EI06-V
Enamel injector

Translation of the original operating instructions
Documentation EI06-V Enamel injector

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# Table of contents

## Special security measures  3

Security.................................................................................................................... 3

## About this manual  5

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

## Function description  7

Fields of application.................................................................................................7
Principle of the injector and influence of supplementary air.................................8

## Start-up  9

Connecting the EI06-V Enamel injector.................................................................9
Powder volume setting table....................................................................................10
  EI06-V Enamel injector with OptiTronic.............................................................10
  General conditions for the EI06-V Enamel injector..........................................10
  Guide values for OptiTronic with EI06-V Enamel injector..............................10

## Cleaning and maintenance  11

EI06-V Enamel injector - cleaning.........................................................................11
Overview..............................................................................................................11
Cleaning the check valve unit .............................................................................12
EI06-V Enamel injector - replacing the insert sleeve .........................................13

## Troubleshooting guide  15

EI06 Enamel injector - problem fixing .................................................................15

## Spare parts list  17

Ordering spare parts ..............................................................................................17
EI06-V Enamel injector - spare parts list............................................................18
EI06-V Enamel injector - spare parts.................................................................19
Special security measures

Security

- The installation work, to be done by the customer, must be carried out according to local regulations
- Before starting up the plant a check must be made that no foreign objects are in the booth or in the ducting (input and exhaust air)
- It must be observed, that all components of the plant are grounded according to the local regulations

NOTE!
For further information see the more detailed Gema Safety regulations.
About this manual

General information

These operating manual contains all important information which you require for the working with the EI06-V Enamel injector. It will safely guide you through the start-up process and give you references and tips for the optimal use of your new enamel injector.

Information about the function mode of the individual system components - booth, powder gun control or powder gun - you will find in the corresponding enclosed documentations.
Function description

Fields of application

The EI06-V Enamel injector is especially suited for use with normal enamel powders.

The EI06-V Enamel injector allows fast cleaning and easy handling because it can be detached from the powder hopper without using any tools. All pneumatic connections are also easily detachable (quick-release connections).

EI06-V Enamel injector
Principle of the injector and influence of supplementary air

If air flows through the nozzle into the cavity, a vacuum is created in the cavity (see figure below). This vacuum causes powder to be drawn up the suction tube and into the cavity. A powder/air mixture is created. The forward air velocity at the nozzle conveys the powder/air mixture through to the powder hose to the gun.

The concentration of the powder/air mixture, and with it, the powder output depends on the conveying air pressure and supplementary air pressure, the quality of the powder, the length of the powder hose, the diameter of the powder hose, the number of coils in the hose, the difference in the height between the gun and injector, and the type of nozzle. The condition of the insert sleeve is of great importance, because wear causes the powder output to sink drastically.

Experience with pneumatic material handling technology shows, that by a pneumatic transport of fine solid matter (powder) in a hose, the transporting medium requires a certain volume of air per unit of time. If a Ø 11 mm hose is used, this value is approximately 4 m³/h. To decrease the powder output, the vacuum in the cavity has to be reduced. For that purpose, the pressure of the conveying air is also reduced. With the reduction of the conveying air the volume of air in the powder hose sinks to below the optimum value of 4 m³/h. The powder transport becomes irregular, so-called "pumping" takes place. In order to prevent this from happening supplementary air is added until the volume of the air in the powder hose is 4-5 m³/h once more. This takes place fully automatically with the OptiTronic control unit.
Start-up

Connecting the EI06-V Enamel injector

Conveying air from the control unit

Supplementary air from the control unit

EI06-V Enamel injector - connections
Powder volume setting table

EI06-V Enamel injector with OptiTronic

To set the ideal powder volume on the OptiTronic, it is recommended, to first select the hardness of the powder cloud or, respectively, the total air. The following can be assumed as a guide value for the various powder hoses:

- Power hose 1001 - ID 11 mm 4-5 m³/h

Depending on the conditions (powder, powder hose layout, for the parts to be coated) a lower to the lowest total air value can also be set with the standard powder hose 1001 (ID 11 mm).

Attention:
It should to be noted, that with irregular or pumping conveying, as a rule, the total air is set too low!

General conditions for the EI06-V Enamel injector

<table>
<thead>
<tr>
<th>Powder type</th>
<th>Enamel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powder hose length (m)</td>
<td>10</td>
</tr>
<tr>
<td>Powder hose Ø (mm)</td>
<td>11</td>
</tr>
<tr>
<td>Input pressure (bar)</td>
<td>5.0</td>
</tr>
<tr>
<td>Conveying air nozzle Ø (mm)</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Guide values for OptiTronic with EI06-V Enamel injector

All values in these tables are guide values. Differing environmental conditions, wear and different powder types can change the table values.

