Schempp+Decker Press-Fit Zones:
The Schempp+Decker press-fit zone provided by Diehl Metal Applications at the company location in Berlin is an innovative solderless connection technology which meets the requirements of the automotive industry. While the majority of components in the automotive industry are currently still processed using conventional soldering methods, the future definitely lies in press-fit technology.

What is Press-Fit Technology?
Press-fit technology is the insertion of component connection pins (especially from connectors or single contacts) into the metallized holes of a printed circuit board (PCB). In this process the contact between the press-fit pin and the wall of the hole is gas-tight and is characterized by good conductivity. The condition is that the press-fit pin has a larger diagonal than the hole diameter on the PCB. The displacement on the press-fit pin and the printed circuit board results in a highly conductive bond.

Automotive Innovation: the Schempp+Decker Press-Fit Zones
We manufacture press-fit zones (EPZ) for the automotive industry with a material thickness of 0.4 mm, 0.6 mm and 0.8 mm. Depending on the requirements regarding ambient temperature and electrical conductivity, various materials are used. Our flexible press-fit zone types Schempp+Decker EPZ EE and Schempp+Decker EPZ EloPin can be used in PCBs with metallized holes according to DIN EN 60352-5 and according to customer specifications. Prior to serial production we can manufacture the press-fit zone in our own close-to-production prototyping department and already take into account the special requirements of our customers.

Advantages over Conventional Soldering:
• no soldering errors, no flux problems
• no need for additional washing
• no thermal load on the PCB or electronic components
• quick and economic insertion of the PCB
• recycling through simple pressing out

Quality:
We are committed to ensuring the quality of the press-fit zone. During serial production continuous process monitoring is carried out using modern camera systems and 3D measuring machines. One of the most important characteristics of a press-fit area is the spring-force behaviour during the insertion process (spring-force curve) and the resulting force exerted on the hole wall. The spring-force curve is determined and analysed during production using a Schempp+Decker measuring fixture.
Typical Values

Component:
Material (standard): CuSn6, CuNiSi alloys
Thickness: 0.4 mm, 0.6 mm, 0.8 mm, 1.0 mm and 1.2 mm
EPZ plating: Sn/SnPb or adv. In over Ni

Ask us about our new plating:

PCB:
Material: FR4, FR4 with Tg > 150 °C
Thickness: 1.6 mm (standard)
PCB type: Double layer and multilayer
Sleeve design: specified for the press-fit process

Press-fit connection EE (embossed form)

<table>
<thead>
<tr>
<th></th>
<th>EE04</th>
<th>EE06</th>
<th>EE08</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>&gt; 2.5 mm</td>
<td>≥ 3.6 mm</td>
<td>≥ 4.4 mm</td>
</tr>
<tr>
<td>L2</td>
<td>&gt; 0.5 mm</td>
<td>&gt; 0.45 mm</td>
<td>&gt; 1.0 mm</td>
</tr>
<tr>
<td>X</td>
<td>0.75 mm</td>
<td>&gt; 1.2 mm</td>
<td>&gt; 1.65 mm</td>
</tr>
<tr>
<td>Nominal hole PCB</td>
<td>Ø (0.6 mm)</td>
<td>Ø (1.0 mm)</td>
<td>Ø (1.45 mm)</td>
</tr>
</tbody>
</table>

Press-fit contact EloPin (needle eye)

<table>
<thead>
<tr>
<th></th>
<th>EloPin06</th>
<th>EloPin08-145</th>
<th>EloPin08-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 3.6 mm</td>
<td>≥ 4.2 mm</td>
<td>≥ 4.2 mm</td>
<td></td>
</tr>
<tr>
<td>≥ 0.85 mm</td>
<td>&gt; 1.2 mm</td>
<td>&gt; 1.2 mm</td>
<td></td>
</tr>
<tr>
<td>≥ 1.24 mm</td>
<td>&gt; 1.63 mm</td>
<td>&gt; 1.78 mm</td>
<td></td>
</tr>
<tr>
<td>Ø (1.0 mm)</td>
<td>Ø (1.45 mm)</td>
<td>Ø (1.6 mm)</td>
<td></td>
</tr>
</tbody>
</table>

Press-Fit Connection (typical values for each EPZ)*

The characteristic values may vary depending on the PCB type, the sleeve design, the press-fit contact and the process parameters and thus deviate from the typical values.

* with a PCB thickness ≥ 1.6 mm  ** ≥ 24 h (after storage at room temperature)

<table>
<thead>
<tr>
<th></th>
<th>Schempp+Decker EPZ</th>
<th>Insertion force $F_{in}$</th>
<th>Push-out force** $F_{out}$</th>
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</thead>
<tbody>
<tr>
<td>EE04-10</td>
<td>≤ 70 N</td>
<td>≥ 20 N</td>
<td></td>
</tr>
<tr>
<td>EE06-15</td>
<td>≤ 120 N</td>
<td>≥ 40 N</td>
<td></td>
</tr>
<tr>
<td>EE08-15</td>
<td>≤ 160 N</td>
<td>≥ 50 N</td>
<td></td>
</tr>
<tr>
<td>EE08-19</td>
<td>≤ 180 N</td>
<td>≥ 50 N</td>
<td></td>
</tr>
</tbody>
</table>

Qualification of the Press-Fit Connection

In our testing laboratory all appropriate tests are carried out to assess the press-fit connection. The laboratory operates according to DIN EN 60352-5 as well as to customer requirements. The scope of the tests, the procedure and the characteristic values are agreed upon with the customer depending on the application.

We provide the following tests in our laboratory:

- visual and dimension inspection
- insertion and push-out force
- micro sectioning and thereof analysis
- contact resistance
- rapid change of temperature (temperature shock)
- climate change (dry heat, cold and damp heat, cyclical)
- whisker analysis
- etching
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For further information, please see the flyers:

• Prototyping