# FULLERTON Tool Company Inc.

# 2015 PRODUCT CATALOG

# Minimum Energy, Maximum Removal

***We're Not Just High Performance, we're ADVANCED Performance.***

## ***Minimum*** *Energy,*

## ***Maximum*** *Removal,*

## ***Advanced*** *Performance.*

*At Fullerton Tool Company, we're not content to be just another "High Performance" tooling company. Our quality carbide tools take us to the next level. But don't take our word for it. Our staff is willing to go above and beyond your expectations and earn your business.*

# Contents

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# Vision, Core Values, and FAST

***People • Principles • Passion • Productivity***

## OUR VISION

*To be a world class manufacturer known for providing **FAST** innovative solutions.*

## CORE VALUES

### People • Principles • Passion • Productivity

*Our **people** make the difference because we care about our customers, our company and each other.*

*Leading by the **principles** of integrity and dedication. We follow the 100/0 rule—100% responsibility, 0 excuses.*

*A **passion** to innovate and continuously improve our people, products and processes.*

*FAST (Fullerton Advanced Solutions Team) is a culture built to rapidly respond to opportunities and to improve **productivity** internally and externally.*

F.A.S.T.®
Fullerton Advanced Solutions Team
ISO 9001:2008 CERTIFIED

## FAST Culture at Fullerton Tool

We understand our customer's sense of urgency, and Fullerton's Advanced Solutions Team (FAST) is the foundation of our commitment to continuously improve, innovate, provide product diversity—and do it with our customer's urgency in mind. Our FAST culture is compiled of experts that specialize in the development of groundbreaking, superior carbide cutting tools while delivering unique high quality services for all of our customers. We continuously work to improve our internal operations with goals of reducing lead times, providing value-added services, and improving quality and overall tool performance for our customers.

Our FAST culture will work closely with your company to help you obtain your goals for optimal process parameters while becoming lean, efficient, and profitable manufacturers.

**Fullerton Tool is proud to leave our finger print on every tool and service we provide.**

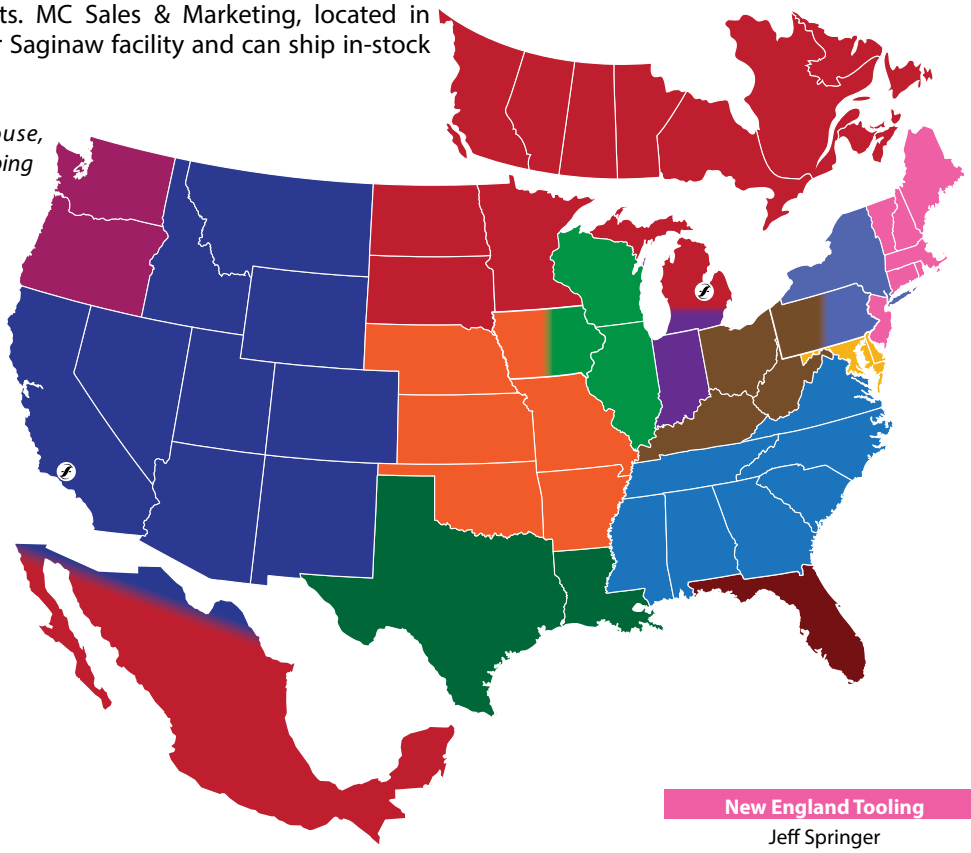
# United States Factory Representatives

***and Regional Shipping Warehouses***

**Fullerton Tool Company** presents its products to end users via distributors throughout the country by working through both factory specialists and selected factory representatives. Fullerton Tool is proud to work with the representatives below. The color-coded map matches representatives to their areas. All areas in red are currently areas Fullerton Tool works directly with distribution.

For our customer's convenience, Fullerton Tool maintains inventory of standard catalog items with some of our factory sales representatives indicated on the map by Fullerton logos. These locations will reduce shipping costs and speed the availability of standard products. MC Sales & Marketing, located in California, is open later than our Saginaw facility and can ship in-stock items directly to you.

**Note: By using our other warehouse, operating hours are extended for shipping of urgently needed products.*



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# Global Representation

***Fullerton Tool is a Key Player in the Global Economy***

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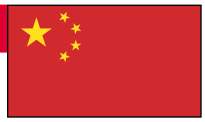
## Rising Sun Automation



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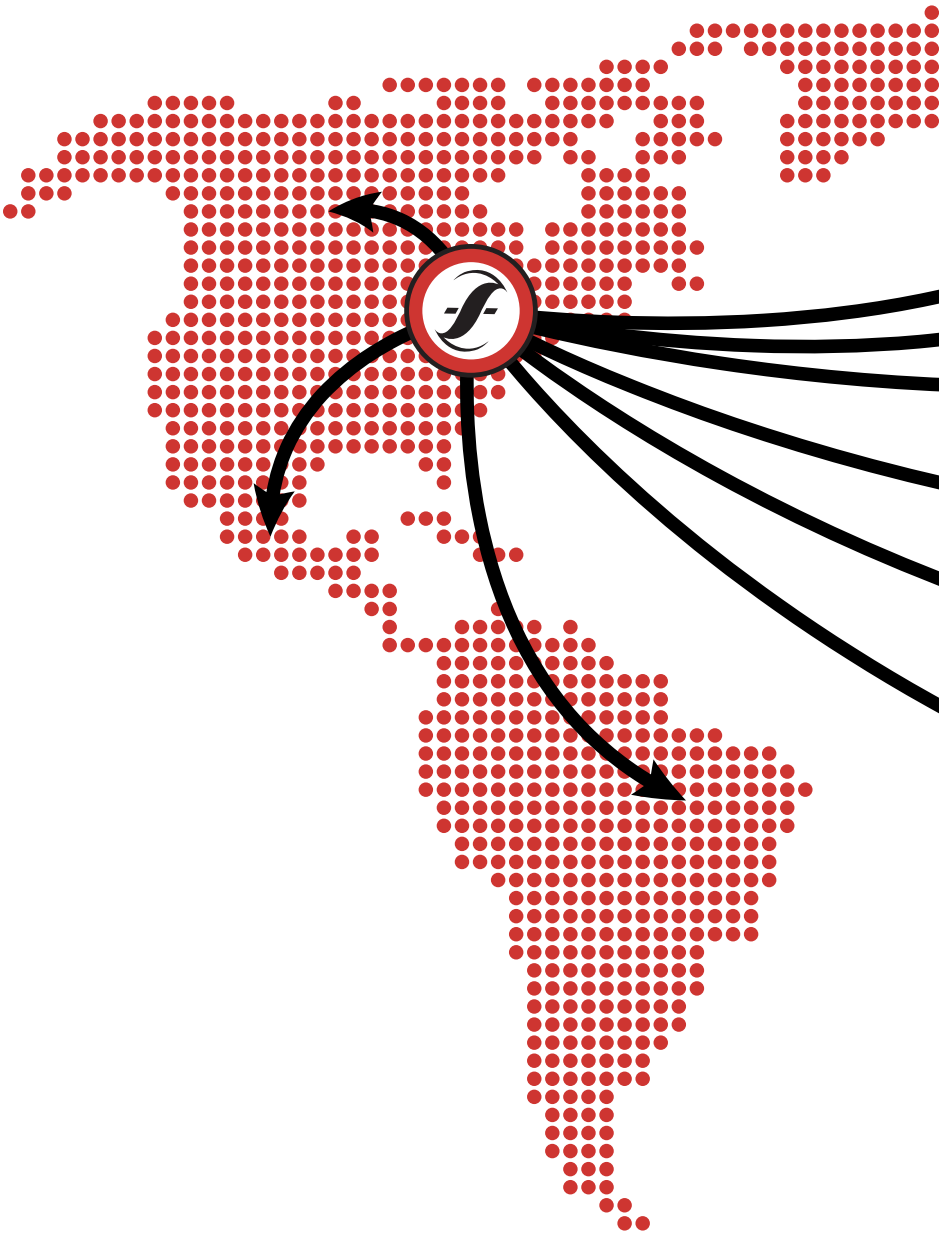

# Global Representation

***Fullerton Tool is a Key Player in the Global Economy***

**Fullerton Tool Company** understands the ever-growing competition in the world of manufacturing. We know our tooling can provide you with a competitive advantage. With our partners in distribution and our quality representation throughout the world, we are willing to tackle your most demanding manufacturing processes. If you are ready to conquer your challenges, allow the Fullerton team to put you on the right path to success.

**Mexico** and the **Latin American** countries are led by Carlos Javier Zermeno. Fullerton Tool's presence in Mexico has exponentially grown over recent years, and it has presented itself as a major competitor in the solid carbide tooling industry worldwide. The customer service office is managed by Marcela Zermeno.

**Fullerton [UK] Ltd.** has been our distribution and representation in the UK and Europe since 2008, and it is led by Christian Kafanke. Fullerton UK takes the guess work out of problem solving by providing a cost effective, progressive, and innovative solution the first time. Their time-served apprentice-trained Sales Engineers ensure Fullerton Tool end users are provided with technical support that is paramount for continued success.

INDUSTRY SPECIALIST

# Serving Your Industry

***Fullerton Delivers What You Need***


## fullerton is a **manufacturer of choice** that has delivered **high quality carbide tools** for over 70 years **...and counting**

From concept to "chips", Fullerton Tool Company has the experience and expertise to turn seemingly impossible machine tool problems into opportunities at your spindle.

Whether it's a domestic or global project, the advanced engineering team, coupled with the latest innovative technology and inspection equipment, is ready to assist you with your needs: reducing cycle time, minimizing cost per piece, combining multiple operations in a single tool, or completing a turnkey tooling process.

Don't hesitate to challenge our 70 plus years of experience in special carbide tool developments. Fullerton's reputation ripples through the industry as the leader of quality, uniquely designed and manufactured specials.

F.A.S.T.
Fullerton Advanced Solutions Team

# Automotive Industry

***Maximizing High Volume Production***

AUTOMOTIVE

tools for
**consistent part production**
that achieve
**minimal cost per piece**
by providing the
# best cycle times

The **Automotive Industry** depends on high quality tooling to achieve consistent part production in high volumes while minimizing cost per piece. Fullerton Tool has proven itself to deliver innovative tooling for your desired application and excels in working directly with you to maximize cycle times. The Automotive Industry has a high demand for manufacturing parts within the best cycle times, and Fullerton's fully equipped in-house R&D Lab gives you the ability to test on our machines and provide you with unbeatable solutions.

Turn three tools into one by having your machine builders work directly with Fullerton Tool's highly experienced sales and engineering staff to develop a process to eliminate unnecessary passes and minimize the tooling needed for your process.

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Fullerton Advanced Solutions Team

AEROSPACE

# Aerospace Industry

***Conquering Exotic Materials***

## tools for maximum metal removal that achieve optimum production times by providing quality solutions

The **Aerospace Industry** is highly competitive with the need for dependable tool manufacturers to provide the industry with cost-effective tooling that can continually increase production times while maximizing your metal removal rates. Exquisite geometry and consistency are key players when tight tolerances, superior surface finish, and perfect wall thicknesses are expected. Long reach tooling for pocketing is important for the Aerospace Industry, and Fullerton's FAST ability to manufacture a custom tooling solution is like a diamond in the rough.

Exotic Aerospace materials (composites, honeycomb, Ti64, etc) can be seemingly difficult to machine, but Fullerton's in-house R&D Lab, combined with their vast custom engineering knowledge, can test and solve any material machining issues and provide you with unbeatable solutions.

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Fullerton Advanced Solutions Team

# Medical Industry

***Maximizing Metal Removal Rates***

MEDICAL

tools for
**dependable production**
that achieve
**maximum metal removal**
by providing
**premium tool quality**

The **Medical Industry** is dependent on steady, high performance tools that provide the ability to produce devices in high volumes. As an ISO 9001:2008 certified manufacturer, Fullerton Tool works to provide quality solid carbide cutting tools that will deliver stability at the spindle and keep cost per device down. Fullerton Tool's fully equipped in-house R&D Lab provides the ability to test on our machines and deliver unbeatable solutions.

Maximize material removal and efficiency by partnering your machine builders to work directly with Fullerton Tool's experienced sales and engineering staff to develop a process to eliminate unnecessary passes and minimize the tooling needed for your process.

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HEAVY EQUIPMENT

# Heavy Equipment Industry

***Streamlining Tooling Processes and Concepts***

## tools for complex part designs that achieve ideal tooling processes by providing superior finishes

The **Heavy Equipment Industry** thrives on complex designs to manufacture products that perform well when the demand and expectations are high. Fullerton Tool will assist in streamlining your tooling process to improve your quality and cost per piece while giving you the consistency that is expected in this demanding industry.

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Fullerton Advanced Solutions Team

# Other Industries

*Fullerton Delivers What You Need*

OTHER INDUSTRIES

- Aerospace
- Firearms
- Small Engine
- Recreational
- Power Generation
- Mold and Die
- Medical
- Heavy Equipment
- Automotive

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Fullerton Advanced Solutions Team

CUSTOM TOOLING

# Custom Tooling

***Unique Process Innovation***

**Process Development**

Fullerton's experienced sales and engineering team will not only help you select the right tooling for your application, but they will assist you in improving your machining process. This is a value-added service that will help you achieve your goals of higher production rates and less waste, resulting in a lower cost per piece.

**The Perfect Tool**

By examining your process, we can match the right tool to the job. If the tool is off-the-shelf, a standard tool with slight alterations, or a completely new tool designed specifically for your application, our staff can take care of you. Over half of our business is based on developing tools specifically suited to an application and not off-the-shelf pieces, so you know when Fullerton is designing a tool for you, there is experience to back it. Not only can we create a custom tool, we can often design a tool that combines multiple tools and operations into a single application.

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Fullerton Advanced Solutions Team

# Poly-Crystalline Diamond (PCD) Tooling

***Delivering the Benefits of Super Abrasive Tools***



**PCD Carbide Tooling Key Features:**

- Vacuum brazed, Bi-modal grade of Poly-Crystalline Diamond
- Pressure sensitive point grinding technology for superior finish
- CNCs equipped with electrical discharge grinding (EDG)
- Pyramid point design on drills to reduce thrust and improve penetration
- PCD produces high material removal rates producing decreased cycle times and providing more parts per shift
- 2-3 times faster cutting speed capabilities
- Up to 10 times the life of carbide

F.A.S.T.®
Fullerton Advanced Solutions Team

FAST QUOTE

# FAST Quote

***Click. Quote. Done.***

NEW! F.A.S.T. Quote®

Click. Quote. Done.

**FAST Quote** is a breakthrough, unique end mill quoting system offered only by Fullerton Tool Company that will allow registered users to fill in the measurements and quantities of a specific end mill and the system will automatically generate list pricing and lead time within seconds! It will even include an image of the requested end mill with your specs in the image. One simple click on "Get Price" will automatically send an email to you and our knowledgeable Quoting team!

***Series which are currently a part of our FAST Quote system are highlighted on the Series side bars with the FAST Quote logo.***

**Watch our Basic Overview on YouTube to see how it works!**

# FAST Quote

*Click. Quote. Done.*

FAST QUOTE

## Design your End Mill online with our NEW **FAST Quote** feature!

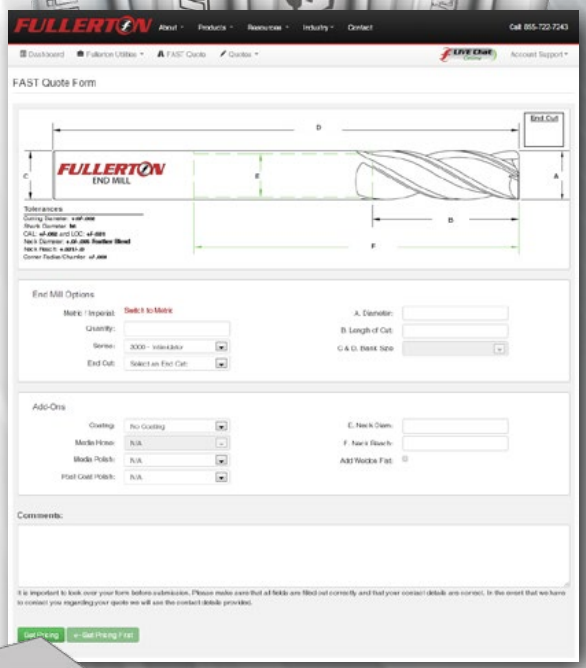
**Choose your:**

- Quantity
- Series
- End Cut
- Diameter
- Length of Cut
- Blank Size
- Coating
- Media Hone
- Media Polish
- Post Coat Polish
- Neck Diameter
- Neck Reach
- Weldon Flat

Receive **INSTANT** pricing!

PDF prints are emailed to you for your approval before committing to the order!

## Click. Quote. Done.


| | |
|---|---|
| **Part:** 6300BD5000X300UC | |
| **5p. list price:** $ | *Working Days:* 2 days |
| **10p. list price:** $ | *Working Days:* 2 days |
| **25p. list price:** $ | *Working Days:* 5 days |

REGRIND SERVICE

# Regrind Service

***Expand Tool Life and Decrease Cost per Part***


**Fullerton Tool Company** provides OEM quality regrinds for their customers so they can take advantage of receiving extended tool life while enjoying the benefits of true cost savings. Fullerton's goal is to provide regrinds that perform with new tool quality.

Once your tool regrind request is sent, you can expect to receive your completed quote within 1 business day. Before sending your request, please be sure to review the regrind parameters. Once Fullerton Tool has received your tools and purchase order, you can expect them to be completed within 2–3 weeks time. Please allow a few more days for recoat processing. Large quantity orders are subject to review for an accurate lead time.

**Regrind Parameters:**

| Shank Diameter Minimum | Shank Diameter Maximum | Piece Minimum |
|---|---|---|
| .2500 | .3750 | 20 |
| .3751 | .5000 | 12 |
| .5001 | .7500 | 8 |
| .7501 | - | 5 |

- *Tools must be .2500" and larger*
- *Minimum order of $100 (per line item)*
- *Minimums must be of the same tool*

F.A.S.T.
Fullerton Advanced Solutions Team

# Standard Coatings

***Maximizing Performance and Tool Life***



Fullerton tools are all available with a variety of niche process specific coatings. Together with our world class coating suppliers we have developed the Fulcoat Family of surface enhancing treatments. In addition to the basic TiN, TiCN and TiAlN coatings, Fullerton has over 20 Fulcoat coatings available. Below is a sampling of our most common coatings. Please contact us for your particular application and current coating pricing.

### TiN - Titanium Nitride

A good general purpose coating that is excellent for iron-based materials and low and medium strength steels. It has excellent wear resistance, thermal stability, and a low coefficient of friction that improves thermal transfer of heat away from the cutting edge.

### TiCN - Titanium Carbonnitride

This coating has a higher hardness and is recommended for cast irons, high silicon aluminum alloys, copper, and other abrasive materials. Coolant must be applied to control temperature at the cutting edge.

### TiAlN - Titanium Aluminum Nitride

Excellent for high strength steels, hard die steels, high temperature alloys, and titanium alloys. Possible for dry machining, which eliminates thermal shocks created by flood coolants.

### FULCOAT 1

Thin film CVD Diamond ideal in graphite, green ceramic, carbon fiber reinforced plastics (CFRP), (Hi Silicon) fiberglass, metal matrix composites, and cast aluminum alloys. Possible dry machining capabilities.

### FULCOAT 2

Advance wear with increased lubricity. Diamond Like Carbon (DLC) works well in machining of non-ferrous metals (especially aluminum w/ < 9% Si), composite material, and plastics.

### FULCOAT 4

Improved chip flow and possible dry machining or MQL (Minimum Quantity Lubricant) combines hardness with superior lubricant layers.

### FULCOAT 5

Special Purpose single layer coating Reduces built-up edge when machining Aluminum and Titanium Alloys.

### FULCOAT 7

Good, hot hardness and high oxidation resistance with outstanding frictional properties. Ideal in deep hole application.

### FULCOAT 18

Terrific for levels of oxidation resistance and hot hardness. Exemplary wear resistance. Excellent in hi-speed machining parameters for milling, stainless steels, alloy steels, titanium, and hardened steels.

### FULCOAT 19

Outstanding self-lubricating properties. Extremely smooth, droplet-free surfaces ensure "frictionless" chip removal. Ideal for machining aluminum (Silicon content <10%) and titanium alloys.

### FULCOAT 20

High hardness and elasticity, low friction, and high oxidation resistance. Excellent for stainless steel and nickel-based high temperature allows.

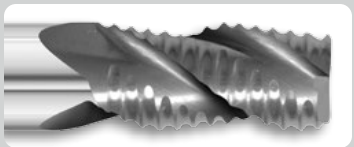
# Dura Carb Family of Carbide Substrates

***The Best Tool Requires the Proper Foundation***

Fullerton tools are made with the finest grades of carbide found in the industry. Fullerton has worked with key suppliers to develop our DURA CARB family of carbide substrates. These uniquely designed grades make the performance difference our customers demand. Fullerton understands Advanced Performance Tooling needs continuous development in all aspects of the tool. This is why we work closely with quality carbide vendors to research and develop superior performing carbide grades. We are continuously testing newly developed grades in our R&D facility. We apply them in niche applications to create the most advanced solution with the best combination of geometry, carbide substrate, and coating. The list below is just a sampling of the DURA CARB family.

**Dura Carb**
With its premium micrograin structure, Dura Carb is a versatile grade that can be applied in a wide range of applications.

**Dura Carb II**
Super Strong Substrate designed to handle High Shock Resistance. It contains a larger percentage of cobalt which increases its resistance to shock. We recommend Dura Carb II in roughing applications and to add coatings to improve tool life.



**Dura Carb III**
This Superior wear grade is excellent for low impact tooling. It is a long-lasting substrate for ideal machining conditions.

**Dura Carb IV**
Special Ultra Fine carbide grade for machining hard materials. > 60RC

**Dura Carb V**
Special submicron grade for Hi-performance machining of steel, stainless steel and difficult to machine materials, like titanium. It has optimum toughness combined with very good wear resistance.

# Edge Preps

***Fullerton Delivers the Edge You Need***

Fullerton Tool has adopted several standardized Edge Preps to provide superior cutting tools to our end users. Below are a sample of some of our most commonly used Edge Preps. The Edge Preps are developed to work on Fullerton's cutting tools in particular materials and applications. Edge Preps can be added to most standard and special order cutting tools. Please contact us for your particular application and current hone pricing.

**MP02 Polish**
High polish with light edge prep, great for non-ferrous materials, particularly aluminum.

**MH02 Edge Prep**
Light edge prep often used in Steels.

**MH04 Edge Prep**
Medium edge prep often used in Titanium.

**MH06 Edge Prep**
Medium edge prep often used in Cast Iron.

**MH08 Edge Prep**
Larger edge prep used in special applications and larger tools.

**PP02 Post Coating Polish**
Droplet removal polish.

# ISO Material Color Guide

***Maximizing Value To Our Customers***

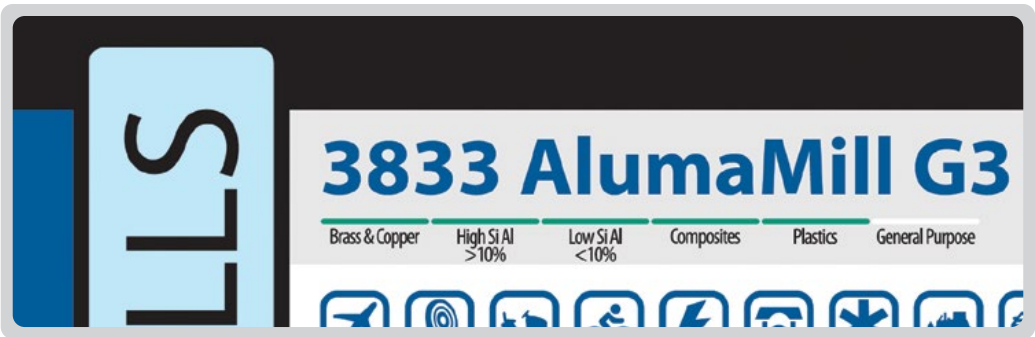


Fullerton Tool recognizes the need to assist users in the selection of a tool appropriate for their need. As part of this effort we have adopted the ISO Material Color Guide and applied it to our tooling. While working on this we recognized the need to repeat colors as the ISO guidelines are broad in some areas. Below are the materials we have selected to highlight at this time along with their ISO icons. These icons will always be displayed in the same relative left to right order in this document.

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

## Fullerton Tool's Primary Material / Icon List

- **Titanium**
- **Super Alloys**
- **Hardened Steels (> 48RC )**
- **Stainless Steels**
- **Steels**
- **Cast Iron**
- **Graphite**
- **Brass and Copper**
- **High Silicon Aluminum (Silicon > 10%)**
- **Low Silicon Aluminum (Silicon < 10%)**
- **Composites**
- **Plastics**
- **Wood**
- **General Purpose** This is a non-ISO category, but it addresses a need in that it identifies items that fill a niche of tools that perform well in multiple material categories and applications. If you are looking for an 'all-around' tool, look for General Purpose.




# h6 Tolerancing

Fullerton Tool uses the industry preferred h6 tolerance on all of its solid carbide cutting tool shanks, with noted exceptions. The h6 tolerance is generally considered the industry standard with regard to shrink fit holders, and it requires manufacturers to be consistent in their processes to adhere to this tolerance.

| INCH | | | METRIC | | |
|---|---|---|---|---|---|
| *Diameter Range* | *Tolerance* | | *Diameter Range* | *Tolerance* | |
| .0236–.0374 | +.0000 | -.00019 | 0.600–0.950 | +0.000 | -0.005 |
| .0375–.1181 | +.0000 | -.00023 | 0.951–3.000 | +0.000 | -0.006 |
| .1182–.2362 | +.0000 | -.00031 | 3.001–6.000 | +0.000 | -0.008 |
| .2363–.3937 | +.0000 | -.00035 | 6.001–10.000 | +0.000 | -0.009 |
| .3938–.7086 | +.0000 | -.00043 | 10.001–18.000 | +0.000 | -0.011 |
| .7087–1.1811 | +.0000 | -.00051 | 18.001–30.000 | +0.000 | -0.013 |
| 1.1812–1.9685 | +.0000 | -.00062 | 30.001–50.000 | +0.000 | -0.016 |

# End Mills

***Solid Carbide End Mills***

# 48-Hour Chip Breaker Service



5:00 P.M. EST
Order Deadline

**Just in Time**
**48-Hour JIT Delivery**
End Mills
w/ Chip Breakers

**12**
PIECES
OR LESS


End Mills in this catalog can be supplied with chip breakers and shipped within 48-hours. When ordering please specify the specific EDP number for the end mill you wish to add chip breakers to.

**Price Per End***

To estimate cost, add these prices to the list price.

| Cutting Diameter | Max Cutting Length | | | SE 2–5 | 6–11 | 12–24 | 25–49 | 50+ |
|---|---|---|---|---|---|---|---|---|
| | Inch | Fractional | Millimeter | DE 1–2 | 3–5 | 6–12 | 13–24 | 25+ |
| .2500–.3439″ 6.35–8.74mm | .5000 | 1/2 | 12.70 | 55.28 | 22.36 | 12.10 | 9.22 | 8.00 |
| | 1.0000 | 1 | 25.40 | 57.24 | 24.34 | 14.06 | 11.20 | 10.00 |
| | 1.5000 | 1-1/2 | 38.10 | 59.22 | 26.32 | 16.03 | 13.14 | 11.84 |
| | 2.0000 | 2 | 50.80 | 64.14 | 31.24 | 21.00 | 18.08 | 16.76 |
| .3440–.4759″ 8.75–12.09″ | .5000 | 1/2 | 12.70 | 55.28 | 22.36 | 12.10 | 9.22 | 8.00 |
| | 1.0000 | 1 | 25.40 | 57.24 | 24.34 | 14.06 | 11.20 | 10.00 |
| | 1.5000 | 1-1/2 | 38.10 | 61.18 | 28.30 | 18.00 | 15.13 | 13.80 |
| | 2.0000 | 2 | 50.80 | 65.00 | 32.22 | 21.94 | 19.06 | 17.76 |
| | 3.0000 | 3 | 76.20 | 72.00 | 40.00 | 29.84 | 26.96 | 25.66 |
| .4760–.6875″ 12.10–17.46mm | .5000 | 1/2 | 12.70 | 57.24 | 24.34 | 14.06 | 11.20 | 10.00 |
| | 1.0000 | 1 | 25.40 | 59.22 | 26.32 | 16.03 | 13.14 | 11.84 |
| | 1.5000 | 1-1/2 | 38.10 | 64.14 | 31.24 | 21.00 | 18.08 | 16.76 |
| | 2.0000 | 2 | 50.80 | 69.08 | 36.18 | 25.90 | 23.02 | 21.72 |
| | 3.0000 | 3 | 76.20 | 78.94 | 46.04 | 35.76 | 32.88 | 31.56 |
| .6876–1.0000″ 17.47–25.40mm | .5000 | 1/2 | 12.70 | 61.18 | 28.30 | 18.00 | 15.13 | 13.80 |
| | 1.0000 | 1 | 25.40 | 64.14 | 31.24 | 21.00 | 18.08 | 16.76 |
| | 1.5000 | 1-1/2 | 38.10 | 69.08 | 36.18 | 25.90 | 23.02 | 21.72 |
| | 2.0000 | 2 | 50.80 | 78.94 | 46.04 | 35.76 | 32.88 | 31.56 |
| | 3.0000 | 3 | 76.20 | 88.08 | 55.92 | 45.64 | 42.76 | 41.44 |

* ***Note: On Double End (DE) End Mills, add 2X price shown to List Price.***

F.A.S.T.
Fullerton Advanced Solutions Team

# Corner Radius and Chamfered End Mill Service

3:00 P.M. EST Order Deadline

**Just in Time**
**48-Hour JIT Delivery**
End Mills
With Chip Breakers

**12** PIECES OR LESS

All end mills (with the exception of 3833 AlumaMill G3) in this catalog can be supplied with a corner radius and shipped within 48-hours. Specify the specific end mill and the radius required.

**Price Per End***

To estimate cost, add these prices to the list price.

| Diameter | | | SE 2–5 | 6–11 | 12–24 | 25–49 | 50+ |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | DE 1–2 | 3–5 | 6–12 | 13–24 | 25+ |
| .0938 | 3/32 | 2.39 | 18.25 | 10.45 | 8.11 | 5.77 | 4.84 |
| .1250 | 1/8 | 3.18 | 18.25 | 10.45 | 8.11 | 5.77 | 4.84 |
| .1875 | 3/16 | 4.76 | 19.66 | 11.86 | 9.52 | 7.18 | 6.24 |
| .2500 | 1/4 | 6.35 | 19.66 | 11.86 | 9.52 | 7.18 | 6.24 |
| .3125 | 5/16 | 7.94 | 20.44 | 12.64 | 10.30 | 7.96 | 7.02 |
| .3750 | 3/8 | 9.53 | 22.00 | 14.20 | 11.86 | 9.52 | 8.58 |
| .4375 | 7/16 | 11.11 | 25.12 | 17.32 | 14.98 | 12.64 | 11.70 |
| .5000 | 1/2 | 12.70 | 26.68 | 18.88 | 16.54 | 14.20 | 13.26 |
| .5625 | 9/16 | 14.29 | 36.18 | 23.56 | 21.22 | 17.32 | 16.38 |
| .6250 | 5/8 | 15.88 | 37.98 | 25.12 | 22.78 | 18.88 | 17.94 |
| .7500 | 3/4 | 19.05 | 37.98 | 25.12 | 22.78 | 20.44 | 18.72 |
| .8750 | 7/8 | 22.23 | 41.58 | 26.68 | 24.34 | 22.00 | 21.06 |
| 1.0000 | 1 | 25.40 | 41.58 | 26.68 | 24.34 | 22.00 | 21.06 |

* *Note: On Double End (DE) End Mills, add 2X price shown to List Price.*

# Weldon Flats

With the use of the newer collet holders, most of our end mills no longer feature a weldon flat, except where shown.

5:00 P.M. EST Order Deadline

**Just in Time**
**48-Hour JIT Delivery**
Weldon Flat

**12** PIECES OR LESS

To estimate cost, add these prices to the list price.

| Shank Diameter | 1-11 | 12+ | |
|---|---|---|---|
| .1875–.2500 | 4.50 | 3.38 | |
| .3125–.3750–.4375–.5000 | 4.50 | 4.13 | |
| .5625–.6250–.7500 | 7.50 | 6.75 | |
| .8750–1.0000–1.2500 | 10.00 | 9.00 | Single Weldon Flat |
| .8750–1.0000–1.2500 | 16.00 | 13.00 | Double Weldon Flat |

****Special note: We cannot guarantee or accept the return of any end mill with a flat put on by the customer.**

F.A.S.T. Fullerton Advanced Solutions Team

# 3833 AlumaMill G3 (Square End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose


**Basic Information**
- Advanced Performance
- Square End
- 3 Flutes
  - 37.5° Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, Extra Long, and Long Reach Lengths
- Standard Uncoated and FC-5 Coated
- Inch and Metric Based Tools
- Corner Radius and Chamfered End Mill Service NOT Available
- Dura Carb (Micrograin)

**Tolerance**
- Shank Diameter: h6
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC | FC-5 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | | 27045 | 27055 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 2.0000 | | | 27000 | 27010 |
| .1250 | 1/8 | 3.18 | SD | .7500 | .1250 | 2.0000 | | | 27100 | 27065* |
| .1875 | 3/16 | 4.76 | STB | .3125 | .1875 | 2.0000 | | | 27046 | 27056 |
| .1875 | 3/16 | 4.76 | SD | .3750 | .1875 | 2.0000 | | | 27101 | 27066 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | 27001 | 27011 |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | | | 27047 | 27057* |
| .2500 | 1/4 | 6.35 | SD | .5000 | .2500 | 2.5000 | | | 27102 | 27067 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | 27103 | 27068 |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | | | 27002 | 27012 |
| .2500 | 1/4 | 6.35 | SD | 1.2500 | .2500 | 3.0000 | | | 27104 | 27069* |
| .2500 | 1/4 | 6.35 | XL | 2.0000 | .2500 | 4.0000 | | | 27020 | 27033* |
| .3125 | 5/16 | 7.94 | STB | .4375 | .3125 | 2.5000 | | | 27105 | 27070* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | | | 27048 | 27058 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | | | 27106 | 27071* |
| .3125 | 5/16 | 7.94 | SD | 1.0000 | .3125 | 2.5000 | | | 27003 | 27013 |
| .3125 | 5/16 | 7.94 | SD | 1.2500 | .3125 | 3.0000 | | | 27107 | 27072* |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 4.0000 | | | 27021 | 27034* |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | | 27049 | 27059 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | 27004 | 27014 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 3.0000 | | | 27088 | 27089 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | | 27022 | 27035* |
| .4375 | 7/16 | 11.11 | STB | .5625 | .4375 | 2.7500 | | | 27050 | 27060* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | 27005 | 27015* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | | | 27023 | 27036* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | 27108 | 27073* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | 27130 | 27481* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | 27131 | 27494* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | | | 27051 | 27061 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | 27109 | 27074 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | 27006 | 27016 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | 27024 | 27037* |



ADVANCED PERFORMANCE

SQUARE

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3833 AlumaMill G3 (Square End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

ADVANCED PERFORMANCE

SQUARE

3 FLUTE | CENTER CUTTING

STB STUB | SD STANDARD

XL EXTRA LONG | LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC | FC-5 |
| .5000 | 1/2 | 12.70 | XL | 2.5000 | .5000 | 5.0000 | | | 27110 | 27075* |
| .5000 | 1/2 | 12.70 | XL | 3.2500 | .5000 | 6.0000 | | | 27025 | 27038* |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | 27111 | 27076 |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | | | 27112 | 27077 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | | | 27007 | 27017* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | | 27026 | 27039* |
| .6250 | 5/8 | 15.88 | XL | 3.2500 | .6250 | 6.0000 | | | 27027 | 27040* |
| .6250 | 5/8 | 15.88 | XL | 3.7500 | .6250 | 6.0000 | | | 27951 | |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | | | 27053 | 27063 |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.2500 | .7200 | 27132 | 27709* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | 27133 | 27722* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | | | 27008 | 27018 |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | | 27028 | 27041 |
| .7500 | 3/4 | 19.05 | XL | 3.2500 | .7500 | 6.0000 | | | 27029 | 27042* |
| 1.0000 | 1 | 25.40 | STB | 1.2500 | 1.0000 | 4.0000 | | | 27054 | 27064* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | 27134 | 27861* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 7.0000 | 4.3750 | .9700 | 27135 | 27874* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 4.0000 | | | 27009 | 27019* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | | 27030 | 27043* |
| 1.0000 | 1 | 25.40 | XL | 3.2500 | 1.0000 | 6.0000 | | | 27031 | 27044* |
| 1.0000 | 1 | 25.40 | XL | 4.1250 | 1.0000 | 7.0000 | | | 27113 | 27917 |
| **METRIC (Millimeter)** | | | | | | | | | | |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | | | 27136 | 27137* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 50.00 | | | 93000 | 93012* |
| .1181 | | 3.00 | SD | 20.00 | 3.00 | 50.00 | | | 27146 | 27147* |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | | | 27164 | 27165 |
| .1575 | | 4.00 | SD | 12.00 | 4.00 | 50.00 | | | 93100 | 93054* |
| .1575 | | 4.00 | SD | 16.00 | 4.00 | 50.00 | | | 93001 | 93013* |
| .1969 | | 5.00 | STB | 13.00 | 5.00 | 51.00 | | | 27195 | 27196* |
| .1969 | | 5.00 | SD | 20.00 | 5.00 | 64.00 | | | 93002 | 93014* |
| .2362 | | 6.00 | STB | 13.00 | 6.00 | 58.00 | | | 93101 | 93055* |
| .2362 | | 6.00 | LR | 20.00 | 6.00 | 100.00 | 50.00 | 5.75 | 93024 | 93031* |
| .2362 | | 6.00 | SD | 25.00 | 6.00 | 64.00 | | | 93003 | 93015 |
| .2362 | | 6.00 | XL | 50.00 | 6.00 | 100.00 | | | 93038 | 93046* |
| .2756 | | 7.00 | SD | 15.00 | 7.00 | 64.00 | | | 27269* | 27270* |
| .2756 | | 7.00 | SD | 25.00 | 7.00 | 64.00 | | | 93004 | 93016* |
| .3150 | | 8.00 | STB | 16.00 | 8.00 | 64.00 | | | 27319 | 27320* |
| .3150 | | 8.00 | LR | 20.00 | 8.00 | 100.00 | 50.00 | 7.72 | 93025 | 93032* |
| .3150 | | 8.00 | SD | 25.00 | 8.00 | 64.00 | | | 93005 | 93017* |
| .3150 | | 8.00 | XL | 50.00 | 8.00 | 100.00 | | | 93039 | 93047* |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 64.00 | | | 27377 | 27378* |
| .3937 | | 10.00 | SD | 26.00 | 10.00 | 64.00 | | | 93006 | 93018* |
| .3937 | | 10.00 | LR | 26.00 | 10.00 | 100.00 | 57.00 | 9.60 | 93026 | 93033* |
| .3937 | | 10.00 | XL | 50.00 | 10.00 | 100.00 | | | 93040 | 93048* |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 76.00 | | | 27435 | 27436* |
| .4724 | | 12.00 | LR | 25.00 | 12.00 | 100.00 | 57.00 | 11.61 | 93027 | 93034* |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 93007 | 93019* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | | | 93041 | 93049* |
| .5512 | | 14.00 | SD | 20.00 | 14.00 | 76.00 | | | 27575* | 27576* |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | | | 93008 | 93020* |
| .5512 | | 14.00 | XL | 57.00 | 14.00 | 125.00 | | | 93042 | 93050* |
| .6299 | | 16.00 | STB | 30.00 | 16.00 | 89.00 | | | 27653 | 27654* |
| .6299 | | 16.00 | LR | 30.00 | 16.00 | 150.00 | 89.00 | 15.34 | 93028 | 93035* |

# 3833 AlumaMill G3 (Square End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC | FC-5 |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 93009 | 93021* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 150.00 | | | 93043 | 93051* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | | | 27759 | 27760* |
| .7874 | | 20.00 | LR | 38.00 | 20.00 | 150.00 | 89.00 | 19.35 | 93029 | 93036* |
| .7874 | | 20.00 | SD | 44.00 | 20.00 | 100.00 | | | 93010 | 93022* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 150.00 | | | 93044 | 93052* |
| .9843 | | 25.00 | LR | 38.00 | 25.00 | 150.00 | 89.00 | 24.00 | 93030 | 93037* |
| .9843 | | 25.00 | SD | 45.00 | 25.00 | 100.00 | | | 93011 | 93023* |
| .9843 | | 25.00 | XL | 63.00 | 25.00 | 150.00 | | | 93045 | 93053* |

END MILLS

ADVANCED PERFORMANCE

SQUARE

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3833 AlumaMill G3 (Ball End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

**Basic Information:**
- Advanced Performance
- Ball End
- 3 Flutes
  - 37.5° Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, Extra Long, and Long Reach Lengths
- Standard Uncoated and FC-5 Coated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

ADVANCED PERFORMANCE

BALL

3 FLUTE | CENTER CUTTING

STB STUB | SD STANDARD

XL EXTRA LONG | LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC | FC-5 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | | 27154 | 27155* |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 2.0000 | | | 27158 | 27159* |
| .1250 | 1/8 | 3.18 | SD | .7500 | .1250 | 2.0000 | | | 27162 | 27163* |
| .1875 | 3/16 | 4.76 | STB | .3125 | .1875 | 2.0000 | | | 27182* | 27183* |
| .1875 | 3/16 | 4.76 | SD | .3750 | .1875 | 2.0000 | | | 27187 | 27188* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | 27193 | 27194* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | | | 27237 | 27238* |
| .2500 | 1/4 | 6.35 | SD | .5000 | .2500 | 2.5000 | | | 27243 | 27244* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | 27249 | 27250* |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | | | 27255 | 27256* |
| .2500 | 1/4 | 6.35 | SD | 1.2500 | .2500 | 3.0000 | | | 27261 | 27262 |
| .2500 | 1/4 | 6.35 | XL | 2.0000 | .2500 | 4.0000 | | | 27267 | 27268 |
| .3125 | 5/16 | 7.94 | STB | .4375 | .3125 | 2.5000 | | | 27287 | 27288* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | | | 27293* | 27294* |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | | | 27299 | 27300* |
| .3125 | 5/16 | 7.94 | SD | 1.0000 | .3125 | 2.5000 | | | 27305* | 27306 |
| .3125 | 5/16 | 7.94 | SD | 1.2500 | .3125 | 3.0000 | | | 27311 | 27312* |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 4.0000 | | | 27317 | 27318* |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | | 27351 | 27352 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | 27359 | 27360* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 3.0000 | | | 27367 | 27368* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | | 27375 | 27376 |
| .4375 | 7/16 | 11.11 | STB | .5625 | .4375 | 2.7500 | | | 27417 | 27418* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | 27425* | 27426* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | | | 27433 | 27434 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | 27479 | 27480 |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | 27492 | 27493* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | 27505 | 27506* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | | | 27517 | 27518* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | 27529 | 27530* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | 27537 | 27538* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | 27549 | 27550* |
| .5000 | 1/2 | 12.70 | XL | 2.5000 | .5000 | 5.0000 | | | 27561 | 27562 |
| .5000 | 1/2 | 12.70 | XL | 3.2500 | .5000 | 6.0000 | | | 27573 | 27574 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | 27617 | 27618* |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | | | 27621 | 27622* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | | | 27631 | 27632* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | | 27641* | 27642* |

# 3833 AlumaMill G3 (Ball End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC | FC-5 |
| .6250 | 5/8 | 15.88 | XL | 3.2500 | .6250 | 6.0000 | | | 27651 | 27652* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | | | 27707 | 27708* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.2500 | .7200 | 27720 | 27721* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | 27733* | 27734* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | | | 27737 | 27738* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | | 27747 | 27748* |
| .7500 | 3/4 | 19.05 | XL | 3.2500 | .7500 | 6.0000 | | | 27757* | 27758* |
| 1.0000 | 1 | 25.40 | STB | 1.2500 | 1.0000 | 4.0000 | | | 27859* | 27860* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | 27872 | 27873* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 7.0000 | 4.3750 | .9700 | 27885* | 27886* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 4.0000 | | | 27895 | 27896* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | | 27905* | 27906* |
| 1.0000 | 1 | 25.40 | XL | 3.2500 | 1.0000 | 6.0000 | | | 27915 | 27916* |
| 1.0000 | 1 | 25.40 | XL | 4.1250 | 1.0000 | 7.0000 | | | 27926* | 27927* |
| **METRIC (Millimeters)** | | | | | | | | | | |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | | | 27140 | 27141* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 50.00 | | | 27144 | 27145* |
| .1181 | | 3.00 | SD | 20.00 | 3.00 | 50.00 | | | 27150 | 27151* |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | | | 27168 | 27169* |
| .1575 | | 4.00 | SD | 12.00 | 4.00 | 50.00 | | | 27172 | 27173* |
| .1575 | | 4.00 | SD | 16.00 | 4.00 | 50.00 | | | 27176 | 27177* |
| .1969 | | 5.00 | STB | 13.00 | 5.00 | 51.00 | | | 27201 | 27202* |
| .1969 | | 5.00 | SD | 20.00 | 5.00 | 64.00 | | | 27207 | 27208* |
| .2362 | | 6.00 | STB | 13.00 | 6.00 | 58.00 | | | 27213 | 27214* |
| .2362 | | 6.00 | LR | 20.00 | 6.00 | 100.00 | 50.00 | 5.75 | 27219 | 27220* |
| .2362 | | 6.00 | SD | 25.00 | 6.00 | 64.00 | | | 27225 | 27226* |
| .2362 | | 6.00 | XL | 50.00 | 6.00 | 100.00 | | | 27231* | 27232* |
| .2756 | | 7.00 | SD | 15.00 | 7.00 | 64.00 | | | 27275* | 27276* |
| .2756 | | 7.00 | SD | 25.00 | 7.00 | 64.00 | | | 27281* | 27282* |
| .3150 | | 8.00 | STB | 16.00 | 8.00 | 64.00 | | | 27325 | 27326* |
| .3150 | | 8.00 | LR | 20.00 | 8.00 | 100.00 | 50.00 | 7.70 | 27331 | 27332* |
| .3150 | | 8.00 | SD | 25.00 | 8.00 | 64.00 | | | 27337 | 27338* |
| .3150 | | 8.00 | XL | 50.00 | 8.00 | 100.00 | | | 27343* | 27344* |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 64.00 | | | 27385 | 27386* |
| .3937 | | 10.00 | SD | 26.00 | 10.00 | 64.00 | | | 27401 | 27402 |
| .3937 | | 10.00 | LR | 26.00 | 10.00 | 100.00 | 57.00 | 9.60 | 27393 | 27394* |
| .3937 | | 10.00 | XL | 50.00 | 10.00 | 100.00 | | | 27409 | 27410* |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 76.00 | | | 27443 | 27444* |
| .4724 | | 12.00 | LR | 25.00 | 12.00 | 100.00 | 57.00 | 11.60 | 27451 | 27452* |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 27459 | 27460 |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | | | 27467* | 27468* |
| .5512 | | 14.00 | SD | 20.00 | 14.00 | 76.00 | | | 27583* | 27584* |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | | | 27595* | 27596* |
| .5512 | | 14.00 | XL | 57.00 | 14.00 | 125.00 | | | 27607* | 27608* |
| .6299 | | 16.00 | STB | 30.00 | 16.00 | 89.00 | | | 27661* | 27662 |
| .6299 | | 16.00 | LR | 30.00 | 16.00 | 150.00 | 89.00 | 15.34 | 27673 | 27674* |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 27685 | 27686* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 150.00 | | | 27697* | 27698* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | | | 27767 | 27768* |
| .7874 | | 20.00 | LR | 38.00 | 20.00 | 150.00 | 89.00 | 19.35 | 27779 | 27789* |
| .7874 | | 20.00 | SD | 44.00 | 20.00 | 100.00 | | | 27791 | 27792* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 150.00 | | | 27803* | 27804* |
| .9843 | | 25.00 | LR | 38.00 | 25.00 | 150.00 | 89.00 | 24.00 | 27825 | 27826* |
| .9843 | | 25.00 | SD | 45.00 | 25.00 | 100.00 | | | 27837* | 27838* |
| .9843 | | 25.00 | XL | 63.00 | 25.00 | 150.00 | | | 27849* | 27850* |

END MILLS

ADVANCED PERFORMANCE

BALL

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3833 AlumaMill G3 (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

ADVANCED PERFORMANCE

RADIUS

3 FLUTE | CENTER CUTTING

STB STUB | SD STANDARD

XL EXTRA LONG | LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked


**Basic Information:**

- Advanced Performance
- Corner Radius
- 3 Flutes
  - 37.5° Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, Extra Long, and Long Reach Lengths
- Standard Uncoated and FC-5 Coated
- Metric and Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | UC | FC-5 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | | .0150 | 27152* | 27153* |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 2.0000 | | | .0150 | 27156* | 27157* |
| .1250 | 1/8 | 3.18 | SD | .7500 | .1250 | 2.0000 | | | .0150 | 27160* | 27161* |
| .1875 | 3/16 | 4.76 | SD | .3125 | .1875 | 2.0000 | | | .0150 | 27178* | 27179* |
| .1875 | 3/16 | 4.76 | SD | .3125 | .1875 | 2.0000 | | | .0300 | 27180* | 27181* |
| .1875 | 3/16 | 4.76 | SD | .3750 | .1875 | 2.0000 | | | .0150 | 27950* | 27184* |
| .1875 | 3/16 | 4.76 | SD | .3750 | .1875 | 2.0000 | | | .0300 | 27185* | 27186* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | .0150 | 27189* | 27191* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | .0300 | 27190 | 27192* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | | | .0150 | 27233* | 27234* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | | | .0300 | 27235 | 27236* |
| .2500 | 1/4 | 6.35 | SD | .5000 | .2500 | 2.5000 | | | .0150 | 27239 | 27240* |
| .2500 | 1/4 | 6.35 | SD | .5000 | .2500 | 2.5000 | | | .0300 | 27241* | 27242* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0150 | 27245* | 27246* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0300 | 27247 | 27248* |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | | | .0150 | 27251 | 27252* |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | | | .0300 | 27253 | 27254* |
| .2500 | 1/4 | 6.35 | SD | 1.2500 | .2500 | 3.0000 | | | .0150 | 27257* | 27258* |
| .2500 | 1/4 | 6.35 | SD | 1.2500 | .2500 | 3.0000 | | | .0300 | 27259 | 27260* |
| .2500 | 1/4 | 6.35 | XL | 2.0000 | .2500 | 4.0000 | | | .0150 | 27263 | 27264* |
| .2500 | 1/4 | 6.35 | XL | 2.0000 | .2500 | 4.0000 | | | .0300 | 27265 | 27266* |
| .3125 | 5/16 | 7.94 | SD | .4375 | .3125 | 2.5000 | | | .0150 | 27283* | 27284* |
| .3125 | 5/16 | 7.94 | SD | .4375 | .3125 | 2.5000 | | | .0300 | 27285* | 27286* |
| .3125 | 5/16 | 7.94 | SD | .5000 | .3125 | 2.5000 | | | .0150 | 27289* | 27290* |
| .3125 | 5/16 | 7.94 | SD | .5000 | .3125 | 2.5000 | | | .0300 | 27291* | 27292* |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | | | .0150 | 27295* | 27296* |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | | | .0300 | 27297* | 27298* |
| .3125 | 5/16 | 7.94 | SD | 1.0000 | .3125 | 2.5000 | | | .0150 | 27301* | 27302* |
| .3125 | 5/16 | 7.94 | SD | 1.0000 | .3125 | 2.5000 | | | .0300 | 27303* | 27304* |
| .3125 | 5/16 | 7.94 | SD | 1.2500 | .3125 | 3.0000 | | | .0150 | 27307* | 27308* |
| .3125 | 5/16 | 7.94 | SD | 1.2500 | .3125 | 3.0000 | | | .0300 | 27309* | 27310* |

# 3833 AlumaMill G3 (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | UC | FC-5 |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 4.0000 | | | .0150 | 27313* | 27314* |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 4.0000 | | | .0300 | 27315* | 27316* |
| .3750 | 3/8 | 9.53 | SD | .5000 | .3750 | 2.5000 | | | .0150 | 27345* | 27346* |
| .3750 | 3/8 | 9.53 | SD | .5000 | .3750 | 2.5000 | | | .0300 | 27347 | 27348* |
| .3750 | 3/8 | 9.53 | SD | .5000 | .3750 | 2.5000 | | | .0600 | 27349 | 27350* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0150 | 27353 | 27354* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0300 | 27355 | 27356* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0600 | 27357 | 27358* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 3.0000 | | | .0150 | 27361* | 27362* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 3.0000 | | | .0300 | 27363 | 27364* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 3.0000 | | | .0600 | 27365 | 27366* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | | .0150 | 27369* | 27370 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | | .0300 | 27371* | 27372* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | | .0600 | 27373* | 27374* |
| .4375 | 7/16 | 11.11 | SD | .5625 | .4375 | 2.7500 | | | .0150 | 27411* | 27412* |
| .4375 | 7/16 | 11.11 | SD | .5625 | .4375 | 2.7500 | | | .0300 | 27413* | 27414* |
| .4375 | 7/16 | 11.11 | SD | .5625 | .4375 | 2.7500 | | | .0600 | 27415* | 27416* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0150 | 27419* | 27420* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0300 | 27421* | 27422* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0600 | 27423 | 27424* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | | | .0150 | 27427* | 27428* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | | | .0300 | 27429* | 27430* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | | | .0600 | 27431* | 27432* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0150 | 27469 | 27470* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0300 | 27471 | 27472* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0600 | 27473 | 27474* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0900 | 27475* | 27476* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .1200 | 27477* | 27478* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .0150 | 27482* | 27483* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .0300 | 27484 | 27485* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .0600 | 27486 | 27487* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .0900 | 27488 | 27489* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .1200 | 27490 | 27491 |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .0150 | 27495* | 27496* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .0300 | 27497 | 27498* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .0600 | 27499 | 27500* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .0900 | 27501 | 27502* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .1200 | 27503 | 27504* |
| .5000 | 1/2 | 12.70 | SD | .7500 | .5000 | 3.0000 | | | .0150 | 27507* | 27508* |
| .5000 | 1/2 | 12.70 | SD | .7500 | .5000 | 3.0000 | | | .0300 | 27509* | 27510* |
| .5000 | 1/2 | 12.70 | SD | .7500 | .5000 | 3.0000 | | | .0600 | 27511* | 27512* |
| .5000 | 1/2 | 12.70 | SD | .7500 | .5000 | 3.0000 | | | .0900 | 27513* | 27514* |
| .5000 | 1/2 | 12.70 | SD | .7500 | .5000 | 3.0000 | | | .1200 | 27515* | 27516* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0150 | 27519 | 27520* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0300 | 27521* | 27522* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0600 | 27523 | 27524* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0900 | 27525 | 27526* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .1200 | 27527 | 27528* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0150 | 27531 | 27532 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0300 | 27120 | 27080* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0600 | 27121 | 27081* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0900 | 27533* | 27534* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .1200 | 27535 | 27536* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | .0150 | 27539* | 27540* |

END MILLS

ADVANCED PERFORMANCE

RADIUS

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

RADIUS

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

# 3833 AlumaMill G3 (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | UC | FC-5 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | .0300 | 27541 | 27542 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | .0600 | 27543 | 27544* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | .0900 | 27545* | 27546* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | .1200 | 27547 | 27548* |
| .5000 | 1/2 | 12.70 | XL | 2.5000 | .5000 | 5.0000 | | | .0150 | 27551 | 27552* |
| .5000 | 1/2 | 12.70 | XL | 2.5000 | .5000 | 5.0000 | | | .0300 | 27553* | 27554* |
| .5000 | 1/2 | 12.70 | XL | 2.5000 | .5000 | 5.0000 | | | .0600 | 27555* | 27556* |
| .5000 | 1/2 | 12.70 | XL | 2.5000 | .5000 | 5.0000 | | | .0900 | 27557 | 27558* |
| .5000 | 1/2 | 12.70 | XL | 2.5000 | .5000 | 5.0000 | | | .1200 | 27559* | 27560* |
| .5000 | 1/2 | 12.70 | XL | 3.2500 | .5000 | 6.0000 | | | .0150 | 27563* | 27564* |
| .5000 | 1/2 | 12.70 | XL | 3.2500 | .5000 | 6.0000 | | | .0300 | 27565* | 27566* |
| .5000 | 1/2 | 12.70 | XL | 3.2500 | .5000 | 6.0000 | | | .0600 | 27567* | 27568* |
| .5000 | 1/2 | 12.70 | XL | 3.2500 | .5000 | 6.0000 | | | .0900 | 27569* | 27570* |
| .5000 | 1/2 | 12.70 | XL | 3.2500 | .5000 | 6.0000 | | | .1200 | 27571* | 27572* |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | .0150 | 27609* | 27610* |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .0300 | 27611* | 27612* |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .0600 | 27613* | 27614* |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .0900 | 27615* | 27616* |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .1200 | 27928* | 27929* |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | | | .0300 | 27122 | 27082* |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | | | .0600 | 27123 | 27083* |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | | | .0900 | 27619* | 27620* |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | | | .1200 | 27124 | 27084* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | | | .0300 | 27623 | 27624* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | | | .0600 | 27625* | 27626* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | | | .0900 | 27627* | 27628* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | | | .1200 | 27629* | 27630* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | | .0300 | 27633* | 27634* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | | .0600 | 27635* | 27636* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | | .0900 | 27637* | 27638* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | | .1200 | 27639 | 27640* |
| .6250 | 5/8 | 15.88 | XL | 3.2500 | .6250 | 6.0000 | | | .0300 | 27643* | 27644* |
| .6250 | 5/8 | 15.88 | XL | 3.2500 | .6250 | 6.0000 | | | .0600 | 27645* | 27646* |
| .6250 | 5/8 | 15.88 | XL | 3.2500 | .6250 | 6.0000 | | | .0900 | 27647* | 27648* |
| .6250 | 5/8 | 15.88 | XL | 3.2500 | .6250 | 6.0000 | | | .1200 | 27649 | 27650* |
| .7500 | 3/4 | 19.05 | SD | 1.0000 | .7500 | 4.0000 | | | .0300 | 27699 | 27700* |
| .7500 | 3/4 | 19.05 | SD | 1.0000 | .7500 | 4.0000 | | | .0600 | 27701 | 27702* |
| .7500 | 3/4 | 19.05 | SD | 1.0000 | .7500 | 4.0000 | | | .0900 | 27703* | 27704* |
| .7500 | 3/4 | 19.05 | SD | 1.0000 | .7500 | 4.0000 | | | .1200 | 27705 | 27706* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.2500 | .7200 | .0150 | 27710* | 27711* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .0150 | 27723 | 27724* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.2500 | .7200 | .0300 | 27712 | 27713* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .0300 | 27725 | 27726* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.2500 | .7200 | .0600 | 27714* | 27715* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .0600 | 27727* | 27728* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.2500 | .7200 | .0900 | 27716* | 27717* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .0900 | 27729* | 27730* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.2500 | .7200 | .1200 | 27718 | 27719* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .1200 | 27731* | 27732* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | | | .0300 | 27125 | 27085* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | | | .0600 | 27126 | 27086* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | | | .0900 | 27735* | 27736* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | | | .1200 | 27127 | 27087* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | | .0300 | 27739 | 27740* |

* Non Stocked

# 3833 AlumaMill G3 (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | UC | FC-5 |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | | .0600 | 27741* | 27742* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | | .0900 | 27743* | 27744* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | | .1200 | 27745 | 27746* |
| .7500 | 3/4 | 19.05 | XL | 3.2500 | .7500 | 6.0000 | | | .0300 | 27749* | 27750* |
| .7500 | 3/4 | 19.05 | XL | 3.2500 | .7500 | 6.0000 | | | .0600 | 27751* | 27752* |
| .7500 | 3/4 | 19.05 | XL | 3.2500 | .7500 | 6.0000 | | | .0900 | 27753* | 27754* |
| .7500 | 3/4 | 19.05 | XL | 3.2500 | .7500 | 6.0000 | | | .1200 | 27755* | 27756* |
| 1.0000 | 1 | 25.40 | SD | 1.2500 | 1.0000 | 4.0000 | | | .0300 | 27851* | 27852* |
| 1.0000 | 1 | 25.40 | SD | 1.2500 | 1.0000 | 4.0000 | | | .0600 | 27853* | 27854* |
| 1.0000 | 1 | 25.40 | SD | 1.2500 | 1.0000 | 4.0000 | | | .0900 | 27855* | 27856* |
| 1.0000 | 1 | 25.40 | SD | 1.2500 | 1.0000 | 4.0000 | | | .1200 | 27857 | 27858* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .0150 | 27862* | 27863* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .0300 | 27864 | 27865* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .0600 | 27866* | 27867* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .0900 | 27868* | 27869* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .1200 | 27870 | 27871* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 7.0000 | 4.3750 | .9700 | .0150 | 27875* | 27876* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 7.0000 | 4.3750 | .9700 | .0300 | 27877* | 27878* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 7.0000 | 4.3750 | .9700 | .0600 | 27879* | 27880* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 7.0000 | 4.3750 | .9700 | .0900 | 27881* | 27882* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 7.0000 | 4.3750 | .9700 | .1200 | 27883* | 27884* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 4.0000 | | | .0300 | 27887* | 27888* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 4.0000 | | | .0600 | 27889* | 27890* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 4.0000 | | | .0900 | 27891* | 27892* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 4.0000 | | | .1200 | 27893* | 27894* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | | .0300 | 27897 | 27898* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | | .0600 | 27899* | 27900* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | | .0900 | 27901* | 27902* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | | .1200 | 27903 | 27904* |
| 1.0000 | 1 | 25.40 | XL | 3.2500 | 1.0000 | 6.0000 | | | .0300 | 27907* | 27908* |
| 1.0000 | 1 | 25.40 | XL | 3.2500 | 1.0000 | 6.0000 | | | .0600 | 27909* | 27910* |
| 1.0000 | 1 | 25.40 | XL | 3.2500 | 1.0000 | 6.0000 | | | .0900 | 27911 | 27912* |
| 1.0000 | 1 | 25.40 | XL | 3.2500 | 1.0000 | 6.0000 | | | .1200 | 27913* | 27914* |
| 1.0000 | 1 | 25.40 | XL | 4.1250 | 1.0000 | 7.0000 | | | .0300 | 27918* | 27919* |
| 1.0000 | 1 | 25.40 | XL | 4.1250 | 1.0000 | 7.0000 | | | .0600 | 27920* | 27921* |
| 1.0000 | 1 | 25.40 | XL | 4.1250 | 1.0000 | 7.0000 | | | .0900 | 27922* | 27923* |
| 1.0000 | 1 | 25.40 | XL | 4.1250 | 1.0000 | 7.0000 | | | .1200 | 27924* | 27925* |
| **METRIC (Millimeter)** | | | | | | | | | | | |
| .1181 | | 3.00 | SD | 6.00 | 3.00 | 38.00 | | | 0.30 | 27138 | 27139* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 50.00 | | | 0.30 | 27142 | 27143* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 50.00 | | | 0.50 | 27930 | |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 50.00 | | | 1.00 | 27931 | |
| .1181 | | 3.00 | SD | 20.00 | 3.00 | 50.00 | | | 0.30 | 27148* | 27149* |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.01 | | | 0.30 | 27166 | 27167* |
| .1575 | | 4.00 | SD | 12.00 | 4.00 | 50.00 | | | 0.50 | 27170 | 27171* |
| .1575 | | 4.00 | SD | 12.00 | 4.00 | 50.00 | | | 1.00 | 27946 | 27947* |
| .1575 | | 4.00 | SD | 16.00 | 4.00 | 50.00 | | | 0.50 | 27174* | 27175* |
| .1969 | | 5.00 | STB | 13.00 | 5.00 | 51.00 | | | 0.50 | 27197 | 27198* |
| .1969 | | 5.00 | STB | 13.00 | 5.00 | 51.00 | | | 0.75 | 27199 | 27200* |
| .1969 | | 5.00 | SD | 20.00 | 5.00 | 64.00 | | | 0.50 | 27203 | 27204* |
| .1969 | | 5.00 | SD | 20.00 | 5.00 | 64.00 | | | 0.75 | 27205 | 27206* |
| .1969 | | 5.00 | SD | 20.00 | 5.00 | 64.00 | | | 1.00 | 27932 | |
| .2362 | | 6.00 | SD | 13.00 | 6.00 | 58.00 | | | 0.50 | 27209 | 27210* |

END MILLS

ADVANCED PERFORMANCE

RADIUS

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

RADIUS

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

# 3833 AlumaMill G3 (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | UC | FC-5 |
| .2362 | | 6.00 | SD | 13.00 | 6.00 | 58.00 | | | 0.75 | 27211* | 27212* |
| .2362 | | 6.00 | LR | 20.00 | 6.00 | 100.00 | 50.00 | 5.75 | 0.50 | 27215* | 27216* |
| .2362 | | 6.00 | LR | 20.00 | 6.00 | 100.00 | 50.00 | 5.75 | 0.75 | 27217* | 27218* |
| .2362 | | 6.00 | LR | 20.00 | 6.00 | 100.00 | 50.00 | 5.75 | 2.00 | 27945 | |
| .2362 | | 6.00 | SD | 25.00 | 6.00 | 64.00 | | | 0.50 | 27221 | 27222* |
| .2362 | | 6.00 | SD | 25.00 | 6.00 | 64.00 | | | 0.75 | 27223 | 27224* |
| .2362 | | 6.00 | SD | 25.00 | 6.00 | 64.00 | | | 1.00 | 27933 | |
| .2362 | | 6.00 | SD | 25.00 | 6.00 | 64.00 | | | 1.50 | 27934 | |
| .2362 | | 6.00 | SD | 25.00 | 6.00 | 64.00 | | | 2.00 | 27935 | |
| .2362 | | 6.00 | XL | 50.00 | 6.00 | 100.00 | | | 0.50 | 27227* | 27228* |
| .2362 | | 6.00 | XL | 50.00 | 6.00 | 100.00 | | | 0.75 | 27229* | 27230* |
| .2756 | | 7.00 | SD | 15.00 | 7.00 | 64.00 | | | 0.50 | 27271* | 27272* |
| .2756 | | 7.00 | SD | 15.00 | 7.00 | 64.00 | | | 0.75 | 27273* | 27274* |
| .2756 | | 7.00 | SD | 25.00 | 7.00 | 64.00 | | | 0.50 | 27277* | 27278* |
| .2756 | | 7.00 | SD | 25.00 | 7.00 | 64.00 | | | 0.75 | 27279* | 27280* |
| .3150 | | 8.00 | SD | 16.00 | 8.00 | 64.00 | | | 0.50 | 27321 | 27322* |
| .3150 | | 8.00 | SD | 16.00 | 8.00 | 64.00 | | | 0.75 | 27323* | 27324* |
| .3150 | | 8.00 | LR | 20.00 | 8.00 | 100.00 | 50.00 | 7.70 | 0.50 | 27327 | 27328* |
| .3150 | | 8.00 | LR | 20.00 | 8.00 | 100.00 | 50.00 | 7.70 | 1.00 | 27329 | 27330* |
| .3150 | | 8.00 | SD | 25.00 | 8.00 | 64.00 | | | 0.50 | 27333 | 27334* |
| .3150 | | 8.00 | SD | 25.00 | 8.00 | 64.00 | | | 1.00 | 27335 | 27336* |
| .3150 | | 8.00 | SD | 25.00 | 8.00 | 64.00 | | | 1.50 | 27936* | |
| .3150 | | 8.00 | SD | 25.00 | 8.00 | 64.00 | | | 2.00 | 27937 | |
| .3150 | | 8.00 | XL | 50.00 | 8.00 | 100.00 | | | 0.50 | 27339 | 27340* |
| .3150 | | 8.00 | XL | 50.00 | 8.00 | 100.00 | | | 1.00 | 27341 | 27342* |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 64.00 | | | 0.50 | 27379 | 27380* |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 64.00 | | | 1.00 | 27381 | 27382* |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 64.00 | | | 1.50 | 27383 | 27384* |
| .3937 | | 10.00 | SD | 26.00 | 10.00 | 64.00 | | | 0.50 | 27395 | 27396* |
| .3937 | | 10.00 | SD | 26.00 | 10.00 | 64.00 | | | 1.00 | 27397 | 27398* |
| .3937 | | 10.00 | SD | 26.00 | 10.00 | 64.00 | | | 1.50 | 27399 | 27400* |
| .3937 | | 10.00 | LR | 26.00 | 10.00 | 100.00 | 57.00 | 9.60 | 0.50 | 27387 | 27388* |
| .3937 | | 10.00 | LR | 26.00 | 10.00 | 100.00 | 57.00 | 9.60 | 1.00 | 27389 | 27390* |
| .3937 | | 10.00 | LR | 26.00 | 10.00 | 100.00 | 57.00 | 9.60 | 1.50 | 27391* | 27392* |
| .3937 | | 10.00 | LR | 26.00 | 10.00 | 100.00 | 57.00 | 11.61 | 2.00 | 27948 | 27949* |
| .3937 | | 10.00 | SD | 27.00 | 10.00 | 64.00 | | | 2.00 | 27938 | |
| .3937 | | 10.00 | SD | 27.00 | 10.00 | 64.00 | | | 2.50 | 27939* | |
| .3937 | | 10.00 | SD | 27.00 | 10.00 | 64.00 | | | 3.00 | 27940* | |
| .3937 | | 10.00 | XL | 50.00 | 10.00 | 100.00 | | | 0.50 | 27403* | 27404* |
| .3937 | | 10.00 | XL | 50.00 | 10.00 | 100.00 | | | 1.00 | 27405* | 27406* |
| .3937 | | 10.00 | XL | 50.00 | 10.00 | 100.00 | | | 1.50 | 27407* | 27408* |
| .4724 | | 12.00 | SD | 20.00 | 12.00 | 76.00 | | | 0.50 | 27437* | 27438* |
| .4724 | | 12.00 | SD | 20.00 | 12.00 | 76.00 | | | 1.00 | 27439* | 27440* |
| .4724 | | 12.00 | SD | 20.00 | 12.00 | 76.00 | | | 1.50 | 27441* | 27442* |
| .4724 | | 12.00 | LR | 25.00 | 12.00 | 100.00 | 57.00 | 11.60 | 0.50 | 27445* | 27446* |
| .4724 | | 12.00 | LR | 25.00 | 12.00 | 100.00 | 57.00 | 11.60 | 1.00 | 27447* | 27448* |
| .4724 | | 12.00 | LR | 25.00 | 12.00 | 100.00 | 57.00 | 11.60 | 1.50 | 27449* | 27450* |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 0.50 | 27453 | 27454* |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 1.00 | 27455 | 27456* |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 1.50 | 27457 | 27458* |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 2.00 | 27941 | |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 2.50 | 27942 | |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 3.00 | 27943 | |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | | | 0.50 | 27461* | 27462* |

* Non Stocked

# 3833 AlumaMill G3 (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | UC | FC-5 |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | | | 1.00 | 27463* | 27464* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | | | 1.50 | 27465 | 27466* |
| .5512 | | 14.00 | SD | 20.00 | 14.00 | 76.00 | | | 0.50 | 27577* | 27578* |
| .5512 | | 14.00 | SD | 20.00 | 14.00 | 76.00 | | | 1.00 | 27579* | 27580* |
| .5512 | | 14.00 | SD | 20.00 | 14.00 | 76.00 | | | 1.50 | 27581* | 27582* |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | | | 1.00 | 27585* | 27586* |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | | | 1.50 | 27587* | 27588* |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | | | 2.00 | 27589* | 27590* |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | | | 2.50 | 27591* | 27592* |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | | | 3.00 | 27593* | 27594* |
| .5512 | | 14.00 | XL | 57.00 | 14.00 | 125.00 | | | 1.00 | 27597* | 27598* |
| .5512 | | 14.00 | XL | 57.00 | 14.00 | 125.00 | | | 1.50 | 27599* | 27600* |
| .5512 | | 14.00 | XL | 57.00 | 14.00 | 125.00 | | | 2.00 | 27601* | 27602* |
| .5512 | | 14.00 | XL | 57.00 | 14.00 | 125.00 | | | 2.50 | 27603* | 27604* |
| .5512 | | 14.00 | XL | 57.00 | 14.00 | 125.00 | | | 3.00 | 27605* | 27606* |
| .6299 | | 16.00 | STB | 30.00 | 16.00 | 89.00 | | | 0.50 | 27655 | 27656* |
| .6299 | | 16.00 | STB | 30.00 | 16.00 | 89.00 | | | 1.00 | 27657 | 27658* |
| .6299 | | 16.00 | STB | 30.00 | 16.00 | 89.00 | | | 1.50 | 27659 | 27660* |
| .6299 | | 16.00 | LR | 30.00 | 16.00 | 150.00 | 89.00 | 15.34 | 0.50 | 27663* | 27664* |
| .6299 | | 16.00 | LR | 30.00 | 16.00 | 150.00 | 89.00 | 15.34 | 1.00 | 27665* | 27666* |
| .6299 | | 16.00 | LR | 30.00 | 16.00 | 150.00 | 89.00 | 15.34 | 1.50 | 27667* | 27668* |
| .6299 | | 16.00 | LR | 30.00 | 16.00 | 150.00 | 89.00 | 19.35 | 2.00 | 27669 | 27670* |
| .6299 | | 16.00 | LR | 30.00 | 16.00 | 150.00 | 89.00 | 24.00 | 3.00 | 27671 | 27672* |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 0.50 | 27944 | |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 1.00 | 27675 | 27676* |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 1.50 | 27677 | 27678* |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 2.00 | 27679 | 27680* |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 2.50 | 27681 | 27682* |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 3.00 | 27683 | 27684* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 150.00 | | | 1.00 | 27687* | 27688* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 150.00 | | | 1.50 | 27689* | 27690* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 150.00 | | | 2.00 | 27691* | 27692* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 150.00 | | | 2.50 | 27693* | 27694* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 150.00 | | | 3.00 | 27695* | 27696* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | | | 0.50 | 27761* | 27762* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | | | 1.00 | 27763* | 27764* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | | | 1.50 | 27765* | 27766* |
| .7874 | | 20.00 | LR | 38.00 | 20.00 | 150.00 | 89.00 | 19.35 | 1.00 | 27769* | 27770* |
| .7874 | | 20.00 | LR | 38.00 | 20.00 | 150.00 | 89.00 | 19.35 | 1.50 | 27771* | 27772* |
| .7874 | | 20.00 | LR | 38.00 | 20.00 | 150.00 | 89.00 | 19.35 | 2.00 | 27773* | 27774* |
| .7874 | | 20.00 | LR | 38.00 | 20.00 | 150.00 | 89.00 | 19.35 | 2.50 | 27775* | 27776* |
| .7874 | | 20.00 | LR | 38.00 | 20.00 | 150.00 | 89.00 | 19.35 | 3.00 | 27777 | 27778* |
| .7874 | | 20.00 | SD | 44.00 | 20.00 | 100.00 | | | 1.00 | 27781* | 27782* |
| .7874 | | 20.00 | SD | 44.00 | 20.00 | 100.00 | | | 1.50 | 27783 | 27784* |
| .7874 | | 20.00 | SD | 44.00 | 20.00 | 100.00 | | | 2.00 | 27785 | 27786* |
| .7874 | | 20.00 | SD | 44.00 | 20.00 | 100.00 | | | 2.50 | 27787* | 27788* |
| .7874 | | 20.00 | SD | 44.00 | 20.00 | 100.00 | | | 3.00 | 27780 | 27790* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 150.00 | | | 1.00 | 27793* | 27794* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 150.00 | | | 1.50 | 27795* | 27796* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 150.00 | | | 2.00 | 27797* | 27798* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 150.00 | | | 2.50 | 27799* | 27800* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 150.00 | | | 3.00 | 27801* | 27802* |
| .9843 | | 25.00 | LR | 38.00 | 25.00 | 150.00 | 89.00 | 24.00 | 1.00 | 27815* | 27816* |
| .9843 | | 25.00 | LR | 38.00 | 25.00 | 150.00 | 89.00 | 24.00 | 1.50 | 27817* | 27818* |

END MILLS

ADVANCED PERFORMANCE

RADIUS

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

RADIUS

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-5 COATING

F.A.S.T. Quote

mm METRIC

# 3833 AlumaMill G3 (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | UC | FC-5 |
| .9843 | | 25.00 | LR | 38.00 | 25.00 | 150.00 | 89.00 | 24.00 | 2.00 | 27819* | 27820* |
| .9843 | | 25.00 | LR | 38.00 | 25.00 | 150.00 | 89.00 | 24.00 | 2.50 | 27821* | 27822* |
| .9843 | | 25.00 | LR | 38.00 | 25.00 | 150.00 | 89.00 | 24.00 | 3.00 | 27823* | 27824* |
| .9843 | | 25.00 | SD | 45.00 | 25.00 | 100.00 | | | 1.00 | 27827* | 27828* |
| .9843 | | 25.00 | SD | 45.00 | 25.00 | 100.00 | | | 1.50 | 27829* | 27830* |
| .9843 | | 25.00 | SD | 45.00 | 25.00 | 100.00 | | | 2.00 | 27831* | 27832* |
| .9843 | | 25.00 | SD | 45.00 | 25.00 | 100.00 | | | 2.50 | 27833* | 27834* |
| .9843 | | 25.00 | SD | 45.00 | 25.00 | 100.00 | | | 3.00 | 27835* | 27836* |
| .9843 | | 25.00 | XL | 63.00 | 25.00 | 150.00 | | | 1.00 | 27839* | 27840* |
| .9843 | | 25.00 | XL | 63.00 | 25.00 | 150.00 | | | 1.50 | 27841* | 27842* |
| .9843 | | 25.00 | XL | 63.00 | 25.00 | 150.00 | | | 2.00 | 27843* | 27844* |
| .9843 | | 25.00 | XL | 63.00 | 25.00 | 150.00 | | | 2.50 | 27845* | 27846* |
| .9843 | | 25.00 | XL | 63.00 | 25.00 | 150.00 | | | 3.00 | 27847* | 27848* |

* *Non Stocked*

# 3825 AlumaMill (Square End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose


**Basic Information:**
- Advanced Performance
- Square End
- 2 Flutes
  - 45° High Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, Extra Long, and Long Reach Lengths
- Standard Uncoated and FC-19 Coating
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC | FC-19 |
| .1250 | 1/8 | 3.18 | LR | .2500 | .1250 | 3.0000 | .7500 | .1200 | 38213 | |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | | 38214 | 38095 |
| .1875 | 3/16 | 4.76 | LR | .3125 | .1875 | 3.0000 | .7500 | .1800 | 38211 | |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | 38216 | 38096* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | | | 38226 | 38103* |
| .2500 | 1/4 | 6.35 | LR | .5000 | .2500 | 3.0000 | 1.1250 | .2400 | 38210 | |
| .2500 | 1/4 | 6.35 | LR | .5000 | .2500 | 4.0000 | 2.1250 | .2400 | 38199 | |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | | | 38218 | 38097 |
| .2500 | 1/4 | 6.35 | XL | 2.0000 | .2500 | 4.0000 | | | 38236 | 38108* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | | | 38238 | 38109* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | | | 38228 | 38104* |
| .3750 | 3/8 | 9.53 | LR | .6250 | .3750 | 4.0000 | 1.1250 | .3600 | 38227 | |
| .3750 | 3/8 | 9.53 | LR | .6250 | .3750 | 6.0000 | 3.1250 | .3600 | 38221 | |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | 38220 | 38098 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | | 38240 | 38110* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | | | 38230 | 38105* |
| .5000 | 1/2 | 12.70 | LR | .7500 | .5000 | 4.0000 | 2.2500 | .4800 | 38198 | |
| .5000 | 1/2 | 12.70 | LR | .7500 | .5000 | 6.0000 | 3.5000 | .4800 | 38197 | |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | 38200 | 38099 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | 38242 | 38111* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | | | 38232 | 38106* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | | | 38222 | 38100* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | | | 38234 | 38107* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 4.0000 | 2.2500 | .7200 | 38229 | |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.1250 | .7200 | 38231 | |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | | | 38212 | 38101* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | | 38244 | 38112* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 5.0000 | 2.5000 | .9700 | 38223 | |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | 38225 | |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | | | 38224 | 38102* |

END MILLS

ADVANCED PERFORMANCE

SQUARE

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-19 COATING

** Non Stocked*

END MILLS

# 3825 AlumaMill (Ball End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

ADVANCED PERFORMANCE

BALL

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-19 COATING

mm METRIC

* Non Stocked


**Basic Information:**

- Advanced Performance
- Ball End
- 2 Flutes
  - 45° High Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard Uncoated and FC-19 Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | FC-19 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 38510 | 38113 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 38512 | 38114* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | 38526 | 38121* |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | 38514 | 38115* |
| .2500 | 1/4 | 6.35 | XL | 2.0000 | .2500 | 4.0000 | 38536 | 38126* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | 38538 | 38127* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | 38528 | 38122* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 38516 | 38116* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 38540 | 38128* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | 38530 | 38123* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | 38518 | 38117* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | 38542 | 38129* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | 38532 | 38124* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | 38520 | 38118* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | 38534 | 38125* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | 38522 | 38119* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | 38544 | 38130* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | 38524 | 38120* |
| **METRIC (Millimeter)** | | | | | | | | |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 92800 | |
| .1575 | | 4.00 | SD | 16.00 | 4.00 | 50.00 | 92801 | |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 50.00 | 92802 | |
| .2362 | | 6.00 | SD | 16.00 | 6.00 | 64.00 | 92803 | |
| .3150 | | 8.00 | SD | 20.00 | 8.00 | 64.00 | 92804 | |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 92805 | |
| .4724 | | 12.00 | SD | 32.00 | 12.00 | 84.00 | 92806 | |

# 3825 AlumaMill (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

END MILLS

ADVANCED PERFORMANCE

RADIUS

2 FLUTE

CENTER CUTTING

SD STANDARD


**Basic Information:**

- Advanced Performance
- Corner Radius
- 2 Flutes
  - 45° High Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated
- Inch Based Tools
- Center Cutting
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

* Non Stocked

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | .0150 | 38600 |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | .0200 | 38601 |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | .0300 | 38602 |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | .0450 | 38603 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0150 | 38604 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0200 | 38605 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0300 | 38606 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0450 | 38607 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0150 | 38608 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0200 | 38609 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0300 | 38610 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0450 | 38611 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0600 | 38612 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0900 | 38613 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .1250 | 38614 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .0150 | 38615* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .0200 | 38616* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .0300 | 38617 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .0450 | 38618 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .0600 | 38619 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .0900 | 38620 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .1250 | 38621 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0150 | 38622 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0200 | 38623 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0300 | 38624 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0450 | 38625 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0600 | 38626 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0900 | 38627 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .1250 | 38628 |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | .0150 | 38629 |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | .0200 | 38630* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | .0300 | 38631 |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | .0450 | 38632 |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | .0600 | 38633 |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | .0900 | 38634 |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | .1250 | 38635 |

END MILLS

ADVANCED PERFORMANCE

CHAMFER

2 FLUTE

CENTER CUTTING

SD STANDARD

XL EXTRA LONG

# 3815 AlumaMill (Chamfer End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose


**Basic Information:**

- Advanced Performance
- Chamfer End
- 2 Flutes
  - 45° High Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard and Extra Long Lengths
- Standard Uncoated
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Chamfer Angle | Chamfer Size | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 45° | .0075 | 38040 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 45° | .0075 | 38042 |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | 45° | .0075 | 38030 |
| .2500 | 1/4 | 6.35 | XL | 2.0000 | .2500 | 4.0000 | 45° | .0075 | 38031 |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | 45° | .0125 | 38032 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 45° | .0125 | 38033 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 45° | .0125 | 38034 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | 45° | .0125 | 38035 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | 45° | .0125 | 38036 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | 45° | .0175 | 38037 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | 45° | .0175 | 38038 |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | 45° | .0175 | 38048 |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 5.0000 | 45° | .0225 | 38039 |

# 3835 AlumaMill (Square End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose


**Basic Information:**
- Advanced Performance
- Square End
- 3 Flutes
  - 36° High Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, Extra Long, and Long Reach Lengths
- Standard Uncoated and FC-19 Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC | FC-19 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | | 38366 | 38141 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | | 38346 | 38131 |
| .1875 | 3/16 | 4.76 | STB | .3125 | .1875 | 2.0000 | | | 38368 | 38142* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | 38348 | 38132 |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | | | 38370 | 38143* |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | | | 38350 | 38133 |
| .2500 | 1/4 | 6.35 | XL | 2.0000 | .2500 | 4.0000 | | | 38386 | 38153* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | | | 38372 | 38144* |
| .3125 | 5/16 | 7.94 | SD | 1.0000 | .3125 | 2.5000 | | | 38352 | 38134* |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 4.0000 | | | 38388 | 38155* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | | | 38374 | 38145* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | 38354 | 38135 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | | 38390 | 38157* |
| .4375 | 7/16 | 11.11 | STB | .6250 | .4375 | 2.7500 | | | 38376 | 38146* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | 38356 | 38136* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | | | 38392 | 38159* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | | | 38378 | 38147 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | 38358 | 38137 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | | 38394 | 38161* |
| .5000 | 1/2 | 12.70 | XL | 3.2500 | .5000 | 6.0000 | | | 38395 | 38163* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | | | 38380 | 38148* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | | | 38360 | 38138* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | | 38396 | 38165* |
| .6250 | 5/8 | 15.88 | XL | 3.2500 | .6250 | 6.0000 | | | 38397 | 38167* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | | | 38382 | 38149* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | | | 38362 | 38139 |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | | 38398 | 38169* |
| .7500 | 3/4 | 19.05 | XL | 3.2500 | .7500 | 6.0000 | | | 38399 | 38171* |
| 1.0000 | 1 | 25.40 | STB | 1.2500 | 1.0000 | 4.0000 | | | 38384 | 38151* |
| 1.0000 | 1 | 25.40 | SD | 1.7500 | 1.0000 | 4.0000 | | | 38364 | 38140* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | | 38400 | 38215 |
| 1.0000 | 1 | 25.40 | XL | 3.2500 | 1.0000 | 6.0000 | | | 38402 | 38217* |



ADVANCED PERFORMANCE

SQUARE

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-19 COATING

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

SQUARE

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-19 COATING

mm METRIC

# 3835 AlumaMill (Square End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC | FC-19 |
| METRIC (Millimeter) | | | | | | | | | | |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | | | 92467 | 92528* |
| .1575 | | 4.00 | SD | 16.00 | 4.00 | 50.00 | | | 92468 | 92529* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | | 92469 | 92530* |
| .2362 | | 6.00 | LR | 20.00 | 6.00 | 100.00 | 50.00 | 5.75 | 92487 | 92548* |
| .2362 | | 6.00 | SD | 25.00 | 6.00 | 64.00 | | | 92470 | 92531* |
| .2362 | | 6.00 | XL | 50.00 | 6.00 | 100.00 | | | 92479 | 92540* |
| .2756 | | 7.00 | SD | 25.00 | 7.00 | 64.00 | | | 92471 | 92532* |
| .3150 | | 8.00 | LR | 20.00 | 8.00 | 100.00 | 50.00 | 7.70 | 92488 | 92549* |
| .3150 | | 8.00 | SD | 25.00 | 8.00 | 64.00 | | | 92472 | 92533* |
| .3150 | | 8.00 | XL | 50.00 | 8.00 | 100.00 | | | 92480 | 92541* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 92473 | 92534* |
| .3937 | | 10.00 | LR | 25.00 | 10.00 | 100.00 | 57.00 | 9.60 | 92489 | 92550* |
| .3937 | | 10.00 | XL | 50.00 | 10.00 | 100.00 | | | 92481 | 92542* |
| .4724 | | 12.00 | LR | 25.00 | 12.00 | 100.00 | 57.00 | 11.60 | 92490 | 92551* |
| .4724 | | 12.00 | SD | 30.00 | 12.00 | 84.00 | | | 92474 | 92535* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | | | 92482 | 92543* |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | | | 92475 | 92536* |
| .5512 | | 14.00 | XL | 57.00 | 14.00 | 125.00 | | | 92483 | 92544* |
| .6299 | | 16.00 | LR | 30.00 | 16.00 | 150.00 | 89.00 | 15.34 | 92491 | 92552* |
| .6299 | | 16.00 | SD | 41.00 | 16.00 | 89.00 | | | 92476 | 92537* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 150.00 | | | 92484 | 92545* |
| .7874 | | 20.00 | LR | 38.00 | 20.00 | 150.00 | 89.00 | 19.35 | 92492 | 92553* |
| .7874 | | 20.00 | SD | 44.00 | 20.00 | 100.00 | | | 92477 | 92538* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 150.00 | | | 92485 | 92546* |
| .9843 | | 25.00 | LR | 38.00 | 25.00 | 150.00 | 89.00 | 24.00 | 92493 | 92554* |
| .9843 | | 25.00 | SD | 44.00 | 25.00 | 100.00 | | | 92478 | 92539* |
| .9843 | | 25.00 | XL | 63.00 | 25.00 | 150.00 | | | 92486 | 92547* |

* *Non Stocked*

# 3805 AlumaMill G3 Vicor (Radius End)

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | General Purpose


**Basic Information:**
- Advanced Performance
- Corner Radius
- 3 Flutes
  - 37.5° High Helix
  - Chip Breakers
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard FC-5 Coating
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.0000″ -.0005″
  +0.000mm -0.013mm

**Now based on AlumaMill G3 Design**

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | FC-5 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0300 | 38490 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0300 | 38491 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .0300 | 38492 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0300 | 38493 |

In addition to our standard **Vicor** AlumaMills, Vicor style chip breakers are available on the rest of our AlumaMill line for an additional charge.

