P1 ENGRAVING UNIT

Engraving Unit for the CMS-P1-PLOTTER

CLIPLINE
Data Sheet
103072_00_en

Description
The engraving unit has been specially developed for use on the CMS-P1-PLOTTER.

The engraving unit is designed for use on the CMS-P1-PLOTTER for the purpose of engraving plastic labels. Plastic sheets with pre-assembled labels are available from Phoenix Contact.

It cannot be adapted for use with a different X-Y unit.

Only CMS-P1-PLOTTERs with a manufacturing date of January 2004 or later can be used in conjunction with the engraving unit. For the manufacturing date, refer to the rating plate on the CMS-P1-PLOTTER.

PH X MM Y ZZZ (Y = year, MM = month)
Example: PH 0 07 6 001 = device manufactured in July 2006

The engraving unit is designed for use on the CMS-P1-PLOTTER for the purpose of engraving plastic labels. The use of other materials, such as aluminum, brass, steel, and glass is not permitted.

The use of lubricants and coolants is not permitted, as the vacuum cleaner used cannot handle liquid materials.

Only use Phoenix Contact gravers.

Make sure you always use the latest documentation. It can be downloaded at www.download.phoenixcontact.com.

A conversion table is available on the Internet at www.download.phoenixcontact.com/general/7000_en_00.pdf.

This data sheet is valid for all products listed on the following page:
# P1 ENGRAVING UNIT

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## Ordering Data

### Engraving Unit

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Order No.</th>
<th>Pcs./Pck.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engraving unit for the CMS-P1-Plotter</td>
<td>P1 ENGRAVING UNIT</td>
<td>5145546</td>
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### Gravers

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Order No.</th>
<th>Pcs./Pck.</th>
</tr>
</thead>
<tbody>
<tr>
<td>15° graver, Ø 0.2 mm</td>
<td>P1 GRAVER 0.2</td>
<td>5145478</td>
<td>1</td>
</tr>
<tr>
<td>15° graver, Ø 0.3 mm</td>
<td>P1 GRAVER 0.3</td>
<td>5145461</td>
<td>1</td>
</tr>
<tr>
<td>15° graver, Ø 0.4 mm</td>
<td>P1 GRAVER 0.4</td>
<td>5145494</td>
<td>1</td>
</tr>
<tr>
<td>15° graver, Ø 0.5 mm</td>
<td>P1 GRAVER 0.5</td>
<td>5145504</td>
<td>1</td>
</tr>
<tr>
<td>15° graver, Ø 0.7 mm</td>
<td>P1 GRAVER 0.7</td>
<td>5145517</td>
<td>1</td>
</tr>
<tr>
<td>15° graver, Ø 1.0 mm</td>
<td>P1 GRAVER 1.0</td>
<td>5145520</td>
<td>1</td>
</tr>
<tr>
<td>15° gravers, set comprising the six gravers listed above</td>
<td>P1 GRAVER SET</td>
<td>5145533</td>
<td>1</td>
</tr>
</tbody>
</table>

### Non-Slip Pads

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Order No.</th>
<th>Pcs./Pck.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic magazine for the CMS-P1 plotter with engraving unit</td>
<td>CMS-P1-M/GPE ENGRAVING</td>
<td>5145711</td>
<td>1</td>
</tr>
<tr>
<td>To hold 1 GPE label sheet</td>
<td>CMS-P1-M/GPE-PAD</td>
<td>5144880</td>
<td>1</td>
</tr>
</tbody>
</table>

