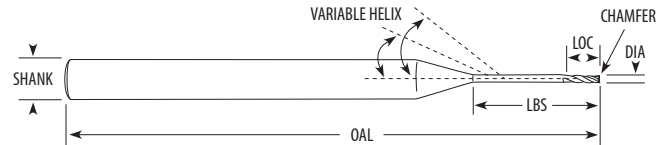
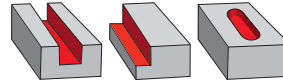
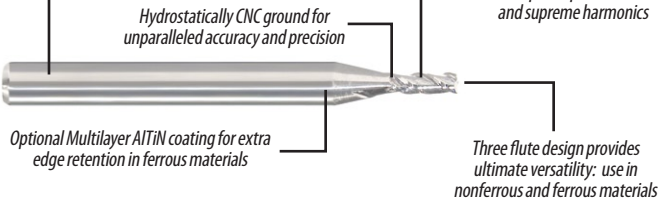


ATOMIC³



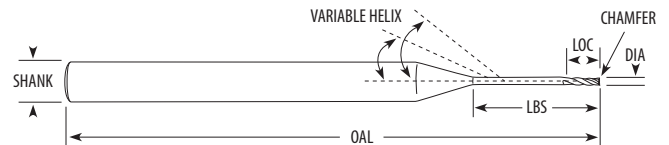
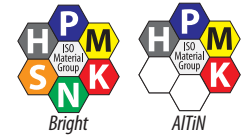
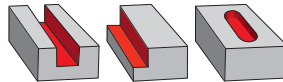
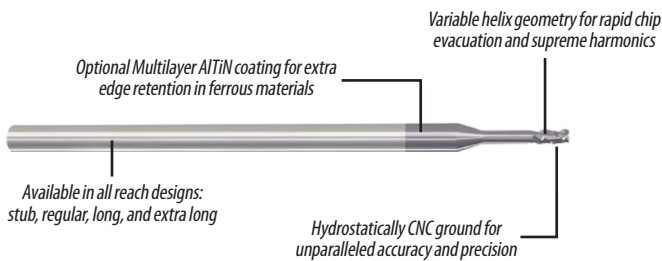
Available in all reach designs: stub, regular, long, and extra long



DIA TOLERANCE: $\pm 0.0005''$ LOC TOLERANCE: $+0.0000 / +0.0120''$ SHANK TOLERANCE: $+0.0000/-0.0003''$

| DIA | LOC | SHANK | OAL | LBS | LENGTH | CHAMFER | BRIGHT | ALTiN |
|--------|------|-------|-------|-------|---------|---------|------------|-------------|
| 0.0312 | 1/32 | 0.125 | 1.500 | — | Stub | 0.003 | 251-003005 | 251-003005B |
| | | | | | Regular | 0.003 | 251-003010 | 251-003010B |
| 0.0469 | 3/64 | 0.125 | 1.500 | — | Stub | 0.003 | 251-003025 | 251-003025B |
| | | | | | Regular | 0.003 | 251-003030 | 251-003030B |
| 0.0625 | 1/16 | 0.125 | 1.500 | — | Stub | 0.003 | 251-003045 | 251-003045B |
| | | | | | Regular | 0.003 | 251-003050 | 251-003050B |
| 0.0781 | 5/64 | 0.125 | 1.500 | — | Stub | 0.003 | 251-003065 | 251-003065B |
| | | | | | Regular | 0.003 | 251-003070 | 251-003070B |
| 0.0938 | 3/32 | 0.125 | 1.500 | — | Stub | 0.003 | 251-003085 | 251-003085B |
| | | | | | Regular | 0.003 | 251-003090 | 251-003090B |
| 0.1250 | 1/8 | 0.125 | 1.500 | — | Stub | 0.003 | 251-003105 | 251-003105B |
| | | | | | Regular | 0.003 | 251-003110 | 251-003110B |
| 0.0312 | 1/32 | 0.125 | 2.500 | 0.312 | X/Long | 0.003 | 251-003020 | 251-003020B |
| | | | | 0.187 | Long | 0.003 | 251-003015 | 251-003015B |
| 0.0469 | 3/64 | 0.125 | 2.500 | 0.470 | X/Long | 0.003 | 251-003040 | 251-003040B |
| | | | | 0.282 | Long | 0.003 | 251-003035 | 251-003035B |
| 0.0625 | 1/16 | 0.125 | 2.500 | 0.625 | X/Long | 0.003 | 251-003060 | 251-003060B |
| | | | | 0.375 | Long | 0.003 | 251-003055 | 251-003055B |
| 0.0781 | 5/64 | 0.125 | 2.500 | 0.781 | X/Long | 0.003 | 251-003080 | 251-003080B |
| | | | | 0.468 | Long | 0.003 | 251-003075 | 251-003075B |
| 0.0938 | 3/32 | 0.125 | 2.500 | 0.938 | X/Long | 0.003 | 251-003100 | 251-003100B |
| | | | | 0.562 | Long | 0.003 | 251-003095 | 251-003095B |
| 0.1250 | 1/8 | 0.125 | 2.500 | 1.250 | X/Long | 0.003 | 251-003120 | 251-003120B |
| | | | | 0.750 | Long | 0.003 | 251-003115 | 251-003115B |

