
Operating instructions and spare parts list

ClassicStandard ClassicOpen Powder coating booth



Translation of the original operating instructions

Documentation Classic Powder coating booths

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General safety regulations

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the Classic powder coating booth.

These safety regulations must be read and understood before the Classic powder coating booth is put into operation.

Safety symbols (pictograms)

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

**DANGER!**

danger due to live electricity or moving parts. Possible consequences: Death or serious injury

**WARNING!**

improper use of the equipment could damage the machine or cause it to malfunction. Possible consequences: minor injuries or damage to equipment



**INFORMATION!**

useful tips and other information

Conformity of use

1. The Classic powder coating booth is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.
2. Any other use is considered as non-conform. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions. If the Classic powder coating booth is to be used for other purposes or other substances outside of our guidelines then Gema Switzerland GmbH should be consulted.

3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The Classic powder coating booth should only be used, maintained and started up by trained personnel, who are informed about and are familiar with the possible hazards involved.
4. Start-up (i.e. the execution of a particular operation) is forbidden until it has been established that the Classic powder coating booth has been set up and wired according to the guidelines for machinery (2006/42 EG). EN 60204-1 (machine safety) must also be observed.
5. Unauthorized modifications to the Classic powder coating booth exempts the manufacturer from any liability from resulting damage.
6. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.
7. Furthermore, the country-specific safety regulations also must be observed.

Explosion protection	Protection type
 	IP54

Technical safety regulations for stationary electrostatic powder spraying equipment

General information

Stationary Gema Switzerland GmbH electrostatic spraying equipment is built to the "state of the art" and is operationally safe. This equipment can be dangerous if it is not used for its specified purpose. Consequently it should be noted that there exists a danger to life and limb of the user or third party, a danger of damage to the equipment and other machinery belonging to the user and a hazard to the efficient operation of the equipment.

1. The powder spraying equipment should only be started up and used once the operating instructions have been carefully studied. Incorrect operation of the control unit can lead to accidents, malfunctions or damage to the control itself or to the plant.
2. Before every start-up check the equipment for operational safety (regular servicing is essential)!
3. The local safety guidelines are to be followed for safe operation.
4. Please observe the local safety regulations!
5. Disconnect the plugs before the machines are opened for repair.
6. The plug connections between the powder spraying equipment and the mains should only be removed when the power supply is switched off.
7. The connecting cables between the control unit and the spray gun must be installed in such a way, that they cannot be

damaged during the operation. Please observe the local safety regulations!

8. Only original Gema spare parts should be used, because the explosion protection will also be preserved that way. Any warranty claim for damage caused by the use of foreign parts is void.
9. If Gema Switzerland GmbH powder spraying equipment is used in conjunction with machinery from other manufacturers, then their safety regulations must also be taken into account.
10. Before starting work, familiarize yourself with all installations and operating elements, as well as with their functions! Familiarization during operation is too late!
11. Take care when working with a powder/air mixture! A powder/air mixture in the right concentration is flammable! Smoking is forbidden in the entire plant area!
12. As a general rule for all powder spraying installations, persons with pacemakers should never enter high voltage areas or areas with electromagnetic fields. Persons with pacemakers should not enter areas with powder spraying installations!



WARNING!

We point out that the customer himself is responsible for the safe operation of the equipment. Gema Switzerland GmbH is in no way responsible for any resulting damage!

Safety conscious working

Each person responsible for the assembly, start-up, operation, service and repair of powder spraying equipment must have read and understood the operating instructions and the "Safety regulations" chapter. The operator must ensure that the user has had the appropriate training for powder spraying equipment and is aware of the possible sources of danger.

The booth should only be used by trained and authorized personnel. This applies to modifications to the electrical equipment, which should only be carried out by a specialist.

The operating instructions and the necessary closing down procedures must be followed before any work is carried out concerning the set-up, start-up, operation, modification, operating conditions, mode of operation, servicing, inspection or repairs.

The booth can be turned off by using the main switch or failing that, the emergency shut-down. Individual components can be turned off during operation by using the appropriate switches.

Individual safety regulations for the operating firm and/or operating personnel

1. Any operating method, which will negatively influence the technical safety of the powder spraying equipment, is to be avoided.
2. The operator should care about no non-authorized personnel works on the powder spraying equipment (e.g. this also includes using the equipment for non-conform work).

3. For dangerous materials, the employer has to provide an operating instructions manual for specifying the dangers arising for humans and environment by handling dangerous materials, as well as the necessary preventive measures and behavior rules. The operating instructions manual has to be written in an understandable form and in the language of the persons employed, and has to be announced in a suitable place in the working area.
4. The operator is under obligation to check the powder spraying equipment at least once every shift for signs of external damage, defects or changes (including the operating characteristics) which could influence safety and to report them immediately.
5. The operator is obliged to check that the powder spraying equipment is only operated when in satisfactory condition.
6. As far as it is necessary, the operating firm must ensure that the operating personnel wear protective clothing (e.g. facemasks).
7. The operating firm must guarantee cleanliness and an overview of the workplace with suitable instructions and checks in and around the powder spraying equipment.
8. No safety devices should be dismantled or put out of operation. If the dismantling of a safety device for set-up, repair or servicing is necessary, reassembly of the safety devices must take place immediately after the maintenance or repair work is finished. All maintenance activities must take place when the powder spraying equipment is switched off. The operator must train and commit the responsible personnel to this.
9. Activities, such as checking powder fluidization or checking the high voltage spray gun etc., must be carried out with the powder spraying equipment switched on.

Notes on special types of hazard

Power/tension

It is necessary to refer once more to the danger of life from high voltage current if the shutdown procedures are not observed. High voltage equipment must not be opened - the plug must first be taken out - otherwise there is danger of electric shock.

Powder

Powder/air mixtures can be ignited by sparks. There must be sufficient ventilation in the powder coating booth. Powder lying on the floor around the powder spraying equipment is a potentially dangerous source of slipping.

Static charges

Static charges can have the following consequences: Charges to people, electric shocks, sparking. Charging of objects must be avoided - see chapter "Earthing".

Grounding

All electricity conducting parts found in the workplace (1 meter around each booth opening, according to EN 12981), and particularly the objects to be coated, have to be grounded. The grounding resistance of each object must amount to maximally 1 MOhm. The resistance must be tested regularly. The condition of the work piece attachments, as well as the hangers, must guarantee that the work pieces remain grounded. If the grounding of the machinery includes the suspension arrangements, then these must constantly be kept clean in order to guarantee the necessary conductivity. The appropriate measuring devices must be kept ready in the workplace, in order to check the grounding.

Compressed air

When there are longer pauses or stand-still times between working, the powder spraying equipment should be drained of compressed air. There is a danger of injury when pneumatic hoses are damaged and from the uncontrolled release and improper use of compressed air.

Crushing and cutting

During operation, moving parts may automatically start to move in the operating area. It must be ensured that only instructed and trained personnel go near these parts. The operator should ensure that barriers comply with the local security regulations.

Access under exceptional circumstances

The operating firm must ensure that local conditions are met when repairs are made to the electronic parts or when the equipment is restarted so that there are additional measures such as barriers to prevent unauthorized access.

Prohibition of unauthorized conversions and modifications to machines

All unauthorized conversions and modifications to the electrostatic spraying equipment are forbidden for safety reasons.

The powder spraying equipment should not be used if damaged, the faulty part must be immediately replaced or repaired. Use only genuine Gema spare parts. Any warranty claim for damage caused by the use of foreign parts is void.

Repairs must only be carried out by specialists or by authorized Gema service centers. Unauthorized conversions and modifications can lead to injuries and damage to the equipment. The Gema Switzerland GmbH guarantee would no longer be valid.