END MILLS

ADVANCED PERFORMANCE

RADIUS

3 FLUTE

CENTER CUTTING

SD STANDARD

FC-5 COATING

END MILLS

# 3500 Fury (Radius End)

Titanium | Super Alloys | Stainless Steels

*NEW TOOL SERIES*

**Basic Information:**
- Advanced Performance
- Corner Radius
- 4 Flutes
  - Variable Helix
  - Variable Index
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub and Standard Lengths
- Standard FC-20 Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

RELEASE THE FURY™

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

FC-20 COATING

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | FC-20 |
| .1875 | 3/16 | 4.76 | STB | .3125 | .1875 | 2.0000 | .0300 | 35198 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | .0200 | 35161 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | .0600 | 35305 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0100 | 35112 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | .0200 | 35172 |
| .3750 | 3/8 | 9.53 | SD | .7500 | .3750 | 2.5000 | .0200 | 35173 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 3.0000 | .0200 | 35174 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 2.5000 | .0100 | 35137 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 2.5000 | .0300 | 35233 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0300 | 35234 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0300 | 35236 |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | .0300 | 35241 |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 3.0000 | .0600 | 35353 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0300 | 35255 |
| .7500 | 3/4 | 19.05 | SD | 2.0000 | .7500 | 5.0000 | .0600 | 35356 |
| **METRIC (Millimeter)** | | | | | | | | |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | 0.25 | 35093 |
| .1575 | | 4.00 | SD | 12.00 | 4.00 | 50.00 | 0.25 | 35100 |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 0.25 | 35567 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 0.25 | 35107 |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | 0.50 | 35169 |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | 0.25 | 35126 |
| .3937 | | 10.00 | SD | 32.00 | 10.00 | 64.00 | 0.25 | 35128 |
| .4724 | | 12.00 | STB | 14.00 | 12.00 | 63.00 | 0.50 | 35181 |
| .4724 | | 12.00 | SD | 26.00 | 12.00 | 84.00 | 0.75 | 35227 |
| .6299 | | 16.00 | STB | 20.00 | 16.00 | 89.00 | 1.00 | 35280 |
| .6299 | | 16.00 | SD | 40.00 | 16.00 | 89.00 | 1.00 | 35283 |
| .7874 | | 20.00 | STB | 25.00 | 20.00 | 100.00 | 2.00 | 35425 |
| .7874 | | 20.00 | SD | 60.00 | 20.00 | 125.00 | 1.50 | 35364 |

# 3400 Harmon-i-Cut (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose


**Basic Information:**

- Advanced Performance
- Square End
- 4 Individually Designed Flutes
  - Variable Helix
  - Variable Index
  - Variable Rake
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard and Extra Long Lengths
- Standard FC-18 Coating
- Inch and Metric Based Tools
- Superior Core Strength
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | FC-18 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | 34900 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | 34001 |
| .1875 | 3/16 | 4.76 | SD | .4375 | .1875 | 2.0000 | | 34751 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | 34005 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | | 34902 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | 34009 |
| .3125 | 5/16 | 7.94 | SD | .5000 | .3125 | 2.0000 | | 34752 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | 34013 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | 34904 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | 34017 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | 34021 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | 34906 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | • | 34906W |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | 34025 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | 34027 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | 34908 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | 34029 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | 34910 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | 34033 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | 34037 |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | 34753* |
| **METRIC (Millimeter)** | | | | | | | | |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | | 92417 |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | | 92410 |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | | 92603 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | | 92611 |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | | 92604 |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | 92612 |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | | 92418 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | 92555 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | | 92411 |



ADVANCED PERFORMANCE

SQUARE

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

SQUARE

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

# 3400 Harmon-i-Cut (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | FC-18 |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | 92419 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | 92556 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | 92412 |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | | 92420 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | 92557 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 89.00 | | 92413 |
| .4724 | | 12.00 | STB | 16.00 | 12.00 | 63.00 | | 92421 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | 92558 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | | 92414 |
| .6299 | | 16.00 | STB | 20.00 | 16.00 | 89.00 | | 92422 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | 92415 |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | 92416 |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | | 92630* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | 92613* |

* *Non Stocked*

# 3400 Harmon-i-Cut (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose


**Basic Information:**

- Advanced Performance
- Ball End
- 4 Individually Designed Flutes
  - Variable Helix
  - Variable Index
  - Variable Rake
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub and Standard Lengths
- Standard FC-18 Coating
- Inch Based Tools
- Superior Core Strength
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | FC-18 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | 34924 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 34081 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 34085 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | 34926 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 34089 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | 34093 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | 34928 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 34097 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 34101 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | 34930 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 34105 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | 34107 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | 34932 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 34109 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | 34934 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 34113 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 34117 |



ADVANCED PERFORMANCE

BALL

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

FC-18 COATING

F.A.S.T. Quote

END MILLS

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

# 3400 Harmon-i-Cut (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose


**Basic Information:**

- Advanced Performance
- Corner Radius
- 4 Individually Designed Flutes
  - Variable Helix
  - Variable Index
  - Variable Rake
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Long Reach Lengths
- Standard FC-18 Coating
- Inch and Metric Based Tools
- Superior Core Strength
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | | FC-18 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | | .0100 | | 34912 |
| .1250 | 1/8 | 3.18 | SD | .2500 | .1250 | 1.5000 | | | .0200 | | 34754* |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | | .0100 | | 34041 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | | .0100 | • | 34041W |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | | .0200 | | 34558* |
| .1875 | 3/16 | 4.76 | SD | .4375 | .1875 | 2.0000 | | | .0100 | | 34755* |
| .1875 | 3/16 | 4.76 | SD | .4375 | .1875 | 2.0000 | | | .0200 | | 34756* |
| .1875 | 3/16 | 4.76 | SD | .4375 | .1875 | 2.0000 | | | .0300 | | 34757 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | .0100 | | 34045 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | .0200 | | 34559* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | | .0300 | | 34560* |
| .2500 | 1/4 | 6.35 | SD | .3750 | .2500 | 2.0000 | | | .0100 | | 34758* |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | | | .0200 | | 34914 |
| .2500 | 1/4 | 6.35 | SD | .3750 | .2500 | 2.0000 | | | .0300 | | 34759 |
| .2500 | 1/4 | 6.35 | SD | .3750 | .2500 | 2.0000 | | | .0600 | | 34760* |
| .2500 | 1/4 | 6.35 | SD | .3750 | .2500 | 2.0000 | | | .0900 | | 34761* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0100 | | 34561* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0200 | | 34049 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0300 | | 34050 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0600 | | 34051 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0900 | | 34052 |
| .2500 | 1/4 | 6.35 | LR | .7500 | .2500 | 3.0000 | 1.7500 | .2200 | .0200 | | 34198 |
| .2500 | 1/4 | 6.35 | LR | .7500 | .2500 | 4.0000 | 2.2500 | .2350 | .0200 | | 34192 |
| .3125 | 5/16 | 7.94 | SD | .5000 | .3125 | 2.0000 | | | .0200 | | 34762 |
| .3125 | 5/16 | 7.94 | SD | .5000 | .3125 | 2.0000 | | | .0300 | | 34763* |
| .3125 | 5/16 | 7.94 | SD | .5000 | .3125 | 2.0000 | | | .0600 | | 34764* |
| .3125 | 5/16 | 7.94 | SD | .5000 | .3125 | 2.0000 | | | .0900 | | 34765* |
| .3125 | 5/16 | 7.94 | LR | .7500 | .3125 | 4.0000 | 2.2500 | .2980 | .0200 | | 34196 |

# 3400 Harmon-i-Cut (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | | FC-18 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | | .0200 | | 34053 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | | .0300 | | 34054 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | | .0600 | | 34055 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | | .0900 | | 34562* |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | | .0200 | | 34916 |
| .3750 | 3/8 | 9.53 | SD | .5000 | .3750 | 2.5000 | | | .0300 | | 34766* |
| .3750 | 3/8 | 9.53 | SD | .5000 | .3750 | 2.5000 | | | .0600 | | 34767* |
| .3750 | 3/8 | 9.53 | SD | .5000 | .3750 | 2.5000 | | | .0900 | | 34768* |
| .3750 | 3/8 | 9.53 | SD | .5000 | .3750 | 2.5000 | | | .1200 | | 34769* |
| .3750 | 3/8 | 9.53 | LR | .7500 | .3750 | 4.0000 | 2.2500 | .3600 | .0200 | | 34200 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0200 | | 34057 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0300 | | 34059 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0600 | | 34060 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .1200 | | 34563 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 3.0000 | | | .0900 | | 34169 |
| .3750 | 3/8 | 9.53 | SD | 2.0000 | .3750 | 4.0000 | | | .0200 | | 34058 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0200 | | 34061 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0300 | | 34564* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0600 | | 34565* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0900 | | 34566* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .1200 | | 34567* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0300 | | 34918 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0300 | • | 34918W |
| .5000 | 1/2 | 12.70 | SD | .6250 | .5000 | 3.0000 | | | .0600 | | 34770* |
| .5000 | 1/2 | 12.70 | SD | .6250 | .5000 | 3.0000 | | | .0900 | | 34771* |
| .5000 | 1/2 | 12.70 | SD | .6250 | .5000 | 3.0000 | | | .1200 | | 34772* |
| .5000 | 1/2 | 12.70 | LR | .7500 | .5000 | 4.0000 | 2.1250 | .4800 | .0300 | | 34204 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0300 | | 34065 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0300 | • | 34065W |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0600 | | 34170 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0900 | | 34171* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .1200 | | 34172 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0300 | | 34067 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0600 | | 34173 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0900 | | 34174* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .1200 | | 34175 |
| .5000 | 1/2 | 12.70 | SD | 2.0000 | .5000 | 4.0000 | | | .0300 | | 34068 |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .0300 | | 34773* |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | .0350 | | 34920 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | .0350 | • | 34920W |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .0600 | | 34774* |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .0900 | | 34775* |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .1200 | | 34776* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 3.5000 | .6000 | .0350 | | 34208 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0300 | | 34568* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0350 | | 34069 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0350 | • | 34069W |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0600 | | 34071* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0900 | | 34072* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .1200 | | 34190 |
| .6250 | 5/8 | 15.88 | SD | 2.2500 | .6250 | 5.0000 | | | .0350 | | 34070 |
| .7500 | 3/4 | 19.05 | LR | .7500 | .7500 | 6.0000 | 3.5000 | .7200 | .0350 | | 34212 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | | .0200 | | 34923 |
| .7500 | 3/4 | 19.05 | SD | .8750 | .7500 | 4.0000 | | | .0300 | | 34777* |

END MILLS

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

# 3400 Harmon-i-Cut (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | | FC-18 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | | .0350 | | 34922 |
| .7500 | 3/4 | 19.05 | SD | .8750 | .7500 | 4.0000 | | | .0600 | | 34778* |
| .7500 | 3/4 | 19.05 | SD | .8750 | .7500 | 4.0000 | | | .0900 | | 34779* |
| .7500 | 3/4 | 19.05 | SD | .8750 | .7500 | 4.0000 | | | .1200 | | 34780* |
| .7500 | 3/4 | 19.05 | SD | .8750 | .7500 | 4.0000 | | | .2500 | | 34781* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0300 | | 34075 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0350 | | 34073 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0350 | • | 34073W |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0600 | | 34076* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0900 | | 34191* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .1200 | | 34193* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .2500 | | 34569* |
| .7500 | 3/4 | 19.05 | SD | 2.2500 | .7500 | 5.0000 | | | .0350 | | 34074 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0300 | | 34782* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0350 | | 34077 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0350 | • | 34077W |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0600 | | 34783* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0900 | | 34784* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .1200 | | 34785* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .2500 | | 34786* |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | | .0300 | | 34570* |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | | .0350 | | 34078 |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | | .0600 | | 34571 |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | | .0900 | | 34572* |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | | .1200 | | 34079 |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | | .2500 | | 34573* |
| **METRIC (Millimeter)** | | | | | | | | | | | |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | | | 0.20 | | 92431 |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | | | 0.20 | | 92423 |
| .1575 | | 4.00 | SD | 8.00 | 4.00 | 50.00 | | | 0.20 | | 92791 |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | | | 0.30 | | 92605 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | | | 0.20 | | 92494 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | | | 0.30 | | 92614 |
| .1969 | | 5.00 | SD | 10.00 | 5.00 | 51.00 | | | 0.20 | | 92792 |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | | | 0.30 | | 92606 |
| .1969 | | 5.00 | SD | 10.00 | 5.00 | 51.00 | | | 0.50 | | 92793* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | | 0.20 | | 92495 |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | | 0.30 | | 92615* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | | 0.50 | | 92498 |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | | | 0.30 | | 92432 |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 0.40 | | 92794 |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 0.50 | | 92795 |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 0.75 | | 92796* |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 1.00 | | 92797 |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 1.50 | | 92798* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | | 0.30 | | 92559 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | | 0.40 | | 92616* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | | 0.50 | | 92617 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | | 0.75 | | 92575 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | | 1.00 | | 92576 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | | 1.50 | | 92577 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | | | 0.30 | | 92424 |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | | | 0.30 | | 91391 |

# 3400 Harmon-i-Cut (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | | FC-18 |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | | | 0.40 | | 91392* |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | | 0.50 | | 92433 |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | | | 0.75 | | 91393* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | | | 1.00 | | 91394* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | | | 1.50 | | 91395* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | | | 2.00 | | 91396* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 0.30 | | 92618* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 0.40 | | 92619* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 0.50 | | 92560 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 0.75 | | 92578* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 1.00 | | 92579 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 1.50 | | 92580 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 2.00 | | 92581 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | | 0.50 | | 92425 |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | | | 0.50 | | 92434 |
| .3937 | | 10.00 | SD | 12.00 | 10.00 | 50.00 | | | 0.75 | | 91397* |
| .3937 | | 10.00 | SD | 12.00 | 10.00 | 50.00 | | | 1.00 | | 91398* |
| .3937 | | 10.00 | SD | 12.00 | 10.00 | 50.00 | | | 1.50 | | 91399* |
| .3937 | | 10.00 | SD | 12.00 | 10.00 | 50.00 | | | 2.00 | | 91400* |
| .3937 | | 10.00 | LR | 20.00 | 10.00 | 100.00 | 54.00 | 9.60 | 0.50 | | 92437 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 0.50 | | 92561 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 0.75 | | 92582* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 1.00 | | 92583 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 1.50 | | 92584 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 2.00 | | 92585 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 3.00 | | 92586 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 89.00 | | | 0.50 | | 92426 |
| .4724 | | 12.00 | STB | 16.00 | 12.00 | 63.00 | | | 0.50 | | 92435 |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 0.75 | | 91401* |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 1.00 | | 91402* |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 1.50 | | 91403* |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 2.00 | | 91404* |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 3.00 | | 91405* |
| .4724 | | 12.00 | LR | 20.00 | 12.00 | 100.00 | 54.00 | 11.60 | 0.50 | | 92438 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | | 0.50 | | 92562 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | | 0.75 | | 92587* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | | 1.00 | | 92588 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | | 1.50 | | 92589* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | | 2.00 | | 92590* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | | 3.00 | | 92591 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | | | 0.50 | | 92427 |
| .6299 | | 16.00 | STB | 20.00 | 16.00 | 89.00 | | | 0.50 | | 92436 |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 0.75 | | 91406* |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 1.00 | | 91407* |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 1.50 | | 91408* |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 2.00 | | 91409* |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 3.00 | | 91410* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 89.00 | 15.35 | 0.50 | | 92439 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 0.75 | | 92592* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 1.00 | | 92593 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 1.50 | | 92594 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 2.00 | | 92595 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 3.00 | | 92596 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 0.50 | | 92428 |

END MILLS

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3400 Harmon-i-Cut (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | | FC-18 |
| .7874 | | 20.00 | LR | 20.00 | 20.00 | 150.00 | 89.00 | 19.35 | 1.00 | | 92440 |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 0.50 | | 92620* |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 0.75 | | 92621* |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 1.00 | | 92429 |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 1.50 | | 92622* |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 2.00 | | 92623* |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 3.00 | | 92624* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 0.50 | | 92625* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 0.75 | | 92626* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 1.00 | | 92430 |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 1.50 | | 92627* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 2.00 | | 92628* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 3.00 | | 92629* |

* Non Stocked

# 3000 Intimidator (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose


**Basic Information:**

- Advanced Performance
- Square End
- 4 Flutes
  - Unequally Spaced Index
  - Specially Designed Relief
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard FC-18 Coating
- Inch and Metric Based Tools
- Chatter-Free Machining
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | FC-18 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | 34550* |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | 34290 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | | 34551 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | 34291 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | | 34552 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | 34292 |
| .2500 | 1/4 | 6.35 | XL | 1.7500 | .2500 | 4.0000 | | 34510 |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | | 34553 |
| .3125 | 5/16 | 7.94 | SD | .7500 | .3125 | 2.5000 | | 34503 |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 3.2500 | | 34511 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | 34554 |
| .3750 | 3/8 | 9.53 | SD | .8750 | .3750 | 2.5000 | | 34293 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | 34512* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | • | 34555 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | • | 34294 |
| .5000 | 1/2 | 12.70 | XL | 1.2500 | .5000 | 3.0000 | • | 34513 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | • | 34514* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 5.0000 | • | 34515* |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | • | 34556 |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | • | 34295 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 4.0000 | • | 34288 |
| .6250 | 5/8 | 15.88 | XL | 2.2500 | .6250 | 5.0000 | • | 34516 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | • | 34557 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | • | 34296 |
| .7500 | 3/4 | 19.05 | SD | 1.6250 | .7500 | 4.0000 | • | 34289 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | • | 34504* |
| .7500 | 3/4 | 19.05 | XL | 2.2500 | .7500 | 5.0000 | • | 34517* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | • | 34518 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | • | 34297 |
| 1.0000 | 1 | 25.40 | SD | 2.0000 | 1.0000 | 5.0000 | • | 34298 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | • | 34519 |



ADVANCED PERFORMANCE

SQUARE

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

# 3000 Intimidator (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

SQUARE

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | FC-18 |
| METRIC (Millimeter) | | | | | | | | |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | | 93900 |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | | 93800 |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | | 93901 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | | 93801 |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | | 93902* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | 93802 |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | | 93903 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | 93803 |
| .3150 | | 8.00 | STB | 16.00 | 8.00 | 50.00 | | 93904 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | 93804 |
| .3937 | | 10.00 | STB | 18.00 | 10.00 | 50.00 | | 93905 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | 93805 |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 63.00 | • | 93906 |
| .4724 | | 12.00 | SD | 27.00 | 12.00 | 76.00 | • | 93806 |
| .6299 | | 16.00 | STB | 25.00 | 16.00 | 89.00 | • | 93907* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | • | 93807* |
| .7874 | | 20.00 | STB | 30.00 | 20.00 | 100.00 | • | 93908* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | • | 93808* |

* *Non Stocked*

# 3000 Intimidator (Chamfer End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose


**Basic Information:**

- Advanced Performance
- Chamfer End
- 4 Flutes
  - Unequally Spaced Index
  - Specially Designed Relief
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard FC-18 Coating
- Inch Based Tools
- Chatter-Free Machining
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Chamfer Angle | Chamfer Size | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | 45° | .0100 | | 34350 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 45° | .0100 | | 34300 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | 45° | .0100 | | 34371 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 45° | .0100 | | 34301 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | 45° | .0100 | | 34351 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 45° | .0100 | | 34302 |
| .2500 | 1/4 | 6.35 | XL | 1.7500 | .2500 | 4.0000 | 45° | .0100 | | 34520* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | 45° | .0100 | | 34352 |
| .3125 | 5/16 | 7.94 | SD | .7500 | .3125 | 2.5000 | 45° | .0100 | | 34303 |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 3.2500 | 45° | .0100 | | 34521* |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | 45° | .0200 | | 34353 |
| .3750 | 3/8 | 9.53 | SD | .8750 | .3750 | 2.5000 | 45° | .0200 | | 34304 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 45° | .0200 | | 34522* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | 45° | .0200 | • | 34354 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 45° | .0200 | • | 34306 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | 45° | .0200 | • | 34307 |
| .5000 | 1/2 | 12.70 | SD | 2.0000 | .5000 | 4.0000 | 45° | .0200 | • | 34308 |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 5.0000 | 45° | .0200 | • | 34523* |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | 45° | .0200 | • | 34355 |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | 45° | .0200 | • | 34309 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 4.0000 | 45° | .0200 | • | 34310 |
| .6250 | 5/8 | 15.88 | XL | 2.2500 | .6250 | 5.0000 | 45° | .0200 | • | 34524* |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | 45° | .0200 | • | 34356 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 45° | .0200 | • | 34311 |
| .7500 | 3/4 | 19.05 | SD | 1.6250 | .7500 | 4.0000 | 45° | .0200 | • | 34314 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | 45° | .0200 | • | 34312 |
| .7500 | 3/4 | 19.05 | XL | 2.2500 | .7500 | 5.0000 | 45° | .0200 | • | 34525* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | 45° | .0200 | • | 34526* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 45° | .0200 | • | 34313 |
| 1.0000 | 1 | 25.40 | SD | 2.0000 | 1.0000 | 5.0000 | 45° | .0200 | • | 34315 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | 45° | .0200 | • | 34527* |



ADVANCED PERFORMANCE

CHAMFER

4 FLUTE | CENTER CUTTING | STB STUB | SD STANDARD | XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

** Non Stocked*

END MILLS

# 3000 Intimidator (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked


**Basic Information:**

- Advanced Performance
- Corner Radius
- 4 Flutes
  - Unequally Spaced Index
  - Specially Designed Relief
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard FC-18 Coating
- Inch and Metric Based Tools
- Chatter-Free Machining
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000″ -.002″
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | FC-18 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0100 | | 34400 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0200 | | 34401 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | .0300 | | 34364 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0100 | | 34402 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0200 | | 34403 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0300 | | 34404 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0100 | | 34405 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0200 | | 34406 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0300 | | 34407 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0450 | | 34408 |
| .2500 | 1/4 | 6.35 | XL | 1.7500 | .2500 | 4.0000 | .0100 | | 34528* |
| .2500 | 1/4 | 6.35 | XL | 1.7500 | .2500 | 4.0000 | .0200 | | 34529 |
| .2500 | 1/4 | 6.35 | XL | 1.7500 | .2500 | 4.0000 | .0300 | | 34530* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | .0300 | | 34366 |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 3.2500 | .0300 | | 34531* |
| .3750 | 3/8 | 9.53 | SD | .8750 | .3750 | 2.5000 | .0100 | | 34409 |
| .3750 | 3/8 | 9.53 | SD | .8750 | .3750 | 2.5000 | .0200 | | 34410 |
| .3750 | 3/8 | 9.53 | SD | .8750 | .3750 | 2.5000 | .0300 | | 34411 |
| .3750 | 3/8 | 9.53 | SD | .8750 | .3750 | 2.5000 | .0450 | | 34412 |
| .3750 | 3/8 | 9.53 | SD | .8750 | .3750 | 2.5000 | .0600 | | 34413 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | .0300 | | 34532* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | .0600 | | 34533* |
| .5000 | 1/2 | 12.70 | SD | .8750 | .5000 | 3.0000 | .0100 | • | 34414 |
| .5000 | 1/2 | 12.70 | SD | .8750 | .5000 | 3.0000 | .0200 | • | 34415 |
| .5000 | 1/2 | 12.70 | SD | .8750 | .5000 | 3.0000 | .0450 | • | 34417 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0300 | • | 34416 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0600 | • | 34418 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0900 | • | 34419 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .1250 | • | 34420 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | .0200 | • | 34500 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | .1200 | • | 34502 |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 5.0000 | .0300 | • | 34534* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 5.0000 | .0600 | • | 34535* |

# 3000 Intimidator (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

END MILLS

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | FC-18 |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 5.0000 | .0900 | • | 34536* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 5.0000 | .1200 | • | 34537* |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | .0300 | • | 34421 |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | .0450 | • | 34422 |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | .0600 | • | 34423 |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | .0900 | • | 34424 |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | .1200 | • | 34505* |
| .6250 | 5/8 | 15.88 | SD | 1.2500 | .6250 | 3.5000 | .1250 | • | 34425 |
| .6250 | 5/8 | 15.88 | XL | 2.2500 | .6250 | 5.0000 | .0300 | • | 34538* |
| .6250 | 5/8 | 15.88 | XL | 2.2500 | .6250 | 5.0000 | .0600 | • | 34539* |
| .6250 | 5/8 | 15.88 | XL | 2.2500 | .6250 | 5.0000 | .0900 | • | 34540* |
| .6250 | 5/8 | 15.88 | XL | 2.2500 | .6250 | 5.0000 | .1200 | • | 34541* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0300 | • | 34426 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0450 | • | 34427* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0600 | • | 34428 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0900 | • | 34429 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .1250 | • | 34430 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0300 | • | 34506 |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0600 | • | 34507* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .0900 | • | 34508* |
| .7500 | 3/4 | 19.05 | SD | 1.7500 | .7500 | 4.0000 | .1200 | • | 34509* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .0300 | • | 34542* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .0600 | • | 34543* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .0900 | • | 34544* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .1200 | • | 34545* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0300 | • | 34431 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0450 | • | 34432* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0600 | • | 34433 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0900 | • | 34434 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .1250 | • | 34435 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .0300 | • | 34546* |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .0600 | • | 34547* |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .0900 | • | 34548 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .1200 | • | 34549* |
| **METRIC (Millimeter)** | | | | | | | | | |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | 0.30 | | 93909* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 0.30 | | 93809* |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | 0.30 | | 93910* |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | 0.50 | | 93911 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 0.30 | | 93810* |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 0.50 | | 93811 |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | 0.30 | | 93912 |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | 0.50 | | 93913* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 0.30 | | 93812* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 0.50 | | 93813* |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | 0.50 | | 93914* |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | 0.75 | | 93915* |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | 1.00 | | 93916* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 0.50 | | 93814 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 0.75 | | 93815* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 1.00 | | 93816 |
| .3150 | | 8.00 | STB | 16.00 | 8.00 | 50.00 | 0.50 | | 93917* |
| .3150 | | 8.00 | STB | 16.00 | 8.00 | 50.00 | 0.75 | | 93918* |

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

# 3000 Intimidator (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | FC-18 |
| .3150 | | 8.00 | STB | 16.00 | 8.00 | 50.00 | 1.00 | | 93919* |
| .3150 | | 8.00 | STB | 16.00 | 8.00 | 50.00 | 1.50 | | 93920* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 0.50 | | 93817 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 0.75 | | 93818* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 1.00 | | 93819* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 1.50 | | 93820* |
| .3937 | | 10.00 | STB | 18.00 | 10.00 | 50.00 | 0.50 | | 93921* |
| .3937 | | 10.00 | STB | 18.00 | 10.00 | 50.00 | 0.75 | | 93922* |
| .3937 | | 10.00 | STB | 18.00 | 10.00 | 50.00 | 1.00 | | 93923* |
| .3937 | | 10.00 | STB | 18.00 | 10.00 | 50.00 | 1.50 | | 93924* |
| .3937 | | 10.00 | STB | 18.00 | 10.00 | 50.00 | 2.00 | | 93925* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 0.50 | | 93821 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 0.75 | | 93822* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 1.00 | | 93823* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 1.50 | | 93824* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 2.00 | | 93825* |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 63.00 | 0.50 | • | 93926* |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 63.00 | 0.75 | • | 93927* |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 63.00 | 1.00 | • | 93928* |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 63.00 | 1.50 | • | 93929* |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 63.00 | 2.00 | • | 93930* |
| .4724 | | 12.00 | STB | 20.00 | 12.00 | 63.00 | 3.00 | • | 93931* |
| .4724 | | 12.00 | SD | 26.01 | 12.00 | 84.00 | 0.75 | • | 90168 |
| .4724 | | 12.00 | SD | 27.00 | 12.00 | 76.00 | 0.50 | • | 93826* |
| .4724 | | 12.00 | SD | 27.00 | 12.00 | 76.00 | 0.75 | • | 93827 |
| .4724 | | 12.00 | SD | 27.00 | 12.00 | 76.00 | 1.00 | • | 93828* |
| .4724 | | 12.00 | SD | 27.00 | 12.00 | 76.00 | 1.50 | • | 93829* |
| .4724 | | 12.00 | SD | 27.00 | 12.00 | 76.00 | 2.00 | • | 93830* |
| .4724 | | 12.00 | SD | 27.00 | 12.00 | 76.00 | 3.00 | • | 93831* |
| .6299 | | 16.00 | STB | 25.00 | 16.00 | 89.00 | 0.75 | • | 93932* |
| .6299 | | 16.00 | STB | 25.00 | 16.00 | 89.00 | 1.00 | • | 93933 |
| .6299 | | 16.00 | STB | 25.00 | 16.00 | 89.00 | 1.50 | • | 93934 |
| .6299 | | 16.00 | STB | 25.00 | 16.00 | 89.00 | 2.00 | • | 93935 |
| .6299 | | 16.00 | STB | 25.00 | 16.00 | 89.00 | 3.00 | • | 93936 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | 0.75 | • | 93832 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | 1.00 | • | 93833* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | 1.50 | • | 93834* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | 2.00 | • | 93835* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | 3.00 | • | 93836* |
| .7874 | | 20.00 | STB | 30.00 | 20.00 | 100.00 | 1.00 | • | 93937 |
| .7874 | | 20.00 | STB | 30.00 | 20.00 | 100.00 | 1.50 | • | 93938 |
| .7874 | | 20.00 | STB | 30.00 | 20.00 | 100.00 | 2.00 | • | 93939 |
| .7874 | | 20.00 | STB | 30.00 | 20.00 | 100.00 | 3.00 | • | 93940 |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 1.00 | • | 93837* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 1.50 | • | 93838* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 2.00 | • | 93839* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 3.00 | • | 93840* |

* Non Stocked

# 3410 Fantom (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

**Basic Information:**
- Advanced Performance
- Square End
- 5 Individually Designed Flutes
  - Eccentric Relief
  - Variable Index
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard FC-18 Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | FC-18 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | 34150 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 34125 |
| .2500 | 1/4 | 6.35 | XL | 1.2500 | .2500 | 3.0000 | 34727 |
| .3125 | 5/16 | 7.94 | STB | .8750 | .3125 | 2.5000 | 34127 |
| .3125 | 5/16 | 7.94 | SD | 1.0000 | .3125 | 3.0000 | 34728 |
| .3125 | 5/16 | 7.94 | XL | 2.0000 | .3125 | 4.0000 | 34729 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | 34152 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 34129 |
| .3750 | 3/8 | 9.53 | XL | 1.2500 | .3750 | 3.0000 | 34730 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 34731* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 34131 |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | 34732* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | 34154 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 34133 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | 34135 |
| .5000 | 1/2 | 12.70 | XL | 1.6250 | .5000 | 4.0000 | 34733 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | 34734 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | 34156 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 34137 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 4.0000 | 34138 |
| .6250 | 5/8 | 15.88 | XL | 2.2500 | .6250 | 5.0000 | 34735 |
| .6250 | 5/8 | 15.88 | XL | 3.2500 | .6250 | 6.0000 | 34736 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | 34158 |
| .7500 | 3/4 | 19.05 | SD | 1.2500 | .7500 | 4.0000 | 34574* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 34139 |
| .7500 | 3/4 | 19.05 | SD | 1.6250 | .7500 | 4.0000 | 34140 |
| .7500 | 3/4 | 19.05 | XL | 2.2500 | .7500 | 5.0000 | 34737 |
| .7500 | 3/4 | 19.05 | XL | 3.2500 | .7500 | 6.0000 | 34738 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 34141 |
| 1.0000 | 1 | 25.40 | SD | 2.0000 | 1.0000 | 5.0000 | 34142 |
| 1.0000 | 1 | 25.40 | XL | 2.2500 | 1.0000 | 5.0000 | 34739* |
| 1.0000 | 1 | 25.40 | XL | 3.2500 | 1.0000 | 6.0000 | 34740 |
| 1.0000 | 1 | 25.40 | XL | 4.2500 | 1.0000 | 7.0000 | 34741 |



ADVANCED PERFORMANCE

SQUARE

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

** Non Stocked*

END MILLS

ADVANCED PERFORMANCE

SQUARE

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

FC-18 COATING

F.A.S.T. Quote

mm METRIC

# 3410 Fantom (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | FC-18 |
| METRIC (Millimeter) | | | | | | | |
| .1181 | | 3.00 | SD | 6.00 | 3.00 | 38.00 | 91411* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 92631 |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | 92607 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 92601 |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | 92608 |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 92602 |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | 92447 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 92563 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | 92441 |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | 92448 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 92564 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | 92442 |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | 92449 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 92565 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 89.00 | 92443 |
| .4724 | | 12.00 | STB | 16.00 | 12.00 | 63.00 | 92450 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | 92566 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | 92444 |
| .6299 | | 16.00 | STB | 20.00 | 16.00 | 89.00 | 92451 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | 92445 |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | 92446 |
| .7874 | | 20.00 | SD | 63.00 | 20.00 | 125.00 | 92764 |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | 92632* |

* *Non Stocked*

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

**Basic Information:**
- Advanced Performance
- Corner Radius
- 5 Individually Designed Flutes
  - Eccentric Relief
  - Variable Index
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, Extra Long, and Long Reach Lengths
- Standard FC-18 Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .1250 | 1/8 | 3.18 | LR | .1562 | .1250 | 2.0000 | .3750 | .1200 | .0100 | 34575 |
| .1250 | 1/8 | 3.18 | LR | .1562 | .1250 | 2.0000 | .3750 | .1200 | .0300 | 34576* |
| .1250 | 1/8 | 3.18 | LR | .1562 | .1250 | 2.0000 | .5000 | .1200 | .0100 | 34577* |
| .1250 | 1/8 | 3.18 | LR | .1562 | .1250 | 2.0000 | .5000 | .1200 | .0300 | 34578 |
| .1250 | 1/8 | 3.18 | LR | .1562 | .1250 | 2.5000 | .7500 | .1200 | .0100 | 34579* |
| .1250 | 1/8 | 3.18 | LR | .1562 | .1250 | 2.5000 | .7500 | .1200 | .0300 | 34580* |
| .1875 | 3/16 | 4.76 | LR | .2188 | .1875 | 2.0000 | .5000 | .1800 | .0100 | 34581* |
| .1875 | 3/16 | 4.76 | LR | .2188 | .1875 | 2.0000 | .5000 | .1800 | .0300 | 34852* |
| .1875 | 3/16 | 4.76 | LR | .2188 | .1875 | 2.5000 | .7500 | .1800 | .0100 | 34583* |
| .1875 | 3/16 | 4.76 | LR | .2188 | .1875 | 2.5000 | .7500 | .1800 | .0300 | 34584* |
| .1875 | 3/16 | 4.76 | LR | .2188 | .1875 | 2.5000 | 1.1250 | .1800 | .0100 | 34585* |
| .1875 | 3/16 | 4.76 | LR | .2188 | .1875 | 2.5000 | 1.1250 | .1800 | .0300 | 34586* |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | | | .0200 | 34160 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | | | .0300 | 34787 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | | | .0600 | 34788* |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | .7500 | .2400 | .0200 | 34587* |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | .7500 | .2400 | .0300 | 34588 |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | .7500 | .2400 | .0600 | 34589 |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | 1.1250 | .2400 | .0200 | 34590* |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | 1.1250 | .2400 | .0300 | 34591* |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | 1.1250 | .2400 | .0600 | 34592* |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | 2.1250 | .2400 | .0200 | 34593* |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | 2.1250 | .2400 | .0300 | 34594* |
| .2500 | 1/4 | 6.35 | LR | .3750 | .2500 | 4.0000 | 2.1250 | .2400 | .0600 | 34595* |

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

** Non Stocked*

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0200 | 34106 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0300 | 34692 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | | .0600 | 34176 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | | .0200 | 34108 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | | .0300 | 34693* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | | .0600 | 34694 |
| .3125 | 5/16 | 7.94 | XL | 1.0000 | .3125 | 3.0000 | | | .0200 | 34742* |
| .3125 | 5/16 | 7.94 | XL | 1.0000 | .3125 | 3.0000 | | | .0300 | 34743* |
| .3125 | 5/16 | 7.94 | XL | 1.0000 | .3125 | 3.0000 | | | .0600 | 34744* |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | | .0200 | 34162 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | | .0300 | 34789 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | | .0600 | 34790 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | | .0900 | 34791 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | | | .1200 | 34792* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 4.0000 | 1.1250 | .3600 | .0200 | 34596 |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 4.0000 | 1.1250 | .3600 | .0300 | 34597 |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 4.0000 | 1.1250 | .3600 | .0600 | 34598 |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 4.0000 | 1.1250 | .3600 | .0900 | 34599* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 4.0000 | 2.1250 | .3600 | .0200 | 34600* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 4.0000 | 2.1250 | .3600 | .0300 | 34601 |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 4.0000 | 2.1250 | .3600 | .0600 | 34602 |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 4.0000 | 2.1250 | .3600 | .0900 | 34603* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 6.0000 | 3.1250 | .3600 | .0200 | 34604 |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 6.0000 | 3.1250 | .3600 | .0300 | 34605* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 6.0000 | 3.1250 | .3600 | .0600 | 34606* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 6.0000 | 3.1250 | .3600 | .0900 | 34607* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 6.0000 | 4.1250 | .3600 | .0200 | 34608* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 6.0000 | 4.1250 | .3600 | .0300 | 34609* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 6.0000 | 4.1250 | .3600 | .0600 | 34610* |
| .3750 | 3/8 | 9.53 | LR | .5000 | .3750 | 6.0000 | 4.1250 | .3600 | .0900 | 34611* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0200 | 34110 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0300 | 34695 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0600 | 34177 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .0900 | 34178 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | | .1200 | 34179 |
| .3750 | 3/8 | 9.53 | SD | 2.0000 | .3750 | 4.0000 | | | .0200 | 34111 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0200 | 34696 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0300 | 34112 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0600 | 34697* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .0900 | 34698* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | | .1200 | 34699* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0300 | 34164 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0600 | 34793* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .0900 | 34794* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | | .1200 | 34795 |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 1.5000 | .4800 | .0300 | 34612* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 1.5000 | .4800 | .0600 | 34613* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 1.5000 | .4800 | .0900 | 34614* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 1.5000 | .4800 | .1200 | 34615* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .0300 | 34616 |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .0600 | 34617 |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .0900 | 34618* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 4.0000 | 2.2500 | .4800 | .1200 | 34619 |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .0300 | 34620* |

* Non Stocked

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .0600 | 34621* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .0900 | 34622* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 3.3750 | .4800 | .1200 | 34623* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 4.1250 | .4800 | .0300 | 34624* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 4.1250 | .4800 | .0600 | 34625* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 4.1250 | .4800 | .0900 | 34626* |
| .5000 | 1/2 | 12.70 | LR | .6250 | .5000 | 6.0000 | 4.1250 | .4800 | .1200 | 34627* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0100 | 34143 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0150 | 34144 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0200 | 34180 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0300 | 34114 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0600 | 34181 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .0900 | 34182 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | | .1200 | 34703* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0150 | 34183 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0300 | 34115 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0600 | 34700 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .0900 | 34701* |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | | | .1200 | 34702 |
| .5000 | 1/2 | 12.70 | SD | 2.0000 | .5000 | 4.0000 | | | .0200 | 34184 |
| .5000 | 1/2 | 12.70 | SD | 2.0000 | .5000 | 4.0000 | | | .0300 | 34119 |
| .5000 | 1/2 | 12.70 | SD | 2.0000 | .5000 | 4.0000 | | | .1200 | 34185 |
| .6250 | 5/8 | 15.88 | SD | .7500 | .6250 | 3.5000 | | | .0300 | 34796 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | .0350 | 34166 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | .0600 | 34797 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | .0900 | 34798* |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | | | .1200 | 34799 |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 4.0000 | 1.6250 | .6000 | .0300 | 34628 |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 4.0000 | 1.6250 | .6000 | .0600 | 34629* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 4.0000 | 1.6250 | .6000 | .0900 | 34630* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 4.0000 | 1.6250 | .6000 | .1200 | 34631* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 2.3750 | .6000 | .0300 | 34632* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 2.3750 | .6000 | .0600 | 34633* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 2.3750 | .6000 | .0900 | 34634* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 2.3750 | .6000 | .1200 | 34635* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 3.3750 | .6000 | .0300 | 34636* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 3.3750 | .6000 | .0600 | 34637* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 3.3750 | .6000 | .0900 | 34638* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 3.3750 | .6000 | .1200 | 34639* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 4.1250 | .6000 | .0300 | 34640* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 4.1250 | .6000 | .0600 | 34641* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 4.1250 | .6000 | .0900 | 34642* |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 6.0000 | 4.1250 | .6000 | .1200 | 34643* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0300 | 34704 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0350 | 34116 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0600 | 34705* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .0900 | 34706* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | | .1200 | 34707* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 4.0000 | | | .0300 | 34708* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 4.0000 | | | .0350 | 34103 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 4.0000 | | | .0600 | 34709* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 4.0000 | | | .0900 | 34710* |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 4.0000 | | | .1200 | 34711 |
| .6250 | 5/8 | 15.88 | SD | 2.2500 | .6250 | 5.0000 | | | .0350 | 34121 |

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked
W = Weldon Flat

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .7500 | 3/4 | 19.05 | SD | .8750 | .7500 | 4.0000 | | | .0300 | 34800 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | | .0350 | 34168 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | | .0600 | 34801* |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | | .0900 | 34802* |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | | .1200 | 34803 |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | | .1900 | 34804* |
| .7500 | 3/4 | 19.05 | STB | .8750 | .7500 | 4.0000 | | | .2500 | 34805* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 4.0000 | 2.0000 | .7200 | .0300 | 34644* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 4.0000 | 2.0000 | .7200 | .0600 | 34645* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 4.0000 | 2.0000 | .7200 | .0900 | 34646* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 4.0000 | 2.0000 | .7200 | .1200 | 34647* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 4.0000 | 2.0000 | .7200 | .1900 | 34648* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 4.0000 | 2.0000 | .7200 | .2500 | 34649* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.5000 | .7200 | .0300 | 34650 |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.5000 | .7200 | .0600 | 34651* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.5000 | .7200 | .0900 | 34652* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.5000 | .7200 | .1200 | 34653* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.5000 | .7200 | .1900 | 34654* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 2.5000 | .7200 | .2500 | 34655* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .0300 | 34656 |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .0600 | 34657* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .0900 | 34658* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .1200 | 34659 |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .1900 | 34660* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 3.3750 | .7200 | .2500 | 34661* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 4.1250 | .7200 | .0300 | 34662* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 4.1250 | .7200 | .0600 | 34663* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 4.1250 | .7200 | .0900 | 34664* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 4.1250 | .7200 | .1200 | 34665* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 4.1250 | .7200 | .1900 | 34666* |
| .7500 | 3/4 | 19.05 | LR | 1.0000 | .7500 | 6.0000 | 4.1250 | .7200 | .2500 | 34667* |
| .7500 | 3/4 | 19.05 | SD | 1.2500 | .7500 | 4.0000 | | | .0300 | 34715* |
| .7500 | 3/4 | 19.05 | LR | 1.2500 | .7500 | 4.0000 | 2.5000 | .7200 | .1200 | 34124 |
| .7500 | 3/4 | 19.05 | SD | 1.2500 | .7500 | 4.0000 | | | .0600 | 34716* |
| .7500 | 3/4 | 19.05 | SD | 1.2500 | .7500 | 4.0000 | | | .0900 | 34717* |
| .7500 | 3/4 | 19.05 | SD | 1.2500 | .7500 | 4.0000 | | | .1200 | 34718* |
| .7500 | 3/4 | 19.05 | SD | 1.2500 | .7500 | 4.0000 | | | .1900 | 34719* |
| .7500 | 3/4 | 19.05 | SD | 1.2500 | .7500 | 4.0000 | | | .2500 | 34720* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0200 | 34186 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0300 | 34712* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0350 | 34118 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0350 | 34118W |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0600 | 34187 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .0900 | 34188 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .1200 | 34189 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .1900 | 34713* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | | .2500 | 34714 |
| .7500 | 3/4 | 19.05 | SD | 1.6250 | .7500 | 4.0000 | | | .0350 | 34104 |
| .7500 | 3/4 | 19.05 | SD | 2.2500 | .7500 | 5.0000 | | | .0350 | 34122 |
| .7500 | 3/4 | 19.05 | SD | 2.2500 | .7500 | 5.0000 | | | .0350 | 34122W |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 4.0000 | 2.2500 | .9700 | .0300 | 34668* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 4.0000 | 2.2500 | .9700 | .0600 | 34669* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 4.0000 | 2.2500 | .9700 | .0900 | 34670* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 4.0000 | 2.2500 | .9700 | .1200 | 34671* |

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 4.0000 | 2.2500 | .9700 | .1900 | 34672* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 4.0000 | 2.2500 | .9700 | .2500 | 34673* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 2.6250 | .9700 | .0300 | 34674* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 2.6250 | .9700 | .0600 | 34675* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 2.6250 | .9700 | .0900 | 34676* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 2.6250 | .9700 | .1200 | 34677* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 2.6250 | .9700 | .1900 | 34678* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 2.6250 | .9700 | .2500 | 34679* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .0300 | 34680* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .0600 | 34681* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .0900 | 34682* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .1200 | 34683* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .1900 | 34684* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 3.3750 | .9700 | .2500 | 34685* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 4.1250 | .9700 | .0300 | 34686* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 4.1250 | .9700 | .0600 | 34687* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 4.1250 | .9700 | .0900 | 34688* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 4.1250 | .9700 | .1200 | 34689* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 4.1250 | .9700 | .1900 | 34690* |
| 1.0000 | 1 | 25.40 | LR | 1.2500 | 1.0000 | 6.0000 | 4.1250 | .9700 | .2500 | 34691* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0300 | 34721* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0350 | 34120 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0600 | 34722 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .0900 | 34723* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .1200 | 34724* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .1900 | 34725* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | | .2500 | 34726* |
| 1.0000 | 1 | 25.40 | XL | 2.2500 | 1.0000 | 5.0000 | | | .0300 | 34745* |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | | .0350 | 34123 |
| 1.0000 | 1 | 25.40 | SD | 2.2500 | 1.0000 | 5.0000 | | | .0350 | 34123W |
| 1.0000 | 1 | 25.40 | XL | 2.2500 | 1.0000 | 5.0000 | | | .0600 | 34746 |
| 1.0000 | 1 | 25.40 | XL | 2.2500 | 1.0000 | 5.0000 | | | .0900 | 34747* |
| 1.0000 | 1 | 25.40 | XL | 2.2500 | 1.0000 | 5.0000 | | | .1200 | 34748* |
| 1.0000 | 1 | 25.40 | XL | 2.2500 | 1.0000 | 5.0000 | | | .1900 | 34749* |
| 1.0000 | 1 | 25.40 | XL | 2.2500 | 1.0000 | 5.0000 | | | .2500 | 34750* |
| **METRIC (Millimeter)** | | | | | | | | | | |
| .1181 | | 3.00 | LR | 4.00 | 3.00 | 50.00 | 10.00 | 2.87 | 0.25 | 92633 |
| .1181 | | 3.00 | LR | 4.00 | 3.00 | 50.00 | 10.00 | 2.87 | 0.75 | 92634* |
| .1181 | | 3.00 | LR | 4.00 | 3.00 | 50.00 | 12.00 | 2.87 | 0.25 | 92635 |
| .1181 | | 3.00 | LR | 4.00 | 3.00 | 50.00 | 12.00 | 2.87 | 0.75 | 92636* |
| .1181 | | 3.00 | LR | 4.00 | 3.00 | 64.00 | 20.00 | 2.87 | 0.25 | 92637* |
| .1181 | | 3.00 | LR | 4.00 | 3.00 | 64.00 | 20.00 | 2.87 | 0.75 | 92638* |
| .1181 | | 3.00 | SD | 6.00 | 3.00 | 38.00 | | | 0.20 | 91412* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | | | 0.20 | 92742 |
| .1575 | | 4.00 | SD | 8.00 | 4.00 | 50.00 | | | 0.20 | 91413 |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | | | 0.30 | 92609 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | | | 0.20 | 92743* |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | | | 0.30 | 92744 |
| .1969 | | 5.00 | LR | 6.00 | 5.00 | 50.00 | 12.00 | 4.75 | 0.25 | 92639* |
| .1969 | | 5.00 | LR | 6.00 | 5.00 | 50.00 | 12.00 | 4.75 | 0.75 | 92640* |
| .1969 | | 5.00 | LR | 6.00 | 5.00 | 64.00 | 20.00 | 4.75 | 0.25 | 92641* |
| .1969 | | 5.00 | LR | 6.00 | 5.00 | 64.00 | 20.00 | 4.75 | 0.75 | 92642* |
| .1969 | | 5.00 | LR | 6.00 | 5.00 | 64.00 | 30.00 | 4.75 | 0.25 | 92643* |

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE | CENTER CUTTING

STB STUB | SD STANDARD

XL EXTRA LONG | LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked
W = Weldon Flat

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .1969 | | 5.00 | LR | 6.00 | 5.00 | 64.00 | 30.00 | 4.75 | 0.75 | 92644* |
| .1969 | | 5.00 | SD | 10.00 | 5.00 | 51.00 | | | 0.20 | 91414* |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | | | 0.30 | 92610 |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | | | 0.50 | 91415* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | | 0.20 | 92745* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | | 0.30 | 92746 |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | | 0.50 | 92747* |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | | | 0.25 | 92499 |
| .2362 | | 6.00 | STB | 10.00 | 6.00 | 50.00 | | | 0.30 | 92458 |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 0.40 | 91416* |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 0.50 | 91417* |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 0.75 | 91418* |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 1.00 | 91419* |
| .2362 | | 6.00 | SD | 10.00 | 6.00 | 50.00 | | | 1.50 | 91420* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 20.00 | 5.75 | 0.50 | 92645* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 20.00 | 5.75 | 0.75 | 92646* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 20.00 | 5.75 | 1.50 | 92647* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 30.00 | 5.75 | 0.50 | 92648* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 30.00 | 5.75 | 0.75 | 92649* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 30.00 | 5.75 | 1.50 | 92650* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 54.00 | 5.75 | 0.50 | 92651* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 54.00 | 5.75 | 0.75 | 92652* |
| .2362 | | 6.00 | LR | 10.00 | 6.00 | 100.00 | 54.00 | 5.75 | 1.50 | 92653* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | | 0.30 | 92567 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | | | 0.30 | 92452 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | | | 0.40 | 92765* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | | | 0.50 | 92766* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | | | 0.75 | 92767* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | | | 1.00 | 92768* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 76.00 | | | 1.50 | 92769* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | | | 0.30 | 91421* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | | | 0.40 | 91422* |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | | 0.50 | 92459 |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | | 0.75 | 91423* |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | | 1.00 | 91424* |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | | 1.50 | 91425* |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | | 2.00 | 91426* |
| .3150 | | 8.00 | LR | 15.00 | 8.00 | 100.00 | 60.00 | 7.75 | 0.50 | 34853* |
| .3150 | | 8.00 | LR | 15.00 | 8.00 | 100.00 | 60.00 | 7.75 | 1.00 | 34854* |
| .3150 | | 8.00 | LR | 15.00 | 8.00 | 100.00 | 60.00 | 7.75 | 1.50 | 34855* |
| .3150 | | 8.00 | LR | 15.00 | 8.00 | 100.00 | 60.00 | 7.75 | 2.00 | 34856* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 0.50 | 92568 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | | 0.30 | 92770* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | | 0.40 | 92771* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | | 0.50 | 92453 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | | 0.75 | 92772* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | | 1.00 | 92773 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | | 1.50 | 92774* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 76.00 | | | 2.00 | 92775* |
| .3150 | | 8.00 | LR | 27.00 | 8.00 | 76.00 | 35.00 | 7.75 | 0.50 | 34857* |
| .3150 | | 8.00 | LR | 27.00 | 8.00 | 76.00 | 35.00 | 7.75 | 1.00 | 34858* |
| .3150 | | 8.00 | LR | 27.00 | 8.00 | 76.00 | 35.00 | 7.75 | 1.50 | 34859* |
| .3150 | | 8.00 | LR | 27.00 | 8.00 | 76.00 | 35.00 | 7.75 | 2.00 | 34860* |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | | | 0.50 | 92460 |

* Non Stocked

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | | | 0.75 | 91427* |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | | | 1.00 | 91428* |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | | | 1.50 | 91429* |
| .3937 | | 10.00 | STB | 12.00 | 10.00 | 50.00 | | | 2.00 | 91430* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 100.00 | 30.00 | 9.60 | 0.50 | 92654* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 100.00 | 30.00 | 9.60 | 0.75 | 92655* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 100.00 | 30.00 | 9.60 | 1.50 | 92656* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 100.00 | 30.00 | 9.60 | 2.25 | 92657* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 100.00 | 54.00 | 9.60 | 0.50 | 92658* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 100.00 | 54.00 | 9.60 | 0.75 | 92659* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 100.00 | 54.00 | 9.60 | 1.50 | 92660* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 100.00 | 54.00 | 9.60 | 2.25 | 92661* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 150.00 | 79.00 | 9.60 | 0.50 | 92662* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 150.00 | 79.00 | 9.60 | 0.75 | 92663* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 150.00 | 79.00 | 9.60 | 1.50 | 92664* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 150.00 | 79.00 | 9.60 | 2.25 | 92665* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 150.00 | 105.00 | 9.60 | 0.50 | 92666* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 150.00 | 105.00 | 9.60 | 0.75 | 92667* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 150.00 | 105.00 | 9.60 | 1.50 | 92668* |
| .3937 | | 10.00 | LR | 12.00 | 10.00 | 150.00 | 105.00 | 9.60 | 2.25 | 92669* |
| .3937 | | 10.00 | LR | 20.00 | 10.00 | 100.00 | 54.00 | 9.60 | 0.50 | 92463 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 0.50 | 92569 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 89.00 | | | 0.50 | 92454 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 89.00 | | | 0.75 | 92776* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 89.00 | | | 1.00 | 92777 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 89.00 | | | 1.50 | 92778* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 89.00 | | | 2.00 | 92779 |
| .4724 | | 12.00 | STB | 16.00 | 12.00 | 63.00 | | | 0.50 | 92461 |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 0.75 | 91431* |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 1.00 | 91432 |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 1.50 | 91433 |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 2.00 | 91434* |
| .4724 | | 12.00 | SD | 16.00 | 12.00 | 63.00 | | | 3.00 | 91435* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 100.00 | 50.00 | 11.60 | 0.75 | 92670* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 100.00 | 50.00 | 11.60 | 1.50 | 92671* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 100.00 | 50.00 | 11.60 | 2.25 | 92672* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 100.00 | 50.00 | 11.60 | 3.00 | 92673* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 100.00 | 57.00 | 11.60 | 0.75 | 92674* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 100.00 | 57.00 | 11.60 | 1.50 | 92675* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 100.00 | 57.00 | 11.60 | 2.25 | 92676* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 100.00 | 57.00 | 11.60 | 3.00 | 92677* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 150.00 | 86.00 | 11.60 | 0.75 | 92678* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 150.00 | 86.00 | 11.60 | 1.50 | 92679* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 150.00 | 86.00 | 11.60 | 2.25 | 92680* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 150.00 | 86.00 | 11.60 | 3.00 | 92681* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 150.00 | 105.00 | 11.60 | 0.75 | 92682* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 150.00 | 105.00 | 11.60 | 1.50 | 92683* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 150.00 | 105.00 | 11.60 | 2.25 | 92684* |
| .4724 | | 12.00 | LR | 16.00 | 12.00 | 150.00 | 105.00 | 11.60 | 3.00 | 92685* |
| .4724 | | 12.00 | LR | 20.00 | 12.00 | 100.00 | 54.00 | 11.60 | 0.50 | 92464 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | | 0.50 | 92570 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | | | 0.50 | 92455 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | | | 0.75 | 92780* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | | | 1.00 | 92781 |

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | | | 1.50 | 92782* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | | | 2.00 | 92783* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 100.00 | | | 3.00 | 92784* |
| .6299 | | 16.00 | STB | 20.00 | 16.00 | 89.00 | | | 0.50 | 92462 |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 0.75 | 91436* |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 1.00 | 91437* |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 1.50 | 91438* |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 2.00 | 91439* |
| .6299 | | 16.00 | SD | 20.00 | 16.00 | 89.00 | | | 3.00 | 91440* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 100.00 | 41.00 | 15.34 | 0.75 | 92686* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 100.00 | 41.00 | 15.34 | 1.50 | 92687* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 100.00 | 41.00 | 15.34 | 2.25 | 92688* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 100.00 | 41.00 | 15.34 | 3.00 | 92689* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 70.00 | 15.34 | 0.75 | 92690* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 70.00 | 15.34 | 1.50 | 92691* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 70.00 | 15.34 | 2.25 | 92692* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 70.00 | 15.34 | 3.00 | 92693* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 86.00 | 15.34 | 0.75 | 92694* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 86.00 | 15.34 | 1.50 | 92695* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 86.00 | 15.34 | 2.25 | 92696* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 86.00 | 15.34 | 3.00 | 92697* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 89.00 | 15.35 | 0.50 | 92465* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 105.00 | 15.34 | 0.75 | 92698* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 105.00 | 15.34 | 1.50 | 92699* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 105.00 | 15.34 | 2.25 | 92700* |
| .6299 | | 16.00 | LR | 20.00 | 16.00 | 150.00 | 105.00 | 15.34 | 3.00 | 92701* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 0.50 | 92456 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 0.75 | 92748* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 1.00 | 92749* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 1.50 | 92750* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 2.00 | 92751* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 100.00 | | | 3.00 | 92752 |
| .7874 | | 20.00 | LR | 20.00 | 20.00 | 150.00 | 89.00 | 19.35 | 1.00 | 92466* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 100.00 | 50.00 | 19.35 | 0.75 | 92702* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 100.00 | 50.00 | 19.35 | 1.50 | 92703* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 100.00 | 50.00 | 19.35 | 2.25 | 92704* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 100.00 | 50.00 | 19.35 | 3.00 | 92705* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 100.00 | 50.00 | 19.35 | 6.00 | 92706* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 64.00 | 19.35 | 0.75 | 92707* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 64.00 | 19.35 | 1.50 | 92708* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 64.00 | 19.35 | 2.25 | 92709* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 64.00 | 19.35 | 3.00 | 92710* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 64.00 | 19.35 | 6.00 | 92711* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 86.00 | 19.35 | 0.75 | 92712* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 86.00 | 19.35 | 1.50 | 92713* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 86.00 | 19.35 | 2.25 | 92714* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 86.00 | 19.35 | 3.00 | 92715* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 86.00 | 19.35 | 6.00 | 92716* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 105.00 | 19.35 | 0.75 | 92717* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 105.00 | 19.35 | 1.50 | 92718* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 105.00 | 19.35 | 2.25 | 92719* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 105.00 | 19.35 | 3.00 | 92720* |
| .7874 | | 20.00 | LR | 25.00 | 20.00 | 150.00 | 105.00 | 19.35 | 6.00 | 92721* |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 0.50 | 92753* |

* Non Stocked

# 3410 Fantom (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | FC-18 |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 0.75 | 92754* |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 1.00 | 92457 |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 1.50 | 92755* |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 2.00 | 92756* |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | | | 3.00 | 92757* |
| .7874 | | 20.00 | SD | 63.00 | 20.00 | 125.00 | | | 0.50 | 92785* |
| .7874 | | 20.00 | SD | 63.00 | 20.00 | 125.00 | | | 0.75 | 92786 |
| .7874 | | 20.00 | SD | 63.00 | 20.00 | 125.00 | | | 1.00 | 92787* |
| .7874 | | 20.00 | SD | 63.00 | 20.00 | 125.00 | | | 1.50 | 92788* |
| .7874 | | 20.00 | SD | 63.00 | 20.00 | 125.00 | | | 2.00 | 92789* |
| .7874 | | 20.00 | SD | 63.00 | 20.00 | 125.00 | | | 3.00 | 92790* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 100.00 | 57.00 | 24.00 | 0.75 | 92722* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 100.00 | 57.00 | 24.00 | 1.50 | 92723* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 100.00 | 57.00 | 24.00 | 2.25 | 92724* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 100.00 | 57.00 | 24.00 | 3.00 | 92725* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 100.00 | 57.00 | 24.00 | 6.00 | 92726* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 67.00 | 24.00 | 0.75 | 92727* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 67.00 | 24.00 | 1.50 | 92728* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 67.00 | 24.00 | 2.25 | 92729* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 67.00 | 24.00 | 3.00 | 92730* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 67.00 | 24.00 | 6.00 | 92731* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 86.00 | 24.00 | 0.75 | 92732* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 86.00 | 24.00 | 1.50 | 92733* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 86.00 | 24.00 | 2.25 | 92734* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 86.00 | 24.00 | 3.00 | 92735* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 86.00 | 24.00 | 6.00 | 92736* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 105.00 | 24.00 | 0.75 | 92737* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 105.00 | 24.00 | 1.50 | 92738* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 105.00 | 24.00 | 2.25 | 92739* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 105.00 | 24.00 | 3.00 | 92740* |
| .9843 | | 25.00 | LR | 32.00 | 25.00 | 150.00 | 105.00 | 24.00 | 6.00 | 92741* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 0.50 | 92758* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 0.75 | 92759* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 1.00 | 92760* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 1.50 | 92761* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 2.00 | 92762* |
| .9843 | | 25.00 | SD | 38.00 | 25.00 | 100.00 | | | 3.00 | 92763* |

END MILLS

ADVANCED PERFORMANCE

RADIUS

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

LR LONG REACH

FC-18 COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

ADVANCED PERFORMANCE

RADIUS

NUMBER OF FLUTES VARY BY DIAMETER

CENTER CUTTING

LR LONG REACH

mm METRIC

* Non Stocked

# 3810 The Dream (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**

- Advanced Performance
- Standard Aerospace Corner Radius
- Flute Count Varies by Diameter
  - Eccentric Relief
  - Right Hand Spiral
  - Right Hand Cut
- Long Reach Length
- Standard Uncoated
- Inch and Metric Based Tools
- Necked Down
- Profiling Tool
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Reach | Neck Diameter | Corner Radius | Number of Flutes | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | | UC |
| .5000 | 1/2 | 12.70 | LR | .7500 | .5000 | 4.0000 | 2.5000 | .4800 | .0600 | 6 | 37498 |
| .6250 | 5/8 | 15.88 | LR | .7500 | .6250 | 4.0000 | 2.5000 | .6000 | .0900 | 6 | 37499* |
| .7500 | 3/4 | 19.05 | LR | 1.1250 | .7500 | 4.0000 | 2.5000 | .7200 | .1200 | 8 | 37500 |
| 1.0000 | 1 | 25.40 | LR | 1.1250 | 1.0000 | 4.5000 | 3.0000 | .9600 | .1200 | 10 | 38562 |
| **METRIC (Millimeter)** | | | | | | | | | | | |
| .7874 | | 20.00 | LR | 28.00 | 20.00 | 100.00 | 63.00 | 19.22 | 3.00 | 8 | 38565* |
| .9843 | | 25.00 | LR | 28.00 | 25.00 | 114.00 | 76.00 | 24.00 | 3.00 | 10 | 38567 |

# 3820 Hercules (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose



ADVANCED PERFORMANCE

RADIUS

20 FLUTE

SD STANDARD


**Basic Information:**
- Advanced Performance
- Standard Aerospace Corner Radius
- 20 Flutes
  - Eccentric Relief
  - Right Hand Spiral
  - Right Hand Cut
- Standard Length
- Standard Uncoated
- Inch Based Tools
- Profiling Tool
- Hollow Design
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Shank Length | Overall Length | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC |
| 2.0000 | 2 | 50.80 | SD | 1.1250 | 1.2500 | 1.7500 | 3.0000 | .1200 | 92600 |

END MILLS

ADVANCED PERFORMANCE

SQUARE

3 FLUTE

CENTER CUTTING

SD STANDARD

TiCN COATING

TiAlN COATING

mm METRIC

* Non Stocked

# 3800 Twister (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Brass & Copper

**Basic Information:**

- Advanced Performance
- Square End
- 3 Flutes
  - 60° Helix
  - Eccentric Relief for Increased Edge Strength
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated, TiCN, and TiAlN Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiCN | TiAlN |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 38001 | 38201 | 38500 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 38002 | 38202* | 38501 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 38003 | 38203 | 38502 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | 38004 | 38204* | 38503 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 38005 | 38205* | 38504 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 38006 | | 38506 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 38007 | 38207 | 38507 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 38008 | 38208* | 38508 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 38009 | 38209* | 38509* |
| **METRIC (Millimeter)** | | | | | | | | | |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | | | 92516 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | | 92517 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | | 92518 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | | 92519 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 76.00 | | | 92520 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | | | 92521 |

# 3990 Hogger (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**
- Advanced Performance
- Corner Radius
- 3 Flutes
  - 40° Helix
  - Sinusoidal Geometry (Corn Cob Cutters)
  - Form Relieved
  - Coarse Pitch
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated
- Inch and Metric Based Tools
- Weldon Flat Standard
- Dura Carb II (Advanced Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.003"
  +0.00mm -0.07mm

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | UC |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0310 | • | 39908 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | .0390 | • | 39910 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0470 | • | 39912 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0625 | • | 39913 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0781 | • | 39914 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0938 | • | 39916 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .1250 | • | 39918 |
| **METRIC (Millimeter)** | | | | | | | | | |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 0.75 | • | 92501 |
| .3150 | | 8.00 | SD | 20.00 | 8.00 | 64.00 | 1.00 | • | 92502 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 73.00 | 1.25 | • | 92503 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 1.50 | • | 92504 |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | 1.75 | • | 92505 |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | 2.00 | • | 92506 |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | 2.50 | • | 92507 |

END MILLS

ADVANCED PERFORMANCE

RADIUS

NUMBER OF FLUTES VARY BY DIAMETER

CENTER CUTTING

SD STANDARD

TiAlN COATING

mm METRIC

# 3995 Hogger (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**

- Advanced Performance
- Corner Radius
- Flute Count Varies by Diameter
  - 30° Helix
  - Sinusoidal Geometry (Corn Cob Cutters)
  - Fine Pitch
  - Form Relieved
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard TiAlN Coating
- Inch and Metric Based Tools
- Weldon Flat Standard
- Dura Carb II (Advanced Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.003"
  +0.00mm -0.07mm

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Number of Flutes | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | TiAlN |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 3 | .0310 | • | 39608 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | 3 | .0390 | • | 39609 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 3 | .0470 | • | 39610 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 4 | .0625 | • | 39611 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 4 | .0781 | • | 39612 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 4 | .0938 | • | 39613 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 5 | .1250 | • | 39614 |
| **METRIC (Millimeter)** | | | | | | | | | | |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 3 | 0.75 | • | 92508 |
| .3150 | | 8.00 | SD | 20.00 | 8.00 | 64.00 | 3 | 1.00 | • | 92509 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 73.00 | 3 | 1.25 | • | 92510 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 4 | 1.50 | • | 92512 |
| .5512 | | 14.00 | SD | 30.00 | 14.00 | 84.00 | 4 | 1.75 | • | 92513 |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | 4 | 2.00 | • | 92514 |
| .7874 | | 20.00 | SD | 38.00 | 20.00 | 100.00 | 4 | 2.50 | • | 92515 |

# 3975 Hogger (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**

- Advanced Performance
- Corner Radius
- Flute Count Varies by Diameter
  - 30° Helix
  - Sinusoidal Geometry (Corn Cob Cutters)
  - Form Relief
  - Coarse Pitch
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard TiAlN Coating
- Inch Based Tools
- Weldon Flat Standard
- Dura Carb II (Advanced Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.003"
  +0.00mm -0.07mm

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Number of Flutes | Corner Radius | Weldon Flat | EDP Number |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | TiAlN |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 3 | .0310 | • | 39600 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | 3 | .0390 | • | 39601 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 3 | .0470 | • | 39602 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 4 | .0625 | • | 39604 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 4 | .0781 | • | 39605 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 4 | .0938 | • | 39606 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 5 | .1250 | • | 39607 |



ADVANCED PERFORMANCE

RADIUS

NUMBER OF FLUTES VARY BY DIAMETER

CENTER CUTTING

SD STANDARD

TiAlN COATING

END MILLS

ADVANCED PERFORMANCE

RADIUS

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

TiAlN COATING

# 3335 Alloy Steel Rougher (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

**Basic Information:**

- Advanced Performance
- Corner Radius
- 3 Flutes
  - 35° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub and Standard Lengths
- Standard TiAlN Coating
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | TiAlN |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | .0080 | 33400 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0080 | 33450 |
| .1875 | 3/16 | 4.76 | STB | .3125 | .1875 | 2.0000 | .0080 | 33404 |
| .1875 | 3/16 | 4.76 | SD | .5625 | .1875 | 2.0000 | .0080 | 33454 |
| .2500 | 1/4 | 6.35 | STB | .3750 | .2500 | 2.0000 | .0150 | 33408 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0150 | 33458 |
| .3125 | 5/16 | 7.94 | STB | .4375 | .3125 | 2.5000 | .0150 | 33412 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | .0150 | 33462 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | .0150 | 33416 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0150 | 33466 |
| .4375 | 7/16 | 11.11 | STB | .5625 | .4375 | 2.7500 | .0150 | 33418 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | .0150 | 33468 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | .0300 | 33420 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | .0300 | 33470 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | .0300 | 33422 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | .0300 | 33472 |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | .0300 | 33424 |
| .7500 | 3/4 | 19.05 | SD | 1.6250 | .7500 | 4.0000 | .0300 | 33474 |
| 1.0000 | 1 | 25.40 | STB | 1.2500 | 1.0000 | 4.0000 | .0300 | 33426 |
| 1.0000 | 1 | 25.40 | SD | 2.0000 | 1.0000 | 4.0000 | .0300 | 33476 |

# 3845 Falcon Finisher (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**
- Advanced Performance
- Square End
- 5 flutes
  - 45° Helix
  - Eccentric Relief
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard Uncoated and TiAlN Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiAlN |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | 38080 | 38173 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 38050 | 38150 |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | 38052 | 38152 |
| .1875 | 3/16 | 4.76 | STB | .3125 | .1875 | 2.0000 | 38081 | 38175 |
| .1875 | 3/16 | 4.76 | SD | .5625 | .1875 | 2.0000 | 38054 | 38154 |
| .2188 | 7/32 | 5.56 | SD | .7500 | .2500 | 2.5000 | 38056 | 38156 |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | 38057 | 38174 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 38058 | 38158 |
| .2500 | 1/4 | 6.35 | XL | 1.2500 | .2500 | 4.0000 | 38060 | 38180 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | 38062 | 38160 |
| .3125 | 5/16 | 7.94 | XL | 1.2500 | .3125 | 3.0000 | | 38188 |
| .3750 | 3/8 | 9.53 | STB | .5000 | .3750 | 2.5000 | 38063 | 38176 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 38064 | 38162 |
| .3750 | 3/8 | 9.53 | XL | 1.2500 | .3750 | 3.0000 | | 38189 |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | 38067 | 38183 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 38066 | 38182 |
| .3750 | 3/8 | 9.53 | XL | 3.0000 | .3750 | 5.0000 | | 38190 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 38068 | 38164 |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | 38069 | 38178 |
| .5000 | 1/2 | 12.70 | SD | 1.2500 | .5000 | 3.0000 | 38070 | 38166 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | 38072 | 38184 |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | | 38191 |
| .5000 | 1/2 | 12.70 | XL | 3.1250 | .5000 | 6.0000 | | 38186 |
| .6250 | 5/8 | 15.88 | STB | .7500 | .6250 | 3.5000 | 38082 | 38177 |
| .6250 | 5/8 | 15.88 | SD | 1.6250 | .6250 | 3.5000 | 38074 | 38168 |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | 38073 | 38185 |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | | 38192 |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | 38083 | 38179 |
| .7500 | 3/4 | 19.05 | SD | 1.6250 | .7500 | 4.0000 | 38076 | 38170 |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | 38061 | 38181 |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | | 38193 |
| 1.0000 | 1 | 25.40 | STB | 1.2500 | 1.0000 | 4.0000 | | 38196 |
| 1.0000 | 1 | 25.40 | SD | 2.0000 | 1.0000 | 4.0000 | 38078 | 38172 |



ADVANCED PERFORMANCE

SQUARE

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

mm METRIC

* Non Stocked

END MILLS

# 3845 Falcon Finisher (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

ADVANCED PERFORMANCE

SQUARE

5 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiAlN |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | 38071 | 38187 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | | 38194 |
| 1.0000 | 1 | 25.40 | XL | 4.0000 | 1.0000 | 6.0000 | | 38195 |
| METRIC (Millimeter) | | | | | | | | |
| .6299 | | 16.00 | XL | 76.00 | 16.00 | 150.00 | 93700 | |
| .7874 | | 20.00 | STB | 28.00 | 20.00 | 105.00 | 38084* | |
| .7874 | | 20.00 | XL | 76.00 | 20.00 | 150.00 | 93702 | |
| .9843 | | 25.00 | SD | 28.00 | 25.00 | 121.00 | 38079* | |

* *Non Stocked*

# 3730 Chamfer Mills

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

**Basic Information:**
- 60°, 90°, 120° Degree Included Angle
- 2 and 4 Flutes
  - Straight Flutes
  - Right Hand Cut
- Standard Uncoated and TiAlN Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Number of Flutes | Chamfer Angle | Non-Cutting Tip Diameter | Double End | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | | | | UC | TiAlN |
| .1250 | 1/8 | 3.18 | SD | .0625 | .1250 | 1.5000 | 2 | 90° | .0200 | | 36160 | 36161 |
| .1250 | 1/8 | 3.18 | SD | .0625 | .1250 | 1.5000 | 4 | 90° | .0200 | | 36158 | 36159 |
| .1250 | 1/8 | 3.18 | SD | .1080 | .1250 | 1.5000 | 2 | 60° | .0200 | | 36156 | 36157 |
| .1250 | 1/8 | 3.18 | SD | .1080 | .1250 | 1.5000 | 4 | 60° | .0200 | | 36154 | 36155 |
| .1875 | 3/16 | 4.76 | SD | .0938 | .1875 | 2.0000 | 2 | 90° | .0200 | | 36173 | 36174 |
| .1875 | 3/16 | 4.76 | SD | .0938 | .1875 | 2.0000 | 4 | 90° | .0200 | | 36171 | 36172 |
| .1875 | 3/16 | 4.76 | SD | .1620 | .1875 | 2.0000 | 2 | 60° | .0200 | | 36165 | 36166 |
| .1875 | 3/16 | 4.76 | SD | .1620 | .1875 | 2.0000 | 4 | 60° | .0200 | | 36163 | 36164 |
| .2500 | 1/4 | 6.35 | SD | .0781 | .2500 | 2.5000 | 2 | 120° | .0250 | • | | 36101 |
| .2500 | 1/4 | 6.35 | SD | .1250 | .2500 | 2.5000 | 2 | 90° | .0250 | • | | 36094 |
| .2500 | 1/4 | 6.35 | SD | .1250 | .2500 | 2.5000 | 2 | 90° | .0250 | | 36147 | 36089 |
| .2500 | 1/4 | 6.35 | SD | .1250 | .2500 | 2.5000 | 4 | 90° | .0250 | | 36146 | 36088 |
| .2500 | 1/4 | 6.35 | SD | .2160 | .2500 | 2.5000 | 2 | 60° | .0250 | | 36141 | 36083 |
| .2500 | 1/4 | 6.35 | SD | .2160 | .2500 | 2.5000 | 4 | 60° | .0250 | | 36140 | 36082 |
| .2500 | 1/4 | 6.35 | SD | .2188 | .2500 | 2.5000 | 2 | 60° | .0250 | • | | 36097 |
| .3750 | 3/8 | 9.53 | SD | .1094 | .3750 | 2.5000 | 2 | 120° | .0300 | • | | 36102 |
| .3750 | 3/8 | 9.53 | SD | .1870 | .3750 | 2.5000 | 2 | 90° | .0300 | | 36149 | 36091 |
| .3750 | 3/8 | 9.53 | SD | .1870 | .3750 | 2.5000 | 4 | 90° | .0300 | | 36148 | 36090 |
| .3750 | 3/8 | 9.53 | SD | .1875 | .3750 | 2.5000 | 2 | 90° | .0300 | • | | 36095 |
| .3750 | 3/8 | 9.53 | SD | .3240 | .3750 | 2.5000 | 2 | 60° | .0300 | | 36143 | 36085 |
| .3750 | 3/8 | 9.53 | SD | .3240 | .3750 | 2.5000 | 4 | 60° | .0300 | | 36142 | 36084 |
| .3750 | 3/8 | 9.53 | SD | .3280 | .3750 | 2.5000 | 2 | 60° | .0300 | • | | 36098 |
| .5000 | 1/2 | 12.70 | SD | .1406 | .5000 | 3.0000 | 2 | 120° | .0350 | • | | 36103 |
| .5000 | 1/2 | 12.70 | SD | .2500 | .5000 | 3.0000 | 2 | 90° | .0350 | • | | 36096 |
| .5000 | 1/2 | 12.70 | SD | .2500 | .5000 | 3.0000 | 2 | 90° | .0350 | | 36151 | 36093 |
| .5000 | 1/2 | 12.70 | SD | .2500 | .5000 | 3.0000 | 4 | 90° | .0350 | | 36150 | 36092 |
| .5000 | 1/2 | 12.70 | SD | .4330 | .5000 | 3.0000 | 2 | 60° | .0350 | | 36145 | 36087 |
| .5000 | 1/2 | 12.70 | SD | .4330 | .5000 | 3.0000 | 4 | 60° | .0350 | | 36144 | 36086 |
| .5000 | 1/2 | 12.70 | SD | .4375 | .5000 | 3.0000 | 2 | 60° | .0350 | • | | 36099 |
| .7500 | 3/4 | 19.05 | SD | .3750 | .7500 | 4.0000 | 2 | 90° | .0450 | | 36177 | 36178 |
| .7500 | 3/4 | 19.05 | SD | .3750 | .7500 | 4.0000 | 4 | 90° | .0450 | | 36175 | 36176 |
| .7500 | 3/4 | 19.05 | SD | .6490 | .7500 | 4.0000 | 2 | 60° | .0450 | | 36169 | 36170 |
| .7500 | 3/4 | 19.05 | SD | .6490 | .7500 | 4.0000 | 4 | 60° | .0450 | | 36167 | 36168 |
| **METRIC (Millimeter)** | | | | | | | | | | | | |
| .1181 | | 3.00 | SD | 1.50 | 3.00 | 38.00 | 4 | 90° | 0.40 | | 92522 | 92850* |
| .1575 | | 4.00 | SD | 2.00 | 4.00 | 50.00 | 4 | 90° | 0.50 | | 92523 | 92851 |
| .2362 | | 6.00 | SD | 3.00 | 6.00 | 64.00 | 4 | 90° | 0.50 | | 92524 | 92852* |
| .3150 | | 8.00 | SD | 4.00 | 8.00 | 64.00 | 4 | 90° | 0.65 | | 92525 | 92853* |
| .3937 | | 10.00 | SD | 5.00 | 10.00 | 64.00 | 4 | 90° | 0.75 | | 92526 | 92854* |
| .4724 | | 12.00 | SD | 6.00 | 12.00 | 76.00 | 4 | 90° | 0.90 | | 92527 | 92855* |

END MILLS

60° 90° 120°

2 FLUTE 4 FLUTE

SD STANDARD

TiAlN COATING

mm METRIC

* Non Stocked

END MILLS

# 2351 Form Relieved Radius Mill

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

RADIUS

4 FLUTE

SD STANDARD

† *Steel Shank*

**Basic Information:**

- 4 Straight Flutes
  - Right Hand Cut
  - Non-Cutting Pilot
- Standard Length
- Standard Uncoated
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Radius: +.0005" -.0005"

† *Solid Carbide Head on Steel Shank*

**Specials Available**

| Cutting Diameter | | | Tool Length Style | Pilot Diameter | Shank Diameter | Overall Length | Radius | EDP Number |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC |
| .2500 | 1/4 | 6.35 | SD | .1250 | .2500 | 2.5000 | .0625 | 23250 |
| .3750 | 3/8 | 9.53 | SD | .1875 | .3750 | 2.5000 | .0938 | 23375 |
| .5000 | 1/2 | 12.70 | SD | .2500 | .5000 | 3.0000 | .1250 | 23500 |
| .7500 | 3/4 | 19.05 | SD | .3750 | .3750 | 2.7500 | .1875 | 23750† |
| 1.0000 | 1 | 25.40 | SD | .5000 | .5000 | 3.0000 | .2500 | 23752† |

# Jo-Engraver



**Basic Information:**
- All-in-One Engraving Tool
- 60° Included Angle
- Single Flute
- Standard Length
- Standard Uncoated and TiAlN Coating
- Inch Based Tools
- .021 Radius
- Double End
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiAlN |
| .1250 | 1/8 | 3.18 | SD | .1250 | .1250 | 2.0000 | 12113 | 12109 |

60°

1 FLUTE

SD STANDARD

TiAlN COATING

END MILLS

# 3200 4-Flute (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**

- Square End
- 4 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard Uncoated, TiN, TiCN, and TiAln Coatings
- Inch and Metric Based Tools
- Single and Double Ends Available
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

SQUARE | 4 FLUTE | CENTER CUTTING | STB STUB | SD STANDARD | XL EXTRA LONG | TiN COATING | TiCN COATING | TiAlN COATING | F.A.S.T. Quote | mm METRIC

* Non Stocked

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiN | TiCN | TiAlN |
| .0156 | 1/64 | 0.40 | SD | .0469 | .1250 | 1.5000 | | 32001 | 33097* | 33098* | 30604 |
| .0312 | 1/32 | 0.79 | STB | .0625 | .1250 | 1.5000 | | 32139 | | | 32822 |
| .0312 | 1/32 | 0.79 | SD | .0938 | .1250 | 1.5000 | | 32002 | 33100 | 32727 | 30605 |
| .0469 | 3/64 | 1.19 | STB | .1250 | .1250 | 1.5000 | | 32140 | | | 32823 |
| .0469 | 3/64 | 1.19 | SD | .1875 | .1250 | 1.5000 | | 32003 | 33101 | 32728 | 30606 |
| .0625 | 1/16 | 1.59 | STB | .1250 | .1250 | 1.5000 | | 32141 | | | 32824 |
| .0625 | 1/16 | 1.59 | SD | .2500 | .1250 | 1.5000 | | 32004 | 32326 | 32729 | 30607 |
| .0781 | 5/64 | 1.98 | STB | .1250 | .1250 | 1.5000 | | 32142 | | | 32825 |
| .0781 | 5/64 | 1.98 | SD | .2500 | .1250 | 1.5000 | | 32005 | 33102 | 32730 | 30608 |
| .0938 | 3/32 | 2.38 | STB | .1875 | .1250 | 1.5000 | | 32143 | | | 32826 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 1.5000 | | 32006 | 32327 | 32731 | 30609 |
| .1094 | 7/64 | 2.78 | STB | .1875 | .1250 | 1.5000 | | 32144 | | | 32827 |
| .1094 | 7/64 | 2.78 | SD | .5000 | .1250 | 1.5000 | | 32007 | 33103 | 32732 | 30610 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | 32145 | | | 32828 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | 32008 | 32328 | 32733 | 30611 |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | | 30232 | | | 30030 |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | | 32252 | | | 30031 |
| .1406 | 9/64 | 3.57 | SD | .5625 | .1875 | 2.0000 | | 32009 | 33104 | 32734 | 30612 |
| .1562 | 5/32 | 3.97 | STB | .3750 | .1875 | 2.0000 | | 32146 | | | 32829 |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | | 32010 | 33105 | 32735 | 30613 |
| .1719 | 11/64 | 4.37 | SD | .5625 | .1875 | 2.0000 | | 32650 | 33106* | 32736 | 30614 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | | 32147 | | | 32830 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | 32011 | 32329 | 32737 | 30615 |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | | 30238 | | | 30033 |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | | 32253 | | | 30032 |
| .2031 | 13/64 | 5.16 | SD | .6250 | .2500 | 2.5000 | | 32667 | 33107 | 32738* | 30616 |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | | 32012 | 33108 | 32739 | 30617 |
| .2344 | 15/64 | 5.95 | SD | .7500 | .2500 | 2.5000 | | 32666 | 33109 | 32740 | 30618 |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | | 32148 | | | 32831 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | 32013 | 32330 | 32741 | 30619 |

