High-Performance
Indexable Carbide Milling Systems

2009 Catalog
Mil-Tec was created to bring the shearing action of traditional solid carbide machining to indexable carbide face & end milling. Along the way we pioneered and patented the Freedom Cutter® (allowing 3 insert shapes to fit into the same cutter body pocket) and the Mil-Loc (a positioning device allowing 8 indexes on a round insert). We use only the best technology available from throughout the world, combined into a product line that offers the ultimate in milling application productivity. All of our inserts are precision ground and are suitable for use on a diverse range of materials and machine tools. Our toughest task in application training is getting prospective customers to run our product FAST ENOUGH to take full advantage of the Mil-Tec design. Once accomplished, a Mil-Tec customer is usually one for life.

We guarantee your satisfaction. This Company was created with a total “white-paper” approach; there are no compromises regarding performance. Our goal is to delight our customers.

We are extremely proud of the Mil-Tec product line, and are confident you will enjoy using it as much as we enjoy manufacturing it.

Sincerely,

David Povich
President

ABOUT THIS CATALOG & PRODUCT LINE: The Mil-Tec product line presentation has been greatly simplified with the addition of EDP numbers. While the “old” nomenclature has been discarded from use in this publication, rest assured it will still appear on packaging and sales documentation. Alongside it will be new EDP #’s and an updated, logic-based numbering system used for Freedom Cutter inserts (see page #6 for more information). Our goal is to make this product line as efficient to understand, sell, purchase, and utilize as it is transferring heat from the workpiece to the chip.

Mil-Tec publishes a separate catalog with complete Metric sizing. Request it from our Sales Department or at miltecusa.com.

Phone (800) 564-5832 Fax (866) 244-0298 miltecusa.com toolalliance.com e-mail: sales@miltecusa.com
COMPONENT #1: Carbide Substrate  From being the first Company to introduce MicroGrain carbide to the mass-market round tool industry through the present day, Tool Alliance® has consistently innovated new powder and grade combinations for demanding applications. We recognize that our material is the very first Significant Characteristic. By creating partnerships with a limited number of tungsten powder and cemented-carbide material suppliers, we are able to guarantee that our customers receive precision-tolerance tools ground from only the purest, finest grades available worldwide. The following photograph of Ultra-Carb® demonstrates the complexity of the compound we commonly refer to as Cemented Carbide. Taken at magnification of 10,000 X through an SEM (Scanning Electron Microscope), the visible grains are tungsten while the cobalt binder appears as dark shadows. The largest tungsten grains appearing in the Ultra-Carb photo are less than one micron in size.

COMPONENT #2: The Grinding Process  After selecting the best material available, Mil-Tec has perfected the manufacturing technology to optimize 100% of its physical properties. We call this process SmoothGrind®. Years in development, SmoothGrind is the result of a proprietary combination of material, abrasive, coolant, machine–tool, software, and grinding method technologies that produce cutting tools with superior qualitative characteristics. Sharper and longer lasting cutting edges, enhanced workpiece finishes, and improved lubricity are just some of the benefits brought to you by the latest indexable carbide rotary tooling advances from Mil-Tec. The following photograph displays a Mil-Tec insert featuring SmoothGrind (bottom) versus a major competitor’s product (top). Our 100% precision-ground smooth-milled insert will turn your throughput and improve your part finish. Love your machine tool? Love your spindle? Treat them right and lower your maintenance costs at the same time you increase your tool life and improve your part finish.

COMPONENT #3: The Edge Preparation Process  Our cutting edges are literally too sharp for certain materials. For our carbide inserts and now increasingly for our solid carbide round tools, proper edge preparation can yield huge productivity improvements to “out of the box” tool application. Using a treatment we call SmoothEdge® and performed on machine tools developed in our own R&D lab, we’ve taken the mystery out of tool “break-in” and provided a consistency that can be counted on time and again. The process for inserts selects from either SmoothEdge 1, a light brush hone, to SmoothEdge 2, which doubles the cycle. Both will sound and run smooth from the first cut and protect your tooling investment from unnecessary potential for chipping during your initial tooling paths. Big productivity gains can be achieved in certain applications as well due to improved chip formation and evacuation. In addition, a microblasting treatment using extremely fine aluminum oxide powder is provided with all coated inserts, further prepping the cutting edge. For aluminum grades and certain other non-ferrous materials, we eliminate the process to achieve maximum edge sharpness.

COMPONENT #4: The Tooling Process  All the best physical ingredients are wasted unless they are all pulled together in a comprehensive system that maximizes their respective attributes. Mil-Tec calls this process SmoothContricity®. Our indexable products are designed to run more like solid carbide end mills versus the traditional pressed & sintered insert. SmoothContricity ensures that optimum results can be obtained by minimizing run–out (TIR), and providing industry–leading tolerances on diameter & radius. Combined, these attributes allow our consumers to reach full machining potential and position the cutting tool as a systematic contributor to process consistency and repeatability. Furthermore, you’ll see benefits through the production stream like reduced maintenance costs, more uptime, better part finishes, and more.

COMPONENT #5: The Coating Process  Please see Page #19 for complete information regarding SmoothCoat.
The Mil–Tec Freedom Cutter® Plus+ Series

- Superb Accuracy & Strength
- Perfect for all material groups
- New Plus+ Geometry
- Hardened steel
- 3 insert shapes fit each pocket
- Unbeatable versatility
- Torx screw system
- Works with wide range of HP
- Uses precision–ground Freedom Cutter inserts
- From 2” to 12” diameter
- Cuts a 90° shoulder with SA90, SS90, or PS90 insert

Select a Freedom Cutter Plus+ Shell Mill Style Body:

All Freedom Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We manufacture standards & specials such as metric, coolant-thru, cartridge style, aluminum, or other cutter bodies with lead times as quick as one week.

The Freedom Cutter system features the ultimate in face-milling versatility. Each cutter body pocket accepts all three insert shapes, and each insert is available in a huge variety of geometries, radius sizes, carbide substrates, hones & coatings. Our cutter bodies are precision machined from hardened steel to exacting, repeatable tolerances. Special pocket geometry allows for 8 indexes on Octagon & Round inserts, and 4 on Square. The Freedom Cutter milling system allows you to maximize your capabilities while minimizing your investment in cutter bodies. Now, the Freedom Cutter features our new Plus+ geometry, offering increased pocket density and superb body strength!

Select a Freedom Cutter Plus+ Large Diameter Face Mill Style Body:

The Large Diameter Freedom Cutter Face Mill features a 4” bolt circle pattern. The CB (counterbore) design is for direct attachment to the spindle face (counterbore diameter is 5″–1/16″), while the FB (flat back) is used with standard shell mill holders.

Phone 800.564.5832  /  Fax 866.244.0298

miltecusa.com
The Freedom Cutter® Plus+45 Series

The Freedom Cutter Plus+45 Milling System is a 45° lead angle shell mill that utilizes square shaped Freedom Cutter Inserts. Because our inserts have precision ground geometries ranging from the SA Super Aluminum to our workhorse NP grind, the new Plus+45 is the most versatile 45° lead face mill in the industry. The Plus+45 powerful combination of attributes generates maximum metal removal rates in the toughest alloys!

Select a Freedom Cutter Plus+45 Shell Mill Style Body:
All Freedom Cutter Plus+45 Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We manufacture standards & specials such as metric, coolant-thru, cartridge style, aluminum, or other cutter bodies with lead times as quick as one week.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>Bore</th>
<th>Keyway</th>
<th>Height</th>
<th>Insert Pockets</th>
<th>FC Plus+45 Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>3/4</td>
<td>5/16</td>
<td>2&quot;</td>
<td>4</td>
<td>FC45-2-4</td>
<td>02050</td>
<td>$220.00</td>
</tr>
<tr>
<td>3&quot;</td>
<td>1-1/4</td>
<td>1/2</td>
<td>2&quot;</td>
<td>6</td>
<td>FC45-3-6</td>
<td>02051</td>
<td>$350.00</td>
</tr>
<tr>
<td>3&quot;</td>
<td>1&quot;</td>
<td>.380</td>
<td>2&quot;</td>
<td>7</td>
<td>FC45-3-6NS</td>
<td>02052</td>
<td>$365.00</td>
</tr>
<tr>
<td>4&quot;</td>
<td>1-1/2</td>
<td>5/8</td>
<td>2&quot;</td>
<td>8</td>
<td>FC45-4-8</td>
<td>02053</td>
<td>$480.00</td>
</tr>
<tr>
<td>5&quot;</td>
<td>1-1/2</td>
<td>5/8</td>
<td>2&quot;</td>
<td>9</td>
<td>FC45-5-9</td>
<td>02054</td>
<td>$590.00</td>
</tr>
<tr>
<td>6&quot;</td>
<td>1-1/2</td>
<td>5/8</td>
<td>2&quot;</td>
<td>10</td>
<td>FC45-6-10</td>
<td>02055</td>
<td>$660.00</td>
</tr>
</tbody>
</table>

Select a Dedicated Finishing (DFCA) Freedom Cutter (Shank & Shell Mill Styles):
The DFCA Freedom Cutter in conjunction with the required Square NP Geometry (minimum 032 Rad) acts as a dedicated finisher / wiper combination in applications that demand exceptional surface finish and flatness.

The Plus+45 uses standard Square Freedom Cutter Inserts up to 125 maximum radius.