Safety requirements for electrostatic powder coating

1. This equipment is dangerous if the instructions in this operating manual are not followed.
2. All electrically conductive parts located in the zone 22 and especially the work pieces must be grounded.
3. The floor of the coating area must conduct electricity (normal concrete is generally conductive).
4. The operating personnel must wear electrically conductive footwear (e.g. leather soles).
5. The operating personnel should hold the gun with bare hands. If gloves are worn, these must also conduct electricity.
6. The supplied grounding cable (green/yellow) must be connected to the grounding screw of the electrostatic manual powder coating equipment. The grounding cable must have a good metallic connection with the coating booth, the recovery unit and the conveyor chain, respectively with the suspension arrangement of the objects.
7. The electricity and powder supply to the hand guns must be set up so that they are fully protected against heat and chemical damage.
8. The powder coating equipment may be able to be switched on only if the booth is in operation. If the booth stops, the powder coating device must switch off too.
9. The grounding of all electricity conducting devices (e.g. hooks, conveyor chains) must be checked on a weekly basis. The grounding resistance must amount to maximally 1 M Ω .
10. The control device must be switched off if the hand gun is cleaned or the nozzle is changed.
11. When working with cleaning agents there may be a risk of hazardous fumes. The manufacturer's instructions must be observed when using such cleaning agents.
12. The manufacturer's instructions and the applicable environmental requirements must be observed when disposing of powder lacquer and cleaning agents.
13. If any part of the spray gun is damaged (broken parts, fractures) or missing, then it should not be used.
14. For your own safety, only use accessories and attachments listed in the operating instructions. The use of other parts can lead to risk of injury. Only original Gema spare parts should be used!
15. Repairs must only be carried out by specialists and under no circumstances should they be carried out in the operating area. The explosion protection must not be reduced.

16. Conditions leading to dangerous levels of dust concentration in the powder spraying booths or in the powder spraying areas must be avoided. There must be sufficient technical ventilation available, to prevent a dust concentration of more than 50% of the lower explosion limit (UEG = max. permissible powder/air concentration). If the UEG is not known, then a value of 10 g/m³ should be considered.

A summary of the directives and standards

European directives RL

2006/42/EC	Machinery
94/9/EC	Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres
2004/108/EC	Electromagnetic Compatibility (EMC)
87/404/EC	Simple Pressure Vessels

EN European standards

EN ISO 12100-1: 2004	Safety of Machinery – Basic Concepts, General Principles for Design –Part 1: Basic Terminology, Methodology
EN ISO 12100-2: 2004	Safety of Machinery – Basic Concepts, General Principles for Design – Part 2: Technical Principles
EN ISO 14121-1: 2007	Safety of Machinery – Risk Assessment, Part 1: Principles
EN 60204-1: 2006	Safety of Machinery – Electrical Equipment of Machines – Part 1: General Requirements
EN 13980:2002	Potentially Explosive Atmospheres – Application of Quality Systems
EN ISO 9001: 2008	Quality Management Systems – Requirements
EN 12981+A1: 2009	Coating Plants – Spray Booths for Application of Organic Powder Coating Material – Safety Requirements
EN 50177:2006	Automatic Electrostatic Spraying Equipment for Flammable Coating Powder
EN 1953:1998	Atomising and Spraying Equipment for Coating Materials
EN 61241-0:2006	Electrical Apparatus for Use in the Presence of Combustible Dust – General Requirements
EN 61241-2-2: 1995	Electrical Apparatus for Use in the Presence of Combustible Dust – Part 2: Test Methods
EN 61241-10: 2004	Electrical Apparatus for Use in the Presence of Combustible Dust – Part 10: Classification of Areas Where Combustible Dusts Are or May Be Present
EN 1127-1:2008	Explosive Atmospheres – Basic Concepts and Methodology

Product specific security measures

Installation

- The installation work, to be done by the customer, must be carried out according to local regulations
- Before starting up the plant a check must be made that no foreign objects are in the booth or in the ducting (input and exhaust air)
- It must be observed, that all components are grounded according to the local regulations, before start-up
- The booth grounding is to be checked at every start-up. The grounding connections are customer specific, and are made on the base of the booth. The proper grounding of the workpieces and other plant units must also be checked.

Inspection check

Before the booth is switched on, the following points are to be checked:

- Powder collecting container must be in place, the clamps locked in, the pneumatic conduction and electric cables connected
- Filter cartridges are inserted
- Filter pads on the exhaust housing are not contaminated (a contamination indicates damaged filter cartridges)

Entering the booth / booth cleaning

To protect the personnel by entering the booth for inspection and cleaning purposes, the booth must be switched on with the Ⓢ switch. The fan is started up with this, the ES control units and other plant units are interlocked, however, and cannot be switched on.

Repairs



ATTENTION:

Carrying out of repairs is only permitted when the booth is switched off, and must be done only by trained personnel!

About this manual

General information

This operating manual contains all the important information which you require for the working with the Classic powder coating booth. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

Information about the function mode of the individual system components - booth, gun control unit, manual gun or powder injector - should be referenced to their enclosed corresponding documents.

Function description

Field of application

The Classic powder coating booth is intended exclusively for the electrostatic coating with organic or metallic powders. Any other use is considered as non-conform. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions!

Reasonably foreseeable misuse

- Use of enamel powders,
- Operation without appropriate training
- Cleaning or blowing off of devices or parts not involved in the coating process

Operation

The ClassicStandard powder coating booths are particularly suitable for manual coating of objects in small series, individual parts or repairs with plastic or metallic powders.

The ClassicOpen is also used for the manual touch-up of series production parts.

Function

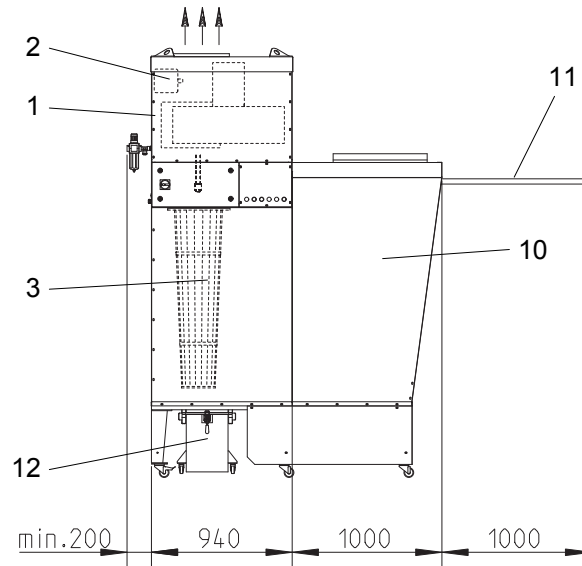
The booth function is characterized by the protection of the coating process from external influences, combined with keeping the area around the booth clean.

The booth function is based on a powerful exhaust air system, which aspirates air from the booth interior through filter cartridges. The resulting negative pressure produces an airflow from the outside of the booth to the inside, thus preventing powder from escaping into the environment.

In order to have a full understanding of the booth operation, the booth functions are individually described in the following sections.

