List Price Catalog - Check Website For Current Pricing  * = additional sizes added

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UNC & UNF

Our premium carbide AlTiN coated thread mills have helical flute geometry. This dramatically reduces cutting pressure which, results in higher feed rates, faster cycle times, better surface finish and accuracy, and lower cost per hole. All threadmills are AlTiN coated. **To order UNCOATED add the letter “B“ to end of part number**

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<th>Part #</th>
<th>Thread</th>
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UNC & UNF (CONT)

A 20 pitch tool can be used to cut any 20 pitch thread as long as the threadmill has a long enough flute length (LOC) to complete the thread. All tools are USA made from USA micrograin carbide. AlTiN coated.

To order UNCOATED add the letter “B“ to end of part number

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<th>Thread</th>
<th>LOC</th>
<th>Cut Dia.</th>
<th># of Flutes</th>
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THREAD PAC $474.11 (Save 10%)

Produce 14 threads with 6 threadmills. AlTiN Coated

Same tool produces internal, external, left and right hand threads.

Comes in plastic container shown

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NPT & NPTF

The taper is ground on the tool eliminating the need to taper ream the hole. Helical flutes relieve cutting forces created by threadmilling. All threadmills are AlTiN coated. *To order UNCOATED add the letter “B” to end of part number*

### NPT

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<th>Cut Dia.</th>
<th># of Flutes</th>
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<th>Shank</th>
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Add the letter “B” to end of part number to order UNCOATED

### NPTF

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~ IF YOU DON'T SEE THE SIZE YOU NEED, CALL US FOR A QUOTE ~
A complete line of premium quality solid carbide Metric Threadmills in stock and available for immediate delivery. All threadmills are AlTiN coated.

To order UNCOATED add the letter “B” to end of part number

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BSPP & BSPT

We stock British Standard Pipe Parallel and British Standard Pipe Tapered, also known as “Whitworth Threadform”. All threadmills are AlTiN coated.

### BSPP

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List Price Catalog - Check Website For Current Pricing
THREADMILLS VARIABLE FLUTE

VARIABLE FLUTE

Our Variable Index/Variable Helix Threadmill increases production and reduces chatter/harmonics in tough materials. All threadmills are AlTiN coated.

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COOLANT THRU for blind hole chip evacuation
Variable Index/Variable Helix. AlTiN coated.

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NPS & NPSF

We now stock National Pipe Straight standard and dryseal. All threadmills are AlTiN coated. *To order UNCOATED add the letter “B” to end of part number*

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*To order UNCOATED add the letter “B” to end of part number*

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Due to fluctuating carbide costs, prices subject to change.
Single Profile Vari-Flute

Variable Flute Single Profile Threadmills have several flutes with only one 60 degree thread form. This lowers cutting pressure in difficult applications along with being able to produce many inch and metric thread sizes with one tool. All threadmills are AlTiN coated.

*To order UNCOATED add the letter “B” to end of part number*

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## Threadmills Hardmill

This breakthrough design allows threadmilling in materials hardened up to 62 Rc. The Variable flutes, high hardness and heat resistant NACO coating allow you to mill threads in hardened steels that taps cannot cut.

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<th>Thread</th>
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<th>Cut Dia</th>
<th># of Flutes</th>
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<td>1/2</td>
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</tr>
</tbody>
</table>

List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/- .002  Shank: -.0001/- .0003 Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
HARDMILL THREADMILLING RECOMMENDATIONS

- Hardmill Threadmills should be run with air blast not coolant.
- Evacuate chips properly while milling. Recutting chips will damage cutter.
- Hardmill Threadmilling requires several small radial cuts or "step overs". We recommend 7 passes for fine threads and 9 passes for coarse threads.
- Always cut feedrate by 50% when ramping in to the cut.
- Thread interpolation should spiral from bottom of thread in upward direction.

HOW TO CALCULATE HARDMILL THREADMILL RADIAL PASSES

EXAMPLE THREAD = 1/4-28

MAJOR THREAD DIAMETER YOU ARE CUTTING = .250
MINOR HOLE DIAMETER = .213

.250 - .213 = .037 TOTAL STOCK BEING REMOVED
.037 / 2 = .0185 STOCK PER SIDE BEING REMOVED

MULTIPLY .0185 x RECOMMENDED PERCENTAGES FOR APPROXIMATE RADIAL DEPTH OF CUT. ROUND NUMBERS WHERE NECESSARY.