### Engraving Material

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Number¹</th>
<th>Order No.</th>
<th>Pcs./Pck.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic label sheet, self-adhesive double-layer plastic labels, material thickness of 0.8 mm, suitable for plotting and engraving</td>
<td>GPE 13X 9 WH</td>
<td>120</td>
<td>0806932</td>
<td>10</td>
</tr>
<tr>
<td>13 mm x 9 mm, square, color: white</td>
<td>GPE 17.5X12 WH</td>
<td>75</td>
<td>0806916</td>
<td>10</td>
</tr>
<tr>
<td>17.5 mm x 12 mm, square, color: white</td>
<td>GPE 20X 7 WH</td>
<td>100</td>
<td>0806990</td>
<td>10</td>
</tr>
<tr>
<td>20 mm x 7 mm, square, color: white</td>
<td>GPE 20X 8 WH</td>
<td>88</td>
<td>0806945</td>
<td>10</td>
</tr>
<tr>
<td>20 mm x 8 mm, square, color: white</td>
<td>GPE 22X12 WH</td>
<td>60</td>
<td>0806929</td>
<td>10</td>
</tr>
<tr>
<td>22 mm x 12 mm, square, color: white</td>
<td>GPE 22X22 SR/R</td>
<td>32</td>
<td>0806628</td>
<td>10</td>
</tr>
<tr>
<td>22 mm x 12 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 27X 8 SR/R</td>
<td>66</td>
<td>0806877</td>
<td>10</td>
</tr>
<tr>
<td>27 mm x 8 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 27X12.5 SR/R</td>
<td>4</td>
<td>0806880</td>
<td>10</td>
</tr>
<tr>
<td>27 mm x 12.5 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 27X18 SR/R</td>
<td>30</td>
<td>0806893</td>
<td>10</td>
</tr>
<tr>
<td>27 mm x 18 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 27X18 WH/R</td>
<td>66</td>
<td>0815189</td>
<td>10</td>
</tr>
<tr>
<td>27 mm x 18 mm, with rounded corners, radius of 2 mm, color: white</td>
<td>GPE 27X18 WH/R</td>
<td>66</td>
<td>0815208</td>
<td>10</td>
</tr>
<tr>
<td>27 mm x 27 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 27X18 SR/R</td>
<td>18</td>
<td>0806903</td>
<td>10</td>
</tr>
<tr>
<td>28 mm x 17.5 mm, square, color: silver</td>
<td>GPE 28X17,5 SR</td>
<td>30</td>
<td>0807889</td>
<td>10</td>
</tr>
<tr>
<td>45 mm x 14 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 45X14 SR/R</td>
<td>26</td>
<td>0807009</td>
<td>10</td>
</tr>
<tr>
<td>45 mm x 14 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 45X14 WH/R</td>
<td>26</td>
<td>0815202</td>
<td>10</td>
</tr>
<tr>
<td>45 mm x 14 mm, with rounded corners, radius of 2 mm, color: white</td>
<td>GPE 52X26 WH</td>
<td>9</td>
<td>0806958</td>
<td>10</td>
</tr>
<tr>
<td>52 mm x 26 mm, square, color: white</td>
<td>GPE 60X12 SR/R</td>
<td>21</td>
<td>0806631</td>
<td>10</td>
</tr>
<tr>
<td>60 mm x 12 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 60X12 WH/R</td>
<td>21</td>
<td>0807630</td>
<td>10</td>
</tr>
<tr>
<td>60 mm x 12 mm, with rounded corners, radius of 2 mm, color: white</td>
<td>GPE 60X30 WH</td>
<td>9</td>
<td>0806961</td>
<td>10</td>
</tr>
<tr>
<td>60 mm x 30 mm, with rounded corners, radius of 2 mm, color: white</td>
<td>GPE 60X30 WH/R</td>
<td>9</td>
<td>0815292</td>
<td>10</td>
</tr>
<tr>
<td>60 mm x 30 mm, with rounded corners, radius of 2 mm, color: silver</td>
<td>GPE 50X30 SR/R</td>
<td>21</td>
<td>0806631</td>
<td>10</td>
</tr>
<tr>
<td>Special version according to customer requirements (please specify: size of the individual label, color, and radius. The number of labels depends on the size.)</td>
<td>GPE SO</td>
<td>–</td>
<td>0807627</td>
<td>10</td>
</tr>
</tbody>
</table>