Select a Freedom Cutter Plus+45 Milling System:
- 45° lead angle for smooth cut
- Perfect for all material groups including toughest alloys
- Precise tolerances
- Hardened steel
- Accepts standard square Freedom Cutter inserts
- Utilizes FC insert geometry
- Torx screw system
- Depths of cut up to .400
- Unbeatable productivity
- From 2” to 6” diameter

Material Speed: feet/minute Feed: inches/minute

4140 Steel 1200 110

316 Stainless 1200 – 1500 110 – 170

6AI–4V Titanium 200 – 300 12 – 27

Specialty Styles of the Freedom Cutter® new!
The Freedom Cutter is available in customized solutions for difficult milling applications. These specialized cutter bodies utilize the same insert family as all Freedom Cutter series.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>OAL</th>
<th>Shank Diameter</th>
<th>Insert Pockets</th>
<th>DFCA Shank Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td></td>
<td>3/4</td>
<td>2</td>
<td>DFCA-1-1-6</td>
<td>02060</td>
<td>$175.00</td>
</tr>
<tr>
<td>1&quot;</td>
<td></td>
<td>1-1/4</td>
<td>2</td>
<td>DFCA-1-1-10</td>
<td>02061</td>
<td>$175.00</td>
</tr>
<tr>
<td>1&quot;</td>
<td></td>
<td>1-1/4</td>
<td>2</td>
<td>DFCA-1-1-2</td>
<td>02062</td>
<td>$175.00</td>
</tr>
<tr>
<td>2&quot;</td>
<td>1.725</td>
<td>5/16</td>
<td>3/4</td>
<td>DFCA-2-2</td>
<td>02063</td>
<td>$175.00</td>
</tr>
<tr>
<td>3&quot;</td>
<td>1-1/8</td>
<td>1/2</td>
<td>1-1/4</td>
<td>DFCA-3-2</td>
<td>02064</td>
<td>$175.00</td>
</tr>
<tr>
<td>3&quot;</td>
<td>1-1/8</td>
<td>.380</td>
<td>1&quot;</td>
<td>DFCA-3-2NS</td>
<td>02065</td>
<td>$175.00</td>
</tr>
<tr>
<td>4&quot;</td>
<td>1-7/8</td>
<td>5/8</td>
<td>1-1/2</td>
<td>DFCA-4-2</td>
<td>02066</td>
<td>$200.00</td>
</tr>
<tr>
<td>5&quot;</td>
<td>1-7/8</td>
<td>5/8</td>
<td>1-1/2</td>
<td>DFCA-5-2</td>
<td>02067</td>
<td>$300.00</td>
</tr>
<tr>
<td>6&quot;</td>
<td>1.950</td>
<td>5/8</td>
<td>1-1/2</td>
<td>DFCA-6-2</td>
<td>02068</td>
<td>$400.00</td>
</tr>
<tr>
<td>8&quot;</td>
<td>2&quot;</td>
<td>1&quot;</td>
<td>2-1/2</td>
<td>DFCA-8-2FB</td>
<td>02069</td>
<td>$500.00</td>
</tr>
</tbody>
</table>

NP Negative / Positive Frustroconical Land SmoothGrind® Shell Style

Dedicated Finishing Freedom Cutter (DFCA)
Select a Freedom Cutter with Extended Reach (FCR) Shank Style Body:
This Freedom Cutter offers extended reach capabilities, bringing the benefits of the FC milling system to a wide variety of application demands.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>Shank</th>
<th>Head Length</th>
<th>OAL</th>
<th>Insert Pockets</th>
<th>FC Shank Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1”</td>
<td>3/4</td>
<td>1-3/4</td>
<td>4”</td>
<td>1</td>
<td>FCR-1-1-6</td>
<td>02070</td>
<td>$100.00</td>
</tr>
<tr>
<td>1”</td>
<td>1-1/4</td>
<td>1-3/4</td>
<td>4”</td>
<td>1</td>
<td>FCR-1-1-10</td>
<td>02071</td>
<td>$100.00</td>
</tr>
<tr>
<td>1”</td>
<td>1”</td>
<td>1-3/4</td>
<td>7”</td>
<td>1</td>
<td>FCR-1-1-8E</td>
<td>02072</td>
<td>$130.00</td>
</tr>
<tr>
<td>1-1/4”</td>
<td>3/4</td>
<td>1-3/4</td>
<td>4”</td>
<td>2</td>
<td>FCR-1-1-10E</td>
<td>02073</td>
<td>$170.00</td>
</tr>
<tr>
<td>1-1/4”</td>
<td>1”</td>
<td>1-3/4</td>
<td>4”</td>
<td>2</td>
<td>FCR-1-1-25-2-6</td>
<td>02074</td>
<td>$150.00</td>
</tr>
<tr>
<td>1-1/4”</td>
<td>1-1/4</td>
<td>1-3/4</td>
<td>7”</td>
<td>2</td>
<td>FCR-1-1-25-2-8</td>
<td>02075</td>
<td>$150.00</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>3/4</td>
<td>1-3/4</td>
<td>4”</td>
<td>3</td>
<td>FCR-1-1-5-3-6</td>
<td>02078</td>
<td>$190.00</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>1”</td>
<td>1-3/4</td>
<td>4”</td>
<td>3</td>
<td>FCR-1-1-5-3-8</td>
<td>02079</td>
<td>$190.00</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>1-1/4</td>
<td>1-3/4</td>
<td>7”</td>
<td>3</td>
<td>FCR-1-1-5-3-10</td>
<td>02080</td>
<td>$190.00</td>
</tr>
<tr>
<td>1-1/2”</td>
<td>1-1/2</td>
<td>1-3/4</td>
<td>7”</td>
<td>3</td>
<td>FCR-1-1-5-3-10E</td>
<td>02081</td>
<td>$225.00</td>
</tr>
<tr>
<td>1-3/4”</td>
<td>3/4</td>
<td>1-3/4</td>
<td>4”</td>
<td>3</td>
<td>FCR-1-1-75-3-6</td>
<td>02082</td>
<td>$220.00</td>
</tr>
<tr>
<td>1-3/4”</td>
<td>1-1/4</td>
<td>1-3/4</td>
<td>4”</td>
<td>3</td>
<td>FCR-1-1-75-3-10</td>
<td>02083</td>
<td>$220.00</td>
</tr>
<tr>
<td>1-3/4”</td>
<td>1-1/2</td>
<td>1-3/4</td>
<td>7”</td>
<td>3</td>
<td>FCR-1-1-75-3-10E</td>
<td>02084</td>
<td>$255.00</td>
</tr>
<tr>
<td>2”</td>
<td>1-1/4</td>
<td>1-3/4</td>
<td>4”</td>
<td>3</td>
<td>FCR-2-3-10</td>
<td>02085</td>
<td>$260.00</td>
</tr>
<tr>
<td>2”</td>
<td>1-1/4</td>
<td>1-3/4</td>
<td>4”</td>
<td>4</td>
<td>FCR-2-4-10</td>
<td>02086</td>
<td>$280.00</td>
</tr>
</tbody>
</table>

Select a Freedom Cutter with integral R8 Shank Style Body:

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>OAL</th>
<th>Insert Pockets</th>
<th>FC R8 Shank Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2”</td>
<td>5-1/8</td>
<td>3</td>
<td>FCR8-1.5</td>
<td>02090</td>
<td>$200.00</td>
</tr>
<tr>
<td>2”</td>
<td>5-1/8</td>
<td>3</td>
<td>FCR8-2.0</td>
<td>02091</td>
<td>$260.00</td>
</tr>
</tbody>
</table>

Select a Freedom Cutter with Coolant Hole (FCC) Shell Mill Style Body:
This Freedom Cutter style is designed for both air and fluid coolant technologies. A custom cap screw is included with the 2” and 3” FCC, while a special 1-1/2” CBS bolt is required for larger diameters.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>Bore</th>
<th>Keyway</th>
<th>Height</th>
<th>Insert Pockets</th>
<th>FC Coolant Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>3/4</td>
<td>5/16</td>
<td>1-3/4</td>
<td>4</td>
<td>FCC-2-4</td>
<td>02100</td>
<td>$300.00</td>
</tr>
<tr>
<td>3”</td>
<td>1-1/4</td>
<td>1/2</td>
<td>1-7/8</td>
<td>5</td>
<td>FCC-3-5</td>
<td>02101</td>
<td>$445.00</td>
</tr>
<tr>
<td>3”</td>
<td>1”</td>
<td>.380</td>
<td>1-7/8</td>
<td>5</td>
<td>FCC-3-5-NS</td>
<td>02102</td>
<td>$445.00</td>
</tr>
<tr>
<td>4”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1-7/8</td>
<td>6</td>
<td>FCC-4-6</td>
<td>02103</td>
<td>$570.00</td>
</tr>
<tr>
<td>6”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1.950</td>
<td>8</td>
<td>FCC-6-8</td>
<td>02104</td>
<td>$780.00</td>
</tr>
</tbody>
</table>

Select a Freedom Cutter that Chamfers with Shank Style Body:
This Freedom Cutter has a chamfer style body with a diameter from front tip of insert to opposing front tip.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>Shank</th>
<th>OAL</th>
<th>Insert Pockets</th>
<th>FC Chamfer Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1”</td>
<td>3/4</td>
<td>3-1/2</td>
<td>2</td>
<td>FC30-8-2-6</td>
<td>02110</td>
<td>$160.00</td>
</tr>
<tr>
<td>7/8</td>
<td>3/4</td>
<td>3-1/2</td>
<td>2</td>
<td>FC45-8-2-6</td>
<td>02111</td>
<td>$160.00</td>
</tr>
<tr>
<td>7/8</td>
<td>1”</td>
<td>3-1/2</td>
<td>2</td>
<td>FC45-8-2-8</td>
<td>02112</td>
<td>$160.00</td>
</tr>
<tr>
<td>7/8</td>
<td>3/4</td>
<td>3-1/2</td>
<td>2</td>
<td>FC60-7-2-6</td>
<td>02113</td>
<td>$160.00</td>
</tr>
</tbody>
</table>
**Specialty Styles of the Freedom Cutter®**

The Freedom Cutter is available in customized solutions for difficult milling applications. These specialized cutter bodies utilize the same insert family as all Freedom Cutter series.