(RADIAL DEPTH OF CUT IN X OR Y)
1ST PASS = .0185 X 23% = .0045 (add any leftover to first pass)
2ND PASS = .0185 X 23% = .004
3RD PASS = .0185 X 16% = .003
4TH PASS = .0185 X 16% = .003
5TH PASS = .0185 X 11% = .002
6TH PASS = .0185 X 11% = .002
7TH PASS = FREE PASS

Hardmill Threadmill Recommendations

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<tr>
<th>Material</th>
<th>Tool Steel</th>
<th>Hardened Steel (55-60HRC)</th>
<th>Hardened Steel (60-65HRC)</th>
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<td>SFM</td>
<td>CHIP LOAD PER TOOTH</td>
<td>SFM</td>
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<td>0.495</td>
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MULTIPLE PASSES RECOMMENDED FOR THREADING STEEL
ALWAYS CUT FEEDRATE BY 50% WHEN RAMPING IN TO THE CUT
DO NOT RECUT CHIPS - COOLANT BLAST RECOMMENDED
A THREADMILL CAN PRODUCE VARIOUS SIZES WITH THE SAME PITCH

Standard Threadmill Feedrate Calculator (inches/tooth)

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<th>Inches P/Tooth</th>
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<td>Magnesium</td>
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## VARIABLE FLUTE FOR ALUMINUM

### STANDARD

Variable Flute for Aluminum (VFA)

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<th>LOC</th>
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### ROUGHER/FINISHER GEOMETRY

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Phone 716-462-4349  www.lakeshorecarbide.com
VARIABLE FLUTE FOR ALUMINUM

STUB
Variable Flute for Aluminum (VFA)

<table>
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<tr>
<th>3 FL</th>
<th>Tool Dia</th>
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<th>Corner Rad</th>
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VARIABLE FLUTE ENDMILLS FOR ALUMINUM

Our own unique geometry includes variable helix multi index flutes eliminating vibration and harmonics. A highly polished flute gullet improves chip evacuation. A .005 corner radius extends tool life, and Zirconium Nitride (Zrn) coating adds hardness and lubricity.

This design can be used to rough, finish, slot or profile. Our geometry allows heavy chip load per tooth for maximum material removal and unmatched performance in aluminum, brass, copper and plastics.
## VARIABLE FLUTE FOR ALUMINUM

### LONG LENGTH

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Tolerance – Diameter: +.000/- .002  Shank: -.0001/- .0003  Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
### VARIABLE FLUTE FOR ALUMINUM

#### SQUARE CORNER

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Tolerance – Diameter: +.000/-0.002  Shank: -.0001/-.0003  Made from Submicrograin Carbide

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Tolerance – Diameter: +.000/-0.002  Shank: -.0001/-.0003  Made from Submicrograin Carbide
## VARIABLE FLUTE FOR ALUMINUM

### BALLNOSE

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Tolerance – Diameter: +.000/-0.002  Shank: -.0001/-0.0003  Made from Submicrograin Carbide
**VFA TECHNICAL DATA**

**VARIABLE FLUTE FOR ALUMINUM SPEEDS AND FEEDS**

Slotting = 1 x Tool Diameter  
Profiling = 1/2 x Tool Diameter

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ipt = inches per tooth

Coolant blast is beneficial.
Tools perform best when balanced.
These approximate numbers are a good starting point.

Due to fluctuating carbide costs, prices subject to change.
## STANDARD

Variable Flute For Steel (VFS). The heavy duty core construction combined with variable helix variable index design creates a rigid tool that runs virtually chatter free. Tools are center cutting, have .0005 - .0015 honed edge and are AlTiN Coated.

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List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/-002  Shank: -.0001/-0003 Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
## VARIABLE FLUTE FOR STEEL

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Tolerance – Diameter: +.000/- .002 Shank: -.0001/- .0003 Made from Submicrograin Carbide
## VARIABLE FLUTE FOR STEEL

Profile Width = 1/4 x Diameter  
Slotting Depth = 1 x Diameter

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**NOTE:**
- These are approximate numbers, a good starting point.
- Coolant application is an important part of using the variable flute geometries.
- Tools perform best when balanced.

**WARNING** – Due to the high metal removal rates of the VFS tools, it is necessary to make all work holding components as rigid as possible.

List Price Catalog - Current Pricing On Our Website
VARIABLE FLUTE FOR STAINLESS

The center cutting 5 flute variable helix cutter is designed for use in stainless steels and exotic materials. This cutter will reduce work hardening and impact resistance common to high strength materials. This tool can be used for roughing and finishing with reduced harmonics and longer tool life. AlTiN coated

STANDARD

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List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/- .002 Shank: -.0001/- .0003 Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
## VFSS STUB & TECHNICAL DATA

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### STARTING RECOMMENDED SPEEDS AND FEEDS

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- Radial Depth = .5 x Diameter
- Axial Depth = 1 x Diameter

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**NOTE:**
- These are approximate numbers, a good starting point.
- Coolant application is important.
- Tools perform best when balanced.
HARDMILLING

Lakeshore Hard Milling End Mills utilize a thicker carbide core, unique hard milling geometry, and nACo coating. nACo offers an extremely high nanohardness, and a very high hot hardness (1200 degrees Celsius) which, makes this tool the right choice for your hard milling project. Non-center cutting 6 Flute.

