Operating instructions and spare parts list

Ultrasonic sieve system

US07

Translation of the original operating instructions
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About this instructions

General information

This operating manual contains all important information you will need to work with the US07. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

Information about the functional mode of the individual system components should be referenced in the respective enclosed documents.

Keeping the manual

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

Safety symbols (pictograms)

The following contains a list of warnings with their meanings found in the Gema operating instructions. Apart from the regulations in the relevant operating instructions, the general safety precautions must also be followed.

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

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

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

General information

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

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

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

⚠️ WARNING

Working without operating instructions

Working without operating instructions or with individual pages from the operating 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 on "Safety regulations".
► Work should only be carried out in accordance with the instructions in the relevant documents.
► Always work with the complete original document.

Basic safety instructions

– This product is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.

– Any other use is 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 safety information**

- 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!

<table>
<thead>
<tr>
<th>Explosion protection</th>
<th>Protection type</th>
<th>Temperature class</th>
</tr>
</thead>
<tbody>
<tr>
<td>II 2 D</td>
<td>IP6x</td>
<td>Sieve converter, zone 21, T130°C</td>
</tr>
<tr>
<td>II 3 D</td>
<td>IP40*</td>
<td>Ultrasonic sieve generator, zone 22, T80°C</td>
</tr>
</tbody>
</table>

* built into OptiCenter housing, protection class IP54

**General information**

The supplied product is a system usually consisting of the following components: screening frame and resonator covered with metal mesh, converter, HF-cable and generator.

The design of the screening resonator corresponds to the current state of technology and is operationally safe.

Only the components originally supplied by the manufacturer may be used.

Any faults which might affect operational safety must be remedied immediately.

The resonator and converter get hot during operation!

**Special instructions**

This operating manual must be carefully read before the system is taken into operation. Lack of knowledge about operation and maintenance could cause damage to the unit.

The operating manual should always be kept ready to hand wherever the equipment is used. Additional copies can be ordered at any time from your supplier.

No items such as spirals, deflectors etc. must be attached to the sieve or in its immediate vicinity (minimum distance of 50 mm).
The screening mesh can become contaminated by powder residue. It should therefore be cleaned in order to ensure that the effectiveness of the ultrasound is not impaired.

For operation in an Ex-area, please refer to the instructions in the appendix.

**Safety precautions**

- Do not allow any heavy objects to drop onto the screening surface that could damage the screening fabric.
- The ultrasonic system must not be taken into operation if:
  a) the sieve has been exposed to abnormal mechanical influences, such as dropping or hard shocks (mechanical damage)
  b) a fault is displayed on the generator
- When cleaning the screening fabric, keep a distance of 15 cm between the compressed air nozzle and the screening fabric in order to prevent damaging the fabric.

**ATTENTION**

**Damage to the sieve mesh tension**

If the ultrasonic sieve is not removed when cleaning the OptiSpeeder and the original cover replaced, the sieve mesh tension will be damaged!

► The OptiSpeeder must only be cleaned with the original cover fitted.

**Operator’s obligations**

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

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

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

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

**Staff qualification**

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

Legend: ✓..Permissible --..Prohibited

**Emergency action**

<table>
<thead>
<tr>
<th>Incident</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric shock</td>
<td>Switch off the installation. Disconnect the mains plug. Notify a doctor. Perform first aid.</td>
</tr>
<tr>
<td>Smoke generation, unusual noises, unusual generation of heat</td>
<td>Switch off the installation. Disconnect the mains plug. Contact the Technical Service Department of Gema.</td>
</tr>
<tr>
<td>Fire in the electrical system</td>
<td>Disconnect the mains plug. Extinguish the fire with an appropriate fire extinguisher. Raise the alarm with the works fire brigade or the local fire brigade. Contact the Technical Service Department of Gema.</td>
</tr>
</tbody>
</table>

**Modifications to the sieve**

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

It is permitted to carry out repairs to the screening fabric.
► Defective screens should be sent for repair to Gema Switzerland.
Function description

Field of application

The US07 Ultrasonic sieve system is built exclusively for electrostatic coating with organic powders. Any other use is considered non-compliant. The manufacturer is not responsible for any incorrect use and the risks associated with such actions are assumed by the user alone!