# 3200 4-Flute (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiN | TiCN | TiAlN |
| .2500 | 1/4 | 6.35 | XL | 1.0000 | .2500 | 4.0000 | | 30200 | | | 30035 |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | | 32550 | | | 30034 |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | | 32254 | | | 30036 |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 6.0000 | | 32551 | | | 30037 |
| .2656 | 17/64 | 6.75 | SD | .8750 | .3125 | 2.5000 | | 32918 | 33110 | 32742 | 30620 |
| .2812 | 9/32 | 7.14 | SD | .8750 | .3125 | 2.5000 | | 32014 | 33111 | 32743 | 30621 |
| .2969 | 19/64 | 7.54 | SD | .8750 | .3125 | 2.5000 | | 32919 | 33112* | 32744 | 30622 |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | | 32149 | | | 32832 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | 32015 | 32331 | 32745 | 30623 |
| .3125 | 5/16 | 7.94 | XL | 1.0000 | .3125 | 4.0000 | | 30201 | | | 30039 |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | | 32574 | | | 30038 |
| .3125 | 5/16 | 7.94 | XL | 1.5000 | .3125 | 6.0000 | | 32552 | | | 30041 |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | | 32255 | | | 30040 |
| .3281 | 21/64 | 8.33 | SD | .8750 | .3750 | 2.5000 | | 32920 | 33113 | 32746 | 30624 |
| .3438 | 11/32 | 8.73 | SD | .8750 | .3750 | 2.5000 | | 32016 | 33114 | 32747* | 30625 |
| .3594 | 23/64 | 9.13 | SD | 1.0000 | .3750 | 2.5000 | | 32921 | 33115* | 32748* | 30626 |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | | 32150 | | | 32833 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | 32017 | 32332 | 32749 | 30627 |
| .3750 | 3/8 | 9.53 | XL | 1.0000 | .3750 | 4.0000 | | 30202 | | | 30043 |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | | 32578 | | | 30042 |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | | 30220 | | | 30044 |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 6.0000 | | 32553 | | | 30046 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | 32256 | | | 30045 |
| .3750 | 3/8 | 9.53 | XL | 3.0000 | .3750 | 6.0000 | | 32257 | | | 30047 |
| .3906 | 25/64 | 9.92 | SD | 1.0000 | .4375 | 2.7500 | | 32922 | 33116* | 32750* | 30628 |
| .4062 | 13/32 | 10.32 | SD | 1.0000 | .4375 | 2.7500 | | 32900 | 33117 | 32751 | 30629 |
| .4219 | 27/64 | 10.72 | SD | 1.0000 | .4375 | 2.7500 | | 32923 | 33118 | 32752* | 30630 |
| .4375 | 7/16 | 11.11 | STB | .7500 | .4375 | 2.7500 | | 32151 | | | 32834 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | 32018 | 32333 | 32753 | 30631 |
| .4375 | 7/16 | 11.11 | XL | 1.0000 | .4375 | 4.0000 | | 30203 | | | 30048 |
| .4375 | 7/16 | 11.11 | XL | 1.5000 | .4375 | 6.0000 | | 32554 | | | 30050 |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | | 32258 | | | 30049 |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | | 32259 | | | 30051 |
| .4531 | 29/64 | 11.51 | SD | 1.0000 | .5000 | 3.0000 | | 32924 | 33119* | 32754* | 30632 |
| .4688 | 15/32 | 11.91 | SD | 1.0000 | .5000 | 3.0000 | | 32910 | 33120* | 32755* | 30633 |
| .4844 | 31/64 | 12.30 | SD | 1.0000 | .5000 | 3.0000 | | 32925 | 33121* | 32756* | 30634 |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | | 32152 | | | 32835 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | 32019 | 32334 | 32757 | 30635 |
| .5000 | 1/2 | 12.70 | XL | 1.0000 | .5000 | 4.0000 | | 30204 | | | 30053 |
| .5000 | 1/2 | 12.70 | XL | 1.2500 | .5000 | 3.0000 | | 30239 | | | 30052 |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | | 32582 | | | 30054 |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 6.0000 | | 32555 | | | 30056 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | 32260 | | | 30055 |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | | 32261 | | | 30057 |
| .5625 | 9/16 | 14.29 | SD | 1.2500 | .5625 | 3.5000 | | 32020 | 32335 | 32758 | 30636 |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | | 32153 | | | 32836 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | 32021 | 32336 | 32759 | 30637 |
| .6250 | 5/8 | 15.88 | XL | 1.5000 | .6250 | 6.0000 | | 30224 | | | 30059 |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | 32262 | | | 30058 |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | | 32263 | | | 30060 |
| .6875 | 11/16 | 17.46 | SD | 1.5000 | .7500 | 4.0000 | | 32022 | 33122 | 32760 | 30638 |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | | 32154 | | | 32837 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | 32023 | 32337 | 32761 | 30639 |
| .7500 | 3/4 | 19.05 | XL | 1.5000 | .7500 | 6.0000 | | 30226 | | | 30062 |

END MILLS

SQUARE

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3200 4-Flute (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

SQUARE

4 FLUTE

CENTER CUTTING

STB STUB

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TiAlN COATING

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mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiN | TiCN | TiAlN |
| .7500 | 3/4 | 19.05 | XL | 2.0000 | .7500 | 5.0000 | | 32250 | | | |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | 32264 | | | 30061 |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | | 32265 | | | 30063 |
| .7500 | 3/4 | 19.05 | XL | 4.0000 | .7500 | 7.0000 | | 32266 | | | 30064 |
| .8750 | 7/8 | 22.23 | SD | 1.5000 | .8750 | 4.0000 | | 32024 | 33123* | 32762 | 30640 |
| 1.0000 | 1 | 25.40 | STB | 1.0000 | 1.0000 | 4.0000 | | 32155 | | | 32838 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | 32025 | 32338 | 32763 | 30641 |
| 1.0000 | 1 | 25.40 | XL | 2.0000 | 1.0000 | 4.5000 | | 32267 | | | 30065 |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | 32268 | | | 30066 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | | 32269 | | | 30067 |
| 1.0000 | 1 | 25.40 | XL | 4.0000 | 1.0000 | 7.0000 | | 32270 | | | 30068 |
| 1.1250 | 1-1/8 | 28.58 | SD | 2.0000 | 1.0000 | 4.5000 | | 32026 | | | |
| 1.2500 | 1-1/4 | 31.75 | SD | 2.0000 | 1.2500 | 4.5000 | | 32027 | | | |
| 1.2500 | 1-1/4 | 31.75 | XL | 3.0000 | 1.2500 | 6.0000 | | 32271 | | | |
| 1.3750 | 1-3/8 | 34.93 | SD | 2.0000 | 1.2500 | 4.5000 | | 32028 | | | |
| 1.5000 | 1-1/2 | 38.10 | SD | 2.0000 | 1.2500 | 4.5000 | | 32029 | | | |
| **DOUBLE END (Inch)** | | | | | | | | | | | |
| .0312 | 1/32 | 0.79 | STB | .0938 | .1250 | 1.5000 | | 32439 | 32700 | | 36001 |
| .0469 | 3/64 | 1.19 | STB | .1250 | .1250 | 1.5000 | | 32440 | 32701 | | 36002 |
| .0625 | 1/16 | 1.59 | STB | .1250 | .1250 | 1.5000 | | 32441 | 32702 | | 36003 |
| .0625 | 1/16 | 1.59 | SD | .1875 | .1250 | 2.0000 | | 32387 | | | 12387 |
| .0781 | 5/64 | 1.98 | STB | .1250 | .1250 | 1.5000 | | 32519 | 32860 | | 36004 |
| .0938 | 3/32 | 2.38 | STB | .1875 | .1250 | 1.5000 | | 32442 | 32703 | | 36005 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 2.0000 | | 32388 | | | 12388 |
| .1094 | 7/64 | 2.78 | STB | .1875 | .1250 | 1.5000 | | 32530 | 32861* | | 36006 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | 32443 | 32704 | | 36007 |
| .1250 | 1/8 | 3.18 | SD | .3750 | .1250 | 2.0000 | | 32389 | | | 12389 |
| .1250 | 1/8 | 3.18 | SD | .3750 | .3750 | 3.5000 | • | 32491 | | | 37001 |
| .1406 | 9/64 | 3.57 | STB | .3125 | .1875 | 2.0000 | | 32537 | | | 36008 |
| .1562 | 5/32 | 3.97 | STB | .3125 | .1875 | 2.0000 | | 32444 | 32705 | | 36009 |
| .1562 | 5/32 | 3.97 | SD | .4375 | .1875 | 3.0000 | | 32390 | | | 12390* |
| .1562 | 5/32 | 3.97 | SD | .4375 | .3750 | 3.5000 | • | 32492 | | | 37002 |
| .1719 | 11/64 | 4.37 | STB | .3125 | .1875 | 2.0000 | | 32538 | | | 36010 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | | 32445 | 32706 | 32621 | 36011 |
| .1875 | 3/16 | 4.76 | SD | .5000 | .1875 | 3.0000 | | 32391 | | | 12391 |
| .1875 | 3/16 | 4.76 | SD | .5000 | .3750 | 3.5000 | • | 32493 | | | 37003 |
| .2031 | 13/64 | 5.16 | STB | .5000 | .2500 | 2.5000 | | 32539 | | | 36012 |
| .2188 | 7/32 | 5.56 | STB | .5000 | .2500 | 2.5000 | | 32446 | 32707 | | 36013 |
| .2188 | 7/32 | 5.56 | SD | .5625 | .2500 | 3.0000 | | 32392 | | | 12392 |
| .2188 | 7/32 | 5.56 | SD | .5625 | .3750 | 3.5000 | • | 32494 | | | 37004* |
| .2344 | 15/64 | 5.95 | STB | .5000 | .2500 | 2.5000 | | 32545 | | | 36014 |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.5000 | | 32447 | 32708 | 32624 | 36015 |
| .2500 | 1/4 | 6.35 | SD | .6250 | .2500 | 3.0000 | | 32393 | | | 12393 |
| .2500 | 1/4 | 6.35 | SD | .6250 | .3750 | 3.5000 | • | 32495 | | | 37005 |
| .2812 | 9/32 | 7.14 | STB | .5000 | .3125 | 2.5000 | | 32594 | | | 36016 |
| .2812 | 9/32 | 7.14 | SD | .6875 | .3750 | 3.5000 | • | 32496 | | | 37006 |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | | 32448 | 32709 | 32626 | 36017 |
| .3125 | 5/16 | 7.94 | SD | .7500 | .3125 | 3.0000 | | 32395 | | | 12395 |
| .3125 | 5/16 | 7.94 | SD | .7500 | .3750 | 3.5000 | • | 32497 | | | 37007 |
| .3750 | 3/8 | 9.53 | STB | .5625 | .3750 | 2.5000 | | 32449 | 32710 | 32627* | 36018 |
| .3750 | 3/8 | 9.53 | SD | .7500 | .3750 | 3.5000 | | 32397 | | | 12397 |
| .4375 | 7/16 | 11.11 | STB | .6250 | .4375 | 2.7500 | | 32450 | 32711* | | 36019 |
| .4375 | 7/16 | 11.11 | SD | .8750 | .4375 | 4.0000 | | 32398 | | | 12398 |

* *Non Stocked*

# 3200 4-Flute (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiN | TiCN | TiAlN |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | 32451 | 32712 | | 36020 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 4.0000 | | 32399 | | | 12399 |
| **METRIC (Millimeter)** | | | | | | | | | | | |
| .0394 | | 1.00 | STB | 2.50 | 3.00 | 38.00 | | 92093 | | | 92180 |
| .0394 | | 1.00 | SD | 4.00 | 3.00 | 38.00 | | 92001 | | | 92201 |
| .0591 | | 1.50 | STB | 3.00 | 3.00 | 38.00 | | 92194 | | | 92195 |
| .0591 | | 1.50 | SD | 6.00 | 3.00 | 38.00 | | 92002 | | | 92202 |
| .0787 | | 2.00 | STB | 4.00 | 3.00 | 38.00 | | 92094 | | | 92181 |
| .0787 | | 2.00 | SD | 8.00 | 3.00 | 38.00 | | 92003 | | | 92203 |
| .0984 | | 2.50 | SD | 6.00 | 3.00 | 38.00 | | 91319 | | | 91388* |
| .0984 | | 2.50 | SD | 12.00 | 3.00 | 38.00 | | 92005 | | | 92204 |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | | 92100 | | | 92223 |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | | 92006 | | | 92205 |
| .1181 | | 3.00 | XL | 25.00 | 3.00 | 76.00 | | 92120 | | | 92228 |
| .1378 | | 3.50 | SD | 12.00 | 4.00 | 50.00 | | 92073 | | | 92206 |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | | 91320* | | | 92101 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | | 92007 | | | 92207 |
| .1575 | | 4.00 | XL | 25.00 | 4.00 | 64.00 | | 91251 | | | 91317* |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | | 92075 | | | 92208 |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | | 91321* | | | 92103 |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | 92008 | | | 92209 |
| .1969 | | 5.00 | XL | 25.00 | 5.00 | 76.00 | | 91252 | | | 91318* |
| .2362 | | 6.00 | STB | 12.00 | 6.00 | 50.00 | | 92102 | | | 92224 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | 92009 | | | 92210 |
| .2362 | | 6.00 | XL | 29.00 | 6.00 | 76.00 | | 92122 | | | 92229 |
| .2756 | | 7.00 | SD | 22.00 | 7.00 | 64.00 | | 92010 | | | 92211 |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | 92104 | | | 92225 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | 92011 | | | 92212 |
| .3150 | | 8.00 | XL | 29.00 | 8.00 | 76.00 | | 92124 | | | 92230 |
| .3543 | | 9.00 | SD | 22.00 | 9.00 | 64.00 | | 92012 | | | 92213 |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 50.00 | | 92106 | | | 92226 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | 92013 | | | 92214 |
| .3937 | | 10.00 | XL | 45.00 | 10.00 | 100.00 | | 92126 | | | 92231 |
| .4331 | | 11.00 | SD | 25.00 | 11.00 | 84.00 | | 92077 | | | 92215 |
| .4724 | | 12.00 | STB | 15.00 | 12.00 | 63.00 | | 92108 | | | 92227 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | | 92014 | | | 92216 |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | | 92128 | | | 92232 |
| .5512 | | 14.00 | SD | 32.00 | 14.00 | 84.00 | | 92015 | | | 92217 |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | | 91322 | | | 91389* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | | 92016 | | | 92218 |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | | 92129 | | | 92182 |
| .7087 | | 18.00 | SD | 40.00 | 18.00 | 100.00 | | 92017 | | | 92219 |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | | 91323* | | | 91390* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | | 92018 | | | 92220 |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | | 92131 | | | 92183 |
| .8661 | | 22.00 | SD | 40.00 | 22.00 | 100.00 | | 92079 | | | 92221* |
| .9843 | | 25.00 | SD | 40.00 | 25.00 | 100.00 | | 92081 | | | 92222 |

END MILLS

SQUARE

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3200 4-Flute (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**

- Ball End
- 4 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard and Extra Long Lengths
- Standard Uncoated, TiN, TiCN, and TiAlN Coatings
- Inch and Metric Based Tools
- Single and Double Ends Available
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

BALL | 4 FLUTE | CENTER CUTTING | STB STUB | SD STANDARD | XL EXTRA LONG | TiN COATING | TiCN COATING | TiAlN COATING | F.A.S.T. Quote | mm METRIC

* Non Stocked

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiN | TiCN | TiAlN |
| .0312 | 1/32 | 0.79 | STB | .0625 | .1250 | 1.5000 | | 32112* | | | 32864 |
| .0312 | 1/32 | 0.79 | SD | .0938 | .1250 | 1.5000 | | 32030 | 30490 | 30339 | 30717 |
| .0469 | 3/64 | 1.19 | STB | .1250 | .1250 | 1.5000 | | 32156 | | | 32865 |
| .0469 | 3/64 | 1.19 | SD | .1875 | .1250 | 1.5000 | | 32031 | 30491 | 30340 | 30718 |
| .0625 | 1/16 | 1.59 | STB | .1250 | .1250 | 1.5000 | | 32157 | | | 32866 |
| .0625 | 1/16 | 1.59 | SD | .2500 | .1250 | 1.5000 | | 32032 | 30492 | 30341 | 30719 |
| .0781 | 5/64 | 1.98 | STB | .1250 | .1250 | 1.5000 | | 32158 | | | 32867 |
| .0781 | 5/64 | 1.98 | SD | .2500 | .1250 | 1.5000 | | 32033 | 30493 | 30342 | 30720 |
| .0938 | 3/32 | 2.38 | STB | .1875 | .1250 | 1.5000 | | 32159 | | | 32868 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 1.5000 | | 32034 | 30494 | 30343 | 30721 |
| .1094 | 7/64 | 2.78 | STB | .1875 | .1250 | 1.5000 | | 32160* | | | 32869* |
| .1094 | 7/64 | 2.78 | SD | .5000 | .1250 | 1.5000 | | 32035 | 30495 | 30344 | 30722 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | 32161 | | | 32870 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | | 32036 | 30496 | 30345 | 30723 |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | | 30235 | | | 30069 |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | | 32272 | | | 30070 |
| .1406 | 9/64 | 3.57 | SD | .5625 | .1875 | 2.0000 | | 32037 | 30497* | 30346* | 30724 |
| .1562 | 5/32 | 3.97 | STB | .3750 | .1875 | 2.0000 | | 32162 | | | 32871 |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | | 32038 | 30498 | 30347 | 30725 |
| .1719 | 11/64 | 4.37 | SD | .5625 | .1875 | 2.0000 | | 32651 | 30499* | 30348* | 30726 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | | 32163 | | | 32872 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | | 32039 | 30500 | 30349 | 30727 |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | | 30240 | | | 30072 |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | | 32273 | | | 30071 |
| .2031 | 13/64 | 5.16 | SD | .6250 | .2500 | 2.5000 | | 32652 | 30501* | 30350* | 30728* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | | 32040 | 30502* | 30351* | 30729 |
| .2344 | 15/64 | 5.95 | SD | .7500 | .2500 | 2.5000 | | 32653 | 30503* | 30352* | 30730 |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | | 32164 | | | 32873 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | | 32041 | 30504 | 30353 | 30731 |
| .2500 | 1/4 | 6.35 | XL | 1.0000 | .2500 | 4.0000 | | 30205 | | | 30074 |

# 3200 4-Flute (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiN | TiCN | TiAlN |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | | 32556 | | | 30073 |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | | 32274 | | | 30075 |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 6.0000 | | 32557 | | | 30076 |
| .2656 | 17/64 | 6.75 | SD | .8750 | .3125 | 2.5000 | | 32930 | 30505 | 30354* | 30732* |
| .2812 | 9/32 | 7.14 | SD | .8750 | .3125 | 2.5000 | | 32042 | 30506 | 30355 | 30733* |
| .2969 | 19/64 | 7.54 | SD | .8750 | .3125 | 2.5000 | | 32931 | 30507* | 30356* | 30734 |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | | 32165 | | | 32874 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | | 32043 | 30508 | 30357 | 30735 |
| .3125 | 5/16 | 7.94 | XL | 1.0000 | .3125 | 4.0000 | | 30206 | | | 30078 |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | | 32575 | | | 30077 |
| .3125 | 5/16 | 7.94 | XL | 1.5000 | .3125 | 6.0000 | | 32558 | | | 30080 |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | | 32275 | | | 30079 |
| .3281 | 21/64 | 8.33 | SD | .8750 | .3750 | 2.5000 | | 32932 | 30509* | 30358* | 30736 |
| .3438 | 11/32 | 8.73 | SD | .8750 | .3750 | 2.5000 | | 32044 | 30510 | 30359* | 30737 |
| .3594 | 23/64 | 9.13 | SD | 1.0000 | .3750 | 2.5000 | | 32933 | 30511* | 30360* | 30738 |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | | 32166 | | | 32875 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | | 32045 | 30512 | 30361 | 30739 |
| .3750 | 3/8 | 9.53 | XL | 1.0000 | .3750 | 4.0000 | | 30207 | | | 30082 |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | | 32579 | | | 30081 |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | | 30221 | | | 30083 |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 6.0000 | | 32559 | | | 30085 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | | 32276 | | | 30084 |
| .3750 | 3/8 | 9.53 | XL | 3.0000 | .3750 | 6.0000 | | 32277 | | | 30086 |
| .3906 | 25/64 | 9.92 | SD | 1.0000 | .4375 | 2.7500 | | 32934* | 30513* | 30362* | 30740* |
| .4062 | 13/32 | 10.32 | SD | 1.0000 | .4375 | 2.7500 | | 32904 | 30514* | 30363* | 30741 |
| .4219 | 27/64 | 10.72 | SD | 1.0000 | .4375 | 2.7500 | | 32935* | 30515* | 30364* | 30742* |
| .4375 | 7/16 | 11.11 | STB | .7500 | .4375 | 2.7500 | | 32167 | | | 32876 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | | 32046 | 30516* | 30365 | 30743 |
| .4375 | 7/16 | 11.11 | XL | 1.0000 | .4375 | 4.0000 | | 30208 | | | 30087* |
| .4375 | 7/16 | 11.11 | XL | 1.5000 | .4375 | 6.0000 | | 32560 | | | 30089* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | | 32278 | | | 30088* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | | 32279 | | | 30090* |
| .4531 | 29/64 | 11.51 | SD | 1.0000 | .5000 | 3.0000 | | 32936 | 30517* | 30366* | 30744* |
| .4688 | 15/32 | 11.91 | SD | 1.0000 | .5000 | 3.0000 | | 32914 | 30518* | 30367* | 30745 |
| .4844 | 31/64 | 12.30 | SD | 1.0000 | .5000 | 3.0000 | | 32937 | 30519* | 30368* | 30746 |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | | 32168 | | | 32877 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | | 32047 | 30520 | 30369 | 30747 |
| .5000 | 1/2 | 12.70 | XL | 1.0000 | .5000 | 4.0000 | | 30209 | | | 30092 |
| .5000 | 1/2 | 12.70 | XL | 1.2500 | .5000 | 3.0000 | | 30241 | | | 30091 |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | | 32583 | | | 30093 |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 6.0000 | | 32561 | | | 30095 |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | | 32280 | | | 30094 |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | | 32281 | | | 30096 |
| .5625 | 9/16 | 14.29 | SD | 1.2500 | .5625 | 3.5000 | | 32048 | 30521* | 30370* | 30748 |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | | 32169 | | | 32878 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | | 32049 | 30522 | 30371 | 30749 |
| .6250 | 5/8 | 15.88 | XL | 1.5000 | .6250 | 6.0000 | | 30228 | | | 30098* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | | 32282 | | | 30097* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | | 32283 | | | 30099 |
| .6875 | 11/16 | 17.46 | SD | 1.5000 | .7500 | 4.0000 | | 32050 | 30523* | 30372* | 30750* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | | 32170 | | | 32879 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | | 32051 | 30524 | 30373 | 30751 |
| .7500 | 3/4 | 19.05 | XL | 1.5000 | .7500 | 6.0000 | | 30230 | | | 30101* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | | 32284 | | | 30100 |

END MILLS

BALL

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3200 4-Flute (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

BALL

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiN | TiCN | TiAlN |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | | 32285 | | | 30102 |
| .7500 | 3/4 | 19.05 | XL | 4.0000 | .7500 | 7.0000 | | 32286 | | | 30103 |
| .8750 | 7/8 | 22.23 | SD | 1.5000 | .8750 | 4.0000 | | 32052 | 30525* | 30374* | 30752 |
| 1.0000 | 1 | 25.40 | STB | 1.0000 | 1.0000 | 4.0000 | | 32171 | | | 32880* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | | 32053 | 30526* | 30375 | 30753 |
| 1.0000 | 1 | 25.40 | XL | 2.0000 | 1.0000 | 4.5000 | | 32287 | | | 30104* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | | 32288 | | | 30105* |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | | 32289 | | | 30106* |
| 1.0000 | 1 | 25.40 | XL | 4.0000 | 1.0000 | 7.0000 | | 32290 | | | 30107 |
| 1.1250 | 1-1/8 | 28.58 | SD | 2.0000 | 1.0000 | 4.5000 | | 32054 | | | |
| 1.2500 | 1-1/4 | 31.75 | SD | 2.0000 | 1.2500 | 4.5000 | | 32055* | | | |
| 1.2500 | 1-1/4 | 31.75 | XL | 3.0000 | 1.2500 | 6.0000 | | 32291* | | | |
| 1.3750 | 1-3/8 | 34.93 | SD | 2.0000 | 1.2500 | 4.5000 | | 32056* | | | |
| 1.5000 | 1-1/2 | 38.10 | SD | 2.0000 | 1.2500 | 4.5000 | | 32057 | | | |
| **DOUBLE END (Inch)** | | | | | | | | | | | |
| .0312 | 1/32 | 0.79 | STB | .0938 | .1250 | 1.5000 | | 32452 | | | 36041 |
| .0469 | 3/64 | 1.19 | STB | .1250 | .1250 | 1.5000 | | 32453 | | | 36042 |
| .0625 | 1/16 | 1.59 | STB | .1250 | .1250 | 1.5000 | | 32454 | | | 36043 |
| .0625 | 1/16 | 1.59 | SD | .1875 | .1250 | 2.0000 | | 32400 | | | 12400 |
| .0781 | 5/64 | 1.98 | STB | .1250 | .1250 | 1.5000 | | 32531 | | | 36044 |
| .0938 | 3/32 | 2.38 | STB | .1875 | .1250 | 1.5000 | | 32455 | | | 36045 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 2.0000 | | 32401 | | | 12401* |
| .1094 | 7/64 | 2.78 | STB | .1875 | .1250 | 1.5000 | | 32532 | | | 36046 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | | 32456 | | | 36047 |
| .1250 | 1/8 | 3.18 | SD | .3750 | .1250 | 2.0000 | | 32402 | | | 12402 |
| .1250 | 1/8 | 3.18 | SD | .3750 | .3750 | 3.5000 | • | 32498 | | | 37008 |
| .1406 | 9/64 | 3.57 | STB | .3125 | .1875 | 2.0000 | | 32546 | | | 36048 |
| .1562 | 5/32 | 3.97 | STB | .3125 | .1875 | 2.0000 | | 32457 | | | 36049 |
| .1562 | 5/32 | 3.97 | SD | .4375 | .1875 | 3.0000 | | 32403 | | | 12403* |
| .1562 | 5/32 | 3.97 | SD | .4375 | .3750 | 3.5000 | • | 32499 | | | 37009* |
| .1719 | 11/64 | 4.37 | STB | .3125 | .1875 | 2.0000 | | 32547 | | | 36050 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | | 32458 | | | 36051 |
| .1875 | 3/16 | 4.76 | SD | .5000 | .1875 | 3.0000 | | 32404 | | | 12404* |
| .1875 | 3/16 | 4.76 | SD | .5000 | .3750 | 3.5000 | • | 32500 | | | 37010* |
| .2031 | 13/64 | 5.16 | STB | .5000 | .2500 | 2.5000 | | 32548 | | | 36052 |
| .2188 | 7/32 | 5.56 | STB | .5000 | .2500 | 2.5000 | | 32459 | | | 36053 |
| .2188 | 7/32 | 5.56 | SD | .5625 | .2500 | 3.0000 | | 32405* | | | 12405* |
| .2188 | 7/32 | 5.56 | SD | .5625 | .3750 | 3.5000 | • | 32501 | | | 37011* |
| .2344 | 15/64 | 5.95 | STB | .5000 | .2500 | 2.5000 | | 32549 | | | 36054* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.5000 | | 32460 | | | 36055 |
| .2500 | 1/4 | 6.35 | SD | .6250 | .2500 | 3.0000 | | 32406 | | | 12406* |
| .2500 | 1/4 | 6.35 | SD | .6250 | .3750 | 3.5000 | • | 32502 | | | 37012* |
| .2812 | 9/32 | 7.14 | STB | .5000 | .3125 | 2.5000 | | 32596* | | | 36056* |
| .2812 | 9/32 | 7.14 | SD | .6875 | .3750 | 3.5000 | • | 32503* | | | 37013* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | | 32461 | | | 36057 |
| .3125 | 5/16 | 7.94 | SD | .7500 | .3125 | 3.0000 | | 32408 | | | 12408* |
| .3125 | 5/16 | 7.94 | SD | .7500 | .3750 | 3.5000 | • | 32504 | | | 37014* |
| .3750 | 3/8 | 9.53 | STB | .5625 | .3750 | 2.5000 | | 32462 | | | 36058 |
| .3750 | 3/8 | 9.53 | SD | .7500 | .3750 | 3.5000 | | 32410* | | | 12410* |
| .4375 | 7/16 | 11.11 | STB | .6250 | .4375 | 2.7500 | | 32463* | | | 36059* |
| .4375 | 7/16 | 11.11 | SD | .8750 | .4375 | 4.0000 | | 32411 | | | 12411* |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | | 32464 | | | 36060 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 4.0000 | | 32412 | | | 12412 |

* *Non Stocked*

# 3200 4-Flute (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Weldon Flat | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiN | TiCN | TiAlN |
| METRIC (Millimeter) | | | | | | | | | | | |
| .0394 | | 1.00 | SD | 4.00 | 3.00 | 38.00 | | 92019 | | | 92265 |
| .0591 | | 1.50 | SD | 6.00 | 3.00 | 38.00 | | 92020 | | | 92266 |
| .0787 | | 2.00 | SD | 4.00 | 3.00 | 38.00 | | 92109* | | | 92329 |
| .0787 | | 2.00 | SD | 8.00 | 3.00 | 38.00 | | 92021 | | | 92267 |
| .0984 | | 2.50 | SD | 12.00 | 3.00 | 38.00 | | 92023 | | | 92268 |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | | 92110 | | | 92287* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | | 92024 | | | 92269 |
| .1181 | | 3.00 | XL | 25.00 | 3.00 | 76.00 | | 92130 | | | 92292 |
| .1378 | | 3.50 | SD | 12.00 | 4.00 | 50.00 | | 92074 | | | 92270 |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | | 92025 | | | 92271 |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | | 92076 | | | 92272 |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | | 92026 | | | 92273 |
| .2362 | | 6.00 | STB | 12.00 | 6.00 | 50.00 | | 92112* | | | 92288 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | | 92027 | | | 92274 |
| .2362 | | 6.00 | XL | 29.00 | 6.00 | 76.00 | | 92132 | | | 92293 |
| .2756 | | 7.00 | SD | 22.00 | 7.00 | 64.00 | | 92028 | | | 92275 |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | | 92114 | | | 92289 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | | 92029 | | | 92276 |
| .3150 | | 8.00 | XL | 29.00 | 8.00 | 76.00 | | 92134* | | | 92294* |
| .3543 | | 9.00 | SD | 22.00 | 9.00 | 64.00 | | 92030 | | | 92277 |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 50.00 | | 92116 | | | 92290 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | | 92031 | | | 92278 |
| .3937 | | 10.00 | XL | 45.00 | 10.00 | 100.00 | | 92136 | | | 92295 |
| .4331 | | 11.00 | SD | 25.00 | 11.00 | 84.00 | | 92078 | | | 92279* |
| .4724 | | 12.00 | STB | 15.00 | 12.00 | 63.00 | | 92118 | | | 92291 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | | 92032 | | | 92280 |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | | 92138 | | | 92296* |
| .5512 | | 14.00 | SD | 32.00 | 14.00 | 84.00 | | 92033 | | | 92281 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | | 92034 | | | 92282 |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | | 92139* | | | 92184* |
| .7087 | | 18.00 | SD | 40.00 | 18.00 | 100.00 | | 92035 | | | 92283 |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | | 92036 | | | 92284 |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | | 92141* | | | 92185* |
| .8661 | | 22.00 | SD | 40.00 | 22.00 | 100.00 | | 92080 | | | 92285* |
| .9843 | | 25.00 | SD | 40.00 | 25.00 | 100.00 | | 92082 | | | 92286* |

* Non Stocked

END MILLS

BALL

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

END MILLS

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

# 3200 4-Flute (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**

- Radius End
- 4 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard Uncoated and TiAlN Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .1094 | 7/64 | 2.78 | SD | .5000 | .1250 | 1.5000 | .0300 | | 31500 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | .0050 | 31907* | 31954* |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | .0100 | 31908* | 31955* |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | .0150 | 31909* | 31956* |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | .0200 | 31910 | 31957* |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | .0300 | 31911* | 31511 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0050 | 31674* | 31710* |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0100 | 31675 | 31711* |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0150 | 33700 | 33804 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0200 | 33709 | 33813 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0300 | 31676 | 31712* |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | .0050 | 31732* | 31856* |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | .0100 | 31733* | 31857* |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | .0150 | 31734* | 31858* |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | .0200 | 31735* | 31859* |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | .0300 | 31736* | 31513 |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | .0050 | 31727* | 31852* |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | .0100 | 31728* | 31853* |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | .0150 | 31729* | 31854* |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | .0200 | 31730* | 31855* |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | .0300 | 31731* | 31515* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | .0050 | 31677* | 31713* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | .0100 | 31678* | 31714* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | .0150 | 31679* | 31715* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | .0200 | 31680* | 31716* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | .0300 | 31681* | 31517* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | .0600 | 31682* | 31518 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | .0050 | 31912* | 31958* |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | .0100 | 31913* | 31959* |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | .0150 | 31914* | 31960* |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | .0200 | 31915* | 31961* |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | .0300 | 31916* | 31519* |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | .0600 | 31917* | 31520* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0050 | 31683 | 31717* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0100 | 31684 | 31718* |

# 3200 4-Flute (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0150 | 33701 | 33805 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0200 | 33710 | 33814 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0300 | 33718 | 33822 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0600 | 31685 | 31719 |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | .0050 | 31743* | 31866* |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | .0100 | 31744* | 31867* |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | .0150 | 31745* | 31868* |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | .0200 | 31746* | 31869* |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | .0300 | 31747* | 31522 |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | .0600 | 31748* | 31523* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | .0050 | 31737* | 31860* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | .0100 | 31738* | 31861* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | .0150 | 31739* | 31862* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | .0200 | 31740* | 31863* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | .0300 | 31741* | 31864* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | .0600 | 31742* | 31865* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | .0150 | 31686* | 31720* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | .0200 | 31687* | 31721* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | .0300 | 31688* | 31525* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | .0600 | 31689* | 31526* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | .0900 | 31690* | 31527* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | .0150 | 31918* | 31962* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | .0200 | 31919* | 31963 |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | .0300 | 31920* | 31528* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | .0600 | 31921* | 31529* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | .0900 | 31922* | 31530* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0150 | 33702 | 33806 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0200 | 33711 | 33815 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0300 | 33719 | 33790 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0450 | 33726 | 33827 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0600 | 31691 | 30970* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0900 | 31692 | 30976 |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | .0150 | 31754* | 31872* |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | .0200 | 31755* | 31873* |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | .0300 | 31756* | 31532 |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | .0600 | 31757 | 31533* |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | .0900 | 31758* | 31534* |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | .0150 | 31749* | 31870* |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | .0200 | 31750* | 31871* |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | .0300 | 31751* | 31540* |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | .0600 | 31752* | 31541* |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | .0900 | 31753* | 31542* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | .0150 | 31923* | 31964* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | .0200 | 31924* | 31965* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | .0300 | 31925* | 31544* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | .0600 | 31926* | 31545* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | .0900 | 31927* | 31546* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | .1200 | 31928* | 31547* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0150 | 33703 | 33807 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0200 | 33712 | 33816 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0300 | 33720 | 33823 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0450 | 33727 | 33828 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0600 | 31693 | 30977* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0900 | 31694* | 30978* |

END MILLS

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3200 4-Flute (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

F.A.S.T. Quote

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .1200 | 31695* | 31633* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | .0150 | 31759* | 31874* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | .0200 | 31760* | 31875* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | .0300 | 31761* | 31548* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | .0600 | 31762* | 31549* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | .0900 | 31763* | 31550* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | .1200 | 31764* | 31551* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | .0150 | 31765* | 31876* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | .0200 | 31766* | 31877* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | .0300 | 31767* | 31552* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | .0600 | 31768* | 31553* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | .0900 | 31769* | 31554* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | .1200 | 31770* | 31555* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | .0150 | 31929* | 31966* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | .0200 | 31930* | 31967* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | .0300 | 31931 | 31556* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | .0600 | 31932* | 31557* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | .0900 | 31933* | 31558* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | .1200 | 31934* | 31559* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0150 | 33704 | 33808 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0200 | 33713 | 33817 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0300 | 33721 | 33791 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0450 | 33728 | 33829 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0600 | 33733 | 33792 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0900 | 31696* | 30971 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .1200 | 31697 | 30972* |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | .0150 | 31777* | 31880* |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | .0200 | 31778* | 31881* |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | .0300 | 31779* | 31560* |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | .0600 | 31780* | 31561* |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | .0900 | 31781* | 31562* |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | .1200 | 31782* | 31563* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | .0150 | 31771* | 31878* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | .0200 | 31772* | 31879* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | .0300 | 31773* | 31564* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | .0600 | 31774* | 31565* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | .0900 | 31775* | 31566* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | .1200 | 31776* | 31567* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | .0150 | 31783* | 31882* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | .0200 | 31784* | 31883* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | .0300 | 31785* | 31568* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | .0600 | 31786* | 31569* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | .0900 | 31787* | 31570* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | .1200 | 31788* | 31571* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | .0150 | 31698* | 31722* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | .0200 | 31699* | 31723* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | .0300 | 31700* | 31572* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | .0600 | 31701* | 31573* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | .0900 | 31702* | 31574* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | .1200 | 31703* | 31575* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | .0150 | 31789* | 31884* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | .0200 | 31790* | 31885* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | .0300 | 31791* | 31576* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | .0600 | 31792* | 31577* |

* *Non Stocked*

# 3200 4-Flute (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | .0900 | 31793* | 31578* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | .1200 | 31794* | 31579* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | .0150 | 31795* | 31886* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | .0200 | 31796* | 31887* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | .0300 | 31797* | 31580* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | .0600 | 31798* | 31581* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | .0900 | 31799* | 31582* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | .1200 | 31800* | 31583* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | .0150 | 31935* | 31968* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | .0200 | 31936* | 31969* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | .0300 | 31937* | 31584* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | .0600 | 31938* | 31585* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | .0900 | 31939* | 31586* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | .1200 | 31940* | 31587* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0150 | 33705 | 33809 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0200 | 33714 | 33818 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0300 | 33722 | 33793 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0450 | 33729 | 33830 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0600 | 33734 | 33794 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0900 | 33738 | 33837 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .1200 | 31704 | 30973 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .1250 | 33742 | 33841 |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | .0150 | 31801* | 31888* |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | .0200 | 31802* | 31889* |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | .0300 | 31803* | 31588* |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | .0600 | 31804* | 31589* |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | .0900 | 31805* | 31590* |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | .1200 | 31806* | 31591* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | .0150 | 31807* | 31890* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | .0200 | 31808* | 31891* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | .0300 | 31809* | 31592* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | .0600 | 31810* | 31593* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | .0900 | 31811* | 31594* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | .1200 | 31812* | 31595* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | .0150 | 31813* | 31892* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | .0200 | 31814* | 31893* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | .0300 | 31815* | 31596* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | .0600 | 31816* | 31597* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | .0900 | 31817* | 31598* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | .1200 | 31818* | 31599* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | .0150 | 31941* | 31970* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | .0200 | 31942* | 31971* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | .0300 | 31943* | 31600* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | .0600 | 31944* | 31601* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | .0900 | 31945* | 31602* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | .1200 | 31946* | 31603* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0150 | 33706 | 33810 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0200 | 33715 | 33819 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0300 | 33723 | 33824 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0450 | 33730 | 33831 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0600 | 33735 | 33834 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0900 | 33739 | 33838 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .1200 | 31705* | 30974 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .1250 | 33802 | 33842 |

END MILLS

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3200 4-Flute (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

F.A.S.T. Quote

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | .0150 | 31819* | 31894* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | .0200 | 31820* | 31895* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | .0300 | 31821* | 31604* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | .0600 | 31822* | 31605* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | .0900 | 31823* | 31606* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | .1200 | 31824* | 31607* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | .0150 | 31825* | 31896* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | .0200 | 31826* | 31897* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | .0300 | 31827* | 31608* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | .0600 | 31828* | 31609* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | .0900 | 31829* | 31610* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | .1200 | 31830* | 31611* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | .0150 | 31947* | 31972* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | .0200 | 31948* | 31973* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | .0300 | 31949* | 31612 |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | .0600 | 31950* | 31613 |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | .0900 | 31951* | 31614* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | .1200 | 31952* | 31615 |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | .2500 | 31953* | 31974* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0150 | 33707 | 33811 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0200 | 33716 | 33820 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0300 | 33724 | 33825 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0450 | 33731 | 33832 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0600 | 33736 | 33835 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0900 | 33740 | 33839 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .1200 | 31706 | 30975 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .1250 | 33743 | 33843 |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .2500 | 31707 | 31724* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | .0150 | 31831* | 31898* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | .0200 | 31832* | 31899* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | .0300 | 31833* | 31616* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | .0600 | 31834* | 31617* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | .0900 | 31835* | 31618* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | .1200 | 31836* | 31619 |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | .2500 | 31837* | 31900* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .0150 | 31838* | 31901* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .0200 | 31839* | 31902* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .0300 | 31840* | 31620* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .0600 | 31841* | 31621* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .0900 | 31842* | 31622* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .1200 | 31843* | 31623* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | .2500 | 31844 | 31903* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0150 | 33708 | 33812* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0200 | 33717 | 33821 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0300 | 33725 | 33826 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0450 | 33732 | 33833 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0600 | 33737 | 33836 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0900 | 33741 | 33840 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .1200 | 31708* | 31725* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .1250 | 33744 | 33844 |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .2500 | 31709 | 31726 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .0150 | 31845 | 31904* |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .0200 | 31846* | 31905* |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .0300 | 31847* | 31501 |

* *Non Stocked*

# 3200 4-Flute (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .0600 | 31848* | 31502 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .0900 | 31849* | 31503* |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .1200 | 31850* | 31504 |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | .2500 | 31851* | 31906* |
| **METRIC (Millimeter)** | | | | | | | | | |
| .1181 | | 3.00 | SD | 8.00 | 3.00 | 38.00 | 0.20 | 91324* | 91356* |
| .1181 | | 3.00 | SD | 8.00 | 3.00 | 38.00 | 0.50 | 91325* | 91357* |
| .1181 | | 3.00 | SD | 8.00 | 3.00 | 38.00 | 1.00 | 91326* | 91358* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 0.20 | 91934* | 91953* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 0.50 | 91935* | 91954* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 1.00 | 91936* | 91955* |
| .1181 | | 3.00 | XL | 25.00 | 3.00 | 76.00 | 0.20 | 91253* | 91285* |
| .1181 | | 3.00 | XL | 25.00 | 3.00 | 76.00 | 0.50 | 91254* | 91286* |
| .1181 | | 3.00 | XL | 25.00 | 3.00 | 76.00 | 1.00 | 91255* | 91287* |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 0.20 | 91937* | 91956* |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 0.50 | 91938* | 91957* |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 1.00 | 91939 | 91958* |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | 0.20 | 91940* | 91959* |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | 0.50 | 91941* | 91960* |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | 1.00 | 91942* | 91961* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 0.20 | 91943 | 91962* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 0.50 | 91944* | 91963* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 1.00 | 91945* | 91964* |
| .2362 | | 6.00 | SD | 12.00 | 6.00 | 50.00 | 0.20 | 91327* | 91359* |
| .2362 | | 6.00 | SD | 12.00 | 6.00 | 50.00 | 0.50 | 91328* | 91360* |
| .2362 | | 6.00 | SD | 12.00 | 6.00 | 50.00 | 1.00 | 91329* | 91361* |
| .2362 | | 6.00 | SD | 12.00 | 6.00 | 50.00 | 1.50 | 91330* | 91362* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 0.20 | 91946* | 91965* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 0.50 | 91876 | 91905 |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 1.00 | 91877 | 91906* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 1.50 | 91878* | |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 2.00 | 91879* | |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 2.50 | 91880* | |
| .2362 | | 6.00 | XL | 29.00 | 6.00 | 76.00 | 0.20 | 91256* | 91288* |
| .2362 | | 6.00 | XL | 29.00 | 6.00 | 76.00 | 0.50 | 91257* | 91289* |
| .2362 | | 6.00 | XL | 29.00 | 6.00 | 76.00 | 1.00 | 91258* | 91290* |
| .2362 | | 6.00 | XL | 29.00 | 6.00 | 76.00 | 1.50 | 91259* | 91291* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | 0.50 | 91331* | 91363* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | 1.00 | 91332* | 91364* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | 1.50 | 91333* | 91365* |
| .3150 | | 8.00 | SD | 12.00 | 8.00 | 50.00 | 2.00 | 91334* | 91366* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 0.50 | 91881 | 91910 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 1.00 | 91882 | 91911 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 1.50 | 91883* | 91912* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 2.00 | 91884* | 91913 |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 2.50 | 91885* | |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 3.00 | 91886* | |
| .3150 | | 8.00 | XL | 29.00 | 8.00 | 76.00 | 0.50 | 91260* | 91292* |
| .3150 | | 8.00 | XL | 29.00 | 8.00 | 76.00 | 1.00 | 91261* | 91293* |
| .3150 | | 8.00 | XL | 29.00 | 8.00 | 76.00 | 1.50 | 91262* | 91294* |
| .3150 | | 8.00 | XL | 29.00 | 8.00 | 76.00 | 2.00 | 91263* | 91295* |
| .3937 | | 10.00 | SD | 15.00 | 10.00 | 50.00 | 0.50 | 91335* | 91367* |
| .3937 | | 10.00 | SD | 15.00 | 10.00 | 50.00 | 1.00 | 91336* | 91368* |

END MILLS

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

F.A.S.T. Quote

mm METRIC

# 3200 4-Flute (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .3937 | | 10.00 | SD | 15.00 | 10.00 | 50.00 | 1.50 | 91337* | 91369* |
| .3937 | | 10.00 | SD | 15.00 | 10.00 | 50.00 | 2.00 | 91338* | 91370* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 0.50 | 91887* | 91916 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 1.00 | 91888 | 91917 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 1.50 | 91889 | 91918* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 2.00 | 91890* | 91874 |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 2.50 | 91891* | |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 3.00 | 91892* | |
| .3937 | | 10.00 | XL | 45.00 | 10.00 | 100.00 | 0.50 | 91264* | 91296* |
| .3937 | | 10.00 | XL | 45.00 | 10.00 | 100.00 | 1.00 | 91265* | 91297* |
| .3937 | | 10.00 | XL | 45.00 | 10.00 | 100.00 | 1.50 | 91266* | 91298* |
| .3937 | | 10.00 | XL | 45.00 | 10.00 | 100.00 | 2.00 | 91267* | 91299* |
| .4724 | | 12.00 | SD | 15.00 | 12.00 | 63.00 | 0.50 | 91339* | 91371* |
| .4724 | | 12.00 | SD | 15.00 | 12.00 | 63.00 | 1.00 | 91340* | 91372* |
| .4724 | | 12.00 | SD | 15.00 | 12.00 | 63.00 | 1.50 | 91341* | 91373* |
| .4724 | | 12.00 | SD | 15.00 | 12.00 | 63.00 | 2.00 | 91342* | 91374* |
| .4724 | | 12.00 | SD | 15.00 | 12.00 | 63.00 | 2.50 | 91343* | 91375* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 0.50 | 91893* | 91922 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 1.00 | 91894* | 91923 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 1.50 | 91895* | 91924 |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 2.00 | 91896* | 91925* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 2.50 | 91897* | 91926* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 3.00 | 91898* | |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | 0.50 | 91268* | 91300* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | 1.00 | 91269* | 91301* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | 1.50 | 91270* | 91302* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | 2.00 | 91271* | 91303* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | 2.50 | 91272* | 91304* |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | 0.50 | 91344* | 91376* |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | 1.00 | 91345* | 91377* |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | 1.50 | 91346* | 91378* |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | 2.00 | 91347* | 91379* |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | 2.50 | 91348* | 91380* |
| .6299 | | 16.00 | SD | 30.00 | 16.00 | 89.00 | 3.00 | 91349* | 91381* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 0.50 | 91899* | 91928 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 1.00 | 91900* | 91929 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 1.50 | 91901* | 91930* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 2.00 | 91902 | 91931 |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 2.50 | 91903* | 91932* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 3.00 | 91904 | 91933* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | 0.50 | 91273* | 91305* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | 1.00 | 91274* | 91306* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | 1.50 | 91275* | 91307* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | 2.00 | 91276* | 91308* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | 2.50 | 91277* | 91309* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | 3.00 | 91278* | 91310* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | 0.50 | 91350* | 91382* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | 1.00 | 91351* | 91383* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | 1.50 | 91352* | 91384* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | 2.00 | 91353* | 91385* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | 2.50 | 91354* | 91386* |
| .7874 | | 20.00 | SD | 30.00 | 20.00 | 100.00 | 3.00 | 91355* | 91387* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 0.50 | 91947* | 91966* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 1.00 | 91948* | 91967* |

* *Non Stocked*

# 3200 4-Flute (Radius End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 1.50 | 91949* | 91968* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 2.00 | 91950* | 91969* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 2.50 | 91951* | 91970* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 3.00 | 91952* | 91971* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | 0.50 | 91279* | 91311* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | 1.00 | 91280* | 91312* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | 1.50 | 91281* | 91313* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | 2.00 | 91282* | 91314* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | 2.50 | 91283* | 91315* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | 3.00 | 91284* | 91316* |

END MILLS

RADIUS

4 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

SQUARE

RADIUS

BALL

4 FLUTE

CENTER CUTTING

SD STANDARD

mm METRIC

# 2004 JIT 4-Flute (Square/Radius/Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

5:00 P.M. EST Order Deadline

**Just in Time**
**48-Hour JIT Delivery**
Decimal-Sized End Mills

**12** PIECES OR LESS

**Basic Information:**

- JIT Service 12 Pieces or less in 48-Hours
- See JIT Pricing Guide for Quantity Break Pricing
- Square End
  - Standard Base Price
- Radius End
  +15% to Base Price *(Specify Radius Size when Ordering)*
- Ball End (Full Radius)
  +20% to Base Price
- Weldon Flats and Coatings Available *(Additional Charges May Apply)*
- 4 Flutes 3200 Series Design
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

* ***Specify Tolerance if not Standard (Additional Charges May Apply)***

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

| Size Range | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Millimeter | | | | | SQUARE | RADIUS | BALL |
| .1200 — .1406 | 3.05 — 3.57 | SD | .5625 | .1875 | 2.0000 | 20426S | 20426R | 20426B |
| .1407 — .1562 | 3.58 — 3.97 | SD | .5625 | .1875 | 2.0000 | 20428S | 20428R | 20428B |
| .1563 — .1719 | 3.98 — 4.36 | SD | .5625 | .1875 | 2.0000 | 20430S | 20430R | 20430B |
| .1720 — .1875 | 4.37 — 4.76 | SD | .6250 | .1875 | 2.0000 | 20432S | 20432R | 20432B |
| .1876 — .2031 | 4.77 — 5.16 | SD | .6250 | .2500 | 2.5000 | 20434S | 20434R | 20434B |
| .2032 — .2188 | 5.17 — 5.56 | SD | .6250 | .2500 | 2.5000 | 20436S | 20436R | 20436B |
| .2189 — .2344 | 5.57 — 5.95 | SD | .7500 | .2500 | 2.5000 | 20438S | 20438R | 20438B |
| .2345 — .2500 | 5.96 — 6.35 | SD | .7500 | .2500 | 2.5000 | 20440S | 20440R | 20440B |
| .2501 — .2656 | 6.36 — 6.74 | SD | .8750 | .3125 | 2.5000 | 20442S | 20442R | 20442B |
| .2657 — .2812 | 6.75 — 7.14 | SD | .8750 | .3125 | 2.5000 | 20444S | 20444R | 20444B |
| .2813 — .2969 | 7.15 — 7.54 | SD | .8750 | .3125 | 2.5000 | 20446S | 20446R | 20446B |
| .2970 — .3125 | 7.55 — 7.94 | SD | .8750 | .3125 | 2.5000 | 20448S | 20448R | 20448B |
| .3126 — .3281 | 7.95 — 8.33 | SD | .8750 | .3750 | 2.5000 | 20450S | 20450R | 20450B |
| .3282 — .3438 | 8.34 — 8.73 | SD | .8750 | .3750 | 2.5000 | 20452S | 20452R | 20452B |
| .3439 — .3594 | 8.74 — 9.13 | SD | 1.0000 | .3750 | 2.5000 | 20454S | 20454R | 20454B |
| .3595 — .3750 | 9.14 — 9.52 | SD | 1.0000 | .3750 | 2.5000 | 20456S | 20456R | 20456B |
| .3751 — .3906 | 9.53 — 9.92 | SD | 1.0000 | .4375 | 2.7500 | 20458S | 20458R | 20458B |
| .3907 — .4062 | 9.93 — 10.32 | SD | 1.0000 | .4375 | 2.7500 | 20460S | 20460R | 20460B |
| .4063 — .4219 | 10.33 — 10.71 | SD | 1.0000 | .4375 | 2.7500 | 20462S | 20462R | 20462B |
| .4220 — .4375 | 10.72 — 11.11 | SD | 1.0000 | .4375 | 2.7500 | 20464S | 20464R | 20464B |
| .4376 — .4531 | 11.12 — 11.51 | SD | 1.0000 | .5000 | 3.0000 | 20466S | 20466R | 20466B |
| .4532 — .4688 | 11.52 — 11.91 | SD | 1.0000 | .5000 | 3.0000 | 20468S | 20468R | 20468B |
| .4689 — .4844 | 11.92 — 12.30 | SD | 1.0000 | .5000 | 3.0000 | 20470S | 20470R | 20470B |
| .4845 — .5000 | 12.31 — 12.70 | SD | 1.0000 | .5000 | 3.0000 | 20472S | 20472R | 20472B |

# 2004 JIT 4-Flute (Square/Radius/Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Size Range | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Millimeter | | | | | SQUARE | RADIUS | BALL |
| .5001 — .5625 | 12.71 — 14.29 | SD | 1.2500 | .5625 | 3.5000 | 20474S | 20474R | 20474B |
| .5626 — .6250 | 14.30 — 15.87 | SD | 1.5000 | .6250 | 3.5000 | 20476S | 20476R | 20476B |
| .6251 — .6875 | 15.88 — 17.46 | SD | 1.5000 | .7500 | 4.0000 | 20478S | 20478R | 20478B |
| .6876 — .7500 | 17.47 — 19.05 | SD | 1.5000 | .7500 | 4.0000 | 20480S | 20480R | 20480B |
| .7501 — .8125 | 19.06 — 20.64 | SD | 1.5000 | .8750 | 4.0000 | 20482S | 20482R | 20482B |
| .8126 — .8750 | 20.65 — 22.22 | SD | 1.5000 | .8750 | 4.0000 | 20484S | 20484R | 20484B |
| .8751 — .9375 | 22.23 — 23.81 | SD | 1.5000 | 1.0000 | 4.0000 | 20486S | 20486R | 20486B |
| .9376 — 1.0000 | 23.82 — 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 20488S | 20488R | 20488B |
| **METRIC (Millimeter)** | | | | | | | | |
| .1181 — .1378 | 3.00 — 3.50 | SD | 14.00 | 5.00 | 51.00 | 90413S | 90413R | 90413B |
| .1379 — .1575 | 3.51 — 4.00 | SD | 14.00 | 5.00 | 51.00 | 90414S | 90414R | 90414B |
| .1576 — .1772 | 4.01 — 4.50 | SD | 14.00 | 5.00 | 51.00 | 90415S | 90415R | 90415B |
| .1773 — .1969 | 4.51 — 5.00 | SD | 16.00 | 5.00 | 51.00 | 90416S | 90416R | 90416B |
| .1970 — .2165 | 5.01 — 5.50 | SD | 16.00 | 6.00 | 64.00 | 90417S | 90417R | 90417B |
| .2166 — .2362 | 5.51 — 6.00 | SD | 20.00 | 6.00 | 64.00 | 90418S | 90418R | 90418B |
| .2363 — .2559 | 6.01 — 6.50 | SD | 22.00 | 8.00 | 64.00 | 90419S | 90419R | 90419B |
| .2560 — .2756 | 6.51 — 7.00 | SD | 22.00 | 8.00 | 64.00 | 90420S | 90420R | 90420B |
| .2757 — .2953 | 7.01 — 7.50 | SD | 22.00 | 8.00 | 64.00 | 90421S | 90421R | 90421B |
| .2954 — .3150 | 7.51 — 8.00 | SD | 22.00 | 8.00 | 64.00 | 90422S | 90422R | 90422B |
| .3151 — .3346 | 8.01 — 8.50 | SD | 22.00 | 10.00 | 64.00 | 90423S | 90423R | 90423B |
| .3347 — .3543 | 8.51 — 9.00 | SD | 22.00 | 10.00 | 64.00 | 90424S | 90424R | 90424B |
| .3544 — .3740 | 9.01 — 9.50 | SD | 25.00 | 10.00 | 64.00 | 90425S | 90425R | 90425B |
| .3741 — .3937 | 9.51 — 10.00 | SD | 25.00 | 10.00 | 64.00 | 90426S | 90426R | 90426B |
| .3938 — .4134 | 10.01 — 10.50 | SD | 25.00 | 11.00 | 71.00 | 90427S | 90427R | 90427B |
| .4135 — .4331 | 10.51 — 11.00 | SD | 25.00 | 11.00 | 71.00 | 90428S | 90428R | 90428B |
| .4332 — .4528 | 11.01 — 11.50 | SD | 25.00 | 12.00 | 76.00 | 90429S | 90429R | 90429B |
| .4529 — .4724 | 11.51 — 12.00 | SD | 25.00 | 12.00 | 76.00 | 90430S | 90430R | 90430B |
| .4725 — .5118 | 12.01 — 13.00 | SD | 32.00 | 14.00 | 84.00 | 90431S | 90431R | 90431B |
| .5119 — .5512 | 13.01 — 14.00 | SD | 32.00 | 14.00 | 84.00 | 90432S | 90432R | 90432B |
| .5513 — .5906 | 14.01 — 15.00 | SD | 38.00 | 16.00 | 89.00 | 90433S | 90433R | 90433B |
| .5907 — .6299 | 15.01 — 16.00 | SD | 38.00 | 16.00 | 89.00 | 90434S | 90434R | 90434B |
| .6300 — .6693 | 16.01 — 17.00 | SD | 38.00 | 20.00 | 100.00 | 90435S | 90435R | 90435B |
| .6694 — .7087 | 17.01 — 18.00 | SD | 38.00 | 20.00 | 100.00 | 90436S | 90436R | 90436B |
| .7088 — .7480 | 18.01 — 19.00 | SD | 38.00 | 20.00 | 100.00 | 90437S | 90437R | 90437B |
| .7481 — .7874 | 19.01 — 20.00 | SD | 38.00 | 20.00 | 100.00 | 90438S | 90438R | 90438B |
| .7875 — .8268 | 20.01 — 21.00 | SD | 38.00 | 22.00 | 100.00 | 90439S | 90439R | 90439B |
| .8269 — .8661 | 21.01 — 22.00 | SD | 38.00 | 22.00 | 100.00 | 90440S | 90440R | 90440B |
| .8662 — .9055 | 22.01 — 23.00 | SD | 38.00 | 25.00 | 100.00 | 90441S | 90441R | 90441B |
| .9056 — .9449 | 23.01 — 24.00 | SD | 38.00 | 25.00 | 100.00 | 90442S | 90442R | 90442B |
| .9450 — .9843 | 24.01 — 25.00 | SD | 38.00 | 25.00 | 100.00 | 90443S | 90443R | 90443B |

END MILLS


SQUARE


RADIUS


BALL

4 FLUTE

CENTER CUTTING

SD STANDARD

mm METRIC

END MILLS

# 3215 2-Flute (Square End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**
- Square End
- 2 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard Uncoated, TiN, TiCN, and TiAlN Coating
- Inch and Metric Based Tools
- Single and Double Ends Available
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

SQUARE | 2 FLUTE | CENTER CUTTING | STB STUB | SD STANDARD | XL EXTRA LONG | TiN COATING | TiCN COATING | TiAlN COATING | F.A.S.T. Quote | mm METRIC

* Non Stocked

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .0156 | 1/64 | 0.40 | SD | .0469 | .1250 | 1.5000 | 32058 | 33124* | 32764* | 30642 |
| .0312 | 1/32 | 0.79 | STB | .0625 | .1250 | 1.5000 | 32113 | | | 32839 |
| .0312 | 1/32 | 0.79 | SD | .0938 | .1250 | 1.5000 | 32059 | 33125 | 32765 | 30643 |
| .0469 | 3/64 | 1.19 | SD | .1250 | .1250 | 1.5000 | 32172 | 33126 | | 32840 |
| .0469 | 3/64 | 1.19 | SD | .1875 | .1250 | 1.5000 | 32060 | | 32766 | 30644* |
| .0625 | 1/16 | 1.59 | STB | .1250 | .1250 | 1.5000 | 32173 | | | 32841 |
| .0625 | 1/16 | 1.59 | SD | .2500 | .1250 | 1.5000 | 32061 | 32339 | 32767 | 30645 |
| .0781 | 5/64 | 1.98 | STB | .1250 | .1250 | 1.5000 | 32174 | | | 32842 |
| .0781 | 5/64 | 1.98 | SD | .2500 | .1250 | 1.5000 | 32062 | 33127* | 32768 | 30646 |
| .0938 | 3/32 | 2.38 | STB | .1875 | .1250 | 1.5000 | 32175 | | | 32843 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 1.5000 | 32063 | 32340 | 32769 | 30647 |
| .1094 | 7/64 | 2.78 | STB | .1875 | .1250 | 1.5000 | 32176 | | | 32844* |
| .1094 | 7/64 | 2.78 | SD | .5000 | .1250 | 1.5000 | 32064 | 33128* | 32770 | 30648 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | 32177 | | | 32845 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 32065 | 32341 | 32771 | 30649 |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | 30233 | | | 30108* |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | 32292 | | | 30109 |
| .1406 | 9/64 | 3.57 | SD | .5625 | .1875 | 2.0000 | 32066 | 33129* | 32772 | 30650* |
| .1562 | 5/32 | 3.97 | STB | .3750 | .1875 | 2.0000 | 32178 | | | 32846* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | 32067 | 33130 | 32773 | 30651 |
| .1719 | 11/64 | 4.37 | SD | .5625 | .1875 | 2.0000 | 32654 | 33131* | 32774* | 30652* |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | 32179 | | | 32847 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 32068 | 32342 | 32775 | 30653 |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | 30242 | | | 30111* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | 32293 | | | 30110* |
| .2031 | 13/64 | 5.16 | SD | .6250 | .2500 | 2.5000 | 32655 | 33132* | 32776* | 30654* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | 32069 | 33133* | 32777* | 30655 |
| .2344 | 15/64 | 5.95 | SD | .7500 | .2500 | 2.5000 | 32656 | 33134* | 32778* | 30656* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | 32180 | | | 32848 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 32070 | 32343 | 32779 | 30657 |
| .2500 | 1/4 | 6.35 | XL | 1.0000 | .2500 | 4.0000 | 30210 | | | 30113* |

# 3215 2-Flute (Square End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | 32562 | | | 30112* |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | 32294 | | | 30114 |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 6.0000 | 32563 | | | 30115* |
| .2656 | 17/64 | 6.75 | SD | .8750 | .3125 | 2.5000 | 32940 | 33135* | 32780* | 30658* |
| .2812 | 9/32 | 7.14 | SD | .8750 | .3125 | 2.5000 | 32071 | 33136* | 32781* | 30659* |
| .2969 | 19/64 | 7.54 | SD | .8750 | .3125 | 2.5000 | 32941 | 33137 | 32782* | 30660* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | 32181 | | | 32849* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | 32072 | 32344 | 32783 | 30661 |
| .3125 | 5/16 | 7.94 | XL | 1.0000 | .3125 | 4.0000 | 30211 | | | 30117* |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | 32576 | | | 30116* |
| .3125 | 5/16 | 7.94 | XL | 1.5000 | .3125 | 6.0000 | 32564 | | | 30119* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | 32295 | | | 30118* |
| .3281 | 21/64 | 8.33 | SD | .8750 | .3750 | 2.5000 | 32942 | 33138* | 32784* | 30662* |
| .3438 | 11/32 | 8.73 | SD | .8750 | .3750 | 2.5000 | 32073 | 33139 | 32785* | 30663* |
| .3594 | 23/64 | 9.13 | SD | 1.0000 | .3750 | 2.5000 | 32943 | 33140 | 32786* | 30664* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | 32182 | | | 32850* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 32074 | 32345 | 32787 | 30665 |
| .3750 | 3/8 | 9.53 | XL | 1.0000 | .3750 | 4.0000 | 30212 | | | 30121* |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | 32580 | | | 30120 |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | 30222 | | | 30122* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 6.0000 | 32565 | | | 30124* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 32296 | | | 30123* |
| .3750 | 3/8 | 9.53 | XL | 3.0000 | .3750 | 6.0000 | 32297 | | | 30125* |
| .3906 | 25/64 | 9.92 | SD | 1.0000 | .4375 | 2.7500 | 32944 | 33141* | 32788* | 30666* |
| .4062 | 13/32 | 10.32 | SD | 1.0000 | .4375 | 2.7500 | 32901 | 33142* | 32789* | 30667* |
| .4219 | 27/64 | 10.72 | SD | 1.0000 | .4375 | 2.7500 | 32945 | 33143* | 32790* | 30668* |
| .4375 | 7/16 | 11.11 | STB | .7500 | .4375 | 2.7500 | 32183 | | | 32851* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 32075 | 32346* | 32791* | 30669* |
| .4375 | 7/16 | 11.11 | XL | 1.0000 | .4375 | 4.0000 | 30213 | | | 30126* |
| .4375 | 7/16 | 11.11 | XL | 1.5000 | .4375 | 6.0000 | 32566 | | | 30128* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | 32298 | | | 30127* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | 32299 | | | 30129* |
| .4531 | 29/64 | 11.51 | SD | 1.0000 | .5000 | 3.0000 | 32946 | 33144* | 32792* | 30670* |
| .4688 | 15/32 | 11.91 | SD | 1.0000 | .5000 | 3.0000 | 32911 | 33145* | 32793* | 30671* |
| .4844 | 31/64 | 12.30 | SD | 1.0000 | .5000 | 3.0000 | 32947 | 33146* | 32794* | 30672* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | 32184 | | | 32852* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 32076 | 32347 | 32795 | 30673 |
| .5000 | 1/2 | 12.70 | XL | 1.0000 | .5000 | 4.0000 | 30214 | | | 30130* |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | 32584 | | | 30131 |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 6.0000 | 32567 | | | 30133* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | 32300 | | | 30132 |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | 32301 | | | 30134* |
| .5625 | 9/16 | 14.29 | SD | 1.2500 | .5625 | 3.5000 | 32077 | 32348 | 32796* | 30674* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | 32185 | | | 32853* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 32078 | 32349* | 32797* | 30675* |
| .6250 | 5/8 | 15.88 | XL | 1.5000 | .6250 | 6.0000 | 30225 | | | 30136* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | 32302 | | | 30135* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | 32303 | | | 30137* |
| .6875 | 11/16 | 17.46 | SD | 1.5000 | .7500 | 4.0000 | 32079 | 33147* | 32798* | 30676* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | 32186 | | | 32854* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 32080 | 32350* | 32799* | 30677 |
| .7500 | 3/4 | 19.05 | XL | 1.5000 | .7500 | 6.0000 | 30227 | | | 30139* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | 32304 | | | 30138* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | 32305 | | | 30140* |



SQUARE

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3215 2-Flute (Square End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

SQUARE

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .8750 | 7/8 | 22.23 | SD | 1.5000 | .8750 | 4.0000 | 32081 | 33148* | 32800* | 30678* |
| 1.0000 | 1 | 25.40 | STB | 1.0000 | 1.0000 | 4.0000 | 32187 | | | 32855* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 32082 | 32351* | 32801* | 30679* |
| 1.0000 | 1 | 25.40 | XL | 2.0000 | 1.0000 | 4.5000 | 32306 | | | 30141* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | 32307 | | | 30142* |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | 32308 | | | 30143* |
| **DOUBLE END (Inch)** | | | | | | | | | | |
| .0312 | 1/32 | 0.79 | STB | .0938 | .1250 | 1.5000 | 32465 | 32713 | | 36021* |
| .0469 | 3/64 | 1.19 | STB | .1250 | .1250 | 1.5000 | 32466 | 32714* | | 36022* |
| .0625 | 1/16 | 1.59 | STB | .1250 | .1250 | 1.5000 | 32467 | 32715* | | 36023 |
| .0625 | 1/16 | 1.59 | SD | .1875 | .1250 | 2.0000 | 32413 | | | |
| .0781 | 5/64 | 1.98 | STB | .1250 | .1250 | 1.5000 | 32533 | 32862* | | 36024* |
| .0938 | 3/32 | 2.38 | STB | .1875 | .1250 | 1.5000 | 32468 | 32716* | | 36025* |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 2.0000 | 32414 | | | |
| .1094 | 7/64 | 2.78 | STB | .1875 | .1250 | 1.5000 | 32534 | 32863* | | 36026* |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | 32469 | 32717* | | 36027* |
| .1250 | 1/8 | 3.18 | SD | .3750 | .1250 | 2.0000 | 32415 | | | |
| .1406 | 9/64 | 3.57 | STB | .3125 | .1875 | 2.0000 | 32586 | | | 36028 |
| .1562 | 5/32 | 3.97 | STB | .3125 | .1875 | 2.0000 | 32470 | 32718* | | 36029* |
| .1562 | 5/32 | 3.97 | SD | .4375 | .1875 | 3.0000 | 32416 | | | |
| .1719 | 11/64 | 4.37 | STB | .3125 | .1875 | 2.0000 | 32587 | | | 36030 |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | 32471 | 32719* | | 36031* |
| .1875 | 3/16 | 4.76 | SD | .5000 | .1875 | 3.0000 | 32417 | | | |
| .2031 | 13/64 | 5.16 | STB | .5000 | .2500 | 2.5000 | 32588 | | | 36032* |
| .2188 | 7/32 | 5.56 | STB | .5000 | .2500 | 2.5000 | 32472 | 32720 | | 36033* |
| .2188 | 7/32 | 5.56 | SD | .5625 | .2500 | 3.0000 | 32418 | | | |
| .2344 | 15/64 | 5.95 | STB | .5000 | .2500 | 2.5000 | 32589 | | | 36034* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.5000 | 32473 | | | 36035* |
| .2500 | 1/4 | 6.35 | SD | .6250 | .2500 | 3.0000 | 32419 | | | |
| .2812 | 9/32 | 7.14 | STB | .5000 | .3125 | 2.5000 | 32595 | | | 36036* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | 32474 | 32722* | | 36037* |
| .3125 | 5/16 | 7.94 | SD | .7500 | .3125 | 3.0000 | 32421 | | | |
| .3750 | 3/8 | 9.53 | STB | .5625 | .3750 | 2.5000 | 32475 | 32723* | | 36038* |
| .3750 | 3/8 | 9.53 | SD | .7500 | .3750 | 3.5000 | 32423 | | | |
| .4375 | 7/16 | 11.11 | STB | .6250 | .4375 | 2.7500 | 32476 | 32724 | | 36039* |
| .4375 | 7/16 | 11.11 | SD | .8750 | .4375 | 4.0000 | 32424 | | | |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | 32477 | 32725* | | 36040* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 4.0000 | 32425 | | | |
| **METRIC (Millimeter)** | | | | | | | | | | |
| .0394 | | 1.00 | STB | 2.50 | 3.00 | 38.00 | 92143 | | | 92186* |
| .0394 | | 1.00 | SD | 4.00 | 3.00 | 38.00 | 92037 | | | 92233 |
| .0591 | | 1.50 | SD | 6.00 | 3.00 | 38.00 | 92038 | | | 92234* |
| .0787 | | 2.00 | STB | 4.00 | 3.00 | 38.00 | 92145 | | | 92187* |
| .0787 | | 2.00 | SD | 8.00 | 3.00 | 38.00 | 92039 | | | 92235* |
| .0984 | | 2.50 | SD | 12.00 | 3.00 | 38.00 | 92041 | | | 92236 |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | 92140 | | | 92255 |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 92042 | | | 92237* |
| .1181 | | 3.00 | XL | 25.00 | 3.00 | 76.00 | 92160 | | | |
| .1378 | | 3.50 | SD | 12.00 | 4.00 | 50.00 | 92083 | | | 92238* |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 92043 | | | 92239 |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | 92085 | | | 92240* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 92044 | | | 92241* |

* *Non Stocked*

# 3215 2-Flute (Square End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .2362 | | 6.00 | STB | 12.00 | 6.00 | 50.00 | 92142 | | | 92256* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 92045 | | | 92242 |
| .2362 | | 6.00 | XL | 29.00 | 6.00 | 76.00 | 92162 | | | |
| .2756 | | 7.00 | SD | 22.00 | 7.00 | 64.00 | 92046 | | | 92243* |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | 92144 | | | 92257* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 92047 | | | 92244* |
| .3150 | | 8.00 | XL | 29.00 | 8.00 | 76.00 | 92164 | | | |
| .3543 | | 9.00 | SD | 22.00 | 9.00 | 64.00 | 92048 | | | 92245* |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 50.00 | 92146 | | | 92258* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 92049 | | | 92246* |
| .3937 | | 10.00 | XL | 45.00 | 10.00 | 100.00 | 92166 | | | |
| .4331 | | 11.00 | SD | 25.00 | 11.00 | 84.00 | 92087 | | | 92247* |
| .4724 | | 12.00 | STB | 15.00 | 12.00 | 63.00 | 92148 | | | 92259* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 92050 | | | 92248* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | 92168 | | | |
| .5512 | | 14.00 | SD | 32.00 | 14.00 | 84.00 | 92051 | | | 92249* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 92052 | | | 92250* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | 92165 | | | |
| .7087 | | 18.00 | SD | 40.00 | 18.00 | 100.00 | 92053 | | | 92251* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 92054 | | | 92252* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | 92167 | | | |
| .8661 | | 22.00 | SD | 40.00 | 22.00 | 100.00 | 92089 | | | 92253* |
| .9843 | | 25.00 | SD | 40.00 | 25.00 | 100.00 | 92091 | | | 92254* |

END MILLS

SQUARE

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3215 2-Flute (Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

BALL

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

**Basic Information:**

- Ball End
- 2 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard Uncoated, TiN, TiCN, and TiAlN Coatings
- Inch and Metric Based Tools
- Single and Double Ends Available
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .0156 | 1/64 | 0.40 | SD | .0469 | .1250 | 1.5000 | 32086 | 30527* | 30376* | 30754 |
| .0312 | 1/32 | 0.79 | STB | .0625 | .1250 | 1.5000 | 32114 | | | 32881* |
| .0312 | 1/32 | 0.79 | SD | .0938 | .1250 | 1.5000 | 32087 | 30528* | 30377* | 30755 |
| .0469 | 3/64 | 1.19 | STB | .1250 | .1250 | 1.5000 | 32188 | | | 32882* |
| .0469 | 3/64 | 1.19 | SD | .1875 | .1250 | 1.5000 | 32088 | 30529 | 30378* | 30756 |
| .0625 | 1/16 | 1.59 | STB | .1250 | .1250 | 1.5000 | 32189 | | | 32883 |
| .0625 | 1/16 | 1.59 | SD | .2500 | .1250 | 1.5000 | 32089 | 30530 | 30379 | 30757 |
| .0781 | 5/64 | 1.98 | STB | .1250 | .1250 | 1.5000 | 32190* | | | 32884* |
| .0781 | 5/64 | 1.98 | SD | .2500 | .1250 | 1.5000 | 32090 | 30531* | 30380 | 30758 |
| .0938 | 3/32 | 2.38 | STB | .1875 | .1250 | 1.5000 | 32191 | | | 32885 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 1.5000 | 32091 | 30532* | 30381* | 30759 |
| .1094 | 7/64 | 2.78 | STB | .1875 | .1250 | 1.5000 | 32192* | | | 32886* |
| .1094 | 7/64 | 2.78 | SD | .5000 | .1250 | 1.5000 | 32092* | 30533* | 30382* | 30760 |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | 32193 | | | 32887 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 32093 | 30534 | 30383 | 30761 |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | 30236 | | | 30144* |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | 32309 | | | 30145* |
| .1406 | 9/64 | 3.57 | SD | .5625 | .1875 | 2.0000 | 32094* | 30535* | 30384* | 30762* |
| .1562 | 5/32 | 3.97 | STB | .3750 | .1875 | 2.0000 | 32194* | | | 32888* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | 32095 | 30536* | 30385* | 30763* |
| .1719 | 11/64 | 4.37 | SD | .5625 | .1875 | 2.0000 | 32657* | 30537* | 30386* | 30764* |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | 32195* | | | 32889 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 32096 | 30538 | 30387 | 30765 |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | 32310 | | | 30146 |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | 30244* | | | 30147* |
| .2031 | 13/64 | 5.16 | SD | .6250 | .2500 | 2.5000 | 32658* | 30539* | 30388* | 30766* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | 32097* | 30540* | 30389* | 30767* |
| .2344 | 15/64 | 5.95 | SD | .7500 | .2500 | 2.5000 | 32659* | 30541* | 30390* | 30768* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.0000 | 32196 | | | 32890 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 32098 | 30542 | 30391 | 30769 |
| .2500 | 1/4 | 6.35 | XL | 1.1250 | .2500 | 3.0000 | 32568 | | | 30148* |

# 3215 2-Flute (Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .2500 | 1/4 | 6.35 | XL | 1.0000 | .2500 | 4.0000 | 30215 | | | 30149 |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | 32311 | | | 30150* |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 6.0000 | 32569 | | | 30151* |
| .2656 | 17/64 | 6.75 | SD | .8750 | .3125 | 2.5000 | 32950* | 30543* | 30392* | 30770* |
| .2812 | 9/32 | 7.14 | SD | .8750 | .3125 | 2.5000 | 32099* | 30544* | 30393* | 30771* |
| .2969 | 19/64 | 7.54 | SD | .8750 | .3125 | 2.5000 | 32951* | 30545* | 30394* | 30772* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | 32197* | | | 32891 |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | 32100 | 30546* | 30395* | 30773 |
| .3125 | 5/16 | 7.94 | XL | 1.1250 | .3125 | 3.0000 | 32577* | | | 30152* |
| .3125 | 5/16 | 7.94 | XL | 1.0000 | .3125 | 4.0000 | 30216* | | | 30153* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | 32312* | | | 30154* |
| .3125 | 5/16 | 7.94 | XL | 1.5000 | .3125 | 6.0000 | 32570* | | | 30155* |
| .3281 | 21/64 | 8.33 | SD | .8750 | .3750 | 2.5000 | 32952* | 30547* | 30396* | 30774* |
| .3438 | 11/32 | 8.73 | SD | .8750 | .3750 | 2.5000 | 32101 | 30548* | 30397* | 30775 |
| .3594 | 23/64 | 9.13 | SD | 1.0000 | .3750 | 2.5000 | 32953* | 30549* | 30398* | 30776* |
| .3750 | 3/8 | 9.53 | STB | .6250 | .3750 | 2.5000 | 32198 | | | 32892 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 32102 | 30550 | 30399* | 30777 |
| .3750 | 3/8 | 9.53 | XL | 1.1250 | .3750 | 3.0000 | 32581* | | | 30156* |
| .3750 | 3/8 | 9.53 | XL | 1.0000 | .3750 | 4.0000 | 30217 | | | 30157* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 4.0000 | 30223 | | | 30158* |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 32313 | | | 30159* |
| .3750 | 3/8 | 9.53 | XL | 1.5000 | .3750 | 6.0000 | 32571 | | | 30160* |
| .3750 | 3/8 | 9.53 | XL | 3.0000 | .3750 | 6.0000 | 32314 | | | 30161* |
| .3906 | 25/64 | 9.92 | SD | 1.0000 | .4375 | 2.7500 | 32954* | 30551* | 30400* | 30778* |
| .4062 | 13/32 | 10.32 | SD | 1.0000 | .4375 | 2.7500 | 32905* | 30552* | 30401* | 30779* |
| .4219 | 27/64 | 10.72 | SD | 1.0000 | .4375 | 2.7500 | 32955* | 30553* | 30402* | 30780* |
| .4375 | 7/16 | 11.11 | STB | .7500 | .4375 | 2.7500 | 32199* | | | 32893* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 32103 | 30554* | 30403* | 30781* |
| .4375 | 7/16 | 11.11 | XL | 1.0000 | .4375 | 4.0000 | 30218* | | | 30162* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | 32315* | | | 30163* |
| .4375 | 7/16 | 11.11 | XL | 1.5000 | .4375 | 6.0000 | 32572* | | | 30164* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | 32316* | | | 30165* |
| .4531 | 29/64 | 11.51 | SD | 1.0000 | .5000 | 3.0000 | 32956* | 30555* | 30404* | 30782* |
| .4688 | 15/32 | 11.91 | SD | 1.0000 | .5000 | 3.0000 | 32915* | 30556* | 30405* | 30783* |
| .4844 | 31/64 | 12.30 | SD | 1.0000 | .5000 | 3.0000 | 32957* | 30557* | 30406* | 30784* |
| .5000 | 1/2 | 12.70 | STB | .7500 | .5000 | 3.0000 | 32200* | | | 32894 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 32104 | 30558* | 30407* | 30785 |
| .5000 | 1/2 | 12.70 | XL | 1.0000 | .5000 | 4.0000 | 30219 | | | 30166 |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | 32585 | | | 30167* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | 32317 | | | 30168* |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 6.0000 | 32573 | | | 30169 |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | 32318 | | | 30170* |
| .5625 | 9/16 | 14.29 | SD | 1.2500 | .5625 | 3.5000 | 32105* | 30559* | 30408* | 30786* |
| .6250 | 5/8 | 15.88 | STB | 1.0000 | .6250 | 3.5000 | 32201 | | | 32895* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 32106 | 30560* | 30409* | 30787 |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | 32319* | | | 30171* |
| .6250 | 5/8 | 15.88 | XL | 1.5000 | .6250 | 6.0000 | 30229* | | | 30172* |
| .6250 | 5/8 | 15.88 | XL | 3.0000 | .6250 | 6.0000 | 32320* | | | 30173* |
| .6875 | 11/16 | 17.46 | SD | 1.5000 | .7500 | 4.0000 | 32107* | 30561* | 30410* | 30788* |
| .7500 | 3/4 | 19.05 | STB | 1.0000 | .7500 | 4.0000 | 32202* | | | 32896* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 32108 | 30562* | 30411* | 30789* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | 32321* | | | 30174* |
| .7500 | 3/4 | 19.05 | XL | 1.5000 | .7500 | 6.0000 | 30231 | | | 30175* |
| .7500 | 3/4 | 19.05 | XL | 3.0000 | .7500 | 6.0000 | 32322 | | | 30176* |

END MILLS

BALL

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3215 2-Flute (Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

BALL

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .8750 | 7/8 | 22.23 | SD | 1.5000 | .8750 | 4.0000 | 32109* | 30563* | 30412* | 30790* |
| 1.0000 | 1 | 25.40 | STB | 1.0000 | 1.0000 | 4.0000 | 32203* | | | 32897* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 32110 | 30564* | 30413* | 30791* |
| 1.0000 | 1 | 25.40 | XL | 2.0000 | 1.0000 | 4.5000 | 32323* | | | 30177* |
| 1.0000 | 1 | 25.40 | XL | 2.5000 | 1.0000 | 5.0000 | 32324* | | | 30178* |
| 1.0000 | 1 | 25.40 | XL | 3.0000 | 1.0000 | 6.0000 | 32325* | | | 30179* |
| **DOUBLE END (Inch)** | | | | | | | | | | |
| .0312 | 1/32 | 0.79 | STB | .0938 | .1250 | 1.5000 | 32478* | | | 36061* |
| .0469 | 3/64 | 1.19 | STB | .1250 | .1250 | 1.5000 | 32479* | | | 36062* |
| .0625 | 1/16 | 1.59 | STB | .1250 | .1250 | 1.5000 | 32480 | | | 36063* |
| .0625 | 1/16 | 1.59 | SD | .1875 | .1250 | 2.0000 | 32426 | | | |
| .0781 | 5/64 | 1.98 | STB | .1250 | .1250 | 1.5000 | 32535* | | | 36064* |
| .0938 | 3/32 | 2.38 | STB | .1875 | .1250 | 1.5000 | 32481* | | | 36065* |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 2.0000 | 32427 | | | |
| .1094 | 7/64 | 2.78 | STB | .1875 | .1250 | 1.5000 | 32536* | | | 36066* |
| .1250 | 1/8 | 3.18 | STB | .2500 | .1250 | 1.5000 | 32482* | | | 36067* |
| .1250 | 1/8 | 3.18 | SD | .3750 | .1250 | 2.0000 | 32428 | | | |
| .1406 | 9/64 | 3.57 | STB | .3125 | .1875 | 2.0000 | 32590* | | | 36068* |
| .1562 | 5/32 | 3.97 | STB | .3125 | .1875 | 2.0000 | 32483* | | | 36069* |
| .1562 | 5/32 | 3.97 | SD | .4375 | .1875 | 3.0000 | 32429 | | | |
| .1719 | 11/64 | 4.37 | STB | .3125 | .1875 | 2.0000 | 32591* | | | 36070* |
| .1875 | 3/16 | 4.76 | STB | .3750 | .1875 | 2.0000 | 32484* | | | 36071* |
| .1875 | 3/16 | 4.76 | SD | .5000 | .1875 | 3.0000 | 32430 | | | |
| .2031 | 13/64 | 5.16 | STB | .5000 | .2500 | 2.5000 | 32592* | | | 36072* |
| .2188 | 7/32 | 5.56 | STB | .5000 | .2500 | 2.5000 | 32485* | | | 36073* |
| .2188 | 7/32 | 5.56 | SD | .5625 | .2500 | 3.0000 | 32431 | | | |
| .2344 | 15/64 | 5.95 | STB | .5000 | .2500 | 2.5000 | 32593* | | | 36074* |
| .2500 | 1/4 | 6.35 | STB | .5000 | .2500 | 2.5000 | 32486* | | | 36075* |
| .2500 | 1/4 | 6.35 | SD | .6250 | .2500 | 3.0000 | 32432 | | | |
| .2812 | 9/32 | 7.14 | STB | .5000 | .3125 | 2.5000 | 32597* | | | 36076* |
| .3125 | 5/16 | 7.94 | STB | .5000 | .3125 | 2.5000 | 32487* | | | 36077* |
| .3125 | 5/16 | 7.94 | SD | .7500 | .3125 | 3.0000 | 32434* | | | |
| .3750 | 3/8 | 9.53 | STB | .5625 | .3750 | 2.5000 | 32488* | | | 36078* |
| .3750 | 3/8 | 9.53 | SD | .7500 | .3750 | 3.5000 | 32436 | | | |
| .4375 | 7/16 | 11.11 | STB | .6250 | .4375 | 2.7500 | 32489* | | | 36079* |
| .4375 | 7/16 | 11.11 | SD | .8750 | .4375 | 4.0000 | 32437 | | | |
| .5000 | 1/2 | 12.70 | STB | .6250 | .5000 | 3.0000 | 32490* | | | 36080* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 4.0000 | 32438 | | | |
| **METRIC (Millimeter)** | | | | | | | | | | |
| .0394 | | 1.00 | SD | 4.00 | 3.00 | 38.00 | 92055 | | | 92297 |
| .0591 | | 1.50 | SD | 6.00 | 3.00 | 38.00 | 92056* | | | 92298* |
| .0787 | | 2.00 | SD | 8.00 | 3.00 | 38.00 | 92057 | | | 92299 |
| .0984 | | 2.50 | SD | 12.00 | 3.00 | 38.00 | 92059 | | | 92300* |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | 92150* | | | |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 92060 | | | 92301* |
| .1181 | | 3.00 | XL | 25.00 | 3.00 | 76.00 | 92170 | | | |
| .1378 | | 3.50 | SD | 12.00 | 4.00 | 50.00 | 92084* | | | 92302* |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 92061* | | | 92303* |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | 92086* | | | 92304* |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 92062* | | | 92305* |
| .2362 | | 6.00 | STB | 12.00 | 6.00 | 50.00 | 92152* | | | |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 92063* | | | 92306 |

* *Non Stocked*

# 3215 2-Flute (Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .2362 | | 6.00 | XL | 29.00 | 6.00 | 76.00 | 92172 | | | |
| .2756 | | 7.00 | SD | 22.00 | 7.00 | 64.00 | 92064* | | | 92307* |
| .3150 | | 8.00 | STB | 12.00 | 8.00 | 50.00 | 92154 | | | |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 92065* | | | 92308* |
| .3150 | | 8.00 | XL | 29.00 | 8.00 | 76.00 | 92174 | | | |
| .3543 | | 9.00 | SD | 22.00 | 9.00 | 64.00 | 92066* | | | 92309* |
| .3937 | | 10.00 | STB | 15.00 | 10.00 | 50.00 | 92156 | | | |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 92067 | | | 92310* |
| .3937 | | 10.00 | XL | 45.00 | 10.00 | 100.00 | 92176 | | | |
| .4331 | | 11.00 | SD | 25.00 | 11.00 | 84.00 | 92088* | | | 92311* |
| .4724 | | 12.00 | STB | 15.00 | 12.00 | 63.00 | 92158 | | | |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 92068* | | | 92312* |
| .4724 | | 12.00 | XL | 50.00 | 12.00 | 100.00 | 92178* | | | |
| .5512 | | 14.00 | SD | 32.00 | 14.00 | 84.00 | 92069* | | | 92313* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 92070* | | | 92314* |
| .6299 | | 16.00 | XL | 63.00 | 16.00 | 125.00 | 92173* | | | |
| .7087 | | 18.00 | SD | 40.00 | 18.00 | 100.00 | 92071* | | | 92315* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 92072* | | | 92316* |
| .7874 | | 20.00 | XL | 63.00 | 20.00 | 125.00 | 92175* | | | |
| .8661 | | 22.00 | SD | 40.00 | 22.00 | 100.00 | 92090* | | | 92317* |
| .9843 | | 25.00 | SD | 40.00 | 25.00 | 100.00 | 92092* | | | 92318* |

END MILLS

BALL

2 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiN COATING

TiCN COATING

TiAlN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3215 2-Flute (Radius End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

