



Where **high performance** is the **standard**<sup>®</sup>

**NOW WITH CORNER  
RADII OPTIONS!**



## **TuffCut<sup>®</sup> 3MV**

**Micro Variable Helix**

**Series 3MVS**

**Series 3MVR**

[www.maford.com](http://www.maford.com)

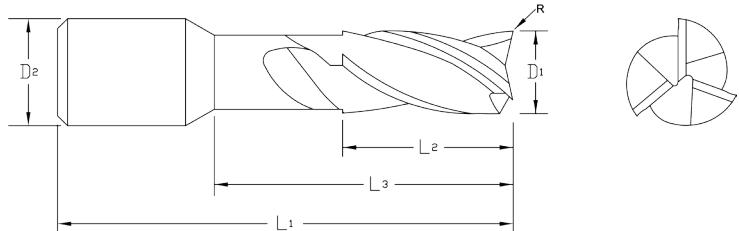


# TuffCut® Series 3MVS

Designed for high performance micro milling in stainless steels and exotic alloys used in medical and aerospace manufacturing.



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



| ALtima® 52        |       | Diameter |      |         | Shank Diameter |    | OAL   |    | Flute Length |      | Neck Length |     | Corner Radius |     |
|-------------------|-------|----------|------|---------|----------------|----|-------|----|--------------|------|-------------|-----|---------------|-----|
|                   |       | D1       |      |         | D2             |    | L1    |    | L2           |      | L3          |     | R             |     |
| Tool Number       | EDP   | Fraction | mm   | Decimal | Inch           | mm | Inch  | mm | Inch         | mm   | Inch        | mm  | Inch          | mm  |
| 3MVS0156AH        | 39000 | 1/64     |      | .0156   | 1/8            |    | 1-1/2 |    | 0.023        |      |             |     |               |     |
| 3MVS0156N5AH      | 39002 | 1/64     |      | .0156   | 1/8            |    | 2-1/2 |    | 0.023        |      | 0.078       |     |               |     |
| 3MVS0156N8AH      | 39003 | 1/64     |      | .0156   | 1/8            |    | 2-1/2 |    | 0.023        |      | 0.125       |     |               |     |
| 3MVS0156R.003AH   | 39066 | 1/64     |      | .0156   | 1/8            |    | 1-1/2 |    | 0.023        |      |             |     | .003          |     |
| 3MVS0156R.003N5AH | 39068 | 1/64     |      | .0156   | 1/8            |    | 2-1/2 |    | 0.023        |      | 0.078       |     | .003          |     |
| 3MVS0156R.003N8AH | 39069 | 1/64     |      | .0156   | 1/8            |    | 2-1/2 |    | 0.023        |      | 0.125       |     | .003          |     |
| 3MVS0050AH        | 39004 |          | 0.50 | .0196   |                | 4  |       | 50 |              | 0.75 |             |     |               |     |
| 3MVS0050R.10AH    | 39070 |          | 0.50 | .0196   |                | 4  |       | 50 |              | 0.75 |             |     |               | .10 |
| 3MVS0050R.10N5AH  | 39072 |          | 0.50 | .0196   |                | 4  |       | 50 |              | 0.75 |             | 2.5 |               | .10 |
| 3MVS0050R.10N8AH  | 39073 |          | 0.50 | .0196   |                | 4  |       | 50 |              | 0.75 |             | 4.0 |               | .10 |
| 3MVS0312AH        | 39006 | 1/32     |      | .0312   | 1/8            |    | 1-1/2 |    | 0.047        |      |             |     |               |     |
| 3MVS0312N10AH     | 39011 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.312       |     |               |     |
| 3MVS0312N12AH     | 39012 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.375       |     |               |     |
| 3MVS0312N15AH     | 39013 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.480       |     |               |     |
| 3MVS0312N3AH      | 39008 | 1/32     |      | .0312   | 1/8            |    | 1-1/2 |    | 0.047        |      | 0.093       |     |               |     |
| 3MVS0312N5AH      | 39009 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.156       |     |               |     |
| 3MVS0312N8AH      | 39010 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.250       |     |               |     |
| 3MVS0312R.005AH   | 39074 | 1/32     |      | .0312   | 1/8            |    | 1-1/2 |    | 0.047        |      |             |     | .005          |     |
| 3MVS0312R.005N5AH | 39076 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.156       |     | .005          |     |
| 3MVS0312R.005N8AH | 39077 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.250       |     | .005          |     |
| 3MVS0312R.010AH   | 39078 | 1/32     |      | .0312   | 1/8            |    | 1-1/2 |    | 0.047        |      |             |     | .010          |     |
| 3MVS0312R.010N5AH | 39080 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.156       |     | .010          |     |
| 3MVS0312R.010N8AH | 39081 | 1/32     |      | .0312   | 1/8            |    | 2-1/2 |    | 0.047        |      | 0.250       |     | .010          |     |

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

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

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

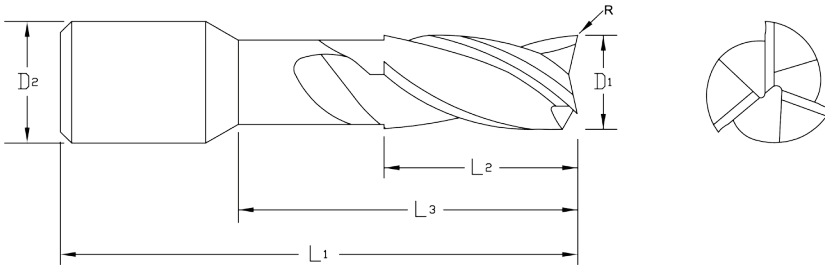
| mm  |                |  |
|-----|----------------|--|
| D2  | Tolerance (h6) |  |
| 4.0 | +0/--.008      |  |

