPMENT**

##### **Danger due to removal of protective and monitoring equipment!**

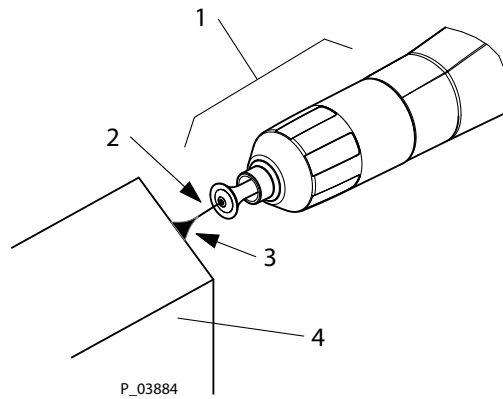
Danger to life and equipment damage.

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

To prevent electrostatic flashover, the union nut for securing the nozzles is designed in a certain geometric shape.

This shape, together with the shape of the flat jet nozzle or deflector cone sleeve, prevents the nozzles from coming loose unintentionally (see chapters [8.4](#), [8.5](#), [8.7](#)).

To ensure safety, only use genuine WAGNER spare parts!

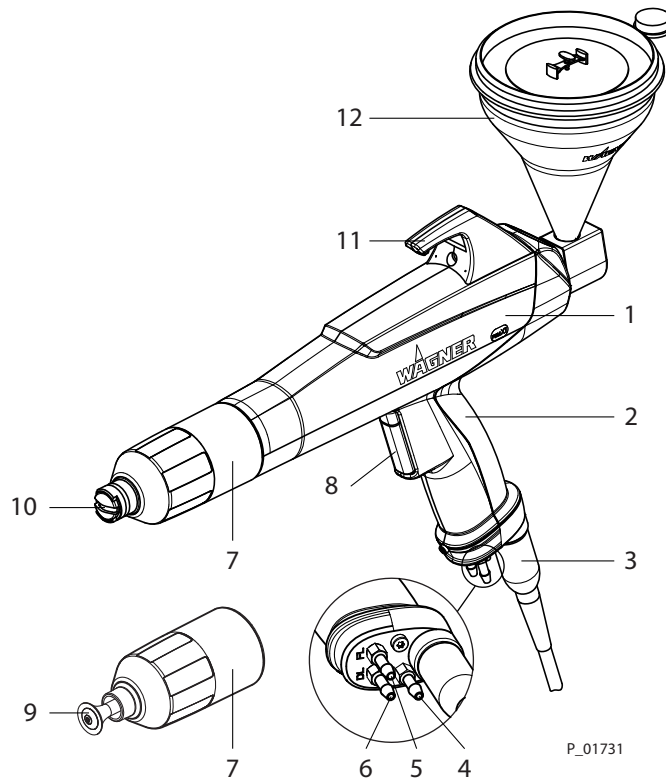
**4.3 INFORMATION ABOUT SAFE DISCHARGES**

Pos	Designation
1	Nozzle
2	Electrode
3	Luminous discharge
4	Work piece

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 ignition energy 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 ignition energy.

## 5 DESCRIPTION

### 5.1 CONSTRUCTION OF THE CUP GUN



Pos	Designation
1	Spray gun body
2	Handle
3	Electrical connection cable
4	Atomizer air connection
5	Feed air connection
6	Dosing air connection
7	Union nut
8	Trigger lever
9	Round jet nozzle
10	Flat jet nozzle
11	Suspension hook
12	Powder Cup

### 5.2 MODE OF OPERATION OF THE CUP GUN

High voltage is activated in the manual gun when the trigger is actuated!

The air supply of the feed, dosage and atomizing air are activated at the same time, for the powder feed.

To secure the cup gun, the control unit must be switched off.

To prevent electrostatic flashover, the union nut for securing the nozzles is designed with a labyrinth.

### 5.3 SCOPE OF DELIVERY

Stk	Order no.	Designation
1	2322588	PEM-X1 CG powder cup gun
	--	Nozzle set
The standard equipment includes:		
1	2326024	Declaration of Conformity
1	2326959	Operating manual, in German
1	see Chapter <a href="#">1.3</a>	Operating manual in local language

### 5.4 DATA

#### 5.4.1 TECHNICAL DATA

Dimensions:	
Length/width/height	see Chapter <a href="#">5.4.2</a>
Weight	550 g; 1.21 lbs
Cup capacity	130 g; 0.29 lb
Cup filling volume	210 cm <sup>3</sup> ; 7.93 ci

Electrical:	
Input voltage	maximum 22 Vpp
Input current	maximum 0.9 A
Frequency	19–30 kHz
Output voltage	maximum 100 kV DC
Maximum Corona current	120 µA
Polarity	negative
Construction type	in accordance with DIN EN 50050-2
Protection class	IP 64

Pneumatic:	
Input air pressure (atomizing air volume)	maximum 3 bar; 0.3 MPa, 43.51 psi
Powder discharge quantity	maximum 200 g/min; maximum 0.44 lbs/min

#### WARNING

##### Exhaust air containing oil!

Risk of poisoning if inhaled.

Insufficient paint application quality

→ Provide compressed air free from oil and water

(Quality Standard 6.5.2 according to ISO 8573.1, 2010)

6.5.2 = particle density ≤ 5 mg/m<sup>3</sup>; pressure dew point ≤ +7 °C; oil content ≤ 0.1 mg/m<sup>3</sup>

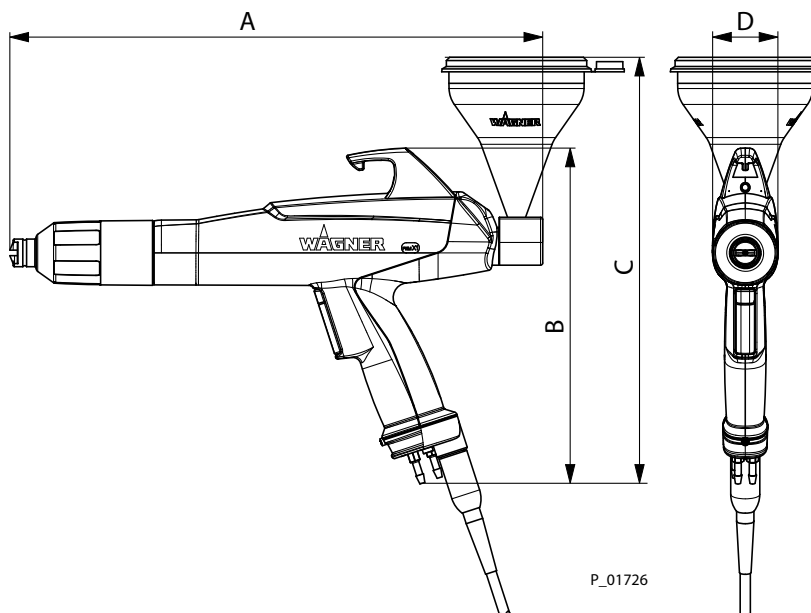


**Ambient conditions:**

If low-melting powders are used, the ambient temperature may have to be lower than 30 °C; 86 °F.

Volume measures for volumes specified in Nm<sup>3</sup> (standard cubic meters). One cubic meter of a gas at 0 °C and 1.013 bar is called norm cubic meter.

<b>Ambient conditions:</b>	
Operating temperature range (CE scope of application)	5–40 °C; 41–104 °F
Operating temperature range (FM scope of application)	5–45 °C; 41–113 °F
Relative humidity	< 75%

**5.4.2 DIMENSIONS**

Measurement	mm	inch
A*	365	14.37
B	230	9.06
C	290	11.42
D	45	1.77

\* with flat jet nozzle/deflector cone

**5.5 ACCESSORIES**

Only the accessories listed in Chapter 12 of this operating manual may be connected to the PEM-X1 CG powder gun.

The accessories listed in Chapter 12 were included in the EC type examination and are approved for use with the manual gun.

## 6 ASSEMBLY AND COMMISSIONING

### 6.1 TRAINING OF ASSEMBLY/COMMISSIONING PERSONNEL

- The assembly and commissioning personnel must have the technical skills to safely commission the device.
- When assembling, commissioning and carrying out all work, read and follow the operating manuals and safety regulations for the additionally required system components.

A skilled person must check to ensure that the device is in a reliable state after it is assembled and commissioned.

### 6.2 STORAGE CONDITIONS

Until the point of assembly, the device must be stored in a dry location, free from vibrations and with a minimum of dust. The device must be stored in closed rooms.

The air temperature at the storage location must be between -20 °C and +60 °C (-4 °F and +140 °F).

The relative air humidity at the storage location must be between 10 and 95% (without condensation).

### 6.3 INSTALLATION CONDITIONS

The air temperature at the installation site must be in a range between 0 °C and 40 °C; 32 °F and 104 °F.


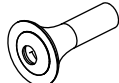
The relative air humidity at the installation site must be between 10 and 95% (without condensation).


### 6.4 PREPARING THE CUP GUN

#### 6.4.1 SELECTION OF A SUITABLE NOZZLE SYSTEM

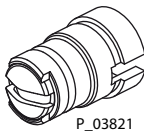
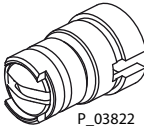
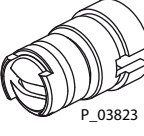
The process of changing from the flat jet nozzle to the deflector cone is described in chapter [8.7](#).

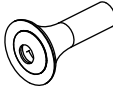

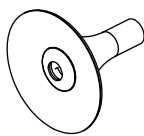
You will find the article numbers of the different nozzles in Chapter [12](#).

Application overview	Powder cloud	Nozzle
Complex part geometries – Flat work pieces (reduced picture frame) – Profile – Undercuts	Widely spread flat powder cloud	Flat jet nozzle  P_01664
– Wire goods – Grid designs – Small components	Round powder cloud Size of the powder cloud is dependent on the deflector plate diameter	Deflector cone  P_01665

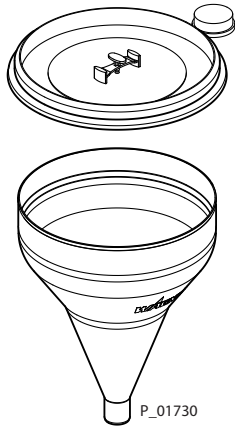
Application	Distance to work piece (mm)	Powder discharge (g/min)	Nozzle
Universal – Deep and complex part geometries – Extensive work pieces	120 ... 300	50 ... 300	 P_01664

The spray width can be adjusted by the sliding ring.

Rear sliding ring Wide cloud Cloud opening angle approx. 80°	 P_03821
Front sliding ring Narrow cloud Cloud opening angle approx. 60°	 P_03822
Front sliding ring, turned by 90° Extra narrow cloud Cloud opening angle approx. 40°	 P_03823

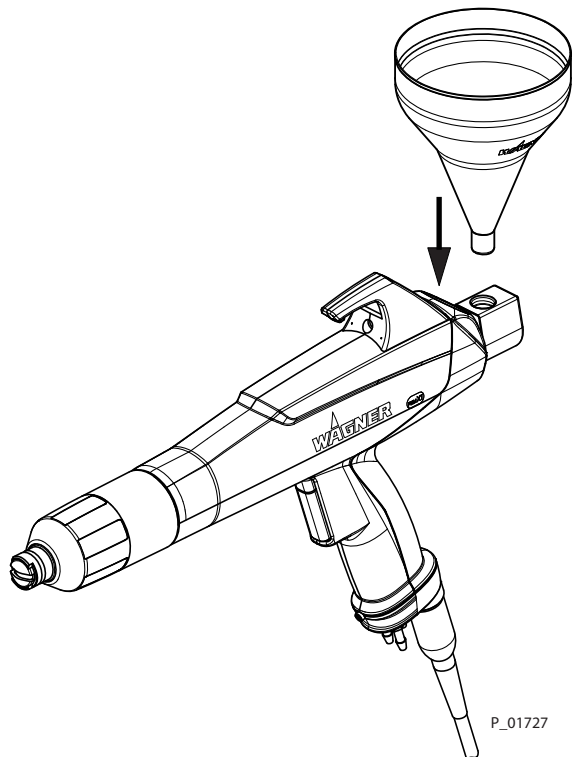
Application	Distance to work piece (mm)	Deflector cone
Ø 18 mm – Smaller flat parts	100 ... 300	R18  P_01665
Ø 25 mm – Medium sized flat parts	100 ... 300	R25  P_01666
Ø 34 mm – Large flat parts	100 ... 300	R34  P_01667

**6.4.2 POWDER CUP**



Powder cup with cover, 210 cm<sup>3</sup>

**6.4.3 ASSEMBLING THE POWDER CUP**



Insert powder cup in opening up to stop.