RADIUS

2 FLUTE

CENTER CUTTING

SD STANDARD

TiAlN COATING

F.A.S.T. Quote

* *Non Stocked*

**Basic Information:**

- Corner Radius
- 2 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated and TiAlN Coating
- Inch and Metric Based Tools
- Center Cutting
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0150 | 33745* | 33845* |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | .0200 | 33754* | 33854* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0150 | 33746* | 33846* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0200 | 33755* | 33855* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | .0300 | 33763* | 33863* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0150 | 33747 | 33847* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0200 | 33756* | 33856* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0300 | 33764* | 33864* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | .0450 | 33771* | 33871* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0150 | 33748* | 33848* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0200 | 33757* | 33857* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0300 | 33765* | 33865* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | .0450 | 33772* | 33872* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0150 | 33749* | 33849* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0200 | 33758* | 33858* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0300 | 33766* | 33866* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0450 | 33773* | 33873* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | .0600 | 33778* | 33878* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0150 | 33750* | 33850* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0200 | 33759* | 33859* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0300 | 33767 | 33867* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0450 | 33774* | 33874* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0600 | 33779* | 33879* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .0900 | 33783* | 33883* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | .1250 | 33787 | 33887* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0150 | 33751* | 33851* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0200 | 33760* | 33860* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0300 | 33768* | 33868* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0450 | 33775 | 33875 |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0600 | 33780* | 33880* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .0900 | 33784* | 33884* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | .1250 | 33803* | 33888* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0150 | 33752* | 33852* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0200 | 33761* | 33861* |

# 3215 2-Flute (Radius End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Corner Radius | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0300 | 33769* | 33869* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0450 | 33776* | 33876* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0600 | 33781* | 33881* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .0900 | 33785* | 33885* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | .1250 | 33788* | 33889* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0150 | 33753* | 33853* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0200 | 33762* | 33862* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0300 | 33770* | 33870* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0450 | 33777* | 33877* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0600 | 33782* | 33882* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .0900 | 33786* | 33886* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | .1250 | 33789* | 33890* |

END MILLS

RADIUS

2 FLUTE

CENTER CUTTING

SD STANDARD

TiAlN COATING

F.A.S.T. Quote

* Non Stocked

END MILLS

SQUARE

RADIUS

BALL

2 FLUTE

CENTER CUTTING

SD STANDARD

mm METRIC

# 2002 JIT 2-Flute (Square/Radius/Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Just in Time**
**48-Hour JIT Delivery**
Decimal-Sized End Mills

5:00 P.M. EST Order Deadline

**12** PIECES OR LESS

**Basic Information:**

- JIT Service 12 Pieces or less in 48-Hours
- See JIT Pricing Guide for Quantity Break Pricing
- Square End
  - Standard Base Price
- Radius End
  +15% to Base Price *(Specify Radius Size when Ordering)*
- Ball End (Full Radius)
  +20% to Base Price
- Weldon Flats and Coatings Available *(Additional Charges May Apply)*
- 2 Flutes 3215 Series Design
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

* ***Specify Tolerance if not Standard (Additional Charges May Apply)***

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

| Size Range | | | | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | | | Millimeter | | | | | | | SQUARE | RADIUS | BALL |
| .1200 | — | .1406 | 3.05 | — | 3.57 | SD | .5625 | .1875 | 2.0000 | 20226S | 20226R | 20226B |
| .1407 | — | .1562 | 3.58 | — | 3.97 | SD | .5625 | .1875 | 2.0000 | 20228S | 20228R | 20228B |
| .1563 | — | .1719 | 3.98 | — | 4.36 | SD | .5625 | .1875 | 2.0000 | 20230S | 20230R | 20230B |
| .1720 | — | .1875 | 4.37 | — | 4.76 | SD | .6250 | .1875 | 2.0000 | 20232S | 20232R | 20232B |
| .1876 | — | .2031 | 4.77 | — | 5.16 | SD | .6250 | .2500 | 2.5000 | 20234S | 20234R | 20234B |
| .2032 | — | .2188 | 5.17 | — | 5.56 | SD | .6250 | .2500 | 2.5000 | 20236S | 20236R | 20236B |
| .2189 | — | .2344 | 5.57 | — | 5.95 | SD | .7500 | .2500 | 2.5000 | 20238S | 20238R | 20238B |
| .2345 | — | .2500 | 5.96 | — | 6.35 | SD | .7500 | .2500 | 2.5000 | 20240S | 20240R | 20240B |
| .2501 | — | .2656 | 6.36 | — | 6.74 | SD | .8750 | .3125 | 2.5000 | 20242S | 20242R | 20242B |
| .2657 | — | .2812 | 6.75 | — | 7.14 | SD | .8750 | .3125 | 2.5000 | 20244S | 20244R | 20244B |
| .2813 | — | .2969 | 7.15 | — | 7.54 | SD | .8750 | .3125 | 2.5000 | 20246S | 20246R | 20246B |
| .2970 | — | .3125 | 7.55 | — | 7.94 | SD | .8750 | .3125 | 2.5000 | 20248S | 20248R | 20248B |
| .3126 | — | .3281 | 7.95 | — | 8.33 | SD | .8750 | .3750 | 2.5000 | 20250S | 20250R | 20250B |
| .3282 | — | .3438 | 8.34 | — | 8.73 | SD | .8750 | .3750 | 2.5000 | 20252S | 20252R | 20252B |
| .3439 | — | .3594 | 8.74 | — | 9.13 | SD | 1.0000 | .3750 | 2.5000 | 20254S | 20254R | 20254B |
| .3595 | — | .3750 | 9.14 | — | 9.52 | SD | 1.0000 | .3750 | 2.5000 | 20256S | 20256R | 20256B |
| .3751 | — | .3906 | 9.53 | — | 9.92 | SD | 1.0000 | .4375 | 2.7500 | 20258S | 20258R | 20258B |
| .3907 | — | .4062 | 9.93 | — | 10.32 | SD | 1.0000 | .4375 | 2.7500 | 20260S | 20260R | 20260B |
| .4063 | — | .4219 | 10.33 | — | 10.71 | SD | 1.0000 | .4375 | 2.7500 | 20262S | 20262R | 20262B |
| .4220 | — | .4375 | 10.72 | — | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 20264S | 20264R | 20264B |
| .4376 | — | .4531 | 11.12 | — | 11.51 | SD | 1.0000 | .5000 | 3.0000 | 20266S | 20266R | 20266B |
| .4532 | — | .4688 | 11.52 | — | 11.91 | SD | 1.0000 | .5000 | 3.0000 | 20268S | 20268R | 20268B |
| .4689 | — | .4844 | 11.92 | — | 12.30 | SD | 1.0000 | .5000 | 3.0000 | 20270S | 20270R | 20270B |
| .4845 | — | .5000 | 12.31 | — | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 20272S | 20272R | 20272B |

# 2002 JIT 2-Flute (Square/Radius/Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Size Range | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Millimeter | | | | | SQUARE | RADIUS | BALL |
| .5001 — .5625 | 12.71 — 14.29 | SD | 1.2500 | .5625 | 3.5000 | 20274S | 20274R | 20274B |
| .5626 — .6250 | 14.30 — 15.87 | SD | 1.5000 | .6250 | 3.5000 | 20276S | 20276R | 20276B |
| .6251 — .6875 | 15.88 — 17.46 | SD | 1.5000 | .7500 | 4.0000 | 20278S | 20278R | 20278B |
| .6876 — .7500 | 17.47 — 19.05 | SD | 1.5000 | .7500 | 4.0000 | 20280S | 20280R | 20280B |
| .7501 — .8125 | 19.06 — 20.64 | SD | 1.5000 | .8750 | 4.0000 | 20282S | 20282R | 20282B |
| .8126 — .8750 | 20.65 — 22.22 | SD | 1.5000 | .8750 | 4.0000 | 20284S | 20284R | 20284B |
| .8751 — .9375 | 22.23 — 23.81 | SD | 1.5000 | 1.0000 | 4.0000 | 20286S | 20286R | 20286B |
| .9376 — 1.0000 | 23.82 — 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 20288S | 20288R | 20288B |
| **METRIC (Millimeter)** | | | | | | | | |
| .1181 — .1378 | 3.00 — 3.50 | SD | 14.00 | 5.00 | 51.00 | 90213S | 90213R | 90213B |
| .1379 — .1575 | 3.51 — 4.00 | SD | 14.00 | 5.00 | 51.00 | 90214S | 90214R | 90214B |
| .1576 — .1772 | 4.01 — 4.50 | SD | 14.00 | 5.00 | 51.00 | 90215S | 90215R | 90215B |
| .1773 — .1969 | 4.51 — 5.00 | SD | 16.00 | 5.00 | 51.00 | 90216S | 90216R | 90216B |
| .1970 — .2165 | 5.01 — 5.50 | SD | 16.00 | 6.00 | 64.00 | 90217S | 90217R | 90217B |
| .2166 — .2362 | 5.51 — 6.00 | SD | 20.00 | 6.00 | 64.00 | 90218S | 90218R | 90218B |
| .2363 — .2559 | 6.01 — 6.50 | SD | 22.00 | 8.00 | 64.00 | 90219S | 90219R | 90219B |
| .2560 — .2756 | 6.51 — 7.00 | SD | 22.00 | 8.00 | 64.00 | 90220S | 90220R | 90220B |
| .2757 — .2953 | 7.01 — 7.50 | SD | 22.00 | 8.00 | 64.00 | 90221S | 90221R | 90221B |
| .2954 — .3150 | 7.51 — 8.00 | SD | 22.00 | 8.00 | 64.00 | 90222S | 90222R | 90222B |
| .3151 — .3346 | 8.01 — 8.50 | SD | 22.00 | 10.00 | 64.00 | 90223S | 90223R | 90223B |
| .3347 — .3543 | 8.51 — 9.00 | SD | 22.00 | 10.00 | 64.00 | 90224S | 90224R | 90224B |
| .3544 — .3740 | 9.01 — 9.50 | SD | 25.00 | 10.00 | 64.00 | 90225S | 90225R | 90225B |
| .3741 — .3937 | 9.51 — 10.00 | SD | 25.00 | 10.00 | 64.00 | 90226S | 90226R | 90226B |
| .3938 — .4134 | 10.01 — 10.50 | SD | 25.00 | 11.00 | 71.00 | 90227S | 90227R | 90227B |
| .4135 — .4331 | 10.51 — 11.00 | SD | 25.00 | 11.00 | 71.00 | 90228S | 90228R | 90228B |
| .4332 — .4528 | 11.01 — 11.50 | SD | 25.00 | 12.00 | 76.00 | 90229S | 90229R | 90229B |
| .4529 — .4724 | 11.51 — 12.00 | SD | 25.00 | 12.00 | 76.00 | 90230S | 90230R | 90230B |
| .4725 — .5118 | 12.01 — 13.00 | SD | 32.00 | 14.00 | 84.00 | 90231S | 90231R | 90231B |
| .5119 — .5512 | 13.01 — 14.00 | SD | 32.00 | 14.00 | 84.00 | 90232S | 90232R | 90232B |
| .5513 — .5906 | 14.01 — 15.00 | SD | 38.00 | 16.00 | 89.00 | 90233S | 90233R | 90233B |
| .5907 — .6299 | 15.01 — 16.00 | SD | 38.00 | 16.00 | 89.00 | 90234S | 90234R | 90234B |
| .6300 — .6693 | 16.01 — 17.00 | SD | 38.00 | 20.00 | 100.00 | 90235S | 90235R | 90235B |
| .6694 — .7087 | 17.01 — 18.00 | SD | 38.00 | 20.00 | 100.00 | 90236S | 90236R | 90236B |
| .7088 — .7480 | 18.01 — 19.00 | SD | 38.00 | 20.00 | 100.00 | 90237S | 90237R | 90237B |
| .7481 — .7874 | 19.01 — 20.00 | SD | 38.00 | 20.00 | 100.00 | 90238S | 90238R | 90238B |
| .7875 — .8268 | 20.01 — 21.00 | SD | 38.00 | 22.00 | 100.00 | 90239S | 90239R | 90239B |
| .8269 — .8661 | 21.01 — 22.00 | SD | 38.00 | 22.00 | 100.00 | 90240S | 90240R | 90240B |
| .8662 — .9055 | 22.01 — 23.00 | SD | 38.00 | 25.00 | 100.00 | 90241S | 90241R | 90241B |
| .9056 — .9449 | 23.01 — 24.00 | SD | 38.00 | 25.00 | 100.00 | 90242S | 90242R | 90242B |
| .9450 — .9843 | 24.01 — 25.00 | SD | 38.00 | 25.00 | 100.00 | 90243S | 90243R | 90243B |




SQUARE


RADIUS


BALL

2 FLUTE

CENTER CUTTING

SD STANDARD

mm METRIC

END MILLS

# 3300 3-Flute (Square End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**
- Square End
- 3 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Stub, Standard, and Extra Long Lengths
- Standard Uncoated, TiN, TiCN, and TiAlN Coating
- Inch and Metric Based Tools
- Center Cutting
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

SQUARE
3 FLUTE
CENTER CUTTING
STB STUB
SD STANDARD
XL EXTRA LONG
TiAlN COATING
TiCN COATING
TiN COATING
F.A.S.T. Quote
mm METRIC

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .0312 | 1/32 | 0.79 | SD | .0938 | .1250 | 1.5000 | 33002 | 30452 | 30301* | 30680 |
| .0469 | 3/64 | 1.19 | SD | .1875 | .1250 | 1.5000 | 33003 | 30453* | 30302* | 30681 |
| .0625 | 1/16 | 1.59 | SD | .2500 | .1250 | 1.5000 | 33004 | 30454 | 30303 | 30682 |
| .0781 | 5/64 | 1.98 | SD | .2500 | .1250 | 1.5000 | 33005 | 30455* | 30304* | 30683* |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 1.5000 | 33006 | 30456 | 30305 | 30684 |
| .1094 | 7/64 | 2.78 | SD | .5000 | .1250 | 1.5000 | 33007 | 30457* | 30306 | 30685 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 33008 | | 30307 | 30686 |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | 30234 | | | 30011* |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | 33059 | | | 30180* |
| .1406 | 9/64 | 3.57 | SD | .5625 | .1875 | 2.0000 | 33009 | 30459 | 30308* | 30687 |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | 33010 | 30460* | 30309 | 30688 |
| .1719 | 11/64 | 4.37 | SD | .5625 | .1875 | 2.0000 | 32660 | 30461* | 30310* | 30689 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 33011 | | 30311 | 30690 |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | 30246 | | | 30182* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | 33060 | | | 30181* |
| .2031 | 13/64 | 5.16 | SD | .6250 | .2500 | 2.5000 | 32661 | 30463* | 30312* | 30691* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | 33012 | 30464* | 30313 | 30692 |
| .2344 | 15/64 | 5.95 | SD | .7500 | .2500 | 2.5000 | 32662 | 30465* | 30314* | 30693 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 33013 | | 30315 | 30694 |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | 33061 | | | 30183* |
| .2656 | 17/64 | 6.75 | SD | .8750 | .3125 | 2.5000 | 32960 | 30467* | 30316* | 30695* |
| .2812 | 9/32 | 7.14 | SD | .8750 | .3125 | 2.5000 | 33014 | 30468* | 30317 | 30696* |
| .2969 | 19/64 | 7.54 | SD | .8750 | .3125 | 2.5000 | 32961 | 30469* | 30318* | 30697* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | 33015 | 30470* | 30319 | 30698* |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | 33062 | | | 30184* |
| .3281 | 21/64 | 8.33 | SD | .8750 | .3750 | 2.5000 | 32962 | 30471* | 30320 | 30699* |
| .3438 | 11/32 | 8.73 | SD | .8750 | .3750 | 2.5000 | 33016 | 30472* | 30321* | 30700* |
| .3594 | 23/64 | 9.13 | SD | 1.0000 | .3750 | 2.5000 | 32963 | 30473* | 30322 | 30701* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 33017 | 30474* | 30323 | 30702 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 33063 | | | 30185* |
| .3750 | 3/8 | 9.53 | XL | 3.0000 | .3750 | 6.0000 | 33064 | | | 30186* |
| .3906 | 25/64 | 9.92 | SD | 1.0000 | .4375 | 2.7500 | 32964 | 30475* | 30324* | 30703* |
| .4062 | 13/32 | 10.32 | SD | 1.0000 | .4375 | 2.7500 | 32902 | 30476* | 30325* | 30704* |
| .4219 | 27/64 | 10.72 | SD | 1.0000 | .4375 | 2.7500 | 32965 | 30477* | 30326* | 30705* |

** Non Stocked*

# 3300 3-Flute (Square End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 33018 | 30478* | 30327* | 30706 |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | 33065 | | | 30187* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | 33066 | | | 30188* |
| .4531 | 29/64 | 11.51 | SD | 1.0000 | .5000 | 3.0000 | 32966 | 30479* | 30328 | 30707 |
| .4688 | 15/32 | 11.91 | SD | 1.0000 | .5000 | 3.0000 | 32912 | 30480* | 30329* | 30708* |
| .4844 | 31/64 | 12.30 | SD | 1.0000 | .5000 | 3.0000 | 32967 | 30481* | 30330* | 30709* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 33019 | 30482 | 30331 | 30710 |
| .5000 | 1/2 | 12.70 | XL | 1.2500 | .5000 | 3.0000 | 30247 | | | 30189 |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | 32598 | | | 30190* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | 33067 | | | 30191* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | 33068 | | | 30192* |
| .5625 | 9/16 | 14.29 | SD | 1.2500 | .5625 | 3.5000 | 33020 | 30483* | 30332* | 30711* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 33021 | 30484* | 30333* | 30712* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | 33079 | | | 30193* |
| .6875 | 11/16 | 17.46 | SD | 1.5000 | .7500 | 4.0000 | 33022 | 30485* | 30334* | 30713* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 33023 | 30486* | 30335* | 30714 |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | 33080 | | | 30194* |
| .8750 | 7/8 | 22.23 | SD | 1.5000 | .8750 | 4.0000 | 33024 | 30487* | 30336* | 30715* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 33025 | 30488* | 30337* | 30716* |
| **METRIC (Millimeter)** | | | | | | | | | | |
| .0394 | | 1.00 | STB | 2.50 | 3.00 | 38.00 | 93200 | | | |
| .0394 | | 1.00 | SD | 4.00 | 3.00 | 38.00 | 92330 | | | 92350 |
| .0591 | | 1.50 | STB | 3.00 | 3.00 | 38.00 | 93201 | | | |
| .0591 | | 1.50 | SD | 6.00 | 3.00 | 38.00 | 92331 | | | 92351* |
| .0787 | | 2.00 | STB | 4.00 | 3.00 | 38.00 | 93202 | | | |
| .0787 | | 2.00 | SD | 9.00 | 3.00 | 38.00 | 92332 | | | 92352 |
| .0984 | | 2.50 | STB | 5.00 | 3.00 | 38.00 | 93203 | | | |
| .0984 | | 2.50 | SD | 12.00 | 3.00 | 38.00 | 92333 | | | 92353* |
| .1181 | | 3.00 | STB | 6.00 | 3.00 | 38.00 | 93204 | | | |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 92334 | | | 92354 |
| .1378 | | 3.50 | SD | 12.00 | 4.00 | 50.00 | 92335 | | | 92355 |
| .1575 | | 4.00 | STB | 8.00 | 4.00 | 50.00 | 93205 | | | |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 92336 | | | 92356* |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | 92337 | | | 92357* |
| .1969 | | 5.00 | STB | 10.00 | 5.00 | 51.00 | 93206 | | | |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 92338 | | | 92358* |
| .2362 | | 6.00 | STB | 13.00 | 6.00 | 50.00 | 93207 | | | |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 92339 | | | 92359 |
| .2756 | | 7.00 | SD | 22.00 | 7.00 | 64.00 | 92340 | | | 92360* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 92341 | | | 92361* |
| .3543 | | 9.00 | SD | 22.00 | 9.00 | 64.00 | 92342 | | | 92362* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 92343 | | | 92363* |
| .3937 | | 10.00 | SD | 28.00 | 10.00 | 73.00 | 92496 | | | 92497* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 92344 | | | 92364* |
| .5512 | | 14.00 | SD | 32.00 | 14.00 | 84.00 | 92345 | | | 92365* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 92346 | | | 92366* |
| .7087 | | 18.00 | SD | 40.00 | 18.00 | 100.00 | 92347 | | | 92367* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 92348 | | | 92368* |
| .9843 | | 25.00 | SD | 40.00 | 25.00 | 100.00 | 92349 | | | 92369* |

END MILLS

SQUARE

3 FLUTE

CENTER CUTTING

STB STUB

SD STANDARD

XL EXTRA LONG

TiAlN COATING

TiCN COATING

TiN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

# 3300 3-Flute (Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

BALL

3 FLUTE

CENTER CUTTING

SD STANDARD

XL EXTRA LONG

TiAlN COATING

TiCN COATING

TiN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

**Basic Information:**

- Ball End
- 3 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard and Extra Long Lengths
- Standard Uncoated, TiN, TiCN, and TiAln Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .0312 | 1/32 | 0.79 | SD | .0938 | .1250 | 1.5000 | 33030 | 30565* | 30414* | 30792* |
| .0469 | 3/64 | 1.19 | SD | .1875 | .1250 | 1.5000 | 33031 | 30566* | 30415* | 30793* |
| .0625 | 1/16 | 1.59 | SD | .2500 | .1250 | 1.5000 | 33032 | 30567* | | 30794 |
| .0781 | 5/64 | 1.98 | SD | .2500 | .1250 | 1.5000 | 33033 | | 30417* | 30795 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 1.5000 | 33034 | | 30418* | 30796 |
| .1094 | 7/64 | 2.78 | SD | .5000 | .1250 | 1.5000 | 33035* | 30570* | 30419* | 30797* |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 33036 | | 30420 | 30798 |
| .1250 | 1/8 | 3.18 | XL | .7500 | .1250 | 3.0000 | 30237* | | | 30195* |
| .1250 | 1/8 | 3.18 | XL | 1.0000 | .1250 | 3.0000 | 33069 | | | 30196* |
| .1406 | 9/64 | 3.57 | SD | .5625 | .1875 | 2.0000 | 33037* | 30572* | 30421* | 30799* |
| .1562 | 5/32 | 3.97 | SD | .5625 | .1875 | 2.0000 | 33038* | 30573* | 30422* | 30800 |
| .1719 | 11/64 | 4.37 | SD | .5625 | .1875 | 2.0000 | 32663* | 30574* | 30423* | 30801* |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 33039 | 30575 | 30424 | 30802 |
| .1875 | 3/16 | 4.76 | XL | 1.0000 | .1875 | 4.0000 | 30248* | | | 30198* |
| .1875 | 3/16 | 4.76 | XL | 1.2500 | .1875 | 3.0000 | 33070 | | | 30197* |
| .2031 | 13/64 | 5.16 | SD | .6250 | .2500 | 2.5000 | 32664* | 30576* | 30425* | 30803* |
| .2188 | 7/32 | 5.56 | SD | .6250 | .2500 | 2.5000 | 33040 | 30577* | 30426* | 30804* |
| .2344 | 15/64 | 5.95 | SD | .7500 | .2500 | 2.5000 | 32665* | 30578* | 30427* | 30805* |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 33041 | 30579* | 30428* | 30806 |
| .2500 | 1/4 | 6.35 | XL | 1.5000 | .2500 | 4.0000 | 33071 | | | 30199* |
| .2656 | 17/64 | 6.75 | SD | .8750 | .3125 | 2.5000 | 32970* | 30580* | 30429* | 30807* |
| .2812 | 9/32 | 7.14 | SD | .8750 | .3125 | 2.5000 | 33042* | 30581* | 30430* | 30808* |
| .2969 | 19/64 | 7.54 | SD | .8750 | .3125 | 2.5000 | 32971* | 30582* | 30431* | 30809* |
| .3125 | 5/16 | 7.94 | SD | .8750 | .3125 | 2.5000 | 33043 | 30583* | 30432* | 30810 |
| .3125 | 5/16 | 7.94 | XL | 1.6250 | .3125 | 4.0000 | 33072* | | | 30000* |
| .3281 | 21/64 | 8.33 | SD | .8750 | .3750 | 2.5000 | 32972* | 30584* | | 30811* |
| .3438 | 11/32 | 8.73 | SD | .8750 | .3750 | 2.5000 | 33044* | 30585* | 30434* | 30812* |
| .3594 | 23/64 | 9.13 | SD | 1.0000 | .3750 | 2.5000 | 32973* | 30586* | 30435* | 30813* |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 33045 | | | 30814 |
| .3750 | 3/8 | 9.53 | XL | 2.0000 | .3750 | 4.0000 | 33073 | | | 30001* |
| .3750 | 3/8 | 9.53 | XL | 3.0000 | .3750 | 6.0000 | 33074* | | | 30002* |

# 3300 3-Flute (Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC | TiN | TiCN | TiAlN |
| .3906 | 25/64 | 9.92 | SD | 1.0000 | .4375 | 2.7500 | 32974* | 30588* | 30437* | 30815* |
| .4062 | 13/32 | 10.32 | SD | 1.0000 | .4375 | 2.7500 | 32906* | 30589* | 30438* | 30816* |
| .4219 | 27/64 | 10.72 | SD | 1.0000 | .4375 | 2.7500 | 32975* | 30590* | 30439* | 30817* |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 33046* | 30591* | 30440* | 30818* |
| .4375 | 7/16 | 11.11 | XL | 2.0000 | .4375 | 4.0000 | 33075* | | | 30003* |
| .4375 | 7/16 | 11.11 | XL | 3.0000 | .4375 | 6.0000 | 33076* | | | 30004* |
| .4531 | 29/64 | 11.51 | SD | 1.0000 | .5000 | 3.0000 | 32976* | 30592* | 30441* | 30819* |
| .4688 | 15/32 | 11.91 | SD | 1.0000 | .5000 | 3.0000 | 32916* | 30593* | 30442* | 30820* |
| .4844 | 31/64 | 12.30 | SD | 1.0000 | .5000 | 3.0000 | 32977* | 30594* | 30443* | 30821* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 33047 | 30595* | 30444 | 30822* |
| .5000 | 1/2 | 12.70 | XL | 1.2500 | .5000 | 3.0000 | 30249* | | | 30005* |
| .5000 | 1/2 | 12.70 | XL | 1.5000 | .5000 | 4.0000 | 32599 | | | 30006* |
| .5000 | 1/2 | 12.70 | XL | 2.0000 | .5000 | 4.0000 | 33077 | | | 30007* |
| .5000 | 1/2 | 12.70 | XL | 3.0000 | .5000 | 6.0000 | 33078* | | | 30008* |
| .5625 | 9/16 | 14.29 | SD | 1.2500 | .5625 | 3.5000 | 33048* | 30596* | 30445* | 30823* |
| .6250 | 5/8 | 15.88 | SD | 1.5000 | .6250 | 3.5000 | 33049 | 30597* | 30446 | 30824* |
| .6250 | 5/8 | 15.88 | XL | 2.5000 | .6250 | 5.0000 | 33089* | | | 30009* |
| .6875 | 11/16 | 17.46 | SD | 1.5000 | .7500 | 4.0000 | 33050* | 30598* | 30447* | 30825* |
| .7500 | 3/4 | 19.05 | SD | 1.5000 | .7500 | 4.0000 | 33051 | 30599* | 30448 | 30826* |
| .7500 | 3/4 | 19.05 | XL | 2.5000 | .7500 | 5.0000 | 33090* | | | 30012* |
| .8750 | 7/8 | 22.23 | SD | 1.5000 | .8750 | 4.0000 | 33052* | 30600* | 30449* | 30827* |
| 1.0000 | 1 | 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 33053* | 30601* | 30450* | 30828* |
| **METRIC (Millimeter)** | | | | | | | | | | |
| .0394 | | 1.00 | SD | 4.00 | 3.00 | 38.00 | 92370 | | | 92390* |
| .0591 | | 1.50 | SD | 6.00 | 3.00 | 38.00 | 92371 | | | 92391* |
| .0787 | | 2.00 | SD | 9.00 | 3.00 | 38.00 | 92372 | | | 92392* |
| .0984 | | 2.50 | SD | 12.00 | 3.00 | 38.00 | 92373* | | | 92393* |
| .1181 | | 3.00 | SD | 12.00 | 3.00 | 38.00 | 92374* | | | 92394* |
| .1378 | | 3.50 | SD | 12.00 | 4.00 | 50.00 | 92375* | | | 92395* |
| .1575 | | 4.00 | SD | 14.00 | 4.00 | 50.00 | 92376 | | | 92396* |
| .1772 | | 4.50 | SD | 14.00 | 5.00 | 51.00 | 92377 | | | 92397 |
| .1969 | | 5.00 | SD | 16.00 | 5.00 | 64.00 | 92378* | | | 92398* |
| .2362 | | 6.00 | SD | 20.00 | 6.00 | 64.00 | 92379 | | | 92399* |
| .2756 | | 7.00 | SD | 22.00 | 7.00 | 64.00 | 92380 | | | 92400* |
| .3150 | | 8.00 | SD | 22.00 | 8.00 | 64.00 | 92381 | | | 92401* |
| .3543 | | 9.00 | SD | 22.00 | 9.00 | 64.00 | 92382 | | | 92402* |
| .3937 | | 10.00 | SD | 25.00 | 10.00 | 64.00 | 92383 | | | 92403* |
| .4724 | | 12.00 | SD | 25.00 | 12.00 | 84.00 | 92384* | | | 92404* |
| .5512 | | 14.00 | SD | 32.00 | 14.00 | 84.00 | 92385 | | | 92405* |
| .6299 | | 16.00 | SD | 38.00 | 16.00 | 89.00 | 92386 | | | 92406* |
| .7087 | | 18.00 | SD | 40.00 | 18.00 | 100.00 | 92387* | | | 92407* |
| .7874 | | 20.00 | SD | 40.00 | 20.00 | 100.00 | 92388* | | | 92408* |
| .9843 | | 25.00 | SD | 40.00 | 25.00 | 100.00 | 92389* | | | 92409* |

END MILLS

BALL

3 FLUTE

CENTER CUTTING

SD STANDARD

XL EXTRA LONG

TiAlN COATING

TiCN COATING

TiN COATING

F.A.S.T. Quote

mm METRIC

* Non Stocked

END MILLS

SQUARE

RADIUS

BALL

3 FLUTE

CENTER CUTTING

SD STANDARD

mm METRIC

# 2003 JIT 3-Flute (Square/Radius/Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Just in Time**
**48-Hour JIT Delivery**
Decimal-Sized End Mills

5:00 P.M. EST Order Deadline

**12** PIECES OR LESS

**Basic Information:**

- JIT Service 12 Pieces or less in 48-Hours
- See JIT Pricing Guide for Quantity Break Pricing
- Square End
  - Standard Base Price
- Radius End
  +15% to Base Price *(Specify Radius Size when Ordering)*
- Ball End (Full Radius)
  +20% to Base Price
- Weldon Flats and Coatings Available *(Additional Charges May Apply)*
- 3 Flutes 3300 Series Design
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

* ***Specify Tolerance if not Standard (Additional Charges May Apply)***

- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

| Size Range | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Millimeter | | | | | SQUARE | RADIUS | BALL |
| .1200 — .1406 | 3.05 — 3.57 | SD | .5625 | .1875 | 2.0000 | 20326S | 20326R | 20326B |
| .1407 — .1562 | 3.58 — 3.97 | SD | .5625 | .1875 | 2.0000 | 20328S | 20328R | 20328B |
| .1563 — .1719 | 3.98 — 4.36 | SD | .5625 | .1875 | 2.0000 | 20330S | 20330R | 20330B |
| .1720 — .1875 | 4.37 — 4.76 | SD | .6250 | .1875 | 2.0000 | 20332S | 20332R | 20332B |
| .1876 — .2031 | 4.77 — 5.16 | SD | .6250 | .2500 | 2.5000 | 20334S | 20334R | 20334B |
| .2032 — .2188 | 5.17 — 5.56 | SD | .6250 | .2500 | 2.5000 | 20336S | 20336R | 20336B |
| .2189 — .2344 | 5.57 — 5.95 | SD | .7500 | .2500 | 2.5000 | 20338S | 20338R | 20338B |
| .2345 — .2500 | 5.96 — 6.35 | SD | .7500 | .2500 | 2.5000 | 20340S | 20340R | 20340B |
| .2501 — .2656 | 6.36 — 6.74 | SD | .8750 | .3125 | 2.5000 | 20342S | 20342R | 20342B |
| .2657 — .2812 | 6.75 — 7.14 | SD | .8750 | .3125 | 2.5000 | 20344S | 20344R | 20344B |
| .2813 — .2969 | 7.15 — 7.54 | SD | .8750 | .3125 | 2.5000 | 20346S | 20346R | 20346B |
| .2970 — .3125 | 7.55 — 7.94 | SD | .8750 | .3125 | 2.5000 | 20348S | 20348R | 20348B |
| .3126 — .3281 | 7.95 — 8.33 | SD | .8750 | .3750 | 2.5000 | 20350S | 20350R | 20350B |
| .3282 — .3438 | 8.34 — 8.73 | SD | .8750 | .3750 | 2.5000 | 20352S | 20352R | 20352B |
| .3439 — .3594 | 8.74 — 9.13 | SD | 1.0000 | .3750 | 2.5000 | 20354S | 20354R | 20354B |
| .3595 — .3750 | 9.14 — 9.52 | SD | 1.0000 | .3750 | 2.5000 | 20356S | 20356R | 20356B |
| .3751 — .3906 | 9.53 — 9.92 | SD | 1.0000 | .4375 | 2.7500 | 20358S | 20358R | 20358B |
| .3907 — .4062 | 9.93 — 10.32 | SD | 1.0000 | .4375 | 2.7500 | 20360S | 20360R | 20360B |
| .4063 — .4219 | 10.33 — 10.71 | SD | 1.0000 | .4375 | 2.7500 | 20362S | 20362R | 20362B |
| .4220 — .4375 | 10.72 — 11.11 | SD | 1.0000 | .4375 | 2.7500 | 20364S | 20364R | 20364B |
| .4376 — .4531 | 11.12 — 11.51 | SD | 1.0000 | .5000 | 3.0000 | 20366S | 20366R | 20366B |
| .4532 — .4688 | 11.52 — 11.91 | SD | 1.0000 | .5000 | 3.0000 | 20368S | 20368R | 20368B |
| .4689 — .4844 | 11.92 — 12.30 | SD | 1.0000 | .5000 | 3.0000 | 20370S | 20370R | 20370B |
| .4845 — .5000 | 12.31 — 12.70 | SD | 1.0000 | .5000 | 3.0000 | 20372S | 20372R | 20372B |

# 2003 JIT 3-Flute (Square/Radius/Ball End)

Titanium | Super Alloys | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Size Range | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Millimeter | | | | | SQUARE | RADIUS | BALL |
| .5001 — .5625 | 12.71 — 14.29 | SD | 1.2500 | .5625 | 3.5000 | 20374S | 20374R | 20374B |
| .5626 — .6250 | 14.30 — 15.87 | SD | 1.5000 | .6250 | 3.5000 | 20376S | 20376R | 20376B |
| .6251 — .6875 | 15.88 — 17.46 | SD | 1.5000 | .7500 | 4.0000 | 20378S | 20378R | 20378B |
| .6876 — .7500 | 17.47 — 19.05 | SD | 1.5000 | .7500 | 4.0000 | 20380S | 20380R | 20380B |
| .7501 — .8125 | 19.06 — 20.64 | SD | 1.5000 | .8750 | 4.0000 | 20382S | 20382R | 20382B |
| .8126 — .8750 | 20.65 — 22.22 | SD | 1.5000 | .8750 | 4.0000 | 20384S | 20384R | 20384B |
| .8751 — .9375 | 22.23 — 23.81 | SD | 1.5000 | 1.0000 | 4.0000 | 20386S | 20386R | 20386B |
| .9376 — 1.0000 | 23.82 — 25.40 | SD | 1.5000 | 1.0000 | 4.0000 | 20388S | 20388R | 20388B |
| **METRIC (Millimeter)** | | | | | | | | |
| .1181 — .1378 | 3.00 — 3.50 | SD | 14.00 | 5.00 | 51.00 | 90313S | 90313R | 90313B |
| .1379 — .1575 | 3.51 — 4.00 | SD | 14.00 | 5.00 | 51.00 | 90314S | 90314R | 90314B |
| .1576 — .1772 | 4.01 — 4.50 | SD | 14.00 | 5.00 | 51.00 | 90315S | 90315R | 90315B |
| .1773 — .1969 | 4.51 — 5.00 | SD | 16.00 | 5.00 | 51.00 | 90316S | 90316R | 90316B |
| .1970 — .2165 | 5.01 — 5.50 | SD | 16.00 | 6.00 | 64.00 | 90317S | 90317R | 90317B |
| .2166 — .2362 | 5.51 — 6.00 | SD | 20.00 | 6.00 | 64.00 | 90318S | 90318R | 90318B |
| .2363 — .2559 | 6.01 — 6.50 | SD | 22.00 | 8.00 | 64.00 | 90319S | 90319R | 90319B |
| .2560 — .2756 | 6.51 — 7.00 | SD | 22.00 | 8.00 | 64.00 | 90320S | 90320R | 90320B |
| .2757 — .2953 | 7.01 — 7.50 | SD | 22.00 | 8.00 | 64.00 | 90321S | 90321R | 90321B |
| .2954 — .3150 | 7.51 — 8.00 | SD | 22.00 | 8.00 | 64.00 | 90322S | 90322R | 90322B |
| .3151 — .3346 | 8.01 — 8.50 | SD | 22.00 | 10.00 | 64.00 | 90323S | 90323R | 90323B |
| .3347 — .3543 | 8.51 — 9.00 | SD | 22.00 | 10.00 | 64.00 | 90324S | 90324R | 90324B |
| .3544 — .3740 | 9.01 — 9.50 | SD | 25.00 | 10.00 | 64.00 | 90325S | 90325R | 90325B |
| .3741 — .3937 | 9.51 — 10.00 | SD | 25.00 | 10.00 | 64.00 | 90326S | 90326R | 90326B |
| .3938 — .4134 | 10.01 — 10.50 | SD | 25.00 | 11.00 | 71.00 | 90327S | 90327R | 90327B |
| .4135 — .4331 | 10.51 — 11.00 | SD | 25.00 | 11.00 | 71.00 | 90328S | 90328R | 90328B |
| .4332 — .4528 | 11.01 — 11.50 | SD | 25.00 | 12.00 | 76.00 | 90329S | 90329R | 90329B |
| .4529 — .4724 | 11.51 — 12.00 | SD | 25.00 | 12.00 | 76.00 | 90330S | 90330R | 90330B |
| .4725 — .5118 | 12.01 — 13.00 | SD | 32.00 | 14.00 | 84.00 | 90331S | 90331R | 90331B |
| .5119 — .5512 | 13.01 — 14.00 | SD | 32.00 | 14.00 | 84.00 | 90332S | 90332R | 90332B |
| .5513 — .5906 | 14.01 — 15.00 | SD | 38.00 | 16.00 | 89.00 | 90333S | 90333R | 90333B |
| .5907 — .6299 | 15.01 — 16.00 | SD | 38.00 | 16.00 | 89.00 | 90334S | 90334R | 90334B |
| .6300 — .6693 | 16.01 — 17.00 | SD | 38.00 | 20.00 | 100.00 | 90335S | 90335R | 90335B |
| .6694 — .7087 | 17.01 — 18.00 | SD | 38.00 | 20.00 | 100.00 | 90336S | 90336R | 90336B |
| .7088 — .7480 | 18.01 — 19.00 | SD | 38.00 | 20.00 | 100.00 | 90337S | 90337R | 90337B |
| .7481 — .7874 | 19.01 — 20.00 | SD | 38.00 | 20.00 | 100.00 | 90338S | 90338R | 90338B |
| .7875 — .8268 | 20.01 — 21.00 | SD | 38.00 | 22.00 | 100.00 | 90339S | 90339R | 90339B |
| .8269 — .8661 | 21.01 — 22.00 | SD | 38.00 | 22.00 | 100.00 | 90340S | 90340R | 90340B |
| .8662 — .9055 | 22.01 — 23.00 | SD | 38.00 | 25.00 | 100.00 | 90341S | 90341R | 90341B |
| .9056 — .9449 | 23.01 — 24.00 | SD | 38.00 | 25.00 | 100.00 | 90342S | 90342R | 90342B |
| .9450 — .9843 | 24.01 — 25.00 | SD | 38.00 | 25.00 | 100.00 | 90343S | 90343R | 90343B |




SQUARE


RADIUS


BALL

3 FLUTE

CENTER CUTTING

SD STANDARD

mm METRIC

END MILLS

SQUARE

2 FLUTE

CENTER CUTTING

SMS 1.5x

SM 3.0x

# 3215SM Sub-Miniature (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**

- Square End
- 2 Flutes
  - 30° Helix
  - 1.5x (SMS) and 3x (SM) Diameter Flute Lengths
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Sub-Miniature Stub (SMS) and Sub-Miniature(SM) Lengths
- Standard Uncoated
- Inch Based Tools
- Dura Carb II for Enhanced Shock Resistance

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.0005" -.0005"
  +0.02mm -0.02mm

**Special Sub-Miniature Design**

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .0050 | | 0.13 | SMS | .0075 | .1250 | 1.5000 | 32540 |
| .0060 | | 0.15 | SMS | .0090 | .1250 | 1.5000 | 32541 |
| .0070 | | 0.18 | SMS | .0105 | .1250 | 1.5000 | 32542 |
| .0080 | | 0.20 | SMS | .0120 | .1250 | 1.5000 | 32543 |
| .0090 | | 0.23 | SMS | .0135 | .1250 | 1.5000 | 32544* |
| .0100 | | 0.25 | SMS | .0150 | .1250 | 1.5000 | 32352 |
| .0100 | | 0.25 | SM | .0300 | .1250 | 1.5000 | 30900 |
| .0110 | | 0.28 | SMS | .0165 | .1250 | 1.5000 | 32353* |
| .0110 | | 0.28 | SM | .0330 | .1250 | 1.5000 | 30901 |
| .0120 | | 0.30 | SMS | .0180 | .1250 | 1.5000 | 32354 |
| .0120 | | 0.30 | SM | .0360 | .1250 | 1.5000 | 30902 |
| .0130 | | 0.33 | SMS | .0195 | .1250 | 1.5000 | 32355* |
| .0130 | | 0.33 | SM | .0390 | .1250 | 1.5000 | 30903 |
| .0140 | | 0.36 | SMS | .0210 | .1250 | 1.5000 | 32356* |
| .0140 | | 0.36 | SM | .0420 | .1250 | 1.5000 | 30904 |
| .0150 | | 0.38 | SMS | .0225 | .1250 | 1.5000 | 32357 |
| .0150 | | 0.38 | SM | .0450 | .1250 | 1.5000 | 30905 |
| .0160 | | 0.41 | SMS | .0240 | .1250 | 1.5000 | 32358* |
| .0160 | | 0.41 | SM | .0480 | .1250 | 1.5000 | 30906 |
| .0170 | | 0.43 | SMS | .0255 | .1250 | 1.5000 | 32359* |
| .0170 | | 0.43 | SM | .0510 | .1250 | 1.5000 | 30907* |
| .0180 | | 0.46 | SMS | .0270 | .1250 | 1.5000 | 32360* |
| .0180 | | 0.46 | SM | .0540 | .1250 | 1.5000 | 30908* |
| .0190 | | 0.48 | SMS | .0285 | .1250 | 1.5000 | 32361* |
| .0190 | | 0.48 | SM | .0570 | .1250 | 1.5000 | 30909* |
| .0200 | | 0.51 | SMS | .0300 | .1250 | 1.5000 | 32362 |
| .0200 | | 0.51 | SM | .0600 | .1250 | 1.5000 | 30910 |
| .0210 | | 0.53 | SMS | .0315 | .1250 | 1.5000 | 32363* |
| .0210 | | 0.53 | SM | .0630 | .1250 | 1.5000 | 30911* |
| .0220 | | 0.56 | SMS | .0330 | .1250 | 1.5000 | 32364* |
| .0220 | | 0.56 | SM | .0660 | .1250 | 1.5000 | 30912 |
| .0230 | | 0.58 | SMS | .0345 | .1250 | 1.5000 | 32365* |
| .0230 | | 0.58 | SM | .0690 | .1250 | 1.5000 | 30913* |

* *Non Stocked*

# 3215SM Sub-Miniature (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .0240 | | 0.61 | SMS | .0360 | .1250 | 1.5000 | 32366* |
| .0240 | | 0.61 | SM | .0720 | .1250 | 1.5000 | 30914* |
| .0250 | | 0.64 | SMS | .0375 | .1250 | 1.5000 | 32367 |
| .0250 | | 0.64 | SM | .0750 | .1250 | 1.5000 | 30915 |
| .0260 | | 0.66 | SMS | .0390 | .1250 | 1.5000 | 32368 |
| .0260 | | 0.66 | SM | .0780 | .1250 | 1.5000 | 30916* |
| .0270 | | 0.69 | SMS | .0405 | .1250 | 1.5000 | 32369* |
| .0270 | | 0.69 | SM | .0810 | .1250 | 1.5000 | 30917* |
| .0280 | | 0.71 | SMS | .0420 | .1250 | 1.5000 | 32370* |
| .0280 | | 0.71 | SM | .0840 | .1250 | 1.5000 | 30918* |
| .0290 | | 0.74 | SMS | .0435 | .1250 | 1.5000 | 32371* |
| .0290 | | 0.74 | SM | .0870 | .1250 | 1.5000 | 30919* |
| .0300 | | 0.76 | SMS | .0450 | .1250 | 1.5000 | 32372 |
| .0300 | | 0.76 | SM | .0900 | .1250 | 1.5000 | 30920 |
| .0310 | | 0.79 | SM | .0930 | .1250 | 1.5000 | 30921 |
| .0350 | | 0.89 | SM | .1050 | .1250 | 1.5000 | 30922 |
| .0400 | | 1.02 | SM | .1200 | .1250 | 1.5000 | 30923 |
| .0470 | | 1.19 | SM | .1410 | .1250 | 1.5000 | 30924* |
| .0500 | | 1.27 | SM | .1500 | .1250 | 1.5000 | 30925 |
| .0550 | | 1.40 | SM | .1650 | .1250 | 1.5000 | 30926* |
| .0600 | | 1.52 | SM | .1800 | .1250 | 1.5000 | 30927 |



SQUARE

2 FLUTE

CENTER CUTTING

SMS 1.5x

SM 3.0x

* *Non Stocked*

END MILLS

# 3215SM Sub-Miniature (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

BALL

2 FLUTE

CENTER CUTTING

SMS 1.5x

SM 3.0x

* *Non Stocked*

**Basic Information:**

- Ball End
- 2 Flutes
  - 30° Helix
  - 1.5x (SMS) and 3x (SM) Diameter Flute Lengths
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Sub-Miniature Stub (SMS) and Sub-Miniature (SM) Length
- Standard Uncoated
- Inch Based Tools
- Dura Carb II for Enhanced Shock Resistance

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.0005" -.0005"
  +0.02mm -0.02mm

**Special Sub-Miniature Design**

* *Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .0050 | | 0.13 | SMS | .0075 | .1250 | 1.5000 | 32609 |
| .0060 | | 0.15 | SMS | .0090 | .1250 | 1.5000 | 32668 |
| .0070 | | 0.18 | SMS | .0105 | .1250 | 1.5000 | 32669 |
| .0080 | | 0.20 | SMS | .0120 | .1250 | 1.5000 | 32698* |
| .0090 | | 0.23 | SMS | .0135 | .1250 | 1.5000 | 32699* |
| .0100 | | 0.25 | SMS | .0150 | .1250 | 1.5000 | 32670 |
| .0100 | | 0.25 | SM | .0300 | .1250 | 1.5000 | 30935 |
| .0110 | | 0.28 | SMS | .0165 | .1250 | 1.5000 | 32671* |
| .0110 | | 0.28 | SM | .0330 | .1250 | 1.5000 | 30936* |
| .0120 | | 0.30 | SMS | .0180 | .1250 | 1.5000 | 32672* |
| .0120 | | 0.30 | SM | .0360 | .1250 | 1.5000 | 30937* |
| .0130 | | 0.33 | SMS | .0195 | .1250 | 1.5000 | 32673* |
| .0130 | | 0.33 | SM | .0390 | .1250 | 1.5000 | 30938* |
| .0140 | | 0.36 | SMS | .0210 | .1250 | 1.5000 | 32674* |
| .0140 | | 0.36 | SM | .0420 | .1250 | 1.5000 | 30939* |
| .0150 | | 0.38 | SMS | .0225 | .1250 | 1.5000 | 32675 |
| .0150 | | 0.38 | SM | .0450 | .1250 | 1.5000 | 30940 |
| .0160 | | 0.41 | SMS | .0240 | .1250 | 1.5000 | 32676* |
| .0160 | | 0.41 | SM | .0480 | .1250 | 1.5000 | 30941* |
| .0170 | | 0.43 | SMS | .0255 | .1250 | 1.5000 | 32677* |
| .0170 | | 0.43 | SM | .0510 | .1250 | 1.5000 | 30942* |
| .0180 | | 0.46 | SMS | .0270 | .1250 | 1.5000 | 32678* |
| .0180 | | 0.46 | SM | .0540 | .1250 | 1.5000 | 30943* |
| .0190 | | 0.48 | SMS | .0285 | .1250 | 1.5000 | 32679* |
| .0190 | | 0.48 | SM | .0570 | .1250 | 1.5000 | 30944* |
| .0200 | | 0.51 | SMS | .0300 | .1250 | 1.5000 | 32680 |
| .0200 | | 0.51 | SM | .0600 | .1250 | 1.5000 | 30945 |
| .0210 | | 0.53 | SMS | .0315 | .1250 | 1.5000 | 32681* |
| .0210 | | 0.53 | SM | .0630 | .1250 | 1.5000 | 30946* |
| .0220 | | 0.56 | SMS | .0330 | .1250 | 1.5000 | 32697* |
| .0220 | | 0.56 | SM | .0660 | .1250 | 1.5000 | 30947* |
| .0230 | | 0.58 | SMS | .0345 | .1250 | 1.5000 | 32682 |
| .0230 | | 0.58 | SM | .0690 | .1250 | 1.5000 | 30948* |

# 3215SM Sub-Miniature (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .0240 | | 0.61 | SMS | .0360 | .1250 | 1.5000 | 32683* |
| .0240 | | 0.61 | SM | .0720 | .1250 | 1.5000 | 30949* |
| .0250 | | 0.64 | SMS | .0375 | .1250 | 1.5000 | 32684* |
| .0250 | | 0.64 | SM | .0750 | .1250 | 1.5000 | 30950 |
| .0260 | | 0.66 | SMS | .0390 | .1250 | 1.5000 | 32685* |
| .0260 | | 0.66 | SM | .0780 | .1250 | 1.5000 | 30951* |
| .0270 | | 0.69 | SMS | .0405 | .1250 | 1.5000 | 32686* |
| .0270 | | 0.69 | SM | .0810 | .1250 | 1.5000 | 30952* |
| .0280 | | 0.71 | SMS | .0420 | .1250 | 1.5000 | 32687* |
| .0280 | | 0.71 | SM | .0840 | .1250 | 1.5000 | 30953* |
| .0290 | | 0.74 | SMS | .0435 | .1250 | 1.5000 | 32688* |
| .0290 | | 0.74 | SM | .0870 | .1250 | 1.5000 | 30954* |
| .0300 | | 0.76 | SMS | .0450 | .1250 | 1.5000 | 32689* |
| .0300 | | 0.76 | SM | .0900 | .1250 | 1.5000 | 30955* |
| .0310 | | 0.79 | SM | .0930 | .1250 | 1.5000 | 30956* |
| .0350 | | 0.89 | SM | .1050 | .1250 | 1.5000 | 30957* |
| .0400 | | 1.02 | SM | .1200 | .1250 | 1.5000 | 30958 |
| .0470 | | 1.19 | SM | .1410 | .1250 | 1.5000 | 30959* |
| .0500 | | 1.27 | SM | .1500 | .1250 | 1.5000 | 30960* |
| .0550 | | 1.40 | SM | .1650 | .1250 | 1.5000 | 30961* |
| .0600 | | 1.52 | SM | .1800 | .1250 | 1.5000 | 30962* |

END MILLS

BALL

2 FLUTE

CENTER CUTTING

SMS 1.5x

SM 3.0x

* *Non Stocked*

END MILLS

SQUARE

4 FLUTE

CENTER CUTTING

SM 3.0x

# 3200SM Sub-Miniature (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**

- Square End
- 4 Flutes
  - 30° Helix
  - 3x (SM) Diameter Flute Length
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Sub-Miniature (SM)Length
- Standard Uncoated
- Inch Based Tools
- Dura Carb II for Enhanced Shock Resistance

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.0005" -.0005"
  +0.02mm -0.02mm

**Special Sub-Miniature Design**

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .0310 | | 0.79 | SM | .0930 | .1250 | 1.5000 | 30928 |
| .0350 | | 0.89 | SM | .1050 | .1250 | 1.5000 | 30929 |
| .0400 | | 1.02 | SM | .1200 | .1250 | 1.5000 | 30930 |
| .0470 | | 1.19 | SM | .1410 | .1250 | 1.5000 | 30931 |
| .0500 | | 1.27 | SM | .1500 | .1250 | 1.5000 | 30932 |
| .0550 | | 1.40 | SM | .1650 | .1250 | 1.5000 | 30933 |
| .0600 | | 1.52 | SM | .1800 | .1250 | 1.5000 | 30934 |

# 3200SM Sub-Miniature (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose



**Basic Information:**

- Ball End
- 4 Flutes
  - 30° Helix
  - 3x (SM) Diameter Flute Length
  - Right Hand Spiral
  - Right Hand Cut
- Center Cutting
- Sub-Miniature (SM) Length
- Standard Uncoated
- Inch Based Tools
- Dura Carb II for Enhanced Shock Resistance

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.0005" -.0005"
  +0.02mm -0.02mm

**Special Sub-Miniature Design**

BALL

4 FLUTE

CENTER CUTTING

SM 3.0x

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .0310 | | 0.79 | SM | .0930 | .1250 | 1.5000 | 30963 |
| .0350 | | 0.89 | SM | .1050 | .1250 | 1.5000 | 30964 |
| .0400 | | 1.02 | SM | .1200 | .1250 | 1.5000 | 30965 |
| .0470 | | 1.19 | SM | .1410 | .1250 | 1.5000 | 30966 |
| .0500 | | 1.27 | SM | .1500 | .1250 | 1.5000 | 30967 |
| .0550 | | 1.40 | SM | .1650 | .1250 | 1.5000 | 30968 |
| .0600 | | 1.52 | SM | .1800 | .1250 | 1.5000 | 30969 |

END MILLS

# 3230 (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

SQUARE

4 FLUTE

CENTER CUTTING

SD STANDARD

* *Non Stocked*

**Basic Information:**

- Square End
- 4 Straight Flutes
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: h6
- Cutter Diameter: +.000″ -.002″
  +0.00mm -0.05mm

* *Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .0625 | 1/16 | 1.59 | SD | .1875 | .1250 | 1.5000 | 12110 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 1.5000 | 12111 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 12112 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 12114 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 12116 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | 12118 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 12120 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 12121* |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 12122 |

# 3242 (Square End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

**Basic Information:**
- Square End
- 2 Straight Flutes
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.002"
  +0.00mm -0.05mm

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .0625 | 1/16 | 1.59 | SD | .1875 | .1250 | 1.5000 | 12136 |
| .0938 | 3/32 | 2.38 | SD | .3750 | .1250 | 1.5000 | 12137 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 12138 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 12140 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 12142 |
| .3125 | 5/16 | 7.94 | SD | .8125 | .3125 | 2.5000 | 12144 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 12146 |
| .4375 | 7/16 | 11.11 | SD | 1.0000 | .4375 | 2.7500 | 12147 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 12148 |

END MILLS

SQUARE

2 FLUTE

CENTER CUTTING

SD STANDARD

END MILLS

# 3261 Tapered Mill (Ball End)

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Brass & Copper | High Si Al >10% | Low Si Al <10% | General Purpose

BALL

2 FLUTE

CENTER CUTTING

SD STANDARD

TiAlN COATING

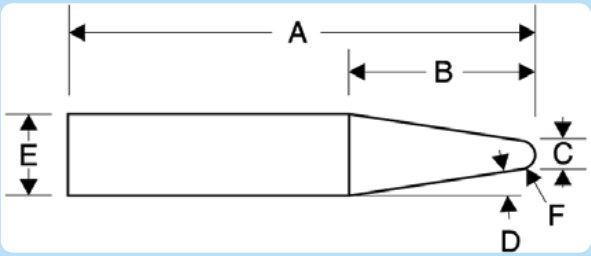
**Basic Information:**
- Ball End
- 2 Straight Flutes
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated and TiAlN Coating
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.0005" -.0005" *on Nose Radius*
  +0.02mm -0.02mm *on Nose Radius*

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | Included Angle | EDP Number | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | | UC | TiAlN |
| .1250 | 1/8 | 3.18 | SD | .3125 | .1250 | 1.5000 | 14° | 32600 | 38772 |
| .1562 | 5/32 | 3.97 | SD | .3125 | .1562 | 2.0000 | 14° | 32601 | 38773 |
| .1875 | 3/16 | 4.76 | SD | .3750 | .1875 | 2.0000 | 14° | 32602 | 38774 |
| .2500 | 1/4 | 6.35 | SD | .5000 | .2500 | 2.5000 | 14° | 32603 | 38775 |
| .3125 | 5/16 | 7.94 | SD | .6250 | .3125 | 2.5000 | 14° | 32604 | 38776 |
| .3750 | 3/8 | 9.53 | SD | .7500 | .3750 | 2.5000 | 14° | 32605 | 38777 |
| .4375 | 7/16 | 11.11 | SD | .8750 | .4375 | 2.7500 | 14° | 32606 | 38778 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 14° | 32607 | 38779 |

## SPECIAL TAPERED END MILLS

Special cutters are available for quote. Use this diagram for your specific requirements.

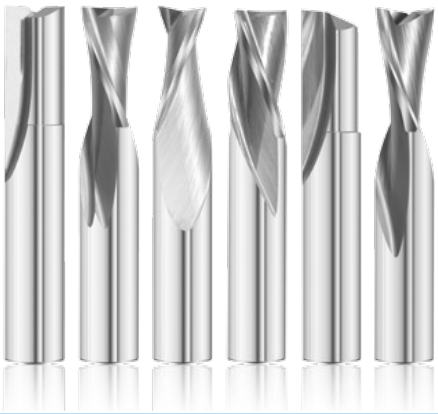



A–Overall Length
B–Approximate Flute Length
C–Nose Diameter
D–Center Line Angle
E–Shank Diameter
F–Square or Nose Radius
Include Style of Flute

# SERIES 3900•3910•3925•3930•3915•3935 Routers

Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose





**Basic Information:**
- Square End
- Number of Flutes and Helix Vary by Series
  - Right Hand Cut
- Center Cutting
- Standard Length
- Standard Uncoated
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.003"

SQUARE

NUMBER OF FLUTES VARY BY SERIES

CENTER CUTTING

SD STANDARD

**3900 Series**
Two straight flutes. General purpose in wood composites and thin laminates, also for hard, more rigid plastics.

**3910 Series**
Two LH Spiral RH cutting flutes. For hard and abrasive materials. LH spiral holds material down and forces chips downward.

**3925 Series**
Three LH Spiral RH cutting flutes. For fiberglass and composite materials. LH spiral holds material down and forces chips downward.

**3930 Series**
One single flute. Designed for composites, wood and softer ductile plastics.

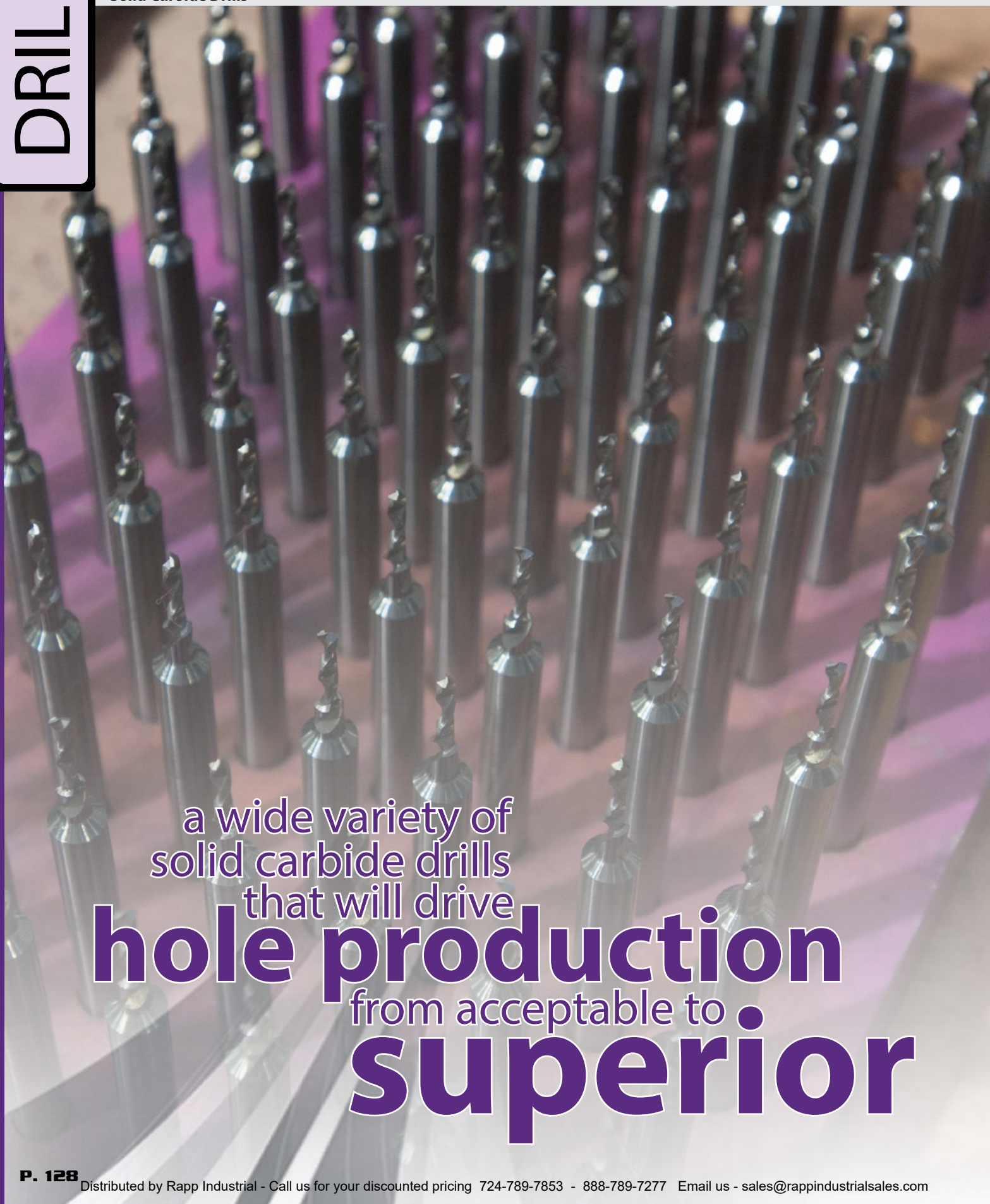
**3915 Series**
Two RH Spiral RH Cutting flutes. Designed for wood, wood composites, plastic, and other non-ferrous materials. The upcut prevents burning in plunge cuts.

**3935 Series**
Two LH spiral RH cutting flutes. Designed for wood, wood composites, plastics and other non-ferrous materials. LH flutes force chips downward.

| Cutting Diameter | | | Tool Length Style | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | 3900 | 3910 | 3925 | 3930 | 3915 | 3935 |
| .1250 | 1/8 | 3.18 | SD | .5000 | .1250 | 1.5000 | 39100 | 39107 | 39114 | 39121 | 39128 | 39135 |
| .1875 | 3/16 | 4.76 | SD | .6250 | .1875 | 2.0000 | 39101 | 39108 | 39115 | 39122 | 39129 | 39136 |
| .2500 | 1/4 | 6.35 | SD | .7500 | .2500 | 2.5000 | 39102 | 39109 | 39116 | 39123 | 39130 | 39137 |
| .2500 | 1/4 | 6.35 | SD | 1.0000 | .2500 | 2.5000 | 39103 | 39110 | 39117 | 39124 | 39131 | 39138 |
| .3750 | 3/8 | 9.53 | SD | 1.0000 | .3750 | 2.5000 | 39105 | 39112 | 39119 | 39126 | 39133 | 39140 |
| .5000 | 1/2 | 12.70 | SD | 1.0000 | .5000 | 3.0000 | 39106 | 39113 | 39120 | 39127 | 39134 | 39141 |

# Drills

***Solid Carbide Drills***



# 1565 AlumaDrill

Titanium | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

DRILLS

ADVANCED PERFORMANCE

130°

3 FLUTE

mm METRIC

**Basic Information:**

- Advanced Performance
- 130° High Performance Point
- 3 Parabolic Style Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Self-Centering
- Standard Uncoated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

| | | |
|---|---|---|
| • Shank Diameter: | +.0000" | -.0005" |
| | +0.000mm | -0.013mm |
| • Cutter Diameter: | +.0000" | -.0005" |
| | +0.000mm | -0.013mm |

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .0625 | 1/16 | 1.59 | | .7500 | .0625 | 1.5000 | 15424 |
| .0670 | | 1.70 | 51 | .7500 | .0670 | 1.5000 | 19000 |
| .0730 | | 1.85 | 49 | .8750 | .0730 | 1.7500 | 19001 |
| .0781 | 5/64 | 1.98 | | .8750 | .0781 | 1.7500 | 15425 |
| .0820 | | 2.08 | 45 | .8750 | .0820 | 1.7500 | 19003 |
| .0890 | | 2.26 | 43 | 1.0000 | .0890 | 2.0000 | 15445 |
| .0938 | 3/32 | 2.38 | | 1.0000 | .0938 | 2.0000 | 15426 |
| .0980 | | 2.49 | 40 | 1.2500 | .0980 | 2.2500 | 15600 |
| .1065 | | 2.71 | 36 | 1.2500 | .1065 | 2.2500 | 15601 |
| .1094 | 7/64 | 2.78 | | 1.2500 | .1094 | 2.2500 | 15427 |
| .1130 | | 2.87 | 33 | 1.2500 | .1130 | 2.2500 | 15602 |
| .1250 | 1/8 | 3.18 | | .8750 | .1250 | 1.5000 | 19008 |
| .1250 | 1/8 | 3.18 | | 1.2500 | .1250 | 2.2500 | 15428 |
| .1285 | | 3.26 | 30 | 1.3750 | .1285 | 2.5000 | 15603 |
| .1360 | | 3.45 | 29 | 1.3750 | .1360 | 2.5000 | 15604 |
| .1406 | 9/64 | 3.57 | | 1.3750 | .1406 | 2.5000 | 15429 |
| .1495 | | 3.80 | 25 | 1.3750 | .1495 | 2.5000 | 15605 |
| .1520 | | 3.86 | 24 | 1.3750 | .1520 | 2.5000 | 19010 |
| .1562 | 5/32 | 3.97 | | 1.3750 | .1562 | 2.5000 | 15430 |
| .1570 | | 3.99 | 22 | 1.3750 | .1570 | 2.5000 | 15606 |
| .1590 | | 4.04 | 21 | 1.3750 | .1590 | 2.5000 | 19012 |
| .1719 | 11/64 | 4.37 | | 1.6250 | .1719 | 2.7500 | 15431 |
| .1730 | | 4.39 | 17 | 1.6250 | .1730 | 2.7500 | 19014 |
| .1770 | | 4.50 | 16 | 1.6250 | .1770 | 2.7500 | 19015 |
| .1800 | | 4.57 | 15 | 1.6250 | .1800 | 2.7500 | 19016 |
| .1875 | 3/16 | 4.76 | | 1.0000 | .1875 | 2.0000 | 19018 |
| .1875 | 3/16 | 4.76 | | 1.6250 | .1875 | 2.7500 | 15432 |
| .1960 | | 4.98 | 9 | 1.7500 | .1960 | 3.0000 | 19019 |
| .1990 | | 5.05 | 8 | 1.7500 | .1990 | 3.0000 | 19020 |
| .2010 | | 5.11 | 7 | 1.7500 | .2010 | 3.0000 | 15226 |
| .2031 | 13/64 | 5.16 | | 1.7500 | .2031 | 3.0000 | 15433 |
| .2130 | | 5.41 | 3 | 1.7500 | .2130 | 3.0000 | 15607 |
| .2188 | 7/32 | 5.56 | | 1.7500 | .2188 | 3.0000 | 15434 |
| .2280 | | 5.79 | 1 | 1.7500 | .2280 | 3.0000 | 19022 |
| .2344 | 15/64 | 5.95 | | 2.0000 | .2344 | 3.2500 | 15435 |

* Non Stocked

DRILLS

ADVANCED PERFORMANCE

130°

3 FLUTE

mm METRIC

* Non Stocked

# 1565 AlumaDrill

Titanium | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .2500 | 1/4 | 6.35 | | 1.2500 | .2500 | 2.5000 | 19024 |
| .2500 | 1/4 | 6.35 | | 2.0000 | .2500 | 3.2500 | 15436 |
| .2570 | | 6.53 | F | 2.1250 | .2570 | 3.5000 | 15608 |
| .2720 | | 6.91 | I | 2.1250 | .2720 | 3.5000 | 15609 |
| .2812 | 9/32 | 7.14 | | 2.1250 | .2812 | 3.5000 | 15437 |
| .3125 | 5/16 | 7.94 | | 1.6250 | .3125 | 3.0000 | 19029 |
| .3125 | 5/16 | 7.94 | | 2.3750 | .3125 | 4.0000 | 15438 |
| .3320 | | 8.43 | Q | 2.5000 | .3320 | 4.0000 | 19031 |
| .3438 | 11/32 | 8.73 | | 2.5000 | .3438 | 4.0000 | 15439 |
| .3680 | | 9.35 | U | 2.5000 | .3680 | 4.0000 | 15227 |
| .3750 | 3/8 | 9.53 | | 1.7500 | .3750 | 3.0000 | 19033 |
| .3750 | 3/8 | 9.53 | | 2.5000 | .3750 | 4.0000 | 15440 |
| .3906 | 25/64 | 9.92 | | 2.8750 | .3906 | 4.5000 | 19034 |
| .4062 | 13/32 | 10.32 | | 2.8750 | .4062 | 4.5000 | 15441 |
| .4219 | 27/64 | 10.72 | | 2.8750 | .4219 | 4.5000 | 15228 |
| .4375 | 7/16 | 11.11 | | 2.8750 | .4375 | 4.5000 | 15442 |
| .4531 | 29/64 | 11.51 | | 3.0000 | .4531 | 4.7500 | 15446 |
| .4688 | 15/32 | 11.91 | | 3.0000 | .4688 | 4.7500 | 15443 |
| .4844 | 31/64 | 12.30 | | 3.0000 | .4844 | 4.7500 | 15229 |
| .5000 | 1/2 | 12.70 | | 2.0000 | .5000 | 3.5000 | 19041 |
| .5000 | 1/2 | 12.70 | | 2.0000 | .5000 | 4.0000 | 19058 |
| .5000 | 1/2 | 12.70 | | 3.0000 | .5000 | 4.7500 | 15444 |
| .5000 | 1/2 | 12.70 | | 4.0000 | .5000 | 6.0000 | 15489 |
| .5156 | 33/64 | 13.10 | | 3.2500 | .5156 | 5.0000 | 19043 |
| .5312 | 17/32 | 13.49 | | 4.0000 | .5312 | 6.0000 | 15490 |
| .5625 | 9/16 | 14.29 | | 4.0000 | .5625 | 6.0000 | 15491 |
| .5781 | 37/64 | 14.68 | | 4.0000 | .5781 | 6.0000 | 19047 |
| .5938 | 19/32 | 15.08 | | 4.0000 | .5938 | 6.0000 | 15492 |
| .6250 | 5/8 | 15.88 | | 2.6250 | .6250 | 4.5000 | 19050 |
| .6250 | 5/8 | 15.88 | | 4.0000 | .6250 | 6.0000 | 15493 |
| .6562 | 21/32 | 16.67 | | 4.0000 | .6562 | 6.0000 | 15494 |
| .6875 | 11/16 | 17.46 | | 4.0000 | .6875 | 6.0000 | 15495 |
| .7188 | 23/32 | 18.26 | | 4.0000 | .7188 | 6.0000 | 15496 |
| .7500 | 3/4 | 19.05 | | 2.6250 | .7500 | 4.5000 | 19055 |
| .7500 | 3/4 | 19.05 | | 4.0000 | .7500 | 6.0000 | 15497 |
| .7656 | 49/64 | 19.45 | | 4.0000 | .7656 | 6.0000 | 15230 |
| .8750 | 7/8 | 22.23 | | 4.0000 | .8750 | 6.0000 | 15498 |
| 1.0000 | 1 | 25.40 | | 4.0000 | 1.0000 | 6.0000 | 15499 |
| **METRIC (Millimeter)** | | | | | | | |
| .0787 | | 2.00 | | 25.00 | 3.00 | 50.00 | 19002 |
| .0906 | | 2.30 | | 25.00 | 3.00 | 50.00 | 19004 |
| .1024 | | 2.60 | | 32.00 | 3.00 | 57.00 | 19005 |
| .1142 | | 2.90 | | 32.00 | 3.00 | 57.00 | 19006 |
| .1181 | | 3.00 | | 22.00 | 3.00 | 38.00 | 19007 |
| .1181 | | 3.00 | | 32.00 | 3.00 | 57.00 | 15675 |
| .1299 | | 3.30 | | 35.00 | 6.00 | 64.00 | 15231 |
| .1457 | | 3.70 | | 35.00 | 6.00 | 64.00 | 19009 |
| .1575 | | 4.00 | | 23.00 | 6.00 | 50.00 | 19011 |
| .1575 | | 4.00 | | 35.00 | 6.00 | 64.00 | 15677 |
| .1654 | | 4.20 | | 45.00 | 6.00 | 76.00 | 15232 |
| .1693 | | 4.30 | | 45.00 | 6.00 | 76.00 | 19013 |
| .1811 | | 4.60 | | 45.00 | 6.00 | 76.00 | 19017 |
| .1969 | | 5.00 | | 45.00 | 6.00 | 76.00 | 15683 |

# 1565 AlumaDrill

Titanium | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

DRILLS

ADVANCED PERFORMANCE

130°

3 FLUTE

mm METRIC

* Non Stocked

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .2047 | | 5.20 | | 50.00 | 6.00 | 82.00 | 19021 |
| .2362 | | 6.00 | | 32.00 | 6.00 | 64.00 | 19023 |
| .2362 | | 6.00 | | 50.00 | 6.00 | 82.00 | 15688 |
| .2677 | | 6.80 | | 54.00 | 8.00 | 100.00 | 15233 |
| .2756 | | 7.00 | | 36.00 | 8.00 | 76.00 | 19025 |
| .2756 | | 7.00 | | 54.00 | 8.00 | 100.00 | 15689 |
| .2874 | | 7.30 | | 54.00 | 8.00 | 100.00 | 19026 |
| .2913 | | 7.40 | | 54.00 | 8.00 | 100.00 | 19027 |
| .2953 | | 7.50 | | 54.00 | 8.00 | 100.00 | 19028 |
| .3071 | | 7.80 | | 60.00 | 8.00 | 100.00 | 15234 |
| .3150 | | 8.00 | | 40.00 | 8.00 | 76.00 | 19030 |
| .3150 | | 8.00 | | 60.00 | 8.00 | 100.00 | 15690 |
| .3346 | | 8.50 | | 63.00 | 10.00 | 100.00 | 15235 |
| .3543 | | 9.00 | | 63.00 | 10.00 | 100.00 | 19032 |
| .3740 | | 9.50 | | 63.00 | 10.00 | 100.00 | 15236 |
| .3937 | | 10.00 | | 44.00 | 10.00 | 76.00 | 19035 |
| .3937 | | 10.00 | | 63.00 | 10.00 | 100.00 | 15691 |
| .4016 | | 10.20 | | 73.00 | 12.00 | 125.00 | 15237 |
| .4173 | | 10.60 | | 73.00 | 12.00 | 125.00 | 19036 |
| .4331 | | 11.00 | | 73.00 | 12.00 | 125.00 | 15242* |
| .4448 | | 11.30 | | 73.00 | 12.00 | 125.00 | 19037 |
| .4724 | | 12.00 | | 50.00 | 12.00 | 100.00 | 19038 |
| .4724 | | 12.00 | | 76.00 | 12.00 | 125.00 | 15692 |
| .4764 | | 12.10 | | 76.00 | 14.00 | 125.00 | 19039 |
| .4823 | | 12.25 | | 76.00 | 14.00 | 125.00 | 15243* |
| .4921 | | 12.50 | | 76.00 | 14.00 | 125.00 | 19040 |
| .5039 | | 12.80 | | 76.00 | 14.00 | 125.00 | 19042 |
| .5118 | | 13.00 | | 76.00 | 14.00 | 125.00 | 15244 |
| .5197 | | 13.20 | | 76.00 | 14.00 | 125.00 | 19044 |
| .5354 | | 13.60 | | 76.00 | 14.00 | 125.00 | 19045 |
| .5512 | | 14.00 | | 101.00 | 14.00 | 150.00 | 15238 |
| .5709 | | 14.50 | | 101.00 | 16.00 | 150.00 | 19046 |
| .5827 | | 14.80 | | 101.00 | 16.00 | 150.00 | 19048 |
| .5906 | | 15.00 | | 101.00 | 16.00 | 150.00 | 15694 |
| .5984 | | 15.20 | | 101.00 | 16.00 | 150.00 | 19049 |
| .6102 | | 15.50 | | 101.00 | 16.00 | 150.00 | 15239 |
| .6299 | | 16.00 | | 67.00 | 16.00 | 112.50 | 19051 |
| .6299 | | 16.00 | | 101.00 | 16.00 | 150.00 | 15695 |
| .6496 | | 16.50 | | 101.00 | 18.00 | 150.00 | 15696 |
| .6693 | | 17.00 | | 101.00 | 18.00 | 150.00 | 15697 |
| .6890 | | 17.50 | | 101.00 | 18.00 | 150.00 | 15240 |
| .7047 | | 17.90 | | 101.00 | 18.00 | 150.00 | 19052 |
| .7244 | | 18.40 | | 101.00 | 20.00 | 150.00 | 19053 |
| .7283 | | 18.50 | | 101.00 | 20.00 | 150.00 | 19054 |
| .7559 | | 19.20 | | 101.00 | 20.00 | 150.00 | 19056 |
| .7677 | | 19.50 | | 101.00 | 20.00 | 150.00 | 15241* |
| .7874 | | 20.00 | | 67.00 | 20.00 | 125.00 | 19057 |
| .7874 | | 20.00 | | 101.00 | 20.00 | 150.00 | 15698 |

DRILLS

150°

3 FLUTE

* *Non Stocked*

# 1540 Thinned Point

Titanium | Hardened Steels >48RC | Steels | Cast Iron | Wood | General Purpose

**Basic Information:**

- 150° Thinned Point
- 3 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Standard Uncoated
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: +.0000" -.0015"
  +0.000mm -0.038mm
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

* *Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .0625 | 1/16 | 1.59 | | .7500 | .0625 | 1.5000 | 15401 |
| .0781 | 5/64 | 1.98 | | .8750 | .0781 | 1.7500 | 15402 |
| .0938 | 3/32 | 2.38 | | 1.0000 | .0938 | 2.0000 | 15403 |
| .0980 | | 2.49 | 40 | 1.2500 | .0980 | 2.2500 | 15550 |
| .1065 | | 2.71 | 36 | 1.2500 | .1065 | 2.2500 | 15551 |
| .1094 | 7/64 | 2.78 | | 1.2500 | .1094 | 2.2500 | 15404 |
| .1130 | | 2.87 | 33 | 1.2500 | .1130 | 2.2500 | 15552 |
| .1250 | 1/8 | 3.18 | | 1.2500 | .1250 | 2.2500 | 15405 |
| .1285 | | 3.26 | 30 | 1.3750 | .1285 | 2.5000 | 15553 |
| .1360 | | 3.45 | 29 | 1.3750 | .1360 | 2.5000 | 15554 |
| .1406 | 9/64 | 3.57 | | 1.3750 | .1406 | 2.5000 | 15406 |
| .1495 | | 3.80 | 25 | 1.3750 | .1495 | 2.5000 | 15555 |
| .1562 | 5/32 | 3.97 | | 1.3750 | .1562 | 2.5000 | 15407 |
| .1570 | | 3.99 | 22 | 1.3750 | .1570 | 2.5000 | 15556 |
| .1610 | | 4.09 | 20 | 1.3750 | .1610 | 2.5000 | 15422* |
| .1719 | 11/64 | 4.37 | | 1.6250 | .1719 | 2.7500 | 15408 |
| .1875 | 3/16 | 4.76 | | 1.6250 | .1875 | 2.7500 | 15409 |
| .1935 | | 4.91 | 10 | 1.6250 | .1935 | 2.7500 | 15423* |
| .2031 | 13/64 | 5.16 | | 1.7500 | .2031 | 3.0000 | 15410 |
| .2130 | | 5.41 | 3 | 1.7500 | .2130 | 3.0000 | 15557 |
| .2188 | 7/32 | 5.56 | | 1.7500 | .2188 | 3.0000 | 15411 |
| .2344 | 15/64 | 5.95 | | 2.0000 | .2344 | 3.2500 | 15412 |
| .2500 | 1/4 | 6.35 | | 2.0000 | .2500 | 3.2500 | 15413 |
| .2570 | | 6.53 | F | 2.1250 | .2570 | 3.5000 | 15558 |
| .2720 | | 6.91 | I | 2.1250 | .2720 | 3.5000 | 15559 |
| .2812 | 9/32 | 7.14 | | 2.1250 | .2812 | 3.5000 | 15414 |
| .3125 | 5/16 | 7.94 | | 2.3750 | .3125 | 4.0000 | 15415 |
| .3438 | 11/32 | 8.73 | | 2.5000 | .3438 | 4.0000 | 15416 |
| .3750 | 3/8 | 9.53 | | 2.5000 | .3750 | 4.0000 | 15417 |
| .4062 | 13/32 | 10.32 | | 2.8750 | .4062 | 4.5000 | 15418 |
| .4375 | 7/16 | 11.11 | | 2.8750 | .4375 | 4.5000 | 15419 |

# 1540 Thinned Point

Titanium | Hardened Steels >48RC | Steels | Cast Iron | Wood | General Purpose

DRILLS

150°

3 FLUTE

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .4688 | 15/32 | 11.91 | | 3.0000 | .4688 | 4.7500 | 15420 |
| .5000 | 1/2 | 12.70 | | 3.0000 | .5000 | 4.7500 | 15421 |
| .5000 | 1/2 | 12.70 | | 4.0000 | .5000 | 6.0000 | 15478 |
| .5312 | 17/32 | 13.49 | | 4.0000 | .5312 | 6.0000 | 15479 |
| .5625 | 9/16 | 14.29 | | 4.0000 | .5625 | 6.0000 | 15480 |
| .5938 | 19/32 | 15.08 | | 4.0000 | .5938 | 6.0000 | 15481 |
| .6250 | 5/8 | 15.88 | | 4.0000 | .6250 | 6.0000 | 15482 |
| .6562 | 21/32 | 16.67 | | 4.0000 | .6562 | 6.0000 | 15483 |
| .6875 | 11/16 | 17.46 | | 4.0000 | .6875 | 6.0000 | 15484 |
| .7188 | 23/32 | 18.26 | | 4.0000 | .7188 | 6.0000 | 15485 |
| .7500 | 3/4 | 19.05 | | 4.0000 | .7500 | 6.0000 | 15486 |
| .8750 | 7/8 | 22.23 | | 4.0000 | .8750 | 6.0000 | 15487 |
| 1.0000 | 1 | 25.40 | | 4.0000 | 1.0000 | 6.0000 | 15488 |

* *Non Stocked*

DRILLS

ADVANCED PERFORMANCE

144°

2 FLUTE

FC-7 COATING

COOLANT HOLES

mm METRIC

* Non Stocked

# 1505 Dominator

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

**Basic Information:**

- Advanced Performance
- 144° Dominator Point
- 2 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Standard FC-7 Coating
- Coolant Through and Solid
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

| | | |
|---|---|---|
| • Shank Diameter: | +.0000″ | -.0005″ |
| | +0.000mm | -0.013mm |
| • Cutter Diameter: | +.0000″ | -.0005″ |
| | +0.000mm | -0.013mm |

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | | Flute Length | Cleared Length | Shank Diameter | Overall Length | Coolant Through | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | | | FC-7 |
| .0938 | 3/32 | 2.38 | | .5000 | .4062 | .0938 | 2.0000 | | 15000* |
| .1015 | | 2.58 | 38 | .5000 | .4062 | .1250 | 2.0000 | | 15001 |
| .1040 | | 2.64 | 37 | .5000 | .4062 | .1250 | 2.0000 | | 15002* |
| .1065 | | 2.71 | 36 | .5625 | .4688 | .1250 | 2.0000 | | 15003 |
| .1130 | | 2.87 | 33 | .5625 | .4688 | .1250 | 2.0000 | | 15004* |
| .1250 | 1/8 | 3.18 | | .6250 | .5000 | .1250 | 2.0000 | | 15006 |
| .1360 | | 3.45 | 29 | .6875 | .5625 | .1875 | 2.7500 | | 15007* |
| .1405 | | 3.57 | 28 | .6875 | .5625 | .1875 | 3.0000 | | 15009* |
| .1470 | | 3.73 | 26 | .7500 | .6250 | .1875 | 3.0000 | | 15011* |
| .1495 | | 3.80 | 25 | .7500 | .6250 | .1875 | 3.0000 | | 15248 |
| .1540 | | 3.91 | 23 | .7500 | .6250 | .1875 | 3.0000 | | 15249* |
| .1562 | 5/32 | 3.97 | | .7500 | .6250 | .1875 | 3.0000 | | 15250 |
| .1590 | | 4.03 | 21 | .8125 | .6562 | .1875 | 3.0000 | | 15251* |
| .1770 | | 4.50 | 16 | .8750 | .7188 | .1875 | 3.0000 | | 15252 |
| .1770 | | 4.50 | 16 | 1.2500 | 1.0938 | .1875 | 3.2500 | • | 15325* |
| .1820 | | 4.62 | 14 | .8750 | .7188 | .1875 | 3.0000 | | 15254* |
| .1820 | | 4.62 | 14 | 1.2500 | 1.0938 | .1875 | 3.2500 | • | 15327* |
| .1850 | | 4.70 | 13 | .9375 | .7812 | .1875 | 3.0000 | | 15255* |
| .1850 | | 4.70 | 13 | 1.2500 | 1.0938 | .1875 | 3.2500 | • | 15328* |
| .1875 | 3/16 | 4.76 | | .9375 | .7500 | .1875 | 3.0000 | | 15257 |
| .1875 | 3/16 | 4.76 | | 1.3125 | 1.1250 | .1875 | 3.2500 | • | 15329 |
| .2010 | | 5.11 | 7 | 1.5000 | 1.1250 | .2500 | 3.0000 | | 15615 |
| .2031 | 13/64 | 5.16 | | 1.5000 | 1.1250 | .2500 | 3.0000 | | 15653 |
| .2055 | | 5.22 | 5 | 1.0000 | .8125 | .2500 | 3.0000 | | 15259 |
| .2130 | | 5.41 | 3 | 1.0938 | .9062 | .2500 | 3.0000 | | 15260 |
| .2188 | 7/32 | 5.56 | | 1.0938 | .8750 | .2500 | 3.0000 | | 15263 |
| .2500 | 1/4 | 6.35 | | 1.5000 | 1.1250 | .2500 | 3.0000 | | 15614 |
| .2500 | 1/4 | 6.35 | | 2.3750 | 2.0000 | .2500 | 4.0000 | • | 15636 |
| .2570 | | 6.53 | F | 1.5000 | 1.1250 | .2500 | 3.0000 | | 15616 |
| .2570 | | 6.53 | F | 1.5000 | 1.1250 | .3125 | 3.0000 | | 15529 |