SQUARE CORNER 6 FLUTE

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CORNER RADIUS 6 FLUTE

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Tolerance – Diameter: +.000/- .002 Shank: -.0001/- .0003 Made from Submicrograin Carbide

Phone 716-462-4349 www.lakeshorecarbide.com
# HARDMILL TECHNICAL DATA

## HARDMILLING RECOMMENDATIONS

RUN HARDMILLS DRY WITH AIR BLAST OR OIL MIST

HARDMILLS ARE NOT CENTER CUTTING. DO NOT PLUNGE

---

### HARDMILL TECHNICAL DATA

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<thead>
<tr>
<th>Material</th>
<th>Tool Steel (-55HRC) AISI H13 etc</th>
<th>Hardened Steel (55-60HRC) AISI D2 etc</th>
<th>Hardened Steel (60-65HRC) AISI D2 etc</th>
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<td>Chip Load (inch per tooth)</td>
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HARDMILLS ARE NOT CENTER CUTTING. DO NOT PLUNGE

RUN HARDMILLS DRY WITH AIR BLAST OR OIL MIST

---

Tolerance – Diameter: +.000/- .002  Shank: -.0001/- .0003  Made from Submicrograin Carbide
The Altin Coated Solid Carbide High Feed Mill achieves high metal removal rates and optimizes milling operations in slotting, pocketing, and contouring projects. Utilizes the new feed mill strategies of taking shallow cuts with rapid feed rates in order to reduce cycle times and efficiently deep mill where other tools cannot. This tool will increase efficiency as a pre-finish cutter in materials ranging from mild to hardened steels including stainless series. AlTiN coated.

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<tr>
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<th>Shank</th>
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Tolerance – Diameter: +.000/-.002  Shank: -.0001/-.0003  Made from Submicrograin Carbide
## Coolant Thru High Feed Mill

### Coolant Thru

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<th>Part #</th>
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### Feed-Max Feedrate Calculator (inches/tooth)

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<th>Tool Steel SFM</th>
<th>Soft Cast Iron SFM</th>
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<td>0.024xD</td>
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<td>0.045xD</td>
<td>0.040xD</td>
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<tr>
<td>Side milling depth of cut - Z</td>
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<td>0.8 x DOC</td>
<td>1 x DOC</td>
<td>0.5 x DOC</td>
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<tr>
<td>Side milling step over</td>
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### Depth of Cut in "Z"

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<th>DOC</th>
<th>MAJOR DIA.</th>
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CARBIDE ROUGHERS

STANDARD
Solid Carbide Fine Pitch Roughers are designed for maximum metal removal in all steel applications. Altin Coated

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<th>Part #</th>
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LONG

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</table>

Weldon flats available upon request.

List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/-002  Shank: -.0001/-0003  Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
CARBIDE ROUGHERS

VARIABLE HELIX

Variable Helix. Increase production without the chatter from harmonics

<table>
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<th>Part #</th>
<th>Flute Dia</th>
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"THE FIREPLUG"

STUB VARIABLE HELIX

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Starting Speeds And Feeds. Strong Coolant Blast Recommended

<table>
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<th>Material</th>
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<th>Titanium</th>
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<th>Cobalt Alloy</th>
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<tr>
<td>Diameter</td>
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<td>210-450 SFM</td>
<td>125-215 SFM</td>
<td>225-475 SFM</td>
<td>55-120 SFM</td>
<td>40-75 SFM</td>
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<td>.0005-.0015</td>
<td>.0007-.0013</td>
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<tr>
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<td>.0009-.0015</td>
<td>.001-.002</td>
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SIX FLUTE

High Performance Profiling Mill
AlTiN coated.

<table>
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<tr>
<th>Part # 6 FL</th>
<th>Tool Dia</th>
<th>LOC</th>
<th>Shank</th>
<th>OAL</th>
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<td>1 1/4</td>
<td>1/2</td>
<td>3</td>
<td>$68.63</td>
</tr>
<tr>
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<td>1 5/8</td>
<td>5/8</td>
<td>3 1/2</td>
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TECH NOTE – For best 6 Flute performance, use 5-30% radial depth of cut.

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<th>Materials</th>
<th>Carbon Steel</th>
<th>Stainless Steel</th>
<th>Alloy Steel</th>
<th>Nickel/High Temp</th>
<th>Titanium and Alloys</th>
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<td>(90-450 SFM)</td>
<td>(200-600 SFM)</td>
<td>(45-115 SFM)</td>
<td>(250-400 SFM)</td>
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</table>

-These are approximate numbers, a good starting point.

-Coolant application is an important part of using this endmill.
45° & 60° CARBIDE ENDMILLS

45 & 60 DEGREE

45 & 60 degree helix 3 Flute endmills are designed for higher speeds and feeds while providing a shearing action that produces improved surface finish. AlTiN coated.