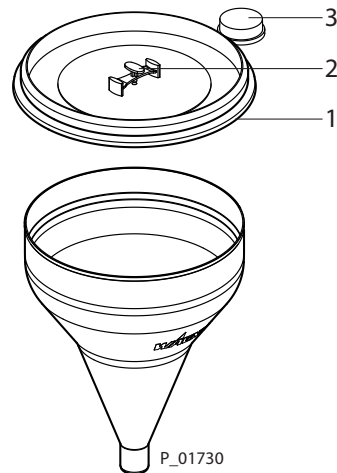


#### 6.4.4 HOW TO USE THE POWDER CUP

Cover 1 is only needed on the gun if the gun is angled such that powder escapes from the tank.

During coating, the flip-flop latch 2 must be open. It is opened by pulling up the toggle.

For storage purposes, the tank must be closed by fitting cover 1, closing flip flop latch 2 and attaching small cover 3 at the bottom of the tank.

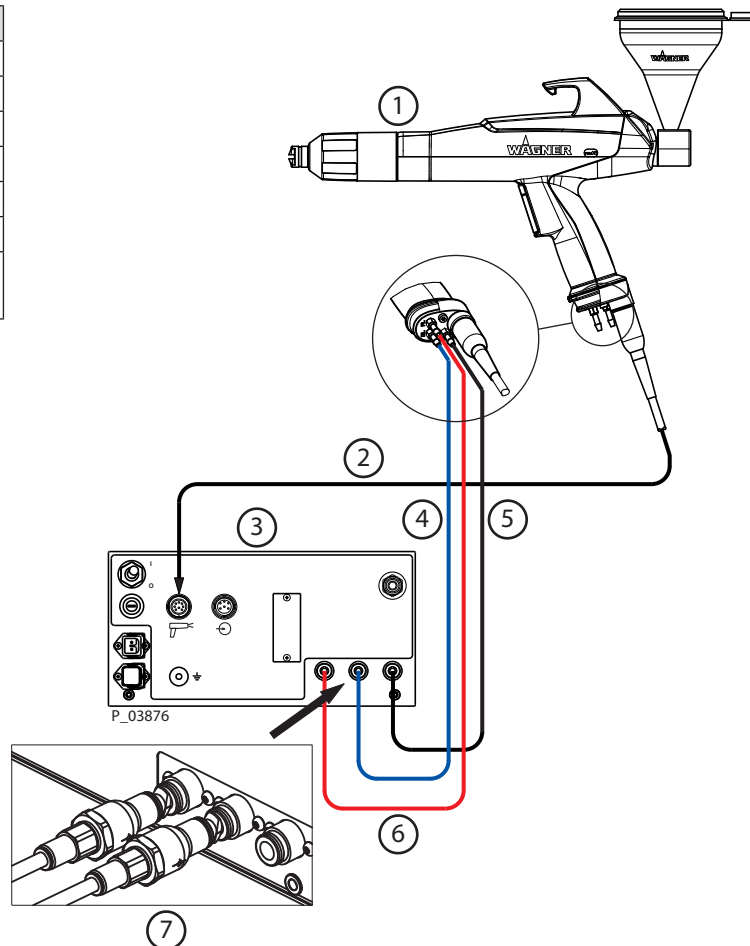


## 6.5 CONNECTING THE MANUAL GUN

Pos	Designation
1	Powder cup gun
2	Electrical connection cable
3	Control unit
4	Dosing air hose (blue)
5	Feed air hose (red)
6	Atomizing air hose (black)
7	Use non-return valve with feed and dosing air!

### Procedure:

1. Switch off the high-voltage generation on the control unit.
2. Before connecting the cup gun, check that all components, such as the nozzle system and union nut, are correctly fitted.
3. Connect electrical cable of the cup gun to the control unit.
4. Connect the feed air hose to the cup gun and to the control unit.
5. Connect the dosing air hose to the cup gun and to the control unit.
6. Connect the atomizing air hose to the cup gun and to the control unit.



## 6.6 GROUNDING

For safety reasons, the control unit must be properly grounded. The grounding connection to the energy supply (socket) takes the form of the mains connection cable's protective conductor, while that to the work piece/system is via the knurled screw on the rear of the control unit. Both connections are absolutely essential. If installed correctly as described above, the spray gun is grounded via the gun cable between the control unit and spray gun.

Good grounding of the work piece is also necessary for optimum powder coating.

### A poorly grounded work piece causes:

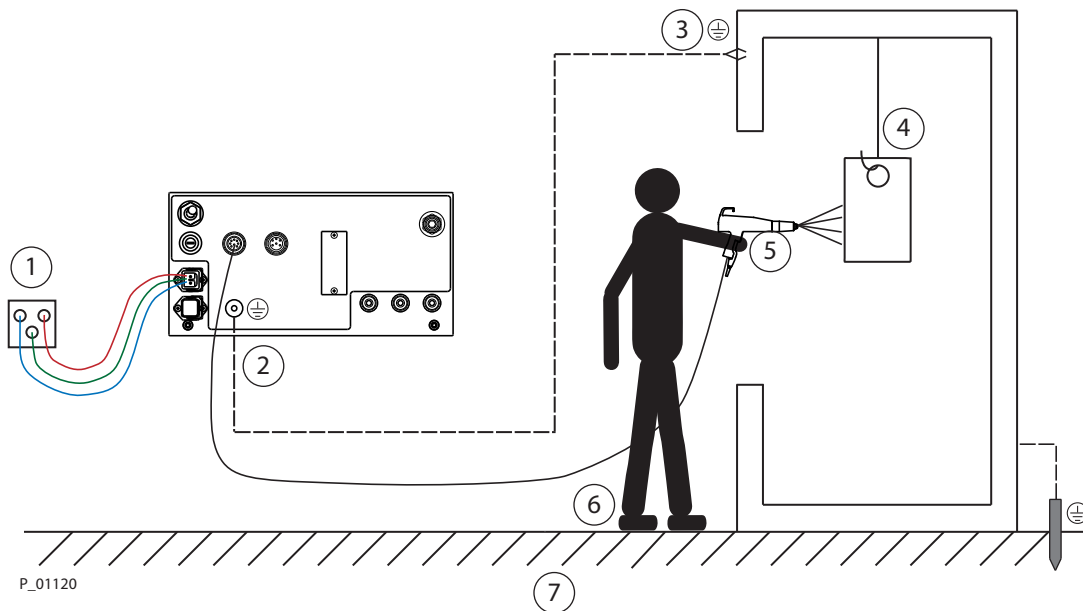
- dangerous electric charging of the work piece
- very poor wrap-around
- uneven coating
- back spraying to the spray gun, i.e., contamination

### Prerequisites for perfect grounding and coating of a work piece are:

- clean suspension of the work piece to be coated,
- the grounding resistance of the work piece must not exceed 1 MΩ (resistance to ground measured at 500 V 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 heavy radio frequency interference (EMC).

#### 6.6.1 GROUNDING THE POWDER COATING SYSTEM



- 1 Only use mains cables with grounding strand!
- 2 Connect the control unit's grounding cable with the signal ground!
- 3 Connect grounding cable to an uncoated metal part of the booth!
- 4 Remove all paint from hooks and other hanger parts!
- 5 Wear electrostatically conductive gloves!
- 6 Wear electrostatically conductive footwear!
- 7 The floor must be electrostatically conductive!

#### 6.7 SAFETY CHECKS

A skilled person must check to ensure that the device is in a reliable state after it is assembled and commissioned.

This includes:

- Carry out safety checks in accordance with Chapter [8.2.3](#).



## 7 OPERATION

### 7.1 TRAINING THE OPERATING PERSONNEL

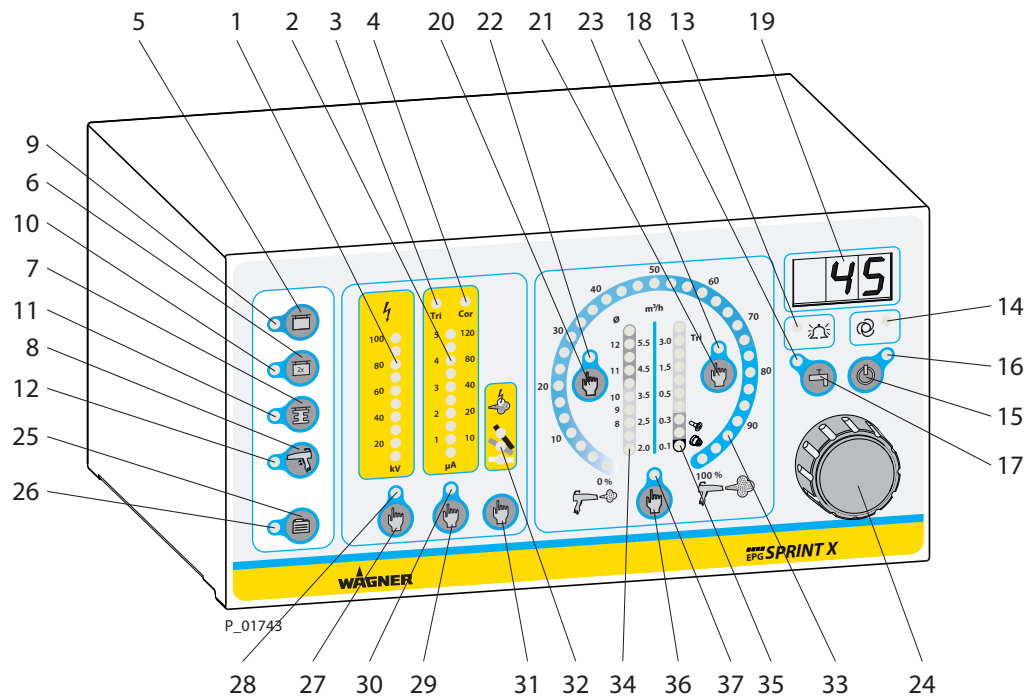
- The operating personnel must be qualified to operate the entire system.
- The operating staff must be familiar with the potential risks associated with improper behavior as well as the necessary protective devices and measures.
- Before work commences, the operating personnel must receive appropriate system training.

### 7.2 TASKS

Ensure that:

- the regular safety checks are carried out in accordance with chapter [8.2.3](#);
- commissioning is carried out in accordance with Chapters [6.4](#) and [6.5](#).