# 1505 Dominator

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

DRILLS

ADVANCED PERFORMANCE

144°

2 FLUTE

FC-7 COATING

COOLANT HOLES

mm METRIC

| Cutting Diameter | | | | Flute Length | Cleared Length | Shank Diameter | Overall Length | Coolant Through | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | | | FC-7 |
| .2570 | | 6.53 | F | 2.3750 | 2.0000 | .2500 | 4.0000 | • | 15638 |
| .2656 | 17/64 | 6.75 | | 1.5000 | 1.1250 | .2500 | 3.0000 | | 15617 |
| .2656 | 17/64 | 6.75 | | 1.5000 | 1.1250 | .3125 | 3.0000 | | 15530 |
| .2656 | 17/64 | 6.75 | | 1.8750 | 1.6250 | .3125 | 4.0000 | • | 15337 |
| .2720 | | 6.91 | I | 1.5000 | 1.1250 | .3125 | 3.0000 | | 15618 |
| .2720 | | 6.91 | I | 2.3750 | 2.0000 | .2500 | 4.0000 | • | 15640 |
| .2812 | 9/32 | 7.14 | | 1.5000 | 1.1250 | .3125 | 3.0000 | | 15621 |
| .2812 | 9/32 | 7.14 | | 2.0000 | 1.7500 | .3125 | 4.0000 | • | 15339 |
| .2969 | 19/64 | 7.54 | | 1.5000 | 1.1250 | .3125 | 3.0000 | | 15623 |
| .2969 | 19/64 | 7.54 | | 2.0000 | 1.7188 | .3125 | 4.0000 | • | 15341* |
| .3125 | 5/16 | 7.94 | | 1.5000 | 1.1250 | .3125 | 3.0000 | | 15620 |
| .3125 | 5/16 | 7.94 | | 2.3750 | 2.0000 | .3125 | 4.0000 | • | 15642 |
| .3230 | | 8.20 | P | 2.0000 | 1.5000 | .3750 | 4.0000 | | 15651 |
| .3281 | 21/64 | 8.33 | | 2.0000 | 1.5000 | .3750 | 4.0000 | | 15625 |
| .3320 | | 8.43 | Q | 1.6875 | 1.3750 | .3750 | 4.0000 | | 15266 |
| .3438 | 11/32 | 8.73 | | 2.0000 | 1.5000 | .3750 | 4.0000 | | 15629 |
| .3438 | 11/32 | 8.73 | | 2.5000 | 2.0000 | .3750 | 4.0000 | • | 15346 |
| .3594 | 23/64 | 9.13 | | 2.0000 | 1.5000 | .3750 | 4.0000 | | 15630 |
| .3594 | 23/64 | 9.13 | | 2.5000 | 2.0000 | .3750 | 4.0000 | • | 15349* |
| .3680 | | 9.35 | U | 2.0000 | 1.5000 | .3750 | 4.0000 | | 15175 |
| .3680 | | 9.35 | U | 2.5000 | 2.0000 | .3750 | 4.0000 | • | 15378 |
| .3750 | 3/8 | 9.53 | | 2.0000 | 1.5000 | .3750 | 4.0000 | | 15622 |
| .3750 | 3/8 | 9.53 | | 2.5000 | 2.0000 | .3750 | 4.0000 | • | 15644 |
| .3906 | 25/64 | 9.92 | | 2.2500 | 1.7500 | .4375 | 4.0000 | | 15631 |
| .3906 | 25/64 | 9.92 | | 2.7500 | 2.3750 | .4375 | 4.5000 | • | 15380* |
| .4062 | 13/32 | 10.32 | | 2.2500 | 1.7500 | .4375 | 4.0000 | | 15633 |
| .4062 | 13/32 | 10.32 | | 2.7500 | 2.3750 | .4375 | 4.5000 | • | 15382 |
| .4219 | 27/64 | 10.72 | | 2.2500 | 1.7500 | .4375 | 4.0000 | | 15624 |
| .4219 | 27/64 | 10.72 | | 2.5000 | 2.0000 | .4375 | 4.0000 | • | 15646 |
| .4375 | 7/16 | 11.11 | | 2.2500 | 1.7500 | .4375 | 4.0000 | | 15626 |
| .4375 | 7/16 | 11.11 | | 2.5000 | 2.0000 | .4375 | 4.0000 | • | 15648 |
| .4531 | 29/64 | 11.51 | | 2.5000 | 2.0000 | .5000 | 4.5000 | | 15635 |
| .4531 | 29/64 | 11.51 | | 3.2500 | 2.8125 | .5000 | 5.0000 | • | 15387* |
| .4688 | 15/32 | 11.91 | | 2.5000 | 2.0000 | .5000 | 4.5000 | | 15679 |
| .4688 | 15/32 | 11.91 | | 3.2500 | 2.7812 | .5000 | 5.0000 | • | 15388 |
| .4844 | 31/64 | 12.30 | | 2.5000 | 2.0000 | .5000 | 4.5000 | | 15681 |
| .4844 | 31/64 | 12.30 | | 3.3750 | 2.9062 | .5000 | 5.0000 | • | 15389 |
| .5000 | 1/2 | 12.70 | | 2.5000 | 2.0000 | .5000 | 4.5000 | | 15628 |
| .5000 | 1/2 | 12.70 | | 3.5000 | 3.0000 | .5000 | 6.0000 | • | 15650 |
| .5156 | 33/64 | 13.10 | | 2.5625 | 2.0625 | .6250 | 5.0000 | | 15274* |
| .5312 | 17/32 | 13.49 | | 4.0000 | 3.5000 | .6250 | 6.0000 | | 15176 |
| .5312 | 17/32 | 13.49 | | 4.0000 | 3.5000 | .6250 | 6.0000 | • | 15393 |
| .5469 | 35/64 | 13.89 | | 2.7500 | 2.2188 | .6250 | 5.0000 | | 15285* |
| .5469 | 35/64 | 13.89 | | 4.0000 | 3.5000 | .6250 | 6.0000 | • | 15395* |
| .5625 | 9/16 | 14.29 | | 4.0000 | 3.5000 | .5625 | 6.0000 | | 15693 |
| .5625 | 9/16 | 14.29 | | 4.0000 | 3.5000 | .5625 | 6.0000 | • | 15652 |
| .5781 | 37/64 | 14.68 | | 2.8750 | 2.3125 | .6250 | 5.0000 | | 15287* |
| .5781 | 37/64 | 14.68 | | 4.0000 | 3.5000 | .6250 | 6.0000 | • | 15398* |
| .6250 | 5/8 | 15.88 | | 4.0000 | 3.5000 | .6250 | 6.0000 | | 15685 |
| .6250 | 5/8 | 15.88 | | 4.0000 | 3.5000 | .6250 | 6.0000 | • | 15654 |
| .6562 | 21/32 | 16.67 | | 4.0000 | 3.5000 | .7500 | 6.0000 | | 15177 |
| .6562 | 21/32 | 16.67 | | 4.5000 | 3.8750 | .7500 | 7.0000 | • | 15400* |
| .6875 | 11/16 | 17.46 | | 4.0000 | 3.5000 | .7500 | 6.0000 | | 15686 |
| .6875 | 11/16 | 17.46 | | 4.0000 | 3.5000 | .7500 | 6.0000 | • | 15649 |

* Non Stocked

DRILLS

ADVANCED PERFORMANCE

144°

2 FLUTE

FC-7 COATING

COOLANT HOLES

mm METRIC

# 1505 Dominator

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

| Cutting Diameter | | | | Flute Length | Cleared Length | Shank Diameter | Overall Length | Coolant Through | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | | | FC-7 |
| .7031 | 45/64 | 17.86 | | 3.5000 | 2.8125 | .7500 | 6.0000 | | 15288* |
| .7031 | 45/64 | 17.86 | | 5.0000 | 4.3125 | .7500 | 7.0000 | • | 15523* |
| .7500 | 3/4 | 19.05 | | 4.0000 | 3.5000 | .7500 | 6.0000 | | 15687 |
| .7500 | 3/4 | 19.05 | | 4.0000 | 3.5000 | .7500 | 6.0000 | • | 15656 |
| .7656 | 49/64 | 19.45 | | 4.0000 | 3.5000 | .8750 | 6.0000 | | 15178 |
| .8750 | 7/8 | 22.23 | | 4.0000 | 3.5000 | .8750 | 6.0000 | | 15179* |
| 1.0000 | 1 | 25.40 | | 5.0000 | 4.0000 | 1.0000 | 7.0000 | | 15292* |
| 1.0000 | 1 | 25.40 | | 7.0000 | 6.0000 | 1.0000 | 9.0000 | • | 15528* |
| METRIC (Millimeter) | | | | | | | | | |
| .1181 | | 3.00 | | 16.00 | 13.49 | 3.00 | 50.00 | | 15005 |
| .1181 | | 3.00 | | 38.00 | 30.00 | 3.00 | 76.00 | • | 15710 |
| .1299 | | 3.30 | | 38.00 | 30.00 | 6.00 | 76.00 | | 15180 |
| .1378 | | 3.50 | | 18.00 | 15.08 | 6.00 | 64.00 | | 15008* |
| .1457 | | 3.70 | | 18.00 | 15.08 | 6.00 | 64.00 | | 15010* |
| .1575 | | 4.00 | | 38.00 | 30.00 | 4.00 | 76.00 | • | 15711 |
| .1654 | | 4.20 | | 38.00 | 30.00 | 6.00 | 76.00 | | 15181 |
| .1772 | | 4.50 | | 22.00 | 18.26 | 6.00 | 64.00 | | 15253* |
| .1772 | | 4.50 | | 32.00 | 27.78 | 6.00 | 84.00 | • | 15326* |
| .1969 | | 5.00 | | 38.00 | 30.00 | 5.00 | 76.00 | • | 15712 |
| .1969 | | 5.00 | | 38.00 | 30.00 | 6.00 | 76.00 | | 15613 |
| .2047 | | 5.20 | | 26.00 | 21.43 | 6.00 | 64.00 | | 15258 |
| .2165 | | 5.50 | | 28.00 | 23.02 | 6.00 | 64.00 | | 15261* |
| .2165 | | 5.50 | | 38.00 | 30.00 | 6.00 | 101.00 | • | 15334* |
| .2362 | | 6.00 | | 38.00 | 30.00 | 6.00 | 76.00 | | 15610 |
| .2362 | | 6.00 | | 50.00 | 42.00 | 6.00 | 101.00 | • | 15713 |
| .2559 | | 6.50 | | 32.00 | 26.19 | 8.00 | 76.00 | | 15264* |
| .2677 | | 6.80 | | 38.00 | 30.00 | 8.00 | 76.00 | | 15619 |
| .2677 | | 6.80 | | 48.00 | 41.28 | 8.00 | 101.00 | • | 15338* |
| .2756 | | 7.00 | | 38.00 | 30.00 | 8.00 | 76.00 | | 15611 |
| .2756 | | 7.00 | | 60.00 | 52.00 | 8.00 | 101.00 | • | 15714* |
| .2953 | | 7.50 | | 38.00 | 30.00 | 8.00 | 76.00 | | 15265* |
| .2953 | | 7.50 | | 50.00 | 42.86 | 8.00 | 101.00 | • | 15340* |
| .3071 | | 7.80 | | 38.00 | 30.00 | 8.00 | 76.00 | | 15182 |
| .3071 | | 7.80 | | 54.00 | 46.83 | 8.00 | 101.00 | • | 15342* |
| .3150 | | 8.00 | | 38.00 | 30.00 | 8.00 | 76.00 | | 15612 |
| .3150 | | 8.00 | | 63.00 | 54.00 | 8.00 | 101.00 | • | 15715 |
| .3346 | | 8.50 | | 50.00 | 38.00 | 10.00 | 100.00 | | 15627 |
| .3465 | | 8.80 | | 45.00 | 36.51 | 10.00 | 100.00 | | 15267* |
| .3465 | | 8.80 | | 60.00 | 51.59 | 10.00 | 101.00 | • | 15347* |
| .3543 | | 9.00 | | 45.00 | 36.51 | 10.00 | 100.00 | | 15268* |
| .3543 | | 9.00 | | 60.00 | 51.59 | 10.00 | 101.00 | • | 15348* |
| .3740 | | 9.50 | | 50.00 | 38.00 | 10.00 | 100.00 | | 15183 |
| .3740 | | 9.50 | | 68.00 | 58.74 | 10.00 | 101.00 | • | 15379* |
| .3937 | | 10.00 | | 57.00 | 45.00 | 10.00 | 100.00 | | 15637 |
| .3937 | | 10.00 | | 63.00 | 54.00 | 10.00 | 101.00 | • | 15716 |
| .4016 | | 10.20 | | 57.00 | 45.00 | 12.00 | 125.00 | | 15632 |
| .4134 | | 10.50 | | 53.00 | 42.86 | 12.00 | 100.00 | | 15269* |
| .4134 | | 10.50 | | 74.00 | 63.50 | 12.00 | 115.00 | • | 15383* |
| .4251 | | 10.80 | | 55.00 | 44.45 | 12.00 | 100.00 | | 15270* |
| .4251 | | 10.80 | | 78.00 | 67.47 | 12.00 | 115.00 | • | 15384* |
| .4331 | | 11.00 | | 55.00 | 44.45 | 12.00 | 100.00 | | 15271* |
| .4331 | | 11.00 | | 78.00 | 67.47 | 12.00 | 115.00 | • | 15385* |
| .4528 | | 11.50 | | 63.00 | 50.00 | 12.00 | 125.00 | | 15634 |

* Non Stocked

# 1505 Dominator

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

DRILLS

ADVANCED PERFORMANCE

144°

2 FLUTE

FC-7 COATING

COOLANT HOLES

mm METRIC

| Cutting Diameter | | | | Flute Length | Cleared Length | Shank Diameter | Overall Length | Coolant Through | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | | | FC-7 |
| .4528 | | 11.50 | | 82.00 | 70.64 | 12.00 | 127.00 | • | 15386* |
| .4724 | | 12.00 | | 63.00 | 50.00 | 12.00 | 125.00 | | 15680 |
| .4724 | | 12.00 | | 89.00 | 76.00 | 12.00 | 150.00 | • | 15717 |
| .4921 | | 12.50 | | 62.00 | 50.01 | 14.00 | 125.00 | | 15272 |
| .4921 | | 12.50 | | 89.00 | 76.99 | 14.00 | 127.00 | • | 15390* |
| .5118 | | 13.00 | | 65.00 | 52.39 | 14.00 | 125.00 | | 15273* |
| .5118 | | 13.00 | | 89.00 | 76.20 | 14.00 | 127.00 | • | 15391* |
| .5315 | | 13.50 | | 68.00 | 54.77 | 14.00 | 125.00 | | 15284 |
| .5315 | | 13.50 | | 95.00 | 81.76 | 14.00 | 150.00 | • | 15394* |
| .5512 | | 14.00 | | 101.00 | 88.00 | 14.00 | 150.00 | | 15682 |
| .5709 | | 14.50 | | 73.00 | 58.74 | 16.00 | 150.00 | | 15286* |
| .5709 | | 14.50 | | 101.00 | 88.00 | 16.00 | 150.00 | • | 15397* |
| .5906 | | 15.00 | | 101.00 | 88.00 | 16.00 | 150.00 | | 15639 |
| .5906 | | 15.00 | | 101.00 | 88.00 | 16.00 | 150.00 | • | 15718 |
| .6102 | | 15.50 | | 101.00 | 88.00 | 16.00 | 150.00 | | 15684 |
| .6102 | | 15.50 | | 110.00 | 95.25 | 16.00 | 150.00 | • | 15399* |
| .6299 | | 16.00 | | 101.00 | 88.00 | 16.00 | 150.00 | | 15641 |
| .6299 | | 16.00 | | 101.00 | 88.00 | 16.00 | 150.00 | • | 15719 |
| .6496 | | 16.50 | | 101.00 | 88.00 | 18.00 | 150.00 | | 15643* |
| .6496 | | 16.50 | | 101.00 | 88.00 | 18.00 | 150.00 | • | 15720 |
| .6693 | | 17.00 | | 101.00 | 88.00 | 18.00 | 150.00 | | 15645 |
| .6693 | | 17.00 | | 101.00 | 88.00 | 18.00 | 150.00 | • | 15721 |
| .6890 | | 17.50 | | 101.00 | 88.00 | 18.00 | 150.00 | | 15184 |
| .6890 | | 17.50 | | 122.00 | 104.78 | 20.00 | 150.00 | • | 15522* |
| .7087 | | 18.00 | | 90.00 | 72.23 | 18.00 | 150.00 | | 15289* |
| .7087 | | 18.00 | | 126.00 | 108.74 | 18.00 | 180.00 | • | 15524 |
| .7283 | | 18.50 | | 92.00 | 73.82 | 20.00 | 150.00 | | 15290* |
| .7283 | | 18.50 | | 129.00 | 111.13 | 20.00 | 180.00 | • | 15525* |
| .7480 | | 19.00 | | 95.00 | 76.20 | 20.00 | 150.00 | | 15291 |
| .7480 | | 19.00 | | 134.00 | 115.09 | 20.00 | 180.00 | • | 15526* |
| .7677 | | 19.50 | | 101.00 | 88.00 | 20.00 | 150.00 | | 15185 |
| .7677 | | 19.50 | | 136.00 | 116.68 | 20.00 | 180.00 | • | 15527* |
| .7874 | | 20.00 | | 101.00 | 88.00 | 20.00 | 150.00 | | 15647 |
| .7874 | | 20.00 | | 101.00 | 88.00 | 20.00 | 150.00 | • | 15722 |

* Non Stocked

DRILLS

135°

2 FLUTE

mm METRIC

# 1570 Micro-Drill

Hardened Steels >48RC | Steels | Cast Iron | Graphite | High Si Al >10% | Low Si Al <10% | Composites | Wood | General Purpose

**Basic Information:**
- 135° Notched Point
- 2 Straight Flutes
  - Right Hand Cut
- Standard Uncoated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: +.0000" -.0005"
  +0.000mm -0.013mm
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .0469 | 3/64 | 1.19 | | .3750 | .0469 | 1.5000 | 17500 |
| .0625 | 1/16 | 1.59 | | .3750 | .0625 | 1.5000 | 17502 |
| .0781 | 5/64 | 1.98 | | .5000 | .0781 | 1.5000 | 17504 |
| .0938 | 3/32 | 2.38 | | .5000 | .0938 | 2.0000 | 17506 |
| .1065 | | 2.71 | 36 | .6250 | .1065 | 2.0000 | 17508 |
| .1094 | 7/64 | 2.78 | | .6250 | .1094 | 2.0000 | 17510 |
| .1130 | | 2.87 | 33 | .6250 | .1130 | 2.0000 | 17512 |
| .1250 | 1/8 | 3.18 | | .6250 | .1250 | 2.0000 | 17514 |
| .1406 | 9/64 | 3.57 | | .7500 | .1406 | 2.0000 | 17516 |
| .1495 | | 3.80 | 25 | .7500 | .1495 | 2.5000 | 17518 |
| .1562 | 5/32 | 3.97 | | .7500 | .1562 | 2.5000 | 17520 |
| .1570 | | 3.99 | 22 | .7500 | .1570 | 2.5000 | 17522 |
| .1719 | 11/64 | 4.37 | | .7500 | .1719 | 2.5000 | 17524 |
| .1730 | | 4.39 | 17 | .7500 | .1730 | 2.5000 | 17526 |
| .1875 | 3/16 | 4.76 | | .7500 | .1875 | 2.5000 | 17528 |
| .2010 | | 5.11 | 7 | .7500 | .2010 | 2.5000 | 17530 |
| .2031 | 13/64 | 5.16 | | .7500 | .2031 | 2.5000 | 17532 |
| .2188 | 7/32 | 5.56 | | 1.0000 | .2188 | 2.5000 | 17534 |
| .2344 | 15/64 | 5.95 | | 1.0000 | .2344 | 2.5000 | 17536 |
| .2500 | 1/4 | 6.35 | | 1.0000 | .2500 | 2.5000 | 17538 |
| .2570 | | 6.53 | F | 1.0000 | .2570 | 2.5000 | 17540 |
| .2656 | 17/64 | 6.75 | | 1.0000 | .2656 | 2.5000 | 17542 |
| .2720 | | 6.91 | I | 1.0000 | .2720 | 2.5000 | 17544 |
| .2812 | 9/32 | 7.14 | | 1.0000 | .2812 | 2.5000 | 17546 |
| .2969 | 19/64 | 7.54 | | 1.2500 | .2969 | 3.0000 | 17548 |
| .3125 | 5/16 | 7.94 | | 1.2500 | .3125 | 3.0000 | 17550 |
| .3281 | 21/64 | 8.33 | | 1.2500 | .3281 | 3.0000 | 17552 |
| .3438 | 11/32 | 8.73 | | 1.2500 | .3438 | 3.0000 | 17554 |
| .3594 | 23/64 | 9.13 | | 1.2500 | .3594 | 3.0000 | 17556 |
| .3750 | 3/8 | 9.53 | | 1.2500 | .3750 | 3.0000 | 17558 |
| .3906 | 25/64 | 9.92 | | 1.2500 | .3906 | 3.0000 | 17560 |
| .4062 | 13/32 | 10.32 | | 1.2500 | .4062 | 3.0000 | 17562 |
| .4219 | 27/64 | 10.72 | | 1.2500 | .4219 | 3.0000 | 17564 |
| .4375 | 7/16 | 11.11 | | 1.2500 | .4375 | 3.0000 | 17566 |
| .4531 | 29/64 | 11.51 | | 1.2500 | .4531 | 3.0000 | 17568 |
| .4688 | 15/32 | 11.91 | | 1.2500 | .4688 | 3.0000 | 17570 |
| .4844 | 31/64 | 12.30 | | 1.2500 | .4844 | 3.0000 | 17572 |
| .5000 | 1/2 | 12.70 | | 1.2500 | .5000 | 3.0000 | 17574 |

# 1570 Micro-Drill

Hardened Steels >48RC | Steels | Cast Iron | Graphite | High Si Al >10% | Low Si Al <10% | Composites | Wood | General Purpose

DRILLS

135°

2 FLUTE

mm METRIC

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| METRIC (Millimeter) | | | | | | | |
| .1181 | | 3.00 | | 16.00 | 3.00 | 57.00 | 15723 |
| .1575 | | 4.00 | | 20.00 | 4.00 | 64.00 | 15724 |
| .1969 | | 5.00 | | 20.00 | 5.00 | 64.00 | 15725 |
| .2165 | | 5.50 | | 20.00 | 5.50 | 64.00 | 15726 |
| .2362 | | 6.00 | | 25.00 | 6.00 | 64.00 | 15727 |
| .3150 | | 8.00 | | 32.00 | 8.00 | 76.00 | 15728 |
| .3937 | | 10.00 | | 32.00 | 10.00 | 76.00 | 15729 |
| .4724 | | 12.00 | | 32.00 | 12.00 | 76.00 | 15730 |
| .4921 | | 12.50 | | 32.00 | 12.50 | 76.00 | 15731 |
| .5118 | | 13.00 | | 32.00 | 13.00 | 76.00 | 15732 |

DRILLS

ADVANCED PERFORMANCE

90°

3 FLUTE

TiAlN COATING

mm METRIC

# 1566 Poly Drill

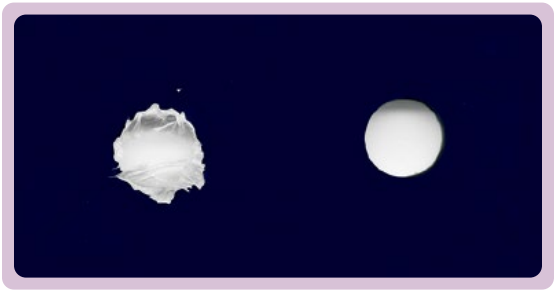
Graphite Composites Plastics

**Basic Information:**

- Advanced Performance
- 90° Point
- 3 Parabolic Flutes
  - Burr Teeth
  - Right Hand Spiral
  - Right Hand Cut
- Standard TiAlN Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: +.0000″ -.0010″ / +0.000mm -0.025mm
- Cutter Diameter: +.0000″ -.0010″ / +0.000mm -0.025mm



The Poly Drill is a patented tool that produces a clean burr-free hole with no breakout, thereby eliminating a secondary operation of sanding or deburring. The Poly Drill works well in fiber reinforced thermoplastics and composite materials commonly found in the automotive, aerospace, appliance, and recreation industries.

**PATENT #5636948**

| Cutting Diameter | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | TiAlN |
| .2500 | 1/4 | 6.35 | 1.5000 | .2500 | 4.0000 | 15676 |
| .5000 | 1/2 | 12.70 | 1.5000 | .5000 | 6.0000 | 15678 |
| METRIC (Millimeter) | | | | | | |
| .1969 | | 5.00 | 32.00 | 5.00 | 100.00 | 15660 |
| .2362 | | 6.00 | 32.00 | 6.00 | 100.00 | 15662 |
| .2559 | | 6.50 | 38.00 | 6.50 | 105.00 | 15663 |
| .2756 | | 7.00 | 38.00 | 7.00 | 105.00 | 15664 |
| .2953 | | 7.50 | 38.00 | 7.50 | 110.00 | 15665 |
| .3150 | | 8.00 | 38.00 | 8.00 | 115.00 | 15666 |
| .3346 | | 8.50 | 38.00 | 8.50 | 120.00 | 15667 |
| .3543 | | 9.00 | 38.00 | 9.00 | 125.00 | 15668 |
| .3740 | | 9.50 | 38.00 | 9.50 | 125.00 | 15669 |
| .3937 | | 10.00 | 38.00 | 10.00 | 130.00 | 15670 |
| .4134 | | 10.50 | 38.00 | 10.50 | 137.00 | 15671 |
| .4331 | | 11.00 | 38.00 | 11.00 | 140.00 | 15672 |
| .4528 | | 11.50 | 38.00 | 11.50 | 143.00 | 15673 |
| .4724 | | 12.00 | 38.00 | 12.00 | 150.00 | 15674 |

**Basic Information:**

- 135° Notched Cam Point
- 2 Flutes
  - 25° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Standard Uncoated, FC-7, and TiAlN Coating
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: +.0000" -.0015"
  +0.000mm -0.038mm
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

* *Non Stocked*

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC | FC-7 | TiAlN |
| **SCREW MACHINE LENGTH (Inch)** | | | | | | | | | |
| .0400 | | 1.02 | 60 | .3750 | .0400 | 1.5000 | 17802 | | 13201* |
| .0410 | | 1.04 | 59 | .3750 | .0410 | 1.5000 | 17803 | | 13202* |
| .0420 | | 1.07 | 58 | .3750 | .0420 | 1.5000 | 17804 | | 13203 |
| .0430 | | 1.09 | 57 | .3750 | .0430 | 1.5000 | 17805 | | 13204 |
| .0465 | | 1.18 | 56 | .3750 | .0465 | 1.5000 | 17806 | | 13205* |
| .0469 | 3/64 | 1.19 | | .3750 | .0469 | 1.5000 | 17807 | | 13206 |
| .0520 | | 1.32 | 55 | .3750 | .0520 | 1.5000 | 17808 | | 13207 |
| .0550 | | 1.40 | 54 | .3750 | .0550 | 1.5000 | 17809 | | 13208* |
| .0595 | | 1.51 | 53 | .3750 | .0595 | 1.5000 | 17811 | | 13210* |
| .0625 | 1/16 | 1.59 | | .3750 | .0625 | 1.5000 | 17812 | | 13211 |
| .0635 | | 1.61 | 52 | .3750 | .0635 | 1.5000 | 17813 | | 13212* |
| .0670 | | 1.70 | 51 | .3750 | .0670 | 1.5000 | 17814 | | 13213 |
| .0700 | | 1.78 | 50 | .3750 | .0700 | 1.5000 | 17815 | | 13214 |
| .0730 | | 1.85 | 49 | .3750 | .0730 | 1.5000 | 17816 | | 13215* |
| .0760 | | 1.93 | 48 | .3750 | .0760 | 1.5000 | 17817 | | 13216 |
| .0781 | 5/64 | 1.98 | | .3750 | .0781 | 1.5000 | 17818 | | 13217 |
| .0785 | | 1.99 | 47 | .3750 | .0785 | 1.5000 | 17819 | | 13218 |
| .0810 | | 2.06 | 46 | .3750 | .0810 | 1.5000 | 17821 | | 13220 |
| .0820 | | 2.08 | 45 | .3750 | .0820 | 1.5000 | 17822 | | 13221* |
| .0860 | | 2.18 | 44 | .5000 | .0860 | 2.0000 | 17823 | | 13222 |
| .0890 | | 2.26 | 43 | .5000 | .0890 | 2.0000 | 17824 | | 13223 |
| .0935 | | 2.37 | 42 | .5000 | .0935 | 2.0000 | 17825 | | 13224* |
| .0938 | 3/32 | 2.38 | | .5000 | .0938 | 2.0000 | 17826 | | 13225 |
| .0960 | | 2.44 | 41 | .5000 | .0960 | 2.0000 | 17827 | | 13226 |
| .0980 | | 2.49 | 40 | .6250 | .0980 | 2.0000 | 17828 | | 13227* |
| .0995 | | 2.53 | 39 | .6250 | .0995 | 2.0000 | 17830 | | 13229* |
| .1015 | | 2.58 | 38 | .6250 | .1015 | 2.0000 | 17831 | | 13230 |
| .1040 | | 2.64 | 37 | .6250 | .1040 | 2.0000 | 17832 | | 13231* |
| .1065 | | 2.71 | 36 | .6250 | .1065 | 2.0000 | 17833 | | 13232 |
| .1094 | 7/64 | 2.78 | | .6250 | .1094 | 2.0000 | 17834 | | 13233 |

# DRILLS

## 1500

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

135°

2 FLUTE

FC-7 COATING

TiAlN COATING

mm METRIC

* Non Stocked

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC | FC-7 | TiAlN |
| .1100 | | 2.79 | 35 | .6250 | .1100 | 2.0000 | 17835 | | 13234* |
| .1110 | | 2.82 | 34 | .6250 | .1110 | 2.0000 | 17836 | | 13235* |
| .1130 | | 2.87 | 33 | .6250 | .1130 | 2.0000 | 17837 | | 13236 |
| .1160 | | 2.95 | 32 | .6250 | .1160 | 2.0000 | 17838 | | 13237* |
| .1200 | | 3.05 | 31 | .6250 | .1200 | 2.0000 | 17840 | | 13239 |
| .1250 | 1/8 | 3.18 | | .6250 | .1250 | 2.0000 | 17841 | | 13240 |
| .1285 | | 3.26 | 30 | .6250 | .1285 | 2.0000 | 17842 | 13241* | |
| .1360 | | 3.45 | 29 | .6250 | .1360 | 2.0000 | 17843 | 13242 | |
| .1405 | | 3.57 | 28 | .6250 | .1405 | 2.0000 | 17845 | 13244 | |
| .1406 | 9/64 | 3.57 | | .6250 | .1406 | 2.0000 | 17846 | 13245* | |
| .1440 | | 3.66 | 27 | .7500 | .1440 | 2.5000 | 17847 | 13255 | |
| .1470 | | 3.73 | 26 | .7500 | .1470 | 2.5000 | 17848 | 13256 | |
| .1495 | | 3.80 | 25 | .7500 | .1495 | 2.5000 | 17849 | 13257 | |
| .1520 | | 3.86 | 24 | .7500 | .1520 | 2.5000 | 17850 | 13258 | |
| .1540 | | 3.91 | 23 | .7500 | .1540 | 2.5000 | 17851 | 13259 | |
| .1562 | 5/32 | 3.97 | | .7500 | .1562 | 2.5000 | 17852 | 13260 | |
| .1570 | | 3.99 | 22 | .7500 | .1570 | 2.5000 | 17853 | 13261* | |
| .1590 | | 4.04 | 21 | .7500 | .1590 | 2.5000 | 17855 | 13263 | |
| .1610 | | 4.09 | 20 | .7500 | .1610 | 2.5000 | 17856 | 13264 | |
| .1660 | | 4.22 | 19 | .7500 | .1660 | 2.5000 | 17857 | 13265 | |
| .1695 | | 4.31 | 18 | .7500 | .1695 | 2.5000 | 17858 | 13266* | |
| .1719 | 11/64 | 4.37 | | .7500 | .1719 | 2.5000 | 17859 | 13267 | |
| .1730 | | 4.39 | 17 | .7500 | .1730 | 2.5000 | 17860 | 13268* | |
| .1770 | | 4.50 | 16 | .7500 | .1770 | 2.5000 | 17861 | 13269* | |
| .1800 | | 4.57 | 15 | .7500 | .1800 | 2.5000 | 17863 | 13271 | |
| .1820 | | 4.62 | 14 | .7500 | .1820 | 2.5000 | 17864 | 13272* | |
| .1850 | | 4.70 | 13 | .7500 | .1850 | 2.5000 | 17865 | 13273 | |
| .1875 | 3/16 | 4.76 | | .7500 | .1875 | 2.5000 | 17866 | 13274 | |
| .1890 | | 4.80 | 12 | .7500 | .1890 | 2.5000 | 17867 | 13275* | |
| .1910 | | 4.85 | 11 | .7500 | .1910 | 2.5000 | 17868 | 13276 | |
| .1935 | | 4.91 | 10 | .7500 | .1935 | 2.5000 | 17869 | 13277 | |
| .1960 | | 4.98 | 9 | .7500 | .1960 | 2.5000 | 17870 | 13278* | |
| .1990 | | 5.05 | 8 | .7500 | .1990 | 2.5000 | 17872 | 13280* | |
| .2010 | | 5.11 | 7 | .7500 | .2010 | 2.5000 | 17873 | 13281 | |
| .2031 | 13/64 | 5.16 | | .7500 | .2031 | 2.5000 | 17874 | 13282 | |
| .2040 | | 5.18 | 6 | 1.0000 | .2040 | 2.5000 | 17875 | 13283* | |
| .2055 | | 5.22 | 5 | 1.0000 | .2055 | 2.5000 | 17876 | 13284 | |
| .2090 | | 5.31 | 4 | 1.0000 | .2090 | 2.5000 | 17877 | 13285 | |
| .2130 | | 5.41 | 3 | 1.0000 | .2130 | 2.5000 | 17878 | 13286* | |
| .2188 | 7/32 | 5.56 | | 1.0000 | .2188 | 2.5000 | 17880 | 13288 | |
| .2210 | | 5.61 | 2 | 1.0000 | .2210 | 2.5000 | 17881 | 13289 | |
| .2280 | | 5.79 | 1 | 1.0000 | .2280 | 2.5000 | 17882 | 13290 | |
| .2340 | | 5.94 | A | 1.0000 | .2340 | 2.5000 | 17883 | 13291* | |
| .2344 | 15/64 | 5.95 | | 1.0000 | .2344 | 2.5000 | 17884 | 13292 | |
| .2380 | | 6.05 | B | 1.0000 | .2380 | 2.5000 | 17886 | 13294 | |
| .2420 | | 6.15 | C | 1.0000 | .2420 | 2.5000 | 17887 | 13295 | |
| .2460 | | 6.25 | D | 1.0000 | .2460 | 2.5000 | 17888 | 13296 | |
| .2500 | 1/4 | 6.35 | E | 1.0000 | .2500 | 2.5000 | 17889 | 13297 | |
| .2570 | | 6.53 | F | 1.0000 | .2570 | 2.5000 | 17891 | 13299 | |
| .2610 | | 6.63 | G | 1.0000 | .2610 | 2.5000 | 17892 | 13300 | |
| .2656 | 17/64 | 6.75 | | 1.0000 | .2656 | 2.5000 | 17893 | 13301 | |
| .2660 | | 6.76 | H | 1.0000 | .2660 | 2.5000 | 17894 | 13302* | |
| .2720 | | 6.91 | I | 1.0000 | .2720 | 2.5000 | 17895 | 13303 | |
| .2770 | | 7.04 | J | 1.0000 | .2770 | 2.5000 | 17897 | 13305 | |

# DRILLS

135°

2 FLUTE

FC-7 COATING

TiAlN COATING

mm METRIC

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC | FC-7 | TiAlN |
| .2810 | | 7.14 | K | 1.0000 | .2810 | 2.5000 | 17898 | 13306 | |
| .2812 | 9/32 | 7.14 | | 1.0000 | .2812 | 2.5000 | 17899 | 13307* | |
| .2900 | | 7.37 | L | 1.2500 | .2900 | 2.7500 | 17900 | 13308* | |
| .2950 | | 7.49 | M | 1.2500 | .2950 | 2.7500 | 17901 | 13309* | |
| .2969 | 19/64 | 7.54 | | 1.2500 | .2969 | 2.7500 | 17903 | 13311* | |
| .3020 | | 7.67 | N | 1.2500 | .3020 | 2.7500 | 17904 | 13312 | |
| .3125 | 5/16 | 7.94 | | 1.2500 | .3125 | 2.7500 | 17905 | 13313 | |
| .3160 | | 8.03 | O | 1.2500 | .3160 | 2.7500 | 17907 | 13315 | |
| .3230 | | 8.20 | P | 1.2500 | .3230 | 2.7500 | 17908 | 13316* | |
| .3281 | 21/64 | 8.33 | | 1.2500 | .3281 | 2.7500 | 17909 | 13317 | |
| .3320 | | 8.43 | Q | 1.2500 | .3320 | 3.0000 | 17910 | 13318* | |
| .3390 | | 8.61 | R | 1.2500 | .3390 | 3.0000 | 17912 | 13320 | |
| .3438 | 11/32 | 8.73 | | 1.2500 | .3438 | 3.0000 | 17913 | 13321 | |
| .3480 | | 8.84 | S | 1.2500 | .3480 | 3.0000 | 17914 | 13322 | |
| .3580 | | 9.09 | T | 1.2500 | .3580 | 3.0000 | 17917 | 13324 | |
| .3594 | 23/64 | 9.13 | | 1.2500 | .3594 | 3.0000 | 17918 | 13325 | |
| .3680 | | 9.35 | U | 1.2500 | .3680 | 3.0000 | 17919 | 13326* | |
| .3750 | 3/8 | 9.53 | | 1.2500 | .3750 | 3.0000 | 17921 | 13328 | |
| .3770 | | 9.58 | V | 1.2500 | .3770 | 3.0000 | 17922 | 13329 | |
| .3860 | | 9.80 | W | 1.2500 | .3860 | 3.0000 | 17923 | 13330 | |
| .3906 | 25/64 | 9.92 | | 1.2500 | .3906 | 3.0000 | 17924 | 13331 | |
| .3970 | | 10.08 | X | 1.2500 | .3970 | 3.0000 | 17926 | 13333 | |
| .4040 | | 10.26 | Y | 1.2500 | .4040 | 3.0000 | 17927 | 13334 | |
| .4062 | 13/32 | 10.32 | | 1.2500 | .4062 | 3.0000 | 17928 | 13335 | |
| .4130 | | 10.49 | Z | 1.2500 | .4130 | 3.0000 | 17929 | 13336* | |
| .4219 | 27/64 | 10.72 | | 1.2500 | .4219 | 3.0000 | 17931 | 13338 | |
| .4375 | 7/16 | 11.11 | | 1.2500 | .4375 | 3.0000 | 17933 | 13340 | |
| .4531 | 29/64 | 11.51 | | 1.2500 | .4531 | 3.0000 | 17935 | 13342* | |
| .4688 | 15/32 | 11.91 | | 1.2500 | .4688 | 3.0000 | 17936 | 13343 | |
| .4844 | 31/64 | 12.30 | | 1.2500 | .4844 | 3.0000 | 17938 | 13345 | |
| .5000 | 1/2 | 12.70 | | 1.2500 | .5000 | 3.0000 | 17940 | 13347 | |
| .5312 | 17/32 | 13.49 | | 1.2500 | .5312 | 3.5000 | 17941 | 13348 | |
| .5625 | 9/16 | 14.29 | | 1.2500 | .5625 | 3.5000 | 17942 | 13349 | |
| .5938 | 19/32 | 15.08 | | 1.5000 | .5938 | 3.5000 | 17943 | 13350* | |
| .6250 | 5/8 | 15.88 | | 1.5000 | .6250 | 3.5000 | 17944 | 13351* | |
| .6562 | 21/32 | 16.67 | | 1.5000 | .6562 | 3.5000 | 17945 | 13352 | |
| .6875 | 11/16 | 17.46 | | 1.5000 | .6875 | 4.0000 | 17946 | 13353* | |
| .7188 | 23/32 | 18.26 | | 1.5000 | .7188 | 4.0000 | 17947 | 13354* | |
| .7500 | 3/4 | 19.05 | | 1.5000 | .7500 | 4.0000 | 17948 | 13355 | |
| .8750 | 7/8 | 22.23 | | 1.5000 | .8750 | 4.0000 | 17949 | 13356* | |
| 1.0000 | 1 | 25.40 | | 1.5000 | 1.0000 | 4.0000 | 17950 | 13357 | |
| **STANDARD LENGTH (Inch)** | | | | | | | | | |
| .0280 | | 0.71 | 70 | .3125 | .0280 | 1.2500 | 17601 | | 13000* |
| .0292 | | 0.74 | 69 | .3125 | .0292 | 1.2500 | 17602 | | 13001 |
| .0310 | | 0.79 | 68 | .3125 | .0310 | 1.2500 | 17603 | | 13002 |
| .0312 | 1/32 | 0.79 | | .3125 | .0312 | 1.2500 | 17604 | | 13003 |
| .0320 | | 0.81 | 67 | .3125 | .0320 | 1.2500 | 17605 | | 13004 |
| .0330 | | 0.84 | 66 | .3125 | .0330 | 1.2500 | 17606 | | 13005 |
| .0350 | | 0.89 | 65 | .6250 | .0350 | 1.5000 | 17607 | | 13006 |
| .0360 | | 0.91 | 64 | .6250 | .0360 | 1.5000 | 17608 | | 13007 |
| .0370 | | 0.94 | 63 | .6250 | .0370 | 1.5000 | 17609 | | 13008 |
| .0380 | | 0.97 | 62 | .6250 | .0380 | 1.5000 | 17610 | | 13009 |
| .0390 | | 0.99 | 61 | .6250 | .0390 | 1.5000 | 17611 | | 13010* |

* Non Stocked

DRILLS

135°

2 FLUTE

FC-7 COATING

TiAlN COATING

mm METRIC

# 1500

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC | FC-7 | TiAlN |
| .0400 | | 1.02 | 60 | .7500 | .0400 | 1.5000 | 17613 | | 13012 |
| .0410 | | 1.04 | 59 | .7500 | .0410 | 1.5000 | 17614 | | 13013 |
| .0420 | | 1.07 | 58 | .7500 | .0420 | 1.5000 | 17615 | | 13014 |
| .0430 | | 1.09 | 57 | .7500 | .0430 | 1.5000 | 17616 | | 13015* |
| .0465 | | 1.18 | 56 | .7500 | .0465 | 1.5000 | 17617 | | 13016 |
| .0469 | 3/64 | 1.19 | | .7500 | .0469 | 1.5000 | 17618 | | 13017* |
| .0520 | | 1.32 | 55 | .7500 | .0520 | 1.5000 | 17619 | | 13018 |
| .0550 | | 1.40 | 54 | .7500 | .0550 | 1.5000 | 17620 | | 13019 |
| .0595 | | 1.51 | 53 | .7500 | .0595 | 1.5000 | 17622 | | 13021 |
| .0625 | 1/16 | 1.59 | | .7500 | .0625 | 1.5000 | 17623 | | 13022 |
| .0635 | | 1.61 | 52 | .7500 | .0635 | 1.5000 | 17624 | | 13023 |
| .0670 | | 1.70 | 51 | .7500 | .0670 | 1.5000 | 17626 | | 13024 |
| .0700 | | 1.78 | 50 | .8750 | .0700 | 1.7500 | 17627 | | 13025 |
| .0730 | | 1.85 | 49 | .8750 | .0730 | 1.7500 | 17628 | | 13026 |
| .0760 | | 1.93 | 48 | .8750 | .0760 | 1.7500 | 17629 | | 13027 |
| .0781 | 5/64 | 1.98 | | .8750 | .0781 | 1.7500 | 17630 | | 13028 |
| .0785 | | 1.99 | 47 | .8750 | .0785 | 1.7500 | 17631 | | 13029* |
| .0810 | | 2.06 | 46 | .8750 | .0810 | 1.7500 | 17633 | | 13031* |
| .0820 | | 2.08 | 45 | .8750 | .0820 | 1.7500 | 17634 | | 13032* |
| .0860 | | 2.18 | 44 | 1.0000 | .0860 | 2.0000 | 17635 | | 13033* |
| .0890 | | 2.26 | 43 | 1.0000 | .0890 | 2.0000 | 17636 | | 13034 |
| .0935 | | 2.37 | 42 | 1.0000 | .0935 | 2.0000 | 17637 | | 13035 |
| .0938 | 3/32 | 2.38 | | 1.0000 | .0938 | 2.0000 | 17638 | | 13036 |
| .0960 | | 2.44 | 41 | 1.0000 | .0960 | 2.0000 | 17639 | | 13037 |
| .0980 | | 2.49 | 40 | 1.0000 | .0980 | 2.0000 | 17640 | | 13038 |
| .0995 | | 2.53 | 39 | 1.2500 | .0995 | 2.2500 | 17642 | | 13040 |
| .1015 | | 2.58 | 38 | 1.2500 | .1015 | 2.2500 | 17643 | | 13041 |
| .1040 | | 2.64 | 37 | 1.2500 | .1040 | 2.2500 | 17644 | | 13042 |
| .1065 | | 2.71 | 36 | 1.2500 | .1065 | 2.2500 | 17645 | | 13043 |
| .1094 | 7/64 | 2.78 | | 1.2500 | .1094 | 2.2500 | 17646 | | 13044 |
| .1100 | | 2.79 | 35 | 1.2500 | .1100 | 2.2500 | 17647 | | 13045 |
| .1110 | | 2.82 | 34 | 1.2500 | .1110 | 2.2500 | 17648 | | 13046* |
| .1130 | | 2.87 | 33 | 1.2500 | .1130 | 2.2500 | 17649 | | 13047 |
| .1160 | | 2.95 | 32 | 1.2500 | .1160 | 2.2500 | 17650 | | 13048 |
| .1200 | | 3.05 | 31 | 1.2500 | .1200 | 2.2500 | 17652 | | 13050 |
| .1250 | 1/8 | 3.18 | | 1.2500 | .1250 | 2.2500 | 17653 | | 13051 |
| .1285 | | 3.26 | 30 | 1.3750 | .1285 | 2.5000 | 17654 | 13052 | |
| .1360 | | 3.45 | 29 | 1.3750 | .1360 | 2.5000 | 17655 | 13053 | |
| .1405 | | 3.57 | 28 | 1.3750 | .1405 | 2.5000 | 17658 | 13055 | |
| .1406 | 9/64 | 3.57 | | 1.3750 | .1406 | 2.5000 | 17659 | 13056 | |
| .1440 | | 3.66 | 27 | 1.3750 | .1440 | 2.5000 | 17660 | 13057 | |
| .1470 | | 3.73 | 26 | 1.3750 | .1470 | 2.5000 | 17661 | 13058 | |
| .1495 | | 3.80 | 25 | 1.3750 | .1495 | 2.5000 | 17662 | 13059 | |
| .1520 | | 3.86 | 24 | 1.3750 | .1520 | 2.5000 | 17663 | 13060* | |
| .1540 | | 3.91 | 23 | 1.3750 | .1540 | 2.5000 | 17664 | 13061 | |
| .1562 | 5/32 | 3.97 | | 1.3750 | .1562 | 2.5000 | 17665 | 13062 | |
| .1570 | | 3.99 | 22 | 1.3750 | .1570 | 2.5000 | 17666 | 13063* | |
| .1590 | | 4.04 | 21 | 1.3750 | .1590 | 2.5000 | 17668 | 13065 | |
| .1610 | | 4.09 | 20 | 1.3750 | .1610 | 2.5000 | 17669 | 13066 | |
| .1660 | | 4.22 | 19 | 1.6250 | .1660 | 2.7500 | 17670 | 13067 | |
| .1695 | | 4.31 | 18 | 1.6250 | .1695 | 2.7500 | 17671 | 13068* | |
| .1719 | 11/64 | 4.37 | | 1.6250 | .1719 | 2.7500 | 17672 | 13069 | |
| .1730 | | 4.39 | 17 | 1.6250 | .1730 | 2.7500 | 17673 | 13070 | |
| .1770 | | 4.50 | 16 | 1.6250 | .1770 | 2.7500 | 17674 | 13071* | |

* *Non Stocked*

# DRILLS

135°

2 FLUTE

FC-7 COATING

TiAlN COATING

mm METRIC

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC | FC-7 | TiAlN |
| .1800 | | 4.57 | 15 | 1.6250 | .1800 | 2.7500 | 17676 | 13073 | |
| .1820 | | 4.62 | 14 | 1.6250 | .1820 | 2.7500 | 17677 | 13074 | |
| .1850 | | 4.70 | 13 | 1.6250 | .1850 | 2.7500 | 17678 | 13075* | |
| .1875 | 3/16 | 4.76 | | 1.6250 | .1875 | 2.7500 | 17679 | 13076 | |
| .1890 | | 4.80 | 12 | 1.6250 | .1890 | 2.7500 | 17680 | 13077* | |
| .1910 | | 4.85 | 11 | 1.6250 | .1910 | 2.7500 | 17681 | 13078 | |
| .1935 | | 4.91 | 10 | 1.6250 | .1935 | 2.7500 | 17682 | 13079 | |
| .1960 | | 4.98 | 9 | 1.7500 | .1960 | 3.0000 | 17683 | 13080* | |
| .1990 | | 5.05 | 8 | 1.7500 | .1990 | 3.0000 | 17685 | 13082 | |
| .2010 | | 5.11 | 7 | 1.7500 | .2010 | 3.0000 | 17686 | 13083 | |
| .2031 | 13/64 | 5.16 | | 1.7500 | .2031 | 3.0000 | 17687 | 13084 | |
| .2040 | | 5.18 | 6 | 1.7500 | .2040 | 3.0000 | 17688 | 13085* | |
| .2055 | | 5.22 | 5 | 1.7500 | .2055 | 3.0000 | 17689 | 13086 | |
| .2090 | | 5.31 | 4 | 1.7500 | .2090 | 3.0000 | 17690 | 13087 | |
| .2130 | | 5.41 | 3 | 1.7500 | .2130 | 3.0000 | 17691 | 13088 | |
| .2188 | 7/32 | 5.56 | | 1.7500 | .2188 | 3.0000 | 17693 | 13090 | |
| .2210 | | 5.61 | 2 | 1.7500 | .2210 | 3.0000 | 17694 | 13091* | |
| .2280 | | 5.79 | 1 | 1.7500 | .2280 | 3.0000 | 17695 | 13092 | |
| .2340 | | 5.94 | A | 2.0000 | .2340 | 3.2500 | 17696 | 13093* | |
| .2344 | 15/64 | 5.95 | | 2.0000 | .2344 | 3.2500 | 17697 | 13094 | |
| .2380 | | 6.05 | B | 2.0000 | .2380 | 3.2500 | 17699 | 13096 | |
| .2420 | | 6.15 | C | 2.0000 | .2420 | 3.2500 | 17700 | 13097* | |
| .2460 | | 6.25 | D | 2.0000 | .2460 | 3.2500 | 17701 | 13098* | |
| .2500 | 1/4 | 6.35 | E | 2.0000 | .2500 | 3.2500 | 17702 | 13099 | |
| .2570 | | 6.53 | F | 2.0000 | .2570 | 3.2500 | 17704 | 13101 | |
| .2610 | | 6.63 | G | 2.1250 | .2610 | 3.5000 | 17705 | 13102 | |
| .2656 | 17/64 | 6.75 | | 2.1250 | .2656 | 3.5000 | 17706 | 13103 | |
| .2660 | | 6.76 | H | 2.1250 | .2660 | 3.5000 | 17707 | 13104* | |
| .2720 | | 6.91 | I | 2.1250 | .2720 | 3.5000 | 17708 | 13105 | |
| .2770 | | 7.04 | J | 2.1250 | .2770 | 3.5000 | 17710 | 13107* | |
| .2810 | | 7.14 | K | 2.1250 | .2810 | 3.5000 | 17711 | 13108* | |
| .2812 | 9/32 | 7.14 | | 2.1250 | .2812 | 3.5000 | 17712 | 13109 | |
| .2900 | | 7.37 | L | 2.1250 | .2900 | 3.5000 | 17713 | 13110 | |
| .2950 | | 7.49 | M | 2.3750 | .2950 | 4.0000 | 17714 | 13111* | |
| .2969 | 19/64 | 7.54 | | 2.3750 | .2969 | 4.0000 | 17716 | 13113 | |
| .3020 | | 7.67 | N | 2.3750 | .3020 | 4.0000 | 17717 | 13114 | |
| .3125 | 5/16 | 7.94 | | 2.3750 | .3125 | 4.0000 | 17718 | 13115 | |
| .3160 | | 8.03 | O | 2.3750 | .3160 | 4.0000 | 17720 | 13117 | |
| .3230 | | 8.20 | P | 2.3750 | .3230 | 4.0000 | 17721 | 13118* | |
| .3281 | 21/64 | 8.33 | | 2.5000 | .3281 | 4.0000 | 17722 | 13119* | |
| .3320 | | 8.43 | Q | 2.5000 | .3320 | 4.0000 | 17723 | 13120* | |
| .3390 | | 8.61 | R | 2.5000 | .3390 | 4.0000 | 17725 | 13122 | |
| .3438 | 11/32 | 8.73 | | 2.5000 | .3438 | 4.0000 | 17726 | 13123 | |
| .3480 | | 8.84 | S | 2.5000 | .3480 | 4.0000 | 17727 | 13124* | |
| .3580 | | 9.09 | T | 2.7500 | .3580 | 4.2500 | 17729 | 13126* | |
| .3594 | 23/64 | 9.13 | | 2.7500 | .3594 | 4.2500 | 17730 | 13127 | |
| .3680 | | 9.35 | U | 2.7500 | .3680 | 4.2500 | 17731 | 13128* | |
| .3750 | 3/8 | 9.53 | | 2.7500 | .3750 | 4.2500 | 17733 | 13130 | |
| .3770 | | 9.58 | V | 2.7500 | .3770 | 4.2500 | 17734 | 13131 | |
| .3860 | | 9.80 | W | 2.8750 | .3860 | 4.5000 | 17735 | 13132 | |
| .3906 | 25/64 | 9.92 | | 2.8750 | .3906 | 4.5000 | 17736 | 13133 | |
| .3970 | | 10.08 | X | 2.8750 | .3970 | 4.5000 | 17738 | 13135* | |
| .4040 | | 10.26 | Y | 2.8750 | .4040 | 4.5000 | 17739 | 13136 | |
| .4062 | 13/32 | 10.32 | | 2.8750 | .4062 | 4.5000 | 17740 | 13137* | |

* Non Stocked

# DRILLS

135°

2 FLUTE

FC-7 COATING

TiAlN COATING

mm METRIC

* Non Stocked

## 1500

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC | FC-7 | TiAlN |
| .4130 | | 10.49 | Z | 2.8750 | .4130 | 4.5000 | 17741 | 13138 | |
| .4219 | 27/64 | 10.72 | | 2.8750 | .4219 | 4.5000 | 17743 | 13140* | |
| .4375 | 7/16 | 11.11 | | 2.8750 | .4375 | 4.5000 | 17745 | 13142 | |
| .4531 | 29/64 | 11.51 | | 3.0000 | .4531 | 4.7500 | 17747 | 13144 | |
| .4688 | 15/32 | 11.91 | | 3.0000 | .4688 | 4.7500 | 17748 | 13145 | |
| .4844 | 31/64 | 12.30 | | 3.0000 | .4844 | 4.7500 | 17750 | 13147 | |
| .5000 | 1/2 | 12.70 | | 3.0000 | .5000 | 4.7500 | 17752 | 13149* | |
| .5312 | 17/32 | 13.49 | | 4.0000 | .5312 | 6.0000 | 17753 | 13150 | |
| .5625 | 9/16 | 14.29 | | 4.0000 | .5625 | 6.0000 | 17754 | 13151 | |
| .5938 | 19/32 | 15.08 | | 4.0000 | .5938 | 6.0000 | 17755 | 13152 | |
| .6250 | 5/8 | 15.88 | | 4.0000 | .6250 | 6.0000 | 17756 | 13153 | |
| .6562 | 21/32 | 16.67 | | 4.0000 | .6562 | 6.0000 | 17757 | 13154* | |
| .6875 | 11/16 | 17.46 | | 4.0000 | .6875 | 6.0000 | 17758 | 13155 | |
| .7188 | 23/32 | 18.26 | | 4.0000 | .7188 | 6.0000 | 17759 | 13156 | |
| .7500 | 3/4 | 19.05 | | 4.0000 | .7500 | 6.0000 | 17760 | 13157* | |
| .8750 | 7/8 | 22.23 | | 4.0000 | .8750 | 6.0000 | 17761 | 13158 | |
| 1.0000 | 1 | 25.40 | | 4.0000 | 1.0000 | 6.0000 | 17762 | 13159 | |
| **SCREW MACHINE LENGTH METRIC (Millimeter)** | | | | | | | | | |
| .0394 | | 1.00 | | 9.50 | 1.00 | 38.00 | 17801 | | 13200* |
| .0591 | | 1.50 | | 9.50 | 1.50 | 38.00 | 17810 | | 13209* |
| .0787 | | 2.00 | | 9.50 | 2.00 | 38.00 | 17820 | | 13219 |
| .0984 | | 2.50 | | 16.00 | 2.50 | 51.00 | 17829 | | 13228 |
| .1181 | | 3.00 | | 16.00 | 3.00 | 51.00 | 17839 | | 13238 |
| .1299 | | 3.30 | | 16.00 | 3.30 | 51.00 | 17952 | | |
| .1339 | | 3.40 | | 16.00 | 3.40 | 51.00 | 17953 | | |
| .1378 | | 3.50 | | 16.00 | 3.50 | 51.00 | 17844 | 13243 | |
| .1575 | | 4.00 | | 19.00 | 4.00 | 63.00 | 17854 | 13262 | |
| .1772 | | 4.50 | | 19.00 | 4.50 | 63.00 | 17862 | 13270 | |
| .1969 | | 5.00 | | 19.00 | 5.00 | 63.00 | 17871 | 13279 | |
| .2165 | | 5.50 | | 25.00 | 5.50 | 63.00 | 17879 | 13287 | |
| .2362 | | 6.00 | | 25.00 | 6.00 | 63.00 | 17885 | 13293* | |
| .2559 | | 6.50 | | 25.00 | 6.50 | 63.00 | 17890 | 13298* | |
| .2756 | | 7.00 | | 25.00 | 7.00 | 63.00 | 17896 | 13304 | |
| .2953 | | 7.50 | | 32.00 | 7.50 | 70.00 | 17902 | 13310 | |
| .3150 | | 8.00 | | 32.00 | 8.00 | 70.00 | 17906 | 13314 | |
| .3346 | | 8.50 | | 32.00 | 8.50 | 76.00 | 17911 | 13319 | |
| .3543 | | 9.00 | | 32.00 | 9.00 | 76.00 | 17915 | 13323 | |
| .3740 | | 9.50 | | 32.00 | 9.50 | 76.00 | 17920 | 13327 | |
| .3937 | | 10.00 | | 32.00 | 10.00 | 76.00 | 17925 | 13332 | |
| .4134 | | 10.50 | | 32.00 | 10.50 | 76.00 | 17930 | 13337* | |
| .4331 | | 11.00 | | 32.00 | 11.00 | 76.00 | 17932 | 13339* | |
| .4528 | | 11.50 | | 32.00 | 11.50 | 76.00 | 17934 | 13341* | |
| .4724 | | 12.00 | | 32.00 | 12.00 | 76.00 | 17937 | 13344 | |
| .4921 | | 12.50 | | 32.00 | 12.50 | 76.00 | 17939 | 13346 | |
| .5118 | | 13.00 | | 32.00 | 13.00 | 89.00 | 17951 | 13358 | |
| **STANDARD LENGTH METRIC (Millimeter)** | | | | | | | | | |
| .0394 | | 1.00 | | 16.00 | 1.00 | 38.00 | 17612 | | 13011 |
| .0591 | | 1.50 | | 19.00 | 1.50 | 38.00 | 17621 | | 13020* |
| .0787 | | 2.00 | | 22.00 | 2.00 | 44.00 | 17632 | | 13030* |
| .0984 | | 2.50 | | 25.00 | 2.50 | 51.00 | 17641 | | 13039 |
| .1181 | | 3.00 | | 32.00 | 3.00 | 57.00 | 17651 | | 13049 |
| .1378 | | 3.50 | | 35.00 | 3.50 | 63.00 | 17656 | 13054* | |

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

# DRILLS

135°

2 FLUTE

FC-7 COATING

TiAlN COATING

mm METRIC

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC | FC-7 | TiAlN |
| .1575 | | 4.00 | | 35.00 | 4.00 | 63.00 | 17667 | 13064 | |
| .1772 | | 4.50 | | 41.00 | 4.50 | 70.00 | 17675 | 13072 | |
| .1969 | | 5.00 | | 44.00 | 5.00 | 76.00 | 17684 | 13081 | |
| .2165 | | 5.50 | | 44.00 | 5.50 | 76.00 | 17692 | 13089 | |
| .2362 | | 6.00 | | 51.00 | 6.00 | 83.00 | 17698 | 13095 | |
| .2559 | | 6.50 | | 51.00 | 6.50 | 83.00 | 17703 | 13100 | |
| .2756 | | 7.00 | | 54.00 | 7.00 | 89.00 | 17709 | 13106 | |
| .2953 | | 7.50 | | 60.00 | 7.50 | 102.00 | 17715 | 13112 | |
| .3150 | | 8.00 | | 60.00 | 8.00 | 102.00 | 17719 | 13116 | |
| .3346 | | 8.50 | | 63.00 | 8.50 | 102.00 | 17724 | 13121 | |
| .3543 | | 9.00 | | 70.00 | 9.00 | 108.00 | 17728 | 13125 | |
| .3740 | | 9.50 | | 70.00 | 9.50 | 108.00 | 17732 | 13129 | |
| .3937 | | 10.00 | | 73.00 | 10.00 | 114.00 | 17737 | 13134* | |
| .4134 | | 10.50 | | 73.00 | 10.50 | 114.00 | 17742 | 13139 | |
| .4331 | | 11.00 | | 73.00 | 11.00 | 114.00 | 17744 | 13141* | |
| .4528 | | 11.50 | | 76.00 | 11.50 | 121.00 | 17746 | 13143 | |
| .4724 | | 12.00 | | 76.00 | 12.00 | 121.00 | 17749 | 13146 | |
| .4921 | | 12.50 | | 76.00 | 12.50 | 121.00 | 17751 | 13148 | |

* *Non Stocked*

DRILLS

118°

2 FLUTE

mm METRIC

* Non Stocked

# 1510

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Wood | General Purpose

**Basic Information:**

- 118° Four Facet Point
- 2 Flutes
  - 30° Helix
  - Right Hand Spiral
  - Right Hand Cut
- Standard Uncoated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**

- Shank Diameter: +.0000" -.0015"
  +0.000mm -0.038mm
- Cutter Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

** Items are made to order and not planned as a normal stocked item. Contact us for current stock status or for lead time at time of order. If you have an * item that you need us to stock, please contact us and we will work with you.*

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| **SCREW MACHINE LENGTH (Inch)** | | | | | | | |
| .0400 | | 1.02 | 60 | .3750 | .0400 | 1.5000 | 16002 |
| .0410 | | 1.04 | 59 | .3750 | .0410 | 1.5000 | 16003 |
| .0420 | | 1.07 | 58 | .3750 | .0420 | 1.5000 | 16004 |
| .0430 | | 1.09 | 57 | .3750 | .0430 | 1.5000 | 16005 |
| .0465 | | 1.18 | 56 | .3750 | .0465 | 1.5000 | 16006 |
| .0469 | 3/64 | 1.19 | | .3750 | .0469 | 1.5000 | 16007 |
| .0520 | | 1.32 | 55 | .3750 | .0520 | 1.5000 | 16008 |
| .0550 | | 1.40 | 54 | .3750 | .0550 | 1.5000 | 16009 |
| .0595 | | 1.51 | 53 | .3750 | .0595 | 1.5000 | 16011 |
| .0625 | 1/16 | 1.59 | | .3750 | .0625 | 1.5000 | 16012 |
| .0635 | | 1.61 | 52 | .3750 | .0635 | 1.5000 | 16013 |
| .0670 | | 1.70 | 51 | .3750 | .0670 | 1.5000 | 16014 |
| .0700 | | 1.78 | 50 | .3750 | .0700 | 1.5000 | 16015 |
| .0730 | | 1.85 | 49 | .3750 | .0730 | 1.5000 | 16016 |
| .0760 | | 1.93 | 48 | .3750 | .0760 | 1.5000 | 16017 |
| .0781 | 5/64 | 1.98 | | .3750 | .0781 | 1.5000 | 16018 |
| .0785 | | 1.99 | 47 | .3750 | .0785 | 1.5000 | 16019 |
| .0810 | | 2.06 | 46 | .3750 | .0810 | 1.5000 | 16021 |
| .0820 | | 2.08 | 45 | .3750 | .0820 | 1.5000 | 16022 |
| .0860 | | 2.18 | 44 | .5000 | .0860 | 2.0000 | 16023 |
| .0890 | | 2.26 | 43 | .5000 | .0890 | 2.0000 | 16024 |
| .0935 | | 2.37 | 42 | .5000 | .0935 | 2.0000 | 16025 |
| .0938 | 3/32 | 2.38 | | .5000 | .0938 | 2.0000 | 16026 |
| .0960 | | 2.44 | 41 | .5000 | .0960 | 2.0000 | 16027 |
| .0980 | | 2.49 | 40 | .6250 | .0980 | 2.0000 | 16028 |
| .0995 | | 2.53 | 39 | .6250 | .0995 | 2.0000 | 16030 |
| .1015 | | 2.58 | 38 | .6250 | .1015 | 2.0000 | 16031 |
| .1040 | | 2.64 | 37 | .6250 | .1040 | 2.0000 | 16032 |
| .1065 | | 2.71 | 36 | .6250 | .1065 | 2.0000 | 15276 |
| .1094 | 7/64 | 2.78 | | .6250 | .1094 | 2.0000 | 16033 |
| .1100 | | 2.79 | 35 | .6250 | .1100 | 2.0000 | 16034 |

* *Non Stocked*

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .1110 | | 2.82 | 34 | .6250 | .1110 | 2.0000 | 16035 |
| .1130 | | 2.87 | 33 | .6250 | .1130 | 2.0000 | 15277 |
| .1160 | | 2.95 | 32 | .6250 | .1160 | 2.0000 | 16036 |
| .1200 | | 3.05 | 31 | .6250 | .1200 | 2.0000 | 16038 |
| .1250 | 1/8 | 3.18 | | .6250 | .1250 | 2.0000 | 15201 |
| .1285 | | 3.26 | 30 | .6250 | .1285 | 2.0000 | 16039 |
| .1360 | | 3.45 | 29 | .6250 | .1360 | 2.0000 | 15278 |
| .1405 | | 3.57 | 28 | .6250 | .1405 | 2.0000 | 16041 |
| .1406 | 9/64 | 3.57 | | .6250 | .1406 | 2.0000 | 15202 |
| .1440 | | 3.66 | 27 | .7500 | .1440 | 2.5000 | 16042 |
| .1470 | | 3.73 | 26 | .7500 | .1470 | 2.5000 | 16043 |
| .1495 | | 3.80 | 25 | .7500 | .1495 | 2.5000 | 15279 |
| .1520 | | 3.86 | 24 | .7500 | .1520 | 2.5000 | 16044 |
| .1540 | | 3.91 | 23 | .7500 | .1540 | 2.5000 | 16045 |
| .1562 | 5/32 | 3.97 | | .7500 | .1562 | 2.5000 | 15203 |
| .1570 | | 3.99 | 22 | .7500 | .1570 | 2.5000 | 15280 |
| .1590 | | 4.04 | 21 | .7500 | .1590 | 2.5000 | 16047 |
| .1610 | | 4.09 | 20 | .7500 | .1610 | 2.5000 | 16048 |
| .1660 | | 4.22 | 19 | .7500 | .1660 | 2.5000 | 16049 |
| .1695 | | 4.31 | 18 | .7500 | .1695 | 2.5000 | 16050 |
| .1719 | 11/64 | 4.37 | | .7500 | .1719 | 2.5000 | 15204 |
| .1730 | | 4.39 | 17 | .7500 | .1730 | 2.5000 | 16051 |
| .1770 | | 4.50 | 16 | .7500 | .1770 | 2.5000 | 16052 |
| .1800 | | 4.57 | 15 | .7500 | .1800 | 2.5000 | 16054 |
| .1820 | | 4.62 | 14 | .7500 | .1820 | 2.5000 | 16055 |
| .1850 | | 4.70 | 13 | .7500 | .1850 | 2.5000 | 16056 |
| .1875 | 3/16 | 4.76 | | .7500 | .1875 | 2.5000 | 15205 |
| .1890 | | 4.80 | 12 | .7500 | .1890 | 2.5000 | 16057 |
| .1910 | | 4.85 | 11 | .7500 | .1910 | 2.5000 | 16058 |
| .1935 | | 4.91 | 10 | .7500 | .1935 | 2.5000 | 16059 |
| .1960 | | 4.98 | 9 | .7500 | .1960 | 2.5000 | 16060 |
| .1990 | | 5.05 | 8 | .7500 | .1990 | 2.5000 | 16062 |
| .2010 | | 5.11 | 7 | .7500 | .2010 | 2.5000 | 16063 |
| .2031 | 13/64 | 5.16 | | .7500 | .2031 | 2.5000 | 15206 |
| .2040 | | 5.18 | 6 | 1.0000 | .2040 | 2.5000 | 16064 |
| .2055 | | 5.22 | 5 | 1.0000 | .2055 | 2.5000 | 16065 |
| .2090 | | 5.31 | 4 | 1.0000 | .2090 | 2.5000 | 16066 |
| .2130 | | 5.41 | 3 | 1.0000 | .2130 | 2.5000 | 15281 |
| .2188 | 7/32 | 5.56 | | 1.0000 | .2188 | 2.5000 | 15207 |
| .2210 | | 5.61 | 2 | 1.0000 | .2210 | 2.5000 | 16068 |
| .2280 | | 5.79 | 1 | 1.0000 | .2280 | 2.5000 | 16069 |
| .2340 | | 5.94 | A | 1.0000 | .2340 | 2.5000 | 16070 |
| .2344 | 15/64 | 5.95 | | 1.0000 | .2344 | 2.5000 | 15208 |
| .2380 | | 6.05 | B | 1.0000 | .2380 | 2.5000 | 16072 |
| .2420 | | 6.15 | C | 1.0000 | .2420 | 2.5000 | 16073 |
| .2460 | | 6.25 | D | 1.0000 | .2460 | 2.5000 | 16074 |
| .2500 | 1/4 | 6.35 | E | 1.0000 | .2500 | 2.5000 | 15209 |
| .2570 | | 6.53 | F | 1.0000 | .2570 | 2.5000 | 15282 |
| .2610 | | 6.63 | G | 1.0000 | .2610 | 2.5000 | 16076 |
| .2656 | 17/64 | 6.75 | | 1.0000 | .2656 | 2.5000 | 15210 |
| .2660 | | 6.76 | H | 1.0000 | .2660 | 2.5000 | 16078 |
| .2720 | | 6.91 | I | 1.0000 | .2720 | 2.5000 | 15283 |
| .2770 | | 7.04 | J | 1.0000 | .2770 | 2.5000 | 16080 |
| .2810 | | 7.14 | K | 1.0000 | .2810 | 2.5000 | 16081 |

DRILLS

118°

2 FLUTE

mm METRIC

* *Non Stocked*

# 1510

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Wood | General Purpose

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .2812 | 9/32 | 7.14 | | 1.0000 | .2812 | 2.5000 | 15211 |
| .2900 | | 7.37 | L | 1.2500 | .2900 | 2.7500 | 16082 |
| .2950 | | 7.49 | M | 1.2500 | .2950 | 2.7500 | 16083 |
| .2969 | 19/64 | 7.54 | | 1.2500 | .2969 | 2.7500 | 15212 |
| .3020 | | 7.67 | N | 1.2500 | .3020 | 2.7500 | 16085 |
| .3125 | 5/16 | 7.94 | | 1.2500 | .3125 | 2.7500 | 15213 |
| .3160 | | 8.03 | O | 1.2500 | .3160 | 2.7500 | 16087 |
| .3230 | | 8.20 | P | 1.2500 | .3230 | 2.7500 | 16088 |
| .3281 | 21/64 | 8.33 | | 1.2500 | .3281 | 2.7500 | 15214 |
| .3320 | | 8.43 | Q | 1.2500 | .3320 | 3.0000 | 16089 |
| .3390 | | 8.61 | R | 1.2500 | .3390 | 3.0000 | 16091 |
| .3438 | 11/32 | 8.73 | | 1.2500 | .3438 | 3.0000 | 15215 |
| .3480 | | 8.84 | S | 1.2500 | .3480 | 3.0000 | 16092 |
| .3580 | | 9.09 | T | 1.2500 | .3580 | 3.0000 | 16094 |
| .3594 | 23/64 | 9.13 | | 1.2500 | .3594 | 3.0000 | 15216 |
| .3680 | | 9.35 | U | 1.2500 | .3680 | 3.0000 | 16095 |
| .3750 | 3/8 | 9.53 | | 1.2500 | .3750 | 3.0000 | 15217 |
| .3770 | | 9.58 | V | 1.2500 | .3770 | 3.0000 | 16097 |
| .3860 | | 9.80 | W | 1.2500 | .3860 | 3.0000 | 16098 |
| .3906 | 25/64 | 9.92 | | 1.2500 | .3906 | 3.0000 | 15218 |
| .3970 | | 10.08 | X | 1.2500 | .3970 | 3.0000 | 16100 |
| .4040 | | 10.26 | Y | 1.2500 | .4040 | 3.0000 | 16101 |
| .4062 | 13/32 | 10.32 | | 1.2500 | .4062 | 3.0000 | 15219 |
| .4130 | | 10.49 | Z | 1.2500 | .4130 | 3.0000 | 16102 |
| .4219 | 27/64 | 10.72 | | 1.2500 | .4219 | 3.0000 | 15220 |
| .4375 | 7/16 | 11.11 | | 1.2500 | .4375 | 3.0000 | 15221 |
| .4531 | 29/64 | 11.51 | | 1.2500 | .4531 | 3.0000 | 15222 |
| .4688 | 15/32 | 11.91 | | 1.2500 | .4688 | 3.0000 | 15223 |
| .4844 | 31/64 | 12.30 | | 1.2500 | .4844 | 3.0000 | 15224 |
| .5000 | 1/2 | 12.70 | | 1.2500 | .5000 | 3.0000 | 15225 |
| .5312 | 17/32 | 13.49 | | 1.2500 | .5312 | 3.5000 | 16108 |
| .5625 | 9/16 | 14.29 | | 1.5000 | .5625 | 3.5000 | 15256 |
| .5938 | 19/32 | 15.08 | | 1.5000 | .5938 | 3.5000 | 16109 |
| .6250 | 5/8 | 15.88 | | 1.5000 | .6250 | 3.5000 | 15262 |
| .6562 | 21/32 | 16.67 | | 1.5000 | .6562 | 3.5000 | 16110 |
| .6875 | 11/16 | 17.46 | | 1.5000 | .6875 | 4.0000 | 16111 |
| .7188 | 23/32 | 18.26 | | 1.5000 | .7188 | 4.0000 | 16112 |
| .7500 | 3/4 | 19.05 | | 1.5000 | .7500 | 4.0000 | 15275 |
| .8750 | 7/8 | 22.23 | | 1.5000 | .8750 | 4.0000 | 16113 |
| 1.0000 | 1 | 25.40 | | 1.5000 | 1.0000 | 4.0000 | 16114 |
| **STANDARD LENGTH (Inch)** | | | | | | | |
| .0280 | | 0.71 | 70 | .3125 | .0280 | 1.2500 | 15012 |
| .0292 | | 0.74 | 69 | .3125 | .0292 | 1.2500 | 15013 |
| .0310 | | 0.79 | 68 | .3125 | .0310 | 1.2500 | 15014 |
| .0312 | 1/32 | 0.79 | | .3125 | .0312 | 1.2500 | 15015 |
| .0320 | | 0.81 | 67 | .3125 | .0320 | 1.2500 | 15016 |
| .0330 | | 0.84 | 66 | .3125 | .0330 | 1.2500 | 15017 |
| .0350 | | 0.89 | 65 | .6250 | .0350 | 1.5000 | 15018 |
| .0360 | | 0.91 | 64 | .6250 | .0360 | 1.5000 | 15019 |
| .0370 | | 0.94 | 63 | .6250 | .0370 | 1.5000 | 15020 |
| .0380 | | 0.97 | 62 | .6250 | .0380 | 1.5000 | 15021 |
| .0390 | | 0.99 | 61 | .6250 | .0390 | 1.5000 | 15022 |
| .0400 | | 1.02 | 60 | .7500 | .0400 | 1.5000 | 15024 |

* *Non Stocked*

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .0410 | | 1.04 | 59 | .7500 | .0410 | 1.5000 | 15025 |
| .0420 | | 1.07 | 58 | .7500 | .0420 | 1.5000 | 15026 |
| .0430 | | 1.09 | 57 | .7500 | .0430 | 1.5000 | 15027 |
| .0465 | | 1.18 | 56 | .7500 | .0465 | 1.5000 | 15028 |
| .0469 | 3/64 | 1.19 | | .7500 | .0469 | 1.5000 | 15029 |
| .0520 | | 1.32 | 55 | .7500 | .0520 | 1.5000 | 15030 |
| .0550 | | 1.40 | 54 | .7500 | .0550 | 1.5000 | 15031 |
| .0595 | | 1.51 | 53 | .7500 | .0595 | 1.5000 | 15033 |
| .0625 | 1/16 | 1.59 | | .7500 | .0625 | 1.5000 | 15034 |
| .0635 | | 1.61 | 52 | .7500 | .0635 | 1.5000 | 15035 |
| .0670 | | 1.70 | 51 | .7500 | .0670 | 1.5000 | 15036 |
| .0700 | | 1.78 | 50 | .8750 | .0700 | 1.7500 | 15037 |
| .0730 | | 1.85 | 49 | .8750 | .0730 | 1.7500 | 15038 |
| .0760 | | 1.93 | 48 | .8750 | .0760 | 1.7500 | 15039 |
| .0781 | 5/64 | 1.98 | | .8750 | .0781 | 1.7500 | 15040 |
| .0785 | | 1.99 | 47 | .8750 | .0785 | 1.7500 | 15041 |
| .0810 | | 2.06 | 46 | .8750 | .0810 | 1.7500 | 15043 |
| .0820 | | 2.08 | 45 | .8750 | .0820 | 1.7500 | 15044 |
| .0860 | | 2.18 | 44 | 1.0000 | .0860 | 2.0000 | 15045 |
| .0890 | | 2.26 | 43 | 1.0000 | .0890 | 2.0000 | 15046 |
| .0935 | | 2.37 | 42 | 1.0000 | .0935 | 2.0000 | 15047 |
| .0938 | 3/32 | 2.38 | | 1.0000 | .0938 | 2.0000 | 15048 |
| .0960 | | 2.44 | 41 | 1.0000 | .0960 | 2.0000 | 15049 |
| .0980 | | 2.49 | 40 | 1.0000 | .0980 | 2.0000 | 15050 |
| .0995 | | 2.53 | 39 | 1.2500 | .0995 | 2.2500 | 15052 |
| .1015 | | 2.58 | 38 | 1.2500 | .1015 | 2.2500 | 15053 |
| .1040 | | 2.64 | 37 | 1.2500 | .1040 | 2.2500 | 15054 |
| .1065 | | 2.71 | 36 | 1.2500 | .1065 | 2.2500 | 15055 |
| .1094 | 7/64 | 2.78 | | 1.2500 | .1094 | 2.2500 | 15056 |
| .1100 | | 2.79 | 35 | 1.2500 | .1100 | 2.2500 | 15057 |
| .1110 | | 2.82 | 34 | 1.2500 | .1110 | 2.2500 | 15058 |
| .1130 | | 2.87 | 33 | 1.2500 | .1130 | 2.2500 | 15059 |
| .1160 | | 2.95 | 32 | 1.2500 | .1160 | 2.2500 | 15060 |
| .1200 | | 3.05 | 31 | 1.2500 | .1200 | 2.2500 | 15062 |
| .1250 | 1/8 | 3.18 | | 1.2500 | .1250 | 2.2500 | 15063 |
| .1285 | | 3.26 | 30 | 1.3750 | .1285 | 2.5000 | 15064 |
| .1360 | | 3.45 | 29 | 1.3750 | .1360 | 2.5000 | 15065 |
| .1405 | | 3.57 | 28 | 1.3750 | .1405 | 2.5000 | 15067 |
| .1406 | 9/64 | 3.57 | | 1.3750 | .1406 | 2.5000 | 15068 |
| .1440 | | 3.66 | 27 | 1.3750 | .1440 | 2.5000 | 15069 |
| .1470 | | 3.73 | 26 | 1.3750 | .1470 | 2.5000 | 15070 |
| .1495 | | 3.80 | 25 | 1.3750 | .1495 | 2.5000 | 15071 |
| .1520 | | 3.86 | 24 | 1.3750 | .1520 | 2.5000 | 15072 |
| .1540 | | 3.91 | 23 | 1.3750 | .1540 | 2.5000 | 15073 |
| .1562 | 5/32 | 3.97 | | 1.3750 | .1562 | 2.5000 | 15074 |
| .1570 | | 3.99 | 22 | 1.3750 | .1570 | 2.5000 | 15075 |
| .1590 | | 4.04 | 21 | 1.3750 | .1590 | 2.5000 | 15077 |
| .1610 | | 4.09 | 20 | 1.3750 | .1610 | 2.5000 | 15078 |
| .1660 | | 4.22 | 19 | 1.6250 | .1660 | 2.7500 | 15079 |
| .1695 | | 4.31 | 18 | 1.6250 | .1695 | 2.7500 | 15080 |
| .1719 | 11/64 | 4.37 | | 1.6250 | .1719 | 2.7500 | 15081 |
| .1730 | | 4.39 | 17 | 1.6250 | .1730 | 2.7500 | 15082 |
| .1770 | | 4.50 | 16 | 1.6250 | .1770 | 2.7500 | 15083 |
| .1800 | | 4.57 | 15 | 1.6250 | .1800 | 2.7500 | 15085 |

DRILLS

118°

2 FLUTE

mm METRIC

* *Non Stocked*

# 1510

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Wood | General Purpose

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .1820 | | 4.62 | 14 | 1.6250 | .1820 | 2.7500 | 15086 |
| .1850 | | 4.70 | 13 | 1.6250 | .1850 | 2.7500 | 15087 |
| .1875 | 3/16 | 4.76 | | 1.6250 | .1875 | 2.7500 | 15088 |
| .1890 | | 4.80 | 12 | 1.6250 | .1890 | 2.7500 | 15089 |
| .1910 | | 4.85 | 11 | 1.6250 | .1910 | 2.7500 | 15090 |
| .1935 | | 4.91 | 10 | 1.6250 | .1935 | 2.7500 | 15091 |
| .1960 | | 4.98 | 9 | 1.7500 | .1960 | 3.0000 | 15092 |
| .1990 | | 5.05 | 8 | 1.7500 | .1990 | 3.0000 | 15094 |
| .2010 | | 5.11 | 7 | 1.7500 | .2010 | 3.0000 | 15095 |
| .2031 | 13/64 | 5.16 | | 1.7500 | .2031 | 3.0000 | 15096 |
| .2040 | | 5.18 | 6 | 1.7500 | .2040 | 3.0000 | 15097 |
| .2055 | | 5.22 | 5 | 1.7500 | .2055 | 3.0000 | 15098 |
| .2090 | | 5.31 | 4 | 1.7500 | .2090 | 3.0000 | 15099 |
| .2130 | | 5.41 | 3 | 1.7500 | .2130 | 3.0000 | 15100 |
| .2188 | 7/32 | 5.56 | | 1.7500 | .2188 | 3.0000 | 15102 |
| .2210 | | 5.61 | 2 | 1.7500 | .2210 | 3.0000 | 15103 |
| .2280 | | 5.79 | 1 | 1.7500 | .2280 | 3.0000 | 15104 |
| .2340 | | 5.94 | A | 2.0000 | .2340 | 3.2500 | 15105 |
| .2344 | 15/64 | 5.95 | | 2.0000 | .2344 | 3.2500 | 15106 |
| .2380 | | 6.05 | B | 2.0000 | .2380 | 3.2500 | 15108 |
| .2420 | | 6.15 | C | 2.0000 | .2420 | 3.2500 | 15109 |
| .2460 | | 6.25 | D | 2.0000 | .2460 | 3.2500 | 15110 |
| .2500 | 1/4 | 6.35 | E | 2.0000 | .2500 | 3.2500 | 15112 |
| .2570 | | 6.53 | F | 2.0000 | .2570 | 3.2500 | 15114 |
| .2610 | | 6.63 | G | 2.1250 | .2610 | 3.5000 | 15115 |
| .2656 | 17/64 | 6.75 | | 2.1250 | .2656 | 3.5000 | 15116 |
| .2660 | | 6.76 | H | 2.1250 | .2660 | 3.5000 | 15117 |
| .2720 | | 6.91 | I | 2.1250 | .2720 | 3.5000 | 15118 |
| .2770 | | 7.04 | J | 2.1250 | .2770 | 3.5000 | 15120 |
| .2810 | | 7.14 | K | 2.1250 | .2810 | 3.5000 | 15121 |
| .2812 | 9/32 | 7.14 | | 2.1250 | .2812 | 3.5000 | 15122 |
| .2900 | | 7.37 | L | 2.1250 | .2900 | 3.5000 | 15123 |
| .2950 | | 7.49 | M | 2.3750 | .2950 | 4.0000 | 15124 |
| .2969 | 19/64 | 7.54 | | 2.3750 | .2969 | 4.0000 | 15126 |
| .3020 | | 7.67 | N | 2.3750 | .3020 | 4.0000 | 15127 |
| .3125 | 5/16 | 7.94 | | 2.3750 | .3125 | 4.0000 | 15128 |
| .3160 | | 8.03 | O | 2.3750 | .3160 | 4.0000 | 15130 |
| .3230 | | 8.20 | P | 2.3750 | .3230 | 4.0000 | 15131 |
| .3281 | 21/64 | 8.33 | | 2.5000 | .3281 | 4.0000 | 15132 |
| .3320 | | 8.43 | Q | 2.5000 | .3320 | 4.0000 | 15133 |
| .3390 | | 8.61 | R | 2.5000 | .3390 | 4.0000 | 15135 |
| .3438 | 11/32 | 8.73 | | 2.5000 | .3438 | 4.0000 | 15136 |
| .3480 | | 8.84 | S | 2.5000 | .3480 | 4.0000 | 15137 |
| .3580 | | 9.09 | T | 2.7500 | .3580 | 4.2500 | 15139 |
| .3594 | 23/64 | 9.13 | | 2.7500 | .3594 | 4.2500 | 15140 |
| .3680 | | 9.35 | U | 2.7500 | .3680 | 4.2500 | 15141 |
| .3750 | 3/8 | 9.53 | | 2.7500 | .3750 | 4.2500 | 15143 |
| .3770 | | 9.58 | V | 2.7500 | .3770 | 4.2500 | 15144 |
| .3860 | | 9.80 | W | 2.8750 | .3860 | 4.5000 | 15145 |
| .3906 | 25/64 | 9.92 | | 2.8750 | .3906 | 4.5000 | 15146 |
| .3970 | | 10.08 | X | 2.8750 | .3970 | 4.5000 | 15148 |
| .4040 | | 10.26 | Y | 2.8750 | .4040 | 4.5000 | 15149 |
| .4062 | 13/32 | 10.32 | | 2.8750 | .4062 | 4.5000 | 15150 |
| .4130 | | 10.49 | Z | 2.8750 | .4130 | 4.5000 | 15170 |