Utilization

The US07 Ultrasonic sieve system with the corresponding SG4L pro Ultrasound sieve generator is used for the ultrasonic supported sieving of coating powder. It is used exclusively inside the OptiSpeeder powder container of Gema's Opticenter powder management centre.

Powder supply variants

The screen can be used to filter fresh powder (FP) and/or recycled powder (RP), depending on the OptiSpeeder version.

Main benefits of the US07 Ultrasonic sieve system

- Removal of powder accumulations (loosening of the coating powder)
- Efficient powder throughput even with fine meshes and small screen areas.
- Quick and easy cleaning
- Low power consumption
- Quiet operation
- Compliant to ATEX
US07 Ultrasonic sieve system – overview

The ultrasonic screening system US07 is installed and operated in powder management systems of type OptiCenter.

fig. 1: Ultrasonic screening system US07 in OptiSpeeder – sectional view

US07 Ultrasonic sieve system – components

fig. 2: US07 Ultrasonic sieve system – components

1 Ultrasonic generator
2 HF-cable
3 Converter
4 Sieve
5 Sieve cover
SGL4 pro Ultrasonic sieve generator

Operating and display elements

The Ultrasonic sieve generator is located in a strong housing. The operating elements (keys) and display elements (LEDs) are freely accessible and described in the corresponding chapters.

- 1. Operating and display elements
- 2. Push button for setting the intensity and operating mode.
- 3. LED lights up when the generator is switched on.
- 4. LED lights up when the ultrasound is activated.
- 5. LED lights up in case of generator and load faults.

**fig. 3: SGL4 pro Ultrasonic sieve generator – Operating and display elements**
Device connections

fig. 4: SGL4 pro Ultrasonic sieve generator – Device connections

1 SGL4 pro Ultrasonic sieve generator
2 LED displays
3 Connection for superordinated control unit
4 Power switch: ON/OFF
5 Power supply
6 Connection for HF-cable

ATTENTION
Rise in temperature
By increasing the intensity, the temperature on the sieve increases too!
▶ It must be guaranteed by means of temperature measurement that the allowed maximum temperature for the material to be sieved is not exceeded!
Ultrasonic sieve

Ultrasonic sieve – overview

fig. 5: Ultrasonic sieve

1 Sieve
2 Converter
3 Cover
4 HF-cable connection

Sieve clothing

For professional new or restored sieve clothing, please contact Gema Switzerland GmbH.
Technical Data

US07 Ultrasonic sieve system

Maximum screening capacity
The screen can be used to filter fresh powder (FP) and/or recycled powder (RP), depending on the OptiSpeeder version.

The screening capacity (throughput) depends on the mesh width.
► The ratio between the number of used guns (P) and effective screening capacity must not exceed the permissible limit.

<table>
<thead>
<tr>
<th>Mesh size (µm)</th>
<th>300</th>
<th>250*</th>
<th>200</th>
<th>140</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughput (kg/min)</td>
<td>4.5</td>
<td>3.5</td>
<td>1.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Only fresh powder (FPS)</td>
<td>36 P</td>
<td>30 P</td>
<td>12 P</td>
<td>6 P</td>
</tr>
<tr>
<td>Only recycled powder (RPS)</td>
<td>36 P</td>
<td>30 P</td>
<td>12 P</td>
<td>6 P</td>
</tr>
<tr>
<td>Recycled and fresh powder (RPS+FPS)</td>
<td>18 P</td>
<td>15 P</td>
<td>6 P</td>
<td>3 P</td>
</tr>
</tbody>
</table>