### 7.3 OPERATION OF THE CONTROL UNIT



#### 1 Illuminated display High voltage

- Lights up green
- Display range: 0-100 kV
- Resolution 10 kV
- Single LED display: Nominal voltage
- Bar display: Working voltage

**2 Illuminated display: "Corona or Tribo Current"**

– Lights up green

Tribo scale:

– When a Tribo gun is connected and selected

– Bar display: When powder feed is activated

– Display range: 0–5  $\mu\text{A}$

Resolution 0.5  $\mu\text{A}$

Corona scale:

– When a Corona gun is connected and selected

– Display and adjusting range: 0 [5]–120  $\mu\text{A}$ ,

0 [5]–20  $\mu\text{A}$  resolution 5  $\mu\text{A}$

20–40  $\mu\text{A}$  resolution 10  $\mu\text{A}$

40–120  $\mu\text{A}$  resolution 20  $\mu\text{A}$

– Single LED display: "Trigger Point of Current Limitation"

– Bar display: Corona current

**3 Display: "Tribo Gun"**

– Lights up when a Tribo gun is connected and selected

**4 Display: "Corona Gun"**

– Lights up when a Corona gun is connected and selected

**5 Push button: recipe for "Surface parts"****6 Push button: recipe for "Second coating"****7 Push button: recipe for "Profiles"****8 Push button: recipe for "Double click"**

– To access the recipe, press the trigger lever on the spray gun twice in quick succession and hold it down

**9 LED display: recipe for "Surface parts"**

– Lights up green when the recipe for surface part is selected

**10 LED display: recipe for "Second coating"**

– Lights up green when the recipe for "Second coating" is selected

**11 LED display: recipe for "Profiles"**

– Lights up green when the recipe for profile part is selected

**12 LED display: recipe for "Double click"**

– Lights up green, when the recipe for "Double click" is selected

**13 LED display: "Fault"**

– Lights up, when there is a fault on the device

**14 LED display: "Automatic gun"**

- Lights up, when an automatic gun is connected

**15 Push button: "Standby"**

- To switch into standby mode
- High voltage and powder feed cannot be activated in this mode
- To reactivate normal mode, press the button again

**16 LED display: "Standby"**

- Lights up when the device is in standby mode

**17 Push button: "Flush"**

- To activate the injector and the hose flushing

**18 LED display: "Flush"**

- Lights up blue, when the flush function is activated

**19 LED display, 7 segments, three-digit number**

- Indicates the exact value depending on the activated function:  
"Total air volume; atomizing, ionizing and Tribo air; additional recipes; high voltage;  
current limitation; powder quantity"
- Display showing error number in the event of warnings and malfunctions

**20 Push button: "Total air volume"**

- To activate the function, the value is precisely adjusted with rotary controller 24 and is indicated in LED display 19
- Adjusting range: 2-6 m<sup>3</sup>/h
- Resolution: 0.05 m<sup>3</sup>/h

**21 Push button: "Atomizing, ionizing and Tribo air"**

- To activate the function, the value is precisely adjusted with rotary controller 24 and is indicated in LED display 19
- Adjusting range: 0.1-4 m<sup>3</sup>/h
- Resolution: 0.05 m<sup>3</sup>/h

**22 LED display: "Total air"**

- Lights up yellow, when the setting "Total air" is selected

**23 LED display: "Atomizing, ionizing and Tribo air"**

- Lights up yellow, when the setting "Atomizing, ionizing and Tribo air" is selected

**24 Universal control dial**

- Dynamic digital control dial with 32 positions per revolution
- Adjustment speed is proportional to rotational speed
- Used to set: "Total air volume; atomizer, ionizer and Tribo air; additional recipes; High voltage; Current limitation; Powder quantity"
- For setting parameter values in configuration mode

**25 Push button: "Additional recipes"**

- To activate the function, the Additional recipes adjustment is set with the control dial 24 and is indicated in the LED display 19.
- Selection of the recipes 5 to 50

**26 LED display: "Additional recipes"**

- Lights up yellow, when an additional recipe is selected

**27 Push button "High voltage"**

- To activate the function, the high voltage is set with control dial 24 and is indicated in LED Display 19
- Adjusting range: 10–100 kV
- Resolution: 1 kV

**28 LED display: "High voltage"**

- Lights up yellow. The high voltage is selected and can be adjusted using control dial 24

**29 Push button: "Current limitation"**

- To activate the function, the current limitation is set with the control dial 24 and is indicated in the LED display 19
- Adjusting range: 5–120  $\mu$ A
- Resolution: 1  $\mu$ A

**30 LED display: "Current limitation"**

- Lights up yellow. The current limitation is selected and can be adjusted using the control dial (24).

**31 Push button: "Characteristic slope"**

- To switch the characteristic slope
- Display with LED 32

**32 LED display: "Characteristic slope"**

- Lights up green
- Lower LED characteristic curve, flat
- Middle LED characteristic curve, medium
- Upper LED characteristic curve, steep

**33 Illuminated display: "Powder quantity"**

- Lights up green
- Display range: 0–100%
- Resolution: 3.33%
- Single LED display: Set point (high voltage and powder are deactivated)
- Bar display: Actual value (high voltage and powder are activated)

**34 Illuminated display: "Total air volume"**

- Lights up green
- Display range: 2–6 m<sup>3</sup>/h
- Resolution: 0.2–0.5 m<sup>3</sup>/h
- Single LED display: Set point (high voltage and powder are deactivated)
- Bar display: Actual value (high voltage and powder are activated)

**35 Illuminated display: "Atomizing, ionizing and Tribo air volume"**

- Lights up green
- Display range: 0.1–4 m<sup>3</sup>/h
- Resolution: 0.1–1.0 m<sup>3</sup>/h
- Single LED display: Set point (high voltage and powder are deactivated)
- Bar display: Actual value (high voltage and powder are activated)

**36 Push button: "Powder quantity"**

- To activate the function, the powder quantity is set with control dial 24 and is indicated in LED display 19.
- Adjusting range: 1–100%
- Resolution: 1%

**37 LED display: "Powder quantity"**

- Lights up yellow, when the powder quantity is selected



**7.4 OPTIMIZING THE POWDER CLOUD FOR COATING**

**Procedure:**

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

**Note:**

To minimize wear on the wearing parts, the total air volume should be below 5 Nm<sup>3</sup>/h.

The atomizing air should be adjusted for the

- flat jet nozzle to 0.1 Nm<sup>3</sup>/h
- round jet nozzle to > 0.2 Nm<sup>3</sup>/h

2. Adjust the powder quantity and the powder speed on a test piece.

**7.4.1 RECOMMENDED SETTINGS FOR TOTAL AIR VOLUME**

	[kV]	Tribo Corona [μA]	[Nm <sup>3</sup> /h]	[%]
	<b>90</b>	<b>80</b>	<b>2.0</b>	<b>50</b>
	<b>50</b>	<b>30</b>	<b>1.5</b>	<b>40</b>
	<b>60</b>	<b>40</b>	<b>1.2</b>	<b>40</b>
	<b>82</b>	<b>20</b>	<b>1.8</b>	<b>30</b>

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**7.5 SWITCHING OFF THE CUP GUN**

When releasing the trigger, the powder feed is stopped and the high voltage switched off. To safely switch off the cup gun, e.g., for maintenance work, the control unit must be switched off.

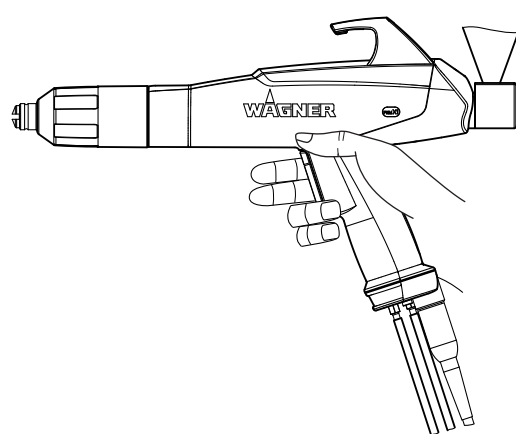
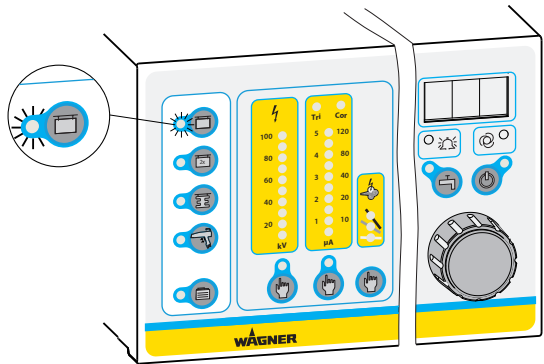
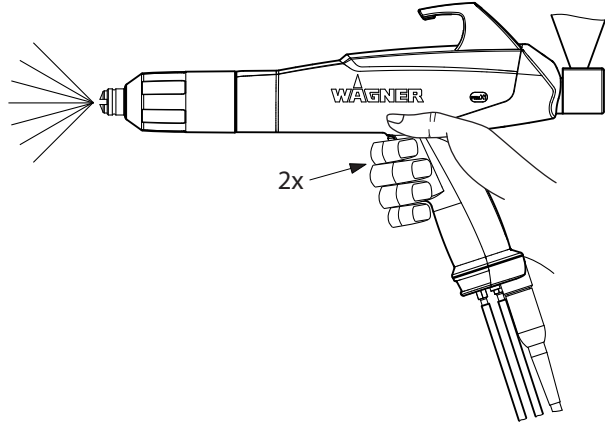
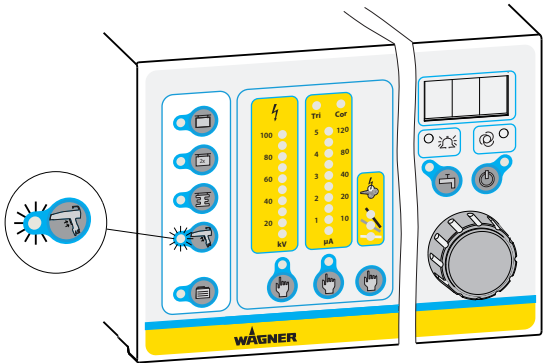
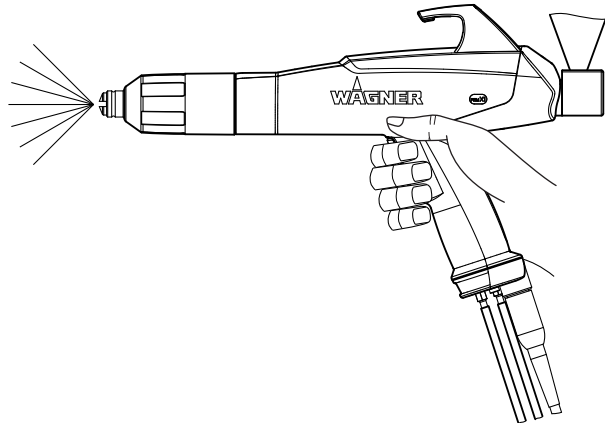
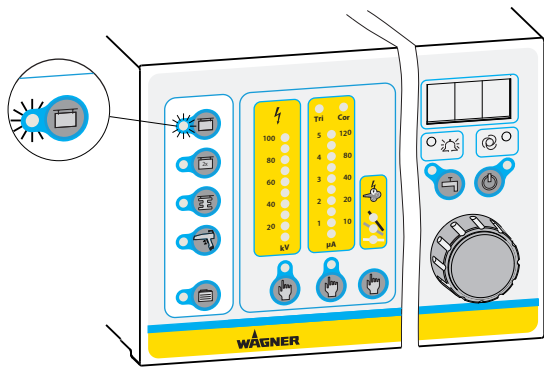
**7.5.1 PRESSURE RELIEF/WORK INTERRUPTION**

- Carry out the work steps as described in the "Pressure relief" chapter:
- if pressure relief is required,
  - if the coating work is interrupted or stopped,
  - before the device is cleaned on the outside, checked, or serviced,
  - before the spray nozzle is installed or cleaned.

**7.6 "DOUBLE CLICK" PROGRAM (HIGH DYNAMIC REMOTE)**

This function is used to change quickly to another program during a coating operation. The operator can access a previously set program by double-clicking on the trigger lever on the manual gun, for example to recoat parts using different parameters (high-voltage, current limitation, air volumes etc.).

