M.A. FORD
High Performance Cutting Tools

APG
ADVANCED PRODUCT GROUP

*Where **high performance** is the **standard**®*

NEW

# TuffCut® 3MV

## Micro Variable Helix

### Series 3MVS

### Series 3MVR

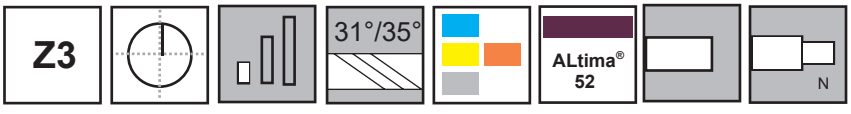
M.A. FORD
High Performance Cutting Tools
100th ANNIVERSARY
1919 - 2019

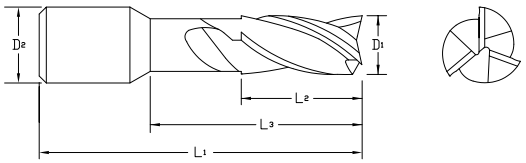
www.maford.com

# TuffCut® Series 3MVS

Designed for high performance micro milling on any ferrous material, especially material used in medical and aerospace manufacturing.

- Variable helix
- Stub length
- Square end
- Neck relief options
- ALtima® 52 coated
- Common shanks




| ALtima® 52 | | Diameter | | | Shank Diameter | | OAL | | Flute Length | | Neck Length | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | D1 | | | D2 | | L1 | | L2 | | L3 | |
| Tool Number | EDP | Fraction | mm | Decimal | Inch | mm | Inch | mm | Inch | mm | Inch | mm |
| 3MVS0156AH | 39000 | 1/64 | | .0156 | 1/8 | | 1-1/2 | | .023 | | | |
| 3MVS0156N5AH | 39002 | 1/64 | | .0156 | 1/8 | | 2-1/2 | | .023 | | .078 | |
| 3MVS0156N8AH | 39003 | 1/64 | | .0156 | 1/8 | | 2-1/2 | | .023 | | .125 | |
| 3MVSM0050AH | 39004 | | 0.5 | .0196 | | 4.0 | | 50 | | 0.75 | | |
| 3MVS0312AH | 39006 | 1/32 | | .0312 | 1/8 | | 1-1/2 | | .047 | | | |
| 3MVS0312N3AH | 39008 | 1/32 | | .0312 | 1/8 | | 1-1/2 | | .047 | | .093 | |
| 3MVS0312N5AH | 39009 | 1/32 | | .0312 | 1/8 | | 2-1/2 | | .047 | | .156 | |
| 3MVS0312N8AH | 39010 | 1/32 | | .0312 | 1/8 | | 2-1/2 | | .047 | | .250 | |
| 3MVS0312N10AH | 39011 | 1/32 | | .0312 | 1/8 | | 2-1/2 | | .047 | | .312 | |
| 3MVS0312N12AH | 39012 | 1/32 | | .0312 | 1/8 | | 2-1/2 | | .047 | | .375 | |
| 3MVS0312N15AH | 39013 | 1/32 | | .0312 | 1/8 | | 2-1/2 | | .047 | | .480 | |
| 3MVSM0100AH | 39014 | | 1.0 | .0394 | | 4.0 | | 50 | | 1.50 | | |
| 3MVSM0100N5AH | 39016 | | 1.0 | .0394 | | 4.0 | | 50 | | 1.50 | | 5 |
| 3MVSM0100N8AH | 39017 | | 1.0 | .0394 | | 4.0 | | 50 | | 1.50 | | 8 |
| 3MVS0468AH | 39018 | 3/64 | | .0468 | 1/8 | | 1-1/2 | | .070 | | | |
| 3MVS0468N5AH | 39020 | 3/64 | | .0468 | 1/8 | | 2-1/2 | | .070 | | .250 | |
| 3MVS0468N8AH | 39021 | 3/64 | | .0468 | 1/8 | | 2-1/2 | | .070 | | .375 | |
| 3MVS0468N10AH | 39022 | 3/64 | | .0468 | 1/8 | | 2-1/2 | | .070 | | .480 | |
| 3MVSM0150AH | 39023 | | 1.5 | .0591 | | 4.0 | | 50 | | 2.25 | | |
| 3MVS0625AH | 39025 | 1/16 | | .0625 | 1/8 | | 1-1/2 | | .094 | | | |
| 3MVS0625N3AH | 39027 | 1/16 | | .0625 | 1/8 | | 1-1/2 | | .094 | | .187 | |
| 3MVS0625N5AH | 39028 | 1/16 | | .0625 | 1/8 | | 2-1/2 | | .094 | | .312 | |
| 3MVS0625N8AH | 39029 | 1/16 | | .0625 | 1/8 | | 2-1/2 | | .094 | | .500 | |
| 3MVS0625N10AH | 39030 | 1/16 | | .0625 | 1/8 | | 2-1/2 | | .094 | | .625 | |
| 3MVS0625N12AH | 39031 | 1/16 | | .0625 | 1/8 | | 2-1/2 | | .094 | | .750 | |