* standard version

The above-mentioned powder flow rates refer to standard powder and can differ, depending on powder condition and powder characteristics!
### Electrical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SG4L pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical Connection</td>
<td>230 VAC +/- 10% or 115 VAC +/- 10%</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Max. ultrasonic performance</td>
<td>100 W eff.</td>
</tr>
<tr>
<td>Output voltage</td>
<td>300 V eff.</td>
</tr>
<tr>
<td>Max. output current</td>
<td>0.5 A eff.</td>
</tr>
<tr>
<td>Device fuse</td>
<td>2 A, slow-acting (200-240 V)</td>
</tr>
<tr>
<td>Output frequency</td>
<td>33 – 37 kHz</td>
</tr>
<tr>
<td>Number of operating modes</td>
<td>8</td>
</tr>
<tr>
<td>Amplitude setting (intensity)</td>
<td>50-100%, in 8 steps</td>
</tr>
<tr>
<td>Inputs</td>
<td>Ultrasonic ON/OFF, potential-free</td>
</tr>
<tr>
<td></td>
<td>Intensity selection, potential-free</td>
</tr>
<tr>
<td>Output</td>
<td>Alarm output (collective alarm), potential-free</td>
</tr>
</tbody>
</table>

### General data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SG4L pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>0 – 45 °C</td>
</tr>
<tr>
<td></td>
<td>(+32 °F - +113 °F)</td>
</tr>
<tr>
<td>Max. relative air humidity</td>
<td>80% at 30 °C, non-condensing</td>
</tr>
<tr>
<td>Protection type</td>
<td>IP40</td>
</tr>
<tr>
<td>Operating location</td>
<td>interior room, &lt; 2,000 m above sea level</td>
</tr>
<tr>
<td>Approvals</td>
<td>CE, Ex II 3 D</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>SG4L pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>70 mm</td>
</tr>
<tr>
<td>Height</td>
<td>59 mm</td>
</tr>
<tr>
<td>Length</td>
<td>429 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.4 kg</td>
</tr>
</tbody>
</table>
## Converter

### Electrical data

<table>
<thead>
<tr>
<th>Converter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>100 W</td>
</tr>
<tr>
<td>Max. operating temperature</td>
<td>60°C</td>
</tr>
<tr>
<td>Weight</td>
<td>0.41 kg</td>
</tr>
<tr>
<td>Approvals (converter)</td>
<td>CE</td>
</tr>
<tr>
<td></td>
<td>Ex II 2 D</td>
</tr>
</tbody>
</table>
Start-up and operation

Ultrasonic sieve generator

ATTENTION

The Ultrasonic sieve generator may not be installed at swinging/vibrating elements of the plant!

- Nonobservance of this information exempts the manufacturer from any liability from resulting damage to persons and equipment!

The textual instructions must be followed step by step, in order to avoid damage!

Preparation

1. The Ultrasonic sieve generator must be placed on a stable basis

2. Switch off the device (POWER to OFF)

3. Connect the ultrasonic sieve connection (HF cable), observe the cable length.

4. Connect the mains cable only at sockets with protective earth/ground and with tension in accordance to the type plate

It must be ensured that the mains cable cannot be disconnected under tension!

If this is not possible, the following solutions can be selected:

- Switch off the Ultrasonic sieve generator and disconnect it from the mains
- Installation of the entire ultrasonic sieve generator into a control cabinet
- Wire the ultrasonic sieve generator directly on the clamps
- Use plug and socket with mechanical locking device against unintentional disconnecting
The potential equalization must be made with a 4 mm² wire on the rear side of the ultrasonic sieve generator. The parts located around the sieve must be merged into this potential equalization. Usually, these are funnels, cowls, tubes etc.

By installing into a plastic housing, a sufficient grounding is to be ensured by the plant manufacturer or the customer.

If an over-temperature occurs, the ultrasonic sieve generator switches off. After cooling down, the ultrasonic sieve generator switches on automatically.

