
Operating instructions and Spare parts list

Manual equipment OptiFlex Pro S



Translation of the original operating instructions

Documentation OptiFlex Pro S

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About these instructions

General information

This operating manual contains all the important information that is needed to operate the OptiFlex Pro S. 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.



This operating manual describes all options and functions of this manual coating equipment.

- Please note that your manual coating equipment may not be equipped with all described functions.
- Options are marked by double asterisks**.

Keeping the Manual

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

Safety symbols (pictograms)

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

DANGER

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

WARNING

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

⚠ CAUTION

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

ATTENTION

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

ENVIRONMENT

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

**MANDATORY NOTE**

Information that must be observed.

**NOTICE**

Useful information, tips, etc.

Structure of Safety Notes

Every note consists of 4 elements:

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

⚠ SIGNAL WORD

Nature and source of the hazard!

Possible consequences of the danger

- ▶ **Prevention of the danger**

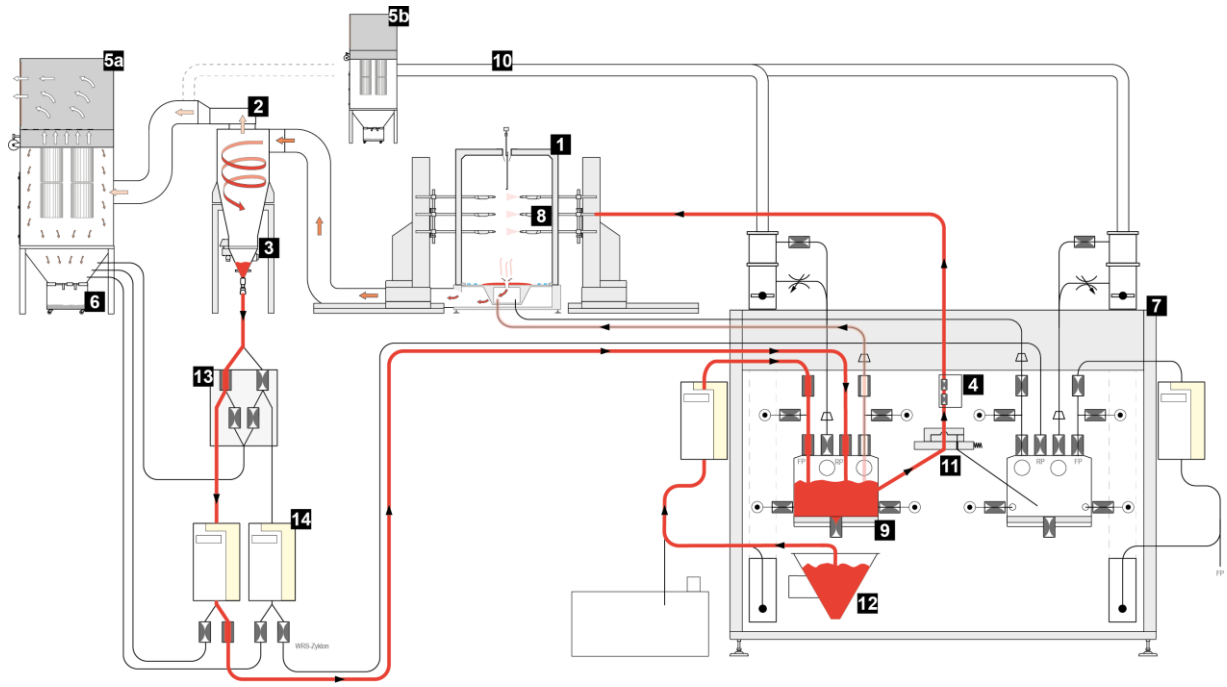
Presentation of the contents

Figure references in the text

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

Example:

"During the typical OptiCenter (7) operation, the powder bag is put in the powder bag cone. The powder is fluidized in the bag with the fluidizing/suction lance and then fed to the OptiSpeeder (9). The fluidized powder is sucked in by the conveyors and fed through the powder hoses to the guns/spray nozzles (8). The powder, which does not adhere to the workpieces, will be absorbed by the exhaust air of the booth (1) and separated from the air in the cyclone separator (2)."



Safety

General

This chapter sets out the fundamental safety regulations, that must be followed by the user and third parties using this product.

These safety regulations must be read and understood before the product is put into operation.

The standards and guidelines applied during the development, manufacture and configuration are described in the EC declaration of conformity and in the manufacturer's declaration.

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.
-

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 not considered as intended use. 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 "EN ISO 12100 Machine safety" must also be observed. Machine safety
- 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.

⚠ WARNING

These general safety regulations must be read and understood in all cases prior to start-up!



General information

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 not considered as intended use. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions. Gema Switzerland GmbH must be consulted prior to any use of this product for any purposes or substances other than those indicated in our guidelines.

Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of the intended use.

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.

Additional safety and operation notices can be found on the homepage www.gemapowdercoating.com.



General dangers

Start-up is forbidden until it has been established that the product has been set up and wired according to the EU guidelines for machinery.

Unauthorized modifications to the product exempt the manufacturer from any liability from resulting damages or accidents.

The operator must ensure that all users do have the appropriate training for powder spraying equipment and are aware of the possible sources of danger.

Any operating method, which will negatively influence the technical safety of the powder spraying equipment, is to be avoided.

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!

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 and invalidate the Gema Switzerland GmbH guarantee.



Electrical danger

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!

The plug connections between the powder spraying equipment and the mains should only be removed when the power supply is switched off.

All maintenance activities must take place when the powder spraying equipment is switched off.

The product may not be switched on until the booth is in operation. If the booth stops, the product must switch off too.



Explosion hazard

The control units for the spray guns must be installed and used in zone 22. Spray guns are allowed in zone 21.

Only original Gema OEM parts are guaranteed to maintain the explosion protection rating. If damages occur by using spare parts from other manufacturers, the warranty or compensation claim is void!

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 (see EN 50177).

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

No safety devices should be dismantled or put out of operation.

Mandatory operational and workplace notices from the operating company must be written in a comprehensible manner in the language of equipment operators and posted in a suitable place.



Danger due to compressed air

Uncontrolled release of strong compressed air containing powder can cause hearing, eye and skin damage.



Slip hazard

Powder lying on the floor around the powder spraying equipment is a potentially dangerous source of slipping. Booths may be entered only in the places suitable for it.

Static charges

Static charges can have the following consequences: Charges to people, electric shocks, sparking. Proper grounding must be in place to prevent objects from becoming charged.

Observe the grounding regulations



Grounding

All electrically conductive parts found in the workplace of 5 meters around each booth opening, and particularly the objects to be coated, have to be grounded. The grounding resistance of each object must amount to maximally 1 MOhm. This resistance must be checked/tested regularly when starting work.

The condition of the work piece attachments, as well as the hangers, must guarantee that the work pieces remain grounded. The appropriate measuring devices must be kept ready in the workplace, in order to check the grounding.