- Freedom Cutter with Square Insert Support (FCS)
- Freedom Cutter with Aluminum Body Design (FCA)
- Freedom Cutter that Ramps & Plunges (RPX)

### Select a Freedom Cutter with Square Insert Support (FCS) Shell Mill Style Body:

This Freedom Cutter style can ramp and plunge. Ramp up to 30° and .187 DOC, and plunge to .187 DOC. Standard milling can also be accomplished; 8-index geometries (Octagon & Round) have a maximum .150 DOC, while 4-index geometries (Square) go up to .312 depth.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>Bore</th>
<th>Keyway</th>
<th>Height</th>
<th>Weight</th>
<th>Insert Pockets</th>
<th>FC Sq. Support Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>3/4</td>
<td>5/16</td>
<td>1.725</td>
<td>5 oz</td>
<td>3</td>
<td>FCS-2-3</td>
<td>02120</td>
<td>$220.00</td>
</tr>
<tr>
<td>2”</td>
<td>3/4</td>
<td>5/16</td>
<td>1.725</td>
<td>5 oz</td>
<td>4</td>
<td>FCS-2-4</td>
<td>02121</td>
<td>$245.00</td>
</tr>
<tr>
<td>2”</td>
<td>1-1/4</td>
<td>1/2</td>
<td>1-7/8</td>
<td>12 oz</td>
<td>5</td>
<td>FCS-2.5-4</td>
<td>02122</td>
<td>$310.00</td>
</tr>
<tr>
<td>3”</td>
<td>1”</td>
<td>.380</td>
<td>1-7/8</td>
<td>12 oz</td>
<td>5</td>
<td>FCS-2.5-4-NS</td>
<td>02123</td>
<td>$310.00</td>
</tr>
<tr>
<td>4”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1-7/8</td>
<td>1 lb</td>
<td>6</td>
<td>FCS-3-4</td>
<td>02124</td>
<td>$350.00</td>
</tr>
<tr>
<td>5”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1.950</td>
<td>3 lb</td>
<td>8</td>
<td>FCS-3-5</td>
<td>02125</td>
<td>$375.00</td>
</tr>
<tr>
<td>6”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1.950</td>
<td>5 lb</td>
<td>10</td>
<td>FCS-3-5-NS</td>
<td>02126</td>
<td>$375.00</td>
</tr>
<tr>
<td>8”</td>
<td>1-1/2</td>
<td>1”</td>
<td>2”</td>
<td>5 lb</td>
<td>9</td>
<td>FCS-4-6</td>
<td>02127</td>
<td>$500.00</td>
</tr>
<tr>
<td>10”</td>
<td>2-1/2</td>
<td>1”</td>
<td>2-1/2</td>
<td>10 lb</td>
<td>10</td>
<td>FCS-6-6</td>
<td>02128</td>
<td>$620.00</td>
</tr>
</tbody>
</table>

### Select a Freedom Cutter with Aluminum construction (FCA) Shell Mill Style Body:

This Freedom Cutter style can ramp and plunge. Ramp up to 30° and .187 DOC, and plunge to .187 DOC. Standard milling can also be accomplished; 8-index geometries (Octagon & Round) have a maximum .150 DOC, while 4-index geometries (Square) go up to .312 depth.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>Bore</th>
<th>Keyway</th>
<th>Height</th>
<th>Insert Pockets</th>
<th>FC Aluminum Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>3/4</td>
<td>5/16</td>
<td>1.725</td>
<td>5 oz</td>
<td>FCA-2-3</td>
<td>02130</td>
<td>$220.00</td>
</tr>
<tr>
<td>2”</td>
<td>3/4</td>
<td>5/16</td>
<td>1.725</td>
<td>5 oz</td>
<td>FCA-2-4</td>
<td>02131</td>
<td>$245.00</td>
</tr>
<tr>
<td>3”</td>
<td>1-1/4</td>
<td>1/2</td>
<td>1-7/8</td>
<td>12 oz</td>
<td>FCA-3-5</td>
<td>02132</td>
<td>$375.00</td>
</tr>
<tr>
<td>3”</td>
<td>1”</td>
<td>.380</td>
<td>1-7/8</td>
<td>12 oz</td>
<td>FCA-3-5-NS</td>
<td>02133</td>
<td>$375.00</td>
</tr>
<tr>
<td>4”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1-7/8</td>
<td>1 lb</td>
<td>FCA-4-6</td>
<td>02134</td>
<td>$500.00</td>
</tr>
<tr>
<td>6”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1.950</td>
<td>3 lb</td>
<td>FCA-6-8</td>
<td>02135</td>
<td>$700.00</td>
</tr>
<tr>
<td>8”</td>
<td>2-1/2</td>
<td>1”</td>
<td>2”</td>
<td>5 lb</td>
<td>FCA-8-9</td>
<td>02136</td>
<td>$950.00</td>
</tr>
<tr>
<td>10”</td>
<td>2-1/2</td>
<td>1”</td>
<td>2-1/2</td>
<td>10 lb</td>
<td>FCA-10-10</td>
<td>02137</td>
<td>$1200.00</td>
</tr>
</tbody>
</table>

### Select a Freedom Cutter that Ramps & Plunges (RPX) with Shell Mill Style Body:

This Freedom Cutter style can ramp and plunge. Ramp up to 30° and .187 DOC, and plunge to .187 DOC. Standard milling can also be accomplished; 8-index geometries (Octagon & Round) have a maximum .150 DOC, while 4-index geometries (Square) go up to .312 depth.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>Bore</th>
<th>Keyway</th>
<th>Height</th>
<th>Insert Pockets</th>
<th>RPX Shell Mill Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>3/4</td>
<td>5/16</td>
<td>1.725</td>
<td>3</td>
<td>RPX-2-3</td>
<td>02140</td>
<td>$200.00</td>
</tr>
<tr>
<td>3”</td>
<td>1”</td>
<td>.380</td>
<td>1-7/8</td>
<td>4</td>
<td>RPX-3-4</td>
<td>02141</td>
<td>$325.00</td>
</tr>
<tr>
<td>4”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1-7/8</td>
<td>6</td>
<td>RPX-4-6</td>
<td>02142</td>
<td>$450.00</td>
</tr>
<tr>
<td>6”</td>
<td>1-1/2</td>
<td>5/8</td>
<td>1.950</td>
<td>8</td>
<td>RPX-6-8</td>
<td>02143</td>
<td>$620.00</td>
</tr>
</tbody>
</table>

### Select a Freedom Cutter that Ramps & Plunges (RPX) with Shank Style Body:

This Freedom Cutter style can ramp and plunge. Ramp up to 30° and .187 DOC, and plunge to .187 DOC. Standard milling can also be accomplished; 8-index geometries (Octagon & Round) have a maximum .150 DOC, while 4-index geometries (Square) go up to .312 depth.

<table>
<thead>
<tr>
<th>Cutter Diameter</th>
<th>Shank</th>
<th>Head Length</th>
<th>OAL</th>
<th>Insert Pockets</th>
<th>RPX Shank Style Body Part Number</th>
<th>EDP Number</th>
<th>Body List Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2</td>
<td>1-1/4</td>
<td>1”</td>
<td>4”</td>
<td>2</td>
<td>RPX-1.5-2-10</td>
<td>02144</td>
<td>$175.00</td>
</tr>
<tr>
<td>1-3/4</td>
<td>1-1/4</td>
<td>1”</td>
<td>4”</td>
<td>2</td>
<td>RPX-1.75-2-10</td>
<td>02145</td>
<td>$195.00</td>
</tr>
<tr>
<td>2”</td>
<td>1-1/4</td>
<td>1.55</td>
<td>4”</td>
<td>3</td>
<td>RPX-2-3-10</td>
<td>02146</td>
<td>$260.00</td>
</tr>
<tr>
<td>2-1/2</td>
<td>1-1/4</td>
<td>1.55</td>
<td>4”</td>
<td>3</td>
<td>RPX-2.5-3-10</td>
<td>02147</td>
<td>$325.00</td>
</tr>
<tr>
<td>3”</td>
<td>1-1/4</td>
<td>1.55</td>
<td>4”</td>
<td>4</td>
<td>RPX-3-4-10</td>
<td>02148</td>
<td>$380.00</td>
</tr>
<tr>
<td>3-1/2</td>
<td>1-1/2</td>
<td>1.55</td>
<td>4”</td>
<td>4</td>
<td>RPX-3.5-4-12</td>
<td>02149</td>
<td>$395.00</td>
</tr>
</tbody>
</table>
Mil–Tec Freedom Cutter® Inserts
Nomenclature Guide & Technical Information

All selections not available • Stocked catalog standards are listed by EDP# on pages 9–12 • Specials available upon quotation
Mil–Tec Freedom Cutter inserts can be ordered in hundreds of variations. The ability to match a specific application with geometry, coating, edge prep and carbide substrate make the Freedom Cutter the perfect application-specific milling system.

1
Insert Shape Availability order as O, S, Z, or R

- Octagon (O)
- Square (S)
- Square 90° (Z)
- Round (R)

Each arrow represents a cutting edge index.
Octagon (O) = 8
Square (S) = 4
Square 90° (Z) = 2
Round (R) = 8

2
Geometry Availability order as SS, PS, NP, MS, GP, or SA

- SS Super Shear High Dish SmoothGrind®
  High positive grind available in all shapes. Ideal for aluminum, non-ferrous, plastic, & non-metals.
- PS Power Shear Medium Dish SmoothGrind®
  Medium positive grind for steel, stainless, and exotics. The perfect “all-application” geometry.
- NP Negative / Positive Frustroconical Land SmoothGrind®
  Strongest insert and designed for heavy feed rates. Ideal for steel, stainless, & heat-treated alloys.
- MS Mag-Na-Shear Pre-Formed + SmoothGrind®
  Molded and ground chip control; ideal for stainless & exotics including titanium and inconel.
- GP General Purpose Flat Top SmoothGrind®
  Flat top grind for all materials.
- SA90 Super Aluminum Extreme Dish SmoothGrind®
  Maximum high positive grind for milling 90° corner in Aluminum. Available in Square 90° (Z) shape.
- SS90 Super Shear 90° High Dish SmoothGrind®
  Super Shear grind for milling 90° corner available in Square 90° (Z).
- PS90 Power Shear 90° Medium Dish SmoothGrind®
  Power Shear grind for milling 90° corner available in Square 90° (Z).