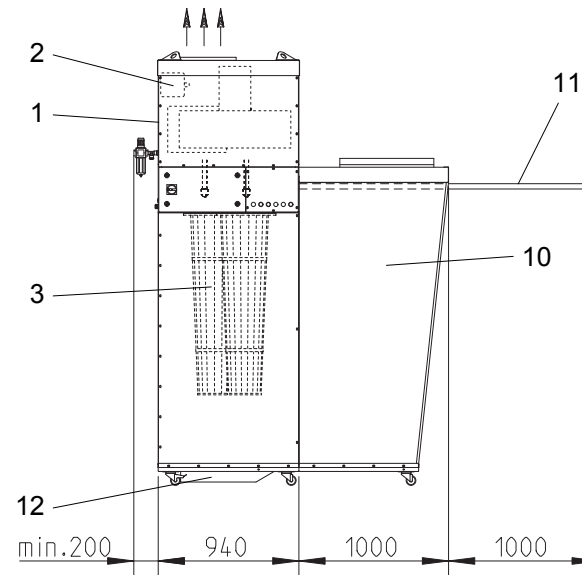
Classic booths with Jet cleaning

Classic Standard 2



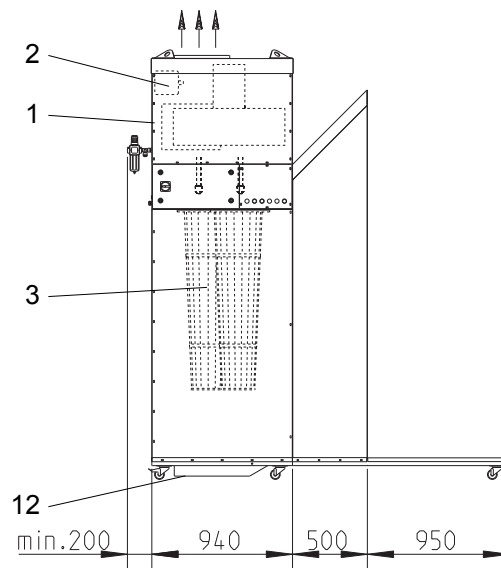
Powder coating booth - Classic Standard 2

Classic Standard 4



Powder coating booth - Classic Standard 4

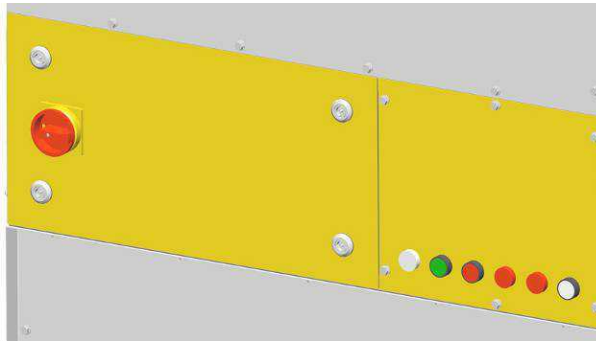
Classic Open



Powder coating booth - Classic Open







1	Exhaust air unit/fan housing	10	Work area
2	Pressure tank for filter cleaning	11	Rail for workpiece suspension
3	Filter cartridges	12	Powder trolley / -powder collector

Operating elements



Operating elements

Main switch (-871Q1)

-  Control voltage ON (-873H1)
-  Plant OFF (-874S1)
-  Plant ON (-874S2)
-  Motor fault (-874H1)
-  Fan overpressure (-875H1)
-  Filter cartridges cleaning ON/OFF (-875S1)

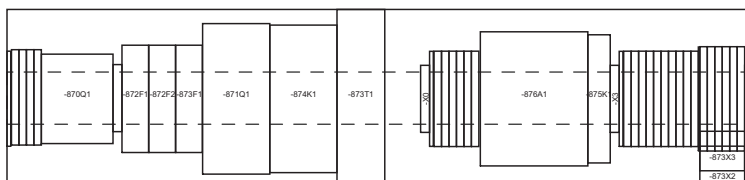
S = Switch/push button

H = Indicator lamp

Equipment



The control cabinet is equipped with the corresponding operating elements dependent on the booth configuration!



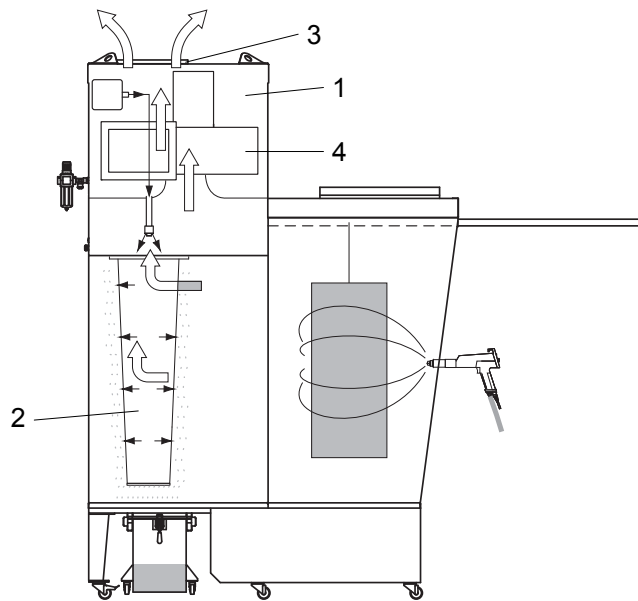
Control - Equipment

The designations are explained in the enclosed wiring diagram.

Exhaust air system (recirculation air)

The exhaust fan (4) of the exhaust system is located in the fan housing (1) above the filter cartridges (2). It sucks air from the booth interior through the filter cartridges, and returns the clean air through the filter pads (3) to the environment.

The filter pads in the fan housing are intended as visual inspection only. Should one of the filter cartridges become damaged or develop a leak, powder will be deposited on this filter stage. The efficiency of the exhaust system depends on how severely the filter cartridge is clogged. For this reason, the suction efficiency is determined and indicated by measuring the differential pressure between the clean air side and the booth environment (pressure monitoring). A pressure rise indicates an increasing clogging of the filter cartridges.



Classic Standard - exhaust air system (recirculation air)

Filter cleaning

Each filter cartridge (2) is equipped with a cleaning device and can be cleaned while the booth is in operation. The cleaning procedure is activated manually by the relevant switch on the control cabinet.




The filter cartridges should not be cleaned more than 1-2 times per shift!

The cartridges are cleaned by compressed air impulses, injected by pressure pipes inside the cartridges. The powder drops onto the booth floor, from where it arrives into the powder trolley or the powder collector.

The filter cleaning air is supplied from the pressure tank in the exhaust air unit, and must amount 5 bar (recommended), and not exceed 6 bar. The cleaning process and consequently the blow off duration per filter cartridge and the pause time, before the next cartridge is blown off, are controlled by an electronic control unit. The blow off time for the cleaning impulse must amount to 10-30 ms and is preset by factory:

- Blow off time = 20 msecs (factory setting)
- Pause time = 10 s (factory setting)



The settings for the blow off time and the pressure should only be changed if the lamp "  Fan overpressure" illuminates repeatedly! If this measure does not help on a permanent basis, the filter cartridges are to be replaced!

Powder trolley

The powder trolley is installed at the rear of the booth, under the booth floor. The powder trolley can be rolled out laterally and is pressed against the booth in its working position.

Power supply for ES equipment

Classic booths are factory-equipped with connectors for ES equipment; these can be deenergized per ATEX regulations if exhaust air levels drop too low.

Fire protection

Classic booths are factory-equipped with connectors for a fire alarm system, which is not included in the Gema scope of supply. The customer is responsible for obtaining, installing, and connecting these components.



WARNING!

Be sure to follow local regulations when positioning elements!

Gema has provided the proposed locations shown here for reference purposes only.

