## Tolerances

### General Tolerances for Linear and Angular Dimensions (UNI ISO 22768-1)

#### Linear Dimensions

<table>
<thead>
<tr>
<th>Tolerance Class</th>
<th>DA 0.5-3</th>
<th>DA 3-6</th>
<th>DA 6-30</th>
<th>DA 30-120</th>
<th>DA 120÷400</th>
<th>400÷1000</th>
<th>1000÷2000</th>
<th>2000÷4000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine –f</td>
<td>±0.05</td>
<td>±0.05</td>
<td>±0.1</td>
<td>±0.15</td>
<td>±0.2</td>
<td>±0.3</td>
<td>±0.5</td>
<td></td>
</tr>
<tr>
<td>Medium –m</td>
<td>±0.1</td>
<td>±0.1</td>
<td>±0.2</td>
<td>±0.3</td>
<td>±0.5</td>
<td>±0.8</td>
<td>±1.2</td>
<td>±2</td>
</tr>
<tr>
<td>Coarse –c</td>
<td>±0.2</td>
<td>±0.3</td>
<td>±0.5</td>
<td>±0.8</td>
<td>±1.2</td>
<td>±2</td>
<td>±3</td>
<td>±4</td>
</tr>
<tr>
<td>Very Coarse –v</td>
<td>-</td>
<td>±0.5</td>
<td>±1</td>
<td>±1.5</td>
<td>±2.5</td>
<td>±4</td>
<td>±6</td>
<td>±8</td>
</tr>
</tbody>
</table>

#### External Radius and Chamfer Heights

<table>
<thead>
<tr>
<th>Tolerance Class</th>
<th>DA 0.5-3</th>
<th>DA 3-6</th>
<th>Oltre 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine –f</td>
<td>±2</td>
<td>±0.5</td>
<td>±1</td>
</tr>
<tr>
<td>Medium –m</td>
<td></td>
<td></td>
<td>±2</td>
</tr>
<tr>
<td>Coarse –c</td>
<td>±0.4</td>
<td>±1</td>
<td>±2</td>
</tr>
<tr>
<td>Very Coarse –v</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Angular Dimensions

<table>
<thead>
<tr>
<th>Tolerance Class</th>
<th>DA 0 - 10</th>
<th>DA 10 - 50</th>
<th>DA 50 - 120</th>
<th>DA 120 - 400</th>
<th>Oltre 400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine –f</td>
<td>±1°</td>
<td>±0° 30'</td>
<td>±0° 20'</td>
<td>±0° 10'</td>
<td>±0° 5'</td>
</tr>
<tr>
<td>Medium –m</td>
<td>±1° 30'</td>
<td>±1°</td>
<td>±0° 30'</td>
<td>±0° 15'</td>
<td>±0° 10'</td>
</tr>
<tr>
<td>Coarse –c</td>
<td>±3°</td>
<td>±2°</td>
<td>±1°</td>
<td>±0° 30'</td>
<td>±0° 20'</td>
</tr>
<tr>
<td>Very Coarse –v</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### General Geometrical Tolerances (UNI ISO 22768-2)

#### Straightness and Flatness

<table>
<thead>
<tr>
<th>Tolerance Class</th>
<th>DA 0 - 10</th>
<th>DA 10 - 30</th>
<th>DA 30 - 100</th>
<th>DA 100 ÷ 300</th>
<th>300÷1000</th>
<th>1000÷3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>0.02</td>
<td>0.05</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>K</td>
<td>0.05</td>
<td>0.1</td>
<td>0.2</td>
<td>0.4</td>
<td>0.6</td>
<td>0.8</td>
</tr>
<tr>
<td>L</td>
<td>0.1</td>
<td>0.2</td>
<td>0.4</td>
<td>0.8</td>
<td>1.2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

#### Perpendicularity

<table>
<thead>
<tr>
<th>Tolerance Class</th>
<th>DA 0 - 100</th>
<th>DA 100 - 300</th>
<th>DA 300 - 1000</th>
<th>DA 1000 – 3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>K</td>
<td>0.4</td>
<td>0.6</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>L</td>
<td>0.6</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>

#### Symmetry

<table>
<thead>
<tr>
<th>Tolerance Class</th>
<th>DA 0 - 100</th>
<th>DA 100 - 300</th>
<th>DA 300 - 1000</th>
<th>DA 1000 – 3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>0.6</td>
<td>0.8</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>0.6</td>
<td>1.0</td>
<td>1.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>

#### Run-Out

<table>
<thead>
<tr>
<th>Tolerance Class</th>
<th>Tolerances in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>0.1</td>
</tr>
<tr>
<td>K</td>
<td>0.2</td>
</tr>
<tr>
<td>L</td>
<td>0.5</td>
</tr>
</tbody>
</table>