| Inch | |
|---|---|
| D1 | Tolerance |
| .0156 - .1250 | +0/-.0008 |

| mm | |
|---|---|
| D1 | Tolerance |
| 0.5 - 3.0 | +0/-.020 |

| Inch | |
|---|---|
| D2 | Tolerance (h6) |
| .1250 | +0/-.00031 |

| mm | |
|---|---|
| D2 | Tolerance (h6) |
| 4.0 | +0/-.008 |

| ALtima® 52 | | Diameter | | | Shank Diameter | | OAL | | Flute Length | | Neck Length | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | D1 | | | D2 | | L1 | | L2 | | L3 | |
| Tool Number | EDP | Fraction | mm | Decimal | Inch | mm | Inch | mm | Inch | mm | Inch | mm |
| 3MVS0625N15AH | 39032 | 1/16 | | .0625 | 1/8 | | 2-1/2 | | .094 | | .950 | |
| 3MVS0781AH | 39033 | 5/64 | | .0781 | 1/8 | | 1-1/2 | | .117 | | | |
| 3MVS0781N5AH | 39035 | 5/64 | | .0781 | 1/8 | | 2-1/2 | | .117 | | .406 | |
| 3MVS0781N8AH | 39036 | 5/64 | | .0781 | 1/8 | | 2-1/2 | | .117 | | .625 | |
| 3MVS0781N10AH | 39037 | 5/64 | | .0781 | 1/8 | | 2-1/2 | | .117 | | .800 | |
| 3MVSM0200AH | 39038 | | 2.0 | .0787 | | 4.0 | | 50 | | 3.00 | | |
| 3MVSM0200N5AH | 39040 | | 2.0 | .0787 | | 4.0 | | 50 | | 3.00 | | 10 |
| 3MVSM0200N8AH | 39041 | | 2.0 | .0787 | | 4.0 | | 50 | | 3.00 | | 16 |
| 3MVS0938AH | 39042 | 3/32 | | .0938 | 1/8 | | 1-1/2 | | .141 | | | |
| 3MVS0938N3AH | 39044 | 3/32 | | .0938 | 1/8 | | 1-1/2 | | .141 | | .279 | |
| 3MVS0938N5AH | 39045 | 3/32 | | .0938 | 1/8 | | 2-1/2 | | .141 | | .500 | |
| 3MVS0938N8AH | 39046 | 3/32 | | .0938 | 1/8 | | 2-1/2 | | .141 | | .750 | |
| 3MVS0938N10AH | 39047 | 3/32 | | .0938 | 1/8 | | 2-1/2 | | .141 | | .950 | |
| 3MVS0938N12AH | 39048 | 3/32 | | .0938 | 1/8 | | 2-1/2 | | .141 | | 1.125 | |
| 3MVS0938N15AH | 39049 | 3/32 | | .0938 | 1/8 | | 2-1/2 | | .141 | | 1.400 | |
| 3MVSM0250AH | 39050 | | 2.5 | .0984 | | 4.0 | | 50 | | 3.75 | | |
| 3MVS1094AH | 39052 | 7/64 | | .1094 | 1/8 | | 1-1/2 | | .164 | | | |
| 3MVS1094N5AH | 39054 | 7/64 | | .1094 | 1/8 | | 2-1/2 | | .164 | | .570 | |
| 3MVS1094N8AH | 39055 | 7/64 | | .1094 | 1/8 | | 2-1/2 | | .164 | | .900 | |
| 3MVSM0300AH | 39056 | | 3.0 | .1181 | | 4.0 | | 50 | | 4.50 | | |
| 3MVSM0300N5AH | 39058 | | 3.0 | .1181 | | 4.0 | | 50 | | 4.50 | | 15 |
| 3MVSM0300N8AH | 39059 | | 3.0 | .1181 | | 4.0 | | 50 | | 4.50 | | 24 |
| 3MVS1250AH | 39060 | 1/8 | | .1250 | 1/8 | | 1-1/2 | | .188 | | | |
| 3MVS1250N3AH | 39062 | 1/8 | | .1250 | 1/8 | | 1-1/2 | | .188 | | .375 | |
| 3MVS1250N5AH | 39063 | 1/8 | | .1250 | 1/8 | | 2-1/2 | | .188 | | .625 | |
| 3MVS1250N8AH | 39064 | 1/8 | | .1250 | 1/8 | | 2-1/2 | | .188 | | 1.000 | |
| 3MVS1250N10AH | 39065 | 1/8 | | .1250 | 1/8 | | 2-1/2 | | .188 | | 1.250 | |