45 DEGREE

<table>
<thead>
<tr>
<th>Part # 3 FLT</th>
<th>Tool Dia</th>
<th>LOC</th>
<th>Shank</th>
<th>OAL</th>
<th>Price</th>
</tr>
</thead>
<tbody>
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<td>1/2</td>
<td>1/8</td>
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<td>$13.78</td>
</tr>
<tr>
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<td>3/4</td>
<td>3/16</td>
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<td>$17.29</td>
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60 DEGREE

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<td>1 1/2</td>
<td>$13.78</td>
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<tr>
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<td>5/8</td>
<td>3/16</td>
<td>2</td>
<td>$17.29</td>
</tr>
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<td>3/4</td>
<td>1/4</td>
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<td>13/16</td>
<td>5/16</td>
<td>2 1/2</td>
<td>$26.10</td>
</tr>
<tr>
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<td>3/8</td>
<td>7/8</td>
<td>3/8</td>
<td>2 1/2</td>
<td>$32.09</td>
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<tr>
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<td>1/2</td>
<td>1</td>
<td>1/2</td>
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<td>$56.91</td>
</tr>
<tr>
<td>3900058</td>
<td>5/8</td>
<td>1 1/4</td>
<td>5/8</td>
<td>3 1/2</td>
<td>$110.99</td>
</tr>
<tr>
<td>3900034</td>
<td>3/4</td>
<td>1 1/2</td>
<td>3/4</td>
<td>4</td>
<td>$157.90</td>
</tr>
</tbody>
</table>

Due to fluctuating carbide costs, prices are subject to change.

Tolerance – Diameter: +.000/- .002 Shank: -.0001/- .0003 Made from Submicrograin Carbide.
# PRE-REAM ENDMILLS

**Solid Carbide, 4 flute, Altin Coated**

## IMPERIAL

<table>
<thead>
<tr>
<th>Part #</th>
<th>Endmill Cut Dia</th>
<th>Preps Reamed Hole Size</th>
<th>Corner Rad</th>
<th>LOC</th>
<th>Shank</th>
<th>OAL</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
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<td>.007</td>
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## METRIC

<table>
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<th>Corner Rad</th>
<th>LOC</th>
<th>Shank</th>
<th>OAL</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
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<td>5/16</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>$250.93</td>
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</tbody>
</table>
The Pre-Ream Endmill Concept

The accuracy of a reamed hole depends heavily on the procedures leading up to the actual reaming operation. The purpose of a reamer is to expand a hole to a precise specified size. In some cases the process of drilling and reaming a hole is accurate enough but this sometimes results in a loss of accuracy in true position location, size, and roundness of the hole.

If the drill “walks”, drifts or creates a hole that is not precisely round during the drilling operation, a reamer is not rigid enough to correct these issues and it will mimic the hole error that the drill left whether it be slightly out of round or slightly off location. The accepted way to avoid this problem has been to “skim bore” the drilled hole with a boring bar. This means finding, and assembling a boring head and the appropriate boring bar, aligning the boring bar, taking a test cut and measuring hole, making the adjustment on the boring head to creep up on the size desired, and hoping that it cuts consistently after that. This usually amounts to 30 minutes for most operators.

A solution to this problem is to eliminate the “skim bore” operation by utilizing a carbide endmill that is slightly undersize from the reamer size. Plunge-milling a hole after the drilling operation with a **Pre-Ream Endmill**, qualifies the hole leaving it perfectly round with an accurate location, correcting any error occurring from the drilling process. This also leaves a consistent and proper amount of stock in the hole for reaming (most often .003 per side, .006 total diameter) allowing the reamer to cut efficiently and accurately. The reamer is never experiencing a heavy cut or an inconsistent side wall that a drill can sometimes produce. **This process also greatly extends the life of the reamer.** Lakeshore Carbide Pre-Ream Endmills eliminate these issues and greatly improve efficiency in reaming operations. **For best results we recommend the drilled hole be .012 min.-.032 max. under the size of the Pre-Ream Endmill.**

Starting Point Speeds and Feeds
SFM = 70-120  
Chipload = .0015 - .003  
Plunge to depth. If stringy chip, use a drill peck cycle  
Coolant Recommended
SPOT DRILLS
Spot drilling before drilling cycles ensures accurate hole locations and prevents drill deflection.

90° INCLUDED

<table>
<thead>
<tr>
<th>Part # 2 Flute</th>
<th>Point Angle</th>
<th>Shank Dia</th>
<th>LOC</th>
<th>OAL</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD139018</td>
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<td>1/4”</td>
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</tr>
<tr>
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<td>3/16”</td>
<td>3/8”</td>
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<td>3/8”</td>
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<td>$24.66</td>
</tr>
<tr>
<td>SD139038</td>
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<td>3/8”</td>
<td>1/2”</td>
<td>4</td>
<td>$43.62</td>
</tr>
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<td>3/4”</td>
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<td>4</td>
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120° INCLUDED

<table>
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<th>Shank Dia</th>
<th>LOC</th>
<th>OAL</th>
<th>Price</th>
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</thead>
<tbody>
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<td>3/8”</td>
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</tr>
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<td>1/2”</td>
<td>4</td>
<td>$43.62</td>
</tr>
<tr>
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<td>3/4”</td>
<td>4</td>
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<td>4</td>
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<td>1”</td>
<td>4</td>
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</table>
DOUBLE END SPOT DRILLS

Spot drilling before drilling cycles ensures accurate hole locations and prevents drill deflection.

