

**2019 CATALOG**

**INTERNAL TOOL INC.**



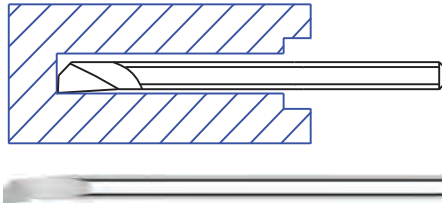
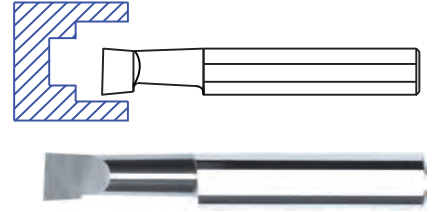
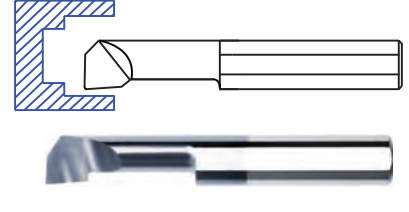
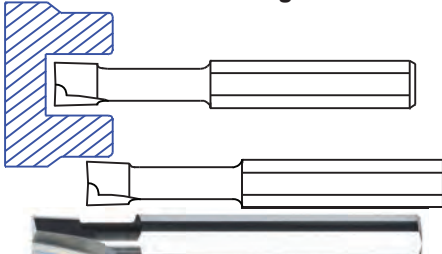
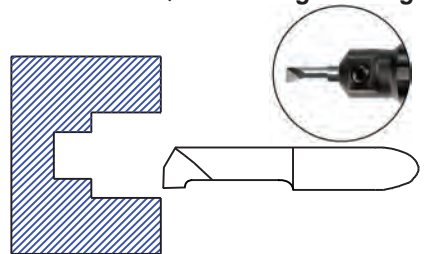
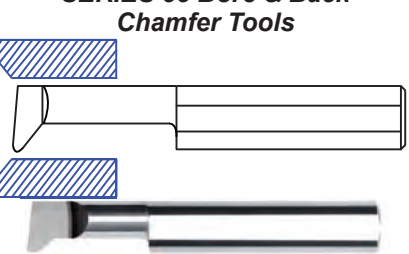
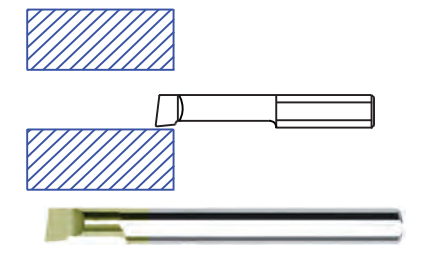
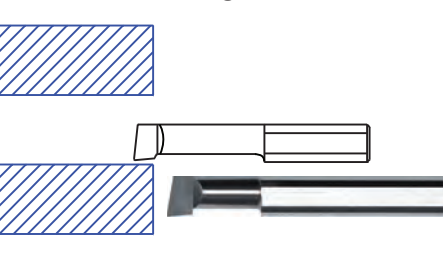
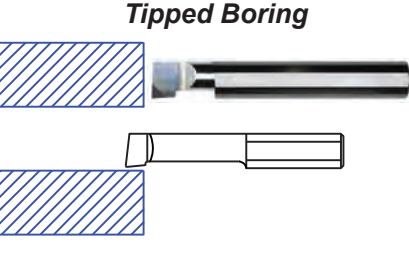
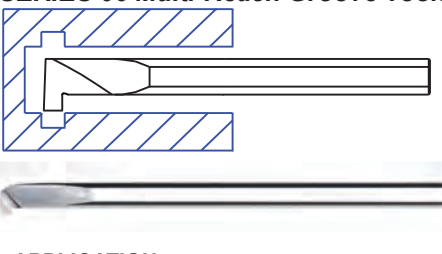
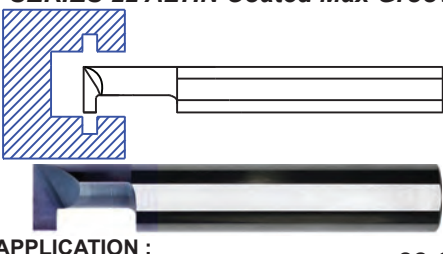
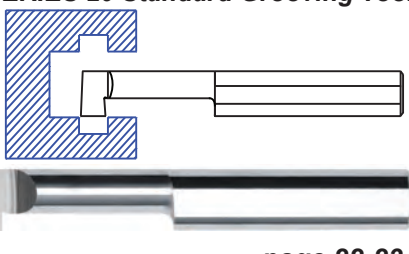
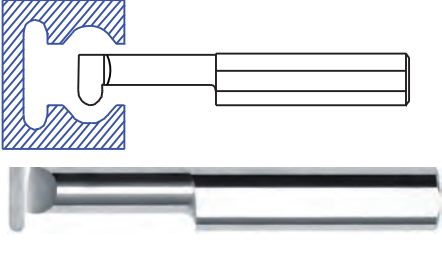
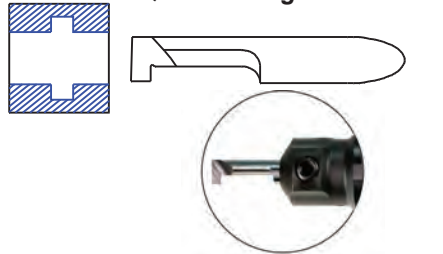
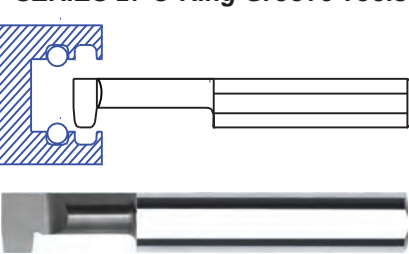
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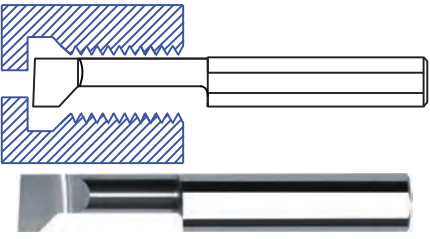
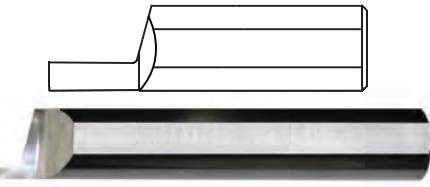
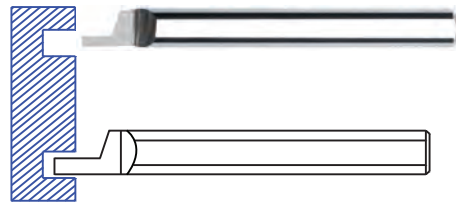
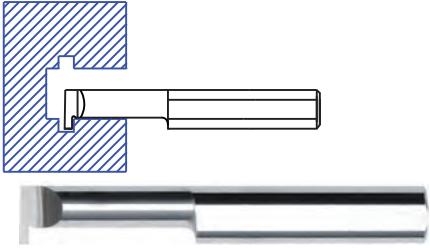
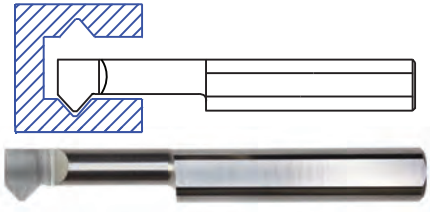
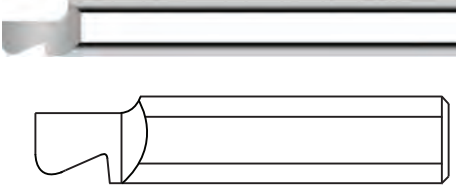
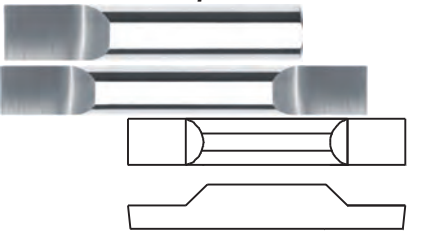
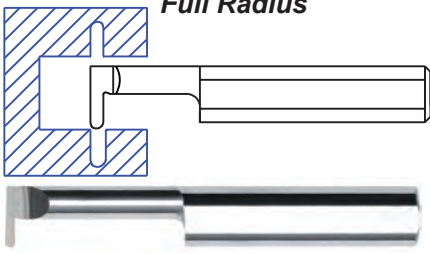
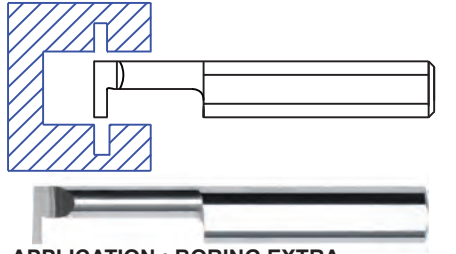
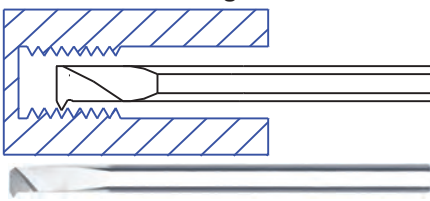
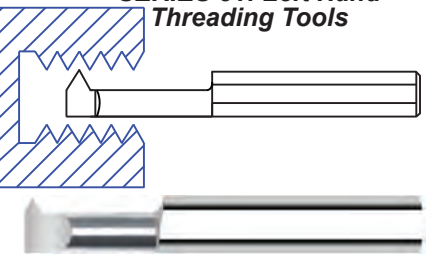
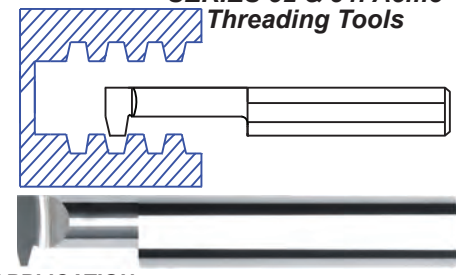
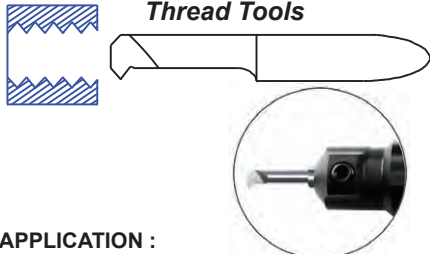
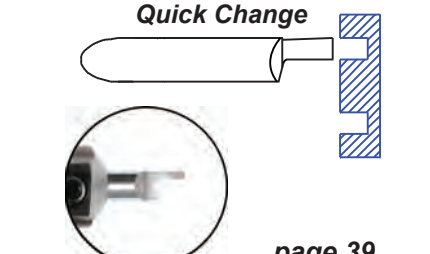
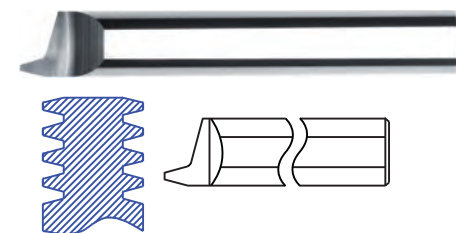
**SPECIALIZING IN CARBIDE  
CUTTING TOOLS**



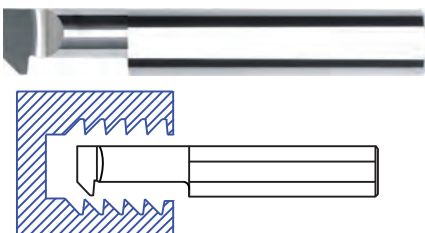
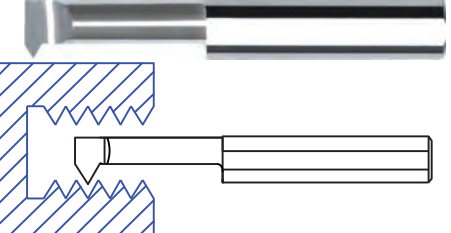
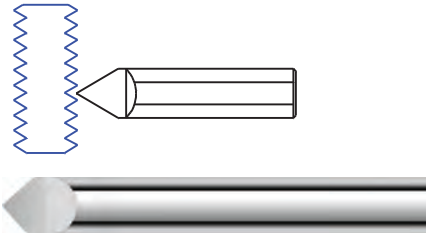
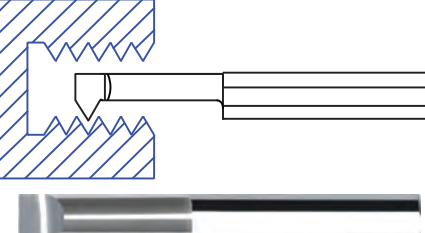
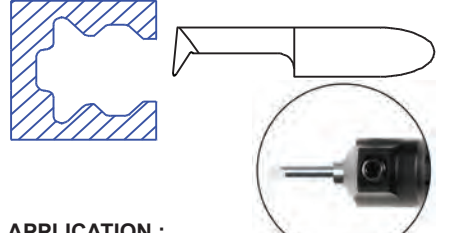
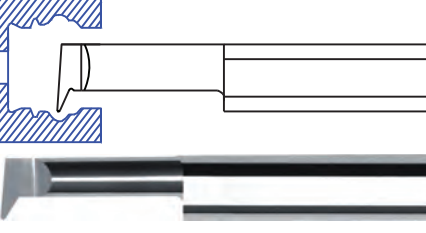
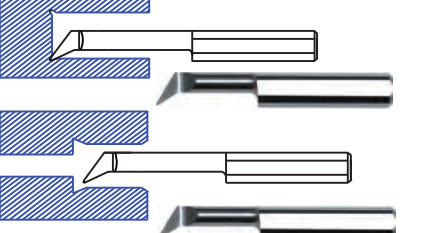
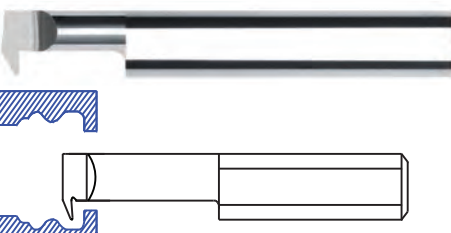
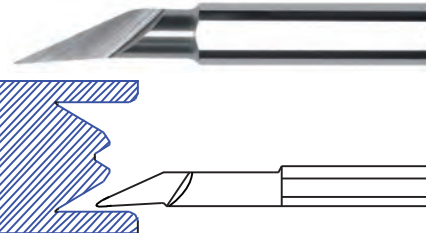
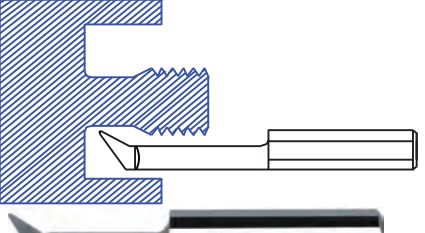
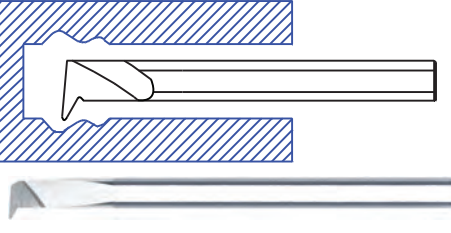

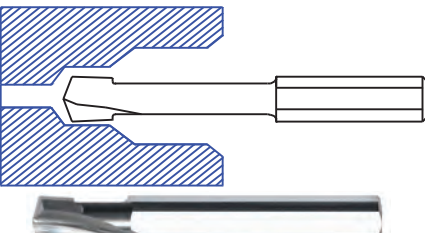
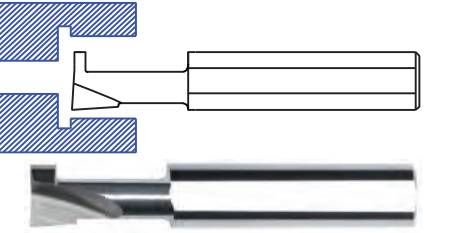
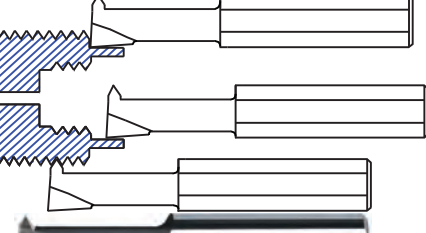
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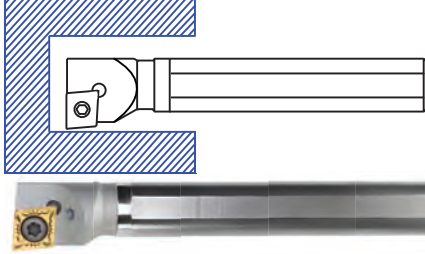
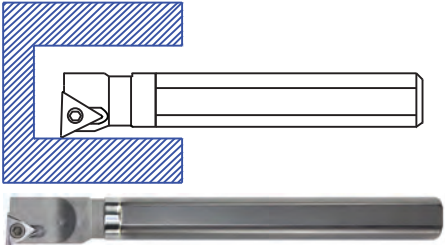
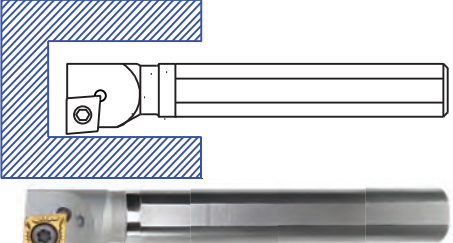
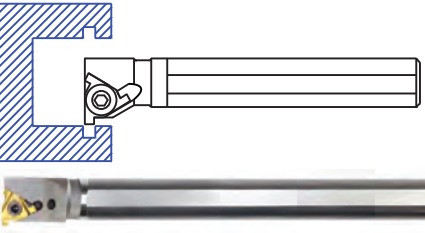
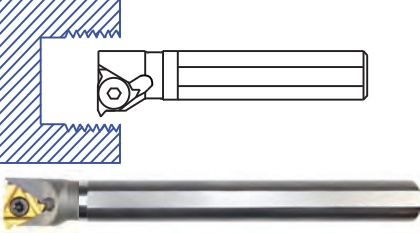
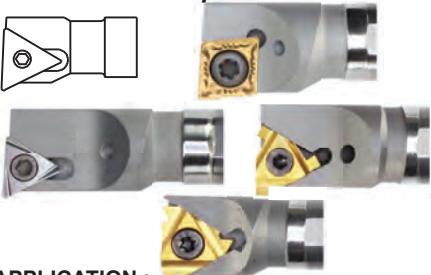
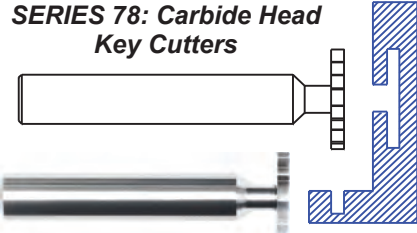

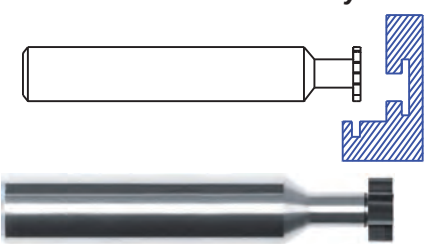
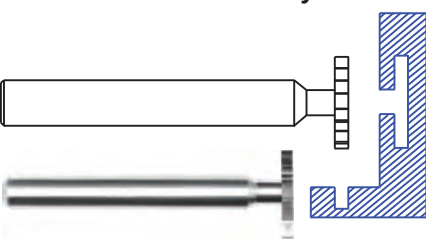
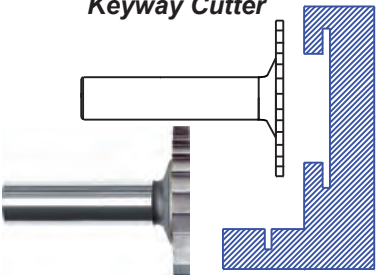
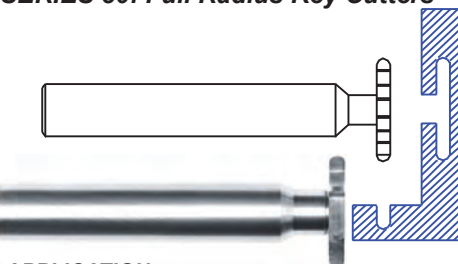

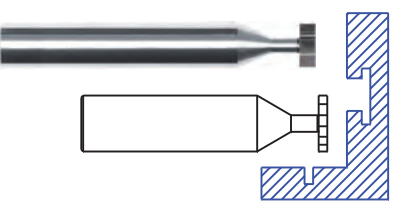


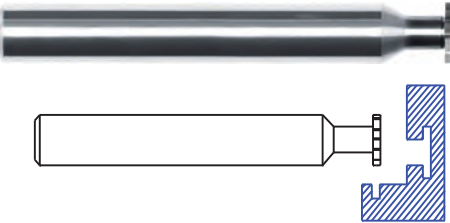
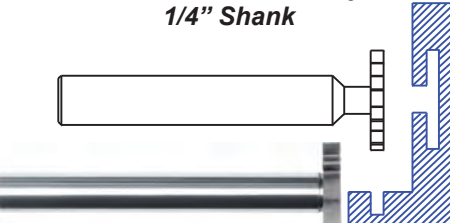
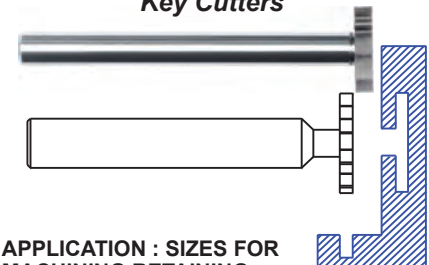
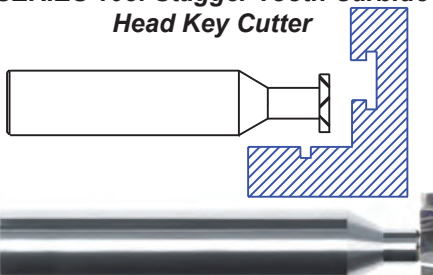
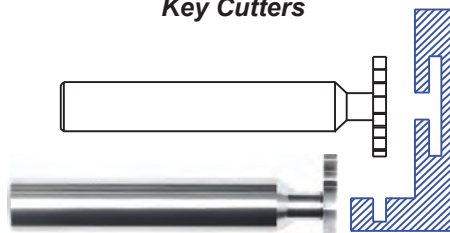
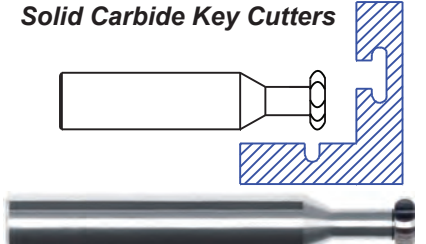
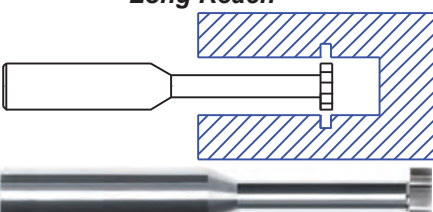
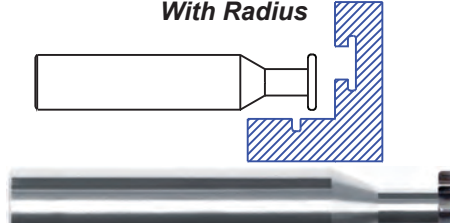
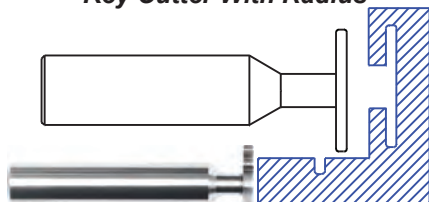
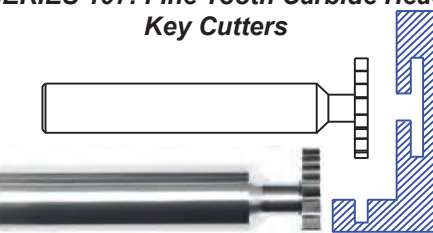
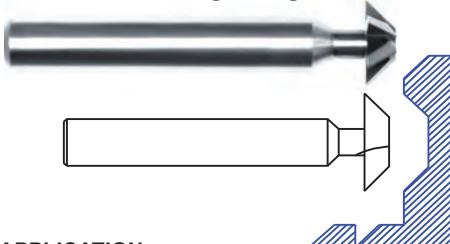
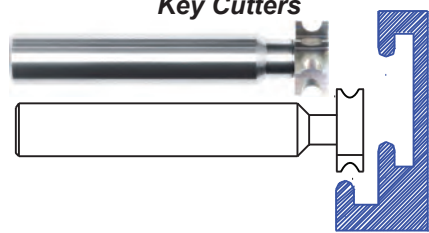
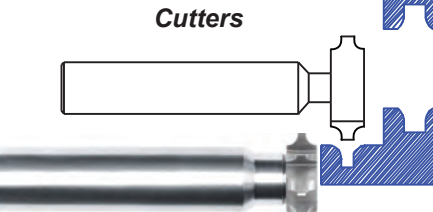
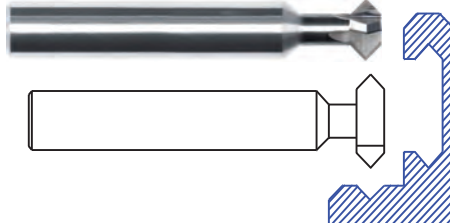

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| <p><b>SERIES 04 Multi-Reach Boring Tools</b></p>  <p>APPLICATION :<br/>DEEP HOLE BORING <i>page 11</i></p>                       | <p><b>SERIES 10 Standard Boring Tool</b></p>  <p>APPLICATION :<br/>BORING ALL TYPES OF MATERIALS <i>page 8-9</i></p>                              | <p><b>SERIES 18 ALTiN Coated Max-Bore</b></p>  <p>APPLICATION :<br/>BORING TOUGH TO MACHINE MATERIALS. STAINLESS ETC. <i>page 10</i></p>  |
| <p><b>SERIES 54 Double Edge Bore Tools</b></p>  <p>APPLICATION : DRILL<br/>BORE &amp; TURN WITH THE SAME TOOL <i>page 13</i></p> | <p><b>SERIES 42 Quick Change Boring Tool</b></p>  <p>APPLICATION :<br/>BORING ALL TYPES OF MATERIALS <i>page 12</i></p>                           | <p><b>SERIES 55 Bore &amp; Back Chamfer Tools</b></p>  <p>APPLICATION : BORE &amp; BACK CHAMFER<br/>WITH THE SAME TOOL <i>page 13</i></p> |
| <p><b>SERIES 19 Aluminum Boring</b></p>  <p>APPLICATION :<br/>BORING ALUMINUM <i>page 12</i></p>                                | <p><b>SERIES 91 Boring Bars For Plastic</b></p>  <p>APPLICATION :<br/>BORING ALL TYPES OF PLASTICS <i>page 11</i></p>                            | <p><b>SERIES 108 CBN and PCD Tipped Boring</b></p>  <p>APPLICATION : BORING HARD<br/>TO MACHINE MATERIALS <i>page 11</i></p>             |
| <p><b>SERIES 06 Multi-Reach Groove Tools</b></p>  <p>APPLICATION :<br/>DEEP HOLE GROOVING <i>page 26</i></p>                   | <p><b>SERIES 22 ALTiN Coated Max Groove</b></p>  <p>APPLICATION :<br/>GROOVING TOUGH TO MACHINE MATERIALS. STAINLESS ETC. <i>page 28-29</i></p> | <p><b>SERIES 20 Standard Grooving Tools</b></p>  <p>APPLICATION :<br/>GROOVING ALL TYPES OF MATERIAL <i>page 22-23</i></p>              |
| <p><b>SERIES 24 Full Radius Groove Tools</b></p>  <p>APPLICATION :<br/>GROOVING - PROFILING <i>page 24-25</i></p>              | <p><b>SERIES 42 Quick Change Groove Tool</b></p>  <p>APPLICATION :<br/>GROOVING ALL TYPES OF MATERIALS <i>page 30-31</i></p>                    | <p><b>SERIES 27 O-Ring Groove Tools</b></p>  <p>APPLICATION :<br/>GROOVING FOR O'RINGS <i>page 26</i></p>                               |

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| <p><b>SERIES 46: Thread Relief Tools</b></p>  <p>APPLICATION :<br/>THREAD RELIEF TOOLS <i>page 44</i></p>                              | <p><b>SERIES 39: External Groove Tools</b></p>  <p>APPLICATION :<br/>EXTERNAL GROOVE <i>page 35</i></p>                                | <p><b>SERIES 73: Face Grooving Tools</b></p>  <p>APPLICATION :<br/>FACE GROOVING <i>page 39</i></p>                          |
| <p><b>SERIES 20: Metric</b></p>  <p>APPLICATION : GROOVING ALL<br/>TYPES OF MATERIALS <i>page 27</i></p>                               | <p><b>SERIES 43: I.D. Chamfer</b></p>  <p>APPLICATION :<br/>CHAMFERING <i>page 35</i></p>  | <p><b>SERIES 53: O-Ring Dovetail</b></p>  <p>APPLICATION : TURNING<br/>O-RING DOVETAILES <i>page 27</i></p>                  |
| <p><b>SERIES 70: Single /Double<br/>End Split Blanks</b></p>  <p>APPLICATION : MAKE YOUR<br/>OWN TOOL <i>page 38</i></p>              | <p><b>SERIES: 123 Deep Groover<br/>Full Radius</b></p>  <p>APPLICATION : BORING EXTRA<br/>DEEP GROOVES WITH RADIUS <i>page 33</i></p> | <p><b>SERIES: 121 Deep Groover</b></p>  <p>APPLICATION : BORING EXTRA<br/>DEEP GROOVES <i>page 32</i></p>                   |
| <p><b>SERIES 08: Multi-Reach<br/>Threading Tools</b></p>  <p>APPLICATION :<br/>DEEP HOLE THREADING <i>page 44</i></p>                | <p><b>SERIES 31: Left Hand<br/>Threading Tools</b></p>  <p>APPLICATION :<br/>LEFT HAND I.D. THREADING <i>page 41</i></p>             | <p><b>SERIES 32 &amp; 34: Acme<br/>Threading Tools</b></p>  <p>APPLICATION :<br/>ACME I.D. THREADING <i>page 42-43</i></p> |
| <p><b>SERIES 42: Quick Change<br/>Thread Tools</b></p>  <p>APPLICATION :<br/>THREADING ALL<br/>TYPES OF MATERIALS <i>page 41</i></p> | <p><b>SERIES 42: Face Grooving<br/>Quick Change</b></p>  <p>APPLICATION : FACE GROOVING <i>page 39</i></p>                           | <p><b>SERIES 33: External<br/>ACME/STUB ACME</b></p>  <p>APPLICATION : ACME<br/>EXTERNAL THREADING <i>page 42-43</i></p>   |

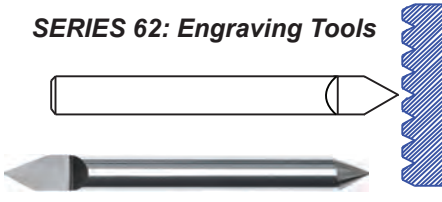
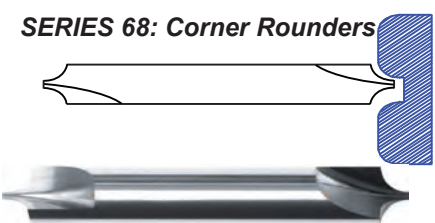
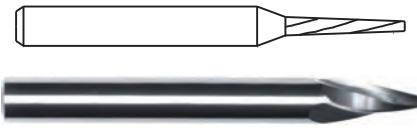
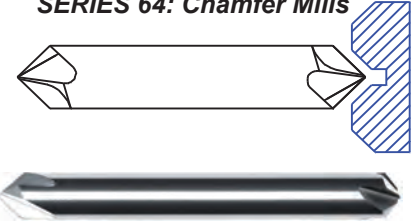
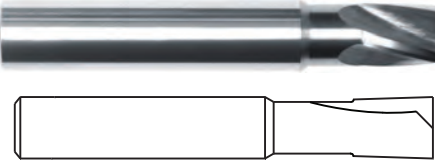

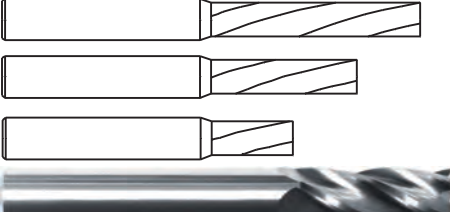
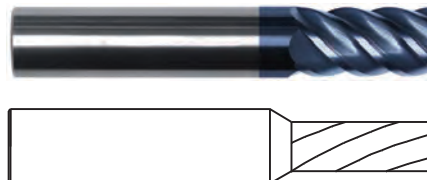
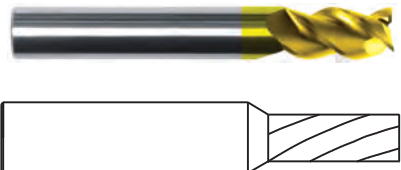
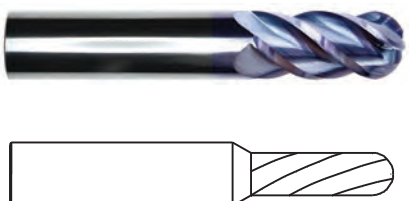
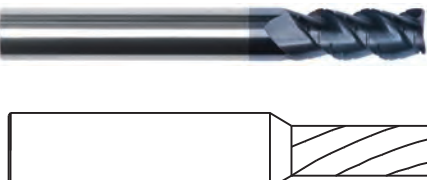
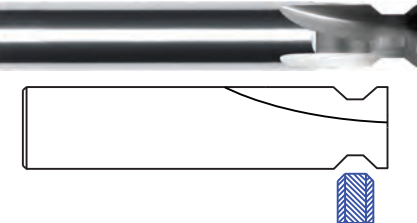
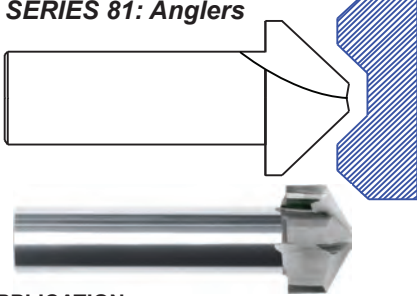

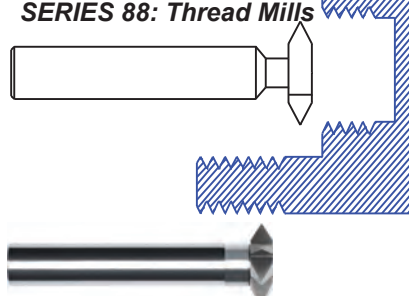


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| <p><b>SERIES 38: Buttress Threading</b></p>  <p>APPLICATION : BUTTRESS THREADING TOOLS <span style="float: right;">page 45</span></p>                 | <p><b>SERIES 30: Metric Threading</b></p>  <p>APPLICATION : METRIC THREADS <span style="float: right;">page 45</span></p>                               | <p><b>SERIES 39: External Thread</b></p>  <p>APPLICATION : EXTERNAL THREAD <span style="float: right;">page 35</span></p>                                   |
| <p><b>SERIES 30: Threading Tools</b></p>  <p>APPLICATION : STANDARD I.D. THREADING <span style="float: right;">page 40</span></p>                     | <p><b>SERIES 42: Quick Change Profile Tool</b></p>  <p>APPLICATION : PROFILING ALL TYPES OF MATERIALS <span style="float: right;">page 51</span></p>    | <p><b>SERIES 56: Profile Tools</b></p>  <p>APPLICATION : I.D. PROFILING <span style="float: right;">page 50</span></p>                                      |
| <p><b>SERIES 56: R.H. Offset Profile Tools</b></p>  <p>APPLICATION : PROFILING <span style="float: right;">page 52</span></p>                        | <p><b>SERIES 56: Reverse Profile Tools</b></p>  <p>APPLICATION : I.D. REVERSE PROFILING <span style="float: right;">page 50</span></p>                 | <p><b>SERIES 56: Fine Point Profile Tools</b></p>  <p>APPLICATION : FINE POINT PROFILING <span style="float: right;">page 51</span></p>                    |
| <p><b>SERIES 56: L.H. Offset Profile Tools</b></p>  <p>APPLICATION : LEFT HAND OFFSET PROFILING <span style="float: right;">page 52</span></p>      | <p><b>SERIES 09: Multi-Reach Profile Tools</b></p>  <p>APPLICATION : DEEP HOLE PROFILING <span style="float: right;">page 51</span></p>               | <p><b>SERIES 52 Thread &amp; Groove Tools</b></p>  <p>APPLICATION : THREAD &amp; GROOVE WITH THE SAME TOOL <span style="float: right;">page 26</span></p> |
| <p><b>SERIES 59 Drill &amp; Bore Tools</b></p>  <p>APPLICATION : DRILL &amp; BORE WITH THE SAME TOOL <span style="float: right;">page 13</span></p> | <p><b>SERIES 48 Bore &amp; Groove Tools</b></p>  <p>APPLICATION : BORE &amp; GROOVE WITH THE SAME TOOL <span style="float: right;">page 14</span></p> | <p><b>SERIES 50 Bore &amp; Thread Tools</b></p>  <p>APPLICATION : BORE &amp; THREAD WITH THE SAME TOOL <span style="float: right;">page 14</span></p>     |

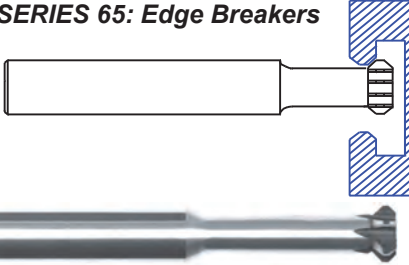
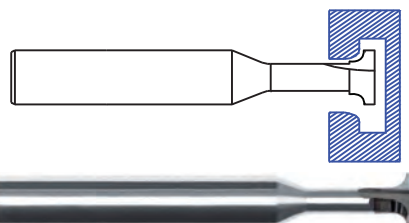
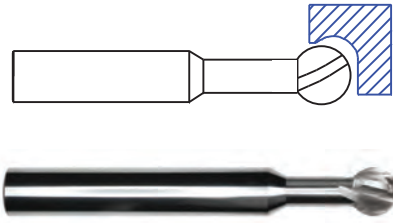
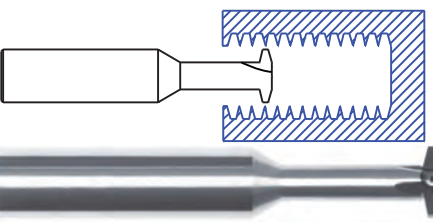
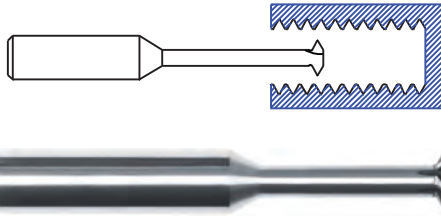
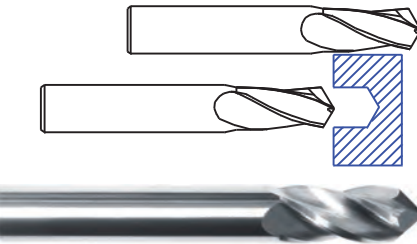
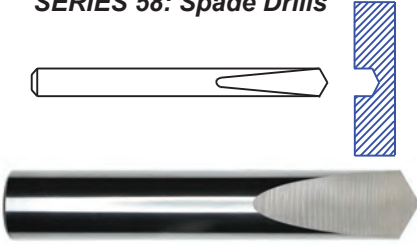
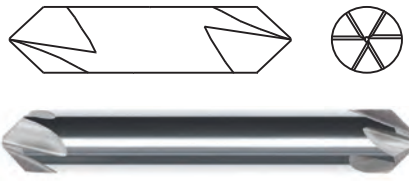
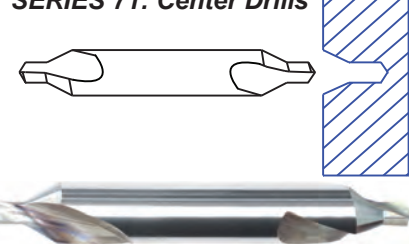
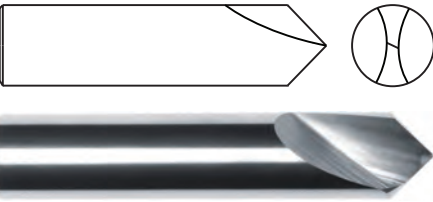
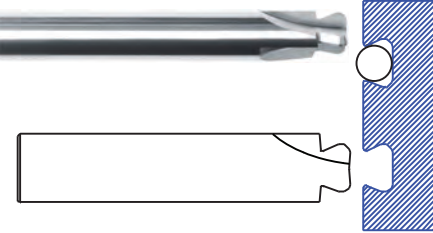
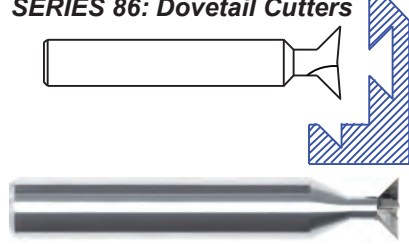
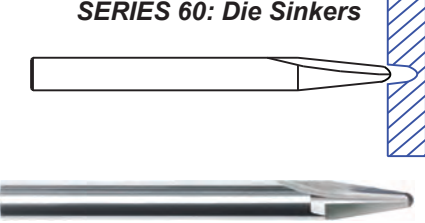
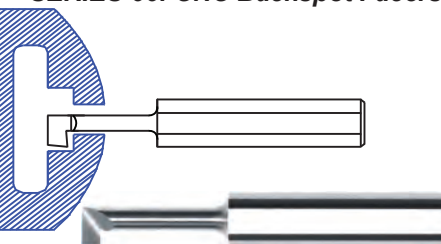
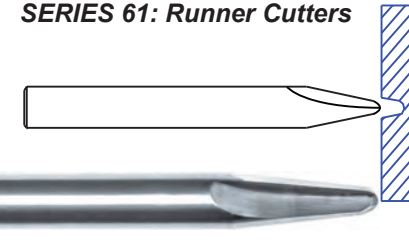
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| <p><b>SERIES 93: Carbide Reamers</b></p>  <p>APPLICATION : REAMING <b>page 108</b></p>                               | <p><b>SERIES 12: Diamond Insert Bars</b></p>  <p>APPLICATION : FOR BORING ALUMINUM <b>page 20-21</b></p>   | <p><b>SERIES 14: Triangle Insert Bars</b></p>  <p>APPLICATION : ID BORING <b>page 15-17</b></p>   |
| <p><b>SERIES 16: Diamond Insert Bars</b></p>  <p>APPLICATION : FOR BORING STEEL <b>page 18-19</b></p>                | <p><b>SERIES 26: Insert Grooving Tools</b></p>  <p>APPLICATION : INSERT GROOVE TOOL <b>page 36</b></p>   | <p><b>SERIES 36: Insert Threading Tools</b></p>  <p>APPLICATION : ID INSERT THREADING <b>page 46-48</b></p>   |
| <p><b>SERIES 40: Replacement Heads</b></p>  <p>APPLICATION : HEADS &amp; SCREWS <b>page 37</b></p>                  | <p><b>SERIES 78: Carbide Head Key Cutters</b></p>  <p>APPLICATION : SLOTTING &amp; GROOVING <b>page 80-83</b></p>   | <p><b>SERIES 76: Carbide Key Cutters for Soft Material</b></p>  <p>APPLICATION : SLOTTING &amp; GROOVING SOFT MATERIAL ALUMINUM BRASS PLASTIC ETC <b>page 74</b></p> |
| <p><b>SERIES 76: Solid Carbide Key Cutters</b></p>  <p>APPLICATION : SLOTTING &amp; GROOVING <b>page 76-77</b></p> | <p><b>SERIES 78: 3/8 Shank Key Cutters</b></p>  <p>APPLICATION : FOR LIVE TOOLING <b>page 88</b></p>   | <p><b>SERIES 23: Large DIA Keyway Cutter</b></p>  <p>APPLICATION : EXTRA LARGE SLOTTING <b>page 86</b></p>  |
| <p><b>SERIES 80: Full Radius Key Cutters</b></p>  <p>APPLICATION : FULL RADIUS SLOTS <b>page 89</b></p>            | <p><b>SERIES 78: Carbide Key Cutters with Carbide Head Steel Shank for Soft Material</b></p>  <p>APPLICATION : SLOTTING &amp; GROOVING SOFT MATERIAL, ALUMINUM, BRASS, PLASTIC, ETC. <b>page 80-83</b></p> | <p><b>SERIES 57: Deep Slotting Key Cutters</b></p>  <p>APPLICATION : DEEP SLOTTING <b>page 79</b></p>   |

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| <p><b>SERIES 74: Solid Carbide Long Shank Key Cutters</b></p>  <p>APPLICATION : SLOTTING <b>page 87</b></p>                                | <p><b>SERIES 76: Solid Carbide Key Cutters 1/4" Shank</b></p>  <p>APPLICATION : SLOTTING WITH 1/4" SHANK <b>page 88</b></p> | <p><b>SERIES 77: Retaining Ring Carbide Key Cutters</b></p>  <p>APPLICATION : SIZES FOR MACHINING RETAINING RINGS <b>page 87</b></p> |
| <p><b>SERIES 103: Stagger Tooth Carbide Head Key Cutter</b></p>  <p>APPLICATION : STAGGERED TOOTH SLOTTING <b>page 92</b></p>              | <p><b>SERIES 79: Metric Head Steel Shank Key Cutters</b></p>  <p>APPLICATION : METRIC SIZES <b>page 84</b></p>              | <p><b>SERIES 80: Full Radius Solid Carbide Key Cutters</b></p>  <p>APPLICATION : FULL RADIUS GROOVES <b>page 89</b></p>              |
| <p><b>SERIES 83: Solid Key Cutter Long Reach</b></p>  <p>APPLICATION : LONG REACH <b>page 78</b></p>                                      | <p><b>SERIES 101: Solid Key Cutter With Radius</b></p>  <p>APPLICATION : CORNER RADIUS <b>page 90</b></p>                  | <p><b>SERIES 102: Carbide Head Key Cutter With Radius</b></p>  <p>APPLICATION : CORNER RADIUS <b>page 91</b></p>                    |
| <p><b>SERIES 107: Fine Tooth Carbide Head Key Cutters</b></p>  <p>APPLICATION : FOR INTERRUPTED CUTS OR THIN MATERIAL <b>page 85</b></p> | <p><b>SERIES 90: Single Angle Cutters</b></p>  <p>APPLICATION : ANGLE CUTS &amp; CHAMFERS <b>page 87</b></p>              | <p><b>SERIES 82: Concave Radius Key Cutters</b></p>  <p>APPLICATION : RADIUS WORK <b>page 94</b></p>                               |
| <p><b>SERIES 84: Double Concave Cutters</b></p>  <p>APPLICATION : RADIUS WORK <b>page 94</b></p>   | <p><b>SERIES 92: Double Angle Cutters</b></p>  <p>APPLICATION : ANGLES &amp; CHAMFERS <b>page 102-103</b></p>             | <p><b>SERIES 85: N/C C'Bores</b></p>  <p>APPLICATION : C'BORING AND FLAT BOTTOM REAMING <b>page 109</b></p>                        |



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| <p><b>SERIES 62: Engraving Tools</b></p>  <p>APPLICATION : ENGRAVING, CHAMFERING, C'SINKING <b>page 62-63</b></p>     | <p><b>SERIES 68: Corner Rounders</b></p>  <p>APPLICATION : ROUNDING CORNERS <b>page 70-72</b></p>   | <p><b>SERIES 69: Tapered Endmills</b></p>  <p>APPLICATION : TAPERED MILLING <b>page 57</b></p>                          |
| <p><b>SERIES 64: Chamfer Mills</b></p>  <p>APPLICATION : MILLING ANGLES &amp; CHAMFERS <b>page 66-69</b></p>          | <p><b>SERIES 45: Back Draft Endmills With/ Without Radius</b></p>  <p>APPLICATION : POCKET MILLING WITHOUT TOUCHING THE WALL <b>page 58</b></p> | <p><b>SERIES 21 &amp; 41: Micro Endmills</b></p>  <p>APPLICATION : MILLING SMALL PARTS <b>page 59</b></p>               |
| <p><b>SERIES 41: Endmills in Special Lengths and Sizes</b></p>  <p>APPLICATION : STANDARD MILLING <b>page 60</b></p> | <p><b>SERIES 136: High Performance Endmill</b></p>  <p>APPLICATION : HIGH PERFORMANCE MILLING <b>page 110-111</b></p>                          | <p><b>SERIES 126: Aluminum Endmill</b></p>  <p>APPLICATION : HIGH PERFORMANCE MILLING IN ALUMINUM <b>page 113</b></p>  |
| <p><b>SERIES 116: Ball Endmill</b></p>  <p>APPLICATION : HIGH PERFORMANCE MILLING <b>page 112</b></p>               | <p><b>SERIES 112: Roughing Endmill</b></p>  <p>APPLICATION : HIGH PERFORMANCE ROUGH MILLING <b>page 112</b></p>                               | <p><b>SERIES 72: Double Chamfer Cutters</b></p>  <p>APPLICATION : CHAMFERING BOTH SIDES OF A PLATE <b>page 65</b></p> |
| <p><b>SERIES 81: Anglers</b></p>  <p>APPLICATION : MACHINING LARGE ANGLES <b>page 94</b></p>                        | <p><b>SERIES 89: Multiple Thread Threadmills</b></p>  <p>APPLICATION : MILL MULTIPLE THREADS IN ONE PASS <b>page 105</b></p>                  | <p><b>SERIES 88: Thread Mills</b></p>  <p>APPLICATION : ID &amp; OD THREADING <b>page 104</b></p>                     |



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|---|---|--|
| <p><b>SERIES 65: Edge Breakers</b></p>  <p>APPLICATION :<br/>EDGE BREAKING / CHAMFERING</p> <p style="text-align: right;"><b>page 64</b></p>             | <p><b>SERIES 67: Reverse Corner Rounders</b></p>  <p>APPLICATION : ROUNDING<br/>BACK OR INSIDE CORNERS</p> <p style="text-align: right;"><b>page 65</b></p> | <p><b>SERIES 29: Lollipop Cutters</b></p>  <p>APPLICATION : PROFILE<br/>MILLING</p> <p style="text-align: right;"><b>page 101</b></p>                   |
| <p><b>SERIES 35: ACME/ STUB ACME<br/>Thread Mill</b></p>  <p>APPLICATION : ACME<br/>THREAD MILLING</p> <p style="text-align: right;"><b>page 106</b></p> | <p><b>SERIES 88: Mini Threadmills</b></p>  <p>APPLICATION : THREAD<br/>MILLING SMALL PARTS</p> <p style="text-align: right;"><b>page 104</b></p>            | <p><b>SERIES 49: Drill-Mills</b></p>  <p>APPLICATION : DRILL &amp; MILL<br/>WITH THE SAME TOOL</p> <p style="text-align: right;"><b>page 53-54</b></p>  |
| <p><b>SERIES 58: Spade Drills</b></p>  <p>APPLICATION :<br/>DRILLING HARD MATERIALS</p> <p style="text-align: right;"><b>page 56</b></p>                | <p><b>SERIES 63: Countersinks</b></p>  <p>APPLICATION :<br/>COUNTERSINKING</p> <p style="text-align: right;"><b>page 49</b></p>                            | <p><b>SERIES 71: Center Drills</b></p>  <p>APPLICATION :<br/>CENTER DRILLING</p> <p style="text-align: right;"><b>page 56</b></p>                      |
| <p><b>SERIES 75: Spotting Drills</b></p>  <p>APPLICATION :<br/>CENTER DRILLING-C'SINK</p> <p style="text-align: right;"><b>page 56</b></p>             | <p><b>SERIES 51: O-Ring Dovetail Cutters</b></p>  <p>APPLICATION :<br/>FACE GROOVE DOVETAILES</p> <p style="text-align: right;"><b>page 95</b></p>        | <p><b>SERIES 86: Dovetail Cutters</b></p>  <p>APPLICATION :<br/>DOVETAIL SLOTS &amp; CHAMFERS</p> <p style="text-align: right;"><b>page 96-99</b></p> |
| <p><b>SERIES 60: Die Sinkers</b></p>  <p>APPLICATION :<br/>TAPERED BALL MILLING</p> <p style="text-align: right;"><b>page 49</b></p>                   | <p><b>SERIES 66: CNC Backspot Facers</b></p>  <p>APPLICATION :<br/>CNC BACK SPOT FACING</p> <p style="text-align: right;"><b>page 64</b></p>              | <p><b>SERIES 61: Runner Cutters</b></p>  <p>APPLICATION :<br/>MACHINING RUNNERS IN<br/>MOLDS</p> <p style="text-align: right;"><b>page 49</b></p>     |

# BORING TOOLS

# SERIES 10 STANDARD CARBIDE BORING TOOLS

**APPLICATION: GENERAL PURPOSE BORING TOOL FOR BORING ALL TYPES OF MATERIALS**

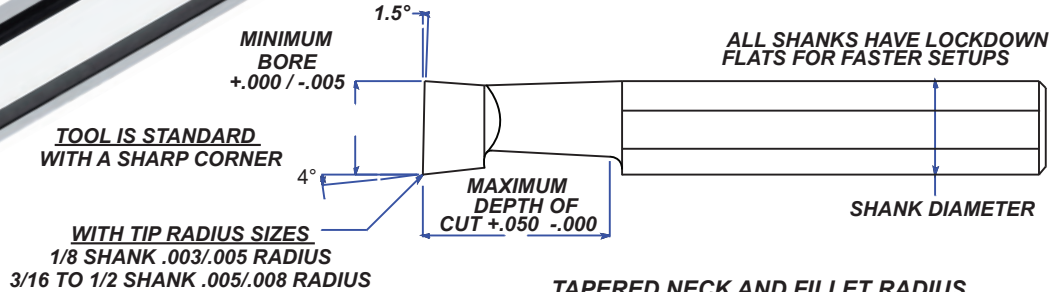
*New!*

NOW AVAILABLE WITH CORNER RADIUS AND COATED



**COATINGS ARE AVAILABLE  
ALTIN FOR STEEL ADD "-A" TO EDP #  
TIN FOR ALUMINUM ADD "-T" TO EDP #**

Example: 10-1000-A = B-050-150 RADIUS ALTIN COATED



| MIN BORE | MAXIMUM DEPTH | EDP# SHARP CORNER | EDP# WITH RADIUS | TOOL ID # | SHANK & OVERALL LENGTH |
|----------|---------------|-------------------|------------------|-----------|------------------------|
| .050     | .150          | 10-1000           | 10-1000-R        | B-050-150 | 1/8                    |
|          | .200          | 10-1005           | 10-1005-R        | B-050-200 | X                      |
|          | .300          | 10-1010           | 10-1010-R        | B-050-300 | 2"                     |
|          | .400          | 10-1015           | 10-1015-R        | B-050-400 |                        |
| .060     | .150          | 10-1020           | 10-1020-R        | B-060-150 | 1/8                    |
|          | .200          | 10-1025           | 10-1025-R        | B-060-200 | X                      |
|          | .300          | 10-1030           | 10-1030-R        | B-060-300 | 2"                     |
|          | .400          | 10-1035           | 10-1035-R        | B-060-400 |                        |
|          | .500          | 10-1040           | 10-1040-R        | B-060-500 |                        |
| .080     | .150          | 10-1045           | 10-1045-R        | B-080-150 | 1/8                    |
|          | .200          | 10-1050           | 10-1050-R        | B-080-200 | X                      |
|          | .300          | 10-1055           | 10-1055-R        | B-080-300 | 2"                     |
|          | .400          | 10-1060           | 10-1060-R        | B-080-400 |                        |
|          | .500          | 10-1065           | 10-1065-R        | B-080-500 |                        |
|          | .600          | 10-1070           | 10-1070-R        | B-080-600 |                        |
| .100     | .150          | 10-1075           | 10-1075-R        | B-100-150 | 1/8                    |
|          | .200          | 10-1080           | 10-1080-R        | B-100-200 | X                      |
|          | .300          | 10-1085           | 10-1085-R        | B-100-300 | 2"                     |
|          | .400          | 10-1090           | 10-1090-R        | B-100-400 |                        |
|          | .500          | 10-1095           | 10-1095-R        | B-100-500 |                        |
|          | .600          | 10-1100           | 10-1100-R        | B-100-600 |                        |
|          | .700          | 10-1105           | 10-1105-R        | B-100-700 |                        |
| .110     | .150          | 10-1110           | 10-1110-R        | B-110-150 | 1/8                    |
|          | .200          | 10-1115           | 10-1115-R        | B-110-200 | X                      |
|          | .300          | 10-1120           | 10-1120-R        | B-110-300 | 2"                     |
|          | .400          | 10-1125           | 10-1125-R        | B-110-400 |                        |
|          | .500          | 10-1130           | 10-1130-R        | B-110-500 |                        |
|          | .600          | 10-1135           | 10-1135-R        | B-110-600 |                        |
|          | .700          | 10-1140           | 10-1140-R        | B-110-700 |                        |
|          | .800          | 10-1145           | 10-1145-R        | B-110-800 |                        |
| .120     | .250          | 10-1145           | 10-1145-R        | B-120-250 | 3/16                   |
|          | .350          | 10-1150           | 10-1150-R        | B-120-350 | X                      |
|          | .500          | 10-1155           | 10-1155-R        | B-120-500 | 2-1/2"                 |
|          | .600          | 10-1160           | 10-1160-R        | B-120-600 |                        |
|          | .700          | 10-1165           | 10-1165-R        | B-120-700 |                        |
|          | .800          | 10-1170           | 10-1170-R        | B-120-800 |                        |

| MIN BORE | MAXIMUM DEPTH | EDP# SHARP CORNER | EDP# WITH RADIUS | TOOL ID #  | SHANK & OVERALL LENGTH |
|----------|---------------|-------------------|------------------|------------|------------------------|
| .140     | .250          | 10-1175           | 10-1175-R        | B-140-250  | 3/16<br>X<br>2-1/2"    |
|          | .400          | 10-1180           | 10-1180-R        | B-140-400  |                        |
|          | .500          | 10-1185           | 10-1185-R        | B-140-500  |                        |
|          | .600          | 10-1190           | 10-1190-R        | B-140-600  |                        |
|          | .700          | 10-1195           | 10-1195-R        | B-140-700  |                        |
|          | .750          | 10-1200           | 10-1200-R        | B-140-750  |                        |
|          | .800          | 10-1205           | 10-1205-R        | B-140-800  |                        |
|          | .160          | .250              | 10-1210          | 10-1210-R  |                        |
| .400     |               | 10-1215           | 10-1215-R        | B-160-400  |                        |
| .500     |               | 10-1220           | 10-1220-R        | B-160-500  |                        |
| .600     |               | 10-1225           | 10-1225-R        | B-160-600  |                        |
| .750     |               | 10-1230           | 10-1230-R        | B-160-750  |                        |
| .900     |               | 10-1235           | 10-1235-R        | B-160-900  |                        |
| 1.000    |               | 10-1240           | 10-1240-R        | B-160-1000 |                        |
| .180     |               | .350              | 10-1245          | 10-1245-R  | B-180-350              |
|          | .500          | 10-1250           | 10-1250-R        | B-180-500  |                        |
|          | .600          | 10-1255           | 10-1255-R        | B-180-600  |                        |
|          | .750          | 10-1260           | 10-1260-R        | B-180-750  |                        |
|          | .900          | 10-1265           | 10-1265-R        | B-180-900  |                        |
|          | 1.000         | 10-1270           | 10-1270-R        | B-180-1000 |                        |
|          | 1.100         | 10-1275           | 10-1275-R        | B-180-1100 |                        |
|          | .200          | .400              | 10-1280          | 10-1280-R  | B-200-400              |
| .500     |               | 10-1285           | 10-1285-R        | B-200-500  |                        |
| .600     |               | 10-1290           | 10-1290-R        | B-200-600  |                        |
| .700     |               | 10-1295           | 10-1295-R        | B-200-700  |                        |
| .800     |               | 10-1300           | 10-1300-R        | B-200-800  |                        |
| .900     |               | 10-1305           | 10-1305-R        | B-200-900  |                        |
| 1.000    |               | 10-1310           | 10-1310-R        | B-200-1000 |                        |
| 1.100    |               | 10-1315           | 10-1315-R        | B-200-1100 |                        |
| .200     | 1.200         | 10-1320           | 10-1320-R        | B-200-1200 |                        |
|          | 1.300         | 10-1325           | 10-1325-R        | B-200-1300 |                        |

**ALL TOOLS ON THIS PAGE ARE AVAILABLE IN LEFT HAND ADD -LH TO EDP NUMBER WHEN ORDERING Example : 10-1630-LH**



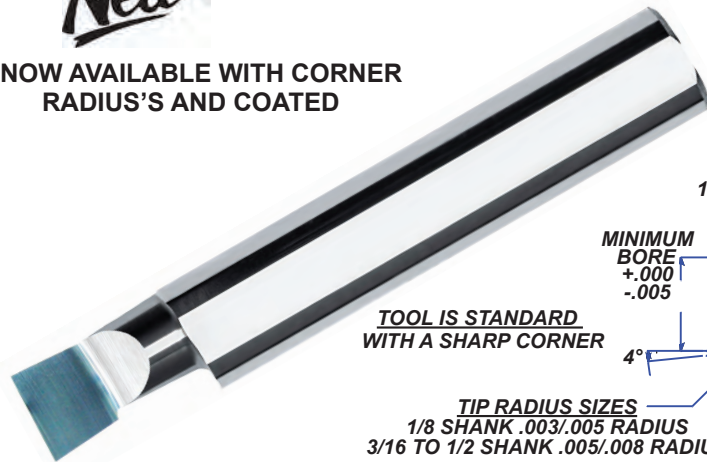
# SERIES 10 STANDARD CARBIDE BORING TOOLS

# BORING TOOLS

**APPLICATION: GENERAL PURPOSE BORING TOOL FOR BORING ALL TYPES OF MATERIALS**

*New!*

**NOW AVAILABLE WITH CORNER RADIUS'S AND COATED**

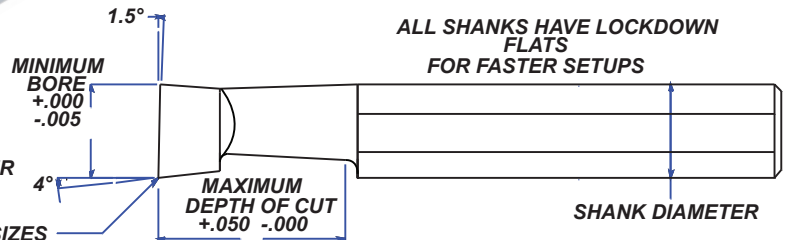


TOOL IS STANDARD WITH A SHARP CORNER

TIP RADIUS SIZES  
1/8 SHANK .003/.005 RADIUS  
3/16 TO 1/2 SHANK .005/.008 RADIUS

**COATINGS ARE AVAILABLE  
ALTN FOR STEEL ADD "-A" TO EDP #  
TIN FOR ALUMINUM ADD "-T" TO EDP #**

Example: 10-1000-A = B-050-150 RADIUS ALTN COATED



ALL SHANKS HAVE LOCKDOWN FLATS FOR FASTER SETUPS

TAPERED NECK AND FULL RADIUS PROVIDE MAXIMUM RIGIDITY

| MIN BORE | MAXIMUM DEPTH | EDP# SHARP CORNER | EDP# WITH RADIUS | TOOL ID #  | SHANK & OVERALL LENGTH |
|----------|---------------|-------------------|------------------|------------|------------------------|
| .230     | .400          | 10-1330           | 10-1330-R        | B-230-400  | 5/16 x 2-1/2"          |
|          | .500          | 10-1335           | 10-1335-R        | B-230-500  |                        |
|          | .600          | 10-1340           | 10-1340-R        | B-230-600  |                        |
|          | .700          | 10-1345           | 10-1345-R        | B-230-700  |                        |
|          | .800          | 10-1350           | 10-1350-R        | B-230-800  |                        |
|          | .900          | 10-1355           | 10-1355-R        | B-230-900  |                        |
|          | 1.000         | 10-1360           | 10-1360-R        | B-230-1000 |                        |
|          | 1.150         | 10-1365           | 10-1365-R        | B-230-1150 |                        |
|          | 1.200         | 10-1370           | 10-1370-R        | B-230-1200 |                        |
|          | 1.250         | 10-1375           | 10-1375-R        | B-230-1250 |                        |
|          | 1.400         | 10-1380           | 10-1380-R        | B-230-1400 |                        |
|          | 1.500         | 10-1385           | 10-1385-R        | B-230-1500 |                        |
| 1.600    | 10-1390       | 10-1390-R         | B-230-1600       |            |                        |
| .290     | .500          | 10-1395           | 10-1395-R        | B-290-500  | 5/16 x 2-1/2"          |
|          | .600          | 10-1400           | 10-1400-R        | B-290-600  |                        |
|          | .750          | 10-1405           | 10-1405-R        | B-290-750  |                        |
|          | .900          | 10-1410           | 10-1410-R        | B-290-900  |                        |
|          | 1.000         | 10-1415           | 10-1415-R        | B-290-1000 |                        |
|          | 1.100         | 10-1420           | 10-1420-R        | B-290-1100 |                        |
|          | 1.250         | 10-1425           | 10-1425-R        | B-290-1250 |                        |
|          | 1.350         | 10-1430           | 10-1430-R        | B-290-1350 |                        |
|          | 1.500         | 10-1435           | 10-1435-R        | B-290-1500 |                        |
|          | 1.600         | 10-1440           | 10-1440-R        | B-290-1600 |                        |
| 1.750    | 10-1445       | 10-1445-R         | B-290-1750       |            |                        |
| .320     | .500          | 10-1450           | 10-1450-R        | B-320-500  | 3/8 x 2-1/2"           |
|          | .600          | 10-1455           | 10-1455-R        | B-320-600  |                        |
|          | .750          | 10-1460           | 10-1460-R        | B-320-750  |                        |
|          | .900          | 10-1465           | 10-1465-R        | B-320-900  |                        |
|          | 1.000         | 10-1470           | 10-1470-R        | B-320-1000 |                        |
|          | 1.100         | 10-1475           | 10-1475-R        | B-320-1100 |                        |
|          | 1.250         | 10-1480           | 10-1480-R        | B-320-1250 |                        |
|          | 1.500         | 10-1485           | 10-1485-R        | B-320-1500 |                        |
|          | 1.600         | 10-1490           | 10-1490-R        | B-320-1600 |                        |
| 1.800    | 10-1495       | 10-1495-R         | B-320-1800       |            |                        |
| .320     | 2.000         | 10-1500           | 10-1500-R        | B-320-2000 | 3/8 x 4.0              |
|          | 2.500         | 10-1505           | 10-1505-R        | B-320-2500 |                        |
|          | 3.000         | 10-1510           | 10-1510-R        | B-320-3000 |                        |

| MIN BORE | MAXIMUM DEPTH | EDP# SHARP CORNER | EDP# WITH RADIUS | TOOL ID #  | SHANK & OVERALL LENGTH |
|----------|---------------|-------------------|------------------|------------|------------------------|
| .360     | .500          | 10-1515           | 10-1515-R        | B-360-500  | 3/8 x 2-1/2"           |
|          | .600          | 10-1520           | 10-1520-R        | B-360-600  |                        |
|          | .750          | 10-1525           | 10-1525-R        | B-360-750  |                        |
|          | .900          | 10-1530           | 10-1530-R        | B-360-900  |                        |
|          | 1.000         | 10-1535           | 10-1535-R        | B-360-1000 |                        |
|          | 1.150         | 10-1540           | 10-1540-R        | B-360-1150 |                        |
|          | 1.250         | 10-1545           | 10-1545-R        | B-360-1250 |                        |
|          | 1.500         | 10-1550           | 10-1550-R        | B-360-1500 |                        |
|          | 1.600         | 10-1555           | 10-1555-R        | B-360-1600 |                        |
|          | 1.800         | 10-1560           | 10-1560-R        | B-360-1800 |                        |
| .360     | 2.000         | 10-1565           | 10-1565-R        | B-360-2000 | 3/8 x 4"               |
|          | 2.500         | 10-1570           | 10-1570-R        | B-360-2500 |                        |
|          | 3.000         | 10-1575           | 10-1575-R        | B-360-3000 |                        |
| .490     | .750          | 10-1580           | 10-1580-R        | B-490-750  | 1/2 x 3"               |
|          | 1.000         | 10-1585           | 10-1585-R        | B-490-1000 |                        |
|          | 1.250         | 10-1590           | 10-1590-R        | B-490-1250 |                        |
|          | 1.500         | 10-1595           | 10-1595-R        | B-490-1500 |                        |
| .490     | 2.000         | 10-1600           | 10-1600-R        | B-490-2000 | 1/2 x 4"               |
|          | 2.500         | 10-1605           | 10-1605-R        | B-490-2500 |                        |
|          | 2.600         | 10-1610           | 10-1610-R        | B-490-2600 |                        |
| .490     | 3.000         | 10-1615           | 10-1615-R        | B-490-3000 | 1/2 x 6"               |
|          | 3.500         | 10-1620           | 10-1620-R        | B-490-3500 |                        |
|          | 4.000         | 10-1625           | 10-1625-R        | B-490-4000 |                        |
|          | 4.500         | 10-1630           | 10-1630-R        | B-490-4500 |                        |

**ALL TOOLS ON THIS PAGE ARE AVAILABLE IN LEFT HAND ADD -LH TO EDP NUMBER WHEN ORDERING Example : 10-1630-LH**

PROUDLY MADE IN THE USA

**IT Carbide Cutting Tools**



# BORING TOOLS

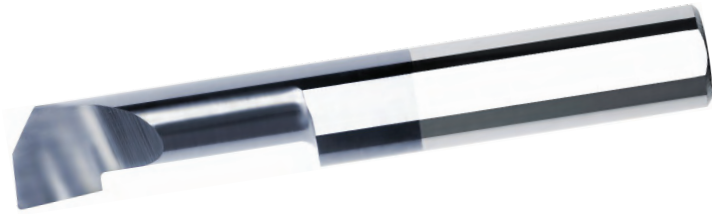
# SERIES 18 SOLID CARBIDE MAX BORING TOOLS

APPLICATION : BORING TOUGH MATERIALS STAINLESS, TITANIUM, 4140, 4340, D2, NICKEL, MONEL, INCONEL ETC.

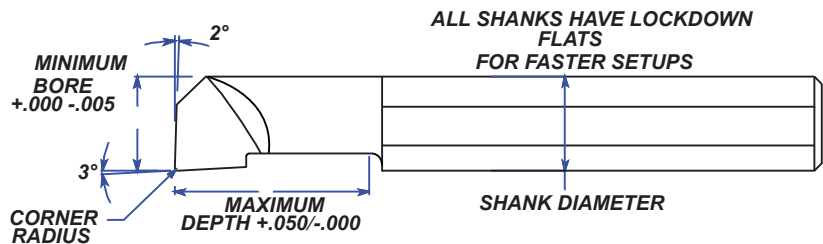
New Sizes Available!

**ALTiN COATED  
GROUND WITH HELICAL RAKE  
ELLIPTICAL NECK FOR GREATER  
STRENGTH**

## MAX-BORE BORING TOOLS



Max-Bore is the Ultimate in boring tools. Featuring an elliptical neck for greater strength. A special helical flute for maximum shearing action with a better finish, and a ALTiN coating for a longer life. Max-Bore outperforms and outlasts our competitors boring tools two to one.



| MIN BORE | ORDER EDP#  | TOOL ID #   | MAXIMUM DEPTH | CORNER RADIUS | SHANK & OVERALL LENGTH | MIN BORE | ORDER EDP#  | TOOL ID #    | MAXIMUM DEPTH | CORNER RADIUS | SHANK & OVERALL LENGTH |       |
|----------|-------------|-------------|---------------|---------------|------------------------|----------|-------------|--------------|---------------|---------------|------------------------|-------|
| .050     | 18-1000     | MB-050-200  | .200          | .007          | 1/8 x 2"               | .180     | 18-1212     | MB-180-400   | .400          | .007          | 3/16 x 2-1/2"          |       |
|          | 18-1005     | MB-050-300  | .300          |               |                        |          | 18-1215     | MB-180-500   | .500          |               |                        |       |
|          | 18-1010     | MB-050-400  | .400          |               |                        |          | 18-1220     | MB-180-600   | .600          |               |                        |       |
| .060     | 18-1015     | MB-060-200  | .200          | 18-1225       | MB-180-800             |          | .800        |              |               |               |                        |       |
|          | 18-1020     | MB-060-300  | .300          | 18-1230       | MB-180-1000            |          | 1.000       |              |               |               |                        |       |
|          | 18-1025     | MB-060-400  | .400          | 18-1235       | MB-180-1250            |          | 1.250       |              |               |               |                        |       |
| .080     | 18-1030     | MB-060-500  | .500          | .007          | 1/8 x 2"               |          | 18-1240     | MB-180-1500  | 1.500         |               |                        |       |
|          | 18-1035     | MB-080-200  | .200          |               |                        |          | .200        | 1/4 x 2-1/2" | 18-1242       |               | MB-200-400             | .400  |
|          | 18-1040     | MB-080-300  | .300          |               |                        |          |             |              | 18-1245       |               | MB-200-500             | .500  |
|          | 18-1045     | MB-080-400  | .400          |               |                        |          |             |              | 18-1250       |               | MB-200-800             | .800  |
|          | 18-1050     | MB-080-500  | .500          |               |                        |          |             |              | 18-1255       |               | MB-200-1000            | 1.000 |
| 18-1055  | MB-080-600  | .600        | 18-1260       | MB-200-1250   | 1.250                  |          |             |              |               |               |                        |       |
| .090     | 18-1060     | MB-090-400  | .400          | .007          | 1/8 x 2"               |          | 18-1265     | MB-200-1500  | 1.500         |               |                        |       |
|          | 18-1065     | MB-090-500  | .500          |               |                        |          | 18-1270     | MB-200-1750  | 1.750         |               |                        |       |
|          | 18-1070     | MB-090-600  | .600          |               |                        |          | .240        | 1/4 x 2-1/2" | 18-1275       |               | MB-240-500             | .500  |
| .100     | 18-1075     | MB-100-300  | .300          | 18-1280       | MB-240-800             |          |             |              | .800          |               |                        |       |
|          | 18-1080     | MB-100-400  | .400          | 18-1285       | MB-240-1000            |          |             |              | 1.000         |               |                        |       |
|          | 18-1085     | MB-100-500  | .500          | 18-1290       | MB-240-1250            |          |             |              | 1.250         |               |                        |       |
|          | 18-1090     | MB-100-600  | .600          | 18-1295       | MB-240-1500            | 1.500    |             |              |               |               |                        |       |
|          | 18-1095     | MB-100-700  | .700          | .290          | 5/16 x 2-1/2"          | 18-1300  | MB-290-750  | .750         |               |               |                        |       |
| .110     | 18-1100     | MB-110-300  | .300          |               |                        | 18-1305  | MB-290-1000 | 1.000        |               |               |                        |       |
|          | 18-1105     | MB-110-400  | .400          |               |                        | 18-1310  | MB-290-1250 | 1.250        |               |               |                        |       |
|          | 18-1110     | MB-110-500  | .500          |               |                        | 18-1315  | MB-290-1500 | 1.500        |               |               |                        |       |
|          | 18-1115     | MB-110-600  | .600          |               |                        | 18-1320  | MB-290-1750 | 1.750        |               |               |                        |       |
|          | 18-1120     | MB-110-700  | .700          | .310          | 5/16 x 2-1/2"          | 18-1322  | MB-310-500  | .500         |               |               |                        |       |
| .120     | 18-1125     | MB-120-400  | .400          |               |                        | 18-1325  | MB-310-750  | .750         |               |               |                        |       |
|          | 18-1130     | MB-120-500  | .500          |               |                        | 18-1330  | MB-310-1000 | 1.000        |               |               |                        |       |
|          | 18-1135     | MB-120-600  | .600          |               |                        | 18-1335  | MB-310-1250 | 1.250        |               |               |                        |       |
|          | 18-1140     | MB-120-700  | .700          |               |                        | 18-1340  | MB-310-1500 | 1.500        |               |               |                        |       |
|          | 18-1145     | MB-140-800  | .800          | 18-1345       | MB-310-1750            | 1.750    |             |              |               |               |                        |       |
| .140     | 18-1150     | MB-140-400  | .400          | .007          | 3/16 x 2-1/2"          | .360     | 18-1350     | MB-360-500   | .500          |               |                        |       |
|          | 18-1155     | MB-140-500  | .500          |               |                        |          | 18-1355     | MB-360-750   | .750          |               |                        |       |
|          | 18-1160     | MB-140-600  | .600          |               |                        |          | 18-1360     | MB-360-1000  | 1.000         |               |                        |       |
|          | 18-1165     | MB-140-700  | .700          |               |                        |          | 18-1365     | MB-360-1250  | 1.250         |               |                        |       |
|          | 18-1170     | MB-140-800  | .800          |               |                        |          | 18-1370     | MB-360-1500  | 1.500         |               |                        |       |
|          | 18-1175     | MB-140-900  | .900          |               |                        |          | .490        | 1/2 x 3"     | 18-1375       | MB-490-750    | .750                   |       |
| 18-1180  | MB-140-1000 | 1.000       | 18-1380       | MB-490-1000   | 1.000                  |          |             |              |               |               |                        |       |
| 18-1185  | MB-140-1250 | 1.250       | 18-1385       | MB-490-1250   | 1.250                  |          |             |              |               |               |                        |       |
| .160     | 18-1190     | MB-160-500  | .500          | 18-1390       | MB-490-1500            | 1.500    |             |              |               |               |                        |       |
|          | 18-1195     | MB-160-600  | .600          |               |                        |          |             |              |               |               |                        |       |
|          | 18-1200     | MB-160-800  | .800          |               |                        |          |             |              |               |               |                        |       |
|          | 18-1205     | MB-160-1000 | 1.000         |               |                        |          |             |              |               |               |                        |       |
| 18-1210  | MB-160-1250 | 1.250       |               |               |                        |          |             |              |               |               |                        |       |

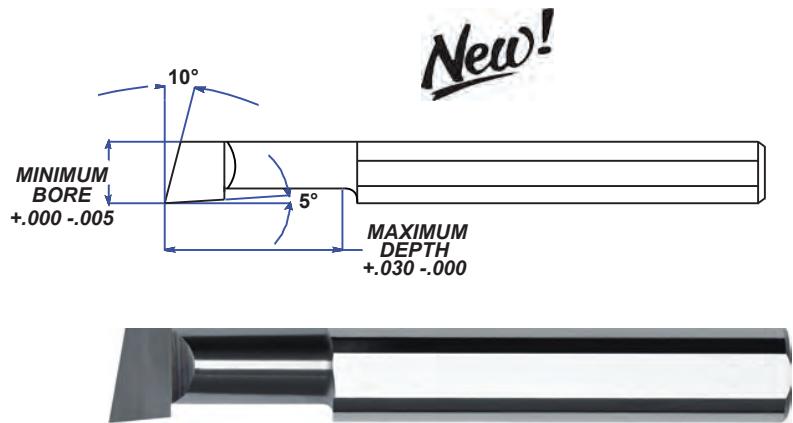


# SERIES 91 PLASTIC CUTTING BORING TOOLS

# BORING TOOLS

**APPLICATION: CLEARANCE AND RELIEF ANGLES FOR CUTTING PLASTIC**

| MIN BORE | ORDER EDP # | MAX DEPTH | SHANK & OVERALL LENGTH |
|----------|-------------|-----------|------------------------|
| .120     | 91-1000     | .250      | 1/8 x 2"               |
|          | 91-1010     | .500      |                        |
|          | 91-1020     | .800      |                        |
| .180     | 91-1030     | .500      | 3/16 x 2-1/2"          |
|          | 91-1040     | .750      |                        |
|          | 91-1050     | 1.250     |                        |
| .240     | 91-1060     | .500      | 1/4 x 2-1/2"           |
|          | 91-1070     | .750      |                        |
|          | 91-1080     | 1.250     |                        |
| .370     | 91-1090     | .500      | 3/8 x 2-1/2"           |
|          | 91-1100     | .750      |                        |
|          | 91-1110     | 1.250     |                        |
| .490     | 91-1120     | .750      | 1/2 x 3"               |
|          | 91-1130     | 1.000     |                        |
|          | 91-1140     | 1.500     |                        |

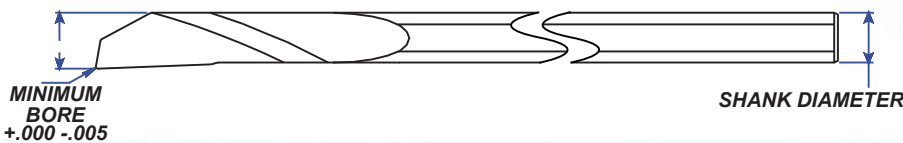


## SERIES 04 MULTI-REACH BORING TOOLS

**APPLICATION: MULTI-REACH BORING NO LONGER LIMITED BY NECK LENGTH. ONE TOOL REPLACES A SERIES OF OTHERS.**

| MIN BORE | ORDER EDP # | ALTiN COATED EDP # | SHANK DIA | CORNER RADIUS | SHANK LENGTH |
|----------|-------------|--------------------|-----------|---------------|--------------|
| .220     | 04-1095     | 04-1095-C          | 3/16"     | .005          | 4"           |
| .280     | 04-1100     | 04-1100-C          | 1/4"      | .007          | 4"           |
| .350     | 04-1110     | 04-1110-C          | 5/16"     | .007          | 4"           |
| .420     | 04-1120     | 04-1120-C          | 3/8"      | .010          | 6"           |
| .560     | 04-1130     | 04-1130-C          | 1/2"      | .010          | 6"           |
| .700     | 04-1140     | 04-1140-C          | 5/8"      | .015          | 6"           |

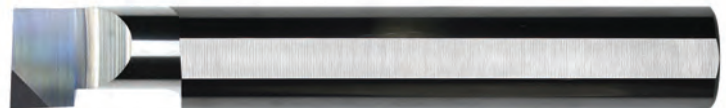
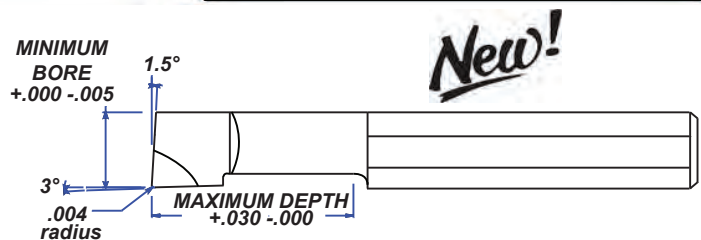
SOLID CARBIDE SHANKS PROVIDE MAXIMUM RIGIDITY.



## SERIES 108 CBN AND PCD TIPPED BORING TOOLS

**APPLICATION: CBN FOR HARD FERROUS MATERIALS 45 RC AND HARDER. PCD FOR ABRASIVE NON FERROUS MATERIALS.**

| MIN BORE | CBN EDP # | PCD EDP # | MAX DEPTH | SHANK & OVERALL LENGTH |
|----------|-----------|-----------|-----------|------------------------|
| .120     | 108-1000  | 108-5000  | .250      | 1/8 x 2"               |
|          | 108-1050  | 108-5050  | .500      |                        |
|          | 108-1100  | 108-5100  | .800      |                        |
| .180     | 108-1150  | 108-5150  | .500      | 3/16 x 2-1/2"          |
|          | 108-1200  | 108-5200  | .750      |                        |
|          | 108-1250  | 108-5200  | 1.250     |                        |
| .240     | 108-1300  | 108-5250  | .500      | 1/4 x 2-1/2"           |
|          | 108-1350  | 108-5300  | .750      |                        |
|          | 108-1400  | 108-5350  | 1.250     |                        |
| .370     | 108-1450  | 108-5450  | .500      | 3/8 x 2-1/2"           |
|          | 108-1500  | 108-5500  | .750      |                        |
|          | 108-1550  | 108-5550  | 1.250     |                        |
| .490     | 108-1600  | 108-5600  | .750      | 1/2 x 3"               |
|          | 108-1650  | 108-5650  | 1.000     |                        |
|          | 108-1700  | 108-5700  | 1.500     |                        |



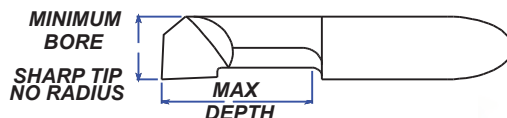
# BORING TOOLS

# SERIES 42 QUICK CHANGE BORING TOOLS

**APPLICATION: QUICK CHANGE, REPLACE TOOLS QUICKLY AND ACCURATELY**



ALL THE DETAIL AND QUALITY FROM OUR STANDARD LINE  
LESS EXPENSIVE QUICK CHANGE STYLE  
NEW FEATURE - AXIAL RAKE FOR FASTER FREER CUTTING



## QUICK CHANGE HOLDERS

HOLDERS ARE AVAILABLE WITH 3/8", 1/2", 5/8", & 3/4" SHANK SIZES. STANDARD STYLE

- 3/8" SHANK EDP# 42-9000
- 1/2" SHANK EDP# 42-9005
- 5/8" SHANK EDP# 42-9010
- 3/4" SHANK EDP# 42-9015
- 22 MM SHANK EDP# 42-9020

### COOLANT HOLE STYLE

- SHANK EDP# 42-9500 3/8"
- SHANK EDP# 42-9505 1/2"
- SHANK EDP# 42-9510 5/8"
- SHANK EDP# 42-9515 3/4"
- SHANK EDP# 42-9520 22 MM

EXTRA SCREW EDP# 42-8888

Quick Change Tools Are Also Available For Grooving, Face Grooving, Threading And, Profiling. See Pages 30-31,39,41, And 51.

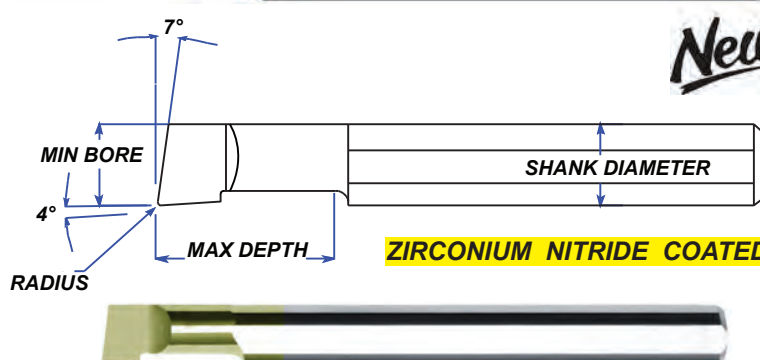
| MIN BORE | MAX DEPTH | ORDER EDP # | ALTIM COATED EDP # |
|----------|-----------|-------------|--------------------|
| .030     | .100      | 42-0980     | 42-0980-C          |
|          | .150      | 42-0985     | 42-0985-C          |
| .040     | .200      | 42-0990     | 42-0990-C          |
|          | .300      | 42-0995     | 42-0995-C          |
| .050     | .200      | 42-1000     | 42-1000-C          |
|          | .300      | 42-1005     | 42-1005-C          |
| .060     | .200      | 42-1010     | 42-1010-C          |
|          | .300      | 42-1015     | 42-1015-C          |
|          | .400      | 42-1020     | 42-1020-C          |
|          | .500      | 42-1025     | 42-1025-C          |
| .080     | .200      | 42-1030     | 42-1030-C          |
|          | .300      | 42-1035     | 42-1035-C          |
|          | .400      | 42-1040     | 42-1040-C          |
|          | .500      | 42-1045     | 42-1045-C          |
| .100     | .200      | 42-1050     | 42-1050-C          |
|          | .300      | 42-1055     | 42-1055-C          |
|          | .400      | 42-1060     | 42-1060-C          |
|          | .500      | 42-1065     | 42-1065-C          |
| .120     | .600      | 42-1070     | 42-1070-C          |
|          | .700      | 42-1075     | 42-1075-C          |
|          | .200      | 42-1080     | 42-1080-C          |
|          | .300      | 42-1085     | 42-1085-C          |
| .140     | .400      | 42-1090     | 42-1090-C          |
|          | .500      | 42-1095     | 42-1095-C          |
|          | .600      | 42-1100     | 42-1100-C          |
|          | .700      | 42-1105     | 42-1105-C          |

| MIN BORE | MAX DEPTH | ORDER EDP # | ALTIM COATED EDP # |
|----------|-----------|-------------|--------------------|
| .140     | .200      | 42-1110     | 42-1110-C          |
|          | .300      | 42-1115     | 42-1115-C          |
|          | .400      | 42-1120     | 42-1120-C          |
|          | .500      | 42-1125     | 42-1125-C          |
|          | .600      | 42-1130     | 42-1130-C          |
| .160     | .700      | 42-1135     | 42-1135-C          |
|          | .200      | 42-1140     | 42-1140-C          |
|          | .300      | 42-1145     | 42-1145-C          |
|          | .400      | 42-1150     | 42-1150-C          |
|          | .500      | 42-1155     | 42-1155-C          |
|          | .600      | 42-1160     | 42-1160-C          |
|          | .700      | 42-1165     | 42-1165-C          |
|          | .800      | 42-1170     | 42-1170-C          |
|          | .900      | 42-1175     | 42-1175-C          |
|          | 1.000     | 42-1180     | 42-1180-C          |
| .180     | 1.100     | 42-1185     | 42-1185-C          |
|          | .200      | 42-1190     | 42-1190-C          |
|          | .300      | 42-1195     | 42-1195-C          |
|          | .400      | 42-1200     | 42-1200-C          |
|          | .500      | 42-1205     | 42-1205-C          |
|          | .600      | 42-1210     | 42-1210-C          |
|          | .700      | 42-1215     | 42-1215-C          |
|          | .800      | 42-1220     | 42-1220-C          |
|          | .900      | 42-1225     | 42-1225-C          |
|          | 1.000     | 42-1230     | 42-1230-C          |
| 1.100    | 42-1235   | 42-1235-C   |                    |

# SERIES 19 ALUMINUM BORING TOOLS

**APPLICATION : CLEARANCE AND RELIEF ANGLES FOR CUTTING ALUMINUM**

| MIN BORE | ORDER EDP # | MAX DEPTH | CORNER RADIUS | SHANK & OVERALL LENGTH |
|----------|-------------|-----------|---------------|------------------------|
| .120     | 19-1200     | .250      | .007          | 1/8 x 2"               |
|          | 19-1250     | .500      |               |                        |
|          | 19-1290     | .800      |               |                        |
| .180     | 19-1300     | .500      | .007          | 3/16 x 2-1/2"          |
|          | 19-1350     | .750      |               |                        |
|          | 19-1390     | 1.250     |               |                        |
| .240     | 19-1400     | .500      | .007          | 1/4 x 2-1/2"           |
|          | 19-1450     | .750      |               |                        |
|          | 19-1490     | 1.250     |               |                        |
| .370     | 19-1500     | .500      | .015          | 3/8 x 2-1/2"           |
|          | 19-1550     | .750      |               |                        |
|          | 19-1590     | 1.250     |               |                        |
| .490     | 19-1600     | .750      | .015          | 1/2 x 3"               |
|          | 19-1650     | 1.000     |               |                        |
|          | 19-1690     | 1.500     |               |                        |



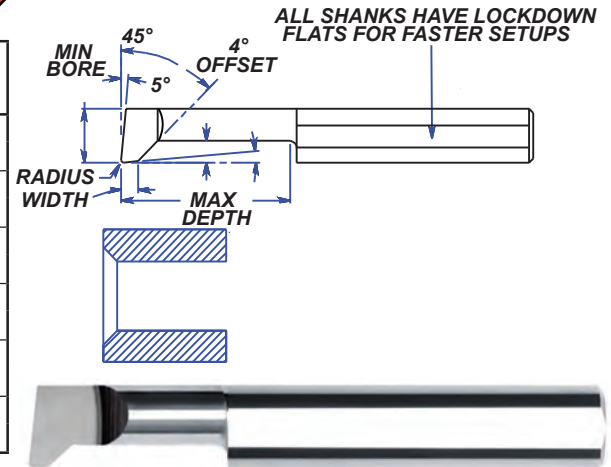


# SERIES 55 BORE & BACK CHAMFER

# BORING TOOLS

**APPLICATION :**  
BORE YOUR HOLE THEN MOVE OVER & REMOVE THE BURR  
ON THE BACKSIDE OF THE HOLE

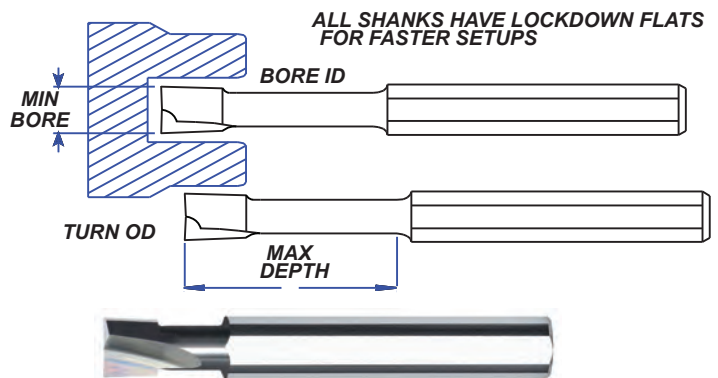
| MIN BORE | WIDTH | OFFSET | RADIUS | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | SHANK & OVERALL LENGTH |
|----------|-------|--------|--------|-----------|-------------|-------------------|------------------------|
| 1/8      | .050  | .045   | .015   | .300      | 55-1100     | 55-1100-C         | 1/8 x 2"               |
|          |       |        |        | .500      | 55-1105     | 55-1105-C         |                        |
| 3/16     | .060  | .050   | .015   | .400      | 55-1110     | 55-1110-C         | 3/16 x 2-1/2"          |
|          |       |        |        | .800      | 55-1115     | 55-1115-C         |                        |
| 1/4      | .080  | .060   | .015   | .500      | 55-1120     | 55-1120-C         | 1/4 x 2-1/2"           |
|          |       |        |        | 1.000     | 55-1125     | 55-1125-C         |                        |
| 5/16     | .080  | .080   | .020   | .750      | 55-1130     | 55-1130-C         | 5/16 x 2-1/2"          |
|          |       |        |        | 1.250     | 55-1135     | 55-1135-C         |                        |
| 3/8      | .100  | .120   | .020   | .750      | 55-1140     | 55-1140-C         | 3/8 x 2-1/2"           |
|          |       |        |        | 1.250     | 55-1145     | 55-1145-C         |                        |
| 1/2      | .110  | .130   | .030   | 1.000     | 55-1150     | 55-1150-C         | 1/2 x 3"               |
|          |       |        |        | 1.500     | 55-1155     | 55-1155-C         |                        |



## SERIES 54 DOUBLE EDGE BORING TOOLS

**APPLICATION :** BORE, AND TURN WITH THE SAME TOOL.

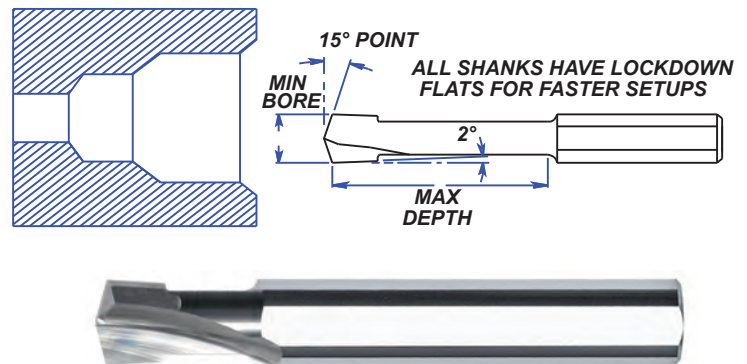
| MIN BORE | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | TOOL ID #   | SHANK & OVERALL LENGTH |
|----------|-----------|-------------|-------------------|-------------|------------------------|
| 1/4      | .500      | 54-1100     | 54-1100-C         | DB-240-500  | 1/4 x 2-1/2"           |
|          | .750      | 54-1105     | 54-1105-C         | DB-240-750  |                        |
|          | 1.000     | 54-1110     | 54-1110-C         | DB-240-1000 |                        |
| 5/16     | .500      | 54-1115     | 54-1115-C         | DB-310-500  | 5/16 x 2-1/2"          |
|          | .750      | 54-1120     | 54-1120-C         | DB-310-750  |                        |
|          | 1.000     | 54-1125     | 54-1125-C         | DB-310-1000 |                        |
| 3/8      | .500      | 54-1130     | 54-1130-C         | DB-360-500  | 3/8 x 2-1/2"           |
|          | .750      | 54-1135     | 54-1135-C         | DB-360-750  |                        |
|          | 1.000     | 54-1140     | 54-1140-C         | DB-360-1000 |                        |
| 1/2      | .500      | 54-1145     | 54-1145-C         | DB-490-500  | 1/2 x 3"               |
|          | .750      | 54-1150     | 54-1150-C         | DB-490-750  |                        |
|          | 1.000     | 54-1155     | 54-1155-C         | DB-490-1000 |                        |



## SERIES 59 DRILL & BORE TOOLS

**APPLICATION :** DRILL, BORE, AND TURN ALL WITH THE SAME TOOL. FEATURING A DRILL POINT FOR FASTER, STRAIGHTER CUTTING

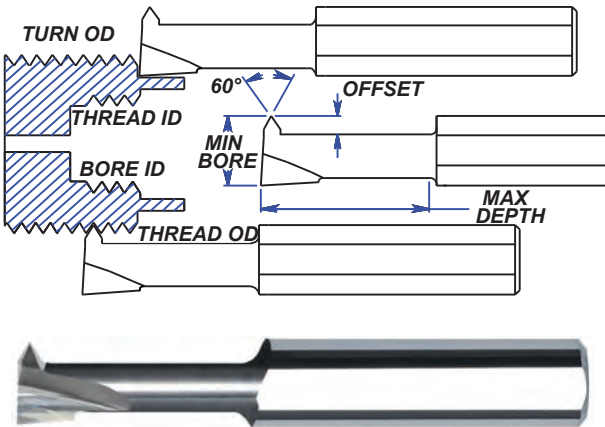
| MIN BORE | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | TOOL ID #    | SHANK & OVERALL LENGTH |
|----------|-----------|-------------|-------------------|--------------|------------------------|
| 1/4      | .500      | 59-1200     | 59-1200-C         | DBO-250-500  | 1/4 x 2-1/2"           |
|          | .750      | 59-1205     | 59-1205-C         | DBO-250-750  |                        |
|          | 1.000     | 59-1210     | 59-1210-C         | DBO-250-1000 |                        |
| 5/16     | .500      | 59-1215     | 59-1215-C         | DBO-312-500  | 5/16 x 2-1/2"          |
|          | .750      | 59-1220     | 59-1220-C         | DBO-312-750  |                        |
|          | 1.000     | 59-1225     | 59-1225-C         | DBO-312-1000 |                        |
| 3/8      | .500      | 59-1230     | 59-1230-C         | DBO-375-500  | 3/8 x 2-1/2"           |
|          | .750      | 59-1235     | 59-1235-C         | DBO-375-750  |                        |
|          | 1.000     | 59-1240     | 59-1240-C         | DBO-375-1000 |                        |
| 1/2      | .500      | 59-1245     | 59-1245-C         | DBO-500-500  | 1/2 x 3"               |
|          | .750      | 59-1250     | 59-1250-C         | DBO-500-750  |                        |
|          | 1.000     | 59-1255     | 59-1255-C         | DBO-500-1000 |                        |



# BORING TOOLS

## SERIES 50 COMBINATION BORE & THREAD

APPLICATION : BORING & THREADING WITH THE SAME TOOL.



