Rev. 00

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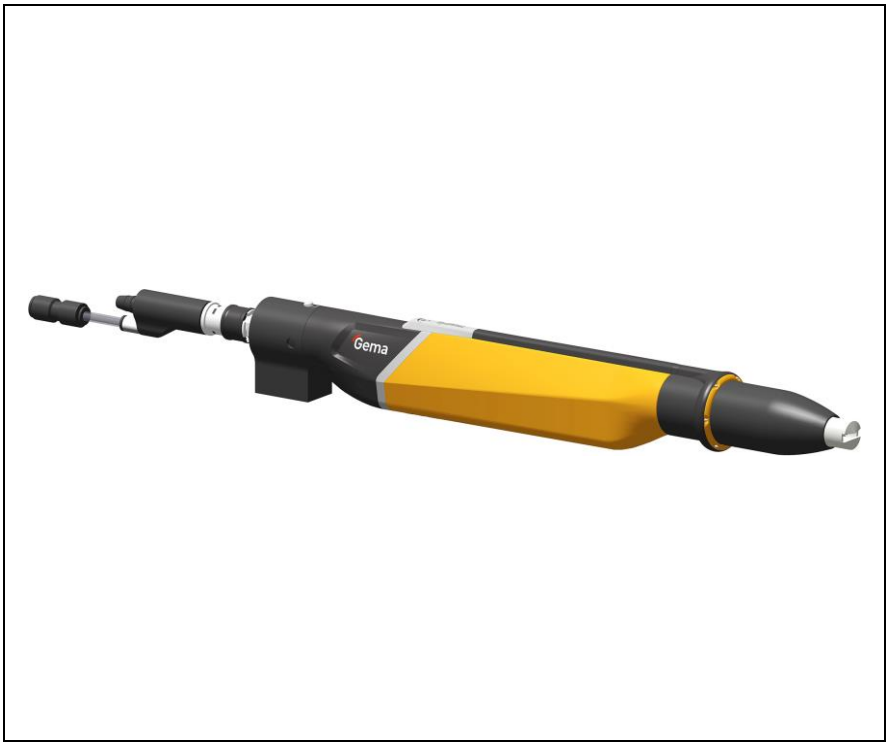
Operating instructions and Spare parts list

Automatic gun OptiGun GA04-P



Translation of the original operating instructions

Gema

Documentation OptiGun GA04-P

For the latest information about Gema products, visit **www.gemapowdercoating.com**.

For information regarding patents, see **www.gemapowdercoating.com/patents** or **www.gemapowdercoating.us/patents**.

Gema Switzerland GmbH
Mövenstrasse 17
9015 St.Gallen
Switzerland

Phone: +41-71-313 83 00

Email: info@gema.eu.com

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About these instructions

General information

This operating manual contains all the important information that is needed to operate the OptiGun GA04-P. It will safely guide you through the start-up process and give you references and tips for the optimal use when working with your powder coating system.

Information about the functional mode of the individual system components should be referenced in the respective enclosed documents.

Keeping the Manual

Please keep this Manual ready for later use or if there should be any queries.

Safety symbols (pictograms)

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

⚠ DANGER

Indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.

ATTENTION

Indicates a potentially harmful situation. If not avoided, the equipment or something in its surrounding may be damaged.

ENVIRONMENT

Indicates a potentially harmful situation, which, if not avoided, may have harmful consequences for the environment.

MANDATORY NOTE

Information that must be observed.

NOTICE

Useful information, tips, etc.

Structure of Safety Notes

Every note consists of 4 elements:

– Signal word
– Nature and source of the danger
– Possible consequences of the danger
– Prevention of the danger

⚠ SIGNAL WORD

Nature and source of the hazard!

Possible consequences of the danger

▶ Prevention of the danger

Presentation of the contents

Figure references in the text

Figure references are used as cross references in the descriptive text.

Example:

*"The high voltage (**H**) created in the gun cascade is guided through the center electrode."*

Safety

Basic safety instructions

- This product is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.
- Any other use is considered non-compliant. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions. If this product is to be used for other purposes or other substances outside of our guidelines then Gema Switzerland GmbH should be consulted.
- Start-up (i.e. the execution of intended operational tasks) is forbidden until it has been established that this product has been set up and wired according to the guidelines for machinery. The standard "Machine safety" must also be observed.
- Unauthorized modifications to the product exempt the manufacturer from any liability from resulting damage.
- The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.
- Furthermore, the country-specific safety regulations also must be observed.

Product specific security regulations

- This product is a constituent part of the equipment and is therefore integrated in the system's safety concept.
- If it is to be used in a manner outside the scope of the safety concept, then corresponding measures must be taken.
- The installation work to be done by the customer must be carried out according to local regulations.
- It must be ensured, that all components are earthed according to the local regulations before start-up.

▶ **For further security information, see the more detailed Gema safety regulations!**

⚠ WARNING

Working without instructions

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

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

Product description

Intended use

Designed for use with organic powders, this gun is used for electrostatic coating of objects connectable to ground. The gun works in conjunction with the control units and accessories, as specified in the corresponding Type Examination Certificate.

fig. 1

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

Any other use is considered non-compliant. The manufacturer is not responsible for any incorrect use and the risks associated with such actions are assumed by the user alone!

A summary of the directives and standards

This product is built according to the current state of the art. The product is subject to the European directives and complies with the following standards.

The product is suitable for the intended purpose and can be used in the appropriate areas.

▶ **For further information, also refer to the enclosed Declaration of Conformity.**

European directives RL

EG-RL 2006/42/EU	Machinery
EG-RL 2014/34/EU	Equipment and Protective Systems in Potentially Explosive Atmospheres (ATEX)
EG-RL 2014/30/EU	Electromagnetic compatibility

EN European standards

EN 50177	Stationary electrostatic application equipment for ignitable liquid coating material - Safety requirements
EN 50050-2	Electrostatic equipment for areas where there is danger of explosion - electrostatic hand held equipment Part 2: Electrostatic hand-held spraying equipment
EN 16985	Spray booths for organic coating material - Safety requirements

Recognized safety-related regulations

764 / DGUV Information 209-052	Electrostatic coating Trade Union information concerning health and safety during work (BGI)

Reasonably foreseeable misuse

– Coating of non grounded objects
– Use of enameled powder
– Incorrectly configured values for powder conveyance
– Incorrectly configured values for electrode rinsing air
– Use of moist powder

Technical Data

Versions

Depending on the operational area, the automatic powder gun is available in two versions with different connecting flanges:

OptiGun GA04-P

OptiGun GA04-P-X

Electrical data

OptiGun GA04-P	
Nominal input voltage	12 V
Frequency	18 kHz (average)
Nominal output voltage	110 kV
Polarity	negative (option: positive)
Max. output current	110 µA
Ignition protection	Type A-P acc. EN 50177 Ex 2 mJ 85 °C
Temperature range	0 °C – +40 °C (+32 °F – +104 °F)
Max. surface temperature	85 °C (+185 °F)
Protection type	IP64
Approvals	CE 0102 Ex II 2D PTB 23 ATEX 5002

ATTENTION

The OptiGun GA04-P Automatic powder gun may only be connected to the following control units:

- ► OptiSpray All-in-One CG26-CP
  OptiStar CG24-CP
  OptiStar CG12-CP

Dimensions

OptiGun GA04-P	
Weight	830 g

Processible powders

OptiGun GA04-P	
Plastic powder	yes
Metallic powder	yes
Enamel powder	no

Structure

Overall view

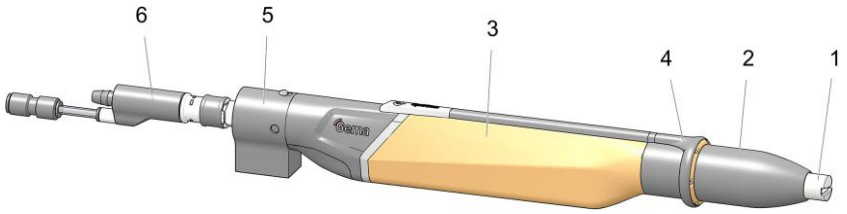


Fig. 2: Structure

1 Spray nozzle
2 Threaded sleeve
3 Shaft with removable high voltage cascade
4 SuperCorona
5 Gun fixture
6 Diffuser

Scope of delivery

– Automatic gun with gun cable (20 m)*, negative polarity
– Electrode rinsing air hose (20 m)*
– Flat jet nozzle NF27, complete (incl. electrode holder)
– Gun cleaning brush
– Parts kit (cable ties with Velcro closure, quick-release coupling, fixing screw)
– Operating manual

* standard

Available accessories**

- SuperCorona
- Flat jet nozzle (for specific applications)
- Multispray adapter (to NF20, NF25 and NF27)
- Round jet nozzles
- Gun extension 150, 300 and 500 mm
- Angled nozzles 45°, 60° and 90°
- Powder tube extensions (when using several powder hoses)

** For more information, see chapter "Spare parts list" on page 47!

SuperCorona

Field of application

The SuperCorona is an optional device for the powder gun, designed to improve surface appearance quality.

When coating wheel rims, drawers, radiators, lamps etc. an exceptional surface appearance quality is generally requried, also when higher then normal coating layer thicknesses are required. The SuperCorona assist the gun in acheiving the desired results.

The SuperCorona works with a variety of powders to reduce or eliminate "orange peel" finish typlically associated with overcharing. Additionally the SuperCorona can be used with structure (or textured) powder coatings to assist with reduce or eliminate the "picture frame effect".

The performance of the gun with SuperCorona is convincing due to its very good charging and very high deposition rate as well as an improved penetration into Faraday cages. The distance between nozzle and workpiece can be reduced to 100 mm without influencing the surface finish.

