Operating instructions and Spare parts list

Powder management system OptiCenter OC09

Translation of the original operating instructions

Gema

Documentation OptiCenter OC09

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

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

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Table of contents

About these instructions

General information

This operating manual contains all important information which you require for the working with the OptiCenter OC09. 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.

▶ **These operating instructions describe all equipment and functions of this OptiCenter.**

- Please note that your OptiCenter may not be equipped with all the described functions.
- Optional equipment is 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 which must be observed.

NOTICE

Useful information, tips, etc.

Structure of Safety Notes

Every note consists of 4 elements:

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

⚠ SIGNAL WORD

Nature and source of the hazard!

Possible consequences of the danger

► Prevention of the danger

Software version

This document describes the operation of the product OptiCenter OC09 with software version starting from 1.2.40 xxxx.

See chapter "Checking the software version" on page 51.

Presentation of the contents

Figure references in the text

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

Example:

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

Safety

Basic safety instructions

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

Product specific security regulations

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

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

⚠ WARNING

Working without instructions

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

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

Transport

Introduction

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

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

or

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

Safety rules

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

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

Requirements on personnel carrying out the work

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

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

Packing material

Not necessary for the internal transport. For external transport:

Transport

Data concerning goods to be transported

– The space requirements correspond to the size of the components plus the packaging

– Weight see "Technical Data"

– Points of attachment, see "Mode of transportation"

Mode of transportation

For short distances/shifts of position within the same room, the product must be transported using a forklift truck with long forks.

Fig. 1

Transport the unit only in the position according to its intended use.

ATTENTION

Risk of damage

The OptiCenter must not be placed fully in the horizontal position, since it is not designed for this purpose.

► In case of doubt contact Gema Switzerland GmbH!

Loading, transferring the load, unloading

Suitable lifting equipment is to be used for all procedures.

Product description

Intended use

The powder management center is designed for easy and clean handling of the coating powder and is operated via a touch panel.

The center will only operate in combination with Gema powder conveyors, which are designed to convey coating powder to the spray guns.

As a part of the process controlled coating plant, the center is designed for automatic or semi-automatic operation. It allows quick, manual color changes, supported by automated cleaning steps. The completely equipped OptiCenter can include all powder conveying devices, gun and axis control units, as well as the complete fresh powder dosing.

Fig. 2

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

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

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

Field of application

The powder management center is suitable for use in plants with a closed powder circuit:

Conveying

– Precision conveying from the integrated powder container (OptiHopper) to the applicators

– Recovered powder is returned to the system

Optional:

– Fresh powder directly from the (original) powder bag

– Fresh powder directly from the (original) powder box

– Powder directly from the large-volume powder container (60 or 100 liters)

– Fresh powder from a Gema fresh powder system

– Powder level monitoring by level sensor(s)

Cleaning

– Automatic internal cleaning of suction tubes, powder conveyors, powder hoses and guns

– Manual cleaning of the OptiHopper is supported with automated cleaning steps and fixed built-in suction unit

– Supply of the recovered powder

– The working environment remains clean

Controlling

– No own exhaust air system – the powder management center does not have its own exhaust air system and will be therefore connected directly to the after filter

Reasonably foreseeable misuse

– Operation without the proper training

– Use of moist powder

– Insufficient fluidization at the suction point

– Use with insufficient compressed air quality

– Input pressure too low

– Use in connection with unauthorized coating devices or components

Technical Data

Electrical data

OptiCenter OC09	
Connected load	230 V+E+N
Frequency	50/60 Hz
Protection type	IP54
Approvals	CE Ex II 3 D

Pneumatic data

OptiCenter OC09	
Inlet pressure	min. 6.5 bar
Water vapor content of compressed air	max. 1.3 g/m³
Oil content of compressed air	max. 0.1 mg/m³

Powder transport

OptiCenter OC09	24 guns
Recovery	OptiFeed powder pump
OptiHopper capacity	60 liters (35 kg)

Compressed air consumption

OptiCenter OC09	
Max. compressed air consumption during cleaning (120 seconds)	200-300 Nm³/h
Coating operation	
Fluidization OptiHopper + AirMover + process air	20 Nm³/h
Consumption per applicator	5 Nm³/h
Example for 10 applicators	70 Nm³/h
Cleaning operation mode	
Cleaning OptiFeed hose to cyclone	120 Nm³/h
Cleaning conveying hose to an applicator	30 Nm³/h
Example for 6 applicators (for group size = 6)	180 Nm³/h

Dimensions

OptiCenter OC09	24 guns
Area* (width x depth) (mm)	1900 x 1700
Overall height (mm)	2100 (2250 - OptiFeed connection)
Weight(kg)	
OptiCenter base weight	460
loaded*	765

* with electrostatic and system control

Sound pressure level

OptiCenter OC09	
Normal operation	75 dB(A)
Cleaning operation mode	for a short time up to 95 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. 3: Rating plate

Fields with a gray background contain contract-specific data!

Design and function

Overall view

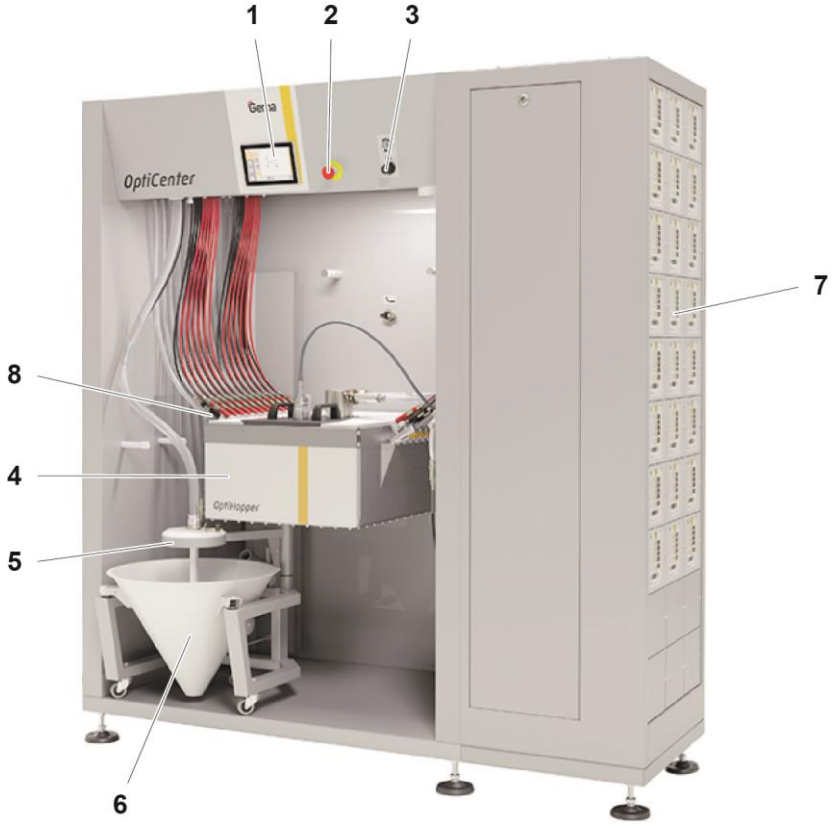


fig. 4: Structure

1 Control unit/operating panel
2 Emergency stop button
3 OptiHopper fluidizing
4 OptiHopper
5 Powder bag fixation
6 Powder bag cone with vibrator
7 Gun and axes control units
8 OptiFlow injectors
9 Suction unit (not shown)

Touch Panel

All necessary operating procedures are activated by the Touch Panel.

Fig. 5:

Compressed air indicators

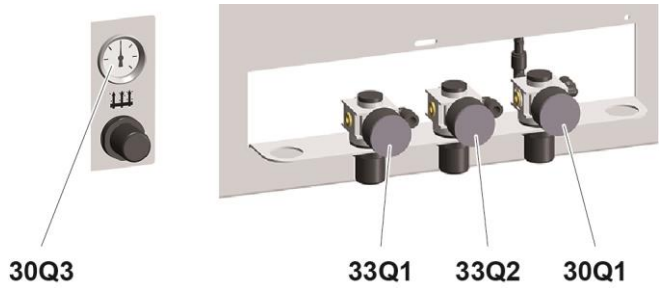


fig. 6:

Gema default values after installation		
30Q1	0.5 bar	AirMover (normal operation)
30Q3	3 bar	OptiHopper fluidizing air
33Q2	2 bar	Powder hopper fluidizing air
33Q1	2 bar	Fluid/suction unit fluidizing air

OptiHopper

The OptiHopper provides the following features:

– Conditioning and fluidization of the coating powder

– Extraction/removal of excess free-floating powder particles and the fluidization air back into the powder circuit by means of ring injector (AirMover)

– Cleaning of the ring injector (AirMover) and the connected powder hose with compressed air pulses for powder recovery

– Manual emptying the residual powder

– Manual cleaning supported by automated cleaning steps and fixed built-in suction unit

Optional:

– Monitoring and control of the powder level

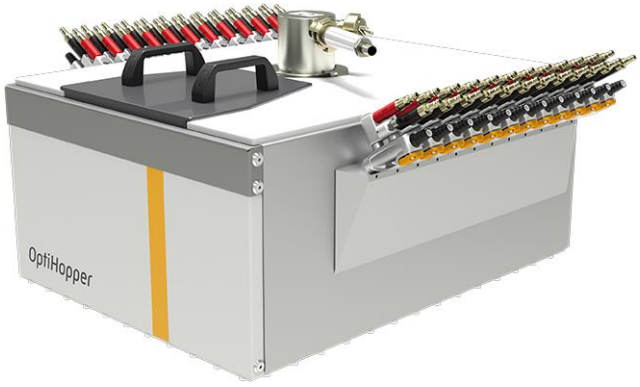


fig. 7

Suction unit

The suction unit provides the following features:

– Dust-free removal of coating powder from the OptiHopper

– Dust-free cleaning of the OptiCenter housing and components with additional brush head

– Can be enabled or disabled at any time on the TouchPanel

– The extracted powder is transported to the after filter (the suction power is increased by additional AirMover)

fig. 8

Level sensors kit** (OptiHopper)

The kit provides the following features:

– Two level sensors for monitoring the levels ("full" and "low")

– The sensors are cleaned with compressed air pulses

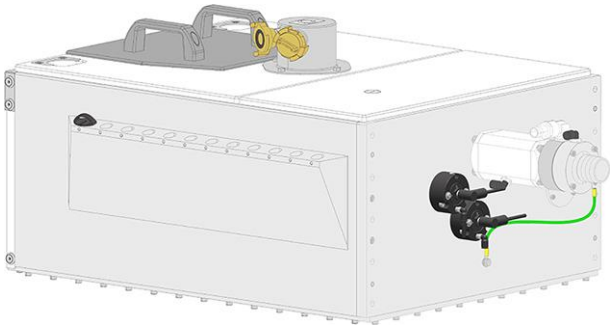


fig. 9

Cleaning hose

– For cleaning the OptiCenter powder hopper and rinsing the fluidizing/suction lance
– Adjustable air flow at the ball valve
– Can be connected instead of the air gun in the OptiCenter

fig. 10

OptiFeed kit**

– For filling the OptiHopper with fresh powder using a powder pump
– Always used in conjunction with the powder bag cone or vibrating trolley

fig. 11

Powder bag cone

– Capacity up to 25 kg
– Can be swiveled for easy powder emptying
– Fluidizing/suction lance
– Fresh powder pump connection
– Recovery powder pump connection

Fig. 12

Vibrating trolley**

– Powder feed directly from the original powder manufacturer's container
– Use up to max. 12 guns
– Can be swiveled for easy powder emptying
– Fluidizing/suction lance
– Fresh powder pump connection
– Recovery powder pump connection

Fig. 13

Powder hopper**

Fig. 14:

– For larger quantities of one powder type
– Capacity 60 or 100 liters
– Connection point for fluidizing/suction lance
– Connection point for external powder supply
– Connection point for recovered powder
– Fluidized, with venting connector
– Suitable for metallic powders
– Level sensor optionally available

When using the powder hopper, the venting hose must be connected to the connector  , and the ball valve (**10**) must be open during the entire operation.

Is there no powder hopper, the ball valve must be closed.

Ultrasonic sieve system US07-1**

The US07-1 Ultrasonic sieve system with the corresponding Ultrasonic sieve generator is used for the ultrasonic supported sieving of coating powder. It is exclusively used inside the OptiHopper.

The system is delivered from the factory with a mesh size of 250 µm. Additional mesh sizes are available: 140 µm, 200 µm, 300 µm, 500 µm and 1180 µm.

The sieve configuration and sieve selection are done on the Touch Panel.

fig. 15:

For additional information, please see the operating instructions of the ultrasonic sieve system!

Sieve machine PS07-1**

The sieve machine is used for the vibration supported sieving of coating powder and can be equipped with different mesh sizes and sieve covers (see separate operating instructions).

It is exclusively used above the OptiHopper powder hopper.

The sieve is configured via the Touch Panel.

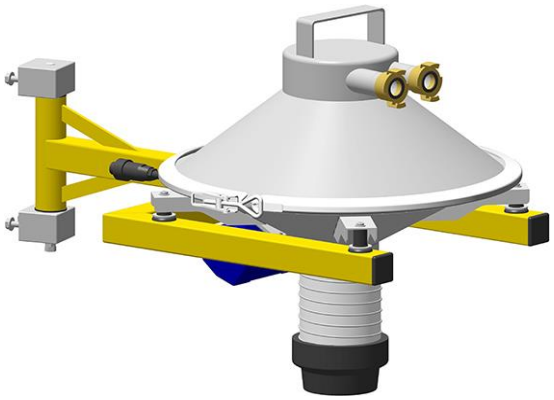


fig. 16:

For additional information, please see the operating instructions of the sieve machine!

Displacer**

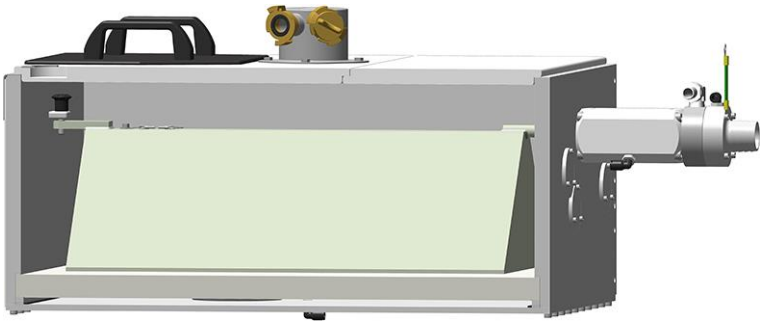


fig. 17:

– Coating process can be started with only 6 kg of powder
– Easy to install (small rework required in the OptiHopper)
– Easy to clean due to no-stick materials

If there is no displacer, 11 kg of powder is required to start the coating process.

Powder feed to guns**

– Powder feed to guns from powder bag cone or original powder container
– Use up to max. 2 guns
– Fluid/suction lance(s)
– Not included in the cleaning procedure of the OptiCenter
– For manual, simple coating tasks

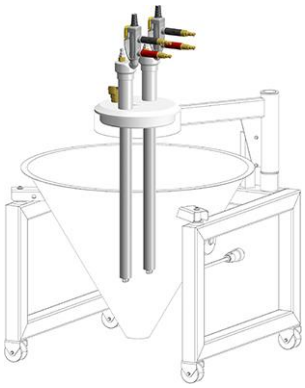


Fig. 18

Level sensor**

– For level detection in the powder bag cone or in the powder hopper
– Height adjustable
– Fluidized in the measuring range

Fig. 19

Principle of operation

Powder circuit

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 OptiHopper (**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**).

The separated powder is cleaned by passing it through the integrated sieve (**3**) and fed back into the OptiHopper (**9**) by the dense phase conveyor (**4**), where it is prepared again for coating operation.

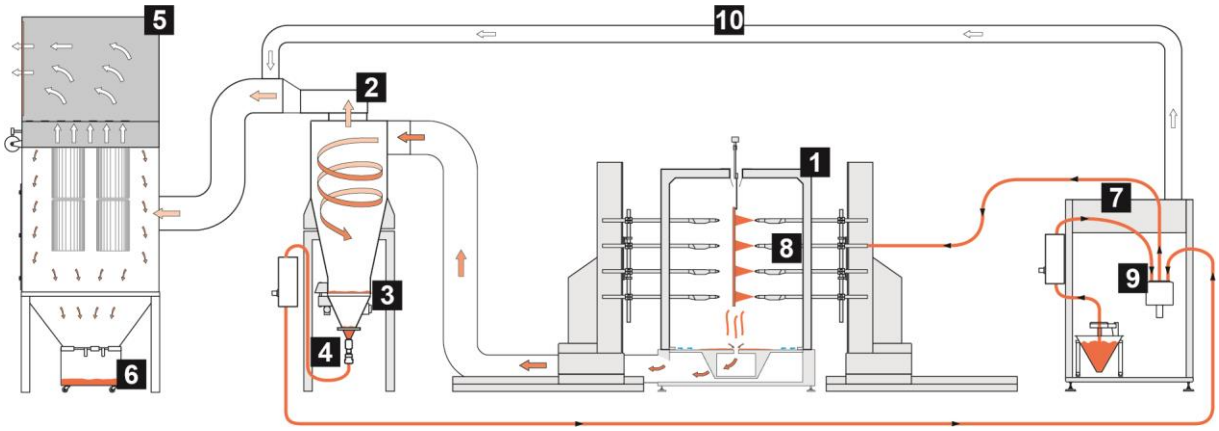


fig. 20: Powder flow in the plant

1	Booth	6	Waste container
2	Cyclone separator	7	OptiCenter
3	Screen	8	Automatic powder guns
4	Dense phase conveyor	9	OptiHopper
5	After filter	10	Exhaust air ducting

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

Touch panel / operating panel

Typical characteristics

- Powder coating in 2 operating modes
- Cleaning in cleaning mode
- User administration and language management
- Configuration and parameter data management
- Alarm handling
- Diagnostic functions
- Operating data acquisition
- Storage of operating data on SD cards
- Data exchange with higher-level plant controls (option)
- 7.0" display with symbol elements
- TFT color screen with touch screen function
- CAN bus technology
- Multilingual version

Technical Data

System

MagicControl CM40	
Processor	ARM Cortex-A9 800 MHz
Internal memory	512 MB RAM, 1 GB SLC
Remanent memory	128 kB

Electrical data

MagicControl CM40	
Nominal voltage	24 VDC SELV, extra-low safety voltage
Voltage range	24 VDC acc. to DIN 19240 19.2 - 30.0 VDC effective
Reverse voltage protection	yes
Protection	yes (internal inaccessible melting fuse)
Electrical insulation	no
Current consumption	max. 21.6 W/24 VDC
Switch-on current max.	1 A^2s

Dimensions

Touch Panel	
Mechanical dimensions	196 x 135 x 51 mm
Window	183 x 122 mm

Display

Touch Panel	
Technology	Projected Capacitive Touch (PCT)
Screen diagonal	7.0"
Resolution	1024 x 600 pixels (WXGA)
Number of colors	≈ 16.7 million (color depth 24 Bit)
Display surface	154 x 90 mm
Operation	Multifinger touch
Front screen	Anti reflex coated, scratch-proof

Connections

MagicControl CM40	
Ethernet 1	RJ-45 socket, 8-pin, 2 LEDs (CAT5e/6), LAN1, 10/100 Mbps
Ethernet 2	RJ-45 socket, 8-pin, 2 LEDs (CAT5e/6), LAN1, 10/100 Mbps
USB host	USB 2.0, not galvanically isolated, plug type A, full power (500 mA)
USB device	USB 2.0, not galvanically isolated, plug type B
COM1	RS-232, not galvanically isolated, SUB-D connector 9-pin
COM2	RS-485, not galvanically isolated, SUB-D connector 9-pin
CAN	CAN1, not galvanically isolated, SUB-D connector 9-pin
SD card slot	SDSC or SDHC according to SDA specification 2.0

Environmental conditions

Touch Panel	
Climate	10-40 °C, 10-95% relative humidity, not condensing
Vibration / shock / drop test	Vibration – IEC 60068-2-6 Shock – IEC 60068-2-27 Drop test – IEC 60068-2-31

Rating plate

A rating place is attached to the back of the device for the purpose of identification. The rating place contains the following information:

– Type designation

– Version

– Required power supply

– Serial no.