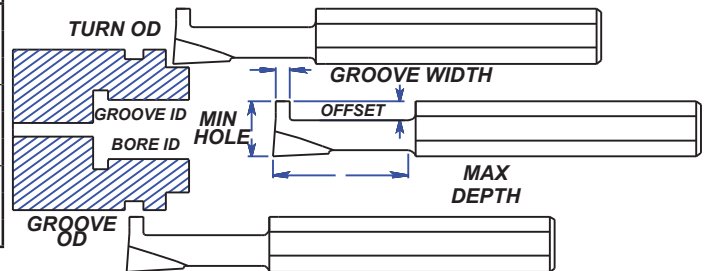
| MIN BORE | MAX DEPTH | ORDER EDP # | TOOL ID #   | THREAD WIDTH | OFFSET | SHANK & OVERALL LENGTH |
|----------|-----------|-------------|-------------|--------------|--------|------------------------|
| 1/4      | .500      | 50-1100     | CM-240-500  | .055         | .050   | 1/4 x 2-1/2            |
|          | .750      | 50-1105     | CM-240-750  |              |        |                        |
|          | 1.000     | 50-1110     | CM-240-1000 |              |        |                        |
| 5/16     | .500      | 50-1115     | CM-310-500  | .065         | .060   | 5/16 x 2-1/2           |
|          | .750      | 50-1120     | CM-310-750  |              |        |                        |
|          | 1.000     | 50-1125     | CM-310-1000 |              |        |                        |
| 3/8      | .500      | 50-1130     | CM-360-500  | .090         | .080   | 3/8 x 2-1/2            |
|          | .750      | 50-1135     | CM-360-750  |              |        |                        |
|          | 1.000     | 50-1140     | CM-360-1000 |              |        |                        |

## SERIES 48 COMBINATION BORE & GROOVE

APPLICATION : BORING & GROOVING WITH THE SAME TOOL.

GROOVE WIDTH CAN BE MODIFIED NO EXTRA CHARGE

| MIN BORE | MAX DEPTH | ORDER EDP # | TOOL ID #   | GROOVE WIDTH | OFFSET | SHANK & OVERALL LENGTH |
|----------|-----------|-------------|-------------|--------------|--------|------------------------|
| 1/4      | .500      | 48-1100     | BG-240-500  | .094         | .050   | 1/4 x 2-1/2            |
|          | .750      | 48-1105     | BG-240-750  |              |        |                        |
|          | 1.000     | 48-1110     | BG-240-1000 |              |        |                        |
| 5/16     | .500      | 48-1115     | BG-310-500  | .125         | .060   | 5/16 x 2-1/2           |
|          | .750      | 48-1120     | BG-310-750  |              |        |                        |
|          | 1.000     | 48-1125     | BG-310-1000 |              |        |                        |
| 3/8      | .500      | 48-1130     | BG-360-500  | .156         | .080   | 3/8 x 2-1/2            |
|          | .750      | 48-1135     | BG-360-750  |              |        |                        |
|          | 1.000     | 48-1140     | BG-360-1000 |              |        |                        |



## SERIES 98 TOOL HOLDER

APPLICATION : A HOLDER THAT WILL HOLD OUR STANDARD SET SCREW FLAT STYLE 1/8" THRU 1/2" DIAMETER SHANK TOOLS.

### Series 98 HOLDERS

| ORDER EDP # | SHANK STYLE |
|-------------|-------------|
| 98-2400     | 3/4" ROUND  |
| 98-2405     | 1" SQUARE   |



### Series 98 BUSHINGS

| ORDER EDP # | SHANK STYLE |
|-------------|-------------|
| 98-2450     | 1/8         |
| 98-2455     | 3/16        |
| 98-2460     | 1/4         |
| 98-2465     | 5/16        |
| 98-2470     | 3/8         |
| 98-2475     | 1/2         |

# SERIES 14 INDEXABLE INSERT BORING BARS

# TRIANGLE INSERT BORING BARS

**APPLICATION: INDEXABLE INSERT BORING BARS USING TRIANGLE INSERTS**

## INDEXABLE INSERT TRIANGLE 5/16" BARS - 5/32" I.C.

### 5/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  |              | ORDER EDP #  | ORDER EDP #   | ORDER EDP #               |
| T11-31    | 1/4       | 5/32        | 99-1100     | BHF-0203S    | 1/16             | 3"           | 14-1030      | 14-1033       | 14-1036                   |
|           |           |             |             |              |                  | 6"           | 14-1039      | 14-1042       | 14-1045                   |



### INSERTS FOR ABOVE BARS - 5/32" INSERT I.C.

| CARBIDE GRADE     | TIP RADIUS | NUMBER        | ORDER EDP # |
|-------------------|------------|---------------|-------------|
| T2000Z            | .007       | TBGT-520.5LFW | 15-1100     |
| T1200A CERMET     | .007       | TBGT-520.5LFW | 15-1110     |
| AC5104 TIN COATED | .007       | TBGT-520.5LFX | 15-1120     |
| T1200A CERMET     | .015       | TBGT-521L     | 15-1130     |
| AC325 TIN COATED  | .015       | TBGT-521LFX   | 15-1140     |

## INDEXABLE INSERT TRIANGLE FOR 3/8" & 7/16" BARS - 3/16 I.C.

### 3/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  |              | ORDER EDP #  | ORDER EDP #   | ORDER EDP #               |
| T11-37    | 5/16      | 3/16        | 99-1105     | BHF-0203B    | 3/32             | 3"           | 14-1048      | 14-1051       | 14-1054                   |
|           |           |             |             |              |                  | 6"           | 14-1057      | 14-1060       | 14-1063                   |

### 7/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  |              | ORDER EDP #  | ORDER EDP #   | ORDER EDP #               |
| T11-43    | 3/8       | 3/16        | 99-1105     | BHF-0203B    | 3/32             | 3"           | 14-1066      | 14-1069       | 14-1072                   |
|           |           |             |             |              |                  | 6"           | 14-1075      | 14-1078       | 14-1081                   |



### INSERTS FOR ABOVE BARS - 3/16" INSERT I.C.

| CARBIDE GRADE     | TIP RADIUS | NUMBER      | ORDER EDP # |
|-------------------|------------|-------------|-------------|
| T2000Z            | .007       | TPGT-630.5L | 15-1150     |
| T12A CERMET       | .007       | TPGT-630.5L | 15-1160     |
| AC5104 TIN COATED | .007       | TPGT-630.5L | 15-1170     |
| T12A CERMET       | .015       | TPGT-631L   | 15-1180     |
| AC530U TIN COATED | .015       | TPGT-631LFX | 15-1190     |

**NOTICE:** INSERT BORING BARS ARE MADE TO ORDER; PLEASE CALL FOR DELIVERY TIME, OTHERWISE THE DELIVERY TIME WILL BE QUOTED IN AN ORDER CONFIRMATION

ITI CARBIDE: FOR THE HIGHEST PRODUCTION

**ITI Carbide Cutting Tools**



# TRIANGLE INSERT BORING BARS

# SERIES 14 INDEXABLE INSERT BORING BARS

APPLICATION: INDEXABLE INSERT BORING BARS USING TRIANGLE INSERTS

## 1/2" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| T11-50    | 3/8       | 1/4         | 99-1110     | BHF0306R     | 1/8              | 3"           | 14-1084                 | 14-1087                   | 14-1090                               |
|           |           |             |             |              |                  | 6"           | 14-1093                 | 14-1096                   | 14-1099                               |

## 9/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| T11-56    | 1/2       | 1/4         | 99-1165     | BHF0308R     | 1/8              | 3"           | 14-1102                 | 14-1105                   | 14-1108                               |
|           |           |             |             |              |                  | 6"           | 14-1111                 | 14-1114                   | 14-1117                               |
|           |           |             |             |              |                  | 9"           | 14-1120                 | 14-1123                   | 14-1126                               |
|           |           |             |             |              |                  | 12"          | 14-1129                 | 14-1132                   | 14-1135                               |

## 5/8" MINIMUM BORE

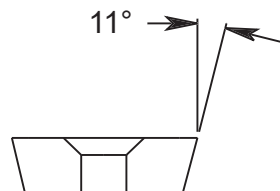
| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| T11-62    | 1/2       | 1/4         | 99-1165     | BHF0308R     | 1/8              | 3"           | 14-1138                 | 14-1141                   | 14-1144                               |
|           |           |             |             |              |                  | 6"           | 14-1147                 | 14-1150                   | 14-1153                               |
|           |           |             |             |              |                  | 9"           | 14-1156                 | 14-1159                   | 14-1162                               |
|           |           |             |             |              |                  | 12"          | 14-1165                 | 14-1168                   | 14-1171                               |

## 11/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| T11-68    | 5/8       | 1/4         | 99-1165     | BHF0308R     | 1/8              | 3"           | 14-1174                 | 14-1177                   | 14-1180                               |
|           |           |             |             |              |                  | 6"           | 14-1183                 | 14-1186                   | 14-1189                               |
|           |           |             |             |              |                  | 9"           | 14-1192                 | 14-1195                   | 14-1198                               |
|           |           |             |             |              |                  | 12"          | 14-1201                 | 14-1204                   | 14-1207                               |

## 3/4" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| T11-75    | 5/8       | 1/4         | 99-1165     | BHF0308R     | 1/8              | 3"           | 14-1210                 | 14-1213                   | 14-1216                               |
|           |           |             |             |              |                  | 6"           | 14-1219                 | 14-1222                   | 14-1225                               |
|           |           |             |             |              |                  | 9"           | 14-1228                 | 14-1231                   | 14-1234                               |
|           |           |             |             |              |                  | 12"          | 14-1237                 | 14-1240                   | 14-1243                               |



INDEXABLE INSERT TRIANGLE 1/4 I.C.

## INSERTS FOR ABOVE BARS - 1/4" INSERT I.C.

| CARBIDE GRADE    | TIP RADIUS | NUMBER      | ORDER EDP # |
|------------------|------------|-------------|-------------|
| T130Z CERMET     | .007       | TPGG-220.5L | 15-1200     |
| T2000Z UN-COATED | .007       | TPGG-220.5L | 15-1210     |
| T2000Z UN-COATED | .015       | TPGG-221L   | 15-1220     |
| T130Z CERMET     | .015       | TPGG-221L   | 15-1230     |

# SERIES 14 INDEXABLE INSERT BORING BARS

# TRIANGLE INSERT BORING BARS

**APPLICATION: INDEXABLE INSERT BORING BARS USING TRIANGLE INSERTS**



## 7/8" MINIMUM BORE

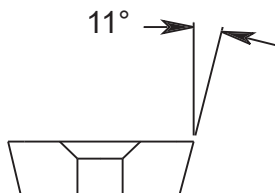
| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  |              | ORDER EDP #  | ORDER EDP #   | ORDER EDP #               |
| T11-87    | 3/4       | 3/8         | 99-1115     | BFXO410R     | 3/16             | 3"           | 14-1246      | 14-1249       | 14-1252                   |
|           |           |             |             |              |                  | 6"           | 14-1255      | 14-1258       | 14-1261                   |
|           |           |             |             |              |                  | 9"           | 14-1264      | 14-1267       | 14-1270                   |
|           |           |             |             |              |                  | 12"          | 14-1273      | 14-1276       | 14-1279                   |

## 1" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  |              | ORDER EDP #  | ORDER EDP #   | ORDER EDP #               |
| T11-100   | 3/4       | 3/8         | 99-1115     | BFXO410R     | 3/16             | 3"           | 14-1282      | 14-1285       | 14-1288                   |
|           |           |             |             |              |                  | 6"           | 14-1291      | 14-1294       | 14-1297                   |
|           |           |             |             |              |                  | 9"           | 14-1300      | 14-1303       | 14-1306                   |
|           |           |             |             |              |                  | 12"          | 14-1309      | 14-1312       | 14-1315                   |

## 1-1/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK |
|           |           |             |             |              |                  |              | ORDER EDP #  | ORDER EDP #   |
| T11-112   | 1"        | 3/8         | 99-1115     | BFXO410R     | 3/16             | 3"           | 14-1318      | 14-1321       |
|           |           |             |             |              |                  | 6"           | 14-1327      | 14-1330       |
|           |           |             |             |              |                  | 9"           | 14-1336      | 14-1339       |
|           |           |             |             |              |                  | 12"          | 14-1345      | 14-1348       |



**INDEXABLE INSERT TRIANGLE 3/8 I.C.**

## INSERTS FOR ABOVE BARS - 3/8" INSERT I.C.

| CARBIDE GRADE      | TIP RADIUS | SUMITOMO NUMBER | ORDER EDP # |
|--------------------|------------|-----------------|-------------|
| G10E C-2           | .007       | TPGG-330.5L     | 15-1250     |
| T1200A CERMET      | .007       | TPGG-330.5L     | 15-1260     |
| G10E C-2           | .015       | TPGG-331L       | 15-1270     |
| AC-200 TIN COATED  | .015       | TPMT-331ENF     | 15-1280     |
| EH10Z TIN COATED   | .031       | TPMT-332ENF     | 15-1290     |
| AC-2500 TIN COATED | .031       | TPMT-332ENF     | 15-1300     |
| EH-10              | .031       | TPMT-332ENF     | 15-1310     |

**NOTICE:** INSERT BORING BARS ARE MADE TO ORDER; PLEASE CALL FOR DELIVERY TIME, OTHERWISE THE DELIVERY TIME WILL BE QUOTED IN AN ORDER CONFIRMATION

# DIAMOND INSERT BORING BARS

# SERIES 16 INDEXABLE INSERT BORING BARS

APPLICATION: INDEXABLE INSERT BORING BARS USING 7° DIAMOND INSERTS



## 3/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D07-37    | 5/16      | 1/4         | 99-1120     | S-90         | 3/32             | 3"           | 16-1660                 | 16-1663                   | 16-1666                               |
|           |           |             |             |              |                  | 6"           | 16-1669                 | 16-1672                   | 16-1675                               |

## 7/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D07-43    | 3/8       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 16-1678                 | 16-1681                   | 16-1684                               |
|           |           |             |             |              |                  | 6"           | 16-1687                 | 16-1690                   | 16-1693                               |

## 1/2" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D07-50    | 3/8       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 16-1696                 | 16-1699                   | 16-1702                               |
|           |           |             |             |              |                  | 6"           | 16-1708                 | 16-1708                   | 16-1711                               |

## 9/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D07-56    | 1/2       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 16-1714                 | 16-1717                   | 16-1720                               |
|           |           |             |             |              |                  | 6"           | 16-1723                 | 16-1726                   | 16-1729                               |
|           |           |             |             |              |                  | 9"           | 16-1732                 | 16-1735                   | 16-1738                               |
|           |           |             |             |              |                  | 12"          | 16-1741                 | 16-1744                   | 16-1747                               |

## 5/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D07-62    | 1/2       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 16-1750                 | 16-1753                   | 16-1756                               |
|           |           |             |             |              |                  | 6"           | 16-1757                 | 16-1762                   | 16-1765                               |
|           |           |             |             |              |                  | 9"           | 16-1768                 | 16-1771                   | 16-1774                               |
|           |           |             |             |              |                  | 12"          | 16-1777                 | 16-1780                   | 16-1783                               |

## 11/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D07-68    | 5/8       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 16-1786                 | 16-1789                   | 16-1792                               |
|           |           |             |             |              |                  | 6"           | 16-1795                 | 16-1798                   | 16-1801                               |
|           |           |             |             |              |                  | 9"           | 16-1804                 | 16-1807                   | 16-1810                               |
|           |           |             |             |              |                  | 12"          | 16-1813                 | 16-1816                   | 16-1819                               |

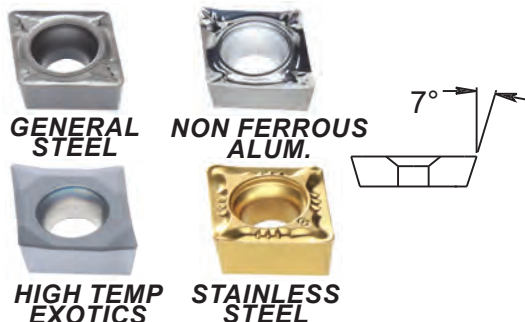
## 3/4" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D07-75    | 5/8       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 16-1822                 | 16-1825                   | 16-1828                               |
|           |           |             |             |              |                  | 6"           | 16-1831                 | 16-1834                   | 16-1837                               |
|           |           |             |             |              |                  | 9"           | 16-1840                 | 16-1843                   | 16-1846                               |
|           |           |             |             |              |                  | 12"          | 16-1849                 | 16-1852                   | 16-1855                               |

## INSERTS FOR ABOVE BARS - 1/4" INSERT I.C.

| CARBIDE INSERT      | APPLICATION        | GRADE   | TIP RADIUS | ORDER EDP # |
|---------------------|--------------------|---------|------------|-------------|
| CCMT 21.51EN-SF     | STEEL              | CTCP125 | 0.015      | 17-1700     |
| CCMT 21.52EN-SMF    | STEEL              | CTCP125 | 0.032      | 17-1710     |
| CCMT 21.51EN-M25    | STAINLESS STEEL    | CTC2135 | 0.015      | 17-1720     |
| CCMT 21.52EN-SMF    | STAINLESS STEEL    | CTCP125 | 0.032      | 17-1730     |
| CCMT 21.51EN-SF     | CAST IRON          | CTCP125 | 0.015      | 17-1740     |
| CCMT 21.52EN-SMF    | CAST IRON          | CTCP125 | 0.032      | 17-1750     |
| CCGT 21.5.5FN-25P   | NO FERROUS ALUM.   | H210T   | 0.008      | 17-1760     |
| CCGT 21.51FN-25P    | NO FERROUS ALUM.   | H210T   | 0.015      | 17-1770     |
| CCGT 21.5.5FN-25P   | HIGH TEMP EXOTICS  | AMZ     | 0.008      | 17-1780     |
| CCGT 21.51FN-25P    | HIGH TEMP EXOTICS  | AMZ     | 0.015      | 17-1790     |
| CCGT 22.5.5 EN CF05 | CERMET-FINISHING   | CTEP110 | 0.008      | 17-1800     |
| CCMT 22.1 EN CF55   | CERMET-SEMI FINISH | CTEP110 | 0.015      | 17-1810     |

## INDEXABLE INSERT DIAMOND 1/4 I.C.





# SERIES 16 INDEXABLE INSERT BORING BARS

# DIAMOND INSERT BORING BARS

**APPLICATION: INDEXABLE INSERT BORING BARS USING 7° DIAMOND INSERTS**



## 5/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
| D07-62B   | 1/2       | 3/8         | 99-1132     | S-98-S       | 5/32             | 3"           | 16-1859                 | 16-1860                   | 16-1862                               |
|           |           |             |             |              |                  | 6"           | 16-1863                 | 16-1865                   | 16-1866                               |
|           |           |             |             |              |                  | 9"           | 16-1868                 | 16-1869                   | 16-1871                               |
|           |           |             |             |              |                  | 12"          | 16-1872                 | 16-1874                   | 16-1875                               |

## 11/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
| D07-68B   | 5/8       | 3/8         | 99-1132     | S-98-S       | 5/32             | 3"           | 16-1877                 | 16-1878                   | 16-1880                               |
|           |           |             |             |              |                  | 6"           | 16-1881                 | 16-1883                   | 16-1884                               |
|           |           |             |             |              |                  | 9"           | 16-1886                 | 16-1887                   | 16-1889                               |
|           |           |             |             |              |                  | 12"          | 16-1890                 | 16-1892                   | 16-1893                               |

## 3/4" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
| D07-75B   | 5/8       | 3/8         | 99-1132     | S-98         | 5/32             | 3"           | 16-1895                 | 16-1896                   | 16-1898                               |
|           |           |             |             |              |                  | 6"           | 16-1899                 | 16-1901                   | 16-1902                               |
|           |           |             |             |              |                  | 9"           | 16-1904                 | 16-1905                   | 16-1907                               |
|           |           |             |             |              |                  | 12"          | 16-1908                 | 16-1910                   | 16-1911                               |

## 7/8" MINIMUM BORE

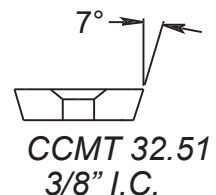
| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
| D07-87    | 3/4       | 3/8         | 99-1132     | S-98         | 5/32             | 3"           | 16-1858                 | 16-1861                   | 16-1864                               |
|           |           |             |             |              |                  | 6"           | 16-1867                 | 16-1870                   | 16-1873                               |
|           |           |             |             |              |                  | 9"           | 16-1876                 | 16-1879                   | 16-1882                               |
|           |           |             |             |              |                  | 12"          | 16-1885                 | 16-1888                   | 16-1891                               |

## 1" MINIMUM BORE

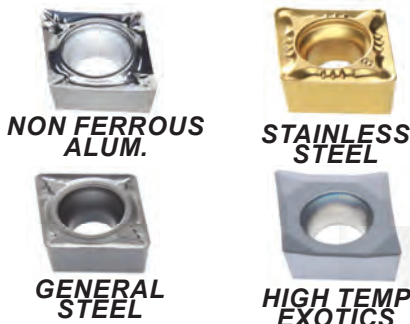
| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
| D07-100   | 3/4       | 3/8         | 99-1132     | S-98         | 5/32             | 3"           | 16-1894                 | 16-1897                   | 16-1900                               |
|           |           |             |             |              |                  | 6"           | 16-1903                 | 16-1906                   | 16-1909                               |
|           |           |             |             |              |                  | 9"           | 16-1912                 | 16-1915                   | 16-1918                               |
|           |           |             |             |              |                  | 12"          | 16-1921                 | 16-1924                   | 16-1927                               |

## 1-1/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
| D07-112   | 1"        | 3/8         | 99-1132     | S-98         | 5/32             | 3"           | 16-1930                 | 16-1933                   |                                       |
|           |           |             |             |              |                  | 6"           | 16-1939                 | 16-1942                   |                                       |
|           |           |             |             |              |                  | 9"           | 16-1948                 | 16-1951                   |                                       |
|           |           |             |             |              |                  | 12"          | 16-1957                 | 16-1960                   |                                       |



## INSERTS FOR ABOVE BARS 3/8" INSERT I.C.



| CARBIDE INSERT     | APPLICATION        | GRADE   | TIP RADIUS | ORDER EDP # |
|--------------------|--------------------|---------|------------|-------------|
| CCMT 32.51EN-SF    | STEEL              | CTCP125 | .015       | 17-1850     |
| CCMT 32.52EN-SMF   | STEEL              | CTCP125 | .032       | 17-1860     |
| CCMT 32.51EN-F43   | STAINLESS STEEL    | CTC2135 | .015       | 17-1870     |
| CCMT 32.52EN-F43   | STAINLESS STEEL    | CTC2135 | .032       | 17-1880     |
| CCMT 32.51EN-SF    | CAST IRON          | CTCP125 | .015       | 17-1890     |
| CCMT 32.52EN-SMF   | CAST IRON          | CTCP125 | .032       | 17-1900     |
| CCMT 32.51FN-25P   | ALUMINUM           | H210T   | .015       | 17-1910     |
| CCMT 32.52FN-25P   | ALUMINUM           | H210T   | .032       | 17-1920     |
| CCMT 32.51FN-25P   | HIGH TEMP/ EXOTICS | AMZ     | .015       | 17-1930     |
| CCMT 32.52FN-25P   | HIGH TEMP/ EXOTICS | AMZ     | .032       | 17-1940     |
| CCMT 32.51 EN CF05 | CERMET-FINISHING   | CTEP110 | .015       | 17-1950     |
| CCMT 32.52 EN CF55 | CERMET-SEMI FINISH | CEPT110 | .030       | 17-1960     |

ITI CARBIDE: HIGH TRANSVERSE RUPTURE STRENGTH

# DIAMOND INSERT BORING BARS

# SERIES 12 INDEXABLE INSERT BORING BARS

APPLICATION: INDEXABLE INSERT BORING BARS USING 11° DIAMOND INSERTS

## CPMT 21.51 INSERT

### 3/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| D11-37    | 5/16      | 1/4         | 99-1120     | S-90         | 3/32             | 3"           | 12-1660      | 12-1663       | 16-1666                   |
|           |           |             |             |              |                  | 6"           | 12-1669      | 12-1672       | 16-1675                   |

### 7/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| D11-43    | 3/8       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 12-1678      | 12-1681       | 16-1684                   |
|           |           |             |             |              |                  | 6"           | 12-1687      | 12-1690       | 16-1693                   |

### 1/2" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| D11-50    | 3/8       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 12-1696      | 12-1699       | 12-1702                   |
|           |           |             |             |              |                  | 6"           | 12-1705      | 12-1708       | 12-1711                   |

### 9/16" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| D11-56    | 1/2       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 12-1714      | 12-1717       | 12-1720                   |
|           |           |             |             |              |                  | 6"           | 12-1723      | 12-1726       | 12-1729                   |
|           |           |             |             |              |                  | 9"           | 12-1732      | 12-1735       | 12-1738                   |
|           |           |             |             |              |                  | 12"          | 12-1741      | 12-1744       | 12-1747                   |

### 5/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| D11-62    | 1/2       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 12-1750      | 12-1753       | 12-1756                   |
|           |           |             |             |              |                  | 6"           | 12-1759      | 12-1762       | 12-1765                   |
|           |           |             |             |              |                  | 9"           | 12-1768      | 12-1771       | 12-1774                   |
|           |           |             |             |              |                  | 12"          | 12-1777      | 12-1780       | 12-1783                   |

### 11/16" MINIMUM BORE

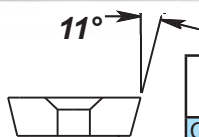
| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| D11-68    | 5/8       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 12-1786      | 12-1789       | 12-1792                   |
|           |           |             |             |              |                  | 6"           | 12-1795      | 12-1798       | 12-1801                   |
|           |           |             |             |              |                  | 9"           | 12-1804      | 12-1807       | 12-1810                   |
|           |           |             |             |              |                  | 12"          | 12-1813      | 12-1816       | 12-1819                   |

### 3/4" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
|           |           |             |             |              |                  | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| D11-75    | 5/8       | 1/4         | 99-1125     | S-95         | 3/32             | 3"           | 12-1822      | 12-1825       | 12-1828                   |
|           |           |             |             |              |                  | 6"           | 12-1831      | 12-1834       | 12-1837                   |
|           |           |             |             |              |                  | 9"           | 12-1840      | 12-1843       | 12-1846                   |
|           |           |             |             |              |                  | 12"          | 12-1849      | 12-1852       | 12-1855                   |



INDEXABLE INSERT  
CPMT 21.51  
1/4" I.C.



### INSERTS FOR ABOVE BARS 1/4" INSERT I.C.

| CARBIDE INSERT  | APPLICATION     | GRADE   | TIP RADIUS | ORDER EDP # |
|-----------------|-----------------|---------|------------|-------------|
| CPMT 21.51EN-SF | STEEL           | CTCP115 | 0.015      | 17-2000     |
| CPMT 21.52EN-SF | STEEL           | CTCP115 | 0.032      | 17-2010     |
| CPMT 21.51EN-SF | STAINLESS STEEL | CTCP115 | 0.015      | 17-2020     |
| CPMT 21.52EN-SF | STAINLESS STEEL | CTCP115 | 0.032      | 17-2030     |
| CPMT 21.51EN-SF | CAST IRON       | CTCP115 | 0.015      | 17-2040     |
| CPMT 21.52EN-SF | CAST IRON       | CTCP115 | 0.032      | 17-2050     |



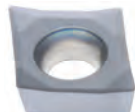
STAINLESS STEEL



NON FERROUS ALUM.



GENERAL STEEL



HIGH TEMP EXOTICS

THE MOST UNIQUE LINE OF CUTTING TOOLS AVAILABLE



Carbide Cutting Tools

# SERIES 12 INDEXABLE INSERT BORING BARS

# DIAMOND INSERT BORING BARS

**APPLICATION: INDEXABLE INSERT BORING BARS USING 11° DIAMOND INSERTS**

TOOL GEOMETRY FOR BORING ALUMINUM & SOFTER MATERIALS



## CPMT 32.51 INSERT

### 7/8" MINIMUM BORE

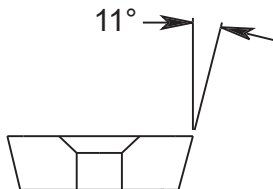
| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D11-87    | 3/4       | 3/8         | 99-1130     | S-98         | 5/32             | 3"           | 12-1858                 | 12-1861                   | 12-1864                               |
|           |           |             |             |              |                  | 6"           | 12-1867                 | 12-1870                   | 12-1873                               |
|           |           |             |             |              |                  | 9"           | 12-1876                 | 12-1879                   | 12-1882                               |
|           |           |             |             |              |                  | 12"          | 12-1885                 | 12-1888                   | 12-1891                               |

### 1" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |                                       |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|---------------------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # | CARBIDE WITH COOLANT HOLE ORDER EDP # |
| D11-100   | 3/4       | 3/8         | 99-1130     | S-98         | 5/32             | 3"           | 12-1894                 | 12-1897                   | 12-1900                               |
|           |           |             |             |              |                  | 6"           | 12-1903                 | 12-1906                   | 12-1909                               |
|           |           |             |             |              |                  | 9"           | 12-1912                 | 12-1915                   | 12-1918                               |
|           |           |             |             |              |                  | 12"          | 12-1921                 | 12-1924                   | 12-1927                               |

### 1-1/8" MINIMUM BORE

| HEAD I.D. | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW NUMBER | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES            |                           |
|-----------|-----------|-------------|-------------|--------------|------------------|--------------|-------------------------|---------------------------|
|           |           |             |             |              |                  |              | STEEL SHANK ORDER EDP # | CARBIDE SHANK ORDER EDP # |
| D11-112   | 1"        | 3/8         | 99-1130     | S-98         | 5/32             | 3"           | 12-1930                 | 12-1933                   |
|           |           |             |             |              |                  | 6"           | 12-1939                 | 12-1942                   |
|           |           |             |             |              |                  | 9"           | 12-1948                 | 12-1951                   |
|           |           |             |             |              |                  | 12"          | 12-1957                 | 12-1960                   |



### INSERTS FOR ABOVE BARS - 3/8" INSERT I.C.



| CARBIDE INSERT | APPLICATION     | GRADE   | TIP RADIUS | ORDER EDP # |
|----------------|-----------------|---------|------------|-------------|
| CPMT 31.51ENSF | STEEL           | CTCP115 | 0.015      | 17-2100     |
| CPMT 31.52ENSF | STEEL           | CTCP115 | 0.032      | 17-2110     |
| CPMT 31.51ENSF | STAINLESS STEEL | CTCP115 | 0.015      | 17-2120     |
| CPMT 31.52ENSF | STAINLESS STEEL | CTCP115 | 0.032      | 17-2130     |
| CPMT 31.51ENSF | CAST IRON       | CTCP115 | 0.015      | 17-2140     |
| CPMT 31.52ENSF | CAST IRON       | CTCP115 | 0.032      | 17-2150     |

**NOTICE:** INSERT BORING BARS ARE MADE TO ORDER; PLEASE CALL FOR DELIVERY TIME, OTHERWISE THE DELIVERY TIME WILL BE QUOTED IN AN ORDER CONFIRMATION

ITI CARBIDE: THE MOST VERSATILE CARBIDE AVAILABLE

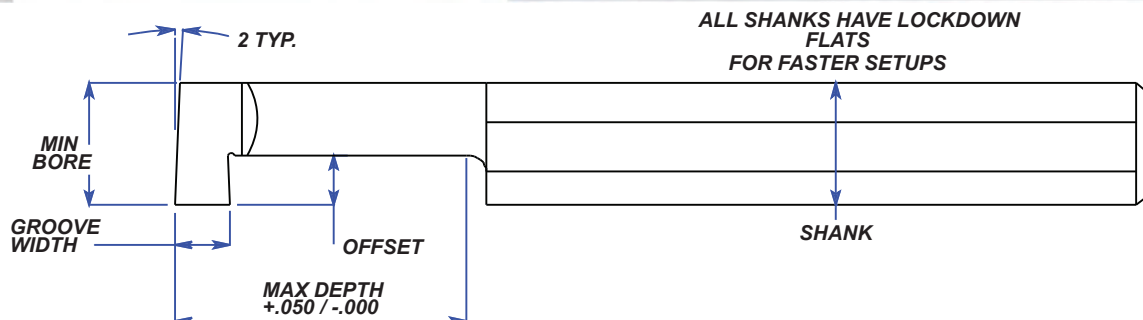




# GROOVING TOOLS

# SERIES 20 STANDARD GROOVING TOOLS

APPLICATION: FOR RETAINING RING GROOVES & INTERNAL RELIEFS



| MIN BORE | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | TOOL ID # | OFFSET | SHANK & OVERALL LENGTH |
|----------|--------------|-----------|-------------|-----------|--------|------------------------|
| 1/16     | .031/.032    | 3/16      | 20-1170     | G-032-3   | .020   | 1/8 x 2"               |
|          |              | 1/4       | 20-1175     | G-032-4   |        |                        |
|          |              | 3/8       | 20-1180     | G-032-6   |        |                        |
| 3/32     | .046/.047    | 1/4       | 20-1185     | G-047-4   | .030   |                        |
|          |              | 3/8       | 20-1190     | G-047-6   |        |                        |
|          |              | 1/2       | 20-1195     | G-047-8   |        |                        |
|          |              | 1/4       | 20-1200     | G-064-4   |        |                        |
| 1/8      | .062/.063    | 3/8       | 20-1205     | G-064-6   | .040   |                        |
|          |              | 1/2       | 20-1210     | G-064-8   |        |                        |
|          |              | 5/8       | 20-1215     | G-064-10  |        |                        |
|          |              | 1/4       | 20-1220     | G-018-4   |        |                        |
| 3/16     | .017/.018    | 3/8       | 20-1225     | G-018-6   | .050   |                        |
|          |              | 1/2       | 20-1230     | G-018-8   |        |                        |
|          |              | 5/8       | 20-1235     | G-018-10  |        |                        |
|          |              | 1/4       | 20-1240     | G-026-4   |        |                        |
|          | .025/.026    | 3/8       | 20-1245     | G-026-6   |        |                        |
|          |              | 1/2       | 20-1250     | G-026-8   |        |                        |
|          |              | 5/8       | 20-1255     | G-026-10  |        |                        |
|          | .030/.031    | 1/4       | 20-1260     | G-031-4   |        |                        |
|          |              | 3/8       | 20-1265     | G-031-6   |        |                        |
|          |              | 1/2       | 20-1270     | G-031-8   |        |                        |
|          |              | 5/8       | 20-1275     | G-031-10  |        |                        |
|          | .062/.063    | 1/4       | 20-1280     | G-061-4   |        |                        |
| 3/8      |              | 20-1285   | G-061-6     |           |        |                        |
| 1/2      |              | 20-1290   | G-061-8     |           |        |                        |
|          |              | 5/8       | 20-1295     | G-061-10  |        |                        |

| MIN BORE  | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | TOOL ID # | OFFSET | SHANK & OVERALL LENGTH |
|-----------|--------------|-----------|-------------|-----------|--------|------------------------|
| 1/4       | .017/.018    | 1/4       | 20-1300     | G-017-4   | .050   | 1/4 x 2-1/2"           |
|           |              | 3/8       | 20-1305     | G-017-6   |        |                        |
|           |              | 1/2       | 20-1310     | G-017-8   |        |                        |
|           |              | 5/8       | 20-1315     | G-017-10  |        |                        |
|           | .025/.026    | 1/4       | 20-1320     | G-025-4   |        |                        |
|           |              | 3/8       | 20-1325     | G-025-6   |        |                        |
|           |              | 1/2       | 20-1330     | G-025-8   |        |                        |
|           |              | 5/8       | 20-1335     | G-025-10  |        |                        |
|           |              | 1/4       | 20-1340     | G-030-4   |        |                        |
|           | .030/.031    | 3/8       | 20-1345     | G-030-6   |        |                        |
|           |              | 1/2       | 20-1350     | G-030-8   |        |                        |
|           |              | 5/8       | 20-1355     | G-030-10  |        |                        |
| .062/.064 | 3/8          | 20-1356   | G-060-6     |           |        |                        |
|           | 1/2          | 20-1357   | G-060-8     |           |        |                        |
|           | 5/8          | 20-1358   | G-060-10    |           |        |                        |
| 5/16      | .033/.034    | 1/4       | 20-1360     | G-033-4   | .100   | 5/16 x 2-1/2"          |
|           |              | 3/8       | 20-1365     | G-033-6   |        |                        |
|           |              | 1/2       | 20-1370     | G-033-8   |        |                        |
|           | .038/.039    | 3/4       | 20-1375     | G-033-12  |        |                        |
|           |              | 1/4       | 20-1380     | G-038-4   |        |                        |
|           |              | 3/8       | 20-1385     | G-038-6   |        |                        |
|           | .062/.064    | 1/2       | 20-1390     | G-038-8   |        |                        |
|           |              | 3/4       | 20-1395     | G-038-12  |        |                        |
|           |              | 1/2       | 20-1400     | G-063-8   |        |                        |
|           | .093/.095    | 3/4       | 20-1405     | G-063-12  |        |                        |
|           |              | 1"        | 20-1410     | G-063-16  |        |                        |
|           |              | 1/2       | 20-1415     | G-094-8   |        |                        |
| 3/4       |              | 20-1420   | G-094-12    |           |        |                        |
|           |              | 1"        | 20-1425     | G-094-16  |        |                        |

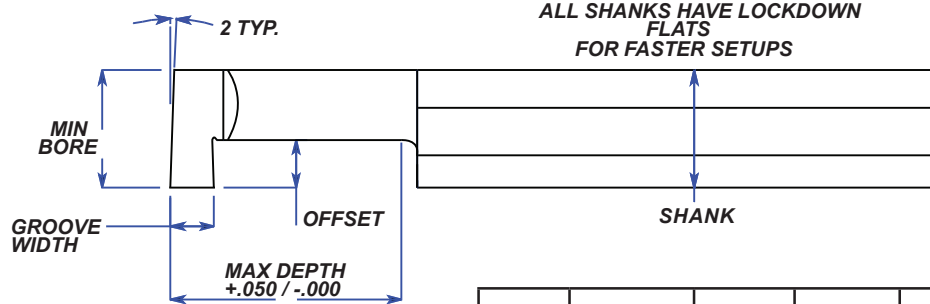
ITI CARBIDE: HIGH TRANSVERSE RUPTURE STRENGTH

**ITI** Carbide Cutting Tools

# SERIES 20 STANDARD GROOVING TOOLS

# GROOVING TOOLS

APPLICATION: FOR RETAINING RING GROOVES & INTERNAL RELIEFS



| MIN BORE  | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | TOOL ID # | OFFSET      | SHANK & O.A.L. | MIN BORE  | GROOVE WIDTH | MAX DEPTH   | ORDER EDP # | TOOL ID #   | OFFSET  | SHANK & O.A.L. |       |          |          |      |             |      |          |
|-----------|--------------|-----------|-------------|-----------|-------------|----------------|-----------|--------------|-------------|-------------|-------------|---------|----------------|-------|----------|----------|------|-------------|------|----------|
| 3/8       | .039/.041    | 1/4       | 20-1430     | G-039-4   | .100        | 3/8 x 2-1/2    | 3/8       | .087/.089    | 1/4         | 20-1580     | G-087-4     | .100    | 3/8 x 2-1/2    |       |          |          |      |             |      |          |
|           |              | 3/8       | 20-1435     | G-039-6   |             |                |           |              | 3/8         | 20-1585     | G-087-6     |         |                |       |          |          |      |             |      |          |
|           |              | 1/2       | 20-1440     | G-039-8   |             |                |           |              | 1/2         | 20-1590     | G-087-8     |         |                |       |          |          |      |             |      |          |
|           |              | 3/4       | 20-1445     | G-039-12  |             |                |           |              | 3/4         | 20-1595     | G-087-12    |         |                |       |          |          |      |             |      |          |
|           |              | 1"        | 20-1450     | G-039-16  |             |                |           |              | 1"          | 20-1600     | G-087-16    |         |                |       |          |          |      |             |      |          |
|           |              | 1-1/4     | 20-1455     | G-039-20  |             |                |           |              | 1-1/4       | 20-1605     | G-087-20    |         |                |       |          |          |      |             |      |          |
|           | .046/.048    | 1/4       | 20-1460     | G-046-4   |             |                |           | 3/8          | 3/8 x 2-1/2 | CONT.       | .093/.095   |         |                | 1/2   | 20-1610  | G-095-8  | .100 | 3/8 x 2-1/2 |      |          |
|           |              | 3/8       | 20-1465     | G-046-6   |             |                |           |              |             |             |             |         |                | 3/4   | 20-1615  | G-095-12 |      |             |      |          |
|           |              | 1/2       | 20-1470     | G-046-8   |             |                |           |              |             |             |             |         |                | 1"    | 20-1620  | G-095-16 |      |             |      |          |
|           |              | 3/4       | 20-1475     | G-046-12  |             |                |           |              |             |             |             |         |                | 1/2   | 20-1625  | G-126-8  |      |             |      |          |
|           |              | 1"        | 20-1480     | G-046-16  |             |                |           |              |             |             |             |         |                | 3/4   | 20-1630  | G-126-12 |      |             |      |          |
|           |              | 1-1/4     | 20-1485     | G-046-20  |             |                |           |              |             |             |             |         |                | 1"    | 20-1635  | G-126-16 |      |             |      |          |
|           | .055/.057    | 1/4       | 20-1490     | G-055-4   |             |                | 1/2       |              |             |             | 3/8 x 2-1/2 | CONT.   | .125/.127      | 1/2   | 20-1640  | G-093-8  |      |             | .150 | 1/2 x 3" |
|           |              | 3/8       | 20-1495     | G-055-6   |             |                |           |              |             |             |             |         |                | 3/4   | 20-1645  | G-093-12 |      |             |      |          |
|           |              | 1/2       | 20-1500     | G-055-8   |             |                |           |              |             |             |             |         |                | 1"    | 20-1650  | G-093-16 |      |             |      |          |
|           |              | 3/4       | 20-1505     | G-055-12  |             |                |           |              |             |             |             |         |                | 1-1/4 | 20-1655  | G-093-20 |      |             |      |          |
|           |              | 1"        | 20-1510     | G-055-16  |             |                |           |              |             |             |             |         |                | 1-1/2 | 20-1660  | G-093-24 |      |             |      |          |
|           |              | 1-1/4     | 20-1515     | G-055-20  |             |                |           |              |             |             |             |         |                | 1/2   | 20-1665  | G-125-8  |      |             |      |          |
|           | .062/.064    | 1/4       | 20-1520     | G-062-4   |             |                |           | 1/2          | 3/8 x 2-1/2 | CONT.       |             |         | .156/.158      | 3/4   | 20-1670  | G-125-12 | .150 | 1/2 x 3"    |      |          |
|           |              | 3/8       | 20-1525     | G-062-6   |             |                |           |              |             |             |             |         |                | 1"    | 20-1675  | G-125-16 |      |             |      |          |
|           |              | 1/2       | 20-1530     | G-062-8   |             |                |           |              |             |             |             |         |                | 1-1/4 | 20-1680  | G-125-20 |      |             |      |          |
|           |              | 3/4       | 20-1535     | G-062-12  |             |                |           |              |             |             |             |         |                | 1-1/2 | 20-1685  | G-125-24 |      |             |      |          |
|           |              | 1"        | 20-1540     | G-062-16  |             |                |           |              |             |             |             |         |                | 1/2   | 20-1690  | G-156-8  |      |             |      |          |
|           |              | 1-1/4     | 20-1545     | G-062-20  |             |                |           |              |             |             |             |         |                | 3/4   | 20-1695  | G-156-12 |      |             |      |          |
| .069/.071 | 1/4          | 20-1550   | G-069-4     | 1/2       | 3/8 x 2-1/2 | CONT.          | .187/.189 |              |             |             | 1"          | 20-1700 | G-156-16       | .150  | 1/2 x 3" |          |      |             |      |          |
|           | 3/8          | 20-1555   | G-069-6     |           |             |                |           |              |             |             | 1-1/4       | 20-1705 | G-156-20       |       |          |          |      |             |      |          |
|           | 1/2          | 20-1560   | G-069-8     |           |             |                |           |              |             |             | 1-1/2       | 20-1710 | G-156-24       |       |          |          |      |             |      |          |
|           | 3/4          | 20-1565   | G-069-12    |           |             |                |           |              |             |             | 1/2         | 20-1715 | G-187-8        |       |          |          |      |             |      |          |
|           | 1"           | 20-1570   | G-069-16    |           |             |                |           |              |             |             | 3/4         | 20-1720 | G-187-12       |       |          |          |      |             |      |          |
|           | 1-1/4        | 20-1575   | G-069-20    |           |             |                |           |              |             |             | 1"          | 20-1725 | G-187-16       |       |          |          |      |             |      |          |
|           |              |           |             |           |             |                |           |              |             |             |             | 1-1/4   | 20-1730        |       |          | G-187-20 |      |             |      |          |
|           |              |           |             |           |             |                |           |              |             |             |             | 1"      | 20-1735        |       |          | G-187-24 |      |             |      |          |
|           |              |           |             |           |             |                |           |              |             |             |             | 1/2     | 20-1740        |       |          | G-250-8  |      |             |      |          |
|           |              |           |             |           |             |                |           |              |             |             |             | 3/4     | 20-1745        |       |          | G-250-12 |      |             |      |          |
|           |              |           |             |           |             |                |           |              |             |             |             | 1"      | 20-1750        |       |          | G-250-16 |      |             |      |          |
|           |              |           |             |           |             |                |           |              |             |             |             | 1-1/4   | 20-1755        |       |          | G-250-20 |      |             |      |          |
|           |              |           |             |           |             |                |           | 1-1/2        | 20-1760     | G-250-24    |             |         |                |       |          |          |      |             |      |          |

THE LEADER IN INNOVATION

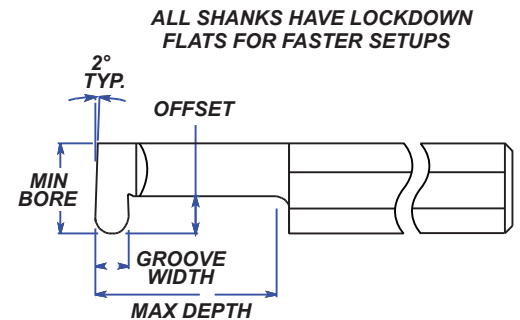
 Carbide Cutting Tools

# GROOVING TOOLS

# SERIES 24 FULL RADIUS GROOVING TOOLS

APPLICATION: FULL RADIUS GROOVES AND PROFILE WORK

| MIN BORE  | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | TOOL ID # | OFFSET  | SHANK & OVERALL LENGTH |
|-----------|--------------|-----------|-------------|--------------------|-----------|---------|------------------------|
| 1/16      | .031/.032    | 3/16      | 24-1170     | 24-1170-C          | R-032-3   | .020    | 1/8 x 2"               |
|           |              | 1/4       | 24-1175     | 24-1175-C          | R-032-4   |         |                        |
|           |              | 3/8       | 24-1180     | 24-1180-C          | R-032-6   |         |                        |
| 3/32      | .046/.047    | 1/4       | 24-1185     | 24-1185-C          | R-047-4   | .030    |                        |
|           |              | 3/8       | 24-1190     | 24-1190-C          | R-047-6   |         |                        |
|           |              | 1/2       | 24-1195     | 24-1195-C          | R-047-8   |         |                        |
| 1/8       | .062/.063    | 1/4       | 24-1200     | 24-1200-C          | R-064-4   | .040    |                        |
|           |              | 3/8       | 24-1205     | 24-1205-C          | R-064-6   |         |                        |
|           |              | 1/2       | 24-1210     | 24-1210-C          | R-064-8   |         |                        |
|           |              | 5/8       | 24-1215     | 24-1215-C          | R-064-10  |         |                        |
| 3/16      | .017/.018    | 1/4       | 24-1220     | 24-1220-C          | R-018-4   | .050    | 3/16 x 2-1/2"          |
|           |              | 3/8       | 24-1225     | 24-1225-C          | R-018-6   |         |                        |
|           |              | 1/2       | 24-1230     | 24-1230-C          | R-018-8   |         |                        |
|           |              | 5/8       | 24-1235     | 24-1235-C          | R-018-10  |         |                        |
|           | .025/.026    | 1/4       | 24-1240     | 24-1240-C          | R-026-4   |         |                        |
|           |              | 3/8       | 24-1245     | 24-1245-C          | R-026-6   |         |                        |
|           |              | 1/2       | 24-1250     | 24-1250-C          | R-026-8   |         |                        |
|           |              | 5/8       | 24-1255     | 24-1255-C          | R-026-10  |         |                        |
|           | .030/.031    | 1/4       | 24-1260     | 24-1260-C          | R-031-4   |         |                        |
|           |              | 3/8       | 24-1265     | 24-1265-C          | R-031-6   |         |                        |
|           |              | 1/2       | 24-1270     | 24-1270-C          | R-031-8   |         |                        |
|           |              | 5/8       | 24-1275     | 24-1275-C          | R-031-10  |         |                        |
|           | .062/.063    | 1/4       | 24-1280     | 24-1280-C          | R-061-4   |         |                        |
|           |              | 3/8       | 24-1285     | 24-1285-C          | R-061-6   |         |                        |
|           |              | 1/2       | 24-1290     | 24-1290-C          | R-061-8   |         |                        |
|           |              | 5/8       | 24-1295     | 24-1295-C          | R-061-10  |         |                        |
| 1/4       | .017/.018    | 1/4       | 24-1300     | 24-1300-C          | R-017-4   | .050    | 1/4 x 2-1/2"           |
|           |              | 3/8       | 24-1305     | 24-1305-C          | R-017-6   |         |                        |
|           |              | 1/2       | 24-1310     | 24-1310-C          | R-017-8   |         |                        |
|           |              | 5/8       | 24-1315     | 24-1315-C          | R-017-10  |         |                        |
|           | .025/.026    | 1/4       | 24-1320     | 24-1320-C          | R-025-4   |         |                        |
|           |              | 3/8       | 24-1325     | 24-1325-C          | R-025-6   |         |                        |
|           |              | 1/2       | 24-1330     | 24-1330-C          | R-025-8   |         |                        |
|           |              | 5/8       | 24-1335     | 24-1335-C          | R-025-10  |         |                        |
|           | .030/.031    | 1/4       | 24-1340     | 24-1340-C          | R-030-4   |         |                        |
|           |              | 3/8       | 24-1345     | 24-1345-C          | R-030-6   |         |                        |
|           |              | 1/2       | 24-1350     | 24-1350-C          | R-030-8   |         |                        |
|           |              | 5/8       | 24-1355     | 24-1355-C          | R-030-10  |         |                        |
|           | .062/.064    | 3/8       | 24-1356     | 24-1356-C          | R-060-6   |         |                        |
|           |              | 1/2       | 24-1357     | 24-1357-C          | R-060-8   |         |                        |
|           |              | 5/8       | 24-1358     | 24-1358-C          | R-060-10  |         |                        |
|           |              | 5/16      | .033/.034   | 1/4                | 24-1365   |         |                        |
| 3/8       | 24-1365      |           |             | 24-1365-C          | R-033-6   |         |                        |
| 1/2       | 24-1370      |           |             | 24-1370-C          | R-033-8   |         |                        |
| 5/8       | 24-1372      |           |             | 24-1372-C          | R-033-10  |         |                        |
| 3/4       | 24-1375      |           |             | 24-1375-C          | R-033-12  |         |                        |
| .038/.039 | 1/4          |           | 24-1380     | 24-1380-C          | R-038-4   |         |                        |
|           | 3/8          |           | 24-1385     | 24-1385-C          | R-038-6   |         |                        |
|           | 1/2          |           | 24-1390     | 24-1390-C          | R-038-8   |         |                        |
|           | 3/4          |           | 24-1395     | 24-1395-C          | R-038-12  |         |                        |
| .062/.064 | 1/2          |           | 24-1400     | 24-1400-C          | R-063-8   |         |                        |
|           | 3/4          |           | 24-1405     | 24-1405-C          | R-063-12  |         |                        |
|           | 1"           |           | 24-1410     | 24-1410-C          | R-063-16  |         |                        |
| .093/.095 | 1/2          |           | 24-1415     | 24-1415-C          | R-094-8   |         |                        |
|           | 3/4          |           | 24-1420     | 24-1420-C          | R-094-12  |         |                        |
|           | 1"           |           | 24-1425     | 24-1425-C          | R-094-16  |         |                        |
| 3/8       | .039/.041    |           | 1/4         | 24-1430            | 24-1430-C | R-039-4 | .100                   |
|           |              | 3/8       | 24-1435     | 24-1435-C          | R-039-6   |         |                        |
|           |              | 1/2       | 24-1440     | 24-1440-C          | R-039-8   |         |                        |
|           |              | 5/8       | 24-1442     | 24-1442-C          | R-039-10  |         |                        |
|           |              | 3/4       | 24-1445     | 24-1445-C          | R-039-12  |         |                        |
|           |              | 1"        | 24-1450     | 24-1450-C          | R-039-16  |         |                        |
|           |              | 1-1/4     | 24-1455     | 24-1455-C          | R-039-20  |         |                        |



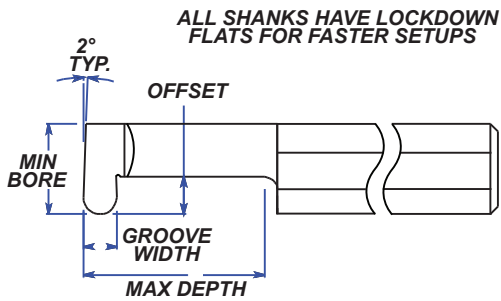
Carbide Cutting Tools



# SERIES 24 FULL RADIUS GROOVING TOOLS

# GROOVING TOOLS

**APPLICATION: FULL RADIUS GROOVES AND PROFILE WORK**



| MIN BORE  | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | TOOL ID # | OFFSET | SHANK & OVERALL LENGTH |
|-----------|--------------|-----------|-------------|--------------------|-----------|--------|------------------------|
| 3/8       | .046/.048    | 1/4       | 24-1460     | 24-1460-C          | R-046-4   | .100   | 3/8 x 2-1/2"           |
|           |              | 3/8       | 24-1465     | 24-1465-C          | R-046-6   |        |                        |
|           |              | 1/2       | 24-1470     | 24-1470-C          | R-046-8   |        |                        |
|           |              | 3/4       | 24-1475     | 24-1475-C          | R-046-12  |        |                        |
|           |              | 1"        | 24-1480     | 24-1480-C          | R-046-16  |        |                        |
|           |              | 1-1/4     | 24-1485     | 24-1485-C          | R-046-20  |        |                        |
|           | .055/.057    | 1/4       | 24-1490     | 24-1490-C          | R-055-4   |        |                        |
|           |              | 3/8       | 24-1495     | 24-1495-C          | R-055-6   |        |                        |
|           |              | 1/2       | 24-1500     | 24-1500-C          | R-055-8   |        |                        |
|           |              | 3/4       | 24-1505     | 24-1505-C          | R-055-12  |        |                        |
|           |              | 1"        | 24-1510     | 24-1510-C          | R-055-16  |        |                        |
|           |              | 1-1/4     | 24-1515     | 24-1515-C          | R-055-20  |        |                        |
|           | .062/.064    | 1/4       | 24-1520     | 24-1520-C          | R-062-4   |        |                        |
|           |              | 3/8       | 24-1525     | 24-1525-C          | R-062-6   |        |                        |
|           |              | 1/2       | 24-1530     | 24-1530-C          | R-062-8   |        |                        |
|           |              | 3/4       | 24-1535     | 24-1535-C          | R-062-12  |        |                        |
|           |              | 1"        | 24-1540     | 24-1540-C          | R-062-16  |        |                        |
|           |              | 1-1/4     | 24-1545     | 24-1545-C          | R-062-20  |        |                        |
|           | .069/.071    | 1/4       | 24-1550     | 24-1550-C          | R-069-4   |        |                        |
|           |              | 3/8       | 24-1555     | 24-1555-C          | R-069-6   |        |                        |
|           |              | 1/2       | 24-1560     | 24-1560-C          | R-069-8   |        |                        |
|           |              | 3/4       | 24-1565     | 24-1565-C          | R-069-12  |        |                        |
|           |              | 1"        | 24-1570     | 24-1570-C          | R-069-16  |        |                        |
|           |              | 1-1/4     | 24-1575     | 24-1575-C          | R-069-20  |        |                        |
| .087/.089 | 1/4          | 24-1580   | 24-1580-C   | R-087-4            |           |        |                        |
|           | 3/8          | 24-1585   | 24-1585-C   | R-087-6            |           |        |                        |
|           | 1/2          | 24-1590   | 24-1590-C   | R-087-8            |           |        |                        |
|           | 3/4          | 24-1595   | 24-1595-C   | R-087-12           |           |        |                        |
|           | 1"           | 24-1600   | 24-1600-C   | R-087-16           |           |        |                        |
|           | 1-1/4        | 24-1605   | 24-1605-C   | R-087-20           |           |        |                        |
| .093/.095 | 1/2          | 24-1610   | 24-1610-C   | R-095-8            |           |        |                        |
|           | 3/4          | 24-1615   | 24-1615-C   | R-095-12           |           |        |                        |
|           | 1"           | 24-1620   | 24-1620-C   | R-095-16           |           |        |                        |
| .125/.127 | 1/2          | 24-1625   | 24-1625-C   | R-126-8            |           |        |                        |
|           | 3/4          | 24-1630   | 24-1630-C   | R-126-12           |           |        |                        |
|           | 1"           | 24-1635   | 24-1635-C   | R-126-16           |           |        |                        |
| 1/2       | .093/.095    | 1/2       | 24-1640     | 24-1640-C          | R-093-8   | .150   | 1/2 x 3"               |
|           |              | 3/4       | 24-1645     | 24-1645-C          | R-093-12  |        |                        |
|           |              | 1"        | 24-1650     | 24-1650-C          | R-093-16  |        |                        |
|           |              | 1-1/4     | 24-1655     | 24-1655-C          | R-093-20  |        |                        |
|           |              | 1-1/2     | 24-1660     | 24-1660-C          | R-093-24  |        |                        |
|           | .125/.127    | 1/2       | 24-1665     | 24-1665-C          | R-125-8   |        |                        |
|           |              | 3/4       | 24-1670     | 24-1670-C          | R-125-12  |        |                        |
|           |              | 1"        | 24-1675     | 24-1675-C          | R-125-16  |        |                        |
|           |              | 1-1/4     | 24-1680     | 24-1680-C          | R-125-20  |        |                        |
|           |              | 1-1/2     | 24-1685     | 24-1685-C          | R-125-24  |        |                        |
|           | .156/.158    | 1/2       | 24-1690     | 24-1690-C          | R-156-8   |        |                        |
|           |              | 3/4       | 24-1695     | 24-1695-C          | R-156-12  |        |                        |
|           |              | 1"        | 24-1700     | 24-1700-C          | R-156-16  |        |                        |
|           |              | 1-1/4     | 24-1705     | 24-1705-C          | R-156-20  |        |                        |
|           |              | 1-1/2     | 24-1710     | 24-1710-C          | R-156-24  |        |                        |
|           | .187/.189    | 1/2       | 24-1715     | 24-1715-C          | R-187-8   |        |                        |
|           |              | 3/4       | 24-1720     | 24-1720-C          | R-187-12  |        |                        |
|           |              | 1"        | 24-1725     | 24-1725-C          | R-187-16  |        |                        |
|           |              | 1-1/4     | 24-1730     | 24-1730-C          | R-187-20  |        |                        |
|           |              | 1-1/2     | 24-1735     | 24-1735-C          | R-187-24  |        |                        |
|           | .250/.252    | 1/2       | 24-1740     | 24-1740-C          | R-250-8   |        |                        |
|           |              | 3/4       | 24-1745     | 24-1745-C          | R-250-12  |        |                        |
|           |              | 1"        | 24-1750     | 24-1750-C          | R-250-16  |        |                        |
|           |              | 1-1/4     | 24-1755     | 24-1755-C          | R-250-20  |        |                        |
| 1-1/2     |              | 24-1760   | 24-1760-C   | R-250-24           |           |        |                        |



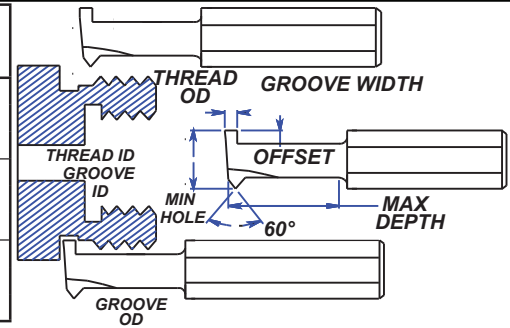
# GROOVING TOOLS

## SERIES 52 COMBINATION THREAD & GROOVE

APPLICATION : THREADING & GROOVING WITH THE SAME TOOL

FLAT ON BOTH SIDES OF SHANK

| MIN BORE | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP# | TOOL ID #   | GROOVE WIDTH | OFFSET | SHANK & O.A.L. |
|----------|-----------|-------------|-------------------|-------------|--------------|--------|----------------|
| 1/4      | .500      | 52-1100     | 52-1100-C         | TG-240-500  | .094         | .050   | 1/4 x 2-1/2"   |
|          | .750      | 52-1105     | 52-1105-C         | TG-240-750  |              |        |                |
|          | 1.000     | 52-1110     | 52-1110-C         | TG-240-1000 |              |        |                |
| 5/16     | .500      | 52-1115     | 52-1115-C         | TG-310-500  | .125         | .060   | 5/16 x 2-1/2"  |
|          | .750      | 52-1120     | 52-1120-C         | TG-310-750  |              |        |                |
|          | 1.000     | 52-1125     | 52-1125-C         | TG-310-1000 |              |        |                |
| 3/8      | .500      | 52-1130     | 52-1130-C         | TG-360-500  | .156         | .080   | 3/8 x 2-1/2"   |
|          | .750      | 52-1135     | 52-1135-C         | TG-360-750  |              |        |                |
|          | 1.000     | 52-1140     | 52-1140-C         | TG-360-1000 |              |        |                |



WIDTHS CAN BE SIZED TO YOUR SPECIFICATIONS

## SERIES 06 MULTI-REACH GROOVING TOOLS

APPLICATION : MULTI-REACH GROOVING NO LONGER LIMITED BY NECK LENGTH

| MIN BORE | TOOL ID #  | GROOVE WIDTH | ORDER EDP # | ALTIN COATED EDP# | OFFSET | SHANK D.I.A. | SHANK LENGTH |
|----------|------------|--------------|-------------|-------------------|--------|--------------|--------------|
| .310     | LG-310-032 | .032         | 06-1200     | 06-1200-C         | .060   | 1/4          | 4"           |
|          | LG-310-063 | .063         | 06-1205     | 06-1205-C         |        |              |              |
|          | LG-310-094 | .094         | 06-1210     | 06-1210-C         |        |              |              |
|          | LG-310-125 | .125         | 06-1215     | 06-1215-C         |        |              |              |
| .390     | LG-390-032 | .032         | 06-1220     | 06-1220-C         | .075   | 5/16         | 4"           |
|          | LG-390-063 | .063         | 06-1225     | 06-1225-C         |        |              |              |
|          | LG-390-094 | .094         | 06-1230     | 06-1230-C         |        |              |              |
|          | LG-390-125 | .125         | 06-1235     | 06-1235-C         |        |              |              |
| .475     | LG-475-032 | .032         | 06-1240     | 06-1240-C         | .100   | 3/8          | 6"           |
|          | LG-475-063 | .063         | 06-1245     | 06-1245-C         |        |              |              |
|          | LG-475-094 | .094         | 06-1250     | 06-1250-C         |        |              |              |
|          | LG-475-125 | .125         | 06-1255     | 06-1255-C         |        |              |              |
| .620     | LG-620-032 | .032         | 06-1260     | 06-1260-C         | .120   | 1/2          | 6"           |
|          | LG-620-063 | .063         | 06-1265     | 06-1265-C         |        |              |              |
|          | LG-620-094 | .094         | 06-1270     | 06-1270-C         |        |              |              |
|          | LG-620-125 | .125         | 06-1275     | 06-1275-C         |        |              |              |

CARBIDE SHANKS PROVIDE MAXIMUM RIGIDITY.

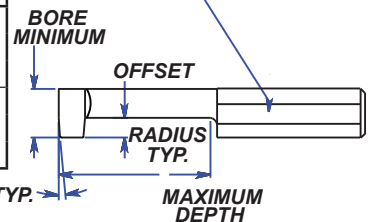


## SERIES 27 O-RING GROOVE TOOLS

APPLICATION : O-RING GROOVING WITH TAPERED SIDES

| MIN BORE | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | TOOL ID # | CORNER RADIUS | OFFSET | SHANK & OVERALL LENGTH |
|----------|--------------|-----------|-------------|--------------------|-----------|---------------|--------|------------------------|
| .250     | .096/.098    | .500      | 27-1300     | 27-1300-C          | O-96-8    | .010/.020     | .100   | 1/4 x 2-1/2"           |
|          | .141/.143    | .562      | 27-1305     | 27-1305-C          | O-141-9   | .035/.045     |        |                        |
|          | .144/.146    | .625      | 27-1310     | 27-1310-C          | O-144-10  | .035/.045     |        |                        |
| .375     | .174/.176    | .750      | 27-1315     | 27-1315-C          | O-174-12  | .010/.020     | .115   | 3/8 x 2-1/2"           |
|          | .208/.210    | .812      | 27-1320     | 27-1320-C          | O-208-13  | .035/.045     |        |                        |
|          | .241/.243    | .940      | 27-1325     | 27-1325-C          | O-241-15  | .035/.045     |        |                        |

ALL SHANKS HAVE LOCKDOWN FLATS FOR FASTER SETUPS



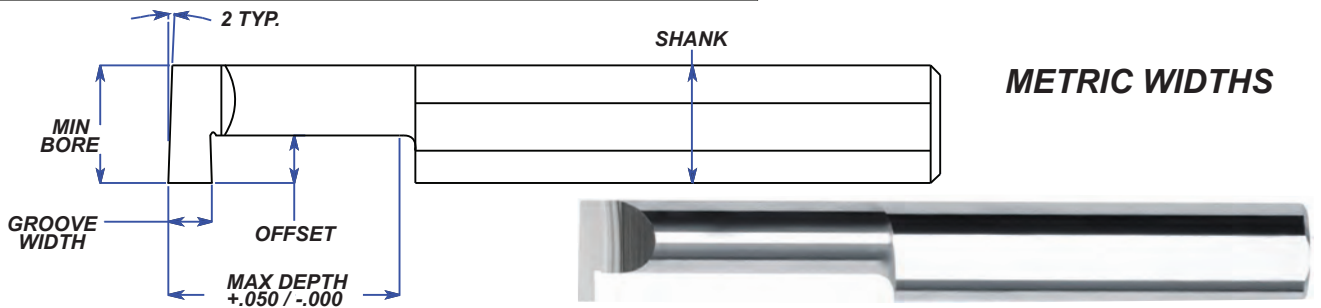
ITI CARBIDE AMERICAN MADE

**ITI** Carbide Cutting Tools

# SERIES 20 METRIC GROOVING TOOLS

# GROOVING TOOLS

**APPLICATION : RETAINING RING GROOVES & INTERNAL RELIEFS**

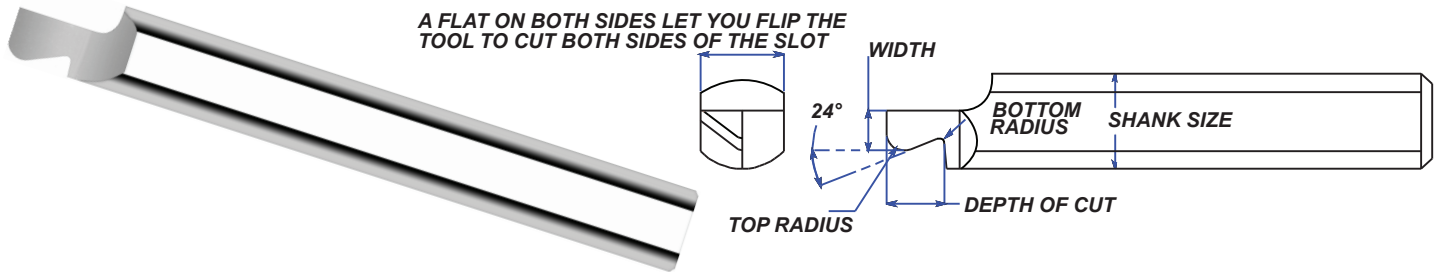


| MIN BORE | GROOVE WIDTH +/- .0254MM | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | TOOL ID # | OFFSET | SHANK & OVERALL LENGTH |
|----------|--------------------------|-----------|-------------|-------------------|-----------|--------|------------------------|
| 6.5      | .5 MM (.0197)            | 13 MM     | 20-9920     | 20-9920-C         | G-5-13    | .050   | 1/4 x 2-1/2"           |
|          | .9 MM (.0354)            | 13 MM     | 20-9930     | 20-9930-C         | G-9-13    |        |                        |
|          | 1.1 MM (.0433)           | 13 MM     | 20-9940     | 20-9940-C         | G-1.1-13  |        |                        |
|          | 1.3 MM (.0512)           | 13 MM     | 20-9950     | 20-9950-C         | G-1.3-13  |        |                        |
| 9.5      | 1.85 MM (.0728)          | 13 MM     | 20-9960     | 20-9960-C         | G-1.85-13 | .100   | 3/8 x 2-1/2"           |
|          | 2.15 MM (.0847)          | 13 MM     | 20-9970     | 20-9970-C         | G-2.15-13 |        |                        |
|          | 2.65 MM (.1044)          | 13 MM     | 20-9980     | 20-9980-C         | G-2.65-13 |        |                        |
|          | 3.0 MM (.1182)           | 13 MM     | 20-9982     | 20-9982-C         | G-3.0-13  |        |                        |
| 12.7     | 3.0 MM (.1182)           | 19 MM     | 20-9985     | 20-9985-C         | G-3.0-19  | .150   | 1/2 x 3"               |
|          | 4.0 MM (.1576)           | 19 MM     | 20-9990     | 20-9990-C         | G-4.0-19  |        |                        |
|          | 6.0 MM (.2364)           | 19 MM     | 20-9995     | 20-9995-C         | G-6.0-19  |        |                        |

# SERIES 53 O-RING DOVETAIL GROOVERS

**APPLICATION : CUT-TURN 24° O-RING DOVETAILS. THEY CUT WITH BOTH TOP & BOTTOM RADIUS.**

MILLING STYLE O-RING TOOLS ARE ON PAGE 95



| O-RING SIZE | WIDTH | ORDER EDP # | ALTN COATED EDP # | DEPTH OF CUT | BOTTOM RADIUS | TOP RADIUS | SHANK & OVERALL LENGTH |
|-------------|-------|-------------|-------------------|--------------|---------------|------------|------------------------|
| .070        | .040  | 53-4000     | 53-4000-C         | .051         | .005          | .015       | 1/8 x 2"               |
| .093        | .060  | 53-4005     | 53-4005-C         | .075         | .010          | .015       | 1/8 x 2"               |
| .103        | .065  | 53-4010     | 53-4010-C         | .082         | .010          | .015       | 1/8 x 2"               |
| .125        | .082  | 53-4015     | 53-4015-C         | .102         | .010          | .031       | 3/16 x 2-1/2"          |
| .139        | .085  | 53-4020     | 53-4020-C         | .112         | .010          | .031       | 3/16 x 2-1/2"          |
| .187        | .130  | 53-4025     | 53-4025-C         | .154         | .015          | .031       | 1/4 x 2-1/2"           |
| .210        | .140  | 53-4030     | 53-4030-C         | .172         | .015          | .031       | 1/4 x 2-1/2"           |
| .250        | .173  | 53-4035     | 53-4035-C         | .212         | .015          | .062       | 1/4 x 2-1/2"           |
| .275        | .180  | 53-4040     | 53-4040-C         | .232         | .015          | .062       | 5/16 x 2-1/2"          |
| .375        | .240  | 53-4045     | 53-4045-C         | .317         | .020          | .094       | 5/16 x 2-1/2"          |

THE MOST UNIQUE LINE OF CUTTING TOOLS AVAILABLE

**IT** Carbide Cutting Tools



# GROOVING TOOLS

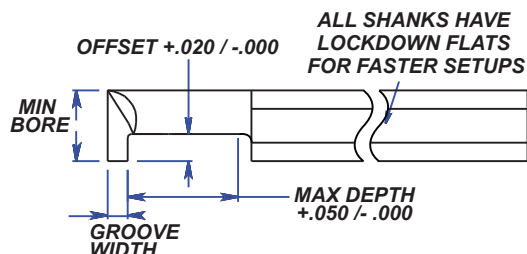
## SERIES 22 ALTiN COATED MAX-GROOVE

APPLICATION : FOR INTERNAL GROOVING AND RELIEVING

| MIN BORE  | GROOVE WIDTH | MAX DEPTH | ORDER EDP #    | TOOL ID #      | OFFSET | SHANK & OVERALL LENGTH |
|-----------|--------------|-----------|----------------|----------------|--------|------------------------|
| 1/4       | .017/.018    | 1/4       | 22-1100        | MG-25-017-250  | .050   | 1/4 x 2-1/2"           |
|           |              | 3/8       | 22-1105        | MG-25-017-375  |        |                        |
|           |              | 1/2       | 22-1110        | MG-25-017-500  |        |                        |
|           |              | 5/8       | 22-1115        | MG-25-017-625  |        |                        |
|           | .025/.026    | 1/4       | 22-1120        | MG-25-025-250  |        |                        |
|           |              | 3/8       | 22-1125        | MG-25-025-375  |        |                        |
|           |              | 1/2       | 22-1130        | MG-25-025-500  |        |                        |
|           |              | 5/8       | 22-1135        | MG-25-025-625  |        |                        |
|           | .030/.031    | 1/4       | 22-1140        | MG-25-030-250  |        |                        |
|           |              | 3/8       | 22-1145        | MG-25-030-375  |        |                        |
|           |              | 1/2       | 22-1150        | MG-25-030-500  |        |                        |
|           |              | 5/8       | 22-1155        | MG-25-030-625  |        |                        |
|           | .062/.064    | 1/4       | 22-1160        | MG-25-063-250  |        |                        |
|           |              | 3/8       | 22-1165        | MG-25-063-375  |        |                        |
|           |              | 1/2       | 22-1170        | MG-25-063-500  |        |                        |
|           |              | 5/8       | 22-1175        | MG-25-063-625  |        |                        |
|           | .093/.095    | 1/4       | 22-1180        | MG-25-094-250  |        |                        |
|           |              | 3/8       | 22-1185        | MG-25-094-375  |        |                        |
|           |              | 1/2       | 22-1190        | MG-25-094-500  |        |                        |
|           |              | 5/8       | 22-1195        | MG-25-094-625  |        |                        |
| .125/.127 | 1/4          | 22-1200   | MG-25-125-250  |                |        |                        |
|           | 3/8          | 22-1205   | MG-25-125-375  |                |        |                        |
|           | 1/2          | 22-1210   | MG-25-125-500  |                |        |                        |
|           | 5/8          | 22-1215   | MG-25-125-625  |                |        |                        |
| 5/16      | .033/.034    | 1/4       | 22-1220        | MG-31-033-250  | .100   | 5/16 x 2-1/2"          |
|           |              | 3/8       | 22-1225        | MG-31-033-375  |        |                        |
|           |              | 1/2       | 22-1230        | MG-31-033-500  |        |                        |
|           |              | 5/8       | 22-1235        | MG-31-033-625  |        |                        |
|           | .038/.039    | 1/4       | 22-1240        | MG-31-038-250  |        |                        |
|           |              | 3/8       | 22-1245        | MG-31-038-375  |        |                        |
|           |              | 1/2       | 22-1250        | MG-31-038-500  |        |                        |
|           |              | 5/8       | 22-1255        | MG-31-038-625  |        |                        |
|           | .062/.064    | 1/2       | 22-1260        | MG-31-063-500  |        |                        |
|           |              | 3/4       | 22-1265        | MG-31-063-750  |        |                        |
|           |              | 1"        | 22-1270        | MG-31-063-1000 |        |                        |
|           | .093/.095    | 1/2       | 22-1275        | MG-31-094-500  |        |                        |
|           |              | 3/4       | 22-1280        | MG-31-094-750  |        |                        |
|           | .125/.127    | 1"        | 22-1285        | MG-31-094-1000 |        |                        |
|           |              | 1/2       | 22-1290        | MG-31-125-500  |        |                        |
|           | 3/8          | .039/.041 | 3/4            | 22-1295        |        |                        |
| 1"        |              |           | 22-1300        | MG-31-125-1000 |        |                        |
| 1/4       |              |           | 22-1305        | MG-37-039-250  |        |                        |
| 3/8       |              |           | 22-1310        | MG-37-039-375  |        |                        |
| 1/2       |              |           | 22-1315        | MG-37-039-500  |        |                        |
| 3/4       |              |           | 22-1320        | MG-37-039-750  |        |                        |
| .046/.048 |              | 1"        | 22-1325        | MG-37-039-1000 |        |                        |
|           |              | 1-1/4     | 22-1330        | MG-37-039-1250 |        |                        |
|           |              | 1/4       | 22-1335        | MG-37-046-250  |        |                        |
|           |              | 3/8       | 22-1340        | MG-37-046-375  |        |                        |
|           |              | 1/2       | 22-1345        | MG-37-046-500  |        |                        |
| .055/.057 |              | 3/4       | 22-1350        | MG-37-046-750  |        |                        |
|           |              | 1"        | 22-1355        | MG-37-046-1000 |        |                        |
|           |              | 1-1/4     | 22-1360        | MG-37-046-1250 |        |                        |
|           | 1/4          | 22-1365   | MG-37-055-250  |                |        |                        |
|           | 3/8          | 22-1370   | MG-37-055-375  |                |        |                        |
|           | 1/2          | 22-1375   | MG-37-055-500  |                |        |                        |
|           | 3/4          | 22-1380   | MG-37-055-750  |                |        |                        |
|           | 1"           | 22-1385   | MG-37-055-1000 |                |        |                        |
|           | 1-1/4        | 22-1390   | MG-37-055-1250 |                |        |                        |



STRONGER ELLIPTICALLY GROUNDED NECK



Max-Groove is the Ultimate in Grooving tools. Featuring an elliptical neck for greater strength. A special helical flute for maximum shearing action with a better finish, and a ALTiN coating for a longer life. Max-Groove outperforms and outlasts our competitors grooving tools two to one.



# SERIES 22 ALTIN COATED MAX-GROOVE

# GROOVING TOOLS

APPLICATION : FOR INTERNAL GROOVING AND RELIEVING

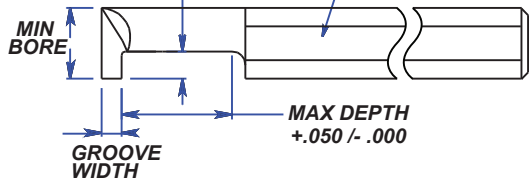


STRONGER ELLIPTICALLY GROUNDED NECK



OFFSET +.020 / -.000

ALL SHANKS HAVE LOCKDOWN FLATS FOR FASTER SETUPS



Max-Groove is the Ultimate in Grooving tools. Featuring an elliptical neck for greater strength. A special helical flute for maximum shearing action with a better finish, and a ALTIN coating for a longer life. Max-Groove outperforms and outlasts our competitors grooving tools two to one.

| MIN BORE  | GROOVE WIDTH | MAX DEPTH | ORDER EDP #    | TOOL ID #      | OFFSET | SHANK & OVERALL LENGTH |
|-----------|--------------|-----------|----------------|----------------|--------|------------------------|
| 3/8       | .062/.064    | 1/4       | 22-1395        | MG-37-063-250  | .100   | 3/8 x 2-1/2"           |
|           |              | 3/8       | 22-1400        | MG-37-063-375  |        |                        |
|           |              | 1/2       | 22-1405        | MG-37-063-500  |        |                        |
|           |              | 3/4       | 22-1410        | MG-37-063-750  |        |                        |
|           |              | 1"        | 22-1415        | MG-37-063-1000 |        |                        |
|           |              | 1-1/4     | 22-1420        | MG-37-063-1250 |        |                        |
|           | .069/.071    | 1/4       | 22-1425        | MG-37-069-250  |        |                        |
|           |              | 3/8       | 22-1430        | MG-37-069-375  |        |                        |
|           |              | 1/2       | 22-1435        | MG-37-069-500  |        |                        |
|           |              | 3/4       | 22-1440        | MG-37-069-750  |        |                        |
|           |              | 1"        | 22-1445        | MG-37-069-1000 |        |                        |
|           |              | 1-1/4     | 22-1450        | MG-37-069-1250 |        |                        |
|           | .087/.089    | 1/4       | 22-1455        | MG-37-087-250  |        |                        |
|           |              | 3/8       | 22-1460        | MG-37-087-375  |        |                        |
|           |              | 1/2       | 22-1465        | MG-37-087-500  |        |                        |
|           |              | 3/4       | 22-1470        | MG-37-087-750  |        |                        |
|           |              | 1"        | 22-1475        | MG-37-087-1000 |        |                        |
|           |              | 1-1/4     | 22-1480        | MG-37-087-1250 |        |                        |
|           | .093/.095    | 1/2       | 22-1485        | MG-37-500      |        |                        |
|           |              | 3/4       | 22-1490        | MG-37-750      |        |                        |
|           |              | 1"        | 22-1495        | MG-37-1000     |        |                        |
|           | .125/.127    | 1/2       | 22-1500        | MG-37-500      |        |                        |
|           |              | 3/4       | 22-1505        | MG-37-750      |        |                        |
|           |              | 1"        | 22-1510        | MG-37-1000     |        |                        |
| 1/2       | .062/.064    | 1/2       | 22-1515        | MG-50-063-500  | .150   | 1/2 x 3"               |
|           |              | 3/4       | 22-1520        | MG-50-063-750  |        |                        |
|           |              | 1"        | 22-1525        | MG-50-063-1000 |        |                        |
|           |              | 1-1/4     | 22-1530        | MG-50-063-1250 |        |                        |
|           |              | 1-1/2     | 22-1535        | MG-50-063-1500 |        |                        |
|           | .093/.095    | 1/2       | 22-1540        | MG-50-094-500  |        |                        |
|           |              | 3/4       | 22-1545        | MG-50-094-750  |        |                        |
|           |              | 1"        | 22-1550        | MG-50-094-1000 |        |                        |
|           |              | 1-1/4     | 22-1555        | MG-50-094-1250 |        |                        |
|           |              | 1-1/2     | 22-1560        | MG-50-094-1500 |        |                        |
|           | .125/.127    | 1/2       | 22-1565        | MG-50-125-500  |        |                        |
|           |              | 3/4       | 22-1570        | MG-50-125-750  |        |                        |
|           |              | 1"        | 22-1575        | MG-50-125-1000 |        |                        |
|           |              | 1-1/4     | 22-1580        | MG-50-125-1250 |        |                        |
|           |              | 1-1/2     | 22-1585        | MG-50-125-1500 |        |                        |
|           | .156/.158    | 1/2       | 22-1590        | MG-50-156-500  |        |                        |
|           |              | 3/4       | 22-1595        | MG-50-156-750  |        |                        |
|           |              | 1"        | 22-1600        | MG-50-156-1000 |        |                        |
|           |              | 1-1/4     | 22-1605        | MG-50-156-1250 |        |                        |
|           |              | 1-1/2     | 22-1610        | MG-50-156-1500 |        |                        |
|           | .187/.189    | 1/2       | 22-1615        | MG-50-187-500  |        |                        |
|           |              | 3/4       | 22-1620        | MG-50-187-750  |        |                        |
|           |              | 1"        | 22-1625        | MG-50-187-1000 |        |                        |
|           |              | 1-1/4     | 22-1630        | MG-50-187-1250 |        |                        |
| 1-1/2     |              | 22-1635   | MG-50-187-1500 |                |        |                        |
| .250/.252 | 1/2          | 22-1640   | MG-50-250-500  |                |        |                        |
|           | 3/4          | 22-1645   | MG-50-250-750  |                |        |                        |
|           | 1"           | 22-1650   | MG-50-250-1000 |                |        |                        |
|           | 1-1/4        | 22-1655   | MG-50-250-1250 |                |        |                        |
|           | 1-1/2        | 22-1660   | MG-50-250-1500 |                |        |                        |

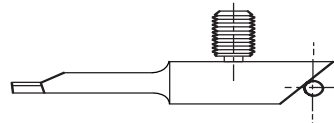
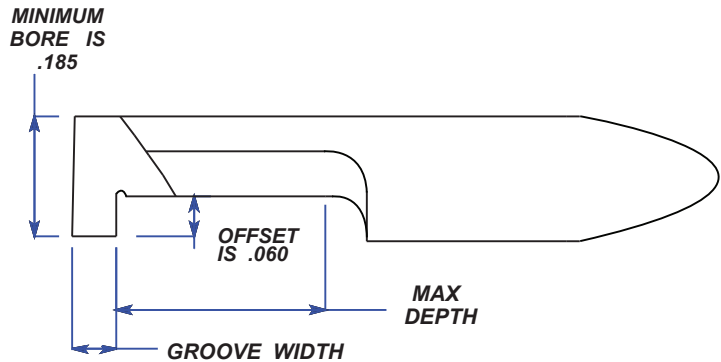
# GROOVING TOOLS

## SERIES 42 QUICK CHANGE GROOVING TOOL

APPLICATION : LOCKED INTO OUR SPECIAL HOLDER MAINTAINING AN EXACT RADIAL AND AXIAL POSITION FOR QUICK TOOL CHANGE



Quick Change Tools Are Also Available For Boring, Threading, Profiling And Face Grooving. See Pages 12,41,51 And,39.



ALL TOOLS HAVE A GROUND ANGLE ON THE SHANK WHICH LOCKS IN PLACE AGAINST A LOCATING PIN, MAINTAINING AN EXACT RADIAL AND AXIAL POSITION

| GROOVE WIDTH | MAX DEPTH | ORDER EDP # | ALTN COATED EDP# |
|--------------|-----------|-------------|------------------|
| .017<br>.018 | .200      | 42-7000     | 42-7000-C        |
|              | .300      | 42-7005     | 42-7005-C        |
|              | .400      | 42-7010     | 42-7010-C        |
|              | .500      | 42-7015     | 42-7015-C        |
|              | .600      | 42-7020     | 42-7020-C        |
|              | .700      | 42-7025     | 42-7025-C        |
| .028<br>.029 | .200      | 42-7030     | 42-7030-C        |
|              | .300      | 42-7035     | 42-7035-C        |
|              | .400      | 42-7040     | 42-7040-C        |
|              | .500      | 42-7045     | 42-7045-C        |
|              | .600      | 42-7050     | 42-7050-C        |
|              | .700      | 42-7055     | 42-7055-C        |
| .031<br>.032 | .200      | 42-7060     | 42-7060-C        |
|              | .300      | 42-7065     | 42-7065-C        |
|              | .400      | 42-7070     | 42-7070-C        |
|              | .500      | 42-7075     | 42-7075-C        |
|              | .600      | 42-7080     | 42-7080-C        |
|              | .700      | 42-7085     | 42-7085-C        |
| .032<br>.033 | .200      | 42-7090     | 42-7090-C        |
|              | .300      | 42-7095     | 42-7095-C        |
|              | .400      | 42-7100     | 42-7100-C        |
|              | .500      | 42-7105     | 42-7105-C        |
|              | .600      | 42-7110     | 42-7110-C        |
|              | .700      | 42-7115     | 42-7115-C        |
| .038<br>.039 | .200      | 42-7120     | 42-7120-C        |
|              | .300      | 42-7125     | 42-7125-C        |
|              | .400      | 42-7130     | 42-7130-C        |
|              | .500      | 42-7135     | 42-7135-C        |
|              | .600      | 42-7140     | 42-7140-C        |
|              | .700      | 42-7145     | 42-7145-C        |



HOLDERS ARE AVAILABLE WITH 3/8, 1/2, 5/8, 3/4 & 22mm SHANK SIZES.

