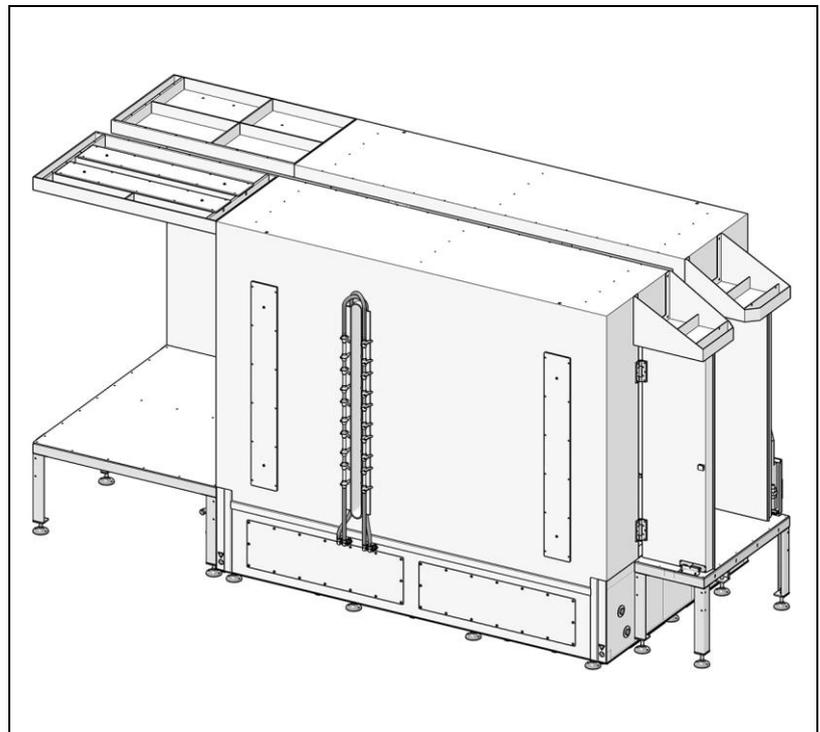

Operating instructions and Spare parts list

Powder coating booth MagicCompact BA04



Translation of the original operating instructions

Documentation MagicCompact BA04

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About these instructions

General information

This operating manual contains all the important information which you require for the working with the MagicCompact BA04. 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.
-

Operating the equipment

In order to be able to operate the equipment safely, it is necessary to be familiar with the safety regulations, the operational characteristics and functioning of the various plant components.

For this purpose, read the safety notes, this operating manual and the operating instructions of the control unit with touch panel, before starting up the plant.

In addition, all further equipment-specific operating instructions, e.g. the OptiCenter and all additional components should also be read.

To obtain practice in operating the plant, it is absolutely essential to start the operation according to the operating instructions. Later on, they also serve as a useful aid in the event of possible malfunctions or uncertainty and make many inquiries unnecessary. For this reason, the operating manual must always be available at the plant.

Should difficulties arise, however, your Gema service center is always ready to assist.

Inspection

Before switching on the booth, check the following points (where applicable):

- No foreign material in the central suction unit in the booth and in the powder suction
- Pneumatic conduction and powder hose are connected to the powder recirculating
- Pneumatic conduction to the After Filter is connected, the filter element door is closed, the waste container is placed and fitted

Operator's obligations

The operator must allow only the following persons to handle the screening machine:

- Persons familiar with basic regulations concerning occupational safety and accident prevention.
- Persons briefed on how to use the screening machine.
- Persons who have read and understood this operating manual.

The requirements of EC directive 89/655/EEC on use of work equipment (council directive dated 30th November 1989 regarding minimum safety and health requirements for use of equipment by staff at workplaces) must be complied with.

Selection of operating personnel

Screening work with the ultrasonic screening system must only be carried out by trained or well instructed personnel.

Staff qualification

Activity	Persons	Specially trained staff	Briefed operating staff	Persons with specialized training (mechanical / electrical engineering)
Transport		Shipping	--	--
Start-up		✓	--	✓
Fault localization and remedy during commissioning		✓	--	✓
Operation		✓	✓	--
Scheduled maintenance		✓	✓	✓
Fault localization and remedy during operation and maintenance		✓	✓	✓
Disposal		✓	--	✓

Legend: ✓..Permissible --.. Prohibited

Emergency action

Incident	Action
Electric shock	<ul style="list-style-type: none"> – Switch off the installation. – Disconnect the mains plug. – Notify a doctor. – Perform first aid.
Smoke generation, unusual noises, unusual generation of heat	<ul style="list-style-type: none"> – Switch off the installation. – Disconnect the mains plug. – Contact the Technical Service Department of Gema.
Fire in the electrical system	<ul style="list-style-type: none"> – Disconnect the mains plug. – Extinguish the fire with an appropriate fire extinguisher. Raise the alarm with the works fire brigade or the local fire brigade. – Contact the Technical Service Department of Gema.

Modifications to the sieve

Modifications, additions or conversions which might affect safety are strictly forbidden without the permission of the manufacturer.

Entering the booth

Entering the booth during operation is prohibited and is not necessary except for cleaning and maintenance work.

WARNING

Risk of slipping and injury

- ▶ Only enter the booth at the designated points.
- ▶ Blow off the powder from the booth floor before entering.

Repairs



Repairs are only permitted when the system is switched off.

- ▶ All work must be carried out only by trained personnel.

Residual risks

Unavoidable design features of a device as well as the intended application area can also pose a risk to the user if operated correctly. Depending on the design and equipment of the booth, certain residual risks cannot be completely excluded, despite the design of the device according to the current state of technology.

WARNING

Risk of electric shock or electrostatic charge

When entering the booth during operation (guns turned on), electrostatic charging can cause electric shock.

- ▶ Never enter the booth during operation.

WARNING

Risk of falling from the manual coater platform

Death or serious injury may result if you fall from the manual coater platform.

- ▶ The platform must be equipped with a handrail (minimum height 50 cm).
- ▶ The stairs must preferably be carried out in the entire width of the platform where the object is entering or exiting the booth.

WARNING

Risk of slipping and injury

There is a risk of slipping if powder is on the floor.

- ▶ Enter the booth only in the designated locations and only for cleaning and maintenance.
- ▶ Blow off the powder from the booth floor before entering.

WARNING

Risk of collapse/falling through!

Walking on the booth roof can result in serious falls with serious injury or death.

- ▶ Never step on the booth roof!

Transport

Introduction

This chapter describes special precautions that must be taken during internal transport of the product if:

- the customer must pack themselves, transport and ship the product, in order to have overhaul and repair work carried out by the manufacturer

or

- the product must be shipped for disposal (recycling).

Safety rules

Suitable equipment (e.g. a crane) must be used when moving parts that are sometimes bulky and heavy.

Components being disassembled must be adequately secured before they are detached.

Requirements on personnel carrying out the work

Use only technical personnel who are trained in operating the respective equipment (e.g. a crane).

If there are any uncertainties, please contact Gema Switzerland GmbH.

Packing material

Not necessary for the internal transport. For external transport: see chapter "[Decommissioning / Storage](#)" on page 43

Transport

Data concerning goods to be transported

- The space requirements correspond to the size of the components plus the packaging
- Weight see "Technical Data"

Loading, transferring the load, unloading

Suitable lifting equipment is to be used for all procedures.

Exercise caution at temperatures below +5 °C to -15 °C.

ATTENTION

Ambient temperature too low

Low temperatures cause the plastic to lose its toughness and become brittle. The resilience under stress decreases enormously, which in the worst case can lead to a material failure or breakage.

- ▶ Avoid stress in the plastic material.
- ▶ The plastic booth must not be transported at temperatures below -15 °C.

In summer, the air temperature during transport should not exceed +60 °C.

ATTENTION

Ambient temperature too high

High temperatures can cause the plastic to soften, depending on the duration of the thermal overload. The result is a material failure and unwanted deformation.

- ▶ Avoid heat accumulations and storage in sunlight.
 - ▶ The plastic booth must not be transported at temperatures above +60 °C.
-

Product description

Intended use

Coating booth systems are used for the electrostatic powder coating of all types of workpieces in large batches with color changes. As part of the process controlled coating plant, they are laid out for fully automatic operation. An efficient exhaust air system is used to keep the area around the booth clean and to prevent the formation of an explosive powder/air mixture when processing organic coating powders.

The powder recovery takes place by the powder separation in the centrifugal cyclone during operation.

Additional equipment such as gun blow-offs and automatic floor cleaning are designed for quick color changes.

Additional equipment such as light grids or laser scanners are designed to increase the degree of automation and reduce powder consumption.