– Arrangement of interfaces and operating elements

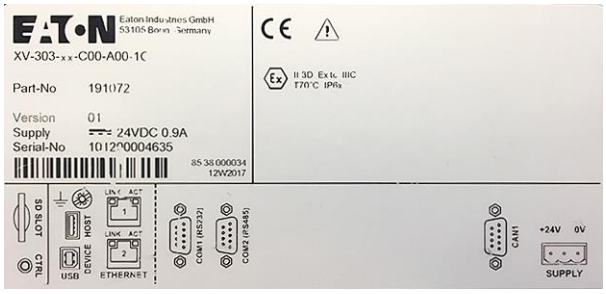


Fig. 21: Rating plate

Design and function

Operating and display elements

Fig. 22: Front and back

	Designation	Description
1	**Display, touch sensor**	Operating and display elements Acquisition of the actuation of the operating elements shown on the display. Operated by touch using fingers.
2	**SD card slot**	Slot for SD card
3	**CTRL button**	Exits the visualization program

Connections and interfaces

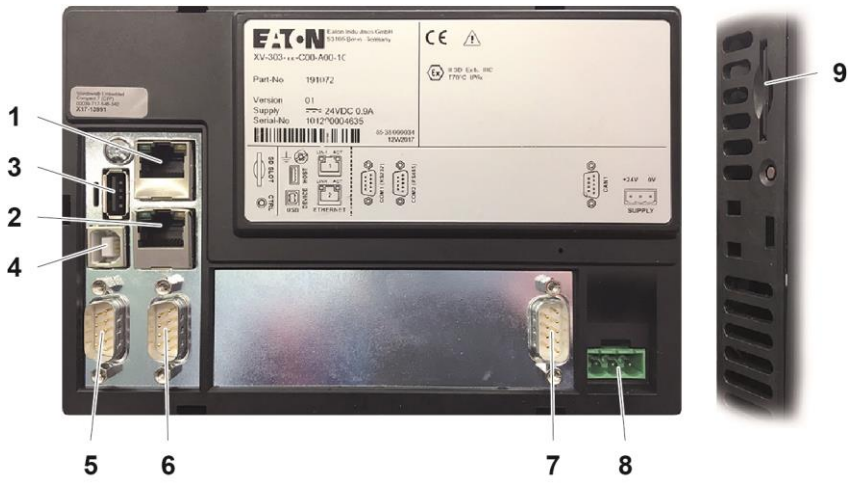


Fig. 23: Connections

	Connection	Description
1	**Ethernet 1**	RJ-45 socket, 8-pin, 2 LEDs (CAT5e/6), LAN1, 10/100 Mbps
2	**Ethernet 2**	RJ-45 socket, 8-pin, 2 LEDs (CAT5e/6), LAN1, 10/100 Mbps
3	**USB host**	USB 2.0, not galvanically isolated, plug type A, full power (500 mA)
4	**USB device**	USB 2.0, not galvanically isolated, plug type B
5	**COM1**	RS-232, not galvanically isolated, SUB-D connector 9-pin
6	**COM2**	RS-485, not galvanically isolated, SUB-D connector 9-pin
7	**CAN**	CAN1, not galvanically isolated, SUB-D connector 9-pin
8	**Power supply**	MSTB plug connector, 3-pin
9	**SD card slot**	SDSC or SDHC according to SDA specification 2.0

Symbols

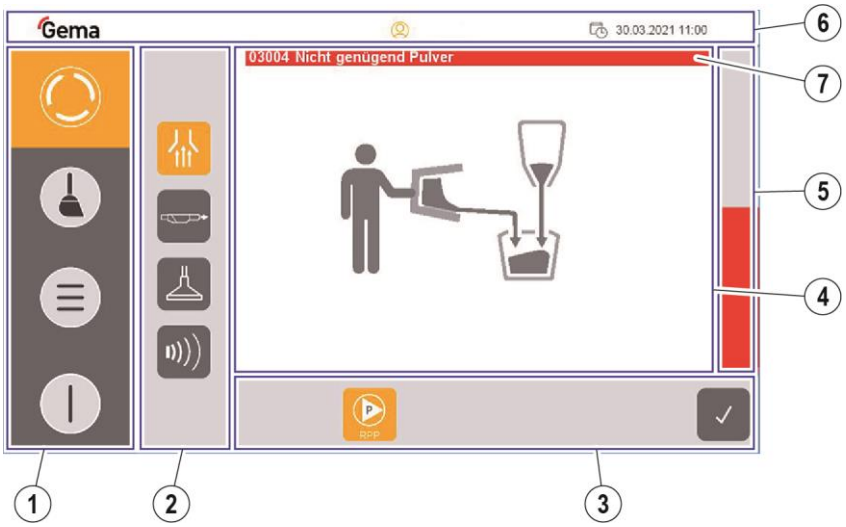


fig. 24

① Navigation bar
② Mode-dependent bar
③ Process-dependent bar
④ Plant overview
⑤ Powder filling level indicator
⑥ Login status bar
⑦ messages

Function keys

ATTENTION

Sensitive touch surface.

Pointed or sharp objects can damage the screen.

- ► Do not use any pointed or sharp objects (e.g. knife).
- ► Only activate the touch panel with your finger or a stylus.
- ► When wearing gloves, ensure that these are clean. They must not be covered with abrasive dust or sharp particles.

The function keys are distributed on the user interface.

	Coating operation		Cleaning operation mode
	Main menu		OptiCenter OFF (Press and hold 2 seconds)
	US sieve ON/OFF		Vibrator ON/OFF
	Extraction system ON/OFF		Gun hose rinsing
	Manual coating		Confirm error messages

	Cleaning (intensive)
	Cleaning (adjustable procedure)
	Cleaning ON
	Suction unit ON/OFF
	Cleaning the powder hoses (in direction to the guns)
	Fluidizing the OptiHopper

	Cleaning (quick)
	Overview of cleaning times
	Cleaning OFF
	Collecting powder Cleaning the ring injector (AirMover)
	Cleaning the powder hoses (in direction to the pumps)

Meaning of the colors

Gray background
= present, but not active

Orange background
= active state

Operating modes

The following operating modes are available:

- **Coating**
- **cleaning/color change**
- **configuration/settings**

These operating modes are described in detail in the following chapters.

The user interface of the control unit is designed with pictograms, so that only the really essential parameters are displayed, and the operator can can quickly find a solution.

The control unit is not in any operating mode after switching on, or after a restart. The operating modes are selected on the panel.

Coating

This operating mode starts the coating process.

The coater decides whether the powder should be recovered or transported into the waste.

Operating mode Coating with powder recovery (spray)

The powder is recovered in this coating mode – the powder, which does not adhere to the object, is fed back into the powder circuit.

Operating mode Coating without powder recovery (into a waste container - spray to waste)

There is no powder recovery in this coating mode – the powder, which does not adhere to the object, is fed directly to the waste.

▶ **The recovery hose must be plugged in manually (connection ).**

Utilization of this operating mode:

- Short coating with different powders
- If highest coating quality is required

Manual coating mode

There is no powder recovery in this coating mode – the powder, which does not adhere to the object, is fed directly to the waste.

Utilization of this operating mode:

- For smaller coating tasks
- If highest coating quality is required

Cleaning/color change operating mode

This operating mode allows the user to select **Intensive cleaning, Quick cleaning or User-defined cleaning** in the first cleaning menu. In

the procedure of these cleaning modes, there is no difference, only the preset parameters are different (cleaning times). The higher the requirement for cleanliness, the higher the time expenditure will be.

Each of these cleaning modes consists of several parts.

The cleaning of the components is partially automated, however, some of them must be cleaned manually.

The **Cleaning** operating mode can be selected from every coating operating mode, or from the **Standby** operating mode.

Utilization of this operating mode:

– After switching on the plant, if very high quality is required on initial coating application

– Before every color change

– Before switching off the plant

The higher the requirement for cleanliness, the higher the time expenditure will be.

▶ **During cleaning, no objects may be present in the booth and no objects may enter the booth.**

Configuration

This operating mode allows logged in operators to make certain configurations on the OptiCenter and to change parameters.

Settings

This operating mode allows logged in operators to make certain settings on the control unit or to read information:

– User administration

– Operator and system language

– Brightness, date/time, communication, diagnostics, network

– Information regarding operating hours, hardware and software

User levels and access

▶ **The user does not have to be logged in to operate the OptiCenter with its basic functions.**

The plant control offers the possibility to define the access rights of the different users. Access is only possible after entering the appropriate password. Certain functions are available depending on the user level, which is defined in advance.

The software has 5 user levels as standard predefined by Gema:

– User level **0 (admin)**

– User level **1 (Gema service)**

– User level **2 (user 1)**

– User level **3 (user 2)**

– User level **4 (user 3)**

These user levels are pre-programmed and cannot be changed.

The functions available depending on the user level are explained below.

Functions available at user level

User	Admin	Gema Service	user 1	user 2	user 3
User level	**0**	**1**	**2**	**3**	**4**
User groups	Administrator	Service	Supervisor	Operator	Painter
The panel can be used without any limitation	•	–	–	–	–
Level for trained Gema personnel	•	•	–	–	–
Configuration possible	•	–	–	–	–
Plant parameters can be modified	•	•	•	–	–
If no user is logged on to the panel, operation is locked	–	–	–	–	–

CAN bus

General

The control is a CAN master system. Together with CAN slave participants, it forms the network.

The wiring and topology of the CAN network is specified in the electrical diagram.

User administration

Status display

The login status is displayed in the corresponding bar:

User logged in

User logged out

Login

The user can log in as follows:

– By clicking on the symbol in the login status bar , if another user has previously logged out

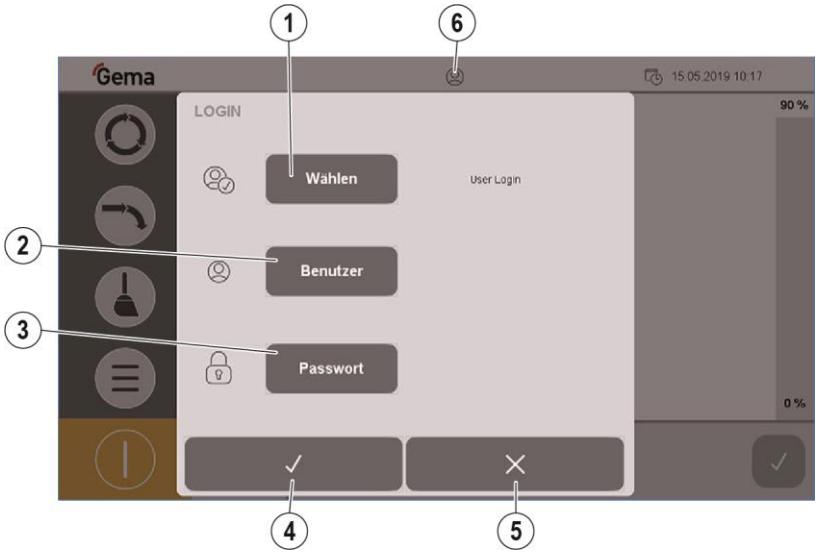


Fig. 25: Login

① Log in by user selection
② Log in by entering user name
③ Enter user password
④ Confirm
⑤ Cancel
⑥ Login status:

User logged in

User logged out

Login procedure

1. Press the **Select** key

Fig. 26: Login – Main page (not logged in)

2. The screen switches to the next page:

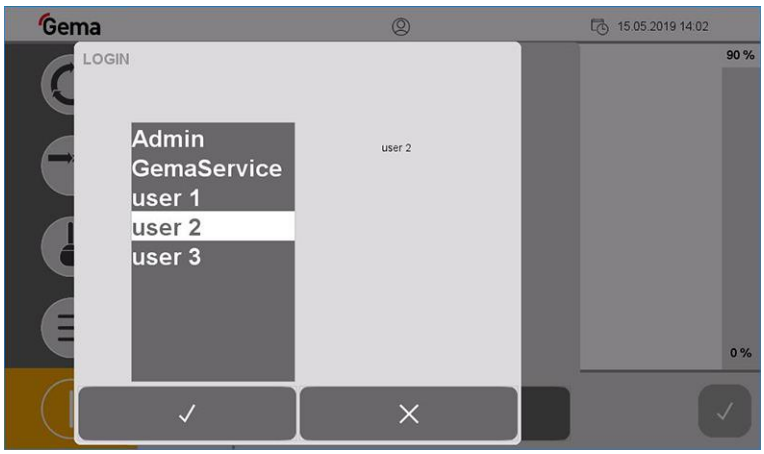


Fig. 27: Login – User selection

3. Select the desired user profile and confirm by pressing the ☑ key

---

Alternatively, the user can enter their own name directly by pressing the **User** key

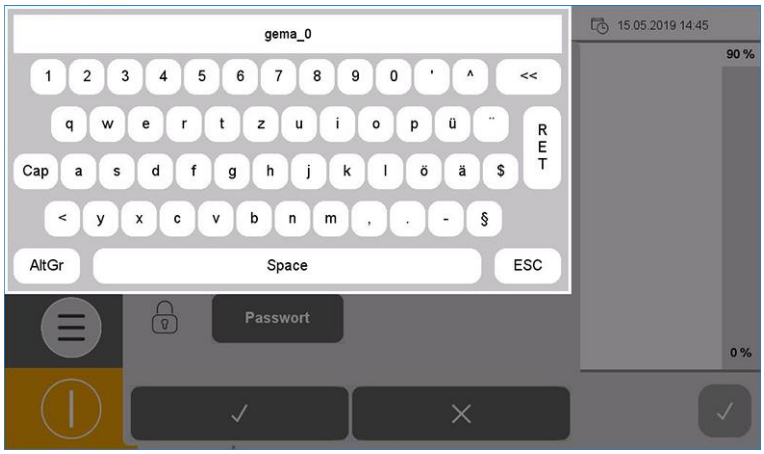


Fig. 28: Login – User input

4. Enter user name and confirm by pressing **RET**

---

5. Press the **Password** key

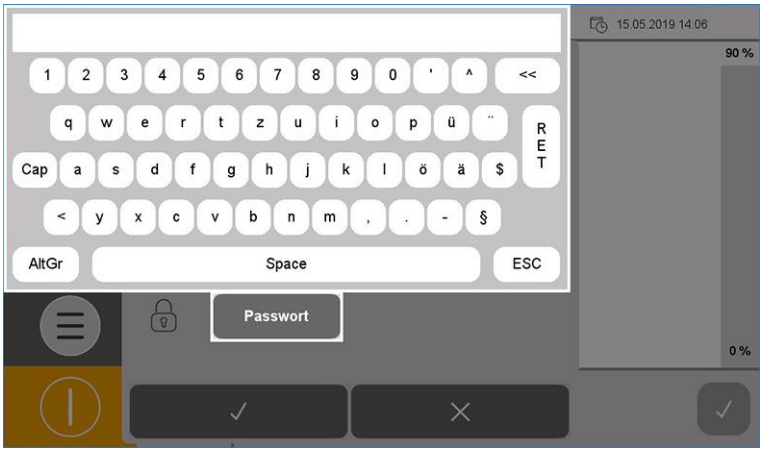


Fig. 29: Login – Password input

6. Enter password and confirm by pressing **RET**

Fig. 30:

7. Press the ✓ key.
   – The following screen is displayed:

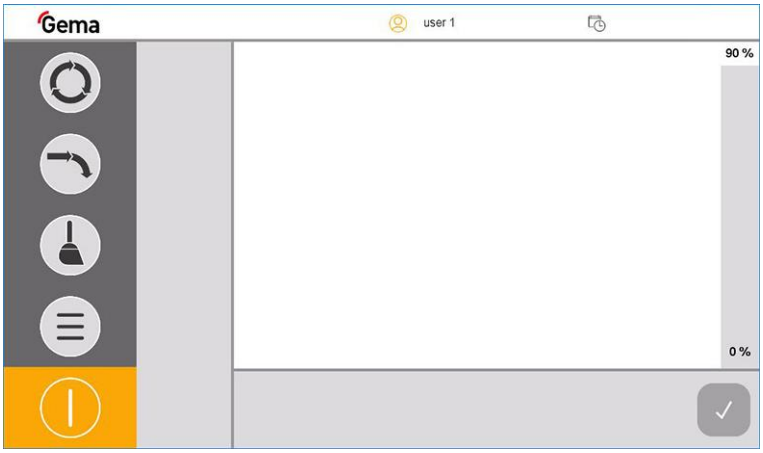


Fig. 31:

Log-out

The user can log out in two ways:

– By switching off the plant (See chapter "Switching off the OptiCenter (after each working day)" on page 64.)

– By pressing the symbol in the log-in status bar

  • User is logged off

Change user

The change of user takes place by logging out and in.

User profile

Depending on user rights, individual functions and settings may not be accessible and are locked.

– See chapter "Functions available at user level" on page 36.

