Operating instructions and spare parts list

PT8 Dense phase conveyor

Translation of the original operating instructions
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General safety regulations

This chapter sets out the fundamental safety regulations that must be followed by the user and third parties using the PT8 Dense phase conveyor. These safety regulations must be read and understood before the PT8 Dense phase conveyor is used.

Safety symbols (pictograms)

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

**DANGER!**
Danger due to live electricity or moving parts. Possible consequences: Death or serious injury

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

**INFORMATION!**
Useful tips and other information

Conformity of use

1. The PT8 Dense phase conveyor is built to the latest specification and conforms to the recognized technical safety regulations. It is designed for the normal application of powder coating.

2. Any other use is considered as non-conform. The manufacturer is not responsible for damage resulting from improper use of this equipment; the end-user alone is responsible. If the PT8 Dense phase conveyor is to be used for other purposes or other substances outside of our guidelines then ITW Gema AG should be consulted.

3. Observance of the operating, service and maintenance instructions specified by the manufacturer is also part of conformity of use. The PT8 Dense phase conveyor should only be used, main-
tained 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 PT8 Dense phase conveyor has been set up and wired according to the guidelines for machinery (98/37 EG). EN 60204-1 (machine safety) must also be observed.

5. Unauthorized modifications to PT8 Dense phase conveyor exempts the manufacturer from any liability from resulting damage.

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

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

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**Product specific security 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 constituent part of the system and is thus integrated into the safety system of the plant. For the use outside of the safety concept, corresponding measures must be taken!

Only original ITW Gema spare parts may be used! Damage caused by other parts is not covered by guarantee.

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

**Conformity of 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.

For the use outside of the safety concept, corresponding measures must be taken!

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**Note:**

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

General information

This operating manual contains all the important information which you require for the working with the PT8 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 - reciprocators, booths, powder gun control units, powder guns etc. - should be referenced to their corresponding documents.
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.

PT8 Dense phase conveyor - structure

Overview

| QV1      | Pinch valve 1 (Fill)  | 4 | Switching air connection QV2 |
| QV2      | Pinch valve 2 (Transport) | 5 | Spiral air connection       |
| 1        | Switching air connection QV1 | 6 | Emptying air connection    |
| 2        | Conveying air connection | 7 | Conveying hose connection  |
| 3        | Intermediate hopper     |   |                             |

PT8 Dense phase conveyor - structure
PT8 Dense phase conveyor - function

**Overview**

1. The upper pinch valve **QV1** opens. The recovered powder falls through the pinch valve **QV1** into the intermediate tube (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 hopper (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.
Additionally to the described procedures, the so-called emptying air (6) is automatically fed in. The emptying air flows through the pinch valve into the overhead powder room and destroys so possible powder bridge accumulations. Thereby, a fluidization of the flow in powder and consequently a better filling of the dense phase conveyor result.
## Technical data

### PT8 Dense phase conveyor

#### Pneumatical Data

<table>
<thead>
<tr>
<th>PT8 Dense phase conveyor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Conveying performance (powder)</td>
<td>depending on powder type and plant layout</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>
Maintenance

Note:
Regular and conscientious maintenance increases the service life of the unit and ensures a longer, more constant coating quality!

Daily maintenance
- Check compressed air/adjusted values
- Check the transport hose connection for sintering on the inside
- Check the transport hose for sintering on the inside

Monthly maintenance
- Check the intermediate hopper for sintering on the inside
- Check the fluidizing plate
Replacing the pinch valve sleeve (NW 65)

The replacement of the sleeve in the pinch valve of the PT8 Dense phase conveyor takes place according to the following instructions:

**Dismantling**
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)

**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
Replacing the pinch valve sleeve (NW 25)

The replacement of the sleeve in the pinch valve of the PT8 Dense phase conveyor takes place according to the following instructions:

Dismantling

Note:
Always use the correct size spanners!