* *Non Stocked*

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .4219 | 27/64 | 10.72 | | 2.8750 | .4219 | 4.5000 | 15152 |
| .4375 | 7/16 | 11.11 | | 2.8750 | .4375 | 4.5000 | 15154 |
| .4531 | 29/64 | 11.51 | | 3.0000 | .4531 | 4.7500 | 15156 |
| .4688 | 15/32 | 11.91 | | 3.0000 | .4688 | 4.7500 | 15157 |
| .4844 | 31/64 | 12.30 | | 3.0000 | .4844 | 4.7500 | 15159 |
| .5000 | 1/2 | 12.70 | | 3.0000 | .5000 | 4.7500 | 15161 |
| .5312 | 17/32 | 13.49 | | 4.0000 | .5312 | 6.0000 | 15162 |
| .5625 | 9/16 | 14.29 | | 4.0000 | .5625 | 6.0000 | 15163 |
| .5938 | 19/32 | 15.08 | | 4.0000 | .5938 | 6.0000 | 15164 |
| .6250 | 5/8 | 15.88 | | 4.0000 | .6250 | 6.0000 | 15165 |
| .6562 | 21/32 | 16.67 | | 4.0000 | .6562 | 6.0000 | 15166 |
| .6875 | 11/16 | 17.46 | | 4.0000 | .6875 | 6.0000 | 15167 |
| .7188 | 23/32 | 18.26 | | 4.0000 | .7188 | 6.0000 | 15171 |
| .7500 | 3/4 | 19.05 | | 4.0000 | .7500 | 6.0000 | 15168 |
| .8750 | 7/8 | 22.23 | | 4.0000 | .8750 | 6.0000 | 15169 |
| 1.0000 | 1 | 25.40 | | 4.0000 | 1.0000 | 6.0000 | 15174 |
| **SCREW MACHINE LENGTH METRIC (Millimeter)** | | | | | | | |
| .0394 | | 1.00 | | 9.50 | 1.00 | 38.00 | 16001 |
| .0591 | | 1.50 | | 9.50 | 1.50 | 38.00 | 16010 |
| .0787 | | 2.00 | | 9.50 | 2.00 | 38.00 | 16020 |
| .0984 | | 2.50 | | 16.00 | 2.50 | 51.00 | 16029 |
| .1181 | | 3.00 | | 16.00 | 3.00 | 51.00 | 16037 |
| .1378 | | 3.50 | | 16.00 | 3.50 | 51.00 | 16040 |
| .1575 | | 4.00 | | 19.00 | 4.00 | 63.00 | 16046 |
| .1772 | | 4.50 | | 19.00 | 4.50 | 63.00 | 16053 |
| .1969 | | 5.00 | | 19.00 | 5.00 | 63.00 | 16061 |
| .2165 | | 5.50 | | 25.00 | 5.50 | 63.00 | 16067 |
| .2362 | | 6.00 | | 25.00 | 6.00 | 63.00 | 16071 |
| .2559 | | 6.50 | | 25.00 | 6.50 | 63.00 | 16075 |
| .2756 | | 7.00 | | 25.00 | 7.00 | 63.00 | 16079 |
| .2953 | | 7.50 | | 32.00 | 7.50 | 70.00 | 16084 |
| .3150 | | 8.00 | | 32.00 | 8.00 | 70.00 | 16086 |
| .3346 | | 8.50 | | 32.00 | 8.50 | 76.00 | 16090 |
| .3543 | | 9.00 | | 32.00 | 9.00 | 76.00 | 16093 |
| .3740 | | 9.50 | | 32.00 | 9.50 | 76.00 | 16096* |
| .3937 | | 10.00 | | 32.00 | 10.00 | 76.00 | 16099 |
| .4134 | | 10.50 | | 32.00 | 10.50 | 76.00 | 16103 |
| .4331 | | 11.00 | | 32.00 | 11.00 | 76.00 | 16104 |
| .4528 | | 11.50 | | 32.00 | 11.50 | 76.00 | 16105 |
| .4724 | | 12.00 | | 32.00 | 12.00 | 76.00 | 16106 |
| .4921 | | 12.50 | | 32.00 | 12.50 | 76.00 | 16107 |
| **STANDARD LENGTH METRIC (Millimeter)** | | | | | | | |
| .0394 | | 1.00 | | 16.00 | 1.00 | 38.00 | 15023 |
| .0591 | | 1.50 | | 19.00 | 1.50 | 38.00 | 15032 |
| .0787 | | 2.00 | | 22.00 | 2.00 | 44.00 | 15042 |
| .0906 | | 2.30 | | 25.00 | 2.30 | 51.00 | 15196 |
| .0984 | | 2.50 | | 25.00 | 2.50 | 51.00 | 15051 |
| .1024 | | 2.60 | | 25.00 | 2.60 | 51.00 | 15186 |
| .1142 | | 2.90 | | 32.00 | 2.90 | 57.00 | 15187 |
| .1181 | | 3.00 | | 32.00 | 3.00 | 57.00 | 15061 |
| .1259 | | 3.20 | | 32.00 | 3.20 | 57.00 | 15245 |
| .1378 | | 3.50 | | 35.00 | 3.50 | 63.00 | 15066 |

DRILLS

118°

2 FLUTE

mm METRIC

* *Non Stocked*

# 1510

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Wood | General Purpose

| Cutting Diameter | | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | UC |
| .1535 | | 3.90 | | 35.00 | 3.90 | 63.00 | 15246 |
| .1575 | | 4.00 | | 35.00 | 4.00 | 63.00 | 15076 |
| .1654 | | 4.20 | | 41.00 | 4.20 | 70.00 | 15188 |
| .1693 | | 4.30 | | 41.00 | 4.30 | 70.00 | 15189 |
| .1772 | | 4.50 | | 41.00 | 4.50 | 70.00 | 15084 |
| .1969 | | 5.00 | | 44.00 | 5.00 | 76.00 | 15093 |
| .2165 | | 5.50 | | 44.00 | 5.50 | 76.00 | 15101 |
| .2284 | | 5.80 | | 44.00 | 5.80 | 76.00 | 15190 |
| .2362 | | 6.00 | | 51.00 | 6.00 | 83.00 | 15107 |
| .2441 | | 6.20 | | 51.00 | 6.20 | 83.00 | 15191 |
| .2520 | | 6.40 | | 51.00 | 6.40 | 83.00 | 15194 |
| .2559 | | 6.50 | | 51.00 | 6.50 | 83.00 | 15113 |
| .2598 | | 6.60 | | 51.00 | 6.60 | 83.00 | 15195 |
| .2716 | | 6.90 | | 54.00 | 6.90 | 89.00 | 15247 |
| .2756 | | 7.00 | | 54.00 | 7.00 | 89.00 | 15119 |
| .2953 | | 7.50 | | 60.00 | 7.50 | 102.00 | 15125 |
| .3150 | | 8.00 | | 60.00 | 8.00 | 102.00 | 15129 |
| .3268 | | 8.30 | | 63.00 | 8.30 | 102.00 | 15192 |
| .3307 | | 8.40 | | 63.00 | 8.40 | 102.00 | 15197 |
| .3346 | | 8.50 | | 63.00 | 8.50 | 102.00 | 15173 |
| .3504 | | 8.90 | | 70.00 | 8.90 | 108.00 | 15198 |
| .3543 | | 9.00 | | 70.00 | 9.00 | 108.00 | 15134 |
| .3740 | | 9.50 | | 70.00 | 9.50 | 108.00 | 15142 |
| .3779 | | 9.60 | | 70.00 | 9.60 | 108.00 | 15193 |
| .3937 | | 10.00 | | 73.00 | 10.00 | 114.00 | 15147 |
| .4134 | | 10.50 | | 73.00 | 10.50 | 114.00 | 15151 |
| .4331 | | 11.00 | | 73.00 | 11.00 | 114.00 | 15153 |
| .4528 | | 11.50 | | 76.00 | 11.50 | 121.00 | 15155 |
| .4724 | | 12.00 | | 76.00 | 12.00 | 121.00 | 15158 |
| .4921 | | 12.50 | | 76.00 | 12.50 | 121.00 | 15160 |

# 2305 Center Drill

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Wood | General Purpose

**Basic Information:**
- 118° Cam Relieved Pilot Point
- 2 Flutes
  - Right Hand Spiral
  - Right Hand Cut
- 60°, 82°, and 90° Included Angle Countersinks
- Double End
- Standard Uncoated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Pilot Diameter: +.003" -.000"
  +0.08mm -0.00mm

| Tool Number | Pilot Diameter | | | Body Diameter | Overall Length | Countersink Angle | EDP Number |
|---|---|---|---|---|---|---|---|
| | Inch | Fractional | Millimeter | | | | UC |
| 000 | .0200 | | 0.51 | .1250 | 1.5000 | 60° | 23000 |
| 000 | .0200 | | 0.51 | .1250 | 1.5000 | 82° | 23002 |
| 000 | .0200 | | 0.51 | .1250 | 1.5000 | 90° | 23004 |
| 00 | .0250 | | 0.64 | .1250 | 1.5000 | 60° | 23001 |
| 00 | .0250 | | 0.64 | .1250 | 1.5000 | 82° | 23003 |
| 00 | .0250 | | 0.64 | .1250 | 1.5000 | 90° | 23005 |
| 0 | .0312 | 1/32 | 0.79 | .1250 | 1.5000 | 60° | 23100 |
| 0 | .0312 | 1/32 | 0.79 | .1250 | 1.5000 | 82° | 23200 |
| 0 | .0312 | 1/32 | 0.79 | .1250 | 1.5000 | 90° | 23300 |
| 1 | .0469 | 3/64 | 1.19 | .1250 | 1.5000 | 60° | 23101 |
| 1 | .0469 | 3/64 | 1.19 | .1250 | 1.5000 | 82° | 23201 |
| 1 | .0469 | 3/64 | 1.19 | .1250 | 1.5000 | 90° | 23301 |
| 2 | .0781 | 5/64 | 1.98 | .1875 | 2.0000 | 60° | 23102 |
| 2 | .0781 | 5/64 | 1.98 | .1875 | 2.0000 | 82° | 23202 |
| 2 | .0781 | 5/64 | 1.98 | .1875 | 2.0000 | 90° | 23302 |
| 3 | .1094 | 7/64 | 2.78 | .2500 | 2.0000 | 60° | 23103 |
| 3 | .1094 | 7/64 | 2.78 | .2500 | 2.0000 | 82° | 23203 |
| 3 | .1094 | 7/64 | 2.78 | .2500 | 2.0000 | 90° | 23303 |
| 4 | .1250 | 1/8 | 3.18 | .3125 | 2.1250 | 60° | 23104 |
| 4 | .1250 | 1/8 | 3.18 | .3125 | 2.1250 | 82° | 23204 |
| 4 | .1250 | 1/8 | 3.18 | .3125 | 2.1250 | 90° | 23304 |
| 5 | .1875 | 3/16 | 4.76 | .4375 | 2.7500 | 60° | 23105 |
| 5 | .1875 | 3/16 | 4.76 | .4375 | 2.7500 | 82° | 23205 |
| 5 | .1875 | 3/16 | 4.76 | .4375 | 2.7500 | 90° | 23305 |
| 6 | .2188 | 7/32 | 5.56 | .5000 | 3.0000 | 60° | 23106 |
| 6 | .2188 | 7/32 | 5.56 | .5000 | 3.0000 | 82° | 23206 |
| 6 | .2188 | 7/32 | 5.56 | .5000 | 3.0000 | 90° | 23306 |
| 7 | .2500 | 1/4 | 6.35 | .6250 | 3.2500 | 60° | 23107 |
| 7 | .2500 | 1/4 | 6.35 | .6250 | 3.2500 | 82° | 23207 |
| 7 | .2500 | 1/4 | 6.35 | .6250 | 3.2500 | 90° | 23307 |
| 8 | .3125 | 5/16 | 7.94 | .7500 | 3.5000 | 60° | 23108 |
| 8 | .3125 | 5/16 | 7.94 | .7500 | 3.5000 | 82° | 23208 |
| 8 | .3125 | 5/16 | 7.94 | .7500 | 3.5000 | 90° | 23308 |

DRILLS

118°

2 FLUTE

60°

82°

90°

mm METRIC

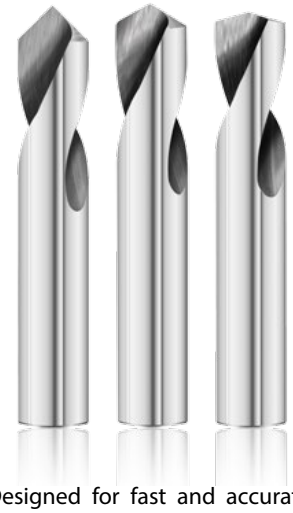
# 2305 Center Drill

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Wood | General Purpose

| Tool Number | Pilot Diameter | | | Body Diameter | Overall Length | Countersink Angle | EDP Number |
|---|---|---|---|---|---|---|---|
| | Inch | Fractional | Millimeter | | | | UC |
| METRIC (Millimeter) | | | | | | | |
| | .0197 | | 0.50 | 3.00 | 38.00 | 60° | 15737 |
| | .0315 | | 0.80 | 3.00 | 38.00 | 60° | 15738 |
| | .0394 | | 1.00 | 3.00 | 38.00 | 60° | 15739 |
| | .0512 | | 1.30 | 3.00 | 38.00 | 60° | 15740 |
| | .0630 | | 1.60 | 4.00 | 50.00 | 60° | 15741 |
| | .0787 | | 2.00 | 5.00 | 51.00 | 60° | 15742 |
| | .0984 | | 2.50 | 6.00 | 50.00 | 60° | 15743 |
| | .1259 | | 3.20 | 8.00 | 50.00 | 60° | 15744 |
| | .1575 | | 4.00 | 10.00 | 76.00 | 60° | 15745 |
| | .1969 | | 5.00 | 12.00 | 76.00 | 60° | 15746 |

# 1535 NC Spotting Drills

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | Composites | Wood | General Purpose



**Basic Information:**
- 90°, 120°, and 150° Point Angles
- 2 Cam Relieved Flutes
  - Right Hand Spiral
  - Right Hand Cut
- Standard Uncoated
- Inch and Metric Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Cutting Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

Designed for fast and accurate spotting on NC machines, these drills are an excellent alternative to Combined Drill & Countersink Tools. With their short flute and overall lengths, no body clearance or back taper, these drills are very rigid allowing higher feeds & speeds. The unique flute design provides several easy regrinds without the need for web thinning. Centering and chamfering can be accomplished in a single operation.

| Cutting Diameter | | | Flute Length | Shank Diameter | Overall Length | Point Angle | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .1250 | 1/8 | 3.18 | .6250 | .1250 | 2.5000 | 90° | 15450 |
| .1250 | 1/8 | 3.18 | .6250 | .1250 | 2.5000 | 120° | 15350 |
| .1250 | 1/8 | 3.18 | .6250 | .1250 | 2.5000 | 150° | 15736 |
| .1875 | 3/16 | 4.76 | .7500 | .1875 | 2.5000 | 90° | 15453 |
| .1875 | 3/16 | 4.76 | .7500 | .1875 | 2.5000 | 120° | 15353 |
| .1875 | 3/16 | 4.76 | .7500 | .1875 | 2.5000 | 150° | 15758 |
| .2500 | 1/4 | 6.35 | 1.0000 | .2500 | 2.5000 | 90° | 15462 |
| .2500 | 1/4 | 6.35 | 1.0000 | .2500 | 2.5000 | 120° | 15362 |
| .2500 | 1/4 | 6.35 | 1.0000 | .2500 | 2.5000 | 150° | 15774 |
| .3125 | 5/16 | 7.94 | 1.0000 | .3125 | 2.5000 | 90° | 15464 |
| .3125 | 5/16 | 7.94 | 1.0000 | .3125 | 2.5000 | 120° | 15364 |
| .3125 | 5/16 | 7.94 | 1.0000 | .3125 | 2.5000 | 150° | 15778 |
| .3750 | 3/8 | 9.53 | 1.2500 | .3750 | 3.0000 | 90° | 15468 |
| .3750 | 3/8 | 9.53 | 1.2500 | .3750 | 3.0000 | 120° | 15368 |
| .3750 | 3/8 | 9.53 | 1.2500 | .3750 | 3.0000 | 150° | 15782 |
| .5000 | 1/2 | 12.70 | 1.2500 | .5000 | 3.0000 | 90° | 15477 |
| .5000 | 1/2 | 12.70 | 1.2500 | .5000 | 3.0000 | 120° | 15377 |
| .5000 | 1/2 | 12.70 | 1.2500 | .5000 | 3.0000 | 150° | 15790 |
| .7500 | 3/4 | 19.05 | 1.5000 | .7500 | 4.0000 | 90° | 15708 |
| .7500 | 3/4 | 19.05 | 1.5000 | .7500 | 4.0000 | 120° | 15709 |
| .7500 | 3/4 | 19.05 | 1.5000 | .7500 | 4.0000 | 150° | 15707 |
| **METRIC (Millimeter)** | | | | | | | |
| .1181 | | 3.00 | 10.00 | 3.00 | 64.00 | 90° | 15454 |
| .1181 | | 3.00 | 10.00 | 3.00 | 64.00 | 120° | 15354 |
| .1181 | | 3.00 | 10.00 | 3.00 | 64.00 | 150° | 15700 |
| .1575 | | 4.00 | 12.00 | 4.00 | 64.00 | 90° | 15455 |
| .1575 | | 4.00 | 12.00 | 4.00 | 64.00 | 120° | 15355 |
| .1575 | | 4.00 | 12.00 | 4.00 | 64.00 | 150° | 15704 |
| .1969 | | 5.00 | 25.00 | 5.00 | 64.00 | 90° | 15456 |
| .1969 | | 5.00 | 25.00 | 5.00 | 64.00 | 120° | 15356 |
| .1969 | | 5.00 | 25.00 | 5.00 | 64.00 | 150° | 15701 |
| .2362 | | 6.00 | 25.00 | 6.00 | 64.00 | 90° | 15459 |

DRILLS

90°

120°

150°

2 FLUTE

mm METRIC

# 1535 NC Spotting Drills

Titanium | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | Composites | Wood | General Purpose

| Cutting Diameter | | | Flute Length | Shank Diameter | Overall Length | Point Angle | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | UC |
| .2362 | | 6.00 | 25.00 | 6.00 | 64.00 | 120° | 15359 |
| .2362 | | 6.00 | 25.00 | 6.00 | 64.00 | 150° | 15702 |
| .3150 | | 8.00 | 25.00 | 8.00 | 64.00 | 90° | 15465 |
| .3150 | | 8.00 | 25.00 | 8.00 | 64.00 | 120° | 15365 |
| .3150 | | 8.00 | 25.00 | 8.00 | 64.00 | 150° | 15703 |
| .3937 | | 10.00 | 32.00 | 10.00 | 76.00 | 90° | 15471 |
| .3937 | | 10.00 | 32.00 | 10.00 | 76.00 | 120° | 15371 |
| .3937 | | 10.00 | 32.00 | 10.00 | 76.00 | 150° | 15705 |
| .4724 | | 12.00 | 32.00 | 12.00 | 76.00 | 90° | 15474 |
| .4724 | | 12.00 | 32.00 | 12.00 | 76.00 | 120° | 15374 |
| .4724 | | 12.00 | 32.00 | 12.00 | 76.00 | 150° | 15706 |

# 1530 Spade Drill

Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Wood | General Purpose

DRILLS

118°

2 FLUTE

**Basic Information:**
- 118° Point
- 2 Flat Flutes
  - Right Hand Cut
- Standard Uncoated
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Cutting Diameter: +.0000" -.0005"
  +0.000mm -0.013mm

**Designed for Drilling Thin Sheet Metal and Shallow Hole Drilling**

| Cutting Diameter | | | Flute Length | Shank Diameter | Overall Length | EDP Number |
|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | UC |
| .0625 | 1/16 | 1.59 | .3750 | .0625 | 1.5000 | 15301 |
| .0938 | 3/32 | 2.38 | .4375 | .0938 | 1.5000 | 15302 |
| .1250 | 1/8 | 3.18 | .5000 | .1250 | 1.5000 | 15303 |
| .1562 | 5/32 | 3.97 | .5625 | .1562 | 1.5000 | 15304 |
| .1875 | 3/16 | 4.76 | .6875 | .1875 | 2.0000 | 15305 |
| .2188 | 7/32 | 5.56 | .6875 | .2188 | 2.0000 | 15306 |
| .2500 | 1/4 | 6.35 | .8125 | .2500 | 2.0000 | 15307 |
| .2812 | 9/32 | 7.14 | .8750 | .2812 | 2.0000 | 15308 |
| .3125 | 5/16 | 7.94 | .8750 | .3125 | 2.5000 | 15309 |
| .3438 | 11/32 | 8.73 | .9375 | .3438 | 2.5000 | 15310 |
| .3750 | 3/8 | 9.53 | 1.1250 | .3750 | 2.5000 | 15311 |
| .4062 | 13/32 | 10.32 | 1.1250 | .4062 | 2.5000 | 15312 |
| .4375 | 7/16 | 11.11 | 1.1875 | .4375 | 2.5000 | 15313 |
| .4688 | 15/32 | 11.91 | 1.1875 | .4688 | 2.5000 | 15314 |
| .5000 | 1/2 | 12.70 | 1.3125 | .5000 | 2.5000 | 15315 |

# Reamers

***Solid Carbide Reamers***


**industry pioneer**
of quality
**solid carbide reamers**
shipped in
**24 hours or less**

# 1415 Over/Under Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

**Basic Information:**
- Solid Carbide Reamers
- Flute Count Varies by Diameter
- Manufactured Using Female and Male Centers for Improved Concentricity
- Male Centers on Items up to .1124" (2.86mm)
- 45° Lead Angle
- Stub Length
- Standard Uncoated
- Inch Based Tools

**Tolerance:**
- Shank Diameter: +.0005" -.0005"
- Cutter Diameter:
  *up to .2500":* +.0002" -.0000"
  *over .2501":* +.0003" -.0000"

| Cutting Diameter | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number |
|---|---|---|---|---|---|---|---|
| Inch | Millimeter | | | | | | UC |
| .1240 | 3.15 | STB | .6250 | .1094 | 2.2500 | 4 | 14150 |
| .1245 | 3.16 | STB | .6250 | .1094 | 2.2500 | 4 | 14151 |
| .1255 | 3.19 | STB | .6250 | .1094 | 2.2500 | 4 | 14153 |
| .1260 | 3.20 | STB | .6250 | .1094 | 2.2500 | 4 | 14154 |
| .1865 | 4.74 | STB | .8750 | .1719 | 2.7500 | 4 | 14155 |
| .1870 | 4.75 | STB | .8750 | .1719 | 2.7500 | 4 | 14156 |
| .1872 | 4.75 | STB | .8750 | .1719 | 2.7500 | 4 | 14157 |
| .1880 | 4.78 | STB | .8750 | .1719 | 2.7500 | 4 | 14158 |
| .1885 | 4.79 | STB | .8750 | .1719 | 2.7500 | 4 | 14159 |
| .2490 | 6.32 | STB | 1.0000 | .2188 | 3.0000 | 6 | 14160 |
| .2495 | 6.34 | STB | 1.0000 | .2188 | 3.0000 | 6 | 14161 |
| .2497 | 6.34 | STB | 1.0000 | .2188 | 3.0000 | 6 | 14162 |
| .2505 | 6.36 | STB | 1.0000 | .2188 | 3.0000 | 6 | 14163 |
| .2510 | 6.38 | STB | 1.0000 | .2188 | 3.0000 | 6 | 14164 |
| .3115 | 7.91 | STB | 1.1250 | .2812 | 3.2500 | 6 | 14165 |
| .3120 | 7.92 | STB | 1.1250 | .2812 | 3.2500 | 6 | 14166 |
| .3130 | 7.95 | STB | 1.1250 | .2812 | 3.2500 | 6 | 14167 |
| .3135 | 7.96 | STB | 1.1250 | .2812 | 3.2500 | 6 | 14168 |
| .3740 | 9.50 | STB | 1.2500 | .3438 | 3.5000 | 6 | 14169 |
| .3745 | 9.51 | STB | 1.2500 | .3438 | 3.5000 | 6 | 14170 |
| .3755 | 9.54 | STB | 1.2500 | .3438 | 3.5000 | 6 | 14171 |
| .3760 | 9.55 | STB | 1.2500 | .3438 | 3.5000 | 6 | 14172 |
| .4365 | 11.09 | STB | 1.5000 | .4062 | 4.0000 | 6 | 14173 |
| .4370 | 11.10 | STB | 1.5000 | .4062 | 4.0000 | 6 | 14180 |
| .4380 | 11.13 | STB | 1.5000 | .4062 | 4.0000 | 6 | 14181 |
| .4385 | 11.14 | STB | 1.5000 | .4062 | 4.0000 | 6 | 14174 |
| .4990 | 12.67 | STB | 1.5000 | .4688 | 4.0000 | 6 | 14175 |
| .4995 | 12.69 | STB | 1.5000 | .4688 | 4.0000 | 6 | 14182 |
| .5005 | 12.71 | STB | 1.5000 | .4688 | 4.0000 | 6 | 14183 |
| .5010 | 12.73 | STB | 1.5000 | .4688 | 4.0000 | 6 | 14176 |



45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

STB STUB

REAMERS

# 1400 General Purpose Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

**Basic Information:**

- Carbide Reamers
- Flute Count Varies by Diameter
- Manufactured Using Female and Male Centers for Improved Concentricity
- Male centers on items up to .1124" (2.86mm)
- 45° lead angle
- Stub and Standard Lengths
- Standard Uncoated
- Inch and Metric Based Tools

**Tolerance:**

- Shank Diameter: +.0005" -.0005"
  +.013mm -.013mm
- Cutter Diameter:
  *up to .2500":* +0.0002" -.0000"
  *over .2501":* +0.0003" -.0000"
  *up to 6.35mm:* +0.005mm -.000mm
  *over 6.351mm:* +0.008mm -.000mm

† ***Steel Shank Items***

***Due to temperatures reached in the coating process, Fullerton Tool cannot guarantee concentricity on steel shank reamers over .2844" in diameter.***

45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

STB STUB | SD STANDARD

mm METRIC

† *Steel Shank*

| Cutting Diameter | | | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | | | UC |
| **STUB LENGTH (Inch)** | | | | | | | | | |
| .0280 | | 0.71 | 70 | STB | .3750 | .0280 | 1.5000 | 4 | 14001 |
| .0292 | | 0.74 | 69 | STB | .3750 | .0292 | 1.5000 | 4 | 14002 |
| .0310 | | 0.79 | 68 | STB | .3750 | .0310 | 1.5000 | 4 | 14003 |
| .0312 | 1/32 | 0.79 | | STB | .3750 | .0312 | 1.5000 | 4 | 14004 |
| .0320 | | 0.81 | 67 | STB | .3750 | .0312 | 1.5000 | 4 | 14005 |
| .0330 | | 0.84 | 66 | STB | .3750 | .0312 | 1.5000 | 4 | 14006 |
| .0350 | | 0.89 | 65 | STB | .3750 | .0312 | 1.5000 | 4 | 14007 |
| .0360 | | 0.91 | 64 | STB | .3750 | .0312 | 1.5000 | 4 | 14008 |
| .0370 | | 0.94 | 63 | STB | .3750 | .0312 | 1.5000 | 4 | 14009 |
| .0380 | | 0.97 | 62 | STB | .3750 | .0312 | 1.5000 | 4 | 14010 |
| .0390 | | 0.99 | 61 | STB | .3750 | .0312 | 1.5000 | 4 | 14011 |
| .0400 | | 1.02 | 60 | STB | .3750 | .0312 | 1.5000 | 4 | 14013 |
| .0410 | | 1.04 | 59 | STB | .3750 | .0312 | 1.5000 | 4 | 14014 |
| .0420 | | 1.07 | 58 | STB | .3750 | .0312 | 1.5000 | 4 | 14015 |
| .0430 | | 1.09 | 57 | STB | .3750 | .0312 | 1.5000 | 4 | 14016 |
| .0465 | | 1.18 | 56 | STB | .3750 | .0312 | 1.5000 | 4 | 14017 |
| .0469 | 3/64 | 1.19 | | STB | .3750 | .0312 | 1.5000 | 4 | 14018 |
| .0520 | | 1.32 | 55 | STB | .3750 | .0469 | 1.5000 | 4 | 14019 |
| .0550 | | 1.40 | 54 | STB | .3750 | .0469 | 1.5000 | 4 | 14020 |
| .0595 | | 1.51 | 53 | STB | .3750 | .0469 | 1.5000 | 4 | 14023 |
| .0625 | 1/16 | 1.59 | | STB | .3750 | .0469 | 1.5000 | 4 | 14024 |
| .0635 | | 1.61 | 52 | STB | .3750 | .0469 | 1.5000 | 4 | 14025 |
| .0670 | | 1.70 | 51 | STB | .5000 | .0625 | 2.0000 | 4 | 14026 |
| .0700 | | 1.78 | 50 | STB | .5000 | .0625 | 2.0000 | 4 | 14027 |
| .0730 | | 1.85 | 49 | STB | .5000 | .0625 | 2.0000 | 4 | 14028 |
| .0760 | | 1.93 | 48 | STB | .5000 | .0625 | 2.0000 | 4 | 14029 |
| .0781 | 5/64 | 1.98 | | STB | .5000 | .0625 | 2.0000 | 4 | 14030 |
| .0785 | | 1.99 | 47 | STB | .5000 | .0625 | 2.0000 | 4 | 14031 |
| .0810 | | 2.06 | 46 | STB | .5000 | .0781 | 2.0000 | 4 | 14033 |
| .0820 | | 2.08 | 45 | STB | .5000 | .0781 | 2.0000 | 4 | 14034 |

# 1400 General Purpose Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

| Cutting Diameter | | | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | | | UC |
| .0860 | | 2.18 | 44 | STB | .5000 | .0781 | 2.0000 | 4 | 14035 |
| .0890 | | 2.26 | 43 | STB | .5000 | .0781 | 2.0000 | 4 | 14036 |
| .0935 | | 2.37 | 42 | STB | .5000 | .0781 | 2.0000 | 4 | 14037 |
| .0938 | 3/32 | 2.38 | | STB | .5000 | .0781 | 2.0000 | 4 | 14038 |
| .0960 | | 2.44 | 41 | STB | .5000 | .0781 | 2.0000 | 4 | 14039 |
| .0980 | | 2.49 | 40 | STB | .6250 | .0938 | 2.2500 | 4 | 14040 |
| .0995 | | 2.53 | 39 | STB | .6250 | .0938 | 2.2500 | 4 | 14042 |
| .1015 | | 2.58 | 38 | STB | .6250 | .0938 | 2.2500 | 4 | 14043 |
| .1040 | | 2.64 | 37 | STB | .6250 | .0938 | 2.2500 | 4 | 14044 |
| .1065 | | 2.71 | 36 | STB | .6250 | .0938 | 2.2500 | 4 | 14045 |
| .1094 | 7/64 | 2.78 | | STB | .6250 | .0938 | 2.2500 | 4 | 14046 |
| .1100 | | 2.79 | 35 | STB | .6250 | .0938 | 2.2500 | 4 | 14047 |
| .1110 | | 2.82 | 34 | STB | .6250 | .0938 | 2.2500 | 4 | 14048 |
| .1130 | | 2.87 | 33 | STB | .6250 | .1094 | 2.2500 | 4 | 14049 |
| .1160 | | 2.95 | 32 | STB | .6250 | .1094 | 2.2500 | 4 | 14050 |
| .1200 | | 3.05 | 31 | STB | .6250 | .1094 | 2.2500 | 4 | 14052 |
| .1250 | 1/8 | 3.18 | | STB | .6250 | .1094 | 2.2500 | 4 | 14053 |
| .1285 | | 3.26 | 30 | STB | .7500 | .1250 | 2.5000 | 4 | 14054 |
| .1360 | | 3.45 | 29 | STB | .7500 | .1250 | 2.5000 | 4 | 14055 |
| .1405 | | 3.57 | 28 | STB | .7500 | .1250 | 2.5000 | 4 | 14057 |
| .1406 | 9/64 | 3.57 | | STB | .7500 | .1250 | 2.5000 | 4 | 14058 |
| .1440 | | 3.66 | 27 | STB | .7500 | .1250 | 2.5000 | 4 | 14059 |
| .1470 | | 3.73 | 26 | STB | .7500 | .1406 | 2.5000 | 4 | 14060 |
| .1495 | | 3.80 | 25 | STB | .7500 | .1406 | 2.5000 | 4 | 14061 |
| .1520 | | 3.86 | 24 | STB | .7500 | .1406 | 2.5000 | 4 | 14062 |
| .1540 | | 3.91 | 23 | STB | .7500 | .1406 | 2.5000 | 4 | 14063 |
| .1562 | 5/32 | 3.97 | | STB | .7500 | .1406 | 2.5000 | 4 | 14064 |
| .1570 | | 3.99 | 22 | STB | .7500 | .1406 | 2.5000 | 4 | 14065 |
| .1590 | | 4.04 | 21 | STB | .7500 | .1406 | 2.5000 | 4 | 14067 |
| .1610 | | 4.09 | 20 | STB | .8750 | .1562 | 2.7500 | 4 | 14068 |
| .1660 | | 4.22 | 19 | STB | .8750 | .1562 | 2.7500 | 4 | 14069 |
| .1695 | | 4.31 | 18 | STB | .8750 | .1562 | 2.7500 | 4 | 14070 |
| .1719 | 11/64 | 4.37 | | STB | .8750 | .1562 | 2.7500 | 4 | 14071 |
| .1730 | | 4.39 | 17 | STB | .8750 | .1562 | 2.7500 | 4 | 14072 |
| .1770 | | 4.50 | 16 | STB | .8750 | .1719 | 2.7500 | 4 | 14073 |
| .1800 | | 4.57 | 15 | STB | .8750 | .1719 | 2.7500 | 4 | 14075 |
| .1820 | | 4.62 | 14 | STB | .8750 | .1719 | 2.7500 | 4 | 14076 |
| .1850 | | 4.70 | 13 | STB | .8750 | .1719 | 2.7500 | 4 | 14077 |
| .1875 | 3/16 | 4.76 | | STB | .8750 | .1719 | 2.7500 | 4 | 14078 |
| .1890 | | 4.80 | 12 | STB | .8750 | .1719 | 2.7500 | 4 | 14079 |
| .1910 | | 4.85 | 11 | STB | .8750 | .1719 | 2.7500 | 4 | 14080 |
| .1935 | | 4.91 | 10 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14081 |
| .1960 | | 4.98 | 9 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14082 |
| .1990 | | 5.05 | 8 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14084 |
| .2010 | | 5.11 | 7 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14085 |
| .2031 | 13/64 | 5.16 | | STB | 1.0000 | .1875 | 3.0000 | 6 | 14086 |
| .2040 | | 5.18 | 6 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14087 |
| .2055 | | 5.22 | 5 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14088 |
| .2090 | | 5.31 | 4 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14089 |
| .2130 | | 5.41 | 3 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14090 |
| .2188 | 7/32 | 5.56 | | STB | 1.0000 | .1875 | 3.0000 | 6 | 14092 |
| .2210 | | 5.61 | 2 | STB | 1.0000 | .1875 | 3.0000 | 6 | 14093 |
| .2280 | | 5.79 | 1 | STB | 1.0000 | .2188 | 3.0000 | 6 | 14094 |
| .2344 | 15/64 | 5.95 | | STB | 1.0000 | .2188 | 3.0000 | 6 | 14096 |

REAMERS

45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

STB STUB | SD STANDARD

mm METRIC

† Steel Shank

REAMERS

# 1400 General Purpose Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

STB STUB | SD STANDARD

mm METRIC

† Steel Shank

| Cutting Diameter | | | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | | | UC |
| .2500 | 1/4 | 6.35 | | STB | 1.0000 | .2188 | 3.0000 | 6 | 14098 |
| .2656 | 17/64 | 6.75 | | STB | 1.1250 | .2500 | 3.2500 | 6 | 14100 |
| .2812 | 9/32 | 7.14 | | STB | 1.1250 | .2500 | 3.2500 | 6 | 14102 |
| .2969 | 19/64 | 7.54 | | STB | 1.1250 | .2812 | 3.2500 | 6 | 14104 |
| .3125 | 5/16 | 7.94 | | STB | 1.1250 | .2812 | 3.2500 | 6 | 14105 |
| .3281 | 21/64 | 8.33 | | STB | 1.2500 | .3125 | 3.5000 | 6 | 14107 |
| .3438 | 11/32 | 8.73 | | STB | 1.2500 | .3125 | 3.5000 | 6 | 14109 |
| .3594 | 23/64 | 9.13 | | STB | 1.2500 | .3438 | 3.5000 | 6 | 14111 |
| .3750 | 3/8 | 9.53 | | STB | 1.2500 | .3438 | 3.5000 | 6 | 14113 |
| .3906 | 25/64 | 9.92 | | STB | 1.5000 | .3750 | 4.0000 | 6 | 14114 |
| .4062 | 13/32 | 10.32 | | STB | 1.5000 | .3750 | 4.0000 | 6 | 14116 |
| .4219 | 27/64 | 10.72 | | STB | 1.5000 | .4062 | 4.0000 | 6 | 14118 |
| .4375 | 7/16 | 11.11 | | STB | 1.5000 | .4062 | 4.0000 | 6 | 14120 |
| .4531 | 29/64 | 11.51 | | STB | 1.5000 | .4375 | 4.0000 | 6 | 14122 |
| .4688 | 15/32 | 11.91 | | STB | 1.5000 | .4375 | 4.0000 | 6 | 14123 |
| .4844 | 31/64 | 12.30 | | STB | 1.5000 | .4688 | 4.0000 | 6 | 14125 |
| .5000 | 1/2 | 12.70 | | STB | 1.5000 | .4688 | 4.0000 | 6 | 14127 |
| **STANDARD LENGTH (Inch)** | | | | | | | | | |
| .1250 | 1/8 | 3.18 | | SD | .8750 | .1094 | 3.5000 | 4 | 14511 |
| .1406 | 9/64 | 3.57 | | SD | .8750 | .1250 | 3.5000 | 4 | 14512 |
| .1562 | 5/32 | 3.97 | | SD | 1.0000 | .1406 | 4.0000 | 4 | 14513 |
| .1719 | 11/64 | 4.37 | | SD | 1.0000 | .1562 | 4.0000 | 4 | 14514 |
| .1875 | 3/16 | 4.76 | | SD | 1.1250 | .1719 | 4.5000 | 4 | 14515 |
| .2031 | 13/64 | 5.16 | | SD | 1.2500 | .1875 | 5.0000 | 6 | 14516 |
| .2188 | 7/32 | 5.56 | | SD | 1.2500 | .1875 | 5.0000 | 6 | 14517 |
| .2344 | 15/64 | 5.95 | | SD | 1.2500 | .2188 | 6.0000 | 6 | 14518 |
| .2500 | 1/4 | 6.35 | | SD | 1.5000 | .2188 | 6.0000 | 6 | 14519 |
| .2656 | 17/64 | 6.75 | | SD | 1.5000 | .2500 | 6.0000 | 6 | 14520 |
| .2812 | 9/32 | 7.14 | | SD | 1.5000 | .2500 | 6.0000 | 6 | 14521 |
| .2969 | 19/64 | 7.54 | | SD | 1.6250 | .2812 | 6.0000 | 6 | 14522† |
| .3125 | 5/16 | 7.94 | | SD | 1.6250 | .2812 | 6.0000 | 6 | 14523† |
| .3281 | 21/64 | 8.33 | | SD | 1.6250 | .3125 | 6.0000 | 6 | 14524† |
| .3438 | 11/32 | 8.73 | | SD | 1.6250 | .3125 | 6.0000 | 6 | 14525† |
| .3594 | 23/64 | 9.13 | | SD | 1.7500 | .3438 | 7.0000 | 6 | 14526† |
| .3750 | 3/8 | 9.53 | | SD | 1.7500 | .3438 | 7.0000 | 6 | 14527† |
| .3906 | 25/64 | 9.92 | | SD | 1.7500 | .3750 | 7.0000 | 6 | 14528† |
| .4062 | 13/32 | 10.32 | | SD | 1.7500 | .3750 | 7.0000 | 6 | 14529† |
| .4219 | 27/64 | 10.72 | | SD | 1.7500 | .4062 | 7.0000 | 6 | 14530† |
| .4375 | 7/16 | 11.11 | | SD | 1.7500 | .4062 | 7.0000 | 6 | 14531† |
| .4531 | 29/64 | 11.51 | | SD | 1.7500 | .4375 | 8.0000 | 6 | 14532† |
| .4688 | 15/32 | 11.91 | | SD | 1.7500 | .4375 | 8.0000 | 6 | 14533† |
| .4844 | 31/64 | 12.30 | | SD | 1.7500 | .4688 | 8.0000 | 6 | 14534† |
| .5000 | 1/2 | 12.70 | | SD | 1.7500 | .4688 | 8.0000 | 6 | 14535† |
| .5625 | 9/16 | 14.29 | | SD | 1.8750 | .5000 | 9.0000 | 6 | 14536† |
| .6250 | 5/8 | 15.88 | | SD | 1.8750 | .5625 | 9.0000 | 6 | 14537† |
| .6875 | 11/16 | 17.46 | | SD | 2.0000 | .6250 | 9.5000 | 6 | 14538† |
| .7500 | 3/4 | 19.05 | | SD | 2.0000 | .6875 | 9.5000 | 6 | 14539† |
| .8750 | 7/8 | 22.23 | | SD | 2.0000 | .8438 | 10.0000 | 8 | 14540† |
| 1.0000 | 1 | 25.40 | | SD | 2.0000 | .9688 | 10.0000 | 8 | 14541† |
| **STUB LENGTH METRIC (Millimeter)** | | | | | | | | | |
| .0394 | | 1.00 | | STB | 10.00 | 0.79 | 38.00 | 4 | 14012 |
| .0591 | | 1.50 | | STB | 10.00 | 1.19 | 38.00 | 4 | 14022 |

# 1400 General Purpose Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

| Cutting Diameter | | | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | Wire/Letter | | | | | | UC |
| .0787 | | 2.00 | | STB | 12.00 | 1.59 | 50.00 | 4 | 14032 |
| .0984 | | 2.50 | | STB | 16.00 | 2.38 | 57.00 | 4 | 14041 |
| .1181 | | 3.00 | | STB | 16.00 | 2.78 | 57.00 | 4 | 14051 |
| .1378 | | 3.50 | | STB | 20.00 | 3.18 | 63.00 | 4 | 14056 |
| .1575 | | 4.00 | | STB | 20.00 | 3.57 | 63.00 | 4 | 14066 |
| .1772 | | 4.50 | | STB | 22.00 | 4.37 | 70.00 | 4 | 14074 |
| .1969 | | 5.00 | | STB | 25.00 | 4.76 | 76.00 | 6 | 14083 |
| .2165 | | 5.50 | | STB | 25.00 | 4.76 | 76.00 | 6 | 14091 |
| .2362 | | 6.00 | | STB | 25.00 | 5.56 | 76.00 | 6 | 14097 |
| .2559 | | 6.50 | | STB | 28.00 | 6.35 | 83.00 | 6 | 14099 |
| .2756 | | 7.00 | | STB | 28.00 | 6.35 | 83.00 | 6 | 14101 |
| .2953 | | 7.50 | | STB | 28.00 | 7.14 | 83.00 | 6 | 14103 |
| .3150 | | 8.00 | | STB | 28.00 | 7.14 | 83.00 | 6 | 14106 |
| .3346 | | 8.50 | | STB | 32.00 | 7.94 | 89.00 | 6 | 14108 |
| .3543 | | 9.00 | | STB | 32.00 | 8.73 | 89.00 | 6 | 14110 |
| .3740 | | 9.50 | | STB | 32.00 | 8.73 | 89.00 | 6 | 14112 |
| .3937 | | 10.00 | | STB | 38.00 | 9.53 | 101.00 | 6 | 14115 |
| .4134 | | 10.50 | | STB | 38.00 | 10.32 | 101.00 | 6 | 14117 |
| .4331 | | 11.00 | | STB | 38.00 | 10.32 | 101.00 | 6 | 14119 |
| .4528 | | 11.50 | | STB | 38.00 | 11.11 | 101.00 | 6 | 14121 |
| .4724 | | 12.00 | | STB | 38.00 | 11.11 | 101.00 | 6 | 14124 |
| .4921 | | 12.50 | | STB | 38.00 | 11.91 | 101.00 | 6 | 14126 |

REAMERS

45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

STB STUB | SD STANDARD

mm METRIC

† *Steel Shank*

REAMERS

# 1410 JIT Decimal Size Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

STB STUB

**Just in Time**
**24-Hour JIT Delivery**
Decimal-Sized Reamers

3:00 P.M. EST Order Deadline

**12** PIECES OR LESS All Styles

***Straight Flute Standard Sizes Available in 1400 Series***

**Basic Information:**

- Straight (ST), Left Hand (LH) Spiral, and Right Hand (RH) Spiral Flutes Available *(S in EDP Number Designates ST Flute, L in EDP Number Designates LH Spiral, and R in EDP Number Designates RH Spiral)*
- Available with Coatings at Tolerances as Low as .0001" *(Additional Charges May Apply)*
- Solid Carbide Reamers
- Manufactured Using Female and Male Centers for Improved Concentricity
- Male Centers on Items up to .1124" (2.86mm)
- 45° Lead Angle
- Stub Length
- Standard Uncoated
- Inch Based Tools

**Tolerance:**

- Shank Diameter: +.0005" -.0005"
  +.013mm -.013mm
- Cutter Diameter:
  *up to .2500":* +0.0002" -.0000"
  *over: .2501":* +0.0003" -.0000"
  *up to 6.35mm:* +0.005mm -.000mm
  *over 6.351mm:* +0.008mm -.000mm
  ***.0001" Tolerances Available (+20%)***

**Same Day Delivery if Ordered by 11 AM (EST) - add 20% to Price**

**Straight Flutes** For all types of general reaming applications.

**LH Spiral Flutes** Produces better finishes on hard materials such as heat-treated steels. Shear action is excellent for holes with interruptions; i.e., keyways, elongated slots, etc.

**RH Spiral Flutes** For blind holes and abrasive, ductile materials. Do not use for holes with interruptions unless material is reasonably soft.

| Size Range | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Millimeter | | | | | | ST | LH | RH |
| .0312 — .0394 | 0.80 — 1.00 | STB | .3750 | .0312 | 1.5000 | 4 | 1410S01 | 1410L01 | 1410R01 |
| .0395 — .0484 | 1.01 — 1.23 | STB | .3750 | .0312 | 1.5000 | 4 | 1410S02 | 1410L02 | 1410R02 |
| .0485 — .0574 | 1.24 — 1.46 | STB | .3750 | .0469 | 1.5000 | 4 | 1410S03 | 1410L03 | 1410R03 |
| .0575 — .0654 | 1.47 — 1.66 | STB | .3750 | .0469 | 1.5000 | 4 | 1410S04 | 1410L04 | 1410R04 |
| .0655 — .0804 | 1.67 — 2.04 | STB | .5000 | .0625 | 2.0000 | 4 | 1410S05 | 1410L05 | 1410R05 |
| .0805 — .0964 | 2.05 — 2.45 | STB | .5000 | .0781 | 2.0000 | 4 | 1410S06 | 1410L06 | 1410R06 |
| .0965 — .1124 | 2.46 — 2.85 | STB | .6250 | .0938 | 2.2500 | 4 | 1410S07 | 1410L07 | 1410R07 |
| .1125 — .1284 | 2.86 — 3.26 | STB | .6250 | .1094 | 2.2500 | 4 | 1410S08 | 1410L08 | 1410R08 |
| .1285 — .1444 | 3.27 — 3.67 | STB | .7500 | .1250 | 2.5000 | 4 | 1410S09 | 1410L09 | 1410R09 |
| .1445 — .1594 | 3.68 — 4.05 | STB | .7500 | .1406 | 2.5000 | 4 | 1410S10 | 1410L10 | 1410R10 |
| .1595 — .1744 | 4.06 — 4.43 | STB | .8750 | .1562 | 2.7500 | 4 | 1410S11 | 1410L11 | 1410R11 |
| .1745 — .1914 | 4.44 — 4.86 | STB | .8750 | .1719 | 2.7500 | 4 | 1410S12 | 1410L12 | 1410R12 |
| .1915 — .2234 | 4.87 — 5.67 | STB | 1.0000 | .1875 | 3.0000 | 6 | 1410S13 | 1410L13 | 1410R13 |
| .2235 — .2544 | 5.68 — 6.46 | STB | 1.0000 | .2188 | 3.0000 | 6 | 1410S14 | 1410L14 | 1410R14 |
| .2545 — .2844 | 6.47 — 7.22 | STB | 1.1250 | .2500 | 3.2500 | 6 | 1410S15 | 1410L15 | 1410R15 |
| .2845 — .3164 | 7.23 — 8.03 | STB | 1.1250 | .2812 | 3.2500 | 6 | 1410S16 | 1410L16 | 1410R16 |
| .3165 — .3484 | 8.04 — 8.85 | STB | 1.2500 | .3125 | 3.5000 | 6 | 1410S17 | 1410L17 | 1410R17 |

# 1410 JIT Decimal Size Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

| Size Range | | | | | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | | | Millimeter | | | | | | | | ST | LH | RH |
| .3485 | — | .3794 | 8.86 | — | 9.63 | STB | 1.2500 | .3438 | 3.5000 | 6 | 1410S18 | 1410L18 | 1410R18 |
| .3795 | — | .4104 | 9.64 | — | 10.42 | STB | 1.5000 | .3750 | 4.0000 | 6 | 1410S19 | 1410L19 | 1410R19 |
| .4105 | — | .4414 | 10.43 | — | 11.21 | STB | 1.5000 | .4062 | 4.0000 | 6 | 1410S20 | 1410L20 | 1410R20 |
| .4415 | — | .4724 | 11.22 | — | 12.00 | STB | 1.5000 | .4375 | 4.0000 | 6 | 1410S21 | 1410L21 | 1410R21 |
| .4725 | — | .5054 | 12.01 | — | 12.84 | STB | 1.5000 | .4688 | 4.0000 | 6 | 1410S22 | 1410L22 | 1410R22 |

REAMERS

45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

STB STUB

REAMERS

# 1450 JIT Decimal Size Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

SD STANDARD

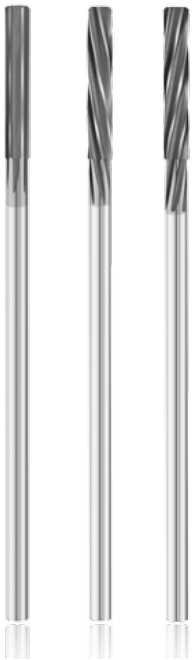
† *Steel Shank*

**Just in Time**
**24-Hour JIT Delivery**
Decimal-Sized Reamers

3:00 P.M. EST Order Deadline

**12** PIECES OR LESS All Styles

***Straight Flute Standard Sizes Available in 1400 Series***



**Basic Information:**

- Straight (ST), Left Hand (LH) Spiral, and Right Hand (RH) Spiral Flutes Available *(S in EDP Number Designates ST Flute, L in EDP Number Designates LH Spiral, and R in EDP Number Designates RH Spiral)*
- Available with Coatings at Tolerances as Low as .0001" *(Additional Charges May Apply)*
- Steel Shanks on Items with Cutting Diameter .2845" and over
- Female Centers
- 45° Lead Angle
- Standard Length
- Standard Uncoated
- Inch Based Tools

**Tolerance:**

- Shank Diameter: +.0005" -.0005"
  +.013mm -.013mm
- Cutter Diameter:
  *up to .2500":* +0.0002" -.0000"
  *over .2501":* +0.0003" -.0000"
  *up to 6.35mm:* +0.005mm -.000mm
  *over 6.351mm:* +0.008mm -.000mm
  ***.0001" Tolerances Available (+20%)***

**Same Day Delivery if Ordered by 11 AM (EST) - add 20% to Price**

† *Steel Shank Items*

***Due to temperatures reached in the coating process, Fullerton Tool cannot guarantee concentricity on reamers over .2844" in diameter.***

**Straight Flutes** For all types of general reaming applications.

**LH Spiral Flutes** Produces better finishes on hard materials such as heat-treated steels. Shear action is excellent for holes with interruptions; i.e., keyways, elongated slots, etc.

**RH Spiral Flutes** For blind holes and abrasive, ductile materials. Do not use for holes with interruptions unless material is reasonably soft.

| Size Range | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Millimeter | | | | | | ST | LH | RH |
| .1105 — .1284 | 2.81 — 3.26 | SD | .8750 | .1094 | 3.5000 | 4 | 1450S01 | 1450L01 | 1450R01 |
| .1285 — .1444 | 3.27 — 3.67 | SD | .8750 | .1250 | 3.5000 | 4 | 1450S02 | 1450L02 | 1450R02 |
| .1445 — .1594 | 3.68 — 4.05 | SD | 1.0000 | .1406 | 4.0000 | 4 | 1450S03 | 1450L03 | 1450R03 |
| .1595 — .1744 | 4.06 — 4.43 | SD | 1.0000 | .1562 | 4.0000 | 4 | 1450S04 | 1450L04 | 1450R04 |
| .1745 — .1914 | 4.44 — 4.86 | SD | 1.1250 | .1719 | 4.5000 | 4 | 1450S05 | 1450L05 | 1450R05 |
| .1915 — .2234 | 4.87 — 5.67 | SD | 1.2500 | .1875 | 5.0000 | 6 | 1450S06 | 1450L06 | 1450R06 |
| .2235 — .2544 | 5.68 — 6.46 | SD | 1.5000 | .2188 | 6.0000 | 6 | 1450S07 | 1450L07 | 1450R07 |
| .2545 — .2844 | 6.47 — 7.22 | SD | 1.5000 | .2500 | 6.0000 | 6 | 1450S08 | 1450L08 | 1450R08 |
| .2845 — .3164 | 7.23 — 8.03 | SD | 1.6250 | .2812 | 6.0000 | 6 | 1450S09† | 1450L09† | 1450R09† |
| .3165 — .3484 | 8.04 — 8.85 | SD | 1.6250 | .3125 | 6.0000 | 6 | 1450S10† | 1450L10† | 1450R10† |
| .3485 — .3794 | 8.86 — 9.63 | SD | 1.7500 | .3438 | 7.0000 | 6 | 1450S11† | 1450L11† | 1450R11† |
| .3795 — .4104 | 9.64 — 10.42 | SD | 1.7500 | .3750 | 7.0000 | 6 | 1450S12† | 1450L12† | 1450R12† |
| .4105 — .4414 | 10.43 — 11.21 | SD | 1.7500 | .4062 | 7.0000 | 6 | 1450S13† | 1450L13† | 1450R13† |
| .4415 — .4724 | 11.22 — 12.00 | SD | 1.7500 | .4375 | 8.0000 | 6 | 1450S14† | 1450L14† | 1450R14† |

# 1450 JIT Decimal Size Reamers

Titanium | Super Alloys | Hardened Steels >48RC | Stainless Steels | Steels | Cast Iron | Graphite | Brass & Copper | High Si Al >10% | Low Si Al <10% | Composites | Plastics | Wood | General Purpose

| Size Range | | | | | | Tool Length Style | Flute Length | Shank Diameter | Overall Length | Number of Flutes | EDP Number | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inch | | | Millimeter | | | | | | | | ST | LH | RH |
| .4725 | — | .5054 | 12.01 | — | 12.84 | SD | 1.7500 | .4688 | 8.0000 | 6 | 1450S15† | 1450L15† | 1450R15† |
| .5055 | — | .5360 | 12.84 | — | 13.61 | SD | 1.8750 | .5000 | 9.0000 | 6 | 1450S16† | 1450L16† | 1450R16† |
| .5361 | — | .5670 | 13.62 | — | 14.40 | SD | 1.8750 | .5000 | 9.0000 | 6 | 1450S16B† | 1450L16B† | 1450R16B† |
| .5671 | — | .5990 | 14.41 | — | 15.21 | SD | 1.8750 | .5625 | 9.0000 | 6 | 1450S17† | 1450L17† | 1450R17† |
| .5991 | — | .6300 | 15.22 | — | 16.00 | SD | 1.8750 | .5625 | 9.0000 | 6 | 1450S17B† | 1450L17B† | 1450R17B† |
| .6301 | — | .6630 | 16.01 | — | 16.84 | SD | 2.0000 | .6250 | 9.5000 | 6 | 1450S18† | 1450L18† | 1450R18† |
| .6631 | — | .6930 | 16.85 | — | 17.60 | SD | 2.0000 | .6250 | 9.5000 | 6 | 1450S18B† | 1450L18B† | 1450R18B† |
| .6931 | — | .7250 | 17.61 | — | 18.41 | SD | 2.0000 | .6875 | 9.5000 | 6 | 1450S19† | 1450L19† | 1450R19† |
| .7251 | — | .7560 | 18.42 | — | 19.20 | SD | 2.0000 | .6875 | 9.5000 | 6 | 1450S19B† | 1450L19B† | 1450R19B† |
| .7561 | — | .7870 | 19.21 | — | 19.99 | SD | 2.0000 | .7500 | 10.0000 | 8 | 1450S20† | 1450L20† | 1450R20† |
| .7871 | — | .8190 | 20.00 | — | 20.80 | SD | 2.0000 | .7812 | 10.0000 | 8 | 1450S21† | 1450L21† | 1450R21† |
| .8191 | — | .8500 | 20.81 | — | 21.59 | SD | 2.0000 | .8125 | 10.0000 | 8 | 1450S22† | 1450L22† | 1450R22† |
| .8501 | — | .8820 | 21.60 | — | 22.40 | SD | 2.0000 | .8438 | 10.0000 | 8 | 1450S23† | 1450L23† | 1450R23† |
| .8821 | — | .9120 | 22.41 | — | 23.16 | SD | 2.0000 | .8750 | 10.0000 | 8 | 1450S24† | 1450L24† | 1450R24† |
| .9121 | — | .9440 | 23.17 | — | 23.98 | SD | 2.0000 | .9062 | 10.0000 | 8 | 1450S25† | 1450L25† | 1450R25† |
| .9441 | — | .9760 | 23.99 | — | 24.79 | SD | 2.0000 | .9375 | 10.0000 | 8 | 1450S26† | 1450L26† | 1450R26† |
| .9761 | — | 1.0100 | 24.80 | — | 25.65 | SD | 2.0000 | .9688 | 10.0000 | 8 | 1450S27† | 1450L27† | 1450R27† |

† *Steel Shank*

REAMERS

45° CHAMFER

NUMBER OF FLUTES VARY BY DIAMETER

SD STANDARD

# Saws

***Solid Carbide Saws***

**solid carbide saws** manufacturing by providing **outstanding lead times** and unbeatable **quality**

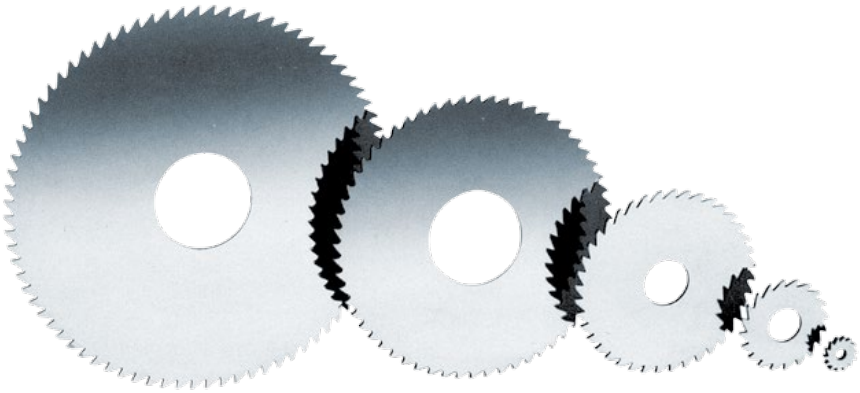
# 2450 JIT Solid Carbide Saws



3:00 P.M. EST Order Deadline

**Just in Time**
**24-Hour JIT Delivery**
Carbide Saws

**6** PIECES OR LESS



**Basic Information:**

- JIT Item:
  - 1–6 pieces 24-Hours
  - 7–12 pieces 48-Hours
  - 13–25 pieces 5 Working Days
  - 50+ pieces Contact Fullerton Tool
- .2500–6.0000″ Outside Diameters (OD) Available
- .1250–1.000″ Inside Diameter Available Depending on OD Size
- .006–.250″ Thicknesses Available Depending on OD Size
- .0005″ Concavity per Inch of Diameter for Clearance
- Solid Carbide Saws
- Standard Uncoated
- Inch Based Tools

**Tolerance:**

- Cutter Diameter: +.015″ -.015″
- Hole Diameter: +.0005″ -.0000″
- Thickness: +.00025″ -.00025″

| Decimal Cutter Diameter | Decimal Size Range | Arbor Hole Diameter | Number of Teeth | EDP Number UC |
|---|---|---|---|---|
| .2500 | .0100 — .0350 | .1250 | 12 | 2450001 |
| .3125 | .0100 — .0350 | .1250 | 12 | 2450002 |
| .3750 | .0060 — .0259 | .1250 | 14 | 2450003 |
| .3750 | .0260 — .0630 | .1250 | 14 | 2450004 |
| .5000 | .0060 — .0349 | .1875 | 14 | 2450005 |
| .5000 | .0350 — .0630 | .1875 | 14 | 2450006 |
| .6250 | .0060 — .0149 | .2500 | 16 | 2450007 |
| .6250 | .0150 — .0409 | .2500 | 16 | 2450008 |
| .6250 | .0410 — .0630 | .2500 | 16 | 2450009 |
| .7500 | .0060 — .0149 | .2500 | 18 | 2450010 |
| .7500 | .0150 — .0409 | .2500 | 18 | 2450011 |
| .7500 | .0410 — .0639 | .2500 | 18 | 2450012 |
| .7500 | .0640 — .0949 | .2500 | 18 | 2450013 |
| .7500 | .0950 — .1300 | .2500 | 18 | 2450014 |
| 1.0000 | .0100 — .0199 | .2500 | 20 | 2450015 |
| 1.0000 | .0100 — .0199 | .3125 | 20 | 2450016 |
| 1.0000 | .0100 — .0199 | .3750 | 20 | 2450017 |

| Decimal Cutter Diameter | Decimal Size Range | Arbor Hole Diameter | Number of Teeth | EDP Number UC |
|---|---|---|---|---|
| 1.0000 | .0200 — .0409 | .2500 | 20 | 2450018 |
| 1.0000 | .0200 — .0409 | .3125 | 20 | 2450019 |
| 1.0000 | .0200 — .0409 | .3750 | 20 | 2450020 |
| 1.0000 | .0410 — .0639 | .2500 | 20 | 2450021 |
| 1.0000 | .0410 — .0639 | .3125 | 20 | 2450022 |
| 1.0000 | .0410 — .0639 | .3750 | 20 | 2450023 |
| 1.0000 | .0640 — .0949 | .2500 | 20 | 2450024 |
| 1.0000 | .0640 — .0949 | .3125 | 20 | 2450025 |
| 1.0000 | .0640 — .0949 | .3750 | 20 | 2450026 |
| 1.0000 | .0950 — .1300 | .2500 | 20 | 2450027 |
| 1.0000 | .0950 — .1300 | .3125 | 20 | 2450028 |
| 1.0000 | .0950 — .1300 | .3750 | 20 | 2450029 |
| 1.2500 | .0100 — .0199 | .3125 | 24 | 2450031 |
| 1.2500 | .0100 — .0199 | .3750 | 24 | 2450030 |
| 1.2500 | .0100 — .0199 | .5000 | 24 | 2450032 |
| 1.2500 | .0200 — .0459 | .3125 | 24 | 2450034 |
| 1.2500 | .0200 — .0459 | .3750 | 24 | 2450033 |

SAWS

# 2450 JIT Solid Carbide Saws

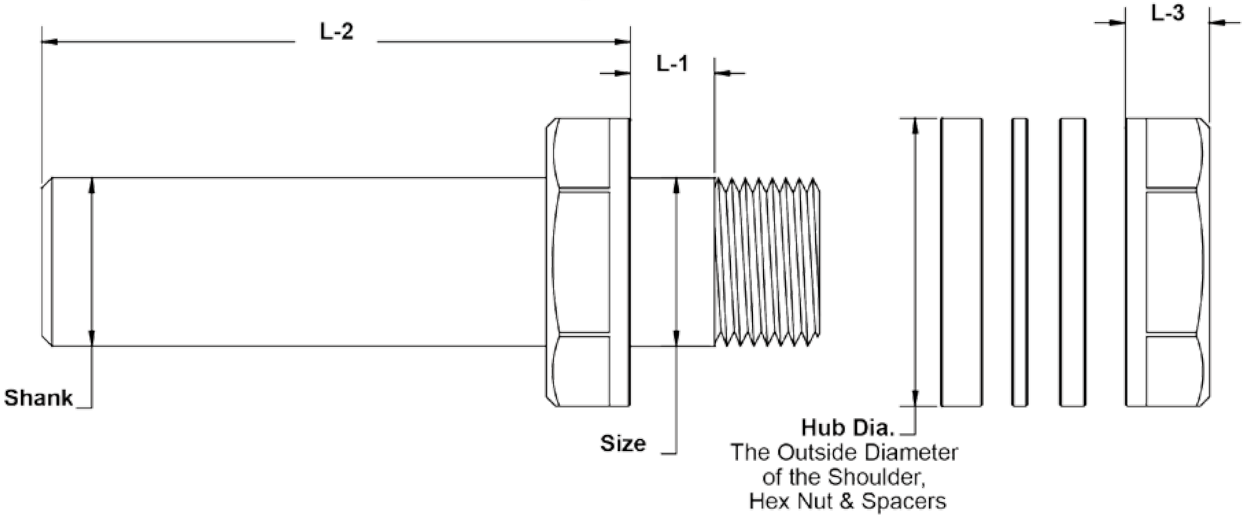
| Decimal Cutter Diameter | Decimal Size Range | Arbor Hole Diameter | Number of Teeth | EDP Number UC |
|---|---|---|---|---|
| 1.2500 | .0200 — .0459 | .5000 | 24 | 2450035 |
| 1.2500 | .0460 — .0639 | .3125 | 24 | 2450037 |
| 1.2500 | .0460 — .0639 | .3750 | 24 | 2450036 |
| 1.2500 | .0460 — .0639 | .5000 | 24 | 2450038 |
| 1.2500 | .0640 — .0949 | .3125 | 24 | 2450040 |
| 1.2500 | .0640 — .0949 | .3750 | 24 | 2450039 |
| 1.2500 | .0640 — .0949 | .5000 | 24 | 2450041 |
| 1.2500 | .0950 — .1300 | .3125 | 24 | 2450043 |
| 1.2500 | .0950 — .1300 | .3750 | 24 | 2450042 |
| 1.2500 | .0950 — .1300 | .5000 | 24 | 2450044 |
| 1.5000 | .0100 — .0199 | .5000 | 36 | 2450045 |
| 1.5000 | .0200 — .0459 | .5000 | 36 | 2450046 |
| 1.5000 | .0460 — .0639 | .5000 | 36 | 2450047 |
| 1.5000 | .0640 — .0949 | .5000 | 36 | 2450048 |
| 1.5000 | .0950 — .1300 | .5000 | 36 | 2450049 |
| 1.7500 | .0100 — .0199 | .5000 | 38 | 2450050 |
| 1.7500 | .0200 — .0459 | .5000 | 38 | 2450051 |
| 1.7500 | .0460 — .0639 | .5000 | 38 | 2450052 |
| 1.7500 | .0640 — .0949 | .5000 | 38 | 2450053 |
| 1.7500 | .0950 — .1300 | .5000 | 38 | 2450054 |
| 2.0000 | .0100 — .0199 | .5000 | 40 | 2450055 |
| 2.0000 | .0100 — .0199 | 1.0000 | 40 | 2450056 |
| 2.0000 | .0200 — .0459 | .5000 | 40 | 2450057 |
| 2.0000 | .0200 — .0459 | 1.0000 | 40 | 2450058 |
| 2.0000 | .0460 — .0639 | .5000 | 40 | 2450059 |
| 2.0000 | .0460 — .0639 | 1.0000 | 40 | 2450060 |
| 2.0000 | .0640 — .0949 | .5000 | 40 | 2450061 |
| 2.0000 | .0640 — .0949 | 1.0000 | 40 | 2450062 |
| 2.0000 | .0950 — .1300 | .5000 | 40 | 2450063 |
| 2.0000 | .0950 — .1300 | 1.0000 | 40 | 2450064 |
| 2.2500 | .0100 — .0199 | .6250 | 44 | 2450065 |
| 2.2500 | .0100 — .0199 | 1.0000 | 44 | 2450066 |
| 2.2500 | .0200 — .0459 | .6250 | 44 | 2450067 |
| 2.2500 | .0200 — .0459 | 1.0000 | 44 | 2450068 |
| 2.2500 | .0460 — .0639 | .6250 | 44 | 2450069 |
| 2.2500 | .0460 — .0639 | 1.0000 | 44 | 2450070 |
| 2.2500 | .0640 — .0949 | .6250 | 44 | 2450071 |

| Decimal Cutter Diameter | Decimal Size Range | Arbor Hole Diameter | Number of Teeth | EDP Number UC |
|---|---|---|---|---|
| 2.2500 | .0640 — .0949 | 1.0000 | 44 | 2450072 |
| 2.2500 | .0950 — .1300 | .6250 | 44 | 2450073 |
| 2.2500 | .0950 — .1300 | 1.0000 | 44 | 2450074 |
| 2.5000 | .0100 — .0199 | 1.0000 | 48 | 2450075 |
| 2.5000 | .0200 — .0459 | 1.0000 | 48 | 2450076 |
| 2.5000 | .0460 — .0639 | 1.0000 | 48 | 2450077 |
| 2.5000 | .0640 — .0949 | 1.0000 | 48 | 2450078 |
| 2.5000 | .0950 — .1300 | 1.0000 | 48 | 2450079 |
| 2.7500 | .0100 — .0199 | 1.0000 | 60 | 2450080 |
| 2.7500 | .0200 — .0459 | 1.0000 | 60 | 2450081 |
| 2.7500 | .0460 — .0649 | 1.0000 | 60 | 2450082 |
| 2.7500 | .0650 — .0949 | 1.0000 | 60 | 2450083 |
| 2.7500 | .0950 — .1300 | 1.0000 | 60 | 2450084 |
| 3.0000 | .0100 — .0199 | 1.0000 | 72 | 2450085 |
| 3.0000 | .0200 — .0459 | 1.0000 | 72 | 2450086 |
| 3.0000 | .0460 — .0649 | 1.0000 | 72 | 2450087 |
| 3.0000 | .0650 — .0949 | 1.0000 | 72 | 2450088 |
| 3.0000 | .0950 — .1259 | 1.0000 | 72 | 2450089 |
| 3.0000 | .1260 — .1889 | 1.0000 | 72 | 2450090 |
| 3.0000 | .1890 — .2500 | 1.0000 | 72 | 2450091 |
| 3.5000 | .0200 — .0399 | 1.0000 | 76 | 2450092 |
| 3.5000 | .0400 — .0649 | 1.0000 | 76 | 2450093 |
| 3.5000 | .0650 — .0949 | 1.0000 | 76 | 2450094 |
| 3.5000 | .0950 — .1300 | 1.0000 | 76 | 2450095 |
| 4.0000 | .0200 — .0399 | 1.0000 | 80 | 2450096 |
| 4.0000 | .0400 — .0639 | 1.0000 | 80 | 2450097 |
| 4.0000 | .0640 — .0949 | 1.0000 | 80 | 2450098 |
| 4.0000 | .0950 — .1259 | 1.0000 | 80 | 2450099 |
| 4.0000 | .1260 — .1889 | 1.0000 | 80 | 2450100 |
| 4.0000 | .1890 — .2500 | 1.0000 | 80 | 2450101 |
| 5.0000 | .0450 — .0639 | 1.0000 | 100 | 2450102 |
| 5.0000 | .0640 — .0949 | 1.0000 | 100 | 2450103 |
| 5.0000 | .0950 — .1300 | 1.0000 | 100 | 2450104 |
| 6.0000 | .0450 — .0639 | 1.0000 | 120 | 2450105 |
| 6.0000 | .0640 — .0949 | 1.0000 | 120 | 2450106 |
| 6.0000 | .0950 — .1300 | 1.0000 | 120 | 2450107 |

# Saw Arbors

***For Carbide or High Speed Steel Saws***






| Decimal Arbor Size | Shank Size | L-1 | L-2 | L-3 | Hub Diameter | Spacers with Each Arbor | EDP Number UC |
|---|---|---|---|---|---|---|---|
| .2500 | .5000 | .2600 | 2.2000 | .2500 | .5700 | .0625 / .1250 / .1875 | 24250 |
| .3750 | .6250 | .3750 | 2.4000 | .2800 | .7100 | .0625 / .1250 / .1875 | 24375 |
| .5000 | .7500 | .5000 | 3.0000 | .3250 | .8550 | .0625 / .1875 / .2500 | 24500 |
| .6250 | .8750 | .5000 | 3.1500 | .3900 | 1.0750 | .0625 / .1875 / .2500 | 24625 |
| 1.0000 | 1.0000 | .5000 | 3.5000 | .4400 | 1.4800 | .0625 / .1875 / .2500 | 24100 |

KEYSEAT CUTTERS

# 4375 Keyseat Cutters

**Basic Information:**

- Carbide Keyseat Cutters (Woodruff Cutter)
- Flute Count Varies by Diameter
- Straight Flutes
- Nominal Diameters
- American Standard Face Widths
- .5000 Inch Diameter Steel Shank
- Standard Uncoated
- Inch Based Tools
- Dura Carb III

**Tolerance:**

| | | |
|---|---|---|
| • .5000 Diameter Shank: | +.0005″ | -.0005″ |
| | +.013mm | -.013mm |
| • Cutting Head Diameter: | | |
| *.3750–.7500″ DIA* | +.010″ | +.015″ |
| *.8750–1.5000″ DIA* | +.012″ | +.017″ |
| • Face Width: | +.0000″ | -.0005″ |
| • Neck Length: | .2500″ | |

† *1.1250–1.5000 Cutter Diameter are Solid Carbide*

NUMBER OF FLUTES VARY BY DIAMETER

† *Solid Carbide*

| Nominal Decimal Cutter Diameter | Nominal Fractional Cutter Diameter | American Standards Number | Face Width | Neck Diameter | Shank Diameter | Overall Length | Number of Flutes | EDP Number UC |
|---|---|---|---|---|---|---|---|---|
| .3750 | 3/8 | | .0312 | .2030 | .5000 | 2.0312 | 8 | 43900 |
| .3750 | 3/8 | | .0469 | .2030 | .5000 | 2.0469 | 8 | 43901 |
| .3750 | 3/8 | 203 | .0625 | .2030 | .5000 | 2.0625 | 8 | 43302 |
| .3750 | 3/8 | 303 | .0938 | .2030 | .5000 | 2.0938 | 8 | 43303 |
| .3750 | 3/8 | 403 | .1250 | .2030 | .5000 | 2.1250 | 8 | 43403 |
| .5000 | 1/2 | | .0312 | .2500 | .5000 | 2.0312 | 10 | 43902 |
| .5000 | 1/2 | | .0469 | .2500 | .5000 | 2.0469 | 10 | 43903 |
| .5000 | 1/2 | 204 | .0625 | .2500 | .5000 | 2.0625 | 10 | 43240 |
| .5000 | 1/2 | | .0781 | .2500 | .5000 | 2.0781 | 10 | 43904 |
| .5000 | 1/2 | 304 | .0938 | .2500 | .5000 | 2.0938 | 10 | 43304 |
| .5000 | 1/2 | | .1094 | .2500 | .5000 | 2.1093 | 10 | 43905 |
| .5000 | 1/2 | 404 | .1250 | .2500 | .5000 | 2.1250 | 10 | 43404 |
| .6250 | 5/8 | | .0312 | .2810 | .5000 | 2.0312 | 10 | 43906 |
| .6250 | 5/8 | | .0469 | .2810 | .5000 | 2.0469 | 10 | 43907 |
| .6250 | 5/8 | | .0625 | .2810 | .5000 | 2.0625 | 10 | 43908 |
| .6250 | 5/8 | | .0781 | .2810 | .5000 | 2.0781 | 10 | 43909 |
| .6250 | 5/8 | 305 | .0938 | .2810 | .5000 | 2.0938 | 10 | 43305 |
| .6250 | 5/8 | | .1094 | .2810 | .5000 | 2.1093 | 10 | 43910 |
| .6250 | 5/8 | 405 | .1250 | .2810 | .5000 | 2.1250 | 10 | 43405 |
| .6250 | 5/8 | | .1406 | .2810 | .5000 | 2.1406 | 10 | 43911 |
| .6250 | 5/8 | 505 | .1562 | .2810 | .5000 | 2.1562 | 10 | 43505 |
| .6250 | 5/8 | 605 | .1875 | .2810 | .5000 | 2.1875 | 10 | 43605 |
| .7500 | 3/4 | | .0312 | .2810 | .5000 | 2.0312 | 10 | 43912 |
| .7500 | 3/4 | | .0469 | .2810 | .5000 | 2.0469 | 10 | 43913 |
| .7500 | 3/4 | | .0625 | .2810 | .5000 | 2.0625 | 10 | 43914 |
| .7500 | 3/4 | | .0781 | .2810 | .5000 | 2.0781 | 10 | 43915 |
| .7500 | 3/4 | | .0938 | .2810 | .5000 | 2.0938 | 10 | 43916 |
| .7500 | 3/4 | | .1094 | .2810 | .5000 | 2.1093 | 10 | 43917 |
| .7500 | 3/4 | 406 | .1250 | .2810 | .5000 | 2.1250 | 10 | 43406 |
| .7500 | 3/4 | | .1406 | .2810 | .5000 | 2.1406 | 10 | 43918 |
| .7500 | 3/4 | 506 | .1562 | .2810 | .5000 | 2.1562 | 10 | 43506 |
| .7500 | 3/4 | 606 | .1875 | .2810 | .5000 | 2.1875 | 10 | 43606 |
| .7500 | 3/4 | | .2031 | .2810 | .5000 | 2.2031 | 10 | 43919 |
| .7500 | 3/4 | | .2188 | .2810 | .5000 | 2.2188 | 10 | 43920 |
| .7500 | 3/4 | | .2344 | .2810 | .5000 | 2.2343 | 10 | 43921 |

# 4375 Keyseat Cutters



| Nominal Decimal Cutter Diameter | Nominal Fractional Cutter Diameter | American Standards Number | Face Width | Neck Diameter | Shank Diameter | Overall Length | Number of Flutes | EDP Number UC |
|---|---|---|---|---|---|---|---|---|
| .7500 | 3/4 | 806 | .2500 | .2810 | .5000 | 2.2500 | 10 | 43806 |
| .8750 | 7/8 | | .0625 | .2810 | .5000 | 2.0625 | 12 | 43922 |
| .8750 | 7/8 | | .1250 | .2810 | .5000 | 2.1250 | 12 | 43923 |
| .8750 | 7/8 | 507 | .1562 | .2810 | .5000 | 2.1562 | 12 | 43507 |
| .8750 | 7/8 | 607 | .1875 | .2810 | .5000 | 2.1875 | 12 | 43607 |
| .8750 | 7/8 | 707 | .2188 | .2810 | .5000 | 2.2188 | 12 | 43707 |
| .8750 | 7/8 | 807 | .2500 | .2810 | .5000 | 2.2500 | 12 | 43807 |
| 1.0000 | 1 | | .0312 | .2810 | .5000 | 2.0312 | 12 | 43924 |
| 1.0000 | 1 | | .0469 | .2810 | .5000 | 2.0469 | 12 | 43925 |
| 1.0000 | 1 | | .0625 | .2810 | .5000 | 2.0625 | 12 | 43926 |
| 1.0000 | 1 | | .0781 | .2810 | .5000 | 2.0781 | 12 | 43927 |
| 1.0000 | 1 | | .0938 | .2810 | .5000 | 2.0938 | 12 | 43928 |
| 1.0000 | 1 | | .1250 | .2810 | .5000 | 2.1250 | 12 | 43929 |
| 1.0000 | 1 | | .1562 | .2810 | .5000 | 2.1562 | 12 | 43930 |
| 1.0000 | 1 | 608 | .1875 | .2810 | .5000 | 2.1875 | 12 | 43608 |
| 1.0000 | 1 | 708 | .2188 | .2810 | .5000 | 2.2188 | 12 | 43708 |
| 1.0000 | 1 | 808 | .2500 | .2810 | .5000 | 2.2500 | 12 | 43808 |
| 1.1250 | 1-1/8 | | .1250 | .2810 | .5000 | 2.1250 | 14 | 43931† |
| 1.1250 | 1-1/8 | 609 | .1875 | .2810 | .5000 | 2.1875 | 14 | 43609† |
| 1.1250 | 1-1/8 | 709 | .2188 | .2810 | .5000 | 2.2188 | 14 | 43709† |
| 1.1250 | 1-1/8 | 809 | .2500 | .2810 | .5000 | 2.2500 | 14 | 43809† |
| 1.2500 | 1-1/4 | | .0312 | .2810 | .5000 | 2.0312 | 14 | 43932† |
| 1.2500 | 1-1/4 | | .0625 | .2810 | .5000 | 2.0625 | 14 | 43933† |
| 1.2500 | 1-1/4 | | .0938 | .2810 | .5000 | 2.0938 | 14 | 43934† |
| 1.2500 | 1-1/4 | | .1250 | .2810 | .5000 | 2.1250 | 14 | 43935† |
| 1.2500 | 1-1/4 | | .1562 | .2810 | .5000 | 2.1562 | 14 | 43936† |
| 1.2500 | 1-1/4 | 610 | .1875 | .2810 | .5000 | 2.1875 | 14 | 43610† |
| 1.2500 | 1-1/4 | 710 | .2188 | .2810 | .5000 | 2.2188 | 14 | 43710† |
| 1.2500 | 1-1/4 | 810 | .2500 | .2810 | .5000 | 2.2500 | 14 | 43810† |
| 1.5000 | 1-1/2 | | .0312 | .3750 | .5000 | 2.0312 | 16 | 43937† |
| 1.5000 | 1-1/2 | | .0625 | .3750 | .5000 | 2.0625 | 16 | 43938† |
| 1.5000 | 1-1/2 | | .0938 | .3750 | .5000 | 2.0938 | 16 | 43939† |
| 1.5000 | 1-1/2 | | .1250 | .3750 | .5000 | 2.1250 | 16 | 43940† |
| 1.5000 | 1-1/2 | | .1875 | .3750 | .5000 | 2.1875 | 16 | 43941† |
| 1.5000 | 1-1/2 | 812 | .2500 | .3750 | .5000 | 2.2500 | 16 | 43812† |
| 1.5000 | 1-1/2 | 1012 | .3125 | .3750 | .5000 | 2.3125 | 16 | 43000† |
| 1.5000 | 1-1/2 | 1212 | .3750 | .3750 | .5000 | 2.3750 | 16 | 43212† |

NUMBER OF FLUTES VARY BY DIAMETER

† *Solid Carbide*

# 4375E JIT Keyseat Cutters

5:00 P.M. EST Order Deadline

**Just in Time**
**24-Hour JIT Delivery**
Keyseat Cutters
Intermediate Thickness

**12 PIECES OR LESS**

**COST: Add the following costs to the list price.**

| 1 | 2 | 3 | 4-7 | 8-11 | 12-15 | 16+ |
|---|---|---|---|---|---|---|
| 32.50 | 16.00 | 14.00 | 10.50 | 7.00 | 4.00 | N/C |

**Basic Information:**

- 4375 Keyseat Cutters are Available in 24 Hours with Special Cutter Thicknesses on 12 Pieces or Less
- Must be Thinner than Standard Face Widths

# Rotary File/Burr Selection Guide

***Basic Cuts and Their Recommended Usage***

WHEN ORDERING SPECIFY TOOL # OR EDP # AND SPECIFIC CUT REQUIRED

**SINGLE CUT #1**

Single cut is a general purpose tool designed for cast iron, steel, some copper and brass, and other ferrous materials. It will give good material removal and good workpiece finishes.

**CHIP BREAKER CUT #2**

The addition of a chip breaker will reduce sliver size and improve operator control at a slightly reduced surface finish.

AVAILABLE ON QUOTE ONLY

**DOUBLE CUT #3**

The double cut allows for rapid stock removal in harder materials. The addition of the left hand flutes reduces the pulling action, which allows for better operator control. It reduces the size of the chips, and it can be used at slower than normal speeds.

**DIAMOND CUT #4**

The diamond cut is very effective in heat treated and tough alloy steels, producing extremely small chips. It offers very good operator control with good stock removal at the sacrifice of finish. The diamond grind will reduce tool life, however.

AVAILABLE ON ALL BURRS—ADD 20% TO LIST PRICE OF #1 CUT

**FAST MILL CUT #5**

For use on non-ferrous and non-metallic materials. It is designed for rapid stock removal with minimum chip loading.

STANDARD ITEMS LISTED ON PGS 175–181

NOTE: CHIP BREAKER, COARSE, AND FINE CUTS ARE ONLY AVAILABLE ON QUOTE

## GENERAL RECOMMENDATIONS

For maximum control and to prevent whipping and chatter, insert the shank into the chuck as far as possible.

Avoid excessive pressure, which slows the spindle speed and damages the cutting edge. Avoid operating the burr beyond normal resharpening, otherwise resultant heat and pressure will cause excessive chipping and possible braze failure.

**Metric Sized Shanks**

All burrs on page 175 thru 181 with a head diameter of .3125" or larger, with the exception of extended shanks, are available with a 6mm diameter shank. They will retain standard fractional cutting diameters and cutting length.

**Add $2.50 to the list price.**

# Burr SA/SB

***.2500" Shank Diameters***



## SA

Cylindrical

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .1250 | 1/8 | 3.18 | .6250 | 2.0000 | SA-12 | 41007 | 41009 | |
| .1875 | 3/16 | 4.76 | .6250 | 2.0000 | SA-14 | 41014 | 41016 | |
| .2500 | 1/4 | 6.35 | .6250 | 2.0000 | SA-1 | 41000 | 41002 | 41004 |
| .2500 | 1/4 | 6.35 | 1.0000 | 2.0000 | SA-1A | 41035 | 41037 | |
| .3125 | 5/16 | 7.94 | .7500 | 2.5000 | SA-2 | 41049 | 41051 | |
| .3750 | 3/8 | 9.53 | .7500 | 2.5000 | SA-3 | 41063 | 41065 | 41067 |
| .3750 | 3/8 | 9.53 | 1.0000 | 2.7500 | SA-3A | 41070 | 41072 | |
| .3750 | 3/8 | 9.53 | 1.5000 | 3.2500 | SA-3B | 41077 | 41079 | |
| .4375 | 7/16 | 11.11 | 1.0000 | 2.7500 | SA-4 | 41091 | 41093 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 2.7500 | SA-5 | 41098 | 41100 | 41102 |
| .6250 | 5/8 | 15.88 | 1.0000 | 2.7500 | SA-6 | 41112 | 41114 | 41116 |
| .7500 | 3/4 | 19.05 | .5000 | 2.5000 | SA-15 | 41021 | 41023 | |
| .7500 | 3/4 | 19.05 | .7500 | 2.5000 | SA-16 | 41028 | 41030 | |
| .7500 | 3/4 | 19.05 | 1.0000 | 2.7500 | SA-7 | 41119 | 41121 | 41123 |
| 1.000 | 1 | 25.40 | 1.0000 | 2.7500 | SA-9 | 41126 | 41128 | |
| EXTENDED SHANK | | | | | | | | |
| .2500 | 1/4 | 6.35 | .5000 | 6.5000 | SA-1x6 | 41042 | 41044 | |
| .3750 | 3/8 | 9.53 | .7500 | 6.7500 | SA-3x6 | 41084 | 41086 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 7.0000 | SA-5x6 | 41105 | 41107 | |

## SB

Cylindrical End Cut

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .1250 | 1/8 | 3.18 | .6250 | 2.0000 | SB-12 | 40100 | 40102 | |
| .1875 | 3/16 | 4.76 | .6250 | 2.0000 | SB-14 | 40107 | 40109 | |
| .2500 | 1/4 | 6.35 | .6250 | 2.0000 | SB-1 | 40142 | 40144 | 40104 |
| .2500 | 1/4 | 6.35 | 1.0000 | 2.0000 | SB-1A | 40135 | 40137 | |
| .3125 | 5/16 | 7.94 | .7500 | 2.5000 | SB-2 | 40149 | 40151 | |
| .3125 | 5/16 | 7.94 | 1.0000 | 2.7500 | SB-2A | 40156 | 40158 | |
| .3750 | 3/8 | 9.53 | .7500 | 2.5000 | SB-3 | 40163 | 40165 | 40167 |
| .3750 | 3/8 | 9.53 | 1.0000 | 2.7500 | SB-3A | 40170 | 40172 | |
| .3750 | 3/8 | 9.53 | 1.5000 | 2.32500 | SB-3B | 40177 | 40179 | |
| .4375 | 7/16 | 11.11 | 1.0000 | 2.7500 | SB-4 | 40191 | 40193 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 2.7500 | SB-5 | 40198 | 40200 | 40202 |
| .6250 | 5/8 | 15.88 | 1.0000 | 2.7500 | SB-6 | 40212 | 40214 | 40216 |
| .7500 | 3/4 | 19.05 | .5000 | 2.5000 | SB-15 | 40121 | 40123 | |
| .7500 | 3/4 | 19.05 | .7500 | 2.5000 | SB-16 | 40128 | 40130 | |
| .7500 | 3/4 | 19.05 | 1.0000 | 2.7500 | SB-7 | 40219 | 40221 | 40223 |
| 1.0000 | 1 | 25.40 | 1.0000 | 2.7500 | SB-9 | 40226 | 40228 | |
| EXTENDED SHANK | | | | | | | | |
| .2500 | 1/4 | 6.35 | .5000 | 6.5000 | SB-1x6 | 40114 | 40116 | |
| .3750 | 3/8 | 9.53 | .7500 | 6.7500 | SB-3x6 | 40184 | 40186 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 7.0000 | SB-5x6 | 40205 | 40207 | |

All above Burrs available with #4 Diamond Cut. Add 20% to list price of #1 cut.
All Burrs .3125" diameter and larger furnished with .2500" x 1.7500" steel shanks.

**Metric Sized Shanks**

All burrs on page 175 thru 181 with a head diameter of .3125" or larger, with the exception of extended shanks, are available with a 6mm diameter shank. They will retain standard fractional cutting diameters and cutting length.