ATOMIC⁴



DIA TOLERANCE: $\pm 0.0005''$ LOC TOLERANCE: $+0.0000 / +0.0120''$ SHANK TOLERANCE: $+0.0000/-0.0003''$

| DIA | LOC | SHANK | OAL | LBS | LENGTH | CHAMFER | BRIGHT | ALTiN |
|--------|------|-------|-------|-----|---------|---------|------------|-------------|
| 0.0312 | 1/32 | 0.125 | 1.500 | — | Stub | 0.003 | 251-004005 | 251-004005B |
| | | | | | Regular | 0.003 | 251-004010 | 251-004010B |
| 0.0469 | 3/64 | 0.125 | 1.500 | — | Stub | 0.003 | 251-004025 | 251-004025B |
| | | | | | Regular | 0.003 | 251-004030 | 251-004030B |
| 0.0625 | 1/16 | 0.125 | 1.500 | — | Stub | 0.003 | 251-004045 | 251-004045B |
| | | | | | Regular | 0.003 | 251-004050 | 251-004050B |

| DIA | LOC | SHANK | OAL | LBS | LENGTH | CHAMFER | BRIGHT | ALTiN | |
|--------|------|-------|-------|-------|--------|---------|--------|------------|-------------|
| 0.0781 | 5/64 | 0.117 | 0.125 | 1.500 | — | Stub | 0.003 | 251-004065 | 251-004065B |
| | | 0.234 | 0.125 | 1.500 | — | Regular | 0.003 | 251-004070 | 251-004070B |
| 0.0938 | 3/32 | 0.140 | 0.125 | 1.500 | — | Stub | 0.003 | 251-004085 | 251-004085B |
| | | 0.279 | 0.125 | 1.500 | — | Regular | 0.003 | 251-004090 | 251-004090B |
| 0.1250 | 1/8 | 0.188 | 0.125 | 1.500 | — | Stub | 0.003 | 251-004105 | 251-004105B |
| | | 0.375 | 0.125 | 1.500 | — | Regular | 0.003 | 251-004110 | 251-004110B |
| 0.0312 | 1/32 | 0.062 | 0.125 | 2.500 | 0.312 | X/Long | 0.003 | 251-004020 | 251-004020B |
| | | | | | 0.187 | Long | 0.003 | 251-004015 | 251-004015B |
| 0.0469 | 3/64 | 0.094 | 0.125 | 2.500 | 0.470 | X/Long | 0.003 | 251-004040 | 251-004040B |
| | | | | | 0.282 | Long | 0.003 | 251-004035 | 251-004035B |
| 0.0625 | 1/16 | 0.094 | 0.125 | 2.500 | 0.625 | X/Long | 0.003 | 251-004060 | 251-004060B |
| | | | | | 0.375 | Long | 0.003 | 251-004055 | 251-004055B |
| 0.0781 | 5/64 | 0.156 | 0.125 | 2.500 | 0.781 | X/Long | 0.003 | 251-004080 | 251-004080B |
| | | | | | 0.468 | Long | 0.003 | 251-004075 | 251-004075B |
| 0.0938 | 3/32 | 0.186 | 0.125 | 2.500 | 0.938 | X/Long | 0.003 | 251-004100 | 251-004100B |
| | | | | | 0.562 | Long | 0.003 | 251-004095 | 251-004095B |
| 0.1250 | 1/8 | 0.250 | 0.125 | 2.500 | 1.250 | X/Long | 0.003 | 251-004120 | 251-004120B |
| | | | | | 0.750 | Long | 0.003 | 251-004115 | 251-004115B |