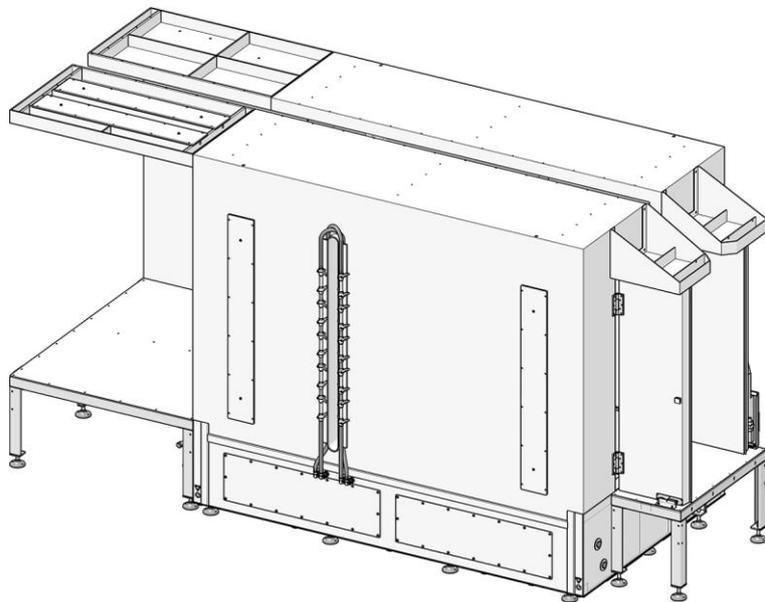


Fig. 1

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!

For a better understanding of the interrelationships in powder coating, it is recommended that the operating instructions for all other components be read as well, so as to be familiar with their functions too.

Reasonably foreseeable misuse

- Operation without the proper training
- Use of moist powder
- Use with insufficient compressed air quality
- Input pressure too low
- Coating of non grounded objects
- Use in connection with unauthorized coating equipment or components

Technical Data

Electrical data

MagicCompact BA04	
Connected load*	3 x 400 V
Frequency*	50/60 Hz
Protection type	IP54
Approvals	 

* other voltages and frequencies on request

Pneumatic data

MagicCompact BA04	
Max. input pressure	10 bar / 145 psi
Min. input pressure (booth in operation)	6 bar / 87 psi
Air entry speed	0.7 m/s
Max. water vapor content of the compressed air	1.3 g/m ³ – ISO 8573-1 Class 3-4
Max. oil vapor content of the compressed air (oil/water)	0.1 mg/m ³ – ISO 8573-1 Class 2

Ambient conditions

Temperature	
Temperature range	+10 °C ... +40 °C (+50 °F ... +104 °F)
Temperature classes	T6 (max. temperature 85 °C)

Dimensions

MagicCompact BA04	
Booth length	min. 2.5 m - max. 6.5 m (in the interior)
Booth width	1.6 / 1.8 / 2.0 m
Booth basement height	min. 0.71 m - max. 1 m
Weight	
<ul style="list-style-type: none"> – Booth inside length 3000 mm Booth inside width 1800 mm Superstructure height approx. 3250 mm – more or less weight per 500 mm length: 	<p>approx. 3300 kg</p> <p>approx. 300 kg</p>

Sound pressure level

MagicCompact BA04	
Sound pressure level	max. 80 dB(A) In coating operation

The sound pressure level was measured while the unit was in operation; measurements were taken at the most frequent operator positions and at a height of 1.6 m from the ground.

The specified value is applicable only for this product itself and does not take into account external noise sources or cleaning impulses.

The sound pressure level may vary, depending on the product configuration and space constraints.

Typical characteristics

The most important characteristics of the coating booths are:

- Superstructure and booth basement in plastic material
- Low booth basement height (simple conversion and fitting)
- Permanent powder suction from the entire booth floor (suction openings integrated into the booth floor)
- Automatic floor cleaning (no powder accumulation)
- Integrated exhaust air main collector
- Fast color change by one person
- Guns are arranged vertically or horizontally

Design and function

Overall view

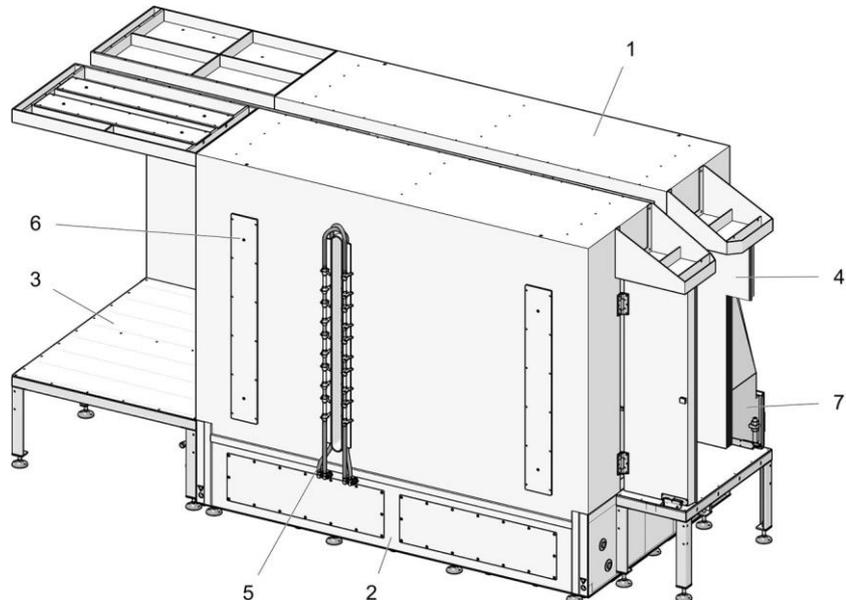


Fig. 2

- | | |
|--------------------------|--------------------------|
| 1 Superstructure | 5 Gun blow off equipment |
| 2 Basement | 6 Lighting |
| 3 Manual coater platform | 7 Exhaust air ducting |
| 4 Booth door | |

Booth – superstructure

The booth superstructure is a double walled plastic panel construction, ensuring an optimum powder repelling effect.

All grounded parts, including the booth superstructure supports, are positioned at the necessary required distance outside of the booth. This ensures the powder repelling effect of the booth, also for a longer coating period.

The interior of the booth is illuminated by lightings, which are fitted into the booth ceilings.

The basic version of this booth has no hand coating openings. The booth can be equipped either on one or both sides with manual coating equipment, as precoating or touch-up station alternatively.

Booth – basement

The booth basement consists of reinforced plastic material. The booth basement contains the floor blow-off unit and the powder suction (suction duct).

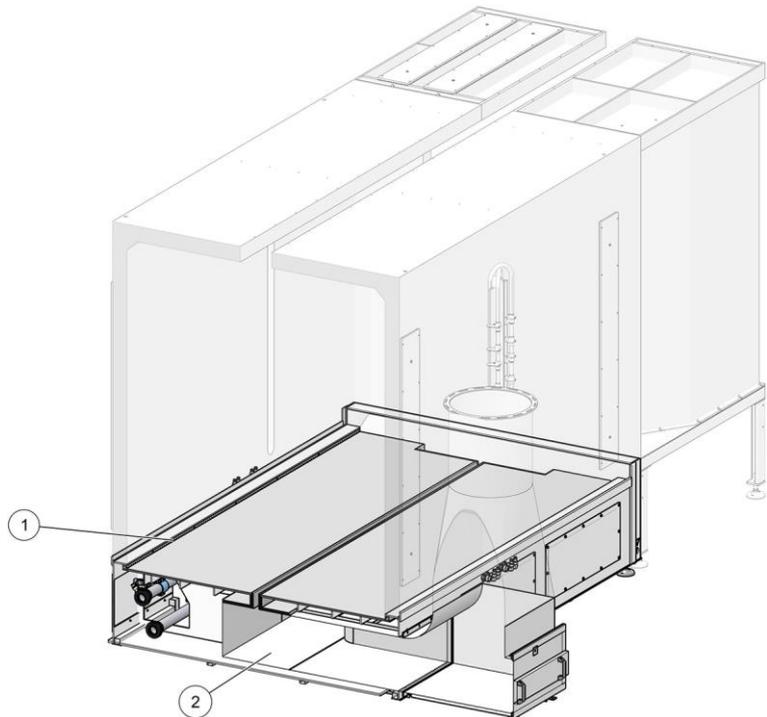


Fig. 3: Basement

1 Floor blow-off system

2 Suction duct

Floor blow-off system

Blow-off rails with blow nozzles are integrated lengthwise into the booth floor. Each blow-off rail consists of various segments, which can be pneumatically controlled one by one.