¹ Number of labels per sheet

### Replacement Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Order No.</th>
<th>Pcs./Pck.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control unit</td>
<td>P1 ENGRAVING CONTROLLER</td>
<td>5145690</td>
<td>1</td>
</tr>
<tr>
<td>4 A fine-wire fuse for the control unit</td>
<td>P1 ENGRAVING FUSE 4A</td>
<td>5145669</td>
<td>1</td>
</tr>
<tr>
<td>Vacuum cleaner</td>
<td>P1 ENGRAVING VC</td>
<td>5145708</td>
<td>1</td>
</tr>
</tbody>
</table>
## P1 ENGRAVING UNIT

### Replacement Parts (Continued)

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Order No.</th>
<th>Pcs./Pck.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum cleaner bag</td>
<td>P1 ENGRAVING VC BAG</td>
<td>514559</td>
<td>5</td>
</tr>
<tr>
<td>Filler plug for the vacuum cleaner</td>
<td>P1 ENGRAVING VC PLUG</td>
<td>5145630</td>
<td>1</td>
</tr>
<tr>
<td>Engraving head</td>
<td>P1 ENGRAVING HEAD</td>
<td>5145575</td>
<td>1</td>
</tr>
<tr>
<td>Counter bearing for engraving head</td>
<td>P1 ENGRAVING CB</td>
<td>5145588</td>
<td>1</td>
</tr>
<tr>
<td>Cover for engraving head</td>
<td>P1 ENGRAVING COVER</td>
<td>5145658</td>
<td>1</td>
</tr>
<tr>
<td>Engraving spindle</td>
<td>P1 ENGRAVING SPINDLE</td>
<td>5145562</td>
<td>1</td>
</tr>
<tr>
<td>Adjustment aid for graver</td>
<td>P1 ENGRAVING PA</td>
<td>5145656</td>
<td>1</td>
</tr>
<tr>
<td>Suction tube for engraving spindle</td>
<td>P1 ENGRAVING TUBE</td>
<td>5145601</td>
<td>1</td>
</tr>
<tr>
<td>Connecting cable for engraving spindle</td>
<td>P1 ENGRAVING PA</td>
<td>5145591</td>
<td>1</td>
</tr>
<tr>
<td>Connecting cable for control unit and CMS-P1-PLOTTER</td>
<td>P1 ENGRAVING CC 1</td>
<td>5145614</td>
<td>1</td>
</tr>
<tr>
<td>Connecting cable for vacuum cleaner</td>
<td>P1 ENGRAVING CC 2</td>
<td>5145614</td>
<td>1</td>
</tr>
<tr>
<td>Holder for cable and tube support</td>
<td>P1 ENGRAVING CH</td>
<td>5145643</td>
<td>1</td>
</tr>
</tbody>
</table>

**Support pipe**

**Clamp for suction tube and engraving spindle cable**

### Technical Data

#### Ambient Conditions for All Devices

<table>
<thead>
<tr>
<th>Condition</th>
<th>Operation</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>+10°C ... +35°C</td>
<td>-10°C ... +50°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>35% ... 75%</td>
<td>10% ... 90%</td>
</tr>
</tbody>
</table>

