



## Speeds & Feeds - Boring Tools

Speeds & Feeds listed are based on a tool that has a reach 3X the min. bore diameter/rotational min. bore diameter. These are considered safe starting parameters and will vary by application. To achieve optimal Speeds & Feeds please contact Micro 100 tech support at 800-421-8065.

Quick Change

QMBB Right Hand - Sharp - Miniature  
QBB Right Hand - Sharp  
QBB Right Hand  
QHBB Helical Back Rake - Corner Radius  
QBT Top Rake Chipbreaker  
QBM Boring Head Tools  
QRB Reverse Boring

Standard

MBB/MBBM Right Hand - Sharp - Miniature  
BBS/BBM Right Hand - Sharp  
BB Right Hand  
BBL Left Hand  
HBB Helical Back Rake - Corner Radius  
HBB/HBM Helical Back Rake  
PBT Top Rake Chipbreaker

| Material Guide                         |                                                                                    | Hardness                                                        | SFM                        | ROUGHING FEED RATE IN INCHES PER REVOLUTION BY MIN BORE DIAMETER |             |             |             |             |        |
|----------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------|------------------------------------------------------------------|-------------|-------------|-------------|-------------|--------|
|                                        |                                                                                    |                                                                 |                            | .015 - .060                                                      | .061 - .130 | .131 - .200 | .201 - .280 | .281 - .374 | .375+  |
| WROUGHT ALUMINUM ALLOY                 | 2014, 5062, 6061, 7050, 7075, 7475                                                 | <75 HRB                                                         | 600                        | 0.0005                                                           | 0.0009      | 0.0013      | 0.0025      | 0.003       | 0.004  |
| CAST ALUMINUM ALLOY                    | 319.0, 328.0, 355.0, 360.0, 380.0, 383.0, 390.0, 520.0, 535.0                      | <75 HRB                                                         | 400                        |                                                                  |             |             |             |             |        |
| COPPER ALLOY                           | Cu-ETP, CuBe2, CuZn30, CuZn36Pb3, CuZn10, CuSn5                                    | <75 HRB                                                         | 450                        | 0.0005                                                           | 0.0009      | 0.0013      | 0.002       | 0.0025      | 0.003  |
| CARBON STEEL                           | 10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36                                        | <75 HRB<br>75 - 98 HRB<br>21 - 36 HRC                           | 200                        | 0.0005                                                           | 0.0009      | 0.0013      | 0.002       | 0.0025      | 0.003  |
| LOW ALLOY STEEL                        | 13XX, 41XX, 43XX, 51XX, 86XX, 93XX                                                 | 75 - 98 HRB<br>21 - 36 HRC<br>36 - 50 HRC<br>>50 HRC            | 150<br>150<br>100<br>60    | 0.0005                                                           | 0.0009      | 0.0013      | 0.002       | 0.0025      | 0.003  |
| TOOL STEEL                             | A2, H13, L6, P20, S7                                                               | 75 - 98 HRB<br>21 - 36 HRC<br>36 - 50 HRC<br>>50 HRC            | 100<br>80<br>65<br>35      | 0.0005                                                           | 0.0009      | 0.0013      | 0.002       | 0.0025      | 0.003  |
| SPECIALTY STEEL                        | 300M, Invar 36, Kovar, Maraging 200, Maraging 250, Maraging 300, Maraging 350      | <75 HRB<br>75 - 98 HRB<br>21 - 36 HRC<br>36 - 50 HRC<br>>50 HRC | 75<br>65<br>50<br>40<br>35 | 0.0005                                                           | 0.0009      | 0.0013      | 0.002       | 0.0025      | 0.003  |
| AUSTENITIC STAINLESS STEEL             | Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347 | 75 - 98 HRB<br>21 - 36 HRC<br>36 - 50 HRC                       | 140<br>110<br>50           | 0.00025                                                          | 0.00045     | 0.001       | 0.002       | 0.0025      | 0.003  |
