Translation of the original operating instructions
# Table of contents

**General safety regulations** 3

- Safety symbols (pictograms) ................................................................. 3
- Proper use ................................................................................................ 3
- Product-specific safety measures ............................................................ 4
  - Personnel safety .................................................................................. 4
  - Safety concept ...................................................................................... 4
  - Proper use ............................................................................................ 4

**About this manual** 5

- General information .............................................................................. 5

**Function description** 7

- Field of application .............................................................................. 7
- PT7 Dense phase conveyor – structure .................................................. 7
  - Overview .............................................................................................. 7
- PT7 Dense phase conveyor – function .................................................... 8
  - Overview .............................................................................................. 8
  - Function description ............................................................................ 8

**Technical data** 9

- PT7 Dense phase conveyor ................................................................... 9
  - Pneumatic data .................................................................................... 9

**Maintenance** 11

- Replacing the pinch valve sleeve .......................................................... 11
  - Dismantling .......................................................................................... 11
  - Assembly .............................................................................................. 12

**Spare parts list** 13

- Ordering spare parts ............................................................................. 13
- PT7 Dense phase conveyor – spare parts list ......................................... 14
- PT7 Dense phase conveyor – spare parts ............................................... 15
This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the PT7 Dense phase conveyor.

These safety regulations must be read and understood before the PT7 is put into operation.

Safety symbols (pictograms)

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

DANGER!
Danger due to electrically live or moving parts. Possible consequences: death or serious injury

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

INFORMATION!
Useful tips and other information

Proper use

1. The PT7 Dense phase conveyor is built to the latest specification and conforms to the recognized technical safety regulations and is designed for the normal application of powder coating.

2. Any other use is considered non-compliant. The manufacturer shall not be liable for damage resulting from such use; the user bears sole responsibility for such actions. Gema Switzerland GmbH must be consulted prior to any use of the PT7 for any purposes or substances other than those indicated in our guidelines.

3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The PT7 Dense phase conveyor should only be used, maintained and
started up by trained personnel, who are informed about and are familiar with the possible hazards involved.

4. Start-up (i.e. the execution of a particular operation) is forbidden until it has been established that the PT7 Dense phase conveyor has been set up and wired according to the guidelines for machinery (2006/42 EG). EN 60204-1 (machine safety) must also be observed.

5. Unauthorized modifications to the PT7 Dense phase conveyor exempt the manufacturer from any liability from resulting damage.

6. The relevant accident prevention regulations, as well as other generally recognized safety regulations, occupational health and structural regulations are to be observed.

7. Furthermore, the country-specific safety regulations also must be observed.

Product-specific safety measures

Personnel safety

The dense phase conveyor may only be switched on and operated after careful reading of this manual. Incorrect operation of the dense phase conveyor can lead to personal injuries as well as damages to property.

Safety devices may not be dismantled, bypassed or ignored!

Safety devices must be held in perfect functioning and may be not put out of operation.

Maintenance work on the dense phase conveyor may only take place when the power supply is switched off.

Safety concept

The dense phase conveyor is a constituent part of the system and is thus integrated into the safety system of the plant. If it is to be used in a manner outside the scope of the safety concept, then corresponding measures must be taken.

Only original Gema spare parts should be used! Any warranty claim for damage caused by the use of foreign parts is void.

Repairs on the dense phase conveyor may only be carried out by Gema trained personnel!

Proper use

The dense phase conveyor is only intended for the defined application range. The use outside of this range is considered as not intended use.

If it is to be used in a manner outside the scope of the safety concept, then corresponding measures must be taken.

NOTE:

For further information, see the more detailed Gema safety regulations!
About this manual

General information

This operating manual contains all the important information you require for the working with the PT7 Dense phase conveyor. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new powder coating system.

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

DANGER:
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 "Safety regulations".
► Work should only be carried out in accordance with the instructions of the relevant documents.
► Always work with the complete original document.
Function description

Field of application

The sieved powder is transported by the dense phase conveyor to the powder center and into the powder container. This powder transport principle permits a very careful and dust-free powder transport, because the air requirement necessary and the transport speed are very low.

PT7 Dense phase conveyor – structure

Overview

PT7 Dense phase conveyor – structure

1. Switching air connection QV1
2. Conveying air connection
3. Intermediate piece
4. Switching air connection QV2
5. Spiral air connection
6. Conveying hose connection
7. Pinch valve 1 QV1
8. Pinch valve 2 QV2
PT7 Dense phase conveyor – function

Function description

1. The upper pinch valve QV1 opens. The recovered powder falls through the pinch valve QV1 into the intermediate piece (3)
   - The lower pinch valve QV2 remains thereby closed
   - The spiral air (5) is constantly in operation
   - The conveying air (2) is switched off
2. The pinch valve QV1 closes
3. The pinch valve QV2 opens
   - The pinch valve QV1 is thereby closed
   - The spiral air (5) is constantly in operation
   - The conveying air (2) is switched on for a short time

The powder is pressed through the pinch valve QV2 into the conveying hose by the overpressure in the intermediate piece (3). By switching on the conveying air (2) for a short time, the powder in the conveying hose (7) will be transported a further step.