**⚠ 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](http://www.P65Warnings.ca.gov).

| ALtima® 52        |       | Diameter |      |         | Shank Diameter |    | OAL   |    | Flute Length |      | Neck Length |     | Corner Radius |      |
|-------------------|-------|----------|------|---------|----------------|----|-------|----|--------------|------|-------------|-----|---------------|------|
|                   |       | D1       |      |         | D2             |    | L1    |    | L2           |      | L3          |     | R             |      |
| Tool Number       | EDP   | Fraction | mm   | Decimal | Inch           | mm | Inch  | mm | Inch         | mm   | Inch        | mm  | Inch          | mm   |
| 3MVSM0100AH       | 39014 |          | 1.00 | .0394   |                | 4  |       | 50 |              | 1.50 |             |     |               |      |
| 3MVSM0100N5AH     | 39016 |          | 1.00 | .0394   |                | 4  |       | 50 |              | 1.50 |             | 5   |               |      |
| 3MVSM0100N8AH     | 39017 |          | 1.00 | .0394   |                | 4  |       | 50 |              | 1.50 |             | 8   |               |      |
| 3MVSM0100R.10AH   | 39082 |          | 1.00 | .0394   |                | 4  |       | 50 |              | 1.50 |             |     |               | .10  |
| 3MVSM0100R.10N5AH | 39084 |          | 1.00 | .0394   |                | 4  |       | 50 |              | 1.50 |             | 5   |               | .10  |
| 3MVSM0100R.10N8AH | 39085 |          | 1.00 | .0394   |                | 4  |       | 50 |              | 1.50 |             | 8   |               | .10  |
| 3MVS0468AH        | 39018 | 3/64     |      | .0468   | 1/8            |    | 1-1/2 |    | 0.070        |      |             |     |               |      |
| 3MVS0468N10AH     | 39022 | 3/64     |      | .0468   | 1/8            |    | 2-1/2 |    | 0.070        |      | 0.480       |     |               |      |
| 3MVS0468N5AH      | 39020 | 3/64     |      | .0468   | 1/8            |    | 2-1/2 |    | 0.070        |      | 0.250       |     |               |      |
| 3MVS0468N8AH      | 39021 | 3/64     |      | .0468   | 1/8            |    | 2-1/2 |    | 0.070        |      | 0.375       |     |               |      |
| 3MVS0468R.005AH   | 39086 | 3/64     |      | .0468   | 1/8            |    | 1-1/2 |    | 0.070        |      |             |     |               | .005 |
| 3MVS0468R.005N5AH | 39088 | 3/64     |      | .0468   | 1/8            |    | 2-1/2 |    | 0.070        |      | 0.250       |     |               | .005 |
| 3MVS0468R.005N8AH | 39089 | 3/64     |      | .0468   | 1/8            |    | 2-1/2 |    | 0.070        |      | 0.375       |     |               | .005 |
| 3MVS0468R.010AH   | 39090 | 3/64     |      | .0468   | 1/8            |    | 1-1/2 |    | 0.070        |      |             |     |               | .010 |
| 3MVS0468R.010N5AH | 39092 | 3/64     |      | .0468   | 1/8            |    | 2-1/2 |    | 0.070        |      | 0.250       |     |               | .010 |
| 3MVS0468R.010N8AH | 39093 | 3/64     |      | .0468   | 1/8            |    | 2-1/2 |    | 0.070        |      | 0.375       |     |               | .010 |
| 3MVSM0150AH       | 39023 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 2.25 |             |     |               |      |
| 3MVSM0150R.20AH   | 39094 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 2.25 |             |     |               | .20  |
| 3MVSM0150R.20N5AH | 39096 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 2.25 |             | 7.5 |               | .20  |
| 3MVSM0150R.20N8AH | 39097 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 2.25 |             | 12  |               | .20  |
| 3MVSM0150R.50AH   | 39162 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 2.25 |             |     |               | .50  |
| 3MVSM0150R.50N6AH | 39163 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 2.25 |             | 10  |               | .50  |
| 3MVSM0150R.50N8AH | 39164 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 2.25 |             | 12  |               | .50  |
| 3MVS0625AH        | 39025 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.094        |      |             |     |               |      |
| 3MVS0625N10AH     | 39030 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.625       |     |               |      |
| 3MVS0625N12AH     | 39031 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.750       |     |               |      |
| 3MVS0625N15AH     | 39032 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.950       |     |               |      |
| 3MVS0625N3AH      | 39027 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.094        |      | 0.187       |     |               |      |
| 3MVS0625N5AH      | 39028 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.312       |     |               |      |
| 3MVS0625N8AH      | 39029 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.500       |     |               |      |
| 3MVS0625R.005AH   | 39098 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.094        |      |             |     |               | .005 |
| 3MVS0625R.005N5AH | 39100 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.312       |     |               | .005 |
| 3MVS0625R.005N8AH | 39101 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.500       |     |               | .005 |
| 3MVS0625R.010AH   | 39102 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.094        |      |             |     |               | .010 |
| 3MVS0625R.010N5AH | 39104 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.312       |     |               | .010 |
| 3MVS0625R.010N8AH | 39105 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.500       |     |               | .010 |
| 3MVS0625R.015AH   | 39106 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.094        |      |             |     |               | .015 |
| 3MVS0625R.015N5AH | 39108 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.312       |     |               | .015 |
| 3MVS0625R.015N8AH | 39109 | 1/16     |      | .0625   | 1/8            |    | 2-1/2 |    | 0.094        |      | 0.500       |     |               | .015 |
| 3MVS0781AH        | 39033 | 5/64     |      | .0781   | 1/8            |    | 1-1/2 |    | 0.117        |      |             |     |               |      |
| 3MVS0781N10AH     | 39037 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.800       |     |               |      |



