## SPEEDS \& FEEDS

## Combination Feed \& HEM - 4 Flute

| 단트든4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Material Guide |  | Hardness | SFM | Inches per Tooth (IPT) |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Slot |  | Rgh | Slot | Rgh | Slot | Rgh | Slot | Rgh | Slot | Rgh | Slot | Rgh | Slot | Rgh |
| Carbon Steel | 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36 |  | $<75$ HRB $75-98$ HRB $21-36$ HRC | $\begin{aligned} & \hline 455 \\ & 445 \\ & 400 \end{aligned}$ | $\begin{aligned} & \hline .0027 \\ & .0020 \\ & .0013 \end{aligned}$ | $\begin{aligned} & \hline .0012 \\ & .0009 \\ & .0006 \end{aligned}$ | $\begin{aligned} & \hline .0040 \\ & .0030 \\ & .0020 \end{aligned}$ | $\begin{aligned} & \hline .0018 \\ & .0013 \\ & .0009 \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0040 \\ & .0027 \end{aligned}$ | $\begin{aligned} & \hline .0024 \\ & .0018 \\ & .0011 \end{aligned}$ | $\begin{aligned} & \hline .0080 \\ & .0060 \\ & .0040 \end{aligned}$ | $\begin{aligned} & \hline .0036 \\ & .0026 \\ & .0017 \end{aligned}$ | $\begin{aligned} & \hline .0107 \\ & .0080 \\ & .0053 \end{aligned}$ | $\begin{aligned} & \hline .0047 \\ & .0034 \\ & .0022 \end{aligned}$ | $\begin{aligned} & \hline .0160 \\ & .0120 \\ & .0080 \end{aligned}$ | $\begin{aligned} & \hline .0067 \\ & .0049 \\ & .0032 \end{aligned}$ | $\begin{aligned} & \hline .0214 \\ & .0160 \\ & .0106 \end{aligned}$ | $\begin{aligned} & \hline .0086 \\ & .0063 \\ & .0041 \end{aligned}$ |
| Low Alloy Steel | $\begin{aligned} & \text { 13XX, 41XX, 43XX, 51XX, } \\ & 86 \mathrm{XX}, 93 X X \end{aligned}$ |  | $\begin{array}{r} 75-98 \mathrm{HRB} \\ 21-36 \mathrm{HRC} \\ 36-50 \mathrm{HRC} \\ >50 \mathrm{HRC} \end{array}$ | $\begin{aligned} & 390 \\ & 340 \\ & 260 \\ & 155 \end{aligned}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & .0020 \\ & .0013 \end{aligned}$ | $\begin{aligned} & .0008 \\ & .0006 \\ & .0005 \\ & .0004 \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & .0030 \\ & .0020 \end{aligned}$ | $\begin{aligned} & .0011 \\ & .0009 \\ & .0007 \\ & .0006 \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \\ & .0040 \\ & .0027 \end{aligned}$ | $\begin{aligned} & .0015 \\ & .0012 \\ & .0010 \\ & .0008 \end{aligned}$ | $\begin{aligned} & .0080 \\ & .0080 \\ & .0060 \\ & .0040 \end{aligned}$ | $\begin{aligned} & .0023 \\ & .0017 \\ & .0015 \\ & .0012 \end{aligned}$ | $\begin{aligned} & .0107 \\ & .0107 \\ & .0080 \\ & .0053 \end{aligned}$ | $\begin{aligned} & .0030 \\ & .0022 \\ & .0019 \\ & .0015 \end{aligned}$ | $\begin{aligned} & .0160 \\ & .0160 \\ & .0120 \\ & .0080 \end{aligned}$ | $\begin{aligned} & .0043 \\ & .0032 \\ & .0028 \\ & .0022 \end{aligned}$ | $\begin{aligned} & .0214 \\ & .0214 \\ & .0160 \\ & .0106 \end{aligned}$ | $\begin{aligned} & .0054 \\ & .0040 \\ & .0035 \\ & .0028 \end{aligned}$ |
| Tool Steel | A2, H13, L6, P20, S7 | $\begin{array}{r} \hline 75-98 \text { HRB } \\ 21-36 \text { HRC } \\ 36-50 \text { HRC } \\ >50 \text { HRC } \\ \hline \end{array}$ | $\begin{gathered} 340 \\ 250 \\ 145 \\ 85 \\ \hline \end{gathered}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & .0020 \\ & .0013 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0008 \\ & .0006 \\ & .0005 \\ & .0004 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & .0030 \\ & .0020 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0011 \\ & .0009 \\ & .0007 \\ & .0006 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \\ & .0040 \\ & .0027 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0015 \\ & .0012 \\ & .0010 \\ & .0008 \end{aligned}$ | $\begin{aligned} & .0080 \\ & .0080 \\ & .0060 \\ & .0040 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0023 \\ & .0018 \\ & .0014 \\ & .0012 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0107 \\ & .0107 \\ & .0080 \\ & .0053 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0030 \\ & .0024 \\ & .0019 \\ & .0015 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0160 \\ & .0160 \\ & .0120 \\ & .0080 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0043 \\ & .0034 \\ & .0027 \\ & .0022 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0214 \\ & .0214 \\ & .0160 \\ & .0106 \end{aligned}$ | $\begin{aligned} & .0054 \\ & .0043 \\ & .0034 \\ & .0028 \\ & \hline \end{aligned}$ |