### Engraving Spindle

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Minimum</td>
<td>5000 rpm</td>
</tr>
<tr>
<td>Speed Maximum</td>
<td>50,000 rpm</td>
</tr>
<tr>
<td>Torque</td>
<td>6 Nm</td>
</tr>
<tr>
<td>Frequency</td>
<td>83 Hz ... 830 Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>60 W, maximum</td>
</tr>
<tr>
<td>Collet chuck</td>
<td>3 mm shaft diameter</td>
</tr>
<tr>
<td>Clamping mechanism</td>
<td>Head clamping</td>
</tr>
<tr>
<td>Concentricity</td>
<td>0.03 mm</td>
</tr>
<tr>
<td>Motor type</td>
<td>Three-phase asynchronous, without brushgears</td>
</tr>
<tr>
<td>Housing</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Clamping diameter</td>
<td>25 mm</td>
</tr>
<tr>
<td>Ball bearing type</td>
<td>Steel, pre-lubricated, double</td>
</tr>
<tr>
<td>Cooling</td>
<td>Via integrated fan using internal air</td>
</tr>
<tr>
<td>Weight</td>
<td>280 g, approximately</td>
</tr>
<tr>
<td>Length</td>
<td>175 mm, approximately</td>
</tr>
<tr>
<td>Area of application</td>
<td>Engraving plastic labels</td>
</tr>
<tr>
<td>Guaranteed storage/service life</td>
<td>1000 hours, minimum, when used correctly</td>
</tr>
</tbody>
</table>

### P1 ENGRAVING CONTROLLER Control Unit

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage input</td>
<td>110 V ... 240 V</td>
</tr>
<tr>
<td>~ 50 Hz ... 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Fuse</td>
<td>4 A, slow-blow</td>
</tr>
<tr>
<td>Power consumption</td>
<td>150 W, maximum</td>
</tr>
<tr>
<td>Dimensions</td>
<td>180 mm x 250 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>2.7 kg, approximately</td>
</tr>
</tbody>
</table>
Scope of Supply

- Engraving spindle with 15° graver, Ø 0.5 mm
- Engraving head
- Counter bearing for engraving head
- Connecting cable for engraving spindle (3-pos.)
- Suction tube
- Cover
- Control unit
- Connecting cable for control unit and plotter
- Mains cable for control unit
- Vacuum cleaner
- Connecting cable for vacuum cleaner (4-pos.)
- Holder for cable and tube
- Calibration block for alignment
- Adjustment aid for graver
- Torx key wrench
Connection and Assembly on the CMS-P1-PLOTTER

Removing of the Pen Lowering Unit From the Plotter

- Remove the blue-green cover of the pen lowering unit from the plotter and remove the red locking pin.
- Loosen and remove the pen lowering unit by gently "wobbling" it out of the guideway.

Fitting the Engraving Head

- Press down on the engraving head as far as it will go and stabilize the holder from below by applying counter pressure, so that the plotter arm guideway is not damaged.
- So that the engraving head cannot work loose during operation, close the red interlocking device on both sides.
- Check that it is secured correctly.

Setting Up the Vacuum Cleaner and Control Unit

- Mount the control unit on the vacuum cleaner and place the two behind the CMS-P1-PLOTTER.

Connecting the Connecting Cables

- Connect the control unit and vacuum cleaner using the corresponding 4-pos. cable and tighten the connections (connection A in Figure 4).
- Connect the control unit to the CMS-P1-PLOTTER. Use the gray connecting cable provided and tighten the knurled screws (connection B in Figure 4).
- Connect the mains cable provided to the control unit (connection C in Figure 4). The fine-wire fuse (4 A) is connected in addition to the ON/OFF switch.
Inserting the Engraving Spindle in the Engraving Head

**Risk of injury**
The graver in the engraving spindle is sharp. Be careful not to injure yourself.

Observe the notes on handling the engraving spindle on page 12.

- Before inserting the engraving spindle, use the adjustment aid to check that there is a gap of three millimeters between the depth adjuster and engraving spindle (see Figure 20 on page 11).
- Insert the engraving spindle in the engraving head. The red marking on the depth adjuster must be lined up with the arrow on the engraving head (see Figure 16 on page 10).
- Secure the engraving spindle with the terminal screw (A in Figure 5).

![Figure 5 Inserting the engraving spindle](image)

Aligning the Engraving Unit

- Make sure that the plotter is switched off. Place the calibration block provided on the CMS-P1-PLOTTER.
- Move the plotter arm with the engraving head towards the calibration block as far as it will go.