Create user

1. Press the key

   The following page is displayed:

Fig. 32:

2. Press the key

   – The following page is displayed:

Fig. 33: Settings

3. Press the  key
   – The following page is displayed:

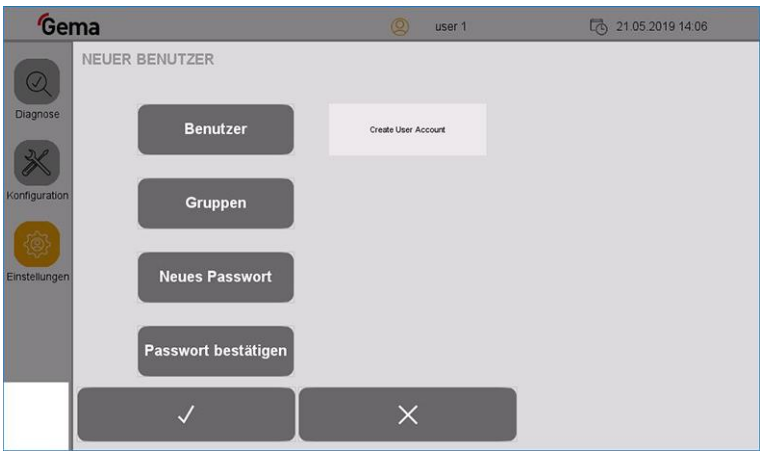


Fig. 34:

4. Press the "**User**" key
   – A keyboard opens to enter the name of the new user.

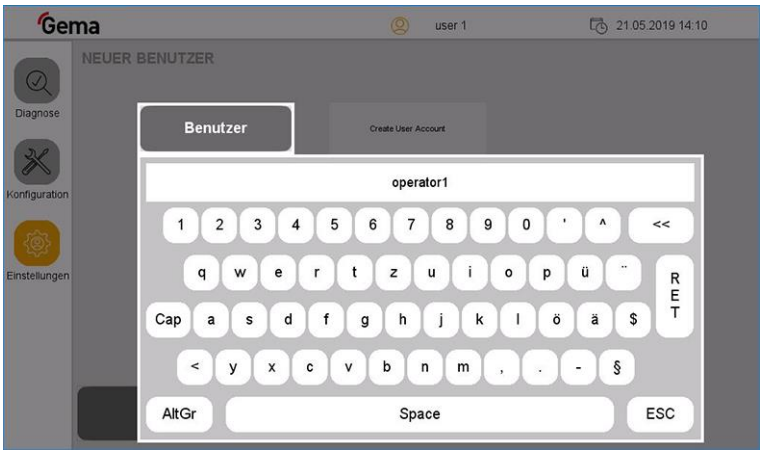


Fig. 35:

5. Enter user name
6. Press the **RET** key to confirm

7. Press the “**Groups**” key
   – A corresponding dialog opens.

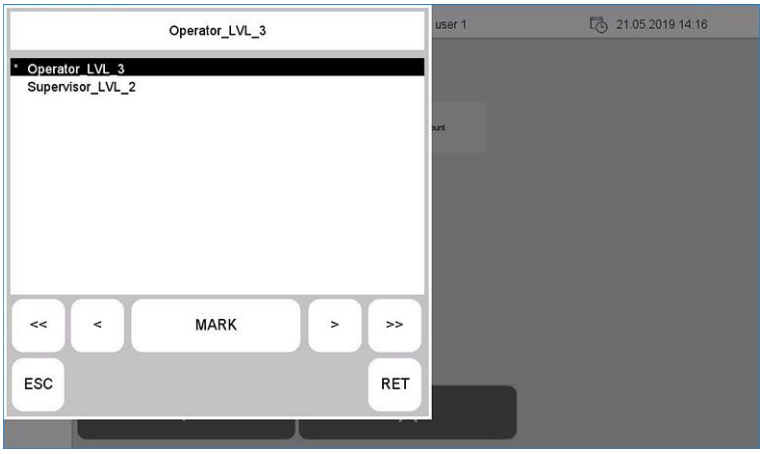


Fig. 36:

8. Assign the desired user group to the new user from the list of available user groups:
   – Select the desired group using the arrow keys (<<, <, >, >>).
   – Press the **MARK** key: the selected group is marked with *****
   – Press the **RET** key to confirm
9. Press the “**New password**” key
   – A keyboard opens to enter a password for the new user.

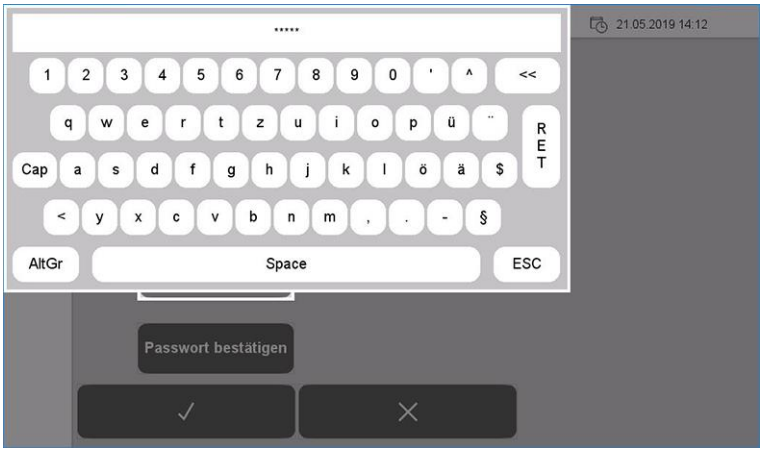


Fig. 37:

10. Enter password
11. Press the **RET** key to confirm
12. Press the “**Confirm password**” key
    – A keyboard opens and the password for the new user must be entered again.

Fig. 38:

13. Press the **RET** key to confirm

14. Press the ☑ key

▶ **The new user now appears in the list of available users and can be deleted or changed at any time.**

Delete users

1. In the **Settings** menu, press the  key
   – The following page is displayed:

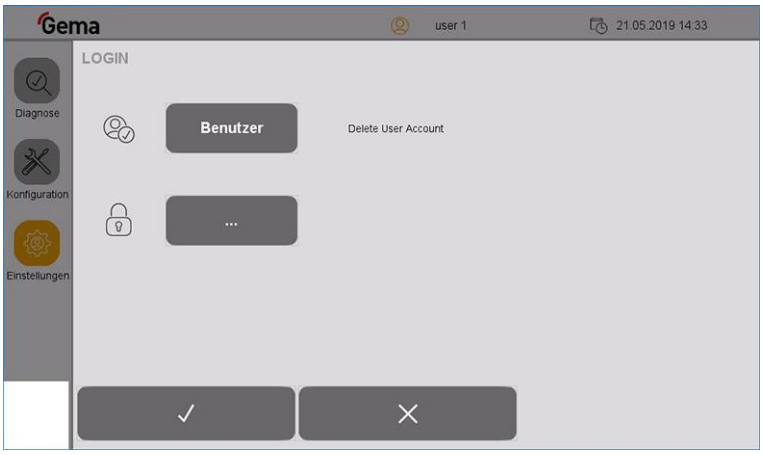


Fig. 39:

2. Press the “**User**” key
   – A keyboard opens to enter the user name to be deleted.

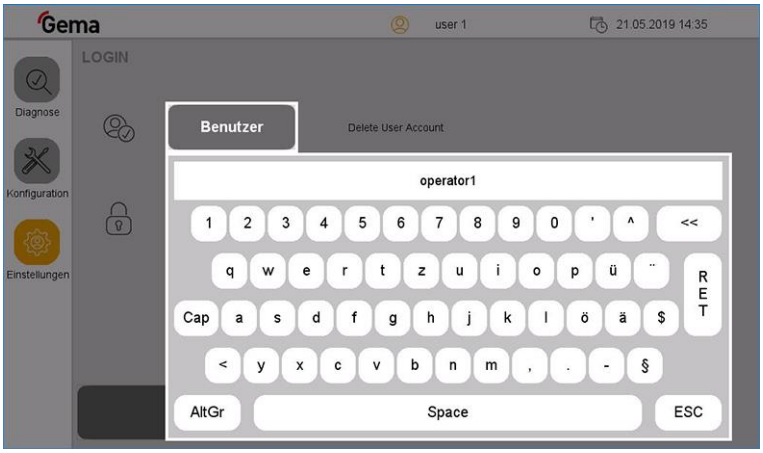


Fig. 40:

3. Enter the user name to be deleted
4. Press the **RET** key to confirm

OR

5. Press the "**⋯**" key
   – A corresponding dialog opens.

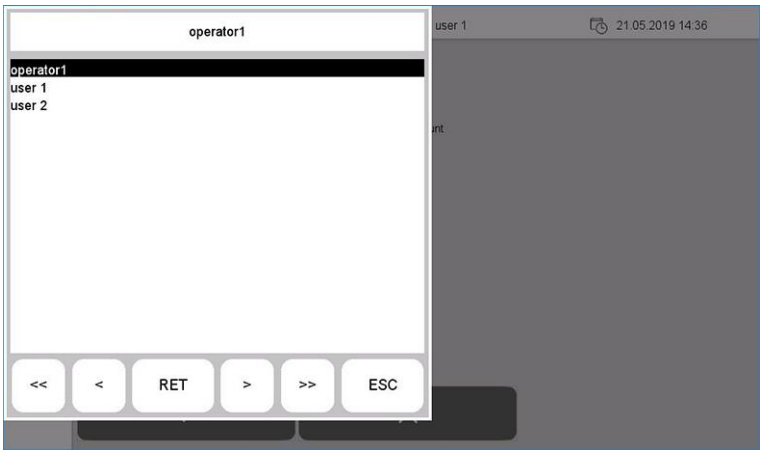


Fig. 41:

6. Select the user to be deleted using the arrow keys (<<, <, >, >>).
7. Press the **RET** key to confirm
8. Press the ☑ key
   – The following page is displayed:

Fig. 42:

Change user password

1. In the **Settings** menu, press the  key

   The following page is displayed:

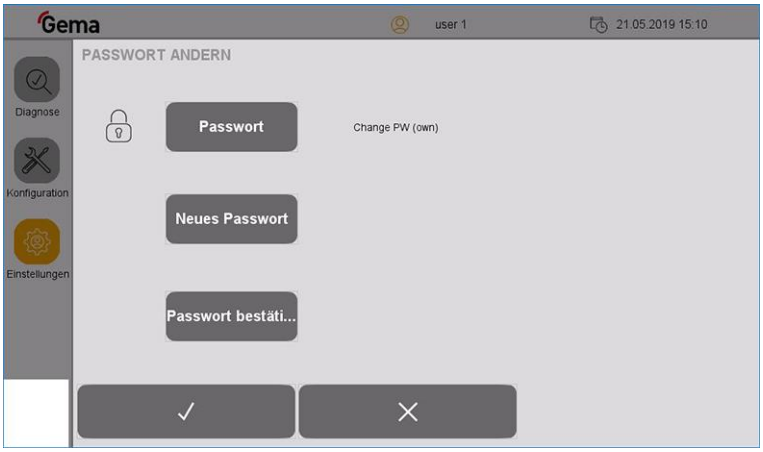


Fig. 43:

2. Press the “**Password**” key

   – A keyboard opens to enter the last password used.

Fig. 44:

3. Enter the last password used
4. Press the **RET** key to confirm
5. Press the “**New password**” key
   – A keyboard opens.
6. Enter the new password
7. Press the **RET** key to confirm
8. Press the “**Confirm password**” key
   – A keyboard opens and the new password must be entered again.
9. Press the **RET** key to confirm
10. Press the  key

Search users

This function is used to display all created and active users.

1. Press the  key

   The following page is displayed:

Fig. 45:

2. Press the  key
   – The following page is displayed:

Fig. 46:

3. Press the  key

   – The following page is displayed:

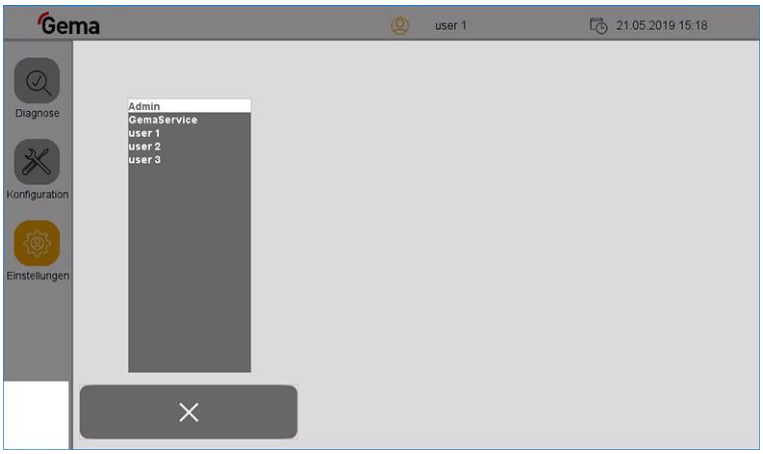


Fig. 47:

User language

The user language is part of the user profile and can be changed to one of the pre-installed languages if required.

The selected language is loaded each time you log in.

1. Press the  key

   The following page is displayed:

Fig. 48:

2. Press the  key
   – The following page is displayed:

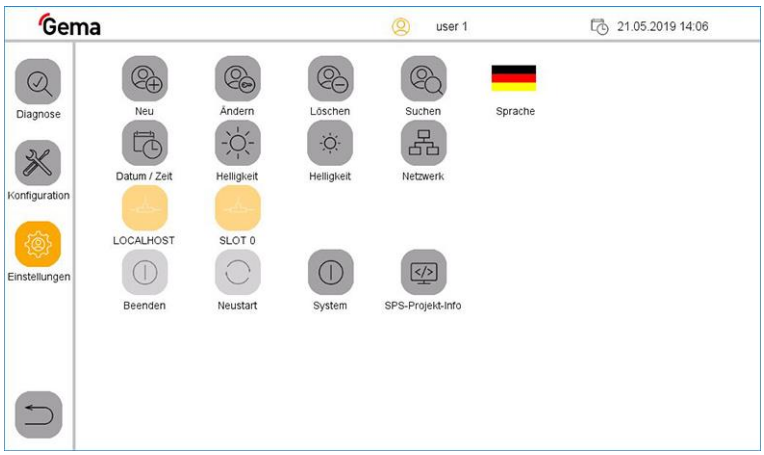


Fig. 49:

3. Press the **LANGUAGE** key
   – The following page is displayed:

Fig. 50:

4. Select desired language

– The change takes effect immediately and the control switches to the previous page

Diagnostic

1. Press the  key

The following page is displayed:

Fig. 51:

2. Press the  key

The following page is displayed:

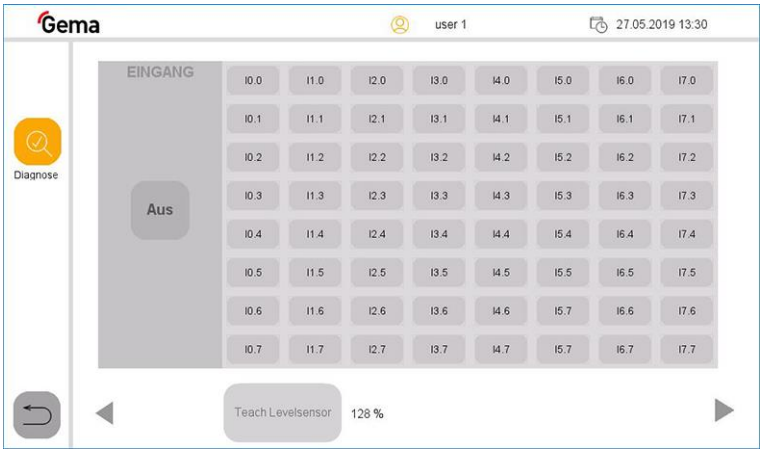


Fig. 52: Inputs

3. Press the ► key

The following page is displayed:

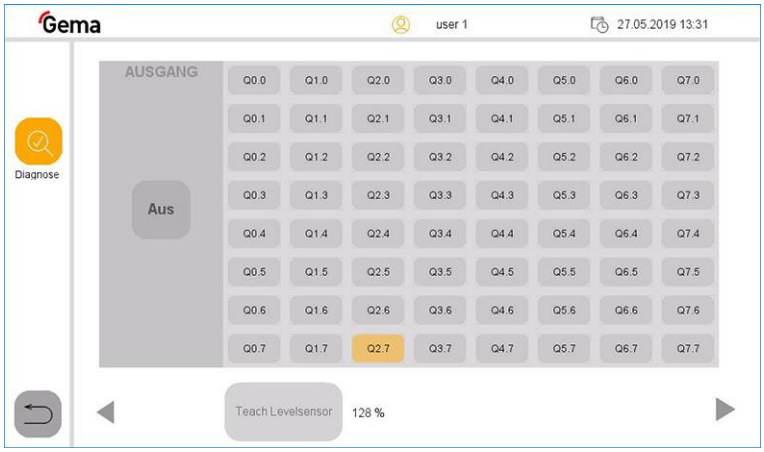


Fig. 53: Outputs

Operating data

1. Press the  key

   The following page is displayed:

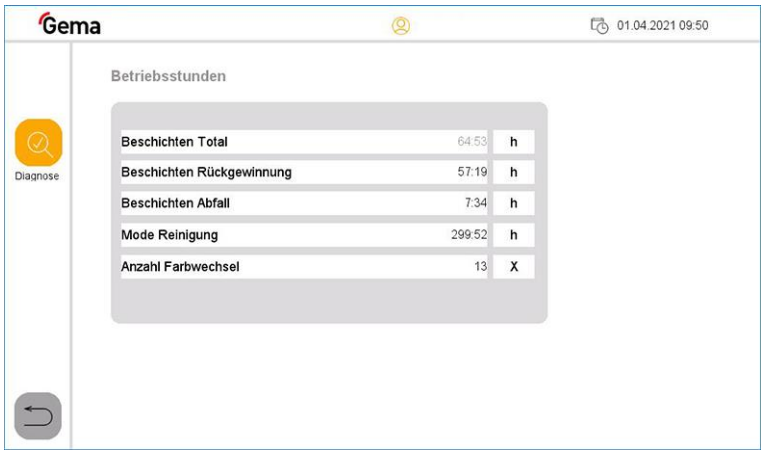
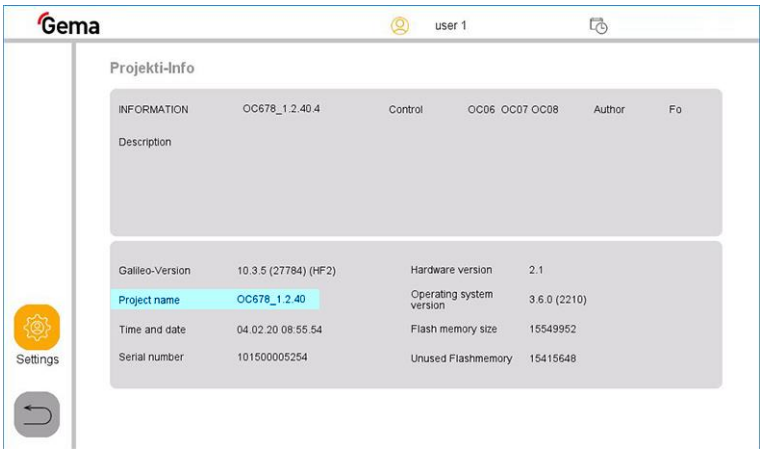


fig. 54:

Coating mode total	The productive plant utilization/coating time
Coating mode with recovery	Total productive time in operating mode **Coating with recovery (spray)**
Mode paint waste	Total productive time in operating mode **Coating without recovery (waste)**
Cleaning mode	Total productive time in operating mode **Cleaning**
Number of color changes	Number of color changes

Checking the software version

1. Push the  button
2. Push the  button
3. Push the  button
   – The following page with the actual software version is displayed:



Assembly / Connection

Set-up

The powder management center is used in combination with powder coating plants.