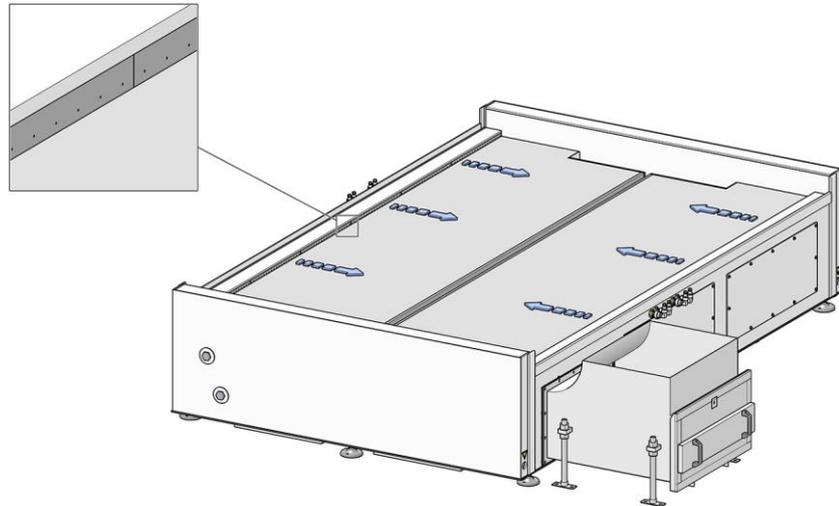


Fig. 4: floor blow-off system (arrows = blow-off direction)

The required blow-off pressure is 2 bar. In preset intervals, the nozzles blow the powder, located on the floor, in the direction of the suction slots. The powder is aspirated via the slots, cleaning the booth floor in this way.

The valves for the control of the floor blow-off segments are located in the booth basement.

▶ **The compressed air input pressure for the floor blow-off system must amount to 4.0 bar.**

- The pressure regulator for the floor blow-off system can be set to max. 2 bar.
-

Powder suction

The powder suction takes place via a lengthwise suction duct in the booth floor. The powder, which has been blown by the floor blow-off system in the direction of the suction slot, is then sucked in along the entire booth length.

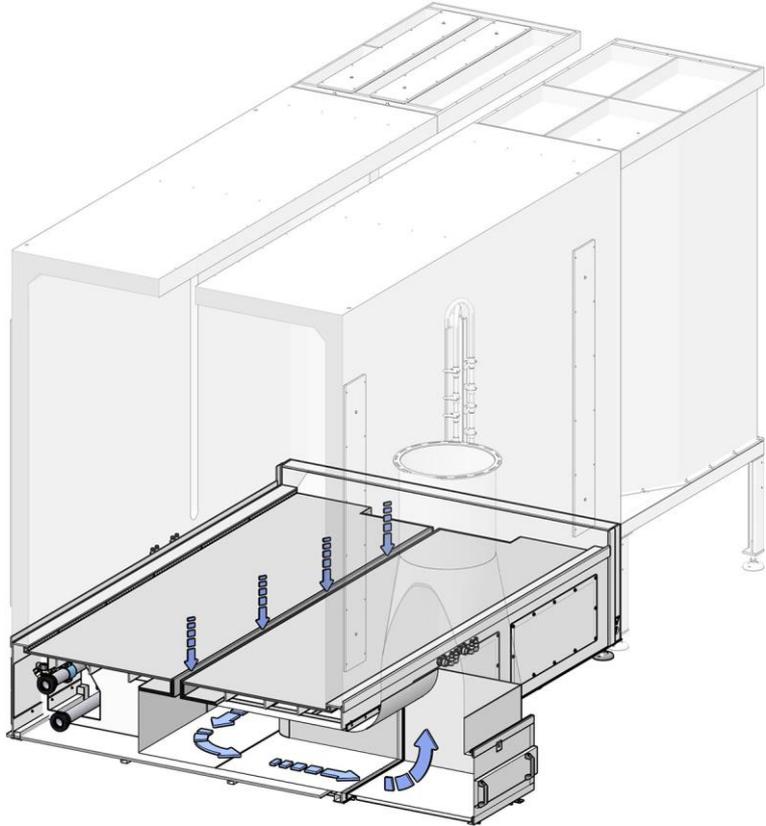


Fig. 5: powder suction (cutaway view)

The suction duct is gathered in a cross duct at the booth end, which can be visually controlled through a service lid. The ducts are autocleaning and can be blown out with compressed air.

The collected powder is delivered to the cyclone separator.

Deposited overspray powder on the walls must sometimes be cleaned manually.

Optionally, the manual coater platform can also be equipped with a powder suction system. The extracted powder is fed directly into the after filter. The platform must be cleaned manually, but the exhaust air ducting to the after filter is self-cleaning.

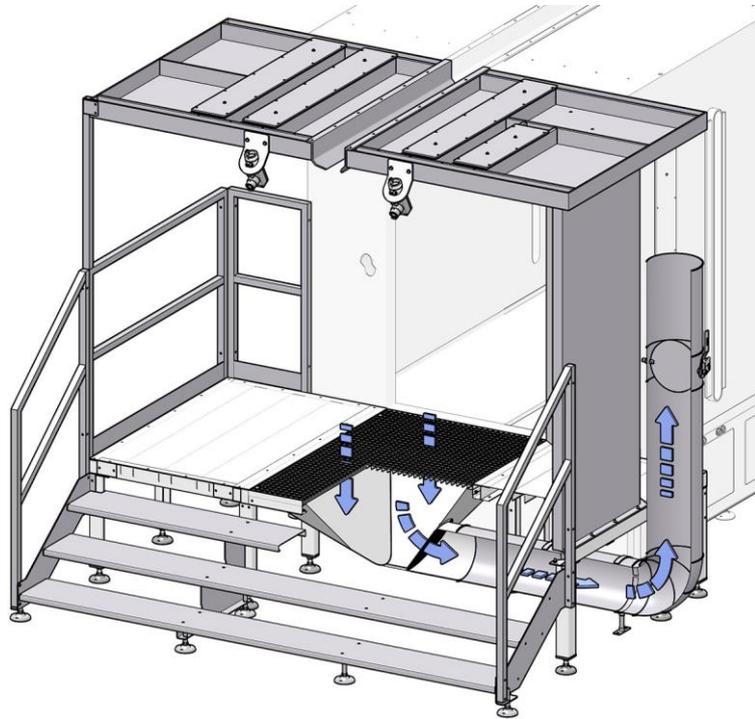


Fig. 6: Manual coater platform – powder suction

Exhaust air system with After Filter

An efficient exhaust air system is used to keep the area around the booth clean and to prevent explosive powder/air mixtures. The exhaust air is created by the fan in the After Filter.

Detailed information about the After Filter is found in the corresponding operating manual.

Fire protection

For safety reasons the plant must be equipped with a CO₂ fire extinguishing system. An existing fire protection is integrated into the safety concept of the plant and takes over the release of the plant interlocking.

Cleaning operation mode

During the automatic gun cleaning, the work piece entrance or exit door is closed, thereby an increased air inlet speed results at the remaining openings at the booth.

This ensures a dust-free environment around the booth during the color change procedure.

Automatic booth cleaning

The cleaning of the booth floor takes place automatically with the combination of the floor blow-off system and the powder suction (see the chapter on "Booth – basement")

Powder recovery system

A safe and clean powder recovery is ensured by following components:

- Cyclone separator
- Sieve machine
- Powder recirculating
- OptiCenter

The powder which does not adhere on the workpiece (overspray) is fed from the suction opening, through a conduction, to the cyclone intake. In the cyclone, the powder is separated from the air by centrifugal forces and then filtered via the sieve. The recovered powder is fed back to the OptiCenter.



Further information on the powder recovery components can be found in the corresponding operating manuals.

Automatic powder guns

OptiGun-AX automatic guns are used in this powder coating booth. These guns were particularly developed for an automatic, simple cleaning.



Fig. 7: Automatic powder guns

The connections for the automatic guns are located outside the coating booth and are integrated into the gun. Therefore, the guns can be cleaned automatically by means of blow-off nozzles.

The powder hose connection makes possible a perfect fixing of the powder hose by the clamping device. This is a prerequisite for the automatic rinsing of the powder transport equipment (further information about automatic guns, see in the corresponding user manual).

Guns exterior cleaning

The automatic guns are cleaned very simply and quickly. The cleaning of the automatic guns takes place by the gun blow off equipment on the coating booth.

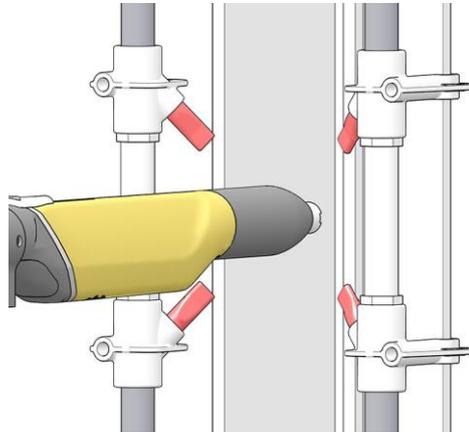


Fig. 8: Guns exterior cleaning

By activating the cleaning function on the control unit, the axes and the guns move out of the booth. At the same time, each gun is blown off clean from the outside, by means of four blow-off nozzles.

These blow-off nozzles are located on the gun slots outside the booth. If necessary, this cleaning sequence can be repeated.

Optionally, guns can be blown off in 2 stages. In the first step, the guns are cleaned at 2 bar, in a second step at 6 bar.

Function description

The principle of function is determined by the requirements placed on the booth, which are:

- The protection of the coating process from external influences, combined with keeping the area around the booth clean
- The powder recovery
- The avoidance of an explosive powder/air mixture inside the booth

An efficient exhaust air system is used to keep the area around the booth clean and to prevent explosive powder/air mixtures.