<table>
<thead>
<tr>
<th>Total air</th>
<th>4 Nm³/h</th>
<th>5 Nm³/h</th>
<th>6 Nm³/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powder output (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>30</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
<td>75</td>
<td>90</td>
</tr>
<tr>
<td>30</td>
<td>85</td>
<td>100</td>
<td>120</td>
</tr>
<tr>
<td>40</td>
<td>110</td>
<td>130</td>
<td>150</td>
</tr>
<tr>
<td>50</td>
<td>130</td>
<td>160</td>
<td>175</td>
</tr>
<tr>
<td>60</td>
<td>150</td>
<td>180</td>
<td>210</td>
</tr>
<tr>
<td>70</td>
<td>175</td>
<td>200</td>
<td>235</td>
</tr>
<tr>
<td>80</td>
<td>200</td>
<td>240</td>
<td>270</td>
</tr>
<tr>
<td>90</td>
<td>215</td>
<td>260</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>235</td>
<td>290</td>
<td></td>
</tr>
</tbody>
</table>
Cleaning and maintenance

EI06-V Enamel injector - cleaning

Overview
Cleaning should be done daily before starting work, or when a color change takes place.

2 Hopper fitting
3 Injector nozzle
4 Insert sleeve
5 Insert sleeve nut
6 Hose connection
7 Tube
8 Check valve unit
11 O-ring
12 O-ring
1. Remove the injector from the powder hopper
2. Remove the hose from the hose connection (6)
3. Remove the insert sleeve nut (5) with the hose connection (6) from the injector
4. Remove the hose connection (6) from the insert sleeve nut (5) and remove the tube (7)
5. Clean the insert sleeve nut (5), the hose fitting (6) and the tube (7) with the gun brush and with compressed air that is free of water and oil, and check for wear
6. Remove the insert sleeve (4), clean it, and check for wear
7. Clean the injector body with compressed air that is free of water and oil. Any contamination can be seen through the opening of the hopper fitting (2)
8. Reassemble the injector and insert it on the powder hopper

Attention:
If the injector is severely fouled, it must be disassembled!
Remove the check valve unit and injector nozzle with the correct sized spanner. Clean the component parts with compressed air and, if necessary, dissolve sintered deposits with nitro-thinners!
Do not scrape, do never use acetone!

The EI06-V Enamel injector should be cleaned a minimum of once per day! Normally, dismantling, as described above, is sufficient.
The EI06-V Enamel injector should be cleaned once weekly, or in case of heavier contamination, dismantled completely (see also the spare parts list)!

Cleaning the check valve unit

Attention:
Take care when dismantling the check valve unit!
Blow out the silencer from the inside to the outside and do not immerse it in solvent!
EI06-V Enamel injector - replacing the insert sleeve

1. Unscrew the insert sleeve nut (5)
2. Remove the insert sleeve (4) and replace it
3. Place the insert sleeve (4) in the insert sleeve nut (5) and fasten it
Troubleshooting guide

EI06 Enamel injector - problem fixing

<table>
<thead>
<tr>
<th>Error</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>The powder gun does not spray powder, in spite of the control unit being switched on</td>
<td>The injector can be dirty or clogged - clean it!</td>
</tr>
<tr>
<td>Injector, injector nozzle, check valve, powder hose or gun are clogged</td>
<td>Clean the corresponding parts, replace, if necessary</td>
</tr>
<tr>
<td>The insert sleeve in the injector is worn</td>
<td>Replace the insert sleeve</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** EI06-V Enamel injector
  **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 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 Gema guarantee conditions!
### EI06-V Enamel injector - spare parts list

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Code</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Nozzle - 1.8 mm</td>
<td>404 136#</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Insert sleeve</td>
<td>405 248#</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Holder</td>
<td>406 368#</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Hose connection</td>
<td>405 990#</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Ceramic tube - Ø 10 mm</td>
<td>405 981#</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Check valve unit - complete</td>
<td>406 333</td>
<td></td>
</tr>
<tr>
<td>8.1</td>
<td>Filter housing</td>
<td>406 309</td>
<td></td>
</tr>
<tr>
<td>8.2</td>
<td>Filter holder</td>
<td>406 325</td>
<td></td>
</tr>
<tr>
<td>8.3</td>
<td>Silencer</td>
<td>237 264</td>
<td></td>
</tr>
<tr>
<td>8.4</td>
<td>O-ring - Ø 14x1.5 mm</td>
<td>263 486#</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Nozzle - 1.4 mm</td>
<td>405 264</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>O-ring - Ø 16x2 mm</td>
<td>231 517#</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>O-ring - Ø 12x2 mm</td>
<td>235 725#</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>O-ring - Ø 8x2 mm</td>
<td>242 470#</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Elbow joint - 1/8&quot;a-1/8&quot;i</td>
<td>237 604</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Sealing ring - Ø 9.8/14x1.8 mm</td>
<td>241 911</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Plastic hose - Ø 14/11 mm, red</td>
<td>103 845</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Plastic hose - Ø 8/6 mm, black</td>
<td>103 756*</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Quick-release coupling for hose - Ø 8/6 mm</td>
<td>203 181</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Plastic hose - Ø 8/6 mm, red</td>
<td>103 500*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Powder hose - Ø 16/11 mm</td>
<td>103 012*</td>
<td></td>
</tr>
</tbody>
</table>

# Wearing part

* Please indicate length
EI06-V Enamel injector - spare parts