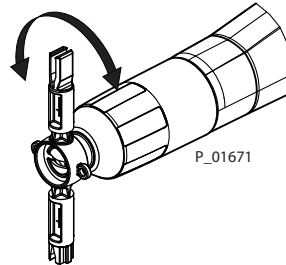
To access the function, press the trigger lever on the manual gun twice in quick succession and hold down. Upon releasing the trigger, the original program will be returned to.



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## 7.7 REPRODUCIBLE SETTING OF THE NOZZLE POSITION

An adjustment tool is provided for the flat jet nozzle. It permits turning the flat jet nozzle without damaging the electrodes and without removing the union nut. The union nut only has to be loosened.



## **8 CLEANING AND MAINTENANCE**

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### **8.1 CLEANING**

#### **8.1.1 CLEANING PERSONNEL**

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

The following hazards may arise during cleaning work:

- health hazard from inhaling powder lacquer,
- use of unsuitable cleaning tools and aids.

#### **8.1.2 CLEANING PROCEDURES**

The cleaning intervals should be adapted by the operator depending on the level of use and if necessary the level of soiling.

If in doubt, we recommend contacting WAGNER's specialist personnel.

##### **Procedure:**

1. End the coating procedure.
2. Press "Flush" button on control unit.  
Let the cleaning function run until the powder cup is completely empty.
3. Push the "Flushing" button on the control unit, in order to switch off the cleaning function.
4. Remove the powder cup from the cup gun.
5. Clean the powder cup and powder cup's cover with compressed air.
6. Unscrew the union nut with nozzle system from the cup gun.
7. Press the nozzle system out of the union nut and clean all parts thoroughly.
8. Thoroughly blow out the cup gun from the rear, on the cup gun fitting, and from the front.
9. Assemble the nozzle system and, with the union nut, attach it to the cup gun.
10. Attach the powder cup, fill it with powder and put on the cover.
11. Continue the coating process.

### **8.2 MAINTENANCE**

#### **8.2.1 MAINTENANCE PERSONNEL**

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

The following hazards may arise during maintenance work:

- health hazard from inhaling powder lacquer,
- use of unsuitable tools and aids.

A skilled person must ensure that the device is checked for being in a reliable state after maintenance work is completed.

## 8.2.2 MAINTENANCE INSTRUCTIONS

### DANGER

#### Incorrect maintenance/repair!

Danger to life and equipment damage.

- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Only repair and replace parts that are listed in the "Spare parts" chapter and that are assigned to the unit.
- Before all work on the device and in the event of work interruptions:
  - Switch off the energy and compressed air supply.
  - Relieve spray gun and device pressure.
  - Secure the spray gun against actuation.
- Observe the operating and service manual for all work.



#### Prior to maintenance

- Flush and clean the system. → Chapter [8.1.2](#)

#### After maintenance

- Carry out safety checks in accordance with Chapter [8.2.3](#).
- Put the system into operation and check for leaks.
- Have the system checked for safe condition by a skilled person.

## 8.2.3 SAFETY CHECKS AND MAINTENANCE INTERVALS

**Daily:** Before starting work, carry out a visual inspection to ensure that the system is grounded.

## 8.2.4 MAINTENANCE PROCEDURES

The maintenance intervals should be adapted by the operator depending on the level of use and if necessary the level of soiling.

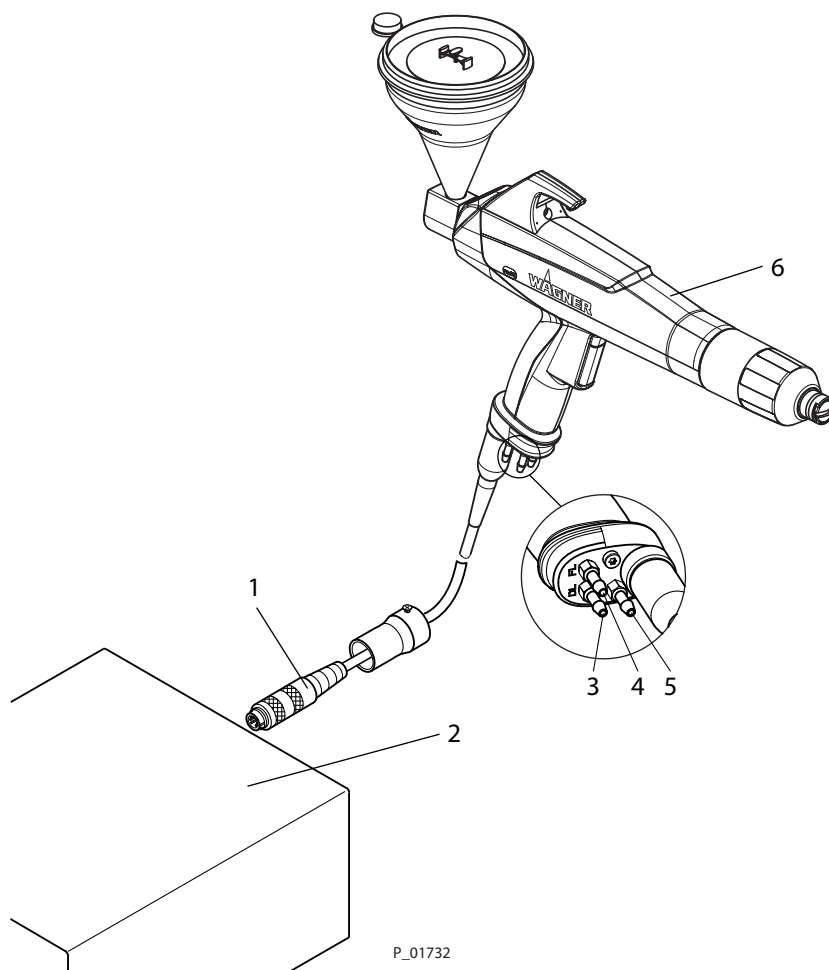
If in doubt, we recommend contacting WAGNER's specialist personnel.

Maintenance work	Time stamp	
	once each shift	weekly
Blow out gun and check for sintering	x	
Check gun settings	x	
Check gun discharge pressure	x	
Blow out powder hoses	x	
Check grounding		x
Check compressed air quality		x
Check gun voltage		x
Check powder hoses for bends and sintering		x

### 8.3 EXCHANGING THE MANUAL GUN

Before exchanging the manual gun, any power residue must be thoroughly removed.

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



#### Procedure:

1. Switch off control unit.
2. Disconnect electrical cable 1 from control unit 2.
3. Disconnect dosing air hose 3, feed air hose 4 and atomizing air hose 5 from spray gun 6.
4. Connect dosing air hose 3, feed air hose 4 and atomizing air hose 5 to new spray gun 6.
5. Connect electrical cable 1 to control unit 2.
6. Switch on the control unit.
7. The spray gun is ready for use again.

## 8.4 CHANGING THE FLAT JET NOZZLE

### 8.4.1 REMOVING THE FLAT JET NOZZLE

**Procedure:**

1. Unscrew union nut from gun housing.
2. Take union nut with nozzle system off gun body.  
The nozzle system remains inserted in the union nut.

**Note:**

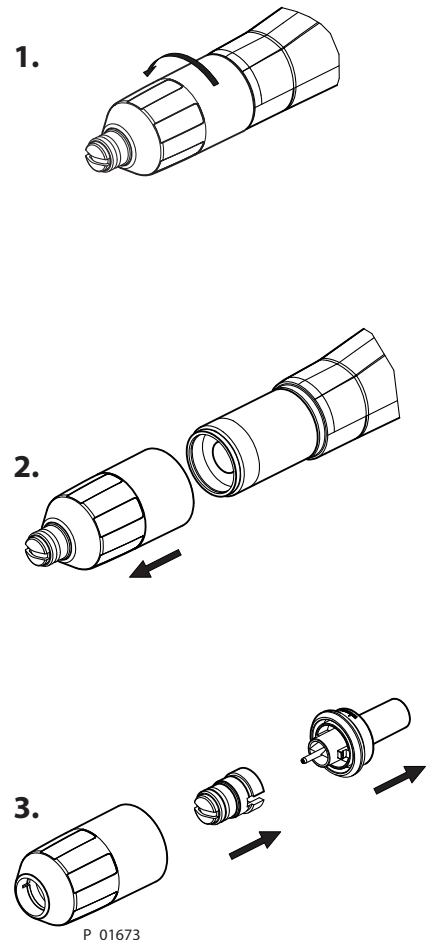
If the nozzle system doesn't remain inserted in the union nut, the nozzle system and union nut must be replaced.

3. The parts can be separated by gently pressing the sliding ring on the flat jet nozzle.
4. Remove powder residues from the removed parts and from the manual gun.

**Note:**

Never place the manual gun or parts of the manual gun in cleaning agent.

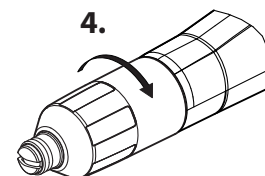
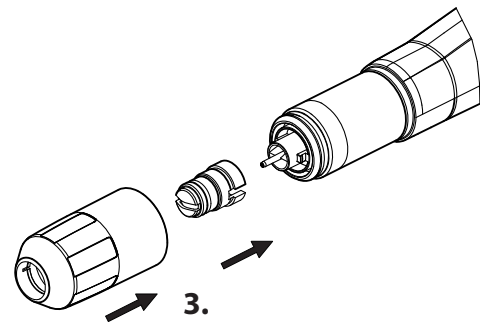
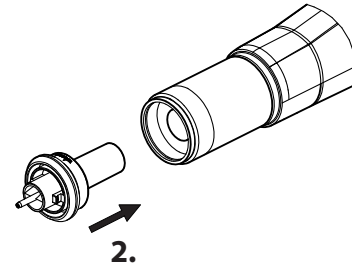
As a rule, the protective wedge needs to be checked for wear and replaced if necessary.



### 8.4.2 FITTING THE FLAT JET NOZZLE

**Procedure:**

1. Before inserting the electrode holder, the spring contact of the gun body and contact surface of the electrode holder should be checked.  
The spring contact must be clean and smooth-running, the gun body must also be clean and free of powder deposits.
2. Insert electrode holder into gun housing.
3. Attach flat jet nozzle to electrode holder and attach union nut.
4. Screw union nut onto gun housing until flat jet nozzle can no longer be turned by hand.



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## 8.5 CHANGING THE ROUND JET NOZZLE

### 8.5.1 REMOVING THE ROUND JET NOZZLE

#### Procedure:

1. Pull off deflector cone.
2. Unscrew union nut from gun housing.
3. Take union nut with nozzle system off gun body.  
The nozzle system remains inserted in the union nut.

#### Note:

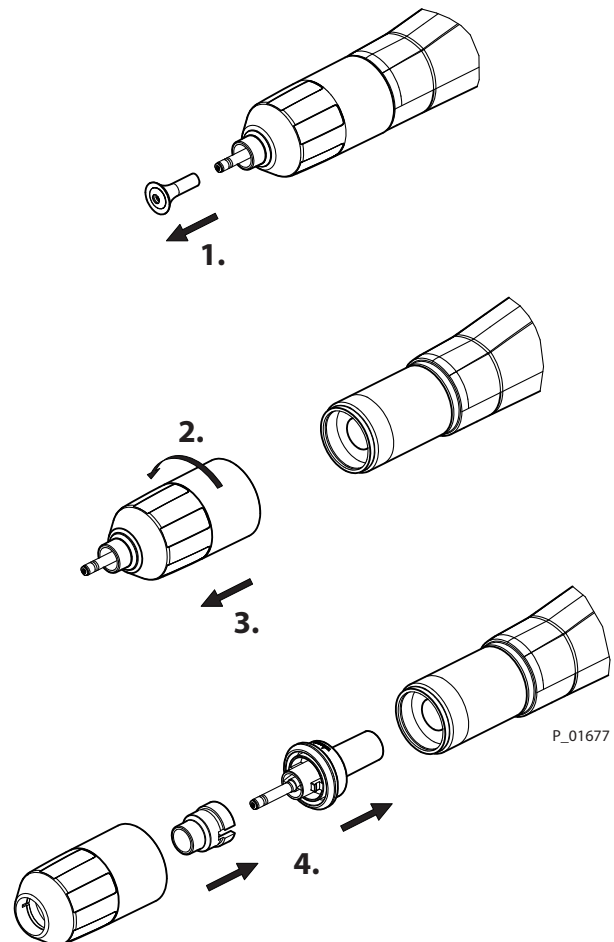
If the nozzle system doesn't remain inserted in the union nut, the nozzle system and union nut must be replaced.