The floor of the coating area must conduct electricity (normal concrete is generally conductive).

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.

Fire and smoke prohibition



Smoking and open flames

Smoking and igniting fire are forbidden in the entire vicinity of the system! No work that could potentially produce sparks is allowed!

The stay for persons with active implants is forbidden



Stay of persons with active implants

In general, all persons with active implants (e.g. with cardiac pacemakers, neurostimulators, insulin pumps, etc.) must not be in areas where strong high voltage and electromagnetic fields are generated. Persons with active implants should not enter areas with powder spraying installations in operation!

Photographing with flashlight is forbidden



Photographing with flashlight

Photographing with flashlight can lead to unnecessary releases and/or disconnections by safety devices.

Disconnect from mains before maintenance works take place



Maintenance works

Disconnect the plugs and secure against restart before the machines are opened for maintenance or repair!

Verify by means of a voltmeter that the parts are deenergized!

The plug connections between the powder spraying equipment and the mains should only be removed when the power supply is switched off.



As far as it is necessary, the operating firm must ensure that the operating personnel wear protective equipment (e.g. hearing, eye, respiratory protection etc.).

A dust mask corresponding to filter class FFP2 or N95 at minimum must be worn during any cleaning work, as powder can enter the respiratory tract in an uncontrolled manner and cause breathing difficulties.

The operating personnel must wear electrically conductive, steel-toe footwear (e.g. ESD shoes).

The operating personnel should hold the gun with bare hands. If gloves are worn, these must also conduct electricity.

Product description

Intended use

This Manual coating equipment is for use with organic powders coating electrostatically grounded objects.



Fig. 1

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

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

Reasonably foreseeable misuse

- Operation without the proper training
- Use with insufficient compressed air quality and grounding
- Use in connection with unauthorized coating devices or components

Structure

Overall view

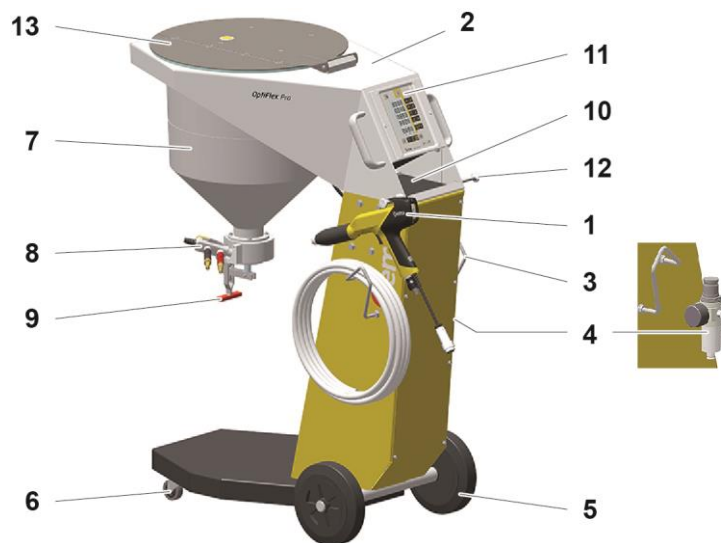


fig. 2

- | | | | |
|---|---------------------------------------|----|--------------------------------|
| 1 | OptiSelect Pro GM04 manual powder gun | 7 | Stirrer hopper |
| 2 | Frame | 8 | OptiFlow injector |
| 3 | Hose holder | 9 | Discharge flap |
| 4 | Filter unit | 10 | Shelf |
| 5 | Rubber wheel | 11 | OptiStar CG21 Gun control unit |
| 6 | Swivel wheel | 12 | Gun holder |
| | | 13 | Filler flap |

OptiSelect Pro GM04 manual powder gun

All information about the OptiSelect Pro GM04 manual powder gun can be found in the documentation for that equipment (enclosed with this manual)!

OptiStar 4.0 Gun control unit

All information about the OptiStar 4.0 (Type CG21) manual gun control unit can be found in the documentation for that equipment (enclosed with this manual)!

OptiFlow injector

All information about the OptiFlow injector will be found in the corresponding enclosed documentation!

Scope of delivery

- OptiSelect Pro GM04 manual powder gun with gun cable, powder hose, rinsing air hose and standard nozzle set (For more on this, see the operating manual for the OptiSelect Pro GM04 manual powder gun)
- OptiStar 4.0 Control unit in a metal case with power supply cable
- plug-in OptiFlow injector
- mobile trolley with a gun/hose support
- Powder hopper with stirrer and cover, inclusive mains adaptor for the stirrer
- PowerClean module**
- Pneumatic hoses for conveying air (red), supplementary air (black), fluidizing air (black) and rinsing air** (black)
- Operating manual
- Short description

Typical characteristics – properties of the functions

Processing the powder from the stirrer recipient

The type S manual coating equipment allows for powder to be processed directly out of the stirrer recipient. Because of the conical shape of the stirrer recipient, the powder can be used completely (optimum powder consumption).

PowerClean™ module – Option

Field of application

The PowerClean module can be used in combination with the OptiStar control unit.

The PowerClean module provides increased stability in application processes. It prevents the bridging phenomena that can lead to short circuiting when handling powders such as metallic powders.

In moist or tropical environments, any moisture is driven from the injector, powder hose and powder gun. The color change is also accelerated during non-extreme color switches.



fig. 3

Technical Data

Connectable guns

OptiFlex Pro S	connectable
OptiSelect Pro Type GM04	yes
OptiSelect Pro Type GM04-CF	yes**
OptiSelect type GM03	yes*
TriboJet	yes**


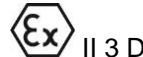
* The PowerBoost functionality is not available

** The gun type must be configured (refer to chapter "Typical properties – Characteristics of the functions").
The Tribo gun the gun is not type approved (ATEX).

WARNING

The gun control unit may only be used with the specified gun types!

Electrical data

OptiFlex Pro S	
Nominal input voltage	110-120 / 230-240 VAC
Frequency	50-60 Hz
Fluctuations of the power supply	± 10 %
Overvoltage category	OVC II
Connected load	150 VA
Nominal output voltage (to the gun)	12 V
Nominal output current (to the gun)	1.2 A
Connection and output for vibrator (on Aux output)	100-240* VAC max. 100 W
Connection for rinsing function (valve)	24 VDC max. 3 W
Protection type	IP54
Approvals	 

* preset country-specific voltage

Pneumatic data

OptiFlex Pro S	
Compressed air connection	8 mm
Input pressure OptiStar	5.5 bar / 80 psi
Max. water vapor content of the compressed air	1.3 g/m ³
Max. oil vapor content of the compressed air	0.1 mg/m ³

Dimensions

OptiFlex Pro S	
Width	481 mm
Depth	822 mm
Height	1109 mm
Weight	ca. 57 kg

Processible powders

OptiFlex Pro S	
Plastic powder	yes
Metallic powder	yes
Enamel powder	no



Powder output (reference values)

General conditions for the OptiFlow Injector

Powder type	Epoxy/polyester
Powder hose Ø (mm)	11
Type of powder hose	POE with guide strips
Input pressure OptiStar (bar)	5.5
Correction value C0	Powder output zeroing adjustment

Guide values for OptiStar with OptiFlow Injector

All values in these tables are guide values for new nozzle inserts. Differing environmental conditions, wear and different powder types can affect the table values.