In multi-color systems, the fan in the After Filter extracts the air from the inside of the booth through the cyclone and afterwards through the filter elements. The air stream created thereby, flowing from the outside to the inside of the booth, prevents powder escaping to the outside of the booth, so that keeping clean the area around the booth is ensured. The maintenance of the air flow prevents as well the creation of dangerous powder/air mixtures.

The powder recovery in multi-color systems takes place by the powder separation in the cyclone separator during operation.

The booth control takes place by the corresponding control unit with operating interface.

The gun control units are fitted into one or two control cabinets. The switching on and off of the guns takes place by the gap detection unit in the automatic mode.



More detailed information about the control units/components and the operating interfaces are found in the corresponding user manuals!

Operational procedure



Only the multiple color version is described in this user manual!

By switching on the booth, the fan in the After Filter starts up and after the start-up phase, the plant units which are interlocked with the booth are released.

The operational condition is reached, as soon as all external plant units such as chain conveyor, OptiCenter, reciprocators (optionally), fire protection (optionally) etc. are switched on.

The operating functions in the OptiCenter can be released now and the coating process can begin. This process is interrupted only if a ventilator motor malfunction is present. Other malfunctions are indicated by an alarm or a message, displayed on the control cabinet.

The suction effect of the filters is monitored during operation. Therefore, the differential pressure and thus the suction performance of the exhaust air system is measured. A blockage of the filter elements is indicated by a decrease of the suction performance (the differential pressure arises). By reaching a fixed preset value, a signal lamp on the control cabinet illuminates and at the same time an alarm sounds.

(Detailed information about the After Filter is found in the corresponding operating manual).

Powder flow

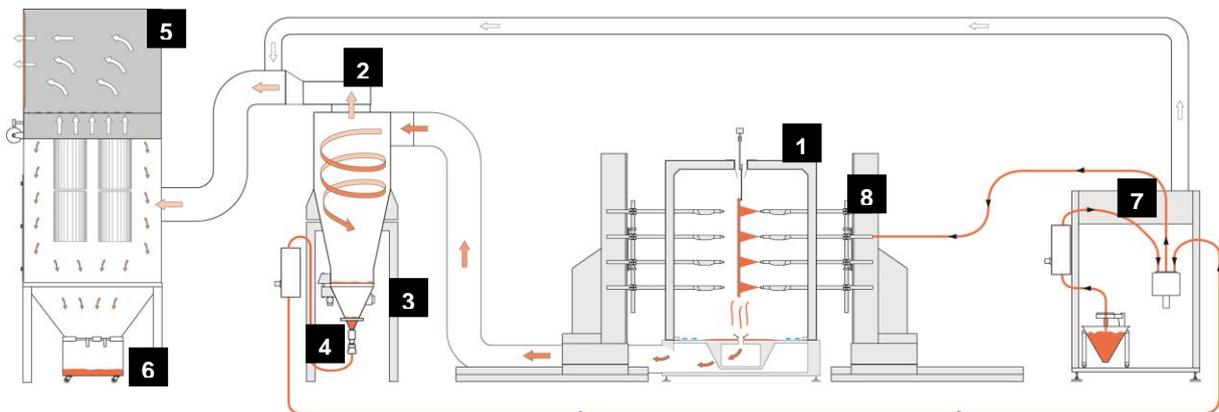


Fig. 9: Powder flow in the plant

- | | |
|------------------------|-------------------------|
| 1 Booth | 5 After filter |
| 2 Cyclone separator | 6 Waste container |
| 3 Sieve | 7 OptiCenter |
| 4 Powder recirculating | 8 Automatic powder guns |

The powder is fluidized in the OptiCenter (7). The injectors/application pumps convey the powder through the hoses to the guns (8). The guns spray the powder/air mixture onto the workpieces to be coated.

The powder which does not adhere on the workpieces falls on the booth floor and is sucked off through the slots in the booth floor, and delivered to the cyclone separator (2) as powder/air mixture.

Centrifugal force separates the powder from the air in the cyclone. The separated powder is cleaned in the integrated sieve (3) and transported back to the powder container in the OptiCenter by a powder recirculating conveyor (4), where it is available again for the coating process.

The rest of the non-separated powder (most of it is fine particles) goes into the after filter (5). The after filter separates the powder into a waste container (6) which is positioned directly under the filter elements and is very easy to empty. The cleaned air then exits the filter and is fed directly back into the workshop environment.

Assembly / Connection

Set-up and assembly

WARNING

Danger of toppling over due to insufficient floor bearing capacity

- ▶ Ensure that the floor bearing capacity is at least 500 kg/m²

CAUTION

Danger of injury

The assembly and installation process must be carried out using the customer's existing equipment, due to heavy and bulky parts.

- ▶ Pay specially attention to the safety of the assembly personnel!
- ▶ In order to guarantee operating safety, all assembly work must be checked by trained personnel!

Installation

Installation work to be done by the customer must be carried out according to local safety regulations!

Cable connections / junctions

The connecting cables between control unit and guns must be laid out in such a way that they cannot be damaged during operation. Observe the safety regulations!

Grounding the booth

⚠ DANGER**Missing or incorrect grounding**

A poor or missing ground connection can be dangerous to the machine operator.

- ▶ Ground all metal parts in accordance with general local regulations.
 - ▶ Check grounding regularly.
-

Appropriate connection points are provided on the booth superstructure and the booth basement, on the cyclone separator, on the duct and on the filter housing for equipotential bonding.

Start-up

Preparation for start-up

Important notes

NOTICE

Damage to the booth or to the ducting

Foreign objects in the booth or in the ducting can cause damages to the plant or facility!

- ▶ Only trained personnel shall be permitted to proceed with the start-up!

Before the start-up the following points are to be checked:

- Are all screw connections on the cyclone and on other plant units firmly tightened?
- Is the ducting and the interior of the cyclone cleaned properly?
- The tube and hose connections, are they properly connected?
- Are there no foreign objects (e.g. screws, small parts etc.) in the booth, the cyclone or the ducting?
- Is the filter unit or collector completely assembled?
- Are all components properly grounded?
- Is the delivery unit connected correctly? Does the two-hand control function (security-operation) of the delivery unit work correctly?
- Is the transport hose connected correctly on the exhaust side?
- Are the settings for the powder transport connection unit correct?



The plant may be put into operation only after all these points are checked and any faults are corrected!

Operation

WARNING

Inhalation and penetration of powders

During manual cleaning tasks, powder can be inhaled inadvertently.

- ▶ Wearing appropriate protective equipment is mandatory.
- ▶ Switch on the after-filter so that any dust produced is directed away from the machine operator.

Before switching on the booth

- Strictly observe the safety regulations (see also chapter "General safety regulations")
- Check the grounding of the booth and the other plant units and ensure it, if necessary
- If necessary, carry out a function check before starting work

After long stops/standstills

1. Fill in or refill powder
2. Check the tight seating of the filter cartridges
3. Place the refuse container under the After Filter

Switch on the booth

1. Open the compressed air supply and set the input pressure for the After Filter
2. Turn on the main switch (the main switch is located on the control cabinet)
3. Turn the key switch, the control unit is activated, the operating unit is activated and the key switch returns to its starting position.
4. Start the system, the main menu appears on the operating unit
5. Activate the OptiCenter (see therefore the corresponding user manual)

Switching off the booth

1. Quit the automatic operation mode
2. Switch off all additional plant units
3. Switch off the system in the main menu
4. Switch off the OptiCenter
5. Switch off the main switch

Alarm messages

If malfunctions take place, the signal horn sounds and an alarm message is shown (see the chapter "Troubleshooting" and the control unit user manual).

Filter cleaning

The filter cartridges in the After Filter are blown off cyclically from the inside during operation. The predetermined cycle times are set at the factory, but must be reset if the maximum differential pressure is repeatedly exceeded (this initiates an alarm).

The differential pressure is displayed on the pressure gauge:

- Pressure monitoring on the filter – is only displayed optically on the pressure gauge
- Pressure monitoring on the fan – is displayed optically and the alarm is initiated by 2 manostats (optically and acoustically)

The upper limiting value, by which the alarm is initiated, is plant-specific and is set by our trained service personnel when assembling the booth.

The setting of the cycle times must be done only by trained service personnel. The input is entered directly on the operating unit of the plant control (see also the operating manual of the plant control unit).

Color change and cleaning

The color change can begin, when the last workpieces have left the booth. In automatic operation mode, the coating is stopped automatically.

Following, a step by step description of the color change procedure from bright to dark (or vice versa) is given. A prerequisite for a quick and efficient color change is that it is done by 2 people, so that some of these steps can be carried out simultaneously.