Alarm location on ClassicStandard 2 and 4



Alarm location on ClassicOpen



Technical data

Classic powder coating booths

General data

Classic	Standard 2	Standard 4	Open
Cleaning system	Jet		
Number of filter elements	2	4	4
Filter surface (m ²)	30	60	60
Powder trolley	yes, 80 liters	no	no

Filter elements

Classic	Standard 2	Standard 4	Open
Filter material	COL270-W (one ply)		
Filter surface area load	200 m ³ /m ² ·h		
Approach velocity	0,056 m/s		
Dust class	"M"		
Test method	DIN EN 60335-2-69		

Electrical data

Classic	Standard 2	Standard 4	Open
Input voltage, frequency	3x380 - 420 V, 50 Hz		
Input power value (kW)	2.7	4.5	4.5
Fan power, effective (kW)	2.2	4.0	4.0

Pneumatic data

Classic	Standard 2	Standard 4	Open
Input pressure (bar)	min. 6 / max. 10		
Recommended input pressure	7 bar		
Water vapor content of compressed air	max. 1.3 g/m ³		
Oil content of compressed air	max. 0.1 mg/kg		
Compressed air consumption at filter cleaning max.	15 m ³ /h at 6 bar input pressure		
Exhaust air volume, rated (Nm ³ /h)	4000	6600	6600

Dimensions

Classic	Standard 2	Standard 4	Open
Floor space required	3 m ²	3 m ²	6 m ²
Width (mm)	1500	1500	2500
Depth (mm)	2000	2000	2400
Height (mm)	2900		
Work area	Booth	Booth	open
Width (mm)	1400	1400	2400
Depth (mm)	800	800	1450
Height (mm)	1450	1800	2350
Weight approx. (kg)	580	625	635

Sound pressure level

Classic	Standard 2	Standard 4	Open
Sound pressure level	< 78 dB(A)		

The sound pressure level was measured while the unit was in operation; measurements were taken at the most frequent operator positions as well as at a height of 1.7 m from the ground.

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

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

Rating plate

ITW Gema GmbH
 Mövenstrasse 17 CH-9015 St.Gallen
 Schweiz / Switzerland
 Industrial powder system
Type: ClassicStandard 2 BM01-02

Serial no.: 18701
 Year of manufacture: 2008

Rated input voltage (V~): 230V
 Frequency (Hz): 50
 Input power (VA): 2300
 IP code (electrical): IP54
 Temperature range (°C): 0/+40
 Input pressure range (bar): 0/10
 Exhaust air volume (Nm³/h): 4000
 Permissible organic powder concentration (g/m³):
 certified powder: 25
 uncertified powder: 10

CE Ex II 3D
 Made in Switzerland

ITW Gema GmbH
 Mövenstrasse 17 CH-9015 St.Gallen
 Schweiz / Switzerland
 Industrial powder system
Type: ClassicStandard 4 BM01-01

Serial no.: 18702
 Year of manufacture: 2008

Rated input voltage (V~): 410V
 Frequency (Hz): 50
 Input power (VA): 4100
 IP code (electrical): IP54
 Temperature range (°C): 0/+40
 Input pressure range (bar): 0/10
 Exhaust air volume (Nm³/h): 6600
 Permissible organic powder concentration (g/m³):
 certified powder: 25
 uncertified powder: 10

CE Ex II 3D
 Made in Switzerland

ITW Gema GmbH
 Mövenstrasse 17 CH-9015 St.Gallen
 Schweiz / Switzerland
 Industrial powder system
Type: ClassicOpen BM01-11

Serial no.: 18703
 Year of manufacture: 2008

Rated input voltage (V~): 410V
 Frequency (Hz): 50
 Input power (VA): 4100
 IP code (electrical): IP54
 Temperature range (°C): 0/+40
 Input pressure range (bar): 0/10
 Exhaust air volume (Nm³/h): 6600
 Permissible organic powder concentration (g/m³):
 certified powder: 25
 uncertified powder: 10

CE Ex II 3D
 Made in Switzerland



Fields with a gray background contain contract-specific data!

Set-up, assembly and initial start-up



Make sure you consult the Set-up and Assembly Instructions accompanying this manual!

Start-up

General information



Before starting up, it may be necessary to run a function check. A start-up should be carried out before the start of every shift, and after the booth has been standing idle for long period!



Because the coating booth is a mobile unit, you must always engage the caster brakes each time after moving the booth!

Preparation for start-up

Procedure

- Observe the safety regulations
- Carry out the following checks and, if necessary, carry out the points listed below (the procedures are described in more detail in the further chapters):
 1. Position the powder trolley (see corresponding chapter)
 2. Check that the filter cartridges are firmly seated
 3. Replace the filter cartridges (at color changes or if defective, see chapter "Replacing the filter cartridges")

Position the powder trolley



ATTENTION:

Careless handling can result in minor crush injuries to hands and fingers!

1. Push the powder trolley laterally under the booth floor all the way to the stop position and press it on with the clamping lever
-



To remove the trolley, it must first be lowered. Take care that the trolley does not drop down when it is being lowered!

Start-up


Procedure

1. Release the compressed air circuit (input pressure must amount to at least 6 bar)
-



ATTENTION:

The pressure may not be set higher than 6 bar on the booth pressure regulator, otherwise the safety valve at the pressure tank will be activated!

2. Switch on the booth (switch on the main switch, and press the  button), see also chapter "Switching on the booth"

Operation



ATTENTION:

Persons taller than 1.77 m (5 ft. 8 in.) run the risk of bumping into the crane rail, potentially resulting in head injury.

Functional check

Check the grounding of the booth and the other connected equipment and if necessary, ground. Before starting work, carry out a function check.

Start-up

A start-up should be carried out after the booth has stood still for a long period, or when starting work.

Safety recommendations

The safety recommendations are to be strictly observed!

Switching on the booth



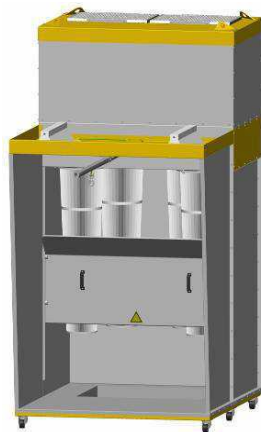
The shield (if available) must be in working position when the booth is in operation!



ATTENTION:

Careless handling could cause the shield to be lifted out of the holder and fall to the booth floor, potentially crushing feet or toes.

► Wear safety shoes with steel toecaps.



Shield position during operation

Procedure

1. Switch on the main switch, the control unit is activated, the ⚡ lamp illuminates, the booth lighting (if available) switches on
2. Press the ⓪ button, the fan starts up and the interlocked plant units are released (electrostatic control units etc.)
3. Switch on the electrostatic control unit, the gun begins to spray when the trigger is pressed

Switching off the booth

Procedure

1. Switch off the electrostatic control unit
2. Press the ○ button
3. Switch off the main switch, the ⚡ lamp goes out

Switching on/off the lighting (ClassicStandard only)

ClassicStandard manual powder coating booths are fitted with two strip lightings in the roof of the booth as standard equipment. The lightning is switched on and off with the main switch.

Filter cleaning



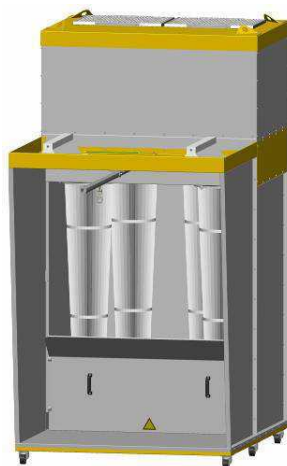
ATTENTION:

Peak noise levels occurring during the cleaning process may cause hearing damage!


- ▶ Do not approach the booth unless absolutely necessary!
- ▶ Wear ear muffs per EN 352-1.



Before cleaning the cartridges, the shield must be moved to the lowest position!



Filter cleaning

The filter cartridges are cleaned cyclically during booth operation. The cleaning cycle must be released manually with the  switch. The cycle determining times are set at the factory.



The filter cartridges should not be cleaned more than 1-2 times per shift!

The cleaning process should last approx. 4 minutes with factory default settings (ClassicStandard 2 = 2 minutes).

If the differential pressure is too great, the "Fan overpressure" lamp lights up, whereby the ES equipment is switched off. The cycle time adjustment is described below.

Color change

Procedure

1. Clean the booth (see therefore chapter "Booth cleaning")
2. Clean the powder trolley thoroughly (see therefore in chapter "Cleaning the powder trolley")
3. Clean the injector separately, blow off the powder hose and clean the gun according to the corresponding operating manual
4. Replace the filter cartridges (see therefore in chapter "Replacing the filter cartridges")

Parameterization



The various time sequences can be easily set and adapted to all plant-specific requirements by the aid of a simple menu control unit.