Hose internal diameter (mm)		Ø 11					
Hose length (m)		6		12		18	
Total air volume  (Nm³/h)		3.5	5.5	3.5	5.5	3.5	5.5
Powder output (g/min)							
Powder output  (%)	20	90	105	65	75	45	60
	40	170	205	135	150	100	120
	60	235	280	185	215	145	170
	80	290	350	235	270	185	220
	100	340	405	280	320	220	260

Air flow rates

The total air consists of conveying air and supplementary air, in relation to the selected powder quantity (in %). As a result the total air volume is maintained constant.

OptiFlex Pro S	Range	Factory setting
Flow rate – fluidizing air:		
– Device type B	0-1.0 Nm³/h	0.1 Nm³/h
– Device type F (without AirMover air requirements) / L	0-5.0 Nm³/h	1.0 Nm³/h
– Device type S (with optional fluid plate)	0-1.0 Nm³/h	0.1 Nm³/h
Electrode rinsing air flow rate	0-5.0 Nm³/h	0.1 Nm³/h
Flow rate total air (at 5.5 bar)	5 Nm³/h	
– Conveying air flow rate	0-5.5 Nm³/h	
– Supplementary air flow rate	0-5.5 Nm³/h	



The max. total air consumption during the coating operation is < 5,5 Nm³/h:

- Total air = 5 Nm³/h (conveying air + supplementary air)
- Electrode rinsing air = 0,1 Nm³/h (flat jet nozzle)



The total air consumption for the device is determined based on the 3 configured air values (without AirMover air value for device type F).

- These values apply for an internal control pressure of 5.5 bar!

Environmental conditions

OptiFlex Pro S	
Utilization	in the interior
Height	up to 2 000 m
Temperature range	+5 °C - +40 °C (+41 °F - +104 °F)
Max. surface temperature	+85 °C (+185 °F)
Maximum relative humidity	80 % for temperatures to 31 °C, linearly decreasing to 50 % relative humidity at 40 °C
Environment	not for wet environment
Degree of pollution of the intended environment	2 (in accordance with DIN EN 61010-1)

Sound pressure level

OptiFlex Pro S	
Normal operation	< 60 dB(A)

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 1.7 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.

Rating plate

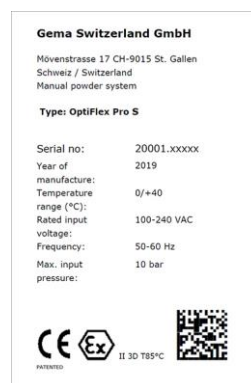


Fig. 4: Nameplate (example)

Assembly / Connection

Set-up

The equipment should always be set up vertically on a flat surface.

NOTICE

Surrounding temperature too high

- ▶ Install the equipment only in locations with an ambient temperature of between +5 °C and +40 °C, i.e. never next to heat sources (such as an enameling furnace) or electromagnetic sources (such as a control cabinet).

Assembly guide

The manual coating equipment must be set up in accordance with the setup and connecting instructions (included with delivery).



fig. 5

Connection instructions

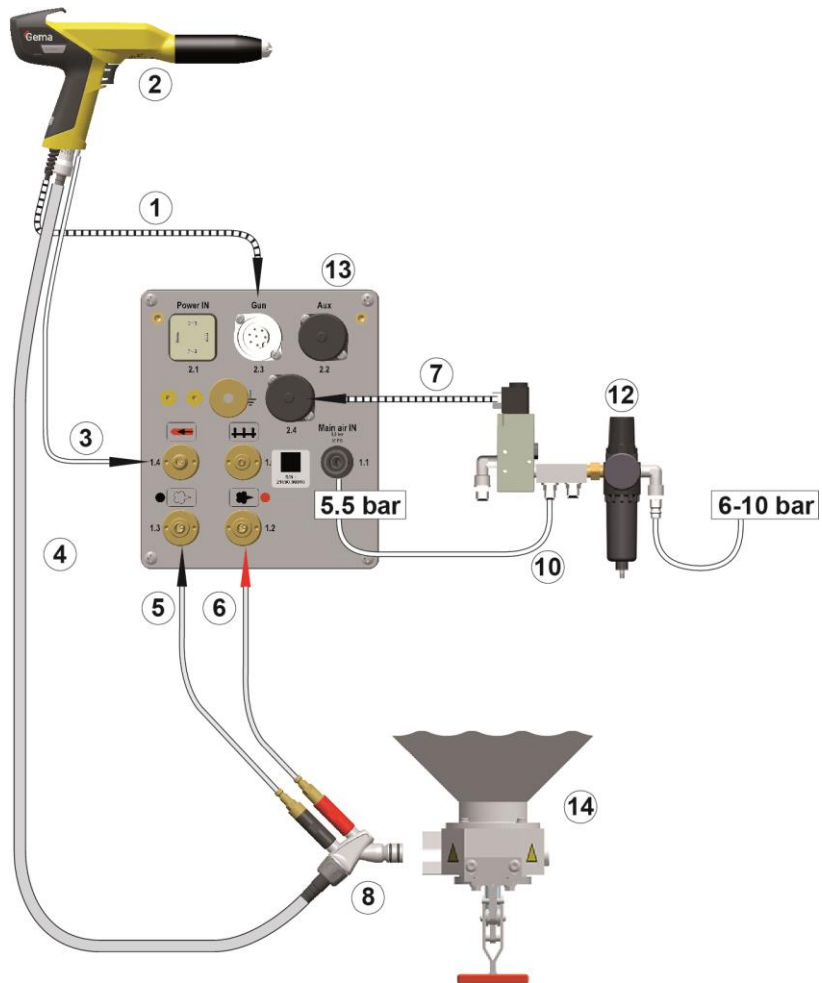


fig. 6: Connecting guide – overview

- | | |
|------------------------------|---------------------------------|
| 1 Gun cable | 7 Control signal cable (option) |
| 2 Manual powder gun | 8 Injector |
| 3 Electrode rinsing air hose | 10 Compressed air hose |
| 4 Powder hose | 12 Maintenance unit |
| 5 Supplementary air hose | 13 OptiStar Control unit |
| 6 Conveying air hose | 14 Stirrer hopper |



Use clamp to connect grounding cable to the cabin or the suspension arrangement!

- ▶ Check ground connections with Ohm meter and ensure 1 MOhm or less!



The compressed air must be free of oil and water!



Close the unused connections with the provided dust protection caps!