1. Prepare the booth for cleaning
 - The booth must be empty of hangers
 - Close the booth doors
 - Switching over the booth control to cleaning operation
 - Move the guns to the cleaning position
2. Prepare the OptiCenter for cleaning
 - Remove the powder container from the OptiCenter (the recovery hose remains on the powder container)

- Set the OptiCenter to the cleaning mode
- Coarse cleaning of the OptiCenter
- 3. Clean the guns externally and move them to the blow off position
- 4. Blow off (internal cleaning) the powder hoses in direction from the OptiCenter
- 5. Coarse cleaning of the booth
 - Coarse cleaning of the booth with the air lance
 - Open the cyclone cone and remove the sieve, leave the cyclone open
 - Remove the recovery hose from the powder container
- 6. Cleaning the booth
 - if necessary, move the guns out of the booth
 - if necessary, clean the muzzles etc.
 - Blow off the booth with the air lance, clean the suction opening
 - if necessary, wipe off the booth walls
- 7. Clean the OptiCenter
 - if necessary, change the powder hoses (bright/dark)
 - Clean the OptiCenter
- 8. Clean the recovery system
 - Connect the recovery hose to the blow off connector
 - Open the cyclone cone and clean the sieve
 - Blow off the recovery system
 - if necessary, wipe off the cyclone cone
 - Blow off the inside of the monocyclone with the air lance
- 9. Prepare the equipment for coating
 - Make the recovery system ready for operation
 - Put the OptiCenter into coating operation
 - Put the booth into coating operation (switch on the plant, move the XT axis into coating position, start the correct axis program)
- 10. Check the guns for functioning (high voltage and powder output)



These short instructions should facilitate, above all, the handling of the plant for the daily, always recurring works. They do not replace by any means the enclosed manuals of the components, and presuppose that you read and understand the corresponding chapters in the operating manual as well as the safety regulations.

Maintenance / Repairs

WARNING

Risk of collapse/falling through!

Walking on the booth roof can result in serious falls with serious injury or death.

- ▶ Never step on the booth roof!

Daily or after each shift

- Blow off the powder hoses
- Clean the guns externally and the check wearing parts
- Check the vibrating sieve of the cyclone separator and clear away contamination with an industrial vacuum cleaner
- Cleaning the booth

weekly

(in single-shift works, or in each fifth shift in multi shift works)

- Check the clean air chamber in the After Filter housing for powder deposits through the inspection window of the filter housing above the door. If powder deposits are present, this is an indication of defect filter elements (replace the filter elements, see After Filter operating instructions).
- Check all oil separators and if necessary, empty (if oil is present, the compressed air preparation must be checked)

Maintenance and repair of the switching unit

The following activities on the switching unit should be carried out regularly:

- Remove powder deposits and caked powder
- Check the gaskets and if necessary, replace them

For further information, see the corresponding operating manual!

Fault clearance

Safety

Securing against unexpected start-up

The machine starting unexpectedly may cause serious injuries to persons working on the machine.

1. Set the safety switch to <0> and lock it.
2. Remove the key and keep it with you.

Explosion protection

Lack of maintenance and a lack of ignition protection can lead to explosions.

- Do not modify the machine.
- Do not use potentially explosive products, operational material or cleaning liquids.
- Maintain, clean and lubricate the machine correctly.
- Only use original spare parts.

Pressurized pneumatics system

The pressurized pneumatics system may trigger dangerous situations.

1. Disconnect the compressed air supply before working on the pneumatics system.
2. Depressurize the pneumatics system.
3. Secure the compressed air supply against reactivation.

General



Faults may be fixed by trained personnel only!

Malfunctions, which arise during operation, are registered together with emergency stops in a list with date and time indications. An error message is displayed on the operating unit of the control unit.

If a fault arises, the plant is not stopped. However, if an emergency stop arises, the whole plant (or units) is switched off and the emergency stop mask is displayed on the operating unit.

The alarm horn sounds at the same time with every message (malfunction or emergency stop).

Problem fixing

Fault	Cause	Corrective action
Alarm has been released: Message too little powder Display flashes in the OptiCenter	Powder shortage in the powder container	<ul style="list-style-type: none"> – Acknowledge error, fill in fresh powder – Switch off the alarm, fill in fresh powder
Alarm has been released: Message EMERGENCY STOP protective switch	Motor malfunction exhaust air fan, corresponding motor protection switch has reacted	<ul style="list-style-type: none"> – Let the motor cool down – Switch on the corresponding motor protection switch again (see wiring diagram), see also the "Troubleshooting" section in the After Filter operating manual. – In the case of repeated alarm, contact your Gema service center
Pressure increase is indicated	Pressure increase on the filter cartridges	<ul style="list-style-type: none"> – Switch off the gun control units, wait until the differential pressure returns to normal again. – Check the cleaning cycles by ear, if necessary, shorten the pause times in the cleaning cycle. – Check, if the cleaning pressure is set on 4 bar on the pressure input valve (see also the section "Troubleshooting" in the After Filter operating manual) <p>ATTENTION: If the pressure gauge shows a pressure rise higher than 2 kPa, contact your Gema agent immediately!</p>

Fault	Cause	Corrective action
Alarm has been released: Message Fan overpressure	Minimum pressure in the filter housing not reached <ul style="list-style-type: none"> – Too little pressure, too much exhaust air, because too little or no air resistance – Filter housing door is open – Sieve not fitted tightly on the cyclone separator – Waste container not fitted tightly 	Close the filter housing door Press on the sieve Press on the waste container (see also the troubleshooting section in the After Filter manual)
Alarm has been released: Message Fan low pressure	Maximum pressure in the filter housing exceeded: <ul style="list-style-type: none"> – Pressure too high, insufficient exhaust air because the air resistance is too high – Filter clogged (valves defect or cleaning pressure too low, at least 4 bar) – Poor compressed air quality (contains oil or water) – Malfunctions on running-in 	Replace defective valves or increase the cleaning pressure Check the quality of compressed air Wait, until the filter cake is built up on the filter cartridges (see also the "Troubleshooting" section in the After Filter operating manual)
Alarm has been released: Message Guns not OK	Diagnostic adaptor of the guns indicates, that no high voltage is being produced	Turn on the gun control unit, or correct the fault in the gun control unit or gun with the information in the corresponding operating instructions
Bad separation efficiency of the cyclone	Seals, especially at the powder discharge of the cyclone, are missing or defective Exhaust air volume flow is incorrect because duct or After-filter is clogged Check the cyclone casing for holes, caused by wear Insufficient pretension force of the fasteners	Check and repair if necessary Check; if necessary, repair clogged parts Check and repair Check and adjust correctly
Sieve clogged up		<ul style="list-style-type: none"> – Check the powder for dampness – Check if too much powder has passed through the cyclone, e.g. when cleaning the booth

Fault	Cause	Corrective action
Automatic floor blow-off system not OK	Pressure reducing valve defective or adjusted incorrectly Solenoid valve defective (coil, cable) or missing signal	Check the compressed air supply Replace or check

Decommissioning / Storage

Safety rules

Suitable equipment (e.g. a crane) must be used when moving parts that are sometimes bulky and heavy.

Components being disassembled must be adequately secured before they are detached.

Requirements on personnel carrying out the work

Use only technical personnel who are trained in operating the respective equipment (e.g. a crane).

If there are any uncertainties, please contact Gema Switzerland GmbH.

Storage conditions

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 components plus the packaging.

The load-bearing capacity of the floor should be at least 200 kg/m².

There are no special requirements for the spacing to adjacent devices

Physical requirements

Storage must be inside a dry building at a temperature between +5 - 60 °C.

Hazard notes

The safety data sheets of the corrosion protection agent used must be observed.

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

Putting out of service

Before starting any kind of work, the whole system must be disconnected from the supply (current/compressed air).

The fire suppression components connected to the cyclone/ducting are to be dismantled/removed according to the instructions of the fire detection system supplier.

Cleaning

Remove the contamination from the outside of all components.

Packing

Suitably and stable pallets, big enough, must be used. In order to prevent damage to the components, collisions with other parts must be avoided.

It is definitely not recommended to stack the individual parts! Should this nonetheless be planned, the packaging must be made robust enough to protect the booth parts against additional forces.

Identification

Apply the label "**Protect from dampness and moisture**" on the product and the packaging.

Maintenance during storage

Maintenance schedule

For longer storage periods (> 1 year) check the anti-corrosion measures periodically.

Maintenance works

If any deficiencies in the anti-corrosion protection measures are found, these must be eliminated.

Return to service

Commissioning following storage

It is essential to pay attention to the ambient temperature before starting installation of the booth.

ATTENTION

Ambient temperature too low

Low temperatures cause the plastic to lose its toughness and become brittle. The resilience under stress decreases enormously, which in the worst case can lead to a material failure or breakage.

- ▶ Avoid stress in the plastic material.
 - ▶ Allow all plastic components such as panels etc. to "acclimatize" at a room temperature of at least 15 °C for at least 24 hours.
-

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** Powder coating booth MagicCompact BA04
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 warranty claims become invalid!

