Area Factor = \( I N^2 \)
\( IN^2 = \pi \times (D \times WT - WT^2) \)

Feed Per Tooth = FPT

Horsepower = HP
\( HP = I N^2 \times IPM \times K \)

Inches per Minute = IPM
\( IPM = FPT \times NT \times RPM \)

K (how difficult the material is to machine)
Steel (K = 1)
Cast Iron (K = .5)
Aluminum (K = .25)

Outer Diameter = D

Material Tensile Strength = Kc
Thrust = T
\( T = .7 \times WT \times FPT \times NT \times Kc \)

Wall Thickness = WT
.188, .196, .218, .264

No. of Teeth = NT

Surface Feet per Minute = SFM
\( SFM = [\pi \times D \div 12] \times RPM \)

Revolutions per Minute = RPM
\( RPM = SFM \div [\pi \div 12] \times OD \)

“12,000-Series” Cutter
SFM = .262 x diameter x RPM

Conventional Drill
SFM = .262 x diameter x RPM

Suggested Feed Rates
These are only starting points. They will vary with application and workpiece condition.

<table>
<thead>
<tr>
<th>Material or Application Type</th>
<th>Feed Per Tooth (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin Walled Workpieces</td>
<td>.001 / .002 (.003 FPT with Work Hardening Materials)</td>
</tr>
<tr>
<td>Oblique Entry / Curved Surfaces / Semi-Circles / Fragile Setups</td>
<td>.001 / .002 (.003 FPT with Work Hardening Materials)</td>
</tr>
<tr>
<td>Soft / Gummy Materials</td>
<td>.004 / .005</td>
</tr>
<tr>
<td>Typical / Average Applications</td>
<td>.003 / .004</td>
</tr>
<tr>
<td>Deep Holes</td>
<td>.004 / .005</td>
</tr>
</tbody>
</table>

Difficult-to-machine materials will require reduced feed rates.

For additional help or questions, please contact Hougen Technical Support - tech@hougen.com