1. Dismantle the pinch valve hoses ("Fill" and "Transport")
2. Unscrew the complete pinch valve assembly by loosen the rear connecting flange (12) from the intermediate hopper
3. Unscrew both threaded sleeves (13) and remove both connecting flanges (12)
4. Remove the old pinch valve sleeve (14)

Assembly

1. Clean the pinch valve housing (15)
2. Insert the new sleeve
3. Press the connecting flange (12) carefully into the sleeve (14) and tighten the threaded sleeves (13) on both sides
4. Reconnect the air hoses on the pinch valve
5. Set the pinch valve under pressure and check it for air leaks. If necessary, retighten both threaded sleeves (13) or repeat point 3
6. Refasten the pinch valve assembly to the intermediate hopper
7. The pinch valve is now ready to operate
Troubleshooting

General information

Always check the following points first, if there are faults on the PT8 Dense phase conveyor:

- Mains voltage present
- Compressed air present (at least 4 bar)

<table>
<thead>
<tr>
<th>Fault</th>
<th>Error/solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport hose is clogged</td>
<td>None, or too little transport air adjusted</td>
</tr>
<tr>
<td>Transport hose laid out alternately rising/falling</td>
<td>Strong sintering in the transport hose</td>
</tr>
<tr>
<td>Strong dust generation at the exit of the transport hose</td>
<td>Too much transport air set</td>
</tr>
<tr>
<td></td>
<td>Too much conveying air set</td>
</tr>
<tr>
<td></td>
<td>Conveying time set too long</td>
</tr>
<tr>
<td>Strong powder accumulation in the powder chamber above the</td>
<td>Pinch valve &quot;Fill&quot; defective</td>
</tr>
<tr>
<td>dense phase conveyor</td>
<td>Too little pressure for pinch valve control unit</td>
</tr>
<tr>
<td></td>
<td>Conveying air not switched off during filling process</td>
</tr>
<tr>
<td>Conveying performance too low</td>
<td>Too little conveying air</td>
</tr>
<tr>
<td></td>
<td>Intermediate hopper not full</td>
</tr>
</tbody>
</table>


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 PT8 Dense phase conveyor,
  Serial number 1234 5678
- Order no. 203 386, 1 piece, Clamp - Ø 18/15 mm

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

The wear 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 ITW-Gema spare parts should be used, because the hazardous location approval will be preserved that way! The use of spare parts from other manufacturers will invalidate the ITW Gema guarantee conditions!
# PT8 Dense phase conveyor - spare parts list