### STANDARD STYLE

|             |              |
|-------------|--------------|
| 3/8 SHANK   | EDP# 42-9000 |
| 1/2 SHANK   | EDP# 42-9005 |
| 5/8 SHANK   | EDP# 42-9010 |
| 3/4 SHANK   | EDP# 42-9015 |
| 22 MM SHANK | EDP# 42-9020 |

### STANDARD HOLDERS



**IT** Carbide Cutting Tools



# SERIES 42 QUICK CHANGE GROOVING TOOL

# GROOVING TOOLS

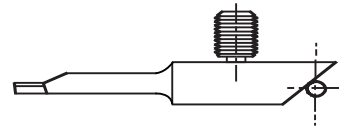
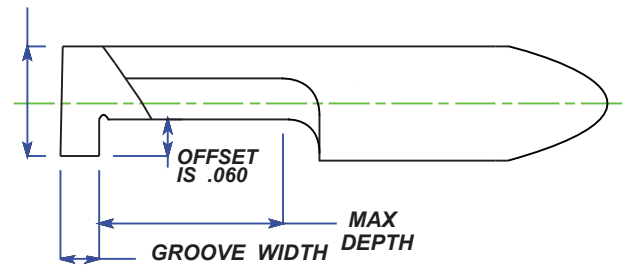
APPLICATION : LOCKED INTO OUR SPECIAL HOLDER MAINTAINING AN EXACT RADIAL AND AXIAL POSITION FOR QUICK TOOL CHANGE



Quick Change Tools Are Also Available For Boring, Threading, Profiling And Face Grooving. See Pages 12,42,50 And,39.

| GROOVE WIDTH               | MAX DEPTH | ORDER EDP # | ALTiN COATED EDP# |
|----------------------------|-----------|-------------|-------------------|
| <u>.039</u><br><u>.040</u> | .200      | 42-7150     | 42-7150-C         |
|                            | .300      | 42-7155     | 42-7155-C         |
|                            | .400      | 42-7160     | 42-7160-C         |
|                            | .500      | 42-7165     | 42-7165-C         |
|                            | .600      | 42-7170     | 42-7170-C         |
|                            | .700      | 42-7175     | 42-7175-C         |
| <u>.045</u><br><u>.046</u> | .200      | 42-7180     | 42-7180-C         |
|                            | .300      | 42-7185     | 42-7185-C         |
|                            | .400      | 42-7190     | 42-7190-C         |
|                            | .500      | 42-7195     | 42-7195-C         |
|                            | .600      | 42-7200     | 42-7200-C         |
|                            | .700      | 42-7205     | 42-7205-C         |
| <u>.047</u><br><u>.048</u> | .200      | 42-7210     | 42-7210-C         |
|                            | .300      | 42-7215     | 42-7215-C         |
|                            | .400      | 42-7220     | 42-7220-C         |
|                            | .500      | 42-7225     | 42-7225-C         |
|                            | .600      | 42-7230     | 42-7230-C         |
|                            | .700      | 42-7235     | 42-7235-C         |
| <u>.055</u><br><u>.056</u> | .200      | 42-7240     | 42-7240-C         |
|                            | .300      | 42-7245     | 42-7245-C         |
|                            | .400      | 42-7250     | 42-7250-C         |
|                            | .500      | 42-7255     | 42-7255-C         |
|                            | .600      | 42-7260     | 42-7260-C         |
|                            | .700      | 42-7265     | 42-7265-C         |
| <u>.061</u><br><u>.062</u> | .200      | 42-7270     | 42-7270-C         |
|                            | .300      | 42-7275     | 42-7275-C         |
|                            | .400      | 42-7280     | 42-7280-C         |
|                            | .500      | 42-7285     | 42-7285-C         |
|                            | .600      | 42-7290     | 42-7290-C         |
|                            | .700      | 42-7295     | 42-7295-C         |

MINIMUM BORE IS .185



ALL TOOLS HAVE A GROUND ANGLE ON THE SHANK WHICH LOCKS IN PLACE AGAINST A LOCATING PIN, MAINTAINING AN EXACT RADIAL AND AXIAL POSITION



HOLDERS ARE AVAILABLE WITH 3/8, 1/2, 5/8, 3/4 & 22mm SHANK SIZES.

### COOLANT STANDARD STYLE

|             |              |
|-------------|--------------|
| 3/8 SHANK   | EDP# 42-9500 |
| 1/2 SHANK   | EDP# 42-9505 |
| 5/8 SHANK   | EDP# 42-9510 |
| 3/4 SHANK   | EDP# 42-9515 |
| 22 MM SHANK | EDP# 42-9520 |

## COOLANT THROUGH HOLDERS



ON THE WEB: [WWW.INTERNALTOOL.COM](http://WWW.INTERNALTOOL.COM)

 **Carbide Cutting Tools**

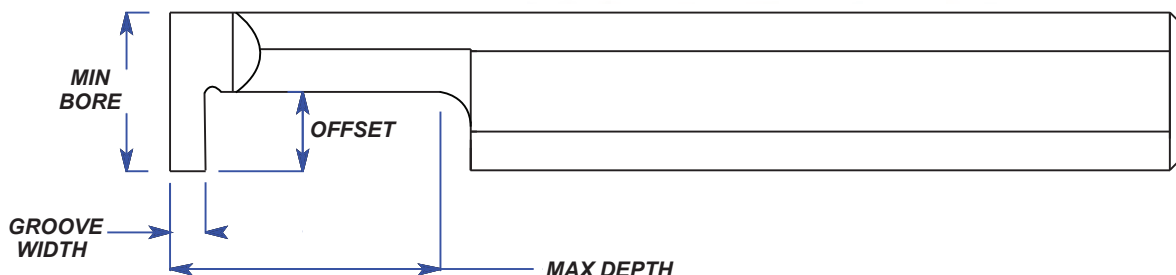
# GROOVING TOOLS

# SERIES 121 DEEP SLOTTING GROOVE TOOLS

APPLICATION : FOR DEEPER RETAINING RING GROOVES & INTERNAL RELIEFS



**New!**



| MIN BORE | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | OFFSET | SHANK & O.A.L. |
|----------|--------------|-----------|-------------|--------------------|--------|----------------|
| 1/4      | .030/.031    | 1/4       | 121-1000    | 121-1000-C         | .080   | 1/4 x 2-1/2"   |
|          |              | 3/8       | 121-1005    | 121-1005-C         |        |                |
|          |              | 1/2       | 121-1010    | 121-1010-C         |        |                |
|          | .062/.064    | 1/4       | 121-1015    | 121-1015-C         |        |                |
|          |              | 3/8       | 121-1020    | 121-1020-C         |        |                |
|          |              | 1/2       | 121-1025    | 121-1025-C         |        |                |
| 5/16     | .030/.031    | 1/4       | 121-1030    | 121-1030-C         | .150   | 5/16 x 2-1/2"  |
|          |              | 3/8       | 121-1035    | 121-1035-C         |        |                |
|          |              | 1/2       | 121-1040    | 121-1040-C         |        |                |
|          |              | 3/4       | 121-1045    | 121-1045-C         |        |                |
|          |              | 1"        | 121-1050    | 121-1050-C         |        |                |
|          |              | .062/.064 | 1/4         | 121-1055           |        |                |
|          | 3/8          |           | 121-1060    | 121-1060-C         |        |                |
|          | 1/2          |           | 121-1065    | 121-1065-C         |        |                |
|          | .093/.095    | 3/4       | 121-1070    | 121-1070-C         |        |                |
|          |              | 1"        | 121-1075    | 121-1075-C         |        |                |
|          |              | 3/8       | 121-1080    | 121-1080-C         |        |                |
|          |              | 1/2       | 121-1085    | 121-1085-C         |        |                |
|          |              | 3/4       | 121-1090    | 121-1090-C         |        |                |
|          |              | 1"        | 121-1095    | 121-1095-C         |        |                |

| MIN BORE  | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | OFFSET | SHANK & O.A.L. |            |
|-----------|--------------|-----------|-------------|--------------------|--------|----------------|------------|
| 3/8       | .030/.031    | 3/8       | 121-1100    | 121-1100-C         | .150   | 3/8 x 2-1/2"   |            |
|           |              | 1/2       | 121-1105    | 121-1105-C         |        |                |            |
|           |              | 3/4       | 121-1110    | 121-1110-C         |        |                |            |
|           |              | 1"        | 121-1115    | 121-1115-C         |        |                |            |
|           |              | 3/8       | 121-1120    | 121-1120-C         |        |                |            |
|           | .046/.048    | 1/2       | 121-1125    | 121-1125-C         |        |                |            |
|           |              | 3/4       | 121-1130    | 121-1130-C         |        |                |            |
|           |              | 1"        | 121-1135    | 121-1135-C         |        |                |            |
|           | .062/.064    | 3/8       | 121-1140    | 121-1140-C         |        |                |            |
|           |              | 1/2       | 121-1145    | 121-1145-C         |        |                |            |
|           |              | 3/4       | 121-1150    | 121-1150-C         |        |                |            |
|           |              | 1"        | 121-1155    | 121-1155-C         |        |                |            |
|           |              | .093/.095 | 3/8         | 121-1160           |        |                | 121-1160-C |
|           |              |           | 1/2         | 121-1165           |        |                | 121-1165-C |
|           | 3/4          |           | 121-1170    | 121-1170-C         |        |                |            |
| .125/.127 | 1"           | 121-1175  | 121-1175-C  |                    |        |                |            |
|           | 3/8          | 121-1180  | 121-1180-C  |                    |        |                |            |
|           | 1/2          | 121-1185  | 121-1185-C  |                    |        |                |            |
|           | 3/4          | 121-1190  | 121-1190-C  |                    |        |                |            |
|           | 1"           | 121-1195  | 121-1195-C  |                    |        |                |            |
| 1/2       | .062/.064    | 1/2       | 121-1200    | 121-1200-C         | .200   | 1/2 x 3"       |            |
|           |              | 3/4       | 121-1205    | 121-1205-C         |        |                |            |
|           |              | 1"        | 121-1210    | 121-1210-C         |        |                |            |
|           |              | 1-1/4     | 121-1215    | 121-1215-C         |        |                |            |
|           | .093/.095    | 1/2       | 121-1220    | 121-1220-C         |        |                |            |
|           |              | 3/4       | 121-1225    | 121-1225-C         |        |                |            |
|           |              | 1"        | 121-1230    | 121-1230-C         |        |                |            |
|           |              | 1-1/4     | 121-1235    | 121-1235-C         |        |                |            |
|           | .125/.127    | 1/2       | 121-1240    | 121-1240-C         |        |                |            |
|           |              | 3/4       | 121-1245    | 121-1245-C         |        |                |            |
|           |              | 1"        | 121-1250    | 121-1250-C         |        |                |            |
|           |              | 1-1/4     | 121-1255    | 121-1255-C         |        |                |            |
|           |              | 1/2       | 121-1260    | 121-1260-C         |        |                |            |
|           | .187/189     | 3/4       | 121-1265    | 121-1265-C         |        |                |            |
|           |              | 1"        | 121-1270    | 121-1270-C         |        |                |            |
| 1-1/4     |              | 121-1275  | 121-1275-C  |                    |        |                |            |

OVER 6000 TOOLS NOW AVAILABLE

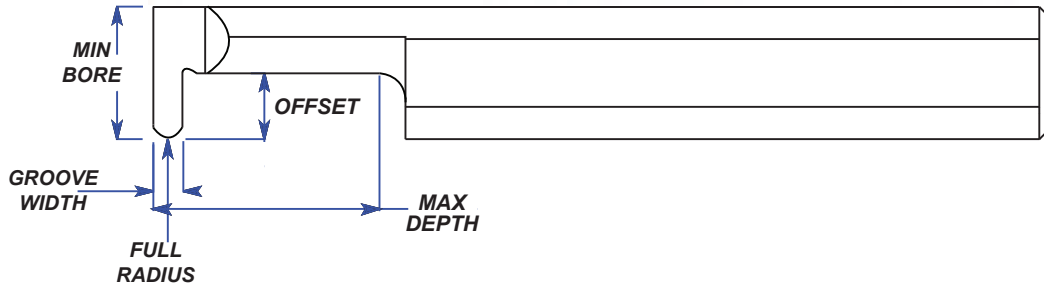
 **Carbide Cutting Tools**

# SERIES 123 DEEP SLOTTING FULL RADIUS

# GROOVING TOOLS

APPLICATION : FOR DEEPER RETAINING RING GROOVES & INTERNAL RELIEFS

**New!**



| MIN BORE | GROOVE WIDTH | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | OFFSET     | SHANK & O.A.L. | MIN BORE | GROOVE WIDTH | MAX DEPTH  | ORDER EDP # | ALTN COATED EDP # | OFFSET     | SHANK & O.A.L. |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|----------|--------------|-----------|-------------|-------------------|------------|----------------|----------|--------------|------------|-------------|-------------------|------------|----------------|------------|-----------|------------|------------|------------|------------|-----------|----------|------------|------------|----|----------|------------|-------|----------|------------|-----------|-----|----------|------------|-----|----------|------------|----|----------|------------|-------|----------|------------|-----|----------|------------|-----|----------|------------|
| 1/4      | .030/.031    | 1/4       | 123-1000    | 123-1000-C        | .080       | 1/4 x 2-1/2"   | 3/8      | .030/.031    | 3/8        | 123-1100    | 123-1100-C        | .150       | 3/8 x 2-1/2"   |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 3/8       | 123-1005    | 123-1005-C        |            |                |          |              | 1/2        | 123-1105    | 123-1105-C        |            |                |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 1/2       | 123-1010    | 123-1010-C        |            |                |          |              | 3/4        | 123-1110    | 123-1110-C        |            |                |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          | .062/.064    | 1/4       | 123-1015    | 123-1015-C        |            |                |          | 1"           | 123-1115   | 123-1115-C  | .046/.048         |            |                | 3/8        | 3/8       | 123-1120   | 123-1120-C |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 3/8       | 123-1020    | 123-1020-C        |            |                |          | 1/2          | 123-1125   | 123-1125-C  |                   |            |                |            | 3/4       | 123-1130   | 123-1130-C |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 1/2       | 123-1025    | 123-1025-C        |            |                |          | 1"           | 123-1135   | 123-1135-C  |                   |            |                |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
| 5/16     | .030/.031    | 1/4       | 123-1030    | 123-1030-C        | .150       | 5/16 x 2-1/2"  |          | .062/.064    | 3/8        | 3/8         | 123-1140          |            |                | 123-1140-C | .093/.095 | 1/2        | 123-1150   | 123-1150-C |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 3/8       | 123-1035    | 123-1035-C        |            |                |          |              |            | 1/2         | 123-1145          |            |                | 123-1145-C |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 1/2       | 123-1040    | 123-1040-C        |            |                |          |              |            | 3/4         | 123-1150          |            |                | 123-1150-C |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 3/4       | 123-1045    | 123-1045-C        |            |                |          |              |            | 1"          | 123-1155          |            |                | 123-1155-C |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 1"        | 123-1050    | 123-1050-C        |            |                |          |              |            | 3/8         | 123-1160          |            |                | 123-1160-C |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          | .062/.064    | 1/4       | 123-1055    | 123-1055-C        |            |                |          | .093/.095    | 3/8        | 123-1160    | 123-1160-C        |            |                | 1/2        |           | 1/2        | 123-1165   | 123-1165-C | .125/.127  | 3/4       | 123-1170 | 123-1170-C |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 3/8       | 123-1060    | 123-1060-C        |            |                | 3/4      |              |            |             |                   | 123-1170   | 123-1170-C     |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 1/2       | 123-1065    | 123-1065-C        |            |                | 1"       |              |            |             |                   | 123-1175   | 123-1175-C     |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 3/4       | 123-1070    | 123-1070-C        |            |                | 3/8      |              |            |             |                   | 123-1180   | 123-1180-C     |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 1"        | 123-1075    | 123-1075-C        |            |                | 1/2      |              |            |             |                   | 123-1185   | 123-1185-C     |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          | .093/.095    | 3/8       | 123-1080    | 123-1080-C        |            |                | 1"       | 123-1195     | 123-1195-C | 3/4         | 123-1190          | 123-1190-C | 1"             | 123-1195   |           | 123-1195-C | 1/2        | 123-1200   | 123-1200-C |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 1/2       | 123-1085    | 123-1085-C        |            |                |          |              |            |             |                   |            |                |            |           |            |            |            |            | .062/.064 | 3/4      | 123-1205   | 123-1205-C | 1" | 123-1210 | 123-1210-C | 1-1/4 | 123-1215 | 123-1215-C |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
|          |              | 3/4       | 123-1090    | 123-1090-C        |            |                |          |              |            |             |                   |            |                |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            | .093/.095 | 1/2 | 123-1220 | 123-1220-C | 3/4 | 123-1225 | 123-1225-C | 1" | 123-1230 | 123-1230-C |       |          |            |     |          |            |     |          |            |
|          |              | 1"        | 123-1095    | 123-1095-C        |            |                |          |              |            |             |                   |            |                |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            | 1-1/4 | 123-1235 | 123-1235-C | 1/2 | 123-1240 | 123-1240-C | 3/4 | 123-1245 | 123-1245-C |
|          |              | .187/189  | 1/2         | 123-1250          |            |                |          |              |            |             |                   |            |                |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |
| 1-1/4    | 123-1275     |           |             |                   | 123-1275-C |                |          |              |            |             |                   |            |                |            |           |            |            |            |            |           |          |            |            |    |          |            |       |          |            |           |     |          |            |     |          |            |    |          |            |       |          |            |     |          |            |     |          |            |

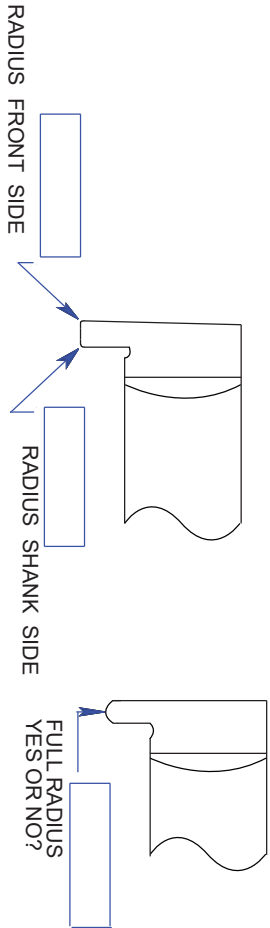
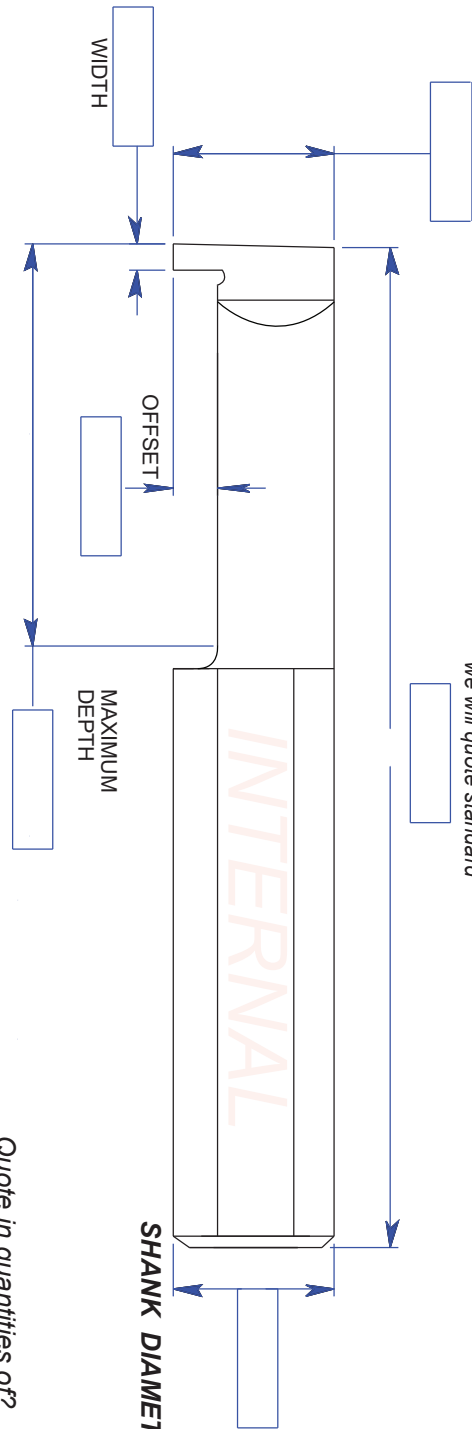
ITI CARBIDE: TESTED AND PROVEN TO BE THE BEST

**ITI Carbide Cutting Tools**



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Try to keep same size  
as shank or smaller

**OVERALL LENGTH**  
If not sure leave blank  
we will quote standard



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YOUR DISTRIBUTOR: \_\_\_\_\_



**Carbide Cutting Tools**

DRAWN BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REV: \_\_\_\_\_

TOOL NUMBER: \_\_\_\_\_

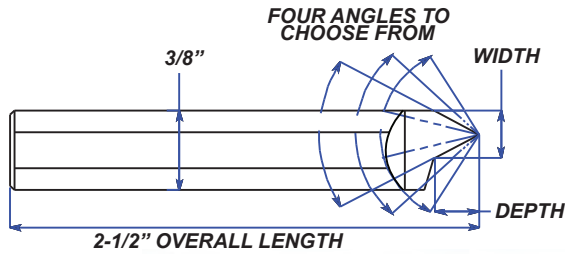
TOLERANCE UNLESS OTHERWISE SPECIFIED

.X = +/- .1/32  
.XX = +/- .010  
.XXX = +/- .002  
.XXXX = +/- .0005  
ANGLES +/- 0.15°

# SERIES 39 EXTERNAL THREAD/CHAMFER

# THREAD & CHAMFER TOOLS

APPLICATION : FOR THREADING ALL TYPES OF MATERIALS



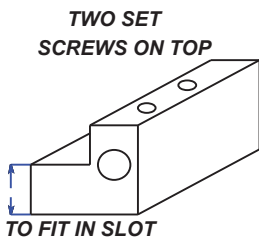
| INC. ANGLE | WIDTH | DEPTH | ORDER EDP # | TOOL ID #  |
|------------|-------|-------|-------------|------------|
| 30°        | .102  | .190  | 39-1000     | EX-30-DBL  |
| 60°        | .250  | .216  | 39-1005     | EX-60-DBL  |
| 90°        | .187  | .187  | 39-1010     | EX-90-DBL  |
| 120°       | .187  | .108  | 39-1015     | EX-120-DBL |



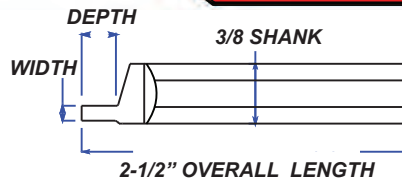
## SERIES 39 HOLDERS / EXTERNAL GROOVE

APPLICATION : FOR EXTERNAL GROOVING

| ORDER EDP # | TO FIT IN THIS SIZE SLOT |
|-------------|--------------------------|
| 39-7400     | 1/2 SQUARE               |
| 39-7410     | 5/8 SQUARE               |
| 39-7420     | 3/4 SQUARE               |
| 39-7430     | 1" SQUARE                |



3/8 BORE THROUGH



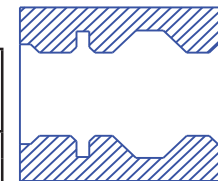
| WIDTH     | DEPTH | ORDER EDP # | ALTiN COATED EDP # | TOOL ID #  |
|-----------|-------|-------------|--------------------|------------|
| .030/.031 | .072  | 39-6000     | 39-6000-C          | EX-030-RET |
| .035/.036 | .075  | 39-6005     | 39-6005-C          | EX-035-RET |
| .041/.042 | .090  | 39-6010     | 39-6010-C          | EX-041-RET |
| .047/.049 | .095  | 39-6015     | 39-6015-C          | EX-047-RET |
| .056/.057 | .125  | 39-6020     | 39-6020-C          | EX-056-RET |
| .068/.071 | .130  | 39-6025     | 39-6025-C          | EX-068-RET |

## SERIES 43 LATHE I.D. CHAMFER TOOLS

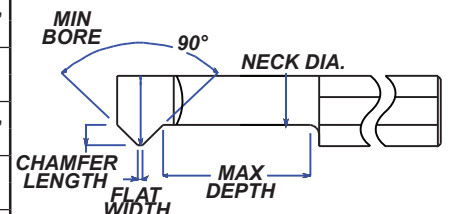
APPLICATION : INSIDE CHAMFERS



| MIN BORE | NECK DIA | FLAT WIDTH | CHAMFER LENGTH | MAX DEPTH | ORDER EDP # | ALTiN COATED EDP # | TOOL ID #   | SHANK & OVERALL LENGTH |
|----------|----------|------------|----------------|-----------|-------------|--------------------|-------------|------------------------|
| .115     | .075     | .030       | .040           | .500      | 43-2000     | 43-2000-C          | LA-115-500  | 1/8 x 2"               |
|          |          |            |                | .750      | 43-2005     | 43-2005-C          | LA-115-750  |                        |
| .175     | .125     | .030       | .050           | .750      | 43-2010     | 43-2010-C          | LA-175-750  | 3/16 x 2-1/2"          |
|          |          |            |                | 1.000     | 43-2015     | 43-2015-C          | LA-175-1000 |                        |
| .240     | .170     | .030       | .070           | .750      | 43-2020     | 43-2020-C          | LA-240-750  | 1/4 x 2-1/2"           |
|          |          |            |                | 1.250     | 43-2025     | 43-2025-C          | LA-240-1250 |                        |
| .300     | .210     | .030       | .090           | .750      | 43-2030     | 43-2030-C          | LA-300-750  | 5/16 x 2-1/2"          |
|          |          |            |                | 1.250     | 43-2035     | 43-2035-C          | LA-300-1250 |                        |
| .360     | .250     | .030       | .110           | .750      | 43-2040     | 43-2040-C          | LA-360-750  | 3/8 x 2-1/2"           |
|          |          |            |                | 1.250     | 43-2045     | 43-2045-C          | LA-360-1250 |                        |
| .490     | .350     | .030       | .140           | 1.000     | 43-2050     | 43-2050-C          | LA-490-1000 | 1/2 x 3"               |
|          |          |            |                | 1.500     | 43-2055     | 43-2055-C          | LA-490-1500 |                        |



ALL SHANKS HAVE LOCKDOWN FLATS FOR FASTER SETUPS



# INSERT STYLE GROOVING TOOLS

# SERIES 26 LAY-DOWN STYLE INSERT GROOVE

APPLICATION : FOR GROOVING ALL MATERIALS, USING LAYDOWN GROOVING INSERTS



## .640 MINIMUM BORE

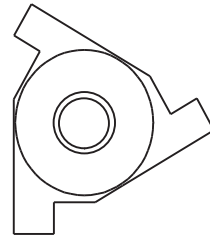
| HEAD ID # | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW # | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                         |
|-----------|-----------|-------------|-------------|---------|------------------|--------------|--------------|---------------|-------------------------|
|           |           |             |             |         |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE W/ COOLANT HOLE |
|           |           |             |             |         |                  |              | ORDER EDP #  | ORDER EDP #   | ORDER EDP #             |
| G-640     | 1/2       | 3/8         | 99-1155     | S-16-S  | 9/64             | 3"           | 26-1100      | 26-1105       | 26-1110                 |
|           |           |             |             |         |                  | 6"           | 26-1115      | 26-1120       | 26-1125                 |
|           |           |             |             |         |                  | 9"           | 26-1130      | 26-1135       | 26-1140                 |
|           |           |             |             |         |                  | 12"          | 26-1145      | 26-1150       | 26-1155                 |

## .750 MINIMUM BORE

| HEAD ID # | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW # | INSERT THICKNESS | SHANK LENGTH | SHANK STYLES |               |                         |
|-----------|-----------|-------------|-------------|---------|------------------|--------------|--------------|---------------|-------------------------|
|           |           |             |             |         |                  |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE W/ COOLANT HOLE |
|           |           |             |             |         |                  |              | ORDER EDP #  | ORDER EDP #   | ORDER EDP #             |
| G-750     | 5/8       | 3/8         | 99-1155     | S-16    | 9/64             | 3"           | 26-1160      | 26-1165       | 26-1170                 |
|           |           |             |             |         |                  | 6"           | 26-1175      | 26-1180       | 26-1185                 |
|           |           |             |             |         |                  | 9"           | 26-1190      | 26-1195       | 26-1200                 |
|           |           |             |             |         |                  | 12"          | 26-1205      | 26-1210       | 26-1215                 |

## INSERTS FOR ABOVE BARS 3/8" INSERT I.C.

| CARBIDE GRADE | GROOVE WIDTH | CUTTING DEPTH | ORDER EDP # |
|---------------|--------------|---------------|-------------|
| C-2 UNCOATED  | .031         | .046          | 26-1700     |
| TIN COATED    | .031         | .046          | 26-1735     |
| C-2 UNCOATED  | .047         | .062          | 26-1705     |
| TIN COATED    | .047         | .062          | 26-1740     |
| C-2 UNCOATED  | .062         | .062          | 26-1710     |
| TIN COATED    | .062         | .062          | 26-1745     |
| C-2 UNCOATED  | .078         | .078          | 26-1715     |
| TIN COATED    | .078         | .078          | 26-1750     |
| C-2 UNCOATED  | .094         | .078          | 26-1720     |
| TIN COATED    | .094         | .078          | 26-1755     |
| C-2 UNCOATED  | .097         | .070          | 26-1725     |
| TIN COATED    | .097         | .070          | 26-1760     |
| C-2 UNCOATED  | .125         | .050          | 26-1730     |
| TIN COATED    | .125         | .050          | 26-1765     |



**NOTICE:** INSERT GROOVING BARS ARE MADE TO ORDER; PLEASE CALL FOR DELIVERY TIME, OTHERWISE THE DELIVERY TIME WILL BE QUOTED IN AN ORDER CONFIRMATION

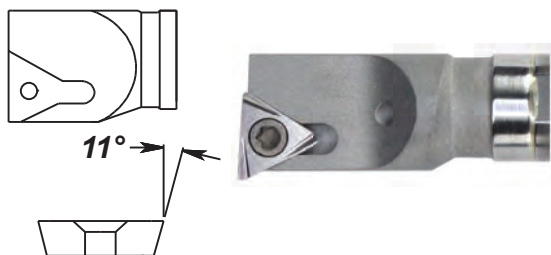


# SERIES 40 REPLACEMENT HEADS

# REPLACEMENT HEADS & SCREWS

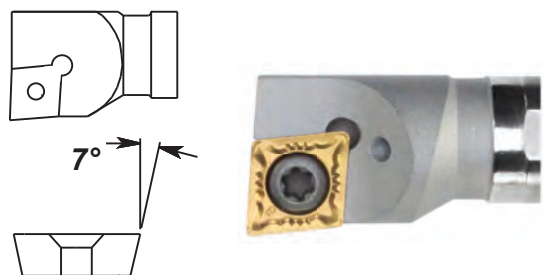
APPLICATION : REPLACEMENT HEADS FOR OUR BORING AND GROOVING INSERT TOOLS

## SERIES 40 11° TRIANGLE



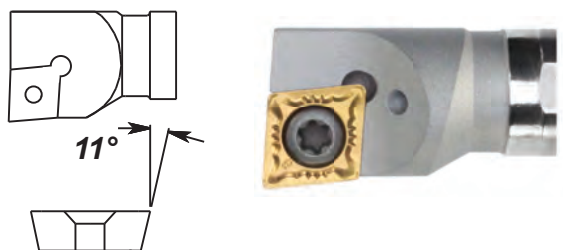
| MIN BORE | SHANK DIA | HEAD ID # | ORDER EDP # | INSERT    | I.C. | INSERT THICKNESS |
|----------|-----------|-----------|-------------|-----------|------|------------------|
| 5/16     | 1/4       | T-11-31   | 40-1110     | TBGP-520  | 5/32 | 1/16             |
| 3/8      | 5/16      | T-11-37   | 40-1115     | TPGP-630  | 3/16 | 3/32             |
| 7/16     | 3/8       | T-11-43   | 40-1120     | TPGP-630  | 3/16 | 3/32             |
| 1/2      | 3/8       | T-11-50   | 40-1125     | TPGP-22YL | 1/4  | 1/8              |
| 9/16     | 1/2       | T-11-56   | 40-1130     | TPGP-22YL | 1/4  | 1/8              |
| 5/8      | 1/2       | T-11-62   | 40-1135     | TPGP-22YL | 1/4  | 1/8              |
| 11/16    | 5/8       | T-11-68   | 40-1140     | TPGP-22YL | 1/4  | 1/8              |
| 3/4      | 5/8       | T-11-75   | 40-1145     | TPGP-22YL | 1/4  | 1/8              |
| 7/8      | 3/4       | T-11-87   | 40-1150     | TPGP-33YL | 3/8  | 3/16             |
| 1"       | 3/4       | T-11-10   | 40-1155     | TPGP-33YL | 3/8  | 3/16             |
| 1-1/8    | 1"        | T-11-11   | 40-1160     | TPGP-33YL | 3/8  | 3/16             |

## SERIES 40 7° DIAMOND



| MIN BORE | SHANK DIA | HEAD ID # | ORDER EDP # | INSERT     | I.C. | INSERT THICKNESS |
|----------|-----------|-----------|-------------|------------|------|------------------|
| 3/8      | 5/16      | D07-37    | 40-1165     | CCMT-21.51 | 1/4  | 3/32             |
| 7/16     | 3/8       | D07-43    | 40-1170     | CCMT-21.51 | 1/4  | 3/32             |
| 1/2      | 3/8       | D07-50    | 40-1175     | CCMT-21.51 | 1/4  | 3/32             |
| 9/16     | 1/2       | D07-56    | 40-1180     | CCMT-21.51 | 1/4  | 3/32             |
| 5/8      | 1/2       | D07-62    | 40-1185     | CCMT-21.51 | 1/4  | 3/32             |
| 5/8      | 1/2       | D07-62B   | 40-1187     | CCMT-32.51 | 3/8  | 5/32             |
| 11/16    | 5/8       | D07-68    | 40-1190     | CCMT-21.51 | 1/4  | 3/32             |
| 11/16    | 5/8       | D07-68B   | 40-1192     | CCMT-32.51 | 3/8  | 5/32             |
| 3/4      | 5/8       | D07-75    | 40-1195     | CCMT-21.51 | 1/4  | 3/32             |
| 3/4      | 5/8       | D07-75B   | 40-1197     | CCMT-32.51 | 3/8  | 5/32             |
| 7/8      | 3/4       | D07-87    | 40-1200     | CCMT-32.51 | 3/8  | 5/32             |
| 1"       | 3/4       | D07-10    | 40-1205     | CCMT-32.51 | 3/8  | 5/32             |
| 1-1/8    | 1"        | D07-11    | 40-1210     | CCMT-32.51 | 3/8  | 5/32             |

## SERIES 40 11° DIAMOND



| MIN BORE | SHANK DIA | HEAD ID # | ORDER EDP # | INSERT     | I.C. | INSERT THICKNESS |
|----------|-----------|-----------|-------------|------------|------|------------------|
| 3/8      | 5/16      | D11-37    | 40-1215     | CPGT-21.51 | 1/4  | 3/32             |
| 7/16     | 3/8       | D11-43    | 40-1220     | CPGT-21.51 | 1/4  | 3/32             |
| 1/2      | 3/8       | D11-50    | 40-1225     | CPGT-21.51 | 1/4  | 3/32             |
| 9/16     | 1/2       | D11-56    | 40-1230     | CPGT-21.51 | 1/4  | 3/32             |
| 5/8      | 1/2       | D11-62    | 40-1235     | CPGT-21.51 | 1/4  | 3/32             |
| 11/16    | 5/8       | D11-68    | 40-1240     | CPGT-21.51 | 1/4  | 3/32             |
| 3/4      | 5/8       | D11-75    | 40-1245     | CPGT-21.51 | 1/4  | 3/32             |
| 7/8      | 3/4       | D11-87    | 40-1250     | CPGT-32.51 | 3/8  | 5/32             |
| 1"       | 3/4       | D11-10    | 40-1255     | CPGT-32.51 | 3/8  | 5/32             |
| 1-1/8    | 1"        | D11-11    | 40-1260     | CPGT-32.51 | 3/8  | 5/32             |

## SERIES 40 LAY DOWN STYLE THREAD/GROOVE

## SERIES 99 SCREWS

| ORDER EDP # | SCREW #    |
|-------------|------------|
| 99-1100     | BFH-0203S  |
| 99-1105     | BFH-0203B  |
| 99-1110     | BFH-0206R  |
| 99-1115     | BFX-0410R  |
| 99-1120     | S-90       |
| 99-1125     | S-95       |
| 99-1130     | S-98       |
| 99-1132     | S-98-S     |
| 99-1135     | S-6        |
| 99-1145     | S-8        |
| 99-1150     | S-11       |
| 99-1155     | S-16-S     |
| 99-1160     | S-16       |
| 99-1165     | BHF-0308R  |
| 99-1170     | BFTX-02506 |



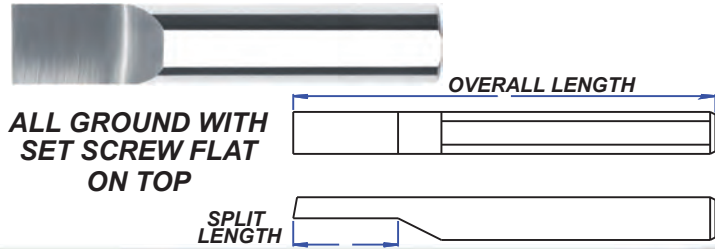
| THREAD STYLE |           |           |             |      |
|--------------|-----------|-----------|-------------|------|
| MIN BORE     | SHANK DIA | HEAD ID # | ORDER EDP # | I.C. |
| .236         | 3/16      | T001      | 40-1265     | 5/32 |
| .307         | 1/4       | T002      | 40-1270     | 3/16 |
| .354         | 5/16      | T003      | 40-1275     | 1/4  |
| .390         | 5/16      | T003.5    | 40-1277     | 1/4  |
| .470         | 3/8       | T004      | 40-1280     | 1/4  |
| .625         | 1/2       | T005      | 40-1285     | 3/8  |
| .640         | 1/2       | T006      | 40-1290     | 3/8  |
| .750         | 5/8       | T007      | 40-1295     | 3/8  |
| 1.000        | 3/4       | T008      | 40-1300     | 3/8  |
| GROOVE STYLE |           |           |             |      |
| MIN BORE     | SHANK DIA | HEAD ID # | ORDER EDP # | I.C. |
| .640         | 1/2       | G-640     | 40-1305     | 3/8  |
| .750         | 5/8       | G-750     | 40-1310     | 3/8  |

# SPLIT BLANKS

## SERIES 70 SINGLE END SPLIT BLANKS

**APPLICATION : A BLANK THAT THE USER CAN GRIND INTO THEIR OWN SPECIAL TOOL**

| D.I.A. | ORDER EDP # | TOOL ID #  | SPLIT LENGTH | OVERALL LENGTH |
|--------|-------------|------------|--------------|----------------|
| 1/8    | 70-1100     | SP-125-SGL | 1/4          | 1-1/2"         |
| 3/16   | 70-1105     | SP-187-SGL | 5/16         | 2"             |
| 1/4    | 70-1110     | SP-250-SGL | 3/8          | 2"             |
| 5/16   | 70-1115     | SP-312-SGL | 1/2          | 2"             |
| 3/8    | 70-1120     | SP-375-SGL | 1/2          | 2"             |
| 1/2    | 70-1125     | SP-500-SGL | 5/8          | 2-1/2"         |



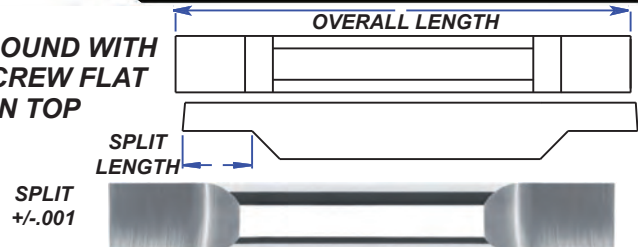
**ALL GROUND WITH SET SCREW FLAT ON TOP**

## SERIES 70 DOUBLE END SPLIT BLANKS

**APPLICATION : A DOUBLE END BLANK THAT THE USER CAN GRIND INTO THEIR OWN SPECIAL TOOL**

| D.I.A. | ORDER EDP # | TOOL ID #  | SPLIT LENGTH | OVERALL LENGTH |
|--------|-------------|------------|--------------|----------------|
| 1/8    | 70-1200     | SP-125-DBL | 1/4          | 2"             |
| 3/16   | 70-1205     | SP-187-DBL | 5/16         | 2-1/2"         |
| 1/4    | 70-1210     | SP-250-DBL | 3/8          | 2-1/2"         |
| 5/16   | 70-1215     | SP-312-DBL | 1/2          | 2-1/2"         |
| 3/8    | 70-1220     | SP-375-DBL | 1/2          | 2-1/2"         |
| 1/2    | 70-1225     | SP-500-DBL | 5/8          | 3"             |

**ALL GROUND WITH SET SCREW FLAT ON TOP**



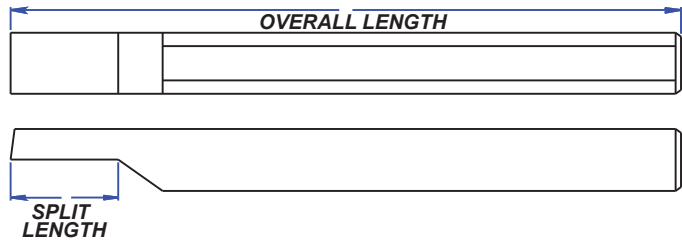
**SPLIT +/- .001**

## SERIES 70 LONG LENGTH SINGLE END SPLIT BLANKS

**APPLICATION : A LONG BLANK THAT THE USER CAN GRIND INTO THEIR OWN SPECIAL TOOL**

| D.I.A. | ORDER EDP # | TOOL ID #  | SPLIT LENGTH | OVERALL LENGTH |
|--------|-------------|------------|--------------|----------------|
| 1/8    | 70-1400     | SP-125-LNG | 3/8          | 4"             |
| 3/16   | 70-1405     | SP-187-LNG | 3/8          | 4"             |
| 1/4    | 70-1410     | SP-250-LNG | 3/8          | 4"             |
| 5/16   | 70-1415     | SP-312-LNG | 1/2          | 4"             |
| 3/8    | 70-1420     | SP-375-LNG | 1/2          | 6"             |
| 1/2    | 70-1425     | SP-500-LNG | 5/8          | 6"             |

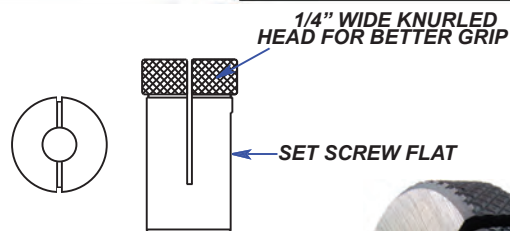
**ALL GROUND WITH SET SCREW FLAT ON TOP**



## SERIES 94 SPLIT BUSHING

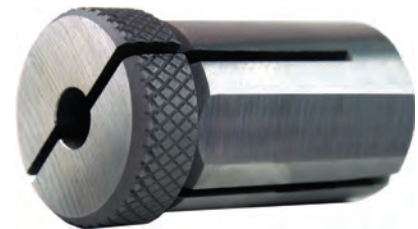
**APPLICATION : USED TO HOLD OUR BORING & GROOVING TOOLS**

| D.I.A. | BUSHING ID # | ORDER EDP # | OUTSIDE D.I.A. | OVERALL LENGTH |
|--------|--------------|-------------|----------------|----------------|
| 1/8    | SB-125       | 94-1100     | 5/8            | 1-1/4"         |
| 3/16   | SB-187       | 94-1105     |                |                |
| 1/4    | SB-250       | 94-1110     |                |                |
| 5/16   | SB-312       | 94-1115     |                |                |
| 3/8    | SB-375       | 94-1120     |                |                |
| 7/16   | SB-437       | 94-1125     | 1/2            | 1-1/4"         |
| 1/2    | SB-500       | 94-1130     |                |                |
| 1/8    | SB-125-5     | 94-1135     |                |                |
| 3/16   | SB-187-5     | 94-1140     |                |                |
| 1/4    | SB-250-5     | 94-1145     |                |                |
| 5/16   | SB-312-5     | 94-1150     |                |                |
| 3/8    | SB-375-5     | 94-1155     |                |                |



**5/8" DIA FOR USE IN HARDINGE TYPE HOLDERS**

**1/2" DIA FOR USE IN CRITERION TYPE HEADS**



ITI CARBIDE: FOR EXTRA LONG TOOL LIFE

**ITI Carbide Cutting Tools**

# SERIES 42 QUICK CHANGE FACE GROOVE

# QUICK CHANGE FACE GROOVERS

**APPLICATION : USED TO CREATE ANY FACE GROOVE WITH A MAJOR DIAMETER GREATER THAN 3/16"**

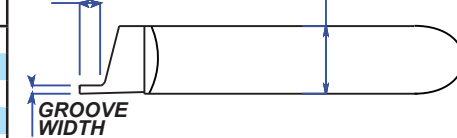
## SERIES 42 HOLDER

| SQUARE NOSE  |              |             |                    |
|--------------|--------------|-------------|--------------------|
| GROOVE WIDTH | GROOVE DEPTH | ORDER EDP # | ALTIN COATED EDP # |
| .017         | .040         | 42-8600     | 42-8600-C          |
| .025         | .065         | 42-8605     | 42-8605-C          |
| .032         | .080         | 42-8610     | 42-8610-C          |
| .063         | .150         | 42-8615     | 42-8615-C          |
| .094         | .200         | 42-8620     | 42-8620-C          |
| .125         | .200         | 42-8625     | 42-8625-C          |

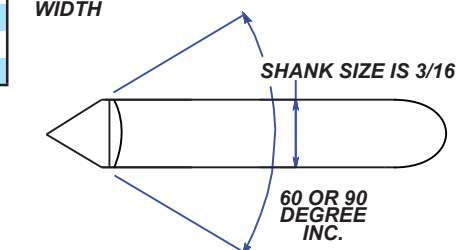
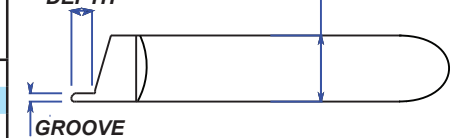
| FULL RADIUS NOSE |              |             |                    |
|------------------|--------------|-------------|--------------------|
| GROOVE WIDTH     | GROOVE DEPTH | ORDER EDP # | ALTIN COATED EDP # |
| .017             | .040         | 42-9600     | 42-9600-C          |
| .025             | .065         | 42-9605     | 42-9605-C          |
| .032             | .080         | 42-9610     | 42-9610-C          |
| .063             | .150         | 42-9615     | 42-9615-C          |
| .094             | .200         | 42-9620     | 42-9620-C          |
| .125             | .200         | 42-9625     | 42-9625-C          |

| DOUBLE ANGLE   |             |                    |
|----------------|-------------|--------------------|
| INCLUDED ANGLE | ORDER EDP # | ALTIN COATED EDP # |
| 60°            | 42-4000     | 42-4000-C          |
| 90°            | 42-4500     | 42-4500-C          |

SHANK SIZE IS 3/16" WILL CUT ANY FACE GROOVE LARGER THAN 3/16 INCH IN DIAMETER.



SHANK SIZE IS 3/16" WILL CUT ANY FACE GROOVE LARGER THAN 3/16 INCH IN DIAMETER.



THIS TOOL USES THE SERIES 42 HOLDERS AS SEEN ON PAGE 12

**New!**



Quick Change Tools Are Also Available For Boring, Threading, Profiling And Grooving. See Pages 12,41,51 And, 30-31.

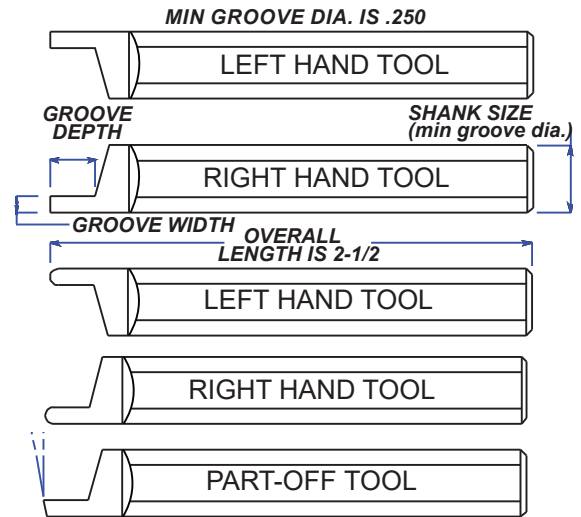
## SERIES 73 SINGLE END FACE/OD GROOVE TOOLS

**APPLICATION : SIMILAR TO ABOVE EXCEPT SINGLE END. LONGER SHANKS WITH LARGER DIAMETERS AND GREATER DEPTHS OF CUT. CAN ALSO BE USED FOR OD GROOVING**

| MIN DIA | GROOVE WIDTH | GROOVE DEPTH | RIGHT HAND SQUARE NOSE |                    | LEFT HAND SQUARE NOSE |                    |
|---------|--------------|--------------|------------------------|--------------------|-----------------------|--------------------|
|         |              |              | ORDER EDP #            | ALTIN COATED EDP # | ORDER EDP #           | ALTIN COATED EDP # |
| 1/4     | .017         | .040         | 73-4900                | 73-4900-C          | 73-7490               | 73-7490-C          |
|         | .025         | .065         | 73-4950                | 73-4950-C          | 73-7495               | 73-7495-C          |
|         | .032         | .095         | 73-5000                | 73-5000-C          | 73-7500               | 73-7500-C          |
|         | .063         | .180         | 73-5005                | 73-5005-C          | 73-7505               | 73-7505-C          |
|         | .094         | .250         | 73-5010                | 73-5010-C          | 73-7510               | 73-7510-C          |
|         | .125         | .280         | 73-5015                | 73-5015-C          | 73-7515               | 73-7515-C          |
| 3/8     | .187         | .300         | 73-5020                | 73-5020-C          | 73-7520               | 73-7520-C          |
|         | .250         | .375         | 73-5025                | 73-5025-C          | 73-7525               | 73-7525-C          |
|         | .312         | .500         | 73-5030                | 73-5030-C          | 73-7530               | 73-7530-C          |
|         | .370         | .600         | 73-5035                | 73-5035-C          | 73-7535               | 73-7535-C          |

| MIN DIA | GROOVE WIDTH | GROOVE DEPTH | RIGHT HAND FULL RADIUS |                    | LEFT HAND FULL RADIUS |                    |
|---------|--------------|--------------|------------------------|--------------------|-----------------------|--------------------|
|         |              |              | ORDER EDP #            | ALTIN COATED EDP # | ORDER EDP #           | ALTIN COATED EDP # |
| 1/4     | .017         | .040         | 73-5900                | 73-5900-C          | 73-7900               | 73-7900-C          |
|         | .025         | .065         | 73-5950                | 73-5950-C          | 73-7950               | 73-7950-C          |
|         | .032         | .095         | 73-6000                | 73-6000-C          | 73-8000               | 73-8000-C          |
|         | .063         | .180         | 73-6005                | 73-6005-C          | 73-8005               | 73-8005-C          |
|         | .094         | .250         | 73-6010                | 73-6010-C          | 73-8010               | 73-8010-C          |
|         | .125         | .280         | 73-6015                | 73-6015-C          | 73-8015               | 73-8015-C          |
| 3/8     | .187         | .300         | 73-6020                | 73-6020-C          | 73-8020               | 73-8020-C          |
|         | .250         | .375         | 73-6025                | 73-6025-C          | 73-8025               | 73-8025-C          |
|         | .312         | .500         | 73-6030                | 73-6030-C          | 73-8030               | 73-8030-C          |
|         | .370         | .600         | 73-6035                | 73-6035-C          | 73-8035               | 73-8035-C          |

| PART-OFF NOSE |              |              |             |                    |
|---------------|--------------|--------------|-------------|--------------------|
| MIN DIA       | GROOVE WIDTH | GROOVE DEPTH | ORDER EDP # | ALTIN COATED EDP # |
| 1/4           | .094         | .325         | 73-7000     | 73-7000-C          |
|               | .125         | .400         | 73-7020     | 73-7020-C          |
| 3/8           | .187         | .500         | 73-7030     | 73-7030-C          |



**TOOLS ARE ROUND SHANK AND CAN BE HELD IN A COLLET BUT FOR EASE OF USE AND FASTER TOOL CHANGES WE RECOMMEND OUR SERIES 98 HOLDER SHOWN ON PAGE 14**



**Carbide Cutting Tools**

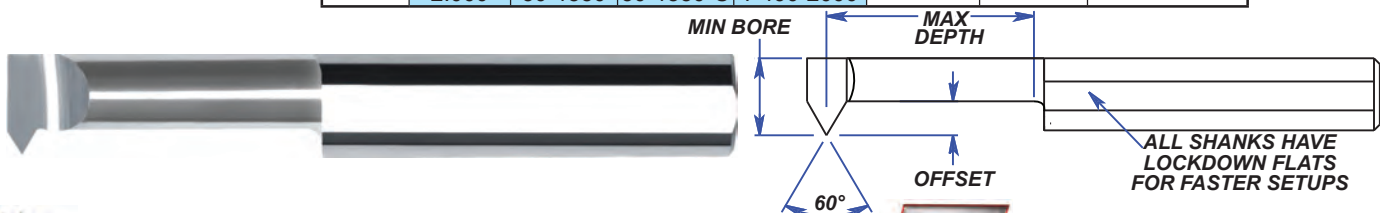


# THREADING TOOLS

## SERIES 30 RIGHT HAND THREADING TOOLS

APPLICATION : RIGHT HAND ID THREADING

| MIN BORE | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | TOOL I.D.  | OFFSET | SHANK & O.A.L. | THREADS PER INCH |
|----------|-----------|-------------|-------------------|------------|--------|----------------|------------------|
| .060     | .150      | 30-1340     | 30-1340-C         | T-60-150   | .020   | 1/8 x 2"       | 40 TO 76         |
|          | .200      | 30-1345     | 30-1345-C         | T-60-200   |        |                |                  |
|          | .300      | 30-1350     | 30-1350-C         | T-60-300   |        |                |                  |
| .080     | .300      | 30-1351     | 30-1351-C         | T-080-300  | .020   | 1/8 x 2"       | 32 TO 76         |
|          | .400      | 30-1352     | 30-1352-C         | T-080-400  |        |                |                  |
|          | .500      | 30-1353     | 30-1353-C         | T-080-500  |        |                |                  |
| .090     | .200      | 30-1355     | 30-1355-C         | T-90-200   | .025   | 1/8 x 2"       | 32 TO 76         |
|          | .300      | 30-1360     | 30-1360-C         | T-90-300   |        |                |                  |
|          | .400      | 30-1365     | 30-1365-C         | T-90-400   |        |                |                  |
| .120     | .300      | 30-1370     | 30-1370-C         | T-120-300  | .030   | 3/16 x 2-1/2"  | 24 TO 56         |
|          | .400      | 30-1375     | 30-1375-C         | T-120-400  |        |                |                  |
|          | .500      | 30-1380     | 30-1380-C         | T-120-500  |        |                |                  |
| .140     | .300      | 30-1385     | 30-1385-C         | T-140-300  | .035   | 3/16 x 2-1/2"  | 20 TO 56         |
|          | .400      | 30-1390     | 30-1390-C         | T-140-400  |        |                |                  |
|          | .500      | 30-1395     | 30-1395-C         | T-140-500  |        |                |                  |
| .160     | .400      | 30-1396     | 30-1396-C         | T-160-400  | .040   | 3/16 x 2-1/2"  | 20 TO 56         |
|          | .500      | 30-1397     | 30-1397-C         | T-160-500  |        |                |                  |
|          | .750      | 30-1398     | 30-1398-C         | T-160-750  |        |                |                  |
|          | 1.000     | 30-1399     | 30-1399-C         | T-160-1000 |        |                |                  |
| .180     | .350      | 30-1400     | 30-1400-C         | T-180-350  | .040   | 1/4 x 2-1/2"   | 18 TO 56         |
|          | .500      | 30-1405     | 30-1405-C         | T-180-500  |        |                |                  |
|          | .750      | 30-1410     | 30-1410-C         | T-180-750  |        |                |                  |
|          | 1.000     | 30-1415     | 30-1415-C         | T-180-1000 |        |                |                  |
| .200     | .400      | 30-1420     | 30-1420-C         | T-200-400  | .045   | 1/4 x 2-1/2"   | 16 TO 40         |
|          | .600      | 30-1425     | 30-1425-C         | T-200-600  |        |                |                  |
|          | .750      | 30-1430     | 30-1430-C         | T-200-750  |        |                |                  |
|          | 1.000     | 30-1435     | 30-1435-C         | T-200-1000 |        |                |                  |
| .230     | .400      | 30-1440     | 30-1440-C         | T-230-400  | .055   | 5/16 x 2-1/2"  | 14 TO 40         |
|          | .600      | 30-1445     | 30-1445-C         | T-230-600  |        |                |                  |
|          | .750      | 30-1450     | 30-1450-C         | T-230-750  |        |                |                  |
|          | 1.000     | 30-1455     | 30-1455-C         | T-230-1000 |        |                |                  |
|          | 1.500     | 30-1460     | 30-1460-C         | T-230-1500 |        |                |                  |
| .290     | .500      | 30-1465     | 30-1465-C         | T-290-500  | .070   | 5/16 x 2-1/2"  | 12 TO 40         |
|          | .750      | 30-1470     | 30-1470-C         | T-290-750  |        |                |                  |
|          | 1.000     | 30-1475     | 30-1475-C         | T-290-1000 |        |                |                  |
|          | 1.250     | 30-1480     | 30-1480-C         | T-290-1250 |        |                |                  |
|          | 1.500     | 30-1482     | 30-1482-C         | T-290-1500 |        |                |                  |
| .320     | .500      | 30-1485     | 30-1485-C         | T-290-1750 | .075   | 3/8 x 2-1/2"   | 10 TO 32         |
|          | .750      | 30-1490     | 30-1490-C         | T-320-500  |        |                |                  |
|          | 1.000     | 30-1495     | 30-1495-C         | T-320-750  |        |                |                  |
|          | 1.250     | 30-1500     | 30-1500-C         | T-320-1000 |        |                |                  |
|          | 1.500     | 30-1505     | 30-1505-C         | T-320-1250 |        |                |                  |
| .360     | 1.500     | 30-1507     | 30-1507-C         | T-320-1500 | .085   | 3/8 x 2-1/2"   | 10 TO 32         |
|          | 1.800     | 30-1510     | 30-1510-C         | T-320-1800 |        |                |                  |
|          | .500      | 30-1515     | 30-1515-C         | T-360-500  |        |                |                  |
|          | .750      | 30-1520     | 30-1520-C         | T-360-750  |        |                |                  |
|          | 1.000     | 30-1525     | 30-1525-C         | T-360-1000 |        |                |                  |
| .490     | 1.250     | 30-1530     | 30-1530-C         | T-360-1250 | .120   | 1/2 x 3"       | 8 TO 24          |
|          | 1.500     | 30-1532     | 30-1532-C         | T-360-1500 |        |                |                  |
|          | 1.800     | 30-1535     | 30-1535-C         | T-360-1800 |        |                |                  |
|          | .750      | 30-1540     | 30-1540-C         | T-490-750  |        |                |                  |
|          | 1.000     | 30-1542     | 30-1542-C         | T-490-1000 |        |                |                  |
|          | 1.500     | 30-1545     | 30-1545-C         | T-490-1500 |        |                |                  |
|          | 2.000     | 30-1550     | 30-1550-C         | T-490-2000 |        |                |                  |



OVER 6000 TOOLS NOW AVAILABLE



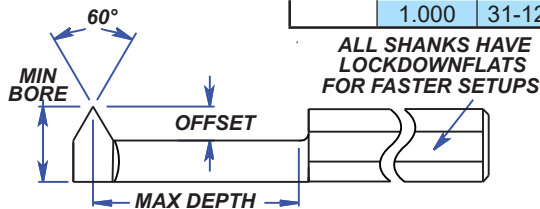
**Carbide Cutting Tools**

# SERIES 31 LEFT HAND THREADING TOOLS

# THREADING TOOLS

**APPLICATION : LEFT HAND AND EXTERNAL THREADING**

| MIN BORE | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | TOOL I.D.   | OFFSET | SHANK & OVERALL LENGTH | THREADS PER INCH |
|----------|-----------|-------------|--------------------|-------------|--------|------------------------|------------------|
| .120     | .300      | 31-1130     | 31-1130-C          | TL-120-300  | .030   | 3/16 x 2-1/2"          | 24 TO 56         |
|          | .400      | 31-1135     | 31-1135-C          | TL-120-400  |        |                        |                  |
|          | .500      | 31-1140     | 31-1140-C          | TL-120-500  |        |                        |                  |
| .140     | .300      | 31-1155     | 31-1155-C          | TL-140-300  | .035   | 3/16 x 2-1/2"          | 20 TO 56         |
|          | .400      | 31-1160     | 31-1160-C          | TL-140-400  |        |                        |                  |
|          | .500      | 31-1165     | 31-1165-C          | TL-140-500  |        |                        |                  |
| .180     | .500      | 31-1200     | 31-1200-C          | TL-180-500  | .040   | 1/4 x 2-1/2"           | 18 TO 56         |
|          | .750      | 31-1205     | 31-1205-C          | TL-180-750  |        |                        |                  |
|          | 1.000     | 31-1210     | 31-1210-C          | TL-180-1000 |        |                        |                  |
| .200     | .500      | 31-1215     | 31-1215-C          | TL-200-500  | .045   | 1/4 x 2-1/2"           | 16 TO 40         |
|          | .750      | 31-1220     | 31-1220-C          | TL-200-750  |        |                        |                  |
|          | 1.000     | 31-1225     | 31-1225-C          | TL-200-1000 |        |                        |                  |
| .230     | .500      | 31-1230     | 31-1230-C          | TL-230-500  | .055   | 5/16 x 2-1/2"          | 14 TO 40         |
|          | .750      | 31-1235     | 31-1235-C          | TL-230-750  |        |                        |                  |
|          | 1.000     | 31-1240     | 31-1240-C          | TL-230-1000 |        |                        |                  |
| .290     | .500      | 31-1245     | 31-1245-C          | TL-290-500  | .070   | 5/16 x 2-1/2"          | 12 TO 40         |
|          | .750      | 31-1250     | 31-1250-C          | TL-290-750  |        |                        |                  |
|          | 1.000     | 31-1255     | 31-1255-C          | TL-290-1000 |        |                        |                  |
| .320     | .500      | 31-1260     | 31-1260-C          | TL-320-500  | .075   | 3/8 x 2-1/2"           | 10 TO 32         |
|          | .750      | 31-1265     | 31-1265-C          | TL-320-750  |        |                        |                  |
|          | 1.000     | 31-1270     | 31-1270-C          | TL-320-1000 |        |                        |                  |
| .360     | .500      | 31-1275     | 31-1275-C          | TL-360-500  | .085   | 3/8 x 2-1/2"           | 10 TO 32         |
|          | .750      | 31-1280     | 31-1280-C          | TL-360-750  |        |                        |                  |
|          | 1.000     | 31-1285     | 31-1285-C          | TL-360-1000 |        |                        |                  |



ALL SHANKS HAVE LOCKDOWN FLATS FOR FASTER SETUPS



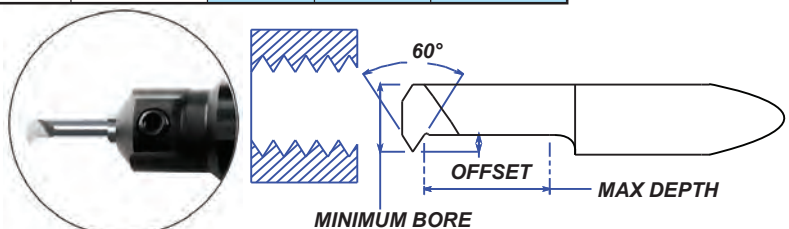
## SERIES 42 QUICK CHANGE THREADING TOOL

**APPLICATION : LOCKED INTO OUR SPECIAL HOLDER MAINTAINING AN EXACT RADIAL AND AXIAL POSITION FOR QUICK TOOL CHANGE**

| MIN BORE | OFFSET | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | MIN BORE | OFFSET | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # |
|----------|--------|-----------|-------------|--------------------|----------|--------|-----------|-------------|--------------------|
| .060     | .025   | .200      | 42-3000     | 42-3000-C          | .160     | .045   | .200      | 42-3100     | 42-3100-C          |
|          |        | .300      | 42-3005     | 42-3005-C          |          |        | .300      | 42-3105     | 42-3105-C          |
|          |        | .400      | 42-3010     | 42-3010-C          |          |        | .400      | 42-3110     | 42-3110-C          |
| .080     | .025   | .300      | 42-3015     | 42-3015-C          | .180     | .045   | .500      | 42-3115     | 42-3115-C          |
|          |        | .400      | 42-3020     | 42-3020-C          |          |        | .600      | 42-3120     | 42-3120-C          |
|          |        | .500      | 42-3025     | 42-3025-C          |          |        | .700      | 42-3125     | 42-3125-C          |
| .100     | .030   | .200      | 42-3030     | 42-3030-C          | .180     | .045   | .200      | 42-3130     | 42-3130-C          |
|          |        | .300      | 42-3035     | 42-3035-C          |          |        | .300      | 42-3135     | 42-3135-C          |
|          |        | .400      | 42-3040     | 42-3040-C          |          |        | .400      | 42-3140     | 42-3140-C          |
| .120     | .035   | .500      | 42-3045     | 42-3045-C          | .180     | .045   | .500      | 42-3145     | 42-3145-C          |
|          |        | .200      | 42-3050     | 42-3050-C          |          |        | .600      | 42-3150     | 42-3150-C          |
|          |        | .300      | 42-3055     | 42-3055-C          |          |        | .700      | 42-3155     | 42-3155-C          |
| .140     | .040   | .400      | 42-3060     | 42-3060-C          | .180     | .045   | .200      | 42-3130     | 42-3130-C          |
|          |        | .500      | 42-3065     | 42-3065-C          |          |        | .300      | 42-3135     | 42-3135-C          |
|          |        | .200      | 42-3070     | 42-3070-C          |          |        | .400      | 42-3140     | 42-3140-C          |
| .140     | .040   | .300      | 42-3075     | 42-3075-C          | .180     | .045   | .500      | 42-3145     | 42-3145-C          |
|          |        | .400      | 42-3080     | 42-3080-C          |          |        | .600      | 42-3150     | 42-3150-C          |
|          |        | .500      | 42-3085     | 42-3085-C          |          |        | .700      | 42-3155     | 42-3155-C          |
| .140     | .040   | .600      | 42-3090     | 42-3090-C          | .180     | .045   | .700      | 42-3155     | 42-3155-C          |
|          |        | .700      | 42-3095     | 42-3095-C          |          |        |           |             |                    |



Quick Change Tools Are Also Available For Boring, Profiling, Grooving And Face Grooving. See Pages 12,51, 30-31 And, 39.



RE-DEFINING THE INDUSTRY STANDARD

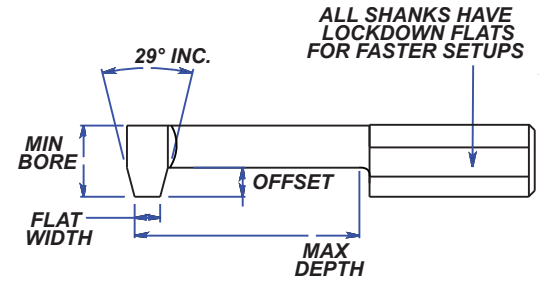
**IT Carbide Cutting Tools**

# THREADING TOOLS

## SERIES 32 ACME THREADING TOOLS

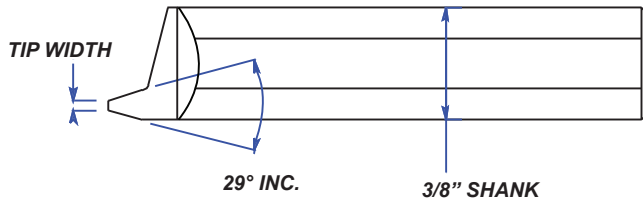
APPLICATION : ACME ID THREADING

| MIN BORE | THREADS PER INCH | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | OFFSET | FLAT WIDTH | SHANK & O.A.L. |
|----------|------------------|-----------|-------------|--------------------|--------|------------|----------------|
| .180     | 16               | .400      | 32-1200     | 32-1200-C          | .045   | .021       | 1/4 x 2-1/2"   |
|          |                  | .600      | 32-1205     | 32-1205-C          |        |            |                |
|          |                  | .750      | 32-1210     | 32-1210-C          |        |            |                |
|          |                  | 1.000     | 32-1215     | 32-1215-C          |        |            |                |
| .230     | 14               | .500      | 32-1220     | 32-1220-C          | .055   | .024       | 5/16 x 2-1/2"  |
|          |                  | .750      | 32-1225     | 32-1225-C          |        |            |                |
|          |                  | 1.000     | 32-1230     | 32-1230-C          |        |            |                |
|          |                  | 1.250     | 32-1235     | 32-1235-C          |        |            |                |
| .290     | 12               | .500      | 32-1245     | 32-1245-C          | .070   | .028       | 3/8 x 2-1/2"   |
|          |                  | .750      | 32-1250     | 32-1250-C          |        |            |                |
|          |                  | 1.000     | 32-1255     | 32-1255-C          |        |            |                |
|          |                  | 1.250     | 32-1260     | 32-1260-C          |        |            |                |
| .360     | 10               | .750      | 32-1270     | 32-1270-C          | .085   | .032       | 3/8 x 2-1/2"   |
|          |                  | 1.500     | 32-1275     | 32-1275-C          |        |            | 3/8 x 3"       |
|          |                  | 2.000     | 32-1280     | 32-1280-C          |        |            | 3/8 x 3"       |
| .490     | 8                | .750      | 32-1285     | 32-1285-C          | .120   | .041       | 1/2" x 3"      |
|          |                  | 1.500     | 32-1290     | 32-1290-C          |        |            |                |
|          |                  | 2.000     | 32-1295     | 32-1295-C          |        |            |                |
| .490     | 6                | .750      | 32-1300     | 32-1300-C          | .120   | .057       | 1/2 x 3"       |
|          |                  | 1.500     | 32-1305     | 32-1305-C          |        |            |                |
|          |                  | 2.000     | 32-1310     | 32-1310-C          |        |            |                |
| .490     | 5                | .750      | 32-1315     | 32-1315-C          | .120   | .069       | 1/2 x 3"       |
|          |                  | 1.500     | 32-1320     | 32-1320-C          |        |            |                |
|          |                  | 2.000     | 32-1325     | 32-1325-C          |        |            |                |
| .490     | 4                | .750      | 32-1330     | 32-1330-C          | .150   | .088       | 1/2 x 3"       |
|          |                  | 1.500     | 32-1335     | 32-1335-C          |        |            |                |
|          |                  | 2.000     | 32-1340     | 32-1340-C          |        |            |                |



## SERIES 33 EXTERNAL ACME THREAD TOOLS

APPLICATION : FOR THREADING ALL TYPES OF MATERIALS



| PITCH | TIP WIDTH | ORDER EDP # | ALTIN COATED EDP # | TOOL ID #  |
|-------|-----------|-------------|--------------------|------------|
| 16    | .021      | 33-1000     | 33-1000-C          | EX-16-ACME |
| 14    | .024      | 33-1005     | 33-1005-C          | EX-14-ACME |
| 12    | .028      | 33-1010     | 33-1010-C          | EX-12-ACME |
| 10    | .032      | 33-1015     | 33-1015-C          | EX-10-ACME |
| 8     | .041      | 33-1020     | 33-1020-C          | EX-8-ACME  |
| 6     | .057      | 33-1025     | 33-1025-C          | EX-6-ACME  |
| 5     | .069      | 33-1030     | 33-1030-C          | EX-5-ACME  |
| 4     | .088      | 33-1035     | 33-1035-C          | EX-4-ACME  |

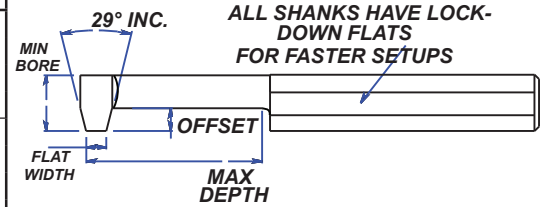


# SERIES 34 STUB ACME THREADING TOOLS

# THREADING TOOLS

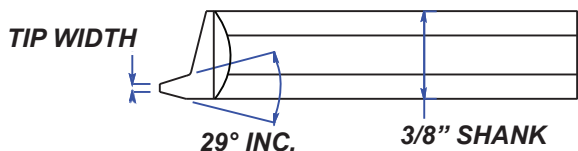
APPLICATION : STUB ACME ID THREADING

| MIN BORE | THREADS PER INCH | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | OFFSET | FLAT WIDTH | SHANK        |
|----------|------------------|-----------|-------------|-------------------|--------|------------|--------------|
| .180     | 16               | .400      | 34-1400     | 34-1400-C         | .045   | .024       | 1/4 x 2-1/2  |
|          |                  | .600      | 34-1405     | 34-1405-C         |        |            |              |
|          |                  | .750      | 34-1410     | 34-1410-C         |        |            |              |
|          |                  | 1.000     | 34-1415     | 34-1415-C         |        |            |              |
| .230     | 14               | .500      | 34-1420     | 34-1420-C         | .055   | .028       | 5/16 x 2-1/2 |
|          |                  | .750      | 34-1425     | 34-1425-C         |        |            |              |
|          |                  | 1.000     | 34-1430     | 34-1430-C         |        |            |              |
|          |                  | 1.250     | 34-1435     | 34-1435-C         |        |            |              |
| .290     | 12               | .500      | 34-1445     | 34-1445-C         | .095   | .033       | 3/8 x 2-1/2" |
|          |                  | .750      | 34-1450     | 34-1450-C         |        |            |              |
|          |                  | 1.000     | 34-1455     | 34-1455-C         |        |            |              |
|          |                  | 1.250     | 34-1460     | 34-1460-C         |        |            |              |
| .360     | 10               | .750      | 34-1470     | 34-1470-C         | .085   | .037       | 3/8 x 2-1/2" |
|          |                  | 1.500     | 34-1475     | 34-1475-C         |        |            | 3/8 x 3      |
|          |                  | 2.000     | 34-1480     | 34-1480-C         |        |            |              |
| .490     | 9                | .750      | 34-1485     | 34-1485-C         | .120   | .042       | 1/2 x 3"     |
|          |                  | 1.500     | 34-1490     | 34-1490-C         |        |            |              |
|          |                  | 1.800     | 34-1495     | 34-1495-C         |        |            |              |
| .490     | 8                | .750      | 34-1500     | 34-1500-C         | .120   | .048       | 1/2 x 3"     |
|          |                  | 1.500     | 34-1505     | 34-1505-C         |        |            |              |
|          |                  | 2.000     | 34-1510     | 34-1510-C         |        |            |              |
| .490     | 7                | .750      | 34-1515     | 34-1515-C         | .120   | .055       | 1/2 x 3"     |
|          |                  | 1.500     | 34-1520     | 34-1520-C         |        |            |              |
|          |                  | 2.000     | 34-1525     | 34-1525-C         |        |            |              |
| .490     | 6                | .750      | 34-1530     | 34-1530-C         | .120   | .065       | 1/2 x 3"     |
|          |                  | 1.500     | 34-1535     | 34-1535-C         |        |            |              |
|          |                  | 2.000     | 34-1540     | 34-1540-C         |        |            |              |
| .490     | 5                | .750      | 34-1545     | 34-1545-C         | .120   | .079       | 1/2 x 3"     |
|          |                  | 1.500     | 34-1550     | 34-1550-C         |        |            |              |
|          |                  | 2.000     | 34-1555     | 34-1555-C         |        |            |              |



# SERIES 33 EXT STUB ACME THREAD TOOLS

APPLICATION : FOR THREADING ALL TYPES OF MATERIALS



| PITCH | TIP WIDTH | ORDER EDP # | TOOL ID #  |
|-------|-----------|-------------|------------|
| 16    | .024      | 33-2000     | EX-16-STUB |
| 14    | .028      | 33-2005     | EX-14-STUB |
| 12    | .033      | 33-2010     | EX-12-STUB |
| 10    | .037      | 33-2015     | EX-10-STUB |
| 9     | .042      | 33-2020     | EX-9-STUB  |
| 8     | .048      | 33-2025     | EX-8-STUB  |
| 7     | .055      | 33-2030     | EX-7-STUB  |
| 6     | .065      | 33-2035     | EX-6-STUB  |
| 5     | .079      | 33-2040     | EX-5-STUB  |

ITI CARBIDE: MAXIMUM SHEAR WITH MINIMUM WEAR

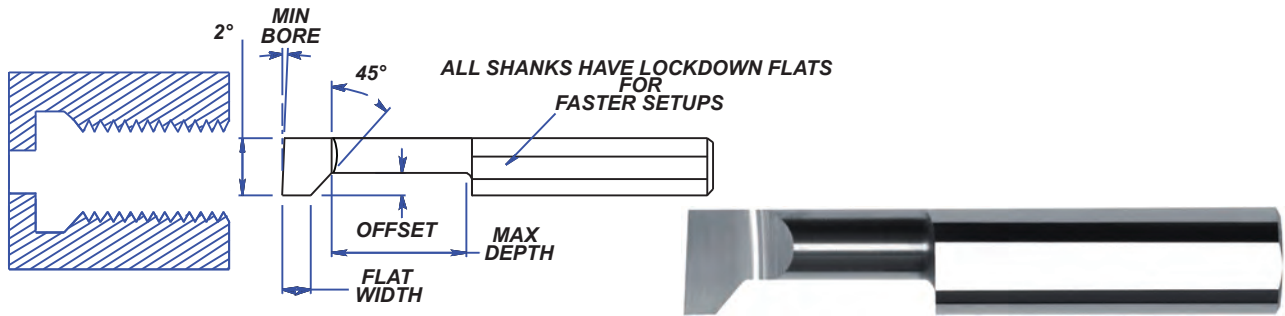
**ITI Carbide Cutting Tools**

# THREADING TOOLS

## SERIES 46 THREAD RELIEF TOOLS

APPLICATION : FOR PRODUCING A THREAD RELIEF TO KEEP THREADING TOOLS FROM BREAKING

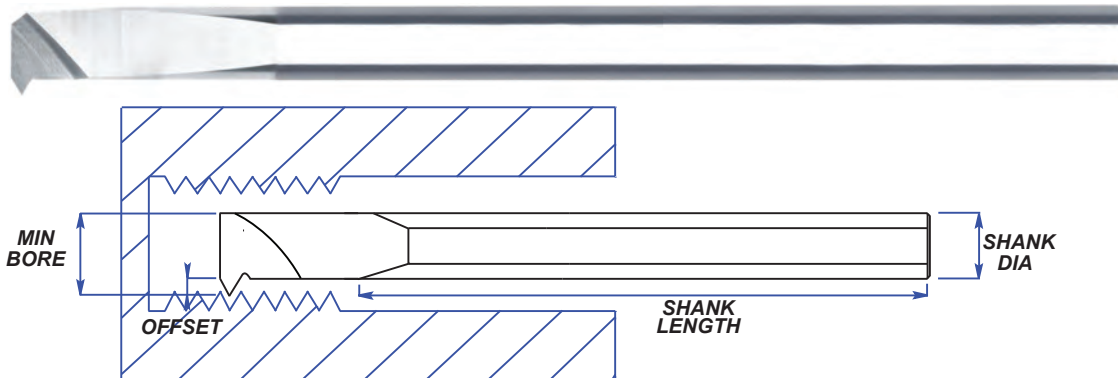
| MIN BORE | FLAT WIDTH | OFFSET | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | TOOL ID #   | SHANK & O.A.L. |
|----------|------------|--------|-----------|-------------|--------------------|-------------|----------------|
| 1/8      | .060       | .045   | .300      | 46-1100     | 46-1100-C          | TR-125-300  | 1/8 x 2"       |
|          |            |        | .400      | 46-1105     | 46-1105-C          | TR-125-400  |                |
| 3/16     | .080       | .060   | .400      | 46-1110     | 46-1110-C          | TR-187-400  | 3/16 x 2-1/2"  |
|          |            |        | .800      | 46-1115     | 46-1115-C          | TR-187-800  |                |
| 1/4      | .095       | .050   | .500      | 46-1120     | 46-1120-C          | TR-250-500  | 1/4 x 2-1/2"   |
|          |            |        | 1.000     | 46-1125     | 46-1125-C          | TR-250-1000 |                |
| 5/16     | .095       | .080   | .750      | 46-1130     | 46-1130-C          | TR-312-750  | 5/16 x 2-1/2"  |
|          |            |        | 1.250     | 46-1135     | 46-1135-C          | TR-312-1250 |                |
| 3/8      | .130       | .120   | .750      | 46-1140     | 46-1140-C          | TR-375-750  | 3/8 x 2-1/2"   |
|          |            |        | 1.250     | 46-1145     | 46-1145-C          | TR-375-1250 |                |
| 1/2      | .160       | .130   | 1.000     | 46-1150     | 46-1150-C          | TR-500-1000 | 1/2 x 3"       |
|          |            |        | 1.500     | 46-1155     | 46-1155-C          | TR-500-1500 |                |



## SERIES 08 MULTI-REACH THREADING TOOL

APPLICATION : MULTI-REACH THREADING, NO LONGER LIMITED BY NECK LENGTH

CARBIDE SHANKS PROVIDE MAXIMUM RIGIDITY.



| MIN BORE | TOOL ID # | ORDER EDP # | ALTIN COATED EDP # | OFFSET | LARGEST PITCH | SHANK DIA | SHANK LENGTH |
|----------|-----------|-------------|--------------------|--------|---------------|-----------|--------------|
| .310     | LT-310-4  | 08-1500     | 08-1500-C          | .060   | 16            | 1/4       | 4"           |
| .375     | LT-375-4  | 08-1505     | 08-1505-C          | .060   | 16            | 5/16      | 4"           |
| .460     | LT-460-6  | 08-1510     | 08-1510-C          | .080   | 11            | 3/8       | 6"           |
| .610     | LT-610-6  | 08-1515     | 08-1515-C          | .100   | 9             | 1/2       | 6"           |
| .750     | LT-750-6  | 08-1520     | 08-1520-C          | .120   | 8             | 5/8       | 6"           |

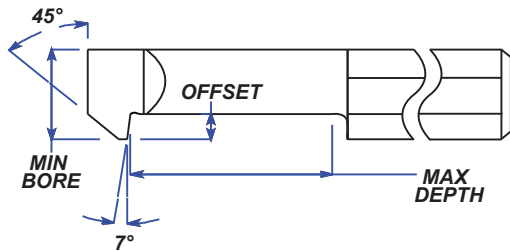
ITI CARBIDE: TESTED AND PROVEN TO BE THE BEST

**ITI** Carbide Cutting Tools

# SERIES 38 BUTTRESS THREADING TOOLS

# THREADING TOOLS

APPLICATION : FOR THREADING ALL TYPES OF MATERIALS

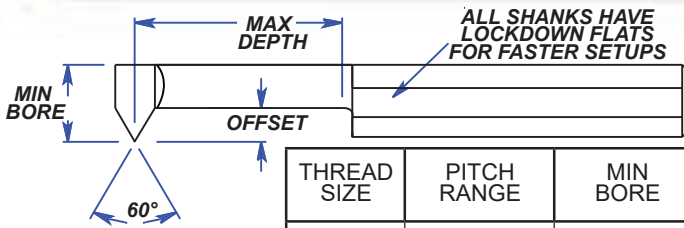


| MIN BORE | THREADS PER INCH | OFFSET | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | TOOL ID #  | SHANK & O.A.L. |
|----------|------------------|--------|-----------|-------------|-------------------|------------|----------------|
| 1/4      | 20               | .050   | .375      | 38-1100     | 38-1100-C         | BU-20-375  | 1/4 x 2-1/2    |
|          |                  |        | .750      | 38-1105     | 38-1105-C         | BU-20-750  |                |
| 5/16     | 16               | .060   | .375      | 38-1110     | 38-1110-C         | BU-16-375  | 5/16 x 2-1/2   |
|          |                  |        | .750      | 38-1115     | 38-1115-C         | BU-16-750  |                |
| 3/8      | 12               | .070   | .500      | 38-1120     | 38-1120-C         | BU-12-500  | 3/8 x 2-1/2    |
|          |                  |        | 1.000     | 38-1125     | 38-1125-C         | BU-12-1000 |                |
| 3/8      | 10               | .080   | .500      | 38-1130     | 38-1130-C         | BU-10-500  | 3/8 x 2-1/2    |
|          |                  |        | 1.000     | 38-1135     | 38-1135-C         | BU-10-1000 |                |
| 1/2      | 8                | .090   | .750      | 38-1140     | 38-1140-C         | BU-8-750   | 1/2 x 3"       |
|          |                  |        | 1.250     | 38-1145     | 38-1145-C         | BU-8-1250  |                |
| 1/2      | 6                | .120   | .750      | 38-1150     | 38-1150-C         | BU-6-750   | 1/2 x 3"       |
|          |                  |        | 1.250     | 38-1155     | 38-1155-C         | BU-6-1250  |                |



# SERIES 30 METRIC THREADING TOOLS

APPLICATION : RIGHT HAND ID THREADING



| THREAD SIZE  | PITCH RANGE | MIN BORE | MAX MM       | DEPTH INCH | ORDER EDP # | ALTN COATED EDP # | OFFSET | SHANK & O.A.L. |
|--------------|-------------|----------|--------------|------------|-------------|-------------------|--------|----------------|
| 2MM          | 0.20/0.70   | 1.52 MM  | 4.0 (.157)   |            | 30-1800     | 30-1800-C         | .635   | 1/8 x 2"       |
|              |             |          | 8.0 (.315)   |            | 30-1805     | 30-1805-C         |        |                |
| 3MM          | .020/.080   | 2.28 MM  | 4.0 (.157)   |            | 30-1810     | 30-1810-C         | .762   | 1/8 x 2"       |
|              |             |          | 8.0 (.315)   |            | 30-1815     | 30-1815-C         |        |                |
|              |             |          | 12.0 (.472)  |            | 30-1820     | 30-1820-C         |        |                |
| 4MM          | 0.20/1.00   | 3.04 MM  | 4.0 (.157)   |            | 30-1825     | 30-1825-C         | .889   | 3/16 x 2-1/2"  |
|              |             |          | 8.0 (.315)   |            | 30-1830     | 30-1830-C         |        |                |
|              |             |          | 12.0 (.472)  |            | 30-1835     | 30-1835-C         |        |                |
| 5MM          | 0.20/1.40   | 4.20 MM  | 10.0 (.394)  |            | 30-1840     | 30-1840-C         | 1.27   | 3/16 x 2-1/2"  |
|              |             |          | 14.0 (.551)  |            | 30-1845     | 30-1845-C         |        |                |
|              |             |          | 18.0 (.709)  |            | 30-1850     | 30-1850-C         |        |                |
|              |             |          | 25.0 (.985)  |            | 30-1855     | 30-1855-C         |        |                |
| 6MM          | 0.20/2.10   | 5.08 MM  | 12.0 (.472)  |            | 30-1860     | 30-1860-C         | 1.90   | 1/4 x 2-1/2"   |
|              |             |          | 18.0 (.709)  |            | 30-1865     | 30-1865-C         |        |                |
|              |             |          | 25.0 (.985)  |            | 30-1870     | 30-1870-C         |        |                |
|              |             |          | 40.0 (1.576) |            | 30-1875     | 30-1875-C         |        |                |
| 8MM          | 0.20/2.20   | 7.36 MM  | 12.0 (.472)  |            | 30-1880     | 30-1880-C         | 2.03   | 5/16 x 2-1/2"  |
|              |             |          | 18.0 (.709)  |            | 30-1890     | 30-1890-C         |        |                |
|              |             |          | 25.0 (.985)  |            | 30-1895     | 30-1895-C         |        |                |
|              |             |          | 40.0 (1.576) |            | 30-1900     | 30-1900-C         |        |                |
| 10MM         | 0.20/2.20   | 8.12 MM  | 12.0 (.472)  |            | 30-1905     | 30-1905-C         | 1.95   | 3/8 x 2-1/2"   |
|              |             |          | 18.0 (.709)  |            | 30-1910     | 30-1910-C         |        |                |
|              |             |          | 25.0 (.985)  |            | 30-1915     | 30-1915-C         |        |                |
|              |             |          | 40.0 (1.576) |            | 30-1920     | 30-1920-C         |        |                |
| 12MM         | 0.20/2.50   | 9.10 MM  | 12.0 (.472)  |            | 30-1925     | 30-1925-C         | 2.15   | 3/8 x 2-1/2"   |
|              |             |          | 18.0 (.709)  |            | 30-1930     | 30-1930-C         |        |                |
|              |             |          | 25.0 (.985)  |            | 30-1935     | 30-1935-C         |        |                |
| 16MM         | 0.20/2.50   | 9.10 MM  | 40.0 (1.576) |            | 30-1940     | 30-1940-C         | 2.15   | 3/8 x 2-1/2"   |
|              |             |          | 12.0 (.472)  |            | 30-1945     | 30-1945-C         |        |                |
|              |             |          | 18.0 (.709)  |            | 30-1950     | 30-1950-C         |        |                |
| 18MM         | 0.20/3.50   | 12.5 MM  | 12.0 (.472)  |            | 30-1945     | 30-1945-C         | 3.01   | 1/2 x 3"       |
|              |             |          | 18.0 (.709)  |            | 30-1950     | 30-1950-C         |        |                |
|              |             |          | 25.0 (.985)  |            | 30-1955     | 30-1955-C         |        |                |
| 20MM         | 0.20/3.50   | 12.5 MM  | 25.0 (.985)  |            | 30-1955     | 30-1955-C         | 3.01   | 1/2 x 3"       |
| 40.0 (1.576) |             |          |              | 30-1960    | 30-1960-C   |                   |        |                |
| 22MM         | 0.20/3.50   | 12.5 MM  | 40.0 (1.576) |            | 30-1960     | 30-1960-C         | 3.01   | 1/2 x 3"       |



# INDEXABLE INSERT BARS

## SERIES 36 INDEXABLE INSERT THREADING BARS

APPLICATION : THREADING BARS WITH 5/32 INSERT I.C.

### .236 MINIMUM BORE

| HEAD ID # | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW # | SHANK LENGTH | SHANK STYLES |               |
|-----------|-----------|-------------|-------------|---------|--------------|--------------|---------------|
|           |           |             |             |         |              | STEEL SHANK  | CARBIDE SHANK |
| T001      | 3/16      | 5/32        | 99-1135     | S-6     | 3"           | 36-1100      | 36-1105       |
|           |           |             |             |         | 6"           | 36-1110      | 36-1115       |

### 60 DEGREE INSERTS FOR .236 BARS

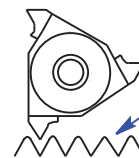
| PITCH RANGE | TIN COATED |
|-------------|------------|
| 20-48       | 37-1300    |

### FULL PROFILE INSERTS FOR .236 BARS

| PITCH | ORDER EDP #<br>TIN COATED |
|-------|---------------------------|
| 32    | 37-1304                   |
| 28    | 37-1308                   |
| 24    | 37-1312                   |
| 20    | 37-1316                   |
| 18    | 37-1320                   |



NO-RADIUS



RADIUS

## SERIES 36 INDEXABLE INSERT THREADING BARS

APPLICATION : THREADING BARS WITH 3/16 INSERT I.C.



### .307 MINIMUM BORE

| HEAD ID # | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW # | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|---------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |         |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
| T002      | 1/4       | 3/16        | 99-1145     | S-8     | 3"           | 36-1120      | 36-1125       | 36-1130                   |
|           |           |             |             |         | 6"           | 36-1135      | 36-1140       | 36-1145                   |

### .354 MINIMUM BORE

| HEAD ID # | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW # | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|---------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |         |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
| T003      | 5/16      | 3/16        | 99-1145     | S-8     | 3"           | 36-1150      | 36-1155       | 36-1160                   |
|           |           |             |             |         | 6"           | 36-1165      | 36-1170       | 36-1175                   |

### 3/16 I.C. 60 DEGREE INSERTS FOR .307 & .354 BARS

| PITCH RANGE | TIN COATED |
|-------------|------------|
| 16-48       | 37-1324    |



NO-RADIUS

### 3/16 I.C. FULL PROFILE INSERTS FOR .307 & .354 BARS

| PITCH | ORDER EDP #<br>TIN COATED |
|-------|---------------------------|
| 32    | 37-1328                   |
| 28    | 37-1332                   |
| 24    | 37-1336                   |
| 20    | 37-1340                   |
| 18    | 37-1344                   |
| 16    | 37-1348                   |



RADIUS



Carbide Cutting Tools

ITI CARBIDE: SIMPLY UN-COMPARABLE

# SERIES 36 INDEXABLE INSERT THREADING BARS

# INDEXABLE INSERT BARS

APPLICATION : THREADING BARS WITH 1/4 INSERT I.C.