3
Radius Availability order as 000, 005, 016, 032, 047, 062, 093, 125, 187, 250, or 312

Octagon shape available in 062 only; Round is 312 by default.

<table>
<thead>
<tr>
<th>Radius</th>
<th>000</th>
<th>005</th>
<th>016</th>
<th>032</th>
<th>047</th>
<th>062</th>
<th>093</th>
<th>125</th>
<th>187</th>
<th>250</th>
<th>312</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric</td>
<td>0.00 mm</td>
<td>0.13 mm</td>
<td>0.40 mm</td>
<td>0.81 mm</td>
<td>1.20 mm</td>
<td>1.57 mm</td>
<td>2.36 mm</td>
<td>3.18 mm</td>
<td>4.75 mm</td>
<td>6.35 mm</td>
<td>7.92 mm</td>
</tr>
<tr>
<td>Decimal</td>
<td>.000</td>
<td>.005</td>
<td>.016</td>
<td>.032</td>
<td>.047</td>
<td>.062</td>
<td>.093</td>
<td>.125</td>
<td>.187</td>
<td>.250</td>
<td>.312</td>
</tr>
</tbody>
</table>

4
Carbide Classification Availability order as 1, 2, or 5

- Ultra-Carb® 1 Toughest Grade
  All applications + Exotics
- Ultra-Carb® 2 Hardest Grade
  Cast Iron, Stainless
  Low Carbon Steels
- Ultra-Carb® 5 Tough + Hard
  Steels, Stainless
  Hard materials

5
Edge Prep Availability order as 0, 1, or 2

- SmoothEdge® 0 No Hone, Upsharp = 0
  Razor sharp for max shearing
  Plastics, Aluminum, Non–Ferrous
- SmoothEdge® 1 Light Hone = 1
  Added edge strength w/high shear
  General Purpose for most materials
- SmoothEdge® 2 Heavy Hone = 2
  Strongest cutting edge
  Exotics, PH Stainless, Heat treated alloys

6
Coating Availability order as UC, TA, TN, A1, AT, D1, D2, or TC

- UC Uncoated
- TA TiAIN
- TN TIN
- A1 TIB2
- AT HSN²
- D1 PVD Diamond
- D2 CVD Diamond
- TC TICN

Example: 1 = Octagon, 2 = Super Shear, 3 = 1.57 mm, 4 = Ultra–Carb 5, 5 = SmoothEdge 1, 6 = TiAIN

Insert Part Number = 0–SS–062–5–1–TA, or OSS06251TA (every FC Insert has 10 characters total)

Available catalog standards are listed by EDP# on pages 9–12.
**Operating Tips**

### Non-Ferrous

Our 20UC grade is ideal in aluminum and plastics. The polished surface provides a smooth cutting face with a low coefficient of friction. This grade also features an extremely sharp cutting edge for free cutting in soft or gummy materials. The 20A1 grade includes A1 coating. A1 adds additional lubricity and dramatically reduces chip welding. 20A1 is ideal in low coolant or dry machining applications.

### Steels

We feature 2 primary grades for steel alloys, 51TA and 52TA. Both use a wear resistant carbide substrate that has been designed for performance in high heat applications. SmoothCoat TA provides further wear resistance, thermal protection, and lubricity. Our TA (a hybrid version of TiAlN) is well suited for dry machining of steel alloys. The difference between the 51TA and 52TA is the edge preparation; 52TA’s heavier hone adds strength in the toughest applications. 52TA or 52TA grades are designed to withstand these conditions. 52TA's heavier hone adds strength in the toughest applications. 52TA or 52TA grades are designed to withstand these conditions.

### Stainless Steel

Variations of stainless steel are immense. 15-5 PH and 440C can be heat treated and have increased hardness. Others such as 304 and 316 will work harden and are gummy to machine. The challenge is to find the optimal combination of hardness and wear resistance that is balanced with toughness to prevent excessive chipping. We offer several grades that feature our SmoothEdge hone and TA coating to obtain the perfect balance.

### High Temp

Titanium, Inconel, and other chromium/nickel alloys can be a challenge to machine. They were developed specifically for airframe applications where strength and toughness are primary goals. Insert toughness and wear characteristics are critical due to the slower speeds these materials are machined at. Our 12TA provides an excellent balance of both. For finishing applications, our 52TA can be highly effective due to outstanding wear abilities.

### Cast Iron

Materials featuring short chips like cast iron require high cutting edge toughness. Casted materials can feature voids and inclusions that are destructive to cutting tools. Our 22TA and 52TA grades are designed to withstand these attributes. 22TA, the first choice, exhibits great toughness while 52TA has better wear resistance.
Mil-Tec Freedom Cutter® Insert Pricing & Availability

All Freedom Cutter Inserts have a 5/8” IC & are 3/16” thick • Inserts are sold in packs of 10

Insert Pricing & Availability

Available catalog standards are listed by EDP# on pages 9–12. Specials available upon quotation.

Octagon

<table>
<thead>
<tr>
<th>Inserts</th>
<th>Uncoated</th>
<th>Coated</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>NP</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>GP</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>MS</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
</tbody>
</table>

Square

<table>
<thead>
<tr>
<th>Inserts</th>
<th>Uncoated</th>
<th>Coated</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>NP</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>GP</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>MS</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
</tbody>
</table>

Round

<table>
<thead>
<tr>
<th>Inserts</th>
<th>Uncoated</th>
<th>Coated</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>NP</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>GP</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
<tr>
<td>MS</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
</tbody>
</table>

All Octagon Freedom Cutter inserts and geometries feature the 062 Radius on all 8 index corners.

Sample Order:
0- NP-062- 5- 1- TA
or ONP062S1TA

cuts 90° with 4 indexes

All Square Freedom Cutter inserts are available with 9 different corner radii.

Sample Order:
S-SS-003- 1- 0- UC
or SSP0320PCD

cuts 90° with 4 indexes

All Round Freedom Cutter inserts and geometries feature our patented Mil-Loc locating system, which assures solid pocket positioning and 4 total indexes. The Round insert by default features the 312 radius.

Sample Order:
R- PS- 312- 2- 1- TA
or RPS312S1UC

cuts 90° cutting with 2 indexes:

Freedom Cutter® Spare Parts

Wrenches, Screws & More

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
<th>Price USD</th>
<th>Pack Q</th>
<th>EDP#</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC-1032T</td>
<td>T20 Torx Insert Screw</td>
<td>$15.00</td>
<td>12</td>
<td>99100</td>
</tr>
<tr>
<td>FCW-125T</td>
<td>T20 Torx Wrench wire style</td>
<td>$15.00</td>
<td>10</td>
<td>99101</td>
</tr>
<tr>
<td>FCW-20T</td>
<td>T20 Torx Wrench w/ handle</td>
<td>$10.00</td>
<td>1</td>
<td>99102</td>
</tr>
<tr>
<td>MLS-632</td>
<td>Mil-Loc Screws</td>
<td>$15.00</td>
<td>12</td>
<td>99103</td>
</tr>
<tr>
<td>MLK-62</td>
<td>Mil-Loc Wrench</td>
<td>$15.00</td>
<td>10</td>
<td>99104</td>
</tr>
<tr>
<td>HT-1</td>
<td>Hardness Tester</td>
<td>$150.00</td>
<td>1</td>
<td>99105</td>
</tr>
<tr>
<td>MT-AS</td>
<td>Anti-Seize tube</td>
<td>$1.00</td>
<td>1</td>
<td>99106</td>
</tr>
<tr>
<td>CBS-15</td>
<td>Pancake Washer &amp; Bolt</td>
<td>$94.50</td>
<td>1</td>
<td>99107</td>
</tr>
</tbody>
</table>

Special Freedom Cutter® Inserts

Silicon Nitride, PCD, Diamond Coated & Wipers

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
<th>Price USD</th>
<th>EDP#</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONP062S1UC</td>
<td>Silicon Nitride for Cast Iron</td>
<td>$20.50</td>
<td>41001</td>
</tr>
<tr>
<td>SNP032S1UC</td>
<td>Silicon Nitride for Cast Iron</td>
<td>$20.50</td>
<td>41002</td>
</tr>
<tr>
<td>SGP03220PCD</td>
<td>Square Single-Tip PCD Insert</td>
<td>$86.00</td>
<td>41003</td>
</tr>
<tr>
<td>Insert EDP# + D2</td>
<td>D2 CVD Diamond Coated</td>
<td>$70.00</td>
<td>41004</td>
</tr>
<tr>
<td>Insert EDP# + D1</td>
<td>D1 PVD Diamond Coated</td>
<td>$17.00</td>
<td>41005</td>
</tr>
<tr>
<td>SSS03220UC-W</td>
<td>Super Shear Wiper Insert</td>
<td>$12.00</td>
<td>41006</td>
</tr>
<tr>
<td>ZSS03220UC-W</td>
<td>Super Shear 90° Wiper</td>
<td>$12.00</td>
<td>41007</td>
</tr>
<tr>
<td>ZSA03220UC-W</td>
<td>Super Aluminum 90° Wiper</td>
<td>$12.00</td>
<td>41008</td>
</tr>
<tr>
<td>ONP03250UC-W</td>
<td>NP 032 Wiper Insert</td>
<td>$12.00</td>
<td>41009</td>
</tr>
<tr>
<td>ONP450S50UC-W</td>
<td>NP 45° Wiper Insert</td>
<td>$12.00</td>
<td>41010</td>
</tr>
</tbody>
</table>
**Mil-Tec Freedom Cutter® Inserts: Octagon**

- SmoothGrind® precision grinding
- SmoothCoat® PVD hard coatings
- 8 indexes for value / .062 radius
- Positive Geometry / free cutting
- 5 Different geometries
- Fits all Freedom Cutter pockets
- 5/8" IC with 3/16" thickness
- Same insert works with Fractional and Metric bodies

Octagons feature a .062 radius on all eight indexes.

---

**SS**

Super Shear High Dish SmoothGrind®

High positive grind available in all shapes. Ideal for aluminum, non-ferrous, plastic, & non-metals.