4. Press nozzle system out of union nut by gently pressing on deflector cone sleeve.
5. Remove powder residues from the removed parts and from the spray gun.

#### Note:

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

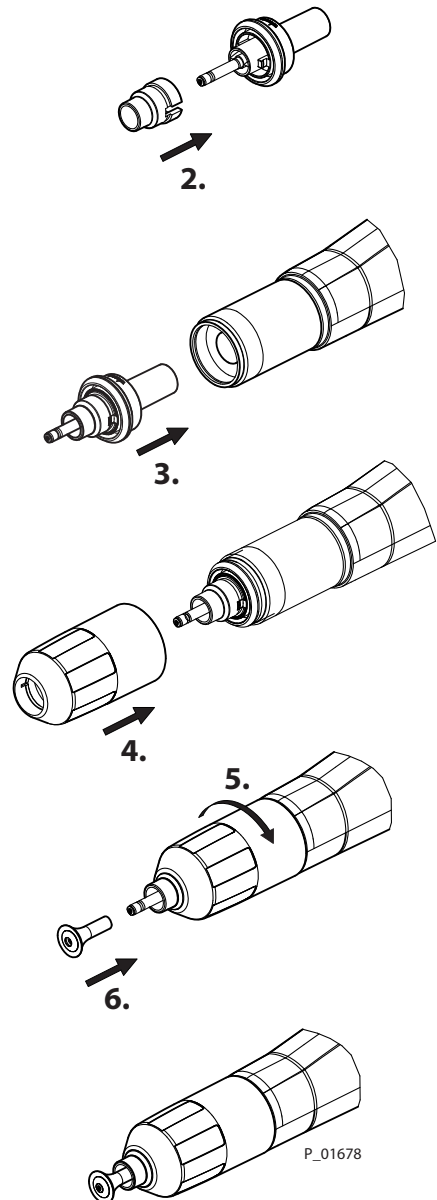
As a rule, the protective wedge needs to be checked for wear and replaced if necessary.



### 8.5.2 FITTING THE ROUND JET NOZZLE

**Procedure:**

1. Before inserting the electrode holder, the spring contact of the gun body and contact surface of the electrode holder should be checked.  
The spring contact must be clean and smooth-running, the gun body must also be clean and free of powder deposits.
2. Attach deflector cone sleeve onto electrode holder.
3. Insert electrode holder into gun housing.
4. Slide union nut onto gun housing.
5. Screw union nut onto gun housing (hand-tight).
6. Slide deflector cone over deflector cone sleeve.



## 8.6 REPLACING THE PROTECTIVE WEDGE

### 8.6.1 REMOVING THE PROTECTIVE WEDGE

#### Note:

A wedge tool is available to prevent the protective wedge from being damaged when dismantling and inserting.

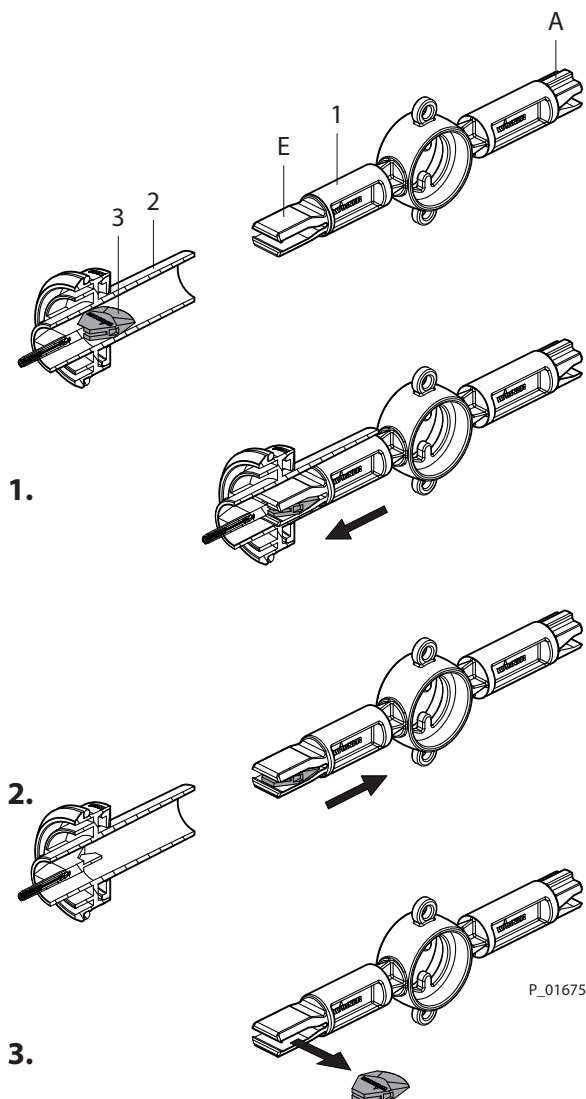
The wedge tool has a removal side (E) and an attachment side (A). Use the right side for the corresponding procedure!

You will find the necessary wearing parts and spare parts in Chapter [13](#) of this operating manual.

- 1 Wedge tool
- 2 Electrode holder (shown with a cut-away view to improve comprehension)
- 3 Protective wedge (when positioned)

#### Procedure:

1. Guide wedge tool 1 into electrode holder 2 up to stop.
2. Pull protective wedge 3 out of electrode holder 2 using wedge tool 1.
3. Press protective wedge 3 sideways out of wedge tool 1 manually (without tool).



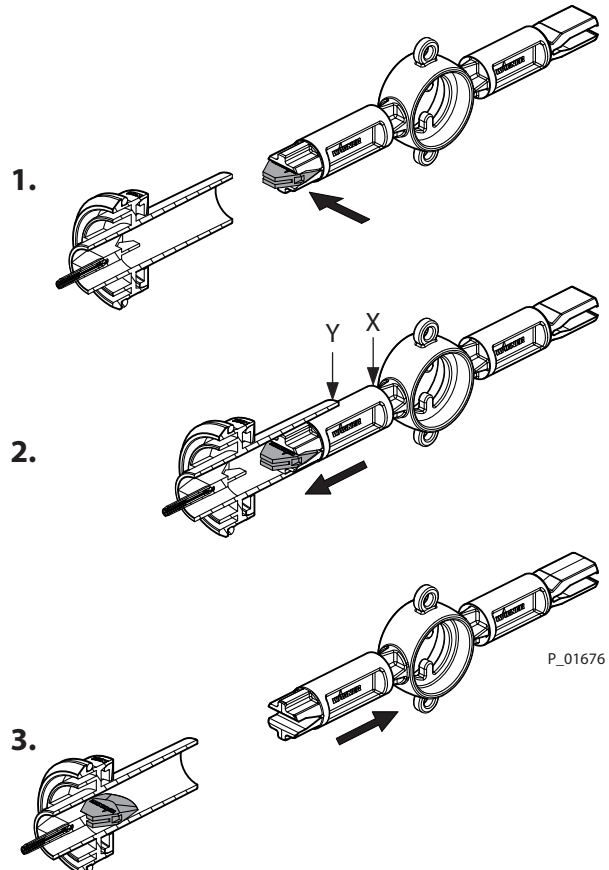
### 8.6.2 INSTALLING THE PROTECTIVE WEDGE

**Note:**

The same wedge tool is used to insert the protective wedge.

**Procedure:**

1. Guide protective wedge into wedge tool.
2. Insert both parts into opening on electrode holder up to stop.  
If it is not possible to push the wedge tool in as far as the X mark, rotate the wedge tool a little until it can be pushed up to the mark.  
The mark X must be flush with the Y end of the electrode holder.
3. The protective wedge is now correctly assembled and the wedge tool can be pulled out of the electrode holder.
4. The protective wedge remains inserted in the electrode holder.  
Prior to re-fitting, check whether the contact points on electrode holder and in gun housing have been thoroughly cleaned so that the electrode tip is electrically connected to the high-voltage generator.
5. Mount fan or round jet nozzle with the corresponding electrode holder.



## 8.7 CHANGING FROM FLAT JET NOZZLE TO ROUND JET NOZZLE

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

The X1 R electrode holder is necessary to perform the change.

### CAUTION

#### Electrode tip!

Risk of injury and damage to the device.

→ Take care when fitting the X1 R electrode holder.



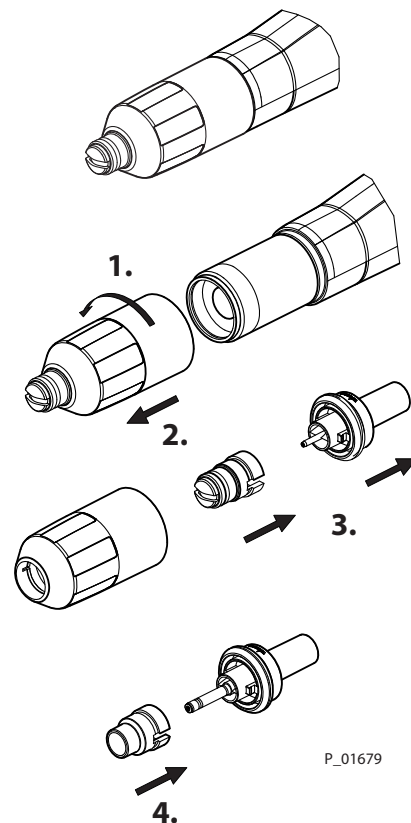
#### Procedure:

1. Unscrew union nut from gun housing.
2. Take union nut with nozzle system off gun body.  
The nozzle system remains inserted in the union nut.

#### Note:

If the nozzle system doesn't remain inserted in the union nut, the nozzle system and union nut must be replaced.

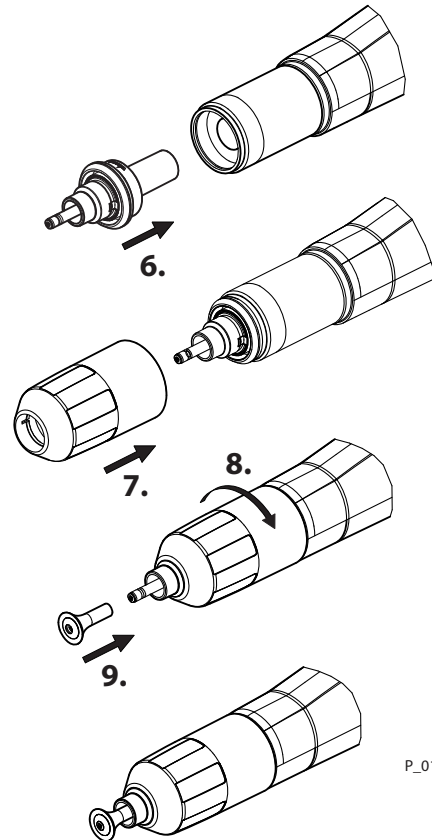
3. The parts can be separated by gently pressing the sliding ring on the flat jet nozzle.
4. Attach deflector cone sleeve onto X1 R electrode holder.



P\_01679

**Procedure:**

5. Before inserting the electrode holder, the spring contact of the gun body and contact surface of the electrode holder should be checked.  
The spring contact must be clean and smooth-running, the gun body must also be clean and free of powder deposits.
6. Insert electrode holder into gun housing.
7. Slide union nut onto gun housing.
8. Screw union nut onto gun housing (hand-tight).
9. Slide deflector cone over deflector cone sleeve.