**Add $2.50 to the list price.**

# Burr SC/SD

***.2500" Shank Diameters***

## SC

Cylindrical Ball Nose

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .1250 | 1/8 | 3.18 | .6250 | 2.0000 | SC-12 | 42132 | 42134 | |
| .1875 | 3/16 | 4.76 | .6250 | 2.0000 | SC-14 | 42139 | 42141 | |
| .2500 | 1/4 | 6.35 | .6250 | 2.0000 | SC-1 | 42125 | 42127 | 42129 |
| .2500 | 1/4 | 6.35 | 1.0000 | 2.0000 | SC-1A | 42146 | 42148 | |
| .3125 | 5/16 | 7.94 | .7500 | 2.5000 | SC-2 | 42160 | 42162 | |
| .3125 | 5/16 | 7.94 | 1.0000 | 2.7500 | SC-2A | 42189 | 42191 | |
| .3750 | 3/8 | 9.53 | .7500 | 2.5000 | SC-3 | 42197 | 42199 | 42201 |
| .3750 | 3/8 | 9.53 | 1.0000 | 2.7500 | SC-3A | 42204 | 42206 | |
| .3750 | 3/8 | 9.53 | 1.5000 | 3.2500 | SC-3B | 42211 | 42213 | |
| .4375 | 7/16 | 11.11 | 1.0000 | 2.7500 | SC-4 | 42225 | 42227 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 2.7500 | SC-5 | 42232 | 42234 | 42236 |
| .6250 | 5/8 | 15.88 | 1.0000 | 2.7500 | SC-6 | 42171 | 42173 | 42175 |
| .7500 | 3/4 | 19.05 | 1.0000 | 2.7500 | SC-7 | 42178 | 42180 | 42182 |
| EXTENDED SHANK | | | | | | | | |
| .2500 | 1/4 | 6.35 | .5000 | 6.5000 | SC-1x6 | 42153 | 42155 | |
| .3750 | 3/8 | 9.53 | .7500 | 6.7500 | SC-3x6 | 42218 | 42220 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 7.0000 | SC-5x6 | 42164 | 42166 | |

## SD

Ball Shape

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .1250 | 1/8 | 3.18 | .1250 | 2.0000 | SD-12 | 43132 | 43134 | |
| .1875 | 3/16 | 4.76 | .1875 | 2.0000 | SD-14 | 43139 | 43141 | |
| .2500 | 1/4 | 6.35 | .2500 | 2.0000 | SD-1 | 43125 | 43127 | 43129 |
| .3125 | 5/16 | 7.94 | .3125 | 2.2500 | SD-2 | 43153 | 43155 | |
| .3750 | 3/8 | 9.53 | .3750 | 2.1250 | SD-3 | 43160 | 43162 | 43164 |
| .4375 | 7/16 | 11.11 | .4375 | 2.1250 | SD-4 | 43174 | 43176 | |
| .5000 | 1/2 | 12.70 | .5000 | 2.2500 | SD-5 | 43181 | 43183 | 43185 |
| .6250 | 5/8 | 15.88 | .6250 | 2.2500 | SD-6 | 43195 | 43197 | 43199 |
| .7500 | 3/4 | 19.05 | .7500 | 2.5000 | SD-7 | 43202 | 43204 | |
| 1.0000 | 1 | 25.40 | 1.0000 | 2.7500 | SD-9 | 43100 | 43102 | |
| EXTENDED SHANK | | | | | | | | |
| .2500 | 1/4 | 6.35 | .2500 | 6.2500 | SD-1x6 | 43146 | 43148 | |
| .3750 | 3/8 | 9.53 | .3750 | 6.3750 | SD-3x6 | 43167 | 43169 | |
| .5000 | 1/2 | 12.70 | .5000 | 6.5000 | SD-5x6 | 43188 | 43190 | |

All above Burrs available with #4 Diamond Cut. Add 20% to list price of #1 cut.
All Burrs .3125" diameter and larger furnished with .2500" x 1.7500" steel shanks.

**Metric Sized Shanks**

All burrs on page 175 thru 181 with a head diameter of .3125" or larger, with the exception of extended shanks, are available with a 6mm diameter shank. They will retain standard fractional cutting diameters and cutting length.

**Add $2.50 to the list price.**

# Burr SE/SF

***.2500" Shank Diameter***



## SE

Egg Shape

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .1875 | 3/16 | 4.76 | .3125 | 2.0000 | SE-11 | 44194 | 44196 | |
| .2500 | 1/4 | 6.35 | .3750 | 2.0000 | SE-1 | 44187 | 44189 | 44191 |
| .3750 | 3/8 | 9.53 | .6250 | 2.3750 | SE-3 | 44208 | 44210 | 44212 |
| .5000 | 1/2 | 12.70 | .8750 | 2.6250 | SE-5 | 44222 | 44224 | 44226 |
| .6250 | 5/8 | 15.88 | 1.0000 | 2.7500 | SE-6 | 44236 | 44238 | |
| .7500 | 3/4 | 19.05 | 1.0000 | 2.7500 | SE-7 | 44243 | 44245 | |
| EXTENDED SHANK | | | | | | | | |
| .2500 | 1/4 | 6.35 | .3750 | 6.3750 | SE-1x6 | 44201 | 44203 | |
| .3750 | 3/8 | 9.53 | .6250 | 6.6250 | SE-3x6 | 44215 | 44217 | |
| .5000 | 1/2 | 12.70 | .8750 | 6.8750 | SE-5x6 | 44229 | 44231 | |

## SF

Round Tree Cut

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .2500 | 1/4 | 6.35 | .5000 | 2.0000 | SF-1 | 45256 | 45258 | 45260 |
| .3750 | 3/8 | 9.53 | .7500 | 2.5000 | SF-3 | 45291 | 45339 | 45294 |
| .4375 | 7/16 | 11.11 | 1.0000 | 2.7500 | SF-4 | 45304 | 45306 | |
| .5000 | 1/2 | 12.70 | .7500 | 2.5000 | SF-13 | 45263 | 45265 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 2.7500 | SF-5 | 45311 | 45313 | 45315 |
| .6250 | 5/8 | 15.88 | 1.0000 | 2.7500 | SF-6 | 45325 | 45327 | 45329 |
| .7500 | 3/4 | 19.05 | 1.0000 | 3.0000 | SF-7 | 45332 | 45334 | |
| .7500 | 3/4 | 19.05 | 1.2500 | 3.0000 | SF-14 | 45270 | 45272 | |
| .7500 | 3/4 | 19.05 | 1.5000 | 3.0000 | SF-15 | 45277 | 45279 | |
| EXTENDED SHANK | | | | | | | | |
| .2500 | 1/4 | 6.35 | .5000 | 6.5000 | SF-1x6 | 45284 | 45286 | |
| .3750 | 3/8 | 9.53 | .7500 | 6.7500 | SF-3x6 | 45297 | 45299 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 7.0000 | SF-5x6 | 45318 | 45320 | |

All above Burrs available with #4 Diamond Cut. Add 20% to list price of #1 cut.
All Burrs .3125" diameter and larger furnished with .2500" x 1.7500" steel shanks.

**Metric Sized Shanks**

All burrs on page 175 thru 181 with a head diameter of .3125" or larger, with the exception of extended shanks, are available with a 6mm diameter shank. They will retain standard fractional cutting diameters and cutting length.

**Add $2.50 to the list price.**

# Burr SG/SM

***.2500" Shank Diameter***

## SG

Pointed Tree Shape

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .2500 | 1/4 | 6.35 | .6250 | 2.0000 | SG-1 | 46100 | 46102 | 46104 |
| .3125 | 5/16 | 7.94 | .7500 | 2.5000 | SG-2 | 46128 | 46130 | |
| .3750 | 3/8 | 9.53 | .7500 | 2.5000 | SG-3 | 46135 | 46137 | 46139 |
| .5000 | 1/2 | 12.70 | .7500 | 2.5000 | SG-13 | 46107 | 46109 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 2.7500 | SG-5 | 46149 | 46151 | 46153 |
| .6250 | 3/8 | 15.88 | 1.0000 | 2.7500 | SG-6 | 46163 | 46165 | 46167 |
| .7500 | 3/4 | 19.05 | 1.0000 | 2.7500 | SG-7 | 46170 | 46172 | |
| .7500 | 3/4 | 19.05 | 1.5000 | 3.2500 | SG-15 | 46114 | 46116 | |
| EXTENDED SHANK | | | | | | | | |
| .2500 | 1/4 | 6.35 | .5000 | 6.5000 | SG-1x6 | 46121 | 46123 | |
| .3750 | 3/8 | 9.53 | .7500 | 6.7500 | SG-3x6 | 46142 | 46144 | |
| .5000 | 1/2 | 12.70 | 1.0000 | 7.0000 | SG-5x6 | 46156 | 46158 | |

## SM

Cone Shape

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut |
| .2500 | 1/4 | 6.35 | .5000 | 2.0000 | SM-1 | 47250 | 47252 |
| .2500 | 1/4 | 6.35 | .7500 | 2.0000 | SM-2 | 47257 | 47259 |
| .2500 | 1/4 | 6.35 | 1.0000 | 2.5000 | SM-3 | 47264 | 47266 |
| .2500 | 1/4 | 6.35 | 1.2500 | 2.5000 | SM-3A | 47271 | 47273 |
| .3750 | 3/8 | 9.53 | .6250 | 2.5000 | SM-4 | 47278 | 47280 |
| .5000 | 1/2 | 12.70 | .8750 | 2.7500 | SM-5 | 47285 | 47287 |
| .6250 | 5/8 | 15.88 | 1.0000 | 3.0000 | SM-6 | 47292 | 47294 |

All above Burrs available with #4 Diamond Cut. Add 20% to list price of #1 cut.
All Burrs .3125" diameter and larger furnished with .2500" x 1.7500" steel shanks.

**Metric Sized Shanks**

All burrs on page 175 thru 181 with a head diameter of .3125" or larger, with the exception of extended shanks, are available with a 6mm diameter shank. They will retain standard fractional cutting diameters and cutting length.

**Add $2.50 to the list price.**

# Burr SL/SH

***.2500" Shank Diameter***



## SL

14° Included

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .2500 | 1/4 | 6.35 | .6250 | 2.0000 | SL-1 | 48250 | 48252 | |
| .3125 | 5/16 | 7.94 | .8750 | 2.7500 | SL-2 | 48257 | 48259 | |
| .3750 | 3/8 | 9.53 | 1.0625 | 3.0000 | SL-3 | 48271 | 48273 | 48275 |
| .5000 | 1/2 | 12.70 | 1.1250 | 3.0000 | SL-4 | 48285 | 48287 | 48289 |
| .6250 | 5/8 | 15.88 | 1.3125 | 3.2500 | SL-6 | 48299 | 48301 | |
| .7500 | 3/4 | 19.05 | 1.5000 | 3.2500 | SL-7 | 48306 | 48308 | |
| EXTENDED SHANK | | | | | | | | |
| .3125 | 5/16 | 7.94 | .8750 | 7.0000 | SL-2x6 | 48264 | 48266 | |
| .3750 | 3/8 | 9.53 | 1.0625 | 7.1250 | SL-3x6 | 48278 | 48280 | |
| .5000 | 1/2 | 12.70 | 1.1250 | 7.2500 | SL-4x6 | 48292 | 48294 | |

## SH

Flame

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .2500 | 1/4 | 6.35 | .6250 | 2.0000 | SH-1 | 49250 | 49252 | |
| .3125 | 5/16 | 7.94 | .7500 | 2.5000 | SH-2 | 49257 | 49259 | 49261 |
| .5000 | 1/2 | 12.70 | 1.2500 | 3.0000 | SH-5 | 49271 | 49273 | |
| .6250 | 5/8 | 15.88 | 1.4375 | 3.2500 | SH-6 | 49285 | 49287 | |
| .7500 | 3/4 | 19.05 | 1.6250 | 3.5000 | SH-7 | 49292 | 49294 | |
| EXTENDED SHANK | | | | | | | | |
| .3125 | 5/16 | 7.94 | .7500 | 6.7500 | SH-2x6 | 49264 | 49266 | |
| .5000 | 1/2 | 12.70 | 1.2500 | 7.2500 | SH-5x6 | 49278 | 49280 | |

All above Burrs available with #4 Diamond Cut. Add 20% to list price of #1 cut.
All Burrs .3125" diameter and larger furnished with .2500" x 1.7500" steel shanks.

**Metric Sized Shanks**

All burrs on page 175 thru 181 with a head diameter of .3125" or larger, with the exception of extended shanks, are available with a 6mm diameter shank. They will retain standard fractional cutting diameters and cutting length.

**Add $2.50 to the list price.**

# Burr SK/SJ

***.2500" Shank Diameter***

## SK

90° Included

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut |
| .2500 | 1/4 | 6.35 | .1250 | 2.0000 | SK-1 | 50250† | 50252† |
| .3750 | 3/8 | 9.53 | .1875 | 2.1250 | SK-3 | 50264 | 50266 |
| .5000 | 1/2 | 12.70 | .2500 | 2.1250 | SK-5 | 50271 | 50273 |
| .6250 | 5/8 | 15.88 | .3125 | 2.2500 | SK-6 | 50278 | 50280 |
| .7500 | 3/4 | 19.05 | .3750 | 2.3750 | SK-7 | 50285 | 50287 |
| .8750 | 7/8 | 22.23 | .4375 | 2.5000 | SK-8 | 50292 | 50294 |
| 1.0000 | 1 | 25.40 | .5000 | 2.5000 | SK-9 | 50299 | 50301 |

† *Double End*

## SJ

60° Included

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | EDP Number | | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | #1 Cut | #3 Cut | #5 Cut |
| .2500 | 1/4 | 6.35 | .1875 | 2.0000 | SJ-1 | 51001† | 51003† | |
| .3125 | 5/16 | 7.94 | .2500 | 2.2500 | SJ-2 | 51008 | 51010 | |
| .3750 | 3/8 | 9.53 | .3125 | 2.2500 | SJ-3 | 51015 | 51017 | 51019 |
| .5000 | 1/2 | 12.70 | .4375 | 2.3750 | SJ-5 | 51022 | 51024 | |
| .6250 | 5/8 | 15.88 | .5000 | 2.5000 | SJ-6 | 51029 | 51031 | |
| .7500 | 3/4 | 19.05 | .6250 | 2.6250 | SJ-7 | 51036 | 51038 | |
| .8750 | 7/8 | 22.23 | .7500 | 2.7500 | SJ-8 | 51043 | 51045 | |
| 1.0000 | 1 | 25.40 | .8750 | 2.7500 | SJ-9 | 51050 | 51052 | |

All above Burrs available with #4 Diamond Cut. Add 20% to list price of #1 cut.
All Burrs .3125" diameter and larger furnished with .2500" x 1.7500" steel shanks.

**Metric Sized Shanks**

All burrs on page 175 thru 181 with a head diameter of .3125" or larger, with the exception of extended shanks, are available with a 6mm diameter shank. They will retain standard fractional cutting diameters and cutting length.

**Add $2.50 to the list price.**

# Burr SN/SNE

***.2500" Shank Diameter***



## SN

Inverted Cone

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | Included Angle | EDP Number | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | #1 Cut | #3 Cut |
| .2500 | 1/4 | 6.35 | .3125 | 2.0000 | SN-1 | 10° | 52250 | 52252 |
| .3750 | 3/8 | 9.53 | .3750 | 2.1250 | SN-2 | 13° | 52257 | 52259 |
| .5000 | 1/2 | 12.70 | .5000 | 2.2500 | SN-3 | 16° | 52264 | 52266 |
| .6250 | 5/8 | 15.88 | .7500 | 2.5000 | SN-6 | 18° | 52271 | 52273 |
| .7500 | 3/4 | 19.05 | .6250 | 2.3750 | SN-7 | 30° | 52278 | 52280 |

## SNE

Inverted Cone - End Cut

| Cutting Diameter | | | Cutting Length | Approx. Overall Length | Tool Number | Included Angle | EDP Number | |
|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | | #1 Cut | #3 Cut |
| .2500 | 1/4 | 6.35 | .3125 | 2.0000 | SN-1E | 10° | 53250 | 53252 |
| .3750 | 3/8 | 9.53 | .3750 | 2.1250 | SN-2E | 13° | 53257 | 53259 |
| .5000 | 1/2 | 12.70 | .5000 | 2.2500 | SN-2E | 16° | 53264 | 53266 |
| .6250 | 5/8 | 15.88 | .7500 | 2.5000 | SN-6E | 18° | 53271 | 53273 |
| .7500 | 3/4 | 19.05 | .6250 | 2.3750 | SN-7E | 30° | 53278 | 53280 |

All above Burrs available with #4 Diamond Cut. Add 20% to list price of #1 cut.
All Burrs .3125" diameter and larger furnished with .2500" x 1.7500" steel shanks.

**Metric Sized Shanks**

All burrs on page 175 thru 181 with a head diameter of .3125" or larger, with the exception of extended shanks, are available with a 6mm diameter shank. They will retain standard fractional cutting diameters and cutting length.

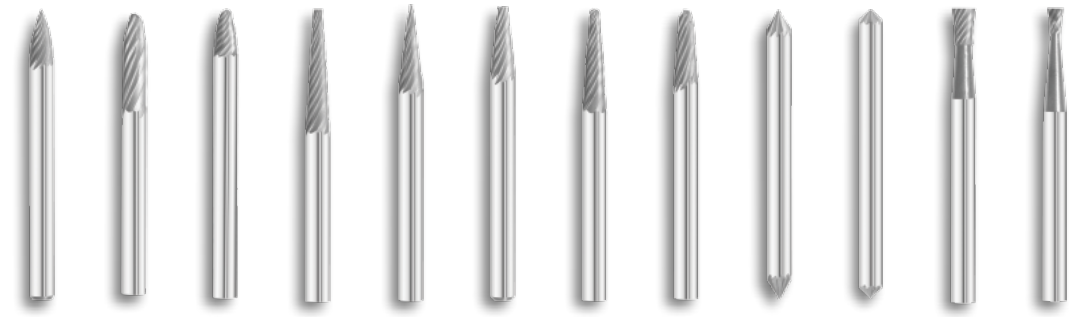
**Add $2.50 to the list price.**

# Burr

***.0625"–.1250" Head Diameter • .1250" Shank Diameter***

| Cutting Head | 1/2" x 9/16" | 3/32" x 7/16" | 1/16" x 1/4" | 1/8" | 1/8" x 9/16" | 3/32" x 7/16" | 1/8" | 3/32" | 1/8" x 1/4" | 1/8" x 1/4" | 1/8" x 1/2" | 1/8" x 3/8" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | .1250" x .5625" | .0938" x .4375" | .0625" x .2500" | .1250" | .1250" x .5625" | .0938" x .4375" | .1250" | .0938" | .1250" x .2500" | .1250" x .2500" | .1250" x .5000" | .1250" x .3750" |
| **Style** | SA-43 | SA-42 | SA-41 | SB-41 | SC-42 | SC-41 | SD-42 | SD-41 | SE-41 | SH-41 | SG-44 | SG-43 |
| **1.5000" Approx. Overall Length** | | | | | | | | | | | | |
| **#1 Cut** | 59104 | 59102 | 59100 | 59106 | 59110 | 59108 | 59114 | 59112 | 59116 | 59128 | 59126 | 59124 |
| **#3 Cut** | 59105 | 59103 | 59101 | 59107 | 59111 | 59109 | 59115 | 59113 | 59117 | 59129 | 59127 | 59125 |
| **2.0000" Approx. Overall Length** | | | | | | | | | | | | |
| **#1 Cut** | 59000 | - | - | - | 59002 | - | 59004 | - | 59006 | 59012 | 59010 | - |
| **#3 Cut** | 59026 | - | - | - | 59028 | - | 59030 | - | 59032 | 59038 | 59036 | - |
| **3.0000" Approx. Overall Length** | | | | | | | | | | | | |
| **#1 Cut** | 59001 | - | - | 59050 | 59003 | - | 59005 | 59055 | 59007 | 59013 | 59011 | - |
| **#3 Cut** | 59027 | - | - | - | 59029 | - | 59031 | - | 59033 | 59039 | 59037 | - |

| Cutting Head | 1/8" x 1/4" | 1/8" x 1/2" | 1/8" x 1/4" | 1/8" x 5/8" | 1/8" x 7/16" | 1/8" x 11/32" | 1/8" x 1/2" | 1/8" x 3/8" | 1/8" | 1/8" | 1/8" x 3/16" | 3/32" x 1/8" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | .1250" x .2500" | .1250" x .5000" | .1250" x .2500" | .1250" x .6250" | .1250" x .4375" | .1250" x .3438" | .1250" x .5000" | .1250" x .3750" | .1250" | .1250" | .1250" x .1875" | .0938" x .1250" |
| **Style** | SG-41 | SF-42 | SF-41 | SM-43 | SM-42 | SM-41 | SL-42 | SL-41 | SJ-42 | SK-42 | SN-42 | SN-41 |
| | | | | 7° Incl. | 14° Incl. | 12° Incl. | 8° Incl. | 8° Incl. | 60° Incl. | 90° Incl. | 10° Incl. | 10° Incl. |
| **1.5000" Approx. Overall Length** | | | | | | | | | | | | |
| **#1 Cut** | 59122 | 59120 | 59118 | 59141 | 59139 | 59137 | 59135 | 59134 | 59130 | 59132 | 59145 | 59143 |
| **#3 Cut** | 59123 | 59121 | 59119 | 59142 | 59140 | 59138 | 59136 | 59147 | 59131 | 59133 | 59146 | 59144 |
| **2.0000" Approx. Overall Length** | | | | | | | | | | | | |
| **#1 Cut** | - | 59008 | - | - | 59016 | - | 59014 | - | - | - | - | - |
| **#3 Cut** | - | 59034 | - | - | 59042 | - | 59040 | - | - | - | - | - |
| **3.0000" Approx. Overall Length** | | | | | | | | | | | | |
| **#1 Cut** | - | 59009 | - | - | 59017 | - | 59015 | - | - | - | - | - |
| **#3 Cut** | - | 59035 | - | - | 59043 | - | 59041 | - | - | - | - | - |



All above Burrs available with #4 Diamond Cut. Add 20% to list price.

# Burr

***.1562"–.1875" Head Diameter • .1250" Shank Diameter***

| Cutting Head | 3/16" x 1/2" | 5/32" x 1/2" | 3/16" x 1/2" | 5/32" x 1/2" | 3/16" Ball | 3/16" x 1/2" | 3/16" x 1/2" | 3/16" x 3/8" | 3/16" x 9/32" | 3/16" x 1/4" | 3/16" x 1/2" | 3/16" x 1/2" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | .1875" x .5000" | .1562" x .5000" | .1875" x .5000" | .1562" x .5000" | .1875" Ball | .1875" x .5000" | .1875" x .5000" | .1875" x .3750" | .1875" x .2812" | .1875" x .2500" | .1875 x .5000" | .1875" x .5000" |
| **Style** | SA-53 | SA-52 | SC-53 | SC-52 | SD-53 | SG-53 | SF-53 | SH-53 | SE-53 | SN-53 | SM-53 | SL-53 |
| | | | | | | | | | | 10° Incl. | 10° Incl. | 14° Incl. |

| 1.5000" Approx. Overall Length | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **#1 Cut** | 71103 | 71101 | 71108 | 71105 | 71110 | 71115 | 71113 | 71116 | 71112 | 71120 | 71119 | 71117 |
| **#3 Cut** | 71104 | 71102 | 71109 | 71106 | 71111 | 71130 | 71114 | 71135 | 71140 | 71121 | 71145 | 71118 |

All above Burrs available with #4 Diamond Cut. Add 20% to list price.

# Burr

***.2500" Head Diameter • .1250" Steel Shank Diameter • 2.0000" Max Overall Length***

| Cutting Head | 1/2" | 3/16" | 1/4" | 1/2" | 1/2" | 1/2" | 1/2" | 3/8" | 1/4" |
|---|---|---|---|---|---|---|---|---|---|
| | .5000" | .1875" | .2500" | .5000" | .5000" | .5000" | .5000" | .3750" | .2500" |
| **Style** | SA-51 | SB-51 | SD-51 | SC-51 | SF-51 | SG-51 | SM-51 | SE-51 | SN-51 |
| | | | | | | | 22° Incl. | | 10° Incl. |
| **2.0000" Max Overall Length** | | | | | | | | | |
| **#1 Cut** | 70101 | 70103 | 70107 | 70105 | 70111 | 70113 | 70115 | 70109 | 70117 |
| **#3 Cut** | 70102 | 70104 | 70108 | 70106 | 70112 | 70114 | 70116 | 70110 | 70118 |

# Burr

***.1875" Head Diameter • .1875" Shank Diameter • 2.0000" Overall Length***

| Cutting Head | 5/8" | 5/8" | 3/16" | 1/2" | 1/2" | 7/16" | 9/32" | 1/4" | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | .6250" | .6250" | .1875" | .5000" | .5000" | .4375" | .2812" | .2500" | 90° | 60° |
| **Style** | SA-81 | SC-81 | SD-81 | SF-81 | SG-81 | SL-81 | SE-81 | SN-81 | SK-81 | SJ-81 |
| | | | | | | 14° Incl. | | 10° Incl. | | |
| **2.0000" Approx. Overall Length** | | | | | | | | | | |
| **#1 Cut** | 72101 | 72102 | 72103 | 72105 | 72106 | 72110 | 72104 | 72111 | 72108 | 72109 |
| **#3 Cut** | 72121 | 72122 | 72123 | 72124 | 72125 | 72126 | 72127 | 72128 | 72129 | 72130 |

All above Burrs available with #4 Diamond Cut. Add 20% to list price.

# Burr Metric

***1.50–3.00mm Head Diameter • 3.00mm Shank Diameter***



| Cutting Head | 3mm x 15mm | 2mm x 13mm | 1.5mm x 6mm | 3mm | 3mm x 15mm | 2mm x 11mm | 3mm | 2mm | 3mm x 6mm | 3mm x 7mm | 3mm x 15mm | 3mm x 10mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Style** | MSA-43 | MSA-42 | MSA-41 | MSB-41 | MSC-42 | MSC-41 | MSD-42 | MSD-41 | MSE-41 | MSH-41 | MSG-44 | MSG-43 |
| **38mm Approx. Overall Length** | | | | | | | | | | | | |
| **#1 Cut** | 59303 | 59302 | 59301 | 59300 | 59305 | 59304 | 59307 | 59306 | 59308 | 59315 | 59313 | 59312 |
| **#3 Cut** | 59511 | 59508 | 59505 | 59502 | 59517 | 59514 | 59523 | 59520 | 59526 | 59831 | 59828 | 59825 |

| Cutting Head | 3mm x 8mm | 3mm x 15mm | 3mm x 8mm | 3mm x 16mm | 3mm x 11mm | 3mm x 9mm | 3mm x 13mm | 3mm x 10mm | 3mm | 3mm | 3mm x 5mm | 2mm x 3mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Style** | MSG-41 | MSF-42 | MSF-41 | MSM-43 | MSM-42 | MSM-41 | MSL-42 | MSL-41 | MSJ-42 | MSK-42 | MSN-42 | MSN-41 |
| | | | | 7° Incl. | 14° Incl. | 12° Incl. | 8° Incl. | 8° Incl. | 60° Incl. | 90° Incl. | 10° Incl. | 10° Incl. |
| **38mm Approx. Overall Length** | | | | | | | | | | | | |
| **#1 Cut** | 59311 | 59310 | 59309 | 59321 | 59320 | 59319 | 59318 | 59317 | 59315 | 59316 | 59323 | 59324 |
| **#3 Cut** | 59535 | 59532 | 59529 | 59551 | 59548 | 59545 | 59538 | 59840 | 59834 | 59837 | 59557 | 59554 |

All above Burrs available with #4 Diamond Cut. Add 20% to list price of #1 cut.

# Burr Metric

***6.40mm Head Diameter • 3.00mm Steel Shank Diameter***

| Cutting Head | 13mm | 5mm | 6mm | 13mm | 13mm | 13mm | 13mm | 10mm | 6mm |
|---|---|---|---|---|---|---|---|---|---|
| Style | MSA-51 | MSB-51 | MSD-51 | MSC-51 | MSF-51 | MSG-51 | MSM-51 | MSE-51 | MSN-51 |
| | | | | | | | 22° Incl. | | 10° Incl. |
| |  |  |  |  |  |  |  |  |  |
| 51mm Max Overall Length | | | | | | | | | |
| #1 Cut | 70310 | 70311 | 70313 | 70312 | 70315 | 70316 | 70317 | 70314 | 70318 |
| #3 Cut | 59560 | 59563 | 59569 | 59566 | 59575 | 59578 | 59581 | 59572 | 59584 |

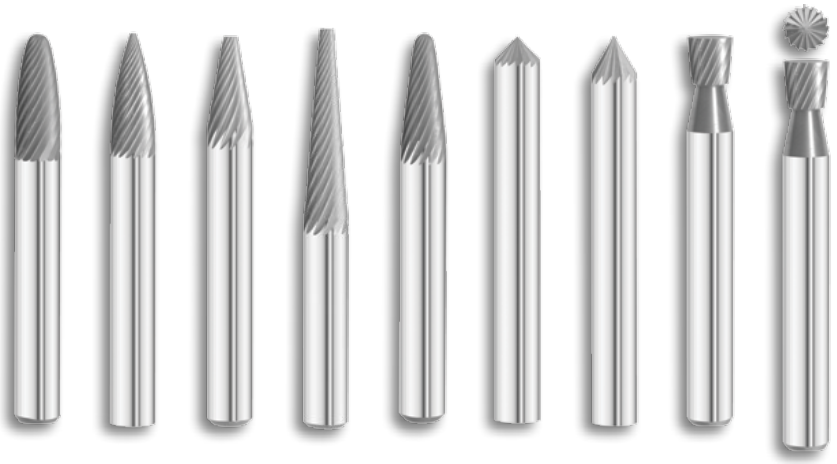
All above Burrs available with #4 Diamond Cut. Add 20% to list price.

# Burr Metric

***3.00–6.00mm Head Diameter • 6.00mm Shank Diameter***

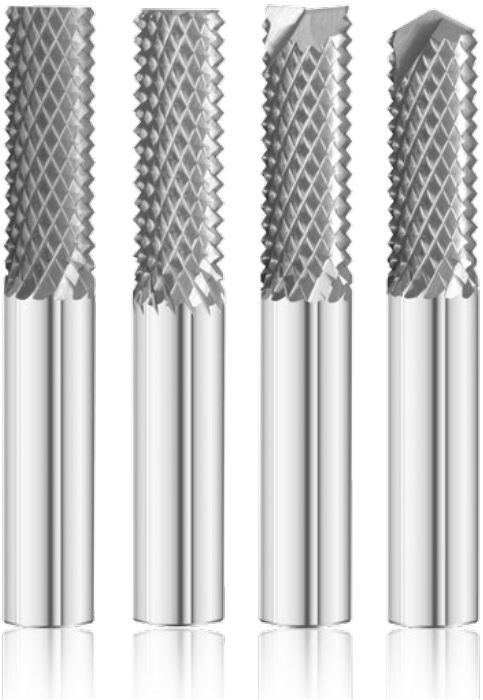


| Cutting Head | 3mm x 16mm | 6mm x 16mm | 3mm x 16mm | 6mm x 16mm | 3mm x 16mm | 6mm x 16mm | 3mm | 6mm | 6mm x 10mm |
|---|---|---|---|---|---|---|---|---|---|
| **Style** | MSA-12 | MSA-1 | MSB-12 | MSB-1 | MSC-12 | MSC-1 | MSD-12 | MSD-1 | MSE-1 |
| |  | | | | | | | | |
| **51mm Overall Length** | | | | | | | | | |
| **#1 Cut** | 80101 | 80100 | 80103 | 80102 | 80105 | 80104 | 80106 | 80107 | 80108 |
| **#3 Cut** | 59587 | 59594 | 59601 | 59604 | 59607 | 59610 | 59617 | 59620 | 59623 |

| Cutting Head | 6mm x 16mm | 6mm x 16mm | 6mm x 13mm | 6mm x 25mm | 6mm x 16mm | 6mm | 6mm | 6mm x 8mm | 6mm x 8mm |
|---|---|---|---|---|---|---|---|---|---|
| **Style** | MSF-1 | MSG-1 | MSM-1 | MSM-3 | MSL-1 | MSK-1 | MSJ-1 | MSN-1 | MSN-1E |
| | | | 22° Incl. | 10° Incl. | 14° Incl. | 90° Incl. | 60° Incl. | 10° Incl. | 10° Incl. |
| |  | | | | | | | | |
| **51mm Overall Length** | | | | | | | | | |
| **#1 Cut** | 80109 | 80110 | 80112 | 80113 | 80111 | 80114 | 80117 | 80115 | 80116 |
| **#3 Cut** | 59626 | 59629 | 59645 | 59842 | 59642 | 59639 | 59636 | 59659 | 59674 |

All above Burrs available with #4 Diamond Cut. Add 20% to list price.

# 2600 Fiberglass Routers



**Style A - No End Cut**
Used for edge or where the end of the router is not in contact with the work piece.

**Style B - Burr Style End Cut**
Used when bottom cutting to produce an even, smooth surface with a square corner.

**Style C - End Mill End Cut**
Designed for bottom cutting where smooth surface and sq uare corners are required.

**Style D - 135° Drill Point**
Designed for plunging through the work piece before routing operation begins.

**Tolerance:**
- Shank Diameter: h6
- Cutting Diameter: +.000" -.005"

| Cutting Diameter | | | Cutting Length | Shank Diameter | Overall Length | EDP Number | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | | Style A | Style B | Style C | Style D |
| .1250 | 1/8 | 3.18 | .5000 | .1250 | 1.5000 | 26125 | 26126 | 26127 | 26128 |
| .1875 | 3/16 | 4.76 | .6250 | .1875 | 2.0000 | 26187 | 26188 | 26189 | 26190 |
| *.2500 | 1/4 | 6.35 | .7500 | .2500 | 2.5000 | 26250 | 26251 | 26252 | 26253 |
| *.2500 | 1/4 | 6.35 | 1.0000 | .2500 | 3.0000 | 26260 | 26261 | 26262 | 26263 |
| .3750 | 3/8 | 9.53 | 1.0000 | .3750 | 2.5000 | 26375 | 26376 | 26377 | 26378 |
| .5000 | 1/2 | 12.70 | 1.0000 | .5000 | 3.0000 | 26500 | 26501 | 26502 | 26503 |

* *Specify Flute Length or EDP Number*

# Burr Sets

***For when you need more than one tool for the job.***




**Basic Information**

- Burr Sets #1-#5 are sets designed with the user in mind. They are offered in both Single and Double Cut versions. The sets come conveniently packaged in a wooden box similar to the one illustrated here.

# Burr Set #1

***10 Tools • .3750–.5000" Diameter Head • .2500" Shank***

| Cut | EDP Number |
|---|---|
| #1 Single | 60001 |
| #3 Double | 60003 |

| Cutting Head | 1/2" x 1" | 1/2" x 1" | 3/8" x 3/4" | 1/2" x 1" | 3/8" x 3/4" | 1/2" x 1" | 3/8" x 3/4" | 3/8" x 5/8" | 1/2" x 1-1/8" | 1/2" |
|---|---|---|---|---|---|---|---|---|---|---|
| | .5000" x 1.0000" | .5000" x 1.0000" | .3750" x .7500" | .5000" x 1.0000" | .3750" x .7500" | .5000" x 1.0000" | .3750" x .7500" | .3750" x .6250" | .5000" x 1.1250" | .5000" |
| **Style** | SA-5 | SC-5 | SC-3 | SF-5 | SF-3 | SG-5 | SG-3 | SE-3 | SL-4 | SD-5 |
| | | | | | | | | | 14° Incl. | |

All above Burrs shown with #3 Cut

(See Above for Set information)

# Burr Set #2

***12 Tools • .0625–.1250" Diameter Head • .1250" Shank***

| Cut | EDP Number |
|---|---|
| #1 Single | 60004 |
| #3 Double | 60006 |

| Cutting Head | 1/8" x 9/16" | 3/32" x 7/16" | 1/8" x 9/16" | 3/32" x 7/16" | 1/8" | 1/8" x 1/4" | 1/8" x 1/4" | 1/8" x 3/8" | 1/8" x 1/2" | 1/8" x 7/16" | 1/8" x 1/2" | 1/8" x 3/16" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | .1250" x .5625" | .0938" x .4375" | .1250" x .5625" | .0938" x .4375" | .1250" | .1250" x .2500" | .1250" x .2500" | .1250" x .3750" | .1250" x .5000" | .1250" x .4375" | .1250" x .5000" | .1250" x .1875" |
| **Style** | SA-43 | SA-42 | SC-42 | SC-41 | SD-42 | SE-41 | SH-41 | SG-43 | SF-42 | SM-42 | SL-42 | SN-42 |
| | | | | | | | | | | 14° Incl. | 8° Incl. | 10° Incl. |

# Burr Set #3

***9 Tools • .2500" Diameter Head • .1250" Shank***

| Cut | EDP Number |
|---|---|
| #1 Single | 60007 |
| #3 Double | 60009 |

| Cutting Head | 1/2" | 3/16" | 1/4" | 1/2" | 1/2" | 1/2" | 1/2" | 3/8" | 1/4" |
|---|---|---|---|---|---|---|---|---|---|
| | .5000" | .1875" | .2500" | .5000" | .5000" | .5000" | .5000" | .3750" | .2500" |
| **Style** | SA-51 | SB-51 | SD-51 | SC-51 | SF-51 | SG-51 | SM-51 | SE-51 | SN-51 |
| | | | | | | | 22° Incl. | | 10° Incl. |

(See Page 191 for Set information)

# Burr Set #4

***12 Tools • .1562"–.1875" Diameter Head • .1250" Steel Shank***

| Cut | EDP Number |
|---|---|
| #1 Single | 60010 |
| #3 Double | 60012 |

| Cutting Head | 3/16" x 1/2" .1875" x .5000" | 5/32" x 1/2" .1562" x .5000" | 3/16" x 1/2" .1875" x .5000" | 5/32" x 1/2" .1562" x .5000" | 3/8" Ball .1875" Ball | 3/16" x 1/2" .1875" x .5000" | 3/16" x 1/2" .1875" x .5000" | 3/16" x 3/8" .1875" x .3750" | 3/16" x 9/32" .1875" x .2812" | 3/16" x 1/4" .1875" x .2500" | 3/16" x 1/2" .1875" x .5000" | 3/16" x 1/2" .1875" x .5000" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Style** | SA-53 | SA-52 | SC-53 | SC-52 | SD-53 | SG-53 | SF-53 | SH-53 | SE-53 | SN-53 10° Incl. Taper | SM-53 16° Incl. Taper | SL-53 14° Incl. Taper |

# Burr Set #5

***10 Tools • .2500" Diameter Head • .2500" Shank***

| Cut | EDP Number |
|---|---|
| #1 Single | 60013 |
| #3 Double | 60015 |

| Cutting Head | 1/4" x 5/8" .2500" x .6250" | 3/16" x 5/8" .1875" x .6250" | 1/4" x 5/8" .2500" x .6250" | 1/8" x 1/2" .1250" x .5000" | 1/4" x 5/8" .2500" x .6250" | 1/4" x 5/8" .2500" x .6250" | 1/4" x 3/8" .2500" x .3750" | 1/4" x 3/4" .2500" x .7500" | 1/4" x 5/8" .2500" x .6250" | 1/4" x 5/16" .2500" x .3125" |
|---|---|---|---|---|---|---|---|---|---|---|
| **Style** | SA-1 | SA-14 | SC-1 | SC-12 | SF-1 | SG-1 | SE-1 | SM-2 14° Incl. | SL-1 14° Incl. | SN-1 10° Incl. |

(See Page 191 for Set information)

COUNTERSINKS

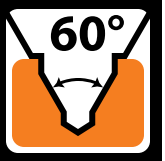
# 1835 Countersinks

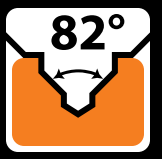
**Basic Information:**
- Carbide Countersinks
- 60°, 82°, 90° Included Angles
- 6 Flute
  - Right Hand Cut
- Steel Shank on .3750" and Above Cutting Diameters
- Standard Uncoated
- Inch Based Tools
- Chatterless Design for Hard Materials
- Dura Carb (Micrograin)

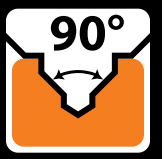
**Tolerance:**
- Shank Diameter: +.000" -.002"

† *Solid Carbide Items*

| Body Diameter | | | Shank Diameter | Approx. Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | 60° | 82° | 90° |
| .1250 | 1/8 | 3.18 | .1250 | 1.5000 | 18617† | 18616† | 18619† |
| .1875 | 3/16 | 4.76 | .1875 | 2.0000 | 18618† | 18818† | 18918† |
| .2500 | 1/4 | 6.35 | .2500 | 2.0000 | 18625† | 18825† | 18925† |
| .3750 | 3/8 | 9.53 | .2500 | 2.7500 | 18637 | 18837 | 18937 |
| .5000 | 1/2 | 12.70 | .2500 | 3.0000 | 18650 | 18850 | 18950 |
| .6250 | 5/8 | 15.88 | .3750 | 2.7500 | 18662 | 18862 | 18962 |
| .7500 | 3/4 | 19.05 | .3750 | 3.0000 | 18675 | 18875 | 18975 |
| 1.0000 | 1 | 25.40 | .5000 | 3.0000 | 18610 | 18810 | 18910 |
| 1.2500 | 1-1/4 | 31.75 | .7500 | 3.2500 | 18612 | 18812 | 18912 |
| 1.5000 | 1-1/2 | 38.10 | .7500 | 3.5000 | 18615 | 18815 | 18915 |





† *Solid Carbide*

# 1847 Countersinks

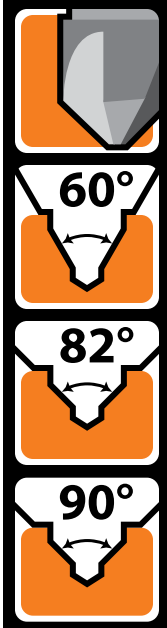
**Basic Information:**
- Carbide Countersinks
- 60°, 82°, 90° Included Angles
- Single Helical Flute
  - Right Hand Cut
- Steel Shank on .3750" and Above Cutting Diameters
- Standard Uncoated
- Inch Based Tools
- For Mild Steels as well as other Non-Ferrous Materials
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: +.000" -.002"

† *Solid Carbide Items.*

| Body Diameter | | | Shank Diameter | Approx. Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | 60° | 82° | 90° |
| .1250 | 1/8 | 3.18 | .1250 | 1.5000 | 18253† | 18254† | 18255† |
| .2500 | 1/4 | 6.35 | .2500 | 2.0000 | 18256† | 18258† | 18259† |
| .3750 | 3/8 | 9.53 | .2500 | 2.7500 | 18376 | 18378 | 18379 |
| .5000 | 1/2 | 12.70 | .2500 | 3.0000 | 18506 | 18508 | 18509 |
| .6250 | 5/8 | 15.88 | .3750 | 2.7500 | 18626 | 18628 | 18629 |
| .7500 | 3/4 | 19.05 | .3750 | 3.0000 | 18756 | 18758 | 18759 |
| 1.0000 | 1 | 25.40 | .5000 | 3.0000 | 18106 | 18108 | 18109 |
| 1.2500 | 1-1/4 | 31.75 | .7500 | 3.2500 | 18126 | 18128 | 18129 |






† *Solid Carbide*

COUNTERSINKS

# 1856 Countersinks

**Basic Information:**
- Carbide Countersinks
- 60°, 82°, 90° Included Angles
- 3 Flute
  - Right Hand Cut
- Steel Shank on .3750" and Above Cutting Diameters
- Standard Uncoated
- Inch Based Tools
- Eccentrically Relieved Flute Design for General Purpose Use
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: +.000" -.002"

† *Solid Carbide Items.*

| Body Diameter | | | Shank Diameter | Approx. Overall Length | EDP Number | | |
|---|---|---|---|---|---|---|---|
| Inch | Fractional | Millimeter | | | 60° | 82° | 90° |
| .1250 | 1/8 | 3.18 | .1250 | 1.5000 | 18122† | 18123† | 18124† |
| .2500 | 1/4 | 6.35 | .2500 | 2.0000 | 18125† | 18225† | 18325† |
| .3750 | 3/8 | 9.53 | .2500 | 2.7500 | 18137† | 18237† | 18337† |
| .5000 | 1/2 | 12.70 | .2500 | 3.0000 | 18150 | 18250 | 18350 |
| .6250 | 5/8 | 15.88 | .3750 | 2.7500 | 18162 | 18262 | 18362 |
| .7500 | 3/4 | 19.05 | .3750 | 3.0000 | 18175 | 18275 | 18375 |
| 1.0000 | 1 | 25.40 | .5000 | 3.0000 | 18110 | 18210 | 18310 |

60°

82°

90°

3 FLUTE

† *Solid Carbide*

# 2400 Boring Bar



**Basic Information:**
- One Straight Flute
- Single End
- Right Hand Cut
- Standard Uncoated
- Inch Based Tools
- Dura Carb (Micrograin)

**Tolerance:**
- Shank Diameter: h6
- Cutter Diameter: +.000" -.004"

1 FLUTE

| Tool Number | Hole Diameter | Depth of Hole | Shank Diameter | Overall Length | EDP Number UC |
|---|---|---|---|---|---|
| F-002 | .0600 | .1875 | .1250 | 1.5000 | 24012 |
| F-00 | .0800 | .3750 | .1250 | 1.5000 | 24010 |
| F-0 | .0900 | .5000 | .1250 | 1.5000 | 24000 |
| F-1 | .1200 | .6250 | .1250 | 1.5000 | 24001 |
| F-2 | .1500 | .7500 | .1875 | 2.0000 | 24002 |
| F-3 | .1800 | 1.0000 | .1875 | 2.0000 | 24003 |
| F-4 | .2100 | 1.2500 | .2500 | 2.5000 | 24004 |
| F-5 | .2400 | 1.2500 | .2500 | 2.5000 | 24005 |
| F-6 | .2700 | 1.2500 | .3125 | 2.5000 | 24006 |
| F-7 | .3000 | 1.2500 | .3125 | 2.5000 | 24007 |
| F-8 | .3300 | 1.5000 | .3750 | 2.5000 | 24008 |
| F-9 | .3600 | 1.5000 | .3750 | 2.5000 | 24009 |

* *Non Stocked*

| EDP | Page | EDP | Page | EDP | Page | EDP | Page | EDP | Page | EDP | Page | EDP | Page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12109 | 79 | 13030* | 144 | 13102 | 143 | 13213 | 139 | 13294 | 140 | 14008 | 160 | 14081 | 161 |
| 12110 | 122 | 13031* | 142 | 13103 | 143 | 13214 | 139 | 13295 | 140 | 14009 | 160 | 14082 | 161 |
| 12111 | 122 | 13032* | 142 | 13104* | 143 | 13215* | 139 | 13296 | 140 | 14010 | 160 | 14083 | 163 |
| 12112 | 122 | 13033* | 142 | 13105 | 143 | 13216 | 139 | 13297 | 140 | 14011 | 160 | 14084 | 161 |
| 12113 | 79 | 13034 | 142 | 13106 | 145 | 13217 | 139 | 13298* | 144 | 14012 | 162 | 14085 | 161 |
| 12114 | 122 | 13035 | 142 | 13107* | 143 | 13218 | 139 | 13299 | 140 | 14013 | 160 | 14086 | 161 |
| 12116 | 122 | 13036 | 142 | 13108* | 143 | 13219 | 144 | 13300 | 140 | 14014 | 160 | 14087 | 161 |
| 12118 | 122 | 13037 | 142 | 13109 | 143 | 13220 | 139 | 13301 | 140 | 14015 | 160 | 14088 | 161 |
| 12120 | 122 | 13038 | 142 | 13110 | 143 | 13221* | 139 | 13302* | 140 | 14016 | 160 | 14089 | 161 |
| 12121* | 122 | 13039 | 144 | 13111* | 143 | 13222 | 139 | 13303 | 140 | 14017 | 160 | 14090 | 161 |
| 12122 | 122 | 13040 | 142 | 13112 | 145 | 13223 | 139 | 13304 | 144 | 14018 | 160 | 14091 | 163 |
| 12136 | 123 | 13041 | 142 | 13113 | 143 | 13224* | 139 | 13305 | 140 | 14019 | 160 | 14092 | 161 |
| 12137 | 123 | 13042 | 142 | 13114 | 143 | 13225 | 139 | 13306 | 141 | 14020 | 160 | 14093 | 161 |
| 12138 | 123 | 13043 | 142 | 13115 | 143 | 13226 | 139 | 13307* | 141 | 14022 | 162 | 14094 | 161 |
| 12140 | 123 | 13044 | 142 | 13116 | 145 | 13227* | 139 | 13308* | 141 | 14023 | 160 | 14096 | 161 |
| 12142 | 123 | 13045 | 142 | 13117 | 143 | 13228 | 144 | 13309* | 141 | 14024 | 160 | 14097 | 163 |
| 12144 | 123 | 13046* | 142 | 13118* | 143 | 13229* | 139 | 13310 | 144 | 14025 | 160 | 14098 | 162 |
| 12146 | 123 | 13047 | 142 | 13119* | 143 | 13230 | 139 | 13311* | 141 | 14026 | 160 | 14099 | 163 |
| 12147 | 123 | 13048 | 142 | 13120* | 143 | 13231* | 139 | 13312 | 141 | 14027 | 160 | 14100 | 162 |
| 12148 | 123 | 13049 | 144 | 13121 | 145 | 13232 | 139 | 13313 | 141 | 14028 | 160 | 14101 | 163 |
| 12387 | 82 | 13050 | 142 | 13122 | 143 | 13233 | 139 | 13314 | 144 | 14029 | 160 | 14102 | 162 |
| 12388 | 82 | 13051 | 142 | 13123 | 143 | 13234* | 140 | 13315 | 141 | 14030 | 160 | 14103 | 163 |
| 12389 | 82 | 13052 | 142 | 13124* | 143 | 13235* | 140 | 13316* | 141 | 14031 | 160 | 14104 | 162 |
| 12390* | 82 | 13053 | 142 | 13125 | 145 | 13236 | 140 | 13317 | 141 | 14032 | 163 | 14105 | 162 |
| 12391 | 82 | 13054* | 145 | 13126* | 143 | 13237* | 140 | 13318* | 141 | 14033 | 160 | 14106 | 163 |
| 12392 | 82 | 13055 | 142 | 13127 | 143 | 13238 | 144 | 13319 | 144 | 14034 | 160 | 14107 | 162 |
| 12393 | 82 | 13056 | 142 | 13128* | 143 | 13239 | 140 | 13320 | 141 | 14035 | 161 | 14108 | 163 |
| 12395 | 82 | 13057 | 142 | 13129 | 145 | 13240 | 140 | 13321 | 141 | 14036 | 161 | 14109 | 162 |
| 12397 | 82 | 13058 | 142 | 13130 | 143 | 13241* | 140 | 13322 | 141 | 14037 | 161 | 14110 | 163 |
| 12398 | 82 | 13059 | 142 | 13131 | 143 | 13242 | 140 | 13323 | 144 | 14038 | 161 | 14111 | 162 |
| 12399 | 83 | 13060* | 142 | 13132 | 143 | 13243 | 144 | 13324 | 141 | 14039 | 161 | 14112 | 163 |
| 12400 | 86 | 13061 | 142 | 13133 | 143 | 13244 | 140 | 13325 | 141 | 14040 | 161 | 14113 | 162 |
| 12401* | 86 | 13062 | 142 | 13134* | 145 | 13245* | 140 | 13326* | 141 | 14041 | 163 | 14114 | 162 |
| 12402 | 86 | 13063* | 142 | 13135* | 143 | 13255 | 140 | 13327 | 144 | 14042 | 161 | 14115 | 163 |
| 12403* | 86 | 13064 | 145 | 13136 | 143 | 13256 | 140 | 13328 | 141 | 14043 | 161 | 14116 | 162 |
| 12404* | 86 | 13065 | 142 | 13137* | 144 | 13257 | 140 | 13329 | 141 | 14044 | 161 | 14117 | 163 |
| 12405* | 86 | 13066 | 142 | 13138 | 144 | 13258 | 140 | 13330 | 141 | 14045 | 161 | 14118 | 162 |
| 12406* | 86 | 13067 | 142 | 13139 | 145 | 13259 | 140 | 13331 | 141 | 14046 | 161 | 14119 | 163 |
| 12408* | 86 | 13068* | 142 | 13140* | 144 | 13260 | 140 | 13332 | 144 | 14047 | 161 | 14120 | 162 |
| 12410* | 86 | 13069 | 142 | 13141* | 145 | 13261* | 140 | 13333 | 141 | 14048 | 161 | 14121 | 163 |
| 12411* | 86 | 13070 | 142 | 13142 | 144 | 13262 | 144 | 13334 | 141 | 14049 | 161 | 14122 | 162 |
| 12412 | 86 | 13071* | 143 | 13143 | 145 | 13263 | 140 | 13335 | 141 | 14050 | 161 | 14123 | 162 |
| 13000* | 141 | 13072 | 145 | 13144 | 144 | 13264 | 140 | 13336* | 141 | 14051 | 163 | 14124 | 163 |
| 13001 | 141 | 13073 | 143 | 13145 | 144 | 13265 | 140 | 13337* | 144 | 14052 | 161 | 14125 | 162 |
| 13002 | 141 | 13074 | 143 | 13146 | 145 | 13266* | 140 | 13338 | 141 | 14053 | 161 | 14126 | 163 |
| 13003 | 141 | 13075* | 143 | 13147 | 144 | 13267 | 140 | 13339* | 144 | 14054 | 161 | 14127 | 162 |
| 13004 | 141 | 13076 | 143 | 13148 | 145 | 13268* | 140 | 13340 | 141 | 14055 | 161 | 14150 | 159 |
| 13005 | 141 | 13077* | 143 | 13148 | 176 | 13269* | 140 | 13341* | 144 | 14056 | 163 | 14151 | 159 |
| 13006 | 141 | 13078 | 143 | 13149* | 144 | 13270 | 144 | 13342* | 141 | 14057 | 161 | 14153 | 159 |
| 13007 | 141 | 13079 | 143 | 13150 | 144 | 13271 | 140 | 13343 | 141 | 14058 | 161 | 14154 | 159 |
| 13008 | 141 | 13080* | 143 | 13151 | 144 | 13272* | 140 | 13344 | 144 | 14059 | 161 | 14155 | 159 |
| 13009 | 141 | 13081 | 145 | 13152 | 144 | 13273 | 140 | 13345 | 141 | 14060 | 161 | 14156 | 159 |
| 13010* | 141 | 13082 | 143 | 13153 | 144 | 13274 | 140 | 13346 | 144 | 14061 | 161 | 14157 | 159 |
| 13011 | 144 | 13083 | 143 | 13154* | 144 | 13275* | 140 | 13347 | 141 | 14062 | 161 | 14158 | 159 |
| 13012 | 142 | 13084 | 143 | 13155 | 144 | 13276 | 140 | 13348 | 141 | 14063 | 161 | 14159 | 159 |
| 13013 | 142 | 13085* | 143 | 13156 | 144 | 13277 | 140 | 13349 | 141 | 14064 | 161 | 14160 | 159 |
| 13014 | 142 | 13086 | 143 | 13157* | 144 | 13278* | 140 | 13350* | 141 | 14065 | 161 | 14161 | 159 |
| 13015* | 142 | 13087 | 143 | 13158 | 144 | 13279 | 144 | 13351* | 141 | 14066 | 163 | 14162 | 159 |
| 13016 | 142 | 13088 | 143 | 13159 | 144 | 13280* | 140 | 13352 | 141 | 14067 | 161 | 14163 | 159 |
| 13017* | 142 | 13089 | 145 | 13200* | 144 | 13281 | 140 | 13353* | 141 | 14068 | 161 | 14164 | 159 |
| 13018 | 142 | 13090 | 143 | 13201* | 139 | 13282 | 140 | 13354* | 141 | 14069 | 161 | 14165 | 159 |
| 13019 | 142 | 13091* | 143 | 13202* | 139 | 13283* | 140 | 13355 | 141 | 14070 | 161 | 14166 | 159 |
| 13020* | 144 | 13092 | 143 | 13203 | 139 | 13284 | 140 | 13356* | 141 | 14071 | 161 | 14167 | 159 |
| 13021 | 142 | 13093* | 143 | 13204 | 139 | 13285 | 140 | 13357 | 141 | 14072 | 161 | 14168 | 159 |
| 13022 | 142 | 13094 | 143 | 13205* | 139 | 13286* | 140 | 13358 | 144 | 14073 | 161 | 14169 | 159 |
| 13023 | 142 | 13095 | 145 | 13206 | 139 | 13287 | 144 | 14001 | 160 | 14074 | 163 | 14170 | 159 |
| 13024 | 142 | 13096 | 143 | 13207 | 139 | 13288 | 140 | 14002 | 160 | 14075 | 161 | 14171 | 159 |
| 13025 | 142 | 13097* | 143 | 13208* | 139 | 13289 | 140 | 14003 | 160 | 14076 | 161 | 14172 | 159 |
| 13026 | 142 | 13098* | 143 | 13209* | 144 | 13290 | 140 | 14004 | 160 | 14077 | 161 | 14173 | 159 |
| 13027 | 142 | 13099 | 143 | 13210* | 139 | 13291* | 140 | 14005 | 160 | 14078 | 161 | 14174 | 159 |
| 13028 | 142 | 13100 | 145 | 13211 | 139 | 13292 | 140 | 14006 | 160 | 14079 | 161 | 14175 | 159 |
| 13029* | 142 | 13101 | 143 | 13212* | 139 | 13293* | 144 | 14007 | 160 | 14080 | 161 | 14176 | 159 |

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| 14182 | 159 | 15039 | 149 | 15112 | 150 | 15186 | 151 | 15260 | 132 | 15365 | 156 | 15453 | 155 |
| 14183 | 159 | 15040 | 149 | 15113 | 152 | 15187 | 151 | 15261* | 134 | 15368 | 155 | 15454 | 155 |
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| 14512 | 162 | 15042 | 151 | 15115 | 150 | 15189 | 152 | 15263 | 132 | 15374 | 156 | 15456 | 155 |
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| 14514 | 162 | 15044 | 149 | 15117 | 150 | 15191 | 152 | 15265* | 134 | 15378 | 133 | 15462 | 155 |
| 14515 | 162 | 15045 | 149 | 15118 | 150 | 15192 | 152 | 15266 | 133 | 15379* | 134 | 15464 | 155 |
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| 14529 | 162 | 15059 | 149 | 15132 | 150 | 15208 | 147 | 15280 | 147 | 15395* | 133 | 15486 | 131 |
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| 14531 | 162 | 15061 | 151 | 15134 | 152 | 15210 | 147 | 15282 | 147 | 15398* | 133 | 15488 | 131 |
| 14532 | 162 | 15062 | 149 | 15135 | 150 | 15211 | 148 | 15283 | 147 | 15399* | 135 | 15489 | 128 |
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| 14537 | 162 | 15067 | 149 | 15141 | 150 | 15216 | 148 | 15288* | 134 | 15404 | 130 | 15494 | 128 |
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| 15001 | 132 | 15073 | 149 | 15147 | 152 | 15222 | 148 | 15302 | 157 | 15410 | 130 | 15522* | 135 |
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| 15004* | 132 | 15076 | 152 | 15150 | 150 | 15225 | 148 | 15305 | 157 | 15413 | 130 | 15525* | 135 |
| 15005 | 134 | 15077 | 149 | 15151 | 152 | 15226 | 127 | 15306 | 157 | 15414 | 130 | 15526* | 135 |
| 15006 | 132 | 15078 | 149 | 15152 | 151 | 15227 | 128 | 15307 | 157 | 15415 | 130 | 15527* | 135 |
| 15007* | 132 | 15079 | 149 | 15153 | 152 | 15228 | 128 | 15308 | 157 | 15416 | 130 | 15528* | 134 |
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| 15009* | 132 | 15081 | 149 | 15155 | 152 | 15230 | 128 | 15310 | 157 | 15418 | 130 | 15530 | 133 |
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| 15029 | 149 | 15101 | 152 | 15176 | 133 | 15250 | 132 | 15348* | 134 | 15438 | 128 | 15609 | 128 |
| 15030 | 149 | 15102 | 150 | 15177 | 133 | 15251* | 132 | 15349* | 133 | 15439 | 128 | 15610 | 134 |
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| 15689 | 129 | 16014 | 146 | 16087 | 148 | 17607 | 141 | 17681 | 143 | 17753 | 144 | 17863 | 140 |
| 15690 | 129 | 16015 | 146 | 16088 | 148 | 17608 | 141 | 17682 | 143 | 17754 | 144 | 17864 | 140 |
| 15691 | 129 | 16016 | 146 | 16089 | 148 | 17609 | 141 | 17683 | 143 | 17755 | 144 | 17865 | 140 |
| 15692 | 129 | 16017 | 146 | 16090 | 151 | 17610 | 141 | 17684 | 145 | 17756 | 144 | 17866 | 140 |
| 15693 | 133 | 16018 | 146 | 16091 | 148 | 17611 | 141 | 17685 | 143 | 17757 | 144 | 17867 | 140 |

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| 17871 | 144 | 17944 | 141 | 18837 | 192 | 20226B | 108 | 20274B | 109 | 20358B | 114 | 20442B | 96 |
| 17872 | 140 | 17945 | 141 | 18850 | 192 | 20226R | 108 | 20274R | 109 | 20358R | 114 | 20442R | 96 |
| 17873 | 140 | 17946 | 141 | 18862 | 192 | 20226S | 108 | 20274S | 109 | 20358S | 114 | 20442S | 96 |
| 17874 | 140 | 17947 | 141 | 18875 | 192 | 20228B | 108 | 20276B | 109 | 20360B | 114 | 20444B | 96 |
| 17875 | 140 | 17948 | 141 | 18910 | 192 | 20228R | 108 | 20276R | 109 | 20360R | 114 | 20444R | 96 |
| 17876 | 140 | 17949 | 141 | 18912 | 192 | 20228S | 108 | 20276S | 109 | 20360S | 114 | 20444S | 96 |
| 17877 | 140 | 17950 | 141 | 18915 | 192 | 20230B | 108 | 20278B | 109 | 20362B | 114 | 20446B | 96 |
| 17878 | 140 | 17951 | 144 | 18918 | 192 | 20230R | 108 | 20278R | 109 | 20362R | 114 | 20446R | 96 |
| 17879 | 144 | 17952 | 144 | 18925 | 192 | 20230S | 108 | 20278S | 109 | 20362S | 114 | 20446S | 96 |
| 17880 | 140 | 17953 | 144 | 18937 | 192 | 20232B | 108 | 20280B | 109 | 20364B | 114 | 20448B | 96 |
| 17881 | 140 | 18106 | 193 | 18950 | 192 | 20232R | 108 | 20280R | 109 | 20364R | 114 | 20448R | 96 |
| 17882 | 140 | 18108 | 193 | 18962 | 192 | 20232S | 108 | 20280S | 109 | 20364S | 114 | 20448S | 96 |
| 17883 | 140 | 18109 | 193 | 18975 | 192 | 20234B | 108 | 20282B | 109 | 20366B | 114 | 20450B | 96 |
| 17884 | 140 | 18110 | 194 | 19000 | 127 | 20234R | 108 | 20282R | 109 | 20366R | 114 | 20450R | 96 |
| 17885 | 144 | 18122 | 194 | 19001 | 127 | 20234S | 108 | 20282S | 109 | 20366S | 114 | 20450S | 96 |
| 17886 | 140 | 18123 | 194 | 19002 | 128 | 20236B | 108 | 20284B | 109 | 20368B | 114 | 20452B | 96 |
| 17887 | 140 | 18124 | 194 | 19003 | 127 | 20236R | 108 | 20284R | 109 | 20368R | 114 | 20452R | 96 |
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| 17889 | 140 | 18126 | 193 | 19005 | 128 | 20238B | 108 | 20286B | 109 | 20370B | 114 | 20454B | 96 |
| 17890 | 144 | 18128 | 193 | 19006 | 128 | 20238R | 108 | 20286R | 109 | 20370R | 114 | 20454R | 96 |
| 17891 | 140 | 18129 | 193 | 19007 | 128 | 20238S | 108 | 20286S | 109 | 20370S | 114 | 20454S | 96 |
| 17892 | 140 | 18137 | 194 | 19008 | 127 | 20240B | 108 | 20288B | 109 | 20372B | 114 | 20456B | 96 |
| 17893 | 140 | 18150 | 194 | 19009 | 128 | 20240R | 108 | 20288R | 109 | 20372R | 114 | 20456R | 96 |
| 17894 | 140 | 18162 | 194 | 19010 | 127 | 20240S | 108 | 20288S | 109 | 20372S | 114 | 20456S | 96 |
| 17895 | 140 | 18175 | 194 | 19011 | 128 | 20242B | 108 | 20326B | 114 | 20374B | 115 | 20458B | 96 |
| 17896 | 144 | 18210 | 194 | 19012 | 127 | 20242R | 108 | 20326R | 114 | 20374R | 115 | 20458R | 96 |
| 17897 | 140 | 18225 | 194 | 19013 | 128 | 20242S | 108 | 20326S | 114 | 20374S | 115 | 20458S | 96 |
| 17898 | 141 | 18237 | 194 | 19014 | 127 | 20244B | 108 | 20328B | 114 | 20376B | 115 | 20460B | 96 |
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| 17901 | 141 | 18254 | 193 | 19017 | 128 | 20246B | 108 | 20330B | 114 | 20378B | 115 | 20462B | 96 |
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| 17910 | 141 | 18337 | 194 | 19026 | 129 | 20252B | 108 | 20336B | 114 | 20384B | 115 | 20468B | 96 |
| 17911 | 144 | 18350 | 194 | 19027 | 129 | 20252R | 108 | 20336R | 114 | 20384R | 115 | 20468R | 96 |
| 17912 | 141 | 18362 | 194 | 19028 | 129 | 20252S | 108 | 20336S | 114 | 20384S | 115 | 20468S | 96 |
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| 17914 | 141 | 18376 | 193 | 19030 | 129 | 20254R | 108 | 20338R | 114 | 20386R | 115 | 20470R | 96 |
| 17915 | 144 | 18378 | 193 | 19031 | 128 | 20254S | 108 | 20338S | 114 | 20386S | 115 | 20470S | 96 |
| 17917 | 141 | 18379 | 193 | 19032 | 129 | 20256B | 108 | 20340B | 114 | 20388B | 115 | 20472B | 96 |
| 17918 | 141 | 18506 | 193 | 19033 | 128 | 20256R | 108 | 20340R | 114 | 20388R | 115 | 20472R | 96 |
| 17919 | 141 | 18508 | 193 | 19034 | 128 | 20256S | 108 | 20340S | 114 | 20388S | 115 | 20472S | 96 |
| 17920 | 144 | 18509 | 193 | 19035 | 129 | 20258B | 108 | 20342B | 114 | 20426B | 96 | 20474B | 97 |
| 17921 | 141 | 18610 | 192 | 19036 | 129 | 20258R | 108 | 20342R | 114 | 20426R | 96 | 20474R | 97 |
| 17922 | 141 | 18612 | 192 | 19037 | 129 | 20258S | 108 | 20342S | 114 | 20426S | 96 | 20474S | 97 |
| 17923 | 141 | 18615 | 192 | 19038 | 129 | 20260B | 108 | 20344B | 114 | 20428B | 96 | 20476B | 97 |
| 17924 | 141 | 18616 | 192 | 19039 | 129 | 20260R | 108 | 20344R | 114 | 20428R | 96 | 20476R | 97 |
| 17925 | 144 | 18617 | 192 | 19040 | 129 | 20260S | 108 | 20344S | 114 | 20428S | 96 | 20476S | 97 |
| 17926 | 141 | 18618 | 192 | 19041 | 128 | 20262B | 108 | 20346B | 114 | 20430B | 96 | 20478B | 97 |
| 17927 | 141 | 18619 | 192 | 19042 | 129 | 20262R | 108 | 20346R | 114 | 20430R | 96 | 20478R | 97 |
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| 17929 | 141 | 18626 | 193 | 19044 | 129 | 20264B | 108 | 20348B | 114 | 20432B | 96 | 20480B | 97 |
| 17930 | 144 | 18628 | 193 | 19045 | 129 | 20264R | 108 | 20348R | 114 | 20432R | 96 | 20480R | 97 |
| 17931 | 141 | 18629 | 193 | 19046 | 129 | 20264S | 108 | 20348S | 114 | 20432S | 96 | 20480S | 97 |
| 17932 | 144 | 18637 | 192 | 19047 | 128 | 20266B | 108 | 20350B | 114 | 20434B | 96 | 20482B | 97 |
| 17933 | 141 | 18650 | 192 | 19048 | 129 | 20266R | 108 | 20350R | 114 | 20434R | 96 | 20482R | 97 |
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| 17935 | 141 | 18675 | 192 | 19050 | 128 | 20268B | 108 | 20352B | 114 | 20436B | 96 | 20484B | 97 |
| 17936 | 141 | 18756 | 193 | 19051 | 129 | 20268R | 108 | 20352R | 114 | 20436R | 96 | 20484R | 97 |
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| 17938 | 141 | 18759 | 193 | 19053 | 129 | 20270B | 108 | 20354B | 114 | 20438B | 96 | 20486B | 97 |
| 17939 | 144 | 18810 | 192 | 19054 | 129 | 20270R | 108 | 20354R | 114 | 20438R | 96 | 20486R | 97 |
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| 23208 | 153 | 27016 | 23 | 27103 | 23 | 27183* | 26 | 27255 | 26 | 27327 | 32 | 27400* | 32 |
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| 27485* | 29 | 27557 | 30 | 27629* | 30 | 27701 | 30 | 27773* | 33 | 27855* | 31 | 27927* | 27 |
| 27486 | 29 | 27558* | 30 | 27630* | 30 | 27702* | 30 | 27774* | 33 | 27856* | 31 | 27928* | 30 |
| 27487* | 29 | 27559* | 30 | 27631 | 26 | 27703* | 30 | 27775* | 33 | 27857 | 31 | 27929* | 30 |
| 27488 | 29 | 27560* | 30 | 27632* | 26 | 27704* | 30 | 27776* | 33 | 27858* | 31 | 27930 | 31 |
| 27489* | 29 | 27561 | 26 | 27633* | 30 | 27705 | 30 | 27777 | 33 | 27859* | 27 | 27931 | 31 |
| 27490 | 29 | 27562 | 26 | 27634* | 30 | 27706* | 30 | 27778* | 33 | 27860* | 27 | 27932 | 31 |
| 27491 | 29 | 27563* | 30 | 27635* | 30 | 27707 | 27 | 27779 | 27 | 27861* | 24 | 27933 | 32 |
| 27492 | 26 | 27564* | 30 | 27636* | 30 | 27708* | 27 | 27780 | 33 | 27862* | 31 | 27934 | 32 |
| 27493* | 26 | 27565* | 30 | 27637* | 30 | 27709* | 24 | 27781* | 33 | 27863* | 31 | 27935 | 32 |
| 27494* | 23 | 27566* | 30 | 27638* | 30 | 27710* | 30 | 27782* | 33 | 27864 | 31 | 27936* | 32 |
| 27495* | 29 | 27567* | 30 | 27639 | 30 | 27711* | 30 | 27783 | 33 | 27865* | 31 | 27937 | 32 |
| 27496* | 29 | 27568* | 30 | 27640* | 30 | 27712 | 30 | 27784* | 33 | 27866* | 31 | 27938 | 32 |
| 27497 | 29 | 27569* | 30 | 27641* | 26 | 27713* | 30 | 27785 | 33 | 27867* | 31 | 27939* | 32 |
| 27498* | 29 | 27570* | 30 | 27642* | 26 | 27714* | 30 | 27786* | 33 | 27868* | 31 | 27940* | 32 |
| 27499 | 29 | 27571* | 30 | 27643* | 30 | 27715* | 30 | 27787* | 33 | 27869* | 31 | 27941 | 32 |
| 27500* | 29 | 27572* | 30 | 27644* | 30 | 27716* | 30 | 27788* | 33 | 27870 | 31 | 27942 | 32 |
| 27501 | 29 | 27573 | 26 | 27645* | 30 | 27717* | 30 | 27789* | 27 | 27871* | 31 | 27943 | 32 |
| 27502* | 29 | 27574 | 26 | 27646* | 30 | 27718 | 30 | 27790* | 33 | 27872 | 27 | 27944 | 33 |
| 27503 | 29 | 27575* | 24 | 27647* | 30 | 27719* | 30 | 27791 | 27 | 27873* | 27 | 27945 | 32 |
| 27504* | 29 | 27576* | 24 | 27648* | 30 | 27720 | 27 | 27792* | 27 | 27874* | 24 | 27946 | 31 |
| 27505 | 26 | 27577* | 33 | 27649 | 30 | 27721* | 27 | 27793* | 33 | 27875* | 31 | 27947* | 31 |
| 27506* | 26 | 27578* | 33 | 27650* | 30 | 27722* | 24 | 27794* | 33 | 27876* | 31 | 27948 | 32 |
| 27507* | 29 | 27579* | 33 | 27651 | 27 | 27723 | 30 | 27795* | 33 | 27877* | 31 | 27949* | 32 |
| 27508* | 29 | 27580* | 33 | 27652* | 27 | 27724* | 30 | 27796* | 33 | 27878* | 31 | 27950* | 28 |
| 27509* | 29 | 27581* | 33 | 27653 | 24 | 27725 | 30 | 27797* | 33 | 27879* | 31 | 27951 | 24 |
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| 27511* | 29 | 27583* | 27 | 27655 | 33 | 27727* | 30 | 27799* | 33 | 27881* | 31 | 30001* | 112 |
| 27512* | 29 | 27584* | 27 | 27656* | 33 | 27728* | 30 | 27800* | 33 | 27882* | 31 | 30002* | 112 |
| 27513* | 29 | 27585* | 33 | 27657 | 33 | 27729* | 30 | 27801* | 33 | 27883* | 31 | 30003* | 113 |
| 27514* | 29 | 27586* | 33 | 27658* | 33 | 27730* | 30 | 27802* | 33 | 27884* | 31 | 30004* | 113 |
| 27515* | 29 | 27587* | 33 | 27659 | 33 | 27731* | 30 | 27803* | 27 | 27885* | 27 | 30005* | 113 |
| 27516* | 29 | 27588* | 33 | 27660* | 33 | 27732* | 30 | 27804* | 27 | 27886* | 27 | 30006* | 113 |
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| 30035 | 81 | 30107 | 86 | 30179* | 104 | 30304* | 110 | 30377* | 102 | 30453* | 110 | 30529 | 102 |
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| 30038 | 81 | 30110* | 98 | 30182* | 110 | 30307 | 110 | 30380 | 102 | 30456 | 110 | 30532* | 102 |
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| 30044 | 81 | 30116* | 99 | 30188* | 111 | 30313 | 110 | 30386* | 102 | 30464* | 110 | 30538 | 102 |
| 30045 | 81 | 30117* | 99 | 30189 | 111 | 30314* | 110 | 30387 | 102 | 30465* | 110 | 30539* | 102 |
| 30046 | 81 | 30118* | 99 | 30190* | 111 | 30315 | 110 | 30388* | 102 | 30467* | 110 | 30540* | 102 |
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| 30048 | 81 | 30120 | 99 | 30192* | 111 | 30317 | 110 | 30390* | 102 | 30469* | 110 | 30542 | 102 |
| 30049 | 81 | 30121* | 99 | 30193* | 111 | 30318* | 110 | 30391 | 102 | 30470* | 110 | 30543* | 103 |
| 30050 | 81 | 30122* | 99 | 30194* | 111 | 30319 | 110 | 30392* | 103 | 30471* | 110 | 30544* | 103 |
| 30051 | 81 | 30123* | 99 | 30195* | 112 | 30320 | 110 | 30393* | 103 | 30472* | 110 | 30545* | 103 |
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| 30057 | 81 | 30129* | 99 | 30201 | 81 | 30326* | 110 | 30399* | 103 | 30478* | 111 | 30551* | 103 |
| 30058 | 81 | 30130* | 99 | 30202 | 81 | 30327* | 111 | 30400* | 103 | 30479* | 111 | 30552* | 103 |
| 30059 | 81 | 30131 | 99 | 30203 | 81 | 30328 | 111 | 30401* | 103 | 30480* | 111 | 30553* | 103 |
| 30060 | 81 | 30132 | 99 | 30204 | 81 | 30329* | 111 | 30402* | 103 | 30481* | 111 | 30554* | 103 |
| 30061 | 82 | 30133* | 99 | 30205 | 84 | 30330* | 111 | 30403* | 103 | 30482 | 111 | 30555* | 103 |
| 30062 | 81 | 30134* | 99 | 30206 | 85 | 30331 | 111 | 30404* | 103 | 30483* | 111 | 30556* | 103 |
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| 30065 | 82 | 30137* | 99 | 30209 | 85 | 30334* | 111 | 30407* | 103 | 30486* | 111 | 30559* | 103 |
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| 30069 | 84 | 30141* | 100 | 30213 | 99 | 30339 | 84 | 30411* | 103 | 30491 | 84 | 30563* | 104 |
| 30070 | 84 | 30142* | 100 | 30214 | 99 | 30340 | 84 | 30412* | 104 | 30492 | 84 | 30564* | 104 |
| 30071 | 84 | 30143* | 100 | 30215 | 103 | 30341 | 84 | 30413* | 104 | 30493 | 84 | 30565* | 112 |
| 30072 | 84 | 30144* | 102 | 30216* | 103 | 30342 | 84 | 30414* | 112 | 30494 | 84 | 30566* | 112 |
| 30073 | 85 | 30145* | 102 | 30217 | 103 | 30343 | 84 | 30415* | 112 | 30495 | 84 | 30567* | 112 |
| 30074 | 84 | 30146 | 102 | 30218* | 103 | 30344 | 84 | 30417* | 112 | 30496 | 84 | 30570* | 112 |
| 30075 | 85 | 30147* | 102 | 30219 | 103 | 30345 | 84 | 30418* | 112 | 30497* | 84 | 30572* | 112 |
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| 30077 | 85 | 30149 | 103 | 30221 | 85 | 30347 | 84 | 30420 | 112 | 30499* | 84 | 30574* | 112 |
| 30078 | 85 | 30150* | 103 | 30222 | 99 | 30348* | 84 | 30421* | 112 | 30500 | 84 | 30575 | 112 |
| 30079 | 85 | 30151* | 103 | 30223 | 103 | 30349 | 84 | 30422* | 112 | 30501* | 84 | 30576* | 112 |
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| 30081 | 85 | 30153* | 103 | 30225 | 99 | 30351* | 84 | 30424 | 112 | 30503* | 84 | 30578* | 112 |
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| 30084 | 85 | 30156* | 103 | 30228 | 85 | 30354* | 85 | 30427* | 112 | 30506 | 85 | 30581* | 112 |
| 30085 | 85 | 30157* | 103 | 30229* | 103 | 30355 | 85 | 30428* | 112 | 30507* | 85 | 30582* | 112 |
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| 30090* | 85 | 30162* | 103 | 30234 | 110 | 30360* | 85 | 30434* | 112 | 30512 | 85 | 30588* | 113 |
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| 30093 | 85 | 30165* | 103 | 30237* | 112 | 30363* | 85 | 30438* | 113 | 30515* | 85 | 30591* | 113 |
| 30094 | 85 | 30166 | 103 | 30238 | 80 | 30364* | 85 | 30439* | 113 | 30516* | 85 | 30592* | 113 |
| 30095 | 85 | 30167* | 103 | 30239 | 81 | 30365 | 85 | 30440* | 113 | 30517* | 85 | 30593* | 113 |
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| 30665 | 99 | 30737 | 85 | 30809* | 112 | 30952* | 119 | 31563* | 90 | 31684 | 88 | 31756* | 89 |
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| 31772* | 90 | 31844 | 92 | 31916* | 88 | 32014 | 81 | 32089 | 102 | 32186 | 99 | 32305 | 99 |
| 31773* | 90 | 31845 | 92 | 31917* | 88 | 32015 | 81 | 32090 | 102 | 32187 | 100 | 32306 | 100 |
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| 31775* | 90 | 31847* | 92 | 31919* | 89 | 32017 | 81 | 32092* | 102 | 32189 | 102 | 32308 | 100 |
| 31776* | 90 | 31848* | 93 | 31920* | 89 | 32018 | 81 | 32093 | 102 | 32190* | 102 | 32309 | 102 |
| 31777* | 90 | 31849* | 93 | 31921* | 89 | 32019 | 81 | 32094* | 102 | 32191 | 102 | 32310 | 102 |
| 31778* | 90 | 31850* | 93 | 31922* | 89 | 32020 | 81 | 32095 | 102 | 32192* | 102 | 32311 | 103 |
| 31779* | 90 | 31851* | 93 | 31923* | 89 | 32021 | 81 | 32096 | 102 | 32193 | 102 | 32312* | 103 |
| 31780* | 90 | 31852* | 88 | 31924* | 89 | 32022 | 81 | 32097* | 102 | 32194* | 102 | 32313 | 103 |
| 31781* | 90 | 31853* | 88 | 31925* | 89 | 32023 | 81 | 32098 | 102 | 32195* | 102 | 32314 | 103 |
| 31782* | 90 | 31854* | 88 | 31926* | 89 | 32024 | 82 | 32099* | 103 | 32196 | 102 | 32315* | 103 |
| 31783* | 90 | 31855* | 88 | 31927* | 89 | 32025 | 82 | 32100 | 103 | 32197* | 103 | 32316* | 103 |
| 31784* | 90 | 31856* | 88 | 31928* | 89 | 32026 | 82 | 32101 | 103 | 32198 | 103 | 32317 | 103 |
| 31785* | 90 | 31857* | 88 | 31929* | 90 | 32027 | 82 | 32102 | 103 | 32199* | 103 | 32318 | 103 |
| 31786* | 90 | 31858* | 88 | 31930* | 90 | 32028 | 82 | 32103 | 103 | 32200* | 103 | 32319* | 103 |
| 31787* | 90 | 31859* | 88 | 31931 | 90 | 32029 | 82 | 32104 | 103 | 32201 | 103 | 32320* | 103 |
| 31788* | 90 | 31860* | 89 | 31932* | 90 | 32030 | 84 | 32105* | 103 | 32202* | 103 | 32321* | 103 |
| 31789* | 90 | 31861* | 89 | 31933* | 90 | 32031 | 84 | 32106 | 103 | 32203* | 104 | 32322 | 103 |
| 31790* | 90 | 31862* | 89 | 31934* | 90 | 32032 | 84 | 32107* | 103 | 32250 | 82 | 32323* | 104 |
| 31791* | 90 | 31863* | 89 | 31935* | 91 | 32033 | 84 | 32108 | 103 | 32252 | 80 | 32324* | 104 |
| 31792* | 90 | 31864* | 89 | 31936* | 91 | 32034 | 84 | 32109* | 104 | 32253 | 80 | 32325* | 104 |
| 31793* | 91 | 31865* | 89 | 31937* | 91 | 32035 | 84 | 32110 | 104 | 32254 | 81 | 32326 | 80 |
| 31794* | 91 | 31866* | 89 | 31938* | 91 | 32036 | 84 | 32112* | 84 | 32255 | 81 | 32327 | 80 |
| 31795* | 91 | 31867* | 89 | 31939* | 91 | 32037 | 84 | 32113 | 98 | 32256 | 81 | 32328 | 80 |
| 31796* | 91 | 31868* | 89 | 31940* | 91 | 32038 | 84 | 32114 | 102 | 32257 | 81 | 32329 | 80 |
| 31797* | 91 | 31869* | 89 | 31941* | 91 | 32039 | 84 | 32139 | 80 | 32258 | 81 | 32330 | 80 |
| 31798* | 91 | 31870* | 89 | 31942* | 91 | 32040 | 84 | 32140 | 80 | 32259 | 81 | 32331 | 81 |
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| 31803* | 91 | 31875* | 90 | 31947* | 92 | 32045 | 85 | 32145 | 80 | 32264 | 82 | 32336 | 81 |
| 31804* | 91 | 31876* | 90 | 31948* | 92 | 32046 | 85 | 32146 | 80 | 32265 | 82 | 32337 | 81 |
| 31805* | 91 | 31877* | 90 | 31949* | 92 | 32047 | 85 | 32147 | 80 | 32266 | 82 | 32338 | 82 |
| 31806* | 91 | 31878* | 90 | 31950* | 92 | 32048 | 85 | 32148 | 80 | 32267 | 82 | 32339 | 98 |
| 31807* | 91 | 31879* | 90 | 31951* | 92 | 32049 | 85 | 32149 | 81 | 32268 | 82 | 32340 | 98 |
| 31808* | 91 | 31880* | 90 | 31952* | 92 | 32050 | 85 | 32150 | 81 | 32269 | 82 | 32341 | 98 |
| 31809* | 91 | 31881* | 90 | 31953* | 92 | 32051 | 85 | 32151 | 81 | 32270 | 82 | 32342 | 98 |
| 31810* | 91 | 31882* | 90 | 31954* | 88 | 32052 | 86 | 32152 | 81 | 32271 | 82 | 32343 | 98 |
| 31811* | 91 | 31883* | 90 | 31955* | 88 | 32053 | 86 | 32153 | 81 | 32272 | 84 | 32344 | 99 |
| 31812* | 91 | 31884* | 90 | 31956* | 88 | 32054 | 86 | 32154 | 81 | 32273 | 84 | 32345 | 99 |
| 31813* | 91 | 31885* | 90 | 31957* | 88 | 32055* | 86 | 32155 | 82 | 32274 | 85 | 32346* | 99 |
| 31814* | 91 | 31886* | 91 | 31958* | 88 | 32056* | 86 | 32156 | 84 | 32275 | 85 | 32347 | 99 |
| 31815* | 91 | 31887* | 91 | 31959* | 88 | 32057 | 86 | 32157 | 84 | 32276 | 85 | 32348 | 99 |
| 31816* | 91 | 31888* | 91 | 31960* | 88 | 32058 | 98 | 32158 | 84 | 32277 | 85 | 32349* | 99 |
| 31817* | 91 | 31889* | 91 | 31961* | 88 | 32059 | 98 | 32159 | 84 | 32278 | 85 | 32350* | 99 |
| 31818* | 91 | 31890* | 91 | 31962* | 89 | 32060 | 98 | 32160* | 84 | 32279 | 85 | 32351* | 100 |
| 31819* | 92 | 31891* | 91 | 31963 | 89 | 32061 | 98 | 32161 | 84 | 32280 | 85 | 32352 | 116 |
| 31820* | 92 | 31892* | 91 | 31964* | 89 | 32062 | 98 | 32162 | 84 | 32281 | 85 | 32353* | 116 |
| 31821* | 92 | 31893* | 91 | 31965* | 89 | 32063 | 98 | 32163 | 84 | 32282 | 85 | 32354 | 116 |
| 31822* | 92 | 31894* | 92 | 31966* | 90 | 32064 | 98 | 32164 | 84 | 32283 | 85 | 32355* | 116 |
| 31823* | 92 | 31895* | 92 | 31967* | 90 | 32065 | 98 | 32165 | 85 | 32284 | 85 | 32356* | 116 |
| 31824* | 92 | 31896* | 92 | 31968* | 91 | 32066 | 98 | 32166 | 85 | 32285 | 86 | 32357 | 116 |
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| 31827* | 92 | 31899* | 92 | 31971* | 91 | 32069 | 98 | 32169 | 85 | 32288 | 86 | 32360* | 116 |
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| 32368 | 117 | 32462 | 86 | 32558 | 85 | 32667 | 80 | 32748* | 81 | 32840 | 98 | 32924 | 81 |
| 32369* | 117 | 32463* | 86 | 32559 | 85 | 32668 | 118 | 32749 | 81 | 32841 | 98 | 32925 | 81 |
| 32370* | 117 | 32464 | 86 | 32560 | 85 | 32669 | 118 | 32750* | 81 | 32842 | 98 | 32930 | 85 |
| 32371* | 117 | 32465 | 100 | 32561 | 85 | 32670 | 118 | 32751 | 81 | 32843 | 98 | 32931 | 85 |
| 32372 | 117 | 32466 | 100 | 32562 | 99 | 32671* | 118 | 32752* | 81 | 32844* | 98 | 32932 | 85 |
| 32387 | 82 | 32467 | 100 | 32563 | 99 | 32672* | 118 | 32753 | 81 | 32845 | 98 | 32933 | 85 |
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| 32389 | 82 | 32469 | 100 | 32565 | 99 | 32674* | 118 | 32755* | 81 | 32847 | 98 | 32935* | 85 |
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| 32392 | 82 | 32472 | 100 | 32568 | 102 | 32677* | 118 | 32758 | 81 | 32850* | 99 | 32940 | 99 |
| 32393 | 82 | 32473 | 100 | 32569 | 103 | 32678* | 118 | 32759 | 81 | 32851* | 99 | 32941 | 99 |
| 32395 | 82 | 32474 | 100 | 32570* | 103 | 32679* | 118 | 32760 | 81 | 32852* | 99 | 32942 | 99 |
| 32397 | 82 | 32475 | 100 | 32571 | 103 | 32680 | 118 | 32761 | 81 | 32853* | 99 | 32943 | 99 |
| 32398 | 82 | 32476 | 100 | 32572* | 103 | 32681* | 118 | 32762 | 82 | 32854* | 99 | 32944 | 99 |
| 32399 | 83 | 32477 | 100 | 32573 | 103 | 32682 | 118 | 32763 | 82 | 32855* | 100 | 32945 | 99 |
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| 32401 | 86 | 32479* | 104 | 32575 | 85 | 32684* | 119 | 32765 | 98 | 32861* | 82 | 32947 | 99 |
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| 32403 | 86 | 32481* | 104 | 32577* | 103 | 32686* | 119 | 32767 | 98 | 32863* | 100 | 32951* | 103 |
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| 32408 | 86 | 32485* | 104 | 32581* | 103 | 32697* | 118 | 32771 | 98 | 32867 | 84 | 32955* | 103 |
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| 32415 | 100 | 32491 | 82 | 32587 | 100 | 32703 | 82 | 32777* | 98 | 32873 | 84 | 32963 | 110 |
| 32416 | 100 | 32492 | 82 | 32588 | 100 | 32704 | 82 | 32778* | 98 | 32874 | 85 | 32964 | 110 |
| 32417 | 100 | 32493 | 82 | 32589 | 100 | 32705 | 82 | 32779 | 98 | 32875 | 85 | 32965 | 110 |
| 32418 | 100 | 32494 | 82 | 32590* | 104 | 32706 | 82 | 32780* | 99 | 32876 | 85 | 32966 | 111 |
| 32419 | 100 | 32495 | 82 | 32591* | 104 | 32707 | 82 | 32781* | 99 | 32877 | 85 | 32967 | 111 |
| 32421 | 100 | 32496 | 82 | 32592* | 104 | 32708 | 82 | 32782* | 99 | 32878 | 85 | 32970* | 112 |
| 32423 | 100 | 32497 | 82 | 32593* | 104 | 32709 | 82 | 32783 | 99 | 32879 | 85 | 32971* | 112 |
| 32424 | 100 | 32498 | 86 | 32594 | 82 | 32710 | 82 | 32784* | 99 | 32880* | 86 | 32972* | 112 |
| 32425 | 100 | 32499 | 86 | 32595 | 100 | 32711* | 82 | 32785* | 99 | 32881* | 102 | 32973* | 112 |
| 32426 | 104 | 32500 | 86 | 32596* | 86 | 32712 | 83 | 32786* | 99 | 32882* | 102 | 32974* | 113 |
| 32427 | 104 | 32501 | 86 | 32597* | 104 | 32713 | 100 | 32787 | 99 | 32883 | 102 | 32975* | 113 |
| 32428 | 104 | 32502 | 86 | 32598 | 111 | 32714* | 100 | 32788* | 99 | 32884* | 102 | 32976* | 113 |
| 32429 | 104 | 32503* | 86 | 32599 | 113 | 32715* | 100 | 32789* | 99 | 32885 | 102 | 32977* | 113 |
| 32430 | 104 | 32504 | 86 | 32600 | 124 | 32716* | 100 | 32790* | 99 | 32886* | 102 | 33002 | 110 |
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| 32442 | 82 | 32538 | 82 | 32624 | 82 | 32728 | 80 | 32800* | 100 | 32896* | 103 | 33012 | 110 |
| 32443 | 82 | 32539 | 82 | 32626 | 82 | 32729 | 80 | 32801* | 100 | 32897* | 104 | 33013 | 110 |
| 32444 | 82 | 32540 | 116 | 32627* | 82 | 32730 | 80 | 32822 | 80 | 32900 | 81 | 33014 | 110 |
| 32445 | 82 | 32541 | 116 | 32650 | 80 | 32731 | 80 | 32823 | 80 | 32901 | 99 | 33015 | 110 |
| 32446 | 82 | 32542 | 116 | 32651 | 84 | 32732 | 80 | 32824 | 80 | 32902 | 110 | 33016 | 110 |
| 32447 | 82 | 32543 | 116 | 32652 | 84 | 32733 | 80 | 32825 | 80 | 32904 | 85 | 33017 | 110 |
| 32448 | 82 | 32544* | 116 | 32653 | 84 | 32734 | 80 | 32826 | 80 | 32905* | 103 | 33018 | 111 |
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| 32450 | 82 | 32546 | 86 | 32655 | 98 | 32736 | 80 | 32828 | 80 | 32910 | 81 | 33020 | 111 |
| 32451 | 83 | 32547 | 86 | 32656 | 98 | 32737 | 80 | 32829 | 80 | 32911 | 99 | 33021 | 111 |
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| 32453 | 86 | 32549 | 86 | 32658* | 102 | 32739 | 80 | 32831 | 80 | 32914 | 85 | 33023 | 111 |
| 32454 | 86 | 32550 | 81 | 32659* | 102 | 32740 | 80 | 32832 | 81 | 32915* | 103 | 33024 | 111 |
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| 32456 | 86 | 32552 | 81 | 32661 | 110 | 32742 | 81 | 32834 | 81 | 32918 | 81 | 33030 | 112 |
| 32457 | 86 | 32553 | 81 | 32662 | 110 | 32743 | 81 | 32835 | 81 | 32919 | 81 | 33031 | 112 |
| 32458 | 86 | 32554 | 81 | 32663* | 112 | 32744 | 81 | 32836 | 81 | 32920 | 81 | 33032 | 112 |
| 32459 | 86 | 32555 | 81 | 32664* | 112 | 32745 | 81 | 32837 | 81 | 32921 | 81 | 33033 | 112 |