Read carefully this section, before access to a menu option!

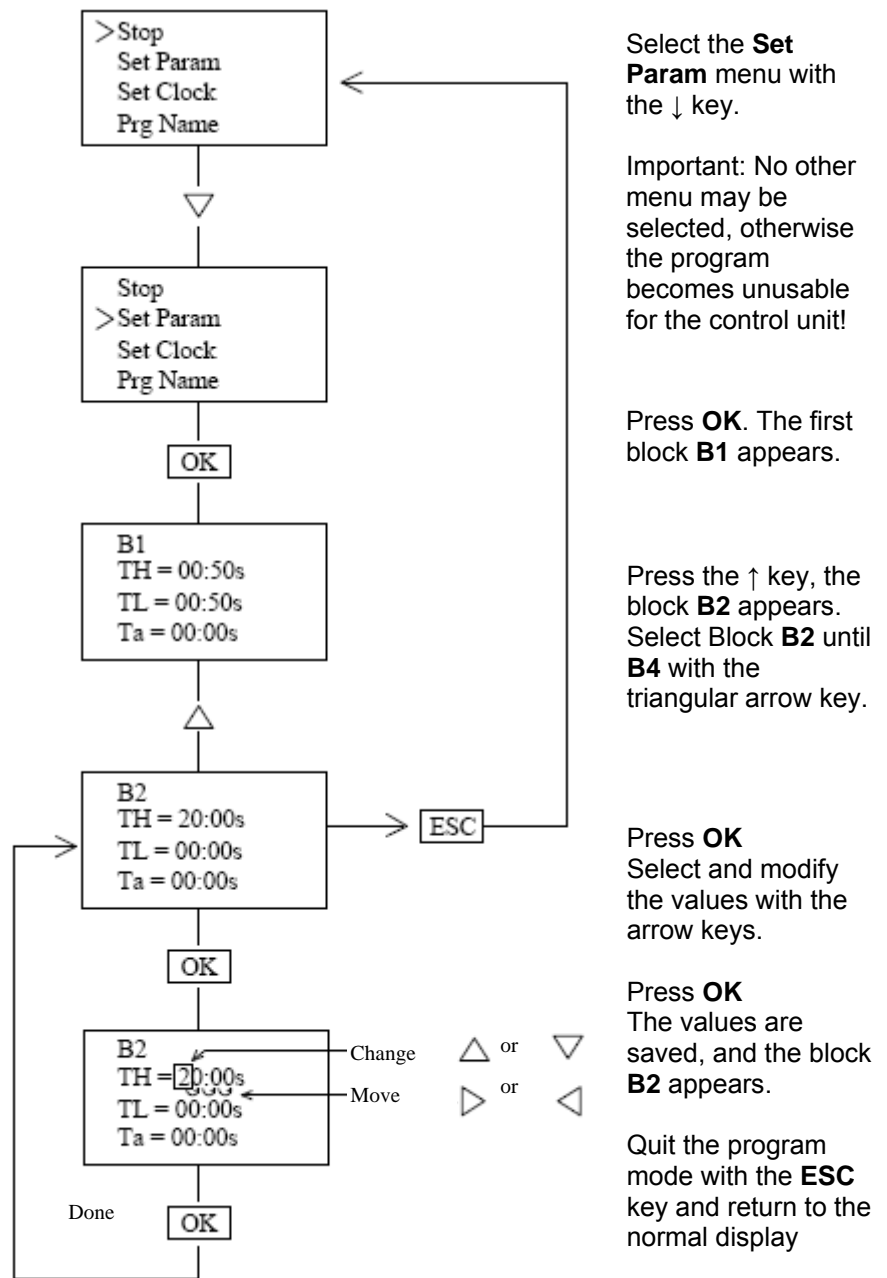
The standard display looks as follows:

> Stop	← not to be used
Set Param	← Parameter setting
Set Clock	← not to be used
Prg Name	← not to be used

Parameter input display:

B2	← Block number
TH = 20:00s	← The value set at Parameter Time ON
TL = 00:00s	← The value set at Parameter Time OFF
Ta = 00:00s	← Current time

Entering and selecting a menu option



WARNING!

The control unit continues to process the program in the "Parameterization" operating mode!

Parameterization

Block no. (Parameter)	Designation	Default value	Remarks
B001 ImpParam	Filter cleaning times	Cleaning impuls TH = 0.2 secs. Pause time: TL = 10.0 secs.	This value should be adjusted only by experienced plant specialists!

**ATTENTION:****Adjustment of the remaining parameters is not permitted!**

Maintenance

General information



DANGER

An electric shock sustained during assembly, servicing, or maintenance work performed near live components may result in serious injury or death!

- ▶ All work must be performed by trained personnel only, and only on deenergized components!
-



WARNING!

Contact with overheated electrical components may result in burn injuries!

- ▶ All work must be performed by trained personnel only, and only on deenergized components!
-

Maintenance schedule

Time interval	Maintenance works
Daily or after each shift	<ul style="list-style-type: none"> - Blow off the hose with compressed air - Clean the outside of the gun and check for wearing parts - Coarse cleaning of the booth (see therefore chapter "Coarse booth cleaning") - Check the powder trolley and remove any contamination - Clean the filter cartridges (see therefore chapter "Filter cleaning")
Weekly	<ul style="list-style-type: none"> - Clean the filter cartridges and check for visible damages, if necessary, replace (see chapter "Replacing the filter cartridges") - Check the filter pads on the exhaust air exits of the fan housing, a large powder deposit indicates a defective filter cartridge, replace the defective filter cartridge or the complete filter set (see chapter "Replacing the filter cartridges") - Clean completely the booth (no wet cleaning!) - Empty the powder trolley / powder collector - Check the oil/water separator and empty, if necessary (if oil is present, the customer should check the air compressor)
Biannually	<ul style="list-style-type: none"> - Inspect the exhaust fan (motor and blade wheel) for dust and powder deposits. A service port is provided on 4-kW motors.



The parts which are to be replaced during maintenance work, such as filters, filter pads etc. are available as spare parts. Please refer to the spare parts list too!

Coarse booth cleaning



ATTENTION:

Never blow off the filter cartridges with compressed air gun!

Procedure

1. Switch on the booth
2. Knock on the outside of the booth walls, so that any powder adhering to the inside falls to the booth floor
3. Move the powder manually into the powder trolley / powder collector



Booth cleaning



ATTENTION:

Never blow off the filter cartridges with compressed air gun!

Procedure

1. Switch on the booth
2. Press the  switch (filter cleaning) and wait until all filter cartridges have been blown off, then press the  switch again (see therefore chapter "Filter cleaning")
3. Clean the booth walls with a squeegee
4. Move the powder manually into the powder trolley / powder collector

Cleaning the powder trolley

Procedure

1. Start up the booth
2. Lower the powder trolley and remove it



ATTENTION:

Do not let the powder trolley fall when lowering!