90° INCLUDED

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<th>Point Angle</th>
<th>Shank Dia</th>
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<th>OAL</th>
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<td>$89.21</td>
</tr>
<tr>
<td>SDE139058</td>
<td>90°</td>
<td>5/8”</td>
<td>1”</td>
<td>4</td>
<td>$155.78</td>
</tr>
<tr>
<td>SDE139034</td>
<td>90°</td>
<td>3/4”</td>
<td>1”</td>
<td>4</td>
<td>$211.94</td>
</tr>
</tbody>
</table>

120° INCLUDED

<table>
<thead>
<tr>
<th>Part # 2 Flute</th>
<th>Point Angle</th>
<th>Shank Dia</th>
<th>LOC</th>
<th>OAL</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDE120018</td>
<td>120°</td>
<td>1/8”</td>
<td>1/4”</td>
<td>2</td>
<td>$23.67</td>
</tr>
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<td>SDE120316</td>
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<td>3/16”</td>
<td>3/8”</td>
<td>2</td>
<td>$28.56</td>
</tr>
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<td>SDE120014</td>
<td>120°</td>
<td>1/4”</td>
<td>3/8”</td>
<td>3</td>
<td>$33.95</td>
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<td>120°</td>
<td>3/8”</td>
<td>1/2”</td>
<td>4</td>
<td>$51.93</td>
</tr>
<tr>
<td>SDE120012</td>
<td>120°</td>
<td>1/2”</td>
<td>3/4”</td>
<td>4</td>
<td>$89.21</td>
</tr>
<tr>
<td>SDE120058</td>
<td>120°</td>
<td>5/8”</td>
<td>1”</td>
<td>4</td>
<td>$155.78</td>
</tr>
<tr>
<td>SDE120034</td>
<td>120°</td>
<td>3/4”</td>
<td>1”</td>
<td>4</td>
<td>$211.94</td>
</tr>
</tbody>
</table>
90° & 120° CARBIDE DRILLMILLS

90° DRILLMILLS
Multi purpose tool for chamfering parts.
Not recommended for drilling steel.

X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

<table>
<thead>
<tr>
<th>Part # 2FL</th>
<th>Part # 4FL</th>
<th>Flute Dia</th>
<th>Point Angle</th>
<th>LOC</th>
<th>OAL</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>15DRLML18X</td>
<td>17DRLML18X</td>
<td>1/8</td>
<td>90°</td>
<td>.500</td>
<td>1.5</td>
<td>$13.62</td>
</tr>
<tr>
<td>15DRLML31X</td>
<td>17DRLML31X</td>
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<td>90°</td>
<td>.625</td>
<td>2.0</td>
<td>$18.21</td>
</tr>
<tr>
<td>15DRLML14X</td>
<td>17DRLML14X</td>
<td>1/4</td>
<td>90°</td>
<td>.750</td>
<td>2.5</td>
<td>$24.98</td>
</tr>
<tr>
<td>15DRLML51X</td>
<td>17DRLML51X</td>
<td>5/16</td>
<td>90°</td>
<td>.875</td>
<td>2.5</td>
<td>$32.53</td>
</tr>
<tr>
<td>15DRLML38X</td>
<td>17DRLML38X</td>
<td>3/8</td>
<td>90°</td>
<td>1.0</td>
<td>2.5</td>
<td>$39.64</td>
</tr>
<tr>
<td>15DRLML12X</td>
<td>17DRLML12X</td>
<td>1/2</td>
<td>90°</td>
<td>1.0</td>
<td>3.0</td>
<td>$62.17</td>
</tr>
<tr>
<td>15DRLML58X</td>
<td>17DRLML58X</td>
<td>5/8</td>
<td>90°</td>
<td>1.25</td>
<td>3.5</td>
<td>$101.17</td>
</tr>
<tr>
<td>15DRLML34X</td>
<td>17DRLML34X</td>
<td>3/4</td>
<td>90°</td>
<td>1.5</td>
<td>4.0</td>
<td>$136.84</td>
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</tbody>
</table>