![Figure 6 Alignment using the calibration block](image)

Assembling the Holder for the Tube and Engraving Spindle Cable

- Now use the screw (A in Figure 7) on the engraving head to align the engraving unit at a right angle by turning it clockwise and counter clockwise. A suitable Torx key wrench is provided.

![Figure 7 Alignment](image)

Connecting the Tube and Cable to the Engraving Head

- First push the holder for the support pipe over the plotter base plate and then press the holder into the side profile.
- Insert the support pipe in the holder.
- Attach the clamp for the suction tube and engraving spindle cable to the support pipe.
- To ensure that the adjustment aid (figure on page 5) is always to hand, it can be secured to the support pipe.

![Figure 8 Assembling the holder over the plotter pen station](image)

- Risk of injury
  The graver in the engraving spindle is sharp. Be careful not to injure yourself.
P1 ENGRAVING UNIT

- Make sure that the plotter and control unit are switched off.
- Manually position the engraving head in the bottom right corner of the CMS-P1-PLOTTERs.
- Now attach the suction tube to the engraving head, bend the tube slightly, and secure it in the clamp on the support pipe.
- Then insert the end of the tube in the opening on the vacuum cleaner.
- Now attach the engraving cable to the engraving head, bend the 3-pos. cable slightly, and secure it in the clamp on the support pipe.
- Connect the other end of the cable to the control unit and tighten the screw connections of the connector.

Fitting the Cover

The blue-green cover can only be fitted on the engraving head in one direction (long side towards the right on the front).
- Fit the cover in the correct position on the engraving head.

Switching From Plotting to Engraving (Test Run)

- Always switch the control unit on first via the mains switch on the back of the device.
- Then switch the CMS-P1-PLOTTER on.
- The engraving unit moves towards the zero position. This is accompanied by a brief "humming" noise. The plotter then moves to the zero position.
- Switch the plotter and control unit off again.

Inserting Engraving Material

- Make sure that the plotter and control unit are switched off.
- Secure the engraving material to be processed.
- Make sure that the carrier plate has sufficient adhesive strength and clean regularly under running water.
- Only use non-slip pads from Phoenix Contact to hold the materials to be processed.

- Place the CMS-P1-M/GPE ENGRAVING plastic magazine with the non-slip pad and engraving material on the plotter in the corresponding holders.
- Manually move the engraving head over the engraving material to check the gap between the engraving spindle and the engraving material.

There must be around 2 mm of space between the bottom end of the engraving spindle and the engraving material.
If the gap is greater or smaller than 2 mm, use the calibration block to check the right-angle alignment of the engraving unit.

Engraving

Important Notes on Engraving

- The engraving unit is designed for use on the CMS-P1-PLOTTER for the purpose of engraving plastic labels. The use of other materials, such as aluminum, brass, steel, and glass is not permitted.
- The use of lubricants and coolants is not permitted, as the vacuum cleaner used cannot handle liquid materials.
- Only use Phoenix Contact gravers.
- Only use the engraving unit in dust-free rooms. An excessively high level of dust can result in the sensitive bearing of the engraving spindle becoming clogged with dust and quickly wearing out.
Control Unit Functions and Indicators

The control unit is switched on at the back, the green LED indicates that it is ready to operate.

The yellow LED indicates that the engraving spindle is operating without any errors, in the event of an error the red LED lights up and engraving is no longer possible. For notes on troubleshooting, please refer to “Troubleshooting” on page 13.

The control unit automatically controls the vacuum cleaner. If required, the vacuum cleaner can be operated manually via the ON and OFF buttons, e.g., to vacuum up any residual particles following engraving.

Engraving Material

Engraving works in the same way as plotting.

- Start the CMS-MARK-WIN software.

The procedure for the plotter is described in the CMS-P1-PLOTTER-UM E user manual.

Please observe the following points for engraving, which differ from plotting (see “Setting the CMS-MARK-WIN Software to Engraving Mode” on page 9).

Setting the CMS-MARK-WIN Software to Engraving Mode

- In the CMS-MARK-WIN software, select the "File... Print Setup..." menu.