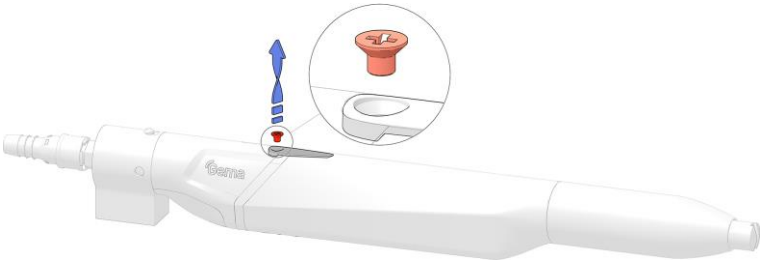
Fig. 3: SuperCorona – retrofit

Due to its modular structure, the gun can be extended quickly and easily with the lightweight SuperCorona (approx. 35 g). The gun remains repair-friendly and easy to maintain even after reconfiguration.

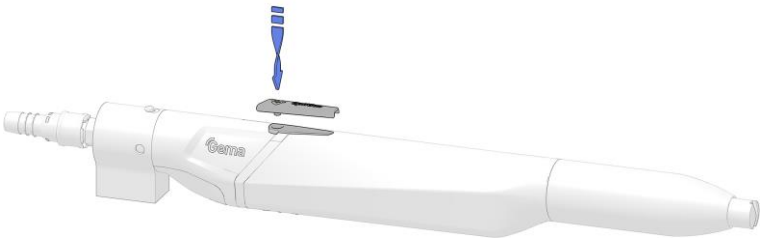
SuperCorona assembly

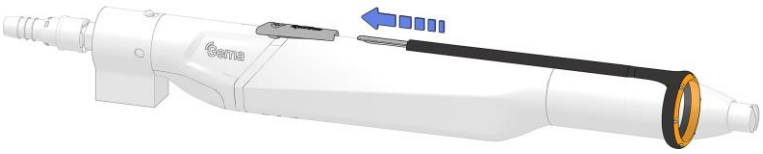
Before fitting the SuperCorona, make sure that the connection and the plug-in connector are free from grease and powder, otherwise the electric contact cannot be guaranteed.

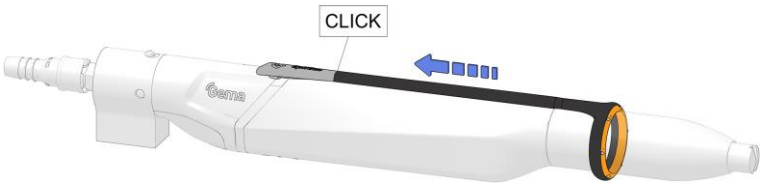
1.



2.



3. 

4. 

Principle of operation

High voltage generation

The control unit supplies a high-frequency low voltage of approx. 12 V eff. This voltage is fed through the gun cable (**1**) and the gun plug to the high voltage cascade (**2**) in the gun body.

In the high voltage cascade (**2**), the low voltage is high-transformed in a first step (**A**). This primary high voltage is subsequently rectified and multiplied in the high voltage cascade in a second step (**B**), until the required high voltage is obtained at the end (approx. 110 kV). The high voltage is now fed to the electrode (**3**) within the spray nozzle.

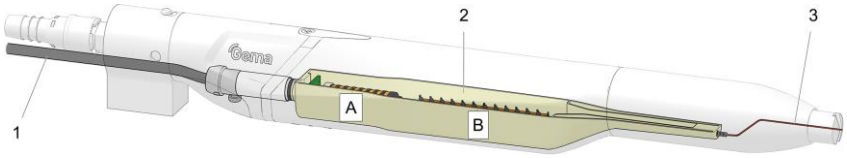


Fig. 4: High voltage generation

Circuit

The gun is switched on and off by the gun control module.

The control unit allows also the adjustment of low voltage, powder flow and electrode rinsing air to the gun.

Powder flow and electrode rinsing air

The electrode rinsing air is used within the corresponding spray nozzles and the air is supplied from the designated connection on the rear side of the gun control unit (see the operating manual of the gun control unit).

The functions of the spray nozzles are described in the following sections.

Flat jet nozzle with rinsed central electrode

The vented flat jet nozzle serves for the spraying and the charging of the powder. The powder is charged by the central electrode (**E**). The high voltage (**H**) created in the gun cascade is guided through the center electrode.

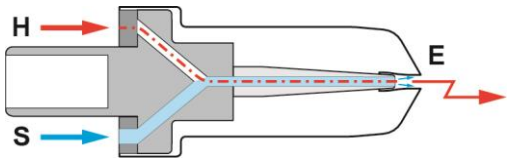


fig. 5

In order to prevent powder from sintering on the electrode, compressed air is used during the spray process.

This compressed air (**S**) (known as electrode rinsing air) can be adjusted on the gun control unit, depending on the gun type (see corresponding operating manual).

Round jet nozzle with rinsed deflector and rinsed central electrode

The deflector is used, to give the powder stream emerging from the gun, a cloud formation. The powder is charged by the central electrode (**E**). The high voltage (**H**) created in the gun cascade is guided through the center electrode.

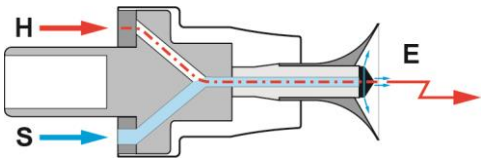


fig. 6

Since powder can accumulate on the baffle plate, it must be rinsed with compressed air.

This compressed air (**S**) (known as electrode rinsing air) can be adjusted on the gun control unit, depending on the gun type (see corresponding operating manual).

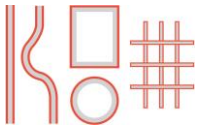
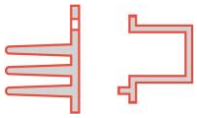
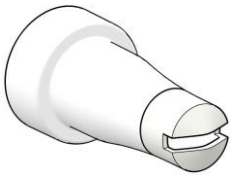
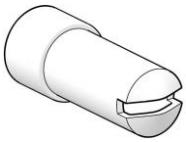
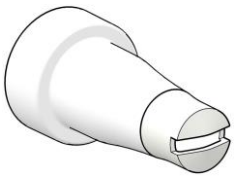
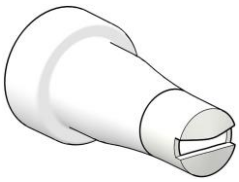
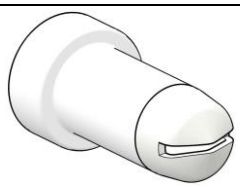
Typical properties – characteristics of the functions

- Continuous, tightly sealed gun body with separate channels for cascade and electrode rinsing air
- Quickly removable SuperCorona
- Powder hose connection with quick coupling
- Covered hose and cable duct
- Simple conversion to a quick color change gun
- Easily dismountable by a few hand movements, therefore very easy to service
- Few wearing parts (nozzle and SuperCorona)
- Easily removable cascade because free of grease, with integrated current limiting resistors

Connection for SuperCorona

- Quick and simple connection to and disconnection from the SuperCorona
  - As standard, the gun is delivered without SuperCorona

Range of nozzles

Type of nozzle		Application		
For more information, see				
NF20				
NF25				
NF21				
NF27				
NF40				
NF50				
NS04				
NS09				

Legend:  very well suited;  well suited;  suitable;  conditionally suitable

Assembly / Connection

Connecting the gun

The gun is delivered ready-to-use by the manufacturer. Just a few cables and hoses must be connected.

Connecting to OptiSpray All-in-One CG26-CP

▶ **The compressed air must be free of oil and water!**

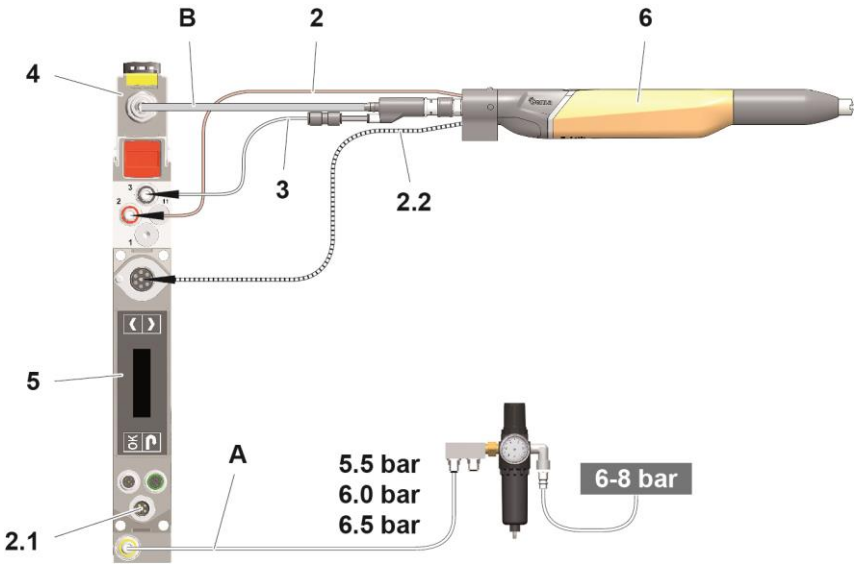


Fig. 7: Connection instructions – overview

A Compressed air hose
B Powder hose
2 Electrode rinsing air hose
2.1 Power supply
2.2 Gun cable
3 Spraying air hose
4 Powder pump
5 Control unit All-in-One CG26
6 Automatic gun with diffuser

Connecting to OptiStar CG24-CP

The compressed air must be free of oil and water!