P\_01690

## 8.8 ASSEMBLY OF THE CORONASTAR

The CoronaStar is a retrofit set for the manual gun, which helps to achieve a better surface quality (e.g., reduction of "orange peel").

### WARNING

#### Danger from electric current!

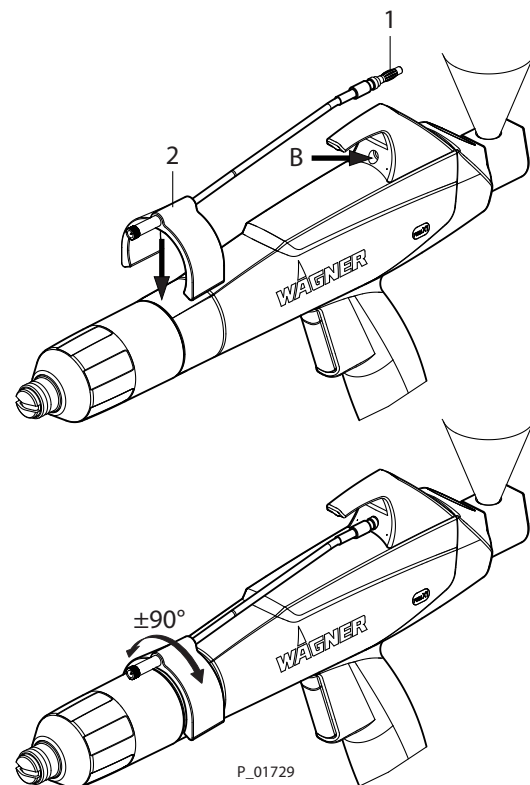
Risk of injury and damage to the device.

- The conversion on the CoronaStar may only be carried out by trained personnel.
- Prior to assembling the CoronaStar, the high voltage and powder feed must be switched off and secured against being inadvertently switched on.



#### Procedure:

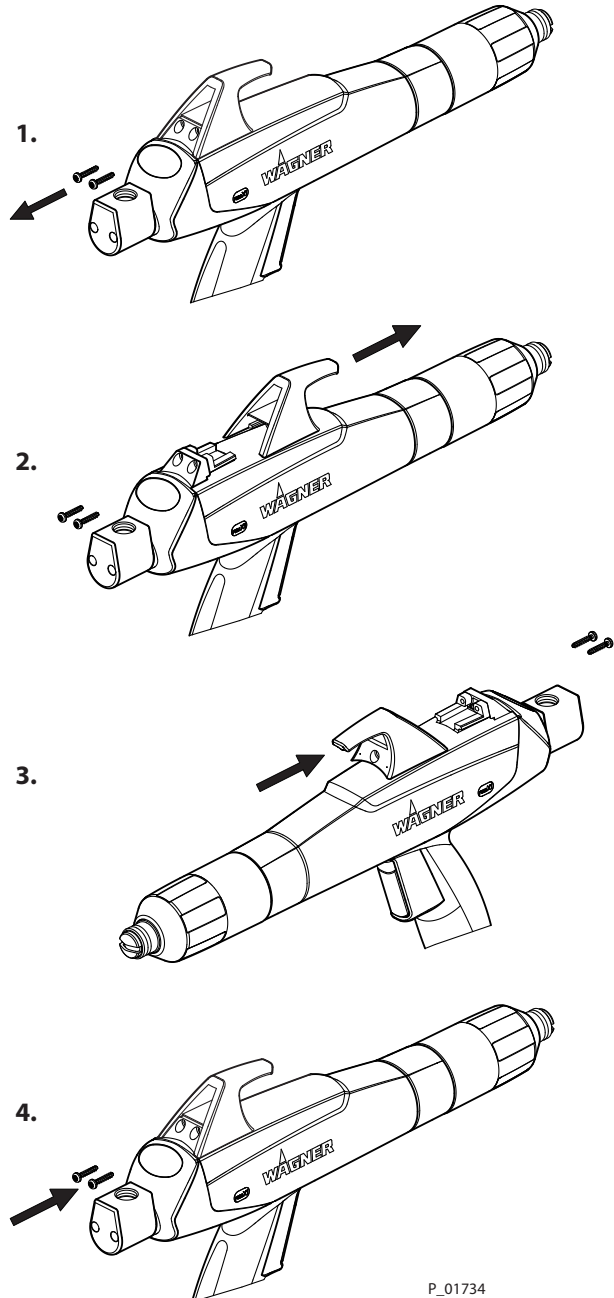
1. Guide plug-in contact 1 of CoronaStar into drilled hole B on hook.
2. Attach clip 2 of CoronaStar to housing.  
Flexible positioning in a range of  $\pm 90^\circ$  is possible.



## 8.9 REPLACING THE SUSPENSION HOOK

### Procedure:

1. Loosen fastening screws on rear of hook and unscrew.
2. Slide hook in direction indicated by arrow and remove from gun housing.
3. Fit new hook on receiver and slide in direction indicated by arrow.
4. Fit fastening screws and tighten.



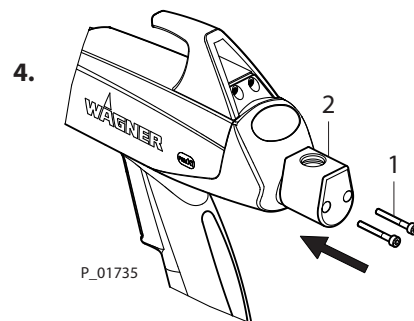
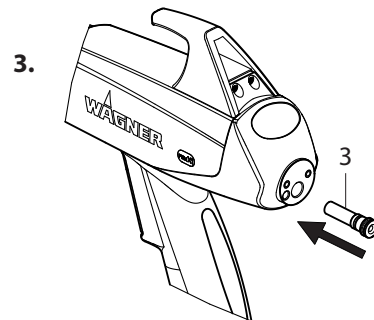
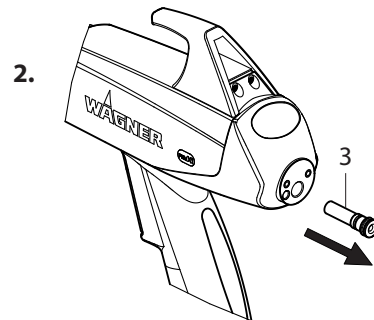
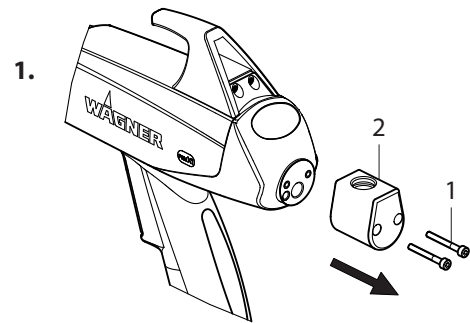
P\_01734



### 8.10 REPLACING THE COLLECTOR NOZZLE

The collector nozzle can be replaced if worn (for order number, see Chapter [13.6](#)).

1. Remove the powder cup from the gun.  
Unscrew screws 1 and remove connecting part 2 from gun body.
2. Pull collector nozzle 3 out of gun body.
3. Carefully insert new collector nozzle 3 in gun body.
4. Attach connecting part 2 to gun body and fasten with screws 1 (torque  $40 \pm 10$  Ncm).  
Insert powder cup in connecting part.

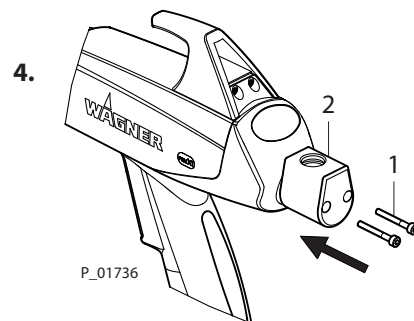
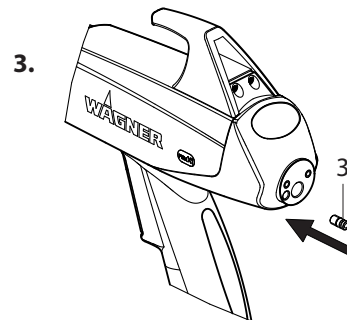
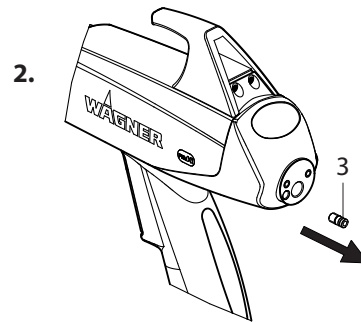
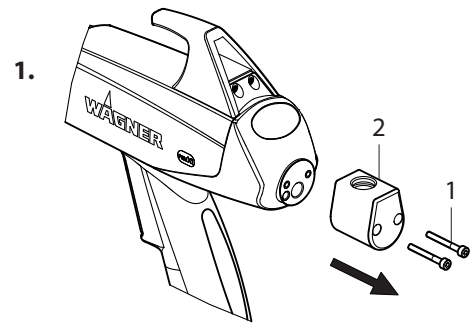


P\_01735

### 8.11 REPLACING THE CONNECTING TUBE

The connecting tube can be replaced if worn (for order number, see Chapter [13.6](#)).

1. Remove the powder cup from the gun.  
Unscrew screws 1 and remove connecting part 2 from gun body.
2. Unscrew connecting tube 3 from gun body.
3. Screw new connecting tube 3 into gun body.
4. Attach connecting part 2 to gun body and fasten with screws 1 (torque  $40\pm 10$  Ncm).  
Insert powder cup in connecting part.



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## 9 TROUBLESHOOTING AND RECTIFICATION

### DANGER

#### Incorrect maintenance/repair!

Danger to life and equipment damage.

- WAGNER devices, protective systems and safety, monitoring and control equipment may only be serviced/repared as defined in Directive 2014/34/EC (ATEX) by trained WAGNER service personnel or skilled persons in accordance with TRBS 1203!

Note national regulations!

- Service, repair or replacement of devices or parts of devices may only be performed outside the hazard area!



Malfunction	Cause	Remedy
No electrostatic (e.g., no wrap around or no powder adhesion)	– Fault in the high-voltage generator	– Contact a WAGNER service center
	– Electrical cable from spray gun to control unit faulty	– Contact a WAGNER service center
	– Cascade in spray gun faulty	– Contact a WAGNER service center
Poor powder wrap-around Back-spray	– Insufficient or no grounding	– See Chapter <a href="#">6.6</a>
Powder outlet uneven or inadequate	– Contamination	– Blow through powder feeding parts
	– Powder sintering	– Clean powder feeding parts
	– Collector nozzle contaminated	– Thoroughly clean cup gun
	– Feed air / dosing air ratio incorrect	– Adjust at control module resp. control unit
	– Collector nozzle worn	– Replace collector nozzle <sup>1)</sup>
Spray pattern is uneven	– Parts of nozzle system worn	– Replace worn parts
Cracks in the gun housing	– Improper handling of the powder spray gun	– Gun housing must be replaced
		– Contact a WAGNER service center

1.) The wearing and spare parts are listed in Chapter [13](#).

## **10 INSPECTIONS**

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If the system is used for electrostatic coating with ignitable coating powders, testing should be undertaken in accordance with DIN EN 50050-2: 2014 as per Table 1.