The procedure for the plotter is described in the CMS-P1-PLOTTER-UM E user manual.

Figure 11 File... Print Setup

Figure 12 Output channels

- A dialog window appears, exit it by selecting "No".

Figure 13 Creating a new output channel (plotter)

- Enter the following values for the plotter parameters.

Risk of damage to the device

Deactivate the "Use the pen magazine" option.

- Confirm the parameters with "OK".

Figure 14 Plotter parameters

Make sure that the interface between the plotter and PC is set up correctly. Check the interface set in the "Output channels" window ("File... Printer Setup..." menu) by clicking on "Interface...".

Change the default values for engraving mode.

- In the CMS-MARK-WIN software, select the "Settings... Default values..." menu.

- Select the "Plotter output" tab.
- Change the speed for all items to 1 cm/s.
- Deactivate the "Start-up function" option.
- Confirm the parameters with "OK".

Engraving Individual Labels

With the engraving unit there is the option of not only engraving the labels on a label sheet, but also individual labels. Observe the notes for the source definition in the manual for the CMS-MARK-WIN software.

Setting the Engraving Depth

The depth adjuster on the engraving spindle is used to set the engraving depth. Depending on the width and the grinding angle of the graver used, as well as the penetration depth in the material, various lettering widths can be obtained when engraving.

The engraving depth is adjusted by turning the depth adjuster. Turning clockwise increases the engraving depth, turning counter clockwise decreases the engraving depth.

When you use the depth adjuster, you will feel it click. Each click lowers or raises the graver by 0.05 mm.

If the depth adjuster is rotated clockwise by an entire rotation, an engraving depth of 1 mm (20 clicks of 0.05 mm each) is achieved. The depth can be read via the scale on the left-hand side of the engraving spindle.

Changing Gravers

- Switch off the plotter and control unit.
- Loosen the fixing on the engraving head and remove the engraving spindle. The connecting cable does not have to be disconnected.

Risk of injury

The graver in the engraving spindle is sharp. Be careful not to injure yourself.

Risk of burns

The graver and engraving spindle can be hot as a result of operation. Allow the graver to cool down following engraving before changing it.

The tips of gravers are sensitive and must be handled very carefully. Avoid damage to the tip. In the event of damage, the labeling quality is considerably affected.
• Now unscrew the depth adjuster from the engraving spindle.

![Loosening the engraving spindle](image1)

**Figure 18** Loosening the engraving spindle

- The depth adjuster is in the zero position when a gap of three millimeters is achieved between the depth adjuster and engraving spindle.

- Use the open end of the adjustment aid as a spacer between the depth adjuster and engraving spindle.

- Now insert the engraving spindle back into the engraving head and line up the markings on the depth adjuster and engraving head.

- Retighten the termination block.

**Cleaning and Maintaining the Engraving Unit**

- Before starting any maintenance work disconnect the engraving unit from the mains.

- Protect the engraving unit against dust and other contamination. Cover the device when it is not being used.

- Never oil the mechanical parts of the engraving unit.

**Changing the Vacuum Cleaner Bag**

- Replacement vacuum cleaner bags can be ordered from Phoenix Contact (P1 ENGRAVING VC BAG, Order No. 5145559).

- Push down the latch above the suction tube on the vacuum cleaner. The cover opens with the suction tube and vacuum cleaner bag.

- Remove the suction tube by simultaneously turning and pulling it.

For assembly, perform the above in reverse order.
Cleaning the Motor Filter

Figure 22 Motor filter

- If the cover has been opened as described above, the motor filter can be removed.
- Carefully remove the motor filter from the chamber for the vacuum cleaner bag.

Simply clean this filter as required.

Handling the Engraving Spindle

- The engraving spindle is a sensitive unit and must be handled with extreme care.
- Only use the engraving spindle in dust-free rooms. An excessively high level of dust can result in the sensitive bearing becoming clogged with dust and quickly wearing out.
- Do not use a lubricant for engraving.