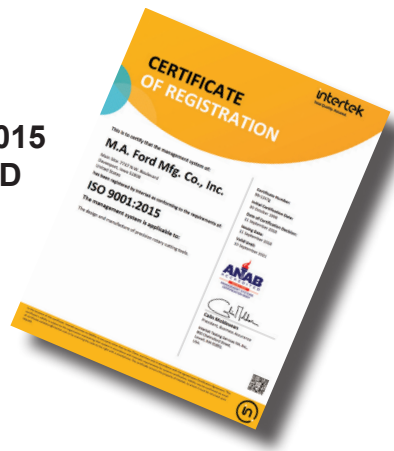
# TuffCut® Series 3MVS Continued



| ALtima® 52        |       | Diameter |      |         | Shank Diameter |    | OAL   |    | Flute Length |      | Neck Length |    | Corner Radius |     |
|-------------------|-------|----------|------|---------|----------------|----|-------|----|--------------|------|-------------|----|---------------|-----|
| Tool Number       | EDP   | Fraction | mm   | Decimal | Inch           | mm | Inch  | mm | Inch         | mm   | Inch        | mm | Inch          | mm  |
| 3MVS0781N5AH      | 39035 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.406       |    |               |     |
| 3MVS0781N8AH      | 39036 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.625       |    |               |     |
| 3MVS0781R.005AH   | 39110 | 5/64     |      | .0781   | 1/8            |    | 1-1/2 |    | 0.117        |      |             |    | .005          |     |
| 3MVS0781R.005N5AH | 39112 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.406       |    | .005          |     |
| 3MVS0781R.005N8AH | 39113 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.625       |    | .005          |     |
| 3MVS0781R.010AH   | 39114 | 5/64     |      | .0781   | 1/8            |    | 1-1/2 |    | 0.117        |      |             |    | .010          |     |
| 3MVS0781R.010N5AH | 39116 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.406       |    | .010          |     |
| 3MVS0781R.010N8AH | 39117 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.625       |    | .010          |     |
| 3MVS0781R.015AH   | 39118 | 5/64     |      | .0781   | 1/8            |    | 1-1/2 |    | 0.117        |      |             |    | .015          |     |
| 3MVS0781R.015N5AH | 39120 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.406       |    | .015          |     |
| 3MVS0781R.015N8AH | 39121 | 5/64     |      | .0781   | 1/8            |    | 2-1/2 |    | 0.117        |      | 0.625       |    | .015          |     |
| 3MVSM0200AH       | 39038 |          | 2.00 | .0787   |                | 4  |       | 50 |              | 3.00 |             |    |               |     |
| 3MVSM0200N5AH     | 39040 |          | 2.00 | .0787   |                | 4  |       | 50 |              | 3.00 |             | 10 |               |     |
| 3MVSM0200N8AH     | 39041 |          | 2.00 | .0787   |                | 4  |       | 50 |              | 3.00 |             | 16 |               |     |
| 3MVSM0200R.20AH   | 39122 |          | 2.00 | .0787   |                | 4  |       | 50 |              | 3.00 |             |    |               | .20 |
| 3MVSM0200R.20N5AH | 39124 |          | 2.00 | .0787   |                | 4  |       | 50 |              | 3.00 |             | 10 |               | .20 |
| 3MVSM0200R.20N8AH | 39125 |          | 2.00 | .0787   |                | 4  |       | 50 |              | 3.00 |             | 16 |               | .20 |
| 3MVS0938AH        | 39042 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .141         |      |             |    |               |     |
| 3MVS0938N10AH     | 39047 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.950       |    |               |     |
| 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       |    |               |     |
| 3MVS0938N3AH      | 39044 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .141         |      | 0.279       |    |               |     |
| 3MVS0938N5AH      | 39045 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.500       |    |               |     |
| 3MVS0938N8AH      | 39046 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.750       |    |               |     |
| 3MVS0938R.005AH   | 39126 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .141         |      |             |    | .005          |     |
| 3MVS0938R.005N5AH | 39128 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.500       |    | .005          |     |
| 3MVS0938R.005N8AH | 39129 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.750       |    | .005          |     |
| 3MVS0938R.010AH   | 39130 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .141         |      |             |    | .010          |     |
| 3MVS0938R.010N5AH | 39132 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.500       |    | .010          |     |
| 3MVS0938R.010N8AH | 39133 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.750       |    | .010          |     |
| 3MVS0938R.015AH   | 39134 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .141         |      |             |    | .015          |     |
| 3MVS0938R.015N5AH | 39136 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.500       |    | .015          |     |
| 3MVS0938R.015N8AH | 39137 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.750       |    | .015          |     |
| 3MVS0938R.020AH   | 39138 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .141         |      |             |    | .020          |     |

| ALtima® 52        |       | Diameter |      |         | Shank Diameter |    | OAL   |    | Flute Length |      | Neck Length |    | Corner Radius |     |
|-------------------|-------|----------|------|---------|----------------|----|-------|----|--------------|------|-------------|----|---------------|-----|
| Tool Number       | EDP   | D1       |      |         | D2             |    | L1    |    | L2           |      | L3          |    | R             |     |
|                   |       | Fraction | mm   | Decimal | Inch           | mm | Inch  | mm | Inch         | mm   | Inch        | mm | Inch          | mm  |
| 3MVS0938R.020N5AH | 39140 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.500       |    | .020          |     |
| 3MVS0938R.020N8AH | 39141 | 3/32     |      | .0938   | 1/8            |    | 2-1/2 |    | .141         |      | 0.750       |    | .020          |     |
| 3MVSM0250AH       | 39050 |          | 2.50 | .0984   |                | 4  |       | 50 |              | 3.75 |             |    |               |     |
| 3MVS1094AH        | 39052 | 7/64     |      | .1094   | 1/8            |    | 1-1/2 |    | 0.164        |      |             |    |               |     |
| 3MVS1094N5AH      | 39054 | 7/64     |      | .1094   | 1/8            |    | 2-1/2 |    | 0.164        |      | 0.570       |    |               |     |
| 3MVS1094N8AH      | 39055 | 7/64     |      | .1094   | 1/8            |    | 2-1/2 |    | 0.164        |      | 0.900       |    |               |     |
| 3MVSM0300AH       | 39056 |          | 3.00 | .1181   |                | 4  |       | 50 |              | 4.50 |             |    |               |     |
| 3MVSM0300N5AH     | 39058 |          | 3.00 | .1181   |                | 4  |       | 50 |              | 4.50 |             | 15 |               |     |
| 3MVSM0300N8AH     | 39059 |          | 3.00 | .1181   |                | 4  |       | 50 |              | 4.50 |             | 24 |               |     |
| 3MVSM0300R.20AH   | 39142 |          | 3.00 | .1181   |                | 4  |       | 50 |              | 4.50 |             |    |               | .20 |
| 3MVSM0300R.20N5AH | 39144 |          | 3.00 | .1181   |                | 4  |       | 50 |              | 4.50 |             | 15 |               | .20 |
| 3MVSM0300R.20N8AH | 39145 |          | 3.00 | .1181   |                | 4  |       | 50 |              | 4.50 |             | 24 |               | .20 |
| 3MVS1250AH        | 39060 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.188        |      |             |    |               |     |
| 3MVS1250N10AH     | 39065 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 1.250       |    |               |     |
| 3MVS1250N3AH      | 39062 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.188        |      | 0.375       |    |               |     |
| 3MVS1250N5AH      | 39063 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 0.625       |    |               |     |
| 3MVS1250N8AH      | 39064 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 1.000       |    |               |     |
| 3MVS1250R.005AH   | 39146 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.188        |      |             |    | .005          |     |
| 3MVS1250R.005N5AH | 39148 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 0.625       |    | .005          |     |
| 3MVS1250R.005N8AH | 39149 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 1.000       |    | .005          |     |
| 3MVS1250R.010AH   | 39150 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.188        |      |             |    | .010          |     |
| 3MVS1250R.010N5AH | 39152 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 0.625       |    | .010          |     |
| 3MVS1250R.010N8AH | 39153 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 1.000       |    | .010          |     |
| 3MVS1250R.015AH   | 39154 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.188        |      |             |    | .015          |     |
| 3MVS1250R.015N5AH | 39156 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 0.625       |    | .015          |     |
| 3MVS1250R.015N8AH | 39157 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 1.000       |    | .015          |     |
| 3MVS1250R.020AH   | 39158 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.188        |      |             |    | .020          |     |
| 3MVS1250R.020N5AH | 39160 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 0.625       |    | .020          |     |
| 3MVS1250R.020N8AH | 39161 | 1/8      |      | .1250   | 1/8            |    | 2-1/2 |    | 0.188        |      | 1.000       |    | .020          |     |

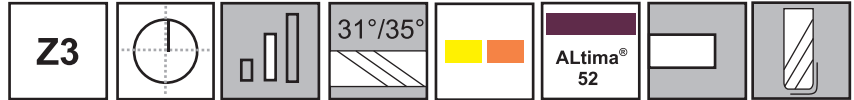
**ISO 9001:2015  
CERTIFIED**



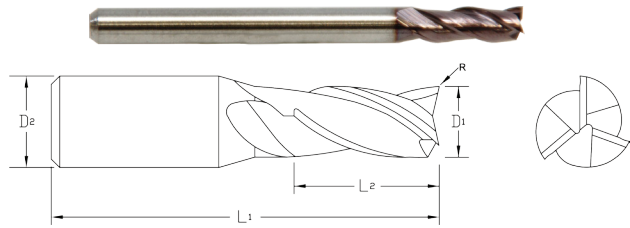


# TuffCut® Series 3MVR

Designed for high performance micro milling in stainless steels and exotic alloys used in medical and aerospace manufacturing.



- Variable helix
- Standard length
- Square end and corner radii options
- ALtima® 52 coated
- Common shanks



| ALtima® 52      |       | Diameter |      |         | Shank Diameter |    | OAL   |    | Flute Length |      | Corner Radius |     |
|-----------------|-------|----------|------|---------|----------------|----|-------|----|--------------|------|---------------|-----|
| Tool Number     | EDP   | D1       |      |         | D2             |    | L1    |    | L2           |      | R             |     |
|                 |       | Fraction | mm   | Decimal | Inch           | mm | Inch  | mm | Inch         | mm   | Inch          | mm  |
| 3MVR0156AH      | 39001 | 1/64     |      | .0156   | 1/8            |    | 1-1/2 |    | 0.047        |      |               |     |
| 3MVR0156R.003AH | 39067 | 1/64     |      | .0156   | 1/8            |    | 1-1/2 |    | 0.047        |      | .003          |     |
| 3MVRM0050AH     | 39005 |          | 0.50 | .0196   |                | 4  |       | 50 |              | 1.50 |               |     |
| 3MVRM0050R.10AH | 39071 |          | 0.50 | .0196   |                | 4  |       | 50 |              | 1.50 |               | .10 |
| 3MVR0312AH      | 39007 | 1/32     |      | .0312   | 1/8            |    | 1-1/2 |    | 0.094        |      |               |     |
| 3MVR0312R.005AH | 39075 | 1/32     |      | .0312   | 1/8            |    | 1-1/2 |    | 0.094        |      | .005          |     |
| 3MVR0312R.010AH | 39079 | 1/32     |      | .0312   | 1/8            |    | 1-1/2 |    | 0.094        |      | .010          |     |
| 3MVRM0100AH     | 39015 |          | 1.00 | .0394   |                | 4  |       | 50 |              | 3.00 |               |     |
| 3MVRM0100R.10AH | 39083 |          | 1.00 | .0394   |                | 4  |       | 50 |              | 3.00 |               | .10 |
| 3MVR0468AH      | 39019 | 3/64     |      | .0468   | 1/8            |    | 1-1/2 |    | 0.140        |      |               |     |
| 3MVR0468R.005AH | 39087 | 3/64     |      | .0468   | 1/8            |    | 1-1/2 |    | 0.140        |      | .005          |     |
| 3MVR0468R.010AH | 39091 | 3/64     |      | .0468   | 1/8            |    | 1-1/2 |    | 0.140        |      | .010          |     |
| 3MVRM0150AH     | 39024 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 4.50 |               |     |
| 3MVRM0150R.20AH | 39095 |          | 1.50 | .0591   |                | 4  |       | 50 |              | 4.50 |               | .20 |
| 3MVR0625AH      | 39026 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.188        |      |               |     |
| 3MVR0625R.005AH | 39099 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.188        |      | .005          |     |
| 3MVR0625R.010AH | 39103 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.188        |      | .010          |     |
| 3MVR0625R.015AH | 39107 | 1/16     |      | .0625   | 1/8            |    | 1-1/2 |    | 0.188        |      | .015          |     |
| 3MVR0781AH      | 39034 | 5/64     |      | .0781   | 1/8            |    | 1-1/2 |    | 0.234        |      |               |     |
| 3MVR0781R.005AH | 39111 | 5/64     |      | .0781   | 1/8            |    | 1-1/2 |    | 0.234        |      | .005          |     |
| 3MVR0781R.010AH | 39115 | 5/64     |      | .0781   | 1/8            |    | 1-1/2 |    | 0.234        |      | .010          |     |
| 3MVR0781R.015AH | 39119 | 5/64     |      | .0781   | 1/8            |    | 1-1/2 |    | 0.234        |      | .015          |     |
| 3MVRM0200AH     | 39039 |          | 2.00 | .0787   |                | 4  |       | 50 |              | 6.00 |               |     |
| 3MVRM0200R.20AH | 39123 |          | 2.00 | .0787   |                | 4  |       | 50 |              | 6.00 |               | .20 |
| 3MVR0938AH      | 39043 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .281         |      |               |     |
| 3MVR0938R.005AH | 39127 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .281         |      | .005          |     |
| 3MVR0938R.010AH | 39131 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .281         |      | .010          |     |
| 3MVR0938R.015AH | 39135 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .281         |      | .015          |     |
| 3MVR0938R.020AH | 39139 | 3/32     |      | .0938   | 1/8            |    | 1-1/2 |    | .281         |      | .020          |     |
| 3MVRM0250AH     | 39051 |          | 2.50 | .0984   |                | 4  |       | 50 |              | 7.50 |               |     |
| 3MVR1094AH      | 39053 | 7/64     |      | .1094   | 1/8            |    | 1-1/2 |    | 0.328        |      |               |     |
| 3MVRM0300AH     | 39057 |          | 3.00 | .1181   |                | 4  |       | 50 |              | 9.00 |               |     |
| 3MVRM0300R.20AH | 39143 |          | 3.00 | .1181   |                | 4  |       | 50 |              | 9.00 |               | .20 |
| 3MVR1250AH      | 39061 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.375        |      |               |     |
| 3MVR1250R.005AH | 39147 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.375        |      | .005          |     |
| 3MVR1250R.010AH | 39151 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.375        |      | .010          |     |
| 3MVR1250R.015AH | 39155 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.375        |      | .015          |     |
| 3MVR1250R.020AH | 39159 | 1/8      |      | .1250   | 1/8            |    | 1-1/2 |    | 0.375        |      | .020          |     |

| 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      |



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

**Note: Square corner tools recommended for finishing applications only.**

| Stub Length - 3MVS Series                |     |   |     |     |             |                              |            |          |                                  |        |        |        |        |        |        |        |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | vc - SFM | End Mill Diameter (inch)         |        |        |        |        |        |        |        |
|  |     | ● Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | .015                             | .031   | .047   | .062   | .078   | .093   | .109   | .125   |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - in/tooth by Cutter Diameter |        |        |        |        |        |        |        |
| Moderate Machining & PH Stainless Steels | M   | ●   | X   | ○   | Slotting    | -                            | .5 x D     | 245      | .00004                           | .00007 | .00011 | .00015 | .00019 | .00022 | .00026 | .00030 |
|  |     |   |     |     | Profiling   | .2 x D                       | 1 x D      | 490      | .00010                           | .00020 | .00031 | .00041 | .00051 | .00061 | .00072 | .00083 |
| High Temp Alloys                         | S   | ●   | X   | X   | Slotting    | -                            | .5 x D     | 100      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
|  |     |   |     |     | Profiling   | .1 x D                       | 1 x D      | 150      | .00008                           | .00017 | .00026 | .00035 | .00044 | .00052 | .00061 | .00070 |
| Titanium Alloys                          | S   | ●   | X   | X   | Slotting    | -                            | .5 x D     | 245      | .00004                           | .00007 | .00011 | .00015 | .00019 | .00022 | .00026 | .00030 |
|  |     |   |     |     | Profiling   | .2 x D                       | 1 x D      | 350      | .00006                           | .00012 | .00019 | .00025 | .00031 | .00037 | .00044 | .00050 |

| Regular Length - 3MVR Series             |     |   |     |     |             |                              |            |          |                                  |        |        |        |        |        |        |        |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | vc - SFM | End Mill Diameter (inch)         |        |        |        |        |        |        |        |
|  |     | ● Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | .015                             | .031   | .047   | .062   | .078   | .093   | .109   | .125   |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - in/tooth by Cutter Diameter |        |        |        |        |        |        |        |
| Moderate Machining & PH Stainless Steels | M   | ●   | X   | ○   | Slotting    | -                            | .5 x D     | 245      | .00004                           | .00007 | .00011 | .00015 | .00019 | .00022 | .00026 | .00030 |
|  |     |   |     |     | Profiling   | .1 x D                       | 2-2.5 x D  | 490      | .00010                           | .00020 | .00031 | .00041 | .00051 | .00061 | .00072 | .00083 |
| High Temp Alloys                         | S   | ●   | X   | X   | Slotting    | -                            | .5 x D     | 100      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
|  |     |   |     |     | Profiling   | .05 x D                      | 2-2.5 x D  | 150      | .00008                           | .00017 | .00026 | .00035 | .00044 | .00052 | .00061 | .00070 |
| Titanium Alloys                          | S   | ●   | X   | X   | Slotting    | -                            | .5 x D     | 245      | .00004                           | .00007 | .00011 | .00015 | .00019 | .00022 | .00026 | .00030 |
|  |     |   |     |     | Profiling   | .1 x D                       | 2-2.5 x D  | 350      | .00006                           | .00012 | .00019 | .00025 | .00031 | .00037 | .00044 | .00050 |

**Inch necked tools cutting data on pages 8-9.**

### 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.

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula:  

$$\frac{(\text{Calculated Feed} \times \text{Spindle Maximum})}{\text{Calculated Speed}}$$

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





## Recommended Cutting Data 3MVS Series Necked Tools - Inch

Note: Square corner tools recommended for finishing applications only.

| 3 X D Necked Tools (3MVS Series - N3)    |     |   |     |     |             |                              |            |          |                                  |       |       |       |       |       |       |       |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | vc - SFM | End Mill Diameter (inch)         |       |       |       |       |       |       |       |
|  |     | • Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | .015                             | .031  | .047  | .062  | .078  | .093  | .109  | .125  |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - in/tooth by Cutter Diameter |       |       |       |       |       |       |       |
| Moderate Machining & PH Stainless Steels | M   | •   | X   | ○   | Slotting    | -                            | .5 x D     | 245      | .0004                            | .0007 | .0011 | .0015 | .0019 | .0022 | .0026 | .0030 |
|  |     |   |     |     | Profiling   | .1 x D                       | 1 x D      | 490      | .0010                            | .0020 | .0031 | .0041 | .0051 | .0061 | .0072 | .0083 |
| High Temp Alloys                         | S   | •   | X   | X   | Slotting    | -                            | .5 x D     | 100      | .0003                            | .0006 | .0009 | .0012 | .0016 | .0019 | .0022 | .0025 |
|  |     |   |     |     | Profiling   | .05 x D                      | 1 x D      | 150      | .0008                            | .0017 | .0026 | .0035 | .0044 | .0052 | .0061 | .0070 |
| Titanium Alloys                          | S   | •   | X   | X   | Slotting    | -                            | .5 x D     | 245      | .0004                            | .0007 | .0011 | .0015 | .0019 | .0022 | .0026 | .0030 |
|  |     |   |     |     | Profiling   | .1 x D                       | 1 x D      | 350      | .0006                            | .0012 | .0019 | .0025 | .0031 | .0037 | .0044 | .0050 |

| 5 X D Necked Tools (3MVS Series - N5)    |     |   |     |     |             |                              |            |          |                                  |       |       |       |       |       |       |       |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | vc - SFM | End Mill Diameter (inch)         |       |       |       |       |       |       |       |
|  |     | • Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | .015                             | .031  | .047  | .062  | .078  | .093  | .109  | .125  |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - in/tooth by Cutter Diameter |       |       |       |       |       |       |       |
| Moderate Machining & PH Stainless Steels | M   | •   | X   | ○   | Slotting    | -                            | .3 x D     | 245      | .0004                            | .0007 | .0011 | .0015 | .0019 | .0022 | .0026 | .0030 |
|  |     |   |     |     | Profiling   | .08 x D                      | 1 x D      | 490      | .0010                            | .0020 | .0031 | .0041 | .0051 | .0061 | .0072 | .0083 |
| High Temp Alloys                         | S   | •   | X   | X   | Slotting    | -                            | .3 x D     | 100      | .0003                            | .0006 | .0009 | .0012 | .0016 | .0019 | .0022 | .0025 |
|  |     |   |     |     | Profiling   | .05 x D                      | 1 x D      | 150      | .0008                            | .0017 | .0026 | .0035 | .0044 | .0052 | .0061 | .0070 |
| Titanium Alloys                          | S   | •   | X   | X   | Slotting    | -                            | .3 x D     | 245      | .0004                            | .0007 | .0011 | .0015 | .0019 | .0022 | .0026 | .0030 |
|  |     |   |     |     | Profiling   | .08 x D                      | 1 x D      | 350      | .0006                            | .0012 | .0019 | .0025 | .0031 | .0037 | .0044 | .0050 |

| 8 X D Necked Tools (3MVS Series - N8)    |     |   |     |     |             |                              |            |          |                                  |       |       |       |       |       |       |       |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | vc - SFM | End Mill Diameter (inch)         |       |       |       |       |       |       |       |
|  |     | • Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | .015                             | .031  | .047  | .062  | .078  | .093  | .109  | .125  |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - in/tooth by Cutter Diameter |       |       |       |       |       |       |       |
| Moderate Machining & PH Stainless Steels | M   | •   | X   | ○   | Slotting    | -                            | .2 x D     | 245      | .0004                            | .0007 | .0011 | .0015 | .0019 | .0022 | .0026 | .0030 |
|  |     |   |     |     | Profiling   | .05 x D                      | .75 x D    | 490      | .0010                            | .0020 | .0031 | .0041 | .0051 | .0061 | .0072 | .0083 |
| High Temp Alloys                         | S   | •   | X   | X   | Slotting    | -                            | .2 x D     | 100      | .0003                            | .0006 | .0009 | .0012 | .0016 | .0019 | .0022 | .0025 |
|  |     |   |     |     | Profiling   | .05 x D                      | .75 x D    | 150      | .0008                            | .0017 | .0026 | .0035 | .0044 | .0052 | .0061 | .0070 |
| Titanium Alloys                          | S   | •   | X   | X   | Slotting    | -                            | .2 x D     | 245      | .0004                            | .0007 | .0011 | .0015 | .0019 | .0022 | .0026 | .0030 |
|  |     |   |     |     | Profiling   | .05 x D                      | .75 x D    | 350      | .0006                            | .0012 | .0019 | .0025 | .0031 | .0037 | .0044 | .0050 |

Inch non-necked tools cutting data on page 7.

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula:  
 $(\text{Calculated Feed} \times \text{Spindle Maximum}) / \text{Calculated Speed}$ .

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



## Recommended Cutting Data 3MVS Series Necked Tools - Inch continued

**Note: Square corner tools recommended for finishing applications only.**

| 10 X D Necked Tools (3MVS Series - N10)  |     |   |     |     |             |                              |            |          |                                  |        |        |        |        |        |        |        |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | vc - SFM | End Mill Diameter (inch)         |        |        |        |        |        |        |        |
|  |     | • Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | .015                             | .031   | .047   | .062   | .078   | .093   | .109   | .125   |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - in/tooth by Cutter Diameter |        |        |        |        |        |        |        |
| Moderate Machining & PH Stainless Steels | M   | •   | X   | ○   | Slotting    | -                            | .15 x D    | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
|  |     |   |     |     | Profiling   | .5 x D                       | .15 x D    | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
| High Temp Alloys                         | S   | •   | X   | X   | Slotting    | -                            | .15 x D    | 100      | .00002                           | .00005 | .00008 | .00010 | .00012 | .00015 | .00017 | .00020 |
|  |     |   |     |     | Profiling   | .5 x D                       | .15 x D    | 100      | .00002                           | .00005 | .00008 | .00010 | .00012 | .00015 | .00017 | .00020 |
| Titanium Alloys                          | S   | •   | X   | X   | Slotting    | -                            | .15 x D    | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
|  |     |   |     |     | Profiling   | .5 x D                       | .15 x D    | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |

| 12 X D Necked Tools (3MVS Series - N12)  |     |   |     |     |             |                              |            |          |                                  |        |        |        |        |        |        |        |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | vc - SFM | End Mill Diameter (inch)         |        |        |        |        |        |        |        |
|  |     | • Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | .015                             | .031   | .047   | .062   | .078   | .093   | .109   | .125   |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - in/tooth by Cutter Diameter |        |        |        |        |        |        |        |
| Moderate Machining & PH Stainless Steels | M   | •   | X   | ○   | Slotting    | -                            | .1 x D     | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
|  |     |   |     |     | Profiling   | .5 x D                       | .1 x D     | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
| High Temp Alloys                         | S   | •   | X   | X   | Slotting    | -                            | .1 x D     | 100      | .00002                           | .00005 | .00008 | .00010 | .00012 | .00015 | .00017 | .00020 |
|  |     |   |     |     | Profiling   | .5 x D                       | .1 x D     | 100      | .00002                           | .00005 | .00008 | .00010 | .00012 | .00015 | .00017 | .00020 |
| Titanium Alloys                          | S   | •   | X   | X   | Slotting    | -                            | .1 x D     | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
|  |     |   |     |     | Profiling   | .5 x D                       | .1 x D     | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |

| 15 X D Necked Tools (3MVS Series - N15)  |     |   |     |     |             |                              |            |          |                                  |        |        |        |        |        |        |        |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | vc - SFM | End Mill Diameter (inch)         |        |        |        |        |        |        |        |
|  |     | • Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | .015                             | .031   | .047   | .062   | .078   | .093   | .109   | .125   |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - in/tooth by Cutter Diameter |        |        |        |        |        |        |        |
| Moderate Machining & PH Stainless Steels | M   | •   | X   | ○   | Slotting    | -                            | .07 x D    | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
|  |     |   |     |     | Profiling   | .5 x D                       | .07 x D    | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
| High Temp Alloys                         | S   | •   | X   | X   | Slotting    | -                            | .07 x D    | 100      | .00002                           | .00005 | .00008 | .00010 | .00012 | .00015 | .00017 | .00020 |
|  |     |   |     |     | Profiling   | .5 x D                       | .07 x D    | 100      | .00002                           | .00005 | .00008 | .00010 | .00012 | .00015 | .00017 | .00020 |
| Titanium Alloys                          | S   | •   | X   | X   | Slotting    | -                            | .07 x D    | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |
|  |     |   |     |     | Profiling   | .5 x D                       | .07 x D    | 245      | .00003                           | .00006 | .00009 | .00012 | .00016 | .00019 | .00022 | .00025 |

**Inch non-necked tools cutting data on page 7.**

**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.

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

Note: Square corner tools recommended for finishing applications only.

| Stub Length - 3MVS Series                |     |  |     |     |             |                              |            |            |                                  |       |       |       |       |       |
|--|-----|--|-----|-----|-------------|------------------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| Workpiece Material Group                 | ISO | Coolant<br>● Preferred<br>○ Possible<br>x Not Possible |     |     | Application | Depth of Cut Per Application |            | vc - m/min | End Mill Diameter (mm)           |       |       |       |       |       |
|  |     | Max.   | Air | MMS |             | Radial (Ae)                  | Axial (Ap) |            | 0.5                              | 1.0   | 1.5   | 2.0   | 2.5   | 3.0   |
|  |     |  |     |     |             |                              |            |            | fz - mm/tooth by Cutter Diameter |       |       |       |       |       |
| Moderate Machining & PH Stainless Steels | M   | ●  | X   | ○   | Slotting    | -                            | .5 x D     | 75         | .0012                            | .0024 | .0036 | .0048 | .0060 | .0072 |
|  |     |  |     |     | Profiling   | .2 x D                       | 1 x D      | 150        | .0033                            | .0066 | .0099 | .0132 | .0165 | .0198 |
| High Temp Alloys                         | S   | ●  | X   | X   | Slotting    | -                            | .5 x D     | 30         | .0010                            | .0020 | .0030 | .0040 | .0050 | .0060 |
|  |     |  |     |     | Profiling   | .1 x D                       | 1 x D      | 45         | .0028                            | .0056 | .0084 | .0112 | .0140 | .0168 |
| Titanium Alloys                          | S   | ●  | X   | X   | Slotting    | -                            | .5 x D     | 75         | .0012                            | .0024 | .0036 | .0048 | .0060 | .0072 |
|  |     |  |     |     | Profiling   | .2 x D                       | 1 x D      | 107        | .0020                            | .0040 | .0060 | .0080 | .0100 | .0120 |

| Regular Length - 3MVR Series             |     |  |     |     |             |                              |            |            |                                  |       |       |       |       |       |
|--|-----|--|-----|-----|-------------|------------------------------|------------|------------|----------------------------------|-------|-------|-------|-------|-------|
| Workpiece Material Group                 | ISO | Coolant<br>● Preferred<br>○ Possible<br>x Not Possible |     |     | Application | Depth of Cut Per Application |            | vc - m/min | End Mill Diameter (mm)           |       |       |       |       |       |
|  |     | Max.   | Air | MMS |             | Radial (Ae)                  | Axial (Ap) |            | 0.5                              | 1.0   | 1.5   | 2.0   | 2.5   | 3.0   |
|  |     |  |     |     |             |                              |            |            | fz - mm/tooth by Cutter Diameter |       |       |       |       |       |
| Moderate Machining & PH Stainless Steels | M   | ●  | X   | ○   | Slotting    | -                            | .5 x D     | 75         | .0012                            | .0024 | .0036 | .0048 | .0060 | .0072 |
|  |     |  |     |     | Profiling   | .1 x D                       | 2-2.5 x D  | 150        | .0033                            | .0066 | .0099 | .0132 | .0165 | .0198 |
| High Temp Alloys                         | S   | ●  | X   | X   | Slotting    | -                            | .5 x D     | 30         | .0010                            | .0020 | .0030 | .0040 | .0050 | .0060 |
|  |     |  |     |     | Profiling   | .05 x D                      | 2-2.5 x D  | 45         | .0028                            | .0056 | .0084 | .0112 | .0140 | .0168 |
| Titanium Alloys                          | S   | ●  | X   | X   | Slotting    | -                            | .5 x D     | 75         | .0012                            | .0024 | .0036 | .0048 | .0060 | .0072 |
|  |     |  |     |     | Profiling   | .1 x D                       | 2-2.5 x D  | 107        | .0020                            | .0040 | .0060 | .0080 | .0100 | .0120 |

Metric necked tools cutting data on page 11.



Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula:  
 $(\text{Calculated Feed} \times \text{Spindle Maximum}) / \text{Calculated Speed}$ .

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

## Recommended Cutting Data 3MVS Series Necked Tools - Metric

**Note: Square corner tools recommended for finishing applications only.**

| 5 X D Necked Tools (3MVS Series - N5)    |     |   |     |     |             |                              |            |          |                                  |       |       |       |       |       |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|-------|-------|-------|-------|-------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | Vc m/min | End Mill Diameter (mm)           |       |       |       |       |       |
|  |     | • Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | 0.5                              | 1.0   | 1.5   | 2.0   | 2.5   | 3.0   |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - mm/tooth by Cutter Diameter |       |       |       |       |       |
| Moderate Machining & PH Stainless Steels | M   | •   | X   | ○   | Slotting    | -                            | .3 x D     | 75       | .0012                            | .0024 | .0036 | .0048 | .0060 | .0072 |
|  |     |   |     |     | Profiling   | .08 x D                      | 1 x D      | 150      | .0033                            | .0066 | .0099 | .0132 | .0165 | .0198 |
| High Temp Alloys                         | S   | •   | X   | X   | Slotting    | -                            | .3 x D     | 30       | .0010                            | .0020 | .0030 | .0040 | .0050 | .0060 |
|  |     |   |     |     | Profiling   | .05 x D                      | 1 x D      | 45       | .0028                            | .0056 | .0084 | .0112 | .0140 | .0168 |
| Titanium Alloys                          | S   | •   | X   | X   | Slotting    | -                            | .3 x D     | 75       | .0012                            | .0024 | .0036 | .0048 | .0060 | .0072 |
|  |     |   |     |     | Profiling   | .08 x D                      | 1 x D      | 107      | .0020                            | .0040 | .0060 | .0080 | .0100 | .0120 |

| 8 X D Necked Tools (3MVS Series - N8)    |     |   |     |     |             |                              |            |          |                                  |       |       |       |       |       |
|--|-----|---|-----|-----|-------------|------------------------------|------------|----------|----------------------------------|-------|-------|-------|-------|-------|
| Workpiece Material Group                 | ISO | Coolant                                     |     |     | Application | Depth of Cut Per Application |            | Vc m/min | End Mill Diameter (mm)           |       |       |       |       |       |
|  |     | • Preferred<br>○ Possible<br>x Not Possible |     |     |             | Radial (Ae)                  | Axial (Ap) |          | 0.5                              | 1.0   | 1.5   | 2.0   | 2.5   | 3.0   |
|  |     | Max.  | Air | MMS |             |                              |            |          | fz - mm/tooth by Cutter Diameter |       |       |       |       |       |
| Moderate Machining & PH Stainless Steels | M   | •   | X   | ○   | Slotting    | -                            | .2 x D     | 75       | .0012                            | .0024 | .0036 | .0048 | .0060 | .0072 |
|  |     |   |     |     | Profiling   | .05 x D                      | .75 x D    | 150      | .0033                            | .0066 | .0099 | .0132 | .0165 | .0198 |
| High Temp Alloys                         | S   | •   | X   | X   | Slotting    | -                            | .2 x D     | 30       | .0010                            | .0020 | .0030 | .0040 | .0050 | .0060 |
|  |     |   |     |     | Profiling   | .05 x D                      | .75 x D    | 45       | .0028                            | .0056 | .0084 | .0112 | .0140 | .0168 |
| Titanium Alloys                          | S   | •   | X   | X   | Slotting    | -                            | .2 x D     | 75       | .0012                            | .0024 | .0036 | .0048 | .0060 | .0072 |
|  |     |   |     |     | Profiling   | .05 x D                      | .75 x D    | 107      | .0020                            | .0040 | .0060 | .0080 | .0100 | .0120 |

**Metric non-necked tools cutting data on page 10.**

### 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.

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula:  

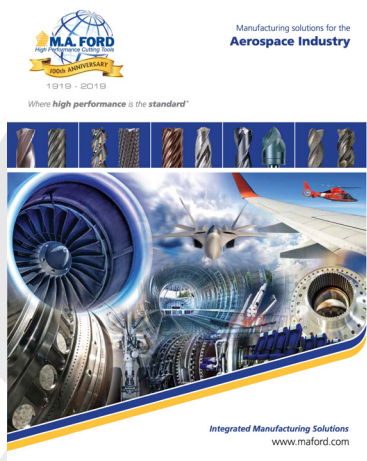
$$\frac{\text{Calculated Feed} \times \text{Spindle Maximum}}{\text{Calculated Speed}}$$

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

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