## .390 MINIMUM BORE

| HEAD ID # | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW # | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|---------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |         |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
| T003.5    | 5/16      | 1/4         | 99-1150     | S-11    | 3"           | 36-1180      | 36-1185       | 36-1190                   |
|           |           |             |             |         | 6"           | 36-1200      | 36-1205       | 36-1210                   |

## .470 MINIMUM BORE

| HEAD ID # | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW # | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|---------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |         |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
| T004      | 3/8       | 1/4         | 99-1150     | S-11    | 3"           | 36-1215      | 36-1220       | 36-1225                   |
|           |           |             |             |         | 6"           | 36-1230      | 36-1235       | 36-1240                   |

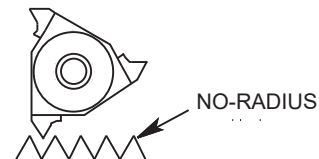
## .625 MINIMUM BORE

| HEAD ID # | SHANK DIA | INSERT I.C. | SCREW EDP # | SCREW # | SHANK LENGTH | SHANK STYLES |               |                           |
|-----------|-----------|-------------|-------------|---------|--------------|--------------|---------------|---------------------------|
|           |           |             |             |         |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
| T005      | 1/2       | 1/4         | 99-1150     | S-11    | 3"           | 36-1245      | 36-1250       | 36-1255                   |
|           |           |             |             |         | 6"           | 36-1260      | 36-1265       | 36-1270                   |

## 60 DEGREE INSERTS FOR .390, .470 & .625 BARS

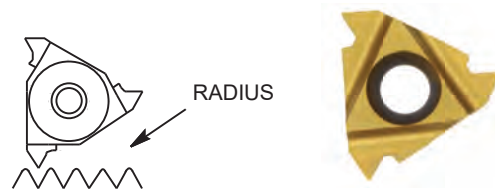
| PITCH RANGE | TIN COATED |
|-------------|------------|
| 16-48       | 37-1368    |

| PITCH RANGE | UN-COATED |
|-------------|-----------|
| 16-48       | 37-1666   |



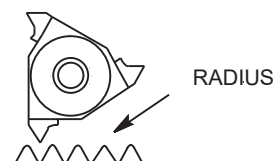
## FULL PROFILE INSERTS FOR .390, .470 & .625 BARS

| PITCH | ORDER EDP# UN-COATED C-2 | ORDER EDP # TIN COATED |
|-------|--------------------------|------------------------|
| 36    | 37-1370                  | 37-1372                |
| 32    | 37-1374                  | 37-1376                |
| 28    | 37-1378                  | 37-1380                |
| 24    | 37-1382                  | 37-1384                |
| 20    | 37-1383                  | 37-1385                |
| 18    | 37-1386                  | 37-1388                |
| 16    | 37-1390                  | 37-1392                |
| 14    | 37-1394                  | 37-1396                |
| 13    | 37-1398                  | 37-1400                |
| 12    | 37-1401                  | 37-1403                |
| 11    | 37-1405                  | 37-1407                |



## PIPE THREAD INSERTS FOR .390, .470 & .625 BARS

| PITCH | ORDER EDP# UN-COATED C-2 | ORDER EDP # TIN COATED |
|-------|--------------------------|------------------------|
| 27    | 37-1402                  | 37-1404                |
| 18    | 37-1406                  | 37-1408                |



ON THE WEB: [WWW.INTERNALTOOL.COM](http://WWW.INTERNALTOOL.COM)

**IT** Carbide Cutting Tools

# INDEXABLE INSERT BARS

# SERIES 36 INDEXABLE INSERT THREADING BARS

APPLICATION : THREADING BARS WITH 3/8 INSERT I.C.

## .640 MINIMUM BORE

| HEAD ID #   | SHANK DIA   | INSERT I.C. | SCREW EDP # | SCREW #     | SHANK LENGTH | SHANK STYLES |               |                           |
|-------------|-------------|-------------|-------------|-------------|--------------|--------------|---------------|---------------------------|
|             |             |             |             |             |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
| ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   | ORDER EDP #               |
| T006        | 1/2         | 3/8         | 99-1155     | S-16-S      | 3"           | 36-1275      | 36-1280       | 36-1285                   |
|             |             |             |             |             | 6"           | 36-1290      | 36-1295       | 36-1300                   |
|             |             |             |             |             | 9"           | 36-1305      | 36-1310       | 36-1315                   |

## .750 MINIMUM BORE

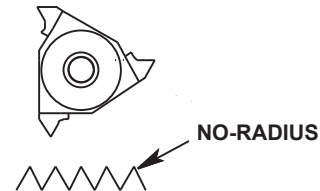
| HEAD ID #   | SHANK DIA   | INSERT I.C. | SCREW EDP # | SCREW #     | SHANK LENGTH | SHANK STYLES |               |                           |
|-------------|-------------|-------------|-------------|-------------|--------------|--------------|---------------|---------------------------|
|             |             |             |             |             |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
| ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| T007        | 5/8         | 3/8         | 99-1160     | S-16        | 3"           | 36-1320      | 36-1325       | 36-1330                   |
|             |             |             |             |             | 6"           | 36-1335      | 36-1340       | 36-1345                   |
|             |             |             |             |             | 9"           | 36-1350      | 36-1355       | 36-1360                   |

## 1" MINIMUM BORE

| HEAD ID #   | SHANK DIA   | INSERT I.C. | SCREW EDP # | SCREW #     | SHANK LENGTH | SHANK STYLES |               |                           |
|-------------|-------------|-------------|-------------|-------------|--------------|--------------|---------------|---------------------------|
|             |             |             |             |             |              | STEEL SHANK  | CARBIDE SHANK | CARBIDE WITH COOLANT HOLE |
| ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP # | ORDER EDP #  | ORDER EDP #  | ORDER EDP #   |                           |
| T008        | 3/4         | 3/8         | 99-1160     | S-16        | 3"           | 36-1365      | 36-1370       | 36-1375                   |
|             |             |             |             |             | 6"           | 36-1380      | 36-1385       | 36-1390                   |
|             |             |             |             |             | 9"           | 36-1395      | 36-1400       | 36-1405                   |

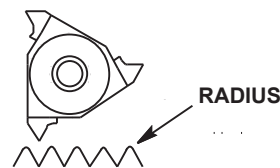
### 60 DEGREE INSERTS FOR .640 .750 & 1" BARS

| PITCH RANGE | ORDER EDP# UN-COATED C-2 | ORDER EDP # TIN COATED |
|-------------|--------------------------|------------------------|
| 16-48       | 37-1410                  | 37-1412                |
| 8-48        | 37-1414                  | 37-1416                |
| 8-14        | 37-1415                  | 37-1417                |



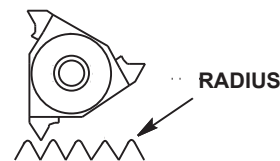
### FULL PROFILE INSERTS FOR .640 .750 & 1" BARS

| PITCH | ORDER EDP# UN-COATED C-2 | ORDER EDP # TIN COATED |
|-------|--------------------------|------------------------|
| 36    | 37-1418                  | 37-1420                |
| 32    | 37-1422                  | 37-1424                |
| 28    | 37-1426                  | 37-1428                |
| 24    | 37-1430                  | 37-1432                |
| 20    | 37-1434                  | 37-1436                |
| 18    | 37-1438                  | 37-1440                |
| 16    | 37-1442                  | 37-1444                |
| 14    | 37-1446                  | 37-1448                |
| 12    | 37-1450                  | 37-1452                |
| 10    | 37-1454                  | 37-1456                |
| 8     | 37-1458                  | 37-1460                |



### PIPE THREAD INSERTS FOR .640 .750 & 1" BARS

| PITCH | ORDER EDP# UN-COATED C-2 | ORDER EDP # TIN COATED |
|-------|--------------------------|------------------------|
| 27    | 37-1462                  | 37-1464                |
| 18    | 37-1466                  | 37-1468                |
| 14    | 37-1470                  | 37-1472                |
| 11-12 | 37-1474                  | 37-1476                |
| 8     | 37-1478                  | 37-1480                |



ITI CARBIDE: TESTED AND PROVEN TO BE THE BEST

**ITI Carbide Cutting Tools**

# SERIES 63 CARBIDE COUNTERSINKS

# COUNTERSINK & MOLD CUTTING TOOLS

APPLICATION : FOR COUNTER SINKING HOLES

| INC ANGLE | ORDER EDP # | ALTN COATED EDP # | SHANK DIA | O.A.L. |
|-----------|-------------|-------------------|-----------|--------|
| 60°       | 63-3000     | 63-3000-C         | .250      | 2-1/2" |
|           | 63-5000     | 63-5000-C         | .375      | 2-1/2" |
|           | 63-6000     | 63-6000-C         | .500      | 3"     |
| 82°       | 63-3100     | 63-3100-C         | .250      | 2-1/2" |
|           | 63-5100     | 63-5100-C         | .375      | 2-1/2" |
|           | 63-6100     | 63-6100-C         | .500      | 3"     |
| 90°       | 63-3200     | 63-3200-C         | .250      | 2-1/2" |
|           | 63-5200     | 63-5200-C         | .375      | 2-1/2" |
|           | 63-6200     | 63-6200-C         | .500      | 3"     |

6 FLUTE DOUBLE END CHATTER FREE STYLE



## SERIES 61 RUNNER CUTTERS

APPLICATION : FOR MACHINING TAPERS OR RELIEFS

| SHANK DIA. | TIP RADIUS | TAPER PER SIDE | ORDER EDP # | ALTN COATED EDP # | TOOL ID # | LENGTH OF CUT | O.A.L. |
|------------|------------|----------------|-------------|-------------------|-----------|---------------|--------|
| 1/8        | .031       | 3°             | 61-1200     | 61-1200-C         | RU-125-3  | .590          | 2"     |
|            |            | 5°             | 61-1250     | 61-1250-C         | RU-125-5  | .370          |        |
|            |            | 10°            | 61-1300     | 61-1300-C         | RU-125-10 | .175          |        |
| 3/16       | .039       | 3°             | 61-1350     | 61-1350-C         | RU-187-3  | .750          | 2-1/2" |
|            |            | 5°             | 61-1400     | 61-1400-C         | RU-187-5  | .620          |        |
|            |            | 10°            | 61-1450     | 61-1450-C         | RU-187-10 | .310          |        |
| 1/4        | .047       | 3°             | 61-1500     | 61-1500-C         | RU-250-3  | 1.000         | 2-1/2" |
|            |            | 5°             | 61-1550     | 61-1550-C         | RU-250-5  | .890          |        |
|            |            | 10°            | 61-1600     | 61-1600-C         | RU-250-10 | .442          |        |
| 5/16       | .062       | 3°             | 61-1650     | 61-1650-C         | RU-312-3  | 1.100         | 2-1/2" |
|            |            | 5°             | 61-1700     | 61-1700-C         | RU-312-5  | 1.060         |        |
|            |            | 10°            | 61-1750     | 61-1750-C         | RU-312-10 | .530          |        |
| 3/8        | .078       | 3°             | 61-1800     | 61-1800-C         | RU-375-3  | 1.375         | 3"     |
|            |            | 5°             | 61-1850     | 61-1850-C         | RU-375-5  | 1.240         |        |
|            |            | 10°            | 61-1900     | 61-1900-C         | RU-375-10 | .610          |        |
| 1/2        | .094       | 3°             | 61-1950     | 61-1950-C         | RU-500-3  | 3.062         | 4"     |
|            |            | 5°             | 61-2000     | 61-2000-C         | RU-500-5  | 2.310         |        |
|            |            | 10°            | 61-2050     | 61-2050-C         | RU-500-10 | .850          |        |

SPECIAL SIZES AVAILABLE ON REQUEST

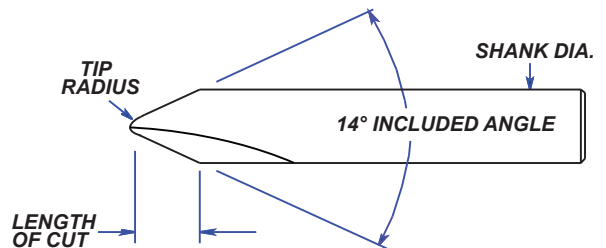


## SERIES 60 DIE SINKERS

APPLICATION : FOR DIE SINKING OR RELIEF WORK



| SHANK DIA. | TIP RADIUS | LENGTH OF CUT | ORDER EDP # | ALTN COATED EDP # | TOOL ID # | O.A.L. |
|------------|------------|---------------|-------------|-------------------|-----------|--------|
| 1/8        | .032       | 5/16          | 60-1400     | 60-1400-C         | A7-312-B  | 2"     |
| 5/32       | .040       | 5/16          | 60-1405     | 60-1405-C         | A7-313-B  | 2"     |
| 3/16       | .046       | 3/8           | 60-1410     | 60-1410-C         | A7-375-B  | 2-1/2" |
| 1/4        | .062       | 1/2           | 60-1415     | 60-1415-C         | A7-500-B  | 2-1/2" |
| 5/16       | .078       | 5/8           | 60-1420     | 60-1420-C         | A7-625-B  | 2-1/2" |
| 3/8        | .093       | 3/4           | 60-1425     | 60-1425-C         | A7-750-B  | 2-1/2" |
| 7/16       | .109       | 7/8           | 60-1430     | 60-1430-C         | A7-875-B  | 2-1/2" |
| 1/2        | .125       | 1"            | 60-1435     | 60-1435-C         | A7-1000-B | 3"     |



SPECIAL SIZES AVAILABLE ON REQUEST

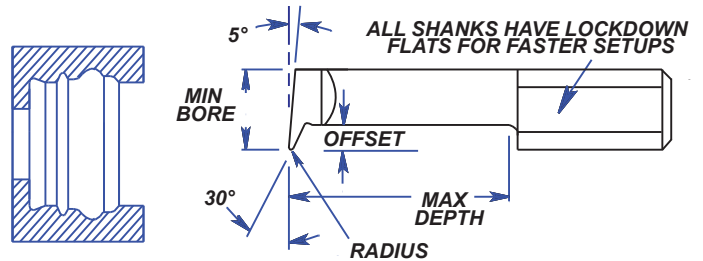


# PROFILE TOOLS

## SERIES 56 PROFILE TOOLS

APPLICATION : STANDARD PROFILING TOOL

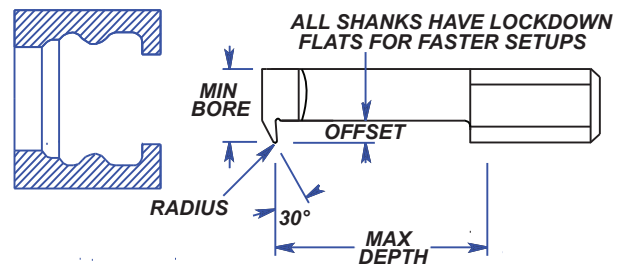
| MIN BORE | TIP RADIUS | OFFSET | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | SHANK & O.A.L. |
|----------|------------|--------|-----------|-------------|--------------------|----------------|
| .090     | .005       | .040   | .200      | 56-1000     | 56-1000-C          | 1/8 x 2"       |
|          |            |        | .300      | 56-1005     | 56-1005-C          |                |
|          |            |        | .400      | 56-1010     | 56-1010-C          |                |
| .120     | .007       | .050   | .250      | 56-1080     | 56-1080-C          | 1/8 x 2"       |
|          |            |        | .500      | 56-1085     | 56-1085-C          |                |
|          |            |        | .750      | 56-1090     | 56-1090-C          |                |
| .180     | .010       | .080   | .500      | 56-1100     | 56-1100-C          | 3/16 x 2-1/2"  |
|          |            |        | .750      | 56-1105     | 56-1105-C          |                |
|          |            |        | 1.000     | 56-1110     | 56-1110-C          |                |
| .220     | .010       | .080   | .500      | 56-1115     | 56-1115-C          | 1/4 x 2-1/2"   |
|          |            |        | .750      | 56-1120     | 56-1120-C          |                |
|          |            |        | 1.000     | 56-1125     | 56-1125-C          |                |
| .300     | .015       | .110   | .500      | 56-1130     | 56-1130-C          | 5/16 x 2-1/2"  |
|          |            |        | .750      | 56-1135     | 56-1135-C          |                |
|          |            |        | 1.000     | 56-1140     | 56-1140-C          |                |
| .360     | .015       | .130   | .500      | 56-1145     | 56-1145-C          | 3/8 x 2-1/2"   |
|          |            |        | .750      | 56-1150     | 56-1150-C          |                |
|          |            |        | 1.000     | 56-1155     | 56-1155-C          |                |
| .490     | .015       | .160   | .500      | 56-1165     | 56-1165-C          | 1/2 x 3"       |
|          |            |        | .750      | 56-1170     | 56-1170-C          |                |
|          |            |        | 1.000     | 56-1175     | 56-1175-C          |                |
|          |            |        | 1.250     | 56-1180     | 56-1180-C          |                |



## SERIES 56 REVERSE PROFILE TOOLS

APPLICATION : REVERSE PROFILING TOOL

| MIN BORE | TIP RADIUS | OFFSET | MAX DEPTH | ORDER EDP # | ALTIN COATED EDP # | SHANK & O.A.L. |
|----------|------------|--------|-----------|-------------|--------------------|----------------|
| .180     | .010       | .080   | .500      | 56-1500     | 56-1500-C          | 3/16 x 2-1/2"  |
|          |            |        | .750      | 56-1505     | 56-1505-C          |                |
|          |            |        | 1.000     | 56-1510     | 56-1510-C          |                |
| .220     | .010       | .080   | .500      | 56-1515     | 56-1515-C          | 1/4 x 2-1/2"   |
|          |            |        | .750      | 56-1520     | 56-1520-C          |                |
|          |            |        | 1.000     | 56-1525     | 56-1525-C          |                |
| .300     | .015       | .110   | .500      | 56-1530     | 56-1530-C          | 5/16 x 2-1/2"  |
|          |            |        | .750      | 56-1535     | 56-1535-C          |                |
|          |            |        | 1.000     | 56-1540     | 56-1540-C          |                |
| .360     | .015       | .130   | .500      | 56-1545     | 56-1545-C          | 3/8 x 2-1/2"   |
|          |            |        | .750      | 56-1550     | 56-1550-C          |                |
|          |            |        | 1.000     | 56-1555     | 56-1555-C          |                |
| .490     | .015       | .160   | .500      | 56-1565     | 56-1565-C          | 1/2 x 3"       |
|          |            |        | .750      | 56-1570     | 56-1570-C          |                |
|          |            |        | 1.000     | 56-1575     | 56-1575-C          |                |
|          |            |        | 1.250     | 56-1580     | 56-1580-C          |                |



SPECIALIZING IN UNIQUE AND HARD TO FIND CUTTING TOOLS

**IT** Carbide Cutting Tools

# SERIES 09 MULTI-REACH PROFILE TOOL

# PROFILE TOOLS

**APPLICATION : MULTI-REACH PROFILING  
NO LONGER LIMITED BY NECK LENGTH**



| MIN BORE | ORDER EDP # | ALTIN COATED EPD # | OFFSET | RADIUS | SHANK DIA | SHANK LENGTH |
|----------|-------------|--------------------|--------|--------|-----------|--------------|
| .360     | 09-1400     | 09-1400-C          | .100   | .010   | 1/4       | 4"           |
| .420     | 09-1405     | 09-1405-C          | .100   | .015   | 5/16      | 4"           |
| .480     | 09-1410     | 09-1410-C          | .100   | .015   | 3/8       | 6"           |
| .615     | 09-1415     | 09-1415-C          | .110   | .015   | 1/2       | 6"           |
| .750     | 09-1420     | 09-1420-C          | .125   | .020   | 5/8       | 6"           |

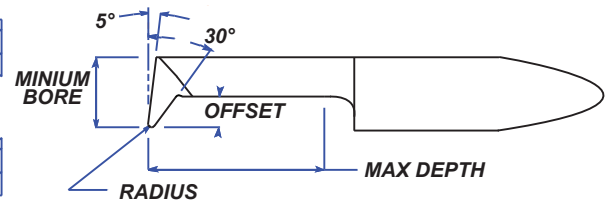
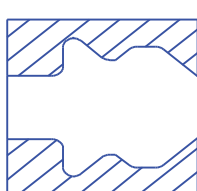
## SERIES 42 QUICK CHANGE PROFILER

**APPLICATION: QUICK CHANGE,  
REPLACE TOOLS  
QUICKLY AND ACCURATELY**

| MIN BORE | TIP RADIUS | OFFSET    | MAX DEPTH | ORDER EDP # | ALTIN COATED EPD # | MIN BORE | TIP RADIUS | OFFSET    | MAX DEPTH | ORDER EDP # | ALTIN COATED EPD # |      |         |           |
|----------|------------|-----------|-----------|-------------|--------------------|----------|------------|-----------|-----------|-------------|--------------------|------|---------|-----------|
| .080     | .005       | .040      | .200      | 42-5000     | 42-5000-C          | .160     | .007       | .060      | .200      | 42-5080     | 42-5080-C          |      |         |           |
|          |            |           | .300      | 42-5005     | 42-5005-C          |          |            |           | .300      | 42-5085     | 42-5085-C          |      |         |           |
|          |            |           | .200      | 42-5010     | 42-5010-C          |          |            |           | .400      | 42-5090     | 42-5090-C          |      |         |           |
| .300     | 42-5015    | 42-5015-C | .500      | 42-5095     | 42-5095-C          |          |            |           |           |             |                    |      |         |           |
| .100     | .005       | .040      | .200      | 42-5020     | 42-5020-C          |          |            |           | .600      | 42-5100     | 42-5100-C          | .700 | 42-5105 | 42-5105-C |
|          |            |           | .300      | 42-5025     | 42-5025-C          |          |            |           | .200      | 42-5110     | 42-5110-C          |      |         |           |
|          |            |           | .400      | 42-5030     | 42-5030-C          |          |            |           | .300      | 42-5115     | 42-5115-C          |      |         |           |
|          |            |           | .500      | 42-5035     | 42-5035-C          |          |            |           | .400      | 42-5120     | 42-5120-C          |      |         |           |
|          |            |           | .600      | 42-5040     | 42-5040-C          |          |            |           | .500      | 42-5125     | 42-5125-C          |      |         |           |
| .120     | .007       | .050      | .700      | 42-5045     | 42-5045-C          |          |            |           | .180      | .007        | .060               | .200 | 42-5130 | 42-5130-C |
|          |            |           | .200      | 42-5050     | 42-5050-C          |          |            |           |           |             |                    | .300 | 42-5135 | 42-5135-C |
|          |            |           | .300      | 42-5055     | 42-5055-C          |          |            |           |           |             |                    | .400 | 42-5140 | 42-5140-C |
|          |            |           | .400      | 42-5060     | 42-5060-C          | .500     | 42-5145    | 42-5145-C |           |             |                    |      |         |           |
| .140     | .007       | .050      | .500      | 42-5065     | 42-5065-C          | .600     | 42-5070    | 42-5070-C |           |             |                    | .700 | 42-5075 | 42-5075-C |
|          |            |           | .600      | 42-5070     | 42-5070-C          |          |            |           |           |             |                    |      |         |           |
|          |            |           | .700      | 42-5075     | 42-5075-C          |          |            |           |           |             |                    |      |         |           |

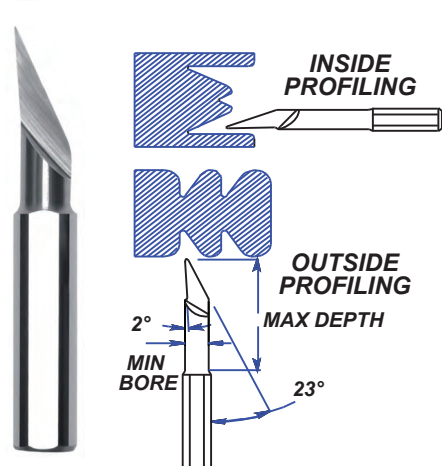


Also Available For Boring, Threading, Grooving And Face Grooving. See Pages 12,41, 30-31 And, 39.



## SERIES 56 FINE POINT PROFILE TOOLS

**APPLICATION :  
FINE POINT PROFILING TOOL**

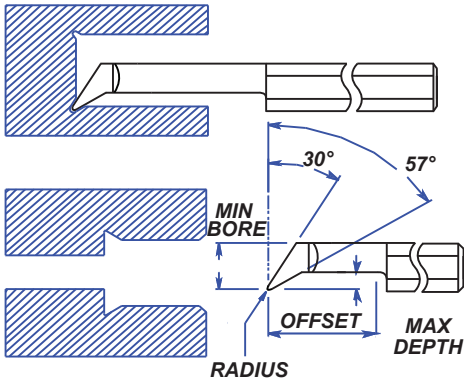


| MIN BORE | TIP RADIUS | OFFSET | MAX DEPTH | ORDER EDP # | ALTIN COATED EPD # | TOOL ID #    | SHANK & O.A.L. |
|----------|------------|--------|-----------|-------------|--------------------|--------------|----------------|
| .220     | .010       | .020   | .500      | 56-1315     | 56-1315-C          | FIP-220-500  | 1/4 x 2-1/2"   |
|          |            |        | .750      | 56-1320     | 56-1320-C          | FIP-220-750  |                |
|          |            |        | 1.000     | 56-1325     | 56-1325-C          | FIP-220-1000 |                |
| .300     | .015       | .020   | .750      | 56-1330     | 56-1330-C          | FIP-300-750  | 5/16 x 2-1/2"  |
|          |            |        | 1.000     | 56-1335     | 56-1335-C          | FIP-300-1000 |                |
| .360     | .015       | .020   | .750      | 56-1340     | 56-1340-C          | FIP-360-750  | 3/8 x 2-1/2"   |
|          |            |        | 1.000     | 56-1345     | 56-1345-C          | FIP-360-1000 |                |
|          |            |        | 1.250     | 56-1350     | 56-1350-C          | FIP-360-1250 |                |
| .490     | .015       | .020   | 1.000     | 56-1360     | 56-1360-C          | FIP-490-1000 | 1/2 x 3"       |
|          |            |        | 1.250     | 56-1365     | 56-1365-C          | FIP-490-1250 |                |
|          |            |        | 1.500     | 56-1370     | 56-1370-C          | FIP-490-1500 |                |

# PROFILE TOOLS

## SERIES 56 R.H. OFFSET PROFILE TOOLS

APPLICATION : RIGHT HAND OFFSET PROFILING TOOL

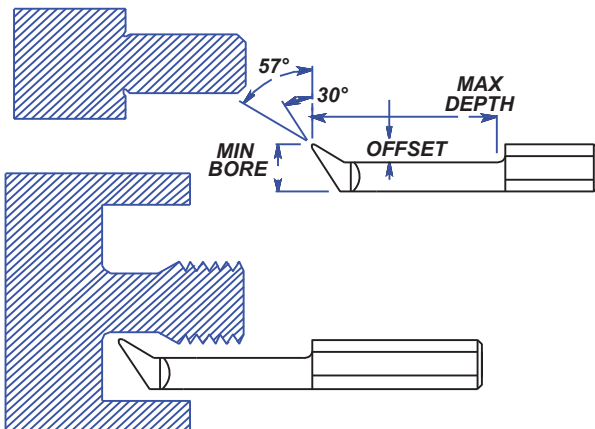


| MIN BORE | TIP RADIUS | OFFSET | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | TOOL ID #    | SHANK & O.A.L. |
|----------|------------|--------|-----------|-------------|-------------------|--------------|----------------|
| .220     | .010       | .080   | .500      | 56-1815     | 56-1815-C         | ROP-220-500  | 1/4 x 2-1/2"   |
|          |            |        | .750      | 56-1820     | 56-1820-C         | ROP-220-750  |                |
|          |            |        | 1.000     | 56-1825     | 56-1825-C         | ROP-220-1000 |                |
| .300     | .015       | .110   | .500      | 56-1830     | 56-1830-C         | ROP-300-500  | 5/16 x 2-1/2"  |
|          |            |        | .750      | 56-1835     | 56-1835-C         | ROP-300-750  |                |
|          |            |        | 1.000     | 56-1840     | 56-1840-C         | ROP-300-1000 |                |
| .360     | .015       | .130   | .500      | 56-1845     | 56-1845-C         | ROP-360-500  | 3/8 x 2-1/2"   |
|          |            |        | .750      | 56-1850     | 56-1850-C         | ROP-360-750  |                |
|          |            |        | 1.000     | 56-1855     | 56-1855-C         | ROP-360-1000 |                |
|          |            |        | 1.250     | 56-1860     | 56-1860-C         | ROP-360-1250 |                |
| .490     | .015       | .160   | .500      | 56-1865     | 56-1865-C         | ROP-490-500  | 1/2 x 3"       |
|          |            |        | .750      | 56-1870     | 56-1870-C         | ROP-490-750  |                |
|          |            |        | 1.000     | 56-1875     | 56-1875-C         | ROP-490-1000 |                |
|          |            |        | 1.250     | 56-1880     | 56-1880-C         | ROP-490-1250 |                |

## SERIES 56 L.H. OFFSET PROFILE TOOLS

APPLICATION : LEFT HAND OFFSET PROFILING TOOL

| MIN BORE | TIP RADIUS | OFFSET | MAX DEPTH | ORDER EDP # | ALTN COATED EDP # | TOOL ID #    | SHANK & O.A.L. |
|----------|------------|--------|-----------|-------------|-------------------|--------------|----------------|
| .220     | .010       | .080   | .500      | 56-1915     | 56-1915-C         | LOP-220-500  | 1/4 x 2-1/2"   |
|          |            |        | .750      | 56-1920     | 56-1920-C         | LOP-220-750  |                |
|          |            |        | 1.000     | 56-1925     | 56-1925-C         | LOP-220-1000 |                |
| .300     | .015       | .110   | .500      | 56-1930     | 56-1930-C         | LOP-300-500  | 5/16 x 2-1/2"  |
|          |            |        | .750      | 56-1935     | 56-1935-C         | LOP-300-750  |                |
|          |            |        | 1.000     | 56-1940     | 56-1940-C         | LOP-300-1000 |                |
| .360     | .015       | .130   | .500      | 56-1945     | 56-1945-C         | LOP-360-500  | 3/8 x 2-1/2"   |
|          |            |        | .750      | 56-1950     | 56-1950-C         | LOP-360-750  |                |
|          |            |        | 1.000     | 56-1955     | 56-1955-C         | LOP-360-1000 |                |
|          |            |        | 1.250     | 56-1960     | 56-1960-C         | LOP-360-1250 |                |
| .490     | .015       | .160   | .500      | 56-1965     | 56-1965-C         | LOP-490-500  | 1/2 x 3"       |
|          |            |        | .750      | 56-1970     | 56-1970-C         | LOP-490-750  |                |
|          |            |        | 1.000     | 56-1975     | 56-1975-C         | LOP-490-1000 |                |
|          |            |        | 1.250     | 56-1980     | 56-1980-C         | LOP-490-1250 |                |



# SERIES 49 DRILL-MILLS

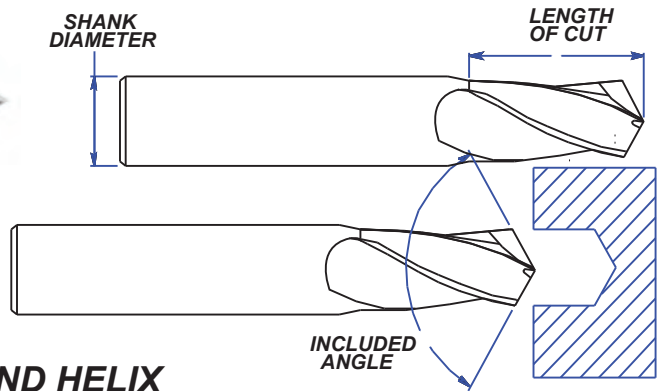
# DRILL-MILLS

APPLICATION : DRILL & MILL WITH ONE TOOL



*New!*

**30° RIGHT HAND HELIX**



| 2 FLUTE<br>60° INCLUDED ANGLE |               |                    |               |                |           |
|-------------------------------|---------------|--------------------|---------------|----------------|-----------|
| SIZE                          | 2 FLUTE EDP # | ALTiN COATED EDP # | LENGTH OF CUT | OVERALL LENGTH | SHANK DIA |
| .125                          | 49-2015       | 49-2015-C          | 5/8"          | 2"             | 1/8       |
| .187                          | 49-2065       | 49-2065-C          | 3/4"          | 2-1/2"         | 3/16      |
| .218                          | 49-2115       | 49-2115-C          | 3/4"          | 2-1/2"         | 1/4       |
| .250                          | 49-2165       | 49-2165-C          | 1"            | 3"             | 1/4       |
| .281                          | 49-2215       | 49-2215-C          | 1"            | 3"             | 5/16      |
| .312                          | 49-2265       | 49-2265-C          | 1"            | 3"             | 5/16      |
| .343                          | 49-2315       | 49-2315-C          | 1"            | 3"             | 3/8       |
| .375                          | 49-2365       | 49-2365-C          | 1"            | 3"             | 3/8       |
| .406                          | 49-2415       | 49-2415-C          | 1"            | 3"             | 7/16      |
| .437                          | 49-2465       | 49-2465-C          | 1"            | 3"             | 7/16      |
| .468                          | 49-2515       | 49-2515-C          | 1"            | 3"             | 1/2       |
| .500                          | 49-2565       | 49-2565-C          | 1"            | 3"             | 1/2       |

| 2 FLUTE<br>82° INCLUDED ANGLE |               |                    |               |                |           |
|-------------------------------|---------------|--------------------|---------------|----------------|-----------|
| SIZE                          | 2 FLUTE EDP # | ALTiN COATED EDP # | LENGTH OF CUT | OVERALL LENGTH | SHANK DIA |
| .125                          | 49-2010       | 49-2010-C          | 5/8"          | 2"             | 1/8       |
| .187                          | 49-2060       | 49-2060-C          | 3/4"          | 2-1/2"         | 3/16      |
| .218                          | 49-2110       | 49-2110-C          | 3/4"          | 2-1/2"         | 1/4       |
| .250                          | 49-2160       | 49-2160-C          | 1"            | 3"             | 1/4       |
| .281                          | 49-2210       | 49-2210-C          | 1"            | 3"             | 5/16      |
| .312                          | 49-2260       | 49-2260-C          | 1"            | 3"             | 5/16      |
| .343                          | 49-2310       | 49-2310-C          | 1"            | 3"             | 3/8       |
| .375                          | 49-2360       | 49-2360-C          | 1"            | 3"             | 3/8       |
| .406                          | 49-2410       | 49-2410-C          | 1"            | 3"             | 7/16      |
| .437                          | 49-2460       | 49-2460-C          | 1"            | 3"             | 7/16      |
| .468                          | 49-2510       | 49-2510-C          | 1"            | 3"             | 1/2       |
| .500                          | 49-2560       | 49-2560-C          | 1"            | 3"             | 1/2       |

| 2 FLUTE<br>90° INCLUDED ANGLE |               |                    |               |                |           |
|-------------------------------|---------------|--------------------|---------------|----------------|-----------|
| SIZE                          | 2 FLUTE EDP # | ALTiN COATED EDP # | LENGTH OF CUT | OVERALL LENGTH | SHANK DIA |
| .125                          | 49-2005       | 49-2005-C          | 5/8"          | 2"             | 1/8       |
| .187                          | 49-2055       | 49-2055-C          | 3/4"          | 2-1/2"         | 3/16      |
| .218                          | 49-2105       | 49-2105-C          | 3/4"          | 2-1/2"         | 1/4       |
| .250                          | 49-2155       | 49-2155-C          | 1"            | 3"             | 1/4       |
| .281                          | 49-2205       | 49-2205-C          | 1"            | 3"             | 5/16      |
| .312                          | 49-2255       | 49-2255-C          | 1"            | 3"             | 5/16      |
| .343                          | 49-2305       | 49-2305-C          | 1"            | 3"             | 3/8       |
| .375                          | 49-2355       | 49-2355-C          | 1"            | 3"             | 3/8       |
| .406                          | 49-2405       | 49-2405-C          | 1"            | 3"             | 7/16      |
| .437                          | 49-2455       | 49-2455-C          | 1"            | 3"             | 7/16      |
| .468                          | 49-2505       | 49-2505-C          | 1"            | 3"             | 1/2       |
| .500                          | 49-2555       | 49-2555-C          | 1"            | 3"             | 1/2       |

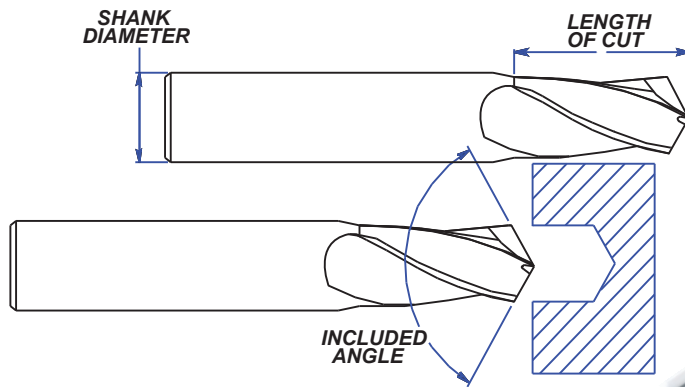
| 2 FLUTE<br>120° INCLUDED ANGLE |               |                    |               |                |           |
|--------------------------------|---------------|--------------------|---------------|----------------|-----------|
| SIZE                           | 2 FLUTE EDP # | ALTiN COATED EDP # | LENGTH OF CUT | OVERALL LENGTH | SHANK DIA |
| .125                           | 49-2000       | 49-2000-C          | 5/8"          | 2"             | 1/8       |
| .187                           | 49-2050       | 49-2050-C          | 3/4"          | 2-1/2"         | 3/16      |
| .218                           | 49-2100       | 49-2100-C          | 3/4"          | 2-1/2"         | 1/4       |
| .250                           | 49-2150       | 49-2150-C          | 1"            | 3"             | 1/4       |
| .281                           | 49-2200       | 49-2200-C          | 1"            | 3"             | 5/16      |
| .312                           | 49-2250       | 49-2250-C          | 1"            | 3"             | 5/16      |
| .343                           | 49-2300       | 49-2300-C          | 1"            | 3"             | 3/8       |
| .375                           | 49-2350       | 49-2350-C          | 1"            | 3"             | 3/8       |
| .406                           | 49-2400       | 49-2400-C          | 1"            | 3"             | 7/16      |
| .437                           | 49-2450       | 49-2450-C          | 1"            | 3"             | 7/16      |
| .468                           | 49-2500       | 49-2500-C          | 1"            | 3"             | 1/2       |
| .500                           | 49-2550       | 49-2550-C          | 1"            | 3"             | 1/2       |



# DRILL-MILLS

# SERIES 49 DRILL-MILLS

APPLICATION : DRILL & MILL WITH ONE TOOL



| 4 FLUTE<br>60° INCLUDED ANGLE |               |                    |               |                |           |
|-------------------------------|---------------|--------------------|---------------|----------------|-----------|
| SIZE                          | 4 FLUTE EDP # | ALTIN COATED EDP # | LENGTH OF CUT | OVERALL LENGTH | SHANK DIA |
| .125                          | 49-1015       | 49-1015-C          | 5/8"          | 2"             | 1/8       |
| .187                          | 49-1065       | 49-1065-C          | 3/4"          | 2-1/2"         | 3/16      |
| .218                          | 49-1115       | 49-1115-C          | 3/4"          | 2-1/2"         | 1/4       |
| .250                          | 49-1165       | 49-1165-C          | 1"            | 3"             | 1/4       |
| .281                          | 49-1215       | 49-1215-C          | 1"            | 3"             | 5/16      |
| .312                          | 49-1265       | 49-1265-C          | 1"            | 3"             | 5/16      |
| .343                          | 49-1315       | 49-1315-C          | 1"            | 3"             | 3/8       |
| .375                          | 49-1365       | 49-1365-C          | 1"            | 3"             | 3/8       |
| .406                          | 49-1415       | 49-1415-C          | 1"            | 3"             | 7/16      |
| .437                          | 49-1465       | 49-1465-C          | 1"            | 3"             | 7/16      |
| .468                          | 49-1515       | 49-1515-C          | 1"            | 3"             | 1/2       |
| .500                          | 49-1565       | 49-1565-C          | 1"            | 3"             | 1/2       |

| 4 FLUTE<br>82° INCLUDED ANGLE |               |                    |               |                |           |
|-------------------------------|---------------|--------------------|---------------|----------------|-----------|
| SIZE                          | 4 FLUTE EDP # | ALTIN COATED EDP # | LENGTH OF CUT | OVERALL LENGTH | SHANK DIA |
| .125                          | 49-1010       | 49-1010-C          | 5/8"          | 2"             | 1/8       |
| .187                          | 49-1060       | 49-1060-C          | 3/4"          | 2-1/2"         | 3/16      |
| .218                          | 49-1110       | 49-1110-C          | 3/4"          | 2-1/2"         | 1/4       |
| .250                          | 49-1160       | 49-1160-C          | 1"            | 3"             | 1/4       |
| .281                          | 49-1210       | 49-1210-C          | 1"            | 3"             | 5/16      |
| .312                          | 49-1260       | 49-1260-C          | 1"            | 3"             | 5/16      |
| .343                          | 49-1310       | 49-1310-C          | 1"            | 3"             | 3/8       |
| .375                          | 49-1360       | 49-1360-C          | 1"            | 3"             | 3/8       |
| .406                          | 49-1410       | 49-1410-C          | 1"            | 3"             | 7/16      |
| .437                          | 49-1460       | 49-1460-C          | 1"            | 3"             | 7/16      |
| .468                          | 49-1510       | 49-1510-C          | 1"            | 3"             | 1/2       |
| .500                          | 49-1560       | 49-1560-C          | 1"            | 3"             | 1/2       |

| 4 FLUTE<br>90° INCLUDED ANGLE |               |                    |               |                |           |
|-------------------------------|---------------|--------------------|---------------|----------------|-----------|
| SIZE                          | 4 FLUTE EDP # | ALTIN COATED EDP # | LENGTH OF CUT | OVERALL LENGTH | SHANK DIA |
| .125                          | 49-1005       | 49-1005-C          | 5/8"          | 2"             | 1/8       |
| .187                          | 49-1055       | 49-1055-C          | 3/4"          | 2-1/2"         | 3/16      |
| .218                          | 49-1105       | 49-1105-C          | 3/4"          | 2-1/2"         | 1/4       |
| .250                          | 49-1155       | 49-1155-C          | 1"            | 3"             | 1/4       |
| .281                          | 49-1205       | 49-1205-C          | 1"            | 3"             | 5/16      |
| .312                          | 49-1255       | 49-1255-C          | 1"            | 3"             | 5/16      |
| .343                          | 49-1305       | 49-1305-C          | 1"            | 3"             | 3/8       |
| .375                          | 49-1355       | 49-1355-C          | 1"            | 3"             | 3/8       |
| .406                          | 49-1405       | 49-1405-C          | 1"            | 3"             | 7/16      |
| .437                          | 49-1455       | 49-1455-C          | 1"            | 3"             | 7/16      |
| .468                          | 49-1505       | 49-1505-C          | 1"            | 3"             | 1/2       |
| .500                          | 49-1555       | 49-1555-C          | 1"            | 3"             | 1/2       |

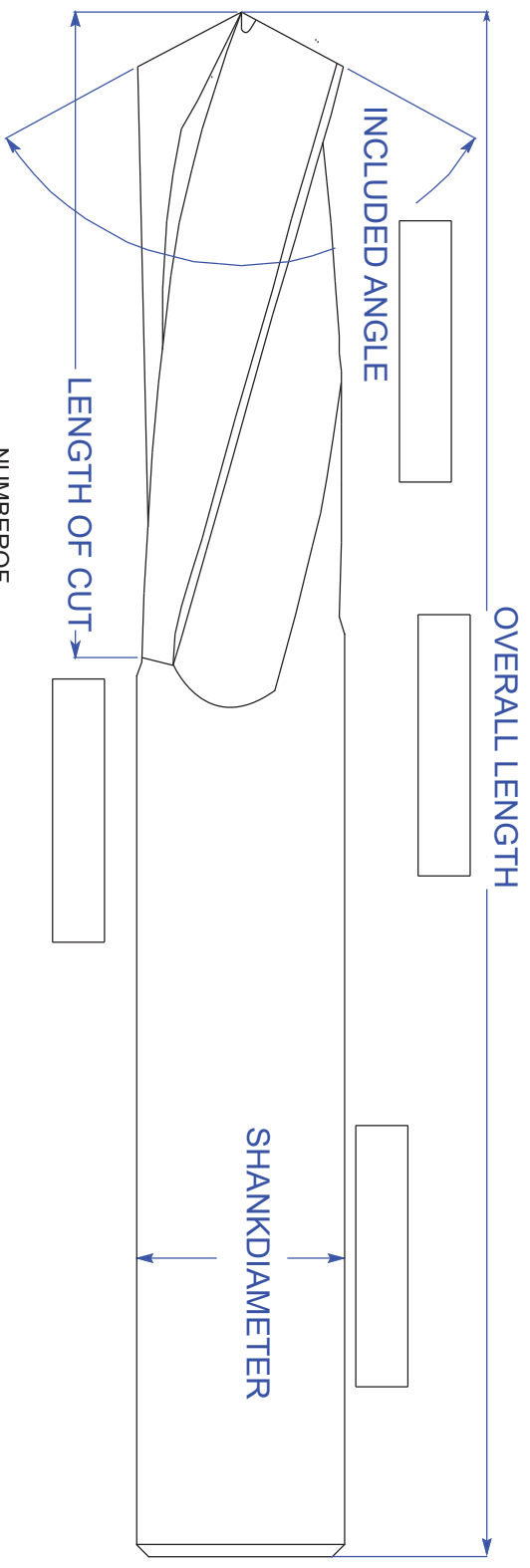
| 4 FLUTE<br>120° INCLUDED ANGLE |               |                    |               |                |           |
|--------------------------------|---------------|--------------------|---------------|----------------|-----------|
| SIZE                           | 4 FLUTE EDP # | ALTIN COATED EDP # | LENGTH OF CUT | OVERALL LENGTH | SHANK DIA |
| .125                           | 49-1000       | 49-1000-C          | 5/8"          | 2"             | 1/8       |
| .187                           | 49-1050       | 49-1050-C          | 3/4"          | 2-1/2"         | 3/16      |
| .218                           | 49-1100       | 49-1100-C          | 3/4"          | 2-1/2"         | 1/4       |
| .250                           | 49-1150       | 49-1150-C          | 1"            | 3"             | 1/4       |
| .281                           | 49-1200       | 49-1200-C          | 1"            | 3"             | 5/16      |
| .312                           | 49-1250       | 49-1250-C          | 1"            | 3"             | 5/16      |
| .343                           | 49-1300       | 49-1300-C          | 1"            | 3"             | 3/8       |
| .375                           | 49-1350       | 49-1350-C          | 1"            | 3"             | 3/8       |
| .406                           | 49-1400       | 49-1400-C          | 1"            | 3"             | 7/16      |
| .437                           | 49-1450       | 49-1450-C          | 1"            | 3"             | 7/16      |
| .468                           | 49-1500       | 49-1500-C          | 1"            | 3"             | 1/2       |
| .500                           | 49-1550       | 49-1550-C          | 1"            | 3"             | 1/2       |

NEED A SPECIAL DRILL-MILL? TURN TO PAGE 55  
AND LET US  
KNOW WHAT YOU NEED



**SERIES 49 DRILLMILLS**

Simply make a copy  
 fill in the information below and fax or email to us. Fax # 909-392-2627  
 we will quote as soon as possible. INFO@internaltool.com  
 Any dimension you're not sure of leave blank, we will quote standard  
 fill in sheet is also available at internaltool.com



NUMBER OF FLUTES \_\_\_\_\_

NOTES

QUOTE IN QUANTITIES OF \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
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**INTERNAL TOOL**

DRAWN BY:

|      |           |
|------|-----------|
| DATE | TOLERANCE |
|------|-----------|

TOOL NUMBER:

|      |          |
|------|----------|
| X    | +/- .015 |
| .XX  | +/- .005 |
| .XXX | +/- .002 |

COMPANY NAME \_\_\_\_\_  
 YOUR NAME \_\_\_\_\_  
 PHONE # \_\_\_\_\_  
 EMAIL \_\_\_\_\_  
 YOUR DISTRIBUTOR \_\_\_\_\_

TYPE OF MATERIAL TO BE CUT

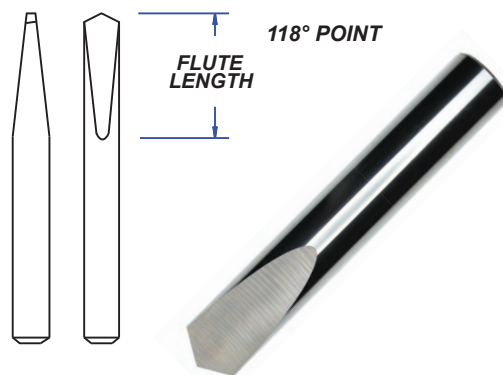
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# SPADE, CENTER & SPOTTING DRILLS

## SERIES 58 SPADE DRILLS

APPLICATION : FOR DRILLING SHALLOW DEPTH HOLES IN HARD MATERIALS

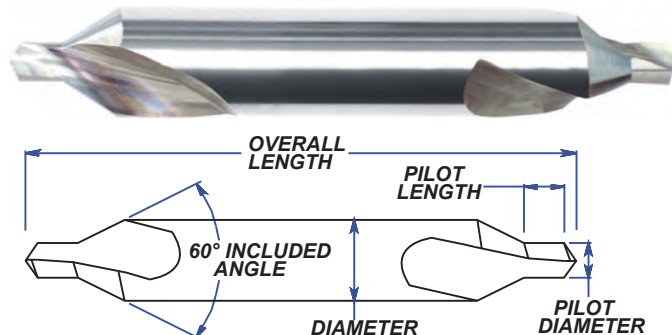
| DRILL DIA    | FLUTE LENGTH | SHANK DIA | ORDER EDP # | TOOL ID # | OVERALL LENGTH |
|--------------|--------------|-----------|-------------|-----------|----------------|
| .125 (1/8)   | 1/2          | .125      | 58-1108     | SD-125    | 2"             |
| .156 (5/32)  | 9/16         | .187      | 58-1110     | SD-156    | 2"             |
| .187 (3/16)  | 11/16        | .187      | 58-1112     | SD-187    | 2"             |
| .218 (7/32)  | 11/16        | .250      | 58-1114     | SD-218    | 2"             |
| .250 (1/4)   | 13/16        | .250      | 58-1116     | SD-250    | 2"             |
| .281 (9/32)  | 7/8          | .312      | 58-1118     | SD-281    | 2-1/2"         |
| .312 (5/16)  | 7/8          | .312      | 58-1120     | SD-312    | 2-1/2"         |
| .343 (11/32) | 15/16        | .375      | 58-1122     | SD-343    | 2-1/2"         |
| .375 (3/8)   | 1-1/8        | .375      | 58-1124     | SD-375    | 2-1/2"         |
| .406 (13/32) | 1-1/8        | .437      | 58-1126     | SD-406    | 3"             |
| .437 (7/16)  | 1-1/8        | .437      | 58-1128     | SD-437    | 3"             |
| .468 (15/32) | 1-3/16       | .500      | 58-1130     | SD-468    | 3"             |
| .500 (1/2)   | 1-3/16       | .500      | 58-1132     | SD-500    | 3"             |



## SERIES 71 CARBIDE CENTER DRILLS

APPLICATION : DRILLING CENTERS IN JUST ABOUT ANY MATERIAL

| SIZE | DIA  | PILOT DIA   | PILOT LENGTH | OVERALL LENGTH | ORDER EDP # |
|------|------|-------------|--------------|----------------|-------------|
| #0   | 1/8  | 1/32 (.031) | 1/32 (.031)  | 2"             | 71-1005     |
| #1   | 1/8  | 3/64 (.046) | 3/64 (.046)  | 2"             | 71-1010     |
| #2   | 3/16 | 5/64 (.078) | 5/64 (.078)  | 2-1/2"         | 71-1015     |
| #3   | 1/4  | 7/64 (.109) | 7/64 (.109)  | 2-1/2"         | 71-1020     |
| #4   | 5/16 | 1/8 (.125)  | 1/8 (.125)   | 2-1/2"         | 71-1025     |
| #5   | 7/16 | 3/16 (.187) | 3/16 (.187)  | 3"             | 71-1030     |
| #6   | 1/2  | 7/32 (.218) | 7/32 (.218)  | 3"             | 71-1035     |



## SERIES 75 SPOTTING DRILLS

APPLICATION : CNC SPOT DRILLING FASTER THAN CENTER DRILLING CAN BE USED AS A COUNTERBINK

| 90° INCLUDED ANGLE  |             |             |           |                |
|---------------------|-------------|-------------|-----------|----------------|
| SIZE                | ORDER EDP # | TOOL ID #   | SHANK DIA | OVERALL LENGTH |
| .125                | 75-2000     | SPD-125-90  | 1/8       | 2"             |
| .187                | 75-2005     | SPD-187-90  | 3/16      | 2"             |
| .250                | 75-2010     | SPD-250-90  | 1/4       | 2"             |
| .312                | 75-2015     | SPD-312-90  | 5/16      | 2"             |
| .375                | 75-2020     | SPD-375-90  | 3/8       | 2"             |
| .500                | 75-2025     | SPD-500-90  | 1/2       | 2-1/2"         |
| 120° INCLUDED ANGLE |             |             |           |                |
| SIZE                | ORDER EDP # | TOOL ID #   | SHANK DIA | OVERALL LENGTH |
| .125                | 75-3000     | SPD-125-120 | 1/8       | 2"             |
| .187                | 75-3005     | SPD-187-120 | 3/16      | 2"             |
| .250                | 75-3010     | SPD-250-120 | 1/4       | 2"             |
| .312                | 75-3015     | SPD-312-120 | 5/16      | 2"             |
| .375                | 75-3020     | SPD-375-120 | 3/8       | 2"             |
| .500                | 75-3025     | SPD-500-120 | 1/2       | 2-1/2"         |



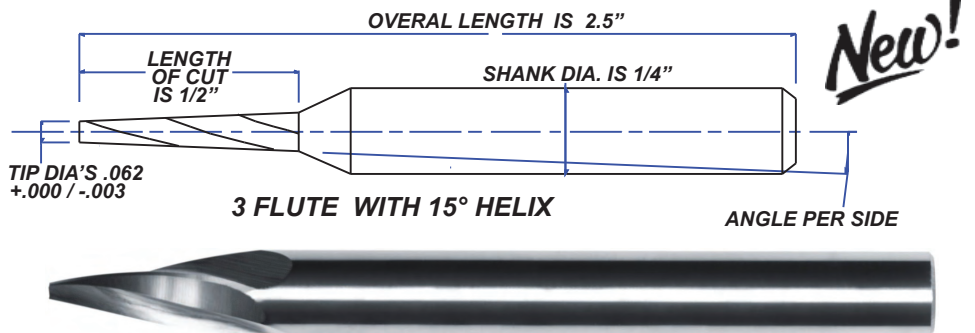
| 82° INCLUDED ANGLE<br>FOR FLAT HEAD SCREWS |             |            |                  |           |                |
|--|-------------|------------|------------------|-----------|----------------|
| SIZE                                       | ORDER EDP # | TOOL ID #  | SCREW SIZE       | SHANK DIA | OVERALL LENGTH |
| .250                                       | 75-1000     | SPD-250-82 | UP TO #2 SCREW   | 1/4       | 2"             |
| .312                                       | 75-1005     | SPD-312-82 | UP TO #6 SCREW   | 5/16      | 2"             |
| .375                                       | 75-1010     | SPD-375-82 | UP TO #8 SCREW   | 3/8       | 2"             |
| .500                                       | 75-1015     | SPD-500-82 | UP TO #10 SCREW  | 1/2       | 2-1/2"         |
| .562                                       | 75-1020     | SPD-562-82 | UP TO 1/4 SCREW  | 1/2       | 2-1/2"         |
| .687                                       | 75-1025     | SPD-687-82 | UP TO 5/16 SCREW | 1/2       | 2-1/2"         |
| .812                                       | 75-1030     | SPD-812-82 | UP TO 3/8 SCREW  | 1/2       | 2-1/2"         |
| .937                                       | 75-1035     | SPD-937-82 | UP TO 1/2 SCREW  | 1/2       | 2-1/2"         |

# SERIES 69 SMALL CARBIDE STUB TAPERS

# ENDMILLS

APPLICATION : FOR MILLING TAPERS OR TAPERED REAMING

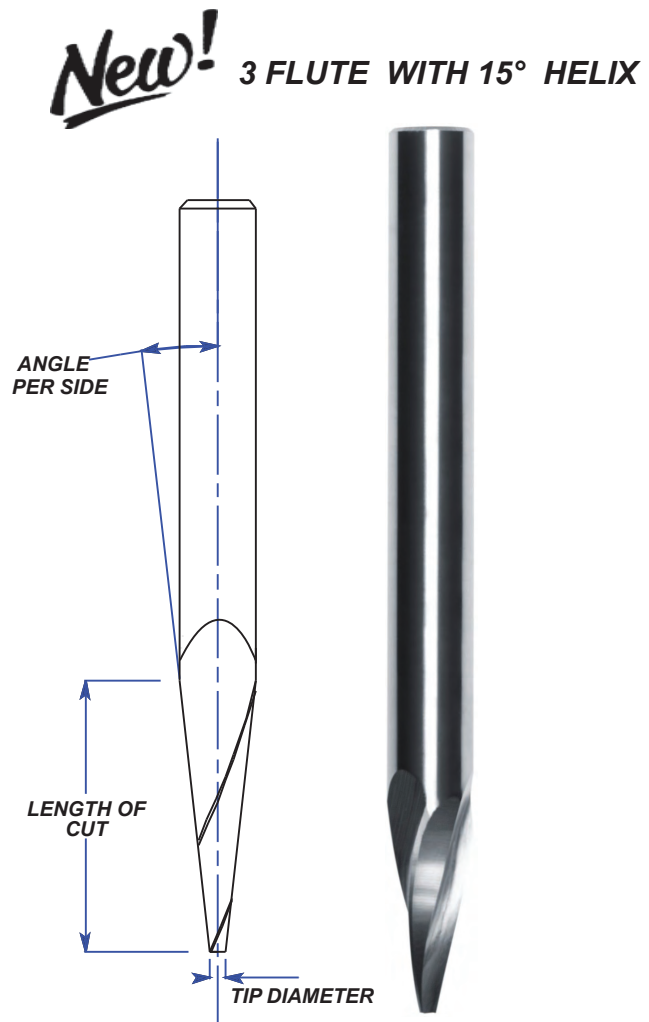
| ANGLE PER SIDE | ORDER EDP # | ALTIN COATED EDP # | TOOL ID # |
|----------------|-------------|--------------------|-----------|
| 1°             | 69-1000     | 69-1000-C          | ST-1      |
| 2°             | 69-1020     | 69-1020-C          | ST-2      |
| 3°             | 69-1030     | 69-1030-C          | ST-3      |
| 4°             | 69-1040     | 69-1040-C          | ST-4      |
| 5°             | 69-1050     | 69-1050-C          | ST-5      |
| 6°             | 69-1060     | 69-1060-C          | ST-6      |
| 7°             | 69-1070     | 69-1070-C          | ST-7      |
| 8°             | 69-1080     | 69-1080-C          | ST-8      |
| 9°             | 69-1090     | 69-1090-C          | ST-9      |
| 10°            | 69-1100     | 69-1100-C          | ST-10     |
| 11°            | 69-1105     | 69-1105-C          | ST-11     |



# SERIES 69 STANDARD TAPERED ENDMILLS

APPLICATION : FOR MILLING TAPERS OR TAPERED REAMING

| ANGLE PER SIDE | TIP DIA | LENGTH OF CUT | SHANK AND O.A.L. | ORDER EDP # | ALTIN COATED EDP # |
|----------------|---------|---------------|------------------|-------------|--------------------|
| 1°             | .094    | .750          | 1/4 x 2.5        | 69-2000     | 69-2000-C          |
|                | .125    | 1.000         | 1/4 x 3.0        | 69-2020     | 69-2020-C          |
|                | .250    | 1.250         | 3/8 x 3.5        | 69-2030     | 69-2030-C          |
| 1-1/2°         | .094    | .750          | 1/4 x 2.5        | 69-2040     | 69-2040-C          |
|                | .125    | 1.000         | 1/4 x 3.0        | 69-2050     | 69-2050-C          |
|                | .250    | 1.250         | 3/8 x 3.5        | 69-2060     | 69-2060-C          |
| 2°             | .094    | .750          | 1/4 x 2.5        | 69-2070     | 69-2070-C          |
|                | .125    | 1.000         | 1/4 x 3.0        | 69-2080     | 69-2080-C          |
|                | .250    | 1.250         | 3/8 x 3.5        | 69-2090     | 69-2090-C          |
| 3°             | .094    | 1.000         | 1/4 x 3.0        | 69-3000     | 69-3000-C          |
|                | .125    | 1.000         | 1/4 x 3.0        | 69-3010     | 69-3010-C          |
|                | .250    | 1.190         | 3/8 x 3.5        | 69-3020     | 69-3020-C          |
| 4°             | .094    | 1.000         | 1/4 x 3.0        | 69-3030     | 69-3030-C          |
|                | .125    | 1.000         | 3/8 x 3.0        | 69-3040     | 69-3040-C          |
|                | .250    | 1.250         | 1/2 x 3.5        | 69-3050     | 69-3050-C          |
| 5°             | .094    | .750          | 1/4 x 3.0        | 69-3060     | 69-3060-C          |
|                | .125    | 1.250         | 3/8 x 3.5        | 69-3070     | 69-3070-C          |
|                | .250    | 1.250         | 1/2 x 3.5        | 69-3080     | 69-3080-C          |
| 7°             | .094    | .500          | 1/4 x 3.0        | 69-3090     | 69-3090-C          |
|                | .125    | 1.000         | 3/8 x 3.0        | 69-4000     | 69-4000-C          |
|                | .250    | 1.000         | 1/2 x 3.5        | 69-4010     | 69-4010-C          |
| 10°            | .094    | .750          | 3/8 x 2.5        | 69-4020     | 69-4020-C          |
|                | .125    | 1.000         | 1/2 x 3.5        | 69-4030     | 69-4030-C          |
|                | .250    | 1.250         | 3/4 x 4.0        | 69-4040     | 69-4040-C          |
| 15°            | .094    | .250          | 1/4 x 2.5        | 69-4050     | 69-4050-C          |
|                | .125    | .460          | 3/8 x 2.5        | 69-4060     | 69-4060-C          |
|                | .250    | .460          | 1/2 x 3.5        | 69-4070     | 69-4070-C          |
| 30°            | .094    | .280          | 3/8 x 2.5        | 69-4080     | 69-4080-C          |
|                | .125    | .325          | 1/2 x 3.0        | 69-4090     | 69-4090-C          |
|                | .250    | .430          | 3/4 x 4.0        | 69-5000     | 69-5000-C          |
| 45°            | .125    | .313          | 3/4 x 4.0        | 69-5010     | 69-5010-C          |





# ENDMILLS

# SERIES 45 BACK-DRAFT ENDMILLS

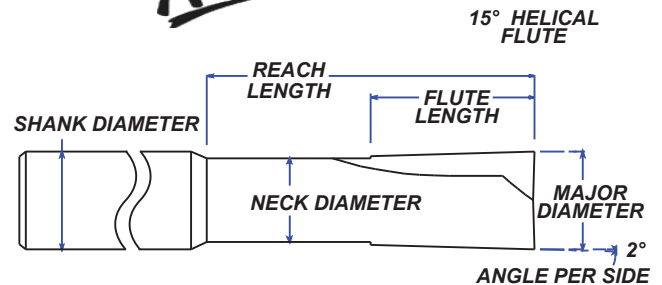
APPLICATION : REVERSE TAPERED ENDMILLS



4 FLUTE WITH 15° HELIX

*New!*

| MAJOR DIA | FLUTE LENGTH | NECK DIA | REACH LENGTH | ORDER EDP # | ALTN COATED EDP # | SHANK DIA | O.A.L. |
|-----------|--------------|----------|--------------|-------------|-------------------|-----------|--------|
| 3/16      | 1/4          | .156     | 1/2          | 45-1100     | 45-1100-C         | 3/16      | 2-1/2" |
|           |              |          | 3/4          | 45-1105     | 45-1105-C         |           |        |
|           |              |          | 1"           | 45-1110     | 45-1110-C         |           |        |
| 1/4       | 3/8          | .210     | 5/8          | 45-1115     | 45-1115-C         | 1/4       | 2-1/2" |
|           |              |          | 3/4          | 45-1120     | 45-1120-C         |           |        |
|           |              |          | 1"           | 45-1125     | 45-1125-C         |           |        |
| 3/8       | 1/2          | .320     | 5/8          | 45-1130     | 45-1130-C         | 3/8       | 2-1/2" |
|           |              |          | 3/4          | 45-1135     | 45-1135-C         |           |        |
|           |              |          | 1"           | 45-1140     | 45-1140-C         |           |        |
| 1/2       | 5/8          | .425     | 5/8          | 45-1145     | 45-1145-C         | 1/2       | 3"     |
|           |              |          | 3/4          | 45-1150     | 45-1150-C         |           |        |
|           |              |          | 1"           | 45-1155     | 45-1155-C         |           |        |

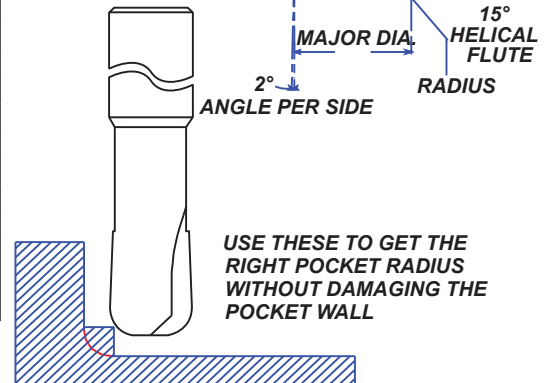
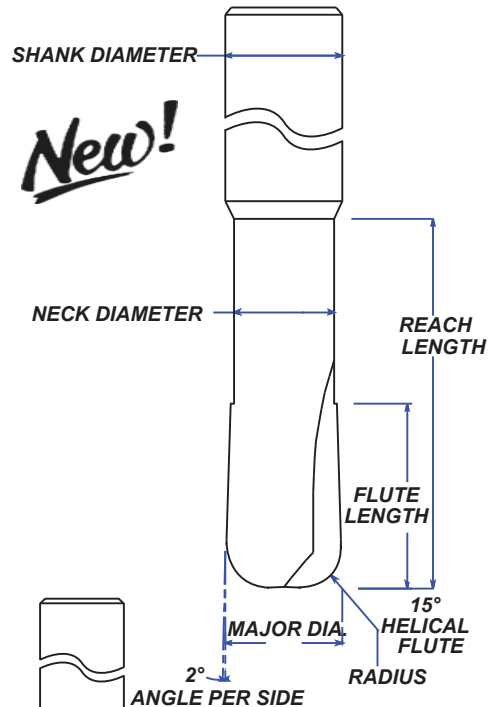


# SERIES 45 BACK-DRAFT RADIUS ENDMILLS

APPLICATION : REVERSE TAPERED ENDMILLS WITH A CORNER RADIUS

| MAJOR DIA | FLUTE LENGTH | NECK DIA | RADIUS SIZE | REACH LENGTH | ORDER EDP # | ALTN COATED EDP # | SHANK DIA | O.A.L. |
|-----------|--------------|----------|-------------|--------------|-------------|-------------------|-----------|--------|
| 3/16      | 1/4          | .156     | 1/32        | 1/2          | 45-3100     | 45-3100-C         | 3/16      | 2-1/2" |
|           |              |          | 1/32        | 3/4          | 45-3105     | 45-3105-C         |           |        |
|           |              |          | 1/32        | 1"           | 45-3110     | 45-3110-C         |           |        |
|           |              |          | 1/16        | 1/2          | 45-3115     | 45-3115-C         |           |        |
|           |              |          | 1/16        | 3/4          | 45-3120     | 45-3120-C         |           |        |
|           |              |          | 1/16        | 1"           | 45-3125     | 45-3125-C         |           |        |
| 1/4       | 3/8          | .210     | 1/32        | 5/8          | 45-3130     | 45-3130-C         | 1/4       | 2-1/2" |
|           |              |          | 1/32        | 3/4          | 45-3135     | 45-3135-C         |           |        |
|           |              |          | 1/32        | 1"           | 45-3140     | 45-3140-C         |           |        |
|           |              |          | 1/16        | 5/8          | 45-3145     | 45-3145-C         |           |        |
|           |              |          | 1/16        | 3/4          | 45-3150     | 45-3150-C         |           |        |
|           |              |          | 1/16        | 1"           | 45-3155     | 45-3155-C         |           |        |
| 3/8       | 1/2          | .320     | 1/32        | 3/4          | 45-3160     | 45-3160-C         | 3/8       | 2-1/2" |
|           |              |          | 1/32        | 1"           | 45-3165     | 45-3165-C         |           |        |
|           |              |          | 1/32        | 1-1/4        | 45-3170     | 45-3170-C         |           |        |
|           |              |          | 1/16        | 3/4          | 45-3175     | 45-3175-C         |           |        |
|           |              |          | 1/16        | 1"           | 45-3180     | 45-3180-C         |           |        |
|           |              |          | 1/16        | 1-1/4        | 45-3185     | 45-3185-C         |           |        |
|           |              |          | 3/32        | 3/4          | 45-3190     | 45-3190-C         |           |        |
|           |              |          | 3/32        | 1"           | 45-3195     | 45-3195-C         |           |        |
|           |              |          | 3/32        | 1-1/4        | 45-3200     | 45-3200-C         |           |        |
|           |              |          | 1/2         | 5/8          | .425        | 1/32              |           |        |
| 1/32      | 1"           | 45-3210  | 45-3210-C   |              |             |                   |           |        |
| 1/32      | 1-1/4        | 45-3215  | 45-3215-C   |              |             |                   |           |        |
| 1/16      | 3/4          | 45-3220  | 45-3220-C   |              |             |                   |           |        |
| 1/16      | 1"           | 45-3225  | 45-3225-C   |              |             |                   |           |        |
| 1/16      | 1-1/4        | 45-3230  | 45-3230-C   |              |             |                   |           |        |
| 3/32      | 3/4          | 45-3235  | 45-3235-C   |              |             |                   |           |        |
| 3/32      | 1"           | 45-3240  | 45-3240-C   |              |             |                   |           |        |
| 3/32      | 1-1/4        | 45-3245  | 45-3245-C   |              |             |                   |           |        |
| 1/8       | 3/4          | 45-3250  | 45-3250-C   |              |             |                   |           |        |
| 1/8       | 1"           | 45-3255  | 45-3255-C   |              |             |                   |           |        |
| 1/8       | 1-1/4        | 45-3260  | 45-3260-C   |              |             |                   |           |        |

4 FLUTE WITH 15° HELIX



APPLICATION : SMALLER ENDMILLS USED IN TRACER, FACE, PROFILE MILLING AND PLUNGING

**SERIES 21 TWO FLUTE**  
**SERIES 41 FOUR FLUTE**

**1/8" SHANK**  
**1-1/2" OAL**

**CENTER CUTTING**  
**30° RIGHT HAND HELIX, RIGHT HAND CUT**

| 2 & 4 FLUTE SQUARE |               |               |               |
|--------------------|---------------|---------------|---------------|
| SIZE               | LENGTH OF CUT | 2 FLUTE EDP # | 4 FLUTE EDP # |
| .005               | .015          | 21-7000       | 41-7000       |
| .006               | .018          | 21-7005       | 41-7005       |
| .007               | .021          | 21-7010       | 41-7010       |
| .008               | .024          | 21-7015       | 41-7015       |
| .009               | .027          | 21-7020       | 41-7020       |
| .010               | .030          | 21-7025       | 41-7025       |
| .011               | .033          | 21-7030       | 41-7030       |
| .012               | .036          | 21-7035       | 41-7035       |
| .013               | .039          | 21-7040       | 41-7040       |
| .014               | .042          | 21-7045       | 41-7045       |
| .015               | .045          | 21-7050       | 41-7050       |
| .016               | .048          | 21-7055       | 41-7055       |
| .017               | .051          | 21-7060       | 41-7060       |
| .018               | .054          | 21-7065       | 41-7065       |
| .019               | .057          | 21-7070       | 41-7070       |
| .020               | .060          | 21-7075       | 41-7075       |
| .021               | .063          | 21-7080       | 41-7080       |
| .022               | .066          | 21-7085       | 41-7085       |
| .023               | .069          | 21-7090       | 41-7090       |
| .024               | .072          | 21-7095       | 41-7095       |
| .025               | .075          | 21-7100       | 41-7100       |
| .026               | .078          | 21-7105       | 41-7105       |
| .027               | .081          | 21-7110       | 41-7110       |
| .028               | .084          | 21-7115       | 41-7115       |
| .029               | .087          | 21-7120       | 41-7120       |
| .030               | .090          | 21-7125       | 41-7125       |
| .031               | .093          | 21-7130       | 41-7130       |
| .035               | .105          | 21-7135       | 41-7135       |
| .040               | .120          | 21-7140       | 41-7140       |
| .045               | .135          | 21-7145       | 41-7145       |
| .047               | .141          | 21-7150       | 41-7150       |
| .050               | .150          | 21-7155       | 41-7155       |
| .055               | .165          | 21-7160       | 41-7160       |
| .060               | .180          | 21-7165       | 41-7165       |
| .065               | .195          | 21-7170       | 41-7170       |
| .070               | .210          | 21-7175       | 41-7175       |
| .075               | .225          | 21-7180       | 41-7180       |
| .080               | .240          | 21-7185       | 41-7185       |
| .085               | .255          | 21-7190       | 41-7190       |
| .090               | .270          | 21-7195       | 41-7195       |
| .100               | .300          | 21-7200       | 41-7200       |
| .105               | .315          | 21-7205       | 41-7205       |
| .110               | .330          | 21-7210       | 41-7210       |
| .115               | .345          | 21-7215       | 41-7215       |
| .120               | .360          | 21-7220       | 41-7220       |
| .125               | .375          | 21-7225       | 41-7225       |



**L.O.C. +.015/-0.00**  
**DIA +.0005/-0.00**

| 2 & 4 FLUTE BALL |               |               |               |
|------------------|---------------|---------------|---------------|
| SIZE             | LENGTH OF CUT | 2 FLUTE EDP # | 4 FLUTE EDP # |
| .010             | .030          | 21-6000       | -- --         |
| .015             | .045          | 21-6005       | -- --         |
| .020             | .060          | 21-6010       | 41-6010       |
| .025             | .075          | 21-6015       | 41-6015       |
| .030             | .090          | 21-6020       | 41-6020       |
| .031             | .093          | 21-6025       | 41-6025       |
| .035             | .105          | 21-6030       | 41-6030       |
| .040             | .120          | 21-6035       | 41-6035       |
| .045             | .135          | 21-6040       | 41-6040       |
| .047             | .141          | 21-6045       | 41-6045       |
| .050             | .150          | 21-6050       | 41-6050       |
| .055             | .165          | 21-6055       | 41-6055       |
| .060             | .180          | 21-6060       | 41-6060       |
| .065             | .195          | 21-6065       | 41-6065       |
| .070             | .210          | 21-6070       | 41-6070       |
| .075             | .225          | 21-6075       | 41-6075       |
| .080             | .240          | 21-6080       | 41-6080       |
| .085             | .255          | 21-6085       | 41-6085       |
| .090             | .270          | 21-6090       | 41-6090       |
| .095             | .285          | 21-6095       | 41-6095       |
| .100             | .300          | 21-6100       | 41-6100       |
| .120             | .360          | 21-6105       | 41-6105       |

# ENDMILLS

# SERIES 41 CARBIDE ENDMILLS

APPLICATION : FACE, PROFILING, MILLING,  
AND PLUNGING

A GREAT QUALITY  
CARBIDE ENDMILL



SEE OUR HIGH PERFORMANCE  
ENDMILLS ON PG-110-111

| SIZE<br>+.000/-.002 | ORDER<br>EDP # | ALTiN<br>COATED<br>EDP # | LENGTH<br>OF CUT | O.A.L. | SHANK<br>DIA |
|---------------------|----------------|--------------------------|------------------|--------|--------------|
| 1/16 .062           | 41-0621        | 41-0621-C                | .200             | 1-1/2" | 1/8          |
| 5/64 .078           | 41-0781        | 41-0781-C                | .280             | 1-1/2" | 1/8          |
| 3/32 .094           | 41-0941        | 41-0941-C                | .190             | 1-1/2" | 1/8          |
|                     | 41-0942        | 41-0942-C                | .380             | 1-1/2" | 1/8          |
|                     | 41-0943        | 41-0943-C                | .500             | 2"     | 1/8          |
|                     | 41-0944        | 41-0944-C                | .750             | 2-1/2" | 1/8          |
| 2.5mm .098          | 41-0981        | 41-0981-C                | .250             | 2"     | 1/8          |
| 7/64 .109           | 41-1091        | 41-1091-C                | .250             | 2"     | 1/8          |
|                     | 41-1092        | 41-1092-C                | .500             | 2"     | 1/8          |
| 3mm .118            | 41-1181        | 41-1181-C                | .400             | 2"     | 1/8          |
| 1/8 .125            | 41-1251        | 41-1251-C                | .250             | 2"     | 1/8          |
|                     | 41-1252        | 41-1252-C                | .380             | 2"     | 1/8          |
|                     | 41-1253        | 41-1253-C                | .500             | 2"     | 1/8          |
|                     | 41-1254        | 41-1254-C                | .750             | 2-1/2" | 1/8          |
|                     | 41-1255        | 41-1255-C                | 1.000            | 3"     | 1/8          |
| 9/64 .141           | 41-1411        | 41-1411-C                | .380             | 2"     | 3/16         |
|                     | 41-1412        | 41-1412-C                | .750             | 2-1/2" | 3/16         |
| 5/32 .156           | 41-1561        | 41-1561-C                | .380             | 2"     | 3/16         |
|                     | 41-1562        | 41-1562-C                | .650             | 2-1/2" | 3/16         |
| 4mm .158            | 41-1581        | 41-1581-C                | .380             | 2"     | 3/16         |
| 11/64 .172          | 41-1721        | 41-1721-C                | .380             | 2"     | 3/16         |
|                     | 41-1722        | 41-1722-C                | .650             | 2-1/2" | 3/16         |
| 3/16 .187           | 41-1871        | 41-1871-C                | .380             | 2"     | 3/16         |
|                     | 41-1872        | 41-1872-C                | .650             | 2"     | 3/16         |
|                     | 41-1873        | 41-1873-C                | .750             | 2-1/2" | 3/16         |
|                     | 41-1874        | 41-1874-C                | 1.000            | 2-1/2" | 3/16         |
| 5mm .197            | 41-1875        | 41-1875-C                | 1.300            | 3"     | 3/16         |
|                     | 41-1971        | 41-1971-C                | .500             | 2"     | 1/4          |
| 13/64 .203          | 41-2031        | 41-2031-C                | .400             | 2"     | 1/4          |
|                     | 41-2032        | 41-2032-C                | .800             | 2-1/2" | 1/4          |
| 7/32 .218           | 41-2181        | 41-2181-C                | .400             | 2"     | 1/4          |
|                     | 41-2182        | 41-2182-C                | .800             | 2-1/2" | 1/4          |
| 15/64 .234          | 41-2341        | 41-2341-C                | .400             | 2"     | 1/4          |
|                     | 41-2342        | 41-2342-C                | .800             | 2-1/2" | 1/4          |
| 6mm .236            | 41-2361        | 41-2361-C                | .500             | 2"     | 1/4          |
|                     | 41-2501        | 41-2501-C                | .500             | 2"     | 1/4          |
|                     | 41-2502        | 41-2502-C                | .800             | 2-1/2" | 1/4          |
|                     | 41-2503        | 41-2503-C                | 1.000            | 3"     | 1/4          |
|                     | 41-2504        | 41-2504-C                | 1.300            | 3"     | 1/4          |
| 1/4 .250            | 41-2505        | 41-2505-C                | 1.500            | 4"     | 1/4          |
|                     | 41-2506        | 41-2506-C                | 1.800            | 4"     | 1/4          |
|                     | 41-2661        | 41-2661-C                | .500             | 2"     | 5/16         |
|                     | 41-2662        | 41-2662-C                | 1.000            | 2-1/2" | 5/16         |
| 7mm .276            | 41-2761        | 41-2761-C                | .650             | 2-1/2" | 5/16         |
|                     | 41-2811        | 41-2811-C                | .500             | 2"     | 5/16         |
| 9/32 .281           | 41-2812        | 41-2812-C                | .800             | 2-1/2" | 5/16         |
|                     | 41-2971        | 41-2971-C                | .500             | 2"     | 5/16         |
| 19/64 .297          | 41-2972        | 41-2972-C                | .800             | 2-1/2" | 5/16         |
|                     | 41-3121        | 41-3121-C                | .500             | 2"     | 5/16         |
| 5/16 .312           | 41-3122        | 41-3122-C                | .750             | 2-1/2" | 5/16         |
|                     | 41-3123        | 41-3123-C                | 1.000            | 3"     | 5/16         |
|                     | 41-3124        | 41-3124-C                | 1.250            | 3"     | 5/16         |
|                     | 41-3125        | 41-3125-C                | 1.500            | 4"     | 5/16         |
|                     | 41-3126        | 41-3126-C                | 1.800            | 4"     | 5/16         |

**CENTER CUTTING**  
**30° RIGHT HAND HELIX, RIGHT HAND CUT**

| SIZE<br>+.000/-.002 | ORDER<br>EDP # | ALTiN<br>COATED<br>EDP # | LENGTH<br>OF CUT | O.A.L. | SHANK<br>DIA |
|---------------------|----------------|--------------------------|------------------|--------|--------------|
| 8mm .315            | 41-3151        | 41-3151-C                | .500             | 2"     | 3/8          |
|                     | 41-3152        | 41-3152-C                | .750             | 2-1/2" | 3/8          |
| 21/64 .328          | 41-3281        | 41-3281-C                | .500             | 2"     | 3/8          |
|                     | 41-3282        | 41-3282-C                | .750             | 2-1/2" | 3/8          |
| 11/32 .344          | 41-3441        | 41-3441-C                | .500             | 2"     | 3/8          |
|                     | 41-3442        | 41-3442-C                | .750             | 2-1/2" | 3/8          |
| 9mm .354            | 41-3541        | 41-3541-C                | .500             | 2"     | 3/8          |
| 23/64 .359          | 41-3591        | 41-3591-C                | .500             | 2"     | 3/8          |
|                     | 41-3592        | 41-3592-C                | .750             | 2-1/2" | 3/8          |
| 3/8 .375            | 41-3751        | 41-3751-C                | .500             | 2"     | 3/8          |
|                     | 41-3752        | 41-3752-C                | .750             | 2-1/2" | 3/8          |
|                     | 41-3753        | 41-3753-C                | 1.000            | 3"     | 3/8          |
|                     | 41-3754        | 41-3754-C                | 1.250            | 3"     | 3/8          |
|                     | 41-3755        | 41-3755-C                | 1.500            | 4"     | 3/8          |
|                     | 41-3756        | 41-3756-C                | 1.750            | 4"     | 3/8          |
| 25/64 .391          | 41-3757        | 41-3757-C                | 2.000            | 4"     | 3/8          |
|                     | 41-3911        | 41-3911-C                | .750             | 2-1/2" | 7/16         |
| 10mm .394           | 41-3912        | 41-3912-C                | 1.000            | 3"     | 7/16         |
|                     | 41-3941        | 41-3941-C                | .750             | 2-1/2" | 7/16         |
| 13/32 .406          | 41-3942        | 41-3942-C                | 1.000            | 3"     | 7/16         |
|                     | 41-4061        | 41-4061-C                | .750             | 2-1/2" | 7/16         |
| 27/64 .422          | 41-4062        | 41-4062-C                | 1.000            | 3"     | 7/16         |
|                     | 41-4221        | 41-4221-C                | .750             | 2-1/2" | 7/16         |
| 11mm .433           | 41-4222        | 41-4222-C                | 1.000            | 3"     | 7/16         |
|                     | 41-4331        | 41-4331-C                | .750             | 2-1/2" | 7/16         |
| 7/16 .437           | 41-4371        | 41-4371-C                | .750             | 2-1/2" | 7/16         |
|                     | 41-4372        | 41-4372-C                | 1.000            | 3"     | 7/16         |
|                     | 41-4373        | 41-4373-C                | 1.800            | 4"     | 7/16         |
| 29/64 .453          | 41-4531        | 41-4531-C                | .750             | 2-1/2" | 1/2          |
|                     | 41-4532        | 41-4532-C                | 1.250            | 3"     | 1/2          |
| 15/32 .469          | 41-4691        | 41-4691-C                | .750             | 2-1/2" | 1/2          |
|                     | 41-4692        | 41-4692-C                | 1.250            | 3"     | 1/2          |
| 12mm .472           | 41-4721        | 41-4721-C                | .750             | 2-1/2" | 1/2          |
|                     | 41-4722        | 41-4722-C                | 1.250            | 3"     | 1/2          |
| 31/64 .484          | 41-4841        | 41-4841-C                | .750             | 2-1/2" | 1/2          |
|                     | 41-4842        | 41-4842-C                | 1.250            | 3"     | 1/2          |
| 1/2 .500            | 41-5001        | 41-5001-C                | .750             | 2-1/2" | 1/2          |
|                     | 41-5002        | 41-5002-C                | 1.000            | 3"     | 1/2          |
|                     | 41-5003        | 41-5003-C                | 1.250            | 3"     | 1/2          |
|                     | 41-5004        | 41-5004-C                | 1.500            | 4"     | 1/2          |
|                     | 41-5005        | 41-5005-C                | 1.750            | 4"     | 1/2          |
|                     | 41-5006        | 41-5006-C                | 2.000            | 4"     | 1/2          |
|                     | 41-5007        | 41-5007-C                | 3.000            | 6"     | 1/2          |
|                     | 41-5008        | 41-5008-C                | 4.000            | 6"     | 1/2          |

THE MOST UNIQUE LINE OF CUTTING TOOLS AVAILABLE



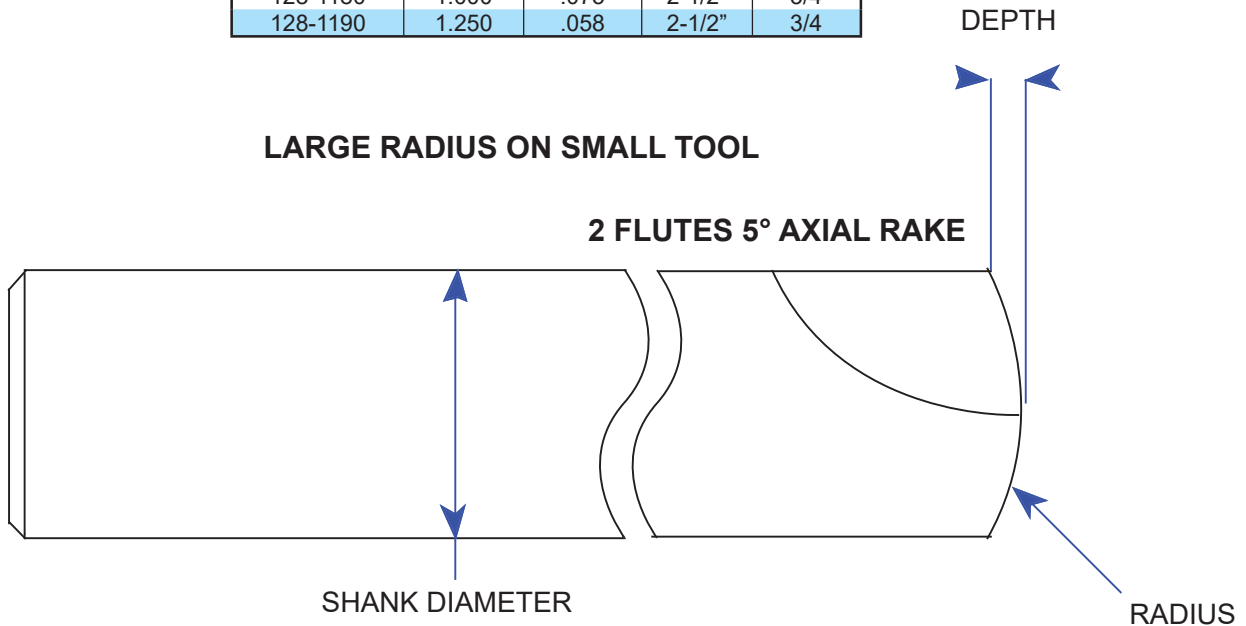
**Carbide Cutting Tools**

**APPLICATION: FOR CUTTING LARGE RADIUS PARTS  
WITH A MORE COST EFFICIENT TOOL DESIGN**

## SOLID CARBIDE

*New!*

| ORDER EDP # | RADIUS | DEPTH | O.A.L. | SHANK DIA |
|-------------|--------|-------|--------|-----------|
| 128-1000    | .250   | .033  | 2"     | 1/4       |
| 128-1010    | .375   | .021  | 2"     | 1/4       |
| 128-1020    | .500   | .016  | 2"     | 1/4       |
| 128-1030    | .625   | .013  | 2"     | 1/4       |
| 128-1040    | .375   | .050  | 2"     | 3/8       |
| 128-1050    | .500   | .036  | 2"     | 3/8       |
| 128-1060    | .625   | .029  | 2"     | 3/8       |
| 128-1070    | .750   | .024  | 2"     | 3/8       |
| 128-1080    | .500   | .067  | 2-1/2" | 1/2       |
| 128-1090    | .625   | .052  | 2-1/2" | 1/2       |
| 128-1100    | .750   | .043  | 2-1/2" | 1/2       |
| 128-1110    | .875   | .036  | 2-1/2" | 1/2       |
| 128-1120    | .625   | .084  | 2-1/2" | 5/8       |
| 128-1130    | .750   | .068  | 2-1/2" | 5/8       |
| 128-1140    | .875   | .058  | 2-1/2" | 5/8       |
| 128-1150    | 1.000  | .050  | 2-1/2" | 5/8       |
| 128-1160    | .750   | .100  | 2-1/2" | 3/4       |
| 128-1170    | .875   | .084  | 2-1/2" | 3/4       |
| 128-1180    | 1.000  | .073  | 2-1/2" | 3/4       |
| 128-1190    | 1.250  | .058  | 2-1/2" | 3/4       |





# ENGRAVING TOOLS

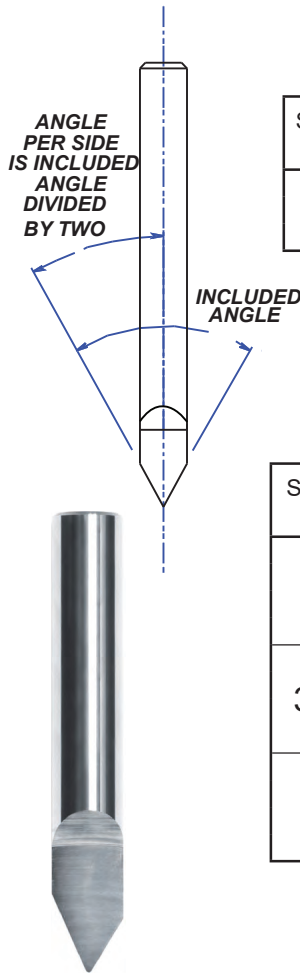
## SERIES 62 ENGRAVING TOOLS

APPLICATION : WE CALL THEM ENGRAVING TOOLS. BUT THEY ARE ALSO USED FOR CHAMFERING, COUNTER SINKING, ETC.