Section	Type of inspection	Requirements	Inspection by	Type of inspection	Inspection interval
1	Ground leaking resistance from the work piece attachment point	The resistance to ground of every work piece's attachment point must not exceed 1 MΩ (measurement voltage must be 1000 V). The form of construction of the work piece mount must guarantee that the work pieces remain grounded during coating.	SP	ME/CM Measure resistance to ground (work piece receiver - ground potential) max. 1 MΩ @ 1000 V.	weekly
2	Link between technical ventilation equipment and high voltage, compressed air and powder feed	The technical ventilation should be interlocked such that the powder feed and high voltage cannot be switched on, while the technical ventilation is not working effectively.	SP	FT Test whether the system is safely stopped and the powder feed, supply air, and high voltage are switched off when the ventilation is shut down.	annually
3	Checking the electrostatic manual coating system for damage	Electrostatic manual coating systems may only be operated in an undamaged condition. Damaged devices must be decommissioned immediately and repaired immediately.	SP	FT Inspect and test (e.g., by measurement) whether all parts carrying high voltage do not result in discharge which puts people at risk.	weekly
<p><b>Legend:</b>                      MF = Manufacturer                      ER = Employer                      SP = Skilled person                      FPO = Fire prevention officer                      ELT = Electrician                      TP = Trained person</p> <p>FT = Function test                      ME = Measurement                      OC = Organization check                      VI = Visual inspection                      CM = Constant monitoring                      TT = Technical testing</p>					

## 11 DISASSEMBLY AND DISPOSAL

### 11.1 DISASSEMBLY

#### **WARNING**

##### **Incorrect disassembly!**

Risk of injury and damage to the device.


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



#### **Procedure:**


1. Switch off the system.
2. Lock the compressed air supply and decompress system.
3. Disconnect the gun connection cable from control unit.
4. Disconnect the hose for feed air, dosing air and atomizing air from the spray gun and from the control unit.

### 11.2 DISPOSAL

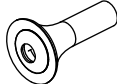

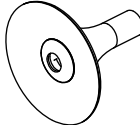
	<p><b>NOTICE</b></p> <p><b>Do not dispose of used electrical equipment with household refuse!</b></p> <p>In accordance with European Directive 2012/19/EU on the disposal of used electrical equipment and its implementation in national law, this product may not be disposed of with the household refuse, but must be recycled in an environmentally correct manner.</p> <p>WAGNER or one of our dealers will take back your used WAGNER electric or electronic equipment and will dispose of it for you in an environmentally-friendly way. To arrange this, please contact one of our service centers, one of our representatives or us directly.</p>
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## 12 ACCESSORIES

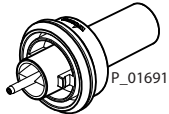
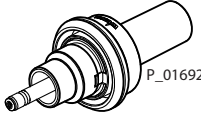
### 12.1 FLAT JET NOZZLE

Order no.	Designation	
2321976	Flat jet nozzle, X1, complete	 P_01664

### 12.2 DEFLECTOR CONE

Order no.	Designation	
2321981	Deflector cone, D18, complete	 P_01665
2321980	Deflector cone, D25, complete	 P_01666
2321171	Deflector cone, D34, complete	 P_01667

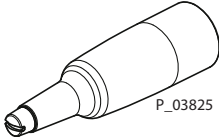
### 12.3 ELECTRODE HOLDER

Order no.	Designation	
2322529	Electrode holder, X1 F ET	 P_01691
2322490	Electrode holder, X1 R ET	 P_01692

### 12.4 SET OF X1 F5 FLAT JET NOZZLES

**Note:**

The X1 F5 nozzles have no FM approval!  
The X1 F5 nozzles are intended for processing metallic powders.

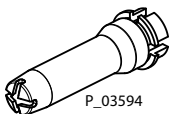
Order no.	Designation	
2387104	Set of flat jet nozzles X1 F5	 P_03825

For further details, see assembly manual, order no. 2389361.

**12.4.1 FLAT JET NOZZLE X1 F5-X**

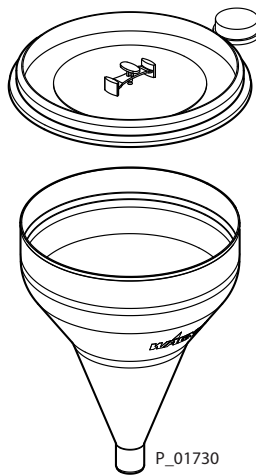
**Note:**

The X1 F5 nozzles have no FM approval!

Order no.	Designation	
2390036	Flat jet nozzle X1 F5-X	 P_03594

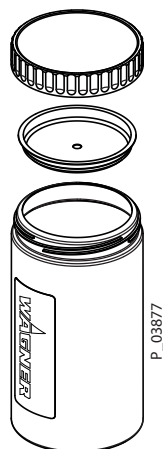
**12.5 POWDER CUP**

**12.5.1 POWDER CUP - 210 CM<sup>3</sup>**



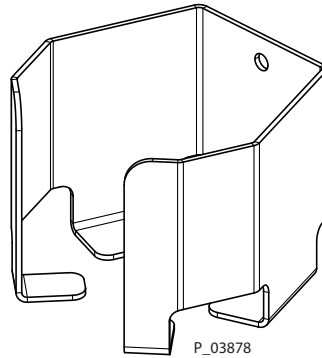
Order no.	Designation
2324139	1 x cup with cover
2324140	5 x cup with cover

**12.5.2 1L POWDER CUP**

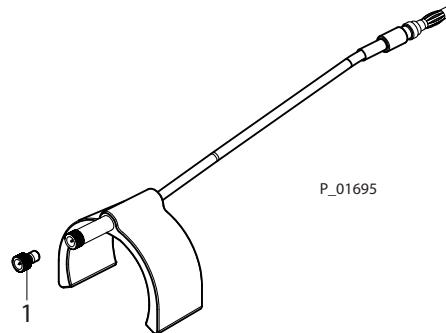


Order no.	Designation
2399466	1 x cup with cover
2399467	5 x cup with cover
2399468	10 x cup with cover
2399469	50 x cup with cover

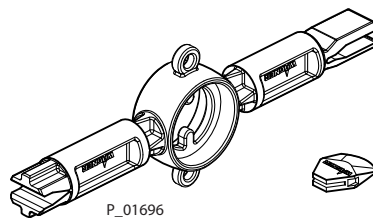


**12.6 CUP HOLDER**

Order no.	Designation
2399470	Cup holder for PEM-X1 CG 1L cup

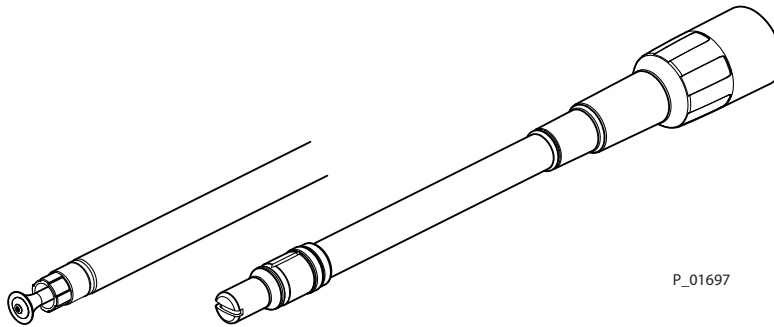
**12.7 CORONASTAR RETROFIT SET**

Pos	Order no.	Designation
	2322868	CoronaStar, PEM-X1, complete
1	2322835	CoronaStar electrode, PEM-X1 ET

**12.8 WEDGE TOOL**

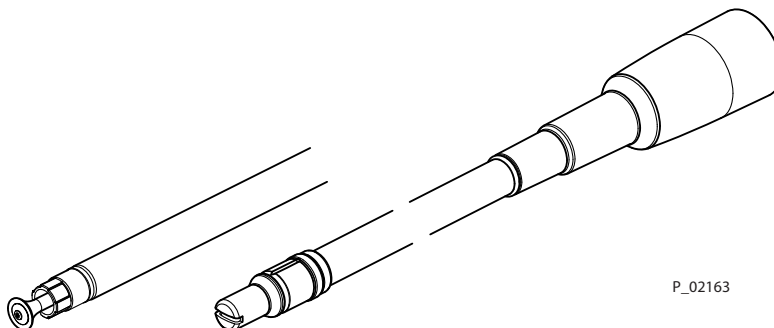
K	Stk	Order no.	Designation
★	1	2324124	Wedge tool, X1 + 20 wedges

★ Available as an accessory, not included in the scope of delivery

**12.9 X1 VL NOZZLE EXTENSION - 150/300/500**

K	Stk	Order no.	Designation
	1	2323366	Nozzle extension, X1 VL 150 (150 mm; 5.91 inches)
	1	2323356	Nozzle extension, X1 VL 300 (300 mm; 11.81 inches)
	1	2323338	Nozzle extension, X1 VL 500 (500 mm; 19.68 inches)
	1	2324147	Flat jet nozzle, X1 VL ET
★	1	2324148	Round jet nozzle, X1 VL ET

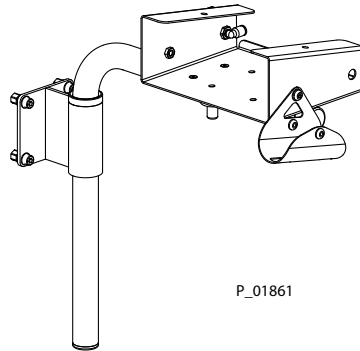
★ Available as an accessory, not included in the scope of delivery

**12.10 X1 VL NOZZLE EXTENSION - 750**

K	Stk	Order no.	Designation
	1	2330497	Nozzle extension, X1 VL 750 (750 mm; 29.53 inches)
	1	2324147	Flat jet nozzle, X1 VL ET
★	1	2324148	Round jet nozzle, X1 VL ET

★ Available as an accessory, not included in the scope of delivery

**12.11 WALL MOUNT**



Order no.	Designation
2330223	Wall mount with bracket

**12.12 RECIPE STICKER**

	[kV]	[µA]	[Nm <sup>2</sup> /h]	[%]
[Icon]	90	80	4.0	70
[Icon]	50	20	3.6	57
[Icon]	70	40	3.6	50
[Icon]	82	20	3.6	45

	80	100	4.5	80
P5				
P6				
P7				
P8				
P9				
P10				

WAGNER

P\_01829

Order no.	Designation
2331223	Recipe sticker

**12.13 POWDER MEASURING ADAPTER**

**⚠ WARNING**

**Risk of explosion due to electrostatic charging!**

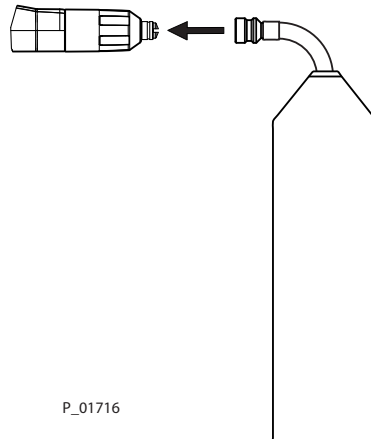
Danger to life and equipment damage.

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



The powder measuring adapter serves to measure powder quantities for the PEM-X1 CG gun. The powder measuring adapter is slid onto the nozzle.

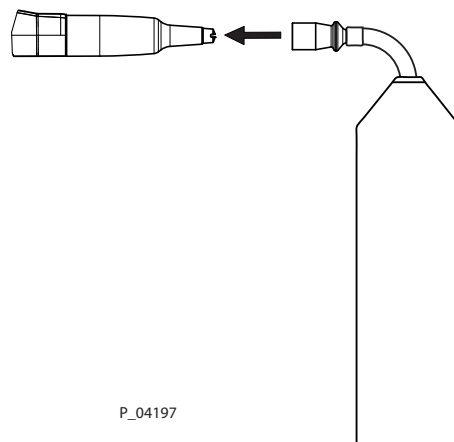
**12.13.1 POWDER MEASURING ADAPTER FOR FLAT JET NOZZLE X1**



P\_01716

Order no.	Designation
2325320	Powder measuring adapter with X1 bag, complete

**12.13.2 POWDER MEASURING ADAPTER FOR C4-F5/X1-F5 FLAT JET NOZZLE**



P\_04197

Order no.	Designation
2403425	Powder measuring adapter, C4-F5/X1-F5, complete

## 13 SPARE PARTS

### 13.1 HOW CAN SPARE PARTS BE ORDERED?

Always supply the following information to ensure delivery of the right spare part:

#### Order number, designation and quantity

The quantity need not be the same as the number given in the quantity column "Stk" on the list. This number merely indicates how many of the respective parts are used in each component.