| Specialty Steel | 300M, Invar 36, Kovar, Maraging 200, Maraging 250, Maraging 300, Maraging 350 | $\begin{array}{r} <75 \text { HRB } \\ 75-98 \text { HRB } \\ 21-36 \text { HRC } \\ 36-50 \text { HRC } \\ >50 \text { HRC } \end{array}$ | $\begin{gathered} \hline 290 \\ 255 \\ 175 \\ 150 \\ 55 \\ \hline \end{gathered}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & .0027 \\ & .0020 \\ & .0013 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0010 \\ & .0007 \\ & .0006 \\ & .0006 \\ & .0004 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & .0040 \\ & .0030 \\ & .0020 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0015 \\ & .0010 \\ & .0009 \\ & .0008 \\ & .0005 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \\ & .0053 \\ & .0040 \\ & .0027 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0020 \\ & .0014 \\ & .0012 \\ & .0011 \\ & .0007 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0080 \\ & .0080 \\ & .0080 \\ & .0060 \\ & .0040 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0030 \\ & .0021 \\ & .0018 \\ & .0016 \\ & .0010 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0107 \\ & .0107 \\ & .0107 \\ & .0080 \\ & .0053 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0039 \\ & .0027 \\ & .0024 \\ & .0021 \\ & .0013 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0160 \\ & .0160 \\ & .0160 \\ & .0120 \\ & .0080 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0056 \\ & .0038 \\ & .0034 \\ & .0031 \\ & .0019 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0214 \\ & .0214 \\ & .0214 \\ & .0160 \\ & .0106 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0071 \\ & .0049 \\ & .0044 \\ & .0039 \\ & .0024 \end{aligned}$ |
| Austenitic Stainless Steel | Nitronic 50, Nitronic 60, <br> 301, 303, 304, 304L, <br> Incoloy 27-7MO, 316, <br> 316L, 321, 347 | $\begin{aligned} & 75-98 \text { HRB } \\ & 21-36 \text { HRC } \\ & 36-50 \text { HRC } \end{aligned}$ | $\begin{aligned} & \hline 265 \\ & 225 \\ & 180 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0027 \\ & .0027 \\ & .0022 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0008 \\ & .0007 \\ & .0006 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & .0033 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0011 \\ & .0010 \\ & .0008 \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \\ & .0043 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0015 \\ & .0014 \\ & .0011 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0080 \\ & .0080 \\ & .0065 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0022 \\ & .0020 \\ & .0016 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0107 \\ & .0107 \\ & .0087 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0029 \\ & .0026 \\ & .0021 \end{aligned}$ | $\begin{aligned} & .0160 \\ & .0160 \\ & .0130 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0042 \\ & .0038 \\ & .0030 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0214 \\ & .0214 \\ & .0174 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0053 \\ & .0048 \\ & .0038 \\ & \hline \end{aligned}$ |