- ▶ Only original Gema spare parts should be used!
-

MagicCompact BA04 – spare parts list

1	Floor blow-off system – Pneumatics (see separate spare parts list)
2	Gun blow off equipment (see separate spare parts list)
3	Sensor/Actor-Box (see separate spare parts list)
4	Pressure regulator (see separate spare parts list)
5	Door drive unit (see separate spare parts list)
6	Lamp – LED-K150 (see separate spare parts list)
7	Lamp – LED-K120 (see separate spare parts list)
8	Lamp – LED-K060, not shown (see separate spare parts list)

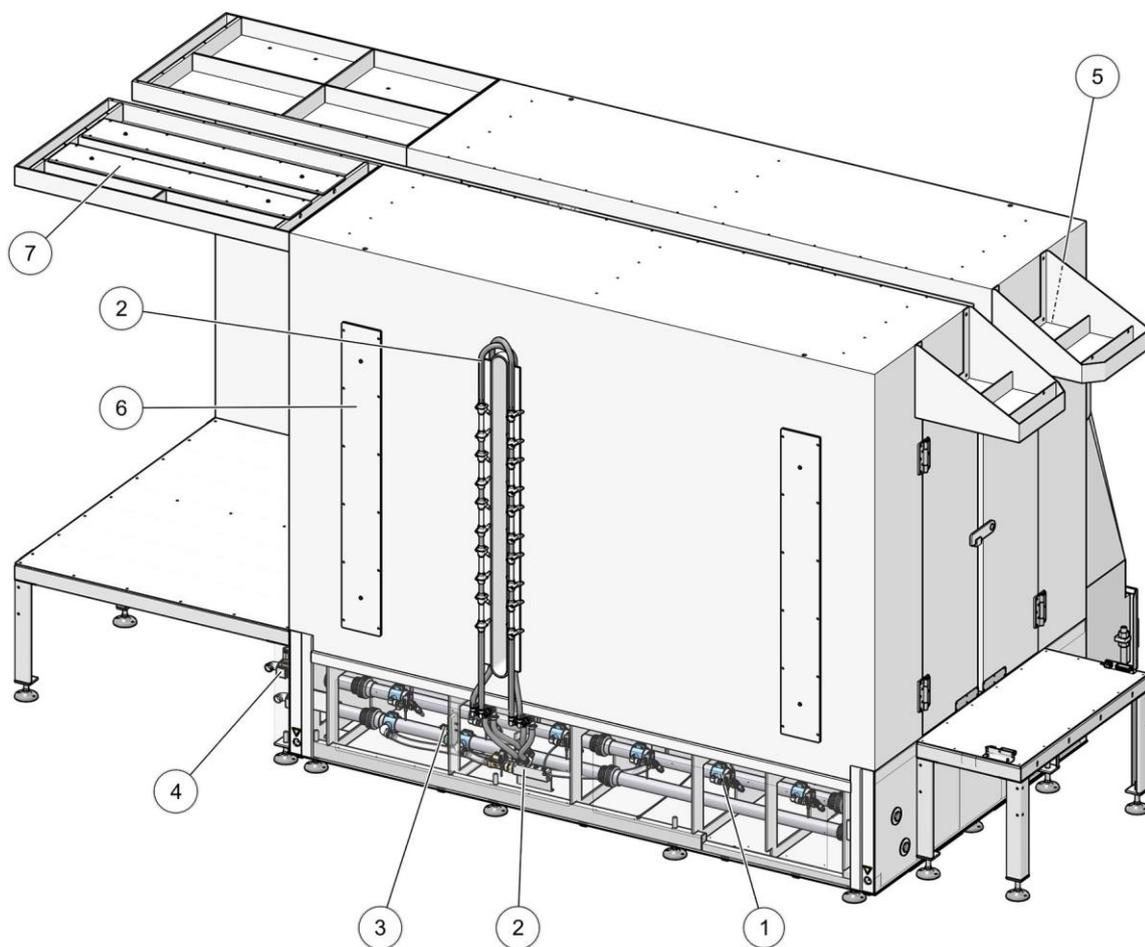


Fig. 10: Spare parts

Floor blow-off system – Pneumatics

1	Solenoid valve – 1/2", NW 13.5 - 24 VDC, without pos. 2	1005 120
2	Valve coil for pos. 1 – 24 VDC	1005 119
3	Valve cable – 3 pins, L= 3 m	1008 244
4	T-piece – 1/2"-1/2"-1/2"	223 026
5	Screw-in nipple – 1/2"-Ø 12 mm	1002 225
6	Double nipple – 1/2"-1/2", divisible	243 582
7	Elbow joint – 1/2"-1/2"	223 166
A	Hose – Ø 12/10 mm (not shown)	100 382*

* Please indicate length

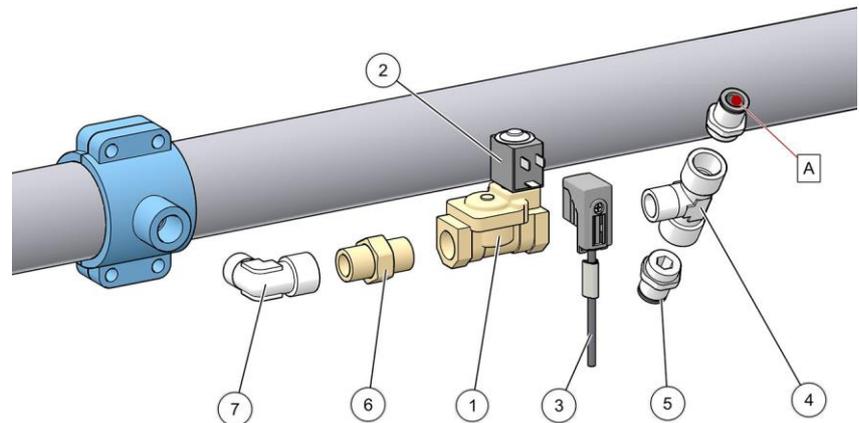


Fig. 11: Floor blow-off system – Pneumatics

Pressure regulator

1	Pressure regulator – 0-8 bar, 1" (gun blow-off cleaning)	1008 185
2	Pressure gauge – 0-10 bar, 1/8"	243 620
3	Adapter nipple – 1/8"-1/4"	265 454
4	Double nipple – 1"-1", divisible	1005 563
5	Pressure regulator – 0-4 bar, 1" (floor blow-off system)	1008 184

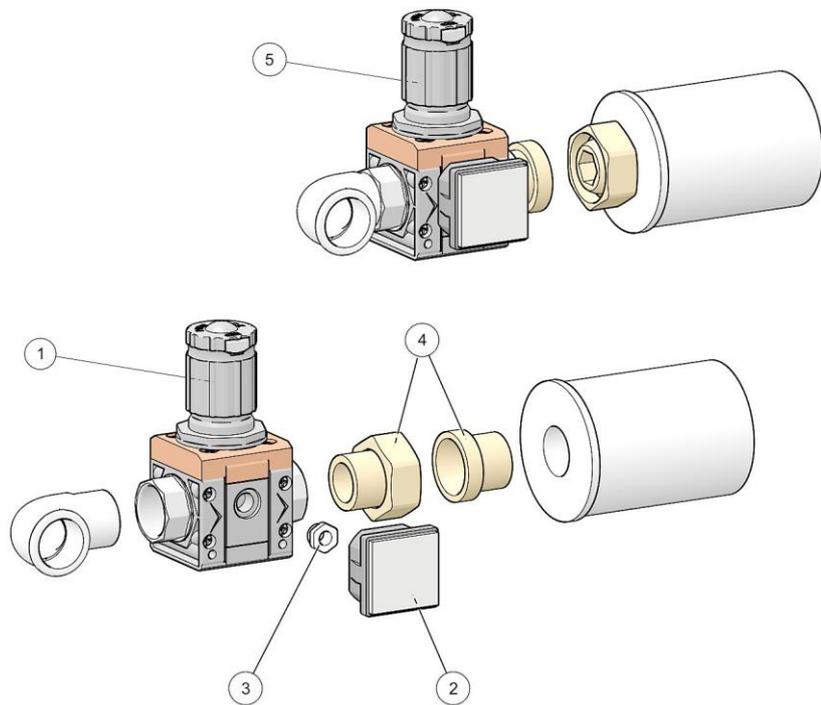


Fig. 12: Pressure regulator

Sensor/Actor Box

1	Sensor-/Actor Box – M12 8P	1008 242
2	Y-distributor – threefold, M12	1008 246
3	Plug screw – M12	1006 905
4	Sensor/actuator cable – 30 m	1008 243