120° DRILLMILLS
X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

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<tr>
<th>Part # 2FL</th>
<th>Part # 4FL</th>
<th>Flute Dia</th>
<th>Point Angle</th>
<th>LOC</th>
<th>OAL</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>11DRLML18X</td>
<td>13DRLML18X</td>
<td>1/8</td>
<td>120°</td>
<td>.500</td>
<td>1.5</td>
<td>$13.62</td>
</tr>
<tr>
<td>11DRLML31X</td>
<td>13DRLML31X</td>
<td>3/16</td>
<td>120°</td>
<td>.625</td>
<td>2.0</td>
<td>$18.21</td>
</tr>
<tr>
<td>11DRLML14X</td>
<td>13DRLML14X</td>
<td>1/4</td>
<td>120°</td>
<td>.750</td>
<td>2.5</td>
<td>$24.98</td>
</tr>
<tr>
<td>11DRLML51X</td>
<td>13DRLML51X</td>
<td>5/16</td>
<td>120°</td>
<td>.875</td>
<td>2.5</td>
<td>$32.53</td>
</tr>
<tr>
<td>11DRLML38X</td>
<td>13DRLML38X</td>
<td>3/8</td>
<td>120°</td>
<td>1.0</td>
<td>2.5</td>
<td>$39.64</td>
</tr>
<tr>
<td>11DRLML12X</td>
<td>13DRLML12X</td>
<td>1/2</td>
<td>120°</td>
<td>1.0</td>
<td>3.0</td>
<td>$62.17</td>
</tr>
<tr>
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<td>13DRLML58X</td>
<td>5/8</td>
<td>120°</td>
<td>1.25</td>
<td>3.5</td>
<td>$101.17</td>
</tr>
<tr>
<td>11DRLML34X</td>
<td>13DRLML34X</td>
<td>3/4</td>
<td>120°</td>
<td>1.5</td>
<td>4.0</td>
<td>$136.84</td>
</tr>
</tbody>
</table>
60° DRILLMILLS
Multi purpose tool for chamfering parts.
Not recommended for drilling steel.

X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

<table>
<thead>
<tr>
<th>Part #</th>
<th>Part #</th>
<th>Flute Dia</th>
<th>Point Angle</th>
<th>LOC</th>
<th>OAL</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2FL</td>
<td>4FL</td>
<td>Dia</td>
<td>Angle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18DRLML18X</td>
<td>19DRLML18X</td>
<td>1/8</td>
<td>60°</td>
<td>.500</td>
<td>1.5</td>
<td>$13.62</td>
</tr>
<tr>
<td>18DRLML31X</td>
<td>19DRLML31X</td>
<td>3/16</td>
<td>60°</td>
<td>.625</td>
<td>2.0</td>
<td>$18.21</td>
</tr>
<tr>
<td>18DRLML14X</td>
<td>19DRLML14X</td>
<td>1/4</td>
<td>60°</td>
<td>.750</td>
<td>2.5</td>
<td>$24.98</td>
</tr>
<tr>
<td>18DRLML51X</td>
<td>19DRLML51X</td>
<td>5/16</td>
<td>60°</td>
<td>.875</td>
<td>2.5</td>
<td>$32.53</td>
</tr>
<tr>
<td>18DRLML38X</td>
<td>19DRLML38X</td>
<td>3/8</td>
<td>60°</td>
<td>1.0</td>
<td>2.5</td>
<td>$39.64</td>
</tr>
<tr>
<td>18DRLML12X</td>
<td>19DRLML12X</td>
<td>1/2</td>
<td>60°</td>
<td>1.0</td>
<td>3.0</td>
<td>$62.17</td>
</tr>
<tr>
<td>18DRLML58X</td>
<td>19DRLML58X</td>
<td>5/8</td>
<td>60°</td>
<td>1.25</td>
<td>3.5</td>
<td>$101.17</td>
</tr>
<tr>
<td>18DRLML34X</td>
<td>19DRLML34X</td>
<td>3/4</td>
<td>60°</td>
<td>1.5</td>
<td>4.0</td>
<td>$136.84</td>
</tr>
</tbody>
</table>

Multi purpose tool for chamfering parts. Not recommended for drilling steel.
These do not have drill geometry. The 2 flute style can spot drill aluminum but not steel. These tools are primarily for milling angles or chamfering applications.

List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/-,.002 Shank: -.0001/-,.0003 Made from Submicrograin Carbide
CORNER ROUNGING

Carbide Single End Corner Round Endmills
Our heavy-duty version of the standard external corner rounding cutter.

<table>
<thead>
<tr>
<th>PART #</th>
<th>TOOL RADIUS</th>
<th>PILOT DIA</th>
<th>SHANK DIA</th>
<th>OAL</th>
<th># FLUTES</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-32RPEM</td>
<td>1/32 (.031)</td>
<td>0.046</td>
<td>1/8</td>
<td>1-1/2</td>
<td>2</td>
<td>$26.86</td>
</tr>
<tr>
<td>1-16RPEM</td>
<td>1/16 (.062)</td>
<td>0.046</td>
<td>3/16</td>
<td>2</td>
<td>2</td>
<td>$35.98</td>
</tr>
<tr>
<td>3-32RPEM</td>
<td>3/32 (.093)</td>
<td>0.0625</td>
<td>1/4</td>
<td>2</td>
<td>3</td>
<td>$45.98</td>
</tr>
<tr>
<td>1-8RPEM</td>
<td>1/8 (.125)</td>
<td>0.093</td>
<td>3/8</td>
<td>2 1/2</td>
<td>3</td>
<td>$61.27</td>
</tr>
<tr>
<td>3-16RPEM</td>
<td>3/16 (.187)</td>
<td>0.125</td>
<td>1/2</td>
<td>2 1/2</td>
<td>3</td>
<td>$81.73</td>
</tr>
<tr>
<td>1-4RPEM</td>
<td>1/4 (.250)</td>
<td>0.125</td>
<td>5/8</td>
<td>3 1/2</td>
<td>4</td>
<td>$118.89</td>
</tr>
<tr>
<td>RADPAC</td>
<td>SAVE 10% - One each of the above stored in a plastic case</td>
<td>$333.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tolerance – Diameter: +.000/-002  Shank: -.0001/-0003  Made from Submicrograin Carbide
## SPIRAL FLUTE CHAMFER MILLS