The following information is also required to ensure smooth processing of your order:

- billing address
- delivery address
- 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" (labeling) in the following spare parts lists:

- ◆ Wearing parts. Wearing parts are not included in the warranty terms.
- ★ Included in service set

#### Note:

These parts are not covered by warranty terms.

- Not part of standard equipment, however, available as special accessory.

Explanation of order no. column

- Item not available as spare part.
- / Position does not exist.

### DANGER

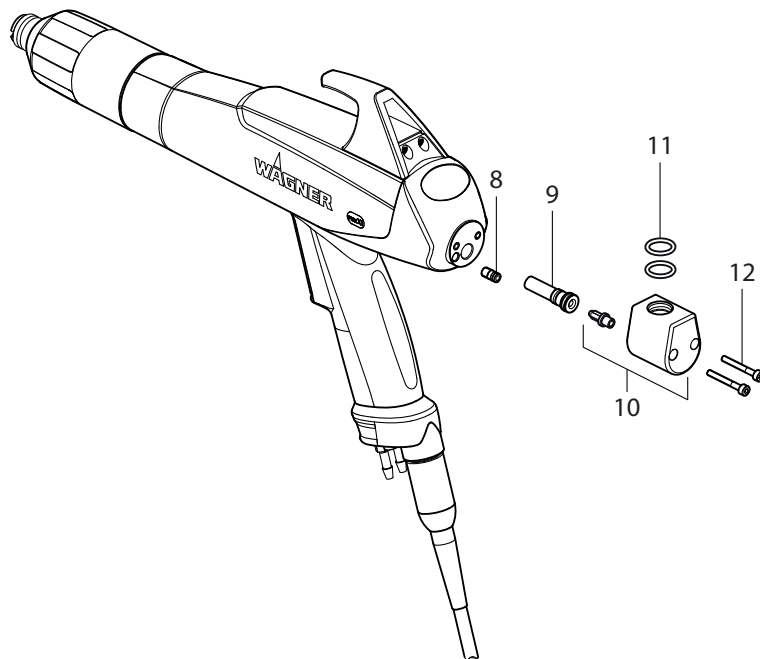
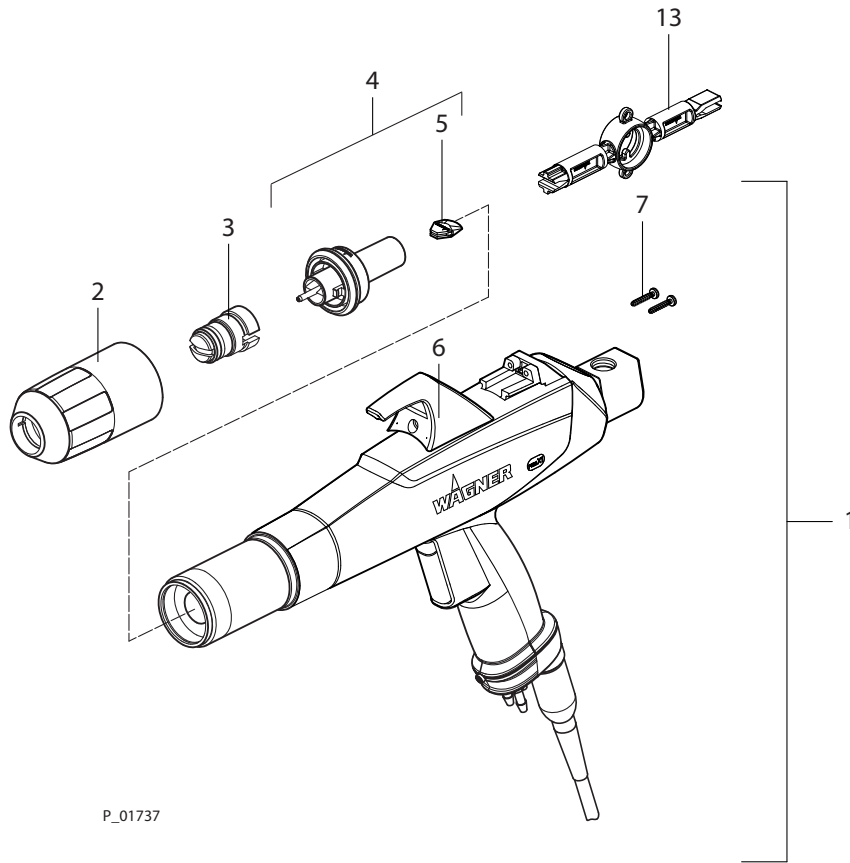
#### Incorrect maintenance/repair!

Danger to life and equipment damage.

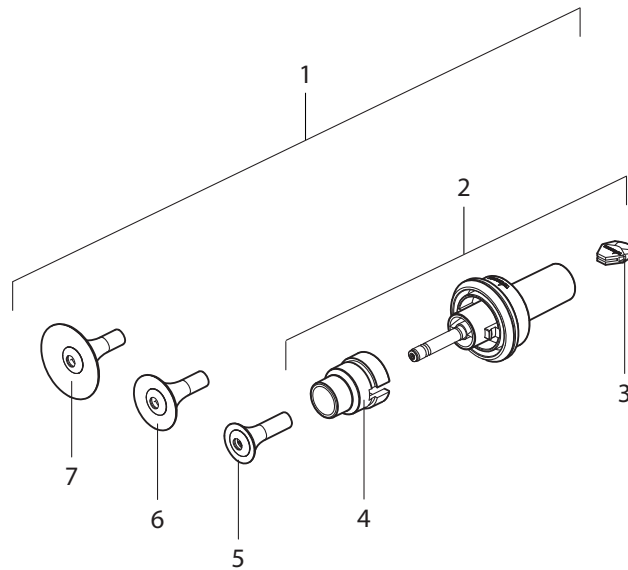
- Only a WAGNER service center or a suitably trained person may carry out repairs and replace parts.
- Use only WAGNER original spare parts and accessories.
- Only repair and replace parts that are listed in the "Spare parts" chapter and that are assigned to the unit.
- Before all work on the device and in the event of work interruptions:
  - Switch off the energy and compressed air supply.
  - Relieve spray gun and device pressure.
  - Secure the spray gun against actuation.
- Observe the operating and service manual for all work.



**13.2 PEM-X1 CG CORONA CUP GUN**



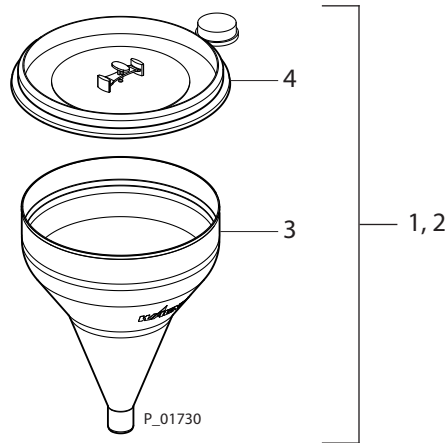
Pos	K	Stk	Order no.	Designation
1			2322588	Corona cup gun, PEM-X1 CG
2			2320464	Union nut, X1
3	◆		2321976	Flat jet nozzle, X1, complete
4	◆ ★		2322529	Electrode holder, X1 F ET
5	◆		2320488	Replacement protective wedge X1
6			2320330	Gun hook, X1 ET
7			2316896	Screw
8			2324135	Connecting tube, ET
9			2324133	Collector nozzle, ET
10			2324132	Connecting part, ET
11	◆		9971313	O-ring
12			9906023	Screw
13			2324205	Wedge tool, X1
			2324223	Non-return valve, complete
	◆ ★		2343544	Hose kit, PEM-X1 CG ET

**13.3 X1 R ELECTRODE HOLDER**

P\_01700

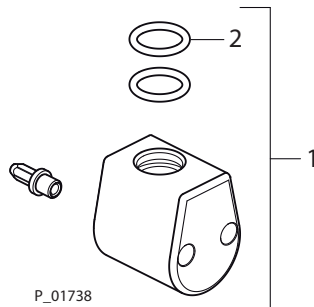
Pos	K	Stk	Order no.	Designation
1	◆	1	2322493	Electrode holder, X1 R, with nozzle
2	◆	1	2322490	Electrode holder, X1 R ET
3	◆	1	2320488	Replacement protective wedge X1
4	◆	1	2320503	Deflector cone sleeve, X1
5	◆	1	2321981	Deflector cone, D18, complete
6	◆	1	2321980	Deflector cone, D25, complete
7	◆	1	2321171	Deflector cone, D34, complete

**13.4 POWDER CUP**



Pos	K	Stk	Order no.	Designation
1		1	2324139	Cup with cover, X1 ET
2		5	2324140	Cup with cover, X1 ET
3		1	2323145	Cup, X1
4		1	2322906	Cover

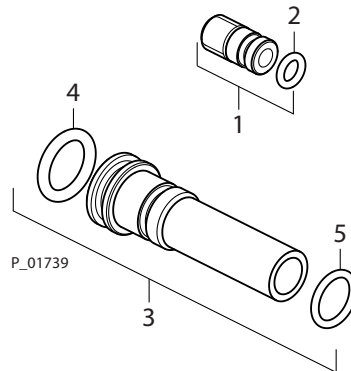
**13.5 CONNECTING PART**



Pos	K	Stk	Order no.	Designation
1		1	2324132	Connecting part, ET
2	◆	2	9971313	O-ring



### 13.6 CONNECTING TUBE, COLLECTOR NOZZLE



Pos	K	Stk	Order no.	Designation
1		1	2324135	Connecting tube, ET
2	◆	1	9971445	O-ring
3		1	2324133	Collector nozzle, ET
4	◆	1	9974210	O-ring
5	◆	1	9971462	O-ring

## 14 PEM-X1 CG PORTABLE SET

The PEM-X1 CG portable set is mainly designed for laboratory tests, sample coatings or small series production.



P\_01740

Order no.	Designation
2328172	PEM-X1 CG portable set



P\_01825

Operating position and connecting parts

## 15 EU DECLARATION OF CONFORMITY

### 15.1 EU DECLARATION OF CONFORMITY - MANUAL GUN

Herewith we declare that the supplied version of:

**PEM-X1 CG**

complies with the following guidelines:

2014/34/EU
2006/42/EC
2014/30/EU
2011/65/EU
2012/19/EU

Applied standards, in particular:

EN ISO 12100: 2010	EN 50050-2:2013
EN 1953:2013	EN 1127-1:2011
EN ISO 13732-1: 2008	EN 61000-6-2: 2005+B: 2011
EN 14462:2015	EN 61000-6-4: 2007+A1: 2011
EN 60529: 1991+A1: 2000+A2: 2013	EN ISO/IEC 80079-34: 2011

Applied national technical standards and specifications, in particular:

DGUV-I 209-052	TRGS 727

**Identification:**



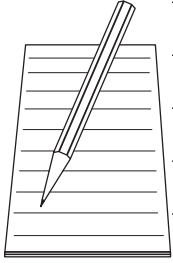
PTB 12 ATEX 5002

EN 50050-2:2013

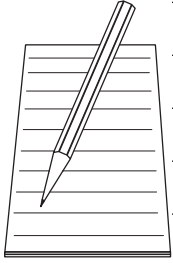
**EU Declaration of Conformity**

The EU Declaration 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.

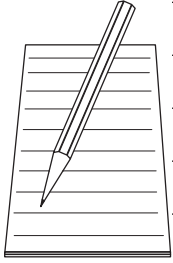
**Order number:** 2326024



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# WAGNER



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