### ENGRAVING TOOLS

**STANDARD POINT**  
TIP DIA APPROX .015  
FASTER FREE CUTTING

| SHANK DIA | TIP INCLUDED ANGLE | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|--------------------|-------------|--------------------|--------|
| 1/8       | 30°                | 62-1095     | 62-1095-C          | 2"     |
|           | 40°                | 62-1100     | 62-1100-C          |        |
|           | 60°                | 62-1105     | 62-1105-C          |        |
|           | 90°                | 62-1110     | 62-1110-C          |        |
|           | 120°               | 62-1115     | 62-1115-C          |        |
| 3/16      | 30°                | 62-1117     | 62-1117-C          | 2-1/2" |
|           | 40°                | 62-1120     | 62-1120-C          |        |
|           | 60°                | 62-1125     | 62-1125-C          |        |
|           | 120°               | 62-1135     | 62-1135-C          |        |
| 1/4       | 30°                | 62-1137     | 62-1137-C          | 2-1/2" |
|           | 40°                | 62-1140     | 62-1140-C          |        |
|           | 60°                | 62-1145     | 62-1145-C          |        |
|           | 120°               | 62-1155     | 62-1155-C          |        |
| 5/16      | 30°                | 62-1157     | 62-1157-C          | 2-1/2" |
|           | 40°                | 62-1160     | 62-1160-C          |        |
|           | 60°                | 62-1162     | 62-1162-C          |        |
|           | 120°               | 62-1167     | 62-1167-C          |        |
| 3/8       | 30°                | 62-1170     | 62-1170-C          | 2-1/2" |
|           | 40°                | 62-1172     | 62-1172-C          |        |
|           | 60°                | 62-1175     | 62-1175-C          |        |
|           | 120°               | 62-1180     | 62-1180-C          |        |
| 1/2       | 30°                | 62-1182     | 62-1182-C          | 3"     |
|           | 40°                | 62-1185     | 62-1185-C          |        |
|           | 60°                | 62-1187     | 62-1187-C          |        |
|           | 120°               | 62-1192     | 62-1192-C          |        |



### FINE POINT

TIP DIA APPROX .002  
SLOWER CUTTING  
FOR VERY FINE CUTS

| SHANK DIA | TIP INCLUDED ANGLE | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|--------------------|-------------|--------------------|--------|
| 1/8       | 40°                | 62-1200     | 62-1200            | 2"     |
|           | 60°                | 62-1205     | 62-1205            |        |
|           | 90°                | 62-1210     | 62-1210            |        |
|           | 120°               | 62-1215     | 62-1215            |        |

### EXTRA LONG

STANDARD POINT  
TIP DIA APPROX .015  
FASTER FREE CUTTING

| SHANK DIA | TIP INCLUDED ANGLE | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|--------------------|-------------|--------------------|--------|
| 1/8       | 40°                | 62-1800     | 62-1800-C          | 4"     |
|           | 60°                | 62-1805     | 62-1805-C          |        |
|           | 90°                | 62-1810     | 62-1810-C          |        |
|           | 120°               | 62-1815     | 62-1815-C          |        |
| 3/16      | 40°                | 62-1820     | 62-1820-C          | 4"     |
|           | 60°                | 62-1825     | 62-1825-C          |        |
|           | 90°                | 62-1830     | 62-1830-C          |        |
|           | 120°               | 62-1835     | 62-1835-C          |        |
| 1/4       | 40°                | 62-1840     | 62-1840-C          | 6"     |
|           | 60°                | 62-1845     | 62-1845-C          |        |
|           | 90°                | 62-1850     | 62-1850-C          |        |
|           | 120°               | 62-1855     | 62-1855-C          |        |

### DOUBLE END

STANDARD POINT DOUBLE TOOL LIFE  
TIP DIA APPROX .015 FASTER FREE CUTTING

| SHANK DIA | TIP INCLUDED ANGLE | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|--------------------|-------------|--------------------|--------|
| 1/8       | 30°                | 62-1400     | 62-1400-C          | 2"     |
|           | 40°                | 62-1402     | 62-1402-C          |        |
|           | 60°                | 62-1405     | 62-1405-C          |        |
|           | 90°                | 62-1410     | 62-1410-C          |        |
|           | 120°               | 62-1415     | 62-1415-C          |        |
| 3/16      | 30°                | 62-1417     | 62-1417-C          | 2-1/2" |
|           | 40°                | 62-1420     | 62-1420-C          |        |
|           | 60°                | 62-1425     | 62-1425-C          |        |
|           | 120°               | 62-1435     | 62-1435-C          |        |
| 1/4       | 30°                | 62-1437     | 62-1437-C          | 2-1/2" |
|           | 40°                | 62-1440     | 62-1440-C          |        |
|           | 60°                | 62-1445     | 62-1445-C          |        |
|           | 90°                | 62-1450     | 62-1450-C          |        |
|           | 120°               | 62-1455     | 62-1455-C          |        |

### SOFT MATERIAL

TIP DIA APPROX .015  
GROUND WITH INCREASED CLEARANCE FOR CUTTING  
ALUM, BRASS, PLASTIC ECT.

| SHANK DIA | TIP INCLUDED ANGLE | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|--------------------|-------------|--------------------|--------|
| 1/8       | 40°                | 62-1500     | 62-1500-C          | 2"     |
|           | 60°                | 62-1505     | 62-1505-C          |        |
|           | 90°                | 62-1510     | 62-1510-C          |        |
| 3/16      | 40°                | 62-1520     | 62-1520-C          | 2-1/2" |
|           | 60°                | 62-1525     | 62-1525-C          |        |
|           | 90°                | 62-1530     | 62-1530-C          |        |
| 1/4       | 40°                | 62-1540     | 62-1540-C          | 2-1/2" |
|           | 60°                | 62-1545     | 62-1545-C          |        |
|           | 90°                | 62-1550     | 62-1550-C          |        |



ITI CARBIDE: FOR THE HIGHEST PRODUCTION

**ITI** Carbide Cutting Tools

# SERIES 62 ENGRAVING TOOLS

# ENGRAVING TOOLS

APPLICATION : FOR ENGRAVING ALL TYPES OF MATERIALS

## New! SPIRAL FLUTE

| SHANK DIA | TIP INCLUDED ANGLE | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|--------------------|-------------|--------------------|--------|
| 1/8       | 40°                | 62-1600     | 62-1600-C          | 2"     |
|           | 60°                | 62-1605     | 62-1605-C          |        |
|           | 90°                | 62-1610     | 62-1610-C          |        |
| 3/16      | 40°                | 62-1615     | 62-1615-C          | 2.5"   |
|           | 60°                | 62-1620     | 62-1620-C          |        |
|           | 90°                | 62-1625     | 62-1625-C          |        |
| 1/4       | 40°                | 62-1630     | 62-1630-C          | 2.5"   |
|           | 60°                | 62-1635     | 62-1635-C          |        |
|           | 90°                | 62-1640     | 62-1640-C          |        |

## CHISEL STYLE New!

| SHANK DIA | TIP INCLUDED ANGLE | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|--------------------|-------------|--------------------|--------|
| 1/8       | 40°                | 62-2400     | 62-2400-C          | 2"     |
|           | 60°                | 62-2405     | 62-2405-C          |        |
|           | 90°                | 62-2410     | 62-2410-C          |        |
| 3/16      | 40°                | 62-2415     | 62-2415-C          | 2.5"   |
|           | 60°                | 62-2420     | 62-2420-C          |        |
|           | 90°                | 62-2425     | 62-2425-C          |        |
| 1/4       | 40°                | 62-2430     | 62-2430-C          | 2.5"   |
|           | 60°                | 62-2435     | 62-2435-C          |        |
|           | 90°                | 62-2440     | 62-2440-C          |        |

## New! RADIUS TIP

| SHANK DIA | TIP INCLUDED ANGLE | TIP RADIUS | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|--------------------|------------|-------------|--------------------|--------|
| 1/8       | 30°                | .005°      | 62-2200     | 62-2200-C          | 2"     |
|           |                    | .010°      | 62-2205     | 62-2205-C          |        |
|           |                    | .015°      | 62-2210     | 62-2210-C          |        |
|           |                    | .020°      | 62-2215     | 62-2215-C          |        |
| 1/8       | 40°                | .005°      | 62-2220     | 62-2220-C          | 2"     |
|           |                    | .010°      | 62-2225     | 62-2225-C          |        |
|           |                    | .015°      | 62-2230     | 62-2230-C          |        |
|           |                    | .020°      | 62-2235     | 62-2235-C          |        |
| 1/8       | 60°                | .005°      | 62-2240     | 62-2240-C          | 2"     |
|           |                    | .010°      | 62-2250     | 62-2250-C          |        |
|           |                    | .015°      | 62-2260     | 62-2260-C          |        |
|           |                    | .020°      | 62-2270     | 62-2270-C          |        |
| 1/8       | 90°                | .005°      | 62-2280     | 62-2280-C          | 2"     |
|           |                    | .010°      | 62-2290     | 62-2290-C          |        |
|           |                    | .015°      | 62-2300     | 62-2300-C          |        |
|           |                    | .020°      | 62-2310     | 62-2310-C          |        |

## 2 FLUTE New!

| TIP INCLUDED ANGLE | SHANK DIA | WEB WIDTH | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|--------------------|-----------|-----------|-------------|--------------------|--------|
| 30°                | 1/8       | .005°     | 62-2600     | 62-2600-C          | 2.0    |
|                    | 3/16      | .005°     | 62-2605     | 62-2605-C          | 2.5    |
|                    | 1/4       | .005°     | 62-2610     | 62-2610-C          | 2.5    |
| 60°                | 1/8       | .005°     | 62-2615     | 62-2615-C          | 2.0    |
|                    | 1/8       | .010°     | 62-2620     | 62-2620-C          | 2.0    |
|                    | 3/16      | .005°     | 62-2625     | 62-2625-C          | 2.5    |
| 90°                | 1/4       | .005°     | 62-2630     | 62-2630-C          | 2.5    |
|                    | 1/8       | .005°     | 62-2635     | 62-2635-C          | 2.0    |
|                    | 1/8       | .010°     | 62-2640     | 62-2640-C          | 2.0    |
| 120°               | 3/16      | .005°     | 62-2650     | 62-2650-C          | 2.5    |
|                    | 1/4       | .005°     | 62-2660     | 62-2660-C          | 2.5    |
|                    | 1/8       | .005°     | 62-2670     | 62-2670-C          | 2.0    |
|                    | 3/16      | .005°     | 62-2680     | 62-2680-C          | 2.5    |
|                    | 1/4       | .005°     | 62-2690     | 62-2690-C          | 2.5    |

## 2 FLUTE BALL END MAX ENGRAVING TOOLS

### New! SINGLE END 60°

| SHANK DIA | RADIUS | ALTIN COATED EDP # | O.A.L. |
|-----------|--------|--------------------|--------|
| 1/8       | .015   | 62-8000            | 2"     |
|           | .030   | 62-8010            |        |
|           | .045   | 62-8020            |        |
| 3/16      | .015   | 62-8030            | 2.5    |
|           | .030   | 62-8040            |        |
|           | .045   | 62-8050            |        |

### NEW MAX ENGRAVING TOOLS

### DOUBLE END 60° New!

| SHANK DIA | RADIUS | ALTIN COATED EDP # | O.A.L. |
|-----------|--------|--------------------|--------|
| 1/8       | .015   | 62-8300            | 2"     |
|           | .030   | 62-8310            |        |
|           | .045   | 62-8320            |        |
| 3/16      | .015   | 62-8330            | 2.5    |
|           | .030   | 62-8340            |        |
|           | .045   | 62-8350            |        |

### New! SINGLE END 90°

| SHANK DIA | RADIUS | ALTIN COATED EDP # | O.A.L. |
|-----------|--------|--------------------|--------|
| 1/8       | .015   | 62-8100            | 2"     |
|           | .030   | 62-8110            |        |
|           | .045   | 62-8120            |        |
| 3/16      | .015   | 62-8130            | 2.5    |
|           | .030   | 62-8140            |        |
|           | .045   | 62-8150            |        |

ALTIN COATING STANDARD

### DOUBLE END 90° New!

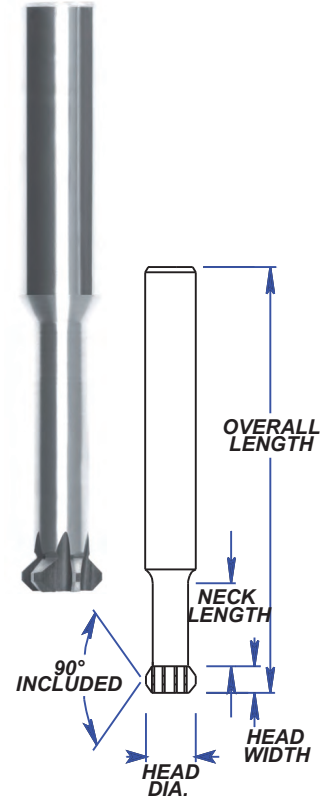
| SHANK DIA | RADIUS | ALTIN COATED EDP # | O.A.L. |
|-----------|--------|--------------------|--------|
| 1/8       | .015   | 62-8400            | 2"     |
|           | .030   | 62-8410            |        |
|           | .045   | 62-8420            |        |
| 3/16      | .015   | 62-8430            | 2.5    |
|           | .030   | 62-8440            |        |
|           | .045   | 62-8450            |        |

# EDGE BREAKERS

# SERIES 65 EDGE BREAKERS

APPLICATION : FOR EDGE BREAKING / CHAMFERING

| HEAD DIA | HEAD WIDTH | NECK DIAMETER | CHAMFER SIZE | NECK LENGTH | ORDER EDP # | ALTN COATED EDP # | SHANK DIA. | OVERALL LENGTH |
|----------|------------|---------------|--------------|-------------|-------------|-------------------|------------|----------------|
| .075     | .040       | .050          | .012         | .187        | 65-1180     | 65-1180-C         | 1/8        | 2"             |
|          |            |               |              | .375        | 65-1185     | 65-1185-C         |            |                |
| .090     | .045       | .060          | .015         | .187        | 65-1190     | 65-1190-C         | 1/8        | 2"             |
|          |            |               |              | .375        | 65-1195     | 65-1195-C         |            |                |
|          |            |               |              | .500        | 65-1197     | 65-1197-C         |            |                |
| .120     | .072       | .075          | .020         | .250        | 65-1200     | 65-1200-C         | 1/8        | 2"             |
|          |            |               |              | .500        | 65-1205     | 65-1205-C         |            |                |
| .180     | .093       | .100          | .032         | .250        | 65-1210     | 65-1210-C         | 3/16       | 2-1/2"         |
|          |            |               |              | .500        | 65-1215     | 65-1215-C         |            |                |
|          |            |               |              | .750        | 65-1220     | 65-1220-C         |            |                |
|          |            |               |              | 1.000       | 65-1225     | 65-1225-C         |            |                |
| .240     | .093       | .165          | .032         | .250        | 65-1230     | 65-1230-C         | 1/4        | 2-1/2"         |
|          |            |               |              | .500        | 65-1235     | 65-1235-C         |            |                |
|          |            |               |              | .750        | 65-1240     | 65-1240-C         |            |                |
|          |            |               |              | 1.000       | 65-1245     | 65-1245-C         |            |                |
| .310     | .093       | .200          | .032         | .250        | 65-1250     | 65-1250-C         | 5/16       | 2-1/2"         |
|          |            |               |              | .500        | 65-1255     | 65-1255-C         |            |                |
|          |            |               |              | .750        | 65-1260     | 65-1260-C         |            |                |
|          |            |               |              | 1.000       | 65-1265     | 65-1265-C         |            |                |
| .360     | .125       | .250          | .046         | .250        | 65-1270     | 65-1270-C         | 3/8        | 2-1/2"         |
|          |            |               |              | .500        | 65-1275     | 65-1275-C         |            |                |
|          |            |               |              | .750        | 65-1280     | 65-1280-C         |            |                |
|          |            |               |              | 1.000       | 65-1285     | 65-1285-C         |            |                |
| .490     | .156       | .350          | .062         | .500        | 65-1290     | 65-1290-C         | 1/2        | 3"             |
|          |            |               |              | .750        | 65-1295     | 65-1295-C         |            |                |
|          |            |               |              | 1.000       | 65-1300     | 65-1300-C         |            |                |

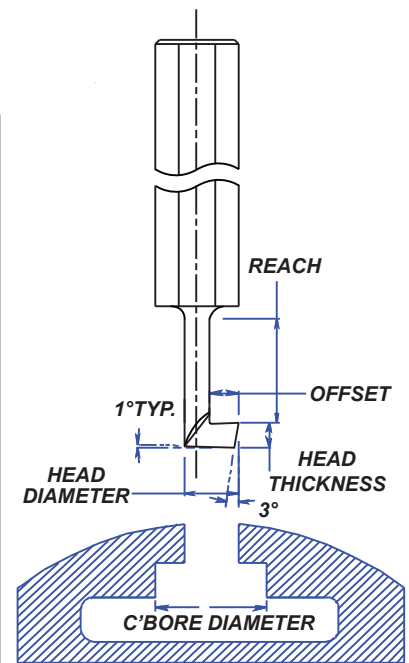


# SERIES 66 CNC BACK-SPOT FACERS

APPLICATION : USED TO CREATE A C'BORE ON THE BACK SIDE OR INSIDE OF A PART USING CIRCULAR INTERPOLATION ON A CNC MILL



| HEAD DIA | OFFSET | MAXIMUM C'BORE DIA | HEAD THICKNESS | REACH | ORDER EDP # | ALTN COATED EDP # | SHANK DIA | OVERALL LENGTH |
|----------|--------|--------------------|----------------|-------|-------------|-------------------|-----------|----------------|
| .135     | .050   | .235               | 3/32           | .375  | 66-1100     | 66-1100-C         | 3/16      | 2-1/2"         |
|          |        |                    |                | .625  | 66-1105     | 66-1105-C         |           |                |
| .180     | .065   | .310               | 3/32           | .375  | 66-1110     | 66-1110-C         | 1/4       | 2-1/2"         |
|          |        |                    |                | .625  | 66-1115     | 66-1115-C         |           |                |
| .225     | .085   | .395               | 1/8            | .500  | 66-1120     | 66-1120-C         | 5/16      | 2-1/2"         |
|          |        |                    |                | .750  | 66-1125     | 66-1125-C         |           |                |
| .270     | .100   | .470               | 1/8            | .500  | 66-1130     | 66-1130-C         | 3/8       | 2-1/2"         |
|          |        |                    |                | .750  | 66-1135     | 66-1135-C         |           |                |
| .370     | .130   | .630               | 1/8            | .500  | 66-1140     | 66-1140-C         | 1/2       | 3"             |
|          |        |                    |                | .750  | 66-1145     | 66-1145-C         |           |                |
|          |        |                    |                | 1.000 | 66-1150     | 66-1150-C         |           |                |
| .435     | .190   | .815               | 5/32           | .500  | 66-1155     | 66-1155-C         | 5/8       | 3-1/2"         |
|          |        |                    |                | .750  | 66-1160     | 66-1160-C         |           |                |
|          |        |                    |                | 1.000 | 66-1165     | 66-1165-C         |           |                |
|          |        |                    |                | 1.250 | 66-1170     | 66-1170-C         |           |                |
| .530     | .225   | .980               | 3/16           | .500  | 66-1175     | 66-1175-C         | 3/4       | 4"             |
|          |        |                    |                | .750  | 66-1180     | 66-1180-C         |           |                |
|          |        |                    |                | 1.000 | 66-1185     | 66-1185-C         |           |                |
|          |        |                    |                | 1.250 | 66-1190     | 66-1190-C         |           |                |



QUALITY TOOLING MADE IN THE USA

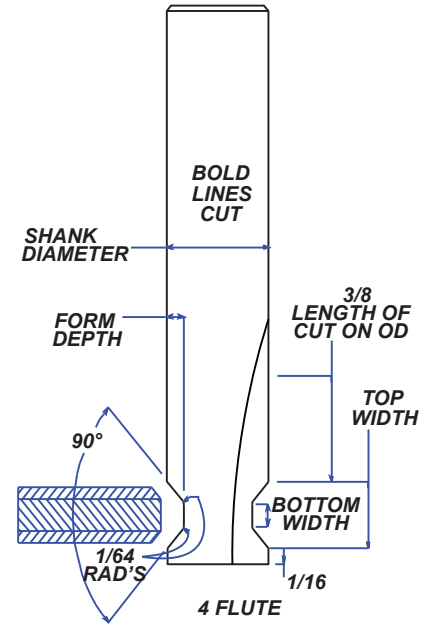
**Carbide Cutting Tools**

# SERIES 72 DOUBLE CHAMFER CUTTERS

# CHAMFER TOOLS

**APPLICATION : FOR CHAMFERING BOTH SIDES OF A PART OR PLATE**

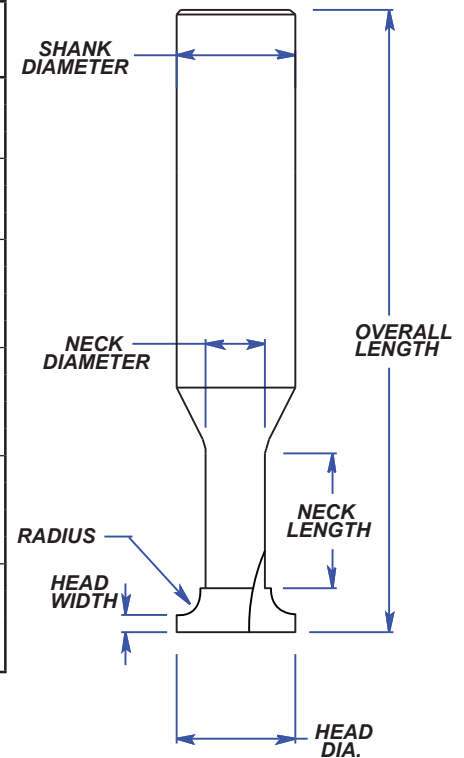
| SHANK DIA | TOP WIDTH | FORM DEPTH | BOTTOM WIDTH | ORDER EDP # | ALTIN COATED EDP # | OVERALL LENGTH |
|-----------|-----------|------------|--------------|-------------|--------------------|----------------|
| .250      | .100      | .044       | .020         | 72-1000     | 72-1000-C          | 2-1/2"         |
| .312      | .135      | .050       | .023         | 72-1020     | 72-1020-C          | 2-1/2"         |
| .375      | .160      | .060       | .028         | 72-1030     | 72-1030-C          | 2-1/2"         |
| .500      | .200      | .080       | .042         | 72-1040     | 72-1040-C          | 3"             |
| .500      | .260      | .080       | .089         | 72-1050     | 72-1050-C          | 3"             |
| .500      | .320      | .080       | .149         | 72-1060     | 72-1060-C          | 3"             |
| .500      | .375      | .080       | .214         | 72-1070     | 72-1070-C          | 3"             |
| .500      | .510      | .080       | .339         | 72-1080     | 72-1080-C          | 3"             |
| .500      | .635      | .080       | .464         | 72-1090     | 72-1090-C          | 3"             |
| .500      | .760      | .100       | .569         | 72-2000     | 72-2000-C          | 4"             |



# SERIES 67 REVERSE CORNER ROUNDERS

**APPLICATION : FOR ROUNDING BACK OR INSIDE CORNERS**

| HEAD DIA. | RADIUS SIZE | NECK DIA | NECK LENGTH | ORDER EDP # | ALTIN COATED EDP # | SHANK DIA | HEAD WIDTH | OVERALL LENGTH |
|-----------|-------------|----------|-------------|-------------|--------------------|-----------|------------|----------------|
| .187      | .031        | .110     | .250        | 67-1400     | 67-1400-C          | 3/16      | 1/16       | 2-1/2"         |
|           |             |          | .500        | 67-1405     | 67-1405-C          |           |            |                |
|           |             |          | .750        | 67-1410     | 67-1410-C          |           |            |                |
| .250      | .047        | .140     | .375        | 67-1415     | 67-1415-C          | 1/4       | 1/16       | 2-1/2"         |
|           |             |          | .625        | 67-1420     | 67-1420-C          |           |            |                |
|           |             |          | .875        | 67-1425     | 67-1425-C          |           |            |                |
| .312      | .062        | .170     | .375        | 67-1430     | 67-1430-C          | 5/16      | 1/16       | 2-1/2"         |
|           |             |          | .625        | 67-1435     | 67-1435-C          |           |            |                |
|           |             |          | .875        | 67-1440     | 67-1440-C          |           |            |                |
| .375      | .093        | .170     | 1.000       | 67-1445     | 67-1445-C          | 3/8       | 3/32       | 2-1/2"         |
|           |             |          | .500        | 67-1450     | 67-1450-C          |           |            |                |
|           |             |          | .750        | 67-1455     | 67-1455-C          |           |            |                |
| .500      | .125        | .230     | 1.000       | 67-1460     | 67-1460-C          | 1/2       | 3/32       | 3"             |
|           |             |          | 1.250       | 67-1465     | 67-1465-C          |           |            |                |
|           |             |          | .500        | 67-1470     | 67-1470-C          |           |            |                |
| .625      | .187        | .230     | .750        | 67-1475     | 67-1475-C          | 5/8       | 3/32       | 3-1/2"         |
|           |             |          | 1.000       | 67-1480     | 67-1480-C          |           |            |                |
|           |             |          | 1.250       | 67-1485     | 67-1485-C          |           |            |                |
|           |             |          | .500        | 67-1490     | 67-1490-C          |           |            |                |
|           |             |          | .750        | 67-1495     | 67-1495-C          |           |            |                |
|           |             |          | 1.000       | 67-1500     | 67-1500-C          |           |            |                |
|           |             |          | 1.250       | 67-1505     | 67-1505-C          |           |            |                |



ITI CARBIDE: HIGH TRANSVERSE RUPTURE STRENGTH

**ITI Carbide Cutting Tools**



# CHAMFERING ENDMILLS

# SERIES 64 SINGLE END CHAMFERMILL

APPLICATION : GROUND WITH POSITIVE  
AXIAL RAKE & CLEARANCE

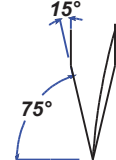
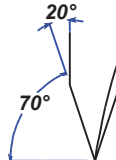
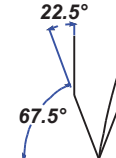
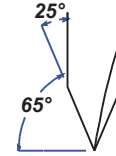
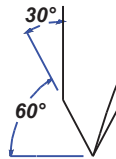
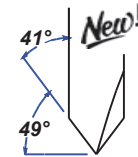
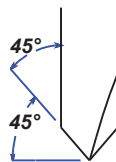
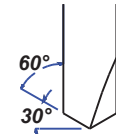


**2 FLUTE SINGLE END  
CHAMFER MILLS**



**4 FLUTE SINGLE END  
CHAMFER MILLS**

| INCLUDED ANGLE                                  | ORDER EDP # | ALTIN COATED EDP # | SHANK DIA. | O.A.L. | ANGLE LENGTH |
|---|-------------|--------------------|------------|--------|--------------|
| <b>150°<br/>2 FLUTE</b><br><b>75° PER SIDE</b>  | 64-2740     | 64-2740            | 1/8        | 2"     | .012         |
|   | 64-2750     | 64-2750            | 3/16       | 2-1/2" | .021         |
|   | 64-2760     | 64-2760            | 1/4        | 2-1/2" | .030         |
|   | 64-2770     | 64-2770            | 5/16       | 2-1/2" | .039         |
|   | 64-2780     | 64-2780            | 3/8        | 2-1/2" | .047         |
|   | 64-2790     | 64-2790            | 1/2        | 3"     | .064         |
| <b>120°<br/>2 FLUTE</b><br><b>60° PER SIDE</b>  | 64-2795     | 64-2795            | 1/8        | 2"     | .035         |
|   | 64-2800     | 64-2800            | 3/16       | 2-1/2" | .050         |
|   | 64-2810     | 64-2810            | 1/4        | 2-1/2" | .060         |
|   | 64-2820     | 64-2820            | 5/16       | 2-1/2" | .090         |
|   | 64-2830     | 64-2830            | 3/8        | 2-1/2" | .105         |
|   | 64-2840     | 64-2840            | 1/2        | 3"     | .140         |
| <b>90°<br/>2 FLUTE</b><br><b>45° PER SIDE</b>   | 64-2845     | 64-2845            | 1/8        | 2"     | .060         |
|   | 64-2850     | 64-2850            | 3/16       | 2-1/2" | .090         |
|   | 64-2860     | 64-2860            | 1/4        | 2-1/2" | .125         |
|   | 64-2870     | 64-2870            | 5/16       | 2-1/2" | .156         |
|   | 64-2880     | 64-2880            | 3/8        | 2-1/2" | .187         |
|   | 64-2890     | 64-2890            | 1/2        | 3"     | .250         |
| <b>82°<br/>2 FLUTE</b><br><b>41° PER SIDE</b>   | 64-2892     | 64-2892            | 1/8        | 2"     | .070         |
|   | 64-2894     | 64-2894            | 3/16       | 2-1/2" | .105         |
|   | 64-2895     | 64-2895            | 1/4        | 2-1/2" | .140         |
|   | 64-2896     | 64-2896            | 5/16       | 2-1/2" | .180         |
|   | 64-2897     | 64-2897            | 3/8        | 2-1/2" | .200         |
|   | 64-2898     | 64-2898            | 1/2        | 3"     | .280         |
| <b>60°<br/>2 FLUTE</b><br><b>30° PER SIDE</b>   | 64-2899     | 64-2899            | 1/8        | 2"     | .105         |
|   | 64-2900     | 64-2900            | 3/16       | 2-1/2" | .160         |
|   | 64-2910     | 64-2910            | 1/4        | 2-1/2" | .200         |
|   | 64-2920     | 64-2920            | 5/16       | 2-1/2" | .270         |
|   | 64-2930     | 64-2930            | 3/8        | 2-1/2" | .312         |
|   | 64-2940     | 64-2940            | 1/2        | 3"     | .420         |
| <b>50°<br/>2 FLUTE</b><br><b>25° PER SIDE</b>   | 64-7210     | 64-7210            | 1/8        | 2"     | .130         |
|   | 64-7215     | 64-7215            | 3/16       | 2-1/2" | .195         |
|   | 64-7220     | 64-7220            | 1/4        | 2-1/2" | .250         |
|   | 64-7225     | 64-7225            | 5/16       | 2-1/2" | .310         |
|   | 64-7230     | 64-7230            | 3/8        | 2-1/2" | .375         |
|   | 64-7235     | 64-7235            | 1/2        | 3"     | .500         |
| <b>45°<br/>2 FLUTE</b><br><b>22.5° PER SIDE</b> | 64-7237     | 64-7237            | 1/8        | 2"     | .145         |
|   | 64-7238     | 64-7238            | 3/16       | 2-1/2" | .220         |
|   | 64-7240     | 64-7240            | 1/4        | 2-1/2" | .280         |
|   | 64-7245     | 64-7245            | 5/16       | 2-1/2" | .350         |
|   | 64-7250     | 64-7250            | 3/8        | 2-1/2" | .430         |
|   | 64-7255     | 64-7255            | 1/2        | 3"     | .580         |
| <b>40°<br/>2 FLUTE</b><br><b>20° PER SIDE</b>   | 64-7257     | 64-7257            | 1/8        | 2"     | .165         |
|   | 64-7258     | 64-7258            | 3/16       | 2-1/2" | .250         |
|   | 64-7260     | 64-7260            | 1/4        | 2-1/2" | .320         |
|   | 64-7265     | 64-7265            | 5/16       | 2-1/2" | .405         |
|   | 64-7270     | 64-7270            | 3/8        | 2-1/2" | .490         |
|   | 64-7275     | 64-7275            | 1/2        | 3"     | .660         |
| <b>30°<br/>2 FLUTE</b><br><b>15° PER SIDE</b>   | 64-7280     | 64-7280            | 1/8        | 2"     | .215         |
|   | 64-7285     | 64-7285            | 3/16       | 2-1/2" | .340         |
|   | 64-7290     | 64-7290            | 1/4        | 2-1/2" | .460         |
|   | 64-7295     | 64-7295            | 5/16       | 2-1/2" | .580         |
|   | 64-7300     | 64-7300            | 3/8        | 2-1/2" | .690         |
|   | 64-7305     | 64-7305            | 1/2        | 3"     | .920         |



| INCLUDED ANGLE                                  | ORDER EDP # | ALTIN COATED EDP # | SHANK DIA. | O.A.L. | ANGLE LENGTH |
|---|-------------|--------------------|------------|--------|--------------|
| <b>150°<br/>4 FLUTE</b><br><b>75° PER SIDE</b>  | 64-4730     | 64-4730-C          | 1/8        | 2"     | .012         |
|   | 64-4740     | 64-4740-C          | 3/16       | 2-1/2" | .021         |
|   | 64-4750     | 64-4750-C          | 1/4        | 2-1/2" | .030         |
|   | 64-4760     | 64-4760-C          | 5/16       | 2-1/2" | .039         |
|   | 64-4780     | 64-4780-C          | 3/8        | 2-1/2" | .047         |
|   | 64-4790     | 64-4790-C          | 1/2        | 3"     | .064         |
| <b>120°<br/>4 FLUTE</b><br><b>60° PER SIDE</b>  | 64-4795     | 64-4795-C          | 1/8        | 2"     | .035         |
|   | 64-4800     | 64-4800-C          | 3/16       | 2-1/2" | .050         |
|   | 64-4810     | 64-4810-C          | 1/4        | 2-1/2" | .060         |
|   | 64-4820     | 64-4820-C          | 5/16       | 2-1/2" | .090         |
|   | 64-4830     | 64-4830-C          | 3/8        | 2-1/2" | .105         |
|   | 64-4840     | 64-4840-C          | 1/2        | 3"     | .140         |
| <b>90°<br/>4 FLUTE</b><br><b>45° PER SIDE</b>   | 64-4845     | 64-4845-C          | 1/8        | 2"     | .060         |
|   | 64-4850     | 64-4850-C          | 3/16       | 2-1/2" | .090         |
|   | 64-4860     | 64-4860-C          | 1/4        | 2-1/2" | .125         |
|   | 64-4870     | 64-4870-C          | 5/16       | 2-1/2" | .156         |
|   | 64-4880     | 64-4880-C          | 3/8        | 2-1/2" | .187         |
|   | 64-4890     | 64-4890-C          | 1/2        | 3"     | .250         |
| <b>82°<br/>4 FLUTE</b><br><b>41° PER SIDE</b>   | 64-4891     | 64-4891-C          | 1/8        | 2"     | .070         |
|   | 64-4892     | 64-4892-C          | 3/16       | 2-1/2" | .105         |
|   | 64-4893     | 64-4893-C          | 1/4        | 2-1/2" | .140         |
|   | 64-4894     | 64-4894-C          | 5/16       | 2-1/2" | .180         |
|   | 64-4895     | 64-4895-C          | 3/8        | 2-1/2" | .200         |
|   | 64-4896     | 64-4896-C          | 1/2        | 3"     | .280         |
| <b>60°<br/>4 FLUTE</b><br><b>30° PER SIDE</b>   | 64-4898     | 64-4898-C          | 1/8        | 2"     | .105         |
|   | 64-4900     | 64-4900-C          | 3/16       | 2-1/2" | .160         |
|   | 64-4910     | 64-4910-C          | 1/4        | 2-1/2" | .200         |
|   | 64-4920     | 64-4920-C          | 5/16       | 2-1/2" | .270         |
|   | 64-4930     | 64-4930-C          | 3/8        | 2-1/2" | .312         |
|   | 64-4940     | 64-4940-C          | 1/2        | 3"     | .420         |
| <b>50°<br/>4 FLUTE</b><br><b>25° PER SIDE</b>   | 64-7380     | 64-7380-C          | 1/8        | 2"     | .130         |
|   | 64-7390     | 64-7390-C          | 3/16       | 2-1/2" | .195         |
|   | 64-7400     | 64-7400-C          | 1/4        | 2-1/2" | .250         |
|   | 64-7402     | 64-7402-C          | 5/16       | 2-1/2" | .310         |
|   | 64-7410     | 64-7410-C          | 3/8        | 2-1/2" | .375         |
|   | 64-7415     | 64-7415-C          | 1/2        | 3"     | .500         |
| <b>45°<br/>4 FLUTE</b><br><b>22.5° PER SIDE</b> | 64-7416     | 64-7416-C          | 1/8        | 2"     | .145         |
|   | 64-7418     | 64-7418-C          | 3/16       | 2-1/2" | .220         |
|   | 64-7420     | 64-7420-C          | 1/4        | 2-1/2" | .280         |
|   | 64-7425     | 64-7425-C          | 5/16       | 2-1/2" | .350         |
|   | 64-7430     | 64-7430-C          | 3/8        | 2-1/2" | .430         |
|   | 64-7435     | 64-7435-C          | 1/2        | 3"     | .580         |
| <b>40°<br/>4 FLUTE</b><br><b>20° PER SIDE</b>   | 64-7438     | 64-7438-C          | 1/8        | 2"     | .165         |
|   | 64-7439     | 64-7439-C          | 3/16       | 2-1/2" | .250         |
|   | 64-7440     | 64-7440-C          | 1/4        | 2-1/2" | .320         |
|   | 64-7445     | 64-7445-C          | 5/16       | 2-1/2" | .405         |
|   | 64-7450     | 64-7450-C          | 3/8        | 2-1/2" | .490         |
|   | 64-7455     | 64-7455-C          | 1/2        | 3"     | .660         |
| <b>30°<br/>4 FLUTE</b><br><b>15° PER SIDE</b>   | 64-7460     | 64-7460-C          | 1/8        | 2"     | .215         |
|   | 64-7465     | 64-7465-C          | 3/16       | 2-1/2" | .340         |
|   | 64-7470     | 64-7470-C          | 1/4        | 2-1/2" | .460         |
|   | 64-7475     | 64-7475-C          | 5/16       | 2-1/2" | .580         |
|   | 64-7480     | 64-7480-C          | 3/8        | 2-1/2" | .690         |
|   | 64-7485     | 64-7485-C          | 1/2        | 3"     | .920         |

# SERIES 64 LONG SINGLE END CHAMFERMILL

# CHAMFERING ENDMILLS

APPLICATION : GROUND WITH POSITIVE AXIAL RAKE & CLEARANCE



**2 FLUTE LONG REACH  
CHAMFER MILLS**

| INCLUDED ANGLE                  | ORDER EDP # | ALTIN COATED EDP # | SHANK DIA | O.A.L. | ANGLE LENGTH |
|---------------------------------|-------------|--------------------|-----------|--------|--------------|
| 120°<br>2 FLUTE<br>60° PER SIDE | 64-6800     | 64-6800-C          | 3/16      | 4"     | .050         |
|                                 | 64-6810     | 64-6810-C          | 1/4       | 4"     | .060         |
|                                 | 64-6820     | 64-6820-C          | 5/16      | 4"     | .090         |
|                                 | 64-6830     | 64-6830-C          | 3/8       | 6"     | .105         |
|                                 | 64-6840     | 64-6840-C          | 1/2       | 6"     | .140         |
| 90°<br>2 FLUTE<br>45° PER SIDE  | 64-6850     | 64-6850-C          | 3/16      | 4"     | .090         |
|                                 | 64-6860     | 64-6860-C          | 1/4       | 4"     | .125         |
|                                 | 64-6870     | 64-6870-C          | 5/16      | 4"     | .156         |
|                                 | 64-6880     | 64-6880-C          | 3/8       | 6"     | .187         |
|                                 | 64-6890     | 64-6890-C          | 1/2       | 6"     | .250         |
| 60°<br>2 FLUTE<br>30° PER SIDE  | 64-6900     | 64-6900-C          | 3/16      | 4"     | .160         |
|                                 | 64-6910     | 64-6910-C          | 1/4       | 4"     | .200         |
|                                 | 64-6920     | 64-6920-C          | 5/16      | 4"     | .270         |
|                                 | 64-6930     | 64-6930-C          | 3/8       | 6"     | .312         |
|                                 | 64-6940     | 64-6940-C          | 1/2       | 6"     | .420         |



**4 FLUTE LONG REACH  
CHAMFER MILLS**

| INCLUDED ANGLE                  | ORDER EDP # | ALTIN COATED EDP # | SHANK DIA | O.A.L. | ANGLE LENGTH |
|---------------------------------|-------------|--------------------|-----------|--------|--------------|
| 120°<br>4 FLUTE<br>60° PER SIDE | 64-8800     | 64-8800-C          | 3/16      | 4"     | .050         |
|                                 | 64-8810     | 64-8810-C          | 1/4       | 4"     | .060         |
|                                 | 64-8820     | 64-8820-C          | 5/16      | 4"     | .090         |
|                                 | 64-8830     | 64-8830-C          | 3/8       | 6"     | .105         |
|                                 | 64-8840     | 64-8840-C          | 1/2       | 6"     | .140         |
| 90°<br>4 FLUTE<br>45° PER SIDE  | 64-8850     | 64-8850-C          | 3/16      | 4"     | .090         |
|                                 | 64-8860     | 64-8860-C          | 1/4       | 4"     | .125         |
|                                 | 64-8870     | 64-8870-C          | 5/16      | 4"     | .156         |
|                                 | 64-8880     | 64-8880-C          | 3/8       | 6"     | .187         |
|                                 | 64-8890     | 64-8890-C          | 1/2       | 6"     | .250         |
| 60°<br>4 FLUTE<br>30° PER SIDE  | 64-8900     | 64-8900-C          | 3/16      | 4"     | .160         |
|                                 | 64-8910     | 64-8910-C          | 1/4       | 4"     | .200         |
|                                 | 64-8920     | 64-8920-C          | 5/16      | 4"     | .270         |
|                                 | 64-8930     | 64-8930-C          | 3/8       | 6"     | .312         |
|                                 | 64-8940     | 64-8940-C          | 1/2       | 6"     | .420         |

## LONG DOUBLE END CHAMFERMILL

APPLICATION : GROUND WITH POSITIVE AXIAL RAKE & CLEARANCE

*New!*

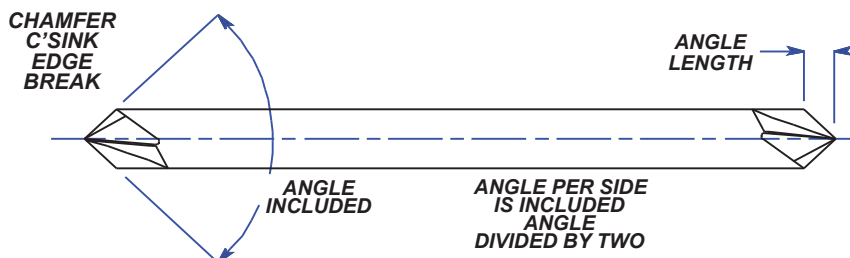
**2 FLUTE LONG REACH  
CHAMFER MILLS**

| INCLUDED ANGLE                  | ORDER EDP # | ALTIN COATED EDP # | SHANK DIA | O.A.L. | ANGLE LENGTH |
|---------------------------------|-------------|--------------------|-----------|--------|--------------|
| 120°<br>2 FLUTE<br>60° PER SIDE | 64-9000     | 64-9000-C          | 3/16      | 4"     | .050         |
|                                 | 64-9010     | 64-9010-C          | 1/4       | 4"     | .060         |
|                                 | 64-9020     | 64-9020-C          | 5/16      | 4"     | .090         |
|                                 | 64-9030     | 64-9030-C          | 3/8       | 6"     | .105         |
|                                 | 64-9040     | 64-9040-C          | 1/2       | 6"     | .140         |
| 90°<br>2 FLUTE<br>45° PER SIDE  | 64-9050     | 64-9050-C          | 3/16      | 4"     | .090         |
|                                 | 64-9060     | 64-9060-C          | 1/4       | 4"     | .125         |
|                                 | 64-9070     | 64-9070-C          | 5/16      | 4"     | .156         |
|                                 | 64-9080     | 64-9080-C          | 3/8       | 6"     | .187         |
|                                 | 64-9090     | 64-9090-C          | 1/2       | 6"     | .250         |
| 60°<br>2 FLUTE<br>30° PER SIDE  | 64-9100     | 64-9100-C          | 3/16      | 4"     | .160         |
|                                 | 64-9110     | 64-9110-C          | 1/4       | 4"     | .200         |
|                                 | 64-9120     | 64-9120-C          | 5/16      | 4"     | .270         |
|                                 | 64-9130     | 64-9130-C          | 3/8       | 6"     | .312         |
|                                 | 64-9140     | 64-9140-C          | 1/2       | 6"     | .420         |

*New!*

**4 FLUTE LONG REACH  
CHAMFER MILLS**

| INCLUDED ANGLE                  | ORDER EDP # | ALTIN COATED EDP # | SHANK DIA | O.A.L. | ANGLE LENGTH |
|---------------------------------|-------------|--------------------|-----------|--------|--------------|
| 120°<br>4 FLUTE<br>60° PER SIDE | 64-9150     | 64-9150-C          | 3/16      | 4"     | .050         |
|                                 | 64-9160     | 64-9160-C          | 1/4       | 4"     | .060         |
|                                 | 64-9170     | 64-9170-C          | 5/16      | 4"     | .090         |
|                                 | 64-9180     | 64-9180-C          | 3/8       | 6"     | .105         |
|                                 | 64-9190     | 64-9190-C          | 1/2       | 6"     | .140         |
| 90°<br>4 FLUTE<br>45° PER SIDE  | 64-9200     | 64-9200-C          | 3/16      | 4"     | .090         |
|                                 | 64-9210     | 64-9210-C          | 1/4       | 4"     | .125         |
|                                 | 64-9220     | 64-9220-C          | 5/16      | 4"     | .156         |
|                                 | 64-9230     | 64-9230-C          | 3/8       | 6"     | .187         |
|                                 | 64-9240     | 64-9240-C          | 1/2       | 6"     | .250         |
| 60°<br>4 FLUTE<br>30° PER SIDE  | 64-9250     | 64-9250-C          | 3/16      | 4"     | .160         |
|                                 | 64-9260     | 64-9260-C          | 1/4       | 4"     | .200         |
|                                 | 64-9270     | 64-9270-C          | 5/16      | 4"     | .270         |
|                                 | 64-9280     | 64-9280-C          | 3/8       | 6"     | .312         |
|                                 | 64-9290     | 64-9290-C          | 1/2       | 6"     | .420         |



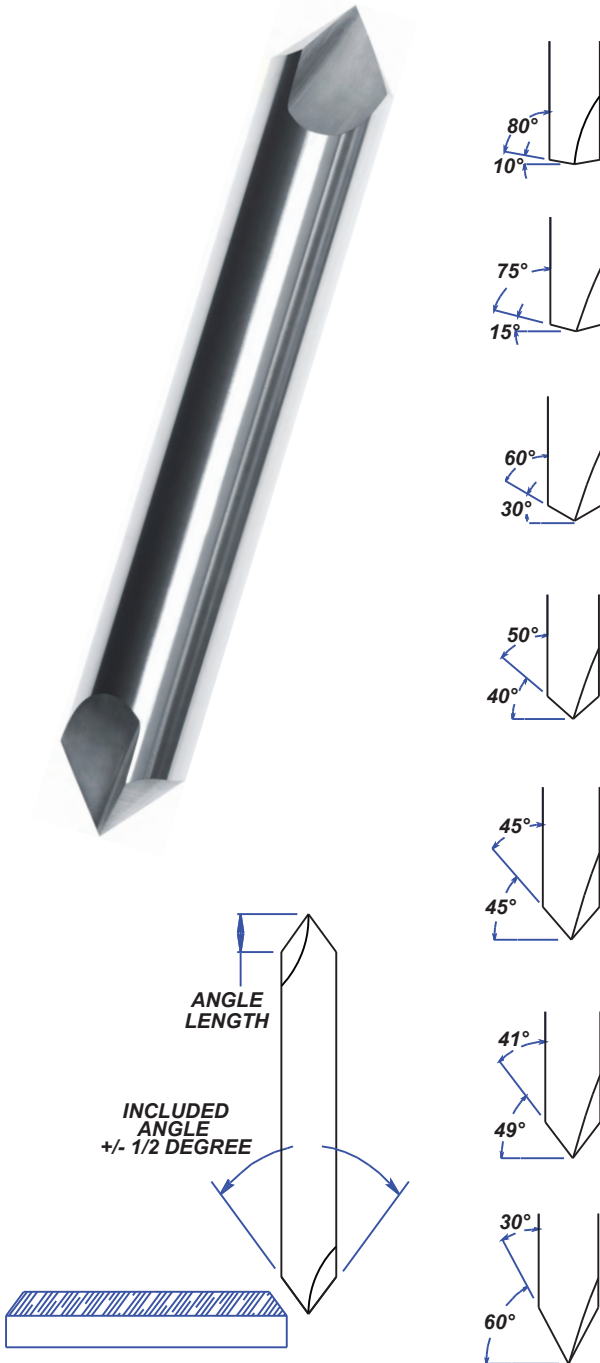
# CHAMFERING ENDMILLS

## SERIES 64 2 FLUTE DOUBLE END CHAMFER MILL

APPLICATION : GROUND WITH POSITIVE AXIAL RAKE & CLEARANCE PRIMARILY FOR ALUMINUM & SOFTER MATERIALS

- CHAMFER
- C'SINK
- EDGE BREAK

### 2 FLUTE DOUBLE END CHAMFER MILLS



| INCLUDED ANGLE                  | ORDER EDP # | ALTiN COATED EDP # | SHANK DIA | O.A.L. | ANGLE LENGTH |
|---------------------------------|-------------|--------------------|-----------|--------|--------------|
| 160°<br>2 FLUTE<br>80° PER SIDE | 64-1115     | 64-1115-C          | 1/8       | 2"     | .007         |
|                                 | 64-1120     | 64-1120-C          | 3/16      | 2-1/2" | .012         |
|                                 | 64-1125     | 64-1125-C          | 1/4       | 2-1/2" | .019         |
|                                 | 64-1130     | 64-1130-C          | 5/16      | 2-1/2" | .025         |
|                                 | 64-1135     | 64-1135-C          | 3/8       | 2-1/2" | .030         |
| 64-1140                         | 64-1140-C   | 1/2                | 3"        | .040   |              |
| 150°<br>2 FLUTE<br>75° PER SIDE | 64-1145     | 64-1145-C          | 1/8       | 2"     | .012         |
|                                 | 64-1150     | 64-1150-C          | 3/16      | 2-1/2" | .021         |
|                                 | 64-1155     | 64-1155-C          | 1/4       | 2-1/2" | .030         |
|                                 | 64-1160     | 64-1160-C          | 5/16      | 2-1/2" | .039         |
|                                 | 64-1165     | 64-1165-C          | 3/8       | 2-1/2" | .047         |
| 64-1170                         | 64-1170-C   | 1/2                | 3"        | .064   |              |
| 120°<br>2 FLUTE<br>60° PER SIDE | 64-1175     | 64-1175-C          | 1/8       | 2"     | .035         |
|                                 | 64-1180     | 64-1180-C          | 3/16      | 2-1/2" | .050         |
|                                 | 64-1200     | 64-1200-C          | 1/4       | 2-1/2" | .060         |
|                                 | 64-1203     | 64-1203-C          | 5/16      | 2-1/2" | .090         |
|                                 | 64-1205     | 64-1205-C          | 3/8       | 2-1/2" | .105         |
| 64-1210                         | 64-1210-C   | 1/2                | 3"        | .140   |              |
| 64-1211                         | 64-1211-C   | 5/8                | 3-1/2"    | .180   |              |
| 100°<br>2 FLUTE<br>50° PER SIDE | 64-2200     | 64-2200-C          | 1/8       | 2"     | .050         |
|                                 | 64-2205     | 64-2205-C          | 3/16      | 2-1/2" | .075         |
|                                 | 64-2210     | 64-2210-C          | 1/4       | 2-1/2" | .100         |
|                                 | 64-2215     | 64-2215-C          | 5/16      | 2-1/2" | .130         |
|                                 | 64-2220     | 64-2220-C          | 3/8       | 2-1/2" | .155         |
| 64-2225                         | 64-2225-C   | 1/2                | 3"        | .205   |              |
| 64-2230                         | 64-2230-C   | 5/8                | 3-1/2"    | .260   |              |
| 90°<br>2 FLUTE<br>45° PER SIDE  | 64-1212     | 64-1212-C          | 1/8       | 2"     | .060         |
|                                 | 64-1213     | 64-1213-C          | 3/16      | 2-1/2" | .090         |
|                                 | 64-1215     | 64-1215-C          | 1/4       | 2-1/2" | .125         |
|                                 | 64-1217     | 64-1217-C          | 5/16      | 2-1/2" | .156         |
|                                 | 64-1220     | 64-1220-C          | 3/8       | 2-1/2" | .187         |
| 64-1225                         | 64-1225-C   | 1/2                | 3"        | .250   |              |
| 64-1226                         | 64-1226-C   | 5/8                | 3-1/2"    | .310   |              |
| 64-1229                         | 64-1229-C   | 3/4                | 4"        | .370   |              |
| 64-1231                         | 64-1231-C   | 1                  | 4"        | .490   |              |
| 82°<br>2 FLUTE<br>41° PER SIDE  | 64-1224     | 64-1224-C          | 1/8       | 2"     | .070         |
|                                 | 64-1227     | 64-1227-C          | 3/16      | 2-1/2" | .105         |
|                                 | 64-1230     | 64-1230-C          | 1/4       | 2-1/2" | .140         |
|                                 | 64-1232     | 64-1232-C          | 5/16      | 2-1/2" | .180         |
|                                 | 64-1235     | 64-1235-C          | 3/8       | 2-1/2" | .200         |
| 64-1240                         | 64-1240-C   | 1/2                | 3"        | .280   |              |
| 64-1241                         | 64-1241-C   | 5/8                | 3-1/2"    | .350   |              |
| 60°<br>2 FLUTE<br>30° PER SIDE  | 64-1239     | 64-1239-C          | 1/8       | 2"     | .105         |
|                                 | 64-1242     | 64-1242-C          | 3/16      | 2-1/2" | .160         |
|                                 | 64-1245     | 64-1245-C          | 1/4       | 2-1/2" | .200         |
|                                 | 64-1247     | 64-1247-C          | 5/16      | 2-1/2" | .270         |
|                                 | 64-1250     | 64-1250-C          | 3/8       | 2-1/2" | .312         |
| 64-1255                         | 64-1255-C   | 1/2                | 3"        | .420   |              |
| 64-1260                         | 64-1260-C   | 5/8                | 3-1/2"    | .540   |              |

UN-MATCHED TOOL VARIETY

 Carbide Cutting Tools

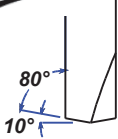
# SERIES 64 4 FLUTE DOUBLE END CHAMFER MILL

# CHAMFERING ENDMILLS

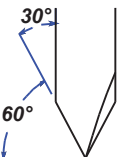
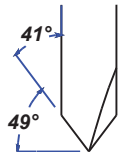
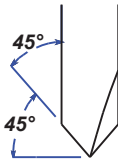
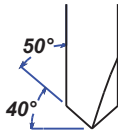
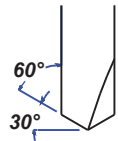
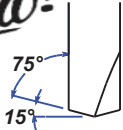
APPLICATION : GROUND WITH RAKE & CLEARANCE FOR STEEL & TOUGHER MATERIALS

## 4 FLUTE DOUBLE END CHAMFER MILLS

**New!**

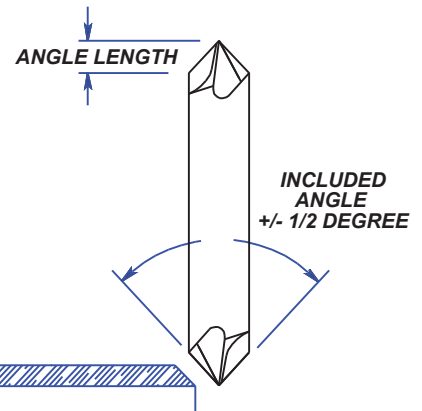


**New!**



| INCLUDED ANGLE                  | EDP #   | ALTIN COATED EDP # | SHANK DIA | O.A.L. | ANGLE LENGTH |
|---------------------------------|---------|--------------------|-----------|--------|--------------|
| 160°<br>4 FLUTE<br>80° PER SIDE | 64-1330 | 64-1330-C          | 1/8       | 2"     | .007         |
|                                 | 64-1335 | 64-1335-C          | 3/16      | 2-1/2" | .012         |
|                                 | 64-1340 | 64-1340-C          | 1/4       | 2-1/2" | .019         |
|                                 | 64-1345 | 64-1345-C          | 5/16      | 2-1/2" | .025         |
|                                 | 64-1350 | 64-1350-C          | 3/8       | 2-1/2" | .030         |
|                                 | 64-1355 | 64-1355-C          | 1/2       | 3"     | .040         |
| 150°<br>4 FLUTE<br>75° PER SIDE | 64-1360 | 64-1360-C          | 1/8       | 2"     | .012         |
|                                 | 64-1365 | 64-1365-C          | 3/16      | 2-1/2" | .021         |
|                                 | 64-1370 | 64-1370-C          | 1/4       | 2-1/2" | .030         |
|                                 | 64-1375 | 64-1375-C          | 5/16      | 2-1/2" | .039         |
|                                 | 64-1380 | 64-1380-C          | 3/8       | 2-1/2" | .047         |
|                                 | 64-1385 | 64-1385-C          | 1/2       | 3"     | .064         |
| 120°<br>4 FLUTE<br>60° PER SIDE | 64-1390 | 64-1390-C          | 1/8       | 2"     | .035         |
|                                 | 64-1395 | 64-1395-C          | 3/16      | 2-1/2" | .050         |
|                                 | 64-1400 | 64-1400-C          | 1/4       | 2-1/2" | .060         |
|                                 | 64-1403 | 64-1403-C          | 5/16      | 2-1/2" | .090         |
|                                 | 64-1405 | 64-1405-C          | 3/8       | 2-1/2" | .105         |
|                                 | 64-1410 | 64-1410-C          | 1/2       | 3"     | .140         |
|                                 | 64-1411 | 64-1411-C          | 5/8       | 3-1/2" | .180         |
| 100°<br>4 FLUTE<br>50° PER SIDE | 64-4400 | 64-4400-C          | 1/8       | 2"     | .050         |
|                                 | 64-4405 | 64-4405-C          | 3/16      | 2-1/2" | .075         |
|                                 | 64-4410 | 64-4410-C          | 1/4       | 2-1/2" | .100         |
|                                 | 64-4415 | 64-4415-C          | 5/16      | 2-1/2" | .130         |
|                                 | 64-4420 | 64-4420-C          | 3/8       | 2-1/2" | .155         |
|                                 | 64-4425 | 64-4425-C          | 1/2       | 3"     | .205         |
|                                 | 64-4430 | 64-4430-C          | 5/8       | 3-1/2" | .260         |
| 90°<br>4 FLUTE<br>45° PER SIDE  | 64-1412 | 64-1412-C          | 1/8       | 2"     | .060         |
|                                 | 64-1413 | 64-1413-C          | 3/16      | 2-1/2" | .090         |
|                                 | 64-1415 | 64-1415-C          | 1/4       | 2-1/2" | .125         |
|                                 | 64-1417 | 64-1417-C          | 5/16      | 2-1/2" | .156         |
|                                 | 64-1420 | 64-1420-C          | 3/8       | 2-1/2" | .187         |
|                                 | 64-1425 | 64-1425-C          | 1/2       | 3"     | .250         |
|                                 | 64-1426 | 64-1426-C          | 5/8       | 3-1/2" | .310         |
|                                 | 64-1429 | 64-1429-C          | 3/4       | 4"     | .370         |
|                                 | 64-1431 | 64-1431-C          | 1         | 4"     | .490         |
| 82°<br>4 FLUTE<br>41° PER SIDE  | 64-1424 | 64-1424-C          | 1/8       | 2"     | .070         |
|                                 | 64-1427 | 64-1427-C          | 3/16      | 2-1/2" | .105         |
|                                 | 64-1430 | 64-1430-C          | 1/4       | 2-1/2" | .140         |
|                                 | 64-1432 | 64-1432-C          | 5/16      | 2-1/2" | .180         |
|                                 | 64-1435 | 64-1435-C          | 3/8       | 2-1/2" | .200         |
|                                 | 64-1440 | 64-1440-C          | 1/2       | 3"     | .280         |
|                                 | 64-1441 | 64-1441-C          | 5/8       | 3-1/2" | .350         |
| 60°<br>4 FLUTE<br>30° PER SIDE  | 64-1439 | 64-1439-C          | 1/8       | 2"     | .105         |
|                                 | 64-1442 | 64-1442-C          | 3/16      | 2-1/2" | .160         |
|                                 | 64-1445 | 64-1445-C          | 1/4       | 2-1/2" | .200         |
|                                 | 64-1447 | 64-1447-C          | 5/16      | 2-1/2" | .270         |
|                                 | 64-1450 | 64-1450-C          | 3/8       | 2-1/2" | .312         |
|                                 | 64-1455 | 64-1455-C          | 1/2       | 3"     | .420         |
|                                 | 64-1460 | 64-1460-C          | 5/8       | 3-1/2" | .540         |

- CHAMFER
- C'SINK
- EDGE BREAK





# CORNER ROUNDING ENDMILLS

# SERIES 68 CORNER ROUNDING ENDMILLS

**APPLICATION : USE IN TIGHT SPOTS WHERE THE TIP DIA NEEDS TO BE SMALLER OR IN SOFTER MATERIALS THAT CAN TAKE HIGHER RPM'S**

## 2 FLUTE DOUBLE END

| SHANK DIA     | RADIUS SIZE   | MINOR DIA | ORDER EDP # | ALTIN COATED EDP # | O.A.L. | SHANK DIA | RADIUS SIZE   | MINOR DIA | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|---------------|---------------|-----------|-------------|--------------------|--------|-----------|---------------|-----------|-------------|--------------------|--------|
| 1/8           | .0050         | .040      | 68-1500     | 68-1500-C          | 2"     | 1/4       | .0781 (5/64)  | .040      | 68-1605     | 68-1605-C          | 2-1/2" |
|               | .0079 (0.2MM) | .040      | 68-1505     | 68-1505-C          |        |           | .0787 (2.0MM) | .040      | 68-1610     | 68-1610-C          |        |
|               | .0100         | .040      | 68-1510     | 68-1510-C          |        |           | .0938 (3/32)  | .040      | 68-1615     | 68-1615-C          |        |
|               | .0118 (0.3MM) | .040      | 68-1515     | 68-1515-C          |        |           | .0984 (2.5MM) | .040      | 68-1620     | 68-1620-C          |        |
|               | .0150         | .040      | 68-1520     | 68-1520-C          |        | 5/16      | .1094 (7/64)  | .055      | 68-1625     | 68-1625-C          | 2-1/2" |
|               | .0157 (0.4MM) | .040      | 68-1525     | 68-1525-C          |        |           | .1181 (3.0MM) | .055      | 68-1630     | 68-1630-C          |        |
|               | .0197 (0.5MM) | .040      | 68-1530     | 68-1530-C          |        |           | .1250 (1/8)   | .055      | 68-1635     | 68-1635-C          |        |
|               | .0200         | .040      | 68-1535     | 68-1535-C          |        | 3/8       | .1378 (3.5MM) | .055      | 68-1640     | 68-1640-C          | 2-1/2" |
|               | .0236 (0.6MM) | .040      | 68-1540     | 68-1540-C          |        |           | .1406 (9/64)  | .055      | 68-1645     | 68-1645-C          |        |
|               | .0250         | .040      | 68-1545     | 68-1545-C          |        |           | .1562 (5/32)  | .055      | 68-1650     | 68-1650-C          |        |
|               | .0276 (0.7MM) | .040      | 68-1550     | 68-1550-C          |        |           | .1575 (4.0MM) | .055      | 68-1655     | 68-1655-C          |        |
|               | .0300         | .040      | 68-1555     | 68-1555-C          |        | 1/2       | .1719 (11/64) | .055      | 68-1660     | 68-1660-C          | 3"     |
|               | .0312 (1/32)  | .040      | 68-1560     | 68-1560-C          |        |           | .1772 (4.5MM) | .055      | 68-1665     | 68-1665-C          |        |
|               | .0315 (0.8MM) | .040      | 68-1565     | 68-1565-C          |        |           | .1875 (3/16)  | .055      | 68-1670     | 68-1670-C          |        |
| .0354 (0.9MM) | .040          | 68-1570   | 68-1570-C   | .1969 (5.0MM)      | .055   |           | 68-1675       | 68-1675-C |             |                    |        |
| .0394 (1.0MM) | .040          | 68-1575   | 68-1575-C   | .2031 (13/64)      | .055   |           | 68-1680       | 68-1680-C |             |                    |        |
| .0469 (3/64)  | .040          | 68-1580   | 68-1580-C   | .2165 (5.5MM)      | .055   |           | 68-1685       | 68-1685-C |             |                    |        |
| 3/16          | .0500         | .040      | 68-1585     | 68-1585-C          | 2"     | 5/8       | .2188 (7/32)  | .055      | 68-1690     | 68-1690-C          | 3-1/2" |
|               | .0591 (1.5MM) | .040      | 68-1590     | 68-1590-C          |        |           | .2344 (15/64) | .105      | 68-1695     | 68-1695-C          |        |
|               | .0600         | .040      | 68-1595     | 68-1595-C          |        |           | .2362 (6.0MM) | .105      | 68-1700     | 68-1700-C          |        |
|               | .0625 (1/16)  | .040      | 68-1600     | 68-1600-C          |        |           | .2500 (1/4)   | .105      | 68-1705     | 68-1705-C          |        |



## SERIES 170 LONG REACH ENDMILLS

**APPLICATION : LONGER REACH  
THAN NORMAL CORNER ROUNDING  
ENDMILLS**

## 3 FLUTE SINGLE END CORNER ROUNDING ENDMILLS



| SHANK DIA | RADIUS SIZE   | MINOR DIA | ORDER EDP # | ALTIN COATED EDP # | O.A.L. | SHANK DIA    | RADIUS SIZE   | MINOR DIA | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|---------------|-----------|-------------|--------------------|--------|--------------|---------------|-----------|-------------|--------------------|--------|
| 1/8       | .0100         | .100      | 170-1000    | 170-1000-C         | 3"     | 3/8          | .0781 (5/64)  | .115      | 170-1160    | 170-1160-C         | 4"     |
|           | .0156 (1/64)  | .090      | 170-1010    | 170-1010-C         |        |              | .0787 (2MM)   | .115      | 170-1170    | 170-1170-C         |        |
|           | .0200         | .080      | 170-1020    | 170-1020-C         |        |              | .0938 (3/32)  | .115      | 170-1180    | 170-1180-C         |        |
|           | .0312 (1/32)  | .060      | 170-1030    | 170-1030-C         |        |              | .0984 (2.5MM) | .115      | 170-1190    | 170-1190-C         |        |
| 3/16      | .0156 (1/64)  | .040      | 170-1040    | 170-1040-C         | 4"     | 1/2          | .1098 (7/64)  | .115      | 170-1200    | 170-1200-C         | 6"     |
|           | .0312 (1/32)  | .040      | 170-1050    | 170-1050-C         |        |              | .1181 (3MM)   | .115      | 170-1210    | 170-1210-C         |        |
|           | .0625 (1/16)  | .060      | 170-1060    | 170-1060-C         |        |              | .1250 (1/8)   | .115      | 170-1220    | 170-1220-C         |        |
| 1/4       | .0100         | .140      | 170-1070    | 170-1070-C         | 4"     | 5/8          | .1400 (9/64)  | .120      | 170-1230    | 170-1230-C         | 6"     |
|           | .0156 (1/64)  | .140      | 170-1080    | 170-1080-C         |        |              | .1562 (5/32)  | .120      | 170-1240    | 170-1240-C         |        |
|           | .0200         | .140      | 170-1090    | 170-1090-C         |        |              | .1575 (4MM)   | .120      | 170-1250    | 170-1250-C         |        |
|           | .0312 (1/32)  | .140      | 170-1100    | 170-1100-C         |        |              | .1718 (11/64) | .120      | 170-1260    | 170-1260-C         |        |
|           | .0394 (1MM)   | .140      | 170-1110    | 170-1110-C         |        | .1875 (3/16) | .120          | 170-1270  | 170-1270-C  |                    |        |
|           | .0469 (3/64)  | .140      | 170-1120    | 170-1120-C         |        | .234 (15/64) | .105          | 170-1280  | 170-1280-C  |                    |        |
|           | .0591 (1.5MM) | .090      | 170-1130    | 170-1130-C         |        | .2362 (6MM)  | .105          | 170-1290  | 170-1290-C  |                    |        |
|           | .0625 (1/16)  | .090      | 170-1140    | 170-1140-C         |        | .250 (1/4)   | .105          | 170-1300  | 170-1300-C  |                    |        |
| .0700     | .090          | 170-1150  | 170-1150-C  |                    |        |              |               |           |             |                    |        |

QUALITY TOOLING MADE IN THE USA

 **Carbide Cutting Tools**

**APPLICATION : USE IN STEEL OR TOUGHER MATERIALS ALSO AVAILABLE ALTIN COATED**

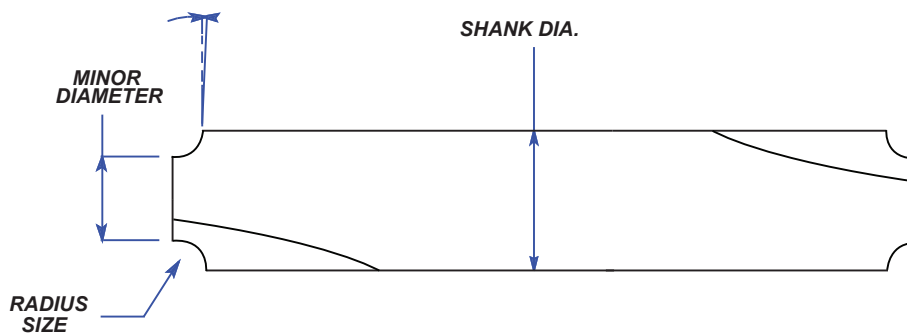
## DOUBLE END 3 FLUTE CORNER ROUNDING ENDMILLS

| SHANK DIA | RADIUS SIZE   | MINOR DIA | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|---------------|-----------|-------------|--------------------|--------|
| 1/8       | .010          | .100      | 68-1200     | 68-1200-C          | 2"     |
|           | .0156 (1/64)  | .090      | 68-1205     | 68-1205-C          |        |
|           | .020          | .080      | 68-1210     | 68-1210-C          |        |
|           | .025          | .070      | 68-1215     | 68-1215-C          |        |
|           | .0312 (1/32)  | .060      | 68-1220     | 68-1220-C          |        |
| 3/16      | .0156 (1/64)  | .040      | 68-1221     | 68-1221-C          | 2"     |
|           | .0312 (1/32)  | .040      | 68-1222     | 68-1222-C          |        |
|           | .0625 (1/16)  | .060      | 68-1223     | 68-1223-C          |        |
| 1/4       | .010          | .140      | 68-1225     | 68-1225-C          | 2-1/2" |
|           | .0156 (1/64)  | .140      | 68-1230     | 68-1230-C          |        |
|           | .020          | .140      | 68-1235     | 68-1235-C          |        |
|           | .025          | .140      | 68-1240     | 68-1240-C          |        |
|           | .0312 (1/32)  | .140      | 68-1245     | 68-1245-C          |        |
|           | .035          | .140      | 68-1250     | 68-1250-C          |        |
|           | .0394 (1MM)   | .140      | 68-1255     | 68-1255-C          |        |
|           | .0469 (3/64)  | .140      | 68-1260     | 68-1260-C          |        |
|           | .050          | .140      | 68-1265     | 68-1265-C          |        |
|           | .055          | .090      | 68-1270     | 68-1270-C          |        |
|           | .0591 (1.5MM) | .090      | 68-1275     | 68-1275-C          |        |
|           | .0625 (1/16)  | .090      | 68-1280     | 68-1280-C          |        |
|           | .070          | .090      | 68-1285     | 68-1285-C          |        |
|           | .075          | .090      | 68-1290     | 68-1290-C          |        |

| SHANK DIA | RADIUS SIZE   | MINOR DIA | ORDER EDP # | ALTIN COATED EDP # | O.A.L. |
|-----------|---------------|-----------|-------------|--------------------|--------|
| 3/8       | .0781 (5/64)  | .115      | 68-1295     | 68-1295-C          | 2-1/2" |
|           | .0787 (2MM)   | .115      | 68-1297     | 68-1297-C          |        |
|           | .0938 (3/32)  | .115      | 68-1300     | 68-1300-C          |        |
|           | .0984 (2.5MM) | .115      | 68-1302     | 68-1302-C          |        |
|           | .1094 (7/64)  | .115      | 68-1305     | 68-1305-C          |        |
|           | .1181 (3MM)   | .115      | 68-1307     | 68-1307-C          |        |
|           | .125 (1/8)    | .115      | 68-1310     | 68-1310-C          |        |
|           | .140 (9/64)   | .120      | 68-1312     | 68-1312-C          |        |
| 1/2       | .1562 (5/32)  | .120      | 68-1315     | 68-1315-C          | 3"     |
|           | .1575 (4MM)   | .120      | 68-1317     | 68-1317-C          |        |
|           | .1718 (11/64) | .120      | 68-1320     | 68-1320-C          |        |
|           | .1875 (3/16)  | .120      | 68-1325     | 68-1325-C          |        |
| 5/8       | .1969 (5MM)   | .120      | 68-1327     | 68-1327-C          | 3-1/2" |
|           | .2031 (13/64) | .120      | 68-1330     | 68-1330-C          |        |
|           | .2188 (7/32)  | .120      | 68-1335     | 68-1335-C          |        |
|           | .2344 (15/64) | .120      | 68-1340     | 68-1340-C          |        |
|           | .2362 (6MM)   | .120      | 68-1342     | 68-1342-C          |        |
|           | .250 (1/4)    | .120      | 68-1345     | 68-1345-C          |        |
| 3/4       | .2812 (9/32)  | .120      | 68-1350     | 68-1350-C          | 4"     |
|           | .2969 (19/64) | .120      | 68-1352     | 68-1352-C          |        |
|           | .3125 (5/16)  | .120      | 68-1355     | 68-1355-C          |        |
| 1"        | .3281 (21/64) | .240      | 68-1360     | 68-1360-C          | 4"     |
|           | .3438 (11/32) | .240      | 68-1365     | 68-1365-C          |        |
|           | .375 (3/8)    | .240      | 68-1370     | 68-1370-C          |        |



**RADIUS HAS A 2° FLARE ON TIP AND SIDES TO KEEP FROM GOUGING YOUR PART**



# CORNER ROUNDING ENDMILLS

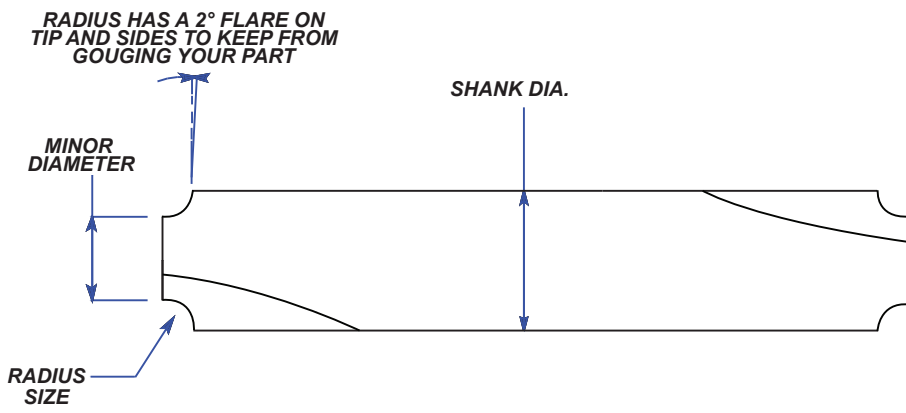
## SERIES 168 MAX ROUNDER

APPLICATION : MILLING TOUGH MATERIALS STAINLESS, TITANIUM, 4140, 4340, D2, NICKEL, MONEL, INCONEL, INCONEL, ECT.

**ALL TOOLS ARE DOUBLE END  
AND ALTiN COATED STANDARD**

*New!*

| SHANK DIA   | RADIUS SIZE   | # OF FLUTES | MINOR DIA | ORDER EDP # | O.A.L. |    |
|-------------|---------------|-------------|-----------|-------------|--------|----|
| 1/4         | .0100         | 6           | 0.199     | 168-1000    | 2-1/2" |    |
|             | .0150         | 6           | 0.189     | 168-1005    |        |    |
|             | .0200         | 6           | 0.179     | 168-1010    |        |    |
|             | .0312 (1/32)  | 6           | 0.157     | 168-1015    |        |    |
| 3/8         | .0312 (1/32)  | 6           | 0.282     | 168-1020    |        |    |
|             | .0394 (1MM)   | 6           | 0.265     | 168-1025    |        |    |
|             | .0469 (3/64)  | 6           | 0.250     | 168-1030    |        |    |
|             | .0591 (1.5MM) | 6           | 0.226     | 168-1035    |        |    |
|             | .0625 (1/16)  | 6           | 0.219     | 168-1040    |        |    |
| 1/2         | .0625 (1/16)  | 5           | 0.344     | 168-1045    |        | 3" |
|             | .0700         | 5           | 0.329     | 168-1050    |        |    |
|             | .0750         | 5           | 0.319     | 168-1055    |        |    |
|             | .0781 (5/64)  | 5           | 0.312     | 168-1060    |        |    |
|             | .0787 (2MM)   | 5           | 0.311     | 168-1065    |        |    |
|             | .0938 (3/32)  | 5           | 0.281     | 168-1070    |        |    |
|             | .0984 (2.5MM) | 5           | 0.272     | 168-1075    |        |    |
|             | .1094 (7/64)  | 5           | 0.251     | 168-1080    |        |    |
|             | .1181 (3MM)   | 5           | 0.233     | 168-1085    |        |    |
| 5/8         | .1250 (1/8)   | 5           | 0.219     | 168-1090    | 3-1/2" |    |
|             | .1250 (1/8)   | 5           | 0.343     | 168-1095    |        |    |
|             | .1562 (5/32)  | 5           | 0.281     | 168-1100    |        |    |
| 1"          | .1875 (3/16)  | 5           | 0.219     | 168-1105    | 4"     |    |
|             | .1250 (1/8)   | 6           | 0.719     | 168-1110    |        |    |
|             | .1562 (5/32)  | 6           | 0.656     | 168-1115    |        |    |
|             | .1575 (4MM)   | 6           | 0.657     | 168-1120    |        |    |
|             | .1875 (3/16)  | 6           | 0.594     | 168-1125    |        |    |
|             | .1969 (5MM)   | 6           | 0.575     | 168-1130    |        |    |
|             | .2031 (13/64) | 6           | 0.563     | 168-1135    |        |    |
|             | .2188 (7/32)  | 6           | 0.533     | 168-1140    |        |    |
|             | .2344 (15/64) | 6           | 0.501     | 168-1145    |        |    |
|             | .2362 (6MM)   | 6           | 0.496     | 168-1150    |        |    |
| .2500 (1/4) | 6             | 0.469       | 168-1155  |             |        |    |

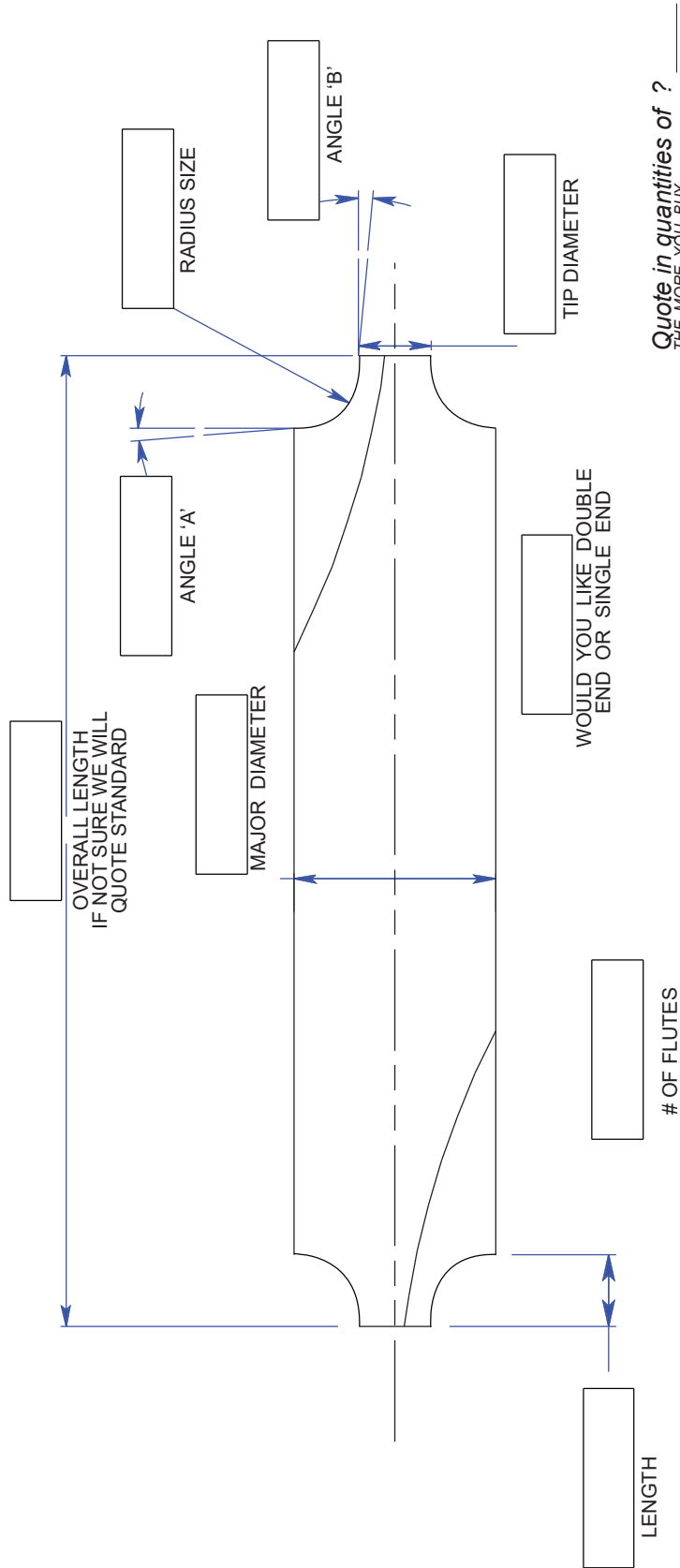


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REVISIONS:

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TOLERANCE UNLESS OTHERWISE SPECIFIED  
 .X = +/- .1/32  
 .XX = +/- .010  
 .XXX = +/- .002  
 .XXXX = +/- .0005  
 ANGLES +/- .015

DRAWN BY: \_\_\_\_\_ DATE: \_\_\_\_\_ REV: \_\_\_\_\_  
 TOOL NUMBER: \_\_\_\_\_



# KEY CUTTERS

# SERIES 76 SOLID CARBIDE KEY CUTTERS

APPLICATION : ALL CLEARANCE ANGLES, RAKE ANGLES AND DISH CLEARANCE SPECIFICALLY ENGINEERED AND DESIGNED FOR CUTTING SOFTER MATERIALS ALUMINUM, PLASTICS, ETC.

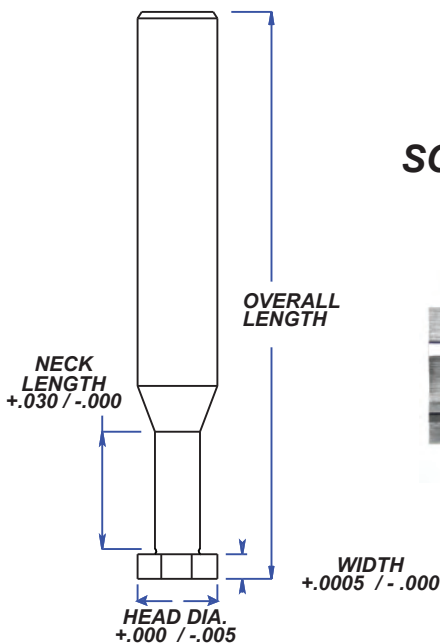
## SOFT MATERIAL CUTTING SOLID CARBIDE KEY CUTTERS

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| HEAD DIA<br>+.000 /<br>-.005 | WIDTH | ORDER<br>EDP # | Z.R.N.<br>COATED<br>EDP # | NECK<br>DIA | DEPTH<br>OF CUT | NECK<br>LENGTH | SHANK<br>DIA. | # OF<br>TEETH | OVERALL<br>LENGTH |
|------------------------------|-------|----------------|---------------------------|-------------|-----------------|----------------|---------------|---------------|-------------------|
| 1/4                          | .0150 | 76-1400        | 76-1400-C                 | .125        | .062            | 1/4            | 1/4           | 4             | 2-1/2"            |
|                              | .0312 | 76-1435        | 76-1435-C                 | .125        | .062            |                |               |               |                   |
|                              | .0625 | 76-1455        | 76-1455-C                 | .125        | .062            |                |               |               |                   |
| 5/16                         | .0150 | 76-1460        | 76-1460-C                 | .150        | .081            | 5/16           | 5/16          | 4             | 2-1/2"            |
|                              | .0312 | 76-1470        | 76-1470-C                 | .150        | .081            |                |               |               |                   |
|                              | .0625 | 76-1480        | 76-1480-C                 | .150        | .081            |                |               |               |                   |
|                              | .0938 | 76-1485        | 76-1485-C                 | .150        | .081            |                |               |               |                   |
|                              | .1250 | 76-1490        | 76-1490-C                 | .150        | .081            |                |               |               |                   |
| 3/8                          | .0312 | 76-1500        | 76-1500-C                 | .200        | .087            | 3/8            | 3/8           | 4             | 2-1/2"            |
|                              | .0625 | 76-1510        | 76-1510-C                 | .200        | .087            |                |               |               |                   |
|                              | .0938 | 76-1515        | 76-1515-C                 | .200        | .087            |                |               |               |                   |
|                              | .1250 | 76-1520        | 76-1520-C                 | .200        | .087            |                |               |               |                   |
|                              | .1875 | 76-1530        | 76-1530-C                 | .200        | .087            |                |               |               |                   |
| 1/2                          | .0312 | 76-1535        | 76-1535-C                 | .250        | .125            | 3/8            | 1/2           | 6             | 3"                |
|                              | .0625 | 76-1545        | 76-1545-C                 | .250        | .125            |                |               |               |                   |
|                              | .0938 | 76-1550        | 76-1550-C                 | .250        | .125            |                |               |               |                   |
|                              | .1250 | 76-1555        | 76-1555-C                 | .250        | .125            |                |               |               |                   |
|                              | .1562 | 76-1560        | 76-1560-C                 | .250        | .125            |                |               |               |                   |
|                              | .1875 | 76-1565        | 76-1565-C                 | .250        | .125            |                |               |               |                   |
|                              | .2500 | 76-1570        | 76-1570-C                 | .250        | .125            |                |               |               |                   |



-C = ZRN COATING FOR SERIES 76



### KEY CUTTERS FOR SOFTER MATERIALS

FOR  
ALUMINUM



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REDUCED  
TO YOUR  
SPECIFICATIONS.

SPECIALIZING IN UNIQUE AND HARD TO FIND CUTTING TOOLS

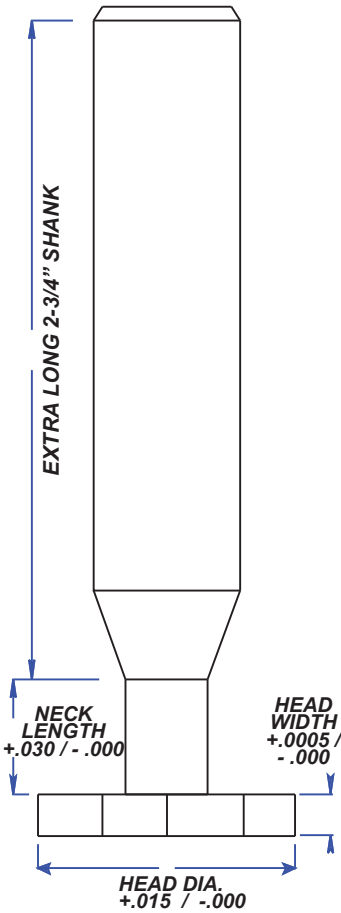


Carbide Cutting Tools

# SERIES 78 SOFT MATERIAL CARBIDE HEAD STEEL SHANK KEY CUTTERS

# KEY CUTTERS

APPLICATION : ALL CLEARANCE ANGLES, RAKE ANGLES AND DISH CLEARANCE  
SPECIFICALLY ENGINEERED AND DESIGNED FOR CUTTING SOFTER  
MATERIALS ALUMINUM, PLASTICS, ETC.



| HEAD DIA<br>+.015 /<br>-.000 | WIDTH   | ORDER<br>EDP # | Z.R.N.<br>COATED<br>EDP # | NECK<br>DIA | DEPTH<br>OF CUT | NECK<br>LENGTH | SHANK<br>DIA. | # OF<br>TEETH | OVERALL<br>LENGTH |
|------------------------------|---------|----------------|---------------------------|-------------|-----------------|----------------|---------------|---------------|-------------------|
| 5/8                          | .0312   | 78-1660        | 78-1660-C                 | .280        | .172            | 1/4            | 1/2           | 6             | 2-3/4"            |
|                              | .0625   | 78-1670        | 78-1670-C                 | .280        | .172            |                |               |               |                   |
|                              | .0938   | 78-1680        | 78-1680-C                 | .280        | .172            |                |               |               |                   |
|                              | .1250   | 78-1690        | 78-1690-C                 | .280        | .172            |                |               |               |                   |
|                              | .1562   | 78-1700        | 78-1700-C                 | .280        | .172            |                |               |               |                   |
|                              | .1875   | 78-1705        | 78-1705-C                 | .280        | .172            |                |               |               |                   |
|                              | .2500   | 78-1720        | 78-1720-C                 | .280        | .172            |                |               |               |                   |
| 3/4                          | .0312   | 78-1728        | 78-1728-C                 | .280        | .235            | 1/4            | 1/2           | 6             | 2-3/4"            |
|                              | .0625   | 78-1730        | 78-1730-C                 | .280        | .235            |                |               |               |                   |
|                              | .0938   | 78-1740        | 78-1740-C                 | .280        | .235            |                |               |               |                   |
|                              | .1250   | 78-1750        | 78-1750-C                 | .280        | .235            |                |               |               |                   |
|                              | .1562   | 78-1760        | 78-1760-C                 | .280        | .235            |                |               |               |                   |
|                              | .1875   | 78-1765        | 78-1765-C                 | .280        | .235            |                |               |               |                   |
|                              | .2500   | 78-1785        | 78-1785-C                 | .280        | .235            |                |               |               |                   |
|                              | .3125   | 78-1800        | 78-1800-C                 | .490        | .130            |                |               |               |                   |
| .3750                        | 78-1810 | 78-1810-C      | .490                      | .130        |                 |                |               |               |                   |
| 7/8                          | .0625   | 78-1813        | 78-1813-C                 | .280        | .297            | 1/4            | 1/2           | 6             | 2-3/4"            |
|                              | .1250   | 78-1815        | 78-1815-C                 | .280        | .297            |                |               |               |                   |
|                              | .1875   | 78-1825        | 78-1825-C                 | .280        | .297            |                |               |               |                   |
|                              | .2500   | 78-1835        | 78-1835-C                 | .280        | .297            |                |               |               |                   |
| 1"                           | .0312   | 78-1846        | 78-1846-C                 | .280        | .360            | 1/4            | 1/2           | 6             | 2-3/4"            |
|                              | .0625   | 78-1850        | 78-1850-C                 | .280        | .360            |                |               |               |                   |
|                              | .0938   | 78-1855        | 78-1855-C                 | .280        | .360            |                |               |               |                   |
|                              | .1250   | 78-1860        | 78-1860-C                 | .280        | .360            |                |               |               |                   |
|                              | .1562   | 78-1862        | 78-1862-C                 | .280        | .360            |                |               |               |                   |
|                              | .1875   | 78-1865        | 78-1865-C                 | .490        | .255            |                |               |               |                   |
|                              | .2500   | 78-1875        | 78-1875-C                 | .490        | .255            |                |               |               |                   |
|                              | .3125   | 78-1885        | 78-1885-C                 | .490        | .255            |                |               |               |                   |
| .3750                        | 78-1890 | 78-1890-C      | .490                      | .255        |                 |                |               |               |                   |
| 1-1/4                        | .0312   | 78-1912        | 78-1912-C                 | .280        | .485            | 1/4            | 1/2           | 6             | 2-3/4"            |
|                              | .0625   | 78-1915        | 78-1915-C                 | .280        | .485            |                |               |               |                   |
|                              | .0938   | 78-1920        | 78-1920-C                 | .280        | .485            |                |               |               |                   |
|                              | .1250   | 78-1925        | 78-1925-C                 | .280        | .485            |                |               |               |                   |
|                              | .1875   | 78-1932        | 78-1932-C                 | .490        | .380            |                |               |               |                   |
|                              | .2500   | 78-1940        | 78-1940-C                 | .490        | .380            |                |               |               |                   |
|                              | .3125   | 78-1945        | 78-1945-C                 | .490        | .380            |                |               |               |                   |
| .3750                        | 78-1950 | 78-1950-C      | .490                      | .380        |                 |                |               |               |                   |

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CAN BE REDUCED  
TO YOUR  
SPECIFICATIONS.



-C = ZRN COATING FOR SERIES 78

KEY CUTTERS  
FOR  
SOFTER MATERIALS

# KEY CUTTERS

# SERIES 76 SOLID CARBIDE KEY CUTTERS

APPLICATION: CLEARANCE ANGLES FOR CUTTING STEEL

| HEAD DIA<br>+.000 /<br>-.005 | CUTTER<br>WIDTH | ORDER<br>EDP # | ALTiN<br>COATED<br>EDP # | NECK<br>DIA | DEPTH<br>OF CUT | NECK<br>LENGTH | SHANK<br>DIA. | # OF<br>TEETH | OVERALL<br>LENGTH |
|------------------------------|-----------------|----------------|--------------------------|-------------|-----------------|----------------|---------------|---------------|-------------------|
| 3/32                         | .010            | 76-0795        | 76-0795-C                | .046        | .047            | 1/8            | 1/8           | 4             | 2"                |
|                              | .015            | 76-0800        | 76-0800-C                | .046        | .047            |                |               |               |                   |
|                              | .020            | 76-0802        | 76-0802-C                | .046        | .047            |                |               |               |                   |
|                              | .025            | 76-0804        | 76-0804-C                | .046        | .047            |                |               |               |                   |
|                              | .0312 (1/32)    | 76-0810        | 76-0810-C                | .046        | .047            |                |               |               |                   |
|                              | .0394 (1 MM)    | 76-0812        | 76-0812-C                | .046        | .047            |                |               |               |                   |
|                              | .0496 (3/64)    | 76-0815        | 76-0815-C                | .046        | .047            |                |               |               |                   |
|                              | .0625 (1/16)    | 76-0820        | 76-0820-C                | .046        | .047            |                |               |               |                   |
| 1/8                          | .010            | 76-0825        | 76-0825-C                | .060        | .032            | 1/8            | 1/8           | 6             | 2"                |
|                              | .015            | 76-0900        | 76-0900-C                | .060        | .032            |                |               |               |                   |
|                              | .020            | 76-0902        | 76-0902-C                | .060        | .032            |                |               |               |                   |
|                              | .025            | 76-0904        | 76-0904-C                | .060        | .032            |                |               |               |                   |
|                              | .030            | 76-0906        | 76-0906-C                | .060        | .032            |                |               |               |                   |
|                              | .0312 (1/32)    | 76-0910        | 76-0910-C                | .060        | .032            |                |               |               |                   |
|                              | .035            | 76-0912        | 76-0912-C                | .060        | .032            |                |               |               |                   |
|                              | .0394 (1 MM)    | 76-0914        | 76-0914-C                | .060        | .032            |                |               |               |                   |
|                              | .0469 (3/64)    | 76-0920        | 76-0920-C                | .060        | .032            |                |               |               |                   |
|                              | .050            | 76-0922        | 76-0922-C                | .060        | .032            |                |               |               |                   |
|                              | .055            | 76-0924        | 76-0924-C                | .060        | .032            |                |               |               |                   |
|                              | .0625 (1/16)    | 76-0926        | 76-0926-C                | .060        | .032            |                |               |               |                   |
|                              | .0781 (5/64)    | 76-0928        | 76-0928-C                | .060        | .032            |                |               |               |                   |
| .0938 (3/32)                 | 76-0930         | 76-0930-C      | .060                     | .032        |                 |                |               |               |                   |
| 5/32                         | .010            | 76-0932        | 76-0932-C                | .078        | .039            | 3/16           | 3/16          | 6             | 2-1/2"            |
|                              | .015            | 76-0950        | 76-0950-C                | .078        | .039            |                |               |               |                   |
|                              | .020            | 76-0952        | 76-0952-C                | .078        | .039            |                |               |               |                   |
|                              | .025            | 76-0954        | 76-0954-C                | .078        | .039            |                |               |               |                   |
|                              | .0312 (1/32)    | 76-0955        | 76-0955-C                | .078        | .039            |                |               |               |                   |
|                              | .0394 (1 MM)    | 76-0957        | 76-0957-C                | .078        | .039            |                |               |               |                   |
|                              | .0469 (3/64)    | 76-0960        | 76-0960-C                | .078        | .039            |                |               |               |                   |
|                              | .0625 (1/16)    | 76-0962        | 76-0962-C                | .078        | .039            |                |               |               |                   |
|                              | .0781 (5/64)    | 76-0963        | 76-0963-C                | .078        | .039            |                |               |               |                   |
|                              | .0938 (3/32)    | 76-0964        | 76-0964-C                | .078        | .039            |                |               |               |                   |
| 3/16                         | .010            | 76-0965        | 76-0965-C                | .094        | .046            | 3/16           | 3/16          | 6             | 2-1/2"            |
|                              | .015            | 76-1050        | 76-1050-C                | .094        | .046            |                |               |               |                   |
|                              | .020            | 76-1052        | 76-1052-C                | .094        | .046            |                |               |               |                   |
|                              | .030            | 76-1054        | 76-1054-C                | .094        | .046            |                |               |               |                   |
|                              | .0312 (1/32)    | 76-1055        | 76-1055-C                | .094        | .046            |                |               |               |                   |
|                              | .0394 (1 MM)    | 76-1057        | 76-1057-C                | .094        | .046            |                |               |               |                   |
|                              | .040            | 76-1059        | 76-1059-C                | .094        | .046            |                |               |               |                   |
|                              | .0469 (3/64)    | 76-1060        | 76-1060-C                | .094        | .046            |                |               |               |                   |
|                              | .050            | 76-1062        | 76-1062-C                | .094        | .046            |                |               |               |                   |
|                              | .0625 (1/16)    | 76-1065        | 76-1065-C                | .094        | .046            |                |               |               |                   |
|                              | .0781 (5/64)    | 76-1067        | 76-1067-C                | .094        | .046            |                |               |               |                   |
|                              | .0787 (2 MM)    | 76-1068        | 76-1068-C                | .094        | .046            |                |               |               |                   |
|                              | .0934 (3/32)    | 76-1069        | 76-1069-C                | .094        | .046            |                |               |               |                   |
|                              | .1250 (1/8)     | 76-1075        | 76-1075-C                | .094        | .046            |                |               |               |                   |
| 1/4                          | .010            | 76-1095        | 76-1095-C                | .125        | .062            | 1/4            | 1/4           | 6             | 2-1/2"            |
|                              | .015            | 76-1100        | 76-1100-C                | .125        | .062            |                |               |               |                   |
|                              | .018            | 76-1105        | 76-1105-C                | .125        | .062            |                |               |               |                   |
|                              | .020            | 76-1110        | 76-1110-C                | .125        | .062            |                |               |               |                   |
|                              | .023            | 76-1115        | 76-1115-C                | .125        | .062            |                |               |               |                   |
|                              | .025            | 76-1120        | 76-1120-C                | .125        | .062            |                |               |               |                   |
|                              | .028            | 76-1125        | 76-1125-C                | .125        | .062            |                |               |               |                   |
|                              | .030            | 76-1130        | 76-1130-C                | .125        | .062            |                |               |               |                   |
|                              | .0312 (1/32)    | 76-1135        | 76-1135-C                | .125        | .062            |                |               |               |                   |



ANY WIDTH REDUCED TO YOUR SPECIFICATIONS.  
SPECIALS, CORNER RADIUS, STAGGER TOOTH AND LEFT HAND AVAILABLE.