**Safety Note**

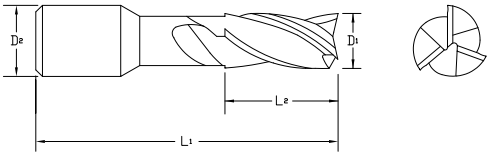
Always wear the appropriate personal protective equipment such as safety glasses and protective clothing when using solid carbide or HSS cutting tools. Machines should be fully guarded.

⚠**WARNING:** This product can expose you to chemicals including nickel, cobalt, and lead, which are known to the State of California to cause cancer, and chemicals including lead which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

# TuffCut® Series 3MVR

Designed for high performance micro milling on any ferrous material, especially material used in medical and aerospace manufacturing.


- Variable helix
- Standard length
- Square end
- ALtima® 52 coated
- Common shanks




| ALtima® 52 | | Diameter | | | Shank Diameter | | OAL | | Flute Length | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | D1 | | | D2 | | L1 | | L2 | |
| Tool Number | EDP | Fraction | mm | Decimal | Inch | mm | Inch | mm | Inch | mm |
| 3MVR0156AH | 39001 | 1/64 | | .0156 | 1/8 | | 1-1/2 | | .047 | |
| 3MVRM0050AH | 39005 | | 0.5 | .0196 | | 4.0 | | 50 | | 1.50 |
| 3MVR0312AH | 39007 | 1/32 | | .0312 | 1/8 | | 1-1/2 | | .094 | |
| 3MVRM0100AH | 39015 | | 1.0 | .0394 | | 4.0 | | 50 | | 3.00 |
| 3MVR0468AH | 39019 | 3/64 | | .0468 | 1/8 | | 1-1/2 | | .140 | |
| 3MVRM0150AH | 39024 | | 1.5 | .0591 | | 4.0 | | 50 | | 4.50 |
| 3MVR0625AH | 39026 | 1/16 | | .0625 | 1/8 | | 1-1/2 | | .188 | |
| 3MVR0781AH | 39034 | 5/64 | | .0781 | 1/8 | | 1-1/2 | | .234 | |
| 3MVRM0200AH | 39039 | | 2.0 | .0787 | | 4.0 | | 50 | | 6.00 |
| 3MVR0938AH | 39043 | 3/32 | | .0938 | 1/8 | | 1-1/2 | | .281 | |
| 3MVRM0250AH | 39051 | | 2.5 | .0984 | | 4.0 | | 50 | | 7.50 |
| 3MVR1094AH | 39053 | 7/64 | | .1094 | 1/8 | | 1-1/2 | | .328 | |
| 3MVRM0300AH | 39057 | | 3.0 | .1181 | | 4.0 | | 50 | | 9.00 |
| 3MVR1250AH | 39061 | 1/8 | | .1250 | 1/8 | | 1-1/2 | | .375 | |

