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Half - compression
Tube
Foam - Skin
Tooling reducer

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Compression
Half - compression
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Tooling reducer

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Technical description

The tolerances of manufacturing of cables are more and more tight. To guarantee a precise machining with a realistic manufacturing price, the life time of the tools is very important.

E-XHEAD manufactures a complete range of extrusion tools requested by your specifications. We are conviced that the quality of our tools and the choice of the materials will give you full satisfaction.

For E-XHEAD, the precision of a tool is not only the dimenssion tolerance on the Drawing, but also the exact geometric shape. All our tools are controlled individually by our quality department.

Our guides with Hard Metal or Diamond insert are fixed through mechanical system, and are therefore at the extremity of the guide. This allows a perfect guiding and centring of the wire and also a better concentricity.

Material used for manufacturing

<table>
<thead>
<tr>
<th>Type</th>
<th>Désignation</th>
<th>Features</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Stainless Steel</td>
<td>Basic Steel for our Tools</td>
<td>Chrom steel, good resistance against corrosion and wear.</td>
</tr>
<tr>
<td>B</td>
<td>Hastelloy C-276</td>
<td>For tools used in very corrosive environment and with high temperature</td>
<td>Steel with high nickel-chrome content</td>
</tr>
<tr>
<td>C</td>
<td>Tungsten-Carbide</td>
<td>Very hard material, used for small tools and high abrasion</td>
<td>Hardness &gt; 70 HRc</td>
</tr>
<tr>
<td>E</td>
<td>Tungsten Carbide</td>
<td>Hard contact insert for bigger tools and high abrasion</td>
<td>Hardness &gt; 70 HRc</td>
</tr>
<tr>
<td>G</td>
<td>Diamond Insert</td>
<td>Tooling for high speed lines or very abrasive copper</td>
<td>The highest resistance to abrasion</td>
</tr>
</tbody>
</table>

Identification of tools

Drawings with dimensions in mm

Steel

- A Hardened Steel EX - 0000 - A
- B Hastelloy EX - 0000 - B
- C Tungsten Carbide EX - 0000 - C
- E Tungsten Carbide insert EX - 0000 - E
- G Diamond Insert EX - 0000 - G

Option - Reduction EX - 00G00

Maximum size of the bore in mm

ø 6.00 max.
Calculation of a tubing tool

Two main elements are necessary for the calculation of a tubing tool:

\[
\text{DDR} \Rightarrow \text{Draw Down Ratio} \\
\text{DRB} \Rightarrow \text{Draw Ratio Balance}
\]

The DDR is in correlation with the polymer and the DRB has to be close to 1.

We have here:

<table>
<thead>
<tr>
<th>Symbol (DF, D, E, d₁, d₂, d₃, x)</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF</td>
<td>Ø Die outlet</td>
</tr>
<tr>
<td>D</td>
<td>Ø Over insulation</td>
</tr>
<tr>
<td>E</td>
<td>Thickness insulation</td>
</tr>
<tr>
<td>d₁</td>
<td>Ø from the wire</td>
</tr>
<tr>
<td>d₂</td>
<td>Ø Inside wire guide</td>
</tr>
<tr>
<td>d₃</td>
<td>Ø Outside wire guide</td>
</tr>
<tr>
<td>x</td>
<td>Thickness wall wire guide</td>
</tr>
</tbody>
</table>

For the calculation of the tools we are using the two formula above:

\[
\text{DDR} = \frac{\text{DF}^2 - d_3^2}{D^2 - d_1^2}
\]

\[
\text{DRB} = \frac{\text{DF}}{D} = 1
\]

Quality Control of the tooling

We guarantee you following measures:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø d ± 0.005</td>
<td>Ø d ± 0.005</td>
</tr>
</tbody>
</table>

0.01
E-XHEAD has developed a new concept of insertion of diamond inserts. The particularity is that the insert has been fixed mechanically right at the front edge of the guide. This guarantees a perfect concentricity and avoid that any polymers can fill the gap between the edge and the Diamond. The mechanical hold of the insert guarantees that the insert can not be removed by differences in tolerances of the copper conductor.

This new technology gives the best quality / price ratio. The Guide body is made in hardened Stainless Steel for longer life.

**Long life time**

**Best Quality / Price ratio**

**Shock resistant**

Perfect concentricity also by the start up

Short deliveries by sizes up to Ø 3.5 mm
Wire Guide

**EX-0110**
- Hardened Stainless Steel: EX-0110-A
- Hastelloy: EX-0110-B
- Tungsten Carbide: EX-0110-C
- Diamond Insert: EX-0110-G

Ø 3.50 max.

**EX-1111**
- Hardened Stainless Steel: EX-1111-A
- Hastelloy: EX-1111-B
- Tungsten Carbide: EX-1111-C
- Tungsten Carbide Insert: EX-1111-E
- Diamond Insert: EX-1111-G

Ø 6.00 max.

**EX-1112**
- Hardened Stainless Steel: EX-1112-A
- Hastelloy: EX-1112-B
- Tungsten Carbide: EX-1112-C

Ø 6.00 max.

Die

**EX-1120**
- Hardened Stainless Steel: EX-1120-A
- Hastelloy: EX-1120-B
- Tungsten Carbide: EX-1120-C

Ø 10.00 max.

**EX-1121**
- Hardened Stainless Steel: EX-1121-A
- Hastelloy: EX-1121-B
- Tungsten Carbide: EX-1121-C

Ø 10.00 max.
**EX-12**
**Semi-Compression**
**Wire Guide Ø 6mm, Ø 17mm & Die Ø 20mm**

---

### Wire Guide

**EX-0210**

- Hardened Stainless Steel  
  EX-0210-A  
- Hastelloy  
  EX-0210-B  
- Tungsten Carbide  
  EX-0210-C  
- Diamond Insert  
  EX-0210-G

ø 3.50 max.

**EX-1211**

- Hardened Stainless Steel  
  EX-1211-A  
- Hastelloy  
  EX-1211-B  
- Tungsten Carbide  
  EX-1211-C  
- Tungsten Carbide Insert  
  EX-1211-E  
- Diamond Insert  
  EX-1211-G

ø 6.00 max.

**EX-1212**

- Hardened Stainless Steel  
  EX-1212-A  
- Hastelloy  
  EX-1212-B  
- Tungsten Carbide  
  EX-1212-C  
- Tungsten Carbide Insert  
  EX-1212-E  
- Diamond Insert  
  EX-1212-G

ø 6.00 max.

### Die

**EX-1220**

- Hardened Stainless Steel  
  EX-1220-A  
- Hastelloy  
  EX-1220-B  
- Tungsten Carbide  
  EX-1220-C

ø 10.00 max.

**EX-1221**

- Hardened Stainless Steel  
  EX-1221-A  
- Hastelloy  
  EX-1221-B  
- Tungsten Carbide  
  EX-1221-C

ø 10.00 max.
**Wire Guide**

<table>
<thead>
<tr>
<th>EX-0310</th>
<th>Wire Guide Ø 6mm, Ø 17mm &amp; Die Ø 20mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX-0310-A</td>
<td>Hardened Stainless Steel</td>
</tr>
<tr>
<td>EX-0310-B</td>
<td>Hastelloy</td>
</tr>
<tr>
<td>EX-0310-C</td>
<td>Tungsten Carbide</td>
</tr>
<tr>
<td>Ø 2.50 max.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>EX-1311</th>
<th>Wire Guide Ø 6mm, Ø 17mm &amp; Die Ø 20mm</th>
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</thead>
<tbody>
<tr>
<td>EX-1311-A</td>
<td>Hardened Stainless Steel</td>
</tr>
<tr>
<td>EX-1311-B</td>
<td>Hastelloy</td>
</tr>
<tr>
<td>EX-1311-C</td>
<td>Tungsten Carbide</td>
</tr>
<tr>
<td>Ø 6.00 max.</td>
<td></td>
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</table>

**Die**

<table>
<thead>
<tr>
<th>EX-1320</th>
<th>Wire Guide Ø 6mm, Ø 17mm &amp; Die Ø 20mm</th>
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</thead>
<tbody>
<tr>
<td>EX-1320-A</td>
<td>Hardened Stainless Steel</td>
</tr>
<tr>
<td>EX-1320-B</td>
<td>Hastelloy</td>
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<tr>
<td>EX-1320-C</td>
<td>Tungsten Carbide</td>
</tr>
<tr>
<td>Ø 10.00 max.</td>
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</tbody>
</table>
**Wire Guide**

**EX-1410**

Diamond Insert

EX-1410-G

\[\varnothing 2.00\text{ max}\]

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**EX-1411**

Diamond Insert

EX-1411-G

\[\varnothing 2.00\text{ max}\]
**Reductions for wire guide**

**Wire Guide Ø 6mm**

---

**Reduction for Compression Wire Guide**

**EX-11G01**

Hardened Stainless Steel
Hastelloy
For => EX-0110 / EX-0210 / EX-0310

---

**EX-11G02**

Hardened Stainless Steel
Hastelloy
For => EX-0110 / EX-0210 / EX-0310

---

**Reduction for Semi-Compression Wire Guide**

**EX-12G01**

Hardened Stainless Steel
Hastelloy
For => EX-0110 / EX-0210 / EX-0310

---

**EX-12G02**

Hardened Stainless Steel
Hastelloy
For => EX-0110 / EX-0210 / EX-0310
EX-21
Compression
Wire Guide Ø 30.74mm & Die Ø 35mm

Wire Guide

EX-2110
Hardened Stainless Steel EX-2110-A
Hastelloy EX-2110-B
Tungsten Carbide Insert EX-2110-E
Diamond Insert EX-2110-G

Ø 16.00 max

Die

EX-2120
Hardened Stainless Steel EX-2120-A
Hastelloy EX-2120-B

Ø 20.00 max
EX-22
Semi-Compression
Wire Guide Ø 30.74mm & Die Ø 35mm

Wire Guide

EX-2210
Ø 16.00 max
Hardened Stainless Steel EX-2210-A
Hastelloy EX-2210-B
Tungsten Carbide Insert EX-2210-E
Diamond Insert EX-2210-G

Die

EX-2220
Ø 20.00 max
Hardened Stainless Steel EX-2220-A
Hastelloy EX-2220-B
Wire Guide

EX-23
Tube
Wire Guide Ø 30.74mm & Die Ø 35mm

Die

EX-2320

Hardened Stainless Steel
Hastelloy
Tungsten Carbide Insert

Ø 16.00 max

EX-2310

Hardened Stainless Steel
Hastelloy
Tungsten Carbide Insert

EX-2310-A
EX-2310-B
EX-2310-E

Ø 20.00 max
Reduction For Wire Guide

Ex-21G1
Reduction For Wire Guide
Wire Guide Ø17mm

Reduction For Wire Guide

Ex-21-G

Hardened Stainless Steel
Hastelloy

Ex-21G1-A
Ex-21G1-B
Your address:

Name:  
Expected Delivery:

Your number:  
From:

### List of Tools

<table>
<thead>
<tr>
<th>Position</th>
<th>Designation</th>
<th>Art. N° E-XHEAD</th>
<th>Ø Bore in mm</th>
<th>Ø External for tubing tool in mm</th>
<th>Quantity</th>
<th>Price</th>
<th>Total price</th>
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Total EUR

Packing + Transport EUR