# SERIES 76 SOLID CARBIDE KEY CUTTERS

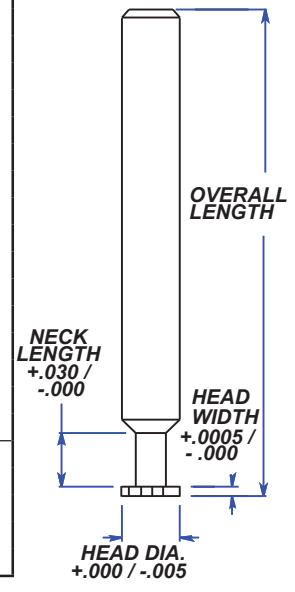
# KEY CUTTERS

APPLICATION: CLEARANCE ANGLES FOR CUTTING STEEL

| HEAD DIA<br>+.000 /<br>-.005 | CUTTER<br>WIDTH | ORDER<br>EDP # | ALTiN<br>COATED<br>EDP # | NECK<br>DIA | DEPTH<br>OF CUT | NECK<br>LENGTH | SHANK<br>DIA. | # OF<br>TEETH | OVERALL<br>LENGTH |
|------------------------------|-----------------|----------------|--------------------------|-------------|-----------------|----------------|---------------|---------------|-------------------|
| 1/4<br>CONT.                 | .0350           | 76-1140        | 76-1140-C                | .125        | .062            | 1/4            | 1/4           | 6             | 2-1/2"            |
|                              | .0380           | 76-1145        | 76-1145-C                | .125        | .062            |                |               |               |                   |
|                              | .0394 (1 MM)    | 76-1147        | 76-1147-C                | .125        | .062            |                |               |               |                   |
|                              | .0400           | 76-1150        | 76-1150-C                | .125        | .062            |                |               |               |                   |
|                              | .0469 (3/64)    | 76-1151        | 76-1151-C                | .125        | .062            |                |               |               |                   |
|                              | .0500           | 76-1153        | 76-1153-C                | .125        | .062            |                |               |               |                   |
|                              | .0600           | 76-1154        | 76-1154-C                | .125        | .062            |                |               |               |                   |
|                              | .0625 (1/16)    | 76-1155        | 76-1155-C                | .125        | .062            |                |               |               |                   |
|                              | .0781 (5/64)    | 76-1157        | 76-1157-C                | .125        | .062            |                |               |               |                   |
|                              | .0787 (2MM)     | 76-1158        | 76-1158-C                | .125        | .062            |                |               |               |                   |
| .0937 (3/32)                 | 76-1159         | 76-1159-C      | .125                     | .062        |                 |                |               |               |                   |
| 5/16                         | .0150           | 76-1160        | 76-1160-C                | .150        | .081            | 5/16           | 5/16          | 8             | 2-1/2"            |
|                              | .0200           | 76-1165        | 76-1165-C                | .150        | .081            |                |               |               |                   |
|                              | .0312 (1/32)    | 76-1170        | 76-1170-C                | .150        | .081            |                |               |               |                   |
|                              | .0394 (1MM)     | 76-1172        | 76-1172-C                | .150        | .081            |                |               |               |                   |
|                              | .0469 (3/64)    | 76-1175        | 76-1175-C                | .150        | .081            |                |               |               |                   |
|                              | .0625 (1/16)    | 76-1180        | 76-1180-C                | .150        | .081            |                |               |               |                   |
|                              | .0781 (5/64)    | 76-1182        | 76-1182-C                | .150        | .081            |                |               |               |                   |
|                              | .0787 (2MM)     | 76-1184        | 76-1184-C                | .150        | .081            |                |               |               |                   |
|                              | .0938 (3/32)    | 76-1185        | 76-1185-C                | .150        | .081            |                |               |               |                   |
|                              | .1250 (1/8)     | 76-1190        | 76-1190-C                | .150        | .081            |                |               |               |                   |
| .1562 (5/32)                 | 76-1195         | 76-1195-C      | .150                     | .081        |                 |                |               |               |                   |
| 3/8                          | .010            | 76-1197        | 76-1197-C                | .200        | .087            | 3/8            | 3/8           | 8             | 2-1/2"            |
|                              | .015            | 76-1198        | 76-1198-C                | .200        | .087            |                |               |               |                   |
|                              | .020            | 76-1199        | 76-1199-C                | .200        | .087            |                |               |               |                   |
|                              | .0312 (1/32)    | 76-1200        | 76-1200-C                | .200        | .087            |                |               |               |                   |
|                              | .0394 (1MM)     | 76-1202        | 76-1202-C                | .200        | .087            |                |               |               |                   |
|                              | .0469 (3/64)    | 76-1205        | 76-1205-C                | .200        | .087            |                |               |               |                   |
|                              | .0625 (1/16)    | 76-1210        | 76-1210-C                | .200        | .087            |                |               |               |                   |
|                              | .0781 (5/64)    | 76-1212        | 76-1212-C                | .200        | .087            |                |               |               |                   |
|                              | .0787 (2MM)     | 76-1213        | 76-1213-C                | .200        | .087            |                |               |               |                   |
|                              | .0938 (3/32)    | 76-1215        | 76-1215-C                | .200        | .087            |                |               |               |                   |
| .1250 (1/8)                  | 76-1220         | 76-1220-C      | .200                     | .087        |                 |                |               |               |                   |
| .1562 (5/32)                 | 76-1225         | 76-1225-C      | .200                     | .087        |                 |                |               |               |                   |
| .1875 (3/16)                 | 76-1230         | 76-1230-C      | .200                     | .087        |                 |                |               |               |                   |
| 1/2                          | .015            | 76-1232        | 76-1232-C                | .250        | .125            | 3/8            | 1/2           | 10            | 3"                |
|                              | .0312 (1/32)    | 76-1235        | 76-1235-C                | .250        | .125            |                |               |               |                   |
|                              | .0394 (1MM)     | 76-1237        | 76-1237-C                | .250        | .125            |                |               |               |                   |
|                              | .0468 (3/64)    | 76-1240        | 76-1240-C                | .250        | .125            |                |               |               |                   |
|                              | .0625 (1/16)    | 76-1245        | 76-1245-C                | .250        | .125            |                |               |               |                   |
|                              | .0781 (5/64)    | 76-1247        | 76-1247-C                | .250        | .125            |                |               |               |                   |
|                              | .0787 (2MM)     | 76-1248        | 76-1248-C                | .250        | .125            |                |               |               |                   |
|                              | .0938 (3/32)    | 76-1250        | 76-1250-C                | .250        | .125            |                |               |               |                   |
|                              | .1181 (3MM)     | 76-1252        | 76-1252-C                | .250        | .125            |                |               |               |                   |
|                              | .1250 (1/8)     | 76-1255        | 76-1255-C                | .250        | .125            |                |               |               |                   |
|                              | .1406 (9/64)    | 76-1257        | 76-1257-C                | .250        | .125            |                |               |               |                   |
|                              | .1562 (5/32)    | 76-1260        | 76-1260-C                | .250        | .125            |                |               |               |                   |
|                              | .1575 (4MM)     | 76-1262        | 76-1262-C                | .250        | .125            |                |               |               |                   |
|                              | .1875 (3/16)    | 76-1265        | 76-1265-C                | .250        | .125            |                |               |               |                   |
|                              | .1969 (5MM)     | 76-1267        | 76-1267-C                | .250        | .125            |                |               |               |                   |
| .2344 (15/64)                | 76-1268         | 76-1268-C      | .250                     | .125        |                 |                |               |               |                   |
| .2362 (6MM)                  | 76-1269         | 76-1269-C      | .250                     | .125        |                 |                |               |               |                   |
| .2500 (1/4)                  | 76-1270         | 76-1270-C      | .250                     | .125        |                 |                |               |               |                   |
| 5/8                          | .0625 (1/16)    | 76-1280        | 76-1280-C                | .300        | .162            | 1/2            | 5/8           | 10            | 3-1/2"            |
|                              | .0938 (3/32)    | 76-1290        | 76-1290-C                | .300        | .162            |                |               |               |                   |
|                              | .1250 (1/8)     | 76-1300        | 76-1300-C                | .300        | .162            |                |               |               |                   |
|                              | .1875 (3/16)    | 76-1310        | 76-1310-C                | .300        | .162            |                |               |               |                   |
| .2500 (1/4)                  | 76-1320         | 76-1320-C      | .300                     | .162        |                 |                |               |               |                   |



ANY WIDTH  
CAN BE REDUCED TO  
YOUR  
SPECIFICATIONS.



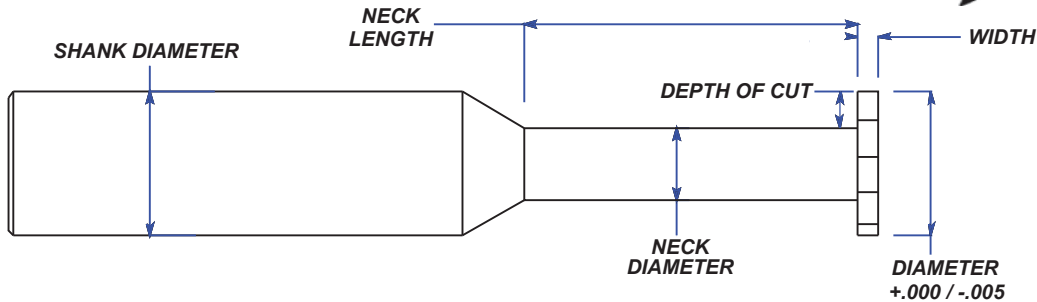


# KEY CUTTERS

## SERIES 83 SOLID CARBIDE LONG REACH KEY CUTTERS

APPLICATION: FOR SLOTTING ALL TYPES OF MATERIALS

*New!*



ANY WIDTH  
CAN BE REDUCED  
TO YOUR  
SPECIFICATIONS.

| HEAD DIA    | WIDTH        | ORDER EDP # | ALTN COATED EDP # | NECK DIA | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | OVERALL LENGTH |
|-------------|--------------|-------------|-------------------|----------|--------------|-------------|------------|------------|----------------|
| 3/16        | .0156 (1/64) | 83-1000     | 83-1000-C         | .093     | .047         | 9/16        | 3/16       | 6          | 2-1/2"         |
|             | .0312 (1/32) | 83-1010     | 83-1010-C         | .093     | .047         |             |            |            |                |
|             | .0469 (3/64) | 83-1020     | 83-1020-C         | .093     | .047         |             |            |            |                |
|             | .0625 (1/16) | 83-1030     | 83-1030-C         | .093     | .047         |             |            |            |                |
|             | .0781 (5/64) | 83-1040     | 83-1040-C         | .093     | .047         |             |            |            |                |
|             | .0938 (3/32) | 83-1050     | 83-1050-C         | .093     | .047         |             |            |            |                |
| .1250 (1/8) | 83-1060      | 83-1060-C   | .093              | .047     |              |             |            |            |                |
| 1/4         | .0156 (1/64) | 83-1070     | 83-1070-C         | .125     | .062         | 3/4         | 1/4        | 6          | 2-1/2"         |
|             | .0312 (1/32) | 83-1080     | 83-1080-C         | .125     | .062         |             |            |            |                |
|             | .0469 (3/64) | 83-1090     | 83-1090-C         | .125     | .062         |             |            |            |                |
|             | .0625 (1/16) | 83-1100     | 83-1100-C         | .125     | .062         |             |            |            |                |
|             | .0781 (5/64) | 83-1110     | 83-1110-C         | .125     | .062         |             |            |            |                |
|             | .0938 (3/32) | 83-1120     | 83-1120-C         | .125     | .062         |             |            |            |                |
| .1250 (1/8) | 83-1130      | 83-1130-C   | .125              | .062     |              |             |            |            |                |
| 5/16        | .0156 (1/64) | 83-1140     | 83-1140-C         | .156     | .078         | 1"          | 5/16       | 8          | 2-1/2"         |
|             | .0312 (1/32) | 83-1150     | 83-1150-C         | .156     | .078         |             |            |            |                |
|             | .0469 (3/64) | 83-1160     | 83-1160-C         | .156     | .078         |             |            |            |                |
|             | .0625 (1/16) | 83-1170     | 83-1170-C         | .156     | .078         |             |            |            |                |
|             | .0781 (5/64) | 83-1180     | 83-1180-C         | .156     | .078         |             |            |            |                |
|             | .0938 (3/32) | 83-1190     | 83-1190-C         | .156     | .078         |             |            |            |                |
| .1250 (1/8) | 83-1200      | 83-1200-C   | .156              | .078     |              |             |            |            |                |
| 3/8         | .0156 (1/64) | 83-1210     | 83-1210-C         | .187     | .094         | 1-1/8       | 3/8        | 8          | 3"             |
|             | .0312 (1/32) | 83-1220     | 83-1220-C         | .187     | .094         |             |            |            |                |
|             | .0469 (3/64) | 83-1230     | 83-1230-C         | .187     | .094         |             |            |            |                |
|             | .0625 (1/16) | 83-1240     | 83-1240-C         | .187     | .094         |             |            |            |                |
|             | .0781 (5/64) | 83-1250     | 83-1250-C         | .187     | .094         |             |            |            |                |
|             | .0938 (3/32) | 83-1260     | 83-1260-C         | .187     | .094         |             |            |            |                |
| .1250 (1/8) | 83-1270      | 83-1270-C   | .187              | .094     |              |             |            |            |                |
| 1/2         | .0156 (1/64) | 83-1280     | 83-1280-C         | .250     | .125         | 1-1/2       | 1/2        | 10         | 3"             |
|             | .0312 (1/32) | 83-1290     | 83-1290-C         | .250     | .125         |             |            |            |                |
|             | .0469 (3/64) | 83-1300     | 83-1300-C         | .250     | .125         |             |            |            |                |
|             | .0625 (1/16) | 83-1310     | 83-1310-C         | .250     | .125         |             |            |            |                |
|             | .0781 (5/64) | 83-1320     | 83-1320-C         | .250     | .125         |             |            |            |                |
|             | .0938 (3/32) | 83-1330     | 83-1330-C         | .250     | .125         |             |            |            |                |
| .1250 (1/8) | 83-1340      | 83-1340-C   | .250              | .125     |              |             |            |            |                |
| 5/8         | .0625 (1/16) | 83-1350     | 83-1350-C         | .300     | .162         | 1-5/8       | 5/8        | 10         | 3-1/2"         |
|             | .0938 (3/32) | 83-1360     | 83-1360-C         | .300     | .162         |             |            |            |                |
|             | .1250 (1/8)  | 83-1370     | 83-1370-C         | .300     | .162         |             |            |            |                |
|             | .1875 (3/16) | 83-1380     | 83-1380-C         | .300     | .162         |             |            |            |                |

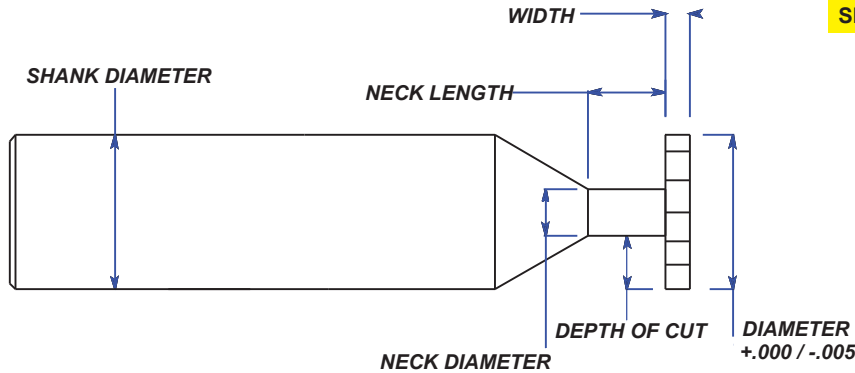


# SERIES 57 DEEP SLOTTING KEY CUTTERS

# KEY CUTTERS

APPLICATION : FOR CUTTING DEEP SLOTS

## SOLID CARBIDE



ANY WIDTH CAN BE REDUCED TO YOUR SPECIFICATIONS.

*New!*



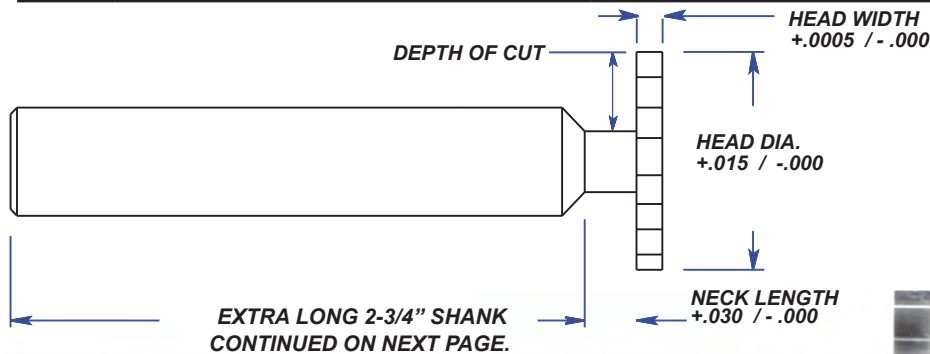
| HEAD DIA    | WIDTH        | ORDER EDP # | ALTN COATED EDP # | NECK DIA | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | OVERALL LENGTH |
|-------------|--------------|-------------|-------------------|----------|--------------|-------------|------------|------------|----------------|
| 1/4         | .0156 (1/64) | 57-1000     | 57-1000-C         | .070     | .090         | 1/8         | 1/4        | 6          | 2-1/2"         |
|             | .0312 (1/32) | 57-1010     | 57-1010-C         | .070     | .090         |             |            |            |                |
|             | .0469 (3/64) | 57-1020     | 57-1020-C         | .070     | .090         |             |            |            |                |
|             | .0625 (1/16) | 57-1030     | 57-1030-C         | .070     | .090         |             |            |            |                |
|             | .0781 (5/64) | 57-1040     | 57-1040-C         | .070     | .090         |             |            |            |                |
|             | .0938 (3/32) | 57-1050     | 57-1050-C         | .070     | .090         |             |            |            |                |
| .1250 (1/8) | 57-1060      | 57-1060-C   | .070              | .090     |              |             |            |            |                |
| 5/16        | .0156 (1/64) | 57-1070     | 57-1070-C         | .090     | .110         | 1/8         | 5/16       | 8          | 2-1/2"         |
|             | .0312 (1/32) | 57-1080     | 57-1080-C         | .090     | .110         |             |            |            |                |
|             | .0469 (3/64) | 57-1090     | 57-1090-C         | .090     | .110         |             |            |            |                |
|             | .0625 (1/16) | 57-1100     | 57-1100-C         | .090     | .110         |             |            |            |                |
|             | .0781 (5/64) | 57-1110     | 57-1110-C         | .090     | .110         |             |            |            |                |
|             | .0938 (3/32) | 57-1120     | 57-1120-C         | .090     | .110         |             |            |            |                |
| .1250 (1/8) | 57-1130      | 57-1130-C   | .090              | .110     |              |             |            |            |                |
| 3/8         | .0156 (1/64) | 57-1140     | 57-1140-C         | .120     | .125         | 3/16        | 3/8        | 8          | 2-1/2"         |
|             | .0312 (1/32) | 57-1150     | 57-1150-C         | .120     | .125         |             |            |            |                |
|             | .0469 (3/64) | 57-1160     | 57-1160-C         | .120     | .125         |             |            |            |                |
|             | .0625 (1/16) | 57-1170     | 57-1170-C         | .120     | .125         |             |            |            |                |
|             | .0781 (5/64) | 57-1180     | 57-1180-C         | .120     | .125         |             |            |            |                |
|             | .0938 (3/32) | 57-1190     | 57-1190-C         | .120     | .125         |             |            |            |                |
| .1250 (1/8) | 57-1200      | 57-1200-C   | .120              | .125     |              |             |            |            |                |
| 1/2         | .0156 (1/64) | 57-1210     | 57-1210-C         | .150     | .175         | 1/4         | 1/2        | 10         | 3"             |
|             | .0312 (1/32) | 57-1220     | 57-1220-C         | .150     | .175         |             |            |            |                |
|             | .0469 (3/64) | 57-1230     | 57-1230-C         | .150     | .175         |             |            |            |                |
|             | .0625 (1/16) | 57-1240     | 57-1240-C         | .150     | .175         |             |            |            |                |
|             | .0781 (5/64) | 57-1250     | 57-1250-C         | .150     | .175         |             |            |            |                |
|             | .0938 (3/32) | 57-1260     | 57-1260-C         | .150     | .175         |             |            |            |                |
| .1250 (1/8) | 57-1270      | 57-1270-C   | .150              | .175     |              |             |            |            |                |
| 5/8         | .0625 (1/16) | 57-1280     | 57-1280-C         | .180     | .220         | 1/4         | 5/8        | 10         | 3-1/2"         |
|             | .0938 (3/32) | 57-1290     | 57-1290-C         | .180     | .220         |             |            |            |                |
|             | .1250 (1/8)  | 57-1300     | 57-1300-C         | .180     | .220         |             |            |            |                |
|             | .1875 (3/16) | 57-1310     | 57-1310-C         | .180     | .220         |             |            |            |                |

# KEY CUTTERS

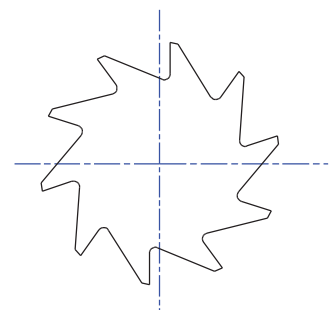
## SERIES 78 CARBIDE HEAD STEEL SHANK KEY CUTTERS

APPLICATION : FOR CUTTING SLOTS & KEYWAYS

| HEAD DIA<br><small>+0.015 / -.000</small> | WIDTH         | STD.#   | ORDER EDP # | ALTN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | SHANK LENGTH |
|---|---------------|---------|-------------|-------------------|-----------|--------------|-------------|------------|------------|--------------|
| 3/8                                       | .0156 (1/64)  |         | 78-1090     | 78-1090-C         | .200      | .078         | 1/4         | 1/2        | 8          | 2-3/4"       |
|   | .0312 (1/32)  |         | 78-1095     | 78-1095-C         | .200      | .078         | 1/4         |            |            |              |
|   | .0469 (3/64)  |         | 78-1100     | 78-1100-C         | .200      | .078         | 1/4         |            |            |              |
|   | .0625 (1/16)  |         | 78-1105     | 78-1105-C         | .200      | .078         | 1/4         |            |            |              |
|   | .0781 (5/64)  |         | 78-1106     | 78-1106-C         | .200      | .078         | 1/4         |            |            |              |
|   | .0938 (3/32)  |         | 78-1110     | 78-1110-C         | .200      | .078         | 1/4         |            |            |              |
|   | .1250 (1/8)   |         | 78-1115     | 78-1115-C         | .200      | .078         | 1/4         |            |            |              |
| 7/16                                      | .0312 (1/32)  |         | 78-1116     | 78-1116-C         | .250      | .093         | 1/4         | 1/2        | 8          | 2-3/4"       |
|   | .0625 (1/16)  |         | 78-1117     | 78-1117-C         | .250      | .093         | 1/4         |            |            |              |
|   | .1250 (1/8)   |         | 78-1118     | 78-1118-C         | .250      | .093         | 1/4         |            |            |              |
| 1/2                                       | .0156 (1/64)  |         | 78-1119     | 78-1119-C         | .250      | .125         | 1/4         | 1/2        | 10         | 2-3/4"       |
|   | .0312 (1/32)  |         | 78-1120     | 78-1120-C         | .250      | .125         | 1/4         |            |            |              |
|   | .0469 (3/64)  |         | 78-1125     | 78-1125-C         | .250      | .125         | 1/4         |            |            |              |
|   | .0625 (1/16)  | # 204   | 78-1130     | 78-1130-C         | .135      | .182         | 1/8         |            |            |              |
|   | .0781 (5/64)  |         | 78-1135     | 78-1135-C         | .250      | .125         | 1/4         |            |            |              |
|   | .0938 (3/32)  | # 304   | 78-1140     | 78-1140-C         | .165      | .167         | 1/8         |            |            |              |
|   | .1094 (7/64)  |         | 78-1145     | 78-1145-C         | .250      | .125         | 1/4         |            |            |              |
|   | .1250 (1/8)   | # 404   | 78-1150     | 78-1150-C         | .190      | .155         | 1/8         |            |            |              |
| .1562 (5/32)                              |               | 78-1155 | 78-1155-C   | .250              | .125      | 1/4          |             |            |            |              |
| 9/16                                      | .0312 (1/32)  |         | 78-1156     | 78-1156-C         | .250      | .156         | 1/4         | 1/2        | 10         | 2-3/4"       |
|   | .0625 (1/16)  |         | 78-1157     | 78-1157-C         | .250      | .156         | 1/4         |            |            |              |
|   | .1250 (1/8)   |         | 78-1158     | 78-1158-C         | .250      | .156         | 1/4         |            |            |              |
| 5/8                                       | .0156 (1/64)  |         | 78-1159     | 78-1159-C         | .280      | .172         | 1/4         | 1/2        | 10         | 2-3/4"       |
|   | .0312 (1/32)  |         | 78-1160     | 78-1160-C         | .280      | .172         | 1/4         |            |            |              |
|   | .0469 (3/64)  |         | 78-1165     | 78-1165-C         | .280      | .172         | 1/4         |            |            |              |
|   | .0625 (1/16)  |         | 78-1170     | 78-1170-C         | .280      | .172         | 1/4         |            |            |              |
|   | .0781 (5/64)  |         | 78-1175     | 78-1175-C         | .280      | .172         | 1/4         |            |            |              |
|   | .0938 (3/32)  | # 305   | 78-1180     | 78-1180-C         | .195      | .215         | 1/8         |            |            |              |
|   | .1094 (7/64)  |         | 78-1185     | 78-1185-C         | .280      | .172         | 1/4         |            |            |              |
|   | .1250 (1/8)   | #405    | 78-1190     | 78-1190-C         | .225      | .200         | 1/4         |            |            |              |
|   | .1406 (9/64)  |         | 78-1195     | 78-1195-C         | .280      | .172         | 1/4         |            |            |              |
|   | .1562 (5/32)  | #505    | 78-1200     | 78-1200-C         | .250      | .187         | 1/4         |            |            |              |
|   | .1875 (3/16)  | #605    | 78-1205     | 78-1205-C         | .250      | .187         | 1/4         |            |            |              |
|   | .2031 (13/64) |         | 78-1210     | 78-1210-C         | .280      | .172         | 1/4         |            |            |              |
|   | .2188 (7/32)  |         | 78-1215     | 78-1215-C         | .280      | .172         | 1/4         |            |            |              |
|   | .2500 (1/4)   |         | 78-1220     | 78-1220-C         | .280      | .172         | 1/4         |            |            |              |
| .2812 (9/32)                              |               | 78-1225 | 78-1225-C   | .280              | .172      | 1/4          |             |            |            |              |
| 11/16                                     | .0625 (1/16)  |         | 78-1226     | 78-1226-C         | .280      | .203         | 1/4         | 1/2        | 10         | 2-3/4"       |
|   | .1250 (1/8)   |         | 78-1227     | 78-1227-C         | .280      | .203         | 1/4         |            |            |              |



ANY WIDTH  
CAN BE REDUCED  
TO YOUR  
SPECIFICATIONS.



STANDARD TEETH

ON THE WEB: [WWW.INTERNALTOOL.COM](http://WWW.INTERNALTOOL.COM)



Carbide Cutting Tools

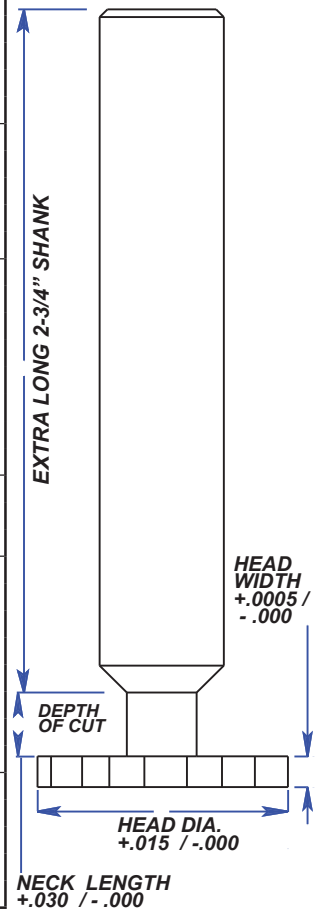
# SERIES 78 CARBIDE HEAD STEEL SHANK KEY CUTTERS

# KEY CUTTERS

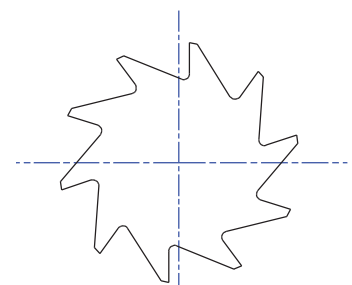
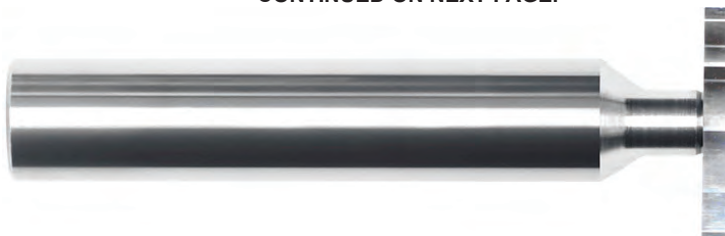
APPLICATION : FOR CUTTING SLOTS & KEYWAYS

| HEAD DIA<br>+.015/-.000 | WIDTH         | STD.#   | ORDER EDP # | ALTN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | SHANK LENGTH |
|-------------------------|---------------|---------|-------------|-------------------|-----------|--------------|-------------|------------|------------|--------------|
| 3/4                     | .0312 (1/32)  |         | 78-1228     | 78-1228-C         | .280      | .235         | 1/4         | 1/2        | 10         | 2-3/4"       |
|                         | .0469 (3/64)  |         | 78-1229     | 78-1229-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .0625 (1/16)  |         | 78-1230     | 78-1230-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .0781 (5/64)  |         | 78-1235     | 78-1235-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .0938 (3/32)  |         | 78-1240     | 78-1240-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .1094 (7/64)  |         | 78-1245     | 78-1245-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .1250 (1/8)   | #406    | 78-1250     | 78-1250-C         | .230      | .260         | 1/4         |            |            |              |
|                         | .1406 (9/64)  |         | 78-1255     | 78-1255-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .1562 (5/32)  | #506    | 78-1260     | 78-1260-C         | .250      | .250         | 1/4         |            |            |              |
|                         | .1875 (3/16)  | #606    | 78-1265     | 78-1265-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .2031 (13/64) |         | 78-1270     | 78-1270-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .2188 (7/32)  |         | 78-1275     | 78-1275-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .2344 (15/64) |         | 78-1280     | 78-1280-C         | .280      | .235         | 1/4         |            |            |              |
|                         | .2500 (1/4)   | #806    | 78-1285     | 78-1285-C         | .280      | .235         | 1/4         |            |            |              |
| .2656 (17/64)           |               | 78-1290 | 78-1290-C   | .490              | .130      | 1/4          |             |            |            |              |
| .2812 (9/32)            |               | 78-1295 | 78-1295-C   | .490              | .130      | 1/4          |             |            |            |              |
| .3125 (5/16)            |               | 78-1300 | 78-1300-C   | .490              | .130      | 1/4          |             |            |            |              |
| .3438 (11/32)           |               | 78-1305 | 78-1305-C   | .490              | .130      | 1/4          |             |            |            |              |
| .3750 (3/8)             |               | 78-1310 | 78-1310-C   | .490              | .130      | 1/4          |             |            |            |              |
| 7/8                     | .0312 (1/32)  |         | 78-1311     | 78-1311-C         | .280      | .297         | 1/4         | 1/2        | 12         | 2-3/4"       |
|                         | .0469 (3/64)  |         | 78-1312     | 78-1312-C         | .280      | .297         | 1/4         |            |            |              |
|                         | .0625 (1/16)  |         | 78-1313     | 78-1313-C         | .280      | .297         | 1/4         |            |            |              |
|                         | .0938 (3/32)  |         | 78-1314     | 78-1314-C         | .280      | .297         | 1/4         |            |            |              |
|                         | .1250 (1/8)   |         | 78-1315     | 78-1315-C         | .280      | .297         | 1/4         |            |            |              |
|                         | .1562 (5/32)  | #507    | 78-1320     | 78-1320-C         | .250      | .312         | 1/4         |            |            |              |
|                         | .1875 (3/16)  | #607    | 78-1325     | 78-1325-C         | .280      | .297         | 1/4         |            |            |              |
|                         | .2188 (7/32)  | #707    | 78-1330     | 78-1330-C         | .280      | .297         | 1/4         |            |            |              |
|                         | .2500 (1/4)   | #807    | 78-1335     | 78-1335-C         | .345      | .265         | 1/4         |            |            |              |
|                         | .3125 (5/16)  |         | 78-1340     | 78-1340-C         | .490      | .192         | 1/4         |            |            |              |
| .3750 (3/8)             |               | 78-1345 | 78-1345-C   | .490              | .192      | 1/4          |             |            |            |              |
| 1"                      | .0312 (1/32)  |         | 78-1346     | 78-1346-C         | .280      | .360         | 1/4         | 1/2        | 12         | 2-3/4"       |
|                         | .0469 (3/64)  |         | 78-1348     | 78-1348-C         | .280      | .360         | 1/4         |            |            |              |
|                         | .0625 (1/16)  |         | 78-1350     | 78-1350-C         | .280      | .360         | 1/4         |            |            |              |
|                         | .0781 (5/64)  |         | 78-1352     | 78-1352-C         | .280      | .360         | 1/4         |            |            |              |
|                         | .0938 (3/32)  |         | 78-1355     | 78-1355-C         | .280      | .360         | 1/4         |            |            |              |
|                         | .1250 (1/8)   |         | 78-1360     | 78-1360-C         | .280      | .360         | 1/4         |            |            |              |
|                         | .1562 (5/32)  |         | 78-1362     | 78-1362-C         | .280      | .360         | 1/4         |            |            |              |
|                         | .1875 (3/16)  | #608    | 78-1365     | 78-1365-C         | .280      | .360         | 1/4         |            |            |              |
|                         | .2188 (7/32)  | #708    | 78-1370     | 78-1370-C         | .340      | .330         | 1/4         |            |            |              |
|                         | .2500 (1/4)   | 808     | 78-1375     | 78-1375-C         | .345      | .327         | 1/4         |            |            |              |
|                         | .2812 (9/32)  |         | 78-1380     | 78-1380-C         | .490      | .255         | 1/4         |            |            |              |
|                         | .3125 (5/16)  | #1008   | 78-1385     | 78-1385-C         | .400      | .300         | 1/4         |            |            |              |
| .3750 (3/8)             | #1208         | 78-1390 | 78-1390-C   | .400              | .300      | 1/4          |             |            |            |              |

ANY WIDTH CAN BE REDUCED TO YOUR SPECIFICATIONS.



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STANDARD TEETH

QUALITY TOOLING MADE IN THE USA

**IT** Carbide Cutting Tools



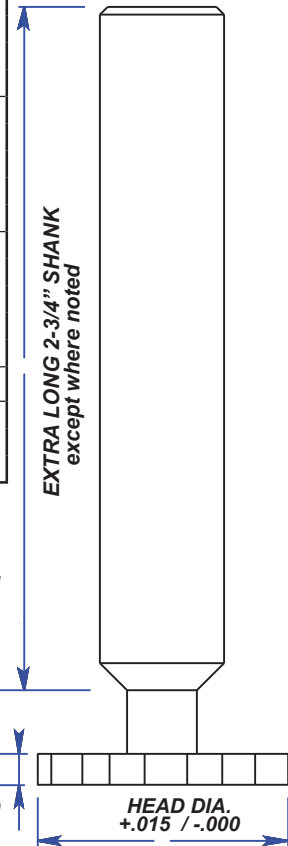
# KEY CUTTERS

## SERIES 78 CARBIDE HEAD STEEL SHANK KEY CUTTERS

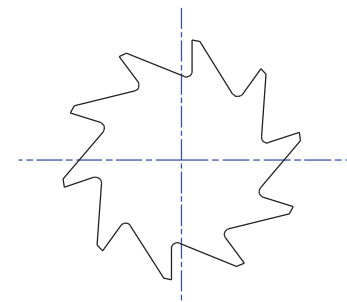
APPLICATION : FOR CUTTING SLOTS & KEYWAYS

| HEAD DIA<br><small>+0.015/-.000</small> | WIDTH        | STD.#   | ORDER EDP # | ALTiN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | SHANK LENGTH     |
|---|--------------|---------|-------------|--------------------|-----------|--------------|-------------|------------|------------|------------------|
| 1-1/8                                   | .0625 (1/16) |         | 78-1392     | 78-1392-C          | .280      | .422         | 1/4         | 1/2        | 12         | 2-3/4"           |
|   | .0938 (3/32) |         | 78-1394     | 78-1394-C          | .280      | .422         | 1/4         |            |            |                  |
|   | .1250 (1/8)  |         | 78-1395     | 78-1395-C          | .280      | .422         | 1/4         |            |            |                  |
|   | .1875 (3/16) |         | 78-1400     | 78-1400-C          | .280      | .422         | 1/4         |            |            |                  |
|   | .2188 (7/32) |         | 78-1405     | 78-1405-C          | .490      | .317         | 1/4         |            |            |                  |
| 1-1/4                                   | .2500 (1/4)  |         | 78-1410     | 78-1410-C          | .490      | .317         | 1/4         | 1/2        | 12         | 2-1/2"           |
|   | .0312 (1/32) |         | 78-1412     | 78-1412-C          | .280      | .485         | 1/4         |            |            |                  |
|   | .0469 (3/64) |         | 78-1413     | 78-1413-C          | .280      | .485         | 1/4         |            |            |                  |
|   | .0625 (1/16) |         | 78-1415     | 78-1415-C          | .280      | .485         | 1/4         |            |            |                  |
|   | .0781 (5/64) |         | 78-1417     | 78-1417-C          | .280      | .485         | 1/4         |            |            |                  |
|   | .0938 (3/32) |         | 78-1420     | 78-1420-C          | .280      | .485         | 1/4         |            |            |                  |
|   | .1250 (1/8)  |         | 78-1425     | 78-1425-C          | .280      | .485         | 1/4         |            |            |                  |
|   | .1562 (5/32) |         | 78-1427     | 78-1427-C          | .280      | .485         | 1/4         |            |            |                  |
|   | .1875 (3/16) | #610    | 78-1430     | 78-1430-C          | .320      | .930         | 1/4         |            |            |                  |
|   | .2188 (7/32) | #710    | 78-1435     | 78-1435-C          | .380      | .435         | 1/4         |            |            |                  |
| 1-3/8                                   | .2500 (1/4)  | #810    | 78-1440     | 78-1440-C          | .379      | .435         | 1/4         | 1/2        | 14         | 2-1/2"           |
|   | .3125 (5/16) | #1010   | 78-1445     | 78-1445-C          | .437      | .406         | 1/4         |            |            |                  |
|   | .3750 (3/8)  | #1210   | 78-1450     | 78-1450-C          | .430      | .410         | 1/4         |            |            |                  |
|   | .0625 (1/16) |         | 78-1555     | 78-1555-C          | .280      | .547         | 1/4         |            |            |                  |
|   | .0781 (5/64) |         | 78-1557     | 78-1557-C          | .280      | .547         | 1/4         |            |            |                  |
|   | .0938 (3/32) |         | 78-1560     | 78-1560-C          | .280      | .547         | 1/4         |            |            |                  |
|   | .1250 (1/8)  |         | 78-1565     | 78-1565-C          | .280      | .547         | 1/4         |            |            |                  |
|   | .1562 (5/32) |         | 78-1570     | 78-1570-C          | .280      | .547         | 1/4         |            |            |                  |
| .1875 (3/16)                            |              | 78-1572 | 78-1572-C   | .490               | .442      | 1/4          |             |            |            |                  |
| 1-3/8                                   | .2500 (1/4)  | #811    | 78-1475     | 78-1475-C          | .400      | .487         | 1/4         | 1/2        | 14         | 2" SOLID CARBIDE |
|   | .3125 (5/16) | #1011   | 78-1480     | 78-1480-C          | .470      | .452         | 1/4         |            |            |                  |
|   | .3750 (3/8)  | #1211   | 78-1485     | 78-1485-C          | .470      | .452         | 1/4         |            |            |                  |

ANY WIDTH CAN BE REDUCED TO YOUR SPECIFICATIONS.



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ITI CARBIDE: TESTED AND PROVEN TO BE THE BEST

**ITI** Carbide Cutting Tools

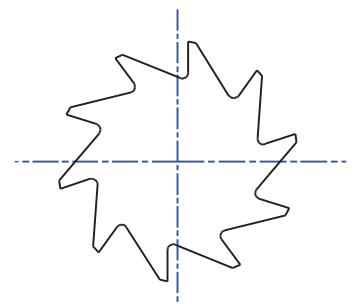
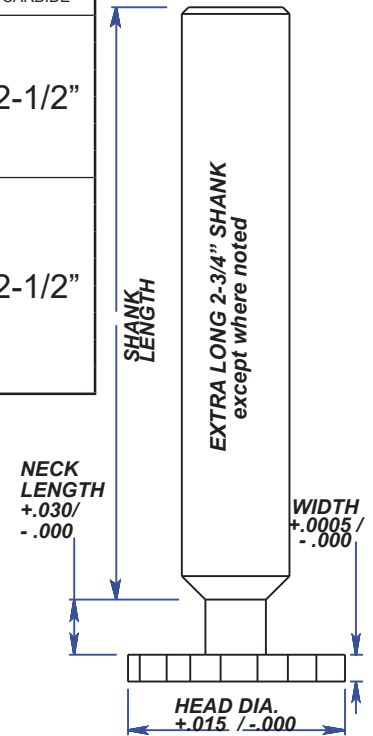
# SERIES 78 CARBIDE HEAD STEEL SHANK KEY CUTTERS

# KEY CUTTERS

APPLICATION : FOR CUTTING SLOTS & KEYWAYS

| HEAD DIA<br>+.015/-.000 | WIDTH        | STD.#   | ORDER EDP # | ALTIN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | SHANK LENGTH               |     |    |        |
|-------------------------|--------------|---------|-------------|--------------------|-----------|--------------|-------------|------------|------------|----------------------------|-----|----|--------|
| 1-1/2                   | .0312 (1/32) |         | 78-1452     | 78-1452-C          | .280      | .610         | 1/4         | 1/2        | 16         | 2-3/4"                     |     |    |        |
|                         | .0469 (3/64) |         | 78-1453     | 78-1453-C          | .280      | .610         | 1/4         |            |            |                            |     |    |        |
|                         | .0625 (1/16) |         | 78-1455     | 78-1455-C          | .280      | .610         | 1/4         |            |            |                            |     |    |        |
|                         | .0781 (5/64) |         | 78-1457     | 78-1457-C          | .280      | .610         | 1/4         |            |            |                            |     |    |        |
|                         | .0938 (3/32) |         | 78-1460     | 78-1460-C          | .280      | .610         | 1/4         |            |            |                            |     |    |        |
|                         | .1250 (1/8)  |         | 78-1465     | 78-1465-C          | .280      | .610         | 1/4         |            |            |                            |     |    |        |
|                         | .1875 (3/16) |         | 78-1470     | 78-1470-C          | .490      | .505         | 1/4         |            |            |                            |     |    |        |
| 1-3/4                   | .2500 (1/4)  | #812    | 78-1490     | 78-1490-C          | .430      | .535         | 1/4         | 1/2        | 16         | 2-1/2"<br>2" SOLID CARBIDE |     |    |        |
|                         | .3125 (5/16) | #1012   | 78-1495     | 78-1495-C          | .460      | .520         | 1/4         |            |            |                            |     |    |        |
|                         | .3750 (3/8)  | #1212   | 78-1500     | 78-1500-C          | .490      | .505         | 1/4         |            |            |                            |     |    |        |
|                         | .0625 (1/16) |         | 78-1505     | 78-1505-C          | .490      | .630         | 1/4         |            |            |                            |     |    |        |
| 2"                      | .0781 (5/64) |         | 78-1507     | 78-1507-C          | .490      | .630         | 1/4         | 1/2        | 16         | 2-1/2"                     |     |    |        |
|                         | .0938 (3/32) |         | 78-1508     | 78-1508-C          | .490      | .630         | 1/4         |            |            |                            |     |    |        |
|                         | .1250 (1/8)  |         | 78-1510     | 78-1510-C          | .490      | .630         | 1/4         |            |            |                            |     |    |        |
|                         | .1562 (5/32) |         | 78-1512     | 78-1512-C          | .490      | .630         | 1/4         |            |            |                            |     |    |        |
|                         | .1875 (3/16) |         | 78-1515     | 78-1515-C          | .490      | .630         | 1/4         |            |            |                            |     |    |        |
|                         | .0312 (1/32) |         | 78-1517     | 78-1517-C          | .490      | .755         | 1/4         |            |            |                            | 1/2 | 18 | 2-1/2" |
|                         | .0469 (3/64) |         | 78-1519     | 78-1519-C          | .490      | .755         | 1/4         |            |            |                            |     |    |        |
| .0625 (1/16)            |              | 78-1520 | 78-1520-C   | .490               | .755      | 1/4          |             |            |            |                            |     |    |        |
| .0781 (5/64)            |              | 78-1522 | 78-1522-C   | .490               | .755      | 1/4          |             |            |            |                            |     |    |        |
| .0938 (3/32)            |              | 78-1523 | 78-1523-C   | .490               | .755      | 1/4          |             |            |            |                            |     |    |        |
| .1250 (1/8)             |              | 78-1525 | 78-1525-C   | .490               | .755      | 1/4          |             |            |            |                            |     |    |        |
| .1562 (5/32)            |              | 78-1527 | 78-1527-C   | .490               | .755      | 1/4          |             |            |            |                            |     |    |        |
| .1875 (3/16)            |              | 78-1530 | 78-1530-C   | .490               | .755      | 1/4          |             |            |            |                            |     |    |        |

ANY WIDTH CAN BE REDUCED TO YOUR SPECIFICATIONS.



STANDARD TEETH

UN-MATCHED TOOL VARIETY

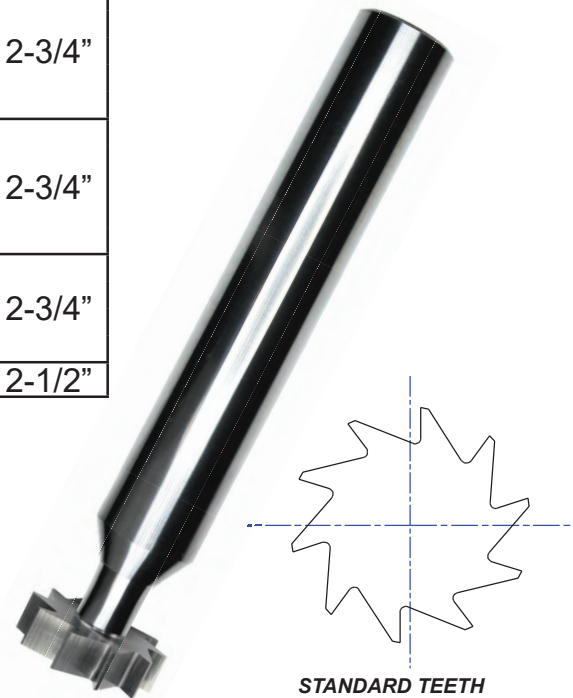
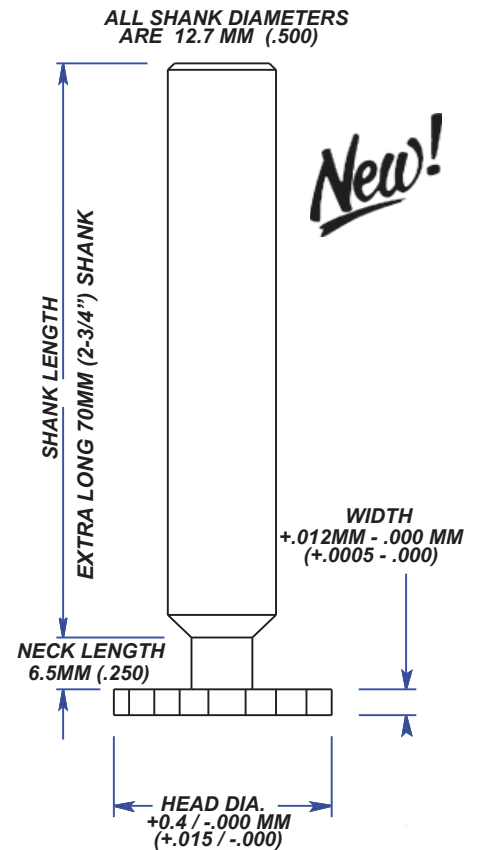
**IT** Carbide Cutting Tools

# KEY CUTTERS

## SERIES 79 METRIC CARBIDE HEAD STEEL SHANK KEY CUTTERS

APPLICATION : FOR CUTTING SLOTS & KEYWAYS

| HEAD DIA<br>+.015/- .000 | WIDTH       | ORDER EDP # | ALTIN COATED EDP # | NECK DIA.   | DEPTH OF CUT  | # OF TEETH | SHANK LENGTH |
|--------------------------|-------------|-------------|--------------------|-------------|---------------|------------|--------------|
| 10MM / .394              | 1.0 (.0394) | 79-1800     | 79-1800-C          | 5MM / .196  | 2.5MM / .099  | 8          | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1805     | 79-1805-C          | 5MM / .196  | 2.5MM / .099  |            |              |
|                          | 3.0 (.1181) | 79-1810     | 79-1810-C          | 5MM / .196  | 2.5MM / .099  |            |              |
| 12MM / .472              | 1.0 (.0394) | 79-1815     | 79-1815-C          | 5MM / .196  | 3.5MM / .138  | 8          | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1820     | 79-1820-C          | 5MM / .196  | 3.5MM / .138  |            |              |
|                          | 3.0 (.1181) | 79-1825     | 79-1825-C          | 5MM / .196  | 3.5MM / .138  |            |              |
| 14MM / .551              | 1.0 (.0394) | 79-1830     | 79-1830-C          | 6MM / .236  | 3.9MM / .157  | 10         | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1835     | 79-1835-C          | 6MM / .236  | 3.9MM / .157  |            |              |
|                          | 3.0 (.1181) | 79-1840     | 79-1840-C          | 6MM / .236  | 3.9MM / .157  |            |              |
|                          | 4.0 (.1575) | 79-1845     | 79-1845-C          | 6MM / .236  | 3.9MM / .157  |            |              |
| 16MM / .629              | 1.0 (.0394) | 79-1850     | 79-1850-C          | 7MM / .275  | 4.4MM / .177  | 10         | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1855     | 79-1855-C          | 7MM / .275  | 4.4MM / .177  |            |              |
|                          | 3.0 (.1181) | 79-1860     | 79-1860-C          | 7MM / .275  | 4.4MM / .177  |            |              |
|                          | 4.0 (.1575) | 79-1865     | 79-1865-C          | 7MM / .275  | 4.4MM / .177  |            |              |
| 18MM / .708              | 1.0 (.0394) | 79-1870     | 79-1870-C          | 7MM / .275  | 5.4MM / .216  | 10         | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1875     | 79-1875-C          | 7MM / .275  | 5.4MM / .216  |            |              |
|                          | 3.0 (.1181) | 79-1880     | 79-1880-C          | 7MM / .275  | 5.4MM / .216  |            |              |
|                          | 4.0 (.1575) | 79-1885     | 79-1885-C          | 7MM / .275  | 5.4MM / .216  |            |              |
|                          | 5.0 (.1969) | 79-1890     | 79-1890-C          | 7MM / .275  | 5.4MM / .216  |            |              |
| 20MM (.787)              | 1.0 (.0394) | 79-1895     | 79-1895-C          | 7MM / .275  | 6.5MM / .256  | 10         | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1900     | 79-1900-C          | 7MM / .275  | 6.5MM / .256  |            |              |
|                          | 3.0 (.1181) | 79-1905     | 79-1905-C          | 7MM / .275  | 6.5MM / .256  |            |              |
|                          | 4.0 (.1575) | 79-1910     | 79-1910-C          | 7MM / .275  | 6.5MM / .256  |            |              |
|                          | 5.0 (.1969) | 79-1915     | 79-1915-C          | 7MM / .275  | 6.5MM / .256  |            |              |
| 24MM / .944              | 1.0 (.0394) | 79-1920     | 79-1920-C          | 7MM / .275  | 8.4MM / .334  | 12         | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1925     | 79-1925-C          | 7MM / .275  | 8.4MM / .334  |            |              |
|                          | 3.0 (.1181) | 79-1930     | 79-1930-C          | 7MM / .275  | 8.4MM / .334  |            |              |
|                          | 4.0 (.1575) | 79-1935     | 79-1935-C          | 7MM / .275  | 8.4MM / .334  |            |              |
|                          | 5.0 (.1969) | 79-1940     | 79-1940-C          | 7MM / .275  | 8.4MM / .334  |            |              |
| 30MM / 1.182             | 1.0 (.0394) | 79-1945     | 79-1945-C          | 7MM / .275  | 11.5MM / .453 | 12         | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1950     | 79-1950-C          | 7MM / .275  | 11.5MM / .453 |            |              |
|                          | 3.0 (.1181) | 79-1955     | 79-1955-C          | 7MM / .275  | 11.5MM / .453 |            |              |
|                          | 4.0 (.1575) | 79-1960     | 79-1960-C          | 7MM / .275  | 11.5MM / .453 |            |              |
|                          | 5.0 (.1969) | 79-1965     | 79-1965-C          | 7MM / .275  | 11.5MM / .453 |            |              |
| 32MM / 1.260             | 1.0 (.0394) | 79-1970     | 79-1970-C          | 7MM / .275  | 12.4MM / .492 | 14         | 2-3/4"       |
|                          | 2.0 (.0787) | 79-1975     | 79-1975-C          | 7MM / .275  | 12.4MM / .492 |            |              |
|                          | 3.0 (.1181) | 79-1980     | 79-1980-C          | 7MM / .275  | 12.4MM / .492 |            |              |
|                          | 4.0 (.1575) | 79-1985     | 79-1985-C          | 7MM / .275  | 12.4MM / .492 |            |              |
|                          | 5.0 (.1969) | 79-1990     | 79-1990-C          | 7MM / .275  | 12.4MM / .492 |            |              |
| 38MM / 1.497             | 1.0 (.0394) | 79-1995     | 79-1995-C          | 7MM / .275  | 16.5MM / .611 | 16         | 2-3/4"       |
|                          | 2.0 (.0787) | 79-2000     | 79-2000-C          | 7MM / .275  | 16.5MM / .611 |            |              |
|                          | 3.0 (.1181) | 79-2005     | 79-2005-C          | 7MM / .275  | 16.5MM / .611 |            |              |
|                          | 4.0 (.1575) | 79-2010     | 79-2010-C          | 7MM / .275  | 16.5MM / .611 |            |              |
|                          | 5.0 (.1969) | 79-2015     | 79-2015-C          | 12MM / .490 | 12.7MM / .503 |            |              |



ANY WIDTH CAN BE REDUCED TO YOUR SPECIFICATIONS.  
SPECIALS, CORNER RADIUS, STAGGER TOOTH  
AND LEFT HAND ARE AVAILABLE ON REQUEST.

ON THE WEB: [WWW.INTERNALTOOL.COM](http://WWW.INTERNALTOOL.COM)

**IT** Carbide Cutting Tools

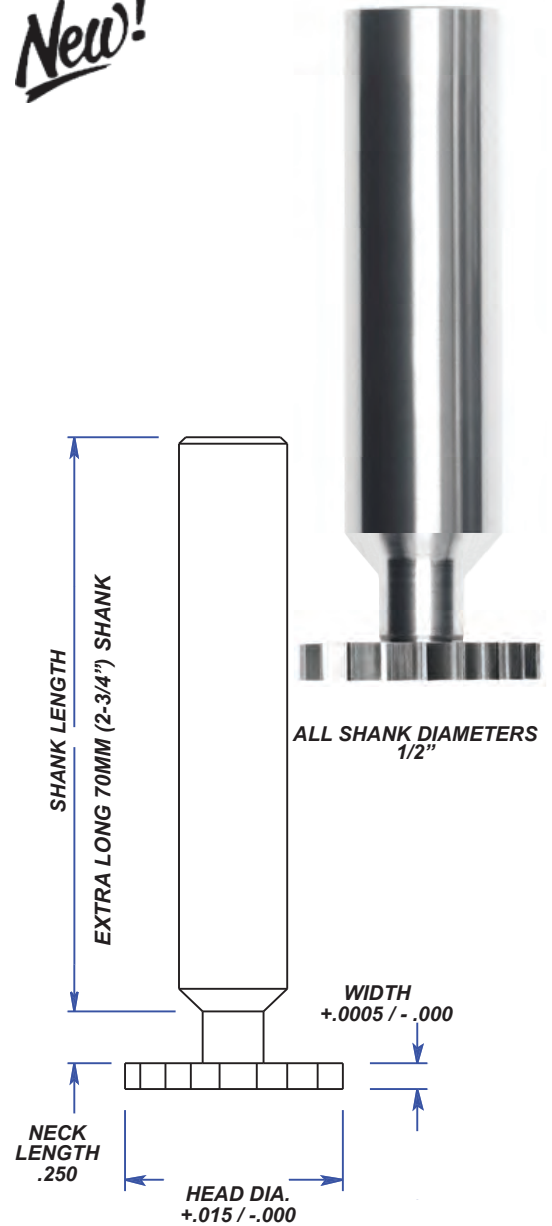
# SERIES 107 FINE TOOTH CARBIDE HEAD STEEL SHANK KEY CUTTERS

# KEY CUTTERS

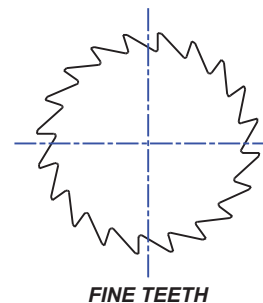
APPLICATION: USED ON HARDER MATERIALS AND WHEN CUTTING INTERRUPTED CUTS

*New!*

| HEAD DIA<br>+.015/- .000 | WIDTH        | ORDER EDP # | ALTN COATED EDP # | NECK DIA. | DEPTH OF CUT | # OF TEETH | SHANK LENGTH |
|--------------------------|--------------|-------------|-------------------|-----------|--------------|------------|--------------|
| 1/2                      | .0312 (1/32) | 107-1000    | 107-1000-C        | .250      | .125         | 14         | 2-3/4"       |
|                          | .0625 (1/16) | 107-1010    | 107-1010-C        | .250      | .125         |            |              |
|                          | .0938 (3/32) | 107-1020    | 107-1020-C        | .250      | .125         |            |              |
|                          | .1250 (1/8)  | 107-1030    | 107-1030-C        | .250      | .125         |            |              |
| 5/8                      | .0312 (1/32) | 107-1040    | 107-1040-C        | .280      | .172         | 16         | 2-3/4"       |
|                          | .0625 (1/16) | 107-1050    | 107-1050-C        | .280      | .172         |            |              |
|                          | .0938 (3/32) | 107-1060    | 107-1060-C        | .280      | .172         |            |              |
|                          | .1250 (1/8)  | 107-1070    | 107-1070-C        | .280      | .172         |            |              |
| 3/4                      | .0312 (1/32) | 107-1080    | 107-1080-C        | .280      | .235         | 20         | 2-3/4"       |
|                          | .0625 (1/16) | 107-1090    | 107-1090-C        | .280      | .235         |            |              |
|                          | .0938 (3/32) | 107-1100    | 107-1100-C        | .280      | .235         |            |              |
|                          | .1250 (1/8)  | 107-1110    | 107-1110-C        | .280      | .235         |            |              |
|                          | .1875 (3/16) | 107-1120    | 107-1120-C        | .280      | .235         |            |              |
|                          | .2500 (1/4)  | 107-1130    | 107-1130-C        | .280      | .235         |            |              |
| 7/8                      | .0625 (1/16) | 107-1140    | 107-1140-C        | .280      | .297         | 22         | 2-3/4"       |
|                          | .0938 (3/32) | 107-1150    | 107-1150-C        | .280      | .297         |            |              |
|                          | .1250 (1/8)  | 107-1160    | 107-1160-C        | .280      | .297         |            |              |
|                          | .1875 (3/16) | 107-1170    | 107-1170-C        | .280      | .297         |            |              |
| 1                        | .0312 (1/32) | 107-1180    | 107-1180-C        | .280      | .360         | 24         | 2-3/4"       |
|                          | .0625 (1/16) | 107-1190    | 107-1190-C        | .280      | .360         |            |              |
|                          | .0938 (3/32) | 107-1200    | 107-1200-C        | .280      | .360         |            |              |
|                          | .1250 (1/8)  | 107-1210    | 107-1210-C        | .280      | .360         |            |              |
|                          | .1875 (3/16) | 107-1220    | 107-1220-C        | .280      | .360         |            |              |
| 1-1/8                    | .0625 (1/16) | 107-1240    | 107-1240-C        | .280      | .422         | 28         | 2-3/4"       |
|                          | .0938 (3/32) | 107-1250    | 107-1250-C        | .280      | .422         |            |              |
|                          | .1250 (1/8)  | 107-1260    | 107-1260-C        | .280      | .422         |            |              |
|                          | .1875 (3/16) | 107-1270    | 107-1270-C        | .280      | .422         |            |              |
| 1-1/4                    | .0625 (1/16) | 107-1280    | 107-1280-C        | .280      | .485         | 30         | 2-3/4"       |
|                          | .0938 (3/32) | 107-1290    | 107-1290-C        | .280      | .485         |            |              |
|                          | .1250 (1/8)  | 107-1300    | 107-1300-C        | .280      | .485         |            |              |
|                          | .1562 (5/32) | 107-1310    | 107-1310-C        | .280      | .485         |            |              |
|                          | .1875 (3/16) | 107-1320    | 107-1320-C        | .490      | .380         |            |              |
| 1-1/2                    | .2500 (1/4)  | 107-1330    | 107-1330-C        | .490      | .380         | 30         | 2-1/2"       |
|                          | .0625 (1/16) | 107-1340    | 107-1340-C        | .280      | .610         |            |              |
|                          | .0938 (3/32) | 107-1350    | 107-1350-C        | .280      | .610         |            |              |
|                          | .1250 (1/8)  | 107-1360    | 107-1360-C        | .280      | .610         |            |              |
|                          | .1562 (5/32) | 107-1370    | 107-1370-C        | .490      | .505         |            |              |
| 1-1/2                    | .1875 (3/16) | 107-1380    | 107-1380-C        | .490      | .505         | 36         | 2-1/2"       |



ANY WIDTH CAN BE REDUCED TO YOUR SPECIFICATIONS.





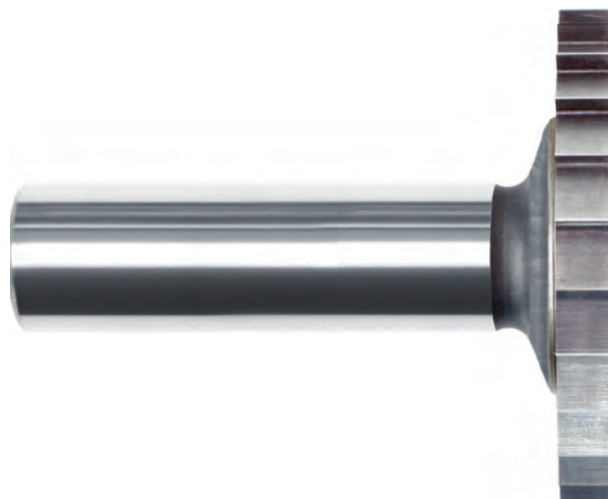
# KEY CUTTERS

## SERIES 23 LARGE DIAMETER CARBIDE HEAD STEEL SHANK KEY CUTTERS

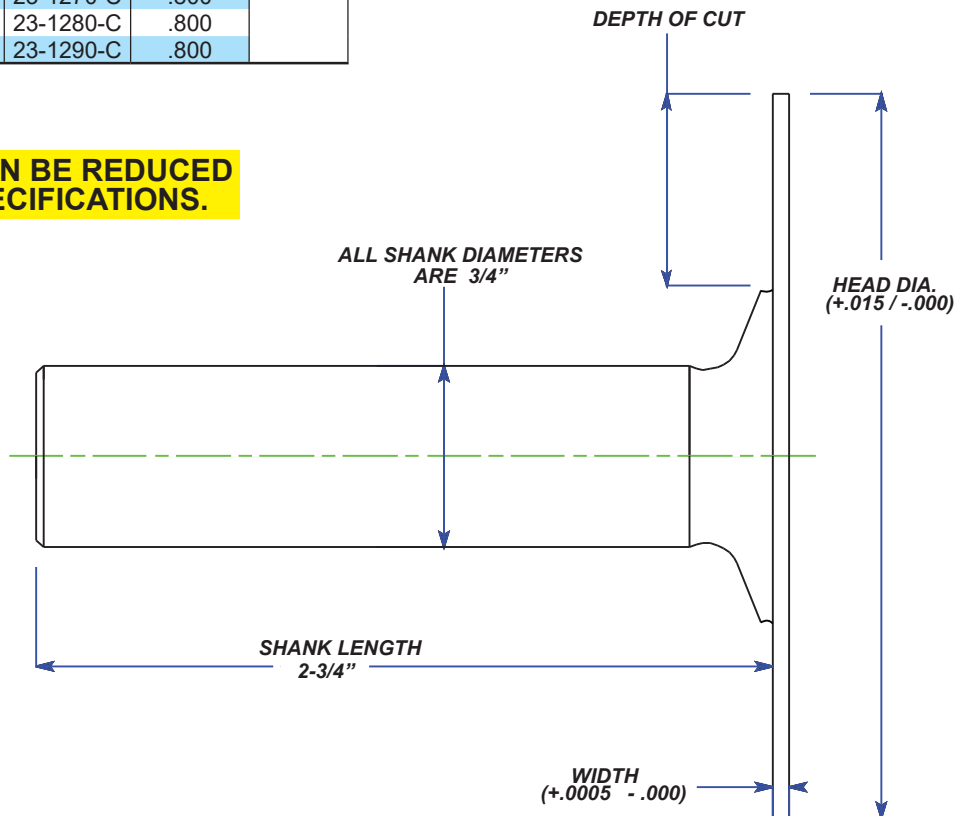
APPLICATION : FOR CUTTING SLOTS & KEYWAYS

| HEAD DIA | WIDTH        | ORDER EDP # | ALTIN COATED EDP # | DEPTH OF CUT | # OF TEETH |
|----------|--------------|-------------|--------------------|--------------|------------|
| 2"       | .0312 (1/32) | 23-1000     | 23-1000-C          | .550         | 24         |
|          | .0625 (1/16) | 23-1010     | 23-1010-C          | .550         |            |
|          | .0938 (3/32) | 23-1020     | 23-1020-C          | .550         |            |
|          | .1250 (1/8)  | 23-1030     | 23-1030-C          | .550         |            |
|          | .1875 (3/16) | 23-1040     | 23-1040-C          | .550         |            |
|          | .2500 (1/4)  | 23-1050     | 23-1050-C          | .550         |            |
| 2-1/4"   | .0312 (1/32) | 23-1060     | 23-1060-C          | .600         | 28         |
|          | .0625 (1/16) | 23-1070     | 23-1070-C          | .600         |            |
|          | .0938 (3/32) | 23-1080     | 23-1080-C          | .600         |            |
|          | .1250 (1/8)  | 23-1090     | 23-1090-C          | .600         |            |
|          | .1875 (3/16) | 23-1100     | 23-1100-C          | .600         |            |
|          | .2500 (1/4)  | 23-1110     | 23-1110-C          | .600         |            |
| 2-1/2"   | .0312 (1/32) | 23-1120     | 23-1120-C          | .550         | 28         |
|          | .0625 (1/16) | 23-1130     | 23-1130-C          | .550         |            |
|          | .0938 (3/32) | 23-1140     | 23-1140-C          | .550         |            |
|          | .1250 (1/8)  | 23-1150     | 23-1150-C          | .550         |            |
|          | .1875 (3/16) | 23-1160     | 23-1160-C          | .550         |            |
|          | .2500 (1/4)  | 23-1170     | 23-1170-C          | .550         |            |
| 2-3/4"   | .0312 (1/32) | 23-1180     | 23-1180-C          | .650         | 30         |
|          | .0625 (1/16) | 23-1190     | 23-1190-C          | .650         |            |
|          | .0938 (3/32) | 23-1200     | 23-1200-C          | .650         |            |
|          | .1250 (1/8)  | 23-1210     | 23-1210-C          | .650         |            |
|          | .1875 (3/16) | 23-1220     | 23-1220-C          | .650         |            |
|          | .2500 (1/4)  | 23-1230     | 23-1230-C          | .650         |            |
| 3"       | .0312 (1/32) | 23-1240     | 23-1240-C          | .800         | 30         |
|          | .0625 (1/16) | 23-1250     | 23-1250-C          | .800         |            |
|          | .0938 (3/32) | 23-1260     | 23-1260-C          | .800         |            |
|          | .1250 (1/8)  | 23-1270     | 23-1270-C          | .800         |            |
|          | .1875 (3/16) | 23-1280     | 23-1280-C          | .800         |            |
|          | .2500 (1/4)  | 23-1290     | 23-1290-C          | .800         |            |

*New!*



**ANY WIDTH CAN BE REDUCED TO YOUR SPECIFICATIONS.**



SPECIALIZING IN UNIQUE AND HARD TO FIND CUTTING TOOLS

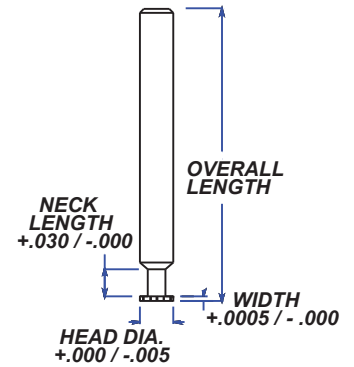
**Carbide Cutting Tools**

# SERIES 77 RETAINING RING CARBIDE KEY CUTTERS

# KEY CUTTERS

APPLICATION: ALL CLEARANCE ANGLES, RAKE ANGLES AND DISH CLEARANCE'S ARE SPECIFICALLY ENGINEERED AND DESIGNED FOR CUTTING RETAINING RING GROOVES

| HEAD DIA | WIDTH | NECK DIA | NECK LENGTH | ORDER EDP # | ALTN COATED EDP # | SHANK DIA | DEPTH OF CUT | # OF TEETH | OVERALL LENGTH |
|----------|-------|----------|-------------|-------------|-------------------|-----------|--------------|------------|----------------|
| 3/16     | .018  | .094     | 3/16        | 77-1900     | 77-1900-C         | 3/16      | .046         | 6          | 2-1/2"         |
|          | .029  | .125     | 3/16        | 77-1910     | 77-1910-C         | 3/16      | .031         |            |                |
| 1/4      | .039  | .125     | 1/4         | 77-1920     | 77-1920-C         | 1/4       | .062         | 6          | 2-1/2"         |
|          | .046  | .125     | 1/4         | 77-1930     | 77-1930-C         | 1/4       | .062         |            |                |
| 5/16     | .056  | .150     | 5/16        | 77-1940     | 77-1940-C         | 5/16      | .081         | 8          | 2-1/2"         |
| 3/8      | .068  | .200     | 3/8         | 77-1950     | 77-1950-C         | 3/8       | .087         | 8          | 2-1/2"         |
|          | .086  | .200     | 3/8         | 77-1960     | 77-1960-C         | 3/8       | .087         |            |                |
| 1/2      | .103  | .250     | 3/8         | 77-1970     | 77-1970-C         | 1/2       | .125         | 10         | 3"             |
|          | .120  | .250     | 3/8         | 77-1980     | 77-1980-C         | 1/2       | .125         |            |                |



## SERIES 74 LONG SHANK SOLID CARBIDE KEY CUTTERS

| HEAD DIA | WIDTH | NECK DIA | NECK LENGTH | ORDER EDP # | ALTN COATED EDP # | SHANK DIA | DEPTH OF CUT | # OF TEETH | OVERALL LENGTH |
|----------|-------|----------|-------------|-------------|-------------------|-----------|--------------|------------|----------------|
| 3/16     | .0469 | .094     | 1/4         | 74-0100     | 74-0100-C         | 3/16      | .046         | 6          | 4"             |
|          | .0938 | .094     | 1/4         | 74-0105     | 74-0105-C         | 3/16      | .046         |            |                |
| 1/4      | .0625 | .125     | 3/8         | 74-0110     | 74-0110-C         | 1/4       | .062         | 6          | 4"             |
|          | .1250 | .125     | 3/8         | 74-0115     | 74-0115-C         | 1/4       | .062         |            |                |
| 5/16     | .0625 | .150     | 1/2         | 74-0120     | 74-0120-C         | 5/16      | .081         | 8          | 4"             |
|          | .1250 | .150     | 1/2         | 74-0125     | 74-0125-C         | 5/16      | .081         |            |                |
| 3/8      | .0625 | .200     | 5/8         | 74-0130     | 74-0130-C         | 3/8       | .087         | 8          | 4"             |
|          | .1250 | .200     | 5/8         | 74-0135     | 74-0135-C         | 3/8       | .087         |            |                |
| 1/2      | .0625 | .250     | 3/4         | 74-0140     | 74-0140-C         | 1/2       | .125         | 10         | 6"             |
|          | .1250 | .250     | 3/4         | 74-0145     | 74-0145-C         | 1/2       | .125         |            |                |

**New!**

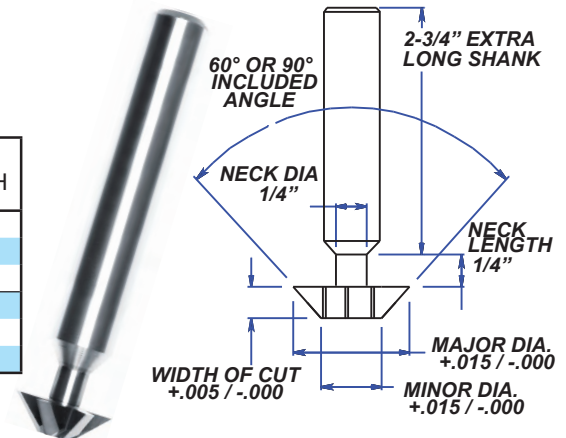
## SERIES 74 LONG SHANK CARBIDE HEAD KEY CUTTERS

| HEAD DIA | WIDTH | NECK DIA | NECK LENGTH | ORDER EDP # | ALTN COATED EDP # | SHANK DIA | DEPTH OF CUT | # OF TEETH | OVERALL LENGTH |
|----------|-------|----------|-------------|-------------|-------------------|-----------|--------------|------------|----------------|
| 5/8      | .0625 | .280     | 1/4         | 74-0200     | 74-0200-C         | 1/2       | .172         | 10         | 6"             |
|          | .1250 | .280     | 1/4         | 74-0205     | 74-0205-C         | 1/2       | .172         |            |                |
| 3/4      | .0625 | .250     | 1/4         | 74-0210     | 74-0210-C         | 1/2       | .250         | 10         | 6"             |
|          | .1250 | .250     | 1/4         | 74-0215     | 74-0215-C         | 1/2       | .250         |            |                |
| 7/8      | .0625 | .280     | 1/4         | 74-0220     | 74-0220-C         | 1/2       | .297         | 12         | 6"             |
|          | .1250 | .280     | 1/4         | 74-0225     | 74-0225-C         | 1/2       | .297         |            |                |
| 1"       | .0625 | .280     | 1/4         | 74-0230     | 74-0230-C         | 1/2       | .360         | 12         | 6"             |
|          | .1250 | .280     | 1/4         | 74-0235     | 74-0235-C         | 1/2       | .360         |            |                |
| 1-1/4    | .0625 | .280     | 1/4         | 74-0240     | 74-0240-C         | 1/2       | .485         | 14         | 6"             |
|          | .1250 | .280     | 1/4         | 74-0245     | 74-0245-C         | 1/2       | .485         |            |                |

**New!**

## SERIES 90 SINGLE ANGLE CUTTERS

| INCLUDED ANGLE | MAJOR DIA | MINOR DIA | WIDTH OF CUT | ORDER EDP # | ALTN COATED EDP # | TOOL ID # | # OF TEETH |
|----------------|-----------|-----------|--------------|-------------|-------------------|-----------|------------|
| 60°            | 1/2       | .356      | .125         | 90-1100     | 90-1100-C         | SA-500-60 | 4          |
|                | 5/8       | .408      | .187         | 90-1105     | 90-1105-C         | SA-625-60 | 6          |
|                | 3/4       | .461      | .250         | 90-1110     | 90-1110-C         | SA-750-60 | 6          |
| 90°            | 1/2       | .250      | .125         | 90-1115     | 90-1115-C         | SA-500-90 | 4          |
|                | 5/8       | .250      | .187         | 90-1120     | 90-1120-C         | SA-625-90 | 6          |
|                | 3/4       | .250      | .250         | 90-1125     | 90-1125-C         | SA-750-90 | 6          |



OVER 6000 TOOLS NOW AVAILABLE

**IT** Carbide Cutting Tools

# KEY CUTTERS

# SERIES 76 CARBIDE 1/4" SHANK KEY CUTTERS

APPLICATION: DESIGNED TO BE USED IN SMALL MILLS OR AS LIVE TOOLING

*New!*

## SOLID CARBIDE

| HEAD DIA<br>+.010/-000 | WIDTH | NECK DIA | NECK LENGTH | ORDER EDP # | ALTiN COATED EDP # | TOOL ID #  | SHANK DIA | DEPTH OF CUT | # OF TEETH | SHANK LENGTH |
|------------------------|-------|----------|-------------|-------------|--------------------|------------|-----------|--------------|------------|--------------|
| 3/8                    | .0312 | .200     | 1/4         | 76-9000     | 76-9000-C          | SC-375-031 | 1/4       | .875         | 8          | 2-1/2"       |
|                        | .0625 | .200     | 1/4         | 76-9010     | 76-9010-C          | SC-375-063 | 1/4       | .875         |            |              |
|                        | .0938 | .200     | 1/4         | 76-9015     | 76-9015-C          | SC-375-094 | 1/4       | .875         |            |              |
|                        | .1250 | .200     | 1/4         | 76-9020     | 76-9020-C          | SC-375-125 | 1/4       | .875         |            |              |
| 1/2                    | .0312 | .240     | 1/4         | 76-9025     | 76-9025-C          | SC-500-031 | 1/4       | .135         | 10         | 2-1/2"       |
|                        | .0625 | .240     | 1/4         | 76-9030     | 76-9030-C          | SC-500-063 | 1/4       | .135         |            |              |
|                        | .0938 | .240     | 1/4         | 76-9035     | 76-9035-C          | SC-500-094 | 1/4       | .135         |            |              |
|                        | .1250 | .240     | 1/4         | 76-9040     | 76-9040-C          | SC-500-125 | 1/4       | .135         |            |              |
| 5/8                    | .0312 | .240     | 1/4         | 76-9045     | 76-9045-C          | SC-625-031 | 1/4       | .185         | 10         | 2-1/2"       |
|                        | .0625 | .240     | 1/4         | 76-9050     | 76-9050-C          | SC-625-063 | 1/4       | .185         |            |              |
|                        | .0938 | .240     | 1/4         | 76-9055     | 76-9055-C          | SC-625-094 | 1/4       | .185         |            |              |
|                        | .1250 | .240     | 1/4         | 76-9060     | 76-9060-C          | SC-625-125 | 1/4       | .185         |            |              |

SPECIAL WIDTHS, CORNER RADIUS, STAGGER TOOTH AND LEFT HAND ARE AVAILABLE ON REQUEST.



# SERIES 78 CARBIDE HEAD 3/8 STEEL SHANK KEY CUTTERS

| HEAD DIA<br>+.015/-000 | WIDTH | ORDER EDP # | ALTiN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA | # OF TEETH | SHANK LENGTH |
|------------------------|-------|-------------|--------------------|-----------|--------------|-------------|-----------|------------|--------------|
| 1/2                    | .0312 | 78-0870     | 78-0870-C          | .250      | .125         | 1/4         | 3/8       | 10         | 2-3/4"       |
|                        | .0469 | 78-0875     | 78-0875-C          | .250      | .125         |             |           |            |              |
|                        | .0625 | 78-0880     | 78-0880-C          | .250      | .125         |             |           |            |              |
|                        | .0781 | 78-0885     | 78-0885-C          | .250      | .125         |             |           |            |              |
|                        | .0938 | 78-0890     | 78-0890-C          | .250      | .125         |             |           |            |              |
|                        | .1250 | 78-0895     | 78-0895-C          | .250      | .125         |             |           |            |              |
| 5/8                    | .0312 | 78-0900     | 78-0900-C          | .250      | .187         | 1/4         | 3/8       | 10         | 2-3/4"       |
|                        | .0469 | 78-0902     | 78-0902-C          | .250      | .187         |             |           |            |              |
|                        | .0625 | 78-0905     | 78-0905-C          | .250      | .187         |             |           |            |              |
|                        | .0781 | 78-0907     | 78-0907-C          | .250      | .187         |             |           |            |              |
|                        | .0938 | 78-0910     | 78-0910-C          | .250      | .187         |             |           |            |              |
|                        | .1250 | 78-0915     | 78-0915-C          | .250      | .187         |             |           |            |              |
| 3/4                    | .0312 | 78-0920     | 78-0920-C          | .250      | .250         | 1/4         | 3/8       | 10         | 2-3/4"       |
|                        | .0469 | 78-0922     | 78-0922-C          | .250      | .250         |             |           |            |              |
|                        | .0625 | 78-0925     | 78-0925-C          | .250      | .250         |             |           |            |              |
|                        | .0781 | 78-0927     | 78-0927-C          | .250      | .250         |             |           |            |              |
|                        | .0938 | 78-0930     | 78-0930-C          | .250      | .250         |             |           |            |              |
|                        | .1250 | 78-0935     | 78-0935-C          | .250      | .250         |             |           |            |              |
| 1"                     | .0312 | 78-0945     | 78-0945-C          | .250      | .375         | 1/4         | 3/8       | 12         | 2-3/4"       |
|                        | .0469 | 78-0950     | 78-0950-C          | .250      | .375         |             |           |            |              |
|                        | .0625 | 78-0955     | 78-0955-C          | .250      | .375         |             |           |            |              |
|                        | .0781 | 78-0960     | 78-0960-C          | .250      | .375         |             |           |            |              |
|                        | .0938 | 78-0965     | 78-0965-C          | .250      | .375         |             |           |            |              |
|                        | .1250 | 78-0970     | 78-0970-C          | .250      | .375         |             |           |            |              |

SPECIAL WIDTHS ARE AVAILABLE ON REQUEST.



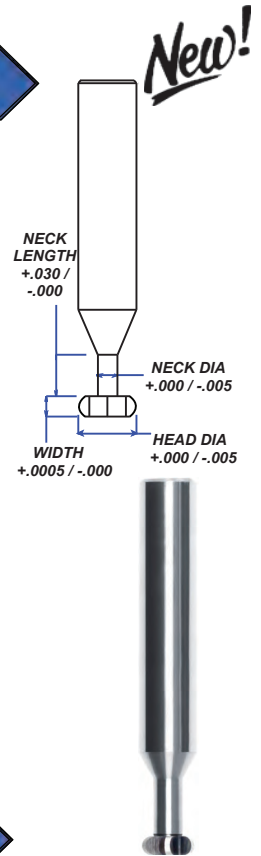
# SERIES 80 FULL RADIUS KEY CUTTER

# KEY CUTTERS

APPLICATION: FOR FULL RADIUS SLOTS

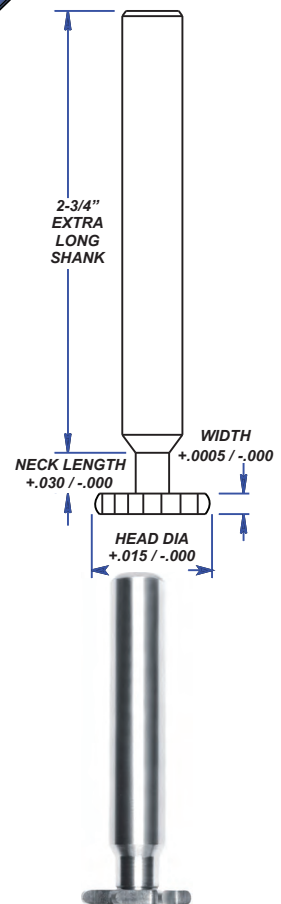
## SOLID CARBIDE FULL RADIUS

| HEAD DIA. | WIDTH        | RADIUS SIZE | ORDER EDP # | ALTIN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | O.A.L. |
|-----------|--------------|-------------|-------------|--------------------|-----------|--------------|-------------|------------|------------|--------|
| 3/16      | .0312 (1/32) | .0156       | 80-5000     | 80-5000-C          | .094      | .046         | 3/16        | 3/16       | 4          | 2-1/2" |
|           | .0469 (3/64) | .0234       | 80-5010     | 80-5010-C          | .094      | .046         |             |            |            |        |
|           | .0625 (1/16) | .0312       | 80-5020     | 80-5020-C          | .094      | .046         |             |            |            |        |
| 1/4       | .0312 (1/32) | .0156       | 80-5030     | 80-5030-C          | .125      | .062         | 1/4         | 1/4        | 5          | 2-1/2" |
|           | .0469 (3/64) | .0234       | 80-5040     | 80-5040-C          | .125      | .062         |             |            |            |        |
|           | .0625 (1/16) | .0312       | 80-5050     | 80-5050-C          | .125      | .062         |             |            |            |        |
|           | .0781 (5/64) | .0390       | 80-5060     | 80-5060-C          | .125      | .062         |             |            |            |        |
| 5/16      | .0312 (1/32) | .0156       | 80-5080     | 80-5080-C          | .150      | .081         | 5/16        | 5/16       | 6          | 2-1/2" |
|           | .0469 (3/64) | .0234       | 80-5090     | 80-5090-C          | .150      | .081         |             |            |            |        |
|           | .0625 (1/16) | .0312       | 80-6000     | 80-6000-C          | .150      | .081         |             |            |            |        |
|           | .0781 (5/64) | .0390       | 80-6010     | 80-6010-C          | .150      | .081         |             |            |            |        |
|           | .0938 (3/32) | .0469       | 80-6020     | 80-6020-C          | .150      | .081         |             |            |            |        |
| 3/8       | .0312 (1/32) | .0156       | 80-6040     | 80-6040-C          | .200      | .087         | 3/8         | 3/8        | 6          | 2-1/2" |
|           | .0469 (3/64) | .0234       | 80-6050     | 80-6050-C          | .200      | .087         |             |            |            |        |
|           | .0625 (1/16) | .0312       | 80-6060     | 80-6060-C          | .200      | .087         |             |            |            |        |
|           | .0938 (3/32) | .0469       | 80-6070     | 80-6070-C          | .200      | .087         |             |            |            |        |
|           | .1250 (1/8)  | .0625       | 80-6080     | 80-6080-C          | .200      | .087         |             |            |            |        |
| 1/2       | .0625 (1/16) | .0312       | 80-6090     | 80-6090-C          | .250      | .125         | 3/8         | 1/2        | 6          | 3"     |
|           | .0938 (3/32) | .0469       | 80-7000     | 80-7000-C          | .250      | .125         |             |            |            |        |
|           | .1250 (1/8)  | .0625       | 80-7010     | 80-7010-C          | .250      | .125         |             |            |            |        |



## CARBIDE HEAD ON HARDENED STEEL SHANK FULL RADIUS

| HEAD DIA. | WIDTH        | RADIUS SIZE | ORDER EDP # | ALTIN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | O.A.L. |
|-----------|--------------|-------------|-------------|--------------------|-----------|--------------|-------------|------------|------------|--------|
| 1/2       | .0312 (1/32) | .0156       | 80-1090     | 80-1090-C          | .250      | .125         | 1/4         | 1/2        | 6          | 2-3/4" |
|           | .0469 (3/64) | .0234       | 80-1095     | 80-1095-C          | .250      | .125         |             |            |            |        |
|           | .0625 (1/16) | .0312       | 80-1100     | 80-1100-C          | .250      | .125         |             |            |            |        |
|           | .0781 (5/64) | .0395       | 80-1104     | 80-1104-C          | .250      | .125         |             |            |            |        |
|           | .0938 (3/32) | .0469       | 80-1105     | 80-1105-C          | .250      | .125         |             |            |            |        |
| 5/8       | .0312 (1/32) | .0156       | 80-1112     | 80-1112-C          | .280      | .172         | 1/4         | 1/2        | 6          | 2-3/4" |
|           | .0469 (3/64) | .0234       | 80-1114     | 80-1114-C          | .280      | .172         |             |            |            |        |
|           | .0625 (1/16) | .0312       | 80-1115     | 80-1115-C          | .280      | .172         |             |            |            |        |
|           | .0781 (5/64) | .0395       | 80-1117     | 80-1117-C          | .280      | .172         |             |            |            |        |
|           | .0938 (3/32) | .0469       | 80-1120     | 80-1120-C          | .280      | .172         |             |            |            |        |
| 3/4       | .0312 (1/32) | .0156       | 80-1127     | 80-1127-C          | .280      | .235         | 1/4         | 1/2        | 8          | 2-3/4" |
|           | .0469 (3/64) | .0234       | 80-1128     | 80-1128-C          | .280      | .235         |             |            |            |        |
|           | .0625 (1/16) | .0312       | 80-1130     | 80-1130-C          | .280      | .235         |             |            |            |        |
|           | .0781 (5/64) | .0395       | 80-1132     | 80-1132-C          | .280      | .235         |             |            |            |        |
|           | .0938 (3/32) | .0469       | 80-1135     | 80-1135-C          | .280      | .235         |             |            |            |        |
| 1"        | .0312 (1/32) | .0156       | 80-1142     | 80-1142-C          | .280      | .360         | 1/4         | 1/2        | 8          | 2-3/4" |
|           | .0469 (3/64) | .0234       | 80-1144     | 80-1144-C          | .280      | .360         |             |            |            |        |
|           | .0625 (1/16) | .0312       | 80-1145     | 80-1145-C          | .280      | .360         |             |            |            |        |
|           | .0938 (3/32) | .0469       | 80-1150     | 80-1150-C          | .280      | .360         |             |            |            |        |
|           | .1250 (1/8)  | .0625       | 80-1155     | 80-1155-C          | .280      | .360         |             |            |            |        |
| 1-1/4     | .0625 (1/16) | .0312       | 80-1160     | 80-1160-C          | .280      | .485         | 1/4         | 1/2        | 10         | 2-3/4" |
|           | .0938 (3/32) | .0469       | 80-1165     | 80-1165-C          | .280      | .485         |             |            |            |        |
|           | .1250 (1/8)  | .0625       | 80-1170     | 80-1170-C          | .280      | .485         |             |            |            |        |
| 1-1/2     | .0625 (1/16) | .0312       | 80-1180     | 80-1180-C          | .280      | .610         | 1/4         | 1/2        | 10         | 2-3/4" |
|           | .0938 (3/32) | .0469       | 80-1185     | 80-1185-C          | .280      | .610         |             |            |            |        |
|           | .1250 (1/8)  | .0625       | 80-1190     | 80-1190-C          | .280      | .610         |             |            |            |        |



SPECIAL WIDTHS ARE AVAILABLE ON REQUEST.