> The power density on the sieve may not exceed 0.1 W/cm²!
> Therefore, the power output on the generator is limited to 50 W!

For the use and integration of optional performance and amplitude regulations, as well as the adjustment of the start settings, see the corresponding chapters in this manual. Default settings: Mode = OFF; intensity = 50 %.

If the generator enclosure is damaged, it has to be put immediately out of operation and has to be replaced!

All plugs may never be disconnected under tension!

If the converter gets too hot, the ultrasonic switches off and the Ultrasonic LED expires. If the converter temperature drops under the adjusted threshold value, the ultrasonic switches on again and the Ultrasonic LED illuminates.

The ultrasonic sieve generator is to be set up in such a way that it is protected against impacts, falling down objects, thermal radiation (also solar radiation)!

The ambient temperatures may only be between 0-40 °C!

### Intensity and job settings

Intensity and job settings are saved in the OptiCenter control unit already at the factory. The required screen type can only be selected via a TouchPanel.

<table>
<thead>
<tr>
<th>Ultrasonic screen type</th>
<th>Mesh width</th>
<th>Intensity</th>
<th>Job setting</th>
<th>Job no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>US07-140</td>
<td>140 µm</td>
<td>50 %</td>
<td>Modus G</td>
<td>J0</td>
</tr>
<tr>
<td>US07-200</td>
<td>200 µm</td>
<td>60 %</td>
<td>Modus G</td>
<td>J1</td>
</tr>
<tr>
<td><strong>US07-250</strong>&lt;sup&gt;*&lt;/sup&gt;</td>
<td><strong>250 µm</strong></td>
<td><strong>70 %</strong></td>
<td>Modus G</td>
<td>J2</td>
</tr>
<tr>
<td>US07-300</td>
<td>300 µm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US07-500</td>
<td>500 µm</td>
<td>100 %</td>
<td>Modus G</td>
<td>J3</td>
</tr>
<tr>
<td>US07-1180</td>
<td>1180 µm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>*</sup> standard version
Automatic switch-on (remote operation)

The generator is used only in conjunction with an OptiCenter, and automatically comes on when the “spray” or “spray waste” button is pressed.

<table>
<thead>
<tr>
<th>!</th>
<th>Thereby, the sieve generator main switch must be on the ON position</th>
</tr>
</thead>
<tbody>
<tr>
<td>–</td>
<td>The generator outputs ultrasonic energy only if this option has been selected on the OptiCenter panel (see the related display on the panel).</td>
</tr>
<tr>
<td>–</td>
<td>The intensity corresponding to the mesh size is also selected on the panel (4 settings were saved at the factory).</td>
</tr>
<tr>
<td>–</td>
<td>Ultrasonic lamp must illuminate, Failure lamp may not be illuminated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>▶</th>
<th>The status display of the generator indicates the external control by the green REMOTE LED!</th>
</tr>
</thead>
<tbody>
<tr>
<td>–</td>
<td>The generator produces ultrasonic on the sieve mesh through the converter</td>
</tr>
<tr>
<td>–</td>
<td>Ultrasonic lamp must illuminate, Failure lamp may not be illuminated</td>
</tr>
<tr>
<td>–</td>
<td>Adjust the required intensity</td>
</tr>
</tbody>
</table>

| ▶ | The Failure lamp illuminates if the mains voltage is too low (<180 V) and/or the heating inside the equipment is too high! |

⚠️ CAUTION

Burn danger

> The sieve may not be touched when the Ultrasonic sieve generator is switched on!

<table>
<thead>
<tr>
<th>⚠️</th>
<th>The Ultrasonic sieve generator of the US07 Ultrasonic sieve system may be operated only with the original sieves!</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;</td>
<td>The equipment may be operated only by trained and instructed personnel and considering the operating instructions!</td>
</tr>
</tbody>
</table>
**Coating with powder recovery (spray)**

The ultrasonic screen is on.

