Parameters for metric thread tools

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Flowdrill Diameter mm</th>
<th>Flowdrill RPM</th>
<th>Motor capacity kW</th>
<th>Production time sec.</th>
<th>Flowtap RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 2</td>
<td>1.8</td>
<td>3200</td>
<td>0.5</td>
<td>2</td>
<td>1600</td>
</tr>
<tr>
<td>M 3</td>
<td>2.7</td>
<td>3000</td>
<td>0.6</td>
<td>2</td>
<td>1350</td>
</tr>
<tr>
<td>M 4</td>
<td>3.7</td>
<td>2600</td>
<td>0.7</td>
<td>2</td>
<td>1000</td>
</tr>
<tr>
<td>M 5</td>
<td>4.5</td>
<td>2500</td>
<td>0.8</td>
<td>2</td>
<td>800</td>
</tr>
<tr>
<td>M 6</td>
<td>5.3/5.4</td>
<td>2400</td>
<td>1.0</td>
<td>2</td>
<td>650</td>
</tr>
<tr>
<td>M 8</td>
<td>7.3</td>
<td>2200</td>
<td>1.3</td>
<td>2</td>
<td>500</td>
</tr>
<tr>
<td>M 10</td>
<td>9.2</td>
<td>2000</td>
<td>1.5</td>
<td>3</td>
<td>400</td>
</tr>
<tr>
<td>M 12</td>
<td>10.9</td>
<td>1800</td>
<td>1.7</td>
<td>3</td>
<td>350</td>
</tr>
<tr>
<td>M 16</td>
<td>14.8</td>
<td>1400</td>
<td>2.2</td>
<td>4</td>
<td>250</td>
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<tr>
<td>M 20</td>
<td>18.7</td>
<td>1200</td>
<td>2.7</td>
<td>5</td>
<td>200</td>
</tr>
</tbody>
</table>

Thread size BSP

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Flowdrill Diameter mm</th>
<th>Flowdrill RPM</th>
<th>Motor capacity kW</th>
<th>Production time sec.</th>
<th>Flowtap RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8”</td>
<td>9.2</td>
<td>2000</td>
<td>1.5</td>
<td>3</td>
<td>400</td>
</tr>
<tr>
<td>1/4”</td>
<td>12.4</td>
<td>1600</td>
<td>2.0</td>
<td>3</td>
<td>360</td>
</tr>
<tr>
<td>3/8”</td>
<td>15.9</td>
<td>1400</td>
<td>2.3</td>
<td>4</td>
<td>300</td>
</tr>
<tr>
<td>1/2”</td>
<td>19.9</td>
<td>1200</td>
<td>3.0</td>
<td>5</td>
<td>270</td>
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<tr>
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<td>25.4</td>
<td>1000</td>
<td>3.5</td>
<td>6</td>
<td>200</td>
</tr>
</tbody>
</table>

Notes:
- The above table indicates the production time for 2 mm thick mild steel.
- For thicker material add 1 second production time/mm.
- Stainless steel requires a 0.1 mm larger diameter Flowdrill. Speed needs to be reduced by 13%.
- For Aluminium and other non-ferrous materials the speed needs to be increased by about 15–20%.
- Parameters for CNC-machine centres are available on request.

Standard FLOWDRILL® types:

We will be pleased to send you detailed information and to discuss your particular application requirements.

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Thermal Drilling Technique

When the Flowdrill® comes into contact with the material, using relatively high axial pressure and RPM, frictional heat is created, allowing penetration and reforming of the displaced material in a few seconds. Initially, displaced material forms a collar on the upper side of the work piece. As the tool advances axial force decreases and feed rate increases allowing the remaining material to be reformed into a bush on the underside of the work piece. The diameter of the bush is determined by the cylindrical part of the Flowdrill® tool.

Flowtap cold-formed thread is a secondary operation, creating a [chip free] thread in the bush, comparable in strength to a weld nut.

Advantages of the Flowdrill® system:
- Consistently accurate hole sizes.
- Bush length approximately 3 times the original thickness.
- Short cycle time, of between 2 and 6 seconds, depending on the diameter and thickness of material.

The formed bushes are suitable for:
- Tapping to give deep threads with high pullout strength and torque loading.
- As a sleeve bearing.
- As a location for a brazed connection.

Machines suitable for the Flowdrill® system, range from standard drillpresses to NC/CNC automated machine centres, with motor capacities between 1.5kW and 3.0kW and speeds from 1000 RPM to 3500 RPM.

Friction drilling is suitable for a wide range of materials including Mild Steel, Stainless Steel, Copper, Brass and Aluminium.

Flowdrill® tools are available in sizes from 1.5mm Ø up to 46mm Ø; special sizes are available on request.

The use of FDKS Flowdrill® paste or liquid lubricant will optimize tool life.

Thermal Friction Drilling
For Professionals that look for the highest quality in their products, the Flowdrill® system provides a cost saving and problem solving production method for the formation of bushes in malleable metals.

The Flowdrill® Thermal Friction Drill produces perfectly formed bushes using a combination of speed of rotation and pressure to locally heat the material, forming a bush in various thickness of metal.

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Advantages of cold-form tapping in conjunction with friction drilling, over thread cutting are:

- Increased pull out strength of the formed thread as the process reforms the material in the bush, without cutting into the natural grain structure of the metal.
- Precise formation of the thread within the bush.
- Increased productivity, through high speed and long tool life.
- Chip free process, therefore no waste to remove.
- Suitable for most tapping machines.
- Suitable for all materials that can be friction drilled.

A good lubricant decreases the process temperature, increases the tool life and helps to form a perfect thread. We recommend the FTMZ Flowdrill lubricant.