Cleaning the Engraving Spindle

- Never clean the engraving spindle with compressed air, as this will remove lubricant from the ball bearings.
- Never use water to clean the engraving spindle.

Switching from Engraving to Plotting

To switch from engraving back to plotting, perform the above in reverse order.
- Switch off the plotter and control unit and disconnect the mains plug on both devices.
- Disconnect the suction tube and connecting cable from the engraving head.
- Disconnect the control unit from the plotter and vacuum cleaner.
- Remove the support pipe with holder.
- Remove the cover from the engraving head.
- Remove the terminal screw and remove the engraving spindle.
- Release counter bearing.
- Release the interlocking device on the engraving head and pull the engraving head out of the plotter arm.
- Assemble the pen lowering unit and insert the locking pin. Fit the plastic cover.

Then change the default values for engraving mode:
- In the CMS-MARK-WIN software, select the "Settings... Default values..." menu.
- On the "Plotter output" tab, adjust the following items:
  - Change the speed for all items to 2 cm/s.
  - Activate the "Startup function" option, if required.
  - Confirm the parameters with "OK".

Do not use a lubricant for engraving.
## Troubleshooting

<table>
<thead>
<tr>
<th>Error</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unclean engraving, poor lettering quality and/or burr formation on the engraved characters.</td>
<td>Engraving shavings or dust particles in the collet chuck of the engraving spindle.</td>
<td><strong>•</strong> Clean the collet chuck of the engraving spindle (see page 12).</td>
</tr>
<tr>
<td>Poor lettering quality, uneven line width, gaps in labeling.</td>
<td>Graver worn out or clogged.</td>
<td><strong>•</strong> Replace graver (see page 10).</td>
</tr>
</tbody>
</table>
| Engraving not visible. Desired engraving depth not achieved.          | Insufficient engraving depth.                                          | **•** Make sure that the depth adjuster is set correctly with the adjustment aid (see page 11).  
  **•** Check that the gap between the depth adjuster and engraving material is around 2 mm.  
  To do this, manually move the engraving head over the engraving material when the plotter is switched off (see page 8).  
  **•** Adjust the engraving depth (see page 10).                        |
| Red LED lights up on the control unit. Engraving unit has aborted the engraving procedure. | Engraving spindle is faulty or an overload has occurred.               | **•** To check, press the "ON" and "OFF" buttons on the control unit simultaneously.  
  The vacuum cleaner continues running and the engraving spindle switches on after a brief delay.  
  By pressing the "ON" or "OFF" button the speed of the engraving spindle can be increased or decreased in order to test the function of the engraving spindle.  
  **•** If the red LED is still lit up, the engraving spindle is faulty and must be replaced. |
| Engraving unit will not switch on. Green "Power" LED is not lit up on the control unit. | Insufficient power supply.  
  Fuse has blown.  
  Power supply unit is faulty. | **•** Check that the socket that is used is OK.  
  **•** Check that the mains plug and connector are connected correctly.  
  **•** Check that the fuse in the mains connection of the control unit is OK.  
  To do this disconnect the mains cable, remove the fuse insert from below the mains switch, and replace the fuse, if necessary (P1 ENGRAVING FUSE 4A, Order No. 5145698).  
  **•** Replace the power supply unit.                                   |
| Engraving mode not possible.                                          | Check that the connecting cable between the control unit and plotter is connected.  
  Check that the engraving head has been fitted correctly and that the cable to the engraving spindle is connected.  
  Observe the notes for the CMS-MARK-WIN software.  
  Note the order when switching on: switch the controller on first, followed by the plotter. | **•** Check that connecting cable between the control unit and plotter is connected.  
  **•** Check that the engraving head has been fitted correctly and that the cable to the engraving spindle is connected.  
  **•** Observe the notes for the CMS-MARK-WIN software.  
  **•** Note the order when switching on: switch the controller on first, followed by the plotter. |
| Engraving unit does not respond to data sent by the PC.               | Data cable connected incorrectly/faulty.                              | **•** Check that the correct interface is set on the PC.  
  **•** Check the data cable and replace, if necessary.                 |
Firmware Upload

The method of operation of the P1 ENGRAVING UNIT depends largely on the firmware (software) that is installed in the plotter.