---

**PS**

Power Shear Medium Dish SmoothGrind®

Medium positive grind for steel, stainless, and exotics. The perfect “all-application” geometry.

---

**NP**

Negative / Positive Frustroconical Land SmoothGrind®

Strongest insert and designed for heavy feed rates. Ideal for steel, stainless, & heat-treated alloys.

---

**MS**

Mag-Na-Shear Pre-Formed + SmoothGrind®

Molded and ground chip control, ideal for stainless & exotics including titanium and inconel.

---

**GP**

General Purpose Flat Top SmoothGrind®

Flat top grind for all materials.

---

**Class / Edge Prep**

<table>
<thead>
<tr>
<th></th>
<th>Uncoated</th>
<th>TA</th>
<th>TN</th>
<th>A1</th>
<th>AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-0</td>
<td>50010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1</td>
<td>50011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>50012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-0</td>
<td>50020</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-1</td>
<td>50021</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-2</td>
<td>50022</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-0</td>
<td>50050</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-1</td>
<td>50051</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-2</td>
<td>50052</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**List Prices**

- Octagon (O) Uncoated: $12.00
- Octagon (O) Coated: $13.50

Note: FC inserts are sold in packs of 10. List prices are for individual inserts. EDP#'s listed below.

---

**MILTEC® - Mil-Tec Freedom Cutter**

- Insert features eight indexes and is available in five different precision ground geometries. Inserts are sold in packs of ten.

---

**Inserts:**

- Octagon (O)
- The Mil-Tec Octagon Freedom Cutter insert features eight indexes and is available in five different precision ground geometries. Inserts are sold in packs of ten.

---

**Features:**

- SmoothGrind® precision grinding
- SmoothCoat® PVD hard coatings
- 8 indexes for value / .062 radius
- Positive Geometry / free cutting
- 5 Different geometries
- Fits all Freedom Cutter pockets
- 5/8" IC with 3/16" thickness
- Same insert works with Fractional and Metric bodies

---

**Uncoated / Coated**

<table>
<thead>
<tr>
<th></th>
<th>Uncoated</th>
<th>Coated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-0</td>
<td>$12.00</td>
<td>$13.50</td>
</tr>
</tbody>
</table>

Note: FC inserts are sold in packs of 10. List prices are for individual inserts. EDP#'s listed below.
**Mil–Tec Freedom Cutter® Inserts: Round**

- **SmoothGrind®** precision grinding
- **SmoothCoat®** PVD hard coatings
- 8 indexes for value / 312 radius
- Positive Geometry / free cutting
- 4 Different geometries
- Fits all Freedom Cutter pockets
- 5/8” IC with 3/16” thickness
- Patented Mil–Loc indexing screw
- Same insert works with Fractional and Metric bodies

### Class / Edge Prep

<table>
<thead>
<tr>
<th>FC Insert</th>
<th>Uncoated</th>
<th>TiAlN</th>
<th>TiN</th>
<th>TiB2</th>
<th>HSN2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-0</td>
<td>51010</td>
<td>51010TA</td>
<td>51010TN</td>
<td>51010A1</td>
<td>51010AT</td>
</tr>
<tr>
<td>1-1</td>
<td>51011</td>
<td>51011TA</td>
<td>51011TN</td>
<td>51011A1</td>
<td>51011AT</td>
</tr>
<tr>
<td>1-2</td>
<td>51012</td>
<td>51012TA</td>
<td>51012TN</td>
<td>51012A1</td>
<td>51012AT</td>
</tr>
<tr>
<td>2-0</td>
<td>51020</td>
<td>51020TA</td>
<td>51020TN</td>
<td>51020A1</td>
<td>51020AT</td>
</tr>
<tr>
<td>2-1</td>
<td>51021</td>
<td>51021TA</td>
<td>51021TN</td>
<td>51021A1</td>
<td>51021AT</td>
</tr>
<tr>
<td>2-2</td>
<td>51022</td>
<td>51022TA</td>
<td>51022TN</td>
<td>51022A1</td>
<td>51022AT</td>
</tr>
<tr>
<td>5-0</td>
<td>51050</td>
<td>51050TA</td>
<td>51050TN</td>
<td>51050A1</td>
<td>51050AT</td>
</tr>
<tr>
<td>5-1</td>
<td>51051</td>
<td>51051TA</td>
<td>51051TN</td>
<td>51051A1</td>
<td>51051AT</td>
</tr>
<tr>
<td>5-2</td>
<td>51052</td>
<td>51052TA</td>
<td>51052TN</td>
<td>51052A1</td>
<td>51052AT</td>
</tr>
</tbody>
</table>

### Freedom Three Shapes, One Body

- **MILTEC®** - Mil-Tec Freedom Cutter®
- **Round (R)**
- Uncoated: $12.00
- Coated: $13.50

**All Application**

- **Super Shear (SS)**
  - High positive grind available in all shapes. Ideal for aluminum, non-ferrous, plastic, & non-metals.
  - Strongest insert and designed for heavy feed rates. Ideal for steel, stainless, & heat-treated alloys.

- **Power Shear (PS)**
  - Medium positive grind for steel, stainless, and exotics. The perfect “all-application” geometry.

- **Negative / Positive (NP)**
  - Flat top grind for all materials.
### Mil-Tec Freedom Cutter® Inserts: Square

The Mil-Tec Square Freedom Cutter insert features four indexes and is available in four different precision ground geometries. Inserts are sold in packs of ten. Squares feature a sharp corner or 9 different radii. Available coatings are listed under the Geometry. Add coating suffix to the listed EDP# (i.e. #52010A1).

**Attention: FC inserts are sold in packs of 10. List prices are for individual inserts. EDP’s listed below.**

<table>
<thead>
<tr>
<th>Class / Edge Prep</th>
<th>Square</th>
<th>.005</th>
<th>.016</th>
<th>.032</th>
<th>.047</th>
<th>.062</th>
<th>.093</th>
<th>.125</th>
<th>.187</th>
<th>.250</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-0</td>
<td>52010</td>
<td>52110</td>
<td>52210</td>
<td>52310</td>
<td>52410</td>
<td>52510</td>
<td>52610</td>
<td>52710</td>
<td>52810</td>
<td>52910</td>
</tr>
<tr>
<td>1-1</td>
<td>52011</td>
<td>52111</td>
<td>52211</td>
<td>52311</td>
<td>52411</td>
<td>52511</td>
<td>52611</td>
<td>52711</td>
<td>52811</td>
<td>52911</td>
</tr>
<tr>
<td>1-2</td>
<td>52012</td>
<td>52112</td>
<td>52212</td>
<td>52312</td>
<td>52412</td>
<td>52512</td>
<td>52612</td>
<td>52712</td>
<td>52812</td>
<td>52912</td>
</tr>
<tr>
<td>2-0</td>
<td>52020</td>
<td>52120</td>
<td>52220</td>
<td>52320</td>
<td>52420</td>
<td>52520</td>
<td>52620</td>
<td>52720</td>
<td>52820</td>
<td>52920</td>
</tr>
<tr>
<td>2-1</td>
<td>52021</td>
<td>52121</td>
<td>52221</td>
<td>52321</td>
<td>52421</td>
<td>52521</td>
<td>52621</td>
<td>52721</td>
<td>52821</td>
<td>52921</td>
</tr>
<tr>
<td>2-2</td>
<td>52022</td>
<td>52122</td>
<td>52222</td>
<td>52322</td>
<td>52422</td>
<td>52522</td>
<td>52622</td>
<td>52722</td>
<td>52822</td>
<td>52922</td>
</tr>
<tr>
<td>5-0</td>
<td>52050</td>
<td>52150</td>
<td>52250</td>
<td>52350</td>
<td>52450</td>
<td>52550</td>
<td>52650</td>
<td>52750</td>
<td>52850</td>
<td>52950</td>
</tr>
<tr>
<td>5-1</td>
<td>52051</td>
<td>52151</td>
<td>52251</td>
<td>52351</td>
<td>52451</td>
<td>52551</td>
<td>52651</td>
<td>52751</td>
<td>52851</td>
<td>52951</td>
</tr>
<tr>
<td>5-2</td>
<td>52052</td>
<td>52152</td>
<td>52252</td>
<td>52352</td>
<td>52452</td>
<td>52552</td>
<td>52652</td>
<td>52752</td>
<td>52852</td>
<td>52952</td>
</tr>
</tbody>
</table>

**Coated** Coated version is also available for additional $1.50 per insert.

---

**Soft Shear High Dish SmoothGrind®**

High positive grind available in all shapes. Ideal for aluminum, non-ferrous, plastic, and non-metals.

**Power Shear Medium Dish SmoothGrind®**

Medium positive grind for steel, stainless, and exotics. The perfect “all-application” geometry.

**Negative / Positive Frustroconical Land SmoothGrind®**

Strongest insert and designed for heavy feed rates. Ideal for steel, stainless, and heat-treated alloys.

**General Purpose Flat Top SmoothGrind®**

Flat top grind for all materials.

---

**List Prices**

<table>
<thead>
<tr>
<th>Class / Edge Prep</th>
<th>Square</th>
<th>.005</th>
<th>.016</th>
<th>.032</th>
<th>.047</th>
<th>.062</th>
<th>.093</th>
<th>.125</th>
<th>.187</th>
<th>.250</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Uncoted</strong></td>
<td>$12.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coated</strong></td>
<td>$13.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mil-Tec Freedom Cutter® Inserts: Square 90°

The Mil-Tec Square 90° Freedom Cutter insert features two indexes and is available in three different precision ground geometries. Inserts are sold in packs of ten.

Squares feature a sharp corner or 9 different radii. Available coatings are listed under the Geometry. Add coating suffix to the listed EDP# (i.e. #53010A1).