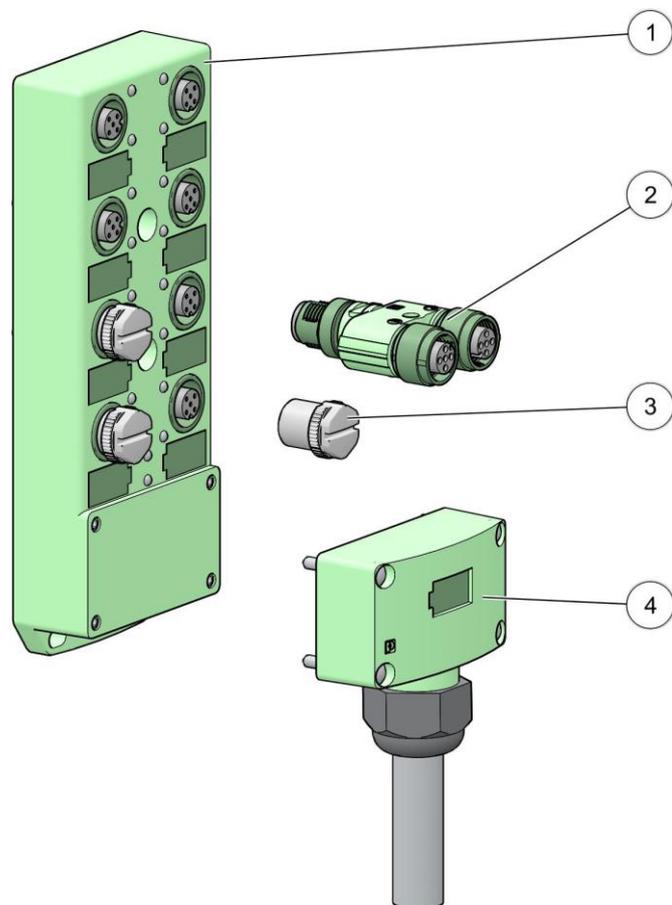


Fig. 13: Sensor/Actor Box

Gun blow off equipment

	Nozzle type 1 – complete (pos. 1-4)	1013 088
	Nozzle type 2 – complete (pos. 2-5)	1013 089
1	Nozzle holder type 1 – complete	1013 090
2	O-ring – Ø 20x3 mm	224 863
3	Nozzle	1013 094
4	Allen grub screw – M6x16 mm	214 850
5	Nozzle holder type 2 – complete	1013 091
6	Intermediate pipe	1013 732
7	Plug cap	1013 092
8	Tube – Ø 20-17 mm	1013 098*
9	Compressed air hose – Ø 16/25 mm, black	105 155*
	Hose connector for pos. 9 (not shown)	223 069
10	Hose clamp – Ø 17–25 mm	223 085
11	Solenoid valve – without coil	1005 592
12	Valve coil – 24 VDC (for pos. 11)	1005 119
13	Valve cable – 3 pins, M12, for pos. 12	1008 244
14	Grounding cable – complete	1006 077
15	Compressed air hose – Ø 33/25 mm	1018 622*
16	Hose clamp – Ø 25–35 mm	226 335

* Please indicate length

Gun blow off equipment

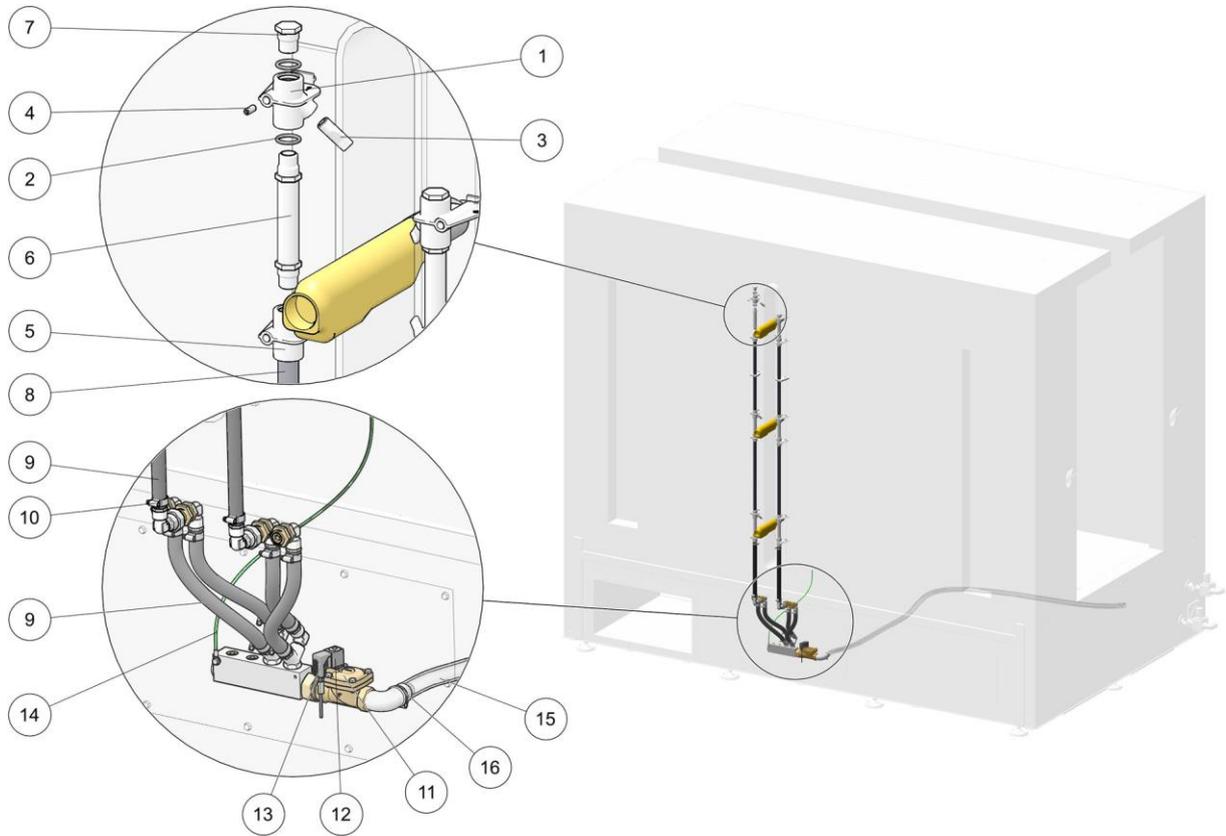


Fig. 14: Gun blow off equipment

Door drive unit

1	Switch box	1014 076
2	Rotary drive 90° left	1017 401
	Rotary drive 90° right	1013 836
	Rotary drive 180° left	1017 402
	Rotary drive 180° right	1014 075
3	Solenoid valve – 24 VDC, without pos. 4	1014 077
4	Valve cable – L= 0.6 m, for pos. 3	1006 902
5	Throttle check valve	1013 837
6	Silencer	1014 078
7	Inline regulator – 6 bar	263 320