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

ATTENTION

Surrounding temperature too high

– Install the OptiCenter only in locations with an ambient temperature of between +10 °C and +40 °C, i.e. never next to heat sources (such as an enameling furnace) or electromagnetic sources (such as a control cabinet).

Grounding of the powder management center

⚠ DANGER

Missing or incorrect grounding

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

► Ground all OptiCenter metal parts in accordance with general local regulations.

► Check grounding regularly.

A corresponding connection point at the rear of the OptiCenter is reserved for the potential equalization.

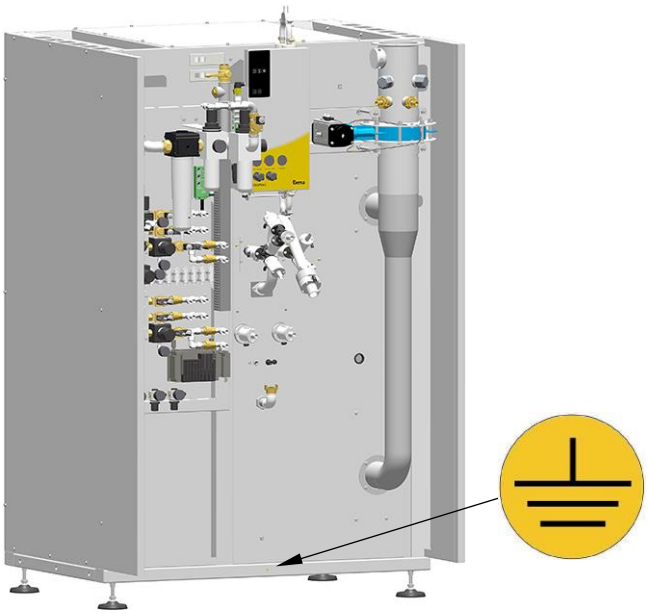


Fig. 55: Potential equalization – connection point

Compressed air supply

The compressed air must be free of oil and water!

The OptiCenter requires a connection to a sufficiently dimensioned compressed air circuit.

In order to ensure correct operation, the main pressure regulator must be set to a pressure of **6 bar**.

Fig. 56: Compressed air supply

The other pressure regulators of the system are preset at the factory according to the pneumatic diagram.

Start-up

Preparation for start-up

Basic conditions

During start-up, the following general conditions, which have an influence on the powder feed, must be observed:

– Characteristic of hose layout

– Length and height difference of the suction section

– Length of the feed section

– Corresponding power and compressed air supply available

– Powder preparation and powder quality

Basic information

Compliance with the following principles will result in successful start-up:

– The OptiCenter works with all types of powders that can be fluidized. If the powder is for example humid or contaminated with other materials, then the conveying can be negatively influenced or does not work at all

– At the suction point, a homogeneous fluidization must be ensured, so that no air ducts (craters) can be formed

– The connecting hose between the AirMover and the booth should be as short as possible. An additional AirMover must be installed from 7 m.

Inserting the SD card

The SD card contains the actual operating system and all important application information. In order for the operating panel to function properly, the SD card must be inserted before the plant is started.

The slot for inserting the SD card is located on the side of the operating panel.

ATTENTION

Data loss

A voltage drop or removal of the SD card while it is being written to can lead to data loss or destruction of the SD card.

- ► Only insert the SD card into the operating panel with the power switched off.
- ► Avoid writing data on to the SD card when there is also a drop in voltage.
- ► Only remove the SD card from the operating panel with the power switched off.
- ► Before switching off, make sure that no software is writing data on to the SD card.

Inserting SD card

SD cards are protected against incorrect insertion.

1. Do not use force when inserting.
2. Push the SD card into the slot until it clicks into place.

Removing SD card

1. Push the SD card all the way into the SD card slot.
2. Pull the SD card out of the SD card slot.
3. Store the SD card in its packaging for protection.

Parameter description

General control settings are defined in the "Settings" menu and the associated submenus.

The OptiCenter parameters are edited and displayed in the "Configuration" menu and the associated submenus.

Depending on the access level of the user logged in, parameters can be edited or only displayed. Some parameters are reserved exclusively for Gema Service.

Depending on the selection of options, additional parameters are displayed and hidden.

No.	Parameters	Description	Value
3400	OptiCenter type	Selection of OptiCenter type	OC06 OC07 OC08 OC09
3401	US-Mesh: 140 µm	Selection of ultrasonic sieve with mesh size 140 µm	0 / 1
3402	US-Mesh: 200 µm	Selection of ultrasonic sieve with mesh size 200 µm	0 / 1
3403	US-Mesh: 250-300 µm	Selection of ultrasonic sieve with mesh size 250 µm or 300 µm.	0 / 1
3404	US-Mesh: > 500 µm	Selection of ultrasonic sieve with mesh size 500 µm or larger (XXX-1180 µm)	0 / 1
3405	Recovery- Freshpowder sieving	The recovery powder is sieved by default. 0 = sieving inactive 1 = sieving recovery powder 2 = sieving recovery and fresh powder 3 = sieving fresh powder	0 / 1 / 2 / 3
3406	Additional powder hopper	Fresh powder hopper with level sensor	0 / 1
3407	Fresh powder system intern	Activates typical limits and default settings for an internal fresh powder system.	0 / 1
3408	Fresh powder system extern	Activates typical limits and default settings for an external fresh powder system.	0 / 1
3409	Vacuum cleaner		0 / 1
3410	Second OptiCenter	OptiCenter is configured as the second OptiCenter in a MultiColor MCS01 system.	0 / 1
3412	Operating mode spray manual		0 / 1
3414	level sensor		0 / 1
3417	Sieve PSxx	Activates typical limits and default settings for an internal vibrating sieve.	0 / 1
3421	US-Mesh: Cannot be deselected	xxx	0 / 1
3439	Number of injectors 1-12	Selection Number of injectors	1-12 1-24
3460	Delay Fresh powder demand	In coating mode with powder recovery (spray), fresh powder is also fed into the OptiHopper after the set time has elapsed in addition to the recovery powder until the powder level set at parameter 3440 is reached again.	0-180 s
3461	Supervision Fresh powder demand	If in automatic mode the powder level set in parameter 3440 is not reached after the set time has elapsed, an error message is triggered.	0.3-5.0 min

No.	Parameters	Description	Value
3462	Supervision Level sensor stops powder circuit	If in automatic mode the powder level set in parameter 3440 is not reached after the set time has elapsed, the powder feed of fresh and recovery powder is stopped for safety reasons (overfill protection) and an error message is triggered.	2.0-10.0 min
3465	Supervision Fresh powder demand FPS	If in automatic mode the powder level set in parameter 3440 is not reached after the set time has elapsed, the powder feed of fresh and recovery powder is stopped for safety reasons (overfill protection) and an error message is triggered.	0.3-5.0 min
3471	Extend sieve		15-60 s
3481	Level sensor cleaning off		10-30 s
3482	Level sensor cleaning on		0.3-3.0 s

Operation

Operation

During the initial commissioning of the device, the functional check is to be performed without powder!

Starting the OptiCenter

1. Turn the plant main switch to the **ON position**.
   – The control starts the operating system, the PLC control and the operating software to the main page.

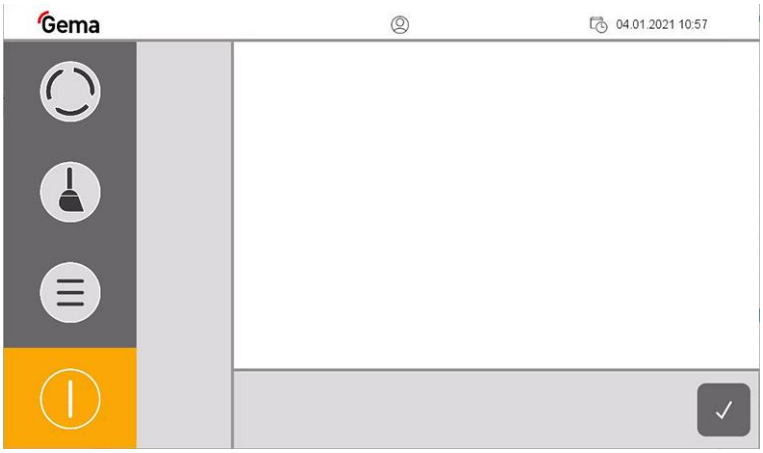


fig. 57: Main page (not logged in)

2. Press the symbol in the login status bar to log in with a user name and password

The user does not have to be logged in to operate the OptiCenter with its basic functions.

   – More about the login procedure see chapter "Login" on page 36.

After logging in, the following functions are available to the user:

– Configuration
– Diagnostics
– Settings

3. Select operating mode:

Coating

Cleaning operation mode

4. Set all other plant components to the correct operating mode (for more information, see the relevant operating instructions)
   – If some plant components are not yet ready for operation, a message will be displayed.

Filling the OptiHopper

Before coating, the OptiHopper must first be filled with powder. The level is reached when the fluidized powder is 20 mm above the air suction openings.

Manual filling is provided as standard. Optional fresh powder systems and level sensors allow automatic filling.

The optional displacer can be used for processing small quantities of powder (less than 11 kg). see chapter "Displacer**" on page 25.

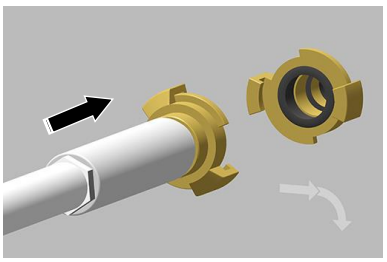
Coating

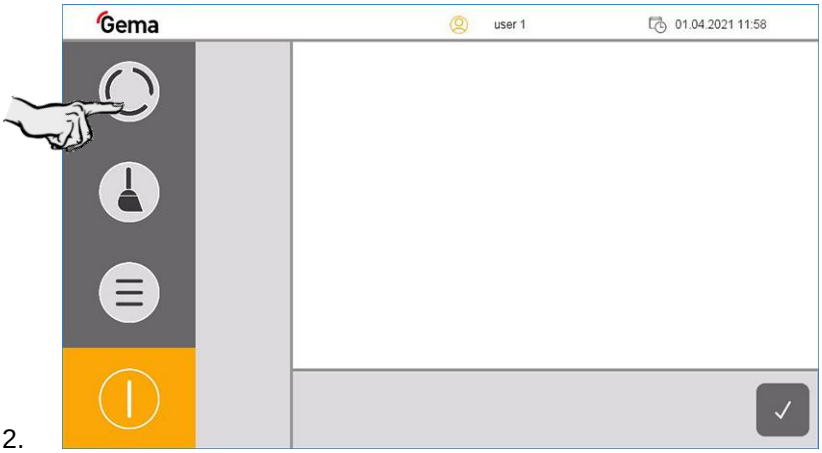
With powder recovery (spray)

1. 

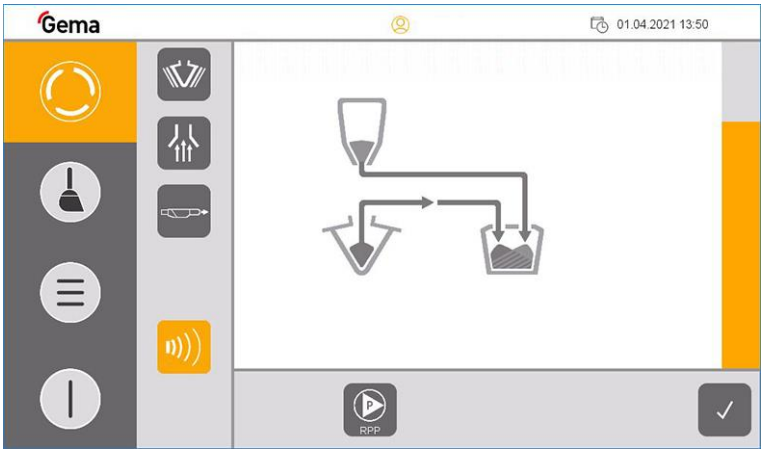
Without powder recovery (spray to waste)

1. Reposition the recovery hose (connection on the back of the OptiCenter housing)



2. 

3. After the reposition, the coating screen shows the selected device configuration:



In this example, the configuration is displayed with a fresh powder system and covered level sensors and the sieve is switched on.

4. If a US sieve** has already been configured, insert and close the OptiHopper cover with the appropriate mesh size
   – If there are several mesh sizes, the corresponding menu appears for selecting the mesh size used

ATTENTION

Overheating of the US sieve**

The US sieve can break if it has already been configured in the configuration menu and is not inserted in the OptiHopper (dry operation).

► Insert US sieve into the OptiHopper

ATTENTION

Clogging of the US sieve**

The US sieve can become clogged if it has not been configured in the configuration menu and is still inserted in the OptiHopper (operation without or with insufficient sieving capacity).

► Set US sieve parameters correctly

5. The extraction system  is switched off by default, but can be manually switched on and off as needed
6. Open the OptiHopper cover and visually check the fluidization and OptiHopper exhaust air.

▶ **Fluidization is set correctly when the powder "boils" slightly.**
– If necessary, adjust again on the appropriate pressure regulator

▶ **The OptiHopper exhaust air is set correctly if the powder does not escape and is slightly removed.**
– If necessary, adjust again on the appropriate pressure regulator

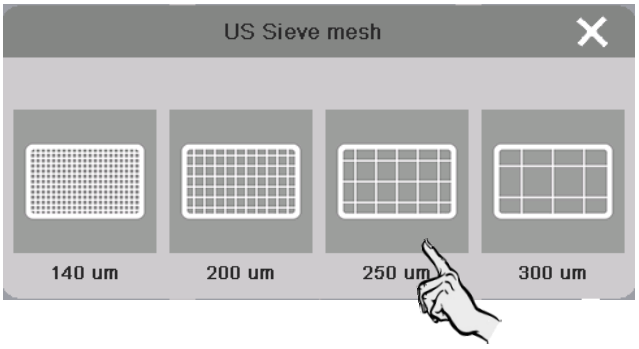
7. Coating can now commence

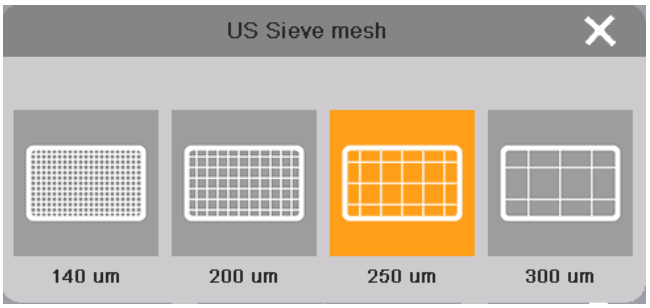
! If an error message is displayed, correct the error and acknowledge the error message so that the coating process continues.

Screen selection

If the customer uses more than one screen, the OptiCenter panel displays a relevant choice of mesh sizes.

▶ **Only previously configured mesh sizes are displayed, however.**
– See chapter "Parameter description" on page 56.

1. 

2. 

The selected mesh size remains active until the system is switched on again.

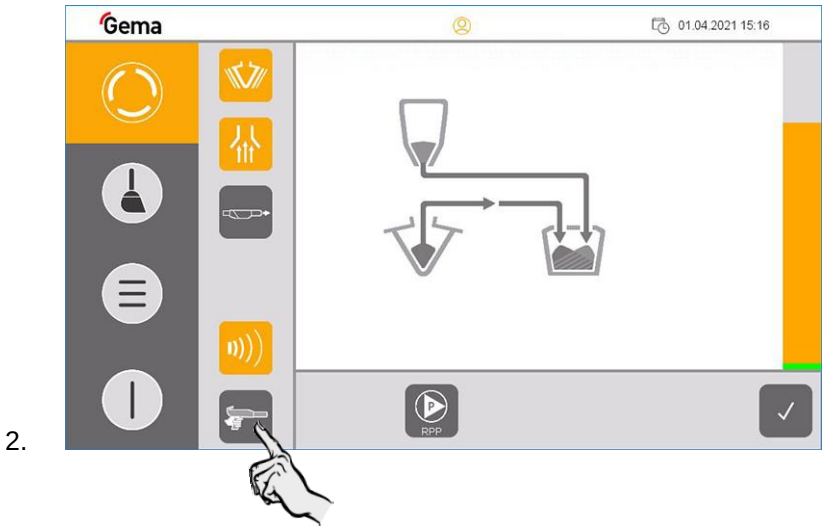
Manual coating

This coating mode is deactivated by default but can be activated as needed.

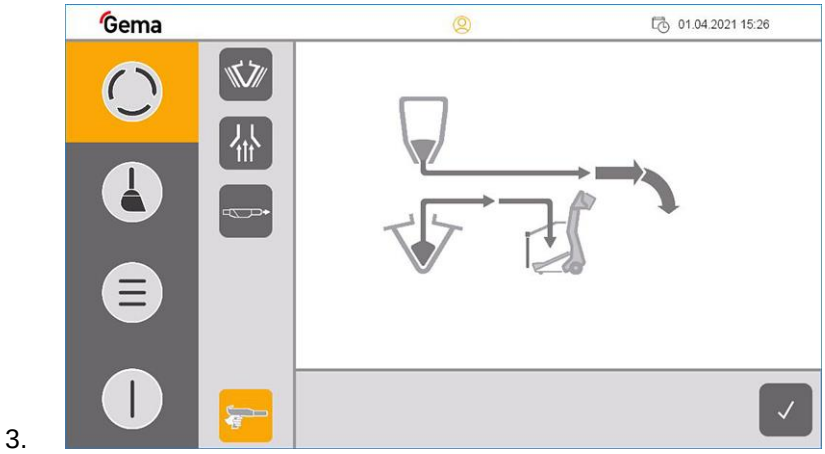
– Set parameter no. 3412 to 1 (See chapter "Parameter description" on page 56.)

1.

2.



3.