| Inch | |
|---|---|
| D1 | Tolerance |
| .0156 - .1250 | +0/-.0008 |

| mm | |
|---|---|
| D1 | Tolerance |
| 0.5 - 3.0 | +0/-.020 |

| Inch | |
|---|---|
| D2 | Tolerance (h6) |
| .1250 | +0/-.00031 |

| mm | |
|---|---|
| D2 | Tolerance (h6) |
| 4.0 | +0/-.008 |

# Also Available General Purpose Micro End Mills:

## M.A. Ford® Series 111

- 4 Flute
- Center cutting
- Standard lengths
- Sizes from .0050" and 0.2mm
- Uncoated
- 30° helix, square end

## M.A. Ford® Series 121

- 2 Flute
- Center cutting
- Standard lengths
- Sizes from .0050" and 0.2mm
- Uncoated
- 30° helix, square end

## M.A. Ford® Series 164

- 2 Flute
- Center cutting
- Stub lengths
- Sizes from .0050" and 0.2mm
- Uncoated
- 30° helix, square end

## M.A. Ford® Series 163

- 4 Flute
- Center cutting
- Stub lengths
- Sizes from .0050" and 1.0mm
- Uncoated
- 30° helix, square end

## M.A. Ford® Series 150

- 2 Flute, Ball Nose
- Center cutting
- Standard lengths
- Sizes from .0150" and 0.4mm
- Uncoated
- 30° helix