Door monitoring and door locking

1	Proximity switch	259 802
2	Magnetic closure	257 826
3	Door locks	1018 309
4	Hook	1020 956

Door drive unit

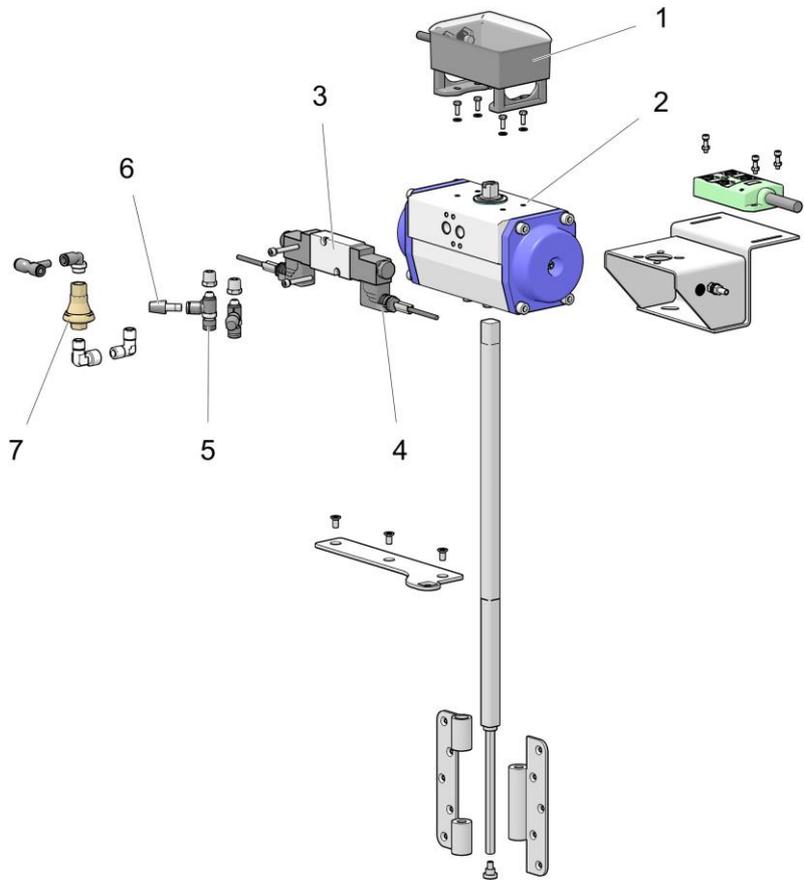


Fig. 15: Door drive unit

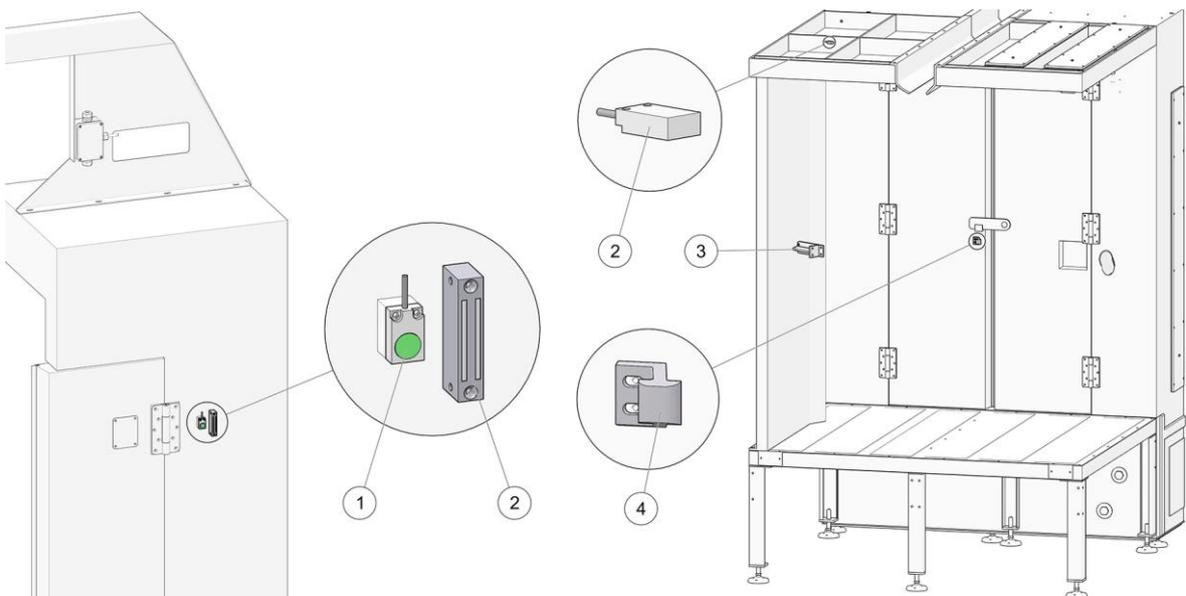


Fig. 16: Door monitoring and door locking

Lamps

1	LED module	
	Type 1500, 230 V, 60 W, length 1512 mm	1014 535
	Type 1200, 230 V, 45 W, length 1227 mm	1014 536
	Type 600, 230 V, 22 W, length 582 mm	1014 537
2	Adhesive seal strip – 19x4 mm	1014 137*
3	Screw – M6x20 mm	244 414
4	Membrane grommet	1003 577
5	Cable – 3x1 mm ²	1013 099*

* Please indicate length

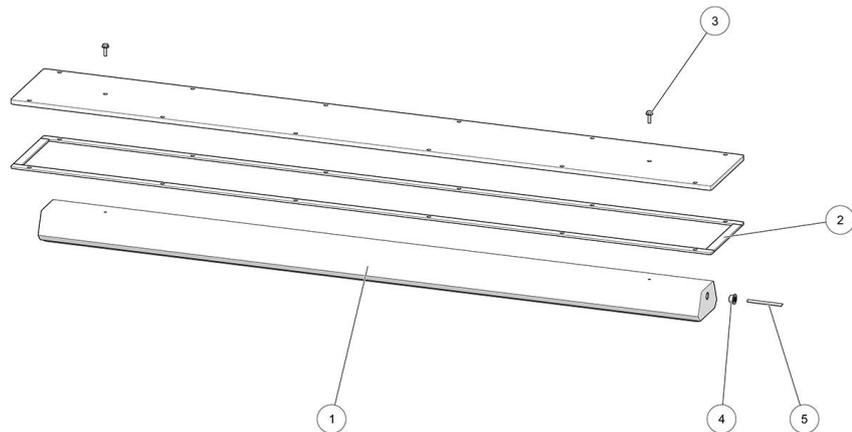


Fig. 17:

Switching unit (exhaust air)

1	Proximity switch	1024 053
2	Connection cable	1023 123
3	Seal (inflatable) – complete	
	Ø 450 mm	1016 743
	Ø 500 mm	1016 744
	Ø 550 mm	1016 745
	Ø 600 mm	1016 746
	Ø 650 mm	1016 747
	Ø 700 mm	1016 748
	Ø 800 mm	1018 319



Fig. 18: Switching unit, double

Booth accessories

1	Cleaning wand for the booth basement – complete	
	Type 8000	1018641
	Type 10000	1018642
	Type 12000	1018643
	Type 14000	1018644
	Type 16000	1018645
	Type 20000	1018646
	Type 24000	1018647
2	Cleaning wand for the booth superstructure (coarse cleaning) – complete	
	200G type	1016 554
	300G type	1016 555
	400G type	1016 556
3	Cleaning wand for the booth superstructure (fine cleaning) – complete	
	100F type	1016 730
	200F type	1016 731
	300F type	1016 732
	400F type	1016 733
4	Cleaning granules – 4 kg (not shown)	269 115
5	Polishing agent – 500 ml (not shown)	262 641
6	Tangit PVC Cleaner – 1000 ml (not shown)	800 196

Booth accessories

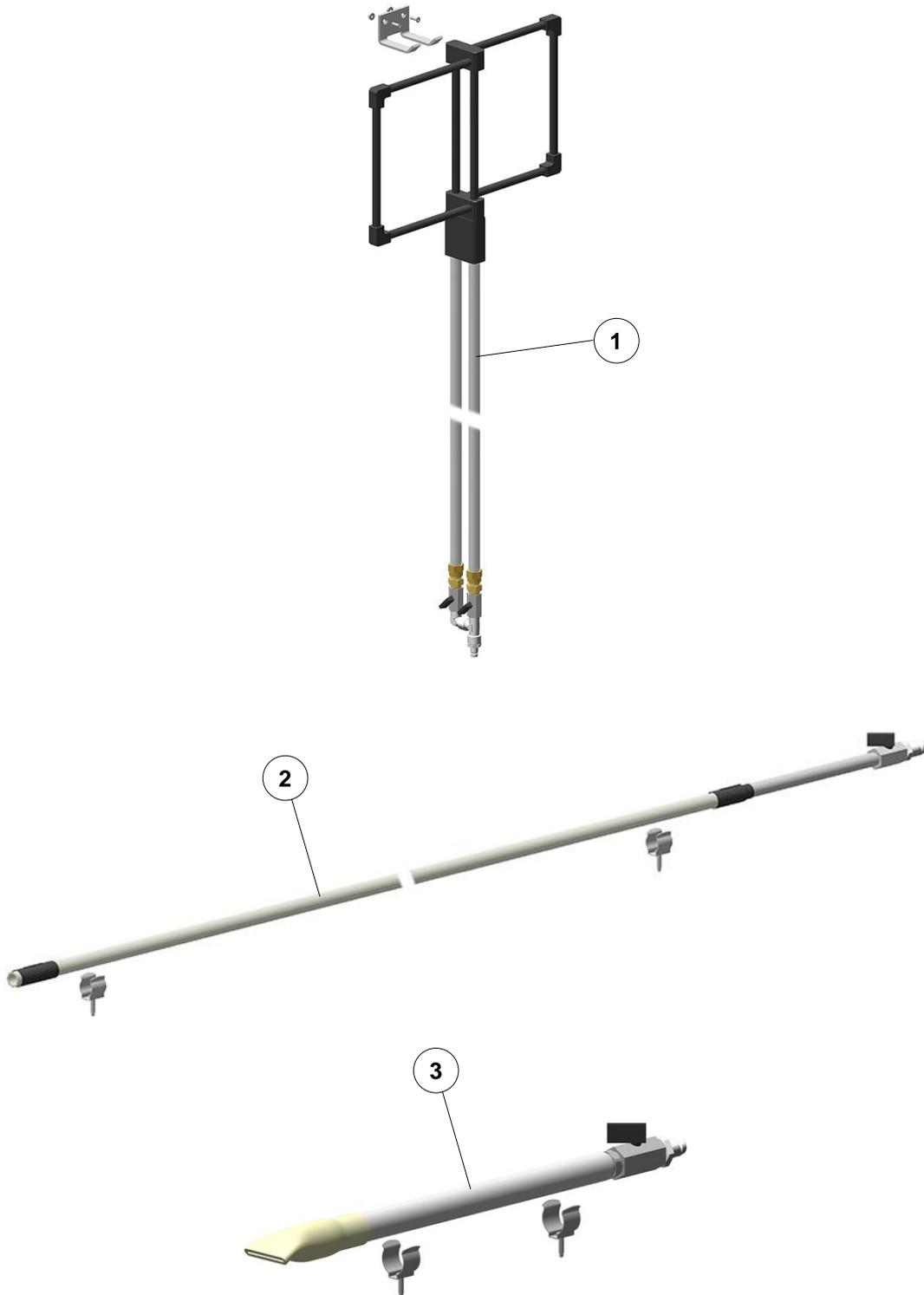


Fig. 19: Booth accessories

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