THEIR SPECIAL IS OUR STANDARD

**IT** Carbide Cutting Tools

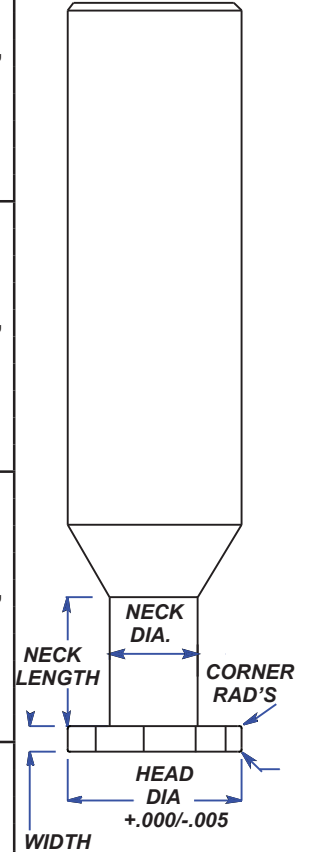


# KEY CUTTERS

## SERIES 101 SOLID CARBIDE CORNER RADIUS KEY CUTTERS

APPLICATION : FOR CUTTING SLOTS & KEYWAYS

| HEAD DIA | WIDTH | RADIUS SIZE | ORDER EDP # | ALTN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | O.A.L. |
|----------|-------|-------------|-------------|-------------------|-----------|--------------|-------------|------------|------------|--------|
| 1/4      | .0625 | .005        | 101-1000    | 101-1000-C        | .125      | .062         | 1/4         | 1/4        | 6          | 2-1/2" |
|          |       | .010        | 101-1020    | 101-1020-C        | .125      | .062         |             |            |            |        |
|          |       | .015        | 101-1030    | 101-1030-C        | .125      | .062         |             |            |            |        |
|          | .0938 | .005        | 101-1040    | 101-1040-C        | .125      | .062         |             |            |            |        |
|          |       | .010        | 101-1050    | 101-1050-C        | .125      | .062         |             |            |            |        |
|          |       | .015        | 101-1060    | 101-1060-C        | .125      | .062         |             |            |            |        |
|          | .1250 | .005        | 101-1070    | 101-1070-C        | .125      | .062         |             |            |            |        |
|          |       | .010        | 101-1080    | 101-1080-C        | .125      | .062         |             |            |            |        |
|          |       | .015        | 101-1090    | 101-1090-C        | .125      | .062         |             |            |            |        |
| .030     |       | 101-1100    | 101-1100-C  | .125              | .062      |              |             |            |            |        |
| 5/16     | .0625 | .005        | 101-1110    | 101-1110-C        | .150      | .081         | 5/16        | 5/16       | 8          | 2-1/2" |
|          |       | .010        | 101-1120    | 101-1120-C        | .150      | .081         |             |            |            |        |
|          |       | .015        | 101-1130    | 101-1130-C        | .150      | .081         |             |            |            |        |
|          | .0938 | .005        | 101-1140    | 101-1140-C        | .150      | .081         |             |            |            |        |
|          |       | .010        | 101-1150    | 101-1150-C        | .150      | .081         |             |            |            |        |
|          |       | .015        | 101-1160    | 101-1160-C        | .150      | .081         |             |            |            |        |
|          | .1250 | .005        | 101-1170    | 101-1170-C        | .150      | .081         |             |            |            |        |
|          |       | .010        | 101-1180    | 101-1180-C        | .150      | .081         |             |            |            |        |
|          |       | .015        | 101-1190    | 101-1190-C        | .150      | .081         |             |            |            |        |
| .030     |       | 101-1200    | 101-1200-C  | .150              | .081      |              |             |            |            |        |
| 3/8      | .0625 | .005        | 101-1210    | 101-1210-C        | .200      | .087         | 3/8         | 3/8        | 8          | 2-1/2" |
|          |       | .010        | 101-1220    | 101-1220-C        | .200      | .087         |             |            |            |        |
|          |       | .015        | 101-1230    | 101-1230-C        | .200      | .087         |             |            |            |        |
|          | .0938 | .005        | 101-1240    | 101-1240-C        | .200      | .087         |             |            |            |        |
|          |       | .010        | 101-1250    | 101-1250-C        | .200      | .087         |             |            |            |        |
|          |       | .015        | 101-1260    | 101-1260-C        | .200      | .087         |             |            |            |        |
|          | .1250 | .005        | 101-1270    | 101-1270-C        | .200      | .087         |             |            |            |        |
|          |       | .010        | 101-1280    | 101-1280-C        | .200      | .087         |             |            |            |        |
|          |       | .015        | 101-1290    | 101-1290-C        | .200      | .087         |             |            |            |        |
| .030     |       | 101-1300    | 101-1300-C  | .200              | .087      |              |             |            |            |        |
| 1/2      | .0625 | .005        | 101-1310    | 101-1310-C        | .250      | .125         | 3/8         | 1/2        | 10         | 3"     |
|          |       | .010        | 101-1320    | 101-1320-C        | .250      | .125         |             |            |            |        |
|          |       | .015        | 101-1330    | 101-1330-C        | .250      | .125         |             |            |            |        |
|          | .0938 | .005        | 101-1340    | 101-1340-C        | .250      | .125         |             |            |            |        |
|          |       | .010        | 101-1350    | 101-1350-C        | .250      | .125         |             |            |            |        |
|          |       | .015        | 101-1360    | 101-1360-C        | .250      | .125         |             |            |            |        |
|          | .1250 | .005        | 101-1370    | 101-1370-C        | .250      | .125         |             |            |            |        |
|          |       | .010        | 101-1380    | 101-1380-C        | .250      | .125         |             |            |            |        |
|          |       | .015        | 101-1390    | 101-1390-C        | .250      | .125         |             |            |            |        |
|          |       | .030        | 101-1400    | 101-1400-C        | .250      | .125         |             |            |            |        |
|          | .250  | .005        | 101-1410    | 101-1410-C        | .250      | .125         |             |            |            |        |
|          |       | .010        | 101-1420    | 101-1420-C        | .250      | .125         |             |            |            |        |
|          |       | .015        | 101-1430    | 101-1430-C        | .250      | .125         |             |            |            |        |
|          |       | .030        | 101-1440    | 101-1440-C        | .250      | .125         |             |            |            |        |



SPECIAL WIDTHS ARE AVAILABLE ON REQUEST.



ON THE WEB: [WWW.INTERNALTOOL.COM](http://WWW.INTERNALTOOL.COM)

**IT** Carbide Cutting Tools

# SERIES 102 CARBIDE HEAD STEEL SHANK CORNER RADIUS KEY CUTTERS

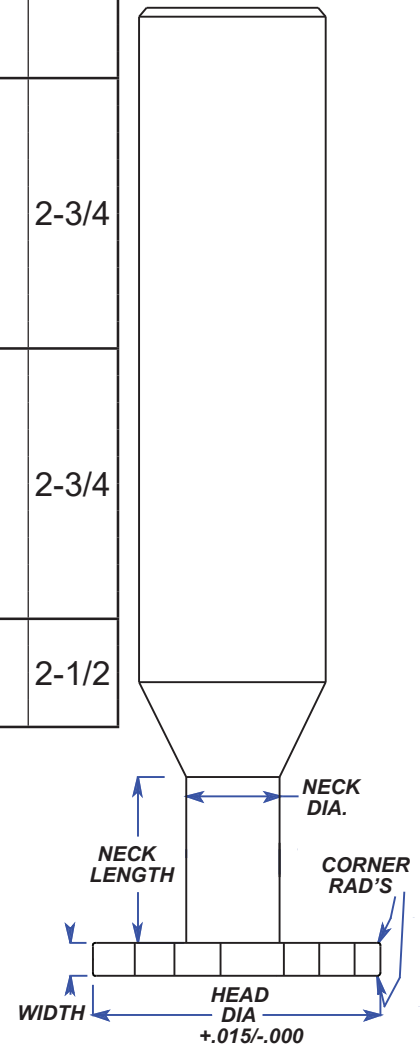
# KEY CUTTERS

APPLICATION : FOR CUTTING SLOTS & KEYWAYS

*New!*

| HEAD DIA | WIDTH | RADIUS SIZE | ORDER EDP # | ALTiN COATED EDP # | NECK DIA. | DEPTH OF CUT | NECK LENGTH | SHANK DIA. | # OF TEETH | O.A.L. |
|----------|-------|-------------|-------------|--------------------|-----------|--------------|-------------|------------|------------|--------|
| 5/8      | .0625 | .005        | 102-1000    | 102-1000-C         | .280      | .172         | 1/4         | 1/2        | 10         | 2-3/4  |
|          |       | .010        | 102-1020    | 102-1020-C         | .280      | .172         |             |            |            |        |
|          |       | .015        | 102-1030    | 102-1030-C         | .280      | .172         |             |            |            |        |
|          | .0938 | .005        | 102-1040    | 102-1040-C         | .280      | .172         |             |            |            |        |
|          |       | .010        | 102-1050    | 102-1050-C         | .280      | .172         |             |            |            |        |
|          |       | .015        | 102-1060    | 102-1060-C         | .280      | .172         |             |            |            |        |
|          | .1250 | .005        | 102-1070    | 102-1070-C         | .280      | .172         |             |            |            |        |
|          |       | .010        | 102-1080    | 102-1080-C         | .280      | .172         |             |            |            |        |
|          |       | .015        | 102-1090    | 102-1090-C         | .280      | .172         |             |            |            |        |
| 3/4      | .0625 | .005        | 102-1110    | 102-1110-C         | .280      | .235         | 1/4         | 1/2        | 10         | 2-3/4  |
|          |       | .010        | 102-1120    | 102-1120-C         | .280      | .235         |             |            |            |        |
|          |       | .015        | 102-1130    | 102-1130-C         | .280      | .235         |             |            |            |        |
|          | .0938 | .005        | 102-1140    | 102-1140-C         | .280      | .235         |             |            |            |        |
|          |       | .010        | 102-1150    | 102-1150-C         | .280      | .235         |             |            |            |        |
|          |       | .015        | 102-1160    | 102-1160-C         | .280      | .235         |             |            |            |        |
|          | .125  | .005        | 102-1170    | 102-1170-C         | .280      | .235         |             |            |            |        |
|          |       | .010        | 102-1180    | 102-1180-C         | .280      | .235         |             |            |            |        |
|          |       | .015        | 102-1190    | 102-1190-C         | .280      | .235         |             |            |            |        |
| 1"       | .0625 | .005        | 102-1210    | 102-1210-C         | .280      | .360         | 1/4         | 1/2        | 12         | 2-3/4  |
|          |       | .010        | 102-1220    | 102-1220-C         | .280      | .360         |             |            |            |        |
|          |       | .015        | 102-1230    | 102-1230-C         | .280      | .360         |             |            |            |        |
|          | .0938 | .005        | 102-1240    | 102-1240-C         | .280      | .360         |             |            |            |        |
|          |       | .010        | 102-1250    | 102-1250-C         | .280      | .360         |             |            |            |        |
|          |       | .015        | 102-1260    | 102-1260-C         | .280      | .360         |             |            |            |        |
|          | .1250 | .005        | 102-1270    | 102-1270-C         | .280      | .360         |             |            |            |        |
|          |       | .010        | 102-1280    | 102-1280-C         | .280      | .360         |             |            |            |        |
|          |       | .015        | 102-1290    | 102-1290-C         | .280      | .360         |             |            |            |        |
| 1-1/4    | .0625 | .005        | 102-1310    | 102-1310-C         | .280      | .485         | 1/4         | 1/2        | 14         | 2-3/4  |
|          |       | .010        | 102-1320    | 102-1320-C         | .280      | .485         |             |            |            |        |
|          |       | .015        | 102-1330    | 102-1330-C         | .280      | .485         |             |            |            |        |
|          | .0938 | .005        | 102-1340    | 102-1340-C         | .280      | .485         |             |            |            |        |
|          |       | .010        | 102-1350    | 102-1350-C         | .280      | .485         |             |            |            |        |
|          |       | .015        | 102-1360    | 102-1360-C         | .280      | .485         |             |            |            |        |
|          | .1250 | .005        | 102-1370    | 102-1370-C         | .280      | .485         |             |            |            |        |
|          |       | .010        | 102-1380    | 102-1380-C         | .280      | .485         |             |            |            |        |
|          |       | .015        | 102-1390    | 102-1390-C         | .280      | .485         |             |            |            |        |
| .250     | .005  | 102-1400    | 102-1400-C  | .280               | .485      |              |             |            |            |        |
|          | .010  | 102-1410    | 102-1410-C  | .380               | .435      |              |             |            |            |        |
|          | .015  | 102-1420    | 102-1420-C  | .380               | .435      |              |             |            |            |        |
|          |       | .015        | 102-1430    | 102-1430-C         | .380      | .435         | 1/4         | 1/2        | 14         | 2-1/2  |
|          |       | .030        | 102-1440    | 102-1440-C         | .380      | .435         |             |            |            |        |
|          |       |             |             |                    |           |              |             |            |            |        |

SPECIAL WIDTHS ARE AVAILABLE ON REQUEST.



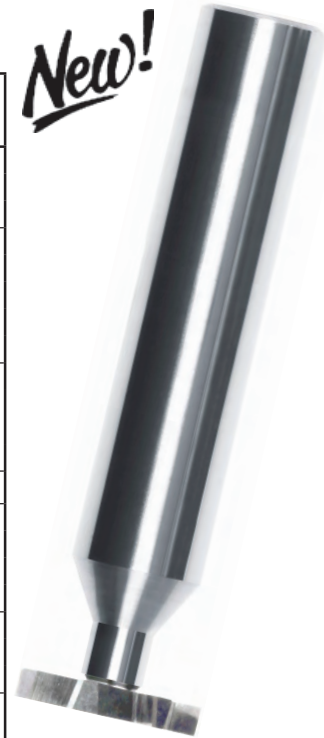
# KEY CUTTERS

## SERIES 103 STAGGERED TOOTH CARBIDE HEAD STEEL SHANK KEY CUTTERS

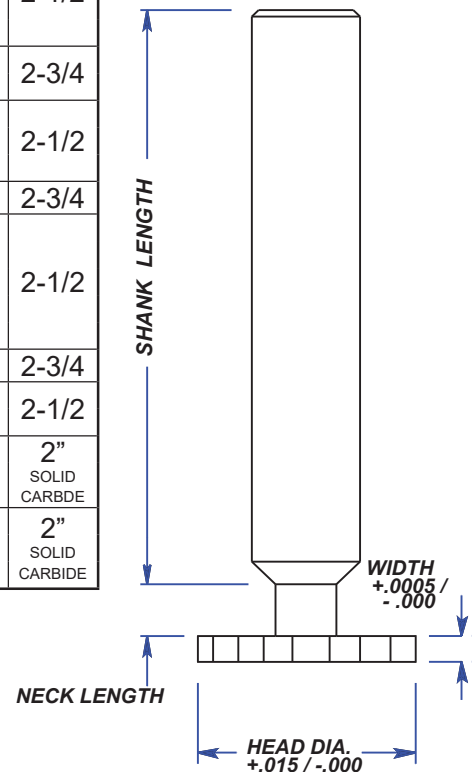
APPLICATION : FOR CUTTING SLOTS & KEYWAYS

| HEAD DIA | WIDTH | STD # | ORDER EDP # | ALTIN COATED EDP # | NECK DIA. | NECK LENGTH | DEPTH OF CUT | # OF TEETH | O.A.L.           |
|----------|-------|-------|-------------|--------------------|-----------|-------------|--------------|------------|------------------|
| 1/2      | .0625 | #204  | 103-1000    | 103-1000-C         | .135      | 1/8         | .182         | 8          | 2-3/4            |
|          | .0938 | #304  | 103-1010    | 103-1010-C         | .165      | 1/8         | .167         |            |                  |
|          | .1250 | #404  | 103-1020    | 103-1020-C         | .190      | 1/8         | .155         |            |                  |
| 5/8      | .0938 | #305  | 103-1030    | 103-1030-C         | .195      | 1/8         | .215         | 8          | 2-3/4            |
|          | .1250 | #405  | 103-1040    | 103-1040-C         | .225      | 1/4         | .200         |            |                  |
|          | .1562 | #505  | 103-1050    | 103-1050-C         | .250      | 1/4         | .187         |            |                  |
|          | .1875 | #605  | 103-1060    | 103-1060-C         | .250      | 1/4         | .187         |            |                  |
|          | .2500 |       | 103-1070    | 103-1070-C         | .280      | 1/4         | .172         |            |                  |
| 3/4      | .1250 | #406  | 103-1080    | 103-1080-C         | .230      | 1/4         | .260         | 8          | 2-3/4            |
|          | .1562 | #506  | 103-1090    | 103-1090-C         | .250      | 1/4         | .250         |            |                  |
|          | .1875 | #606  | 103-1100    | 103-1100-C         | .280      | 1/4         | .235         |            |                  |
|          | .2500 | #806  | 103-1110    | 103-1110-C         | .280      | 1/4         | .235         |            |                  |
|          | .3125 |       | 103-1120    | 103-1120-C         | .490      | 1/4         | .130         |            |                  |
| 7/8      | .1250 |       | 103-1130    | 103-1130-C         | .280      | 1/4         | .297         | 10         | 2-3/4            |
|          | .1562 | #507  | 103-1140    | 103-1140-C         | .250      | 1/4         | .312         |            |                  |
|          | .1875 | #607  | 103-1150    | 103-1150-C         | .280      | 1/4         | .297         |            |                  |
|          | .2188 | #707  | 103-1160    | 103-1160-C         | .280      | 1/4         | .297         | 10         | 2-1/2            |
|          | .2500 | #807  | 103-1170    | 103-1170-C         | .345      | 1/4         | .265         |            |                  |
|          | .3125 |       | 103-1180    | 103-1180-C         | .490      | 1/4         | .192         |            |                  |
|          | .3750 |       | 103-1190    | 103-1190-C         | .490      | 1/4         | .192         |            |                  |
| 1        | .1250 |       | 103-1200    | 103-1200-C         | .280      | 1/4         | .360         | 10         | 2-3/4            |
|          | .1875 | #608  | 103-1210    | 103-1210-C         | .280      | 1/4         | .360         |            |                  |
|          | .2188 | #708  | 103-1220    | 103-1220-C         | .340      | 1/4         | .330         |            |                  |
|          | .2500 | #808  | 103-1230    | 103-1230-C         | .345      | 1/4         | .327         |            |                  |
|          | .3125 | #1008 | 103-1240    | 103-1240-C         | .400      | 1/4         | .300         |            |                  |
| 1-1/8    | .3750 | #1208 | 103-1250    | 103-1250-C         | .400      | 1/4         | .300         | 10         | 2-1/2            |
|          | .1250 |       | 103-1260    | 103-1260-C         | .280      | 1/4         | .422         |            |                  |
|          | .1875 | #609  | 103-1270    | 103-1270-C         | .280      | 1/4         | .422         |            |                  |
|          | .2500 |       | 103-1280    | 103-1280-C         | .490      | 1/4         | .317         |            |                  |
|          | .3125 |       | 103-1290    | 103-1290-C         | .490      | 1/4         | .317         |            |                  |
| 1-1/4    | .3750 |       | 103-1300    | 103-1300-C         | .490      | 1/4         | .317         | 12         | 2-3/4            |
|          | .1250 |       | 103-1310    | 103-1310-C         | .280      | 1/4         | .485         |            |                  |
|          | .1875 | #610  | 103-1320    | 103-1320-C         | .320      | 1/4         | .465         |            |                  |
|          | .2188 | #710  | 103-1330    | 103-1330-C         | .380      | 1/4         | .435         |            |                  |
|          | .2500 | #810  | 103-1340    | 103-1340-C         | .437      | 1/4         | .406         |            |                  |
| 1-3/8    | .3125 | #1010 | 103-1350    | 103-1350-C         | .435      | 1/4         | .407         | 12         | 2-1/2            |
|          | .3750 | #1210 | 103-1360    | 103-1360-C         | .430      | 1/4         | .410         |            |                  |
|          | .1250 |       | 103-1370    | 103-1370-C         | .280      | 1/4         | .547         |            |                  |
|          | .1875 |       | 103-1380    | 103-1380-C         | .400      | 1/4         | .487         |            |                  |
|          | .2500 | #811  | 103-1390    | 103-1390-C         | .400      | 1/4         | .487         |            |                  |
| 1-1/2    | .3125 | #1011 | 103-1400    | 103-1400-C         | .470      | 1/4         | .452         | 12         | 2" SOLID CARBIDE |
|          | .3750 | #1211 | 103-1410    | 103-1410-C         | .470      | 1/4         | .452         |            |                  |
|          | .2500 | #812  | 103-1420    | 103-1420-C         | .430      | 1/4         | .535         |            |                  |
| 1-1/2    | .3125 | #1012 | 103-1430    | 103-1430-C         | .460      | 1/4         | .520         | 14         | 2" SOLID CARBIDE |
|          | .3750 | #1212 | 103-1440    | 103-1440-C         | .490      | 1/4         | .505         |            |                  |

SPECIAL WIDTHS ARE AVAILABLE ON REQUEST.



ALL SHANK DIAMETERS  
1/2"



SPECIALIZING IN UNIQUE AND HARD TO FIND CUTTING TOOLS



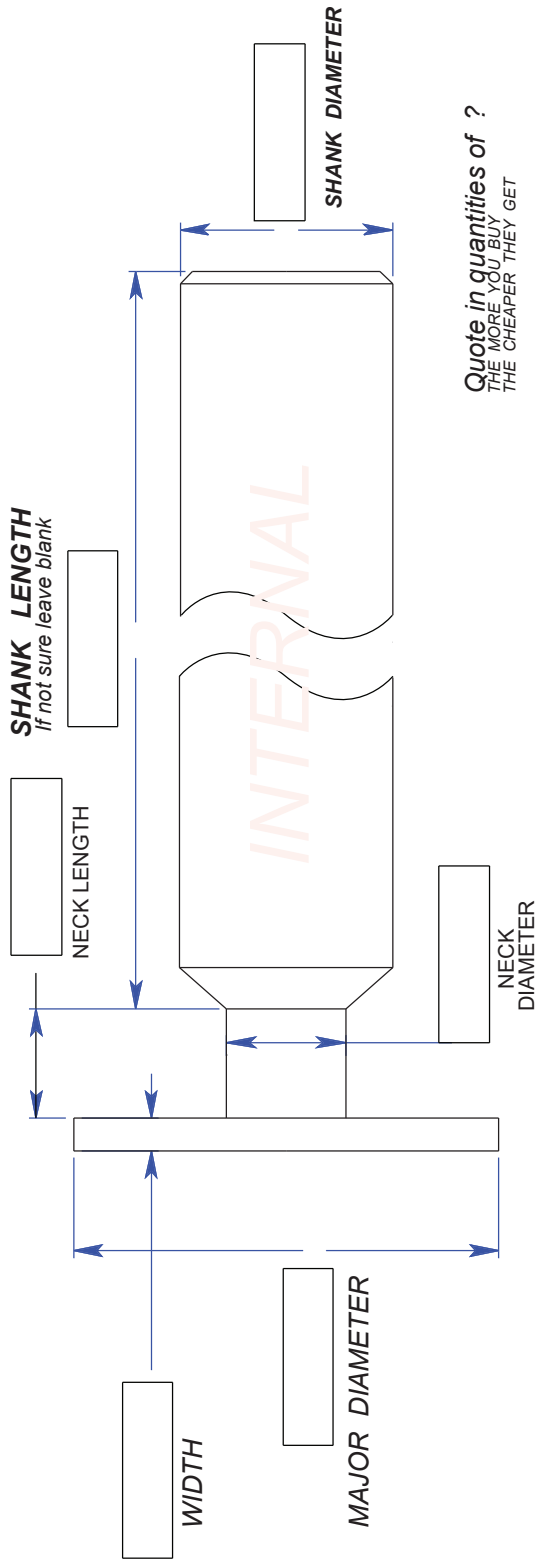
Carbide Cutting Tools

MAKE YOUR OWN KEY CUTTER TOOL HERE

REVISIONS:

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Quote in quantities of ?  
THE MORE YOU BUY  
THE CHEAPER THEY GET

CORNER RADIUS OUTSIDE - SIZE?

CORNER RADIUS INSIDE - SIZE?

FULL RADIUS ?

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PHONE: \_\_\_\_\_

FAX: \_\_\_\_\_

QUANTITY: \_\_\_\_\_

YOUR DISTRIBUTOR: \_\_\_\_\_

|                 |  |
|-----------------|--|
|                 | <b>INTERNAL TOOL</b>   |
|                 | TOLERANCE UNLESS OTHERWISE SPECIFIED<br>.X = +/- 1/32<br>.XX = +/- .010<br>.XXX = +/- .002<br>.XXXX = +/- .0005<br>ANGLES +/- 0.15 |
| DRAWN BY: _____ | REV: _____   |
| DATE: _____     | TOOL NUMBER: _____   |



# SPECIALTY CUTTERS

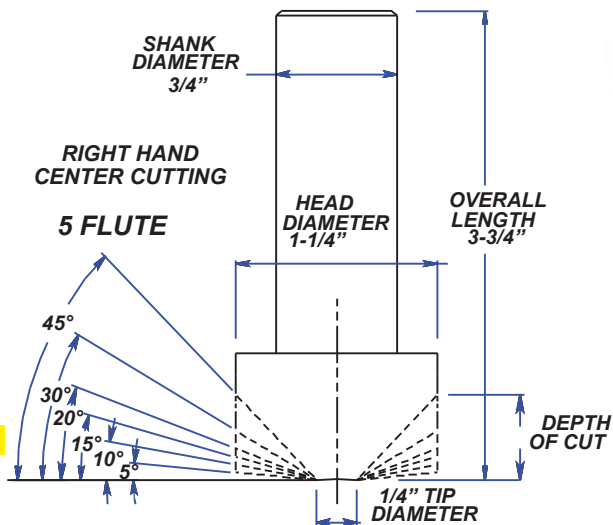
## SERIES 81 ANGLERS

APPLICATION: MILLING ANGLES

CARBIDE HEAD ON HARDENED STEEL SHANK

| ANGLE PER SIDE | ORDER EDP # | DEPTH OF CUT |
|----------------|-------------|--------------|
| 5°             | 81-1050     | .044         |
| 10°            | 81-1060     | .088         |
| 15°            | 81-1070     | .134         |
| 20°            | 81-1080     | .182         |
| 30°            | 81-1090     | .289         |
| 45°            | 81-1100     | .500         |

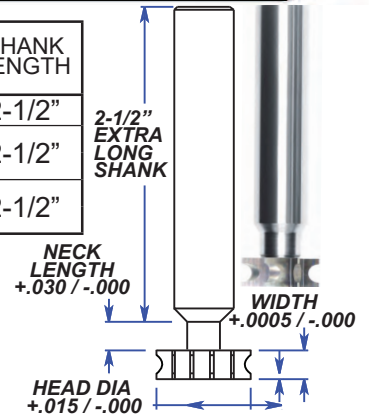
SPECIAL ANGLES AVAILABLE ON REQUEST



## SERIES 82 CONCAVE RADIUS KEY CUTTERS

APPLICATION: CONCAVE RADIUS WORK

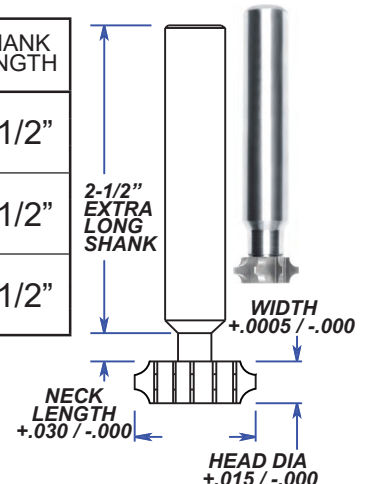
| HEAD DIA | RADIUS SIZE | HEAD WIDTH | ORDER EDP # | ALTN COATED EDP # | TOOL ID #  | NECK DIA. | NECK LENGTH | SHANK DIA. | # OF TEETH | SHANK LENGTH |
|----------|-------------|------------|-------------|-------------------|------------|-----------|-------------|------------|------------|--------------|
| 1/2      | .031        | 3/16       | 82-1100     | 82-1100-C         | CO-500-031 | .280      | 1/4         | 1/2        | 6          | 2-1/2"       |
| 5/8      | .046        | 7/32       | 82-1120     | 82-1120-C         | CO-625-046 | .280      | 1/4         | 1/2        | 6          | 2-1/2"       |
|          | .062        | 1/4        | 82-1130     | 82-1130-C         | CO-625-062 |           |             |            |            |              |
| 3/4      | .093        | 5/16       | 82-1140     | 82-1140-C         | CO-750-094 | .380      | 1/4         | 1/2        | 8          | 2-1/2"       |
|          | .125        | 3/8        | 82-1150     | 82-1150-C         | CO-750-125 |           |             |            |            |              |



## SERIES 84 DOUBLE CONCAVE RADIUS CUTTERS

APPLICATION: CONCAVE RADIUS WORK

| HEAD DIA. | RADIUS SIZE | HEAD WIDTH | ORDER EDP # | ALTN COATED EDP # | TOOL ID #  | NECK DIA. | NECK LENGTH | SHANK DIA. | # OF TEETH | SHANK LENGTH |
|-----------|-------------|------------|-------------|-------------------|------------|-----------|-------------|------------|------------|--------------|
| 1/2       | .010        | .115       | 84-1100     | 84-1100-C         | DR-500-010 | .250      | 1/4         | 1/2        | 6          | 2-1/2"       |
|           | .015        | .125       | 84-1105     | 84-1105-C         | DR-500-015 |           |             |            |            |              |
|           | .020        | .135       | 84-1110     | 84-1110-C         | DR-500-020 |           |             |            |            |              |
| 5/8       | .031        | .155       | 84-1115     | 84-1115-C         | DR-625-031 | .280      | 1/4         | 1/2        | 6          | 2-1/2"       |
|           | .046        | .185       | 84-1120     | 84-1120-C         | DR-625-046 |           |             |            |            |              |
|           | .062        | .215       | 84-1125     | 84-1125-C         | DR-625-062 |           |             |            |            |              |
| 3/4       | .080        | .255       | 84-1130     | 84-1130-C         | DR-750-080 | .380      | 1/4         | 1/2        | 8          | 2-1/2"       |
|           | .093        | .280       | 84-1135     | 84-1135-C         | DR-750-094 |           |             |            |            |              |
|           | .125        | .345       | 84-1140     | 84-1140-C         | DR-750-125 |           |             |            |            |              |



SPECIAL SIZES AVAILABLE ON REQUEST

ITI CARBIDE: MAXIMUM SHEAR WITH MINIMUM WEAR

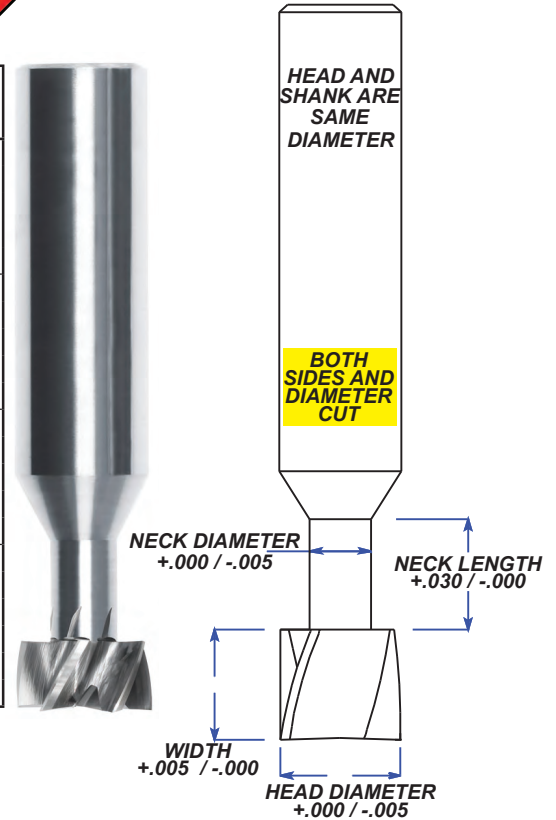
**ITI** Carbide Cutting Tools

# SERIES 106 PUSH-PULL SOLID CARBIDE CUTTERS

# CARBIDE CUTTERS

APPLICATION: CUTS ON BOTH SIDES AND DIAMETER

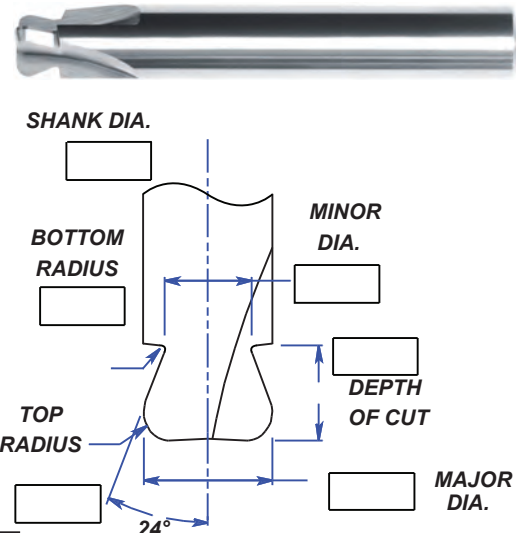
| HEAD DIA | WIDTH | ORDER EDP # | ALTN COATED EDP# | NECK DIA | NECK LENGTH | # OF TEETH | OVERALL LENGTH |
|----------|-------|-------------|------------------|----------|-------------|------------|----------------|
| 1/2      | .250  | 106-1000    | 106-1000-C       | .250     | 1/2         | 4          | 4"             |
|          | .375  | 106-1020    | 106-1020-C       |          |             |            |                |
|          | .500  | 106-1040    | 106-1040-C       |          |             |            |                |
|          | .625  | 106-1060    | 106-1060-C       |          |             |            |                |
|          | .750  | 106-1080    | 106-1080-C       |          |             |            |                |
| 5/8      | .250  | 106-1100    | 106-1100-C       | .312     | 1/2         | 4          | 4"             |
|          | .375  | 106-1120    | 106-1120-C       |          |             |            |                |
|          | .500  | 106-1140    | 106-1140-C       |          |             |            |                |
|          | .625  | 106-1160    | 106-1160-C       |          |             |            |                |
|          | .750  | 106-1180    | 106-1180-C       |          |             |            |                |
| 3/4      | .250  | 106-1200    | 106-1200-C       | .375     | 3/4         | 4          | 4"             |
|          | .375  | 106-1220    | 106-1220-C       |          |             |            |                |
|          | .500  | 106-1240    | 106-1240-C       |          |             |            |                |
|          | .625  | 106-1260    | 106-1260-C       |          |             |            |                |
|          | .750  | 106-1280    | 106-1280-C       |          |             |            |                |
| 1"       | .250  | 106-1300    | 106-1300-C       | .500     | 3/4         | 6          | 6"             |
|          | .375  | 106-1320    | 106-1320-C       |          |             |            |                |
|          | .500  | 106-1340    | 106-1340-C       |          |             |            |                |
|          | .625  | 106-1360    | 106-1360-C       |          |             |            |                |
|          | .750  | 106-1380    | 106-1380-C       |          |             |            |                |
|          | 1.00  | 106-1400    | 106-1400-C       |          |             |            |                |



## SERIES 51 O-RING DOVETAIL CUTTERS

APPLICATION: USED TO CUT-MILL 24° O-RING DOVETAILED. THEY CUT WITH BOTH TOP & BOTTOM RADIUS.

| O-RING SIZE | MINOR DIA | MAJOR DIA | ORDER EDP # | DEPTH OF CUT | BOTTOM RADIUS | TOP RADIUS | SHANK LENGTH & DIA |
|-------------|-----------|-----------|-------------|--------------|---------------|------------|--------------------|
| .070        | .062      | .086      | 51-8000     | .051         | .005          | .015       | 3/16 x 2.5         |
| .093        | .086      | .126      | 51-8005     | .075         | .010          | .015       | 3/16 x 2.5         |
| .103        | .094      | .140      | 51-8010     | .082         | .010          | .015       | 3/16 x 2.5         |
| .125        | .130      | .177      | 51-8015     | .102         | .010          | .031       | 1/4 x 2.5          |
| .139        | .125      | .180      | 51-8020     | .112         | .010          | .031       | 1/4 x 2.5          |
| .187        | .190      | .279      | 51-8025     | .154         | .015          | .031       | 5/16 x 2.5         |
| .210        | .189      | .293      | 51-8030     | .172         | .015          | .031       | 5/16 x 2.5         |
| .250        | .250      | .356      | 51-8035     | .212         | .015          | .062       | 3/8 x 2.5          |
| .275        | .244      | .369      | 51-8040     | .232         | .015          | .062       | 3/8 x 2.5          |
| .375        | .338      | .497      | 51-8045     | .317         | .020          | .094       | 1/2 x 3.0          |



## PARKER-HANNIFIN STYLE

DIMENSIONS ARE METRIC

| O-RING SIZE | MINOR DIA | MAJOR DIA | ORDER EDP # | DEPTH OF CUT | BOTTOM RADIUS | TOP RADIUS | SHANK LENGTH & DIA |
|-------------|-----------|-----------|-------------|--------------|---------------|------------|--------------------|
| 1.78        | 1.40      | 1.79      | 51-2000     | 1.25         | .211          | .508       | 3/16 x 2.5         |
| 2.62        | 2.10      | 3.22      | 51-2010     | 2.05         | .203          | .508       | 3/16 x 2.5         |
| 3.53        | 2.85      | 4.28      | 51-2020     | 2.80         | .254          | .787       | 1/4 x 2.5          |
| 5.33        | 4.35      | 7.33      | 51-2030     | 4.55         | .254          | .787       | 5/16 x 2.5         |
| 6.99        | 5.85      | 9.04      | 51-2040     | 5.85         | .254          | 1.60       | 3/8 x 2.5          |

TURNING STYLE O-RING TOOLS ARE ON PAGE 27

NEED A SPECIAL SIZE ?  
MAKE A COPY, FILL IN THE INFORMATION,  
AND FAX IT TO US FOR A QUOTE .

OVER 6000 TOOLS NOW AVAILABLE

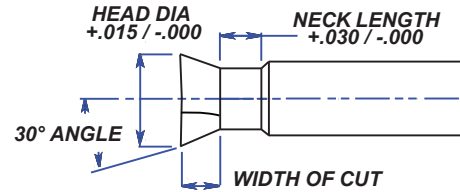
**IT** Carbide Cutting Tools

# DOVETAIL CUTTERS

## SERIES 86 CARBIDE HEAD, STEEL SHANK DOVETAIL CUTTERS

APPLICATION : FOR CUTTING DOVETAILS AND CHAMFERING

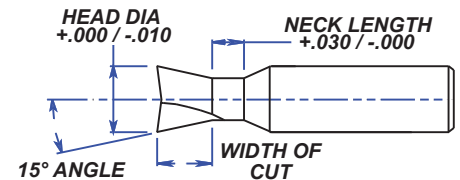
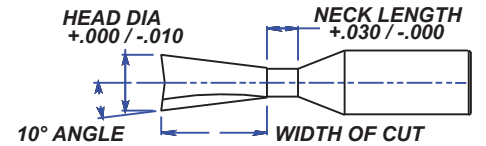
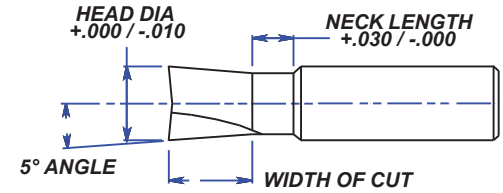
| HEAD DIA | WIDTH OF CUT | NECK DIA | ORDER EPD # | ALTIM COATED EDP # | SHANK DIA. | # OF TEETH | O.A.L. | NECK LENGTH | ANGLE PER SIDE |
|----------|--------------|----------|-------------|--------------------|------------|------------|--------|-------------|----------------|
| 3/8      | .187         | .160     | 86-1200     | 86-1200-C          | 1/2        | 5          | 3-1/8" | 1/4         | 30°            |
| 1/2      | .250         | .210     | 86-1205     | 86-1205-C          | 1/2        | 6          | 3-1/8" | 1/4         |                |
| 3/4      | .312         | .350     | 86-1210     | 86-1210-C          | 1/2        | 5          | 3-1/8" | 1/4         |                |
| 3/8      | .125         | .125     | 86-1215     | 86-1215-C          | 1/2        | 4          | 3-1/8" | 1/4         | 45°            |
| 1/2      | .156         | .185     | 86-1220     | 86-1220-C          | 1/2        | 4          | 3-1/8" | 1/4         |                |
| 3/4      | .250         | .250     | 86-1225     | 86-1225-C          | 1/2        | 5          | 3-1/8" | 1/4         |                |



### SERIES 86 SOLID CARBIDE DOVETAIL CUTTERS

APPLICATION : USED IN CHAMFERING OR MILLING ANGLES ON THE BOTTOM SURFACE OF A PART

| 5° PER SIDE 10° INCLUDED  |              |          |             |                    |            |            |        |             |  |
|---------------------------|--------------|----------|-------------|--------------------|------------|------------|--------|-------------|--|
| HEAD DIA                  | WIDTH OF CUT | NECK DIA | ORDER EPD # | ALTIM COATED EDP # | SHANK DIA. | # OF TEETH | O.A.L. | NECK LENGTH |  |
| 3/16                      | .500         | .100     | 86-0100     | 86-0100-C          | 3/16       | 4          | 2-1/2" | 1/4         |  |
| 1/4                       | .625         | .135     | 86-0105     | 86-0105-C          | 1/4        | 4          | 2-1/2" | 1/4         |  |
| 5/16                      | .750         | .175     | 86-0110     | 86-0110-C          | 5/16       | 4          | 2-1/2" | 1/4         |  |
| 3/8                       | .875         | .210     | 86-0115     | 86-0115-C          | 3/8        | 4          | 2-1/2" | 1/4         |  |
| 1/2                       | 1.000        | .300     | 86-0120     | 86-0120-C          | 1/2        | 6          | 3"     | 1/4         |  |
| 5/8                       | 1.250        | .405     | 86-0125     | 86-0125-C          | 5/8        | 6          | 3-1/2" | 1/4         |  |
| 10° PER SIDE 20° INCLUDED |              |          |             |                    |            |            |        |             |  |
| HEAD DIA                  | WIDTH OF CUT | NECK DIA | ORDER EPD # | ALTIM COATED EDP # | SHANK DIA. | # OF TEETH | O.A.L. | NECK LENGTH |  |
| 3/16                      | .250         | .090     | 86-0200     | 86-0200-C          | 3/16       | 4          | 2-1/2" | 1/4         |  |
| 1/4                       | .350         | .120     | 86-0205     | 86-0205-C          | 1/4        | 4          | 2-1/2" | 1/4         |  |
| 5/16                      | .450         | .140     | 86-0210     | 86-0210-C          | 5/16       | 4          | 2-1/2" | 1/4         |  |
| 3/8                       | .550         | .175     | 86-0215     | 86-0215-C          | 3/8        | 4          | 2-1/2" | 1/4         |  |
| 1/2                       | .650         | .250     | 86-0220     | 86-0220-C          | 1/2        | 6          | 3"     | 1/4         |  |
| 5/8                       | .750         | .350     | 86-0225     | 86-0225-C          | 5/8        | 6          | 3-1/2" | 1/4         |  |
| 15° PER SIDE 30° INCLUDED |              |          |             |                    |            |            |        |             |  |
| HEAD DIA                  | WIDTH OF CUT | NECK DIA | ORDER EPD # | ALTIM COATED EDP # | SHANK DIA. | # OF TEETH | O.A.L. | NECK LENGTH |  |
| 3/16                      | .125         | .110     | 86-1000     | 86-1000-C          | 3/16       | 4          | 2-1/2" | 1/4         |  |
| 1/4                       | .160         | .150     | 86-1005     | 86-1005-C          | 1/4        | 4          | 2-1/2" | 1/4         |  |
| 5/16                      | .190         | .200     | 86-1010     | 86-1010-C          | 5/16       | 4          | 2-1/2" | 1/4         |  |
| 3/8                       | .250         | .230     | 86-1015     | 86-1015-C          | 3/8        | 4          | 2-1/2" | 1/4         |  |
| 1/2                       | .320         | .320     | 86-1020     | 86-1020-C          | 1/2        | 6          | 3"     | 1/4         |  |
| 5/8                       | .500         | .345     | 86-1025     | 86-1025-C          | 5/8        | 6          | 3-1/2" | 1/4         |  |



# SERIES 86 SOLID CARBIDE DOVETAIL CUTTERS

# DOVETAIL CUTTERS

APPLICATION : FOR CUTTING DOVETAILS AND CHAMFERING

## 20° PER SIDE 40° INCLUDED

| HEAD DIA | WIDTH OF CUT | NECK DIA | ORDER EPD # | ALTIN COATED EPD # | SHANK DIA. | # OF TEETH | O.A.L. | NECK LENGTH |
|----------|--------------|----------|-------------|--------------------|------------|------------|--------|-------------|
| 1/8      | .085         | .062     | 86-1250     | 86-1250-C          | 1/8        | 3          | 2"     | 3/16        |
| 3/16     | .130         | .090     | 86-1255     | 86-1255-C          | 3/16       | 3          | 2-1/2" | 1/4         |
| 1/4      | .170         | .125     | 86-1260     | 86-1260-C          | 1/4        | 4          | 2-1/2" | 1/4         |
| 5/16     | .255         | .125     | 86-1265     | 86-1265-C          | 5/16       | 4          | 2-1/2" | 1/4         |
| 3/8      | .305         | .160     | 86-1270     | 86-1270-C          | 3/8        | 5          | 2-1/2" | 1/4         |
| 1/2      | .405         | .200     | 86-1275     | 86-1275-C          | 1/2        | 6          | 3"     | 1/4         |
| 5/8      | .500         | .260     | 86-1280     | 86-1280-C          | 5/8        | 6          | 3-1/2" | 1/4         |

## 30° PER SIDE 60° INCLUDED

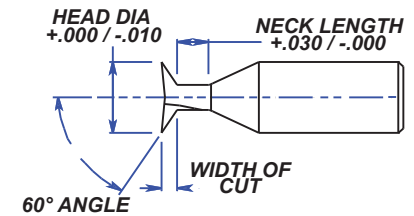
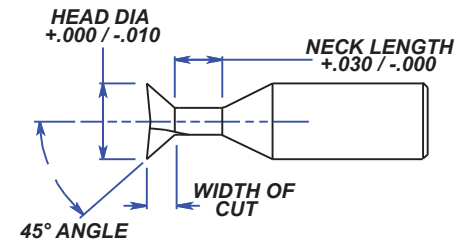
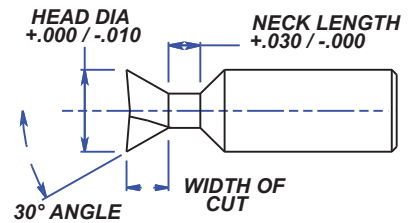
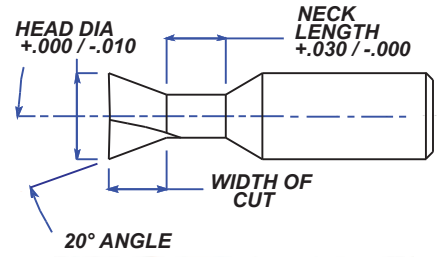
| HEAD DIA | WIDTH OF CUT | NECK DIA | ORDER EPD # | ALTIN COATED EPD # | SHANK DIA. | # OF TEETH | O.A.L. | NECK LENGTH |
|----------|--------------|----------|-------------|--------------------|------------|------------|--------|-------------|
| 1/8      | .054         | .062     | 86-1095     | 86-1095-C          | 1/8        | 3          | 2"     | 3/16        |
| 3/16     | .080         | .090     | 86-1100     | 86-1100-C          | 3/16       | 3          | 2-1/2" | 1/4         |
| 1/4      | .100         | .125     | 86-1105     | 86-1105-C          | 1/4        | 4          | 2-1/2" | 1/4         |
| 5/16     | .160         | .125     | 86-1107     | 86-1107-C          | 5/16       | 4          | 2-1/2" | 1/4         |
| 3/8      | .180         | .160     | 86-1110     | 86-1110-C          | 3/8        | 5          | 2-1/2" | 1/4         |
| 1/2      | .250         | .200     | 86-1115     | 86-1115-C          | 1/2        | 6          | 3"     | 1/4         |
| 5/8      | .315         | .260     | 86-1117     | 86-1117-C          | 5/8        | 6          | 3-1/2" | 1/4         |
| 3/4      | .380         | .311     | 86-1118     | 86-1118-C          | 3/4        | 6          | 4"     | 1/4         |

## 45° PER SIDE 90° INCLUDED

| HEAD DIA | WIDTH OF CUT | NECK DIA | ORDER EPD # | ALTIN COATED EPD # | SHANK DIA. | # OF TEETH | O.A.L. | NECK LENGTH |
|----------|--------------|----------|-------------|--------------------|------------|------------|--------|-------------|
| 1/8      | .032         | .062     | 86-1119     | 86-1119-C          | 1/8        | 3          | 2"     | 3/16        |
| 3/16     | .045         | .090     | 86-1120     | 86-1120-C          | 3/16       | 3          | 2-1/2" | 1/4         |
| 1/4      | .062         | .115     | 86-1125     | 86-1125-C          | 1/4        | 3          | 2-1/2" | 1/4         |
| 5/16     | .080         | .150     | 86-1127     | 86-1127-C          | 5/16       | 4          | 2-1/2" | 1/4         |
| 3/8      | .120         | .125     | 86-1130     | 86-1130-C          | 3/8        | 4          | 2-1/2" | 1/4         |
| 1/2      | .150         | .185     | 86-1135     | 86-1135-C          | 1/2        | 4          | 3"     | 1/4         |
| 5/8      | .190         | .245     | 86-1137     | 86-1137-C          | 5/8        | 6          | 3-1/2" | 1/4         |
| 3/4      | .230         | .290     | 86-1139     | 86-1139-C          | 3/4        | 6          | 4"     | 1/4         |
| 7/8      | .270         | .335     | 86-1142     | 86-1142-C          | 7/8        | 6          | 4"     | 1/4         |
| 1"       | .320         | .360     | 86-1144     | 86-1144-C          | 1"         | 6          | 4"     | 1/4         |

## 60° PER SIDE 120° INCLUDED

| HEAD DIA | WIDTH OF CUT | NECK DIA | ORDER EPD # | ALTIN COATED EPD # | SHANK DIA. | # OF TEETH | O.A.L. | NECK LENGTH |
|----------|--------------|----------|-------------|--------------------|------------|------------|--------|-------------|
| 3/16     | .032         | .070     | 86-1160     | 86-1160-C          | 3/16       | 3          | 2-1/2" | 1/4         |
| 1/4      | .048         | .080     | 86-1165     | 86-1165-C          | 1/4        | 3          | 2-1/2" | 1/4         |
| 5/16     | .062         | .095     | 86-1170     | 86-1170-C          | 5/16       | 4          | 2-1/2" | 1/4         |
| 3/8      | .078         | .100     | 86-1175     | 86-1175-C          | 3/8        | 4          | 2-1/2" | 1/4         |
| 1/2      | .094         | .170     | 86-1180     | 86-1180-C          | 1/2        | 4          | 3"     | 1/4         |
| 5/8      | .125         | .180     | 86-1185     | 86-1185-C          | 5/8        | 5          | 3-1/2" | 1/4         |





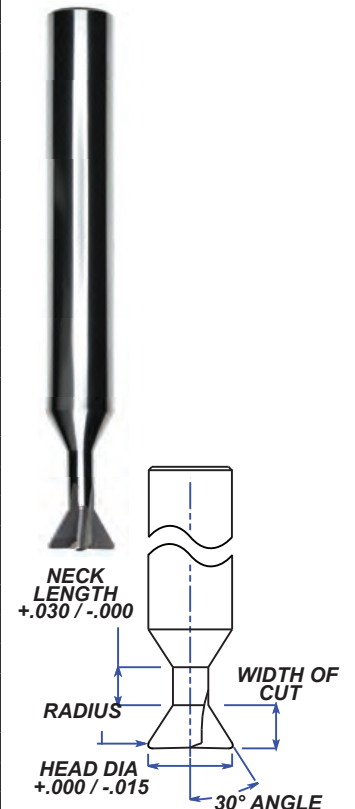
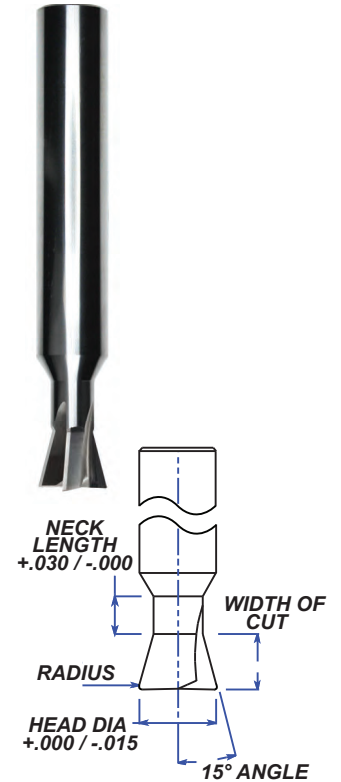
# DOVETAIL CUTTERS

## SERIES 86 DOVETAIL CUTTERS W/RADIUS

APPLICATION : FOR CUTTING DOVETAILS AND CHAMFERNG

SOLID CARBIDE

| 15° PER SIDE 30° INCLUDED |             |             |                    |              |          |           |            |        |             |
|---------------------------|-------------|-------------|--------------------|--------------|----------|-----------|------------|--------|-------------|
| HEAD DIA                  | RADIUS SIZE | ORDER EDP # | ALTIM COATED EDP # | WIDTH OF CUT | NECK DIA | SHANK DIA | # OF TEETH | O.A.L. | NECK LENGTH |
| 3/16                      | .005        | 86-2500     | 86-2500-C          | .125         | .110     | 3/16      | 4          | 2-1/2" | 1/4         |
|                           | .010        | 86-2505     | 86-2505-C          |              |          |           |            |        |             |
|                           | .015        | 86-2510     | 86-2510-C          |              |          |           |            |        |             |
| 1/4                       | .005        | 86-2515     | 86-2515-C          | .160         | .150     | 1/4       | 4          | 2-1/2" | 1/4         |
|                           | .010        | 86-2520     | 86-2520-C          |              |          |           |            |        |             |
|                           | .015        | 86-2530     | 86-2530-C          |              |          |           |            |        |             |
| 5/16                      | .005        | 86-2535     | 86-2535-C          | .190         | .200     | 5/16      | 4          | 2-1/2" | 1/4         |
|                           | .010        | 86-2540     | 86-2540-C          |              |          |           |            |        |             |
|                           | .015        | 86-2545     | 86-2545-C          |              |          |           |            |        |             |
| 3/8                       | .005        | 86-2550     | 86-2550-C          | .250         | .230     | 3/8       | 4          | 2-1/2" | 1/4         |
|                           | .010        | 86-2555     | 86-2555-C          |              |          |           |            |        |             |
|                           | .015        | 86-2560     | 86-2560-C          |              |          |           |            |        |             |
| 1/2                       | .005        | 86-2565     | 86-2565-C          | .320         | .320     | 1/2       | 6          | 3"     | 1/4         |
|                           | .010        | 86-2570     | 86-2570-C          |              |          |           |            |        |             |
|                           | .015        | 86-2575     | 86-2575-C          |              |          |           |            |        |             |
|                           | .030        | 86-2580     | 86-2580-C          |              |          |           |            |        |             |
| 5/8                       | .005        | 86-2585     | 86-2585-C          | .500         | .345     | 5/8       | 6          | 3-1/2" | 1/4         |
|                           | .010        | 86-2590     | 86-2590-C          |              |          |           |            |        |             |
|                           | .015        | 86-2595     | 86-2595-C          |              |          |           |            |        |             |
|                           | .030        | 86-2600     | 86-2600-C          |              |          |           |            |        |             |
| 30° PER SIDE 60° INCLUDED |             |             |                    |              |          |           |            |        |             |
| HEAD DIA                  | RADIUS SIZE | ORDER EDP # | ALTIM COATED EDP # | WIDTH OF CUT | NECK DIA | SHANK DIA | # OF TEETH | O.A.L. | NECK LENGTH |
| 1/8                       | .005        | 86-3000     | 86-3000-C          | .054         | .062     | 1/8       | 3          | 2"     | 3/16        |
|                           | .010        | 86-3005     | 86-3005-C          |              |          |           |            |        |             |
|                           | .015        | 86-3010     | 86-3010-C          |              |          |           |            |        |             |
| 3/16                      | .005        | 86-3015     | 86-3015-C          | .080         | .090     | 3/16      | 3          | 2-1/2" | 1/4         |
|                           | .010        | 86-3020     | 86-3020-C          |              |          |           |            |        |             |
|                           | .015        | 86-3025     | 86-3025-C          |              |          |           |            |        |             |
| 1/4                       | .005        | 86-3030     | 86-3030-C          | .100         | .125     | 1/4       | 4          | 2-1/2" | 1/4         |
|                           | .010        | 86-3035     | 86-3035-C          |              |          |           |            |        |             |
|                           | .015        | 86-3040     | 86-3040-C          |              |          |           |            |        |             |
| 5/16                      | .005        | 86-3045     | 86-3045-C          | .160         | .125     | 5/16      | 4          | 2-1/2" | 1/4         |
|                           | .010        | 86-3050     | 86-3050-C          |              |          |           |            |        |             |
|                           | .015        | 86-3055     | 86-3055-C          |              |          |           |            |        |             |
| 3/8                       | .005        | 86-3060     | 86-3060-C          | .180         | .160     | 3/8       | 5          | 2-1/2" | 1/4         |
|                           | .010        | 86-3065     | 86-3065-C          |              |          |           |            |        |             |
|                           | .015        | 86-3070     | 86-3070-C          |              |          |           |            |        |             |
|                           | .030        | 86-3075     | 86-3075-C          |              |          |           |            |        |             |
| 1/2                       | .005        | 86-3080     | 86-3080-C          | .250         | .200     | 1/2       | 6          | 3"     | 1/4         |
|                           | .010        | 86-3085     | 86-3085-C          |              |          |           |            |        |             |
|                           | .015        | 86-3090     | 86-3090-C          |              |          |           |            |        |             |
|                           | .030        | 86-3095     | 86-3095-C          |              |          |           |            |        |             |
| 5/8                       | .005        | 86-4000     | 86-4000-C          | .315         | .260     | 5/8       | 6          | 3-1/2" | 1/4         |
|                           | .010        | 86-4005     | 86-4005-C          |              |          |           |            |        |             |
|                           | .015        | 86-4010     | 86-4010-C          |              |          |           |            |        |             |
|                           | .030        | 86-4015     | 86-4015-C          |              |          |           |            |        |             |
| 3/4                       | .005        | 86-4020     | 86-4020-C          | .380         | .311     | 3/4       | 6          | 1/4"   | 1/4         |
|                           | .010        | 86-4025     | 86-4025-C          |              |          |           |            |        |             |
|                           | .015        | 86-4030     | 86-4030-C          |              |          |           |            |        |             |
|                           | .030        | 86-4035     | 86-4035-C          |              |          |           |            |        |             |



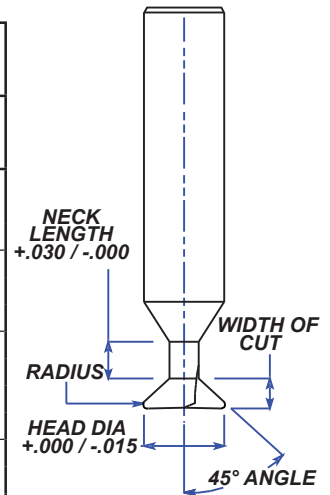
# SERIES 86 DOVETAIL CUTTERS W/RADIUS

# DOVETAIL CUTTERS

APPLICATION : FOR CUTTING DOVETAILS AND CHAMFERNG

## SOLID CARBIDE

| 45° PER SIDE 90° INCLUDED |             |             |                    |              |          |            |            |               |             |
|---------------------------|-------------|-------------|--------------------|--------------|----------|------------|------------|---------------|-------------|
| HEAD DIA                  | RADIUS SIZE | ORDER EDP # | ALTiN COATED EDP # | WIDTH OF CUT | NECK DIA | SHANK DIA. | # OF TEETH | O.A.L. LENGTH | NECK LENGTH |
| 1/8                       | .005        | 86-5000     | 86-5000-C          | .032         | .062     | 1/8        | 3          | 2"            | 3/16        |
|                           | .010        | 86-5005     | 86-5005-C          |              |          |            |            |               |             |
|                           | .015        | 86-5010     | 86-5010-C          |              |          |            |            |               |             |
| 3/16                      | .005        | 86-5015     | 86-5015-C          | .045         | .090     | 3/16       | 3          | 2-1/2"        | 1/4         |
|                           | .010        | 86-5020     | 86-5020-C          |              |          |            |            |               |             |
|                           | .015        | 86-5025     | 86-5025-C          |              |          |            |            |               |             |
| 1/4                       | .005        | 86-5030     | 86-5030-C          | .062         | .115     | 1/4        | 3          | 2-1/2"        | 1/4         |
|                           | .010        | 86-5035     | 86-5035-C          |              |          |            |            |               |             |
|                           | .015        | 86-5040     | 86-5040-C          |              |          |            |            |               |             |
|                           | .030        | 86-5045     | 86-5045-C          |              |          |            |            |               |             |
| 5/16                      | .005        | 86-5050     | 86-5050-C          | .080         | .150     | 5/16       | 4          | 2-1/2"        | 1/4         |
|                           | .010        | 86-5055     | 86-5055-C          |              |          |            |            |               |             |
|                           | .015        | 86-5060     | 86-5060-C          |              |          |            |            |               |             |
|                           | .030        | 86-5065     | 86-5065-C          |              |          |            |            |               |             |
| 3/8                       | .005        | 86-5070     | 86-5070-C          | .120         | .125     | 3/8        | 4          | 2-1/2"        | 1/4         |
|                           | .010        | 86-5075     | 86-5075-C          |              |          |            |            |               |             |
|                           | .015        | 86-5080     | 86-5080-C          |              |          |            |            |               |             |
|                           | .030        | 86-5085     | 86-5085-C          |              |          |            |            |               |             |
| 1/2                       | .005        | 86-5090     | 86-5090-C          | .150         | .185     | 1/2        | 4          | 3"            | 1/4         |
|                           | .010        | 86-5095     | 86-5095-C          |              |          |            |            |               |             |
|                           | .015        | 86-6000     | 86-6000-C          |              |          |            |            |               |             |
|                           | .030        | 86-6005     | 86-6005-C          |              |          |            |            |               |             |
|                           | .060        | 86-6010     | 86-6010-C          |              |          |            |            |               |             |
| 5/8                       | .005        | 86-6015     | 86-6015-C          | .190         | .245     | 5/8        | 6          | 3-1/2"        | 1/4         |
|                           | .010        | 86-6020     | 86-6020-C          |              |          |            |            |               |             |
|                           | .015        | 86-6025     | 86-6025-C          |              |          |            |            |               |             |
|                           | .030        | 86-6030     | 86-6030-C          |              |          |            |            |               |             |
|                           | .060        | 86-6035     | 86-6035-C          |              |          |            |            |               |             |
| 3/4                       | .005        | 86-6040     | 86-6040-C          | .230         | .290     | 3/4        | 6          | 4"            | 1/4         |
|                           | .010        | 86-6045     | 86-6045-C          |              |          |            |            |               |             |
|                           | .015        | 86-6050     | 86-6050-C          |              |          |            |            |               |             |
|                           | .030        | 86-6055     | 86-6055-C          |              |          |            |            |               |             |
|                           | .060        | 86-6060     | 86-6060-C          |              |          |            |            |               |             |
| 7/8                       | .005        | 86-6065     | 86-6065-C          | .270         | .335     | 7/8        | 6          | 4"            | 1/4         |
|                           | .010        | 86-6070     | 86-6070-C          |              |          |            |            |               |             |
|                           | .015        | 86-6075     | 86-6075-C          |              |          |            |            |               |             |
|                           | .030        | 86-6080     | 86-6080-C          |              |          |            |            |               |             |
|                           | .060        | 86-6085     | 86-6085-C          |              |          |            |            |               |             |
| 1"                        | .005        | 86-6090     | 86-6090-C          | .320         | .360     | 1"         | 6          | 4"            | 1/4         |
|                           | .010        | 86-6095     | 86-6095-C          |              |          |            |            |               |             |
|                           | .015        | 86-7000     | 86-7000-C          |              |          |            |            |               |             |
|                           | .030        | 86-7005     | 86-7005-C          |              |          |            |            |               |             |
|                           | .060        | 86-7010     | 86-7010-C          |              |          |            |            |               |             |



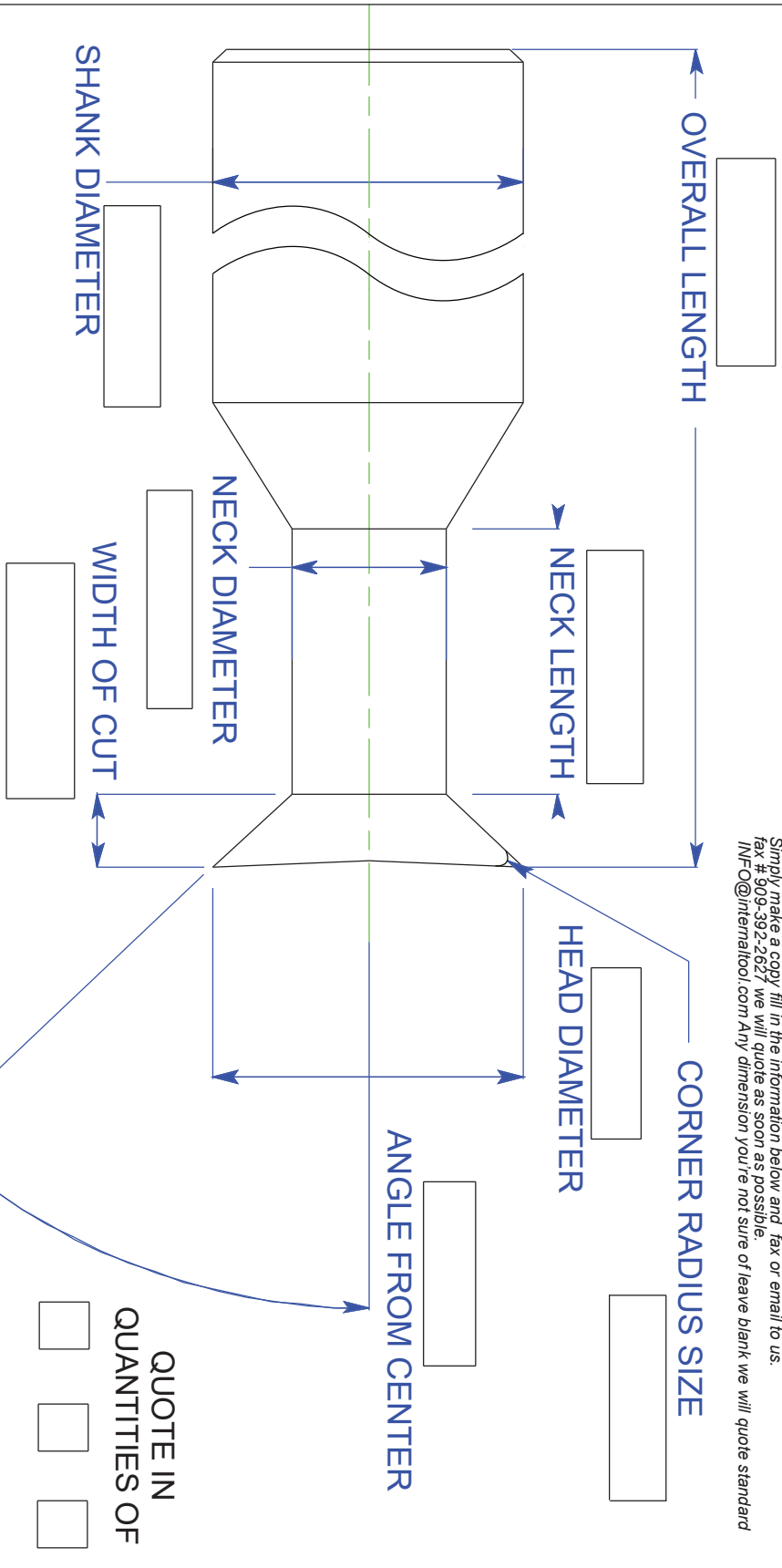
ITI CARBIDE: FOR EXTRA LONG TOOL LIFE

**ITI** Carbide Cutting Tools

### DOVETAIL CUTTER

### CARBIDE DOVETAIL CUTTERS MADE TO YOUR SPECIFICATIONS

Simply make a copy fill in the information below and fax or email to us.  
 Fax # 909-392-2627 we will quote as soon as possible.  
 INFO@Internatool.com Any dimension you're not sure of leave blank we will quote standard



NOTES

### INTERNAL TOOL

DRAWN BY:  DATE:

TOOL NUMBER:

TOLERANCE UNLESS SPECIFIED  
 .X +/- .015  
 .XX +/- .005  
 .XXX +/- .002

TYPE OF MATERIAL TO BE CUT

COMPANY NAME

YOUR NAME

PHONE #

EMAIL

YOUR DISTRIBUTOR

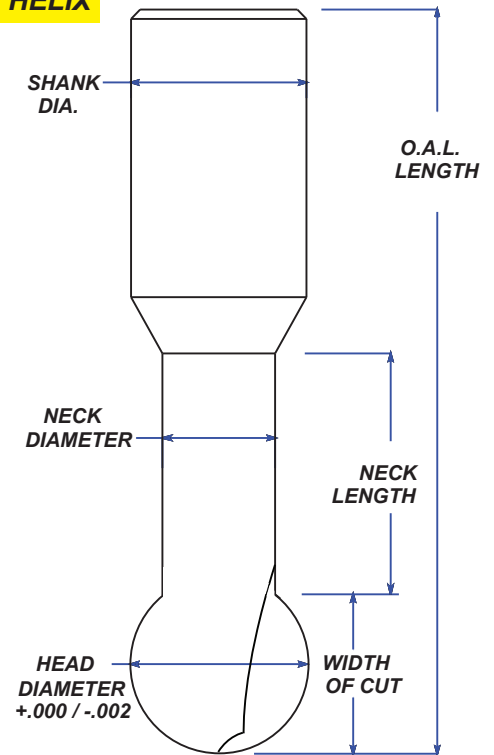
# SERIES 29 LOLLIPOP CUTTERS

# UNDERCUTTING ENDMILLS

APPLICATION: MOLD RELIEF CUTS AND  
PROFILE MILLING

270° CUT  
10° HELIX

| HEAD DIA<br>+.000/-0.002 | WIDTH OF CUT<br>+.015 | NECK DIA<br>+.000/-0.005 | NECK LENGTH<br>+.030 | ORDER EDP # | ALTIN COATED EDP # | SHANK DIA | O.A.L. |
|--------------------------|-----------------------|--------------------------|----------------------|-------------|--------------------|-----------|--------|
| 1/8                      | .107                  | .075                     | .250                 | 29-4000     | 29-4000-C          | 1/8       | 2-1/2" |
|                          |                       |                          | .375                 | 29-4005     | 29-4005-C          |           |        |
|                          |                       |                          | .500                 | 29-4010     | 29-4010-C          |           |        |
|                          |                       |                          | .750                 | 29-4015     | 29-4015-C          |           |        |
|                          |                       |                          | 1.000                | 29-4020     | 29-4020-C          |           |        |
|                          |                       |                          | 1.250                | 29-4025     | 29-4025-C          |           |        |
|                          |                       |                          | 1.500                | 29-4030     | 29-4030-C          |           |        |
| 3/16                     | .160                  | .115                     | .250                 | 29-4035     | 29-4035-C          | 3/16      | 2-1/2" |
|                          |                       |                          | .375                 | 29-4040     | 29-4040-C          |           |        |
|                          |                       |                          | .500                 | 29-4045     | 29-4045-C          |           |        |
|                          |                       |                          | .750                 | 29-4050     | 29-4050-C          |           |        |
|                          |                       |                          | 1.000                | 29-4055     | 29-4055-C          |           |        |
|                          |                       |                          | 1.250                | 29-4060     | 29-4060-C          |           |        |
|                          |                       |                          | 1.500                | 29-4065     | 29-4065-C          |           |        |
| 1/4                      | .213                  | .155                     | .250                 | 29-4070     | 29-4070-C          | 1/4       | 3"     |
|                          |                       |                          | .375                 | 29-4075     | 29-4075-C          |           |        |
|                          |                       |                          | .500                 | 29-4080     | 29-4080-C          |           |        |
|                          |                       |                          | .750                 | 29-4085     | 29-4085-C          |           |        |
|                          |                       |                          | 1.000                | 29-4090     | 29-4090-C          |           |        |
|                          |                       |                          | 1.250                | 29-4095     | 29-4095-C          |           |        |
|                          |                       |                          | 1.500                | 29-4100     | 29-4100-C          | 1/4       | 4"     |
| 2.000                    | 29-4105               | 29-4105-C                |                      |             |                    |           |        |
| 5/16                     | .266                  | .200                     | .250                 | 29-4110     | 29-4110-C          | 5/16      | 3"     |
|                          |                       |                          | .375                 | 29-4115     | 29-4115-C          |           |        |
|                          |                       |                          | .500                 | 29-4120     | 29-4120-C          |           |        |
|                          |                       |                          | 1.000                | 29-4125     | 29-4125-C          |           |        |
|                          |                       |                          | 1.250                | 29-4130     | 29-4130-C          |           |        |
|                          |                       |                          | 1.500                | 29-4135     | 29-4135-C          | 5/16      | 4"     |
|                          |                       |                          | 2.000                | 29-4140     | 29-4140-C          |           |        |
| 3/8                      | .325                  | .240                     | .250                 | 29-4145     | 29-4145-C          | 3/8       | 3"     |
|                          |                       |                          | .375                 | 29-4150     | 29-4150-C          |           |        |
|                          |                       |                          | .500                 | 29-4155     | 29-4155-C          |           |        |
|                          |                       |                          | .750                 | 29-4160     | 29-4160-C          |           |        |
|                          |                       |                          | 1.000                | 29-4165     | 29-4165-C          |           |        |
|                          |                       |                          | 1.250                | 29-4170     | 29-4170-C          | 3/8       | 4"     |
|                          |                       |                          | 1.500                | 29-4175     | 29-4175-C          |           |        |
| 1/2                      | .425                  | .320                     | .375                 | 29-4185     | 29-4185-C          | 1/2       | 3"     |
|                          |                       |                          | .500                 | 29-4190     | 29-4190-C          |           |        |
|                          |                       |                          | 1.000                | 29-4195     | 29-4195-C          |           |        |
|                          |                       |                          | 1.250                | 29-4200     | 29-4200-C          | 1/2       | 4"     |
|                          |                       |                          | 1.500                | 29-4205     | 29-4205-C          |           |        |
|                          |                       |                          | 2.000                | 29-4210     | 29-4210-C          |           |        |



AVAILABLE IN UN-COATED OR ALTIN COATED

THEIR SPECIAL IS OUR STANDARD

**IT** Carbide Cutting Tools



# DOUBLE ANGLE CUTTERS

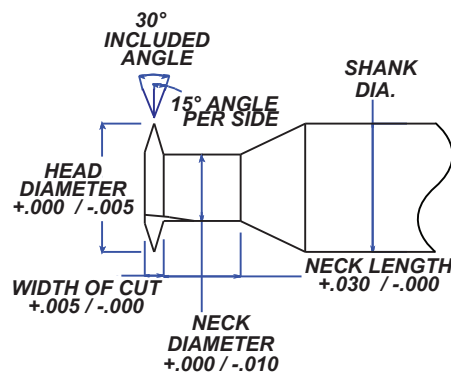
# SERIES 92 DOUBLE ANGLE CUTTERS

APPLICATION: FOR CUTTING CHAMFERS, SERRATIONS, ANGLES ETC.

## 30° INC DOUBLE ANGLE CUTTERS

| HEAD DIA | WIDTH OF CUT | ORDER EDP # | ALTIN COATED EDP # | NECK LENGTH | NECK DIA | # OF TEETH | SHANK DIA | O.A.L. |
|----------|--------------|-------------|--------------------|-------------|----------|------------|-----------|--------|
| 1/8      | .020         | 92-0880     | 92-0880-C          | .188        | .050     | 4          | 1/8       | 2"     |
|          |              | 92-0885     | 92-0885-C          | .375        |          |            |           |        |
| 3/16     | .026         | 92-0890     | 92-0890-C          | .250        | .080     | 4          | 3/16      | 2-1/2" |
|          |              | 92-0895     | 92-0895-C          | .750        |          |            |           |        |
| 1/4      | .032         | 92-0900     | 92-0900-C          | .250        | .125     | 4          | 1/4       | 2-1/2" |
|          |              | 92-0905     | 92-0905-C          | .750        |          |            |           |        |
| 5/16     | .040         | 92-0902     | 92-0902-C          | .312        | .160     | 4          | 5/16      | 2-1/2" |
|          |              | 92-0904     | 92-0904-C          | 1.000       |          |            |           |        |
| 3/8      | .050         | 92-0907     | 92-0907-C          | .312        | .250     | 4          | 3/8       | 2-1/2" |
|          |              | 92-0910     | 92-0910-C          | 1.000       |          |            |           |        |
| 1/2      | .067         | 92-0912     | 92-0912-C          | .375        | .250     | 4          | 1/2       | 3"     |
|          |              | 92-0920     | 92-0920-C          | 1.250       |          |            |           |        |
| 5/8*     | .070         | 92-0925     | 92-0925-C          | .250        | .250     | 6          | 3/8       | 3"     |
| 3/4*     | .100         | 92-0930     | 92-0930-C          | .250        | .250     | 5          | 3/8       | 3"     |

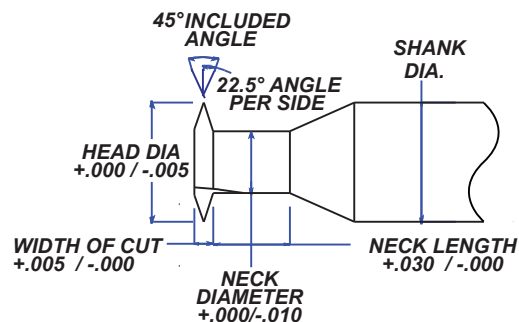
\*CARBIDE HEAD WITH STEEL SHANK



## 45° INC DOUBLE ANGLE CUTTERS

| HEAD DIA | WIDTH OF CUT | ORDER EDP # | ALTIN COATED EDP # | NECK LENGTH | NECK DIA | # OF TEETH | SHANK DIA | O.A.L. |
|----------|--------------|-------------|--------------------|-------------|----------|------------|-----------|--------|
| 1/8      | .030         | 92-1500     | 92-1500-C          | .188        | .050     | 4          | 1/8       | 2"     |
|          |              | 92-1505     | 92-1505-C          | .375        |          |            |           |        |
| 3/16     | .044         | 92-1510     | 92-1510-C          | .250        | .080     | 4          | 3/16      | 2-1/2" |
|          |              | 92-1515     | 92-1515-C          | .750        |          |            |           |        |
| 1/4      | .050         | 92-1520     | 92-1520-C          | .250        | .125     | 4          | 1/4       | 2-1/2" |
|          |              | 92-1525     | 92-1525-C          | .750        |          |            |           |        |
| 5/16     | .062         | 92-1530     | 92-1530-C          | .312        | .160     | 4          | 5/16      | 2-1/2" |
|          |              | 92-1535     | 92-1535-C          | 1.000       |          |            |           |        |
| 3/8      | .075         | 92-1540     | 92-1540-C          | .312        | .250     | 4          | 3/8       | 2-1/2" |
|          |              | 92-1545     | 92-1545-C          | 1.000       |          |            |           |        |
| 1/2      | .100         | 92-1550     | 92-1550-C          | .375        | .250     | 4          | 1/2       | 3"     |
|          |              | 92-1555     | 92-1555-C          | 1.250       |          |            |           |        |
| 5/8*     | .125         | 92-1560     | 92-1560-C          | .250        | .250     | 5          | 3/8       | 3"     |
| 3/4*     | .150         | 92-1565     | 92-1565-C          | .250        | .250     | 5          | 3/8       | 3"     |

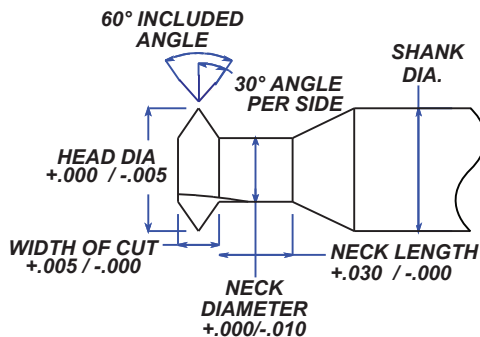
\*CARBIDE HEAD WITH STEEL SHANK



## 60° INC DOUBLE ANGLE CUTTERS

| HEAD DIA | WIDTH OF CUT | ORDER EDP # | ALTIN COATED EDP # | NECK LENGTH | NECK DIA | # OF TEETH | SHANK DIA | O.A.L. |
|----------|--------------|-------------|--------------------|-------------|----------|------------|-----------|--------|
| 1/8      | .062         | 92-1180     | 92-1180-C          | .188        | .050     | 4          | 1/8       | 2"     |
|          |              | 92-1185     | 92-1185-C          | .375        |          |            |           |        |
| 3/16     | .093         | 92-1190     | 92-1190-C          | .250        | .080     | 4          | 3/16      | 2-1/2" |
|          |              | 92-1195     | 92-1195-C          | .750        |          |            |           |        |
| 1/4      | .125         | 92-1200     | 92-1200-C          | .250        | .125     | 4          | 1/4       | 2-1/2" |
|          |              | 92-1205     | 92-1205-C          | .750        |          |            |           |        |
| 5/16     | .088         | 92-1207     | 92-1207-C          | .312        | .160     | 4          | 5/16      | 2-1/2" |
|          |              | 92-1208     | 92-1208-C          | 1.000       |          |            |           |        |
| 3/8      | .109         | 92-1210     | 92-1210-C          | .312        | .250     | 4          | 3/8       | 2-1/2" |
|          |              | 92-1215     | 92-1215-C          | 1.000       |          |            |           |        |
| 1/2      | .140         | 92-1220     | 92-1220-C          | .375        | .250     | 4          | 1/2       | 3"     |
|          |              | 92-1225     | 92-1225-C          | 1.250       |          |            |           |        |
| 5/8*     | .144         | 92-1230     | 92-1230-C          | .250        | .250     | 5          | 3/8       | 3"     |
| 3/4*     | .217         | 92-1235     | 92-1235-C          | .250        | .250     | 5          | 3/8       | 3"     |

\*CARBIDE HEAD WITH STEEL SHANK



ITI CARBIDE: FOR EXTRA LONG TOOL LIFE

**ITI** Carbide Cutting Tools

# SERIES 92 DOUBLE ANGLE CUTTERS

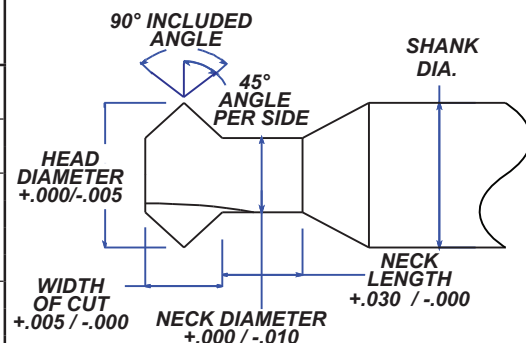
# DOUBLE ANGLE CUTTERS

APPLICATION: FOR CUTTING CHAMFERS, SERRATIONS, ANGLES ECT.

## 90° INC DOUBLE ANGLE CUTTERS

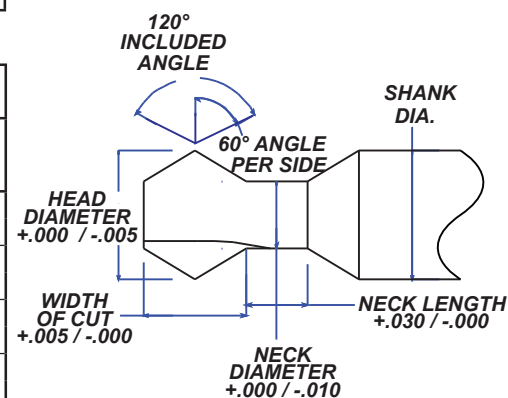
| HEAD DIA | WIDTH OF CUT | ORDER EDP # | ALTN COATED EDP # | NECK LENGTH | NECK DIA | # OF TEETH | SHANK DIA | O.A.L. |
|----------|--------------|-------------|-------------------|-------------|----------|------------|-----------|--------|
| 3/32     | .047         | 92-0955     | 92-0955-C         | .125        | .045     | 2          | 1/8       | 2"     |
|          |              | 92-0960     | 92-0960-C         | .250        |          |            |           |        |
| 1/8      | .062         | 92-0965     | 92-0965-C         | .188        | .062     | 4          | 1/8       | 2"     |
|          |              | 92-0970     | 92-0970-C         | .500        |          |            |           |        |
| 3/16     | .093         | 92-0975     | 92-0975-C         | .250        | .093     | 4          | 3/16      | 2-1/2" |
|          |              | 92-0980     | 92-0980-C         | .500        |          |            |           |        |
|          |              | 92-0985     | 92-0985-C         | .750        |          |            |           |        |
|          |              | 92-0990     | 92-0990-C         | 1.000       |          |            |           |        |
| 1/4      | .120         | 92-1000     | 92-1000-C         | .250        | 1/8      | 4          | 1/4       | 2-1/2" |
|          |              | 92-1002     | 92-1002-C         | .500        |          |            |           |        |
|          |              | 92-1005     | 92-1005-C         | .750        |          |            |           |        |
|          |              | 92-1006     | 92-1006-C         | 1.000       |          |            |           |        |
| 5/16     | .125         | 92-1007     | 92-1007-C         | .500        | 3/16     | 4          | 5/16      | 2-1/2" |
|          |              | 92-1008     | 92-1008-C         | .750        |          |            |           |        |
|          |              | 92-1009     | 92-1009-C         | 1.000       |          |            |           |        |
| 3/8      | .185         | 92-1010     | 92-1010-C         | .312        | 3/16     | 4          | 3/8       | 2-1/2" |
|          |              | 92-1011     | 92-1011-C         | .500        |          |            |           |        |
|          |              | 92-1012     | 92-1012-C         | .750        |          |            |           |        |
|          |              | 92-1015     | 92-1015-C         | 1.000       |          |            |           |        |
| 1/2      | .250         | 92-1020     | 92-1020-C         | .375        | 1/4      | 4          | 1/2       | 3"     |
|          |              | 92-1022     | 92-1022-C         | .625        |          |            |           |        |
|          |              | 92-1023     | 92-1023-C         | .875        |          |            |           |        |
|          |              | 92-1025     | 92-1025-C         | 1.250       |          |            |           |        |
| 1/2*     | .125         | 92-1100     | 92-1100-C         | .250        | 1/4      | 6          | 1/2       | 3-1/8" |
|          | .187         | 92-1105     | 92-1105-C         | .250        |          |            |           |        |
| 5/8      | .312         | 92-1106     | 92-1106-C         | .500        | .300     | 4          | 5/8       | 3-1/2" |
|          |              | 92-1107     | 92-1107-C         | .750        |          |            |           |        |
|          |              | 92-1108     | 92-1108-C         | 1.250       |          |            |           |        |
| 5/8*     | .187         | 92-1110     | 92-1110-C         | .250        | .250     | 6          | 1/2       | 3-1/8" |
|          | .250         | 92-1115     | 92-1115-C         | .250        |          |            |           |        |
| 3/4*     | .125         | 92-1117     | 92-1117-C         | .250        | .250     | 6          | 1/2       | 3-1/8" |
|          | .250         | 92-1120     | 92-1120-C         | .250        |          |            |           |        |
| 1*       | .125         | 92-1125     | 92-1125-C         | .250        | .250     | 8          | 1/2       | 3-1/8" |
|          | .250         | 92-1130     | 92-1130-C         | .250        |          |            |           |        |

\*CARBIDE HEAD WITH STEEL SHANK



## 120° INC DOUBLE ANGLE CUTTERS

| HEAD DIA | WIDTH OF CUT | ORDER EDP # | ALTN COATED EDP # | NECK LENGTH | NECK DIA | # OF TEETH | SHANK DIA | O.A.L. |
|----------|--------------|-------------|-------------------|-------------|----------|------------|-----------|--------|
| 1/8      | .109         | 92-1280     | 92-1280-C         | .188        | .062     | 4          | 1/8       | 2"     |
|          |              | 92-1285     | 92-1285-C         | .500        |          |            |           |        |
| 3/16     | .163         | 92-1290     | 92-1290-C         | .250        | .094     | 4          | 3/16      | 2-1/2" |
|          |              | 92-1295     | 92-1295-C         | .750        |          |            |           |        |
| 1/4      | .215         | 92-1300     | 92-1300-C         | .250        | .125     | 4          | 1/4       | 2-1/2" |
|          |              | 92-1302     | 92-1302-C         | .750        |          |            |           |        |
| 5/16     | .281         | 92-1304     | 92-1304-C         | .312        | .150     | 4          | 5/16      | 2-1/2" |
|          |              | 92-1306     | 92-1306-C         | 1.000       |          |            |           |        |
| 3/8      | .320         | 92-1310     | 92-1310-C         | .312        | .188     | 4          | 3/8       | 2-1/2" |
|          |              | 92-1315     | 92-1315-C         | 1.000       |          |            |           |        |
| 1/2      | .430         | 92-1320     | 92-1320-C         | .375        | .250     | 4          | 1/2       | 3"     |
|          |              | 92-1325     | 92-1325-C         | 1.250       |          |            |           |        |



# THREAD MILLS

## SERIES 88 SOLID CARBIDE MINI THREAD MILLS

APPLICATION: FOR CUTTING THREADS

| INCH    | METRIC       | TOOL TO USE |
|---------|--------------|-------------|
| 5-40    |              | 88-0870     |
| 5-44    | M3.0 X .5    | 88-0880     |
| 6-32    | M3.5 X .6    | 88-0890     |
| 6-40    |              | 88-0900     |
| 8-32    | M4.0 X .7    | 88-0910     |
| 8-36    | M4.5 X .7    | 88-0915     |
| 10-32   | M5.0 X .8    | 88-0915     |
| 10-24   |              |             |
| 12-24   | M6.0 X 1.0   | 88-1000     |
| 12-28   | M7.0 X 1.0   | 88-1005     |
| 1/4-20  |              |             |
| 1/4-28  |              |             |
| 1/4-18  | M8.0 X 1.5   | 88-1010     |
| 5/16-18 | M8.0 X 1.0   |             |
| 5/16-24 | M8.0 X 1.25  | 88-1020     |
| 3/8-16  | M10.0 X 1.0  | 88-1025     |
| 3/8-24  | M10.0 X 1.25 | 88-1027     |
| 7/16-14 |              | 88-1030     |
| 7/16-20 |              | 88-1035     |
| 1/2-13  | M12.0 X 1.25 | 88-1040     |
| 1/2-20  | M12.0 X 1.75 | 88-1045     |
| 9/16-12 | M14.0 X 1.5  | 88-1050     |
| 9/16-18 | M14.0 X 2.0  | 88-1055     |
| 5/8-11  |              | 88-1060     |
| 5/8-18  | M16 X 2.0    | 88-1065     |
| 3/4-10  | M16 X 5.0    | 88-1070     |
| 3/4-16  |              |             |

### MATCH COLOR TO FIND YOUR TOOL

| HEAD DIA | WIDTH OF CUT | NECK DIA | ORDER EDP # | ALTIN COATED EDP # | DEPTH OF CUT | SHANK DIA | # OF TEETH | PITCH RANGE |
|----------|--------------|----------|-------------|--------------------|--------------|-----------|------------|-------------|
| .098     | .030         | .050     | 88-0870     | 88-0870-C          | 1/4          | 1/8       | 3          | 32-64       |
|          |              |          | 88-0880     | 88-0880-C          | 3/8          | 1/8       | 3          |             |
|          |              |          | 88-0890     | 88-0890-C          | 1/2          | 1/8       | 3          |             |
| .125     | .035         | .060     | 88-0900     | 88-0900-C          | 1/4          | 1/8       | 3          | 30-56       |
|          |              |          | 88-0910     | 88-0910-C          | 3/8          | 1/8       | 3          |             |
|          |              |          | 88-0915     | 88-0915-C          | 1/2          | 1/8       | 3          |             |
| .148     | .046         | .070     | 88-1000     | 88-1000-C          | 1/4          | 3/16      | 3          | 20-56       |
|          |              |          | 88-1005     | 88-1005-C          | 1/2          | 3/16      | 3          |             |
|          |              |          | 88-1010     | 88-1010-C          | 3/8          | 3/16      | 3          |             |
| 3/16     | .055         | .090     | 88-1015     | 88-1015-C          | 3/4          | 3/16      | 3          | 18-56       |
|          |              |          | 88-1017     | 88-1017-C          | 1"           | 3/16      | 3          |             |
|          |              |          | 88-1020     | 88-1020-C          | 3/8          | 1/4       | 4          |             |
| 1/4      | .065         | .130     | 88-1025     | 88-1025-C          | 3/4          | 1/4       | 4          | 16-48       |
|          |              |          | 88-1027     | 88-1027-C          | 1            | 1/4       | 4          |             |
|          |              |          | 88-1030     | 88-1030-C          | 1/2          | 5/16      | 4          |             |
| 5/16     | .078         | .180     | 88-1035     | 88-1035-C          | 1            | 5/16      | 4          | 14-40       |
|          |              |          | 88-1040     | 88-1040-C          | 1/2          | 3/8       | 6          |             |
|          |              |          | 88-1045     | 88-1045-C          | 3/4          | 3/8       | 6          |             |
| 3/8      | .095         | .200     | 88-1050     | 88-1050-C          | 1            | 3/8       | 6          | 12-32       |
|          |              |          | 88-1055     | 88-1055-C          | 1-1/4        | 3/8       | 6          |             |
|          |              |          | 88-1060     | 88-1060-C          | 1            | 1/2       | 5          |             |
|          |              |          | 88-1065     | 88-1065-C          | 1-1/4        | 1/2       | 5          |             |
| 1/2      | .119         | .300     | 88-1070     | 88-1070-C          | 1-1/2        | 1/2       | 5          | 11-32       |



THREAD MILLS HAVE A SMALL FLAT ON THE TIP. SIZE DEPENDS ON PITCH. IF YOUR APPLICATION DOESN'T REQUIRE A FLAT, TRY OUR DOUBLE ANGLE CUTTERS ON PAGE 102-103.