- This button can be used to switch off the ultrasonic screen at any time.

**Coating without powder recovery (spray waste)**

The ultrasonic screen is off.
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.
- Refer to "Screen configuration".

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

Screen configuration

The sieve is configured via the Touch Panel on the OptiCenter.

The OptiCenter parameters are edited and displayed in the "Configuration" menu and the associated submenus.
Depending on the access level of the user who is logged on, parameters can be edited or only displayed. Some parameters are reserved exclusively for Gema Service.

1. Activate the sieve(s) with the mesh size inserted

- Screen active = 1
- The activated sieve(s) can now be selected during operation

Use

- only by trained and instructed personnel
- only in technically perfect condition
- safety and conscious of danger
- considering the operating instructions
- in trouble-free and safe environment
- with adherence to the maintenance conditions

Consequences of inappropriate utilization

- Danger to life and limb of the user or a third party
- Impairment of the sieve device and other equipment

Shutdown and disassembly

- Switch off the Ultrasonic sieve generator with the main switch
- Disconnect all connections
- Store the Ultrasonic sieve generator in a protected place

Ultrasonic sieve

Ultrasound sieve converter

The ultrasonic sieve converter may be operated only with the sieve, the cable and the generator released for it. Modifications of the components require the consent of the company Gema Switzerland GmbH!

The locking torque of the converter on the sieve corresponds to 15 Nm (aluminum). If the starting torque is lower, this will lead to heat at the junc-
tion point. The connecting surface of the converter at the sieve must be clean and free of grease!

⚠️ CAUTION

Burn danger!
- The sieve may not be touched during operating status!
- If longer operation takes place, let the system cool down.

It is to be provided for a sufficient cooling of the sieve and the converter. In capsuled systems, an additional cooling or power output limitation is necessary!
Screen

It is important, that nothing sticks on the sieve surface or touches it, e.g. adhesive strips, seal material etc.

- When a friction takes place, there may be a risk of higher temperatures!
- Modifications require the consent of the company Gema Switzerland GmbH!

Clean the sieve in regular intervals, according to the operator experiences. Too much stucked grain or caked powder leads to a rise of temperature!

**Grounding of the components**

Earthing takes place via the connection cable.

The potential equalization is done by a 4 mm² wire on the rear side of the Ultrasonic sieve generator to the converter. The parts located around the resonator must be merged into this potential equalization. Usually, these are funnels, cowls, tubes etc.

**Installing the sieve**

**ATEX note:**

The converter and the sieve are to be installed in such a way that, if operational malfunctions take place, impact or sliding sparks to other devices and components are impossible!

**Lay out the HF cable in a safe matter!**

- The installing regulations according to EN 61241-14 have to be observed!
Sieve/converter connection

All plugs may never be disconnected under tension!
The plant may be switched on only if the plug locking is snapped into place and the safety screw is tightened well!

Disassembly:
1. Disconnect the plant from the mains (Ultrasonic sieve generator etc.)
2. Turn the fixing screw counterclockwise until a gap is formed
3. Pull the plug straight out

Assembly:
1. Disconnect the plant from the mains (Ultrasonic sieve generator etc.)
2. Determine the position of the plug coding
3. Insert the plug straight and press until a "CLICK" is heard.

4. Turn the fixing screw clockwise and tighten firmly.
Color change

On a change of color, the OptiSpeeder container is to be cleaned too.

**ATTENTION**

Damage to the sieve mesh tension

If the ultrasonic sieve is not removed when cleaning the OptiSpeeder and the original cover replaced, the sieve mesh tension will be damaged!

► The OptiSpeeder must only be cleaned with the original cover fitted.

1. Replace original cover
2. The cleaning mode can be started now.
Maintenance and cleaning

Ultrasonic sieve generator

The Ultrasonic sieve generator does not require a technical maintenance. If repairs are needed, the device should be sent to the nearest Gema agent.