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Code</th>
<th>Part Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT8 Dense phase conveyor - complete</td>
<td></td>
<td>1003 656</td>
</tr>
<tr>
<td>Powder hopper - NW 65</td>
<td>1</td>
<td>1003 655</td>
</tr>
<tr>
<td>Cover</td>
<td>2</td>
<td>363 529</td>
</tr>
<tr>
<td>Spacer sleeve</td>
<td>3</td>
<td>377 376</td>
</tr>
<tr>
<td>Fluidizing plate</td>
<td>4</td>
<td>363 537</td>
</tr>
<tr>
<td>Fluidizing ring</td>
<td>5</td>
<td>363 570</td>
</tr>
<tr>
<td>Connecting piece</td>
<td>6</td>
<td>377 368</td>
</tr>
<tr>
<td>Bezel - Ø 1.9 mm</td>
<td>7</td>
<td>372 900</td>
</tr>
<tr>
<td>Spring hook - 60x6 mm</td>
<td>8</td>
<td>250 694</td>
</tr>
<tr>
<td>O-ring - Ø 110x5 mm</td>
<td>9</td>
<td>253 774</td>
</tr>
<tr>
<td>Allen grub screw - M8x35 mm</td>
<td>10</td>
<td>255 580</td>
</tr>
<tr>
<td>Lockwasher - M8 R</td>
<td>11</td>
<td>215 953</td>
</tr>
<tr>
<td>Hexagon nut - M8</td>
<td>12</td>
<td>215 570</td>
</tr>
<tr>
<td>Hexagon shakeproof screw - M8x25 mm</td>
<td>13</td>
<td>244 465</td>
</tr>
<tr>
<td>Eyebolt - M6x15 mm</td>
<td>14</td>
<td>261 122</td>
</tr>
<tr>
<td>Allen cylinder screw - M8x35 mm</td>
<td>15</td>
<td>216 526</td>
</tr>
<tr>
<td>Geka coupling - 1&quot;</td>
<td>16</td>
<td>1000 854</td>
</tr>
<tr>
<td>T-piece - 1/8&quot;i-1/8&quot;i-1/8&quot;i</td>
<td>17</td>
<td>253 928</td>
</tr>
<tr>
<td>T-connection - 1/8&quot;-1/8&quot;-1/8&quot;</td>
<td>18</td>
<td>237 760</td>
</tr>
<tr>
<td>Elbow joint - 1/8&quot;i-8 mm</td>
<td>19</td>
<td>253 987</td>
</tr>
<tr>
<td>Elbow joint - 1/8&quot;a-1/8&quot;a</td>
<td>20</td>
<td>235 733</td>
</tr>
<tr>
<td>Elbow joint - 1/8&quot;a-8 mm</td>
<td>21</td>
<td>203 050</td>
</tr>
<tr>
<td>Double nipple - 1/4&quot;a-1/8&quot;a</td>
<td>22</td>
<td>242 209</td>
</tr>
<tr>
<td>Double nipple - 1/8&quot;a-1/8&quot;a</td>
<td>23</td>
<td>259 578</td>
</tr>
<tr>
<td>Double nipple - 3/8&quot;a-1/8&quot;a</td>
<td>24</td>
<td>240 079</td>
</tr>
<tr>
<td>Adapter nipple - 1/8&quot;i-1/4&quot;a</td>
<td>25</td>
<td>231 932</td>
</tr>
<tr>
<td>Screw-in nipple - 1/8&quot;a-Ø 8 mm</td>
<td>26</td>
<td>246 956</td>
</tr>
<tr>
<td>Adapter nipple - 1/8&quot;i-1/4&quot;a</td>
<td>27</td>
<td>265 454</td>
</tr>
<tr>
<td>Connection sleeve - 1/8&quot;i-Ø 8 mm</td>
<td>28</td>
<td>236 020</td>
</tr>
<tr>
<td>Pinch valve - NW 25</td>
<td>29</td>
<td>253 707</td>
</tr>
<tr>
<td>Sleeve - NW 25 (for pos. 29)</td>
<td></td>
<td>255 246#</td>
</tr>
<tr>
<td>Pinch valve - NW 65</td>
<td>30</td>
<td>258 520</td>
</tr>
<tr>
<td>Sleeve - NW 65 (for pos. 30)</td>
<td></td>
<td>711 576#</td>
</tr>
<tr>
<td>Valve unit</td>
<td>31</td>
<td>390 356</td>
</tr>
<tr>
<td>Check valve - 1/8&quot;a-1/8&quot;i</td>
<td>32</td>
<td>202 240</td>
</tr>
<tr>
<td>Inline regulator - 1/4&quot;i, 2 bar</td>
<td>33</td>
<td>268 100</td>
</tr>
</tbody>
</table>
PT8 Dense phase conveyor - spare parts
# PT8 Dense phase conveyor - spare parts list

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>Silencer - 1/8&quot;a</td>
<td>251 305</td>
</tr>
<tr>
<td>35</td>
<td>Silencer - M5a</td>
<td>265 764</td>
</tr>
<tr>
<td>36</td>
<td>Plastic tube - Ø 8/6 mm, black</td>
<td>103 756*</td>
</tr>
<tr>
<td>37</td>
<td>Bezel - Ø 0.9 mm</td>
<td>403 652</td>
</tr>
<tr>
<td>A</td>
<td>Hose connection - complete (not shown), consisting of:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Coupling with hose connector - Ø 25 mm</td>
<td>1002 132</td>
</tr>
<tr>
<td></td>
<td>Hose - Ø 33/25 mm</td>
<td>104 604</td>
</tr>
<tr>
<td></td>
<td>Hose clamp - 25-35 mm</td>
<td>226 335</td>
</tr>
<tr>
<td></td>
<td>Safety wire - L=200 mm</td>
<td>374 628</td>
</tr>
</tbody>
</table>

* Please indicate length
# Wearing part