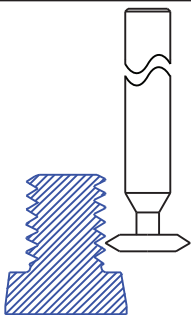
## SERIES 88 THREAD MILLS CARBIDE HEAD STEEL SHANK

| HEAD DIA | PITCH RANGE | WIDTH OF CUT | ORDER EDP # | ALTIN COATED EDP # | # OF TEETH |
|----------|-------------|--------------|-------------|--------------------|------------|
| 1/2      | 16 - 32     | .062         | 88-1100     | 88-1100-C          | 6          |
|          | 16 - 32     | .062         | 88-1105     | 88-1105-C          |            |
| 5/8      | 11 - 28     | .094         | 88-1110     | 88-1110-C          |            |
|          | 8 - 28      | .135         | 88-1112     | 88-1112-C          |            |
|          | 11 - 24     | .094         | 88-1115     | 88-1115-C          |            |
| 3/4      | 7 - 24      | .156         | 88-1120     | 88-1120-C          |            |
|          | 7 - 20      | .156         | 88-1125     | 88-1125-C          |            |
| 1"       | 4 - 18      | .250         | 88-1130     | 88-1130-C          | 8          |

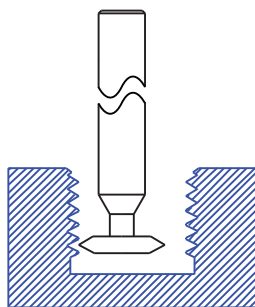
APPLICATION:

1. **THREAD MILLING ELIMINATES THE NEED FOR SPECIAL TAPS. CUT ANY SIZE THREAD YOU WANT. UNDER SIZE, OVER SIZE, ANY PITCH, EVEN A TAPERED THREAD.**

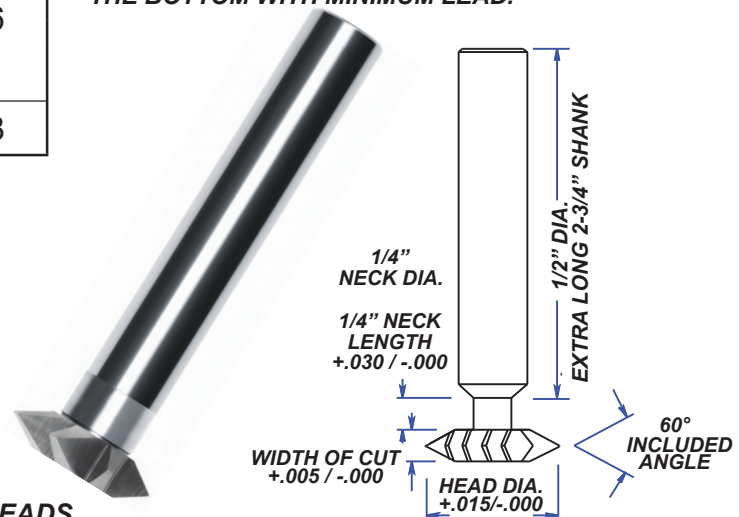
2. **THREAD BLIND HOLES ALL THE WAY DOWN TO THE BOTTOM WITH MINIMUM LEAD.**



MILL EXTERNAL THREADS



MILL INTERNAL THREADS



ITI CARBIDE: FOR EXTRA LONG TOOL LIFE

**ITI Carbide Cutting Tools**

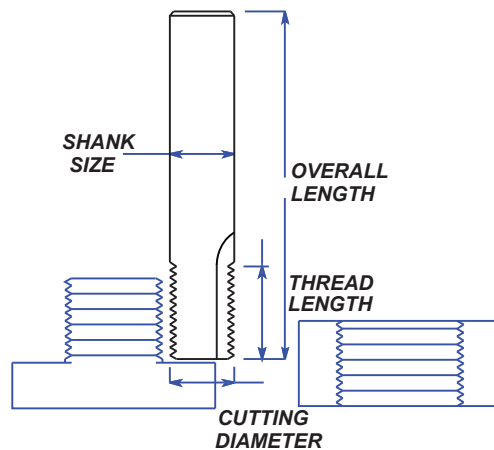
# SERIES 89 SOLID CARBIDE MULTI THREAD MILLS

# THREAD MILLS

APPLICATION: FOR CUTTING INTERNAL OR EXTERNAL THREAD

| SIZE      | CUTTING DIA | THREAD LENGTH | O.A.L. | NUMBER OF FLUTES | SHANK SIZE | ALTiN COATED EDP # |
|-----------|-------------|---------------|--------|------------------|------------|--------------------|
| 6 - 32    | .100        | .218          | 2"     | 3                | 1/8        | 89-1200            |
| 8 - 32    | .115        | .250          | 2"     | 3                | 1/8        | 89-1205            |
| 8 - 36    | .115        | .250          | 2"     | 3                | 1/8        | 89-1210            |
| 10 - 24   | .120        | .312          | 2"     | 3                | 3/16       | 89-1215            |
| 10 - 32   | .120        | .312          | 2"     | 3                | 3/16       | 89-1220            |
| 1/4 - 20  | .180        | .500          | 2-1/2" | 3                | 3/16       | 89-1225            |
| 1/4 - 28  | .180        | .500          | 2-1/2" | 3                | 3/16       | 89-1230            |
| 5/16 - 18 | .240        | .625          | 2-1/2" | 3                | 1/4        | 89-1235            |
| 5/16 - 24 | .240        | .625          | 2-1/2" | 3                | 1/4        | 89-1240            |
| 3/8 - 16  | .290        | .750          | 3"     | 4                | 5/16       | 89-1245            |
| 3/8 - 24  | .290        | .750          | 3"     | 4                | 5/16       | 89-1250            |
| 7/16 - 14 | .340        | .875          | 3"     | 4                | 3/8        | 89-1255            |
| 7/16 - 20 | .340        | .875          | 3"     | 4                | 3/8        | 89-1260            |
| 1/2 - 13  | .350        | .875          | 3-1/2" | 4                | 3/8        | 89-1265            |
| 1/2 - 20  | .350        | .875          | 3-1/2" | 4                | 3/8        | 89-1270            |
| 9/16 - 12 | .370        | .875          | 3-1/2" | 4                | 1/2        | 89-1275            |
| 9/16 - 18 | .370        | .875          | 3-1/2" | 4                | 1/2        | 89-1280            |
| 5/8 - 11  | .470        | 1.250         | 3-1/2" | 5                | 1/2        | 89-1285            |
| 5/8 - 18  | .470        | 1.250         | 3-1/2" | 5                | 1/2        | 89-1290            |
| 3/4 - 10  | .495        | 1.250         | 3-1/2" | 5                | 1/2        | 89-1295            |
| 3/4 - 16  | .495        | 1.250         | 3-1/2" | 5                | 1/2        | 89-1300            |
| 7/8 - 9   | .620        | 1.250         | 3-1/2" | 5                | 5/8        | 89-1305            |
| 7/8 - 14  | .620        | 1.250         | 3-1/2" | 5                | 5/8        | 89-1310            |
| 1" - 8    | .620        | 1.375         | 4"     | 5                | 3/4        | 89-1315            |
| 1" - 12   | .620        | 1.375         | 4"     | 5                | 3/4        | 89-1320            |

MILL INTERNAL OR EXTERNAL THREADS IN ONE PASS



ITI CARBIDE: MAXIMUM SHEAR WITH MINIMUM WEAR

**ITI** Carbide Cutting Tools

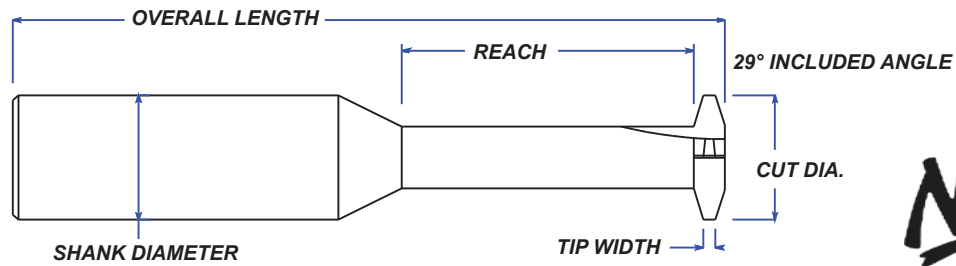


# THREAD MILLS

## SERIES 35 EXTERNAL ACME THREAD MILLS

APPLICATION : FOR CUTTING INTERNAL OR EXTERNAL THREADS

SOLID CARBIDE



*New!*



### ACME EXTERNAL THREAD MILLS

| THREAD SIZE | CUT DIA. | OVERALL LENGTH | SHANK SIZE | TIP WIDTH | # OF TEETH | REACH | ORDER EDP # | ALTiN COATED EDP # |
|-------------|----------|----------------|------------|-----------|------------|-------|-------------|--------------------|
| 16          | .170     | 2-1/2          | 1/4        | .021      | 3          | .375  | 35-5000     | 35-5000-C          |
| 14          | .220     | 2-1/2          | 1/4        | .024      | 3          | .500  | 35-5005     | 35-5005-C          |
| 12          | .270     | 2-1/2          | 5/16       | .028      | 4          | .750  | 35-5010     | 35-5010-C          |
| 10          | .370     | 2-1/2          | 3/8        | .032      | 4          | .750  | 35-5015     | 35-5015-C          |
| 8           | .500     | 3"             | 1/2        | .041      | 4          | 1.00  | 35-5020     | 35-5020-C          |
| 6           | .750     | 3"             | 1/2*       | .057      | 6          | 1.00  | 35-5025     | 35-5025-C          |
| 5           | .800     | 3-1/8          | 1/2*       | .069      | 6          | 2.00  | 35-5030     | 35-5030-C          |
| 4           | 1.120    | 3-1/8          | 1/2*       | .088      | 8          | 2.00  | 35-5035     | 35-5035-C          |

\* CARBIDE HEAD ON HARDENED STEEL SHANK

### STUB ACME EXTERNAL THREAD MILLS

| THREAD SIZE | CUT DIA. | OVERALL LENGTH | SHANK SIZE | TIP WIDTH | # OF TEETH | REACH | ORDER EDP # | ALTiN COATED EDP # |
|-------------|----------|----------------|------------|-----------|------------|-------|-------------|--------------------|
| 16          | .170     | 2-1/2          | 1/4        | .024      | 3          | .375  | 35-6000     | 35-6000-C          |
| 14          | .220     | 2-1/2          | 1/4        | .028      | 3          | .500  | 35-6005     | 35-6005-C          |
| 12          | .270     | 2-1/2          | 5/16       | .033      | 4          | .750  | 35-6010     | 35-6010-C          |
| 10          | .370     | 2-1/2          | 3/8        | .037      | 4          | .750  | 35-6015     | 35-6015-C          |
| 8           | .500     | 3"             | 1/2        | .048      | 4          | 1.00  | 35-6020     | 35-6020-C          |
| 6           | .750     | 3"             | 1/2*       | .065      | 6          | 1.00  | 35-6025     | 35-6025-C          |
| 5           | .800     | 3-1/8          | 1/2*       | .079      | 6          | 2.00  | 35-6030     | 35-6030-C          |
| 4           | 1.120    | 3-1/8          | 1/2*       | .100      | 8          | 2.00  | 35-6035     | 35-6035-C          |

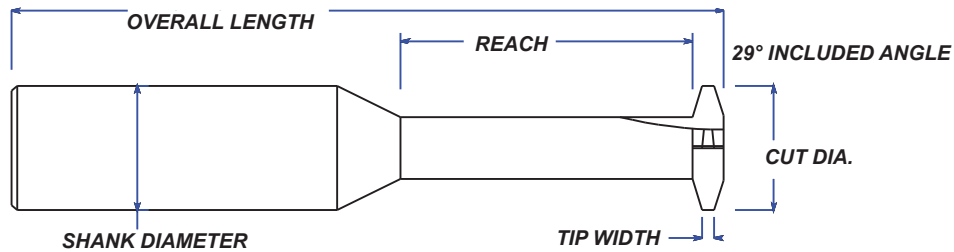
THE MOST UNIQUE LINE OF CUTTING TOOLS AVAILABLE

**IT** Carbide Cutting Tools

# SERIES 135 INTERNAL STUB ACME THREAD MILLS

# THREAD MILLS

APPLICATION : FOR CUTTING INTERNAL OR EXTERNAL THREADS



## ACME INTERNAL THREAD MILLS

| THREAD SIZE | CUT DIA. | O.A.L. | SHANK DIA | TIP WIDTH | # OF TEETH | REACH | ORDER EDP # | ALTiN COATED EDP # |
|-------------|----------|--------|-----------|-----------|------------|-------|-------------|--------------------|
| 1/4-16      | .170     | 2-1/2  | 1/4       | .021      | 4          | .500  | 135-3000    | 135-3000-C         |
| 5/16-14     | .200     | 2-1/2  | 1/4       | .024      | 4          | .750  | 135-3005    | 135-3005-C         |
| 3/8-12      | .235     | 2-1/2  | 1/4       | .028      | 4          | 1.000 | 135-3010    | 135-3010-C         |
| 1/2-10      | .320     | 3"     | 3/8       | .032      | 4          | 1.250 | 135-3015    | 135-3015-C         |
| 5/8-8       | .400     | 3-1/2  | 1/2       | .041      | 4          | 1.300 | 135-3020    | 135-3020-C         |
| 3/4-6       | .490     | 3-1/2  | 1/2       | .057      | 4          | 1.300 | 135-3025    | 135-3025-C         |
| 7/8-6       | .490     | 3-1/2  | 1/2       | .057      | 4          | 1.300 | 135-3025    | 135-3025-C         |
| 1"-5        | .620     | 4"     | 5/8       | .069      | 5          | 1.750 | 135-3030    | 135-3030-C         |
| 1-1/8-5     | .620     | 4"     | 5/8       | .069      | 5          | 1.750 | 135-3030    | 135-3030-C         |
| 1-1/4-5     | .620     | 4"     | 5/8       | .069      | 5          | 1.750 | 135-3030    | 135-3030-C         |
| 1-3/8-4     | .745     | 5"     | 3/4       | .088      | 5          | 1.500 | 135-3035    | 135-3035-C         |
| 1-1/2-4     | .745     | 5"     | 3/4       | .088      | 5          | 2.500 | 135-3040    | 135-3040-C         |
| 1-3/4-4     | .745     | 5"     | 3/4       | .088      | 5          | 2.500 | 135-3040    | 135-3040-C         |

## STUB ACME INTERNAL THREAD MILLS

| THREAD SIZE | CUT DIA. | O.A.L. | SHANK DIA | TIP WIDTH | # OF TEETH | REACH | ORDER EDP # | ALTiN COATED EDP # |
|-------------|----------|--------|-----------|-----------|------------|-------|-------------|--------------------|
| 1/4-16      | .170     | 2-1/2  | 1/4       | .024      | 4          | .500  | 135-4000    | 135-4000-C         |
| 5/16-14     | .200     | 2-1/2  | 1/4       | .028      | 4          | .750  | 135-4005    | 135-4005-C         |
| 3/8-12      | .235     | 2-1/2  | 1/4       | .033      | 4          | 1.000 | 135-4010    | 135-4010-C         |
| 1/2-10      | .320     | 3"     | 3/8       | .037      | 4          | 1.250 | 135-4015    | 135-4015-C         |
| 5/8-8       | .400     | 3-1/2  | 1/2       | .048      | 4          | 1.300 | 135-4020    | 135-4020-C         |
| 3/4-6       | .490     | 3-1/2  | 1/2       | .065      | 4          | 1.300 | 135-4025    | 135-4025-C         |
| 7/8-6       | .490     | 3-1/2  | 1/2       | .065      | 4          | 1.300 | 135-4025    | 135-4025-C         |
| 1"-5        | .620     | 4"     | 5/8       | .079      | 5          | 1.750 | 135-4030    | 135-4030-C         |
| 1-1/8-5     | .620     | 4"     | 5/8       | .079      | 5          | 1.750 | 135-4030    | 135-4030-C         |
| 1-1/4-5     | .620     | 4"     | 5/8       | .079      | 5          | 1.750 | 135-4030    | 135-4030-C         |
| 1-3/8-4     | .745     | 5"     | 3/4       | .100      | 5          | 1.500 | 135-4035    | 135-4035-C         |
| 1-1/2-4     | .745     | 5"     | 3/4       | .100      | 5          | 2.500 | 135-4040    | 135-4040-C         |
| 1-3/4-4     | .745     | 5"     | 3/4       | .100      | 5          | 2.500 | 135-4040    | 135-4040-C         |

# CARBIDE REAMERS

# SERIES 93 CARBIDE REAMERS

APPLICATION : FINISHING OR ENLARGING  
DRILLED HOLES IN METAL

-STRAIGHT FLUTE  
-RIGHT HAND CUT  
-DIA +.003/- .000



| CUTTING DIA | FLUTE LENGTH | O.A.L. | SHANK SIZE | # OF FLUTES | ORDER EDP # |
|-------------|--------------|--------|------------|-------------|-------------|
| .0620       | 3/8          | 1-1/2  | .0620      | 4           | 93-0620     |
| .0625       | 3/8          | 1-1/2  | .0625      | 4           | 93-0625     |
| .0630       | 3/8          | 1-1/2  | .0630      | 4           | 93-0630     |
| .0635       | 3/8          | 1-1/2  | .0635      | 4           | 93-0635     |
| .0930       | 1/2          | 2"     | .0930      | 4           | 93-0930     |
| .0935       | 1/2          | 2"     | .0935      | 4           | 93-0935     |
| .0938       | 1/2          | 2"     | .0938      | 4           | 93-0938     |
| .0940       | 1/2          | 2"     | .0940      | 4           | 93-0940     |
| .0945       | 1/2          | 2"     | .0945      | 4           | 93-0945     |
| .1090       | 5/8          | 2-1/4  | .1090      | 4           | 93-1090     |
| .1094       | 5/8          | 2-1/4  | .1094      | 4           | 93-1094     |
| .1100       | 5/8          | 2-1/4  | .1100      | 4           | 93-1100     |
| .1240       | 5/8          | 2-1/4  | .1240      | 4           | 93-1240     |
| .1245       | 5/8          | 2-1/4  | .1245      | 4           | 93-1245     |
| .1250       | 5/8          | 2-1/4  | .1250      | 4           | 93-1250     |
| .1255       | 5/8          | 2-1/4  | .1255      | 4           | 93-1255     |
| .1700       | 7/8          | 2-3/4  | .1700      | 4           | 93-1700     |
| .1719       | 7/8          | 2-3/4  | .1719      | 4           | 93-1719     |
| .1725       | 7/8          | 2-3/4  | .1725      | 4           | 93-1725     |
| .1860       | 7/8          | 2-3/4  | .1860      | 4           | 93-1860     |
| .1865       | 7/8          | 2-3/4  | .1865      | 4           | 93-1865     |
| .1870       | 7/8          | 2-3/4  | .1870      | 4           | 93-1870     |
| .1875       | 7/8          | 2-3/4  | .1875      | 4           | 93-1875     |
| .1880       | 7/8          | 2-3/4  | .1880      | 4           | 93-1880     |
| .1885       | 7/8          | 2-3/4  | .1885      | 4           | 93-1885     |
| .2025       | 1"           | 3"     | .2025      | 4           | 93-2025     |
| .2031       | 1"           | 3"     | .2031      | 4           | 93-2031     |
| .2035       | 1"           | 3"     | .2035      | 4           | 93-2035     |
| .2330       | 1"           | 3"     | .2330      | 4           | 93-2330     |
| .2340       | 1"           | 3"     | .2340      | 4           | 93-2340     |
| .2344       | 1"           | 3"     | .2344      | 4           | 93-2344     |
| .2350       | 1"           | 3"     | .2350      | 4           | 93-2350     |
| .2470       | 1"           | 3"     | .2470      | 4           | 93-2470     |
| .2475       | 1"           | 3"     | .2475      | 4           | 93-2475     |
| .2480       | 1"           | 3"     | .2480      | 4           | 93-2480     |
| .2485       | 1"           | 3"     | .2485      | 4           | 93-2485     |
| .2490       | 1"           | 3"     | .2490      | 4           | 93-2490     |
| .2495       | 1"           | 3"     | .2495      | 4           | 93-2495     |
| .2500       | 1"           | 3"     | .2500      | 4           | 93-2500     |
| .2505       | 1"           | 3"     | .2505      | 4           | 93-2505     |
| .2510       | 1"           | 3"     | .2510      | 4           | 93-2510     |
| .2515       | 1"           | 3"     | .2515      | 4           | 93-2515     |
| .2520       | 1"           | 3"     | .2520      | 4           | 93-2520     |
| .2650       | 1-1/8"       | 3-1/4  | .2650      | 6           | 93-2650     |
| .2656       | 1-1/8"       | 3-1/4  | .2656      | 6           | 93-2656     |
| .2660       | 1-1/8"       | 3-1/4  | .2660      | 6           | 93-2660     |
| .2800       | 1-1/8"       | 3-1/4  | .2800      | 6           | 93-2800     |
| .2812       | 1-1/8"       | 3-1/4  | .2812      | 6           | 93-2812     |
| .2820       | 1-1/8"       | 3-1/4  | .2820      | 6           | 93-2820     |
| .2960       | 1-1/8"       | 3-1/4  | .2960      | 6           | 93-2960     |
| .2965       | 1-1/8"       | 3-1/4  | .2965      | 6           | 93-2965     |
| .2969       | 1-1/8"       | 3-1/4  | .2969      | 6           | 93-2969     |
| .2975       | 1-1/8"       | 3-1/4  | .2975      | 6           | 93-2975     |

| CUTTING DIA | FLUTE LENGTH | O.A.L. | SHANK SIZE | # OF FLUTES | ORDER EDP # |
|-------------|--------------|--------|------------|-------------|-------------|
| .3115       | 1-1/8        | 3-1/4  | .3115      | 6           | 93-3115     |
| .3120       | 1-1/8        | 3-1/4  | .3120      | 6           | 93-3120     |
| .3125       | 1-1/8        | 3-1/4  | .3125      | 6           | 93-3125     |
| .3130       | 1-1/8        | 3-1/4  | .3130      | 6           | 93-3130     |
| .3135       | 1-1/8        | 3-1/4  | .3135      | 6           | 93-3135     |
| .3275       | 1-1/4        | 3-1/2  | .3275      | 6           | 93-3275     |
| .3281       | 1-1/4        | 3-1/2  | .3281      | 6           | 93-3281     |
| .3285       | 1-1/4        | 3-1/2  | .3285      | 6           | 93-3285     |
| .3430       | 1-1/4        | 3-1/2  | .3430      | 6           | 93-3430     |
| .3435       | 1-1/4        | 3-1/2  | .3435      | 6           | 93-3435     |
| .3438       | 1-1/4        | 3-1/2  | .3438      | 6           | 93-3438     |
| .3445       | 1-1/4        | 3-1/2  | .3445      | 6           | 93-3445     |
| .3590       | 1-1/4        | 3-1/2  | .3590      | 6           | 93-3590     |
| .3594       | 1-1/4        | 3-1/2  | .3594      | 6           | 93-3594     |
| .3600       | 1-1/4        | 3-1/2  | .3600      | 6           | 93-3600     |
| .3730       | 1-1/4        | 3-1/2  | .3730      | 6           | 93-3730     |
| .3735       | 1-1/4        | 3-1/2  | .3735      | 6           | 93-3735     |
| .3740       | 1-1/4        | 3-1/2  | .3740      | 6           | 93-3740     |
| .3745       | 1-1/4        | 3-1/2  | .3745      | 6           | 93-3745     |
| .3750       | 1-1/4        | 3-1/2  | .3750      | 6           | 93-3750     |
| .3755       | 1-1/4        | 3-1/2  | .3755      | 6           | 93-3755     |
| .3760       | 1-1/4        | 3-1/2  | .3760      | 6           | 93-3760     |
| .3900       | 1-1/4        | 3-1/2  | .3900      | 6           | 93-3900     |
| .3906       | 1-1/4        | 3-1/2  | .3906      | 6           | 93-3906     |
| .3910       | 1-1/4        | 3-1/2  | .3910      | 6           | 93-3910     |
| .4060       | 1-1/4        | 3-1/2  | .4060      | 6           | 93-4060     |
| .4062       | 1-1/4        | 3-1/2  | .4062      | 6           | 93-4062     |
| .4070       | 1-1/4        | 3-1/2  | .4070      | 6           | 93-4070     |
| .4210       | 1-3/8        | 4"     | .4210      | 6           | 93-4210     |
| .4219       | 1-3/8        | 4"     | .4219      | 6           | 93-4219     |
| .4225       | 1-3/8        | 4"     | .4225      | 6           | 93-4225     |
| .4365       | 1-3/8        | 4"     | .4365      | 6           | 93-4365     |
| .4370       | 1-3/8        | 4"     | .4370      | 6           | 93-4370     |
| .4375       | 1-3/8        | 4"     | .4375      | 6           | 93-4375     |
| .4380       | 1-3/8        | 4"     | .4380      | 6           | 93-4380     |
| .4525       | 1-3/8        | 4"     | .4525      | 6           | 93-4525     |
| .4531       | 1-3/8        | 4"     | .4531      | 6           | 93-4531     |
| .4540       | 1-3/8        | 4"     | .4540      | 6           | 93-4540     |
| .4680       | 1-3/8        | 4"     | .4680      | 6           | 93-4680     |
| .4688       | 1-3/8        | 4"     | .4688      | 6           | 93-4688     |
| .4695       | 1-3/8        | 4"     | .4695      | 6           | 93-4695     |
| .4840       | 1-1/2        | 4"     | .4840      | 6           | 93-4840     |
| .4844       | 1-1/2        | 4"     | .4844      | 6           | 93-4844     |
| .4850       | 1-1/2        | 4"     | .4850      | 6           | 93-4850     |
| .4980       | 1-1/2        | 4"     | .4980      | 6           | 93-4980     |
| .4985       | 1-1/2        | 4"     | .4985      | 6           | 93-4985     |
| .4990       | 1-1/2        | 4"     | .4990      | 6           | 93-4990     |
| .4995       | 1-1/2        | 4"     | .4995      | 6           | 93-4995     |
| .5000       | 1-1/2        | 4"     | .5000      | 6           | 93-5000     |
| .5005       | 1-1/2        | 4"     | .5005      | 6           | 93-5005     |
| .5010       | 1-1/2        | 4"     | .5010      | 6           | 93-5010     |



Carbide Cutting Tools

# SERIES 85 N/C COUNTERBORES

# N/C COUNTERBORES

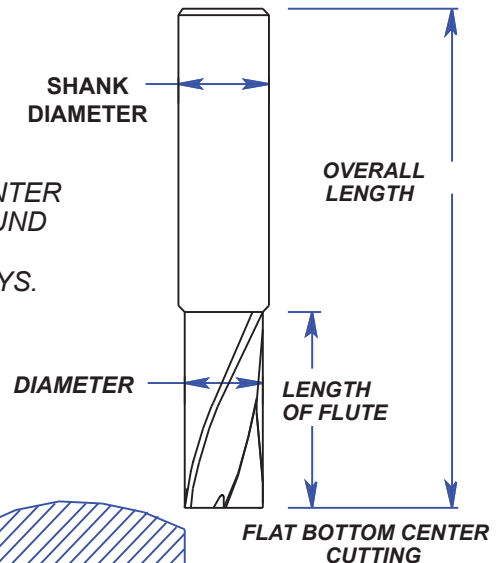
**APPLICATION: SPOTTING ON IRREGULAR OR ROUND SURFACES, COUNTER BORING AND, FLAT BOTTOM REAMING**

| DIAMETER<br>+.000/- .001 | ORDER<br>EDP # | LENGTH<br>OF<br>FLUTE | O.A.L. | SHANK<br>DIA |      |
|--------------------------|----------------|-----------------------|--------|--------------|------|
| 3/32                     | .094           | 85-0941               | 3/8    | 2"           | 1/8  |
| 1/8                      | .125           | 85-1251               | 3/8    | 2"           | 1/8  |
| 9/64                     | .140           | 85-1401               | 1/2    | 2-1/2"       | 3/16 |
| 5/32                     | .156           | 85-1561               | 1/2    | 2-1/2"       | 3/16 |
| 11/64                    | .171           | 85-1711               | 1/2    | 2-1/2"       | 3/16 |
| 3/16                     | .187           | 85-1871               | 1/2    | 2-1/2"       | 3/16 |
| 13/64                    | .203           | 85-2031               | 5/8    | 2-1/2"       | 1/4  |
| 7/32                     | .219           | 85-2191               | 5/8    | 2-1/2"       | 1/4  |
| 15/64                    | .234           | 85-2341               | 5/8    | 2-1/2"       | 1/4  |
| 1/4                      | .250           | 85-2501               | 5/8    | 2-1/2"       | 1/4  |
| 17/64                    | .265           | 85-2651               | 11/16  | 2-1/2"       | 5/16 |
| 9/32                     | .281           | 85-2811               | 11/16  | 2-1/2"       | 5/16 |
| 19/64                    | .297           | 85-2971               | 11/16  | 2-1/2"       | 5/16 |
| 5/16                     | .312           | 85-3121               | 11/16  | 2-1/2"       | 5/16 |
| 21/64                    | .328           | 85-3281               | 3/4    | 2-1/2"       | 3/8  |
| 11/32                    | .343           | 85-3431               | 3/4    | 2-1/2"       | 3/8  |
| 23/64                    | .359           | 85-3591               | 3/4    | 2-1/2"       | 3/8  |
| 3/8                      | .375           | 85-3751               | 3/4    | 2-1/2"       | 3/8  |
| 25/64                    | .390           | 85-3901               | 7/8    | 3"           | 7/16 |
| 13/32                    | .406           | 85-4061               | 7/8    | 3"           | 7/16 |
| 27/64                    | .421           | 85-4211               | 7/8    | 3"           | 7/16 |
| 7/16                     | .437           | 85-4371               | 7/8    | 3"           | 7/16 |
| 29/64                    | .453           | 85-4531               | 1      | 3"           | 1/2  |
| 15/32                    | .469           | 85-4691               | 1      | 3"           | 1/2  |
| 31/64                    | .484           | 85-4841               | 1      | 3"           | 1/2  |
| 1/2                      | .500           | 85-5001               | 1      | 3"           | 1/2  |
| 33/64                    | .515           | 85-5151               | 1-1/8  | 3"           | 9/16 |
| 17/32                    | .531           | 85-5311               | 1-1/8  | 3"           | 9/16 |
| 35/64                    | .547           | 85-5471               | 1-1/8  | 3"           | 9/16 |
| 9/16                     | .562           | 85-5621               | 1-1/8  | 3"           | 9/16 |
| 37/64                    | .578           | 85-5781               | 1-3/16 | 3-1/2"       | 5/8  |
| 19/32                    | .594           | 85-5941               | 1-3/16 | 3-1/2"       | 5/8  |
| 39/64                    | .625           | 85-6091               | 1-3/16 | 3-1/2"       | 5/8  |
| 5/8                      | .641           | 85-6251               | 1-3/16 | 3-1/2"       | 5/8  |
| 41/64                    | .656           | 85-6411               | 1-1/4  | 4"           | 3/4  |
| 21/32                    | .656           | 85-6561               | 1-1/4  | 4"           | 3/4  |
| 43/64                    | .672           | 85-6721               | 1-1/4  | 4"           | 3/4  |
| 11/16                    | .687           | 85-6871               | 1-1/4  | 4"           | 3/4  |
| 45/64                    | .703           | 85-7031               | 1-1/4  | 4"           | 3/4  |
| 23/32                    | .719           | 85-7191               | 1-1/4  | 4"           | 3/4  |
| 47/64                    | .734           | 85-7341               | 1-1/4  | 4"           | 3/4  |
| 3/4                      | .750           | 85-7501               | 1-1/4  | 4"           | 3/4  |

FLAT BOTTOM CENTER CUTTING  
15° RIGHT HAND HELIX, RIGHT HAND CUT

**APPLICATION :**

1. SPOTTING ON IRREGULAR OR ROUND SURFACES
2. COUNTER BORING
3. FLAT BOTTOM REAMING
4. STRAIGHTENING MISALIGNED OR OUT OF ROUND HOLES



FLAT BOTTOM AND CENTER CUTTING. CIRCLE GROUND ON OUTSIDE DIAMETER. WILL NOT CUT SIDEWAYS.

**THESE COUNTERBORES ARE DESIGNED FOR USE ON A CNC THEY DONT HAVE A PILOT OR A PILOT HOLE.**

**SPECIAL SIZES AVAILABLE ON REQUEST**



# HIGH PERFORMANCE ENDMILLS SERIES 136 HIGH PERFORMANCE ENDMILL

**APPLICATION: FOR CUTTING HARD TO MACHINE MATERIALS**

New!

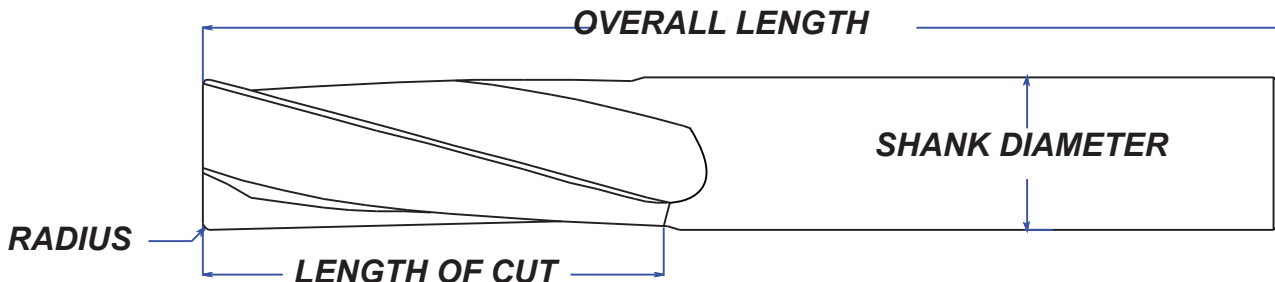


**CONTINUED ON NEXT PAGE**

**FEATURES:**

- 45° HELIX VARIABLE PITCH
  - FULL ECCENTRIC RELIEF
  - ALTiN COATING FOR LONG TOOL LIFE
  - FOR CUTTING HARD TO MACHINE MATERIALS
  - AVAILABLE IN MULTIPLE RADIUS
- SIZES**
- CHATTER FREE CUTTING

| CUTTING DIA | SHANK SIZE | O.A.L. | LENGTH OF CUT | RADIUS | # OF FLUTES | DESCRIPTION      | ORDER EDP # |
|-------------|------------|--------|---------------|--------|-------------|------------------|-------------|
| 1/8         | 1/8        | 1-1/2  | 1/4           | 0.0    | 3           | .125x.250x.0R    | 136-0995    |
| 1/8         | 1/8        | 1-1/2  | 1/4           | 0.010  | 3           | .125x.250x.010R  | 136-1000    |
| 1/8         | 1/8        | 1-1/2  | 1/2           | 0.0    | 3           | .125x.500x.0R    | 136-1010    |
| 5/32        | 3/16       | 2      | 5/16          | 0.0    | 3           | .156x.312x.0R    | 136-1015    |
| 5/32        | 3/16       | 2      | 5/16          | 0.010  | 3           | .156x.312x.010R  | 136-1020    |
| 5/32        | 3/16       | 2      | 9/16          | 0.0    | 3           | .156x.562x.0R    | 136-1025    |
| 5/32        | 3/16       | 2      | 9/16          | 0.010  | 3           | .156x.562x.010R  | 136-1030    |
| 3/16        | 3/16       | 1-1/2  | 5/16          | 0.0    | 3           | .187x.312x.0R    | 136-1038    |
| 3/16        | 3/16       | 1-1/2  | 5/16          | 0.010  | 3           | .187x.312x.010R  | 136-1040    |
| 3/16        | 3/16       | 2      | 9/16          | 0.0    | 3           | .187x.562x.0R    | 136-1045    |
| 3/16        | 3/16       | 2      | 9/16          | 0.010  | 3           | .187x.562x.010R  | 136-1050    |
| 3/16        | 3/16       | 2      | 9/16          | 0.020  | 3           | .187x.562x.020R  | 136-1060    |
| 7/32        | 1/4        | 2      | 1/2           | 0.015  | 3           | .218x.500x.015R  | 136-1070    |
| 7/32        | 1/4        | 2      | 1/2           | 0.0    | 3           | .218x.500x.0R    | 136-1075    |
| 7/32        | 1/4        | 2-1/2  | 3/4           | 0.015  | 3           | .218x.750x.015R  | 136-1080    |
| 1/4         | 1/4        | 2      | 1/2           | 0.0    | 3           | .250x.500x.0R    | 136-1085    |
| 1/4         | 1/4        | 2      | 1/2           | 0.015  | 3           | .250x.500x.015R  | 136-1090    |
| 1/4         | 1/4        | 2-1/2  | 3/4           | 0.0    | 3           | .250x.750x.0R    | 136-1095    |
| 1/4         | 1/4        | 2-1/2  | 3/4           | 0.015  | 3           | .250x.750x.015R  | 136-1100    |
| 1/4         | 1/4        | 2-1/2  | 3/4           | 0.030  | 3           | .250x.750x.030R  | 136-1110    |
| 1/4         | 1/4        | 3"     | 1-1/8         | .015   | 3           | .250x1.125x.015R | 136-1120    |
| 9/32        | 5/16       | 2      | 1/2           | 0.0    | 5           | .281x.500x.0R    | 136-1135    |
| 9/32        | 5/16       | 2      | 1/2           | 0.015  | 5           | .281x.500x.015R  | 136-1140    |
| 9/32        | 5/16       | 2-1/2  | 3/4           | 0.015  | 5           | .281x.750x.015R  | 136-1150    |
| 5/16        | 5/16       | 2      | 1/2           | 0.0    | 5           | .312x.500x.0R    | 136-1155    |
| 5/16        | 5/16       | 2      | 1/2           | 0.015  | 5           | .312x.500x.015R  | 136-1160    |
| 5/16        | 5/16       | 2-1/2  | 13/16         | 0.0    | 5           | .312x.812x.0R    | 136-1170    |
| 5/16        | 5/16       | 2-1/2  | 13/16         | 0.015  | 5           | .312x.812x.015R  | 136-1180    |
| 5/16        | 5/16       | 2-1/2  | 13/16         | 0.030  | 5           | .312x.812x.030R  | 136-1190    |
| 11/32       | 3/8        | 2-1/2  | 9/16          | 0.0    | 5           | .343x.562x.0R    | 136-1210    |
| 11/32       | 3/8        | 2-1/2  | 9/16          | 0.015  | 5           | .343x.562x.015R  | 136-1220    |
| 11/32       | 3/8        | 2-1/2  | 7/8           | 0.0    | 5           | .343x.875x.0R    | 136-1225    |
| 11/32       | 3/8        | 2-1/2  | 7/8           | 0.015  | 5           | .343x.875x.015R  | 136-1230    |
| 3/8         | 3/8        | 2      | 9/16          | 0.0    | 5           | .375x.562x.0R    | 136-1235    |
| 3/8         | 3/8        | 2      | 9/16          | 0.015  | 5           | .375x.562x.015R  | 136-1240    |
| 3/8         | 3/8        | 2      | 9/16          | 0.030  | 5           | .375x.562x.030R  | 136-1250    |
| 3/8         | 3/8        | 2-1/2  | 1             | 0.0    | 5           | .375x1.00x.0R    | 136-1265    |
| 3/8         | 3/8        | 2-1/2  | 1             | 0.015  | 5           | .375x1.00x.015R  | 136-1270    |
| 3/8         | 3/8        | 2-1/2  | 1             | 0.030  | 5           | .375x1.00x.030R  | 136-1280    |
| 3/8         | 3/8        | 2-1/2  | 1             | 0.062  | 5           | .375x1.00x.062R  | 136-1290    |
| 3/8         | 3/8        | 3      | 1-1/4         | 0.0    | 5           | .375x1.250x.0R   | 136-1305    |
| 3/8         | 3/8        | 3      | 1-1/4         | 0.015  | 5           | .375x1.250x.015R | 136-1310    |
| 3/8         | 3/8        | 3      | 1-1/4         | 0.030  | 5           | .375x1.250x.030R | 136-1320    |
| 3/8         | 3/8        | 4      | 1-1/2         | 0.0    | 5           | .375x1.500x.0R   | 136-1335    |
| 3/8         | 3/8        | 4      | 1-1/2         | 0.015  | 5           | .375x1.500x.015R | 136-1340    |
| 3/8         | 3/8        | 4      | 1-1/2         | 0.030  | 5           | .375x1.500x.030R | 136-1350    |
| 3/8         | 3/8        | 4      | 1-1/2         | 0.0    | 5           | .375x2.500x.0R   | 136-1365    |
| 7/16        | 7/16       | 2-1/2  | 9/16          | 0.0    | 5           | .437x.562x.0R    | 136-1395    |



# SERIES 136 HIGH PERFORMANCE ENDMILL HIGH PERFORMANCE ENDMILLS

APPLICATION: FOR CUTTING HARD TO MACHINE MATERIALS

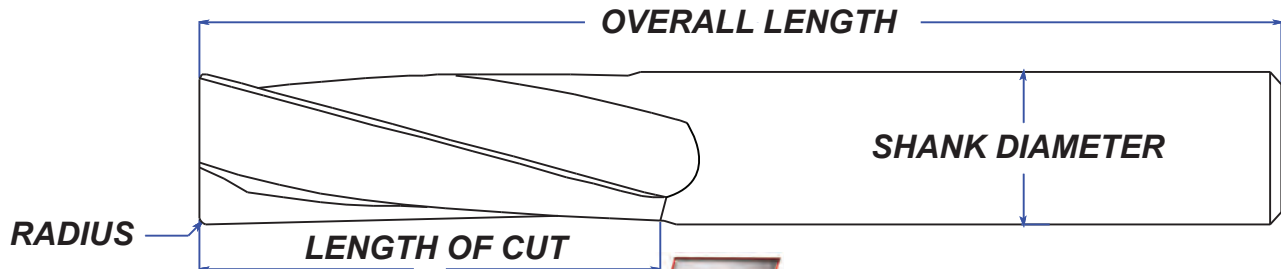


**New!**

**FEATURES:**

- 45° HELIX VARIABLE PITCH
- FULL ECCENTRIC RELIEF
- ALTiN COATING FOR LONG TOOL LIFE
- FOR CUTTING HARD TO MACHINE MATERIALS
- AVAILABLE IN MULTIPLE RADIUS SIZES
- CHATTER FREE CUTTING

| CUTTING DIA | SHANK SIZE | O.A.L. | LENGTH OF CUT | RADIUS | # OF FLUTES | DESCRIPTION      | ORDER EDP # |
|-------------|------------|--------|---------------|--------|-------------|------------------|-------------|
| 7/16        | 7/16       | 2-1/2  | 9/16          | 0.015  | 5           | .437x.562x.015R  | 136-1400    |
| 7/16        | 7/16       | 2-1/2  | 1             | 0.0    | 5           | .437x1.00x.0R    | 136-1415    |
| 7/16        | 7/16       | 2-1/2  | 1             | 0.015  | 5           | .437x1.00x.015R  | 136-1420    |
| 7/16        | 7/16       | 2-1/2  | 2             | 0.0    | 5           | .437x2.00x.0R    | 136-1445    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | 0.0    | 5           | .500x.625x.0R    | 136-1465    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | 0.010  | 5           | .500x.625x.010R  | 136-1470    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | 0.015  | 5           | .500x.625x.015R  | 136-1480    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | 0.030  | 5           | .500x.625x.030R  | 136-1490    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | 0.045  | 5           | .500x.625x.045R  | 136-1500    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | 0.062  | 5           | .500x.625x.062R  | 136-1510    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | 0.094  | 5           | .500x.625x.094R  | 136-1520    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | 0.125  | 5           | .500x.625x.125R  | 136-1530    |
| 1/2         | 1/2        | 3      | 1             | 0.0    | 5           | .500x1.00x.0R    | 136-1535    |
| 1/2         | 1/2        | 3      | 1             | 0.015  | 5           | .500x1.00x.015R  | 136-1540    |
| 1/2         | 1/2        | 3      | 1             | 0.030  | 5           | .500x1.00x.030R  | 136-1550    |
| 1/2         | 1/2        | 3      | 1             | 0.045  | 5           | .500x1.00x.045R  | 136-1560    |
| 1/2         | 1/2        | 3      | 1             | 0.062  | 5           | .500x1.00x.062R  | 136-1570    |
| 1/2         | 1/2        | 3      | 1             | 0.094  | 5           | .500x1.00x.094R  | 136-1580    |
| 1/2         | 1/2        | 3      | 1             | 0.125  | 5           | .500x1.00x.125R  | 136-1590    |
| 1/2         | 1/2        | 3      | 1-1/4         | 0.0    | 5           | .500x1.25x.0R    | 136-1595    |
| 1/2         | 1/2        | 3      | 1-1/4         | 0.015  | 5           | .500x1.25x.015R  | 136-1610    |
| 1/2         | 1/2        | 3      | 1-1/4         | 0.030  | 5           | .500x1.25x.030R  | 136-1620    |
| 1/2         | 1/2        | 3      | 1-1/4         | 0.062  | 5           | .500x1.25x.062R  | 136-1640    |
| 1/2         | 1/2        | 4      | 1-1/2         | 0.015  | 5           | .500x1.500x.0R   | 136-1645    |
| 1/2         | 1/2        | 4      | 1-1/2         | 0.015  | 5           | .500x1.500x.015  | 136-1670    |
| 1/2         | 1/2        | 4      | 1-1/2         | 0.030  | 5           | .500x1.500x.030R | 136-1680    |
| 1/2         | 1/2        | 4      | 1-1/2         | 0.062  | 5           | .500x1.500x.062R | 136-1690    |
| 1/2         | 1/2        | 4      | 2             | 0.0    | 5           | .500x2.00x.0R    | 136-1695    |
| 1/2         | 1/2        | 4      | 2             | 0.015  | 5           | .500x2.00x.015R  | 136-1720    |
| 1/2         | 1/2        | 4      | 2             | 0.030  | 5           | .500x2.00x.030R  | 136-1730    |
| 1/2         | 1/2        | 4      | 2             | 0.062  | 5           | .500x2.00x.062R  | 136-1750    |
| 1/2         | 1/2        | 4      | 2             | 0.125  | 5           | .500x2.00x.125R  | 136-1770    |
| 5/8         | 5/8        | 3      | 3/4           | 0.0    | 5           | .625x.750x.0R    | 136-1775    |
| 5/8         | 5/8        | 3      | 3/4           | 0.062  | 5           | .625x.750x.062R  | 136-1780    |
| 5/8         | 5/8        | 3      | 3/4           | 0.125  | 5           | .625x.750x.125R  | 136-1800    |
| 5/8         | 5/8        | 3-1/2  | 1-5/8         | 0.0    | 5           | .625x1.625x.0R   | 136-1805    |
| 5/8         | 5/8        | 3-1/2  | 1-5/8         | 0.030  | 5           | .625x1.625x.030R | 136-1820    |
| 5/8         | 5/8        | 3-1/2  | 1-5/8         | 0.062  | 5           | .625x1.625x.062R | 136-1830    |
| 5/8         | 5/8        | 3-1/2  | 1-5/8         | 0.125  | 5           | .625x1.625x.125R | 136-1850    |
| 3/4         | 3/4        | 3      | 7/8           | 0.0    | 5           | .750x.875x.0R    | 136-1855    |
| 3/4         | 3/4        | 3      | 7/8           | 0.030  | 5           | .750x.875x.030R  | 136-1920    |
| 3/4         | 3/4        | 3      | 7/8           | 0.062  | 5           | .750x.875x.062R  | 136-1940    |
| 3/4         | 3/4        | 3      | 7/8           | 0.125  | 5           | .750x.875x.125R  | 136-1960    |
| 3/4         | 3/4        | 4      | 1-5/8         | 0.0    | 5           | .750x1.625x.0R   | 136-1965    |
| 3/4         | 3/4        | 4      | 1-5/8         | 0.030  | 5           | .750x1.625x.030R | 136-1980    |
| 3/4         | 3/4        | 4      | 1-5/8         | 0.062  | 5           | .750x1.625x.062R | 136-2010    |
| 1"          | 1"         | 4      | 1-1/4         | 0.0    | 5           | 1.00x1.25x.0R    | 136-2165    |
| 1"          | 1"         | 4      | 1-1/4         | 0.030  | 5           | 1.00x1.25x.030R  | 136-2170    |
| 1"          | 1"         | 4      | 1-1/4         | 0.062  | 5           | 1.00x1.25x.062R  | 136-2180    |
| 1"          | 1"         | 4      | 1-1/4         | 0.125  | 5           | 1.00x1.25x.125R  | 136-2190    |



# HIGH PERFORMANCE ENDMILLS

# SERIES 112 HIGH PERFORMANCE ROUGHING ENDMILL

APPLICATION: ROUGHING STEEL & STAINLESS ALLOYS

ALTIN COATED FOR LONG LIFE

- 3 FLUTE
- CORNER RADIUS
- VARIABLE PITCH
- CHIP BEAKERS
- 50° HELIX ANGLE

| CUTTING DIA | SHANK SIZE | O.A.L. | LENGTH OF CUT | RADIUS | DESCRIPTION       | ORDER EDP # |
|-------------|------------|--------|---------------|--------|-------------------|-------------|
| 1/4         | 1/4        | 2-1/2  | 3/4           | 0.015  | .250x.750x.015R   | 112-1000    |
| 1/4         | 1/4        | 3"     | 1-1/8         | 0.015  | .250x1.125x.015R  | 112-1005    |
| 5/16        | 5/16       | 2-1/2  | 13/16         | 0.015  | .312x.812x.015R   | 112-1010    |
| 3/8         | 3/8        | 2-1/2  | 1"            | 0.015  | .375x1.000x.015R  | 112-1015    |
| 3/8         | 3/8        | 3"     | 1-1/4         | 0.015  | .375x1.250x.015R  | 112-1020    |
| 7/16        | 7/16       | 2-3/4  | 1"            | 0.015  | .437x1.000x.015R  | 112-1025    |
| 7/16        | 7/16       | 4"     | 2"            | 0.015  | .437x2.000x.015R  | 112-1030    |
| 1/2         | 1/2        | 3"     | 1-1/4         | 0.030  | .500x1.250x.030R  | 112-1035    |
| 1/2         | 1/2        | 4"     | 1-1/2         | 0.030  | .500x1.500x.030R  | 112-1040    |
| 1/2         | 1/2        | 4"     | 2"            | 0.030  | .500x2.000x.030R  | 112-1045    |
| 5/8         | 5/8        | 3-1/2  | 1-5/8         | 0.030  | .625x1.625x.030R  | 112-1050    |
| 5/8         | 5/8        | 5"     | 2-1/4         | 0.030  | .625x2.250x.030R  | 112-1055    |
| 3/4         | 3/4        | 4"     | 1-5/8         | 0.030  | .750x1.625x.030R  | 112-1060    |
| 3/4         | 3/4        | 5"     | 2-1/4         | 0.030  | .750x2.250x.030R  | 112-1065    |
| 1"          | 1"         | 4"     | 2"            | 0.030  | 1.000x2.000x.030R | 112-1070    |
| 1"          | 1"         | 6"     | 3"            | 0.030  | 1.000x2.000x.030R | 112-1075    |



# SERIES 116 HIGH PERFORMANCE BALL ENDMILL

APPLICATION: ROUGHING OR FINISHING STEEL & STAINLESS ALLOYS

ALTIN COATED FOR LONG LIFE

| CUTTING DIA | SHANK SIZE | O.A.L. | LENGTH OF CUT | DESCRIPTION | ORDER EDP # |
|-------------|------------|--------|---------------|-------------|-------------|
| 3/16        | 3/16       | 1-1/2  | 3/8           | .187x.375   | 116-1000    |
| 3/16        | 3/16       | 2      | 9/16          | .187x.562   | 116-1005    |
| 1/4         | 1/4        | 2      | 1/2           | .250x.500   | 116-1010    |
| 1/4         | 1/4        | 2-1/2  | 3/4           | .250x.750   | 116-1015    |
| 5/16        | 5/16       | 2      | 1/2           | .312x.500   | 116-1020    |
| 5/16        | 5/16       | 2-1/2  | 13/16         | .312x.812   | 116-1025    |
| 3/8         | 3/8        | 2      | 1/2           | .375x.500   | 116-1030    |
| 3/8         | 3/8        | 2-1/2  | 7/8           | .375x.875   | 116-1035    |
| 7/16        | 7/16       | 2-1/2  | 5/8           | .437x.625   | 116-1040    |
| 7/16        | 7/16       | 2-3/4  | 1             | .437x1.000  | 116-1045    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | .500x.625   | 116-1050    |
| 1/2         | 1/2        | 3      | 1             | .500x1.000  | 116-1055    |
| 1/2         | 1/2        | 3      | 1-1/4         | .500x1.250  | 116-1060    |
| 1/2         | 1/2        | 4      | 1-1/2         | .500x1.500  | 116-1065    |
| 5/8         | 5/8        | 3      | 3/4           | .625x.750   | 116-1070    |
| 5/8         | 5/8        | 3-1/2  | 1-1/4         | .625x1.250  | 116-1075    |
| 3/4         | 3/4        | 3      | 1             | .750x1.000  | 116-1080    |
| 3/4         | 3/4        | 4      | 1-1/2         | .750x1.500  | 116-1085    |
| 1"          | 1"         | 4      | 1-1/2         | 1.000x1.500 | 116-1090    |

*New!*

- 4 Flute
- Ball Nose
- Variable Pitch
- 45° Helix Angle





# SERIES 126 HIGH PERFORMANCE ALUMINUM CUTTING ENDMILLS

# HIGH PERFORMANCE ENDMILLS

APPLICATION: ROUGHING OR FINISHING ALUMINUM ALLOYS

*New!*

ZIRCONIUM COATED FOR LONGER LIFE AND PREVENTS CHIPS STICKING TO THE TOOL

- 3 Flute
- Variable Pitch
- 45 ° Helix Angle

| CUTTING DIA | SHANK SIZE | O.A.L. | LENGTH OF CUT | DESCRIPTION | ORDER EDP # |
|-------------|------------|--------|---------------|-------------|-------------|
| 3/16        | 3/16       | 2"     | 3/8           | .1875x.375  | 126-1000    |
| 3/16        | 3/16       | 2"     | 9/16          | .1875x.562  | 126-1005    |
| 7/32        | 1/4        | 2"     | 1/2           | .218x.500   | 126-1010    |
| 7/32        | 1/4        | 2-1/2  | 3/4           | .218x.500   | 126-1015    |
| 1/4         | 1/4        | 2"     | 1/2           | .250x500    | 126-1020    |
| 1/4         | 1/4        | 2-1/2  | 3/4           | .250x.750   | 126-1025    |
| 1/4         | 1/4        | 3"     | 1-1/4         | .250x1.250  | 126-1030    |
| 1/4         | 1/4        | 4"     | 1-1/12        | .250x1.500  | 126-1035    |
| 9/32        | 5/16       | 2"     | 9/16          | .281x.562   | 126-1040    |
| 9/32        | 5/16       | 2-1/2  | 13/16         | .281x.812   | 126-1045    |
| 5/16        | 5/16       | 2"     | 1/2           | .312x.500   | 126-1050    |
| 5/16        | 5/16       | 2-1/2  | 13/16         | .312x.812   | 126-1055    |
| 5/16        | 5/16       | 3"     | 1-1/4         | .312x1.250  | 126-1060    |
| 3/8         | 3/8        | 2"     | 5/8           | .375x.625   | 126-1065    |
| 3/8         | 3/8        | 2-1/2  | 1"            | .375x1.000  | 126-1070    |
| 3/8         | 3/8        | 3"     | 1-1/4         | .375x1.250  | 126-1075    |
| 3/8         | 3/8        | 4"     | 1-1/2         | .375x1.500  | 126-1080    |
| 7/16        | 3/8        | 4"     | 2"            | .375x2.000  | 126-1085    |
| 7/16        | 7/16       | 2-1/2  | 5/8           | .437x.625   | 126-1090    |
| 7/16        | 7/16       | 2-3/4  | 1"            | .437x1.000  | 126-1095    |
| 1/2         | 7/16       | 4"     | 2"            | .437x2.000  | 126-1100    |
| 1/2         | 1/2        | 2-1/2  | 5/8           | .500x.625   | 126-1105    |
| 1/2         | 1/2        | 3"     | 1"            | .500x1.000  | 126-1110    |
| 1/2         | 1/2        | 3"     | 1-1/4         | .500x1.250  | 126-1115    |
| 1/2         | 1/2        | 4"     | 1-1/2         | .500x1.500  | 126-1120    |
| 1/2         | 1/2        | 4"     | 2"            | .500x2.000  | 126-1125    |
| 1/2         | 1/2        | 6"     | 3"            | .500x3.000  | 126-1130    |
| 5/8         | 5/8        | 3"     | 3/4           | .625x.750   | 126-1135    |
| 5/8         | 5/8        | 3-1/2  | 1-5/8         | .625x.1.625 | 126-1140    |
| 5/8         | 5/8        | 5"     | 2-1/4         | .625x2.250  | 126-1145    |
| 3/4         | 3/4        | 3"     | 1"            | .750x1.000  | 126-1150    |
| 3/4         | 3/4        | 4"     | 1-5/8         | .750x1.625  | 126-1155    |
| 3/4         | 3/4        | 5"     | 2-1/4         | .750x2.250  | 126-1160    |
| 3/4         | 3/4        | 6"     | 3"            | .750x3.000  | 126-1165    |
| 1"          | 1"         | 4"     | 1-1/2         | 1.000x1.500 | 126-1170    |
| 1"          | 1"         | 5"     | 2-1/4         | 1.000x2.250 | 126-1175    |
| 1"          | 1"         | 6"     | 3"            | 1.000x3.000 | 126-1180    |





# CARBIDE RODS

# SERIES 200 CARBIDE RODS

APPLICATION: CARBIDE BLANK

*New!*

| BLANK DIA | O.A.L.   | ORDER EDP # | BLANK DIA | O.A.L.   | ORDER EDP # |
|-----------|----------|-------------|-----------|----------|-------------|
| 1/8       | 1"       | 200-1000    | 1/2       | 1"       | 200-1430    |
|           | 1-1/4    | 200-1010    |           | 1-1/4    | 200-1440    |
|           | 1-1/2    | 200-1020    |           | 1-1/2    | 200-1450    |
|           | 2"       | 200-1030    |           | 2"       | 200-1460    |
|           | 2-1/2    | 200-1040    |           | 2-1/2    | 200-1470    |
|           | 2-3/4    | 200-1050    |           | 2-3/4    | 200-1480    |
|           | 3"       | 200-1060    |           | 3"       | 200-1490    |
| 3/16      | 4"       | 200-1070    | 4"        | 200-1500 |             |
|           | 1"       | 200-1080    | 6"        | 200-1510 |             |
|           | 1-1/4    | 200-1090    | 12"       | 200-1520 |             |
|           | 1-1/2    | 200-1100    | 5/8       | 1"       | 200-1530    |
|           | 2"       | 200-1110    |           | 1-1/4    | 200-1540    |
|           | 2-1/2    | 200-1120    |           | 1-1/2    | 200-1550    |
|           | 2-3/4    | 200-1130    |           | 2"       | 200-1560    |
| 3"        | 200-1140 | 2-1/2       |           | 200-1570 |             |
| 4"        | 200-1150 | 2-3/4       |           | 200-1580 |             |
| 1/4       | 1"       | 200-1160    |           | 3"       | 200-1590    |
|           | 1-1/4    | 200-1170    | 4"        | 200-1600 |             |
|           | 1-1/2    | 200-1180    | 6"        | 200-1610 |             |
|           | 2"       | 200-1190    | 12"       | 200-1620 |             |
|           | 2-1/2    | 200-1200    | 3/4       | 1"       | 200-1630    |
|           | 2-3/4    | 200-1210    |           | 1-1/4    | 200-1640    |
|           | 3"       | 200-1220    |           | 1-1/2    | 200-1650    |
| 4"        | 200-1230 | 2"          |           | 200-1660 |             |
| 6"        | 200-1240 | 2-1/2       |           | 200-1670 |             |
| 5/16      | 1"       | 200-1250    |           | 2-3/4    | 200-1680    |
|           | 1-1/4    | 200-1260    |           | 3"       | 200-1690    |
|           | 1-1/2    | 200-1270    | 4"        | 200-1700 |             |
|           | 2"       | 200-1280    | 6"        | 200-1710 |             |
|           | 2-1/2    | 200-1290    | 12"       | 200-1720 |             |
|           | 2-3/4    | 200-1300    | 1"        | 1"       | 200-1730    |
|           | 3"       | 200-1310    |           | 1-1/4    | 200-1740    |
| 4"        | 200-1320 | 1-1/2       |           | 200-1750 |             |
| 6"        | 200-1330 | 2"          |           | 200-1760 |             |
| 3/8       | 1"       | 200-1340    |           | 2-1/2    | 200-1770    |
|           | 1-1/4    | 200-1350    |           | 2-3/4    | 200-1780    |
|           | 1-1/2    | 200-1360    |           | 3"       | 200-1790    |
|           | 2"       | 200-1370    | 4"        | 200-1800 |             |
|           | 2-1/2    | 200-1380    | 6"        | 200-1810 |             |
|           | 2-3/4    | 200-1390    | 12"       | 200-1820 |             |
|           | 3"       | 200-1400    |           |          |             |
| 4"        | 200-1410 |             |           |          |             |
| 6"        | 200-1420 |             |           |          |             |



# SERIES 210 CARBIDE RODS WITH FLATS

# CARBIDE RODS

APPLICATION: CARBIDE BLANK

| BLANK DIA | O.A.L.   | ORDER EDP # |
|-----------|----------|-------------|
| 1/8       | 1"       | 210-1000    |
|           | 1-1/4    | 210-1010    |
|           | 1-1/2    | 210-1020    |
|           | 2"       | 210-1030    |
|           | 2-1/2    | 210-1040    |
|           | 2-3/4    | 210-1050    |
|           | 3"       | 210-1060    |
| 3/16      | 4"       | 210-1070    |
|           | 1"       | 210-1080    |
|           | 1-1/4    | 210-1090    |
|           | 1-1/2    | 210-1100    |
|           | 2"       | 210-1110    |
|           | 2-1/2    | 210-1120    |
|           | 2-3/4    | 210-1130    |
| 1/4       | 3"       | 210-1140    |
|           | 4"       | 210-1150    |
|           | 1"       | 210-1160    |
|           | 1-1/4    | 210-1170    |
|           | 1-1/2    | 210-1180    |
|           | 2"       | 210-1190    |
|           | 2-1/2    | 210-1200    |
| 5/16      | 2-3/4    | 210-1210    |
|           | 3"       | 210-1220    |
|           | 4"       | 210-1230    |
|           | 6"       | 210-1240    |
|           | 1"       | 210-1250    |
|           | 1-1/4    | 210-1260    |
|           | 1-1/2    | 210-1270    |
| 3/8       | 2"       | 210-1280    |
|           | 2-1/2    | 210-1290    |
|           | 2-3/4    | 210-1300    |
|           | 3"       | 210-1310    |
|           | 4"       | 210-1320    |
|           | 6"       | 210-1330    |
|           | 1"       | 210-1340    |
| 1/2       | 1-1/4    | 210-1350    |
|           | 1-1/2    | 210-1360    |
|           | 2"       | 210-1370    |
|           | 2-1/2    | 210-1380    |
|           | 2-3/4    | 210-1390    |
|           | 3"       | 210-1400    |
|           | 4"       | 210-1410    |
| 6"        | 210-1420 |             |

| BLANK DIA | O.A.L. | ORDER EDP # |          |
|-----------|--------|-------------|----------|
| 1/2       | 1"     | 210-1430    |          |
|           | 1-1/4  | 210-1440    |          |
|           | 1-1/2  | 210-1450    |          |
|           | 2"     | 210-1460    |          |
|           | 2-1/2  | 210-1470    |          |
|           | 2-3/4  | 210-1480    |          |
|           | 3"     | 210-1490    |          |
|           | 4"     | 210-1500    |          |
|           | 6"     | 210-1510    |          |
|           | 12"    | 210-1520    |          |
|           | 5/8    | 1"          | 210-1530 |
|           |        | 1-1/4       | 210-1540 |
| 1-1/2     |        | 210-1550    |          |
| 2"        |        | 210-1560    |          |
| 2-1/2     |        | 210-1570    |          |
| 2-3/4     |        | 210-1580    |          |
| 3"        |        | 210-1590    |          |
| 4"        |        | 210-1600    |          |
| 6"        |        | 210-1610    |          |
| 12"       |        | 210-1620    |          |
| 3/4       |        | 1"          | 210-1630 |
|           |        | 1-1/4       | 210-1640 |
|           | 1-1/2  | 210-1650    |          |
|           | 2"     | 210-1660    |          |
|           | 2-1/2  | 210-1670    |          |
|           | 2-3/4  | 210-1680    |          |
|           | 3"     | 210-1690    |          |
|           | 4"     | 210-1700    |          |
|           | 6"     | 210-1710    |          |
|           | 12"    | 210-1720    |          |
|           | 1"     | 1"          | 210-1730 |
|           |        | 1-1/4       | 210-1740 |
| 1-1/2     |        | 210-1750    |          |
| 2"        |        | 210-1760    |          |
| 2-1/2     |        | 210-1770    |          |
| 2-3/4     |        | 210-1780    |          |
| 3"        |        | 210-1790    |          |
| 4"        |        | 210-1800    |          |
| 6"        |        | 210-1810    |          |
| 12"       |        | 210-1820    |          |



| SPEED AND FEEDS FOR CARBIDE ENDMILLS |                               | ENDMILL DIAMETER FEED PER TOOTH (INCHES) |            |           |
|--------------------------------------|-------------------------------|--|------------|-----------|
| MATERIAL                             | SPEED SURFACE FEET PER MINUTE | UP TO 1/4                                | UP TO 1/2  | UP TO 1"  |
| ALUMINUM / ALUMINUM ALLOYS           | 600-1300                      | .0002-.002                               | .002-.004  | .004-.008 |
| BRASS / SOFT BRONZE                  | 400-700                       | .0005-.002                               | .002-.003  | .003-.005 |
| BRONZE / HIGH TENSILE                | 250-400                       | .001-.002                                | .002-.003  | .004-.006 |
| COPPER / COPPER ALLOYS               | 350-900                       | .0005-.002                               | 0.002      | .002-.006 |
| IRON-CAST (SOFT)                     | 200-500                       | .0005-.002                               | .002-.003  | .003-.006 |
| IRON-CAST (HARD)                     | 100-450                       | .0003-.001                               | .0008-.002 | .003-.005 |
| IRON-DUCTILE                         | 80-400                        | .0002-.001                               | .001-.002  | .002-.006 |
| IRON MALLEABLE                       | 250-600                       | .001-.002                                | .001-.003  | .003-.008 |
| MAGNESIUM / MAGNESIUM ALLOYS         | 800-1400                      | .0005-.002                               | .002-.004  | .004-.010 |
| MOLYBDENUM                           | 800-1100                      | .001-.002                                | .002-.004  | .004-.008 |
| MONEL / HIGH NICKEL STEEL            | 150-300                       | .0002-.001                               | .001-.002  | .002-.004 |
| NICKEL BASE HIGH TEMP ALLOYS         | 20-130                        | .0003-.0008                              | .0008-.001 | .001-.002 |
| PLASTICS                             | 600-1200                      | .0006-.003                               | .003-.006  | .006-.015 |
| PLASTICS-GLASS FILLED                | 300-800                       | .0006-.003                               | .003-.004  | .004-.012 |
| REFRACTORY ALLOYS                    | 80-400                        | .0002-.001                               | 0.001      | .001-.002 |
| STEEL-LOW CARBON                     | 250-550                       | .0002-.001                               | .001-.003  | .003-.007 |
| STEEL-MEDIUM CARBON                  | 100-250                       | .0004-.0015                              | .0015-.002 | .002-.005 |
| STEEL-UP TO Rc35                     | 150-250                       | .0005-.001                               | .001-.002  | .002-.003 |
| STEEL-Rc35 - Rc50                    | 80-150                        | .0003-.0007                              | .0007-.001 | .002-.003 |
| STEEL-Rc50 - Rc60                    | 25-120                        | .0002-.0005                              | .0005-.001 | .001-.003 |
| STEEL-MOLD                           | 200-350                       | .0002-.001                               | .001-.002  | .002-.006 |
| STEEL TOOL                           | 100-300                       | .0002-.001                               | .001-.002  | .002-.006 |
| STAINLESS STEEL-SOFT                 | 250-400                       | .0002-.001                               | .001-.002  | .002-.006 |
| STAINLESS STEEL-HARD                 | 50-250                        | .0002-.001                               | .001-.002  | .001-.005 |
| TITANIUM-SOFT                        | 120-350                       | .0002-.001                               | .001-.002  | .002-.006 |
| TITANIUM-HARD                        | 30-150                        | .0002-.0005                              | .0005-.001 | .001-.004 |

**PLUNGE OPERATIONS: REDUCE FEED PER TOOTH 50-65%**

**SLOTING APPLICATIONS: SURFACE SPEEDS (SFM) SHOULD BE REDUCED APPROXIMATELY 20% OF THE LOWEST VALUE**

**LIGHT RADIAL: DEPTHS OF CUT, THE HIGHER OF THE RECOMMENDED SURFACE SPEEDS (SFM) SHOULD BE USED**

**GREATER RADIAL: DEPTHS OF CUT (MORE THAN .5 X DIAMETER) THE LOWER RANGE OF SURFACE SPEEDS (SFM) SHOULD BE**

**USED AXIAL DEPTH OF CUT; RECOMMENDATIONS ARE NOT TO EXCEED 1-1/2 TIMES THE DIAMETER. IF THIS CONDITION EXISTS,**

**CONVENTIONAL MILLING SHOULD BE USED AND FEED PER TOOTH SHOULD BE REDUCED BY 50%**

**PLEASE NOTE: THE ABOVE RECOMMENDATIONS SHOULD BE CONSIDERED ONLY AS A STARTING POINT;**

**"FINE TUNING" MAY BE REQUIRED IN ORDER TO MAXIMIZE PERFORMANCE**

| SPEED AND FEEDS FOR BORING TOOLS |                         |                               |                            | DEPTH OF CUT                        |   |   |
|----------------------------------|-------------------------|-------------------------------|----------------------------|-------------------------------------|---|---|
| MATERIAL                         | TYPE                    | SPEED SURFACE FEET PER MINUTE | FEED INCHES PER REVOLUTION | INSERT BARS SERIES 12-17 PAGE 15-21 | SOLID CARBIDE BARS OUR SERIES 10 PAGE 8-9 | ALTIN COATED SOLID CARBIDE BARS OUR SERIES 18 PAGE 10 |
| PLASTIC                          | TEFLON                  | 500-600                       | .003-.006                  | .007                                | .012                                      | .016  |
|                                  | NYLON                   | 700-800                       | .001-.003                  | .007                                | .012                                      | .016  |
|                                  | PHENOLIC                | 700-800                       | .001-.003                  | .007                                | .012                                      | .016  |
|                                  | GLASS FILLED            | 700-800                       | .001-.003                  | .005                                | .012                                      | .016  |
| MAGNESIUM                        | AZ,AM,EZ,ZE,HK          | 750-1500                      | .005-.012                  | .008                                | .012                                      | .016  |
| ALUMINUM                         | 2021 THRU 6061          | 700-1400                      | .005-.012                  | .008                                | .014                                      | .018  |
| COPPER                           | 101-707                 | 600-800                       | .003-.005                  | .008                                | .014                                      | .016  |
|                                  | 834-978                 | 600-800                       | .003-.005                  | .008                                | .014                                      | .016  |
| BRASS                            |                         | 350-400                       | .001-.003                  | .006                                | .011                                      | .012  |
| BRONZE                           |                         | 300-400                       | .001-.002                  | .006                                | .011                                      | .012  |
| CAST IRON                        | GRAY                    | 250-350                       | .004-.010                  | .007                                | .007                                      | .009  |
|                                  | DUCTILE                 | 250-350                       | .004-.010                  | .007                                | .007                                      | .009  |
|                                  | MALLEABLE               | 250-350                       | .004-.010                  | .007                                | .007                                      | .009  |
| STEEL                            | 1005-1029               | 100-300                       | .003-.007                  | .007                                | .014                                      | .016  |
|                                  | 1030-1055               | 100-300                       | .003-.007                  | .007                                | .014                                      | .016  |
|                                  | 1060-1095               | 150-400                       | .003-.005                  | .007                                | .014                                      | .016  |
|                                  | 10L45-10L50             | 300-500                       | .004-.006                  | .007                                | .014                                      | .016  |
|                                  | 12L13-12L15             | 300-500                       | .003-.005                  | .007                                | .014                                      | .016  |
|                                  | 41L30-41L50             | 200-400                       | .003-.005                  | .007                                | .014                                      | .016  |
|                                  | 4140-4150               | 150-400                       | .003-.005                  | .007                                | .014                                      | .016  |
|                                  | 4140 (35 HRC)           | 90-125                        | .001-.004                  | .004                                | .007                                      | .008  |
|                                  | 8617-8622               | 100-300                       | .002-.004                  | .007                                | .006                                      | .007  |
|                                  | M1-M6                   | 150-250                       | .003-.008                  | .006                                | .005                                      | .006  |
|                                  | H10-H19                 | 150-250                       | .003-.007                  | .006                                | .005                                      | .006  |
|                                  | D2-D7                   | 150-250                       | .004-.010                  | .006                                | .005                                      | .006  |
|                                  | A2-A9, 01-07            | 150-250                       | .003-.008                  | .006                                | .005                                      | .006  |
|                                  | W1, W2                  | 150-250                       | .003-.008                  | .006                                | .006                                      | .007  |
| M-50, 52100                      | 300-400                 | .004-.010                     | .007                       | .006                                | .007                                      |   |
| TITANIUM                         | TI-9AI-6V               | 90-250                        | .001-.003                  | .005                                | .008                                      | .011  |
| STAINLESS                        | 201-385                 | 100-250                       | .001-.004                  | .005                                | .008                                      | .012  |
|                                  | 405-446                 | 100-250                       | .001-.004                  | .005                                | .008                                      | .012  |
|                                  | 15-5PH, 16-6PH, 14-4 PH | 300-400                       | .002-.004                  | .005                                | .008                                      | .012  |
| NICKEL                           | NICKEL 200-300          | 100-250                       | .002-.005                  | .004                                | .007                                      | .009  |
| MONEY                            |                         | 80-120                        | .001-.003                  | .004                                | .007                                      | .009  |
| INCONEL                          |                         | 80-120                        | .001-.003                  | .004                                | .007                                      | .009  |
| WASPALOY                         |                         | 80-120                        | .001-.003                  | .004                                | .007                                      | .009  |
| HASTELLOY                        |                         | 80-120                        | .001-.003                  | .004                                | .007                                      | .009  |





| SPEED AND FEEDS FOR GROOVING TOOLS |                         |                               | FEED  | FEED  | FEED  |
|------------------------------------|-------------------------|-------------------------------|---|---|---|
| MATERIAL                           | TYPE                    | SPEED SURFACE FEET PER MINUTE | INCHES PER REVOLUTION<br>CARBIDE INSERT<br>OUR SERIES 26<br>PAGE 36 | INCHES PER REVOLUTION<br>SOLID CARBIDE<br>OUR SERIES 20<br>PAGE 22-23 | INCHES PER REVOLUTION<br>ALTiN COATED<br>SOLID CARBIDE<br>OUR SERIES 22<br>PAGE 28-29 |
| PLASTIC                            | TEFLON                  | 350-400                       | .003-.006   | .007  | .012  |
|                                    | NYLON                   | 350-600                       | .001-.003   | .007  | .012  |
|                                    | PHENOLIC                | 500-600                       | .001-.003   | .007  | .012  |
|                                    | GLASS FILLED            | 250-300                       | .001-.003   | .005  | .012  |
| MAGNESIUM                          | AZ,AM,EZ,ZE,HK          | 850-1000                      | .005-.012   | .008  | .012  |
| ALUMINUM                           | 2021 THRU 6061          | 900-1000                      | .005-.012   | .008  | .014  |
| COPPER                             | 101-707                 | 150-170                       | .003-.005   | .008  | .014  |
|                                    | 834-978                 | 500-600                       | .003-.005   | .008  | .014  |
| BRASS                              |                         | 200-250                       | .001-.003   | .006  | .011  |
| BRONZE                             |                         | 200-250                       | .001-.002   | .006  | .011  |
| CAST IRON                          | GRAY                    | 120-350                       | .004-.010   | .007  | .007  |
|                                    | DUCTILE                 | 70-350                        | .004-.010   | .007  | .007  |
|                                    | MALLEABLE               | 75-550                        | .004-.010   | .007  | .007  |
| STEEL                              | 1005-1029               | 250-450                       | .003-.007   | .007  | .014  |
|                                    | 1030-1055               | 110-370                       | .003-.007   | .007  | .014  |
|                                    | 1060-1095               | 90-250                        | .003-.005   | .007  | .014  |
|                                    | 10L45-10L50             | 130-450                       | .004-.006   | .007  | .014  |
|                                    | 12L13-12L15             | 550-600                       | .003-.005   | .007  | .014  |
|                                    | 41L30-41L50             | 65-350                        | .003-.005   | .007  | .014  |
|                                    | 4140-4150               | 65-400                        | .003-.005   | .007  | .014  |
|                                    | 4140 (35 HRC)           | 190-200                       | .001-.004   | .004  | .007  |
|                                    | 8617-8622               | 100-400                       | .002-.004   | .007  | .006  |
|                                    | M1-M6                   | 150-200                       | .003-.008   | .006  | .005  |
|                                    | H10-H19                 | 65-250                        | .003-.007   | .006  | .005  |
|                                    | D2-D7                   | 150-200                       | .004-.010   | .006  | .005  |
|                                    | A2-A9, 01-07            | 150-250                       | .003-.008   | .006  | .005  |
|                                    | W1, W2                  | 150-250                       | .003-.008   | .006  | .006  |
|                                    | M-50, 52100             | 60-300                        | .004-.010   | .007  | .006  |
| TITANIUM                           | TI-9Al-6V               | 90-100                        | .001-.003   | .005  | .008  |
| STAINLESS                          | 201-385                 | 200-280                       | .001-.004   | .005  | .008  |
|                                    | 405-446                 | 250-300                       | .001-.004   | .005  | .008  |
|                                    | 15-5PH, 16-6PH, 14-4 PH | 100-200                       | .002-.004   | .005  | .008  |
| NICKEL                             | NICKEL 200-300          | 200-250                       | .002-.005   | .004  | .007  |
| MONEY                              |                         | 100-150                       | .001-.003   | .004  | .007  |
| INCONEL                            |                         | 40-50                         | .001-.003   | .004  | .007  |
| WASPALOY                           |                         | 70-100                        | .001-.003   | .004  | .007  |
| HASTELLOY                          |                         | 70-90                         | .001-.003   | .004  | .007  |

**NOTE : ALL SPEEDS AND FEEDS LISTED HERE ARE PROVIDED FOR REFERENCE ONLY.**

$$\text{RPM} = \frac{\text{SFM} \times 12}{(\text{D}) \times \text{DIAMETER}}$$

| SPEED AND FEEDS FOR KEY CUTTERS |                         |                               |
|---------------------------------|-------------------------|-------------------------------|
| MATERIAL                        | TYPE                    | SPEED SURFACE FEET PER MINUTE |
| PLASTIC                         | TEFLON                  | 200                           |
|                                 | NYLON                   | 200                           |
|                                 | PHENOLIC                | 180                           |
|                                 | GLASS FILLED            | 150                           |
| MAGNESIUM                       | AZ,AM,EZ,ZE,HK          | 300                           |
| ALUMINUM                        | 2021 THRU 6061          | 300                           |
| COPPER                          | 101-707                 | 100                           |
|                                 | 834-978                 | 200                           |
| BRASS                           |                         | 250                           |
| BRONZE                          |                         | 230                           |
| CAST IRON                       | GRAY                    | 180                           |
|                                 | DUCTILE                 | 140                           |
|                                 | MALLEABLE               | 100                           |
| STEEL                           | 1005-1029               | 180                           |
|                                 | 1030-1055               | 180                           |
|                                 | 1060-1095               | 170                           |
|                                 | 10L45-10L50             | 165                           |
|                                 | 12L13-12L15             | 160                           |
|                                 | 41L30-41L50             | 150                           |
|                                 | 4140-4150               | 140                           |
|                                 | 4140 (35 HRC)           | 130                           |
|                                 | 8617-8622               | 120                           |
|                                 | M1-M6                   | 110                           |
|                                 | H10-H19                 | 100                           |
|                                 | D2-D7                   | 90                            |
|                                 | A2-A9, 01-07            | 80                            |
|                                 | W1, W2                  | 70                            |
| M-50, 52100                     | 60                      |                               |
| TITANIUM                        | TI-9AI-6V               | 90                            |
| STAINLESS                       | 201-385                 | 100                           |
|                                 | 405-446                 | 110                           |
|                                 | 15-5PH, 16-6PH, 14-4 PH | 120                           |
| NICKEL                          | NICKEL 200-300          | 80                            |
| MONEY                           |                         | 80                            |
| INCONEL                         |                         | 80                            |
| WASPALLOY                       |                         | 80                            |
| HASTELLOY                       |                         | 80                            |

FORMULA FOR COMPUTING SPINDLE SPEED IS.

SURFACE FEET PER MINUTE FACTOR X 4 = \_\_\_?

\_\_\_ DIVIDED BY DIAMETER OF CUTTER = \_\_\_ RPM

EXAMPLE CUTTING ALUMINUM WITH A 3/4" KEY CUTTER

300 X 4 = 1200 divided by .750 = 1600 RPM

SURFACE FEET

MULTIPLIER

CUTTER DIAMETER

FORMULA FOR COMPUTING TABLE SPEED IS.

.001 X NUMBER OF TEETH IN CUTTER X RPM

EXAMPLE CUTTING ALUMINUM WITH A 3/4" KEY CUTTER

.001 X 10 X 1600 = 16

MULTIPLIER

NUMBER OF TEETH

RPM

INCHES PER MINUTE

NOTE : ALL SPEEDS AND FEEDS LISTED HERE ARE PROVIDED FOR REFERENCE ONLY.



| SPEED AND FEEDS FOR THREADING TOOLS |                         |                               |                               |                                |
|-------------------------------------|-------------------------|-------------------------------|-------------------------------|--------------------------------|
| MATERIAL                            | TYPE                    | SPEED SURFACE FEET PER MINUTE | FEED INFEED PER PASS 1ST PASS | FEED INFEED PER PASS LAST PASS |
| PLASTIC                             | TEFLON                  | 250-400                       | .015                          | .001                           |
|                                     | NYLON                   | 250-400                       | .015                          | .001                           |
|                                     | PHENOLIC                | 250-400                       | .015                          | .001                           |
|                                     | GLASS FILLED            | 250-400                       | .015                          | .001                           |
| MAGNESIUM                           | AZ,AM,EZ,ZE,HK          | 100-200                       | .020                          | .001                           |
| ALUMINUM                            | 2021 THRU 6061          | 100-200                       | .020                          | .001                           |
| COPPER                              |                         | 100-200                       | .010                          | .001                           |
| BRASS                               |                         | 200-300                       | .010                          | .001                           |
| BRONZE                              |                         | 200-300                       | .010                          | .001                           |
| CAST IRON                           |                         | 85-140                        | .015                          | .0005                          |
| STEEL                               | 1005-1029               | 50-150                        | .015                          | .001                           |
|                                     | 1030-1055               | 50-150                        | .015                          | .001                           |
|                                     | 1060-1095               | 50-150                        | .015                          | .001                           |
|                                     | 10L45-10L50             | 50-150                        | .015                          | .001                           |
|                                     | 12L13-12L15             | 50-150                        | .015                          | .001                           |
|                                     | 41L30-41L50             | 50-150                        | .015                          | .001                           |
|                                     | 4140-4150               | 50-150                        | .015                          | .001                           |
|                                     | 4140 (35 HRC)           | 50-150                        | .015                          | .001                           |
|                                     | 8617-8622               | 50-150                        | .015                          | .001                           |
|                                     | M1-M6                   | 50-150                        | .015                          | .001                           |
|                                     | H10-H19                 | 50-150                        | .015                          | .001                           |
|                                     | D2-D7                   | 50-150                        | .015                          | .001                           |
|                                     | A2-A9, 01-07            | 50-150                        | .015                          | .001                           |
|                                     | W1, W2                  | 50-150                        | .015                          | .001                           |
|                                     | M-50, 52100             | 50-150                        | .015                          | .001                           |
| TITANIUM                            | TI-9Al-6V               | 40-65                         | .020                          | .0005                          |
| STAINLESS                           | 405-446                 | 65-100                        | .015                          | .001                           |
|                                     | 15-5PH, 16-6PH, 14-4 PH | 65-100                        | .015                          | .001                           |
| NICKEL                              | NICKEL 200-300          | 40-100                        | .015                          | .001                           |

### SINGLE POINT THREADING ROUGHING INFEED DEPTH PER PASS

| THREADS PER INCH | 8     | 10    | 11    | 12    | 13    | 14    | 16    | 18    | 20    | 24    | 28    | 32    | 36    | 40    |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| PASS 1           | .0171 | .0148 | .0148 | .0134 | .0124 | .0114 | .0110 | .0110 | .0099 | .0094 | .0079 | .0083 | .0072 | .0083 |
| PASS 2           | .0283 | .0243 | .0243 | .0219 | .0202 | .0189 | .0179 | .0178 | .0159 | .0150 | .0126 | .0130 | .0113 | .0128 |
| PASS 3           | .0372 | .0318 | .0318 | .0287 | .0264 | .0244 | .0233 | .0231 | .0206 | .0194 | .0163 | .0167 | .0145 |       |
| PASS 4           | .0449 | .0383 | .0383 | .0345 | .0317 | .0293 | .0279 | .0276 | .0246 | .0231 | .0194 |       |       |       |
| PASS 5           | .0517 | .0441 | .0441 | .0396 | .0364 | .0337 | .0321 | .0316 | .0282 |       |       |       |       |       |
| PASS 6           | .0580 | .0494 | .0494 | .0443 | .0407 | .0376 | .0358 |       |       |       |       |       |       |       |
| PASS 7           | .0637 | .0543 | .0543 | .0486 | .0447 | .0413 |       |       |       |       |       |       |       |       |
| PASS 8           | .0691 | .0588 | .0588 |       |       |       |       |       |       |       |       |       |       |       |
| PASS 9           | .0742 |       |       |       |       |       |       |       |       |       |       |       |       |       |

**IN MOST CASES  
A FINISH OR SPRING PASS IS  
RECOMMENDED.**

**FORMULA FOR CONVERTING SURFACE FEET PER MINUTE (SFM)  
TO REVOLUTIONS PER MINUTE (RPM)**

NOTE : ALL SPEEDS AND FEEDS LISTED HERE ARE PROVIDED FOR REFERENCE ONLY.

$$RPM = \frac{SFM \times 12}{(\pi) \times DIAMETER}$$



**Carbide Cutting Tools**

| SPEED AND FEEDS FOR FACE GROOVING |                         |                               |                            |
|-----------------------------------|-------------------------|-------------------------------|----------------------------|
| MATERIAL                          | TYPE                    | SPEED SURFACE FEET PER MINUTE | FEED INCHES PER REVOLUTION |
| PLASTIC                           | TEFLON                  | 350-400                       | .003-.006                  |
|                                   | NYLON                   | 350-600                       | .001-.003                  |
|                                   | PHENOLIC                | 500-600                       | .001-.003                  |
|                                   | GLASS FILLED            | 250-300                       | .001-.003                  |
| MAGNESIUM                         | AZ,AM,EZ,ZE,HK          | 850-1000                      | .001-.002                  |
| ALUMINUM                          | 2021 THRU 6061          | 900-1000                      | .002-.003                  |
| COPPER                            | 101-707                 | 450-500                       | .002-.003                  |
|                                   | 834-978                 | 500-600                       | .001-.002                  |
| BRASS                             |                         | 200-250                       | .001-.002                  |
| BRONZE                            |                         | 200-250                       | .001-.002                  |
| CAST IRON                         | GRAY                    | 120-350                       | .002-.003                  |
|                                   | DUCTILE                 | 70-350                        | .002-.003                  |
|                                   | MALLEABLE               | 75-550                        | .002-.003                  |
| STEEL                             | 1005-1029               | 250-450                       | .002-.003                  |
|                                   | 1030-1055               | 110-370                       | .001-.003                  |
|                                   | 1060-1095               | 90-250                        | .001-.003                  |
|                                   | 10L45-10L50             | 130-450                       | .002-.003                  |
|                                   | 12L13-12L15             | 550-600                       | .002-.003                  |
|                                   | 41L30-41L50             | 65-350                        | .002-.003                  |
|                                   | 4140-4150               | 65-400                        | .002-.003                  |
|                                   | 4140 (35 HRC)           | 190-200                       | .001-.003                  |
|                                   | 8617-8622               | 100-400                       | .001-.002                  |
|                                   | M1-M6                   | 150-200                       | .001-.002                  |
|                                   | H10-H19                 | 65-250                        | .001-.002                  |
|                                   | D2-D7                   | 150-200                       | .001-.002                  |
|                                   | A2-A9, 01-07            | 150-250                       | .001-.002                  |
|                                   | W1, W2                  | 150-250                       | .001-.002                  |
| M-50, 52100                       | 60-300                  | .001-.002                     |                            |
| TITANIUM                          | TI-9AI-6V               | 90-100                        | .001-.002                  |
| STAINLESS                         | 201-385                 | 200-280                       | .001-.002                  |
|                                   | 405-446                 | 250-300                       | .001-.002                  |
|                                   | 15-5PH, 16-6PH, 14-4 PH | 100-200                       | .001-.002                  |
| NICKEL                            | NICKEL 200-300          | 200-250                       | .001-.002                  |
| MONEL                             |                         | 100-150                       | .001-.002                  |
| INCONEL                           |                         | 40-50                         | .001-.002                  |
| WASPALLOY                         |                         | 70-100                        | .001-.002                  |
| HASTELLOY                         |                         | 70-90                         | .001-.002                  |

**NOTE : ALL SPEEDS AND FEEDS LISTED HERE ARE PROVIDED FOR REFERENCE ONLY.**

$$\frac{RPM=SF\text{M} \times 12}{(\uparrow) \times \text{DIAMETER}}$$



**Carbide Cutting Tools**



# TERMS AND CONDITIONS

## Technical Assistance

*Any technical assistance or application suggestions made by Internal Tool, Inc. personnel are only to assist the customer and in all cases use of such information is solely the customer's responsibility.*

## Shipping Terms

*All shipments are FOB Internal Tool, Inc. La Verne CA. unless otherwise specified. Normally terms of payment on open accounts are 1% 10 NET 30 days from the date of invoice.*

## Past Due Accounts

*Net accounts are considered past due at 30 days from the date of invoice. Past due accounts are subject to shipment and production hold at the discretion of Internal Tool Inc. Internal Tool, Inc. reserves the right to place any past due account on hold until all past due invoices are paid.*

## Return Policy

*Any discrepancies in shipments received by you must be reported immediately. Such merchandise will not be accepted by us for return unless assigned a return authorization number. Any merchandise returned must be accompanied by a copy of our invoice indicating our return authorization number. Any merchandise that has been misused, abused, or is otherwise in non-saleable condition, will not be accepted for return by Internal Tool, Inc. Merchandise returned that is found to be in compliance with the aforementioned policy will be refunded the full purchase price, subject to a reasonable restocking charge. Merchandise will not be accepted for return after 30 days from receipt.*

## Credit Policy

*Internal Tool, Inc. will not honor any credit that has not been expressly issued by Internal Tool, Inc. Any payments received that are found to be short paid for any reason without a credit issued by Internal Tool, Inc. will be promptly returned to the customer. The customer will have their account put on hold, or their shipping status changed to COD, at the discretion of Internal Tool, Inc. until the invoice has been cleared.*

## Telephone Orders

*Telephone orders are accepted at the risk of the purchaser and shipments made before receipt of confirmation are for the special convenience of the customer. Internal Tool Inc. is not responsible for any shipping errors incurred as a result of a telephone order.*

## Special Orders

*Orders for items marked as "specials" or items not stocked by Internal Tool, Inc. are considered special orders. Special items are subject to minimum order quantities and/or special handling charges with allowable over/under-run of 10%. All special orders are non-cancelable and special orders manufactured per print or instruction are non returnable.*

## Backordered Items

*All Backordered items will be shipped in the same manner as the items on the original purchase order, unless specified in writing by the customer.*

## Shortage or Error

*All claims for shortages or shipment error must be made immediately after receipt of shipment. Invoice number and EDP number must be referenced. Our liability is limited to the purchase price, at the discretion of Internal Tool Inc.*

CALL FACTORY DIRECT AT

PHONE: 909-392-4700

FAX: 909-392-2627

EMAIL: [INFO@INTERNALTOOL.COM](mailto:INFO@INTERNALTOOL.COM)

[WWW.INTERNALTOOL.COM](http://WWW.INTERNALTOOL.COM)

Internal Tool Inc. 1338 Palomares Ave. LaVerne CA. 91750



## **BACKSPOT FACERS**

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