New firmware can be stored in the CMS-P1-PLOTTER in order to optimize the method of operation.

If an upload is performed via a parallel interface, depending on the computer configuration it may be necessary to deactivate or reassign existing printer drivers that use this interface.

In the event of upload via a USB interface, it must be ensured that the USB plotter driver has been installed first.

The data required for this can be downloaded from our homepage on the Internet or requested via the service hotline.

Proceed as follows to update the firmware:

- Save the downloaded files (uploadvp.exe and vp5n-xxx.cas) in a directory.
- Switch off the plotter and the connected PC.
- Connect the two devices using the supplied parallel data cable and switch them both back on again.
- To prepare the plotter for firmware download, press the [STOP/VIEW], [Clear Buffer], and [ON] buttons on the plotter simultaneously.
- Start the uploadvp.exe program on the PC (e.g., double-click from Explorer).

The following message appears on the PC.

- Click on "Select file".

Following successful firmware upload, the plotter switches off automatically.

- Exit the uploadvp.exe program by clicking on "Quit".

The method of operation of the P1 ENGRAVING UNIT depends largely on the firmware (software) that is installed in the plotter.
Magazine Import in CMS-MARK-WIN

- In the CMS-MARK-WIN software, select the "File... Magazine Editor..." menu.

- In the window that appears, select "Magazine... Import...".

- Highlight the CMS-P1-M_GPE_ENGRAVING file and click on "Open".

- Confirm the dialog box by clicking "Open".

- Close the magazine editor.

- Copy the magazine descriptions to the material directory in CMS-MARK-WIN (default: Drive:\Program Files\CMS-MARK-WIN\Materials\).
EC Declaration of Conformity

Manufacturer: PHOENIX CONTACT GmbH & Co. KG
Address: Flachsmarktstraße 8
32825 Blomberg, Germany

Product description: P1 ENGRAVING UNIT
(Order description, Order No.) 5145546

The above stated product meets the provisions of the following listed directive(s) and their modification directive(s):

- ☑ 89/336/EWG EMC directive (electromagnetic compatibility)
- ☑ 94/9/EG Ex directive (ATEX)
- ☑ 73/23/EWG Low voltage directive (LVD)
- ☑ 98/37/EG Machinery directive

In the assessment of conformity, the following relevant standards have been consulted:

DIN EN 60950-1/A11:2004 EN 55022, Class B EN 61000-3-2
EN 61000-3-3 EN 61000-4-2 EN 61000-4-3
EN 61000-4-4 EN 61000-4-5 EN 61000-4-6, EN 61000-4-11

Additional documents or information (e.g., test reports, etc.), which have been consulted as basis of the conformity assessment:

Conformity with the provisions of the EMC directive has been certified by

Competent body: 
Certificate: 
(No., date, supplement)

Conformity with the provisions of the Ex directive has been certified by

Notified body: 
Address: 
Certificate: 
(No., date, supplement)

The last two digits of the year in which the CE mark was applied: 06
(only to be entered on declaration of the low voltage directive 72/23/EWG)

☐ This declaration also applies for the products listed in the "Variants" appendix. (If marked with a cross)

Blomberg, August 14, 2006

Heinz Reibke
Dirk Görlitzer
BU ICT
Head of Technology Department
Vice President - Head of Business Unit Connection Technology

This declaration certifies conformity with the indicated directive(s), it does not, however, provide any guarantee as to characteristics.
The safety notes and installation instructions in the enclosed product documentation must be observed.

This form was created on July 22, 2003 by Automation Department.