Delay fresh powder demand

In coating mode with powder recovery (spray), fresh powder is also fed into the OptiHopper after the set time has elapsed in addition to the recovery powder until the powder level is reached again.

To prevent the powder collection unit (under the cyclone) from overfilling, the fresh powder supply is delayed by parameter 3460. This ensures that priority is given to recovering the powder from the powder collection unit before fresh powder is introduced into the powder cycle. After the delay, the OptiHopper is simultaneously filled with the fresh and recovery powder until the powder level is reached.

▶ **The coating is correctly set when the powder collection unit (under the cyclone) does not overfill.**

– This must be set with parameter 3460.

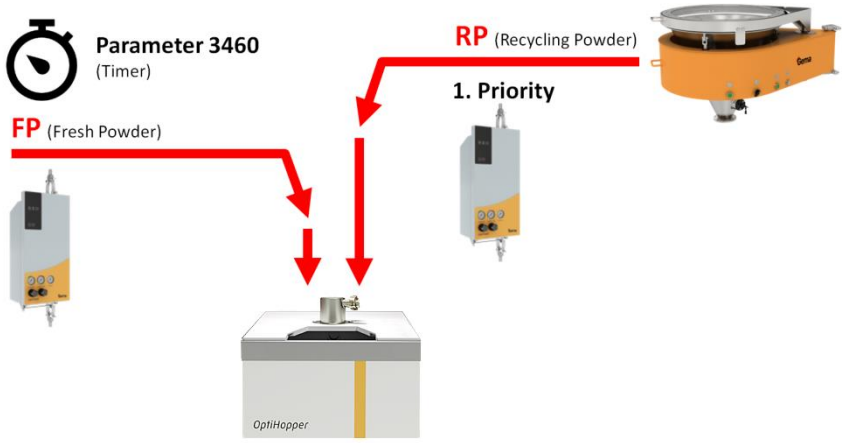


fig. 58:

(See chapter "Parameter description" on page 56.)

Working interruptions or coating breaks

If the coating process is interrupted for a longer period of time, the system should be brought into an economical state.

1. Check if all the workpieces have been coated
2. Press the  key for 2 seconds
   – The **Coating** menu is closed and switches back to the main menu
   – The level control is switched off
   – The vibrator switches off

Switching off the OptiCenter (after each working day)

To shut down, the following steps must be taken:

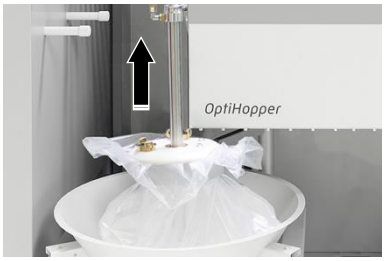
1. Check if all the workpieces have been coated
2. Press the  key for 2 seconds
   – The **Coating** menu is closed and switches back to the main menu
   – The level control is switched off
   – The vibrator switches off

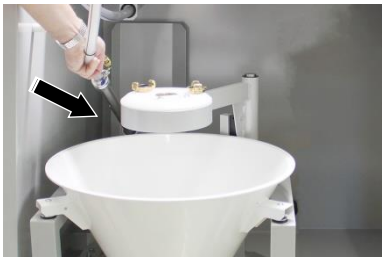
3. Clean the OptiCenter
   – See chapter "Cleaning" on page 69.
4. Turn the main switch to the **OFF position**

   – the interior lighting goes out

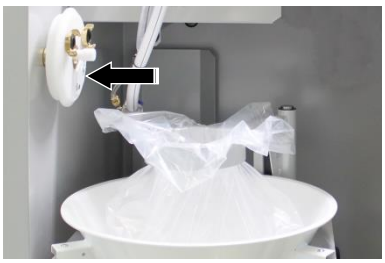
Replace powder bag

1. Check visually the powder level in the bag cone
2. Hold the full powder bag ready
3. Switch this on if it is has not been switched on already

4. 

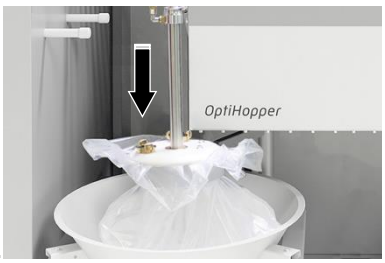
5. 

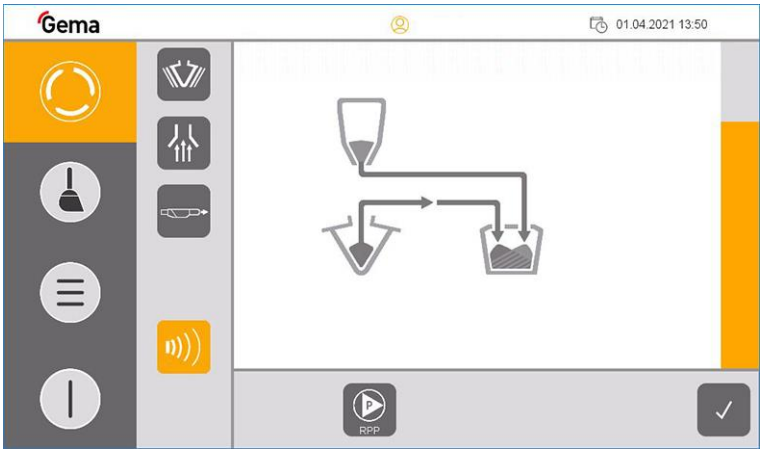
6. 

7. 

8. 

9. 

10. 

11. Empty the used powder bag with the residual powder into another container or dispose of it
12. 

If an error message appears, correct the error and acknowledge it to ensure that the coating process continues to run!

Color change

To perform a color change, proceed as follows:

1. End the coating procedure
2. Clean the OptiCenter
   – See chapter "Cleaning procedure" on page 70.
3. Fill the cleaned OptiHopper with new color
   – See chapter "Filling the OptiHopper" on page 60.
4. Select the desired operating mode

If an error message is displayed, correct the error and acknowledge the error message so that the coating process continues.

Maintenance / Repairs

ATTENTION

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

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

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

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, careful cleaning and maintenance extends the service life of the product and ensures long-lasting, uniform coating quality!

– The parts to be replaced during maintenance work are available as spare parts. For further information, see chapter "Spare parts list".

General information

The product is designed to require a minimum of maintenance.

OptiCenter maintenance

Maintenance schedule

The following components or modules are subject to a maintenance schedule:

	Component	Activity	Tool	Interval
1	Pneumatic parts, pinch valves	Check for unusual noises	–	1 x daily
2	Side panels, interior	Check for powder residues and clean	Air guns	1 x daily
3	Ring injector (AirMover)	Clean	Thinner	1 x monthly
4	Fluidizing plate in OptiHopper	Visual function check	–	1 x annually
5	Pinch hoses in all pinch valves NW15	Replace	–	1 x annually
6	Fluid plate level sensor	Replace	–	1 x annually
7	Filter element check valves injectors	Replace	–	1 x annually
8	Hose lines and fittings	Check	–	1 x annually
9	All electrical screw and clamp connections	Check if firmly fitted	–	1 x annually

▶ **The specified intervals are based on operation of 8 hours per day.**

The service life of the components depends heavily on the service duration, the powder quality and the quality of the air supply.

Check for unusual noises

During operation of the machine pay attention to unusual noises. Stop the machine immediately if an unusual noise can be heard. Check the components at the noise source.

! **If no clear cause can be found, contact Gema customer service.**

Wearing parts

Wearing parts replaced during maintenance can be individually purchased (refer to spare parts list).

Cleaning

⚠ WARNING

Cleaning with compressed air!

Eye injury and bodily injury from compressed air and flying parts.

- ► Wear eye protection.
- ► DO NOT point the compressed air jet at persons.
- ► DO NOT point the compressed air jet at loose objects.

⚠ CAUTION

Hearing damage caused by sound overexposure

Peak noise levels (for a short time up to 95 db(A)) occurring during the cleaning process may cause hearing damage.

- ► Do not approach the OptiCenter unless absolutely necessary!
- ► Wear adequate hearing protection (e.g. ear muffs per EN 352-1)!

A great deal of air is required for the cleaning procedure!

- ► Make sure that 6 bar is always available!

ATTENTION

Powder can escape if the OptiHopper cover is not closed properly.

- ► Check that the cover fits properly

ATTENTION

Damage to the sieve mesh tension

When using an ultrasonic sieve, the sieve mesh tension is damaged during cleaning!**

- ► The OptiHopper must only be cleaned with the cover on WITHOUT a US sieve.

Cleaning Steps

Manual cleaning is supported by automated procedures. The OptiCenter offers the following automated procedures:

	Collecting powder Cleaning the ring injector (AirMover) / powder hose (in direction to the booth)
	Cleaning the powder hoses (in direction to the guns)
	Cleaning the powder hoses (in direction to the pumps)

The following functions are available for fine cleaning:

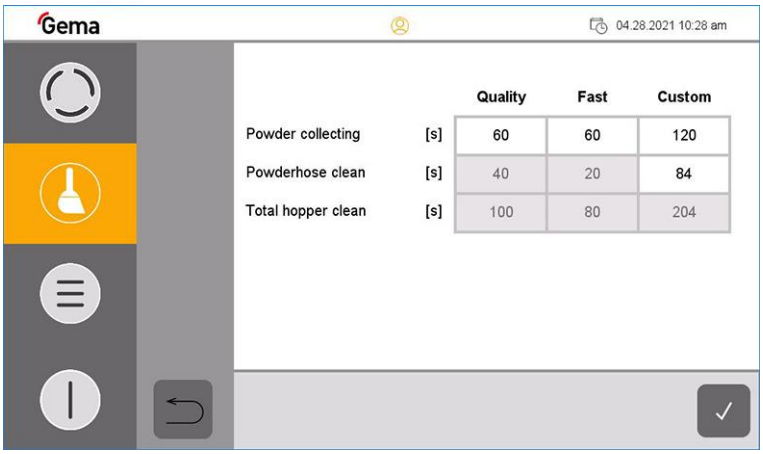
	Strong fluidization of the fluidization plate
	Suction unit

Cleaning Times

All cleaning steps are time controlled. However, the factory-set values can be individually adjusted according to the requirements for cleanliness.

1. In cleaning mode, press the 

key



2. Adjust cleaning time(s)

Cleaning procedure

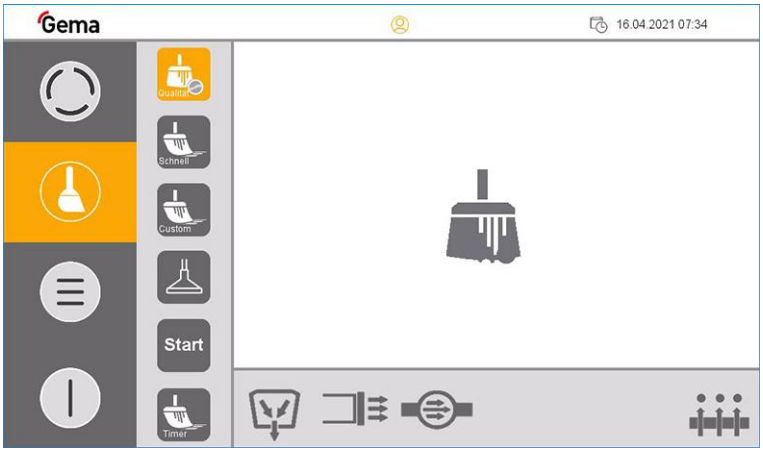
1. End the coating procedure

2. To exit **Coating mode**, press and hold the key for 2 seconds.

   The following menu appears on the display:

3. 

4. Select the desired cleaning mode

5. 

   – Exhaust air starts automatically

6. Remove and clean all powder-contacting components (see example below):

7. 

8. 

9. 

10. 

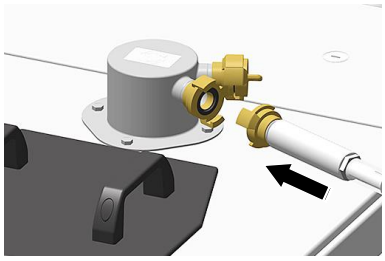
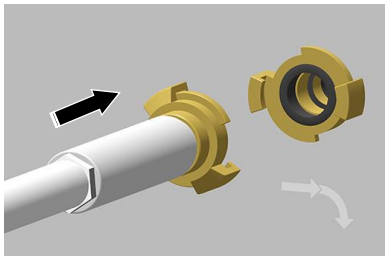
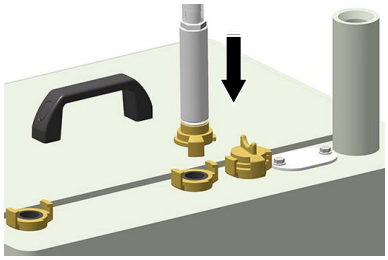
11. 

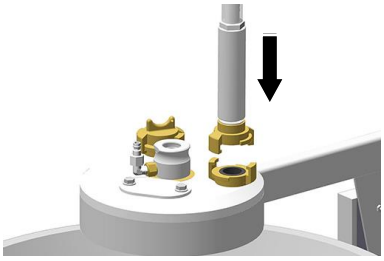
12. 

13. 

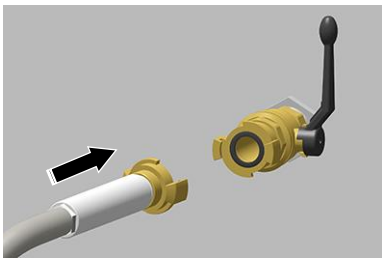
14. The operator must now decide where to collect the powder from the booth:
    - **Variant 1:** in the OptiHopper
    - **Variant 2:** transferred to the waste
    - **Variant 3:** in the optional powder hopper
    - **Variant 4:** in the optional powder cone (bag)

For variants 2, 3 and 4, the recovery hose must be replugged before starting.

Option	Destination
1	
2	
3	

Option	Destination
4	

For variants 3 and 4, the suction must also be connected and the ball valve must be open.



The powder circuit could contain more than 20 kg of powder.

- Be sure to estimate the powder volume in the system.
- If you suspect that there is too much powder in the system, the process must be monitored and stopped if necessary.

15. Press **Start**

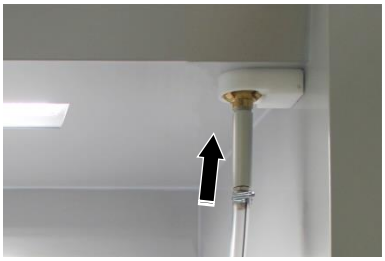
If necessary, the cleaning process can be interrupted at any time by pressing the stop button.

-  The powder is collected in the OptiHopper
- This step can be stopped by the operator when no more powder is returned

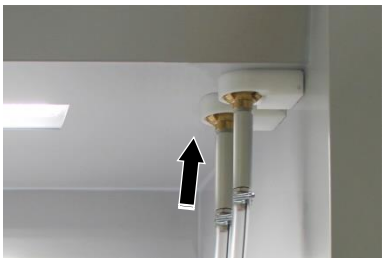
16 Press 

- Cleaning of the ring injector (AirMover) and the connected powder hose with compressed air pulses starts automatically

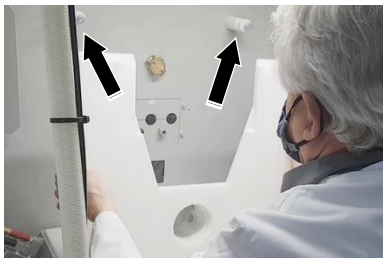
17. The automatic process step is complete when the  key looks like this. The key can be pressed once again if necessary. This is a sign that the next cleaning phase needs to be activated.
18. Move recovery hose to cleaning position (RP)



19. The position of the recovery hose is sensor-monitored
20. If equipped, move the fresh powder hose from the OptiHopper to the cleaning position (FP)



21. The position of the fresh powder hose is sensor-monitored
22. Remove black OptiHopper cover, clean and place in parking position (side wall parking position)
23. Lift the white OptiHopper covers, clean them and place them in the parking position (rear panel parking position)



ATTENTION

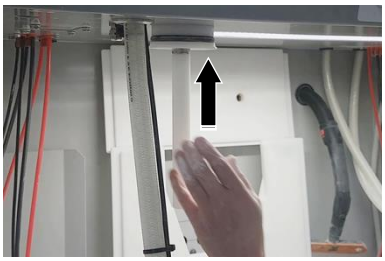
Large dust formation possible!

If the OptiCenter is operated without the appropriate equipment (hearing protection, safety goggles) and if not cleaned with the exhaust air switched on, the compressed air containing powder can cause hearing damage, eye damage as well as respiratory problems.

- ► Switch on the exhaust air
- ► Wear appropriate protective equipment.

24. Remove the plug from the OptiHopper



– The powder from the OptiHopper flows into the powder bag or provided powder container

25. Use a scraper to lead as much powder as possible to the opening

26. Use a scraper to clean the side walls of the OptiHopper so that the suction openings are no longer covered with powder.

27. Also clean the fluidizing plate so that there is only a small amount of powder on the surface.

28. Press the  key

– The powder hoses are cleaned and the residual is transported to the booth

– Suction channels in the OptiHopper are rinsed

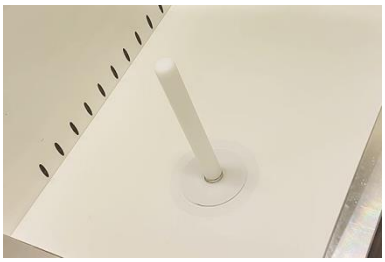
29. The automatic process step is complete once this symbol  is displayed.
    – The key can be pressed once again if necessary. Otherwise, the next cleaning step can be activated.
30. Press the  key
    – The existing OptiFeed pumps and connected powder hoses are cleaned and the powder is transported to the after filter
31. The process is complete once this symbol  is displayed.

▶ **Any individual step can be repeated as needed by pressing the corresponding key again.**
– Only the selected cleaning step is carried out.

Fine cleaning

1. Press the  key
   – This key activates/deactivates the strong fluidization for fine cleaning
2. Press the  key
   – This key is used to activate/deactivate the suction unit

3. Visually check the OptiHopper interior, clean with the suction unit and/or with the compressed air gun if necessary
4. Put the plug back in position



5. Place the cover components in position
6. Booth cleaning can now be started: Activate the corresponding command on the MagicControl control unit

Cleaning the recovery system

1. Open the monocyclone

ATTENTION

Sieve damage

The sieve can be damaged when backwashing the transport hose.

► Swing out the sieve completely during this cleaning step.

2. Slowly swing out the sieve and clean it with the air gun

3. Press the button on the monocyclone
   – The cleaning process is started.
4. Compressed air pulses blow through the hose from the OptiCenter to the cyclone

► **The process can be manually stopped and resumed by the operator.**

5. Swing the funnel on the cyclone slowly away and, at the same time, clean it off with the air gun
6. Clean the inside of the cyclone with the cleaning wand
7. Reconnect the sieve machine and funnel to the cyclone
8. If a new color is to be used: See chapter "Color change" on page 66.