| MARTENSITIC & FERRITIC STAINLESS STEEL | 403, 410, 416, 420, 440, 430, 446                                                  | 75 - 98 HRB<br>21 - 36 HRC                                      | 160<br>115                 | 0.00022                                                          | 0.0004      | 0.0009      | 0.0018      | 0.0022      | 0.0027 |
| PH STAINLESS STEEL                     | 15-5, 17-4, Carpenter 450, Carpenter 465                                           | 21 - 36 HRC<br>36 - 50 HRC                                      | 100<br>73                  | 0.00025                                                          | 0.00045     | 0.001       | 0.002       | 0.0025      | 0.003  |
| GRAY CAST IRON                         | AE J431, ASTM A48                                                                  | 75 - 98 HRB<br>21 - 36 HRC                                      | 205<br>185                 | 0.00055                                                          | 0.001       | 0.0014      | 0.0022      | 0.0028      | 0.0045 |
| MALLEABLE CAST IRON                    | ASTM A47, ASTM A220, ASTM A602                                                     | 75 - 98 HRB<br>21 - 36 HRC                                      | 173<br>168                 | 0.00055                                                          | 0.001       | 0.0014      | 0.0022      | 0.0028      | 0.0045 |
| NODULAR (DUCTILE) CAST IRON            | ASTM A536, ASTM 897                                                                | 75 - 98 HRB<br>21 - 36 HRC<br>36 - 50 HRC                       | 155<br>130<br>68           | 0.00055                                                          | 0.001       | 0.0014      | 0.0022      | 0.0028      | 0.0045 |
| PURE NICKEL                            | Nickel 200, Nickel 201                                                             | <75 HRB<br>75 - 98 HRB                                          | 143<br>125                 | 0.0005                                                           | 0.0009      | 0.0013      | 0.002       | 0.0025      | 0.003  |
| NICKEL ALLOY                           | Hastelloy C-22, Inconel 625, Waspaloy, René 41, Inconel 718, Incoloy 20            | 75 - 98 HRB<br>21 - 36 HRC<br>36 - 50 HRC                       | 55<br>38<br>35             | 0.00025                                                          | 0.0006      | 0.001       | 0.0015      | 0.002       | 0.0025 |
| PURE TITANIUM                          | Ti Grade 1, Ti Grade 2, Ti Grade 3, Ti Grade 4, Ti Grade 7, Ti Grade 12            | <75 HRB<br>75 - 98 HRB<br>21 - 36 HRC                           | 150<br>138<br>125          | 0.0005                                                           | 0.0009      | 0.0013      | 0.002       | 0.0025      | 0.003  |
| TITANIUM ALLOY                         | Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al                                             | 21 - 28 HRC<br>29 - 36 HRC                                      | 100<br>75                  | 0.0005                                                           | 0.0009      | 0.0013      | 0.002       | 0.0025      | 0.003  |
| COBALT ALLOY                           | ASTM F562, ASTM F90, ASTM F75, ASTM F799                                           | 75 - 98 HRB<br>21 - 36 HRC<br>36 - 50 HRC                       | 105<br>85<br>33            | 0.00025                                                          | 0.0006      | 0.001       | 0.0015      | 0.002       | 0.0025 |

| Calculations - Roughing Depth of Cut                            |                                                        |
|-----------------------------------------------------------------|--------------------------------------------------------|
| Min Bores from .010 to .100<br>Multiply Min Bore Diameter by 3% | Example: Min Bore is .090<br>(.090 x .03 = .0027 RDOC) |
| Min bore > .100<br>Multiply Min Bore Diameter by 5%             | Example: Min bore is .180<br>(.180 X .05 = .009 RDOC)  |

| Calculations - Finishing                              |                                                          |
|-------------------------------------------------------|----------------------------------------------------------|
| Finishing Depth of Cut<br>Not to exceed 30% of Radius | Example: Nose Radius is .006<br>(.006 x .3 = .0018 RDOC) |
| Finishing Feed Rate<br>Multiply radius by 25%         | Example: Nose Radius is .006<br>(.006 x .3 = .0018)      |

RDOC= Radial Depth of Cut

## Helpful Hints

- Program in G96 (Constant Surface Footage On) in conjunction with G50 (Maximum Spindle Speed) to achieve best part finish
- Calculate RPM by part diameter being cut
- When using coated tools, increase SFM 5% - 10%

800-421-8065  
www.micro100.com