4. The pinch valve QV2 closes
   - After a short delay, the pinch valve QV1 opens again
   - The steps 1-4 will be repeated continuously

After a short time, the conveying hose will be filled with many powder sections, which are transported continuously into the powder container. The conveying efficiency depends on the powder type, the pulse frequency and the length of the conveying hose with the actual dimensions of the used pinch valve and conveying hose.
Technical data

PT7 Dense phase conveyor

Pneumatic data

<table>
<thead>
<tr>
<th>PT7 Dense phase conveyor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conveying performance (powder)</td>
<td>2.0 kg/min</td>
</tr>
<tr>
<td>Max. input pressure</td>
<td>10 bar</td>
</tr>
<tr>
<td>Min. input pressure</td>
<td>6 bar</td>
</tr>
<tr>
<td>Max. water vapor content of the compressed air</td>
<td>1.3 g/m³</td>
</tr>
<tr>
<td>Max. oil vapor content of the compressed air</td>
<td>0.1 mg/m³</td>
</tr>
</tbody>
</table>
Replacing the pinch valve sleeve

The replacement of the sleeve in the pinch valve of the PT7 Dense phase conveyor takes place according to the following instructions:

1. Remove the pinch valve from the dense phase conveyor
2. Remove the black positioning pin with pliers (1)
3. Turn the pinch valve sleeve 45° counter-clockwise (2)
4. Pull out the pinch valve sleeve and replace it (3)

Dismantling

Replacing the pinch valve sleeve
Assembly

1. Place the wide lug of the pinch valve sleeve into the wide pinch valve slot
2. Push the pinch valve sleeve into the pinch valve up to the stop
3. Turn the pinch valve sleeve 45° clockwise up to the stop pin
4. Insert the positioning pin
5. Check the O-rings for damage and replace it, if necessary
6. Reinsert the pinch valve to the dense phase conveyor
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** PT7  
  **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 *.

Wearing parts are always marked with a #.

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

**Example:**

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

**WARNING!**

Only original Gema spare parts should be used, because the explosion protection will also be preserved that way. The use of spare parts from other manufacturers will invalidate the Gema guarantee conditions!
# PT7 Dense phase conveyor – spare parts list

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Elbow connection</td>
<td>390 178</td>
</tr>
<tr>
<td>2</td>
<td>Flow restrictor – Ø 1.9 mm</td>
<td>372 900</td>
</tr>
<tr>
<td>3</td>
<td>Fluidizing ring</td>
<td>363 570</td>
</tr>
<tr>
<td>4</td>
<td>Connecting piece</td>
<td>377 368</td>
</tr>
<tr>
<td>5</td>
<td>Spacer sleeve</td>
<td>377 376</td>
</tr>
<tr>
<td>10</td>
<td>Pinch valve – NW 25</td>
<td>253 707</td>
</tr>
<tr>
<td></td>
<td>Sleeve – NW 25 (for pos. 10)</td>
<td>255 246#</td>
</tr>
<tr>
<td>11</td>
<td>Pinch valve – NW 65</td>
<td>258 520</td>
</tr>
<tr>
<td></td>
<td>Sleeve – NW 65 (for pos. 11)</td>
<td>711 576#</td>
</tr>
<tr>
<td>14</td>
<td>Valve unit – Af-2600/Ch2</td>
<td>390 356</td>
</tr>
<tr>
<td>15</td>
<td>Check valve – 1/8&quot;-1/8&quot;</td>
<td>202 240</td>
</tr>
<tr>
<td>16</td>
<td>Geka coupling</td>
<td>1000 854</td>
</tr>
<tr>
<td>19</td>
<td>Connection sleeve – 1/8&quot;, Ø 8 mm</td>
<td>236 020</td>
</tr>
<tr>
<td>20</td>
<td>Double nipple – 1/4&quot;-1/8&quot;</td>
<td>242 209</td>
</tr>
<tr>
<td>21</td>
<td>Double nipple – 3/8&quot;-1/8&quot;</td>
<td>240 079</td>
</tr>
<tr>
<td>22</td>
<td>Elbow joint – 1/8&quot;, Ø 8 mm</td>
<td>203 050</td>
</tr>
<tr>
<td>23</td>
<td>Elbow joint – 1/8&quot;, Ø 8 mm</td>
<td>253 987</td>
</tr>
<tr>
<td>24</td>
<td>T-connection – 1/8&quot;-1/8&quot;-1/8&quot;</td>
<td>237 760</td>
</tr>
<tr>
<td>25</td>
<td>Screw-in nipple – 1/8&quot;, Ø 8 mm</td>
<td>246 956</td>
</tr>
<tr>
<td>26</td>
<td>Silencer – 1/8&quot;</td>
<td>251 305</td>
</tr>
<tr>
<td>27</td>
<td>Silencer – M5</td>
<td>265 764</td>
</tr>
<tr>
<td>29</td>
<td>Spring hook – 60x6 mm</td>
<td>250 694</td>
</tr>
<tr>
<td>30</td>
<td>Eye bolt – M6x15 mm</td>
<td>261 122</td>
</tr>
<tr>
<td>34</td>
<td>Allen cylinder screw – M8x35 mm</td>
<td>216 526</td>
</tr>
<tr>
<td>35</td>
<td>Lock washer – M8</td>
<td>215 953</td>
</tr>
<tr>
<td>38</td>
<td>Plastic tube – Ø 8/6 mm, black</td>
<td>103 756*</td>
</tr>
</tbody>
</table>

### Hose connection – complete (not shown), consisting of:

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupling with hose connector – Ø 25 mm</td>
<td>1002 132</td>
</tr>
<tr>
<td>Hose – Ø 33/25 mm</td>
<td>104 604</td>
</tr>
<tr>
<td>Hose clamp – 25-35 mm</td>
<td>226 335</td>
</tr>
<tr>
<td>Safety wire – L=200 mm</td>
<td>374 628</td>
</tr>
</tbody>
</table>

* Please indicate length

# Wearing part
PT7 Dense phase conveyor – spare parts

PT7 Dense phase conveyor – spare parts