**CHAMFER MILLS**

Unique helical geometry reduces cutting forces and improves chip evacuation

### 90 DEGREE INCLUDED

<table>
<thead>
<tr>
<th>PART #</th>
<th>SHANK DIA</th>
<th>TIP DIA</th>
<th>INCL ANGLE</th>
<th>OAL</th>
<th># FLUTES</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>18CHAM45</td>
<td>1/8</td>
<td>To Point</td>
<td>90°</td>
<td>1-1/2</td>
<td>4-STR *</td>
<td>$18.88</td>
</tr>
<tr>
<td>14CHAM45</td>
<td>1/4</td>
<td>0.046</td>
<td>90°</td>
<td>2</td>
<td>4-HLX</td>
<td>$34.01</td>
</tr>
<tr>
<td>38CHAM45</td>
<td>3/8</td>
<td>0.062</td>
<td>90°</td>
<td>2</td>
<td>4-HLX</td>
<td>$49.30</td>
</tr>
<tr>
<td>12CHAM45</td>
<td>1/2</td>
<td>0.093</td>
<td>90°</td>
<td>2 1/2</td>
<td>4-HLX</td>
<td>$73.75</td>
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<td>58CHAM45</td>
<td>5/8</td>
<td>.125</td>
<td>90°</td>
<td>3 1/2</td>
<td>4-HLX</td>
<td>$114.90</td>
</tr>
</tbody>
</table>

* Straight Fluted Tool

### 82 DEGREE INCLUDED

<table>
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<th>SHANK DIA</th>
<th>TIP DIA</th>
<th>INCL ANGLE</th>
<th>OAL</th>
<th># FLUTES</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>18CHAM41</td>
<td>1/8</td>
<td>To Point</td>
<td>82°</td>
<td>1-1/2</td>
<td>4-STR *</td>
<td>$18.88</td>
</tr>
<tr>
<td>14CHAM41</td>
<td>1/4</td>
<td>0.046</td>
<td>82°</td>
<td>2</td>
<td>4-HLX</td>
<td>$34.01</td>
</tr>
<tr>
<td>38CHAM41</td>
<td>3/8</td>
<td>0.062</td>
<td>82°</td>
<td>2</td>
<td>4-HLX</td>
<td>$49.30</td>
</tr>
<tr>
<td>12CHAM41</td>
<td>1/2</td>
<td>0.093</td>
<td>82°</td>
<td>2 1/2</td>
<td>4-HLX</td>
<td>$73.75</td>
</tr>
<tr>
<td>58CHAM41</td>
<td>5/8</td>
<td>.125</td>
<td>82°</td>
<td>3 1/2</td>
<td>4-HLX</td>
<td>$114.90</td>
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</table>

* Straight Fluted Tool

### 60 DEGREE INCLUDED

<table>
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<tr>
<th>PART #</th>
<th>SHANK DIA</th>
<th>TIP DIA</th>
<th>INCL ANGLE</th>
<th>OAL</th>
<th># FLUTES</th>
<th>PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>18CHAM30</td>
<td>1/8</td>
<td>To Point</td>
<td>60°</td>
<td>1-1/2</td>
<td>4-STR *</td>
<td>$18.88</td>
</tr>
<tr>
<td>14CHAM30</td>
<td>1/4</td>
<td>0.046</td>
<td>60°</td>
<td>2</td>
<td>4-HLX</td>
<td>$34.01</td>
</tr>
<tr>
<td>38CHAM30</td>
<td>3/8</td>
<td>0.062</td>
<td>60°</td>
<td>2</td>
<td>4-HLX</td>
<td>$49.30</td>
</tr>
<tr>
<td>12CHAM30</td>
<td>1/2</td>
<td>0.093</td>
<td>60°</td>
<td>2 1/2</td>
<td>4-HLX</td>
<td>$73.75</td>
</tr>
<tr>
<td>58CHAM30</td>
<td>5/8</td>
<td>.125</td>
<td>60°</td>
<td>3 1/2</td>
<td>4-HLX</td>
<td>$114.90</td>
</tr>
</tbody>
</table>

* Straight Fluted Tool
STUB SQUARE END

Carbide Single-End Stub Length End Mills
Shorter flute length for increased rigidity
30 degree helix, center cutting.