MILLING RECOMMENDATIONS

PROFILING



Surface Feet Per Minute (SFM)
Inches Per Tooth (IPT)

| Workpiece Material Group | Hardness | SFM | Inches Per Tooth (IPT) | | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----|------------------------|---------|---------|---------|---------|---------|---------|
| | | | Cutting Diameter | | | | | | |
| | | | 0.015 | 0.031 | 0.047 | 0.062 | 0.078 | 0.093 | 0.125 |
| Steels Free Machining & Low Carbon: 10XX, 11XX, 12XX 12LXX, ASTM A27 ASTM A36 Medium/High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX 51XX, 86XX, 93XX | ≤ 28 Rc | 400 | | | | | | | |
| | 28 - 38 Rc | 300 | 0.00007 | 0.00015 | 0.00023 | 0.00027 | 0.00034 | 0.00040 | 0.00054 |
| Tool & Die Steels A2, H13, L6, P20, S7 | 28 - 44 Rc | 200 | | | | | | | |
| | ≤ 28 Rc | 400 | | | | | | | |
| Stainless Steel Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303 304, 304L Incoloy 27-7MO, 316 316L, 321, 347 | ≤ 28 Rc | 200 | 0.00007 | 0.00015 | 0.00023 | 0.00027 | 0.00034 | 0.00040 | 0.00054 |
| | > 28 Rc | 150 | | | | | | | |
| Super Alloys High Temp, Nimonic, Inconel, Monel, Hastelloy Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al | ≤ 42 Rc | 70 | 0.00004 | 0.00008 | 0.00015 | 0.00023 | 0.00027 | 0.00034 | 0.00040 |
| | ≤ 42 Rc | 150 | | | | | | | |
| Hardened Materials Gray: SAE J431, ASTM A48 | 45-55 Rc | 100 | 0.00010 | 0.00030 | 0.00050 | 0.00140 | 0.00180 | 0.00210 | 0.00300 |
| | 160 - 200 HB | 400 | | | | | | | |
| Cast-Iron Ductile & Malleable, ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602 | 200 - 250 HB | 250 | 0.00007 | 0.00015 | 0.00023 | 0.00027 | 0.00034 | 0.00040 | 0.00054 |
| | | | | | | | | | |
| Non-Ferrous Aluminum, Brass, Bronze, Copper, Plastics, Graphite | | 100 | 0.00004 | 0.00008 | 0.00015 | 0.00023 | 0.00027 | 0.00034 | 0.00040 |

SLOTTING



Surface Feet Per Minute (SFM)
Inches Per Tooth (IPT)

| Workpiece Material Group | Hardness | SFM | Inches Per Tooth (IPT) | | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----|------------------------|--------|--------|--------|--------|--------|--------|
| | | | Cutting Diameter | | | | | | |
| | | | 0.015 | 0.031 | 0.047 | 0.062 | 0.078 | 0.093 | 0.125 |
| Steels Free Machining & Low Carbon: 10XX, 11XX, 12XX 12LXX, ASTM A27 ASTM A36 Medium/High Carbon Steels, Alloy Steels & Easy to Machine Tool: 13XX, 41XX, 43XX 51XX, 86XX, 93XX | ≤ 28 Rc | 400 | | | | | 0.0003 | 0.0004 | 0.0005 |
| | 28 - 38 Rc | 300 | 0.0001 | 0.0001 | 0.0002 | 0.0002 | 0.0003 | 0.0003 | 0.0004 |
| Tool & Die Steels A2, H13, L6, P20, S7 | 28 - 44 Rc | 200 | | | | | 0.0002 | 0.0003 | 0.0004 |
| | ≤ 28 Rc | 400 | | | 0.0002 | 0.0002 | 0.0003 | 0.0004 | 0.0005 |
| Stainless Steel Easy to Machine, 430F, 301, 303, 410, 416 Annealed, 420F, 430, 430F Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303 304, 304L Incoloy 27-7MO, 316 316L, 321, 347 | ≤ 28 Rc | 200 | 0.0001 | 0.0001 | 0.0002 | 0.0002 | 0.0003 | 0.0003 | 0.0004 |
| | > 28 Rc | 150 | | | 0.0001 | 0.0001 | 0.0002 | 0.0002 | 0.0003 |
| Super Alloys High Temp, Nimonic, Inconel, Monel, Hastelloy Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al | ≤ 42 Rc | 70 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0002 | 0.0002 | 0.0003 |
| | ≤ 42 Rc | 150 | | | | | | | |
| Hardened Materials Gray: SAE J431, ASTM A48 | 35 - 45 Rc | 100 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0002 | 0.0002 |
| | 160 - 200 HB | 400 | | | | | | 0.0004 | 0.0005 |
| Cast-Iron Ductile & Malleable, ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602 | 200 - 250 HB | 250 | 0.0001 | 0.0001 | 0.0002 | 0.0002 | 0.0003 | 0.0003 | 0.0004 |
| | | | | | | | | | |
| Non-Ferrous Aluminum, Brass, Bronze, Copper, Plastics, Graphite | | 750 | 0.0002 | 0.0003 | 0.0005 | 0.0006 | 0.0007 | 0.0008 | 0.0011 |