Periodic checks

The periodic checks include examining all connecting cables. If any damage to the cable insulation is noticed, the affected cable must be replaced immediately.

All fastening screws must be properly tightened. In the case of external damage to the case, the generator must be shut down.

Cleaning

By cleaning the ultrasonic system, no ignitable solvents may be used!

Clean the Ultrasonic sieve generator at periodic intervals or if necessary.
- Switch off the Ultrasonic sieve generator
- Leave all plug connections connected
- Clean the Ultrasonic sieve generator with a multi purpose cleaner and a humid cloth
- Wipe off the Ultrasonic sieve generator and switch it on again
Ultrasonic sieve

The ultrasonic generator cannot always prevent the screen fabric from clogging. Consequently, the screening fabric should be cleaned on a regular basis. The intervals should be judged by the operator according to experience.

Periodic checks

For the purpose of preventative maintenance, we recommend a general inspection of all components of the screening unit every 6 months or at appropriate intervals according to the experience of the operator.

In particular, the sieve should be checked for wear, cracks or damage.

Regular visual inspection of the HF-connecting cables, HF-plugs and the screening insert will preserve the performance and efficiency of the ultrasonic system. Special attention should be paid to the HF-plugs. If a lot of dust collects on them, clean the plugs with oil-free compressed air.

The periodic checks include examining all connecting cables. The corresponding parts should be replaced immediately if any damage to cables or wear to plug contacts is discovered.

Scheduled maintenance

Scheduled maintenance helps ensure smooth and efficient production processes. The operating staff can perform these tasks after having been appropriately briefed.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Maintenance interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean the sieve</td>
<td>1-2 times daily, or during powder changes.</td>
</tr>
<tr>
<td>Check the screen for damage.</td>
<td>Before the system is turned on.</td>
</tr>
</tbody>
</table>

Some of the tasks mentioned above depend significantly on usage and ambient conditions. The cycles stated above are minimum requirements. Different maintenance cycles are permissible in individual cases. In such cases:

- Revise the details in this operating manual
- Appropriately brief operating staff.

Cleaning

Proceed as follows to clean the screening insert:

1. Switch the OptiCenter to the standby mode.
2. Switch off the generator.
3. Unplug the connections between the generator and the sieve.
4. Remove the converter from the sieve.
5. Remove the screen from the OptiSpeeder.
6. Clean the sieve frame and screening fabric with soapy water and a sponge.

For more efficient cleaning, it is also possible to do this with an ul-
7. Dry the sieve and fabric with compressed air and reconnect them to the generator. Keep a distance of 15 cm between the compressed air nozzle and the screening fabric in order to prevent damaging the fabric.

Take care not to cause any damage when using a high-pressure cleaner or compressed air; it is better to use a soft brush.

**Service**

In the event of a fault, the unit 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.
The service life of the sieve can be increased by careful cleaning.

Treat the sieve mesh carefully. It consists of very thin wires and is sensitive to small-area pressure, which can occur with compressed air guns, screwdrivers, spatulas or similar things.

When blowing off with compressed air, keep a distance from at least 15 cm.

Take care with brooms, brushes and similar things, because bristles can get caught in the mesh.

The cleaning in the ultrasonic bath is to be limited on a time as short as possible.

### Replacing the ultrasonic sieve

**Sieve mesh**

Defective sieve may be sent for repair to the Gema Switzerland GmbH. New sieves and their new sieve meshes can be ordered to the Gema Switzerland GmbH (see therefore the corresponding spare parts list).

**Demounting the screen**

The newly inset screen is replaced in the following steps:

1. Remove the plug from the converter: See also “Sieve/converter connection”:

2. 

3. 

4.
Mounting the screen

Mounting takes place in the reverse order.