<table>
<thead>
<tr>
<th>Class / Edge Prep</th>
<th>Square 90°</th>
<th>.005</th>
<th>.016</th>
<th>.032</th>
<th>.047</th>
<th>.062</th>
<th>.093</th>
<th>.125</th>
<th>.187</th>
<th>.250</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA90 Super Aluminum</td>
<td>43010</td>
<td>43110</td>
<td>43210</td>
<td>43310</td>
<td>43410</td>
<td>43510</td>
<td>43610</td>
<td>43710</td>
<td>43810</td>
<td>43910</td>
</tr>
<tr>
<td>SS90 Super Shear 90°</td>
<td>53010</td>
<td>53110</td>
<td>53210</td>
<td>53310</td>
<td>53410</td>
<td>53510</td>
<td>53610</td>
<td>53710</td>
<td>53810</td>
<td>53910</td>
</tr>
<tr>
<td>PS90 Power Shear 90°</td>
<td>63010</td>
<td>63110</td>
<td>63210</td>
<td>63310</td>
<td>63410</td>
<td>63510</td>
<td>63610</td>
<td>63710</td>
<td>63810</td>
<td>63910</td>
</tr>
</tbody>
</table>

Note FC inserts are sold in packs of 10. List prices are for individual inserts. EDP's listed below.

Uncoated $12.00
Coated $13.50

SA90
- Maximum high positive grind for square inserts with 90° shoulder. “Super Aluminum” geometry.

SS90
- High positive grind available in all shapes. Ideal for aluminum, non-ferrous, plastic, & non-metals.

PS90
- Medium positive grind for steel, stainless, and exotics. The perfect “all-application” geometry.

SHEARDISBELIEF

OURS Shears material with positive ground geometry
Carries heat off with the chip
Leaves the workpiece cool to the touch

THEIRS Pushes material with pressed geometry
Punishes the workpiece
Punishes the entire machine tool assembly

“REPROGRAM YOUR MILLING EXPECTATIONS”
Mil-Tec Freedom Cutter® Madness & Kits

Mil-Tec offers some of the indexable industry’s best sales promotions and, even better, the Madness never ends! Our Madness and Kit programs are available throughout the year and can be applied to our most popular Freedom Cutter body & insert combinations using the following methods:

**Madness:** Select any Freedom Cutter Plus+ or Plus+ 45 Series cutter body on page 2 or 3 for $25 per inch when purchasing ten Freedom Cutter inserts per inch of cutter body.

Example: 3” FC is $75 + 30 coated FC inserts @ $13.50 each = $480 total cost

Inserts can be mixed in lots of 10 each (pre-packaged quantities).

**Kits:** Purchase any Mil-Tec cutter body (4’’ and smaller in size) in this catalog along with ten corresponding inserts, and we’ll include wrenches, extra screws, plus anti-seize lubricant, all packaged in kit form, and take 20% off the total amount.

Example: 2” FC @ $200 + 10 coated FC inserts @ $13.50 each = $335 less 20% = $268

To order, specify “Kit” or “KT” followed by the EDP numbers of the Cutter Body and Inserts “KT-05004-51010A1”

**Mil-Tec Freedom Cutter® Facts, Tips & Hints**

**EFFECTIVE CUTTER DIAMETERS:** The cutting diameter of your Freedom Cutter will change relative to the cutter body depending upon the shape of the approximately 5/8” below the body diameter.

**THINGS TO REMEMBER:**
- Always run Stainless dry (coolant may be used only on very light finishing cuts of .005 – .015)
- SFPM & chip load recommendations are based on 2/3’s width of cutter and climb milling
- Recommended depth of cut (DOC) ranges from .025 to .150
- For finishing cuts leave feed rate unchanged but increase RPM by 10% to 30%, with DOC at .015 to .030
- Recommended Speeds & Feeds are starting parameters and may require adjustment dependent upon material & machine condition

**LOADING OF 90° INSERTS:** When using any 90° insert, ensure that each insert is placed into the pocket with the straight, 90° edge on the periphery of the cutter body (concave edge is down).

**USING THE PATENTED MIL-LOC FEATURE FOR ROUND INSERTS:** The Mil-Loc keeps Round inserts from spinning under load and ensures 8 indexs. Use screw protru so that the match center screw. Be sure to retract the Mil-Loc screw completely when using Octagon or Square inserts.

**Commonly Used Formulas:**
- Surface Feet Minute (SFM) = RPM x Diam. x .262
- Revolutions Per Minute (RPM) = 3.82 x (SFM / Diam.)
- Feed Rate (IPM) = IPT x #teeth x RPM
- Feed Per Tooth (IPT) = IPM / (#teeth x RPM)
- Convert Inches to millimeters: Multiply by 25.4
- Convert millimeters to Inches: Multiply by .03937

Mil-Tec publishes a separate catalog with complete Metric sizing. Request it from our Sales Department or at miltecusa.com.
**The Mil-Tec HV3HD High-Velocity End Mill Series**

Heavy Duty, High-Velocity. The new HV3HD is the perfect mix of performance and versatility. The 100% ground and polished insert features both positive axial and radial rake, allowing the HV3HD to literally shear through the toughest materials and allowing the chip to carry away a high percentage of the generated heat. If you've been an APKT user, get ready to step up to the high-performance plate. Also available in kit form and special requirements. Let's get started!

**Select an HV3HD Cutter Body:**

All HV3HD Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We can manufacture specials such as Metric, Left-Hand, Extended Length, Coolant-Thru or other cutter bodies with lead times as quick as one week.

**Select an HV3HD Insert:**

All HV3HD inserts are parallelogram-shaped and measure 1/4” wide by .360” in length, with precision ground & polished SmoothGrind® and Mil-Tec’s unique Super Shear or Power Shear geometry. All inserts have 2 indexes. Length varies by radius.

**About our Geometry:**

Mil-Tec’s Power Shear has higher edge strength than the Super Shear. The Power Shear is engineered for use in steels, stainless, titanium & inconel, while the Super Shear is ideal for aluminum and other non-ferrous material groups. Both geometries are 100% precision ground and feature Tool Alliance’s proprietary SmoothGrind® technology for superior cutting edge properties and increased chip lubricity.

**HV3HD Insert List Prices**

Note HV3HD inserts are sold in packs of 10. List prices are for individual inserts. EDP’s listed below.

- **Uncoated** $10.00
- **Coated** $11.50

---

**HV3HD Data Sheet**

- **Perfect for all material groups**
- **Positive Geometry**
- **Free Cutting**
- **Cuts a 90° shoulder**
- **PS and SS Geometry**
- **SmoothGrind® surface polish**
- **SmoothCoat® PVD hard coatings**
- **Cuts more like solid carbide than APKT style end mills**
- **From 5/8” to 1-1/4” diameter range**
The Mil-Tec HV5HD High-Velocity End Mill Series

- Perfect for all material groups
- Positive Geometry / Free Cutting
- Cuts a 90° shoulder
- PS and SS Geometry
- SmoothGrind® surface polish
- SmoothCoat® PVD hard coatings
- Cuts more like solid carbide than ADKT style end mills
- From 3/4” to 3” diameter range

Select an HV5HD Cutter Body:
All HV5HD Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We can manufacture specials such as Metric, Left-Hand, Extended Length, Coolant-Thru or other cutter bodies with lead times as quick as one week.

Select an HV5HD Insert:
All HV5HD inserts are parallelogram-shaped and measure 3/8” wide by .600” in length, with precision ground & polished SmoothGrind® and Mil-Tec’s unique Super Shear or Power Shear geometry. All inserts have 2 indexes. Length varies by radius.

About our Geometry:
Mil-Tec’s Power Shear has higher edge strength than the Super Shear. The Power Shear is engineered for use in steels, stainless, titanium & inconel, while the Super Shear is ideal for aluminum and other non-ferrous material groups. Both geometries are 100% precision ground and feature Tool Alliance’s proprietary SmoothGrind® technology for superior cutting edge properties and increased chip lubricity.

Note HV5HD inserts are sold in packs of 10. List prices are for individual inserts. EDP’s are listed below.

HV5HD Insert List Prices

<table>
<thead>
<tr>
<th>Class/Prep Coating</th>
<th>Rad</th>
<th>0.05</th>
<th>0.16</th>
<th>0.32</th>
<th>0.62</th>
<th>0.125</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC</td>
<td>20UC</td>
<td>40050</td>
<td>40060</td>
<td>40070</td>
<td>40080</td>
<td>40090</td>
</tr>
</tbody>
</table>

Key:
- UC: Uncoated | $1.00
- AT: Coated | $1.25

HV5HD Shank Body List

<table>
<thead>
<tr>
<th>Shank Diameter</th>
<th>Cutter Diameter</th>
<th>Max LOC</th>
<th>LOR</th>
<th>OAL</th>
<th>EDP Number</th>
<th>Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4”</td>
<td>3/4”</td>
<td>.600</td>
<td>1.8</td>
<td>4”</td>
<td>2</td>
<td>$90.00</td>
</tr>
<tr>
<td>1”</td>
<td>1”</td>
<td>.600</td>
<td>1.8</td>
<td>4”</td>
<td>2</td>
<td>$100.00</td>
</tr>
<tr>
<td>1”</td>
<td>1”</td>
<td>.600</td>
<td>3.8</td>
<td>6”</td>
<td>3</td>
<td>$115.00</td>
</tr>
<tr>
<td>1/1-1/4</td>
<td>1”</td>
<td>.600</td>
<td>3.8</td>
<td>6”</td>
<td>3</td>
<td>$115.00</td>
</tr>
<tr>
<td>1-1/4</td>
<td>1-1/4</td>
<td>.600</td>
<td>3.8</td>
<td>6”</td>
<td>3</td>
<td>$140.00</td>
</tr>
</tbody>
</table>