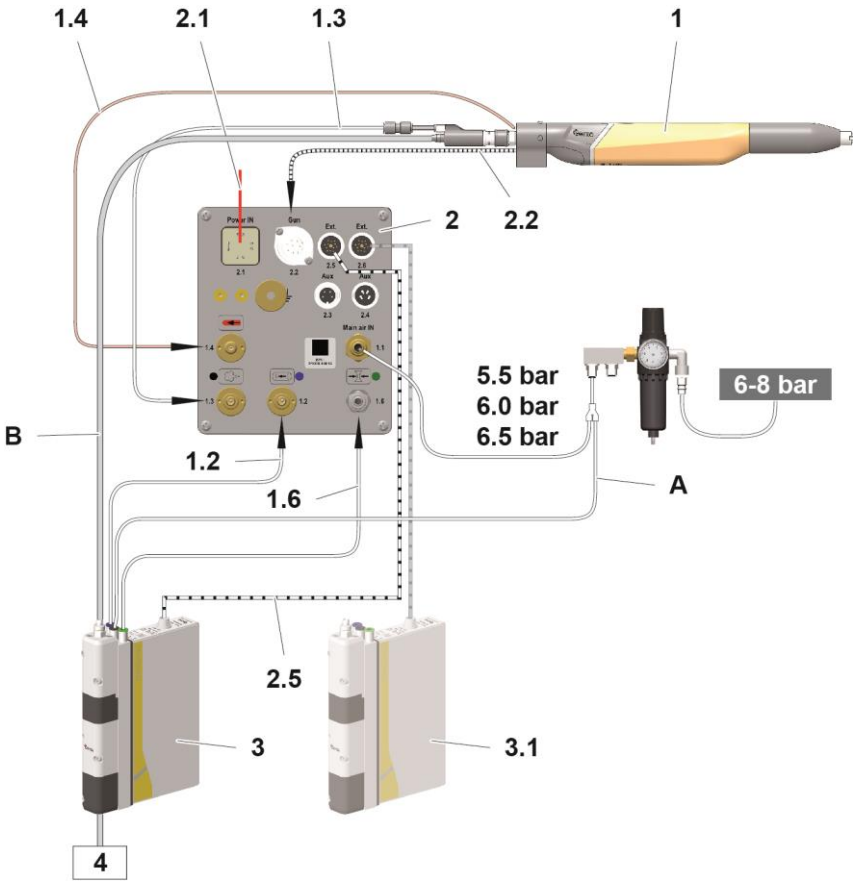


Fig. 8: Connection instructions – overview

A Compressed air hose
B Powder hose
1 Automatic gun with diffuser
2 OptiStar CG24-CP Gun control unit
3 Application pump no. 1
3.1 Application pump no. 2
4 Powder container
1.2 Transport air hose
1.3 Spraying air hose
1.4 Electrode rinsing air hose
1.6 Pinch valve air
2.1 Power supply
2.2 Gun cable
2.5 Control signal cable

Start-up

Preparation for start-up

Basic conditions

When starting up the gun control unit, the following general conditions impacting the coating results must be taken into consideration:

– Gun correctly connected

– Gun control unit correctly connected

– Corresponding power and compressed air supply available

– Powder preparation and powder quality OK

Initial start-up

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

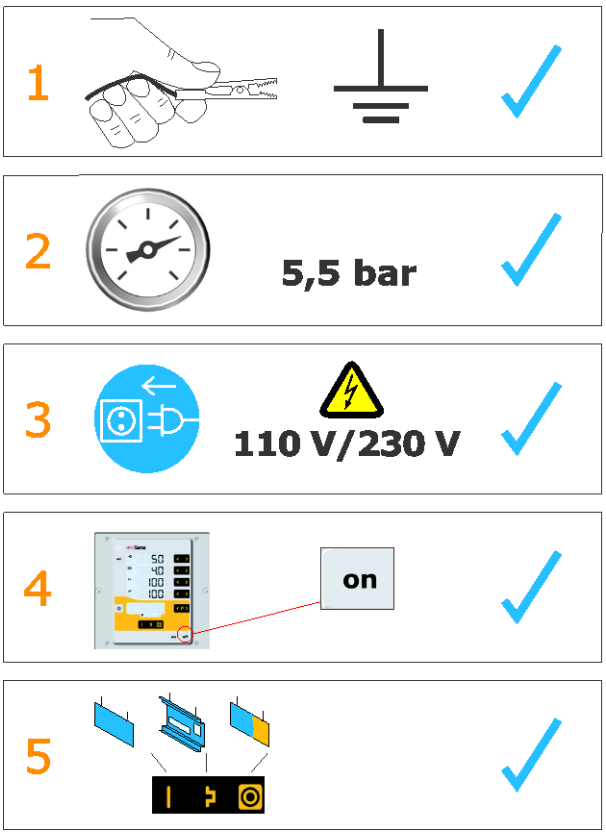


Fig. 9

The remainder of the start-up procedure for the gun is explicitly described in the operating instructions for the OptiStar CGxx powder gun control unit (chapter "Initial start-up" and "Start-up")!

Functional check

General information

1. The installed gun must be pointed towards a grounded work piece in the coating booth. All electric and pneumatic connections must be attached!
2. Turn on the gun control unit (see also the control unit operating instructions) – the gun starts spraying
3. Adjust the desired coating parameters (powder volume, total air and high voltage) on the gun control unit (see also the control unit operating instructions)
4. Adjust the electrode rinsing air on the control unit dependent upon the nozzle used

If all tests have been completed correctly, the gun is ready for operation. If malfunctions take place, the cause of the fault can be located by the corresponding troubleshooting guide.

Troubleshooting

If a malfunction occurs, see chapter "Fault clearance" on page 43. Please consider also the control unit operating instructions.

Operation

⚠ WARNING

Discharges when touching the gun or gun accessories, while in use or after use.

During the coating process, the gun can discharge if touched.

► Do not touch any parts of the gun!

Operation

Setting powder output and powder cloud

The powder output depends on the selected powder output (in %), and the powder cloud on the selected total air volume.

►

As a factory default value, a powder rate of 60% and a total air volume of 4 Nm³/h are recommended.

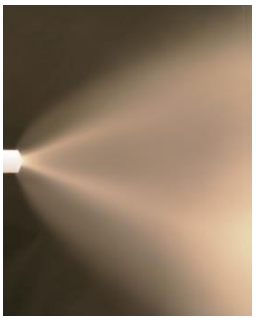
– If values are entered that the gun control unit cannot implement, then the operator is informed of this by a blinking in the relevant display and a temporary error message!

Setting the total air volume

1. 

Adjust the total air volume on the gun control unit with the **T3/T4** keys

– Adjust the total air volume according to the corresponding coating requests



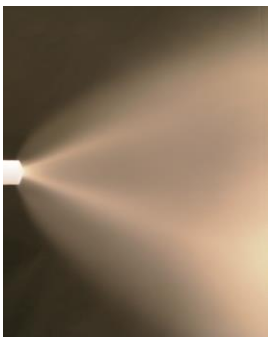
correct powder cloud

too little total air

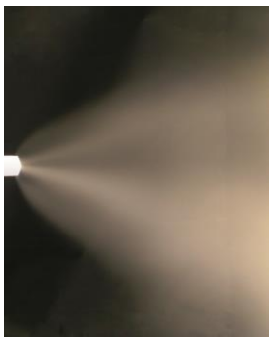
The adjusted value of the total air volume can be left as it is, as long as the same diameter powder hose is used. If the hose diameter changes, the total air volume must be reset!

Setting the powder output

1. 



much powder



little powder

Adjust the powder output volume (e.g. according to the desired coating thickness)

– Factory default setting of 60% is recommended for initial operation. The total air volume is thereby kept constant automatically by the control unit.

To achieve maximum efficiency, we recommend using the lowest possible powder volume where possible!

2. Check fluidization of the powder in the powder container
3. Point the gun into the booth, switch the gun on and visually check the powder output

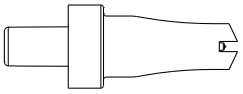
Setting the electrode rinsing air

1. Press the key.

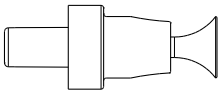
   The second display level will be shown.

2. 

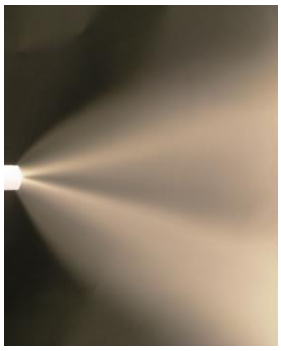
   Adjust the correct electrode rinsing air according to the applied nozzles (deflector plate, flat jet nozzle)



≈ 0.1 Nm³/h



≈ 0.5 Nm³/h



too much electrode rinsing air

3. If in this display level is no operation for 3 seconds, the dispay will automatically switch back to main default display level.

Decommissioning / Storage

Shutdown

1. End the coating procedure
2. Switch off the control unit

The adjustments for high voltage, powder output volume and electrode rinsing air remain stored.

When the product will not be used for several days

1. Switch off the power to the control unit at the main switch
2. Clean the gun and the components for powder conveying (see therefore the corresponding user manuals)
3. Turn off the compressed air main supply

Storage conditions

Hazard notes

There is no danger to personnel or the environment if the unit is stored properly.

Type of storage

The product must be stored horizontally for safety reasons.

Storage duration

If the physical conditions are maintained, the unit can be stored indefinitely.

Space requirements

The space requirements correspond to the size of the product.

There are no special requirements concerning distance to neighboring equipment.

Physical requirements

Storage must be inside a dry building at a temperature between +5 and +50 °C. Do not expose to direct sunlight!

Maintenance during storage

Maintenance schedule

No maintenance schedule is necessary.

Maintenance works

During long-term storage, periodically perform a visual check.

Maintenance / Repairs

ATTENTION

Any unauthorized modifications and alterations to the product are not permitted for safety reasons and exclude the manufacturer's liability for any resulting damage!

▶ **Regular and conscientious cleaning and maintenance increase the service life of the product and ensure consistent high coating quality!**

– The parts to be replaced during maintenance work are available as spare parts. These parts can be found in the appropriate spare parts list!

Cleaning

Gun cleaning

ATTENTION

Impermissible solvents

The following solvents may not be used to clean the gun:

▶ Ethylene chloride, acetone, ethyl acetate, methyl ethyl ketone, methylene chloride, premium gasoline, turpentine, tetrachloromethane, toluene, trichloroethylene, xylene!

▶ **Only cleaning agents with a flash point of a least 5 Kelvin above the ambient temperature, or cleaning places with technical ventilation are allowed!**

! **Before cleaning the powder gun, switch off the control unit. The compressed air used for cleaning must be free of oil and water!**

Daily:

1. Blow off the outside of the gun and wipe, clean etc.

Weekly:

2. Remove powder hose
3. Remove the spray nozzle from the gun and clean it with compressed air
4. Blow through the gun with compressed air, beginning from the connection in flow direction
5. Clean the integrated gun tube with the brush supplied if necessary
6. Blow through the gun with compressed air again
7. Clean the powder hose
8. Reassemble the gun and connect it

Cleaning the spray nozzle

Daily or after every shift

1. Clean the inside and outside of the spray nozzle with compressed air.

   Never immerse the parts in solvents!
2. Check the seating of the spray nozzles.

ATTENTION

Threaded sleeve not tightened well

Loose mounting of the spray nozzle poses a risk of high voltage discharge from the gun, potentially damaging it!

► Always tighten the threaded sleeve well!

Weekly:

1. Remove the spray nozzle and clean on the inside with compressed air. If sintering has formed, then removal of this sintered powder is required!

Monthly

1. Check spray nozzle for wear

   The flat jet nozzle is to be replaced, if:

   – the spray pattern is no longer a regular oval

   – deeper grooves are in the nozzle slot, or even the wall thickness is no longer recognizable

   – the wedge of the electrode holder is worn

   Nozzles with deflectors:

   – if the wedge of the electrode holder is worn down, then the electrode holder is to be replaced

Interval

Gun maintenance

The gun is designed to require only a minimum amount of maintenance.

1. Clean the gun with dry cloth, see chapter "Maintenance"
2. Check connection points to powder house.
3. Replace the powder hoses, if necessary.

Replacing parts

Except for the replacement of possible defective parts, there are very few repairs to be made.

▶ **The cascade can be replaced trouble-free.**

The repair of the gun cable connection, however, may only be made by an authorized Gema Service center.

– Contact your Gema representative for details!

Dismantling the gun

General information

▶ **The gun should only be dismantled, if this is required because of a defect or pollution.**

– Dismantle the gun only so far, as the desired part is accessible!

⚠ WARNING

Touching the gun parts

During work on the gun, the gun can if touched.

▶ Before dismantling the gun, switch off the control unit and disconnect the gun plug!

Required tools

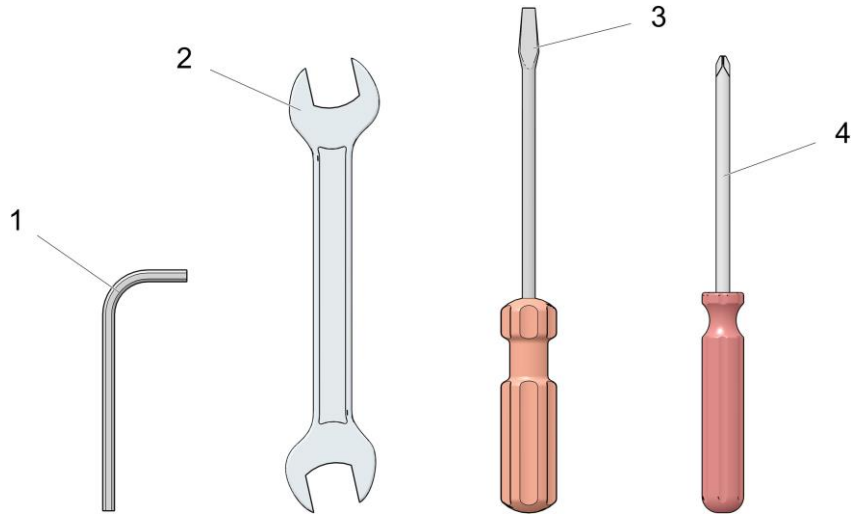


Fig. 10

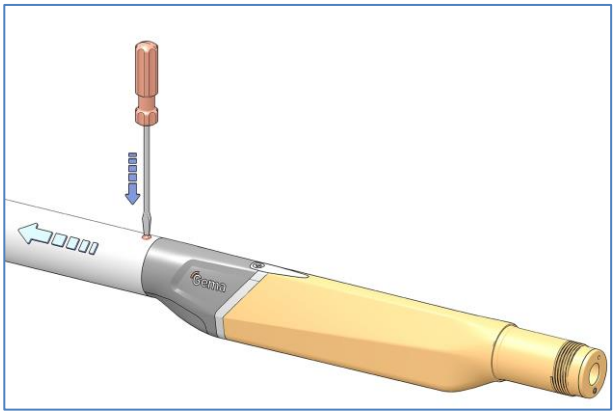
1	Allen key size 3 mm	3	Slotted screwdriver #5
2	Open-ended wrench 17 mm	4	Phillips screwdriver #2

ATTENTION

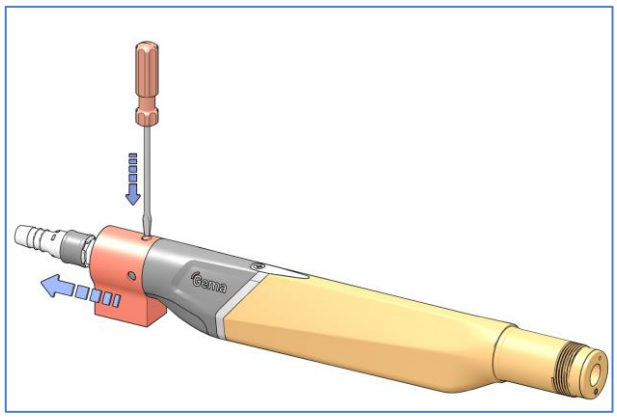
Incorrectly assembled parts may cause malfunctions or defects

- ► Observe the tightening torques when assembling!
- ► Use the appropriate torque wrench!

Dismantling procedure

1. Remove the threaded sleeve
2. Remove the nozzle
3. 

OR



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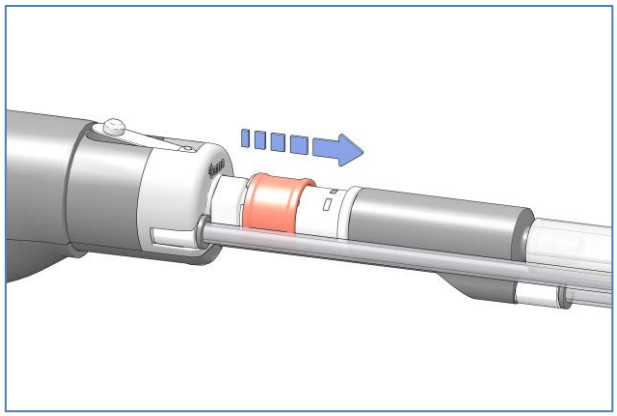

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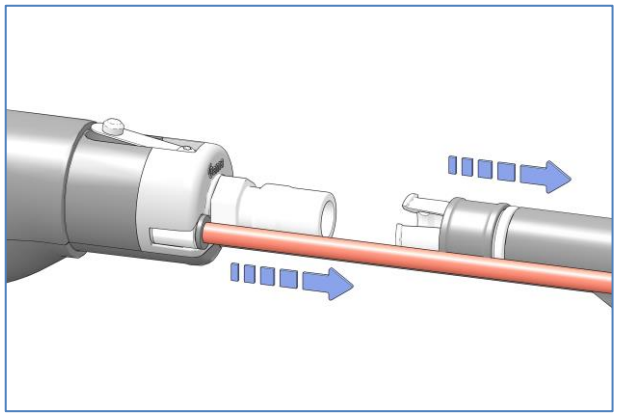

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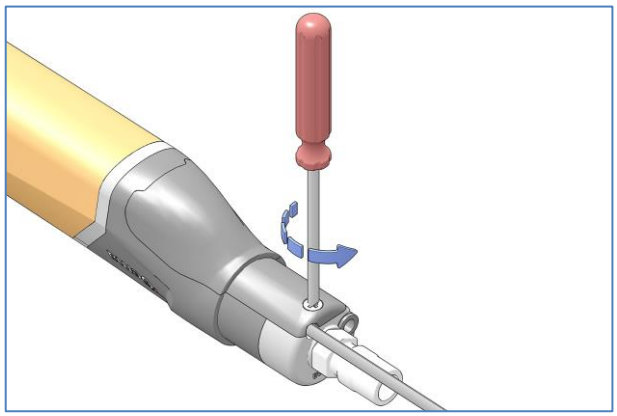

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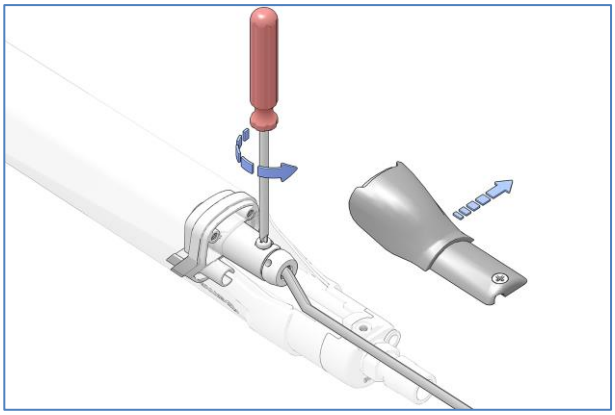

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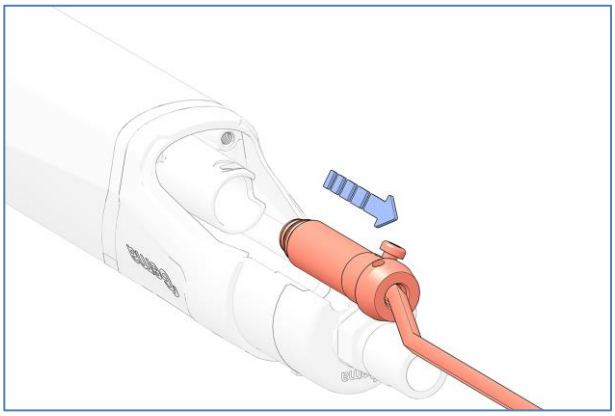

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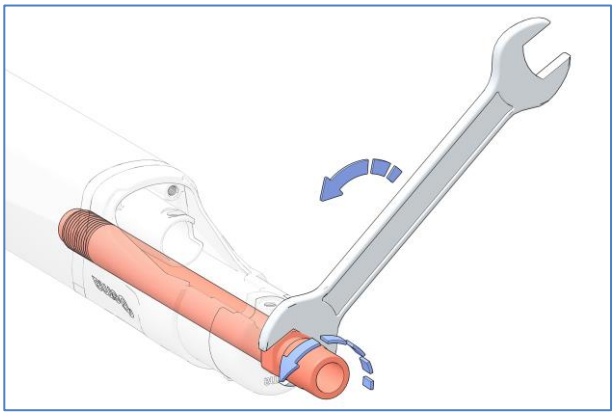

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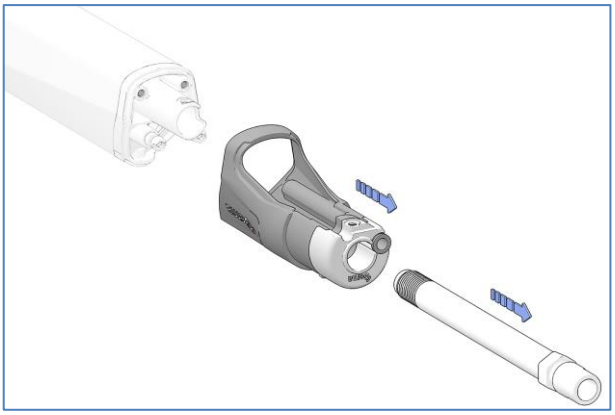

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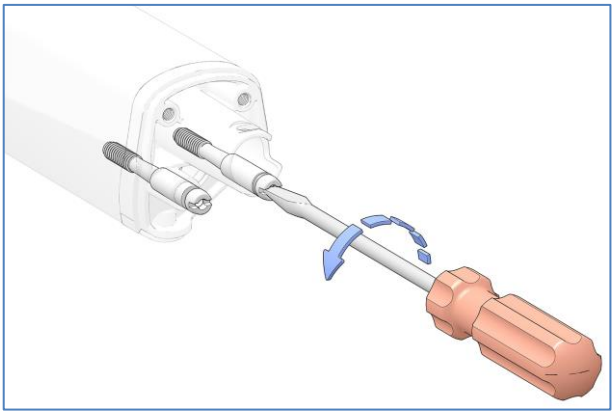

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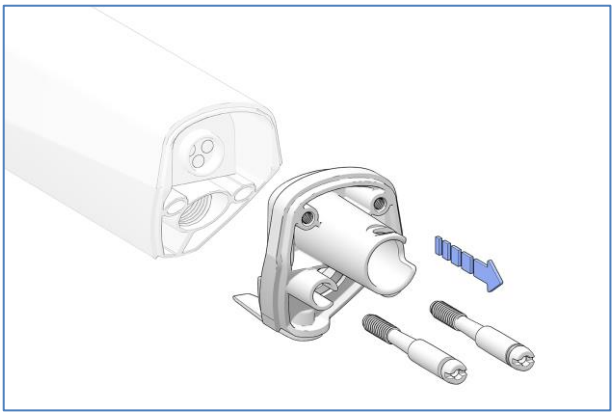

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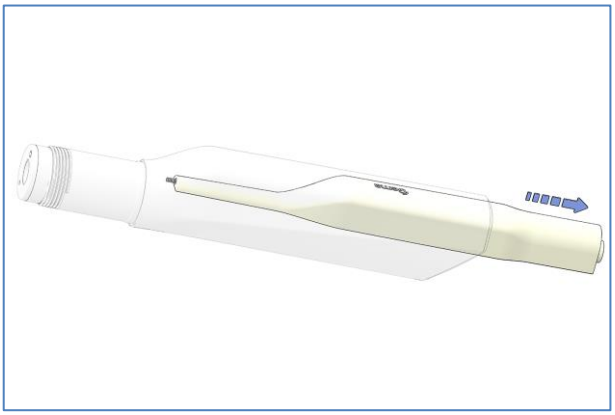


Assembling the powder gun

The assembling of the gun is to be carried out in the reverse order to that shown above.

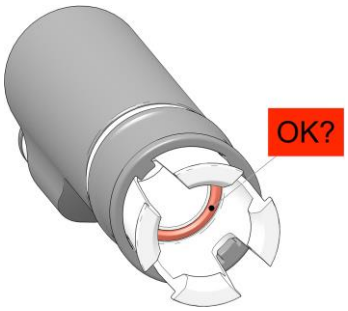
ATTENTION

Incorrectly assembled parts may cause malfunctions or defects

- ► Observe the tightening torques when assembling!
- ► Use the appropriate torque wrench!

Connecting the diffuser

1.



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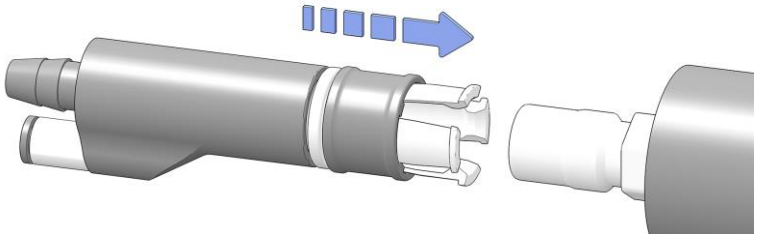

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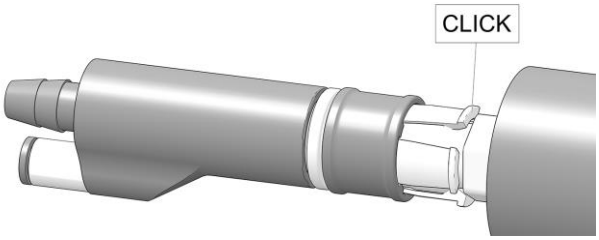

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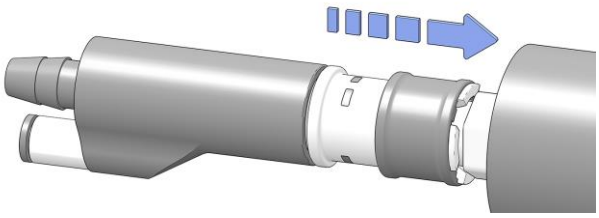


Fault clearance

Additional error descriptions are to be found also in the control unit operating instructions!

Incident	Causes	Corrective action
H11 (Help code on control unit)	Gun not connected	Connect the gun
	Gun plug or gun cable defective	Contact local Gema representative
Powder does not adhere to object, although the gun sprays powder	High voltage and current deactivated or too low	Check the high voltage and current setting
	Gun cable (gun plug or gun connection) defective	Test the gun cable on another control unit
	High voltage cascade defective	Contact local Gema representative
	Electronic board in the OptiTronic defective	Send in for repair
	The objects are not properly grounded	Check the grounding
The powder gun does not spray powder, although the powder gun control unit is switched on	Compressed air not present	Connect the equipment to the compressed air
	Application pump, powder hose or powder gun are clogged	Clean the corresponding part
	Filter elements in the application pump worn/clogged	Clean/replace
	Pressure valve in the control unit defective	Replace
	Solenoid valve in the control unit defective	Replace
	No transport air: - Throttle motor defective - Solenoid valve defective	Contact local Gema representative
	Electronic board in the control unit defective	Contact local Gema representative

Incident	Causes	Corrective action
Gun achieving only poor spray profile	Total air incorrectly configured	Increase the powder quantity and/or total air volume on the control unit
	Air lines to the Application pump or to the gun bend or damaged	Check air lines
	Filter elements in the application pump worn or not inserted	Replace or insert it
	Fluidization not running	See above

Disposal

Introduction

Requirements on personnel carrying out the work

The disposal of the product is to be carried out by the owner or operator.

When disposing of components that are not manufactured by Gema, the instructions in the respective manufacturer's documentation must be observed.

Disposal regulations

The product must be disassembled and disposed of properly at the end of its service life.

- ► When disposing of the product, the applicable local and regional laws, directives and environmental regulations must be complied with!

Materials

The materials must be sorted according to material groups and taken to the appropriate collection points.

Spare parts list

Ordering spare parts

When ordering spare parts for your product, please indicate the following specifications:

– Type and serial number of your product

– Order number, quantity and description of each spare part

Example:

– **Type** Automatic gun OptiGun GA04-P

Serial number 1234 5678

– **Order no.** 203 386, 1 piece, Clamp – Ø 18/15 mm

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

The wearing parts are always marked with a **#**. marked.

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

Example:

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

⚠ WARNING

Use of non-original Gema spare parts

Use of Non-Gema replacement spare parts may invalidate some or all approval certificates and accreditations; and the user assumes all explosion risks associated with use of these parts. Use of these replacement spare parts may void any and all warranty claims.

► Use only original Gema spare parts!

OptiGun GA04-P – complete

Only parts were included in the spare parts list, which the user can replace himself without problems!

– If the powder gun cable is defective, it is to be completely sent in for repair!

	OptiGun GA04-P Automatic gun – complete, incl. pos. 1-11	
	Negative polarity	1025 243
	Positive polarity	1025 244
1	Gun body OptiGun GA04 – complete, see Spare parts list "Powder gun body"	
2	Flat jet nozzle NF27 – complete, see Spare parts list "Flat jet nozzles"	
3	Threaded sleeve – complete, see Spare parts list "Flat jet nozzles"	
	Gun cable pack, complete – incl. pos. 4 and 5	
	Gun cable pack 20 m	1025 302
	Gun cable pack 30 m	1025 303
4	Gun cable complete – see Spare parts list "Gun cable"	
5	Electrode rinsing air hose – Ø 6/4 mm	103 144*
6	Cleaning brush – Ø 12 mm (not shown)	389 765
	Parts kit (pos. 7-10)	
7	Cylinder screw – M8x50 mm	235 113
8	Washer – Ø 8.4/20x2 mm	215 880
9	Quick release connection – NW5, Ø 6 mm, for pos. 5	200 840
10	Cable tie with Velcro closure (8x) (not shown)	303 070
11	Diffuser – complete, see Spare parts list "Diffuser"	1011 635
12	Powder hose – Ø 11.5/7 mm (not shown)	005 097*#
13	Gun fixture	1008 711

* Please indicate length

Wearing part

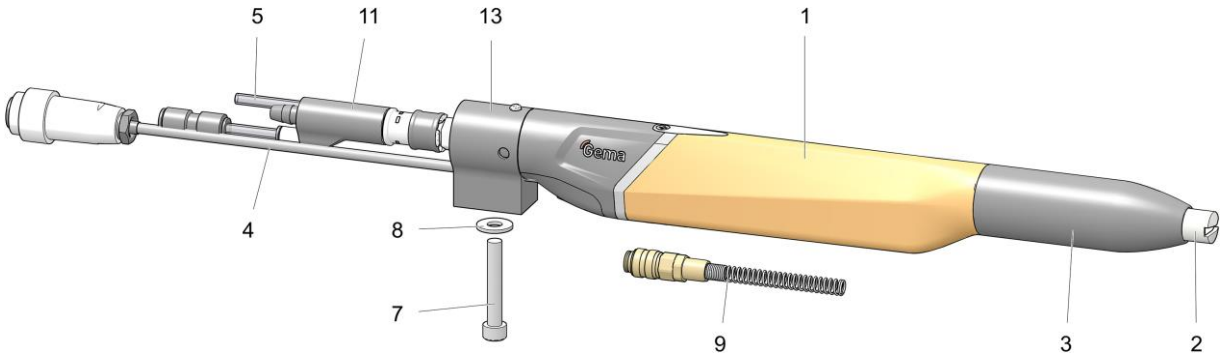


Fig. 11: OptiGun GA04-P – complete

Powder gun body

1	OptiGun GA04 shaft	1025 095
2	Cascade – complete, negative polarity	1025 091
	Cascade – complete, positive polarity	1025 092
3	Sealing piece – complete, see Spare parts list "Gun rear piece"	
4	Rear piece – complete, see Spare parts list "Gun rear piece"	
5	Powder tube	1025 112**#**
6	Diffuser – complete, see Spare parts list "Diffuser"	1011 635**#**

Wearing part

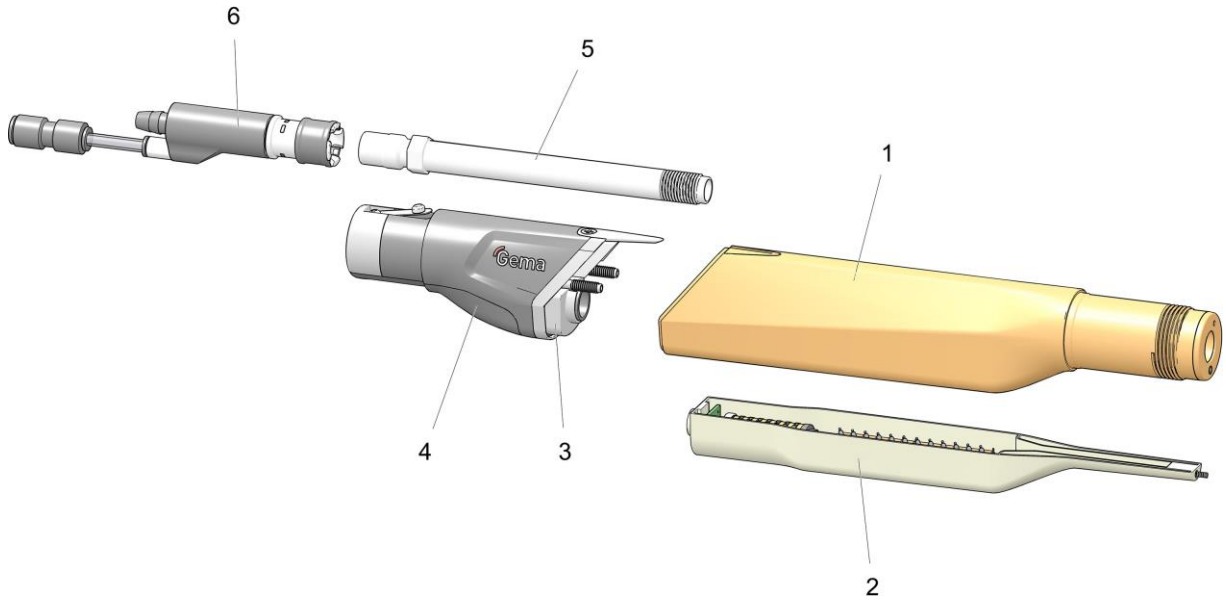


Fig. 12: OptiGun GA04-P – gun body

Gun rear piece

1	Gun rear piece – incl. pos. 1-4	1025 105
2	Screw-in nipple – M7-Ø 6 mm	1020 731
3	Lock knob	382 833
4	Screw – M3x3 mm	266 795
5	Rear piece cover – complete, incl. pos. 6 and 7	1025 109
6	Screw – M4x6 mm	214 639
7	Retaining washer – M4	1025 111
8	Sealing piece	1025 100
9	Gasket	1025 102
10	Gasket (cascade)	1025 101
11	Ground plate	1025 282
12	Screw – M4x5 mm	1025 163
13	Threaded bolt – complete, incl. pos. 14	1025 182
14	O-ring – Ø 4x1.5 mm	1025 168

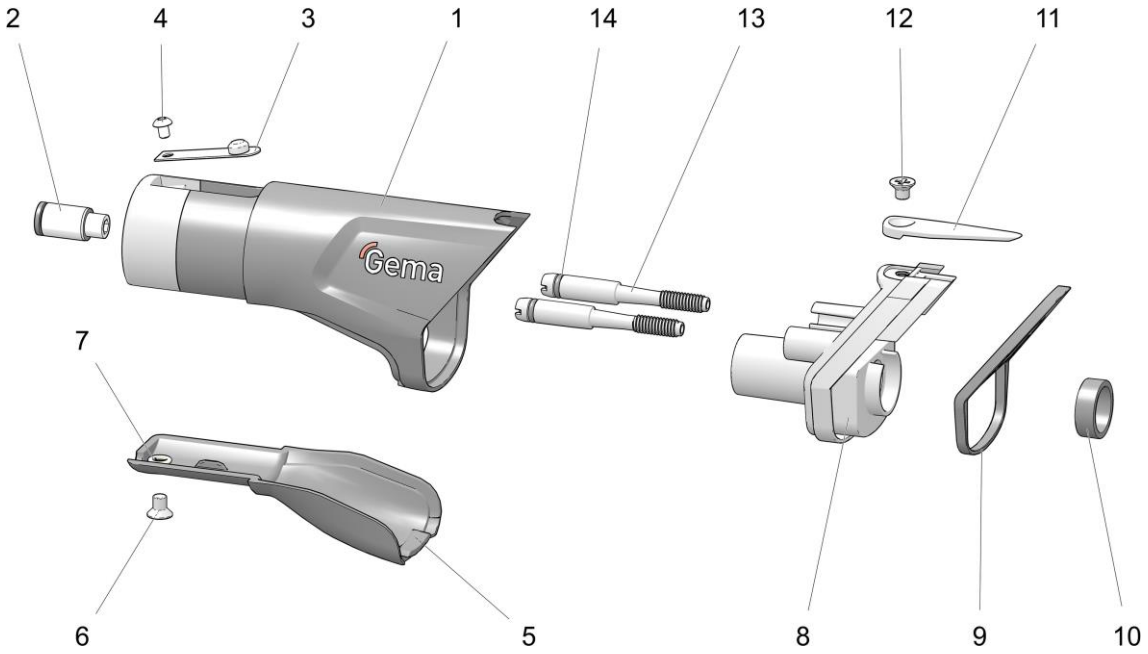


Fig. 13: Gun rear piece

Diffuser

	Diffuser – complete (pos. 1-7)	1011 635
1	Adaptor piece – complete	1025 297
2	O-ring – Ø 13x1.5 mm	1009 943
3	Fluidizing tube	1005 262**#**
4	Connector	1011 634
5	Screw-in nipple – M7-Ø 6 mm	1020 731
6	Plastic tube – Ø 6/4 mm	103 144*****
7	Plug-in connector – Ø 6-Ø 8 mm	254 894
8	Spraying air hose – Ø 8/6 mm (black)	103 756*****

***** Please indicate length

Wearing part

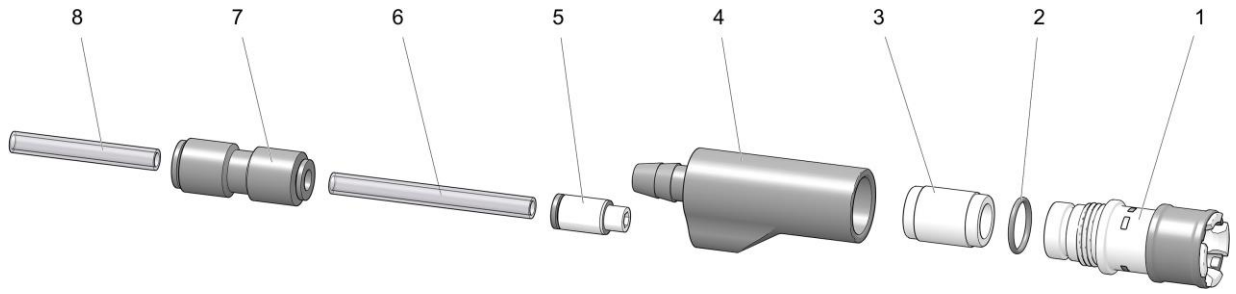


Fig. 14: OptiGun GA04-P – Diffuser

OptiGun GA04-P-X – complete

	OptiGun GA04-P Automatic gun – complete, incl. pos. 1-9	
	Negative polarity	1025 243
	Positive polarity	1025 244
1	Gun body OptiGun GA04 – complete, see Spare parts list "Powder gun body"	
2	Flat jet nozzle NF27 – complete, see Spare parts list "Flat jet nozzles"	
3	Threaded sleeve – complete, see Spare parts list "Flat jet nozzles"	
	Gun cable pack, complete – incl. pos. 4 and 5	
	Gun cable pack 20 m	1025 302
	Gun cable pack 30 m	1025 303
4	Gun cable complete – see Spare parts list "Gun cable"	
5	Electrode rinsing air hose – Ø 6/4 mm	103 144*
6	Cleaning brush – Ø 12 mm (not shown)	389 765
	Parts kit (pos. 7-8)	
7	Quick release connection – NW5, Ø 6 mm, for pos. 5	200 840
8	Cable tie with Velcro closure (8x) (not shown)	303 070
9	Diffuser – complete (not shown), see Spare parts list "Diffuser"	1011 635
10	Extension tube – see Spare parts list "OptiGun GA04-X – Extension tube"	
11	Powder hose – Ø 11.5/7 mm (not shown)	1005 097*#

* Please indicate length # Wearing part

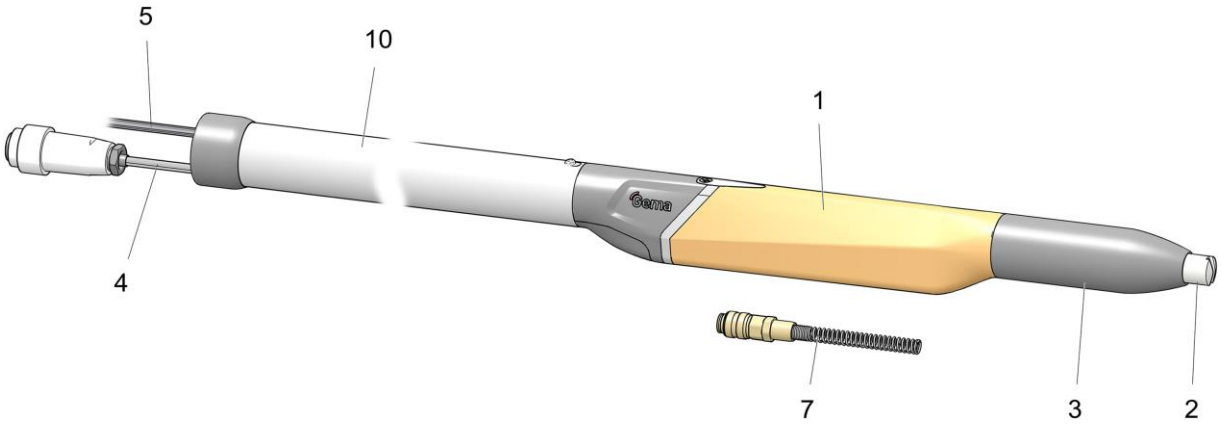


Fig. 15: OptiGun GA04-P-X – complete

OptiGun GA04-X – Extension tube

	Extension tube, complete, for:	
	OptiGun GA04-700, L=700 mm	1025 312
	OptiGun GA04-900, L=900 mm	1025 313
	OptiGun GA04-1100, L=1100 mm	1025 314
	OptiGun GA04-1300, L=1300 mm	1025 315
	OptiGun GA04-1500, L=1500 mm	1025 316
	OptiGun GA04-1700, L=1700 mm	1025 317
	OptiGun GA04-1900, L=1900 mm	1025 318
	OptiGun GA04-2100, L=2100 mm	1025 319
1	End piece - complete (incl. O-rings)	1008 724

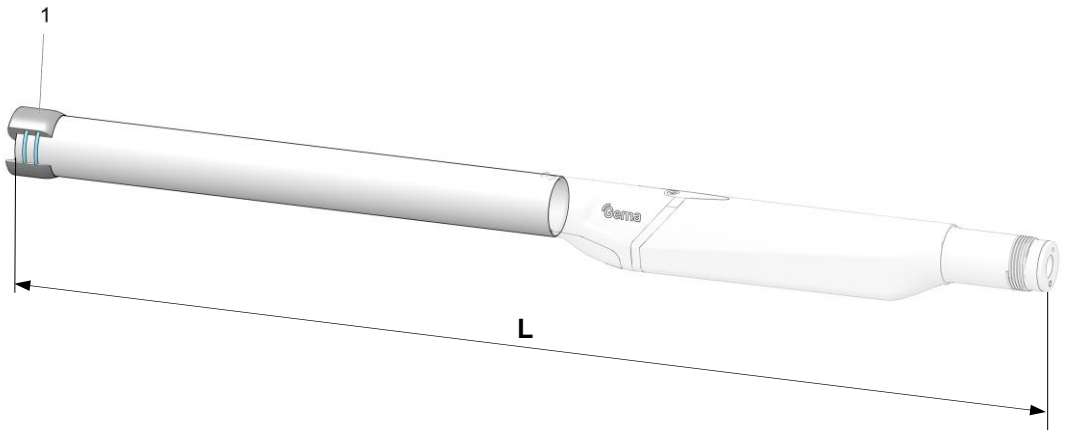


Fig. 16: OptiGun GA04-X – Extension tube

Gun cable

If the powder gun cable is defective, the entire cable is to be sent to an authorized service center for repair!

	Gun cable – complete, 20 m	1025 173
	Gun cable – complete, 30 m	1025 174
1	Screw – M4x6 mm	1008 639
2	O-ring – Ø 9.5x1.5 mm	1025 166#
3	O-ring – Ø 7.5x1.5 mm	1025 165#

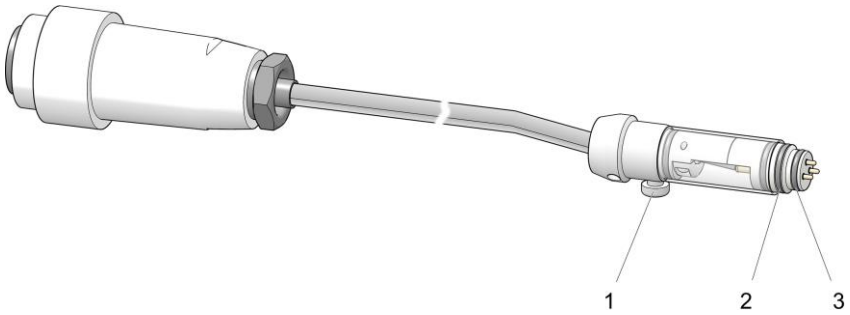
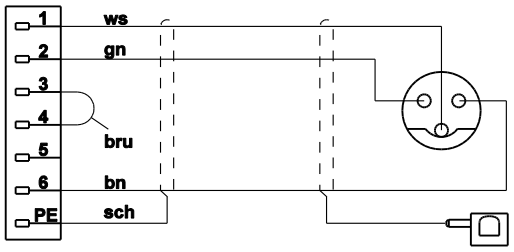


Fig. 17: Gun cable (complete)



Pin allocation	
ws	white
gn	green
bru	Bridge
bn	brown
sc	Shield

SuperCorona

	SuperCorona incl. connection – complete (pos. 1-4)	1025 120
1	SuperCorona – complete	1025 121**#**
	SuperCorona connection – complete (pos. 2-4)	1025 131
2	SuperCorona connection	1025 128
3	Screw – M4x6 mm	1008 639
4	Retaining washer – M4	1025 111

Wearing part

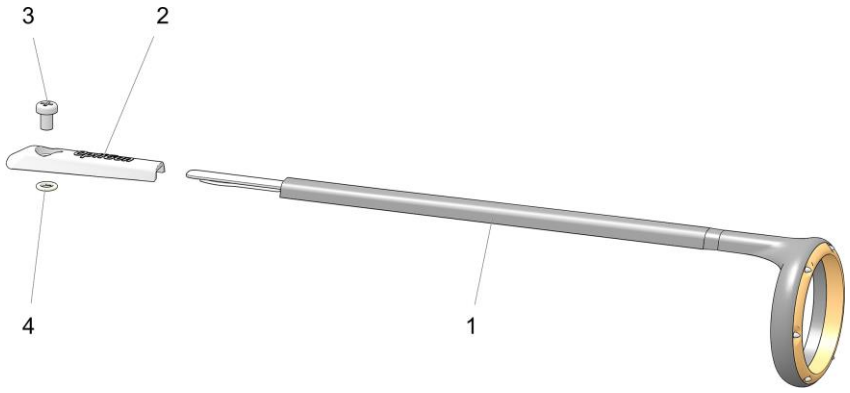


Fig. 18: SuperCorona

Angled nozzles

A	Angled nozzle PA03-90° – complete (pos. 1, 4, 5, 6, without pos. 4.1)	1009 139#
B	Angled nozzle PA03-60° – complete (pos. 2, 4, 5, 6, without pos. 4.1)	1009 138#
C	Angled nozzle PA03-45° – complete (pos. 3, 4, 5, 6, without pos. 4.1)	1009 137#
D	Extension PE09-090 – complete	1010 931#
	Extension PE09-120 – complete (not shown)	1010 932#
	Extension PE09-180 – complete (not shown)	1010 933#
1	PA03-90° elbow – complete	1009 135#
2	PA03-60° elbow – complete	1009 134#
3	PA03-45° elbow – complete	1009 133#
4	Threaded sleeve	1009 128
4.1	Threaded sleeve for NF24, NF40, NF50 Flat jet nozzle (not shown)	1012 654
5	Flat jet nozzle NF27 – see Spare parts list "Flat jet nozzles"	
6	Round jet nozzle NS04 – see Spare parts list "Round jet nozzles"(not shown)	

Wearing part

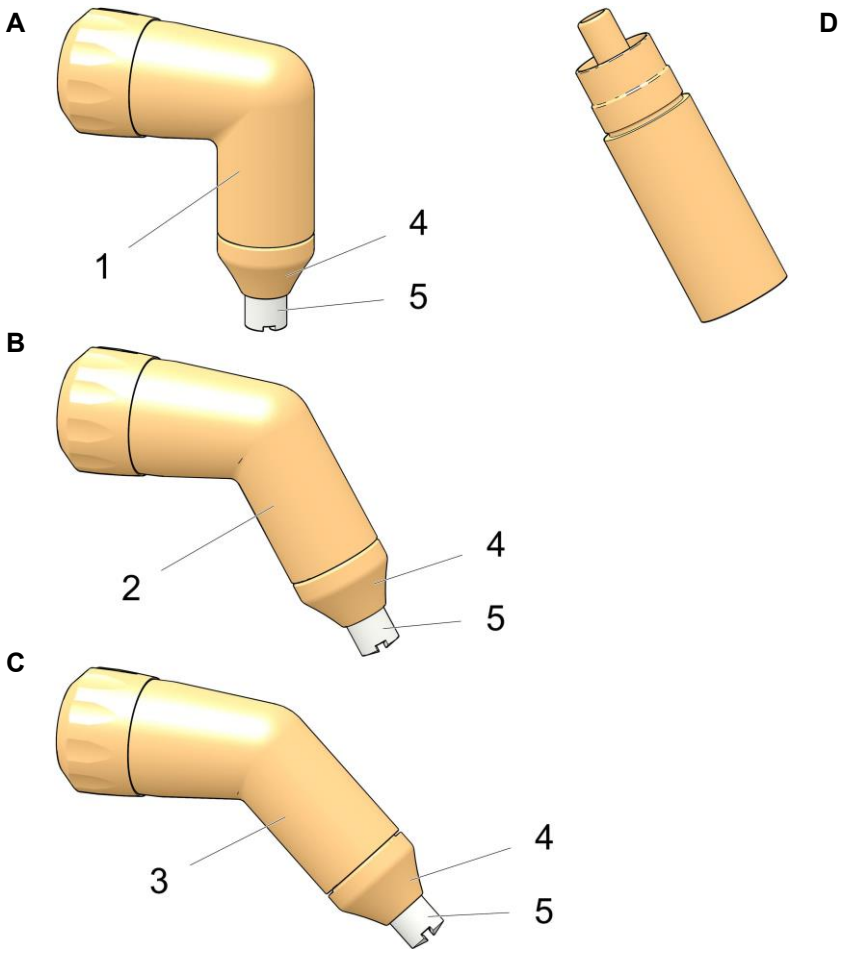
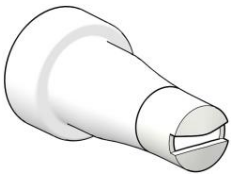
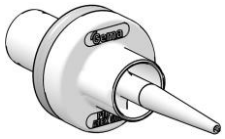
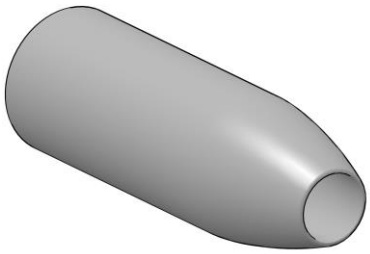
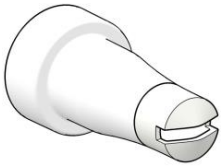
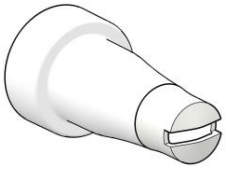
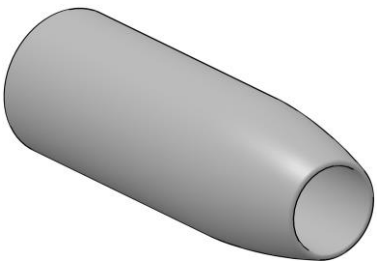


Fig. 19: Angled nozzles

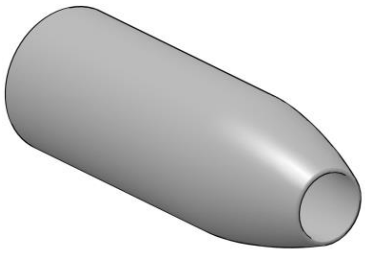
Nozzle combinations – overview (wearing parts)

Flat jet nozzles

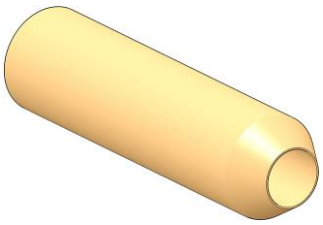
A	B	A + B	Threaded sleeve
 NF27 1010 752	 1007 683	**NF27** 1010 754	 1007 229
 NF20 1010 090		**NF20** 1010 160	
 NF21 1025 265		**NF21** 1025 270	
 NF24 1025 186		**NF24** 1025 273	 1008 326
 NF40 1025 187		**NF40** **1025 116**	
 NF50 1025 185		**NF50** **1025 279**	

Round jet nozzles

Round jet nozzle NS04

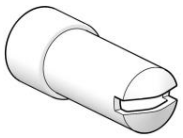
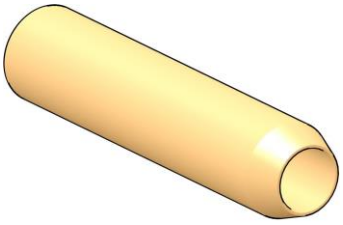
A	B	A + B	Threaded sleeve	Deflectors
 NS04 1025 199	 1008 152	**NS04** 1025 281	 1007 229	 Ø 16 mm 331 341 Ø 24 mm 331 333 Ø 32 mm 331 325 Ø 50 mm 345 822

Round jet nozzle NS12

A	B	Threaded sleeve (C)	A + B + C	Deflectors
 NS12-09 1010 924	 1000 345	 405 736	**NS12-09** 1010 921	 Ø 9 mm 378 321 Ø 12 mm 301 175 Ø 16 mm 302 040 Ø 20 mm 301 183
 NS12-11 1010 925	 1000 346		**NS12-11** 1010 922	Ø 24 mm 301 191 Ø 28 mm 302 031 Ø 32 mm 301 205 Ø 50 mm 302 023 Ø 60 mm 1000 611

Mini nozzles

Suitable extensions: See below!

<table>
<tr><th>A</th><th>B</th><th>A + B</th><th>Threaded sleeve</th><th>Deflectors</th></tr>
<tr><td> 
NF25
1007 735</td><td> 
1007 684</td><td>NF25
1007 743</td><td rowspan="5"> 
1007 740</td><td>–</td></tr>
<tr><td rowspan="4"> 
NS09
1008 257</td><td rowspan="4"> 
1008 258</td><td rowspan="4">NS09
1008 259</td><td>  </td></tr>
<tr><td>Ø 16 mm
331 341</td></tr>
<tr><td>Ø 24 mm
331 333</td></tr>
<tr><td>Ø 32 mm
331 325</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Ø 50 mm
345 822</td></tr>
</table>

Multi-spray adapter

Suitable for the following flat jet nozzles:

– NF20, NF25 and NF27

1	Multi-spray adapter	1003 634**#**

Wearing part

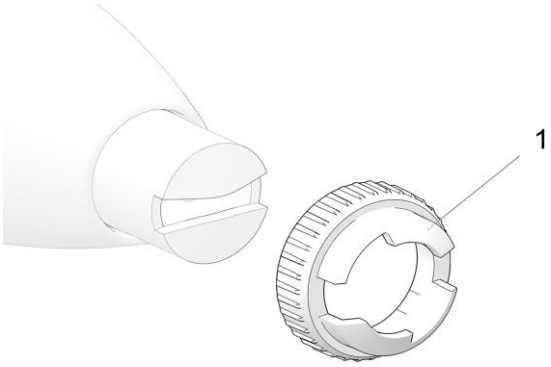
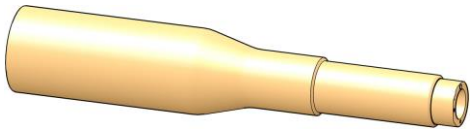
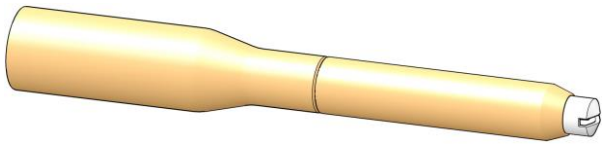
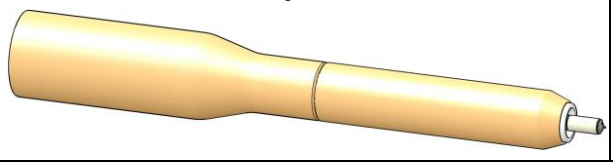


Fig. 20:

Gun extensions

	Gun extension		
	150 mm	300 mm	500 mm
Extension without nozzle[1] 	1008 616	1008 617	–

	Gun extension for mini nozzles		
	150 mm	300 mm	500 mm
Extension without nozzle[2] 	1007 718	1007 719	1016 481
Extension with flat jet nozzle NF25 	1007 746	1007 747	1016 485
Extension with round jet nozzle NS09 	1007 748	1007 749	1016 486

[1] available nozzles: NF20, NF21, NF27, NF40, NF50, NS04 (see "Nozzle combinations")

[2] available nozzles: NF25, NS09 (see "Nozzle combinations – Mini nozzles")

ATTENTION

When coupling extensions, leverage forces are created.

Damage to the gun can occur when coupling more than two extensions together.

- ► The extensions (150 mm/300 mm) may be connected TO ONLY ONE ADDITONAL extension (150 mm/300 mm/500 mm).
- ► The coupling of more than two extensions is not subject to approval.

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