| Martensitic \& Ferritic Stainless Steel | $\begin{aligned} & 403,410,416,420,440, \\ & 430,446 \end{aligned}$ | $\begin{aligned} & 75-98 \text { HRB } \\ & 21-36 \text { HRC } \end{aligned}$ | $\begin{aligned} & 300 \\ & 280 \end{aligned}$ | $\begin{aligned} & .0025 \\ & .0027 \end{aligned}$ | $\begin{aligned} & .0008 \\ & .0007 \end{aligned}$ | $\begin{aligned} & .0038 \\ & .0040 \end{aligned}$ | $\begin{aligned} & .0011 \\ & .0010 \end{aligned}$ | $\begin{aligned} & .0050 \\ & .0053 \end{aligned}$ | $\begin{aligned} & .0016 \\ & .0013 \end{aligned}$ |  | $\begin{aligned} & .0023 \\ & .0020 \end{aligned}$ |  | $\begin{aligned} & .0030 \\ & .0026 \end{aligned}$ | $\begin{aligned} & .0150 \\ & .0160 \end{aligned}$ | $\begin{aligned} & .0043 \\ & .0037 \end{aligned}$ | $\begin{aligned} & .0200 \\ & .0214 \end{aligned}$ | $\begin{aligned} & .0055 \\ & .0047 \end{aligned}$ |
| PH Stainless Steel | 15-5, 17-4, Carpenter 450, Carpenter 465 | $\begin{aligned} & 21-36 \text { HRC } \\ & 36-50 \text { HRC } \end{aligned}$ | $\begin{aligned} & 200 \\ & 145 \end{aligned}$ | $\begin{aligned} & .0025 \\ & .0020 \end{aligned}$ | $\begin{aligned} & .0006 \\ & .0005 \end{aligned}$ | $\begin{aligned} & .0038 \\ & .0030 \end{aligned}$ | $\begin{aligned} & .0008 \\ & .0007 \end{aligned}$ | $\begin{aligned} & .0050 \\ & .0040 \end{aligned}$ | $\begin{aligned} & .0011 \\ & .0010 \end{aligned}$ | $\begin{aligned} & .0075 \\ & .0060 \end{aligned}$ | $\begin{aligned} & .0017 \\ & .0014 \end{aligned}$ | $\begin{aligned} & .0100 \\ & .0080 \end{aligned}$ | $\begin{aligned} & .0022 \\ & .0019 \end{aligned}$ | $\begin{aligned} & .0150 \\ & .0120 \end{aligned}$ | $\begin{aligned} & .0031 \\ & .0027 \end{aligned}$ | $\begin{aligned} & .0200 \\ & .0160 \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0035 \end{aligned}$ |
| Gray Cast Iron | SAE J431, ASTM A48 | $\begin{aligned} & \hline 75-98 \mathrm{HRB} \\ & 21-36 \mathrm{HRC} \end{aligned}$ | $\begin{aligned} & 410 \\ & 370 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0013 \\ & .0007 \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0019 \\ & .0010 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \end{aligned}$ | $\begin{aligned} & .0025 \\ & .0013 \end{aligned}$ | $\begin{aligned} & .0080 \\ & .0080 \end{aligned}$ | $\begin{aligned} & .0037 \\ & .0020 \end{aligned}$ | $\begin{aligned} & .0107 \\ & .0107 \end{aligned}$ | $\begin{aligned} & .0048 \\ & .0026 \end{aligned}$ | $\begin{aligned} & \hline .0160 \\ & .0160 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0069 \\ & .0038 \end{aligned}$ | $\begin{array}{r} .0214 \\ .0214 \\ \hline \end{array}$ | $\begin{aligned} & .0088 \\ & .0048 \end{aligned}$ |
| $\begin{gathered} \text { Malleable Cast } \\ \text { Iron } \end{gathered}$ | ASTM A47, ASTM A220, ASTM A602 | $\begin{aligned} & 75-98 \mathrm{HRB} \\ & 21-36 \text { HRC } \end{aligned}$ | $\begin{aligned} & 345 \\ & 335 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0008 \\ & .0007 \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0012 \\ & .0010 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \\ & \hline \end{aligned}$ | $\begin{array}{r} .0016 \\ .0014 \\ \hline \end{array}$ | $\begin{aligned} & .0080 \\ & .0080 \end{aligned}$ | $\begin{aligned} & .0023 \\ & .0020 \\ & \hline \end{aligned}$ | $\begin{array}{r} .0107 \\ .0107 \\ \hline \end{array}$ | $\begin{array}{r} .0031 \\ .0026 \\ \hline \end{array}$ | $\begin{aligned} & .0160 \\ & .0160 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0044 \\ & .0038 \end{aligned}$ | $\begin{array}{r} .0214 \\ .0214 \\ \hline \end{array}$ | $\begin{aligned} & .0056 \\ & .0048 \end{aligned}$ |