HV5HD Shell Body List

<table>
<thead>
<tr>
<th>Shell Diameter</th>
<th>Max LOC</th>
<th>Height</th>
<th>Keyway</th>
<th>Bore</th>
<th>Insert Pockets</th>
<th>EDP Number</th>
<th>Price USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2”</td>
<td>.600</td>
<td>1.725</td>
<td>5/16</td>
<td>3/4</td>
<td>5</td>
<td>10065</td>
<td>$190.00</td>
</tr>
<tr>
<td>3”</td>
<td>.600</td>
<td>1-7/8</td>
<td>.380</td>
<td>1”</td>
<td>7</td>
<td>10062</td>
<td>$250.00</td>
</tr>
<tr>
<td>3”</td>
<td>.600</td>
<td>1-7/8</td>
<td>1/2</td>
<td>1-1/4</td>
<td>7</td>
<td>10063</td>
<td>$350.00</td>
</tr>
</tbody>
</table>

Diameter:
- .005          | .016 | .032 | .062 | .125 |
- 40050         | 40060| 40070| 40080| 40090|
- 40050A1       | 40060A1| 40070A1| 40080A1| 40090A1|

Online at toolalliance.com
The Mil-Tec HV10 High-Velocity End Mill Series

- Perfect for Aluminum, Non-Ferrous Alloys & more
- Positive Geometry / Free Cutting
- Up to .950 cutting length
- Super Shear & Power Shear Geometry
- SmoothGrind® surface polish
- SmoothCoat® A1 TiB2 hard coating for dry machining
- 2 screws for strength
- Available in both Shank and Shell Mill style bodies
- From 1” to 6” diameter range

The new HV10 is the perfect choice for High Velocity, high performance milling in aluminum, non-ferrous alloys, and more. The 100% ground and polished insert features both positive axial and radial rake, allowing the HV10 to literally shear through the work piece material. The long insert length is ideal for deep axial cuts, and also generates a 90° shoulder. A two screw design lends superior holding strength between insert and body. The razor sharp cutting edge generates smooth, clean cuts resulting in excellent part finishes.

Select an HV10 Cutter Body (Shank & Shell Mill Styles):
All HV10 Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We can manufacture specials such as Metric, Left-Hand, Extended Length, Coolant-Thru, Integral Shank, or other cutter bodies with lead times as quick as one week.

Select an HV10 Insert:
All HV10 inserts are parallelogram-shaped and measure 7/16” wide by .950 in length, with precision ground & polished SmoothGrind® and Mil-Tec’s unique Super Shear or Power Shear geometry. All inserts have 2 indexes. Length varies by radius.

About our Geometry:
Mil-Tec’s Super Shear is ideal for aluminum and other non-ferrous material groups. The geometry is 100% precision ground and feature Tool Alliance’s proprietary SmoothGrind® technology for superior cutting edge properties and increased chip lubricity. Power Shear adds toughness for more difficult jobs. Each has been matched with the appropriate Grade, Edge Prep, and Coating for optimum application-specific milling results.
Mil–Tec HV3HD, HV5HD, & HV10 Speeds and Feeds

Speeds and Feeds for the most common material groups plus typical insert selection. Recommendations based on normal slotting & peripheral milling with DOC .100 or less. Speed in Surface Feet Per Minute. Feed in inches per tooth.

<table>
<thead>
<tr>
<th>Material</th>
<th>Alloy Grade</th>
<th>Speed SFPM</th>
<th>HV3HD feed per tooth</th>
<th>HV5HD feed per tooth</th>
<th>HV10 feed per tooth</th>
<th>Mil–Tec Grade (Class/Prep/Coating)</th>
<th>Coolant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non–Ferrous</td>
<td>6061 Aluminum</td>
<td>1000 – 3000+</td>
<td>.003 – .010</td>
<td>.003 – .012</td>
<td>.003 – .024</td>
<td>20UC or 20A1</td>
<td>Wet</td>
</tr>
<tr>
<td></td>
<td>Copper, Brass</td>
<td>800 – 1500</td>
<td>.003 – .008</td>
<td>.003 – .010</td>
<td>.003 – .018</td>
<td>20UC or 20A1</td>
<td>Wet</td>
</tr>
<tr>
<td></td>
<td>Plastics</td>
<td>500 – 3000+</td>
<td>.003 – .015</td>
<td>.003 – .015</td>
<td>.003 – .015</td>
<td>20UC or 20A1</td>
<td>Wet</td>
</tr>
<tr>
<td>Steels</td>
<td>1018, 1020</td>
<td>800 – 1500</td>
<td>.002 – .006</td>
<td>.002 – .008</td>
<td>call factory</td>
<td>51TA</td>
<td>Dry</td>
</tr>
<tr>
<td></td>
<td>4140, 4340, P20</td>
<td>600 – 1200</td>
<td>.002 – .005</td>
<td>.002 – .007</td>
<td>call factory</td>
<td>51TA</td>
<td>Dry</td>
</tr>
<tr>
<td></td>
<td>A2, D2, H13</td>
<td>400 – 1000</td>
<td>.002 – .004</td>
<td>.002 – .006</td>
<td>call factory</td>
<td>51TA</td>
<td>Dry</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>13–8, 15–5, 17–4</td>
<td>500 – 1200</td>
<td>.001 – .004</td>
<td>.001 – .006</td>
<td>call factory</td>
<td>51TA or 11AT</td>
<td>Dry</td>
</tr>
<tr>
<td></td>
<td>303, 304, 316</td>
<td>800 – 1500</td>
<td>.002 – .006</td>
<td>.002 – .006</td>
<td>call factory</td>
<td>51TA or 11AT</td>
<td>Dry</td>
</tr>
<tr>
<td></td>
<td>420, 440C</td>
<td>800 – 1500</td>
<td>.002 – .005</td>
<td>.002 – .005</td>
<td>call factory</td>
<td>51TA or 11AT</td>
<td>Dry</td>
</tr>
<tr>
<td>High Temp</td>
<td>Inconel</td>
<td>100 – 300</td>
<td>.001 – .004</td>
<td>.001 – .004</td>
<td>call factory</td>
<td>11AT</td>
<td>Wet</td>
</tr>
<tr>
<td></td>
<td>Titanium</td>
<td>70 – 250</td>
<td>.001 – .004</td>
<td>.001 – .004</td>
<td>call factory</td>
<td>11AT</td>
<td>Wet</td>
</tr>
<tr>
<td></td>
<td>Ductile Iron</td>
<td>600 – 1200</td>
<td>.002 – .004</td>
<td>.002 – .006</td>
<td>call factory</td>
<td>11TA</td>
<td>Dry</td>
</tr>
</tbody>
</table>

HV Series Specifications: Body Diameter + .000 / -.005, TIR with installed insert ± .001

**HV Series Spare Parts**

Wrenches, Screws & More

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
<th>Price USD</th>
<th>Package Q</th>
<th>EDP#</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVW–7T</td>
<td>Torx wrench for HV3HD</td>
<td>$3.00</td>
<td>1</td>
<td>99110</td>
</tr>
<tr>
<td>HVW–10T</td>
<td>Torx wrench for HV5HD</td>
<td>$3.00</td>
<td>1</td>
<td>99111</td>
</tr>
<tr>
<td>HVW–15T</td>
<td>Torx wrench for HV10</td>
<td>$3.00</td>
<td>1</td>
<td>99112</td>
</tr>
<tr>
<td>HVS–440T</td>
<td>Torx insert screw / HV3HD</td>
<td>$15.00</td>
<td>9</td>
<td>99113</td>
</tr>
<tr>
<td>HVS–832T</td>
<td>Torx insert screw / HV5HD</td>
<td>$15.00</td>
<td>9</td>
<td>99114</td>
</tr>
<tr>
<td>HV10–1032T</td>
<td>Torx insert screw / HV10</td>
<td>$30.00</td>
<td>9</td>
<td>99115</td>
</tr>
<tr>
<td>MT–AS</td>
<td>Anti–Seize tube</td>
<td>$1.00</td>
<td>1</td>
<td>99106</td>
</tr>
</tbody>
</table>

**About the Mil–Tec HV End Mill Series:**

The Mil–Tec HV End Mill Series:

SuperNitride PVD hard coatings makes the HV run like a solid carbide end mill, yet the inherent modular makeup allows for flexibility in design, application, and diameter. The HV can be made in special sizes & configurations, including coolant– thru. Call the factory today!

- Positive Axial Geometry = Free cutting with maximized work piece engagement.
- Positive Radial Geometry = Superb chip formation transfers heat away from tool and work piece.
- 100% Precision Ground Insert = Sharp cutting edges, tight tolerances, and excellent coating adhesion.

**Applications:**

- Face Milling

*Note: The HV Series are not designed for plunge milling. Ramp milling or starter hole necessary for pocket milling.*
The Mil-Tec HD Heavy Duty Series

- Large 1” Insert
- 1/4” Axial DOC
- 8 indexes for Value
- Positive Geometry / Free Cutting
- NP, PS and SS Geometry
- SmoothGrind® surfaces
- SmoothCoat® PVD hard coating availability
- From 2” to 10” diameter range

The Mil-Tec Heavy Duty Series features a huge 1” IC carbide insert for increased capacity and strength. The HD allows for heavier depth of cuts and higher feed rates for maximum stock removal. The Mil-Tec HD Series Inserts are available in our NP (Negative/Positive), PS (Power Shear), and SS (Super Shear) geometries.

Select an HD Heavy Duty Cutter Body:
All HD Heavy Duty Cutter Bodies are machined in our own modern CNC factory in Fort Myers, FL from special pre-hardened steel to exacting tolerances. We can manufacture specials such as Metric, Left-Hand, Extended Length, Coolant-Thru or other cutter bodies with lead times as quick as one week.

Inserts are octagon-shaped and measure 1” inscribed circle, with precision ground & polished SmoothGrind® and Mil-Tec’s unique Negative-Positive, Super Shear or Power Shear geometry. All inserts have 8 indexes. Radius size is .100 by default.

The Mil-Tec HD Heavy Duty Series offers high positive grind ideal for aluminum, non-ferrous, plastic, & non-metals. Medium positive grind for steels, stainless, and other higher-hardness range applications. Strongest insert and designed for heavy feed rates. Ideal for steel, stainless, & heat-treated alloys.