X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

<table>
<thead>
<tr>
<th>Part # 2 FL</th>
<th>Part # 4 FL</th>
<th>Tool Dia</th>
<th>LOC</th>
<th>Shank</th>
<th>OAL</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100332X</td>
<td>1200332X</td>
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<td>3/16</td>
<td>1/8</td>
<td>1 1/2</td>
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<td>1/8</td>
<td>1 1/2</td>
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</tr>
<tr>
<td>1100532X</td>
<td>1200532X</td>
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<td>5/16</td>
<td>3/16</td>
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<td>1200316X</td>
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<td>3/8</td>
<td>3/16</td>
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<td>2</td>
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<tr>
<td>110038X</td>
<td>120038X</td>
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<td>5/8</td>
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<td>$26.62</td>
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<tr>
<td>1100716X</td>
<td>1200716X</td>
<td>7/16</td>
<td>5/8</td>
<td>7/16</td>
<td>2 1/2</td>
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<tr>
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<td>1200012X</td>
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<td>1/2</td>
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<td>1200058X</td>
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<td>3/4</td>
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<td>1200034X</td>
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<td>1</td>
<td>3/4</td>
<td>4</td>
<td>$134.58</td>
</tr>
</tbody>
</table>

Tolerance – Diameter: +.000/- .002 Shank: -.0001/- .0003 Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

<table>
<thead>
<tr>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 FLT</td>
</tr>
<tr>
<td>4 FLT</td>
</tr>
<tr>
<td>Tool Dia</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>1300332X</td>
</tr>
<tr>
<td>1300018X</td>
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<td>1300532X</td>
</tr>
<tr>
<td>1300316X</td>
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<tr>
<td>1300058X</td>
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<tr>
<td>1300034X</td>
</tr>
</tbody>
</table>

List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/-0.002  Shank: -.0001/-0.0003  Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com 45
X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

<table>
<thead>
<tr>
<th>Part # 2 FLT</th>
<th>Part # 4 FLT</th>
<th>Tool Dia</th>
<th>LOC</th>
<th>Shank</th>
<th>OAL</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3/16</td>
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<td>1120018X</td>
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Double end stub length endmills are ideal for slotting, keying, and general purpose milling.

Tolerance – Diameter: +.000/-002  Shank: -.0001/-.0003  Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
### STANDARD LENGTH ENDMILLS

#### STANDARD LENGTH

X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

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Tolerance – Diameter: +.000/- .002  Shank: -.0001/-.0003  Made from Submicrograin Carbide

Phone 716-462-4349 47  www.lakeshorecarbide.com
X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

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Tolerance – Diameter: +.000/- .002 Shank: -.0001/-.0003 Made from Submicrograin Carbide
X on end of part number indicates AlTiN COATING
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List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/- .002 Shank: -.0001/- .0003 Made from Submicrograin Carbide
Phone 716-462-4349  www.lakeshorecarbide.com
**CORNER RADIUS ENDMILLS**

**CORNER RADIUS**
4 Flute standard length
Solid carbide endmill with Corner radius and AlTiN coating
(Not available in Uncoated)

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## CORNER RADIUS ENDMILLS

### CORNER RADIUS

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List Price Catalog - Current Pricing On Our Website

Tolerance – Diameter: +.000/- .002  Shank: -.0001/- .0003 Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

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List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/- .002 Shank: -.0001/- .0003 Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
X on end of part number indicates AITiN COATING  
To order UNCOATED remove the X from end of part number  

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List Price Catalog - Check Website For Current Pricing
X on end of part number indicates AlTiN COATING
To order UNCOATED remove the X from end of part number

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List Price Catalog - Check Website For Current Pricing

Tolerance – Diameter: +.000/-0.002  Shank: -.0001/-0.0003  Made from Submicrograin Carbide

Phone 716-462-4349  www.lakeshorecarbide.com
BACK CHAMFER

Solid carbide back chamfer endmill can machine a 45 degree back chamfer from the front side of your part.

AITiN COATED

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<thead>
<tr>
<th>Part #</th>
<th>TIP</th>
<th>NECK</th>
<th>REACH</th>
<th>Shank Diameter</th>
<th>Overall Length</th>
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UNCOATED

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EXTENSIONS

- Two opposed set screws for secure holding and a third for possible use of positive stop.
- A-2 Steel, hardened to 60-62 R.C.
- Concentricity within .0002
- Black Oxide Finish

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PROUDLY MADE IN THE USA

List Price Catalog - Check Website For Current Pricing
### H.S.S. Rotary Broaches

H.S.S. Rotary broaches – used to cut hex shapes in blind holes. Max forming depth 1-1/2 times the broach size. Broach size measured across flats.

List Price Catalog - Current Pricing On Our Website

<table>
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<th>Shank Diameter</th>
<th>Depth of cut</th>
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<th>Tool Price</th>
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</table>

Tolerance – Diameter: +.000/-0.002  Shank: -.0001/-0.0003  Made from Submicrograin Carbide
Carbide Tipped Slitting Saws

Carbide tipped slitting saws have a carbide grade and tool geometry best suited for the material to be cut. All saws are precision ground with side clearance and concavity on the carbide tips for free cutting action.

For extended tool life, saws can be ordered with a variety of special coatings.

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<th>Cat No. Steel</th>
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