| Nodular (Ductile) Cast Iron | ASTM A536, ASTM 897 | $\begin{aligned} & \hline 75-98 \text { HRB } \\ & 21-36 \text { HRC } \\ & 36-50 \text { HRC } \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline 310 \\ & 260 \\ & 135 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & .0013 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0008 \\ & .0006 \\ & .0004 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0040 \\ & .0040 \\ & .0020 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0012 \\ & .0008 \\ & .0005 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0053 \\ & .0053 \\ & .0027 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0016 \\ & .0011 \\ & .0007 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0080 \\ & .0080 \\ & .0040 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0024 \\ & .0016 \\ & .0010 \\ & \hline \end{aligned}$ | $\begin{array}{r} .0107 \\ .0107 \\ .0053 \\ \hline \end{array}$ | $\begin{aligned} & \hline .0032 \\ & .0021 \\ & .0013 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0160 \\ & .0160 \\ & .0080 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0046 \\ & .0030 \\ & .0019 \\ & \hline \end{aligned}$ | $\begin{array}{r} .0214 \\ .0214 \\ .0106 \\ \hline \end{array}$ | $\begin{aligned} & .0058 \\ & .0039 \\ & .0024 \\ & \hline \end{aligned}$ |
| Pure Nickel | Nickel 200, Nickel 201 | $\begin{array}{r} <75 \mathrm{HRB} \\ 75-98 \mathrm{HRB} \end{array}$ | $\begin{aligned} & 285 \\ & 250 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0011 \\ & .0009 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0016 \\ & .0013 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \end{aligned}$ | $\begin{aligned} & .0021 \\ & .0018 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0080 \\ & .0080 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0031 \\ & .0026 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0107 \\ & .0107 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0041 \\ & .0034 \end{aligned}$ | $\begin{aligned} & .0160 \\ & .0160 \\ & \hline \end{aligned}$ | $\begin{array}{r} .0059 \\ .0049 \\ \hline \end{array}$ | $\begin{array}{r} .0214 \\ .0214 \\ \hline \end{array}$ | $\begin{array}{r} .0075 \\ .0063 \\ \hline \end{array}$ |
| Nickel Alloy | Hastelloy C-22, Inconel 625, Waspaloy, René 41, Inconel 718, Incoloy 20 | $\begin{aligned} & 75-98 \text { HRB } \\ & 21-36 \text { HRC } \\ & 36-50 \text { HRC } \end{aligned}$ | $\begin{aligned} & 80 \\ & 75 \\ & 70 \end{aligned}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & .0022 \end{aligned}$ | $\begin{aligned} & .0005 \\ & .0005 \\ & .0005 \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & .0033 \end{aligned}$ | $\begin{aligned} & .0008 \\ & .0008 \\ & .0007 \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \\ & .0043 \end{aligned}$ | $\begin{aligned} & .0011 \\ & .0010 \\ & .0009 \end{aligned}$ | $\begin{aligned} & \hline .0080 \\ & .0080 \\ & .0065 \end{aligned}$ | $\begin{aligned} & \hline .0016 \\ & .0015 \\ & .0013 \end{aligned}$ | $\begin{aligned} & .0107 \\ & .0107 \\ & .0087 \end{aligned}$ | $\begin{aligned} & .0021 \\ & .0020 \\ & .0017 \end{aligned}$ | $\begin{aligned} & .0160 \\ & .0160 \\ & .0130 \end{aligned}$ | $\begin{aligned} & \hline .0030 \\ & .0029 \\ & .0025 \end{aligned}$ | $\begin{aligned} & \hline .0214 \\ & .0214 \\ & .0174 \end{aligned}$ | $\begin{aligned} & .0038 \\ & .0036 \\ & .0031 \end{aligned}$ |
| Pure Titanium | Ti Grade 1, Ti Grade 2, Ti Grade 3, Ti Grade 4, Ti Grade 7, Ti Grade 12 | $<75$ HRB $75-98$ HRB $21-36$ HRC | $\begin{aligned} & 300 \\ & 275 \\ & 250 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0027 \\ & .0027 \\ & .0027 \end{aligned}$ | $\begin{aligned} & .0015 \\ & .0012 \\ & .0009 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0040 \\ & .0040 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0022 \\ & .0018 \\ & .0014 \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0053 \\ & .0053 \end{aligned}$ | $\begin{aligned} & .0029 \\ & .0024 \\ & .0018 \end{aligned}$ | $\begin{aligned} & .0080 \\ & .0080 \\ & .0080 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0043 \\ & .0036 \\ & .0027 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0107 \\ & .0107 \\ & .0107 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0057 \\ & .0047 \\ & .0036 \end{aligned}$ | $\begin{aligned} & .0160 \\ & .0160 \\ & .0160 \end{aligned}$ | $\begin{aligned} & .0081 \\ & .0068 \\ & .0051 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0214 \\ & .0214 \\ & .0214 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0103 \\ & .0087 \\ & .0065 \\ & \hline \end{aligned}$ |
| Titanium Alloy | Ti 3AI-2.5V, Ti 6Al-4V, Ti $10 \mathrm{~V}-2 \mathrm{Fe}-3 \mathrm{Al}$ | $\begin{aligned} & 21-36 \text { HRC } \\ & 36-50 \text { HRC } \end{aligned}$ | $\begin{aligned} & 180 \\ & 160 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0027 \\ & .0025 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0007 \\ & .0007 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0040 \\ & .0038 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0011 \\ & .0010 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0053 \\ & .0050 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0014 \\ & .0013 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0080 \\ & .0075 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0021 \\ & .0020 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0107 \\ & .0100 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0028 \\ & .0026 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0160 \\ & .0150 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0040 \\ & .0037 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0214 \\ & .0200 \\ & \hline \end{aligned}$ | $\begin{array}{r} .0051 \\ .0047 \\ \hline \end{array}$ |
| Cobalt Alloy | ASTM F562, ASTM F90, ASTM F75, ASTM F799 | $\begin{aligned} & \hline 75-98 \text { HRB } \\ & 21-36 \text { HRC } \\ & 36-50 \text { HRC } \\ & \hline \end{aligned}$ | $\begin{aligned} & 210 \\ & 170 \\ & 65 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0020 \\ & .0027 \\ & .0020 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0006 \\ & .0006 \\ & .0004 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0030 \\ & .0040 \\ & .0030 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0009 \\ & .0009 \\ & .0006 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0040 \\ & .0053 \\ & .0040 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0012 \\ & .0012 \\ & .0008 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0060 \\ & .0080 \\ & .0060 \\ & \hline \end{aligned}$ | $\begin{aligned} & .0018 \\ & .0017 \\ & .0012 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0080 \\ & .0107 \\ & .0080 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0024 \\ & .0023 \\ & .0016 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0120 \\ & .0160 \\ & .0120 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0034 \\ & .0033 \\ & .0022 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0160 \\ & .0214 \\ & .0160 \\ & \hline \end{aligned}$ | $\begin{aligned} & \hline .0043 \\ & .0042 \\ & .0028 \\ & \hline \end{aligned}$ |


| Milling Process | Hardness | ADOC | RDOC |
| :---: | :---: | :---: | :---: |
| Slot (Full Slotting) | $<35$ HRC | $3.00 \%-5.00 \%$ Diameter | $100 \%$ Diameter |
|  | $\geq 35$ HRC | $2.50 \%-4.00 \%$ Diameter | $100 \%$ Diameter |
| Rgh (Traditional Roughing) | $<35$ HRC | Up to Max LOC | $30 \%-40 \%$ Diameter |
|  | $\geq 35$ HRC | Up to Max LOC | $25 \%-35 \%$ Diameter |

NOTES:
IPT values shown are for $2.5 \times \mathrm{D}$ length of cut tools,
and should be adjusted for longer or shorter lengths of cut.
For more accurate running parameters, please refer to Machining Advisor Pro.