Start-up

Preparation for start-up

Prerequisites

When starting up the gun control unit, the following preconditions which impacting the coating results must be met into consideration:

- Gun correctly connected
- Gun control unit correctly connected
- Corresponding power and compressed air supply available
- Powder preparation and powder quality OK

Initial start-up



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

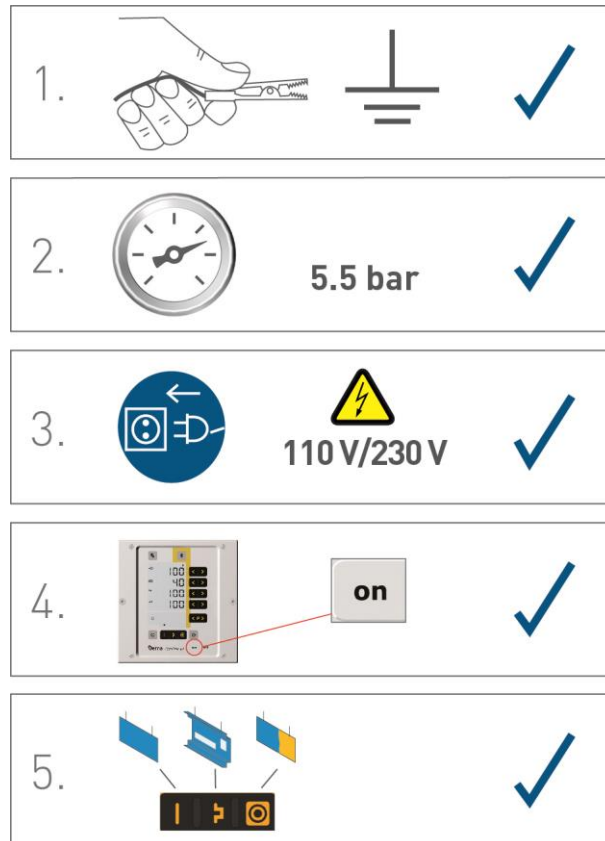


fig. 7



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

Setting the device type



If the control unit is supplied as a component of a manual coating unit, then the corresponding system parameter is set correctly by the factory!

ATTENTION

A wrong parameterization leads to various malfunctions!

- ▶ For more on this, please also see the operating instructions for the gun control unit!

Operation

WARNING

Holding the gun incorrectly

During the coating process, the gun can discharge along the body of the coater if not held using its intended handle, which has been grounded.

- ▶ Always hold gun only by the handle!
- ▶ Do not touch any other parts of the gun!

Operation

CAUTION

Large dust formation possible!

If the manual equipment is not being used for coating in conjunction with a sufficiently powerful suction unit, then the stirred-up dust from the coating powder can cause respiratory issues or cause a slippage/falling hazard.

- ▶ The manual equipment may only be operated in conjunction with a sufficiently powerful suction unit (such as Gema Classic Open booth).

1. Fill the stirrer hopper with powder
 - a) Open the hinged flap of the stirrer hopper cover

CAUTION

Hand injury!

If the cover to the agitator unit is opened, then this can fall shut again during inattentive handling. Fingers or hands in the cover/container zone can be crushed.

- ▶ Observe the cover.

- b) Fill in the coating powder in the stirrer recipient. Maximum filling level of the powder is marked on the inside of the recipient (useful capacity approx. 18,5 dm³)

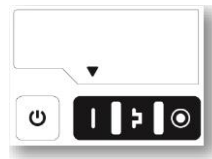


Check whether the discharge flap is closed and not just ajar.

- c) Close the hinged flap of the stirrer recipient cover
 - d) The stirrer can be put into operation by pressing manually the button on the cover when filling/emptying
2. Set coating parameters

Select predefined operating mode (Preset mode)

1. Turn on the gun control unit with the **ON** key
2. Press the corresponding application key.
The arrow above the desired button lights up.



The pre-defined application modes have preset values for high voltage and spray current:

Application mode		Preset kV	Preset μ A
	flat parts	100	100
	complicated parts	100	22
	overcoat	100	10

3. The air values for total air, powder output and electrode rinsing air can be individually defined and are saved in the programs.

Starting the individual adjustable programs

1. Turn on the gun control unit with the **ON** key
2. Press the **< P >** program key
3. Select the desired program (01-20)







Program 20 active

4. Change the coating parameters as required



Programs 01-20 are preset at the factory but can be modified at any time, after which they are automatically stored.

Description		Presetting
	Powder output	60 % (50% for device type CF)
	Total air	4.0 Nm ³ /h (2.5 Nm ³ /h for device type CF)
kV	High voltage	80 kV
μA	Spray current	20 μA
	Electrode rinsing air	0.1 Nm ³ /h
	Fluidizing air	1.0 Nm ³ /h (for device type F) 0.1 Nm ³ /h (for device type B and S)

Setting powder output and powder cloud

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



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

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

Setting the total air volume

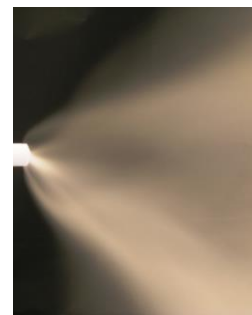


Adjust the total air volume on the gun control unit with the **T3/T4** keys

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



correct powder cloud



too little total air

Setting the powder output





much powder



little powder

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

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



To achieve maximum efficiency, we recommend avoided an overly high powder volume where possible!

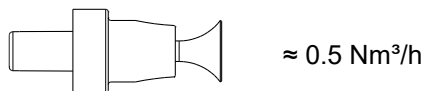
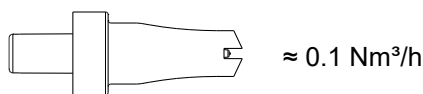
2. Check fluidization of the powder in the powder container
3. Point the gun into the booth, switch the gun on and visually check the powder output

Setting the electrode rinsing air

1. Press the  key.
The second display level will be shown.



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



too much electrode rinsing air

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

Rinsing mode

The rinsing mode enables blowing off powder accumulations in the powder hose.

Activating the rinsing function

⚠ CAUTION

Release of pulsating and/or compressed air containing powder. If the product is operated without the appropriate equipment (hearing protection, safety goggles) and not in front of an appropriately dimensioned suction unit, the compressed air containing powder can cause hearing damage, eye damage as well as respiratory problems.

- ▶ The powder hose and the pneumatic hoses must be mounted.
- ▶ The gun must be held in the direction of an appropriately dimensioned suction unit (such as Gema Classic Open booth) (targeted discharge of the compressed air energy).
- ▶ Wear appropriate protective equipment.

Manual equipment without optional PowerClean module (system parameter P01=0)

The cleaning mode can only be activated from standby mode (main menu display, no powder conveying).

ATTENTION

During the rinsing process, a potentially damaging situation arises.

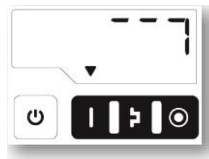
- ▶ On manual coating equipment type F, the injector must be disconnected prior to cleaning procedure, on type B, the suction unit must be lifted, and on type S, the powder container must be empty.