3. Put the powder into a plastic bag with a plastic scoop. Wipe the residual powder with a soft brush and put it also into the plastic bag
4. Clean the container with an industrial vacuum cleaner
5. Clean the inside and outside of the container with a clean, dry cloth
6. Clean thoroughly the bottom with an industrial vacuum cleaner

Replacing spare parts

General information

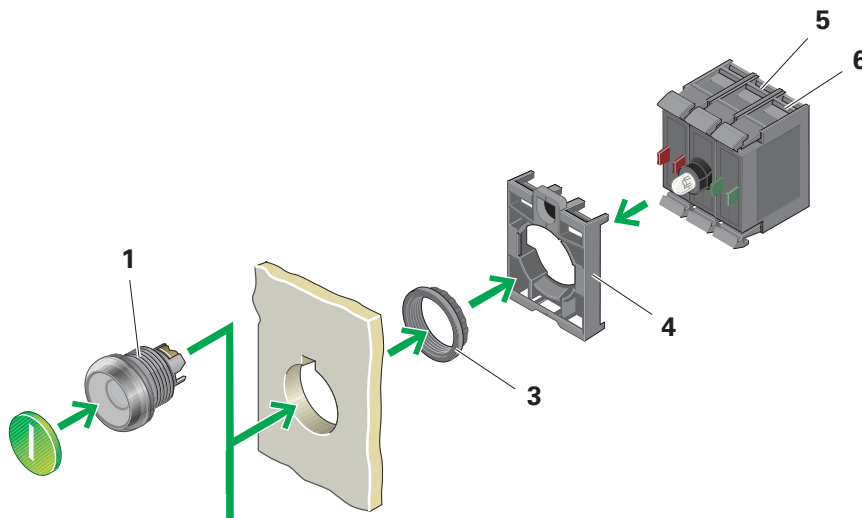


The replacement of spare parts may only be carried out by trained personnel!
The plant must be switched off before replacing spare parts!

Spare parts can be ordered according to the spare parts list.

Replacing the push button lamp/switch elements

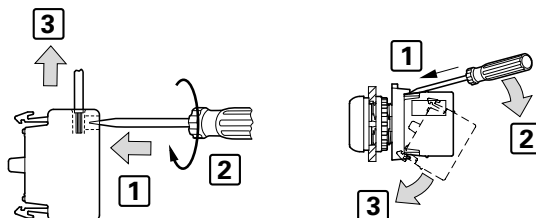
(Control panel)



Replacing the push button lamp/switch elements

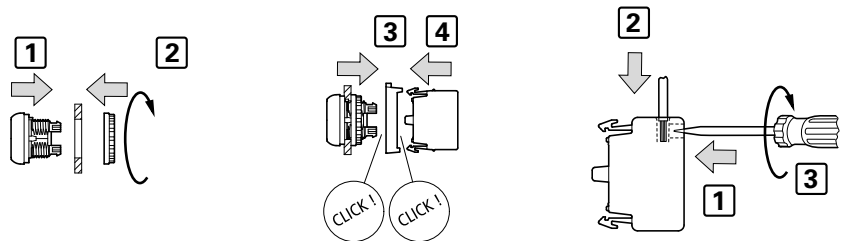
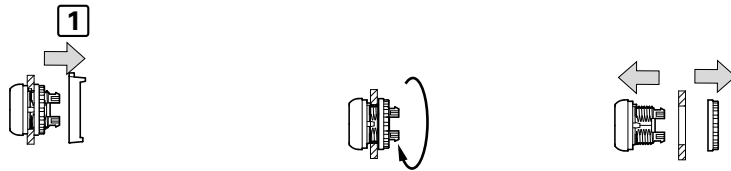
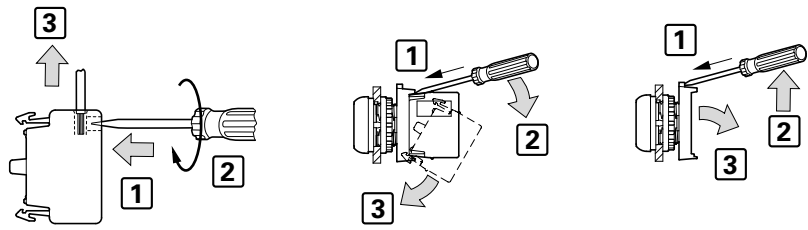
- | | | | |
|---|----------------|---|------------------|
| 1 | Push button | 5 | LED elements |
| 3 | Locking ring | 6 | Contact elements |
| 4 | Fixing adaptor | | |

Procedure for replacing the push button lamp/switch elements



Replacing the push button switch



Procedure for replacing the push button switch



Procedure for replacing the push button switch

Replacing the filter cartridges

A filter cleaning operation must take place before every filter cartridge replacement:

1. Start up the booth
2. Press the  switch (filter cleaning) and wait until all filter cartridges have been blown off, then press the  switch again to switch off the cleaning (see therefore chapter "Filter cleaning")
3. Switch off the booth

Procedure for replacing the filter cartridges

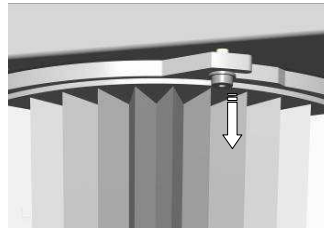


Replace the entire cartridge set if damage to one of the filter cartridges has been identified or if prolonged use of the cartridges has resulted in excessive filter resistance, causing repeated triggering of the alarm.

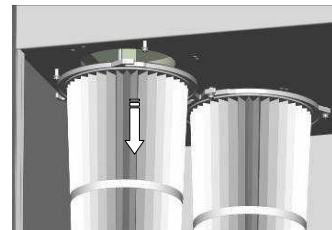
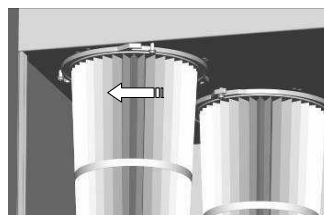
The access to the filter cartridges takes place from the inside of the booth.

Dismantling:

1. Remove the shield (Classic Standard 4 and Open only)
2. Loosen the fixing screws a couple of turns with the correct size spanner. Do not unscrew completely!



3. Hold the filter cartridge in both hands, turn slightly and hang it out from the holding screws



4. Place the filter cartridge away
5. Clean all parts, especially the seating surfaces

Assembly:

1. Unpack the new filter cartridge
2. Hang the filter cartridge onto the fixing screws and turn to the stop
3. Tighten the fixing screws evenly, so that the sealing ring touches all round evenly and the filter cartridge hangs vertically

Replacing the filter pads on the fan housing



Procedure

1. Open the retaining grid on the exhaust air housing
2. Check the clean air chamber (for powder deposits), and clean the chamber, if necessary
3. Insert a new filter pad and close the retaining grid

Replacing the solenoid valve on the pressure tank

The solenoid valves are installed on the pressure tank in the exhaust air unit and numbered according to the allocation diagram.

Procedure

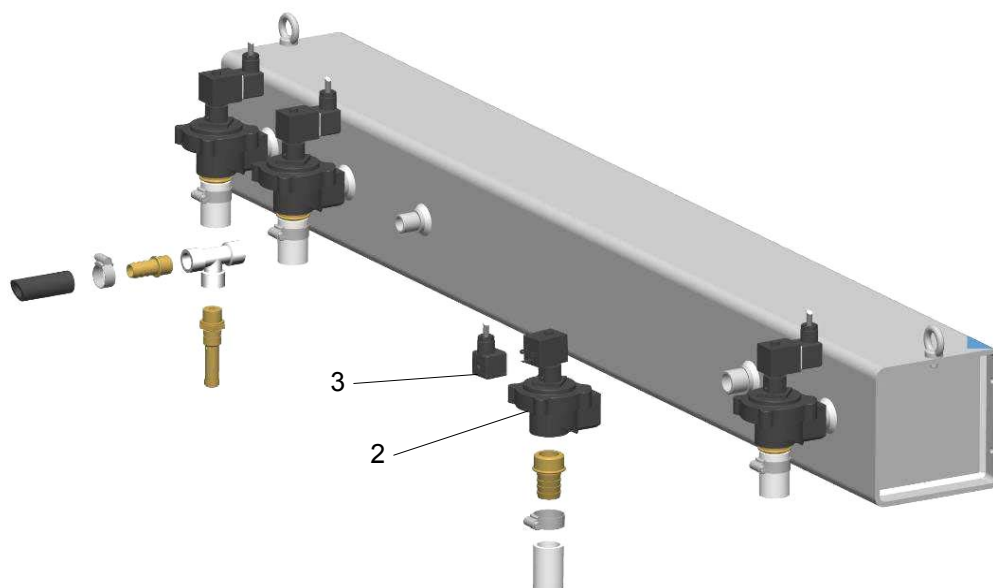
1. Vent the compressed air tank - close the pressure reducing valve on the rear of the booth, and make sure that the pressure gauge shows **0**
2. Press the  switch (filter cartridges cleaning) and check the filter cartridges cleaning (take note of the noise, until air escapes no longer from the pressure tank)
3. Press the  switch again, in order to switch off the cleaning



WARNING:

Danger of injury!

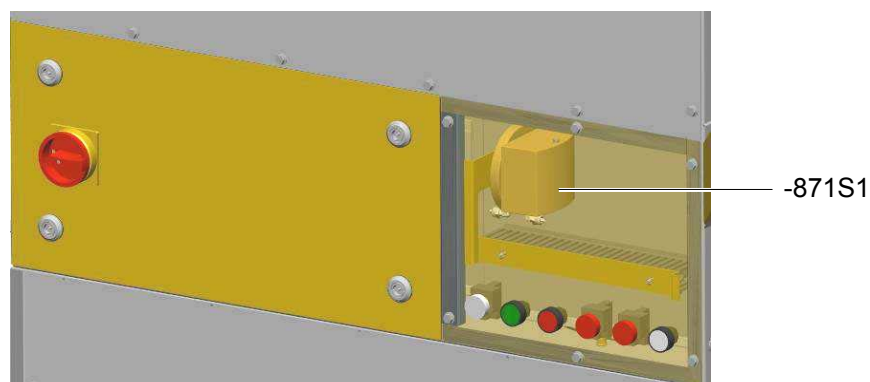
4. Open the retaining grid on the exhaust air housing
5. Remove the air hose from the defective solenoid valve - if several solenoid valves are to be replaced at the same time, the air hoses are to be identified according to the valve
6. Unscrew the plug screw and remove the plug (3) with the electric cable
7. Unscrew the solenoid valve (2)
8. Install the new solenoid valve and connect it (seal the connection point with PTFE tape or with another suitable sealant)
9. Set the cleaning pressure to 2.5-3 bar on the pressure reducing valve and check the pressure tank for air leaks
10. If no leaks are detected, set the pressure on the pressure reducing valve to 5 bar (recommended)
11. Install the retaining grid on the exhaust air housing again



Replacing the solenoid valve on the pressure tank

Replacing the pressure monitoring manostat

(Filter cartridges differential pressure)



Pressure monitoring manostat

Procedure






1. Loosen the screws and open the control panel
2. Mark the manostat connections (electrical and pneumatic) and loosen them
3. Dismantle the manostat
4. Blow off the air hoses
5. Install the new manostat and connect it

Functional check

A function check is to be carried out:

- after a replacement of spare parts on the electrical/pneumatic part of the booth
- after manipulations on the control unit, respectively on the electrical part of the plant

Procedure


1. Turn on the main switch - the lamp  must illuminate, it should not be possible to switch on the electrostatic control unit
2. Press the  button - the exhaust air fan must start, after the start phase the electrostatic control unit must be ready for operation
3. Press the  switch (filter cartridges cleaning) and check the filter cartridges cleaning (take note of the noise)
4. Press the  switch again, in order to switch off the cleaning
5. Press the  button - the booth must switch off

Troubleshooting

General information



The fault elimination on the electrical part must be carried out only by trained personnel!

Error/fault	Cause	Troubleshooting
The plant is switched off, the lamp  illuminates	Fan motor malfunction, the corresponding motor protection switch is released	Turn off the main switch, let the motor cool down, reset the corresponding motor protection switch (see wiring diagram) and switch on the booth If the malfunction occurs repeatedly, please contact an Gema service center
Powder accumulation on the filter pads in the fan housing	Filter cartridge defective	Replace the filter cartridge, respectively the complete filter set (see therefore chapter "Replacing the filter cartridges")
Filter cartridge is not cleaned.	Solenoid valve (coil) is defective or cable is broken	Replace the defective solenoid valve (coil) Check the cable for cable break
	Control relay defective	Replace the control module (see enclosed wiring diagram)

Spare parts list

Ordering spare parts

When ordering spare parts for powder coating equipment, please provide the following information:

- Model and serial number of your powder coating equipment
- Order number, quantity and description of each spare part

Example:

- **Model** Classic powder coating booth
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 yard/meter ware is always marked with an *.

The wearing parts are always marked with a #.

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!

Only original Gema spare parts should be used, because the explosion protection will also be preserved that way. The use of spare parts from other manufacturers will invalidate the Gema guarantee conditions!

ClassicStandard / ClassicOpen - spare parts list



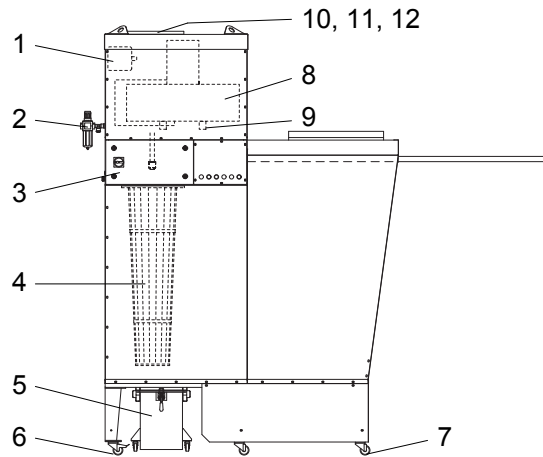
The spare parts mentioned and illustrated in this spare parts list are identical for all booth types!
Only the number of individual elements may vary!

1	Pressure tank - complete, see corresponding spare parts list	
2	Pneumatic parts - see corresponding spare parts list	
3	Electrical parts - see enclosed wiring diagram	
4	Filter cartridge - Ø 325x1200 mm	1006 090#
5	Powder trolley - complete, see corresponding spare parts list	
6	Swivel wheel, wheel Ø 65 mm, with stop	1005 816
7	Swivel wheel - wheel Ø 65 mm	1005 815
8	Fan - 2.2 kW	1005 876
8.1	Fan - 4.0 kW	1005 948
	Fan cable (for pos. 8 and 8.1) - 4x1.5 mm ²	100 560*
9	Rubber damper - Ø 40x40 mm-M8 (for pos. 8)	258 636#
10	Change-over frame	320 633
11	Filter pad	320 650#
12	Adhesive seal strip - 25x4 mm	100 900*

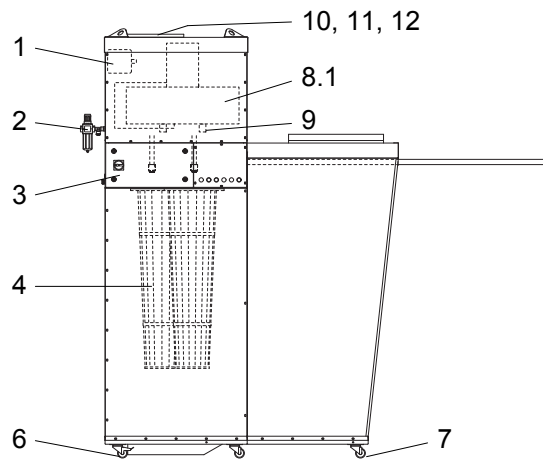
Wearing part

* Please indicate length

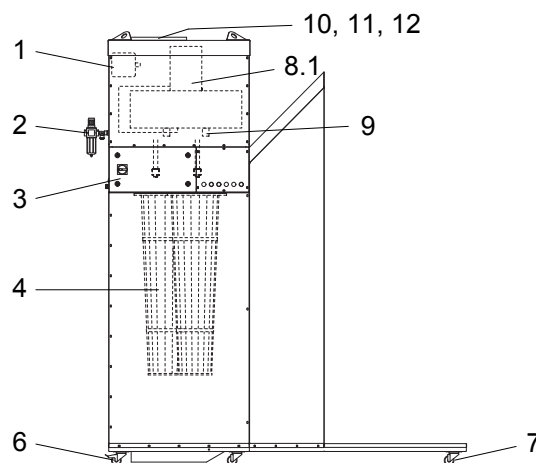
Classic Standard / Classic Open - spare parts list



Classic Standard 2



Classic Standard 4



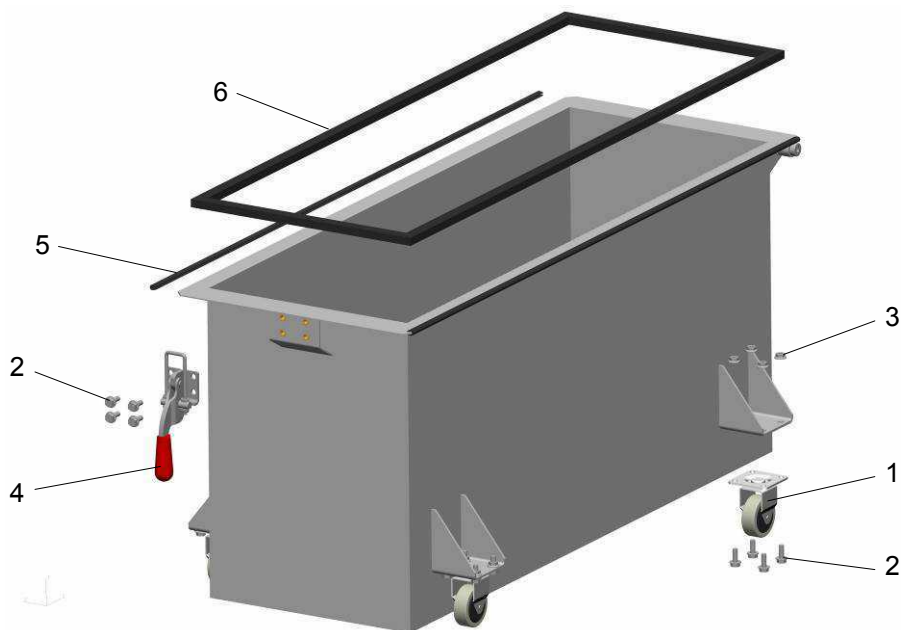
Classic Open

Powder trolley - spare parts list

	Powder trolley - complete	1005 803
1	Roller - 50 mm	258 571
2	Hexagon shakeproof screw - M6x16 mm	244 503
3	Hexagon shakeproof nut - M6	244 430
4	Toggle clamp	247 073
5	Edge protection profile	100 552*
6	Foam rubber profile - 15x10 mm	100 056*#

* Please indicate length

Wearing part



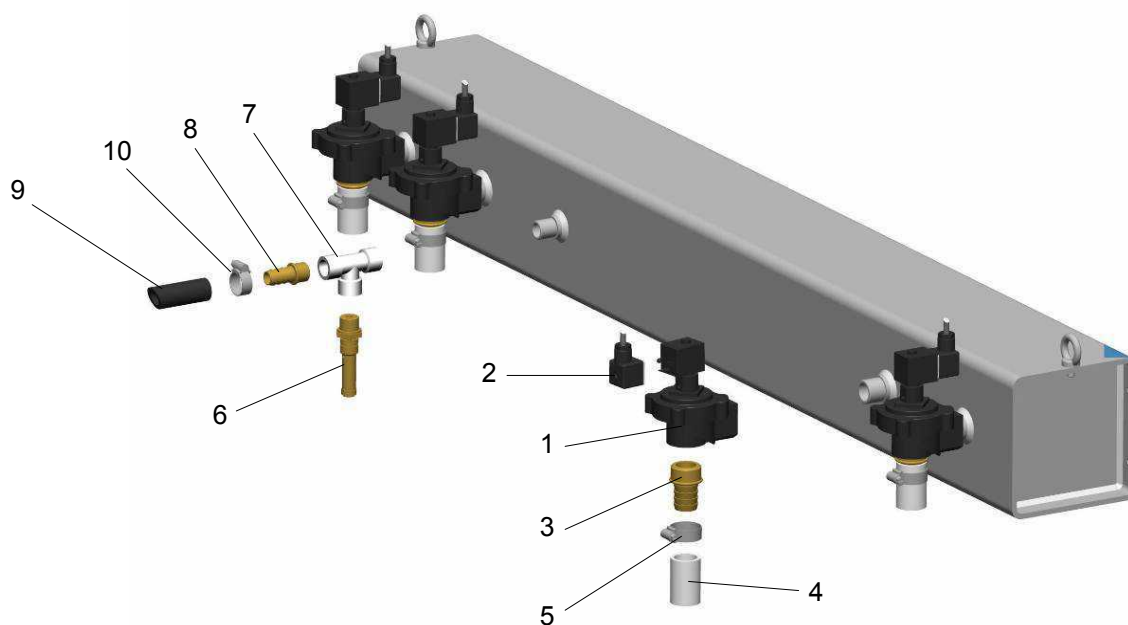
Powder trolley - spare parts

Pressure tank - spare parts list

1	Membrane valve - 24 VDC, complete (without pos. 2 and 2.1)	1005 858#
2	Valve cable - complete	1006 075
2.1	Cable (for pos. 2)	103 578*
3	Hose connector - Ø 25 mm, 1" a	1005 856
4	Hose - Ø 25/33 mm	104 604*
5	Hose clamp - Ø 25-35 mm	226 335
6	Safety valve	244 910
7	T-piece - 1/2"-1/2"-1/2"	223 131
8	Hose connector - Ø 16 mm, 1/2" a	259 268
9	Hose - Ø 16/25 mm	105 155*
10	Hose clamp - Ø 17-25 mm	223 085

Wearing part

* Please indicate length

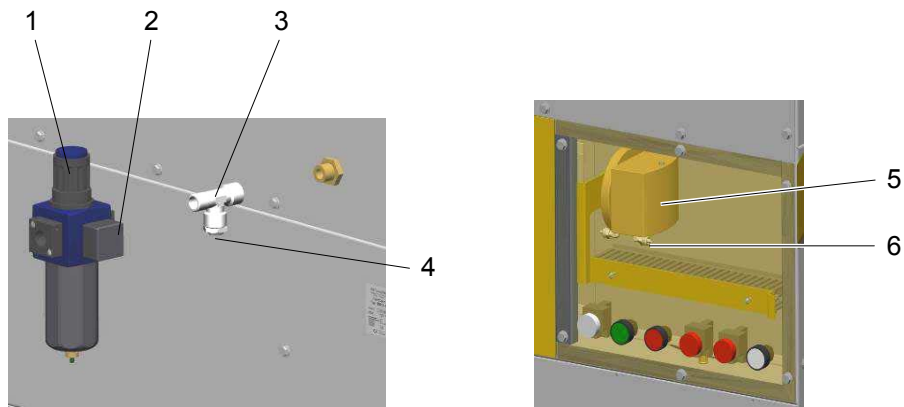


Pressure tank - spare parts

Pneumatic parts - spare parts list

1	Regulator/filter unit	1005 841
2	Pressure gauge - 0-10 bar	203 289
3	T-piece - 1/2"-1/2"-1/2"	223 301
4	Plug cap - 1/4"a	263 834
5	Differential pressure switch - 0.5-2.5 kPa	243 736
5.1	Plastic tube - Ø 4/6 mm (for pos. 5)	100 706*
6	Elbow joint complete - Ø 6, 1/8"a	242 195

* Please indicate length



Pneumatic parts - spare parts