1. No scratches or grease! Secure with ERGO no. 4202!

2. Secure with ERGO number 4202; then tighten with an open-ended wrench.

3. WARNING: The tightening torque is: 15 Nm
4. Loosen the screw (C)

5. Align sieve

6. Retighten the screw (C)

**ATTENTION**

Operational malfunctions

Otherwise machine vibrations might cause the connector to fail.

- The Allen screw must remain firmly tightened during operation.
Decommissioning, storage

Introduction

Safety rules
Before removing the ultrasonic screen, turn off the generator.

Requirements on personnel carrying out the work
All work should be carried out only by authorized technical personnel.

Shut-down

Temporary shutdown
1. Switch off the generator.
2. Clean and maintain the screen (refer to the chapter titled "Maintenance and cleaning").

After a temporary shutdown, commissioning must be performed again.
– For this, refer to "Commissioning and operation".

Final shutdown
1. Switch off the generator.
2. Remove the connector.
3. Clean the screen and generator.

Storage conditions

Storage duration
Short-term and medium-term storage (up to 2 years) are permissible without special measures under the ambient conditions specified in the technical data.

Anti-corrosion measures are necessary for longer storage periods.
Space requirements
The space needed corresponds to the size of the ultrasonic screen plus the generator.
There are no special requirements concerning distance to neighboring equipment.

Physical requirements
Storage must be inside a dry building at a temperature between +5 – 50 °C.

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

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Maintenance during storage

Maintenance schedule
No maintenance schedule is necessary.

Maintenance works
During long-term storage, periodically perform a visual check for corrosion.
Packing, transport, disposal

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, such as to have renovations or service work carried out by the manufacturer

or

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

Requirements on personnel carrying out the work
All work must be carried out by personnel trained in packing machines.

Packing material

Selection of packing material
The original packing material or suitably stable packing must be used.

Transport

Data concerning goods to be transported
The space requirements correspond to the size of the ultrasonic sieve plus the generator plus the packaging.

Loading, transferring the load, unloading
There are no special requirements.
Before transporting the ultrasonic screening system, decommission it as described in the chapter titled "Decommissioning and storage".

Observe the transport instructions in the chapter titled "Transport".

Screening-machine and electrical components should be segregated according to variety, and disposed of properly.

All the screening machine’s parts as well as ancillary materials and consumables must be segregated according to variety, and disposed of according to local regulations and guidelines.

- Please contact the manufacturer if you have any questions regarding disposal.
Provided next is an overview of possible faults as well as their causes and remedies. In the event of a fault:

– Notify qualified service staff.
– If necessary, inform the manufacturer's customer service department.

<table>
<thead>
<tr>
<th>Failure</th>
<th>Causes</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>The green Ultrasonic LED does not illuminate&lt;br&gt;No sound on the sieve</td>
<td>Mains plug not connected</td>
<td>Connect the mains plug</td>
</tr>
<tr>
<td></td>
<td>Voltage too low or not available on the socket</td>
<td>Check the socket</td>
</tr>
<tr>
<td></td>
<td>Main switch is on OFF position</td>
<td>Put the main switch to position ON</td>
</tr>
<tr>
<td></td>
<td>Fuse is defective</td>
<td>Replace the fuse</td>
</tr>
<tr>
<td></td>
<td>Generator is defective</td>
<td>Send in the generator for repair</td>
</tr>
<tr>
<td></td>
<td>Sieve not connected</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HF cable interruption</td>
<td>Connect the replacement cable</td>
</tr>
<tr>
<td></td>
<td>Short circuit in the HF cable</td>
<td>Connect the replacement cable</td>
</tr>
<tr>
<td></td>
<td>No operating mode selected</td>
<td>Select an operating mode</td>
</tr>
<tr>
<td>The green Ultrasonic LED does not illuminate&lt;br&gt;Ultrasound on the sieve</td>
<td>Ultrasonic LED defective</td>
<td>Replace the LED</td>
</tr>
<tr>
<td>Red Failure LED illuminates&lt;br&gt;No sound on the sieve</td>
<td>Mains voltage is too</td>
<td>Check the mains voltage</td>
</tr>
<tr>
<td></td>
<td>Generator overheats</td>
<td>Let the generator cool down</td>
</tr>
<tr>
<td>Failure</td>
<td>Causes</td>
<td>Troubleshooting</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
</tbody>
</table>
| Strong heating up of the sieve               | Adjusted intensity is too high              | Turn back the intensity or switch to PULS
|                                               | Connecting surfaces of the converter are    | Operating mode                           |
|                                               | not clean                                   |                                          |
|                                               | Converter is not tightened well             | Tighten the converter                    |
| The red **Failure** LED on the OptiCenter illu-
| No sound on the sieve                        | The screen generator is inactive or defect- | Turn on the screen generator, or send it |
|                                               | The mesh is too fine.                       | in for repairs.                          |
|                                               | The powder dose is too large.               | Reduce the dose.                         |
|                                               | The converter is not connected firmly to the screen. | Connect the conver-
|                                               | Screen is defective                         | ter firmly to the screen. Ensure the      |
|                                               |                                             | correct tightening torque.               |