1. Detach the injector

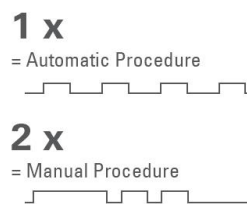


- 2.

OR



3. **START =**



Procedure	Effect
Automatic (automatic)	<ul style="list-style-type: none"> - The rinsing process is started - Injector, powder hose, gun and spray nozzle are purged using compressed air - The rinsing function enables parallel cleaning of other components, such as the fluidizing/suction unit, powder container, etc. - The rinsing mode is exited if the automatic rinsing sequence has finished.
Manual (manual)	The operator controls the number and length of the PowerClean impulse by pressing the gun trigger a second time

4. **STOP =**



OR



OR the cleaning mode is terminated automatically.

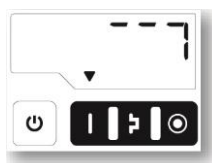
After completion of the PowerClean procedure, the controller switches back to coating mode.

Manual equipment with optional PowerClean module (system parameter P01= 1 or P01=2)

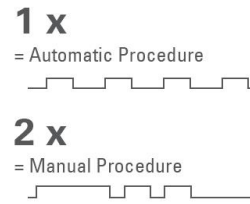
The cleaning mode can only be activated from standby mode (main menu display, no powder conveying).



OR



2. **START =**



Procedure	Effect
Automatic (automatic)	<ul style="list-style-type: none"> - The rinsing process is started - Injector, powder hose, gun and spray nozzle are purged using compressed air - The rinsing function enables parallel cleaning of other components, such as the fluidizing/suction unit, powder container, etc. - The rinsing mode is exited if the automatic rinsing sequence has finished.
Manual (manual)	The operator controls the number and length of the PowerClean impulse by pressing the gun trigger a second time

3. **STOP =**



OR



OR the cleaning mode is terminated automatically.

After completion of the PowerClean procedure, the controller switches back to coating mode.

Setting the background illumination

1. Press the key

The display switches to the following level:



- 2.

Select the desired brightness

Color change

1. End the coating procedure
2. Empty the stirrer hopper
3. The rinsing mode can be activated either on the rear of the powder gun (remote control) or on the control unit
4. Point the gun into the booth
5. Press the gun trigger
 - The rinsing process is started
6. Clean the stirrer hopper
7. Clean the powder hose:
 - Disconnect the powder hose from the hose connection on the injector
 - Point the gun into the booth
 - Blow through the hose manually with a compressed air gun
 - Connect the powder hose again to the hose connection on the injector
8. Dismantle and clean the powder gun (see therefore the user manual of the powder gun)
9. Clean the injector (see therefore the injector user manual)
10. Prepare the manual coating equipment with new powder for start-up

Decommissioning / Storage

Shutdown

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



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

When the product will not be used for several days

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

Storage conditions

Hazard notes

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

Type of storage

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

Storage duration

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

Space requirements

The space requirements correspond to the size of the product.

There are no special requirements concerning distance to neighboring equipment.

Physical requirements

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

Maintenance during storage

Maintenance schedule

No maintenance schedule is necessary.

Maintenance works

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

Maintenance / Repairs

General information

The product was designed for a maintenance-free operation.

ATTENTION

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



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

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

Interval

Daily maintenance

1. Clean the injector (see therefore the user manual of the OptiFlow injector)
2. Clean the powder gun (For more on this, please also review the user manual for the OptiSelect GM03 manual powder gun)
3. Clean the powder hose; Please also review the section "Color change"

Weekly maintenance

1. Clean stirrer hopper, injector, rinsing module** and powder gun.
2. Check the control unit grounding connections to the coating booth, the suspension devices of the work pieces, or the conveyor chain

If in disuse for several days

1. Separate from power mains
2. Clean the coating equipment
3. Turn off the compressed air main supply

Powder hose rinsing

If longer downtimes take place, the powder hose has to be cleaned.

Procedure:

1. Disconnect the powder hose from the hose connection on the injector
2. Point the gun into the booth
3. Blow through the hose manually with a compressed air gun
4. Connect the powder hose again to the hose connection on the injector

Gun maintenance

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

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

Maintenance of the filter unit

The filter unit measures and cleans the compressed air. This is where the equipment's main compressed air connection is located.

Replacing the filter element

1. Unscrew the filter glass on the filter unit
2. Remove the complete filter element

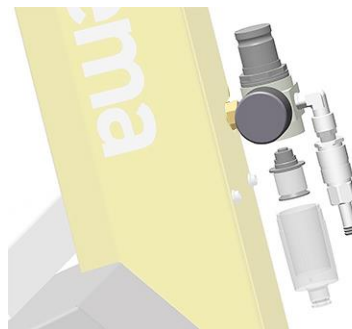


Fig. 8

3. Replace the filter element
4. Clean the filter glass on the inside and install it again

Cleaning

⚠ CAUTION

Large dust formation possible!

If no dust mask or one of an insufficient filter class is worn when cleaning the product, then the dust that is stirred up from the coating powder can cause respiratory problems.

- ▶ The ventilation system must be turned on for all cleaning work.
- ▶ A dust mask corresponding to filter class FFP2 or N95 at minimum must be worn during any cleaning work.

Gun cleaning

ATTENTION

Impermissible solvents

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

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



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



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

Daily:

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

Weekly:

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

Cleaning the powder container

1. Place an empty container under the discharge flap.
2. Open the discharge flap by pushing the lever towards the column.

⚠ WARNING**Hand injury!**

When opening/closing the discharge flap, fingers caught between the flap/injector bracket and lever can be severely crushed!

- ▶ Open/close the discharge flap carefully.

3. Press the Push button on the powder hopper cover and continue to hold it down.
 - The powder then empties into the container.
4. Remove the injector, and the plug covering the second injector hole
5. Clean the injector and the injector seat hole (see therefore the injector user manual)

⚠ WARNING**Danger of accident**

When the stirrer is operating, fingers can be severely crushed between the flap/injector bracket!

- ▶ Never put fingers or any other objects into the injector seat hole at the bottom of the powder hopper!

6. Remove the cover (take care not to damage the stirrer arm)
7. Blow off with compressed air the hopper, cover and stirrer arm, and wipe with a clean, dry brush, and a clean cloth.
8. Carefully close the cover again (taking care of the stirrer arm), and fit the injector, and hoses.
 - The coating equipment is now ready for operation.



Do not refill the powder hopper until just before the next use!

Repair work

In the event of malfunctions or faults, the product must be checked and repaired at an authorized Gema service location. The repairs must only be performed by an authorized specialist.

Improper interventions can result in serious danger for user or the equipment and may result in loss of warranty!

Periodic checks

The periodic checks include examining all connecting cables and hoses.

The corresponding parts should be replaced immediately if any damage to cables or hoses is discovered.

All plugs must be properly tightened.

Fault clearance



Prior to any troubleshooting measures, always check whether the equipment parameter (P00) as configured in the control unit is correct

- ▶ See operating instructions for the manual gun control unit, Chapter "Initial Start-up – Setting Equipment Type"!

Incident	Causes	Corrective action
H11 (Help code on control unit)	Gun not connected	Connect the gun
	Gun plug or gun cable defective	Contact local Gema representative
	Remote control on powder gun defective	Contact local Gema representative
Control unit displays remain dark, although the control unit is switched on	Control unit is not connected to the mains	Connect the equipment with the mains cable
	Power pack fuse defective	Replace the fuse
	Power pack defective	Contact local Gema representative
Gun LED remains dark, although the gun is triggered	High voltage adjustment is set too low	Increase high voltage
	Gun plug or gun cable defective	Contact local Gema representative
	LED on gun defective	Contact local Gema representative
Powder does not adhere to object, although the gun is triggered and sprays powder	High voltage and current deactivated	Check the high voltage and current setting
	High voltage cascade defective	Contact local Gema representative
	The objects are not properly grounded	Check the grounding
The gun does not spray powder, although the control unit is switched on and the gun trigger is pressed	Compressed air not present	Connect the equipment to the compressed air
	Injector or nozzle on the injector, powder hose or powder gun clogged	Clean the corresponding part
	Insert sleeve in the injector is clogged	Clean/replace
	Fluidization not running	see below

Incident	Causes	Corrective action
	Pressure valve in the control unit defective	Replace
	Solenoid valve in the control unit defective	Replace
	No conveying air: <ul style="list-style-type: none"> – Throttle motor defective – Solenoid valve defective 	Contact local Gema representative
	Front plate defective	Contact local Gema representative
Gun achieving only poor spray profile	Total air incorrectly configured	Increase the powder quantity and/or total air volume on the control unit
	Bend or damage to air lines to injector	Check air lines to injector
	Insert sleeve in the injector worn or not inserted	Replace or insert it
	Fluidization not running	see below
No electrode rinsing air	Rinsing air throttle motor defective	Contact local Gema representative
The powder is not fluidized	Compressed air not present	Connect the equipment to the compressed air
	Fluidizing air is set too low on the control unit	Set the fluidizing air correctly
	Throttle motor defective	Contact local Gema representative
Stirrer motor not functioning	Motor/condenser broken	Contact local Gema representative
	Motor cable not plugged in	plug in

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** Manual equipment OptiFlex Pro S
Serial number 1234 5678
- **Order no.** 203 386, 1 piece, Clamp – Ø 18/15 mm

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

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

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

Example:

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

⚠ WARNING

Use of non-original Gema spare parts

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

- ▶ Use only original Gema spare parts!

OptiFlex Pro S – Spare parts list

1	OptiStar CG21 gun control unit – complete (see corresponding operating manual)	
2	OptiSelect Pro GM04 Manual powder gun – complete (see corresponding user manual)	
3	OptiFlow IG07 injector – complete (see corresponding user manual)	
4	Pneumatic connection for supplementary air – complete (incl. Pos. 4.1, 4.2 and 4.3)	1008 029
4.1	Quick release connection – NW5, Ø 8 mm, black	261 637
4.2	Nut with kink protection – M12x1 mm, Ø 8 mm	201 316
4.3	Plastic tube – Ø 8/6 mm, black	1008 038*
5	Pneumatic connection for conveying air – complete (incl. Pos. 5.1, 5.2, 5.3)	1008 030
5.1	Quick release connection – NW5, Ø 8 mm, red	261 645
5.2	Nut with kink protection – M12x1 mm, Ø 8 mm	201 316
5.3	Plastic tube – Ø 8/6 mm, red	103 500*
7	Stirrer hopper (see corresponding spare parts list)	
8	Swivel wheel – Ø 50 mm	260 606
12	Rubber wheel – Ø 200 mm	260 592
13	Hose clamp – Ø 15-18 mm	203 386
14	Quick release connection – NW7.8 – Ø 10 mm	239 267
15	Pneumatic group – complete (see corresponding spare parts list)	
16	Hose holder – right	1017 842
	Hose holder – left (not shown)	1017 843
17	Grounding cable – complete (not shown)	301 140
18	Power cable – country-specific (not shown)	
20	Powder hose – Ø 15/10 mm, 6 m	1001 673*#
21	Spare parts kit – consisting of:	
	Cartridge – complete (1x)	1016 561
	O-ring – Ø 16x2 mm (2x)	1007 794
	Multi-Tool for OptiFlow IG07 (1x)	1017 201
	Cable tie (6x)	200 719
22	Short instructions (not shown)	1017 907
23	Operating instructions (not shown)	1017 972

* Please indicate length

Wearing part

OptiFlex Pro S – Spare parts



fig. 9:

Stirrer hopper

1	Mini stirrer brush	366 862
2	Main filler cover	1008 265
3	Filler flap	1008 266
4	Hinge	305 472
5	Powder container	366 854
6	Gasket for powder container	101 630*
7	Cardan joint – Ø 12 mm	206 369
8	Protective sleeve for cardan joint	206 350
9	Manifold	379 395
10	O-ring – Ø 67x2 mm	236 403
11	Gasket for discharge flap	303 240
12	Discharge flap with toggle clamp, incl. pos. 11	303 194
13	Blind grommet – complete, incl. pos. 14	380 296
14	O-ring for blind grommet	231 517#
15	Injector holder	1017 971
16	Feather key – 4x4x12 mm, round	269 263
17	Feather key for cardan joint – 4x4x16 mm, round	206 075
18	Allen grub screw for cardan joint – sharp, M4x5 mm	214 728
19	Allen cylinder screw – M3x20 mm	1010 377
20	Cylinder ribbed Allen screw – M6x16 mm	261 823
21	Cylinder ribbed Allen screw – M5x12 mm	257 052

