

**■ UEBD • 2-Flute • Ball Nose**


| Material Group |                                   |         |         |                           |     |  |               |       |       |       |       |       |       |       |
|----------------|-----------------------------------|---------|---------|---------------------------|-----|--|---------------|-------|-------|-------|-------|-------|-------|-------|
|                | Side Milling (A) and Slotting (B) |         |         | KC643M                    |     | Recommended feed per tooth (IPT = inch/th) for side milling (A).<br>For slotting (B), reduce IPT by 20%. |               |       |       |       |       |       |       |       |
|                | A                                 |         | B       | Cutting Speed – vc<br>SFM |     | frac.<br>dec.  | D1 – Diameter |       |       |       |       |       |       |       |
|                | ap                                | ae      | ap      | min                       | max |  | 5/64          | 1/8   | 3/16  | 1/4   | 5/16  | 3/8   | 1/2   |       |
| P              | 0                                 | 1.5 x D | 0.5 x D | 1 x D                     | 490 | 660  | IPT           | .0005 | .0009 | .0013 | .0018 | .0023 | .0027 | .0034 |
|                | 1                                 | 1.5 x D | 0.5 x D | 1 x D                     | 490 | 660  | IPT           | .0005 | .0009 | .0013 | .0018 | .0023 | .0027 | .0034 |
|                | 2                                 | 1.5 x D | 0.5 x D | 1 x D                     | 460 | 620  | IPT           | .0005 | .0009 | .0013 | .0018 | .0023 | .0027 | .0034 |
|                | 3                                 | 1.5 x D | 0.5 x D | 1 x D                     | 390 | 520  | IPT           | .0004 | .0007 | .0011 | .0015 | .0020 | .0023 | .0029 |
|                | 4                                 | 1.5 x D | 0.5 x D | 0.75 x D                  | 300 | 490  | IPT           | .0004 | .0007 | .0010 | .0014 | .0017 | .0020 | .0026 |
|                | 5                                 | 1.5 x D | 0.5 x D | 1 x D                     | 200 | 330  | IPT           | .0004 | .0006 | .0009 | .0012 | .0016 | .0018 | .0023 |
| M              | 1                                 | 1.5 x D | 0.5 x D | 0.75 x D                  | 160 | 250  | IPT           | .0003 | .0005 | .0008 | .0010 | .0013 | .0015 | .0019 |
|                | 2                                 | 1.5 x D | 0.5 x D | 1 x D                     | 300 | 380  | IPT           | .0004 | .0007 | .0011 | .0015 | .0020 | .0023 | .0029 |
|                | 3                                 | 1.5 x D | 0.5 x D | 1 x D                     | 200 | 260  | IPT           | .0004 | .0006 | .0009 | .0012 | .0016 | .0018 | .0023 |
| K              | 1                                 | 1.5 x D | 0.5 x D | 1 x D                     | 200 | 230  | IPT           | .0003 | .0005 | .0008 | .0010 | .0013 | .0015 | .0019 |
|                | 2                                 | 1.5 x D | 0.5 x D | 1 x D                     | 390 | 490  | IPT           | .0005 | .0009 | .0013 | .0018 | .0023 | .0027 | .0034 |
|                | 3                                 | 1.5 x D | 0.5 x D | 1 x D                     | 360 | 460  | IPT           | .0004 | .0007 | .0011 | .0015 | .0020 | .0023 | .0029 |
| S              | 1                                 | 1.5 x D | 0.3 x D | 0.3 x D                   | 160 | 300  | IPT           | .0004 | .0007 | .0011 | .0015 | .0020 | .0023 | .0029 |
|                | 2                                 | 1.5 x D | 0.3 x D | 0.3 x D                   | 80  | 130  | IPT           | .0002 | .0004 | .0006 | .0008 | .0010 | .0012 | .0015 |
|                | 3                                 | 1.5 x D | 0.3 x D | 0.3 x D                   | 80  | 130  | IPT           | .0002 | .0004 | .0006 | .0008 | .0010 | .0012 | .0015 |
|                | 4                                 | 1.5 x D | 0.5 x D | 1 x D                     | 160 | 200  | IPT           | .0003 | .0005 | .0008 | .0011 | .0014 | .0017 | .0021 |
| H              | 1                                 | 1.5 x D | 0.5 x D | 0.75 x D                  | 260 | 460  | IPT           | .0004 | .0007 | .0010 | .0014 | .0017 | .0020 | .0026 |

**■ UEBD • 3-flute • Ball Nose**


| Material Group |                                   |         |         |                           |     |  |               |       |       |       |       |       |       |       |
|----------------|-----------------------------------|---------|---------|---------------------------|-----|--|---------------|-------|-------|-------|-------|-------|-------|-------|
|                | Side Milling (A) and Slotting (B) |         |         | KC643M                    |     | Recommended feed per tooth (IPT = inch/th) for side milling (A).<br>For slotting (B), reduce IPT by 20%. |               |       |       |       |       |       |       |       |
|                | A                                 |         | B       | Cutting Speed – vc<br>SFM |     | frac.<br>dec.  | D1 – Diameter |       |       |       |       |       |       |       |
|                | ap                                | ae      | ap      | min                       | max |  | 5/64          | 1/8   | 3/16  | 1/4   | 5/16  | 3/8   | 1/2   |       |
| P              | 0                                 | 1.5 x D | 0.5 x D | 1 x D                     | 490 | 660  | IPT           | .0005 | .0009 | .0013 | .0018 | .0023 | .0027 | .0034 |
|                | 1                                 | 1.5 x D | 0.5 x D | 1 x D                     | 490 | 660  | IPT           | .0005 | .0009 | .0013 | .0018 | .0023 | .0027 | .0034 |
|                | 2                                 | 1.5 x D | 0.5 x D | 1 x D                     | 460 | 620  | IPT           | .0005 | .0009 | .0013 | .0018 | .0023 | .0027 | .0034 |
|                | 3                                 | 1.5 x D | 0.5 x D | 1 x D                     | 390 | 520  | IPT           | .0004 | .0007 | .0011 | .0015 | .0020 | .0023 | .0029 |
|                | 4                                 | 1.5 x D | 0.5 x D | 0.75 x D                  | 300 | 490  | IPT           | .0004 | .0007 | .0010 | .0014 | .0017 | .0020 | .0026 |
|                | 5                                 | 1.5 x D | 0.5 x D | 1 x D                     | 200 | 330  | IPT           | .0004 | .0006 | .0009 | .0012 | .0016 | .0018 | .0023 |
| M              | 1                                 | 1.5 x D | 0.5 x D | 0.75 x D                  | 160 | 250  | IPT           | .0003 | .0005 | .0008 | .0010 | .0013 | .0015 | .0019 |
|                | 2                                 | 1.5 x D | 0.5 x D | 1 x D                     | 300 | 380  | IPT           | .0004 | .0007 | .0011 | .0015 | .0020 | .0023 | .0029 |
|                | 3                                 | 1.5 x D | 0.5 x D | 1 x D                     | 200 | 260  | IPT           | .0004 | .0006 | .0009 | .0012 | .0016 | .0018 | .0023 |
| K              | 1                                 | 1.5 x D | 0.5 x D | 1 x D                     | 200 | 230  | IPT           | .0003 | .0005 | .0008 | .0010 | .0013 | .0015 | .0019 |
|                | 2                                 | 1.5 x D | 0.5 x D | 1 x D                     | 390 | 490  | IPT           | .0005 | .0009 | .0013 | .0018 | .0023 | .0027 | .0034 |
|                | 3                                 | 1.5 x D | 0.5 x D | 1 x D                     | 360 | 460  | IPT           | .0004 | .0007 | .0011 | .0015 | .0020 | .0023 | .0029 |
| S              | 1                                 | 1.5 x D | 0.3 x D | 0.3 x D                   | 160 | 300  | IPT           | .0004 | .0007 | .0011 | .0015 | .0020 | .0023 | .0029 |
|                | 2                                 | 1.5 x D | 0.3 x D | 0.3 x D                   | 80  | 130  | IPT           | .0002 | .0004 | .0006 | .0008 | .0010 | .0012 | .0015 |
|                | 3                                 | 1.5 x D | 0.3 x D | 0.3 x D                   | 80  | 130  | IPT           | .0002 | .0004 | .0006 | .0008 | .0010 | .0012 | .0015 |
|                | 4                                 | 1.5 x D | 0.5 x D | 1 x D                     | 160 | 200  | IPT           | .0003 | .0005 | .0008 | .0011 | .0014 | .0017 | .0021 |
| H              | 1                                 | 1.5 x D | 0.5 x D | 0.75 x D                  | 260 | 460  | IPT           | .0004 | .0007 | .0010 | .0014 | .0017 | .0020 | .0026 |

NOTE: These guidelines may require variations to achieve optimum results.  
 Lower value of cutting speed is used for high stock removal applications or for higher hardness (machinability) within group.  
 Higher value of cutting speed is used for finishing applications or for lower hardness (machinability) within group.  
 For better surface finish, reduce feed per tooth.