# TuffCut®

## Recommended Cutting Data 3MVS/3MVR Series - Inch

| Workpiece Material Group | ISO | Hardness | Coolant • Preferred o Possible x Not Possible | | | vc - SFM | Application | End Mill Diameter (inch) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Max. | Air | MMS | | | .015 | .031 | .047 | .062 | .078 | .093 | .109 | .125 |
| | | | | | | | | fz - in/tooth | | | | | | | |
| Alloy Steels 4140, 4145 | P | 28 to 44 Rc | • | • | o | 275 | Slotting | .00005 | .00010 | .00015 | .00020 | .00025 | .00030 | .00035 | .00040 |
| | | | | | | | Roughing | .00017 | .00035 | .00053 | .00069 | .00087 | .00104 | .00122 | .00140 |
| | | | | | | | Finishing | .00032 | .00067 | .00102 | .00134 | .00168 | .00201 | .00235 | .00270 |
| Die / Tool Steels A2, D2, H13, P20 | P | 28 to 44 Rc | • | • | o | 225 | Slotting | .00005 | .00010 | .00015 | .00020 | .00025 | .00030 | .00035 | .00040 |
| | | | | | | | Roughing | .00017 | .00035 | .00053 | .00069 | .00087 | .00104 | .00122 | .00140 |
| | | | | | | | Finishing | .00032 | .00067 | .00102 | .00134 | .00168 | .00201 | .00235 | .00270 |
| Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430 | M | up to 28 Rc | • | X | o | 325 | Slotting | .00005 | .00010 | .00015 | .00020 | .00025 | .00030 | .00035 | .00040 |
| | | | | | | | Roughing | .00017 | .00035 | .00053 | .00069 | .00087 | .00104 | .00122 | .00140 |
| | | | | | | | Finishing | .00032 | .00067 | .00102 | .00134 | .00168 | .00201 | .00235 | .00270 |
| Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH | M | up to 28 Rc | • | X | o | 225 | Slotting | .00005 | .00010 | .00015 | .00020 | .00025 | .00030 | .00035 | .00040 |
| | | | | | | | Roughing | .00017 | .00035 | .00053 | .00069 | .00087 | .00104 | .00122 | .00140 |
| | | | | | | | Finishing | .00032 | .00067 | .00102 | .00134 | .00168 | .00201 | .00235 | .00270 |
| Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics | M | over 28 Rc | • | X | o | 200 | Slotting | .00005 | .00010 | .00015 | .00020 | .00025 | .00030 | .00035 | .00040 |
| | | | | | | | Roughing | .00017 | .00035 | .00053 | .00069 | .00087 | .00104 | .00122 | .00140 |
| | | | | | | | Finishing | .00032 | .00067 | .00102 | .00134 | .00168 | .00201 | .00235 | .00270 |
| High Temp Alloys Nimonics, Inconel, Monel, Hastelloy | S | up to 42 Rc | • | X | X | 95 | Slotting | .00004 | .00007 | .00011 | .00015 | .00019 | .00022 | .00026 | .00030 |
| | | | | | | | Roughing | .00004 | .00009 | .00014 | .00018 | .00023 | .00027 | .00032 | .00036 |
| | | | | | | | Finishing | .00008 | .00017 | .00026 | .00034 | .00043 | .00051 | .00060 | .00069 |
| Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al | S | up to 42 Rc | • | X | X | 180 | Slotting | .00004 | .00007 | .00011 | .00015 | .00019 | .00022 | .00026 | .00030 |
| | | | | | | | Roughing | .00004 | .00009 | .00014 | .00018 | .00023 | .00027 | .00032 | .00036 |
| | | | | | | | Finishing | .00008 | .00017 | .00026 | .00034 | .00043 | .00051 | .00060 | .00069 |
| Hardened Steels | H | 45 to 50 Rc | • | • | o | 200 | Slotting | .00004 | .00007 | .00011 | .00015 | .00019 | .00022 | .00026 | .00030 |
| | | | | | | | Roughing | .00009 | .00018 | .00027 | .00036 | .00045 | .00054 | .00063 | .00072 |
| | | | | | | | Finishing | .00017 | .00034 | .00052 | .00068 | .00086 | .00102 | .00120 | .00138 |
| Hardened Steels | H | 50 to 55 Rc | • | • | o | 180 | Slotting | .00001 | .00002 | .00004 | .00005 | .00006 | .00007 | .00009 | .00010 |
| | | | | | | | Roughing | .00004 | .00009 | .00014 | .00018 | .00023 | .00027 | .00032 | .00036 |
| | | | | | | | Finishing | .00008 | .00017 | .00026 | .00034 | .00043 | .00051 | .00060 | .00069 |
| Hardened Steels | H | > 55 Rc | • | • | o | 150 | Slotting | .00001 | .00002 | .00004 | .00005 | .00006 | .00007 | .00009 | .00010 |
| | | | | | | | Roughing | .00004 | .00009 | .00014 | .00018 | .00023 | .00027 | .00032 | .00036 |
| | | | | | | | Finishing | .00008 | .00017 | .00026 | .00034 | .00043 | .00051 | .00060 | .00069 |

**Depth of Cut Per Application - 1.5x, 3x, & 5x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .25 x Dia. |
| Roughing | .25 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

**Depth of Cut Per Application - 8x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .2 x Dia. |
| Roughing | .2 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

**Depth of Cut Per Application - 10x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .15 x Dia. |
| Roughing | .15 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

**Depth of Cut Per Application - 12x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .12 x Dia. |
| Roughing | .1 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

**Depth of Cut Per Application - 15x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .07 x Dia. |
| Roughing | .1 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula: (Calculated Feed x Spindle Maximum)/Calculated Speed.

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

# Recommended Cutting Data 3MVS/3MVR Series - Metric

| Workpiece Material Group | ISO | Hardness | Coolant • Preferred o Possible x Not Possible | | | vc-m/min | Application | End Mill Diameter (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Max. | Air | MMS | | | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3 |
| | | | | | | | | fz - mm/tooth | | | | | |
| Alloy Steels 4140, 4145 | P | 28 to 44 Rc | • | • | o | 85 | Slotting | .002 | .003 | .005 | .006 | .008 | .010 |
| | | | | | | | Roughing | .006 | .011 | .017 | .022 | .028 | .034 |
| | | | | | | | Finishing | .011 | .022 | .032 | .043 | .054 | .065 |
| Die / Tool Steels A2, D2, H13, P20 | P | 28 to 44 Rc | • | • | o | 70 | Slotting | .002 | .003 | .005 | .006 | .008 | .010 |
| | | | | | | | Roughing | .006 | .011 | .017 | .022 | .028 | .034 |
| | | | | | | | Finishing | .011 | .022 | .032 | .043 | .054 | .065 |
| Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430 | M | up to 28 Rc | • | X | o | 100 | Slotting | .002 | .003 | .005 | .006 | .008 | .010 |
| | | | | | | | Roughing | .006 | .011 | .017 | .022 | .028 | .034 |
| | | | | | | | Finishing | .011 | .022 | .032 | .043 | .054 | .065 |
| Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH | M | up to 28 Rc | • | X | o | 70 | Slotting | .002 | .003 | .005 | .006 | .008 | .010 |
| | | | | | | | Roughing | .006 | .011 | .017 | .022 | .028 | .034 |
| | | | | | | | Finishing | .011 | .022 | .032 | .043 | .054 | .065 |
| Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics | M | over 28 Rc | • | X | o | 60 | Slotting | .002 | .003 | .005 | .006 | .008 | .010 |
| | | | | | | | Roughing | .006 | .011 | .017 | .022 | .028 | .034 |
| | | | | | | | Finishing | .011 | .022 | .032 | .043 | .054 | .065 |
| High Temp Alloys Nimonics, Inconel, Monel, Hastelloy | S | up to 42 Rc | • | X | X | 30 | Slotting | .001 | .002 | .004 | .005 | .006 | .007 |
| | | | | | | | Roughing | .001 | .003 | .004 | .006 | .007 | .009 |
| | | | | | | | Finishing | .003 | .006 | .008 | .011 | .014 | .017 |
| Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al | S | up to 42 Rc | • | X | X | 55 | Slotting | .001 | .002 | .004 | .005 | .006 | .007 |
| | | | | | | | Roughing | .001 | .003 | .004 | .006 | .007 | .009 |
| | | | | | | | Finishing | .003 | .006 | .008 | .011 | .014 | .017 |
| Hardened Steels | H | 45 to 50 Rc | • | • | o | 60 | Slotting | .001 | .002 | .004 | .005 | .006 | .007 |
| | | | | | | | Roughing | .003 | .006 | .009 | .012 | .014 | .017 |
| | | | | | | | Finishing | .006 | .011 | .017 | .022 | .028 | .033 |
| Hardened Steels | H | 50 to 55 Rc | • | • | o | 55 | Slotting | .0004 | .001 | .001 | .002 | .002 | .002 |
| | | | | | | | Roughing | .001 | .003 | .004 | .006 | .007 | .009 |
| | | | | | | | Finishing | .003 | .006 | .008 | .011 | .014 | .017 |
| Hardened Steels | H | > 55 Rc | • | • | o | 45 | Slotting | .0004 | .001 | .001 | .002 | .002 | .002 |
| | | | | | | | Roughing | .001 | .003 | .004 | .006 | .007 | .009 |
| | | | | | | | Finishing | .003 | .006 | .008 | .011 | .014 | .017 |

**Depth of Cut Per Application - 1.5x, 3x, & 5x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .25 x Dia. |
| Roughing | .25 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

**Depth of Cut Per Application - 8x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .2 x Dia. |
| Roughing | .2 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

**Depth of Cut Per Application - 10x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .15 x Dia. |
| Roughing | .15 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

**Depth of Cut Per Application - 12x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .12 x Dia. |
| Roughing | .1 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

**Depth of Cut Per Application - 15x Reach Tools**

| Application | Depth of Cut | |
|---|---|---|
| | Radial | Axial |
| Slotting | 1 x Dia. | .07 x Dia. |
| Roughing | .1 x Dia. | .5 - 1 x Dia. |
| Finishing | .05 x Dia. | .5 - 1 x Dia. |

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula: (Calculated Feed x Spindle Maximum)/Calculated Speed.

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

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