* Please indicate length

Wearing part

Stirrer hopper – Spare parts

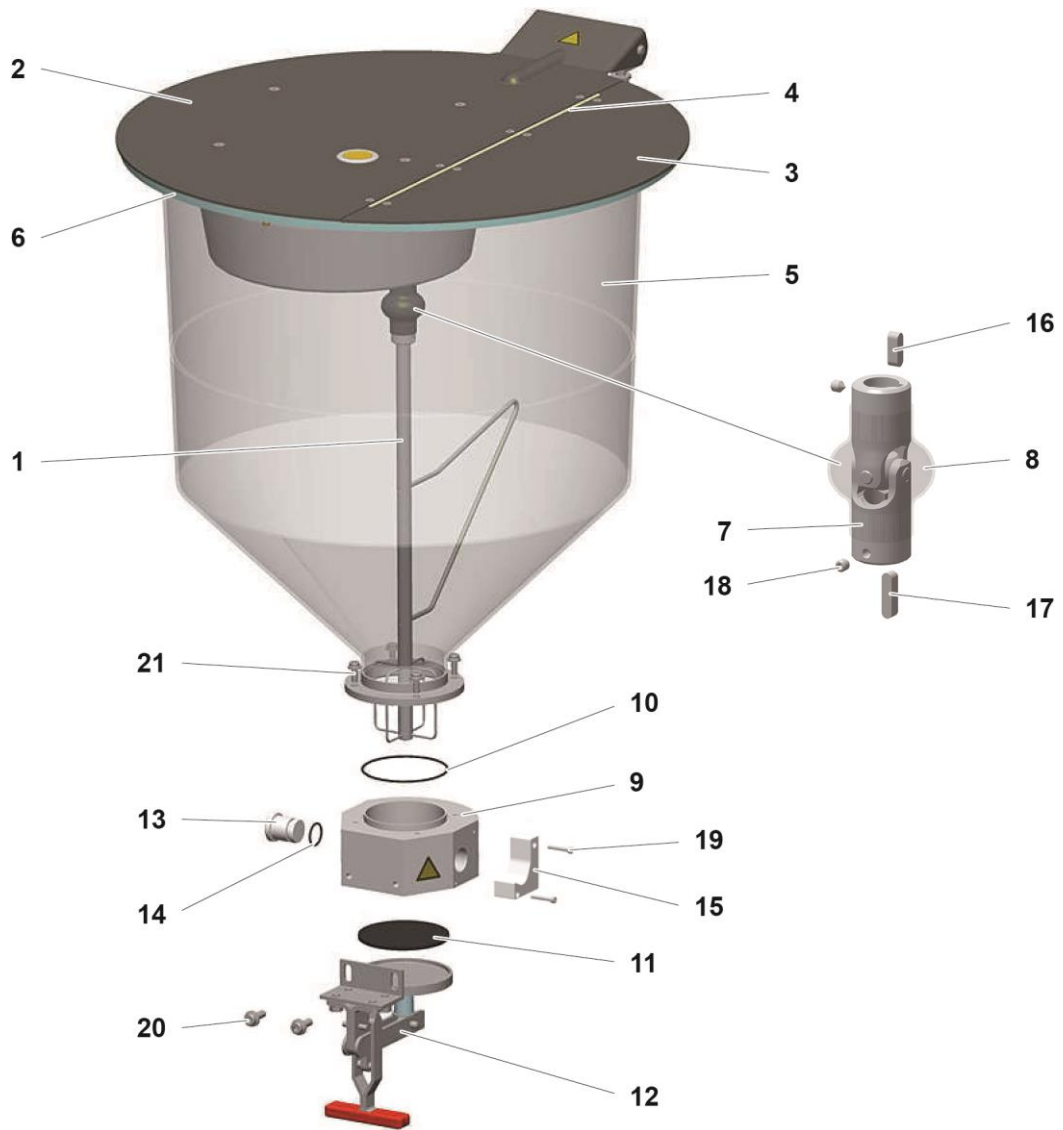


fig. 10: Stirrer hopper – Spare parts

Stirrer drive unit

	Stirrer drive unit – complete (pos. 1-13)	393 940
1	Stirrer motor (with gear and stirrer case)	393 932
2	Stirrer motor (with pinion)	268 950
	Stirrer motor	269 255
	Drive belt	268 941
3	Electronic board for stirrer control – complete, incl. pos. 5	388 173
4	Electronic board for power pack (Stirrer Control Power Supply)	389 277
5	Mains push button – complete, with cable	390 542
9	Fixture set for power pack board, consisting of two pieces each:	
	Spacer – M3, SW5.5x12 mm	267 775
	Spacer – M3, SW5.5x10 mm	267 007
	Cylinder screw	245 321
	Shake proof washer	205 885
10	Fuse – 2 AT	221 872
11	Adaptor cable for stirrer connection	391 905
12	Gland	265 780
13	Gasket for stirrer motor	393 924

* Please indicate length

Wearing part

Stirrer drive unit – Spare parts

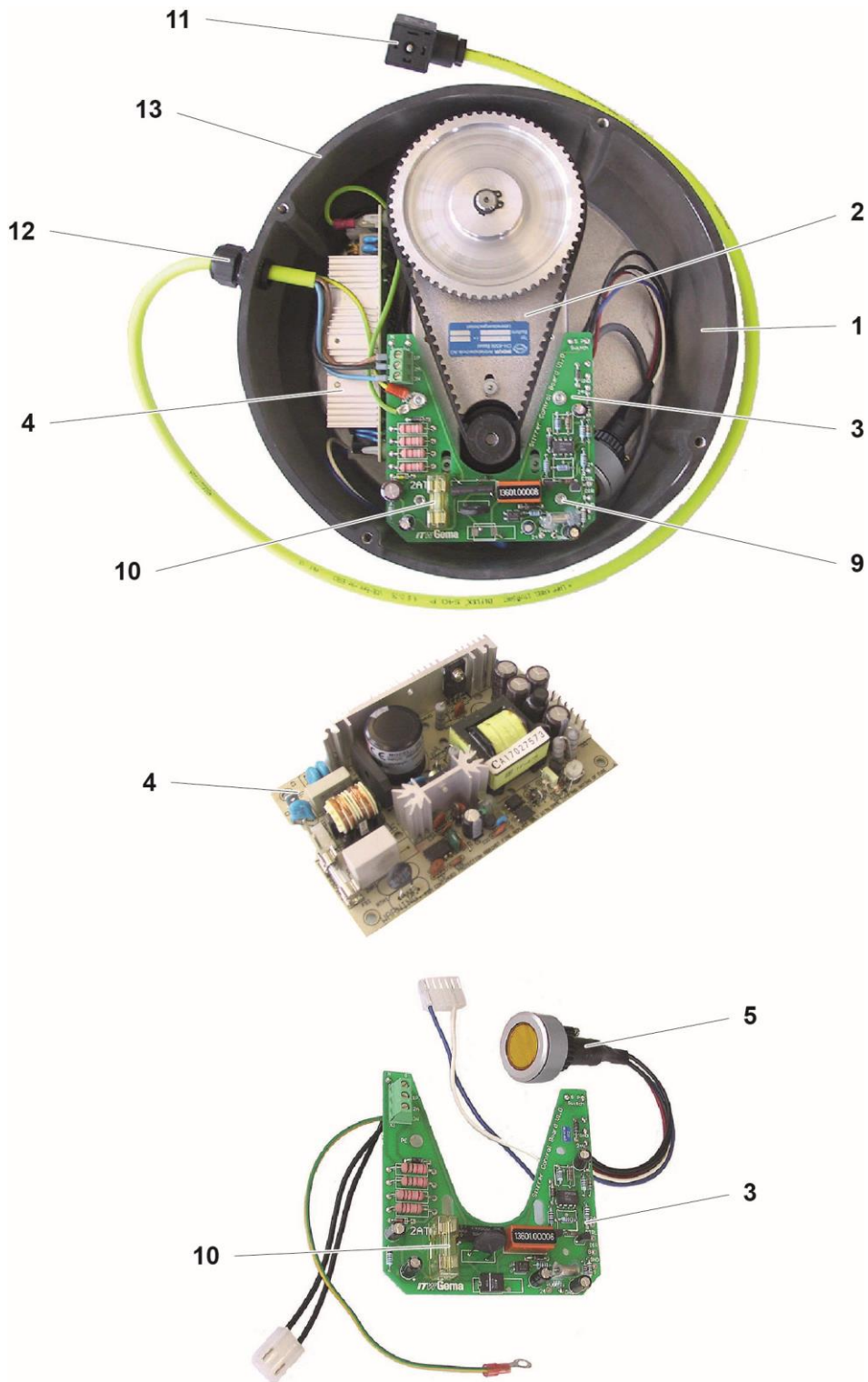


fig. 11: Stirrer drive unit – Spare parts

Pneumatic group

	Pneumatic group – complete	1017 815
1	Filter cartridge – 20 µm	1008 239#
2	Condensate container with drain valve	1008 238
3	Connector – NW7.4 - 1/4"	256 730
4	Elbow joint – 1/4"-1/4"	222 674
5	Sealing plug – 1/8"	203 297
6	R/F unit – 0-8 bar, 1/4", complete (incl. pos. 1 and 2)	1008 236
7	Double nipple – 1/4"1/4", divisible	261 165
8	Pressure gauge – 0-10 bar, 1/8"	1008 049
9	Distribution block	1017 816
10	Screw-in nipple – 1/4", Ø 8 mm	265 136
11	Plug – Ø 8 mm	238 023

Wearing part

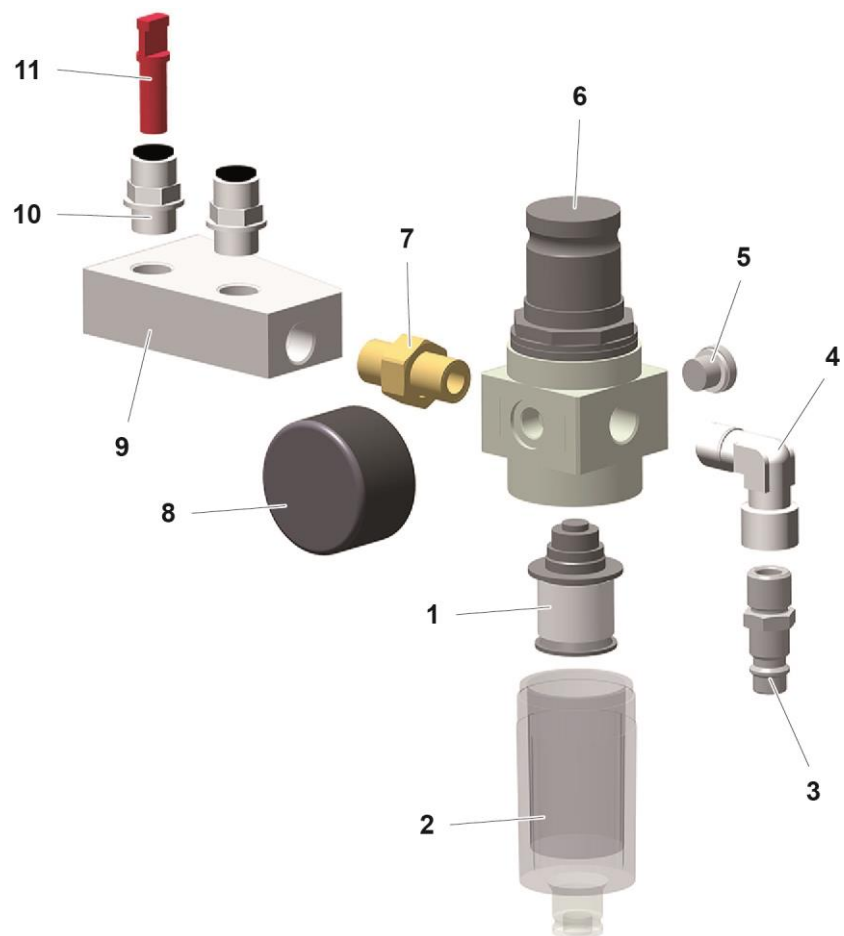


fig. 12: Pneumatic group

PowerClean module set**

	PowerClean module set – rinsing air hose length 2 m (pos. 1, 2, 3, 4 - 7)	1010 519
	PowerClean module set – rinsing air hose length 12 m (pos. 1, 2, 3.1 – 7)	1010 520
1	PowerClean module** – complete (See operating instructions OptiSelect Pro GM04 manual powder gun)	1009 528
2	Solenoid valve – complete	1009 928
3	PowerClean module cable – complete, length 1 m	1009 879
3.1	PowerClean module cable – complete, length 15 m	1009 880
4	Quick release connection – NW5-Ø 8 mm	1008 027
5	Plastic tube – Ø 8/6 mm, black	103 152*
6	O ring – Ø 16x2 mm, NBR70, anti-static (2x) (not shown)	#
7	Cable tie (not shown)	

* Please indicate length

Wearing part



fig. 13: PowerClean module set**

Fluidizing flap**

	Fluidizing flap – complete (pos. 1-10)	1005 463
1	Flow restrictor – Ø 0.7 mm, incl. O-ring	652 121
2	Basement	326 356
3	O-ring – Ø 64 x 3 mm	255 335#
4	Fluidizing plate	322 610
5	Countersunk screw – M6x10 mm	1005 465
6	Guide ring	380 318#
7	Screw – M5x20 mm	263 192
8	Elbow joint – 1/8"-Ø 6 mm	203 033
9	Plastic tube – Ø 6/4 mm	1001 973*
10	Nut with kink protection	201 308

* Please indicate length

Wearing part

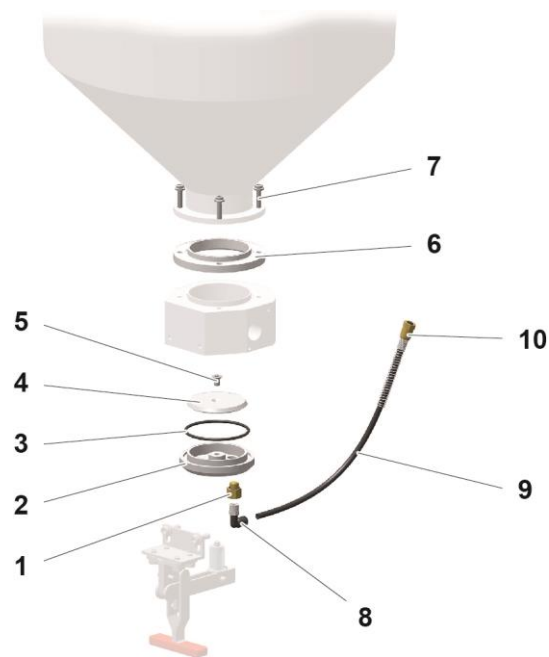


Fig. 14: Fluidizing flap

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