OTHERWISE

9. To switch the OptiCenter to stand-by mode, press and hold the key for 2 seconds.
10. Store the powder properly

Cleaning and maintenance of the operating panel

The operating panel is maintenance-free. However, the following work may be necessary:

– Cleaning the screen if it becomes dirty.

– Recalibrating the capacitive screen if it no longer responds correctly to touch.

Touch-sensitive screen

If dirty:

ATTENTION

Pointed, sharp objects or corrosive liquids can damage the screen

Cleaning the screen

- ► Do not use any pointed or sharp objects (e.g. knife).
- ► Do not use any aggressive or abrasive cleaning agent or solvent.
- ► Ensure liquids do not enter the operating panel (risk of short circuit) and no damage is caused to the operating panel
- ► Clean the touch screen surface carefully with a clean, soft, damp cloth.

Battery

The built-in battery for buffering the real-time clock is maintenance-free and designed for a buffer time with the power switched off while maintaining the ambient conditions of typically 10 years at 25 °C (77 °F).

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.

Repair work

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

Improper tampering can result in serious danger for user and equipment.

Repairs

For repairs, please contact Gema Technical Support.

ATTENTION

Destruction of the operating panel

The operating panel may only be opened by the manufacturer or an authorized body.

- ► Operate the operating panel only with the housing completely closed.

Use appropriate packaging when transporting.

SD card – data backup

The contents of the SD card can be saved on another medium in order to be able to copy them back in case of card damage or data loss. Further information can be found in the SD card user manual.

► **Some operating systems do not display individual files. This is often the case with “autoexec.bat” files, for example.**

- – When copying the data, make sure that all data is visible and copied.
- – If in doubt, contact your IT department.

Inserting the SD card: See chapter "Inserting the SD card" on page 56.

Fault clearance

Error messages

If faults occur in the powder management center, an error message shown in red lettering appears on the display.

1 Booth not ready

2 No release for cleaning, X axes not in cleaning position

3 Sieve error or switched off

4 No powder

5 No fresh powder

6 Powder circuit stopped

7 Level sensor detects no powder

The causes of these errors must be eliminated, before further procedures can be carried out (refer to troubleshooting guide).

If the error has been eliminated, the display returns to the previous menu again.

Troubleshooting guide

Fault	Cause	Corrective action
No powder feed from the OptiHopper	OptiHopper empty	Refill powder manually
	Powder accumulation on optional level sensor	– Clean the sensor – Readjust the sensor sensitivity – Check the fluidizing of the sensor if necessary, increase the fluidizing air pressure
	Optional compressed air pulse cleaning does not work	Check function at corresponding output (see also “Pneumatic diagram”), replace if necessary
	Optional level sensor defective	Replace
	Cable defective	Replace

Fault	Cause	Corrective action
No fluidization or fluidization too low in the OptiHopper	Compressed air regulator incorrectly set	Set the appropriate pressure
	Corresponding valve in the valve pool defective or dirty	Check function at corresponding output (see also “Pneumatic diagram”), replace if necessary
	Compressed air regulator dirty or defective	Clean, replace if necessary
	Fluidizing plate clogged	Replace
Powder escapes from the fluidized powder hopper	No or too little AirMover function/ compressed air regulator incorrectly set	Set the appropriate pressure
No AirMover function in the OptiHopper	Ring injector clogged or dirty	Clean
	Corresponding valve in the valve pool defective or dirty	Check function at corresponding output (see also “Pneumatic diagram”), replace if necessary
Conveying problem with powder pump	Powder pump does not function properly	
	– Pump defective	See corresponding operating manual OptiFeed PPxx
	– Pump does not suck in powder	– Check the cyclone funnel for powder abrasion – Check fluidization at the suction point
	– Hose plugged or incorrectly connected (overpressure at the OptiFeed PPxx powder pump)	See corresponding operating manual OptiFeed PPxx
No extraction in the OptiCenter	Incorrect operating mode selected	Select correct operating mode
	Corresponding valve in the valve pool defective or dirty	Check function at corresponding output (see also “Pneumatic diagram”), replace if necessary
	Exhaust air flap does not move	Ensure the compressed air supply Check for movement or replace
Powder residues in the powder hose to the booth	Insufficient cleaning of the ring injector (AirMover)	Check function at corresponding output (see also “Pneumatic diagram”), replace if necessary
	Corresponding valve in the valve pool does not switch over: – Defective or dirty	
Powder residues in the fresh powder pump after cleaning	Corresponding valve in the valve pool defective or dirty	Check function at corresponding output (see also “Pneumatic diagram”), replace if necessary

Fault	Cause	Corrective action
	Pinch valve(s) defective (at rear of OC)	Replace pinch hose
Powder residues in the recovery pump after cleaning	Corresponding valve in the valve pool defective or dirty	Check function at corresponding output (see also “Pneumatic diagram”), replace if necessary
	Pinch valve(s) defective (at rear of OC)	Replace pinch hose
	Pinch valve defective (mono-cyclone)	Replace pinch hose
No cleaning or insufficient cleaning of the powder hoses	Corresponding valve in the valve pool defective or dirty	Check function at corresponding output (see also “Pneumatic diagram”), replace if necessary
Vibrator defective	Motor protection switch Q6 has reacted	Remove the small maintenance panel and switch on the motor protection switch again. With repeated Alarms, contact a Gema service center
	Vibrator defective	Replace
	Cable broken	Replace
Valve battery failure	Safety equipment (F7) has reacted, control unit switches to stand-by mode	Check the 24 VDC Power pack (G4)
		Check the safety equipment whether all 4 LEDs illuminate green
		If one or more LEDs illuminate, reset the corresponding channel and if necessary, restart
Fuse Fxx defective	Fuse (1 AT) in the WAGO module A1 defective, control unit switches to stand-by mode	Replace the fuse, otherwise contact a Gema service center
CAN bus malfunction	No communication with CM40/CM41	Switch on higher-level control unit CM40/CM41
	CAN bus participant defective	Contact Gema Service

Decommissioning / Storage

Shutdown

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

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

If in disuse for several days

1. Switch off the plant with the main switch
2. Clean the gun and the components for powder conveying (see therefore the corresponding user manuals)
3. Turn off the compressed air main supply

Storage conditions

Storage duration

If the physical conditions for metal parts and electronics are maintained, the unit can be stored indefinitely. On the other hand, the installed elastomeric components (pinch valve collars, O-ring seals, etc.) can become brittle over time and crack when put under repeated loads.

Type of storage

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

Space requirements

The space requirements correspond to the size of the components plus the packaging.

The load-bearing capacity of the floor should be at least 500 kg/m².

There are no special requirements for the spacing to adjacent devices

Physical requirements

Storage must be inside a dry building at a temperature between +5 and +40 °C. Preferably in a cool, dry and dark space.

Do not expose to direct sunlight.

Hazard notes

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

Maintenance during storage

Maintenance schedule

No maintenance schedule is necessary.

Maintenance works

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

Storage and transport of the operating panel

ATTENTION

UV light

Plastics become brittle under the influence of UV light. This artificial aging reduces the service life of the operating panel.

- ► Protect the operating panel from direct sunlight or other sources of UV radiation.

ATTENTION

Risk of short-circuit

In the event of climatic fluctuations (ambient temperature or humidity), moisture may be deposited on or inside the operating panel. If the control panel is subjected to condensation, there is a risk of short-circuit.

- ► Never switch on the operating panel when condensation is present.
- ► If condensation is present and the operating panel has been exposed to climatic fluctuations, allow the operating panel to adjust to room temperature before start-up.
- ► Do not expose the operating panel to direct heat radiation from heaters.

Observe the ambient conditions when transporting and storing the operating panel.

The maximum ambient temperature for storage and transport must not exceed the specified value:

Climatic ambient conditions	
Air pressure (operation)	795 - 1080 hPa max. 2000 m ü. NHN
Temperature (operation)	+10 – +40 °C (+50 – +104 °F)
Temperature (storage / transport)	-20 – + 60 °C (-4 – +140 °F)
Air humidity	Relative air humidity 10 - 95 %
Condensation	Non-condensing

Whilst the operating panel has a robust design, the built-in components are sensitive to excessive vibrations and/or shocks.

The operating panel must be protected from mechanical loads outside its intended use.

The operating panel may only be transported in the appropriate packaging and in the correct manner.

Before recommissioning

During storage and transport in cold weather, and in the event of extreme temperature differences, ensure that no moisture is deposited on or inside the unit (condensation).

If condensation is present, the unit may only be switched on after it is fully dry.

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.

Disassembly of component groups

⚠ WARNING

Live components

Risk of fatal injury from electric shock if touched

- ► Only trained, authorized staff may open the electrical compartment
- ► Observe the safety symbols

1. Disconnect the mains supply and supply cables.
2. Remove all product covers.

The product is now prepared for disassembly.

⚠ WARNING

Risk of explosion: Lithium battery

If improperly handled, there is a risk of explosion due to the lithium battery installed in the operating panel.

► Ensure the operating panel is disposed of properly.

The recyclable materials should be taken to your local recycling center.

Operating panels that are no longer required must be disposed of properly in accordance with local regulations.

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** OptiGun GA03 automatic powder gun,

Serial number 1234 5678

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

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

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

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

Example:

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

⚠ WARNING

Use of non-original Gema spare parts

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

► Only original Gema spare parts should be used!

OptiCenter OC09

1	Touch Panel – 7" complete (see enclosed wiring diagram)	1015 525
	SD card – for pos. 1 (not shown)	on request
2	Pneumatics – see corresponding spare parts list	
3	OptiFlow IG07-PA Powder injector – see corresponding operating manual	
4	OptiHopper – see corresponding spare parts list	
5	Powder supply – see corresponding spare parts list	
7	Pneumatics ES (AS06) – see corresponding spare parts list	
10	Powder feed – see corresponding spare parts list	
11	OptiFeed PPxx Powder pump – see corresponding operating manual	

For all other electrical components, see also the spare parts list in the enclosed wiring diagram!

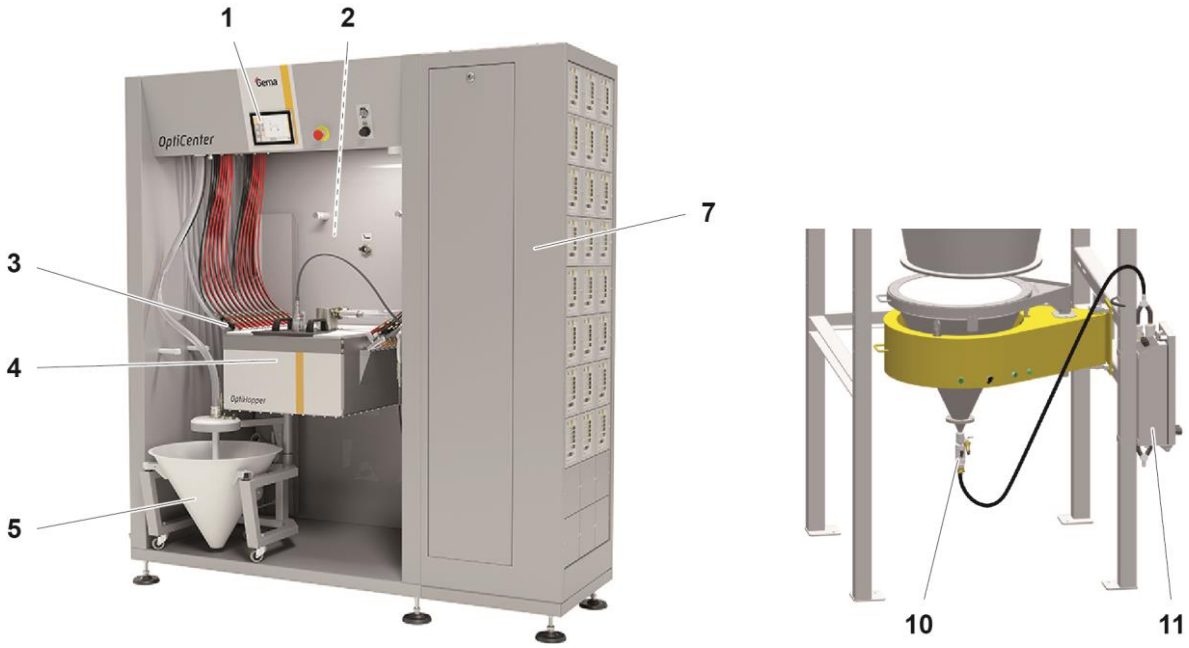


fig. 59:

Cone trolley

1	Cone	1017 465
2	Rubber damper set – Ø 20x25 mm, M6/21 mm (3 pieces)	720 000
3	Roller set – 4 rollers + 4 screws	720 001
4	Vibrator motor – 220-240 V	1009 251
5	GEKA blind coupling	1002 405
6	Cover	1007 177
7	GEKA coupling – 3/4"	254 339
8	Cover bushing	1005 245
9	Fluidizing/suction unit – Ø 28 mm, complete	1005 332
10	Tube connection – complete, incl. pos. 11	1007 658
11	O-ring – Ø 16x2 mm	1007 794#
12	Quick release connection – NW5-Ø 6 mm	200 840

Wear part

* Please specify length

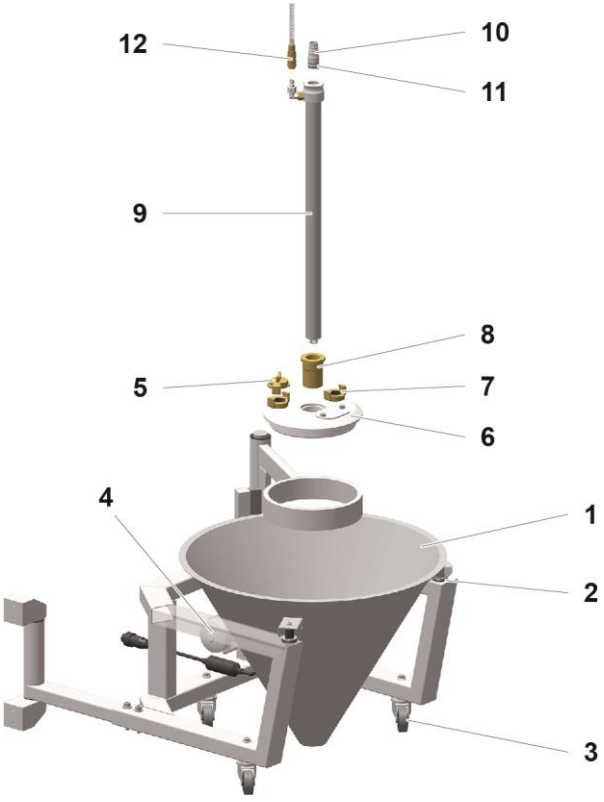


Fig. 60:

Fluidizing/suction unit

	Fluidizing/suction unit – Ø 28 mm, complete	1005 332
1	Connector – NW5.0-1/8"	200 859
2	Elbow joint – 1/8"-1/8"	235 733
3	Adapter nipple – 1/8"-1/8"	200 930
4	Flow restrictor – Ø 0.3 mm	338 303
	Fluidizing ring set – incl. pos. 5, 6, 7	720 002#
5	O-ring – Ø 22.1x1.6 mm	233 340#
6	Fluidizing ring	1005 330
7	O-ring – Ø 14x1.5 mm	263 486#
8	Foot piece	1005 327

Wear part

* Please specify length

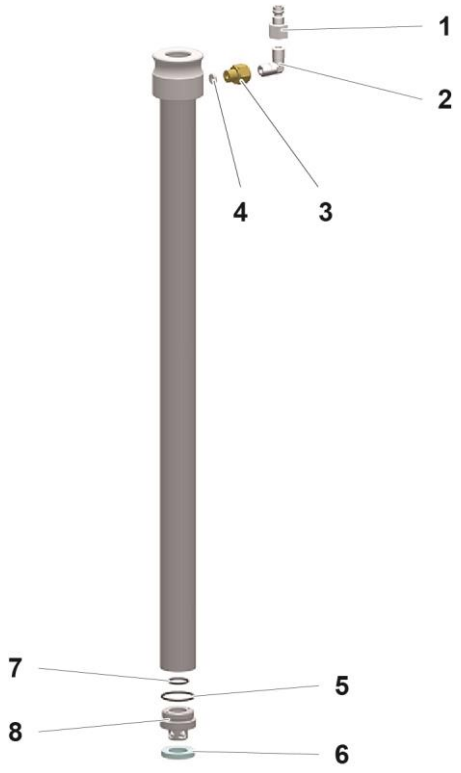


Fig. 61:

OptiHopper – complete

1	OptiHopper cover – complete, incl. pos. 1.1	1019 850
1.1	Handle	1006 013
2	Sealing plug – complete, with O-ring	1018 773
3	Pinch valve – DN32 G 1 1/4", complete, see corresponding spare parts list	1007 648
4	Ring injector (AirMover) – complete, see corresponding spare parts list	1019 824
5	Grounding cable – complete	391 603
6	GEKA coupling – 3/4"	1002 551
7	GEKA blind coupling	1002 405

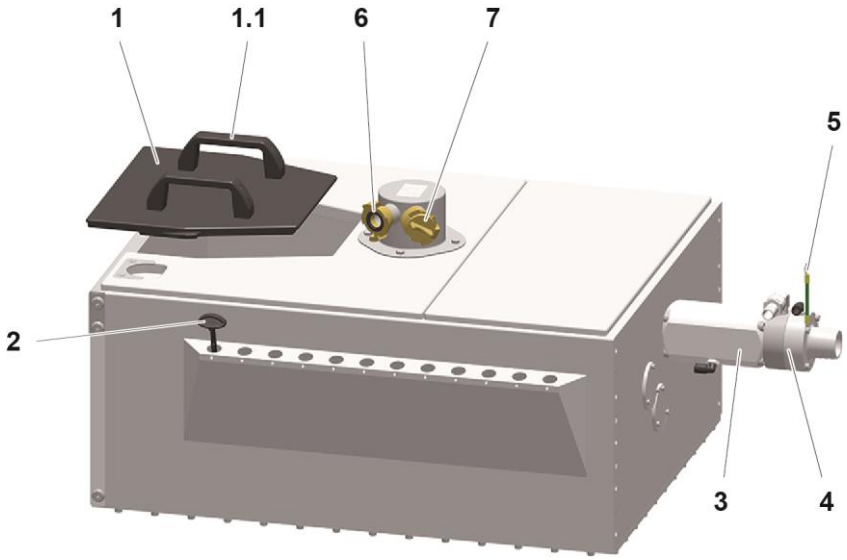


fig. 62:

OptiHopper – Fluidization plate

	Plug – complete (pos. 1-7)	1022 154
1	Rod	1019 879
2	Magnet – Ø 25 mm	1019 881
3	Screw – M5x16 mm	262 986
4	Magnet – Ø 25 mm	1019 880
5	Plug	1022 153
6	Screw – M5x30 mm	1019 883
7	O-ring – Ø 70x8 mm	1022 038#
8	O-ring – Ø 104x3 mm	1019 887#
9	O-ring – Ø 114x3 mm	1019 888#
10	Powder outlet	1019 873#
11	Bottom fluidization plate – complete	1019 813#
12	Fastening plate – complete	1019 820
13	Allen cylinder screw – M6x20 mm	216 429
14	Elbow joint – 1/4"-Ø 8 mm	254 029

Wear part

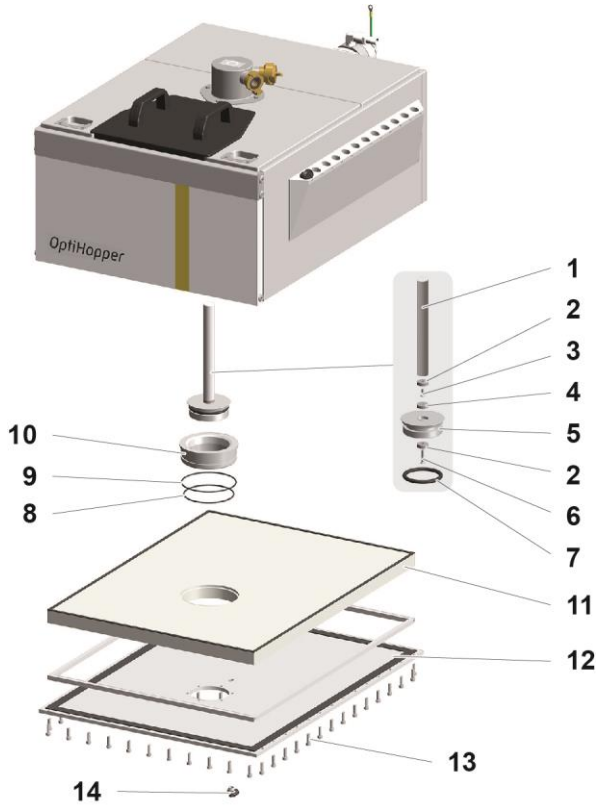


fig. 63:

OptiCenter – Pneumatics

1	Butterfly valve – complete (incl. pos. 1.1)	1006 445
1.1	Pneumatic rotary actuator – complete	1006 444
5	Ring injector (AirMover) – NW40 mm, complete	1019 824
6	Pinch valve – see corresponding spare parts list	
7	Pressure regulators pool – see corresponding spare parts list	
8	Valves pool – see corresponding pneumatic diagram	1020 470
9	Pneumatic manifold 2 – see corresponding spare parts list	
10	Vacuum filter – Ø 8 mm	1004 946
10.1	Vacuum filter – Ø 6 mm	1019 437
11	Pneumatic manifold 1 – see corresponding spare parts list	
12	Main air supply – see corresponding spare parts list	
13	Fluidization OptiHopper – see corresponding spare parts list	
14	Compressed air hose – Ø 16.4/26.6 mm	105 155*
15	Powder hose – Ø 16/23 mm	1010 040*#

Wear part * Please specify length

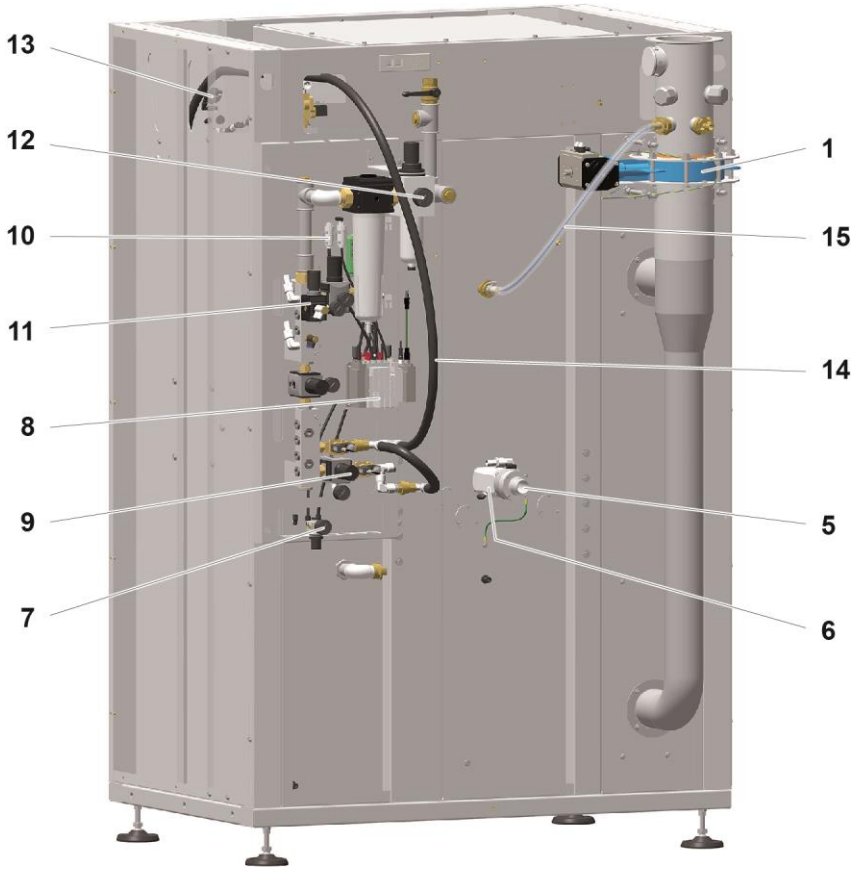


fig. 64:

Main air supply

1	Ball valve – 1"-1"	1006 065
2	Pressure regulator/Filter unit – 0.5-8 bar, 1"	1006 547
2	Pressure gauge – 0-10 bar, 1/4"	1010 964
4	Plug – 1"	1019 095
5	Filter unit	

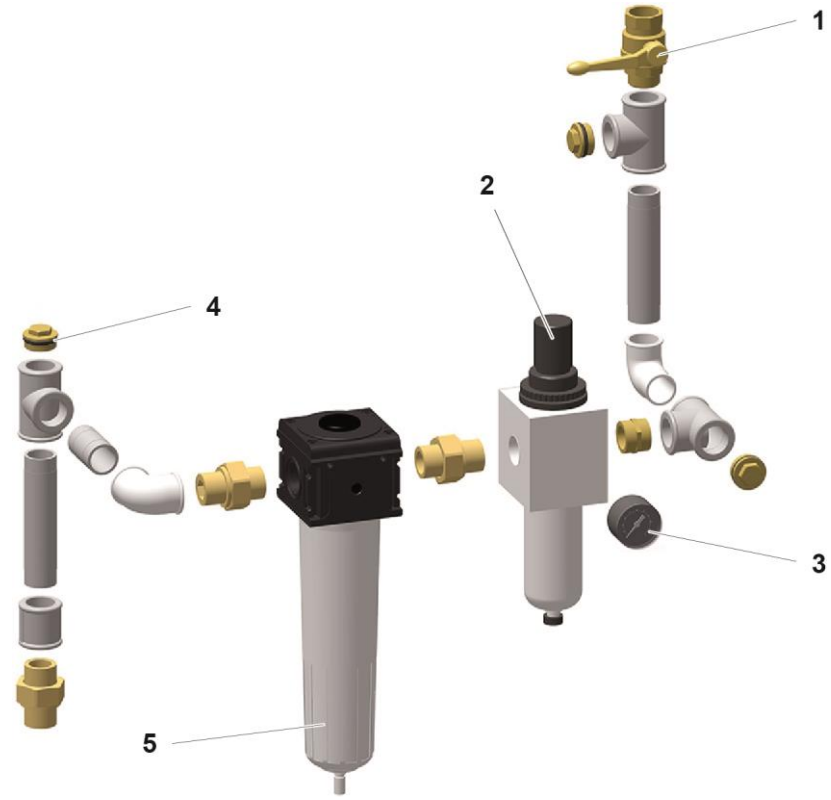


fig. 65:

OptiHopper – pneumatic distributor

1	Pressure regulator – 0.5-10 bar, 1/2"	259 187
2	Pressure gauge – 0-10 bar, 1/8"	259 179
3	Solenoid valve – 1/2" NW13.5 mm, without coil, incl. pos. 3.1	1005 120
3.1	Membrane (not shown)	830 160
4	Valve coil – 24 VDC	1005 119#
5	Valve cable – 3 pins	1006 902*
6	Hose connector – Ø 17-1/2"	223 069
7	Elbow joint – 1/8"-1/8"	237 604
9	Adapter nipple – 1/4"-1/8"	1020 052
10	Pressure regulator – 0.5-8 bar, 3/8"	1017 787
11	Plug – 1/4"	258 695
12	Elbow joint – 3/8"-Ø 10/2 x	1020 062
13	Elbow joint – 1/4"-Ø 8/2 x	1020 054

Wear part

* Please indicate length

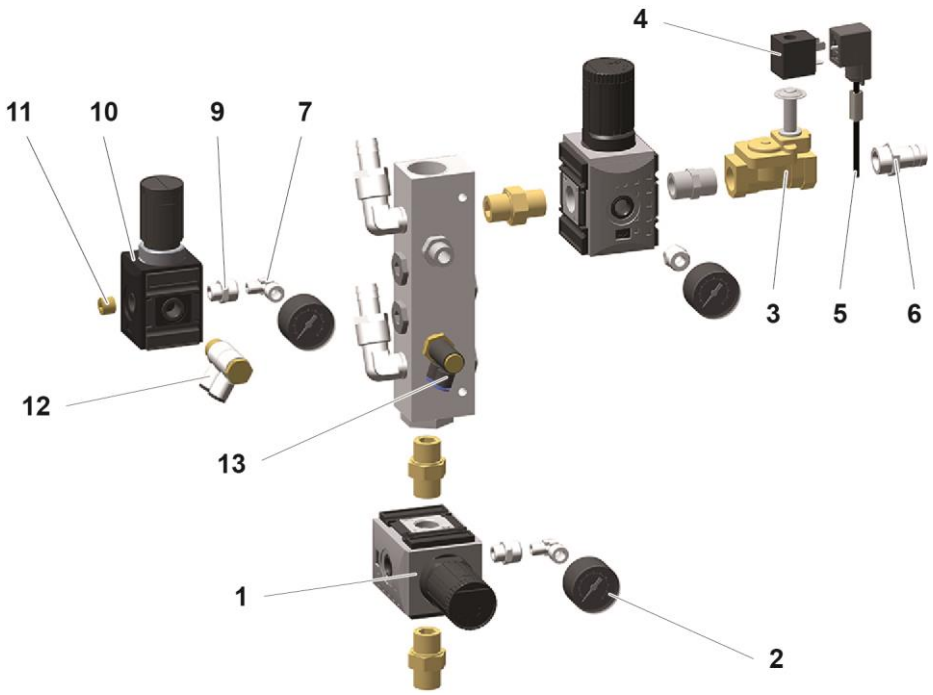


fig. 66:

OptiHopper – Fluidization

1	Pressure gage – 0-6 bar, 1/8"	1003 300
2	Elbow joint – 1/8"-Ø 8 mm	251 372
3	Plug – 1/4"	263 834
4	Pressure regulator – 0.5-6 bar, 1/4"	264 342
5	Adapter nipple – 1/8"-1/4"	265 454
6	Elbow joint – 1/8"-1/8"	237 604
7	Flow restrictor – Ø 1.9 mm	372 900
8	Screw-in nipple – 1/8"-Ø 8 mm	240 087
9	Double connecting nipple – Ø 8 mm	229 326
10	Check valve – Ø 8-Ø 8 mm	1005 575
11	Y-plug connection – Ø 8-2x Ø 8 mm	264 814
12	Elbow joint – 1/4"-Ø 8 mm	254 029
13	Elbow joint – 1/8"-Ø 8 mm	253 987
14	Adjusting elbow – Ø 8-Ø 8 mm	1001 031
15	Plastic tube – Ø 8/6 mm	103 756*

Wear part

* Please indicate length

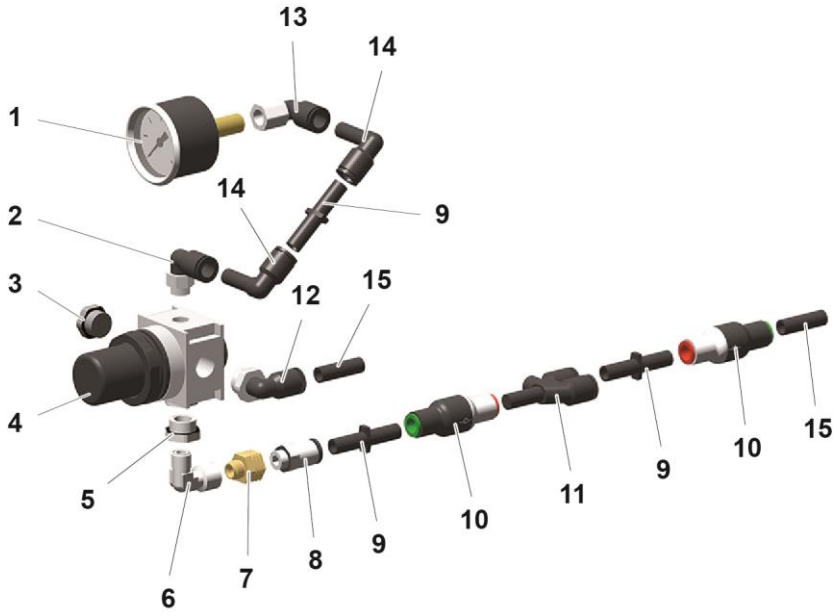


fig. 67:

Pressure regulators pool

1	Pressure regulator – 0.5-10 bar, 1/4"	264 326
2	Elbow joint – 1/4"-Ø 8 mm	254 029
3	Pressure gauge – 0-10 bar, 1/8"	259 179
4	Sealing plug – 1/4"	258 695
5	Screw-in nipple – 1/4"-Ø 8 mm	265 136
6	Adjusting elbow – Ø 8-Ø 8 mm	1001 031
7	Double connecting nipple – Ø 8 mm	229 326
8	Check valve – Ø 8-Ø 8 mm	1005 575
9	Y-connection – 3 x Ø 8 mm	251 259
10	Elbow connection – Ø 8-Ø 8 mm	230 995
11	Adjusting elbow – Ø 8-Ø 8 mm	1005 190
12	Screw-in nipple – 1/4"-Ø 8 mm	600 237
13	Adjusting elbow – Ø 6-Ø 6 mm	268 453
	Plug – Ø 8 mm (not shown)	238 023

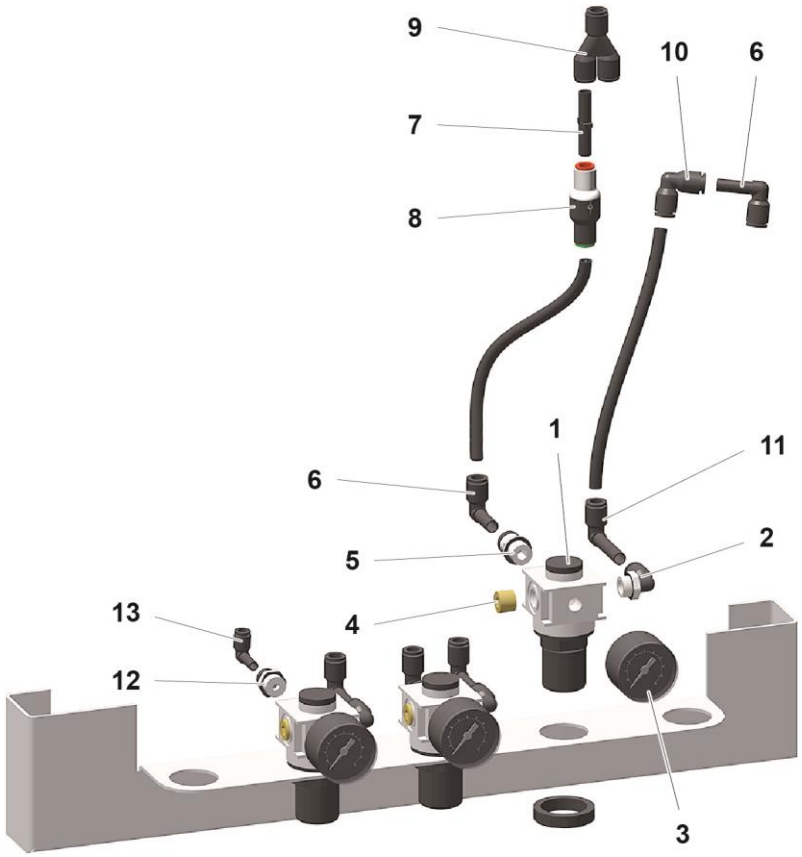


fig. 68:

Pneumatic manifold Cleaning

1	Pressure regulator – 0.5-10 bar, 1/2"	259 187
2	Adapter nipple – 1/4"-1/8"	1020 052
4	Elbow joint – 1/8"-1/8"	237 604
5	Pressure gauge – 0-10 bar, 1/8"	259 179
6	Solenoid valve – 1/2" NW13.5 mm, without coil, incl. pos. 6.1	1005 120
6.1	Membrane (not shown)	830 160
7	Valve coil – 24 VDC	1005 119#
8	Valve cable – 3 pins	1007 004
9	Hose connector – Ø 17 mm-1/2"	223 069

Wear part

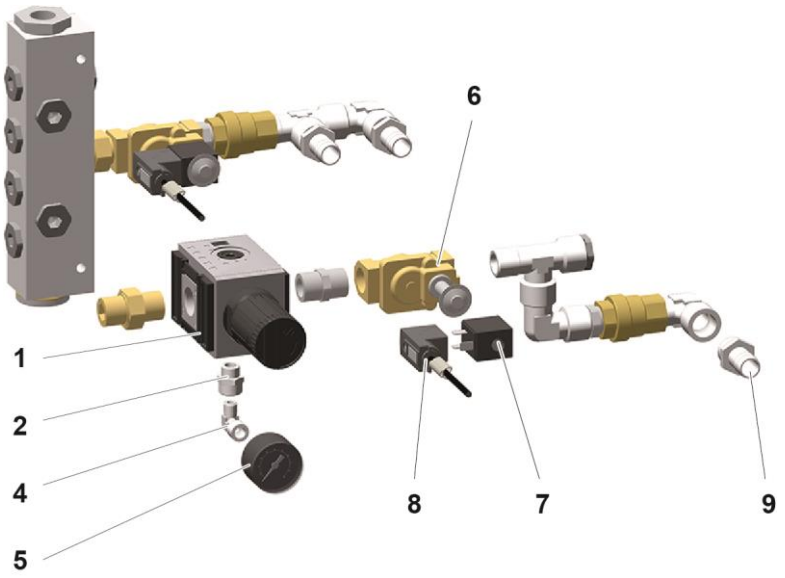


fig. 69:

Ring Injector (Airmover) / Pinch Valve

1	Pinch valve NW32 – complete	1007 648
2	Pinch valve sleeve NW32	1007 647#
3	Elbow joint – 1/4"-Ø 8 mm	254 029
4	Connector	1019 823
5	O-ring – Ø 46x3 mm	1019 886#
6	Ring injector (AirMover) – complete	1019 824#
7	O-ring – Ø 59x2 mm	1003 352#

Wear part

* Please specify length

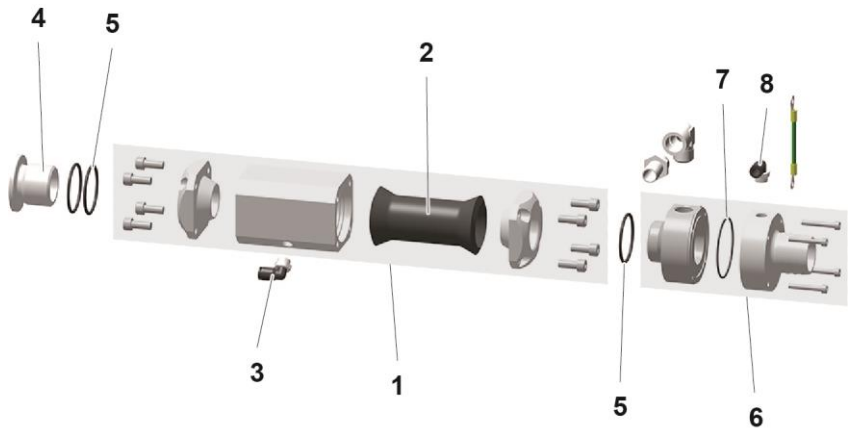


fig. 70:

Powder hopper PH60-OC

	Powder hopper PH60-OC – complete (pos. 1-19)	1008 171
1	Powder hopper PH60-OC (incl. pos. 6-10, 18)	1008 313
2	Cover PH60-OC	1011 498
3	Container cover – complete	1011 642
4	GEKA coupling – 3/4"	254 339
5	GEKA blind coupling	1002 405
6	Handle	1006 013
7	Connector – NW5-1/8"	237 272
8	Elbow joint – 1/8"-1/8"	237 604
9	Fluidizing plate PH60-OC	1006 012
10	Countersunk Allen screw – M6x50 mm	1002 954
15	Level sensor cover	1007 178
16	Cover bushing	1011 499
17	Locknut – Ø 40x28xM8 mm	1008 285
18	Rubber profile	1007 172*
19	Hose for OptiHopper emptying – Ø 40 mm (not shown)	100 048*
	Blind cover PH60-OC (not shown)	373 907

* Please specify length

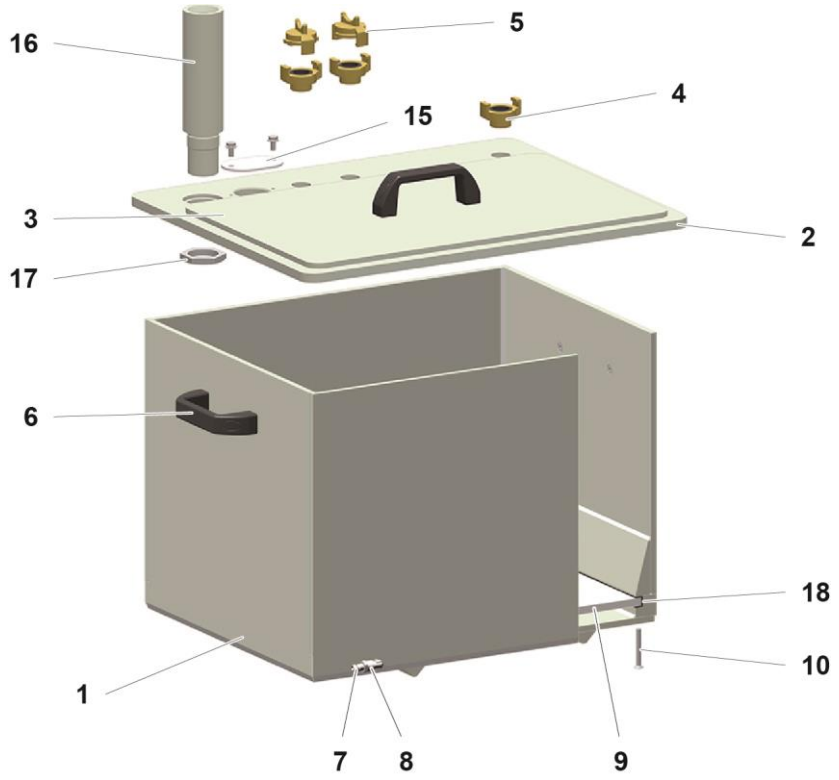


fig. 71:

PH100-OC Powder Hopper

	Powder hopper PH100-OC – complete (pos. 1-21)	1008 303
1	Powder hopper PH100-OC (incl. pos. 6-10, 13, 18-20)	1008 315
3	Container cover – complete	1011 642
4	GEKA coupling – 3/4"	254 339
5	GEKA blind coupling	1002 405
6	Handle	1006 013
7	Connector – NW5-1/8"	237 272
8	Elbow joint – 1/8"-1/8"	237 604
10	Countersunk Allen screw – M6x50 mm	1002 954
12	Cover PH100-OC	1011 497
13	Fluidizing plate PH100-OC	1006 017
15	Level sensor cover	1007 178
16	Cover bushing	1011 499
17	Locknut – Ø 40x28xM8 mm	1008 285
18	Rubber profile	1007 172*
19	Rubber buffer – M40x1.5 mm	248 592
20	Roller	1009 141
21	Hose for OptiHopper emptying – Ø 40 mm (not shown)	100 048*
	Blind cover PH100-OC (not shown)	362 719

* Please specify length

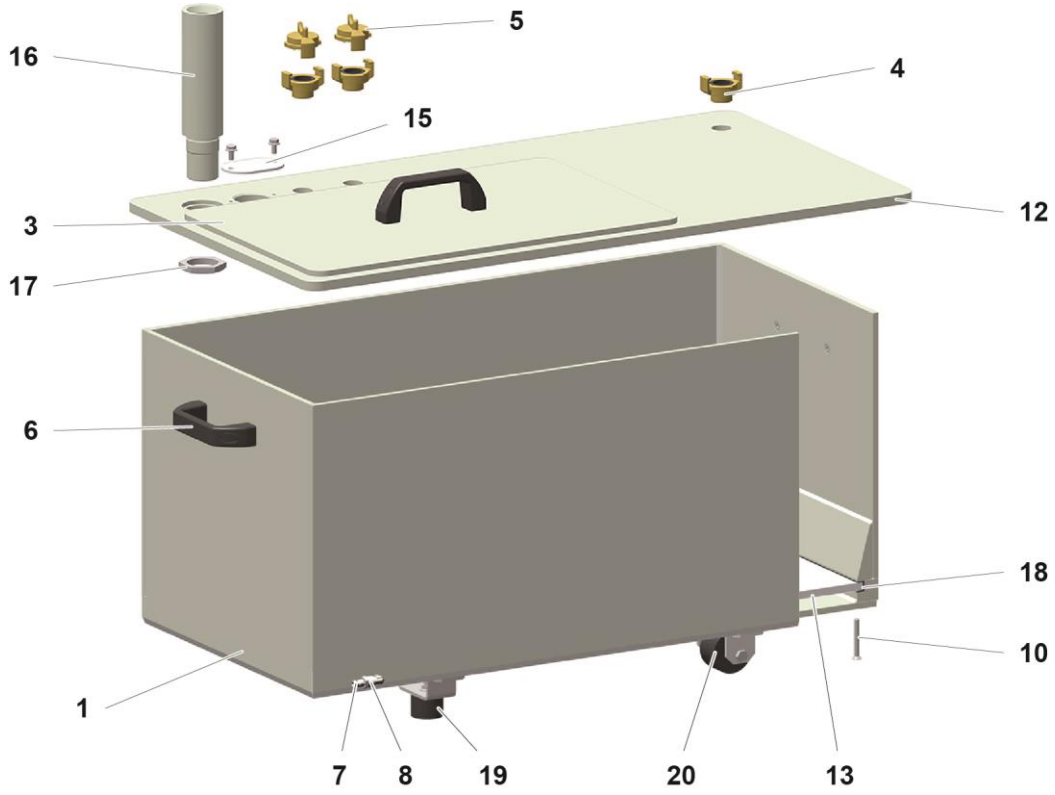


fig. 72:

LC01 Level sensor

1	LC01 Level sensor – complete (incl. pos. 2)	1006 089
2	O-ring – Ø 38 x 4 mm	239 151#
3	Plastic tube – Ø 6/Ø 4 mm	1001 973*
4	Connecting cable – complete	371 696

Wearing part

* Please indicate length

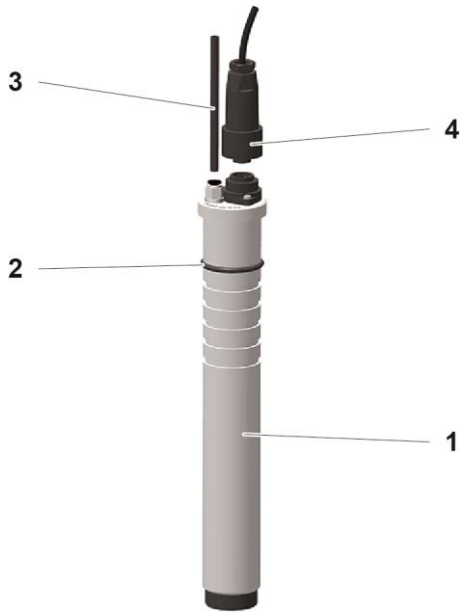


fig. 73:

Vibration trolley

	Vibration trolley – complete	1020 479
1	Rubber buffer – Ø 20x15 mm	211 770
2	Rubber damper – Ø 25x30 mm	232 866
3	Connection plug	206 466
4	Swivel wheel – Ø 50 mm	260 606
5	Rubber buffer – 15x8 mm (not shown)	234 915
6	Rubber damper – Ø 20x20 mm	248 681
7	Fluidizing/suction unit – Ø 28 mm, complete	1005 332
8	Cover	1009 744
9	GEKA coupling – 3/4"	254 339
10	Quick-connection socket	1005 245
11	Vibrator	1009 251

* Please specify length

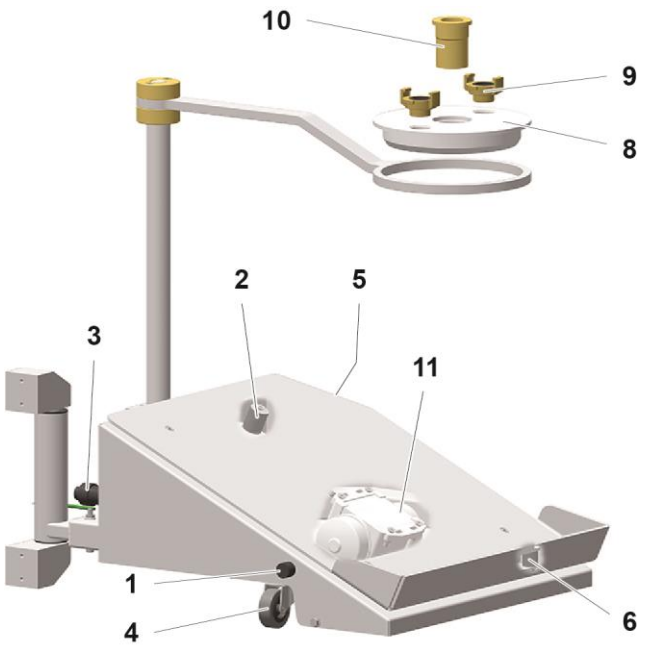


fig. 74:

Monocyclone – Powder transport

2	Powder hose – dia. 16/23 mm	1010 040#*
3	Hose clamp – 17-25 mm	223 085
4	OptiFeed PP06 Powder pump – see corresponding operating manual	
5	Plastic tube – Ø 6/4 mm	103 144*
6	GEKA coupling with grommet – Ø 16 mm	1003 872
7	Fluidizing unit – complete, see corresponding spare parts list	1005 507#
8	Allen cylinder screw – M8x20 mm	265 241
9	Gasket	395 439
10	Hexagon shakeproof nut – M8	244 449

Wearing part

* Please indicate length

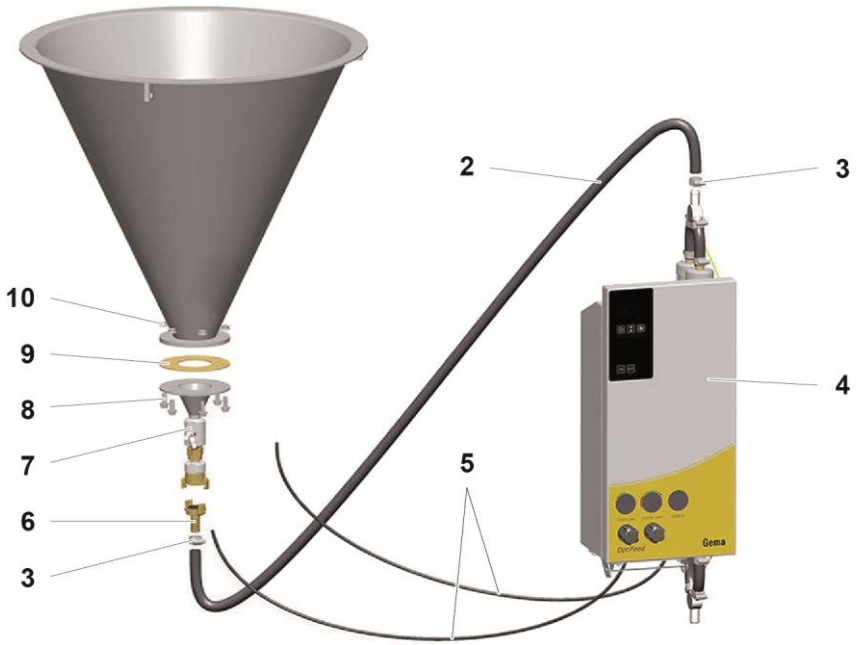


fig. 75:

Monocyclone – Powder transport connection

	Powder transport connection – complete (pos. 1-13, incl. fixing screws)	1008 846
1	Funnel piece	1005 502
1.1	Gasket for pos. 1	395 439#
	Fluidizing unit – complete (pos. 2-6)	1005 507
2	Connector	1005 504
	Fluidizing tube set (incl. pos. 3, 4, 5)	720 006
3	Fluidizing tube	1005 505#
4	O-ring – Ø 17x3 mm	242 489#
5	O-ring – Ø 26x2 mm	246 549#
6	Locking piece	1005 506
7	Connecting piece	1005 503
8	GEKA coupling – 1"-IG	1000 854
9	Pinch valve DN15 – complete, incl. pos. 9.1	1006 255
9.1	Pinch valve sleeve NW15	1006 256#
10	Elbow joint – 1/4"-Ø 8 mm	224 359
11	Throttle valve – 1/8"-1/8"	1002 127
12	Double nipple – 1/4"-1/8"	242 209
13	Inline regulator – 3 bar, 1/4"	1005 517

Wearing part

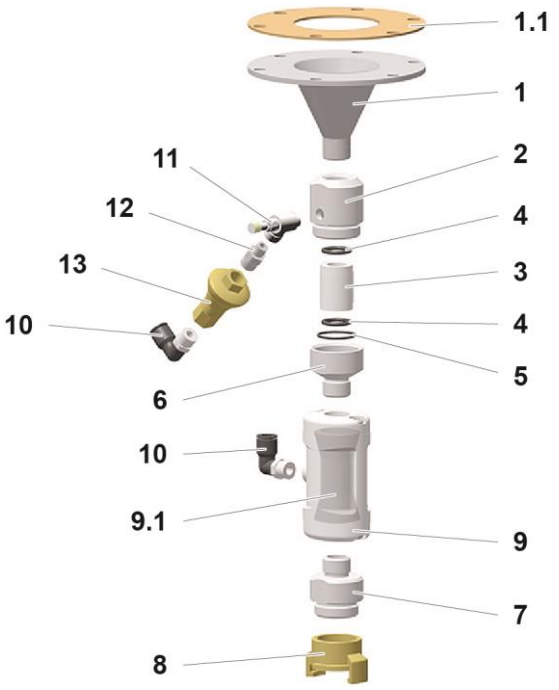


fig. 76:

Pneumatics ES (AS..)

1	Solenoid valve – 3/4" NW18, without coil	1005 121
1	Valve coil – 24 VDC	1005 119#
3	Pressure switch – 1-10 bar, 1/4", PG7	233 757
4	Hose connector – Ø 16 mm, 1/2"	259 268

Wearing part

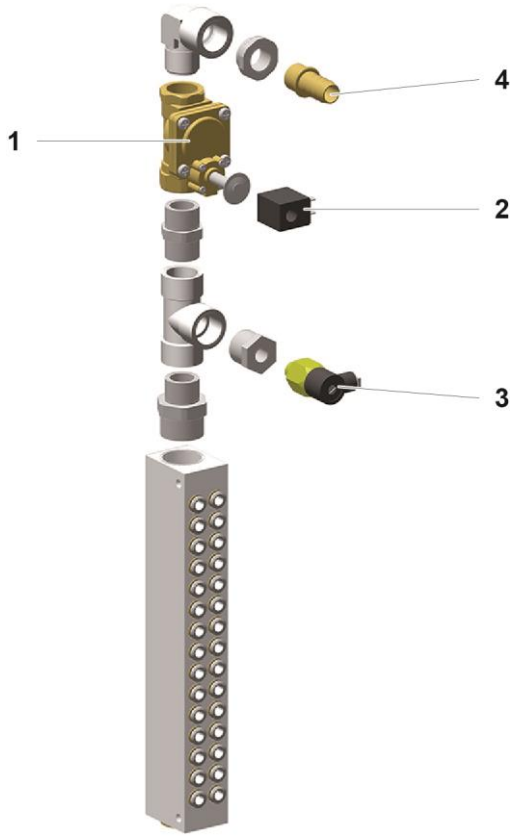


fig. 77:

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