About our Geometry:
Mil-Tec’s Power Shear (PS) has higher edge strength than the Super Shear (SS). The PS is engineered for use in steels, stainless, titanium, & inconel, while the SS is ideal for aluminum and other non-ferrous material groups. The NP (Negative/Positive) is a workhorse design for a wide range of applications.
**SmoothCoat®**

Our coating @ 2,000X (top). Everybody else’s (bottom).

**COMPONENT #5: The Coating Process**  
The challenge of finding a coating method to leverage 100% of the inherent assets of our carbide grade and grinding technologies was difficult. What we finally discovered was such a perfect fit and so logical for our product lines that we invested heavily into the process we now call SmoothCoat®. Much more than simply the standard arc-deposited PVD coating, SmoothCoat involves sputter multi-layering and a multi-step prep & post operation called Micro-Blasting. The advantages of this procedure include relieving of tensile stresses underneath the cutting edge, increased stability of the coating surface, and perhaps most importantly, elevating SmoothGrind even another notch by leveling and activating the cemented carbide substrate. The result is a smooth, shiny, tough, and durable surface that can withstand tomorrow’s machining requirements and outlast competitive coatings. Additionally, we’ve made it a standard feature on thousands of our standard catalog items. Our coating services are performed within our own factories for quality & extremely quick turnaround times.

**Coating Availability** Order by adding the suffix TA, TN, AT, TC, A1, D1, or D2 to the EDP #.

- **UC** Uncoated
- **TA** TiAlN
- **TN** TiN
- **AT** AlTiN HSN²
- **TC** TiCN
- **A1** TiB2
- **D1** PVD Diamond
- **D2** CVD Diamond

---

**SmoothCoat®**

- **AT** materials up to 70HRc including high-temp exotics, nickel based alloys, die & hardened steels  
  ideal for dry milling & high speed machining
- **TA** materials up to 50HRc including steel, stainless steel, & cast iron  
  great choice for wide range of materials wet & dry applications
- **TN** general purpose in all materials up to 30HRc  
  excellent lubricity & wear
- **TC** aluminum, steel & stainless steel  
  lower temp applications
- **A1** aluminum, titanium, & non-ferrous  
  tremendous lubricity / reduced weld allows for dry milling
- **D1** extreme hardness for wearability in graphites, plastics, silicon alloys & other abrasive materials  
  sharpest diamond edge
- **D2** extreme hardness for long life (10-50x) in graphite, carbon, composites & high silicon aluminum  
  thickest diamond coating

---

**Material Abrasiveness**

**Material Hardness**

- **SmoothCoat®**
- **Premium Coatings available**
- **Standard Coatings available at “Coated” List Price**

---

**Components of Guaranteed Quality continued from Page #1**

**MILTEC®**

- **Premium Coatings available**
- **Standard Coatings available at “Coated” List Price**
The world’s first web-based design, blueprint, quotation, and ordering system for solid carbide specials brings real time information to cutting tool consumers everywhere on a 24/7/365 virtual basis.

Customize Yourself.™

Celebrating 40 years of providing the industry’s highest value in solid carbide standards and blueprint specials.

The Total Value Carbide Solution.™

Precision ground and polished carbide insert geometries utilized within a family of advanced end mill & face mill cutter bodies.

Home of the Freedom Cutter.™

Application-specific end mills for the die & mold industry including our outstanding PVD Diamond & CVD Diamond coated GR Series.

Not just where machining is, but where machining will be.™

Bringing the Tool Alliance principles of Performance & Value to the woodworking and plastics industry.

Proven daily by the linear foot.™

About the brands of Tool Alliance®

We obsess over details that create the finest cutting tools available. Our reward is customer satisfaction via increased factory pro"

About the technology partners of Tool Alliance®

Our technology partners are second to none. We find premiere firms, the technological leaders in their respective industries, throughout the world and work with them in progressive, win–win relationships to bring our customers the very finest components and characteristics that we build into Performance & Solutions to carbide rotary tooling consumers everywhere.

Creative Workhabits
Mil-Tec® Terms & Conditions

Ordering Information: All Mil-Tec® products have an EDP number and a Part number. One or both may be used when entering orders via e-mail or phone. 

Availability: Mil-Tec® products are available only through select Industrial Distributors worldwide. Locally, your Industrial Distributor can provide communication, technical assistance, and inventory support. Standard products are subject to prior sale.

Pricing: All prices shown are effective October 6, 2008, supersede and cancel all previous listed prices, and are subject to change without notice. The amount of any present or future sales tax, value-added tax, or similar tax applicable to the products listed herein shall be added to the purchase price and paid by the customer. All sales made at list price less standard applicable distributor discount. Contract pricing must be obtained in writing via current quotation, with stated pricing, effective date, and expiration date, to be valid.

Shipping: Preferred carriers are UPS ground services, Federal Express Express Saver (Guaranteed 3-Day), and Federal Express premium services. Prices quoted herein are F.O.B. our shipping warehouses in Fort Myers, Florida, or Huntington Beach, California, U.S.A.

Terms: Domestic and Export Net 30 Days.

Minimum Charge: $50.00 Net.

Returned Items: Current catalog items are returnable subject to a 25% handling charge and approval by the Mil-Tec® Inspection Department. Credit cannot be issued for any product that has in any way been modified, machined, altered, coated, marked, or displaying other characteristics that render it in a “used” condition. Additionally, as our tolerances, substrate, and grinding methods are continually improved, products purchased two-years or longer prior to return may not be acceptable for credit. A Returned Goods Authorization (RGA) number must be obtained from the Tool Alliance® Sales Department prior to return. Returned product must be sent to the Factory for credit; consignment locations are not capable of issuing either RGA’s or credit memos. Special tools are not returnable.

Specials Policy: We reserve the right to over-ship or under-ship and invoice special tools up to a 10% variance per item. Quantities under 10 are subject to a one-piece variance. Any variations to this policy must be stated in advance as it will effect pricing upon quotation. Special orders cannot be cancelled without prior approval and proper consideration.

Product Warranty: Mil-Tec® warrants that products sold by it shall be free from defects in materials and workmanship. Mil-Tec will replace, repair, or grant credit for any product which does not comply with this warranty. This warranty does not apply to any products which have been in any way modified, machined, misused, subjected to accident, or used beyond normal life. Warranty claims should be made through the distributor from whom the product was purchased. There are no other warranties, expressed or implied, made by us except as expressed above, and we neither assume nor authorize any other firm or person to assume for it any other obligation or liability in connection with our products.

Cooperative Advertising: Mil-Tec® does not participate in any cooperative advertising programs with either industrial distributors or manufacturer’s representatives. This policy allows us to avoid any possible favoritism or conflicts of interest, and keeps costs and sales prices as low as possible.

Tool Alliance / Florida
Mil-Tec, Incorporated
5578 6th Street West
Lehigh Acres, FL 33971
(800) 564-5832 • fax (866) 244-0298

Tool Alliance / California
Ultra-Tool Int’l Inc.
5451 McFadden Avenue
Huntington Beach, CA 92649
(800) 854-2431 • fax (714) 891-7816

Visit our factories on your next trip to the greater Los Angeles / San Diego, CA area (solid carbide) or Fort Myers / Naples, FL (indexable). View our automated facilities, meet our Associates, and tell us how we can better grow our relationship together. Huntington Beach is officially “Surf City” with miles of open beach on the Pacific Ocean, and we’re minutes away from attractions such as Disneyland, Knott’s, Universal Studios, Reagan and Nixon Presidential Libraries, Getty Museum, Dodger Stadium, Staples Center, Angel Stadium, Honda Center, The Tool Alliance Club, and the list goes on. The closest airport is Orange County (SNA), followed by Long Beach (LGB), Los Angeles (LAX), and then Ontario (ONT). Fort Myers (airport code RSW) is on the beautiful Gulf of Mexico coast, a recreational haven, home to Major League Baseball spring training, and within a 3-hour drive to Orlando, Tampa Bay, Sarasota, Miami, Fort Lauderdale, the Everglades, and more.

All contents Copyright Tool Alliance
Mil-Tec® sales features:

• The Company created and patented the Freedom Cutter, allowing square, octagon, and round inserts to seat in the same cutter body.
• Our 100% precision ground carbide inserts provide incredible shearing via positive geometries & work excellent within a wide machine tool spectrum.
• Mil-Tec is dedicated solely to the indexable carbide tooling industry.
• We are privately-owned, operate with long-term focus and goals, and manufacture 100% of our products within our ISO 9001:2000 Registered factories.
• Our substrate, geometry, and coating are specially selected for each application and Series.
• Our cutting tools have extremely accurate diameter, radius, and concentricity characteristics.
• Our edge prep process provides toughness and strength.
• Our grinding method and coating technology yields an extremely sharp & long-lasting cutting edge.
• We perform in-house, 5-axis cutter body machining and testing.
• We offer proprietary coatings such as A1 (TiB2) and AT (HSN²), all performed in-house for quick delivery.
• Our inserts are also completely proprietary / Non-ISO.
• We can stock firm blanket orders.
• We are able to quickly quote and manufacture print specials.
• Both fractional and metric (separate catalog) size ranges are offered.
• We have sales offices in both coastal time zones (Florida and California).
• We have large standard inventories and excellent service levels.
• We strongly support traditional Industrial Distribution.

About the technology of Mil-Tec® and Tool Alliance®:

We obsess over details that create the finest cutting tools available. Our reward is customer satisfaction via increasing their factory technologies that yield significant characteristics of cutting tools unlike any you’ll find elsewhere:
• SmoothGrind® = Polished cutting edges for extreme sharpness and lubricity.
• SmoothContricity® = Precision grinding, tool holding, and tolerances for minimized TIR.
• SmoothCoat® = Sputter-based SuperNitride PVD coating for superior surface hardness & uniformity.
• SmoothEdge® = Surface and edge preparation for lubricity and minimized break-in.

Mil-Tec, Incorporated
5578 6th Street West
Lehigh Acres, FL 33971

(800) 564–5832 • fax (866) 244–0298
e-mail: sales@miltecusa.com
miltecusa.com • toolalliance.com

Proudly Distributed By: