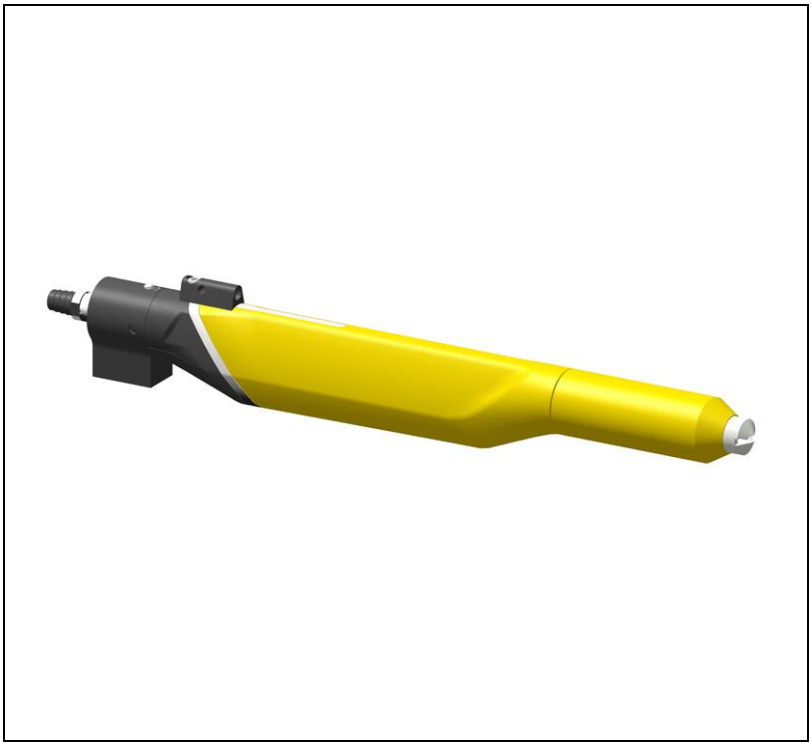
Operating instructions and Spare parts list

Enamel automatic gun OptiGun GA03-E



Translation of the original operating instructions

Gema

Documentation OptiGun GA03-E

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

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Table of contents

About these instructions

General information

This operating manual contains all the important information which you require for the working with the OptiGun GA03-E. 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 which 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

This gun is used for electrostatic coating of objects connectable to ground with inorganic, non-flammable enamel powders 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 the intended 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 not considered as intended use. 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 was 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 metallic or organic powder
– Incorrectly configured values for powder conveyance
– Incorrectly configured values for electrode rinsing air
– Use of moist powder

Technical Data

Electrical data

OptiGun GA03-E	
Nominal input voltage	12 V
Frequency	18 kHz (average)
Nominal output voltage	100 kV
Polarity	negative (option: positive)
Max. output current	100 µA
Ignition protection	Type A acc. EN 50177 Ex 2 mJ T6
Temperature range	0 °C – +40 °C (+32 °F – +104 °F)
Max. surface temperature	85°C (+185°F)
Protection type	IP64
Approvals	CE Ex II 2D

Dimensions

OptiGun GA03-E	
Weight	600 g

Processible powders

OptiGun GA03-E	
Enamel powder	yes
Plastic powder	No
Metallic powder	No

ATTENTION

The gun gun may only be connected to the following control units:

- ► OptiStar CG06, CG07, CG08, CG09, CG10, CG12, CG13, CG20, CG21, CG23, CG24 and MultiStar CG10!

Structure

Overall view

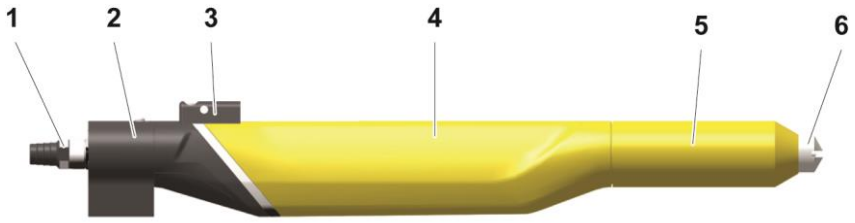


Fig. 2: Structure

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

Scope of delivery

– OptiGun GA03-E Enamel automatic gun with gun cable (20 m)*, negative polarity
– Rinsing air hose (20 m)*
– Flat jet nozzle NF28-E, complete (incl. electrode holder) or Round jet nozzle NS11-E with deflector Ø 28 mm
– Cable tie with Velcro closure
– Gun cleaning brush
– Spare parts kit
– Operating manual

* standard

Available accessories**

– SuperCorona ring
– Flat jet nozzle (for specific applications)
– Round jet nozzles
– Gun extension 150 and 300 mm
– Angled nozzles 45° und 60°
– Gun cable extensions
– Collision protection
– Diffuser (additional functions when used with application pumps)

** For more information, see spare parts list!

SuperCorona ring

Field of application

The SuperCorona is an optional extension for the enamel automatic gun, allowing for a better surface quality when coating with the powder coating equipment.

When coating wheel rims, drawers, radiators, lamps etc. the surface quality is exceptional, also in places with higher coating layer requirements. By coating with several powder types, an "orange peel" finish can be completely avoided. By coating with structure powder, the "picture frame effect" is hardly visible.

The performance of the OptiGun 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 OptiGun Enamel automatic gun can be extended quickly and easily with the lightweight SuperCorona (approx. 75 g). The OptiGun remains repair-friendly and easy to maintain even after reconfiguration.

SuperCorona assembly

Before fitting the SuperCorona ring, 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. 

Principle of operation

High voltage generation

The control unit supplies a high-frequency low voltage signal of approx. 12 V eff. This voltage is fed through the gun cable (**11**) and the gun plug to the high voltage cascade (**4**) in the gun body.

In the high voltage cascade (**4**), the low voltage is high-transformed in a first step (**c**). This primary high voltage is subsequently rectified and multiplied in the high voltage cascade in a second step (**d**), until the required high voltage is obtained at the end (approx. 100 kV). The high voltage is now fed to the electrode (**e**) within the spray nozzle.

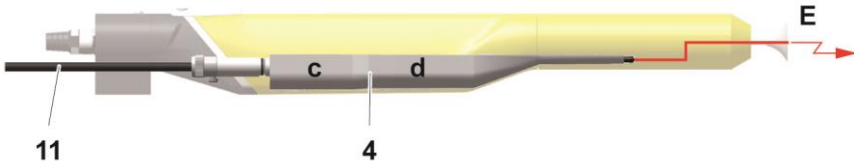


Fig. 4: High voltage generation

Circuit

The OptiGun Enamel automatic 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 by vented spray nozzles and is connected with its 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 vented 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.

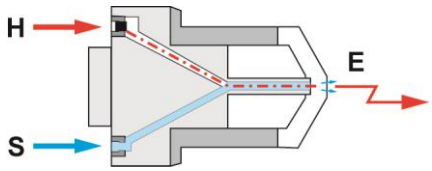


Fig. 5: Flat jet nozzle with vented central electrode

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

The electrode rinsing air (**S**) adjustment on the gun control unit is described in the corresponding operating manual.

Round jet nozzle with vented deflector and vented electrodes

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

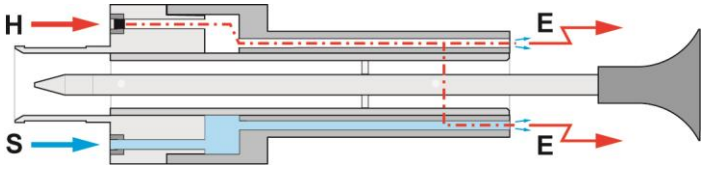


Fig. 6: Round jet nozzle with vented deflector and vented electrodes

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

The electrode rinsing air cleaning ability depends on the powder and its sintering ability. The electrode rinsing air (**S**) adjustment on the gun control unit is described in the corresponding operating manual.

Typical properties – characteristics of the functions

- Continuous, tightly sealed gun body with separate channels for cascade and electrode rinsing air
- Powder tube coupling with quick-release fastener
- Covered hose and cable duct
- 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 Ring

- Quick and simple connection to and disconnection from the SuperCorona ring

Assembly / Connection

Connecting the gun

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

The compressed air must be free of oil and water!

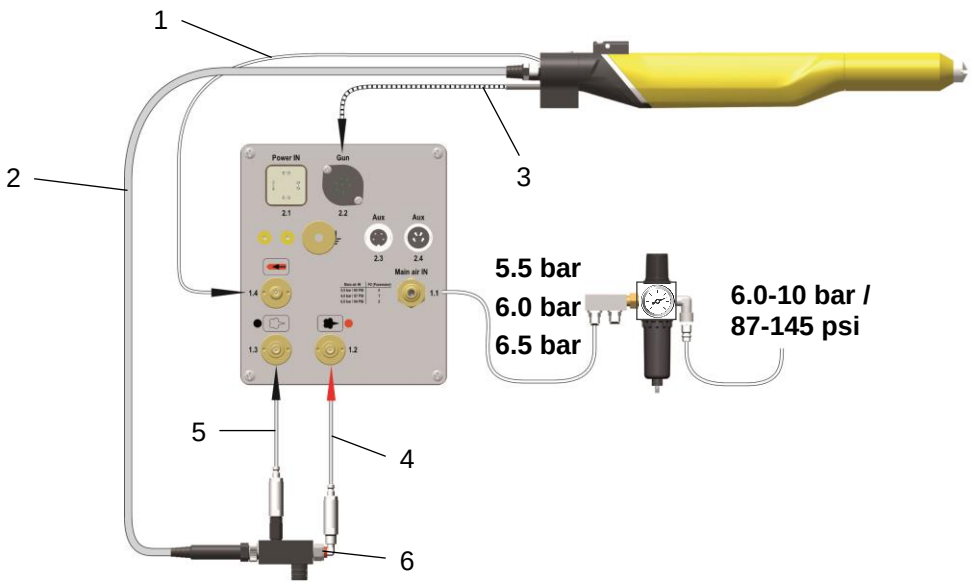


Fig. 7: Connection instructions – overview

1	Electrode rinsing air hose	4	Conveying air hose
2	Powder hose	5	Supplementary air hose
3	Gun cable	6	Injector

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

Basic conditions

When starting up the Enamel automatic gun, 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

Initial start-up

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

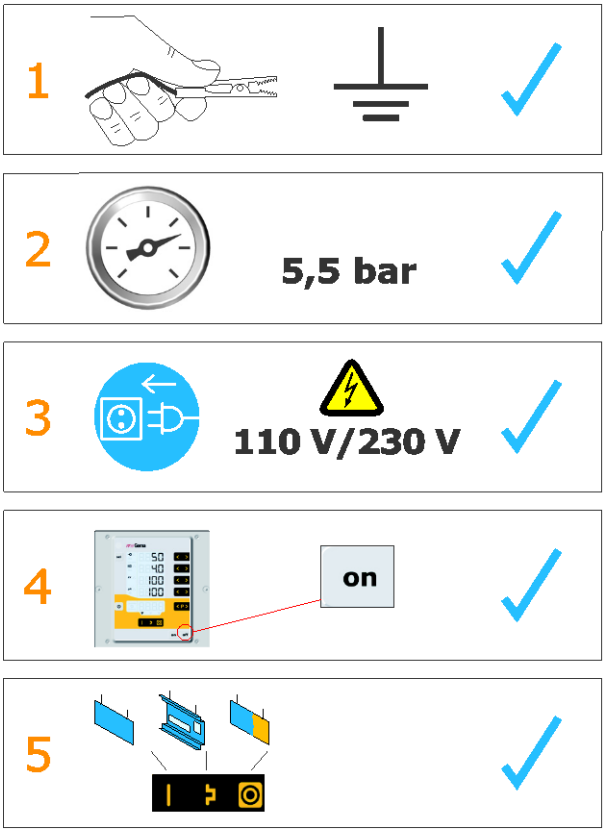


Fig. 8

The remainder of the start-up procedure for the Gun is explicitly described in the operating instructions for the OptiStar CG08/CG13 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 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 positively, 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 section "Troubleshooting". Please consider also the control unit operating instructions.

Operation

⚠ WARNING

Discharges when touching the gun parts

During the coating process, the gun can discharge along the body of the coater if touching it.

► 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 50% 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!

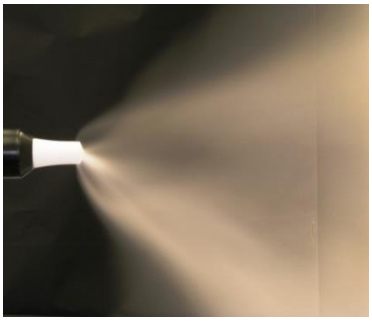
Setting the total air volume

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

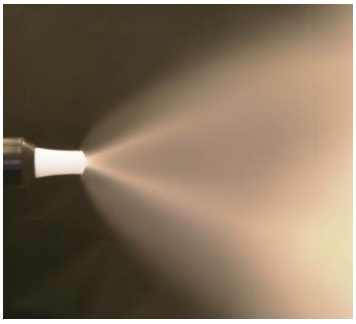


too little total air

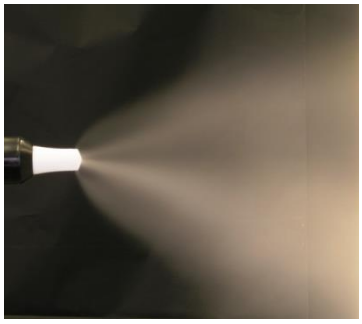
The adjusted value of the total air volume can be left as it is, as long as the same diameter powder hose is used. If the hose diameter changes, the total air volume must be reset!

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 50% is recommended for initial operation. The total air volume is thereby kept constant automatically by the control unit.

To achieve maximum efficiency, we recommend avoided an overly high 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

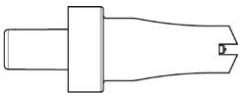
1. Press the 

key.

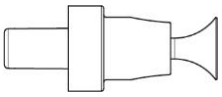
   The second display level will be shown.

2. 

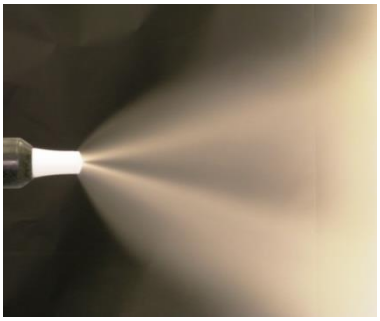
   Adjust the correct electrode rinsing air according to the applied nozzles (deflector plate, flat jet nozzle)



≈ 0.1 Nm³/h



≈ 0.5 Nm³/h



too much electrode rinsing air

If in this display level is no operation for 3 seconds, the first display level is switched over independently.

3. Adjust the powder cloud with a test object

If flat jet nozzles are used:

4. Unscrew the threaded sleeve approx. 45°, so that the flat jet nozzle (or its extension) can be moved slightly
5. Turn the flat jet nozzle to desired axis direction
6. Tighten the threaded sleeve firmly again

ATTENTION

Threaded sleeve not tightened well

If the spray nozzle is just fitted loosely, there is danger of a flash-over of the gun high voltage, which can damage the gun!

► Always tighten the threaded sleeve well!

If round jet nozzles with air rinsed deflectors are used:

7. Exchange the deflector plate (Ø 16, 24 or 32 mm, see also the Spare parts list)

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.

If in disuse for several days

1. Switch off the plant with 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

For safety reasons, the product should only be stored in a horizontal position

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

If the spray nozzle is just fitted loosely, there is danger of a flash-over of the gun high voltage, which can damage the gun!

► Always tighten the threaded sleeve well!

Weekly:

1. Remove the spray nozzle and clean on the inside with compressed air. If sinterings should have formed, then they have to be removed!

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!

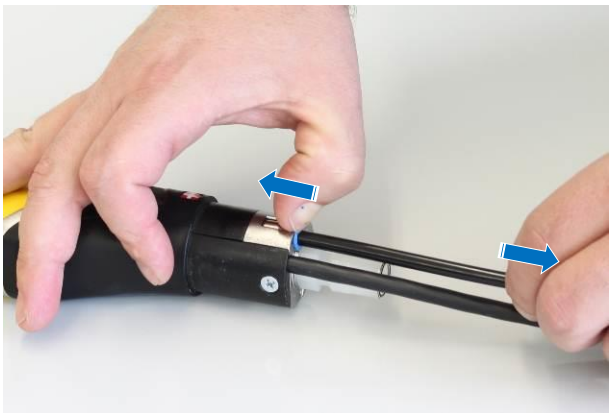
⚠ WARNING

Touching the gun parts

During work on the gun, the gun can discharge along the body of the coater if touching it.

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

Dismantling procedure

1. Remove the threaded sleeve
2. Remove the nozzle
3. 
4. 
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6. 

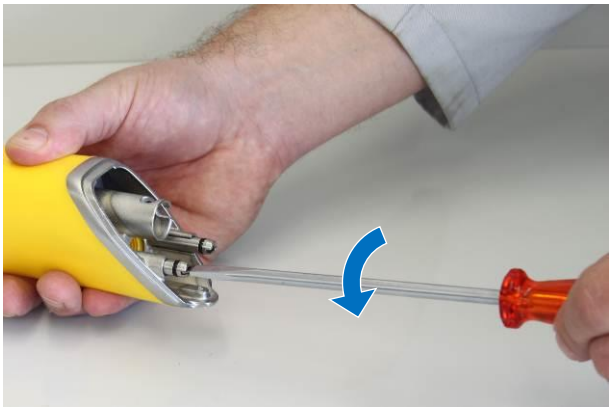
7. 

8. 

9. 

10. 

11. 

12. 

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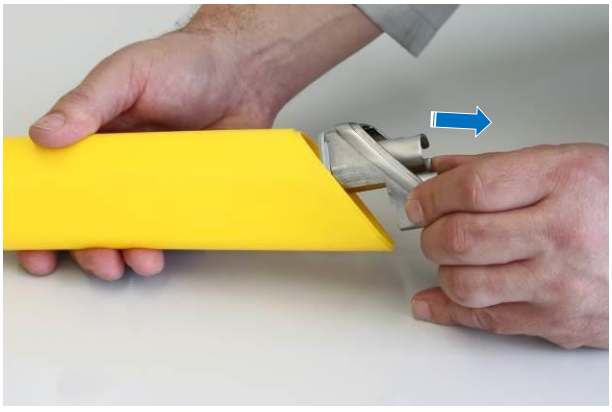
14. 

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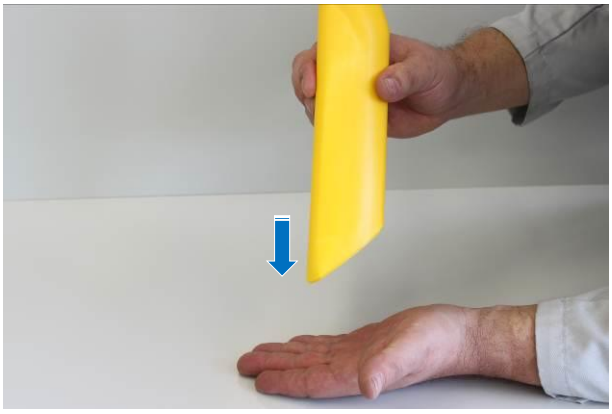

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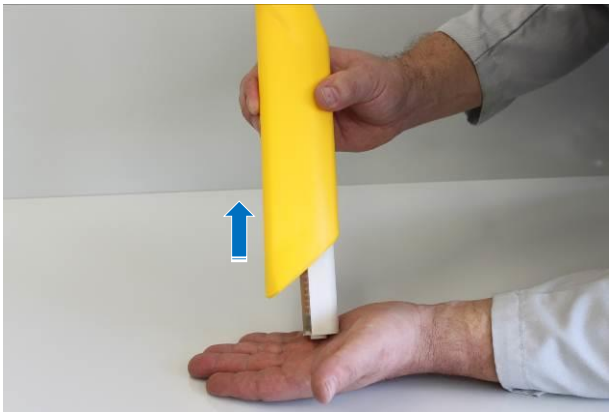

Assembling the powder gun

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

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
	Injector or nozzle on the injector, powder hose or powder gun clogged	Clean the corresponding part
	Cartridge/insert sleeve in the injector clogged	Clean/replace
	Pressure valve in the control unit defective	Replace
	Solenoid valve in the control unit defective	Replace
	No conveying 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
	Bend or damage to air lines to injector	Check air lines to injector
	Cartridge/insert sleeve in the injector 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** Enamel automatic gun OptiGun GA03-E

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

When using the spare parts from other manufacturers the explosion protection is no longer guaranteed. If any damage is caused by this use all warrantee claims become invalid!

► Only original Gema spare parts should be used!

OptiGun GA03-E – 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 GA03-E Enamel automatic gun – complete with Flat jet nozzle, polarity negative, incl. pos. 1-9	1009 422
	OptiGun GA03-E Enamel automatic gun – complete with Round jet nozzle, polarity negative, incl. pos. 1, 4-11	1009 421
1	OptiGun GA03-E gun body – complete, polarity negative	1009 415
2	Threaded sleeve – see "Nozzle combinations" spare parts list	
3	Flat jet nozzle – complete, see "Nozzle combinations" spare parts list	
4	Gun cable – complete, 20 m, see also spare parts list "Gun cable"	1008 663
5	Cylinder screw – M8x50 mm	235 113
6	Washer – Ø 8.4/20x2 mm	215 880
7	Cable tie with Velcro closure (8x) (not shown)	303 070
8	Quick release connection – NW5, Ø 6 mm, for pos. 11 (not shown)	200 840
9	Cleaning brush – Ø 12 mm (not shown)	389 765
10	Threaded sleeve – see "Nozzle combinations" spare parts list	
11	Round jet nozzle – complete, incl. deflector Ø 28 mm, see "Nozzle combinations" spare parts list	
12	Electrode rinsing air hose – Ø 6/4 mm (not shown)	103 144*****
13	Powder hose – Ø 16/11 mm (not shown)	103 012*****

***** Please indicate length

Wearing part

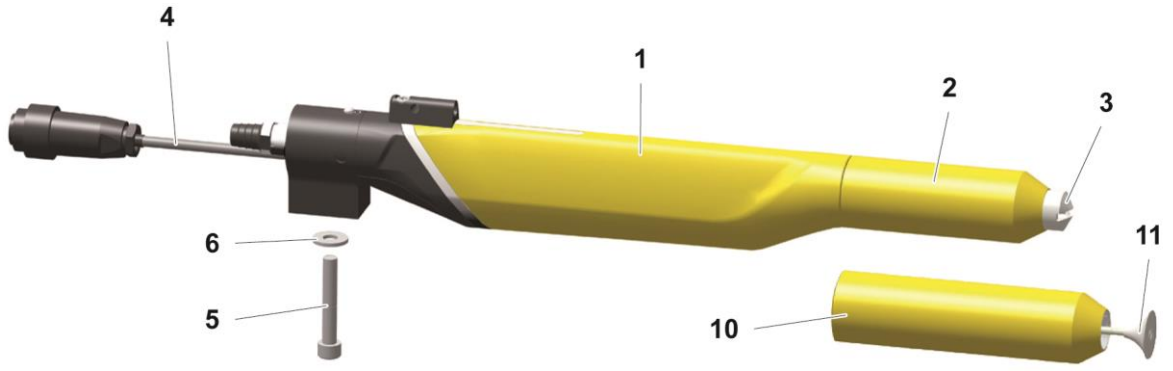

Fig. 9: OptiGun GA03-E – complete

Powder gun body

1	OptiGun GA03-E shaft – complete, negative polarity, see spare parts list "Shaft"	
2	Powder tube – complete	1009 405#
3	Hollow screw	1009 406
4	Gun fixture	1008 711
5	Ground plate	1011 457
6	SuperCorona connection	1012 089
7	Cylinder screw – M5x12 mm	1012 109

Wearing part

X = 347 mm, **Y** = 20 mm

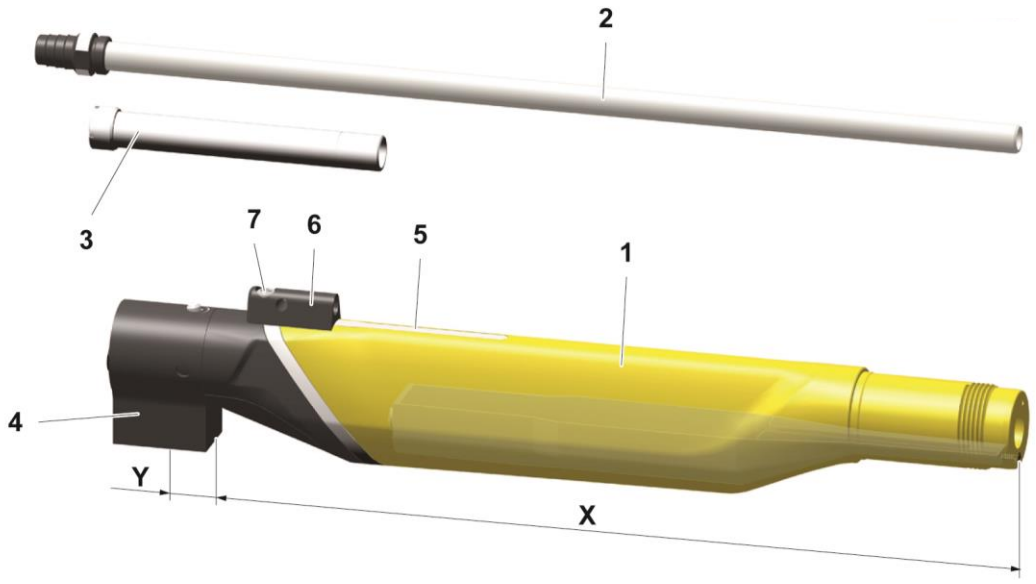

Fig. 10: OptiGun GA03-E – gun body

Shaft

	Shaft OptiGun GA03-E – complete, polarity negative, incl. pos. 1-9	1009 410
1	Cascade – complete, negative polarity	1007 231
2	Shaft (without cascade)	1009 400
3	Sealing piece – complete (incl. pos. 6)	1008 690
6	Axial gasket	1008 687
8	Threaded bolt	1009 587
9	O-ring – Ø 4x1.5 mm	264 466
10	Gun rear end – complete (incl. pos. 10-13)	1008 701
11	Lock knob	382 833
12	Screw – M3x3 mm	266 795
13	Screw-in nipple – M7-Ø 6 mm	1008 699
14	Rear end cover	1008 697
15	Countersunk head screw – M4x6 mm	214 639

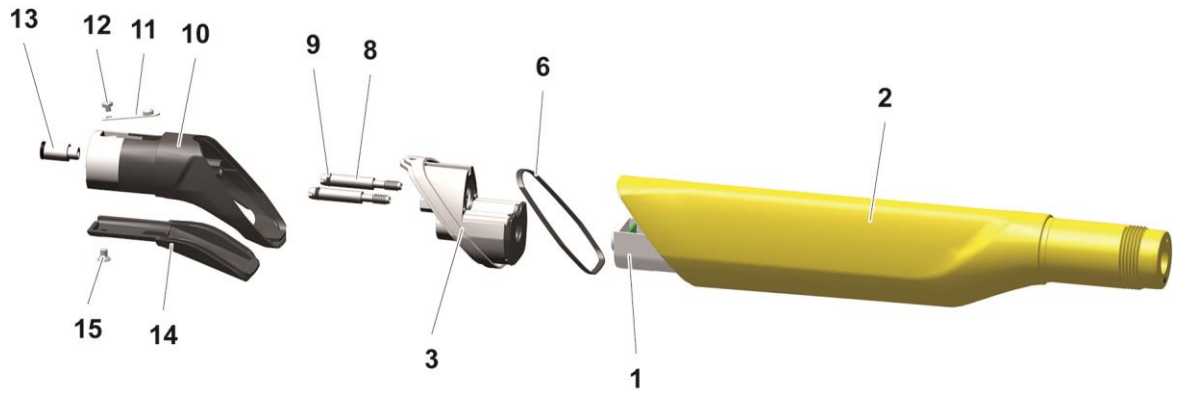

Fig. 11: OptiGun GA03-E – shaft

Gun cable

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

	Gun cable – complete, 11 m	1008 661
	Gun cable – complete, 15 m	1008 662
	Gun cable – complete, 20 m	1008 663
	Gun cable – complete, 30 m	1008 664
1	Cylinder screw – M4x6 mm	1008 639
2	O-ring – Ø 9.5x1.5 mm	1008 665
3	O-ring – Ø 8.5x1 mm	1008 666

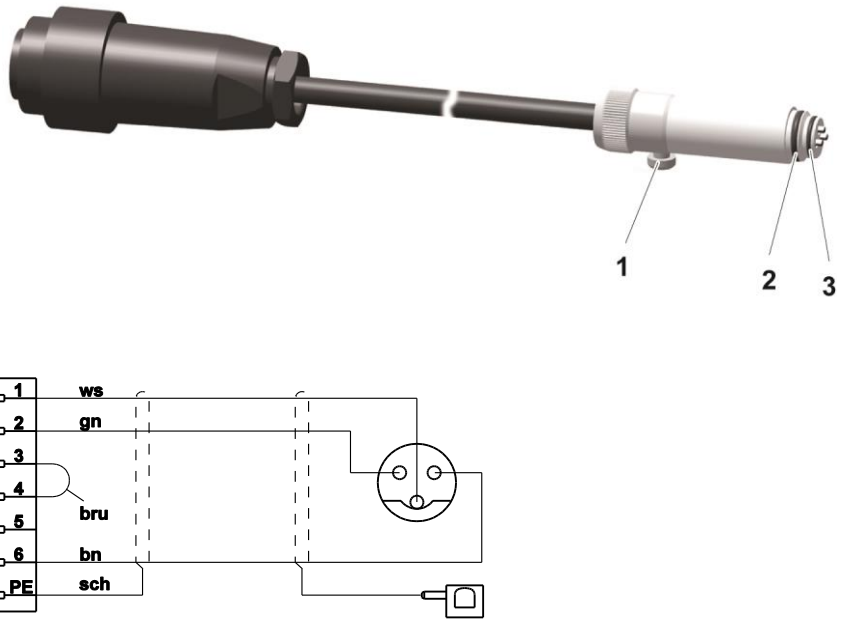

Fig. 12: Gun cable (complete)

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

SuperCorona

A	SuperCorona ring for Flat jet nozzle – complete	
	PC08-299 (L=299 mm)	1012 096#
	PC08-449 (L=449 mm) – for extension 150 mm	1012 098#
	PC08-599 (L=599 mm) – for extension 300 mm	1012 100#
B	SuperCorona ring for Round jet nozzle – complete	
	PC08-319 (L=319 mm)	1012 097#
	PC08-469 (L=469 mm) – for extension 150 mm	1012 099#
	PC08-619 (L=619 mm) – for extension 300 mm	1012 101#
1	Plug cap for SuperCorona connection – complete (not shown)	1001 037

Wearing part

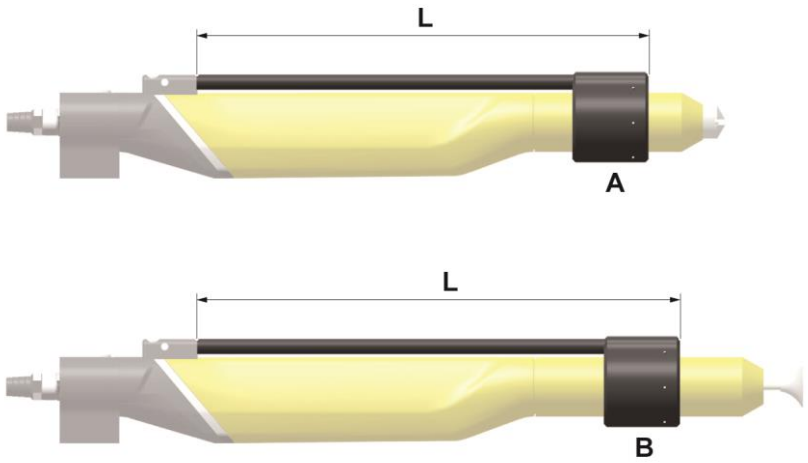

Fig. 13: OptiGun GA03-E – SuperCorona

Nozzle combinations

1	Flat jet nozzle NF28-E – complete	1009 430#
2	Fixation piece NF28-E – complete	1009 429#
3	Flat jet nozzle set (without pos. 5.1)	404 225#
4	Contact ring	318 760#
5	Electrode holder – complete (ETFE)	404 209#
5.1	Electrode holder – complete (PTFE)	406 058#
6	Flat jet nozzle	404 128#
7	Threaded sleeve PU04-E-NF – complete	405 728
10	Round jet nozzle NS11-E – complete	1009 440#
11	Deflector rod NS11-E – complete	1002 249#
12	Muzzle NS11-E – complete	1009 439#
13	Threaded sleeve PU04-E-NS – complete	405 736
14	Deflector – Ø 15 mm	400 262#
14.1	Deflector – Ø 24 mm	400 181#
14.2	Deflector – Ø 28 mm	400 254#
14.3	Deflector – Ø 32 mm	400 238#
14.4	Deflector – Ø 50 mm	400 246#
20	Extension PE08-E-150 – complete, 150 mm	1010 501#
20.1	Extension PE08-E-300 – complete, 300 mm	1010 502#

Wearing part

ATTENTION

Connecting more than two extensions together

It is not permitted to connect more than two extensions together, in order to prevent the gun from being damaged by arising leverage force.

- ► The extensions (150 mm/300 mm) may be connected TO ONLY ONE ADDITONAL extension (150 mm/300 mm), if necessary.

Nozzle combinations

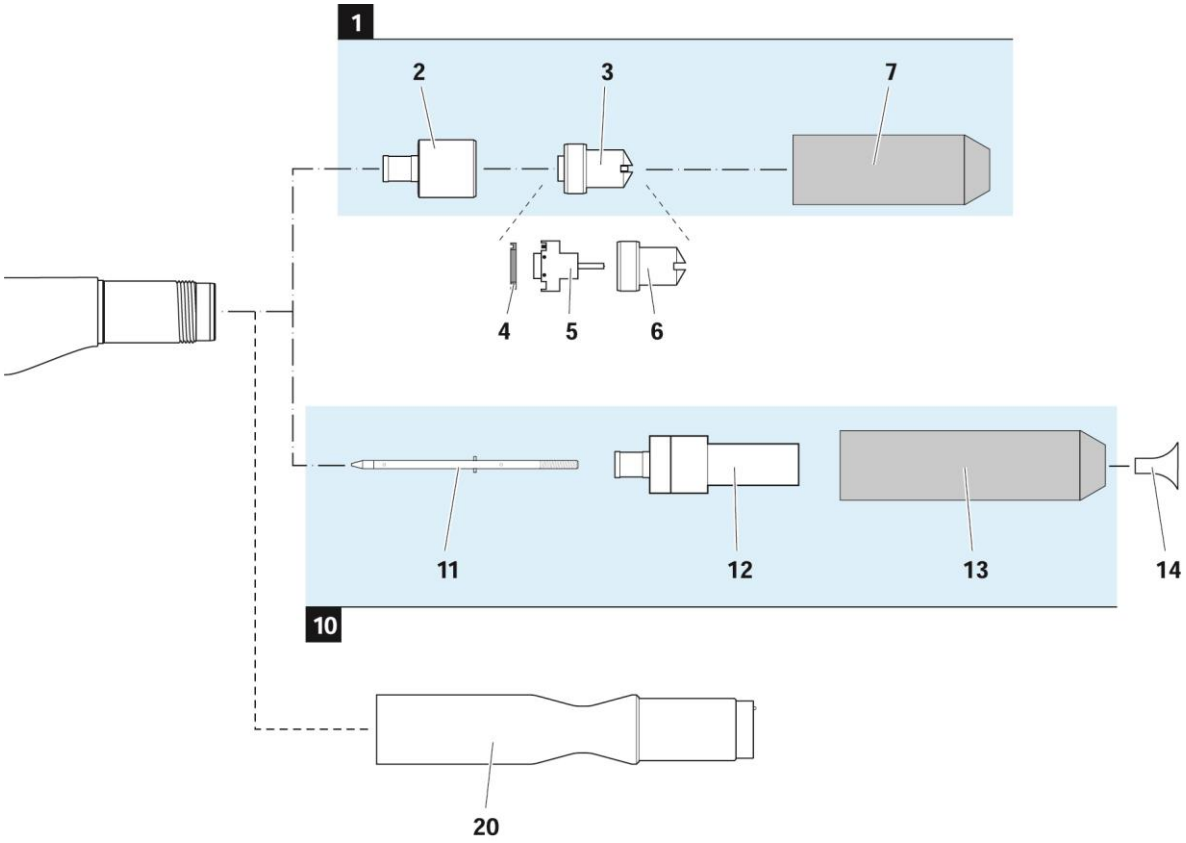

Fig. 14: OptiGun GA03-E – Nozzle combinations

Flat jet nozzle NF29-E-60°

	Flat jet nozzle NF29-E-60° – complete (pos. 1, 2, 3)	1009 435#
1	Fixation piece – complete	1009 429#
2	Flat jet nozzle set (without pos. 5.1)	1007 465#
3	Threaded sleeve – complete	405 728
4	Flat jet nozzle	1007 462#
5	Electrode holder – complete (ETFE)	404 209#
5.1	Electrode holder – complete (PTFE)	406 058#
6	Contact ring	318 760#

Wearing part

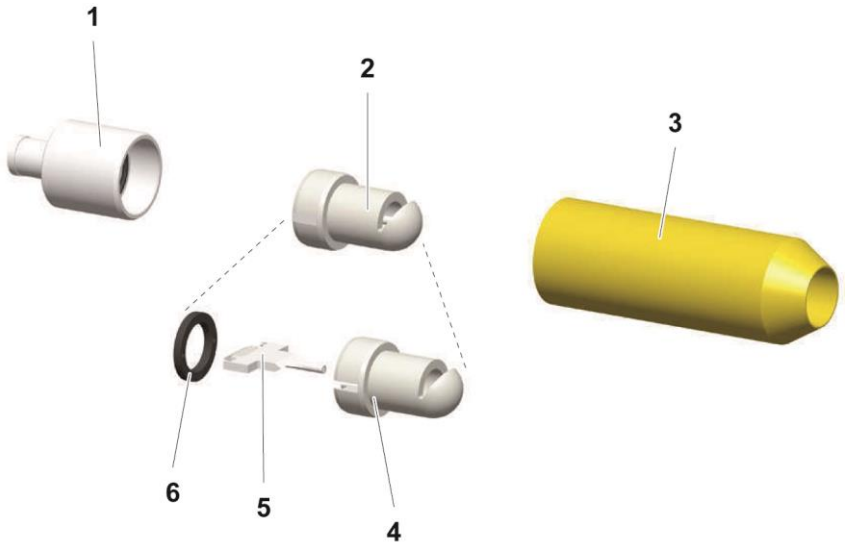

Fig. 15: Flat jet nozzle NF29-E-60°

Angled nozzles

A	Angled nozzle PA03-E-45° – complete	1013 670#
B	Angled nozzle PA03-E-60° – complete	1010 480#
1	PA03-E-60° knee piece – complete	1010 479#
2	Threaded sleeve	1010 476
3	Nozzle – see "OptiGun GA03-E – Nozzle combinations"	
4	PA03-E-60° knee piece – complete	1013 669#

Wearing part

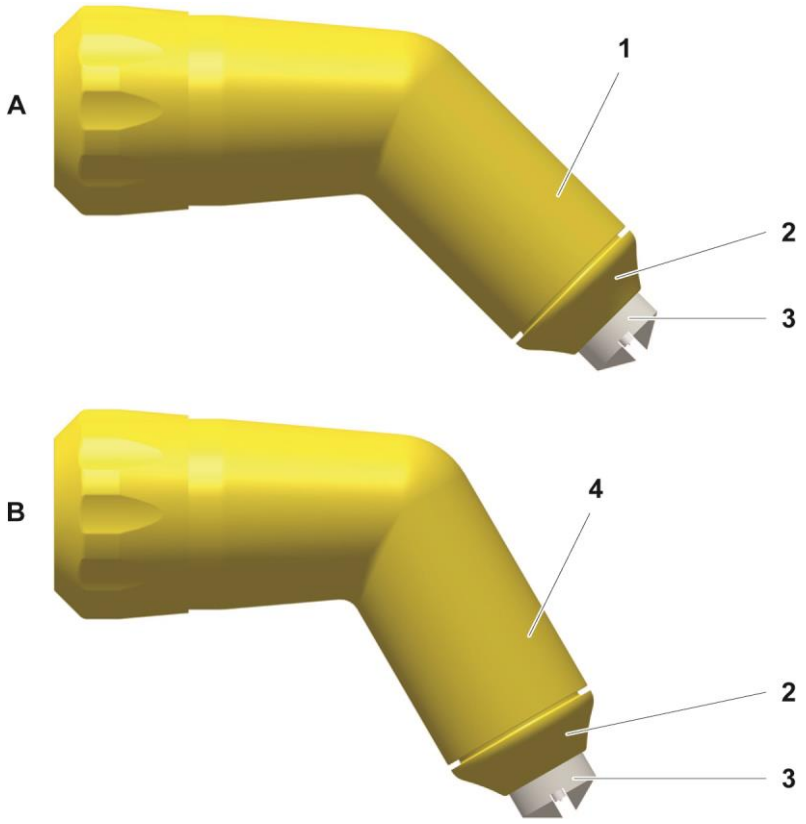

Fig. 16: Angled nozzles

Diffuser (OptiSpray AP01.1-E version)

	Diffuser – complete	**1011 630**
1	Plug-in connector – Ø 6-Ø 8 mm	254 894
2	Plastic tube – Ø 6/4 mm	103 144*
3	Screw-in nipple – M7-Ø 6 mm	1008 699
	Connector – complete, incl. pos. 4, 8 and 9	1011 627
4	Connector	1011 638
5	Fluidizing tube	1005 262#
6	O-ring – Ø 13x1.5 mm	1009 943
7	Adaptor piece – complete, incl. pos. 6	1011 625
8	Tube connection – complete, incl. pos. 9	1011 632
9	O-ring – Ø 9x1.5 mm	1011 637

***** Please indicate length

Wear part

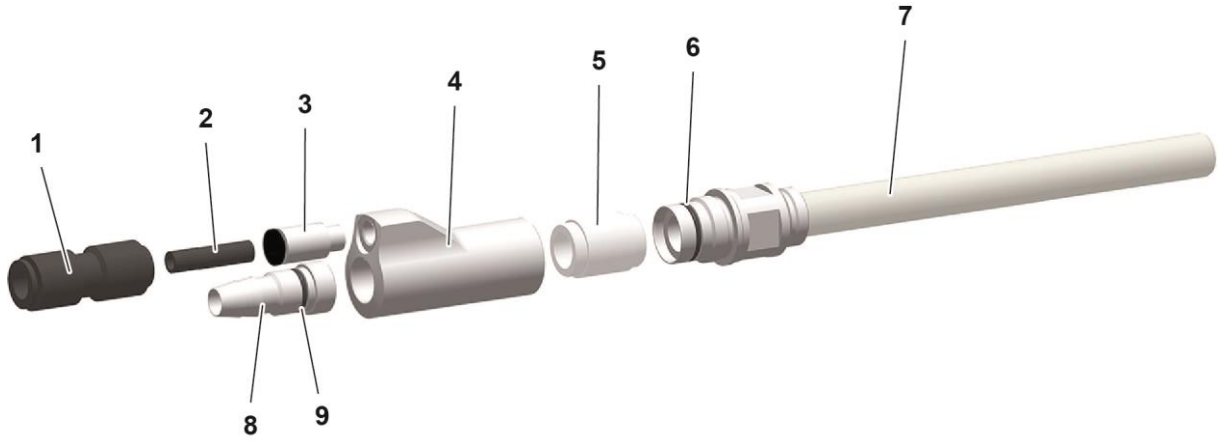

Fig. 17: Diffuser (OptiGun GA03-E)

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