**Fault acknowledgement**

Generator faults are acknowledged after eliminating the cause by switching off the main switch (for at least 30 seconds) and then switching on again.
Spare parts list

Ordering spare parts

When ordering spare parts for powder coating equipment, please indicate the following specifications:

– Type and serial number of your powder coating equipment
– 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)

**ATTENTION**

*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!
# US07 Ultrasonic sieve system – Spare parts list

<table>
<thead>
<tr>
<th></th>
<th>US07 Ultrasonic sieve – complete (pos. 1-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>– with sieve 140 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 200 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 250 µm (standard)</td>
</tr>
<tr>
<td></td>
<td>– with sieve 300 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 500 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 1180 µm</td>
</tr>
<tr>
<td></td>
<td>Ultrasonic sieve US07 with additional external powder connection in cover (EPS) – complete (pos. 1-9.1)</td>
</tr>
<tr>
<td></td>
<td>– with sieve 140 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 200 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 250 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 300 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 500 µm</td>
</tr>
<tr>
<td></td>
<td>– with sieve 1180 µm</td>
</tr>
</tbody>
</table>

**Sieve (sieve resonator, covered)**

|   | Sieve 140 µm – complete (pos. 1-3)                                                                            | 1013 224# |
|   | Sieve 200 µm – complete (pos. 1-3)                                                                            | 1013 225# |
|   | Sieve 250 µm – complete (pos. 1-3)                                                                            | 1013 226# |
|   | Sieve 300 µm – complete (pos. 1-3)                                                                            | 1013 227# |
|   | Sieve 500 µm – complete (pos. 1-3)                                                                            | 1013 333# |
|   | Sieve 1180 µm – complete (pos. 1-3)                                                                           | 1013 228# |
| 2 | Allen set screw – M8x35 mm                                                                                   |
| 3 | Nut with flange – M8                                                                                         |
| 4 | X-ring                                                                                                         | 1018 069# |
| 5 | O-ring – Ø 35x2 mm                                                                                           | 220 442# |
| 6 | Converter                                                                                                      | 1018 067 |
| 7 | Converter support                                                                                             | 1018 031 |
| 8 | Screw – M6x75 mm                                                                                              | 1005 161 |
| 9 | Container cover – complete                                                                                   |
| 9.1| Cover with EPS connection – complete                                                                          |
|10 | Ultrasonic generator – 100 W                                                                                  | 1018 716 |
|11 | HF cable – 6 m, complete                                                                                      | 1018 717 |
|12 | Cable (RS-232) – 1 m, complete                                                                                 | 1018 718 |
|   | Thread sealant – ERGO no. 4202                                                                                | 220 507 |

* Wearing part

* Please indicate length
US07 Ultrasonic sieve system – Spare parts

fig. 6: Spare parts