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| 33036 | 112 | 33128* | 98 | 33731 | 92 | 33810 | 91 | 33882* | 107 | 34116 | 61 | 34293 | 51 |
| 33037* | 112 | 33129* | 98 | 33732 | 92 | 33811 | 92 | 33883* | 106 | 34117 | 45 | 34294 | 51 |
| 33038* | 112 | 33130 | 98 | 33733 | 90 | 33812* | 92 | 33884* | 106 | 34118W | 62 | 34295 | 51 |
| 33039 | 112 | 33131* | 98 | 33734 | 91 | 33813 | 88 | 33885* | 107 | 34118 | 62 | 34296 | 51 |
| 33040 | 112 | 33132* | 98 | 33735 | 91 | 33814 | 89 | 33886* | 107 | 34119 | 61 | 34297 | 51 |
| 33041 | 112 | 33133* | 98 | 33736 | 92 | 33815 | 89 | 33887* | 106 | 34120 | 63 | 34298 | 51 |
| 33042* | 112 | 33134* | 98 | 33737 | 92 | 33816 | 89 | 33888* | 106 | 34121 | 61 | 34300 | 53 |
| 33043 | 112 | 33135* | 99 | 33738 | 91 | 33817 | 90 | 33889* | 107 | 34122W | 62 | 34301 | 53 |
| 33044* | 112 | 33136* | 99 | 33739 | 91 | 33818 | 91 | 33890* | 107 | 34122 | 62 | 34302 | 53 |
| 33045 | 112 | 33137 | 99 | 33740 | 92 | 33819 | 91 | 34001 | 43 | 34123W | 63 | 34303 | 53 |
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| 33047 | 113 | 33139 | 99 | 33742 | 91 | 33821 | 92 | 34009 | 43 | 34124 | 62 | 34306 | 53 |
| 33048* | 113 | 33140 | 99 | 33743 | 92 | 33822 | 89 | 34013 | 43 | 34125 | 57 | 34307 | 53 |
| 33049 | 113 | 33141* | 99 | 33744 | 92 | 33823 | 89 | 34017 | 43 | 34127 | 57 | 34308 | 53 |
| 33050* | 113 | 33142* | 99 | 33745* | 106 | 33824 | 91 | 34021 | 43 | 34129 | 57 | 34309 | 53 |
| 33051 | 113 | 33143* | 99 | 33746* | 106 | 33825 | 92 | 34025 | 43 | 34131 | 57 | 34310 | 53 |
| 33052* | 113 | 33144* | 99 | 33747 | 106 | 33826 | 92 | 34027 | 43 | 34133 | 57 | 34311 | 53 |
| 33053* | 113 | 33145* | 99 | 33748* | 106 | 33827 | 89 | 34029 | 43 | 34135 | 57 | 34312 | 53 |
| 33059 | 110 | 33146* | 99 | 33749* | 106 | 33828 | 89 | 34033 | 43 | 34137 | 57 | 34313 | 53 |
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| 33061 | 110 | 33148* | 100 | 33751* | 106 | 33830 | 91 | 34041W | 46 | 34139 | 57 | 34315 | 53 |
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| 33071 | 112 | 33426 | 74 | 33761* | 106 | 33840 | 92 | 34057 | 47 | 34158 | 57 | 34371 | 53 |
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| 33077 | 113 | 33468 | 74 | 33767 | 106 | 33846* | 106 | 34065 | 47 | 34169 | 47 | 34405 | 54 |
| 33078* | 113 | 33470 | 74 | 33768* | 106 | 33847* | 106 | 34067 | 47 | 34170 | 47 | 34406 | 54 |
| 33079 | 111 | 33472 | 74 | 33769* | 107 | 33848* | 106 | 34068 | 47 | 34171* | 47 | 34407 | 54 |
| 33080 | 111 | 33474 | 74 | 33770* | 107 | 33849* | 106 | 34069W | 47 | 34172 | 47 | 34408 | 54 |
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| 33100 | 80 | 33703 | 89 | 33775 | 106 | 33854* | 106 | 34073W | 48 | 34177 | 60 | 34413 | 54 |
| 33101 | 80 | 33704 | 90 | 33776* | 107 | 33855* | 106 | 34073 | 48 | 34178 | 60 | 34414 | 54 |
| 33102 | 80 | 33705 | 91 | 33777* | 107 | 33856* | 106 | 34074 | 48 | 34179 | 60 | 34415 | 54 |
| 33103 | 80 | 33706 | 91 | 33778* | 106 | 33857* | 106 | 34075 | 48 | 34180 | 61 | 34416 | 54 |
| 33104 | 80 | 33707 | 92 | 33779* | 106 | 33858* | 106 | 34076* | 48 | 34181 | 61 | 34417 | 54 |
| 33105 | 80 | 33708 | 92 | 33780* | 106 | 33859* | 106 | 34077W | 48 | 34182 | 61 | 34418 | 54 |
| 33106* | 80 | 33709 | 88 | 33781* | 107 | 33860* | 106 | 34077 | 48 | 34183 | 61 | 34419 | 54 |
| 33107 | 80 | 33710 | 89 | 33782* | 107 | 33861* | 106 | 34078 | 48 | 34184 | 61 | 34420 | 54 |
| 33108 | 80 | 33711 | 89 | 33783* | 106 | 33862* | 107 | 34079 | 48 | 34185 | 61 | 34421 | 55 |
| 33109 | 80 | 33712 | 89 | 33784* | 106 | 33863* | 106 | 34081 | 45 | 34186 | 62 | 34422 | 55 |
| 33110 | 81 | 33713 | 90 | 33785* | 107 | 33864* | 106 | 34085 | 45 | 34187 | 62 | 34423 | 55 |
| 33111 | 81 | 33714 | 91 | 33786* | 107 | 33865* | 106 | 34089 | 45 | 34188 | 62 | 34424 | 55 |
| 33112* | 81 | 33715 | 91 | 33787 | 106 | 33866* | 106 | 34093 | 45 | 34189 | 62 | 34425 | 55 |
| 33113 | 81 | 33716 | 92 | 33788* | 107 | 33867* | 106 | 34097 | 45 | 34190 | 47 | 34426 | 55 |
| 33114 | 81 | 33717 | 92 | 33789* | 107 | 33868* | 106 | 34101 | 45 | 34191* | 48 | 34427* | 55 |
| 33115* | 81 | 33718 | 89 | 33790 | 89 | 33869* | 107 | 34103 | 61 | 34192 | 46 | 34428 | 55 |
| 33116* | 81 | 33719 | 89 | 33791 | 90 | 33870* | 107 | 34104 | 62 | 34193* | 48 | 34429 | 55 |
| 33117 | 81 | 33720 | 89 | 33792 | 90 | 33871* | 106 | 34105 | 45 | 34196 | 46 | 34430 | 55 |
| 33118 | 81 | 33721 | 90 | 33793 | 91 | 33872* | 106 | 34106 | 60 | 34198 | 46 | 34431 | 55 |
| 33119* | 81 | 33722 | 91 | 33794 | 91 | 33873* | 106 | 34107 | 45 | 34200 | 47 | 34432* | 55 |
| 33120* | 81 | 33723 | 91 | 33802 | 91 | 33874* | 106 | 34108 | 60 | 34204 | 47 | 34433 | 55 |
| 33121* | 81 | 33724 | 92 | 33803* | 106 | 33875 | 106 | 34109 | 45 | 34208 | 47 | 34434 | 55 |
| 33122 | 81 | 33725 | 92 | 33804 | 88 | 33876* | 107 | 34110 | 60 | 34212 | 47 | 34435 | 55 |
| 33123* | 82 | 33726 | 89 | 33805 | 89 | 33877* | 107 | 34111 | 60 | 34288 | 51 | 34500 | 54 |
| 33124* | 98 | 33727 | 89 | 33806 | 89 | 33878* | 106 | 34112 | 60 | 34289 | 51 | 34502 | 54 |
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| 34510 | 51 | 34583* | 59 | 34655* | 62 | 34727 | 57 | 34799 | 61 | 36007 | 82 | 36079* | 104 |
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| 34512* | 51 | 34585* | 59 | 34657* | 62 | 34729 | 57 | 34801* | 62 | 36009 | 82 | 36082 | 77 |
| 34513 | 51 | 34586* | 59 | 34658* | 62 | 34730 | 57 | 34802* | 62 | 36010 | 82 | 36083 | 77 |
| 34514* | 51 | 34587* | 59 | 34659 | 62 | 34731* | 57 | 34803 | 62 | 36011 | 82 | 36084 | 77 |
| 34515* | 51 | 34588 | 59 | 34660* | 62 | 34732* | 57 | 34804* | 62 | 36012 | 82 | 36085 | 77 |
| 34516 | 51 | 34589 | 59 | 34661* | 62 | 34733 | 57 | 34805* | 62 | 36013 | 82 | 36086 | 77 |
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| 34518 | 51 | 34591* | 59 | 34663* | 62 | 34735 | 57 | 34853* | 64 | 36015 | 82 | 36088 | 77 |
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| 34521* | 53 | 34594* | 59 | 34666* | 62 | 34738 | 57 | 34856* | 64 | 36018 | 82 | 36091 | 77 |
| 34522* | 53 | 34595* | 59 | 34667* | 62 | 34739* | 57 | 34857* | 64 | 36019 | 82 | 36092 | 77 |
| 34523* | 53 | 34596 | 60 | 34668* | 62 | 34740 | 57 | 34858* | 64 | 36020 | 83 | 36093 | 77 |
| 34524* | 53 | 34597 | 60 | 34669* | 62 | 34741 | 57 | 34859* | 64 | 36021* | 100 | 36094 | 77 |
| 34525* | 53 | 34598 | 60 | 34670* | 62 | 34742* | 60 | 34860* | 64 | 36022* | 100 | 36095 | 77 |
| 34526* | 53 | 34599* | 60 | 34671* | 62 | 34743* | 60 | 34900 | 43 | 36023 | 100 | 36096 | 77 |
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| 34535* | 54 | 34608* | 60 | 34680* | 63 | 34752 | 43 | 34916 | 47 | 36032* | 100 | 36142 | 77 |
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| 34553 | 51 | 34626* | 61 | 34698* | 60 | 34770* | 47 | 35128 | 42 | 36050 | 86 | 36163 | 77 |
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| 34555 | 51 | 34628 | 61 | 34700 | 61 | 34772* | 47 | 35161 | 42 | 36052 | 86 | 36165 | 77 |
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| 34560* | 46 | 34633* | 61 | 34705* | 61 | 34777* | 47 | 35181 | 42 | 36057 | 86 | 36170 | 77 |
| 34561* | 46 | 34634* | 61 | 34706* | 61 | 34778* | 48 | 35198 | 42 | 36058 | 86 | 36171 | 77 |
| 34562* | 47 | 34635* | 61 | 34707* | 61 | 34779* | 48 | 35227 | 42 | 36059* | 86 | 36172 | 77 |
| 34563 | 47 | 34636* | 61 | 34708* | 61 | 34780* | 48 | 35233 | 42 | 36060 | 86 | 36173 | 77 |
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| 34565* | 47 | 34638* | 61 | 34710* | 61 | 34782* | 48 | 35236 | 42 | 36062* | 104 | 36175 | 77 |
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| 34570* | 48 | 34643* | 61 | 34715* | 62 | 34787 | 59 | 35305 | 42 | 36067* | 104 | 37002 | 82 |
| 34571 | 48 | 34644* | 62 | 34716* | 62 | 34788* | 59 | 35353 | 42 | 36068* | 104 | 37003 | 82 |
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| 37009* | 86 | 38107* | 35 | 38179 | 75 | 38374 | 39 | 38620 | 37 | 39613 | 72 | 41070 | 175 |
| 37010* | 86 | 38108* | 35 | 38180 | 75 | 38376 | 39 | 38621 | 37 | 39614 | 72 | 41072* | 175 |
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| 37012* | 86 | 38110* | 35 | 38182 | 75 | 38380 | 39 | 38623 | 37 | 39910 | 71 | 41084 | 175 |
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| 37014* | 86 | 38112* | 35 | 38184 | 75 | 38384 | 39 | 38625 | 37 | 39913 | 71 | 41091 | 175 |
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| 38003 | 70 | 38119* | 36 | 38191 | 75 | 38396 | 39 | 38632 | 37 | 40107 | 175 | 41112 | 175 |
| 38004 | 70 | 38120* | 36 | 38192 | 75 | 38397 | 39 | 38633 | 37 | 40109* | 175 | 41114* | 175 |
| 38005 | 70 | 38121* | 36 | 38193 | 75 | 38398 | 39 | 38634 | 37 | 40114 | 175 | 41116 | 175 |
| 38006 | 70 | 38122* | 36 | 38194 | 76 | 38399 | 39 | 38635 | 37 | 40116 | 175 | 41119 | 175 |
| 38007 | 70 | 38123* | 36 | 38195 | 76 | 38400 | 39 | 38772 | 124 | 40121 | 175 | 41121* | 175 |
| 38008 | 70 | 38124* | 36 | 38196 | 75 | 38402 | 39 | 38773 | 124 | 40123* | 175 | 41123 | 175 |
| 38009 | 70 | 38125* | 36 | 38197 | 35 | 38490 | 41 | 38774 | 124 | 40128 | 175 | 41126 | 175 |
| 38030 | 38 | 38126* | 36 | 38198 | 35 | 38491 | 41 | 38775 | 124 | 40130* | 175 | 41128 | 175 |
| 38031 | 38 | 38127* | 36 | 38199 | 35 | 38492 | 41 | 38776 | 124 | 40135 | 175 | 41770* | 175 |
| 38032 | 38 | 38128* | 36 | 38200 | 35 | 38493 | 41 | 38777 | 124 | 40137 | 175 | 42125 | 176 |
| 38033 | 38 | 38129* | 36 | 38201 | 70 | 38500 | 70 | 38778 | 124 | 40142 | 175 | 42127 | 176 |
| 38034 | 38 | 38130* | 36 | 38202* | 70 | 38501 | 70 | 38779 | 124 | 40144 | 175 | 42129 | 176 |
| 38035 | 38 | 38131 | 39 | 38203 | 70 | 38502 | 70 | 39100 | 125 | 40149 | 175 | 42132 | 176 |
| 38036 | 38 | 38132 | 39 | 38204* | 70 | 38503 | 70 | 39101 | 125 | 40151* | 175 | 42134 | 176 |
| 38037 | 38 | 38133 | 39 | 38205* | 70 | 38504 | 70 | 39102 | 125 | 40156 | 175 | 42139 | 176 |
| 38038 | 38 | 38134* | 39 | 38207 | 70 | 38506 | 70 | 39103 | 125 | 40158* | 175 | 42141 | 176 |
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| 38040 | 38 | 38136* | 39 | 38209* | 70 | 38508 | 70 | 39106 | 125 | 40165 | 175 | 42148 | 176 |
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| 38048 | 38 | 38138* | 39 | 38211 | 35 | 38510 | 36 | 39108 | 125 | 40170 | 175 | 42155 | 176 |
| 38050 | 75 | 38139 | 39 | 38212 | 35 | 38512 | 36 | 39109 | 125 | 40172* | 175 | 42160 | 176 |
| 38052 | 75 | 38140* | 39 | 38213 | 35 | 38514 | 36 | 39110 | 125 | 40177 | 175 | 42162 | 176 |
| 38054 | 75 | 38141 | 39 | 38214 | 35 | 38516 | 36 | 39112 | 125 | 40179* | 175 | 42164 | 176 |
| 38056 | 75 | 38142* | 39 | 38215 | 39 | 38518 | 36 | 39113 | 125 | 40184 | 175 | 42166 | 176 |
| 38057 | 75 | 38143* | 39 | 38216 | 35 | 38520 | 36 | 39114 | 125 | 40186 | 175 | 42171 | 176 |
| 38058 | 75 | 38144* | 39 | 38217* | 39 | 38522 | 36 | 39115 | 125 | 40191 | 175 | 42173 | 176 |
| 38060 | 75 | 38145* | 39 | 38218 | 35 | 38524 | 36 | 39116 | 125 | 40193* | 175 | 42175 | 176 |
| 38061 | 75 | 38146* | 39 | 38220 | 35 | 38526 | 36 | 39117 | 125 | 40198 | 175 | 42178 | 176 |
| 38062 | 75 | 38147 | 39 | 38221 | 35 | 38528 | 36 | 39119 | 125 | 40200 | 175 | 42180 | 176 |
| 38063 | 75 | 38148* | 39 | 38222 | 35 | 38530 | 36 | 39120 | 125 | 40202 | 175 | 42182 | 176 |
| 38064 | 75 | 38149* | 39 | 38223 | 35 | 38532 | 36 | 39121 | 125 | 40205 | 175 | 42189 | 176 |
| 38066 | 75 | 38150 | 75 | 38224 | 35 | 38534 | 36 | 39122 | 125 | 40207 | 175 | 42191* | 176 |
| 38067 | 75 | 38151* | 39 | 38225 | 35 | 38536 | 36 | 39123 | 125 | 40212 | 175 | 42197 | 176 |
| 38068 | 75 | 38152 | 75 | 38226 | 35 | 38538 | 36 | 39124 | 125 | 40214* | 175 | 42199 | 176 |
| 38069 | 75 | 38153* | 39 | 38227 | 35 | 38540 | 36 | 39126 | 125 | 40216 | 175 | 42201 | 176 |
| 38070 | 75 | 38154 | 75 | 38228 | 35 | 38542 | 36 | 39127 | 125 | 40219 | 175 | 42204 | 176 |
| 38071 | 76 | 38155* | 39 | 38229 | 35 | 38544 | 36 | 39128 | 125 | 40221* | 175 | 42206 | 176 |
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| 38073 | 75 | 38157* | 39 | 38231 | 35 | 38565* | 68 | 39130 | 125 | 40226 | 175 | 42213 | 176 |
| 38074 | 75 | 38158 | 75 | 38232 | 35 | 38567 | 68 | 39131 | 125 | 40228* | 175 | 42218 | 176 |
| 38076 | 75 | 38159* | 39 | 38234 | 35 | 38600 | 37 | 39133 | 125 | 41000 | 175 | 42220 | 176 |
| 38078 | 75 | 38160 | 75 | 38236 | 35 | 38601 | 37 | 39134 | 125 | 41002 | 175 | 42225 | 176 |
| 38079* | 76 | 38161* | 39 | 38238 | 35 | 38602 | 37 | 39135 | 125 | 41004 | 175 | 42227 | 176 |
| 38080 | 75 | 38162 | 75 | 38240 | 35 | 38603 | 37 | 39136 | 125 | 41007 | 175 | 42232 | 176 |
| 38081 | 75 | 38163* | 39 | 38242 | 35 | 38604 | 37 | 39137 | 125 | 41009* | 175 | 42234 | 176 |
| 38082 | 75 | 38164 | 75 | 38244 | 35 | 38605 | 37 | 39138 | 125 | 41014 | 175 | 42236 | 176 |
| 38083 | 75 | 38165* | 39 | 38346 | 39 | 38606 | 37 | 39140 | 125 | 41016* | 175 | 43000 | 173 |
| 38084* | 76 | 38166 | 75 | 38348 | 39 | 38607 | 37 | 39141 | 125 | 41021 | 175 | 43100 | 176 |
| 38095 | 35 | 38167* | 39 | 38350 | 39 | 38608 | 37 | 39600 | 73 | 41023* | 175 | 43102* | 176 |
| 38096* | 35 | 38168 | 75 | 38352 | 39 | 38609 | 37 | 39601 | 73 | 41028 | 175 | 43125 | 176 |
| 38097 | 35 | 38169* | 39 | 38354 | 39 | 38610 | 37 | 39602 | 73 | 41030* | 175 | 43127 | 176 |
| 38098 | 35 | 38170 | 75 | 38356 | 39 | 38611 | 37 | 39604 | 73 | 41035 | 175 | 43129 | 176 |
| 38099 | 35 | 38171* | 39 | 38358 | 39 | 38612 | 37 | 39605 | 73 | 41037 | 175 | 43132 | 176 |
| 38100* | 35 | 38172 | 75 | 38360 | 39 | 38613 | 37 | 39606 | 73 | 41042 | 175 | 43134 | 176 |
| 38101* | 35 | 38173 | 75 | 38362 | 39 | 38614 | 37 | 39607 | 73 | 41044* | 175 | 43139 | 176 |
| 38102* | 35 | 38174 | 75 | 38364 | 39 | 38615* | 37 | 39608 | 72 | 41049 | 175 | 43141 | 176 |
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| 38104* | 35 | 38176 | 75 | 38368 | 39 | 38617 | 37 | 39610 | 72 | 41063 | 175 | 43153 | 176 |
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| 43164 | 176 | 43928 | 173 | 46128 | 178 | 50278 | 180 | 59035* | 182 | 59313 | 185 | 70101 | 184 |
| 43167 | 176 | 43929 | 173 | 46130 | 178 | 50280* | 180 | 59036* | 182 | 59315 | 185 | 70102 | 184 |
| 43169 | 176 | 43930 | 173 | 46135 | 178 | 50285 | 180 | 59037* | 182 | 59315 | 185 | 70103 | 184 |
| 43174 | 176 | 43931 | 173 | 46137 | 178 | 50287 | 180 | 59038* | 182 | 59316 | 185 | 70104 | 184 |
| 43176 | 176 | 43932 | 173 | 46139 | 178 | 50292 | 180 | 59039* | 182 | 59317 | 185 | 70105 | 184 |
| 43181 | 176 | 43933 | 173 | 46142 | 178 | 50294* | 180 | 59040* | 182 | 59318 | 185 | 70106 | 184 |
| 43183 | 176 | 43934 | 173 | 46144 | 178 | 50299 | 180 | 59041* | 182 | 59319 | 185 | 70107 | 184 |
| 43185 | 176 | 43935 | 173 | 46149 | 178 | 50301* | 180 | 59042* | 182 | 59320 | 185 | 70108 | 184 |
| 43188 | 176 | 43936 | 173 | 46151 | 178 | 51001 | 180 | 59043* | 182 | 59321 | 185 | 70109 | 184 |
| 43190 | 176 | 43937 | 173 | 46153 | 178 | 51003* | 180 | 59050 | 182 | 59323 | 185 | 70110* | 184 |
| 43195 | 176 | 43938 | 173 | 46156 | 178 | 51008 | 180 | 59055 | 182 | 59324 | 185 | 70111 | 184 |
| 43197 | 176 | 43939 | 173 | 46158* | 178 | 51010* | 180 | 59100 | 182 | 59502* | 185 | 70112 | 184 |
| 43199 | 176 | 43940 | 173 | 46163 | 178 | 51015 | 180 | 59101 | 182 | 59505* | 185 | 70113 | 184 |
| 43202 | 176 | 43941 | 173 | 46165 | 178 | 51017* | 180 | 59102 | 182 | 59508 | 185 | 70114 | 184 |
| 43204* | 176 | 44187 | 177 | 46167 | 178 | 51019 | 180 | 59103 | 182 | 59511 | 185 | 70115 | 184 |
| 43212 | 173 | 44189 | 177 | 46170 | 178 | 51022 | 180 | 59104 | 182 | 59514* | 185 | 70116 | 184 |
| 43240 | 172 | 44191 | 177 | 46172* | 178 | 51024* | 180 | 59105 | 182 | 59517 | 185 | 70117 | 184 |
| 43302 | 172 | 44194 | 177 | 47250 | 178 | 51029 | 180 | 59106 | 182 | 59520 | 185 | 70118* | 184 |
| 43303 | 172 | 44196* | 177 | 47252 | 178 | 51031* | 180 | 59107 | 182 | 59523 | 185 | 70310 | 186 |
| 43304 | 172 | 44201 | 177 | 47257 | 178 | 51036 | 180 | 59108 | 182 | 59526* | 185 | 70311 | 186 |
| 43305 | 172 | 44203 | 177 | 47259 | 178 | 51038* | 180 | 59109* | 182 | 59529* | 185 | 70312 | 186 |
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| 43404 | 172 | 44210 | 177 | 47266 | 178 | 51045* | 180 | 59111 | 182 | 59535* | 185 | 70314 | 186 |
| 43405 | 172 | 44212 | 177 | 47271 | 178 | 51050 | 180 | 59112 | 182 | 59538* | 185 | 70315 | 186 |
| 43406 | 172 | 44215 | 177 | 47273 | 178 | 51052* | 180 | 59113 | 182 | 59545* | 185 | 70316 | 186 |
| 43505 | 172 | 44217 | 177 | 47278 | 178 | 52250 | 181 | 59114 | 182 | 59548 | 185 | 70317 | 186 |
| 43506 | 172 | 44222 | 177 | 47280 | 178 | 52252* | 181 | 59115 | 182 | 59551* | 185 | 70318 | 186 |
| 43507 | 173 | 44224 | 177 | 47285 | 178 | 52257 | 181 | 59116 | 182 | 59554* | 185 | 71101 | 183 |
| 43605 | 172 | 44226 | 177 | 47287 | 178 | 52259* | 181 | 59117 | 182 | 59557* | 185 | 71102* | 183 |
| 43606 | 172 | 44229 | 177 | 47292 | 178 | 52264 | 181 | 59118 | 182 | 59560* | 186 | 71103 | 183 |
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| 43608 | 173 | 44236 | 177 | 48250 | 179 | 52271 | 181 | 59120 | 182 | 59566* | 186 | 71105 | 183 |
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| 43610 | 173 | 44243 | 177 | 48257 | 179 | 52278 | 181 | 59122 | 182 | 59572* | 186 | 71108 | 183 |
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| 43709 | 173 | 45258 | 177 | 48266* | 179 | 53252* | 181 | 59125* | 182 | 59581* | 186 | 71111 | 183 |
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| 43806 | 173 | 45263 | 177 | 48273 | 179 | 53259* | 181 | 59127 | 182 | 59587* | 187 | 71113 | 183 |
| 43807 | 173 | 45265* | 177 | 48275 | 179 | 53264* | 181 | 59128 | 182 | 59594* | 187 | 71114 | 183 |
| 43808 | 173 | 45270 | 177 | 48278 | 179 | 53266* | 181 | 59129 | 182 | 59601* | 187 | 71115 | 183 |
| 43809 | 173 | 45272 | 177 | 48280 | 179 | 53271* | 181 | 59130 | 182 | 59604* | 187 | 71116 | 183 |
| 43810 | 173 | 45277 | 177 | 48285 | 179 | 53273* | 181 | 59131* | 182 | 59607* | 187 | 71117 | 183 |
| 43812 | 173 | 45279 | 177 | 48287 | 179 | 53278* | 181 | 59132 | 182 | 59610* | 187 | 71118 | 183 |
| 43900 | 172 | 45284 | 177 | 48289 | 179 | 53280* | 181 | 59133 | 182 | 59617* | 187 | 71119 | 183 |
| 43901 | 172 | 45286 | 177 | 48292 | 179 | 59000 | 182 | 59134 | 182 | 59620* | 187 | 71120 | 183 |
| 43902 | 172 | 45291 | 177 | 48294* | 179 | 59001 | 182 | 59135 | 182 | 59623* | 187 | 71121* | 183 |
| 43903 | 172 | 45294 | 177 | 48299 | 179 | 59002 | 182 | 59136 | 182 | 59626* | 187 | 71130* | 183 |
| 43904 | 172 | 45297 | 177 | 48301* | 179 | 59003 | 182 | 59137 | 182 | 59629* | 187 | 71135* | 183 |
| 43905 | 172 | 45299 | 177 | 48306 | 179 | 59004 | 182 | 59138* | 182 | 59636* | 187 | 71140 | 183 |
| 43906 | 172 | 45304 | 177 | 48308* | 179 | 59005 | 182 | 59139 | 182 | 59639* | 187 | 71145* | 183 |
| 43907 | 172 | 45306 | 177 | 49250 | 179 | 59006 | 182 | 59140 | 182 | 59642* | 187 | 72101 | 184 |
| 43908 | 172 | 45311 | 177 | 49252 | 179 | 59007 | 182 | 59141 | 182 | 59645* | 187 | 72102 | 184 |
| 43909 | 172 | 45313 | 177 | 49257 | 179 | 59008 | 182 | 59142 | 182 | 59659* | 187 | 72103 | 184 |
| 43910 | 172 | 45315 | 177 | 49259 | 179 | 59009 | 182 | 59143 | 182 | 59674* | 187 | 72104 | 184 |
| 43911 | 172 | 45318 | 177 | 49261 | 179 | 59010 | 182 | 59144* | 182 | 59825* | 185 | 72105 | 184 |
| 43912 | 172 | 45320 | 177 | 49264 | 179 | 59011 | 182 | 59145 | 182 | 59828 | 185 | 72106 | 184 |
| 43913 | 172 | 45325 | 177 | 49266* | 179 | 59012 | 182 | 59146* | 182 | 59831 | 185 | 72108 | 184 |
| 43914 | 172 | 45327 | 177 | 49271 | 179 | 59013 | 182 | 59147* | 182 | 59834* | 185 | 72109 | 184 |
| 43915 | 172 | 45329 | 177 | 49273 | 179 | 59014 | 182 | 59300 | 185 | 59837* | 185 | 72110 | 184 |
| 43916 | 172 | 45332 | 177 | 49278 | 179 | 59015 | 182 | 59301 | 185 | 59840 | 185 | 72111 | 184 |
| 43917 | 172 | 45334* | 177 | 49280* | 179 | 59016 | 182 | 59302 | 185 | 59842 | 187 | 72121* | 184 |
| 43918 | 172 | 45339 | 177 | 49285 | 179 | 59017 | 182 | 59303 | 185 | 60001 | 189 | 72122* | 184 |
| 43919 | 172 | 46100 | 178 | 49287 | 179 | 59026 | 182 | 59304 | 185 | 60003 | 189 | 72123* | 184 |
| 43920 | 172 | 46102 | 178 | 49292 | 179 | 59027 | 182 | 59305 | 185 | 60004 | 190 | 72124* | 184 |
| 43921 | 172 | 46104 | 178 | 49294* | 179 | 59028* | 182 | 59306 | 185 | 60006 | 190 | 72125* | 184 |
| 43922 | 173 | 46107 | 178 | 50250 | 180 | 59029 | 182 | 59307 | 185 | 60007 | 190 | 72126* | 184 |
| 43923 | 173 | 46109* | 178 | 50252* | 180 | 59030* | 182 | 59308 | 185 | 60009 | 190 | 72127* | 184 |
| 43924 | 173 | 46114 | 178 | 50264 | 180 | 59031* | 182 | 59309 | 185 | 60010 | 191 | 72128* | 184 |
| 43925 | 173 | 46116* | 178 | 50266 | 180 | 59032* | 182 | 59310 | 185 | 60012 | 191 | 72129* | 184 |

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| 80100 | 187 | 90230S | 109 | 90323S | 115 | 90416S | 97 | 90440S | 97 | 91313* | 95 | 91385* | 94 |
| 80101 | 187 | 90231B | 109 | 90324B | 115 | 90417B | 97 | 90441B | 97 | 91314* | 95 | 91386* | 94 |
| 80102 | 187 | 90231R | 109 | 90324R | 115 | 90417R | 97 | 90441R | 97 | 91315* | 95 | 91387* | 94 |
| 80103 | 187 | 90231S | 109 | 90324S | 115 | 90417S | 97 | 90441S | 97 | 91316* | 95 | 91388* | 83 |
| 80104 | 187 | 90232B | 109 | 90325B | 115 | 90418B | 97 | 90442B | 97 | 91317* | 83 | 91389* | 83 |
| 80105 | 187 | 90232R | 109 | 90325R | 115 | 90418R | 97 | 90442R | 97 | 91318* | 83 | 91390* | 83 |
| 80106 | 187 | 90232S | 109 | 90325S | 115 | 90418S | 97 | 90442S | 97 | 91319 | 83 | 91391 | 48 |
| 80107 | 187 | 90233B | 109 | 90326B | 115 | 90419B | 97 | 90443B | 97 | 91320* | 83 | 91392* | 49 |
| 80108 | 187 | 90233R | 109 | 90326R | 115 | 90419R | 97 | 90443R | 97 | 91321* | 83 | 91393* | 49 |
| 80109 | 187 | 90233S | 109 | 90326S | 115 | 90419S | 97 | 90443S | 97 | 91322 | 83 | 91394* | 49 |
| 80110 | 187 | 90234B | 109 | 90327B | 115 | 90420B | 97 | 91251 | 83 | 91323* | 83 | 91395* | 49 |
| 80111 | 187 | 90234R | 109 | 90327R | 115 | 90420R | 97 | 91252 | 83 | 91324* | 93 | 91396* | 49 |
| 80112 | 187 | 90234S | 109 | 90327S | 115 | 90420S | 97 | 91253* | 93 | 91325* | 93 | 91397* | 49 |
| 80113 | 187 | 90235B | 109 | 90328B | 115 | 90421B | 97 | 91254* | 93 | 91326* | 93 | 91398* | 49 |
| 80114 | 187 | 90235R | 109 | 90328R | 115 | 90421R | 97 | 91255* | 93 | 91327* | 93 | 91399* | 49 |
| 80115 | 187 | 90235S | 109 | 90328S | 115 | 90421S | 97 | 91256* | 93 | 91328* | 93 | 91400* | 49 |
| 80116* | 187 | 90236B | 109 | 90329B | 115 | 90422B | 97 | 91257* | 93 | 91329* | 93 | 91401* | 49 |
| 80117 | 187 | 90236R | 109 | 90329R | 115 | 90422R | 97 | 91258* | 93 | 91330* | 93 | 91402* | 49 |
| 90168 | 56 | 90236S | 109 | 90329S | 115 | 90422S | 97 | 91259* | 93 | 91331* | 93 | 91403* | 49 |
| 90213B | 109 | 90237B | 109 | 90330B | 115 | 90423B | 97 | 91260* | 93 | 91332* | 93 | 91404* | 49 |
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| 90214S | 109 | 90238S | 109 | 90331S | 115 | 90424S | 97 | 91265* | 94 | 91337* | 94 | 91409* | 49 |
| 90215B | 109 | 90239B | 109 | 90332B | 115 | 90425B | 97 | 91266* | 94 | 91338* | 94 | 91410* | 49 |
| 90215R | 109 | 90239R | 109 | 90332R | 115 | 90425R | 97 | 91267* | 94 | 91339* | 94 | 91411* | 58 |
| 90215S | 109 | 90239S | 109 | 90332S | 115 | 90425S | 97 | 91268* | 94 | 91340* | 94 | 91412* | 63 |
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| 90216R | 109 | 90240R | 109 | 90333R | 115 | 90426R | 97 | 91270* | 94 | 91342* | 94 | 91414* | 64 |
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| 90217R | 109 | 90241R | 109 | 90334R | 115 | 90427R | 97 | 91273* | 94 | 91345* | 94 | 91417* | 64 |
| 90217S | 109 | 90241S | 109 | 90334S | 115 | 90427S | 97 | 91274* | 94 | 91346* | 94 | 91418* | 64 |
| 90218B | 109 | 90242B | 109 | 90335B | 115 | 90428B | 97 | 91275* | 94 | 91347* | 94 | 91419* | 64 |
| 90218R | 109 | 90242R | 109 | 90335R | 115 | 90428R | 97 | 91276* | 94 | 91348* | 94 | 91420* | 64 |
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| 90219B | 109 | 90243B | 109 | 90336B | 115 | 90429B | 97 | 91278* | 94 | 91350* | 94 | 91422* | 64 |
| 90219R | 109 | 90243R | 109 | 90336R | 115 | 90429R | 97 | 91279* | 95 | 91351* | 94 | 91423* | 64 |
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| 90221S | 109 | 90314S | 115 | 90338S | 115 | 90431S | 97 | 91286* | 93 | 91358* | 93 | 91430* | 65 |
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| 90222S | 109 | 90315S | 115 | 90339S | 115 | 90432S | 97 | 91289* | 93 | 91361* | 93 | 91433 | 65 |
| 90223B | 109 | 90316B | 115 | 90340B | 115 | 90433B | 97 | 91290* | 93 | 91362* | 93 | 91434* | 65 |
| 90223R | 109 | 90316R | 115 | 90340R | 115 | 90433R | 97 | 91291* | 93 | 91363* | 93 | 91435* | 65 |
| 90223S | 109 | 90316S | 115 | 90340S | 115 | 90433S | 97 | 91292* | 93 | 91364* | 93 | 91436* | 66 |
| 90224B | 109 | 90317B | 115 | 90341B | 115 | 90434B | 97 | 91293* | 93 | 91365* | 93 | 91437* | 66 |
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| 90225B | 109 | 90318B | 115 | 90342B | 115 | 90435B | 97 | 91296* | 94 | 91368* | 93 | 91440* | 66 |
| 90225R | 109 | 90318R | 115 | 90342R | 115 | 90435R | 97 | 91297* | 94 | 91369* | 94 | 91874 | 94 |
| 90225S | 109 | 90318S | 115 | 90342S | 115 | 90435S | 97 | 91298* | 94 | 91370* | 94 | 91876 | 93 |
| 90226B | 109 | 90319B | 115 | 90343B | 115 | 90436B | 97 | 91299* | 94 | 91371* | 94 | 91877 | 93 |
| 90226R | 109 | 90319R | 115 | 90343R | 115 | 90436R | 97 | 91300* | 94 | 91372* | 94 | 91878* | 93 |
| 90226S | 109 | 90319S | 115 | 90343S | 115 | 90436S | 97 | 91301* | 94 | 91373* | 94 | 91879* | 93 |
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| 90227R | 109 | 90320R | 115 | 90413R | 97 | 90437R | 97 | 91303* | 94 | 91375* | 94 | 91881 | 93 |
| 90227S | 109 | 90320S | 115 | 90413S | 97 | 90437S | 97 | 91304* | 94 | 91376* | 94 | 91882 | 93 |
| 90228B | 109 | 90321B | 115 | 90414B | 97 | 90438B | 97 | 91305* | 94 | 91377* | 94 | 91883* | 93 |
| 90228R | 109 | 90321R | 115 | 90414R | 97 | 90438R | 97 | 91306* | 94 | 91378* | 94 | 91884* | 93 |
| 90228S | 109 | 90321S | 115 | 90414S | 97 | 90438S | 97 | 91307* | 94 | 91379* | 94 | 91885* | 93 |
| 90229B | 109 | 90322B | 115 | 90415B | 97 | 90439B | 97 | 91308* | 94 | 91380* | 94 | 91886* | 93 |
| 90229R | 109 | 90322R | 115 | 90415R | 97 | 90439R | 97 | 91309* | 94 | 91381* | 94 | 91887* | 94 |
| 90229S | 109 | 90322S | 115 | 90415S | 97 | 90439S | 97 | 91310* | 94 | 91382* | 94 | 91888 | 94 |
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| 91891* | 94 | 92001 | 83 | 92077 | 83 | 92181 | 83 | 92269 | 87 | 92351* | 111 | 92423 | 48 |
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| 91897* | 94 | 92008 | 83 | 92083 | 100 | 92187* | 100 | 92275 | 87 | 92357* | 111 | 92429 | 50 |
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| 91900* | 94 | 92011 | 83 | 92086* | 104 | 92201 | 83 | 92278 | 87 | 92360* | 111 | 92432 | 48 |
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| 91904 | 94 | 92015 | 83 | 92090* | 105 | 92205 | 83 | 92282 | 87 | 92364* | 111 | 92436 | 49 |
| 91905 | 93 | 92016 | 83 | 92091 | 101 | 92206 | 83 | 92283 | 87 | 92365* | 111 | 92437 | 49 |
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| 91910 | 93 | 92018 | 83 | 92093 | 83 | 92208 | 83 | 92285* | 87 | 92367* | 111 | 92439 | 49 |
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| 91916 | 94 | 92023 | 87 | 92102 | 83 | 92212 | 83 | 92289 | 87 | 92371 | 113 | 92443 | 58 |
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| 91923 | 94 | 92027 | 87 | 92108 | 83 | 92216 | 83 | 92293 | 87 | 92375* | 113 | 92447 | 58 |
| 91924 | 94 | 92028 | 87 | 92109* | 87 | 92217 | 83 | 92294* | 87 | 92376 | 113 | 92448 | 58 |
| 91925* | 94 | 92029 | 87 | 92110 | 87 | 92218 | 83 | 92295 | 87 | 92377 | 113 | 92449 | 58 |
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| 91928 | 94 | 92031 | 87 | 92114 | 87 | 92220 | 83 | 92297 | 104 | 92379 | 113 | 92451 | 58 |
| 91929 | 94 | 92032 | 87 | 92116 | 87 | 92221* | 83 | 92298* | 104 | 92380 | 113 | 92452 | 64 |
| 91930* | 94 | 92033 | 87 | 92118 | 87 | 92222 | 83 | 92299 | 104 | 92381 | 113 | 92453 | 64 |
| 91931 | 94 | 92034 | 87 | 92120 | 83 | 92223 | 83 | 92300* | 104 | 92382 | 113 | 92454 | 65 |
| 91932* | 94 | 92035 | 87 | 92122 | 83 | 92224 | 83 | 92301* | 104 | 92383 | 113 | 92455 | 65 |
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| 91934* | 93 | 92037 | 100 | 92126 | 83 | 92226 | 83 | 92303* | 104 | 92385 | 113 | 92457 | 67 |
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| 91939 | 93 | 92043 | 100 | 92132 | 87 | 92231 | 83 | 92308* | 105 | 92390* | 113 | 92462 | 66 |
| 91940* | 93 | 92044 | 100 | 92134* | 87 | 92232 | 83 | 92309* | 105 | 92391* | 113 | 92463 | 65 |
| 91941* | 93 | 92045 | 101 | 92136 | 87 | 92233 | 100 | 92310* | 105 | 92392* | 113 | 92464 | 65 |
| 91942* | 93 | 92046 | 101 | 92138 | 87 | 92234* | 100 | 92311* | 105 | 92393* | 113 | 92465* | 66 |
| 91943 | 93 | 92047 | 101 | 92139* | 87 | 92235* | 100 | 92312* | 105 | 92394* | 113 | 92466* | 66 |
| 91944* | 93 | 92048 | 101 | 92140 | 100 | 92236 | 100 | 92313* | 105 | 92395* | 113 | 92467 | 40 |
| 91945* | 93 | 92049 | 101 | 92141* | 87 | 92237* | 100 | 92314* | 105 | 92396* | 113 | 92468 | 40 |
| 91946* | 93 | 92050 | 101 | 92142 | 101 | 92238* | 100 | 92315* | 105 | 92397 | 113 | 92469 | 40 |
| 91947* | 94 | 92051 | 101 | 92143 | 100 | 92239 | 100 | 92316* | 105 | 92398* | 113 | 92470 | 40 |
| 91948* | 94 | 92052 | 101 | 92144 | 101 | 92240* | 100 | 92317* | 105 | 92399* | 113 | 92471 | 40 |
| 91949* | 95 | 92053 | 101 | 92145 | 100 | 92241* | 100 | 92318* | 105 | 92400* | 113 | 92472 | 40 |
| 91950* | 95 | 92054 | 101 | 92146 | 101 | 92242 | 101 | 92329 | 87 | 92401* | 113 | 92473 | 40 |
| 91951* | 95 | 92055 | 104 | 92148 | 101 | 92243* | 101 | 92330 | 111 | 92402* | 113 | 92474 | 40 |
| 91952* | 95 | 92056* | 104 | 92150* | 104 | 92244* | 101 | 92331 | 111 | 92403* | 113 | 92475 | 40 |
| 91953* | 93 | 92057 | 104 | 92152* | 104 | 92245* | 101 | 92332 | 111 | 92404* | 113 | 92476 | 40 |
| 91954* | 93 | 92059 | 104 | 92154 | 105 | 92246* | 101 | 92333 | 111 | 92405* | 113 | 92477 | 40 |
| 91955* | 93 | 92060 | 104 | 92156 | 105 | 92247* | 101 | 92334 | 111 | 92406* | 113 | 92478 | 40 |
| 91956* | 93 | 92061* | 104 | 92158 | 105 | 92248* | 101 | 92335 | 111 | 92407* | 113 | 92479 | 40 |
| 91957* | 93 | 92062* | 104 | 92160 | 100 | 92249* | 101 | 92336 | 111 | 92408* | 113 | 92480 | 40 |
| 91958* | 93 | 92063* | 104 | 92162 | 101 | 92250* | 101 | 92337 | 111 | 92409* | 113 | 92481 | 40 |
| 91959* | 93 | 92064* | 105 | 92164 | 101 | 92251* | 101 | 92338 | 111 | 92410 | 43 | 92482 | 40 |
| 91960* | 93 | 92065* | 105 | 92165 | 101 | 92252* | 101 | 92339 | 111 | 92411 | 43 | 92483 | 40 |
| 91961* | 93 | 92066* | 105 | 92166 | 101 | 92253* | 101 | 92340 | 111 | 92412 | 44 | 92484 | 40 |
| 91962* | 93 | 92067 | 105 | 92167 | 101 | 92254* | 101 | 92341 | 111 | 92413 | 44 | 92485 | 40 |
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| 91965* | 93 | 92070* | 105 | 92172 | 105 | 92257* | 101 | 92344 | 111 | 92416 | 44 | 92488 | 40 |
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| 91968* | 95 | 92073 | 83 | 92175* | 105 | 92265 | 87 | 92347 | 111 | 92419 | 44 | 92491 | 40 |
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| 92494 | 48 | 92568 | 64 | 92647* | 64 | 92719* | 66 | 92791 | 48 | 93051* | 25 | 93914* | 55 |
| 92495 | 48 | 92569 | 65 | 92648* | 64 | 92720* | 66 | 92792 | 48 | 93052* | 25 | 93915* | 55 |
| 92496 | 111 | 92570 | 65 | 92649* | 64 | 92721* | 66 | 92793* | 48 | 93053* | 25 | 93916* | 55 |
| 92497* | 111 | 92575 | 48 | 92650* | 64 | 92722* | 67 | 92794 | 48 | 93054* | 24 | 93917* | 55 |
| 92498 | 48 | 92576 | 48 | 92651* | 64 | 92723* | 67 | 92795 | 48 | 93055* | 24 | 93918* | 55 |
| 92499 | 64 | 92577 | 48 | 92652* | 64 | 92724* | 67 | 92796* | 48 | 93100 | 24 | 93919* | 56 |
| 92501 | 71 | 92578* | 49 | 92653* | 64 | 92725* | 67 | 92797 | 48 | 93101 | 24 | 93920* | 56 |
| 92502 | 71 | 92579 | 49 | 92654* | 65 | 92726* | 67 | 92798* | 48 | 93200 | 111 | 93921* | 56 |
| 92503 | 71 | 92580 | 49 | 92655* | 65 | 92727* | 67 | 92800 | 36 | 93201 | 111 | 93922* | 56 |
| 92504 | 71 | 92581 | 49 | 92656* | 65 | 92728* | 67 | 92801 | 36 | 93202 | 111 | 93923* | 56 |
| 92505 | 71 | 92582* | 49 | 92657* | 65 | 92729* | 67 | 92802 | 36 | 93203 | 111 | 93924* | 56 |
| 92506 | 71 | 92583 | 49 | 92658* | 65 | 92730* | 67 | 92803 | 36 | 93204 | 111 | 93925* | 56 |
| 92507 | 71 | 92584 | 49 | 92659* | 65 | 92731* | 67 | 92804 | 36 | 93205 | 111 | 93926* | 56 |
| 92508 | 72 | 92585 | 49 | 92660* | 65 | 92732* | 67 | 92805 | 36 | 93206 | 111 | 93927* | 56 |
| 92509 | 72 | 92586 | 49 | 92661* | 65 | 92733* | 67 | 92806 | 36 | 93207 | 111 | 93928* | 56 |
| 92510 | 72 | 92587* | 49 | 92662* | 65 | 92734* | 67 | 92850* | 77 | 93700 | 76 | 93929* | 56 |
| 92512 | 72 | 92588 | 49 | 92663* | 65 | 92735* | 67 | 92851 | 77 | 93702 | 76 | 93930* | 56 |
| 92513 | 72 | 92589* | 49 | 92664* | 65 | 92736* | 67 | 92852* | 77 | 93800 | 52 | 93931* | 56 |
| 92514 | 72 | 92590* | 49 | 92665* | 65 | 92737* | 67 | 92853* | 77 | 93801 | 52 | 93932* | 56 |
| 92515 | 72 | 92591 | 49 | 92666* | 65 | 92738* | 67 | 92854* | 77 | 93802 | 52 | 93933* | 56 |
| 92516 | 70 | 92592* | 49 | 92667* | 65 | 92739* | 67 | 92855* | 77 | 93803 | 52 | 93934 | 56 |
| 92517 | 70 | 92593 | 49 | 92668* | 65 | 92740* | 67 | 93000 | 24 | 93804 | 52 | 93935* | 56 |
| 92518 | 70 | 92594 | 49 | 92669* | 65 | 92741* | 67 | 93001 | 24 | 93805 | 52 | 93936* | 56 |
| 92519 | 70 | 92595 | 49 | 92670* | 65 | 92742 | 63 | 93002 | 24 | 93806 | 52 | 93937* | 56 |
| 92520 | 70 | 92596 | 49 | 92671* | 65 | 92743* | 63 | 93003 | 24 | 93807* | 52 | 93938* | 56 |
| 92521 | 70 | 92600 | 69 | 92672* | 65 | 92744 | 63 | 93004 | 24 | 93808* | 52 | 93939* | 56 |
| 92522 | 77 | 92601 | 58 | 92673* | 65 | 92745* | 64 | 93005 | 24 | 93809* | 55 | 93940* | 56 |
| 92523 | 77 | 92602 | 58 | 92674* | 65 | 92746 | 64 | 93006 | 24 | 93810* | 55 | 2450001 | 169 |
| 92524 | 77 | 92603 | 43 | 92675* | 65 | 92747* | 64 | 93007 | 24 | 93811 | 55 | 2450002 | 169 |
| 92525 | 77 | 92604 | 43 | 92676* | 65 | 92748* | 66 | 93008 | 24 | 93812* | 55 | 2450003 | 169 |
| 92526 | 77 | 92605 | 48 | 92677* | 65 | 92749* | 66 | 93009 | 25 | 93813* | 55 | 2450004 | 169 |
| 92527 | 77 | 92606 | 48 | 92678* | 65 | 92750* | 66 | 93010 | 25 | 93814 | 55 | 2450005 | 169 |
| 92528* | 40 | 92607 | 58 | 92679* | 65 | 92751* | 66 | 93011 | 25 | 93815* | 55 | 2450006 | 169 |
| 92529* | 40 | 92608 | 58 | 92680* | 65 | 92752 | 66 | 93012* | 24 | 93816 | 55 | 2450007 | 169 |
| 92530* | 40 | 92609 | 63 | 92681* | 65 | 92753* | 66 | 93013* | 24 | 93817 | 56 | 2450008 | 169 |
| 92531* | 40 | 92610 | 64 | 92682* | 65 | 92754* | 67 | 93014* | 24 | 93818* | 56 | 2450009 | 169 |
| 92532* | 40 | 92611 | 43 | 92683* | 65 | 92755* | 67 | 93015 | 24 | 93819* | 56 | 2450010 | 169 |
| 92533* | 40 | 92612 | 43 | 92684* | 65 | 92756* | 67 | 93016* | 24 | 93820* | 56 | 2450011 | 169 |
| 92534* | 40 | 92613* | 44 | 92685* | 65 | 92757* | 67 | 93017* | 24 | 93821 | 56 | 2450012 | 169 |
| 92535* | 40 | 92614 | 48 | 92686* | 66 | 92758* | 67 | 93018* | 24 | 93822* | 56 | 2450013 | 169 |
| 92536* | 40 | 92615* | 48 | 92687* | 66 | 92759* | 67 | 93019* | 24 | 93823* | 56 | 2450014 | 169 |
| 92537* | 40 | 92616* | 48 | 92688* | 66 | 92760* | 67 | 93020* | 24 | 93824* | 56 | 2450015 | 169 |
| 92538* | 40 | 92617 | 48 | 92689* | 66 | 92761* | 67 | 93021* | 25 | 93825* | 56 | 2450016 | 169 |
| 92539* | 40 | 92618* | 49 | 92690* | 66 | 92762* | 67 | 93022* | 25 | 93826* | 56 | 2450017 | 169 |
| 92540* | 40 | 92619* | 49 | 92691* | 66 | 92763* | 67 | 93023* | 25 | 93827 | 56 | 2450018 | 169 |
| 92541* | 40 | 92620* | 50 | 92692* | 66 | 92764 | 58 | 93024 | 24 | 93828* | 56 | 2450019 | 169 |
| 92542* | 40 | 92621* | 50 | 92693* | 66 | 92765* | 64 | 93025 | 24 | 93829* | 56 | 2450020 | 169 |
| 92543* | 40 | 92622* | 50 | 92694* | 66 | 92766* | 64 | 93026 | 24 | 93830* | 56 | 2450021 | 169 |
| 92544* | 40 | 92623* | 50 | 92695* | 66 | 92767* | 64 | 93027 | 24 | 93831* | 56 | 2450022 | 169 |
| 92545* | 40 | 92624* | 50 | 92696* | 66 | 92768* | 64 | 93028 | 24 | 93832 | 56 | 2450023 | 169 |
| 92546* | 40 | 92625* | 50 | 92697* | 66 | 92769* | 64 | 93029 | 25 | 93833* | 56 | 2450024 | 169 |
| 92547* | 40 | 92626* | 50 | 92698* | 66 | 92770* | 64 | 93030 | 25 | 93834* | 56 | 2450025 | 169 |
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| 92549* | 40 | 92628* | 50 | 92700* | 66 | 92772* | 64 | 93032* | 24 | 93836* | 56 | 2450027 | 169 |
| 92550* | 40 | 92629* | 50 | 92701* | 66 | 92773 | 64 | 93033* | 24 | 93837* | 56 | 2450028 | 169 |
| 92551* | 40 | 92630* | 44 | 92702* | 66 | 92774* | 64 | 93034* | 24 | 93838* | 56 | 2450029 | 169 |
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| 92556 | 44 | 92635 | 63 | 92707* | 66 | 92779 | 65 | 93039 | 24 | 93902* | 52 | 2450034 | 169 |
| 92557 | 44 | 92636* | 63 | 92708* | 66 | 92780* | 65 | 93040 | 24 | 93903 | 52 | 2450035 | 170 |
| 92558 | 44 | 92637* | 63 | 92709* | 66 | 92781 | 65 | 93041 | 24 | 93904 | 52 | 2450036 | 170 |
| 92559 | 48 | 92638* | 63 | 92710* | 66 | 92782* | 66 | 93042 | 24 | 93905 | 52 | 2450037 | 170 |
| 92560 | 49 | 92639* | 63 | 92711* | 66 | 92783* | 66 | 93043 | 25 | 93906 | 52 | 2450038 | 170 |
| 92561 | 49 | 92640* | 63 | 92712* | 66 | 92784* | 66 | 93044 | 25 | 93907* | 52 | 2450039 | 170 |
| 92562 | 49 | 92641* | 63 | 92713* | 66 | 92785* | 67 | 93045 | 25 | 93908* | 52 | 2450040 | 170 |
| 92563 | 58 | 92642* | 63 | 92714* | 66 | 92786 | 67 | 93046* | 24 | 93909* | 55 | 2450041 | 170 |
| 92564 | 58 | 92643* | 63 | 92715* | 66 | 92787* | 67 | 93047* | 24 | 93910* | 55 | 2450042 | 170 |
| 92565 | 58 | 92644* | 64 | 92716* | 66 | 92788* | 67 | 93048* | 24 | 93911 | 55 | 2450043 | 170 |
| 92566 | 58 | 92645* | 64 | 92717* | 66 | 92789* | 67 | 93049* | 24 | 93912 | 55 | 2450044 | 170 |
| 92567 | 64 | 92646* | 64 | 92718* | 66 | 92790* | 67 | 93050* | 24 | 93913* | 55 | 2450045 | 170 |

* *Non Stocked*

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|---|---|---|---|---|---|---|---|
| 2450046 | 170 | 1410L11 | 164 | 1450L16B | 167 | 1450S23 | 167 |
| 2450047 | 170 | 1410L12 | 164 | 1450L17 | 167 | 1450S24 | 167 |
| 2450048 | 170 | 1410L13 | 164 | 1450L17B | 167 | 1450S25 | 167 |
| 2450049 | 170 | 1410L14 | 164 | 1450L18 | 167 | 1450S26 | 167 |
| 2450050 | 170 | 1410L15 | 164 | 1450L18B | 167 | 1450S27 | 167 |
| 2450051 | 170 | 1410L16 | 164 | 1450L19 | 167 | | |
| 2450052 | 170 | 1410L17 | 164 | 1450L19B | 167 | | |
| 2450053 | 170 | 1410L18 | 165 | 1450L20 | 167 | | |
| 2450054 | 170 | 1410L19 | 165 | 1450L21 | 167 | | |
| 2450055 | 170 | 1410L20 | 165 | 1450L22 | 167 | | |
| 2450056 | 170 | 1410L21 | 165 | 1450L23 | 167 | | |
| 2450057 | 170 | 1410L22 | 165 | 1450L24 | 167 | | |
| 2450058 | 170 | 1410R01 | 164 | 1450L25 | 167 | | |
| 2450059 | 170 | 1410R02 | 164 | 1450L26 | 167 | | |
| 2450060 | 170 | 1410R03 | 164 | 1450L27 | 167 | | |
| 2450061 | 170 | 1410R04 | 164 | 1450R01 | 166 | | |
| 2450062 | 170 | 1410R05 | 164 | 1450R02 | 166 | | |
| 2450063 | 170 | 1410R06 | 164 | 1450R03 | 166 | | |
| 2450064 | 170 | 1410R07 | 164 | 1450R04 | 166 | | |
| 2450065 | 170 | 1410R08 | 164 | 1450R05 | 166 | | |
| 2450066 | 170 | 1410R09 | 164 | 1450R06 | 166 | | |
| 2450067 | 170 | 1410R10 | 164 | 1450R07 | 166 | | |
| 2450068 | 170 | 1410R11 | 164 | 1450R08 | 166 | | |
| 2450069 | 170 | 1410R12 | 164 | 1450R09 | 166 | | |
| 2450070 | 170 | 1410R13 | 164 | 1450R10 | 166 | | |
| 2450071 | 170 | 1410R14 | 164 | 1450R11 | 166 | | |
| 2450072 | 170 | 1410R15 | 164 | 1450R12 | 166 | | |
| 2450073 | 170 | 1410R16 | 164 | 1450R13 | 166 | | |
| 2450074 | 170 | 1410R17 | 164 | 1450R14 | 166 | | |
| 2450075 | 170 | 1410R18 | 165 | 1450R15 | 167 | | |
| 2450076 | 170 | 1410R19 | 165 | 1450R16 | 167 | | |
| 2450077 | 170 | 1410R20 | 165 | 1450R16B | 167 | | |
| 2450078 | 170 | 1410R21 | 165 | 1450R17 | 167 | | |
| 2450079 | 170 | 1410R22 | 165 | 1450R17B | 167 | | |
| 2450080 | 170 | 1410S01 | 164 | 1450R18 | 167 | | |
| 2450081 | 170 | 1410S02 | 164 | 1450R18B | 167 | | |
| 2450082 | 170 | 1410S03 | 164 | 1450R19 | 167 | | |
| 2450083 | 170 | 1410S04 | 164 | 1450R19B | 167 | | |
| 2450084 | 170 | 1410S05 | 164 | 1450R20 | 167 | | |
| 2450085 | 170 | 1410S06 | 164 | 1450R21 | 167 | | |
| 2450086 | 170 | 1410S07 | 164 | 1450R22 | 167 | | |
| 2450087 | 170 | 1410S08 | 164 | 1450R23 | 167 | | |
| 2450088 | 170 | 1410S09 | 164 | 1450R24 | 167 | | |
| 2450089 | 170 | 1410S10 | 164 | 1450R25 | 167 | | |
| 2450090 | 170 | 1410S11 | 164 | 1450R26 | 167 | | |
| 2450091 | 170 | 1410S12 | 164 | 1450R27 | 167 | | |
| 2450092 | 170 | 1410S13 | 164 | 1450S01 | 166 | | |
| 2450093 | 170 | 1410S14 | 164 | 1450S02 | 166 | | |
| 2450094 | 170 | 1410S15 | 164 | 1450S03 | 166 | | |
| 2450095 | 170 | 1410S16 | 164 | 1450S04 | 166 | | |
| 2450096 | 170 | 1410S17 | 164 | 1450S05 | 166 | | |
| 2450097 | 170 | 1410S18 | 165 | 1450S06 | 166 | | |
| 2450098 | 170 | 1410S19 | 165 | 1450S07 | 166 | | |
| 2450099 | 170 | 1410S20 | 165 | 1450S08 | 166 | | |
| 2450100 | 170 | 1410S21 | 165 | 1450S09 | 166 | | |
| 2450101 | 170 | 1410S22 | 165 | 1450S10 | 166 | | |
| 2450102 | 170 | 1450L01 | 166 | 1450S11 | 166 | | |
| 2450103 | 170 | 1450L02 | 166 | 1450S12 | 166 | | |
| 2450104 | 170 | 1450L03 | 166 | 1450S13 | 166 | | |
| 2450105 | 170 | 1450L04 | 166 | 1450S14 | 166 | | |
| 2450106 | 170 | 1450L05 | 166 | 1450S15 | 167 | | |
| 2450107 | 170 | 1450L06 | 166 | 1450S16 | 167 | | |
| 1410L01 | 164 | 1450L07 | 166 | 1450S16B | 167 | | |
| 1410L02 | 164 | 1450L08 | 166 | 1450S17 | 167 | | |
| 1410L03 | 164 | 1450L09 | 166 | 1450S17B | 167 | | |
| 1410L04 | 164 | 1450L10 | 166 | 1450S18 | 167 | | |
| 1410L05 | 164 | 1450L11 | 166 | 1450S18B | 167 | | |
| 1410L06 | 164 | 1450L12 | 166 | 1450S19 | 167 | | |
| 1410L07 | 164 | 1450L13 | 166 | 1450S19B | 167 | | |
| 1410L08 | 164 | 1450L14 | 166 | 1450S20 | 167 | | |
| 1410L09 | 164 | 1450L15 | 167 | 1450S21 | 167 | | |
| 1410L10 | 164 | 1450L16 | 167 | 1450S22 | 167 | | |

# End Mill Speed and Feed Recommendations

***Maximizing Performance and Tool Life***

## General Recommendations

**For latest speed and feed information and charts, please visit FullertonTool.com.**

***All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process, then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for additional support.***

***The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.***

**Rigidity**
Maximize rigidity to reduce chatter and increase tool life. Ways to improve rigidity include choosing the largest diameter possible to perform your milling task, using the shortest LOC (Length of Cut) available and using the tool holder which offers the shortest gage line (Shortest Tool Holder Length).

**Chatter**
If chatter is present, increase feed or reduce speed.

**Extra Long End Mills**
For extra long end mills, the SFM should be reduced by 25%.

**Cutter Direction**
Cutter direction should be in a climb milling direction whenever possible. Conventional tool paths may be employed when the tool is in use on older manual equipment to minimize backlash or to remove scale to reach the softer parent material underneath.

**TIR or Total Indicatior Runout**
This condition should be held to a minimum at all times. As this value increases, the effectiveness of the tool's performance decreases, thus reducing tool life.

**Re-Cutting Chips**
Use a coolant or air blast to evacuate chips to avoid premature damage to your carbide cutting tool, which may occur if chips are recut.

For assistance in selecting the best tool for your application and how to apply it, we provide the latest selection guides and speed & feed charts on our website FullertonTool.com.

We also have an experienced technical staff available to assist you with any support you need on your application.

Call 1-800-248-8315
Mark Donze - Ext. 204
Steve Oszust - Ext. 232
Tom McKimmy - Ext. 218
John Winebrenner - 989-751-4154

**Formulas to determine speed, feed, and chip load after the type and diameter of the cutting tool is determined.**

**US Customary Units (Imperial)**
D = cutter diameter (in)
T = tooth count (flute)
IPT chip load (in/flute) = IPM ÷ RPM ÷ T
IPR feed per revolution (in/rev) = IPM ÷ RPM
SFM surface speed (ft/min) = 0.2618 x RPM x D
RPM spindle speed (rev/min) = 3.82 x SFM ÷ D
IPM feed rate (in/min) = RPM x IPT x T

**SI Units (Metric)**
D = cutter diameter (mm)
T = tooth count (flute)
MMPT chip load (mm/flute)
MMPR feed per revolution (mm/rev) = MMPM ÷ RPM
SMPM surface speed (m/min) = 0.00314 x RPM x D
RPM spindle speed (rev/min) = 318.3 x SMPM ÷ D
MMPM feed rate (mm/min) = RPM x MMPT x T

**Feed Rate Conversion**
MMPM (mm/min) = IPM (in/min) x 25.4 (mm/in)
IPM (in/min) = MMPM (mm/min) x 0.0394 (in/mm)

**Surface Speed Conversion**
SMPM (m/min) = SFM (ft/min) x 0.3048 (m/ft)
SFM (ft/min) = SMPM (m/min) x 3.2808 (ft/m)

**Unit Conversion**
1 in = 25.4 mm
1 ft = 304.8 mm = 0.3048 m
1 mm = .03937 in
1 m = 3.2808 ft = 39.370 in

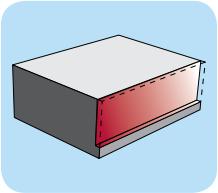
# End Mill Applications & Selection

***Selecting the Correct Tool for the Application***

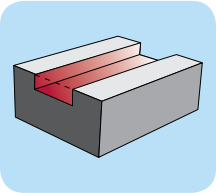


## Milling Application Icons

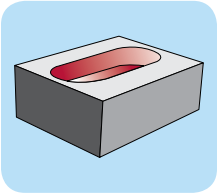
Below are icons for various milling applications and a brief description of the application. Please use these as reference aids in selecting the proper tool for your application. The charts on the following pages provide Speed & Feed information for materials and milling application. Reference both your milling application and your material to help find the proper tool and Speeds & Feeds for your application.



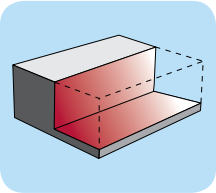
**Profiling / Finishing Cut:**
Use 4 or 5 Flutes.



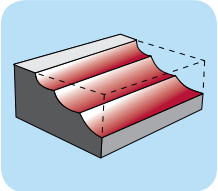
**Slotting:**
Use 3-Flute to resist chatter.
Use 2-Flute or roughing mill for maximum chip removal.



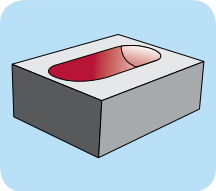
**Plunge / Slot:**
Use 3-Flute to resist chatter.
Use 2-Flute for maximum chip removal.



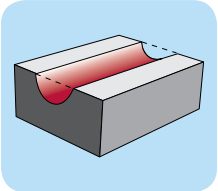
**Profiling / Roughing Cut:**
Use roughing mill for rapid material removal.



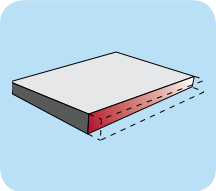
**Contour Finishing:**
Use 3 or 4 Flute Ball End.



**Plunge / Slot Contouring:**
Use 2-Flute Ball End for maximum chip removal. Use 3-Flute Ball End for improved surface finish.



**Contour Slotting:**
Use 3-Flute Ball End to resist chatter.
Use 2-Flute Ball End for maximum chip removal.



**Profiling / Thin Material:**
Use 2 or 4 straight flutes.

***The guide on these pages are only general guidelines in choosing the proper end mill for the various types of material.*** For the very best selection of an end mill and how to apply it for your particular application, we suggest that you call our technical support staff. They will advise you in what end mill to use, the correct speeds and feeds, and if a particular coating would be beneficial. You may also visit our web site (http://www.fullertontool.com) for the latest information regarding application and particular tools.

Call 1-800-248-8315
Mark Donze - Ext. 204 • Steve Oszust - Ext. 232 • Tom McKimmy - Ext. 218
John Winebrenner - 989-751-4154

**Imperial Units**

# 3000-Intimidator

F.A.S.T. Fullerton Advanced Solutions Team


Square End - Four Uniquely Indexed RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Recommended in Unique Situations | | | | | **Low Si Aluminum ( <10%)** Recommended in Unique Situations | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (400 - 600) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | .0008 | .0009 | .0007 | .0010 | .0007 | | | | | |
| 1/4 | | | | | | .0015 | .0020 | .0015 | .0020 | .0015 | | | | | |
| 3/8 | | | | | | .0025 | .0030 | .0025 | .0030 | .0025 | | | | | |
| 1/2 | | | | | | .0028 | .0032 | .0028 | .0032 | .0028 | | | | | |
| 3/4 | | | | | | .0030 | .0035 | .0030 | .0035 | .0030 | | | | | |
| 1 | | | | | | .0040 | .0045 | .0040 | .0045 | .0040 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (400 - 600) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** (130 - 170) SFM (ft/min) | | | | | **Steels** (300 - 600) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0008 | .0010 | .0007 | .0010 | .0007 | .0006 | .0007 | .0006 | .0007 | .0006 | .0007 | .0009 | .0007 | .0009 | .0007 |
| 1/4 | .0015 | .0020 | .0015 | .0020 | .0015 | .0012 | .0014 | .0012 | .0014 | .0012 | .0015 | .0018 | .0015 | .0018 | .0015 |
| 3/8 | .0025 | .0030 | .0025 | .0030 | .0025 | .0018 | .0020 | .0018 | .0020 | .0018 | .0020 | .0022 | .0020 | .0022 | .0020 |
| 1/2 | .0028 | .0032 | .0028 | .0032 | .0028 | .0020 | .0022 | .0020 | .0022 | .0020 | .0022 | .0024 | .0022 | .0024 | .0022 |
| 3/4 | .0030 | .0035 | .0030 | .0035 | .0030 | .0024 | .0026 | .0024 | .0026 | .0024 | .0026 | .0028 | .0026 | .0028 | .0026 |
| 1 | .0040 | .0045 | .0040 | .0045 | .0040 | .0025 | .0027 | .0025 | .0027 | .0025 | .0028 | .0030 | .0028 | .0030 | .0028 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (250 - 300) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (100 - 120) SFM (ft/min) | | | | | **Titanium** (120 - 150) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting | Plunge | Rough | Finish | Pocket | Slotting | Plunge | Rough | Finish | Pocket | Slotting | Plunge | Rough | Finish | Pocket |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0007 | .0009 | .0007 | .0009 | .0007 | .0004 | .0005 | .0004 | .0005 | .0004 | .0004 | .0005 | .0004 | .0005 | .0004 |
| 1/4 | .0015 | .0018 | .0015 | .0018 | .0015 | .0008 | .0010 | .0008 | .0010 | .0008 | .0008 | .0010 | .0008 | .0010 | .0008 |
| 3/8 | .0024 | .0026 | .0024 | .0026 | .0024 | .0013 | .0015 | .0013 | .0015 | .0013 | .0012 | .0015 | .0012 | .0015 | .0012 |
| 1/2 | .0026 | .0028 | .0026 | .0028 | .0026 | .0019 | .0020 | .0019 | .0020 | .0019 | .0016 | .0018 | .0016 | .0018 | .0016 |
| 3/4 | .0028 | .0032 | .0028 | .0032 | .0028 | .0025 | .0028 | .0025 | .0028 | .0025 | .0020 | .0022 | .0020 | .0022 | .0020 |
| 1 | .0030 | .0035 | .0030 | .0035 | .0030 | .0027 | .0030 | .0027 | .0030 | .0027 | .0028 | .0030 | .0028 | .0030 | .0028 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3000-Intimidator

F.A.S.T. Fullerton Advanced Solutions Team


Square End - Four Uniquely Indexed RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Recommended in Unique Situations | | | | | **Low Si Aluminum ( <10%)** Recommended in Unique Situations | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (121-182) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | .0203 | .0229 | .0178 | .0254 | .0178 | | | | | |
| 6 | | | | | | .0381 | .0508 | .0381 | .0508 | .0381 | | | | | |
| 10 | | | | | | .0635 | .0762 | .0635 | .0762 | .0635 | | | | | |
| 12 | | | | | | .0711 | .0813 | .0711 | .0813 | .0711 | | | | | |
| 20 | | | | | | .0762 | .0889 | .0762 | .0889 | .0762 | | | | | |
| 25 | | | | | | .1016 | .1143 | .1016 | .1143 | .1016 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (121-182) SMM (m/min) | | | | | **Hardened Steels > 48 RC** (39-51) SMM (m/min) | | | | | **Steels** (91-182) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0203 | .0254 | .0178 | .0254 | .0178 | .0152 | .0178 | .0152 | .0178 | .0152 | .0178 | .0229 | .0178 | .0229 | .0178 |
| 6 | .0381 | .0508 | .0381 | .0508 | .0381 | .0305 | .0356 | .0305 | .0356 | .0305 | .0381 | .0457 | .0381 | .0457 | .0381 |
| 10 | .0635 | .0762 | .0635 | .0762 | .0635 | .0457 | .0508 | .0457 | .0508 | .0457 | .0508 | .0559 | .0508 | .0559 | .0508 |
| 12 | .0711 | .0813 | .0711 | .0813 | .0711 | .0508 | .0559 | .0508 | .0559 | .0508 | .0559 | .0610 | .0559 | .0610 | .0559 |
| 20 | .0762 | .0889 | .0762 | .0889 | .0762 | .0610 | .0660 | .0610 | .0660 | .0610 | .0660 | .0711 | .0660 | .0711 | .0660 |
| 25 | .1016 | .1143 | .1016 | .1143 | .1016 | .0635 | .0686 | .0635 | .0686 | .0635 | .0711 | .0762 | .0711 | .0762 | .0711 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (76-91) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (30-36) SMM (m/min) | | | | | **Titanium** (36-45) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0178 | .0229 | .0178 | .0229 | .0178 | .0102 | .0127 | .0102 | .0127 | .0102 | .0102 | .0127 | .0102 | .0127 | .0102 |
| 6 | .0381 | .0457 | .0381 | .0457 | .0381 | .0203 | .0254 | .0203 | .0254 | .0203 | .0203 | .0254 | .0203 | .0254 | .0203 |
| 10 | .0610 | .0660 | .0610 | .0660 | .0610 | .0330 | .0381 | .0330 | .0381 | .0330 | .0305 | .0381 | .0305 | .0381 | .0305 |
| 12 | .0660 | .0711 | .0660 | .0711 | .0660 | .0483 | .0508 | .0483 | .0508 | .0483 | .0406 | .0457 | .0406 | .0457 | .0406 |
| 20 | .0711 | .0813 | .0711 | .0813 | .0711 | .0635 | .0711 | .0635 | .0711 | .0635 | .0508 | .0559 | .0508 | .0559 | .0508 |
| 25 | .0762 | .0889 | .0762 | .0889 | .0762 | .0686 | .0762 | .0686 | .0762 | .0686 | .0711 | .0762 | .0711 | .0762 | .0711 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001B 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3200,2004 JIT-General Purpose 4-Flute

Square End - Standard Length - Four 30° RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** (1100 - 1500) SFM (ft/min) | | | | | **Composites** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | .0010 | .0012 | .0010 | .0012 | .0010 | | | | | |
| 1/4 | | | | | | .0030 | .0034 | .0030 | .0034 | .0030 | | | | | |
| 3/8 | | | | | | .0045 | .0048 | .0045 | .0048 | .0045 | | | | | |
| 1/2 | | | | | | .0060 | .0063 | .0060 | .0063 | .0060 | | | | | |
| 3/4 | | | | | | .0080 | .0085 | .0080 | .0085 | .0080 | | | | | |
| 1 | | | | | | .0100 | .0114 | .0100 | .0114 | .0100 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (400 - 600) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | .0009 | .0011 | .0007 | .0011 | .0007 | | | | | |
| 1/4 | | | | | | .0013 | .0014 | .0009 | .0015 | .0009 | | | | | |
| 3/8 | | | | | | .0021 | .0020 | .0012 | .0021 | .0012 | | | | | |
| 1/2 | | | | | | .0025 | .0028 | .0025 | .0028 | .0025 | | | | | |
| 3/4 | | | | | | .0030 | .0035 | .0028 | .0035 | .0028 | | | | | |
| 1 | | | | | | .0040 | .0045 | .0035 | .0040 | .0035 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (250 - 400) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** (80 - 130) SFM (ft/min) | | | | | **Steels** (230 - 350) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0010 | .0012 | .0008 | .0012 | .0008 | .0008 | .0009 | .0008 | .0009 | .0008 | .0006 | .0008 | .0006 | .0008 | .0006 |
| 1/4 | .0014 | .0015 | .0010 | .0015 | .0010 | .0015 | .0016 | .0015 | .0016 | .0015 | .0014 | .0014 | .0014 | .0014 | .0014 |
| 3/8 | .0022 | .0022 | .0013 | .0022 | .0013 | .0020 | .0022 | .0020 | .0022 | .0020 | .0022 | .0022 | .0022 | .0022 | .0022 |
| 1/2 | .0025 | .0030 | .0025 | .0030 | .0025 | .0025 | .0025 | .0025 | .0025 | .0025 | .0025 | .0025 | .0025 | .0025 | .0025 |
| 3/4 | .0028 | .0035 | .0030 | .0035 | .0030 | .0028 | .0030 | .0028 | .0030 | .0028 | .0028 | .0028 | .0028 | .0028 | .0028 |
| 1 | .0035 | .0045 | .0040 | .0045 | .0040 | .0030 | .0035 | .0030 | .0035 | .0030 | .0035 | .0035 | .0035 | .0035 | .0035 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (130 - 280) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (80 - 120) SFM (ft/min) | | | | | **Titanium** (120 - 200) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0006 | .0008 | .0006 | .0008 | .0006 | .0003 | .0004 | .0003 | .0004 | .0003 | .0003 | .0004 | .0003 | .0004 | .0003 |
| 1/4 | .0014 | .0014 | .0014 | .0014 | .0014 | .0007 | .0010 | .0008 | .0010 | .0008 | .0007 | .0007 | .0007 | .0007 | .0007 |
| 3/8 | .0022 | .0022 | .0022 | .0022 | .0022 | .0012 | .0015 | .0015 | .0015 | .0015 | .0011 | .0011 | .0011 | .0011 | .0011 |
| 1/2 | .0023 | .0023 | .0023 | .0023 | .0023 | .0018 | .0020 | .0020 | .0020 | .0020 | .0014 | .0014 | .0014 | .0014 | .0014 |
| 3/4 | .0025 | .0025 | .0025 | .0025 | .0025 | .0025 | .0028 | .0025 | .0025 | .0025 | .0018 | .0018 | .0018 | .0018 | .0018 |
| 1 | .0027 | .0027 | .0027 | .0027 | .0027 | .0030 | .0035 | .0030 | .0030 | .0030 | .0025 | .0025 | .0025 | .0025 | .0025 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3200,2004 JIT-General Purpose 4-Flute

Square End - Standard Length - Four 30° RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** (335 - 457) SMM (m/min) | | | | | **Composites** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | .0254 | .0305 | .0254 | .0305 | .0254 | | | | | |
| 6 | | | | | | .0762 | .0864 | .0762 | .0864 | .0762 | | | | | |
| 10 | | | | | | .1143 | .1219 | .1143 | .1219 | .1143 | | | | | |
| 12 | | | | | | .1524 | .1600 | .1524 | .1600 | .1524 | | | | | |
| 20 | | | | | | .2032 | .2159 | .2032 | .2159 | .2032 | | | | | |
| 25 | | | | | | .2540 | .2896 | .2540 | .2896 | .2540 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (121 - 182) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | .0229 | .0279 | .0178 | .0279 | .0178 | | | | | |
| 6 | | | | | | .0330 | .0356 | .0229 | .0381 | .0229 | | | | | |
| 10 | | | | | | .0533 | .0508 | .0305 | .0533 | .0305 | | | | | |
| 12 | | | | | | .0635 | .0711 | .0635 | .0711 | .0635 | | | | | |
| 20 | | | | | | .0762 | .0889 | .0711 | .0889 | .0711 | | | | | |
| 25 | | | | | | .1016 | .1143 | .0889 | .1016 | .0889 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (76 - 121) SMM (m/min) | | | | | **Hardened Steels > 48 RC** (24 - 39) SMM (m/min) | | | | | **Steels** (70 - 106) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0254 | .0305 | .0203 | .0305 | .0203 | .0203 | .0229 | .0203 | .0229 | .0203 | .0152 | .0203 | .0152 | .0203 | .0152 |
| 6 | .0356 | .0381 | .0254 | .0381 | .0254 | .0381 | .0406 | .0381 | .0406 | .0381 | .0356 | .0356 | .0356 | .0356 | .0356 |
| 10 | .0559 | .0559 | .0330 | .0559 | .0330 | .0508 | .0559 | .0508 | .0559 | .0508 | .0559 | .0559 | .0559 | .0559 | .0559 |
| 12 | .0635 | .0762 | .0635 | .0762 | .0635 | .0635 | .0635 | .0635 | .0635 | .0635 | .0635 | .0635 | .0635 | .0635 | .0635 |
| 20 | .0711 | .0889 | .0762 | .0889 | .0762 | .0711 | .0762 | .0711 | .0762 | .0711 | .0711 | .0711 | .0711 | .0711 | .0711 |
| 25 | .0889 | .1143 | .1016 | .1143 | .1016 | .0762 | .0889 | .0762 | .0889 | .0762 | .0889 | .0889 | .0889 | .0889 | .0889 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (39 - 85) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (24 - 36) SMM (m/min) | | | | | **Titanium** (36 - 60) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0152 | .0203 | .0152 | .0203 | .0152 | .0076 | .0102 | .0076 | .0102 | .0076 | .0076 | .0102 | .0076 | .0102 | .0076 |
| 6 | .0356 | .0356 | .0356 | .0356 | .0356 | .0178 | .0254 | .0203 | .0254 | .0203 | .0178 | .0178 | .0178 | .0178 | .0178 |
| 10 | .0559 | .0559 | .0559 | .0559 | .0559 | .0305 | .0381 | .0381 | .0381 | .0381 | .0279 | .0279 | .0279 | .0279 | .0279 |
| 12 | .0584 | .0584 | .0584 | .0584 | .0584 | .0457 | .0508 | .0508 | .0508 | .0508 | .0356 | .0356 | .0356 | .0356 | .0356 |
| 20 | .0635 | .0635 | .0635 | .0635 | .0635 | .0635 | .0711 | .0635 | .0635 | .0635 | .0457 | .0457 | .0457 | .0457 | .0457 |
| 25 | .0686 | .0686 | .0686 | .0686 | .0686 | .0762 | .0889 | .0762 | .0762 | .0762 | .0635 | .0635 | .0635 | .0635 | .0635 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3215,2002 JIT-General Purpose 2-Flute

F.A.S.T. Fullerton Advanced Solutions Team

Square End - Two 30° RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** (1100 - 1500) SFM (ft/min) | | | | | **Composites** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | .0039 | .0051 | .0039 | .0051 | .0039 | | | | | |
| 1/4 | | | | | | .0042 | .0059 | .0042 | .0059 | .0042 | | | | | |
| 3/8 | | | | | | .0046 | .0068 | .0046 | .0068 | .0046 | | | | | |
| 1/2 | | | | | | .0050 | .0077 | .0050 | .0077 | .0050 | | | | | |
| 3/4 | | | | | | .0055 | .0088 | .0055 | .0088 | .0055 | | | | | |
| 1 | | | | | | .0059 | .0098 | .0059 | .0098 | .0059 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (400 - 600) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | .0004 | .0006 | .0004 | .0006 | .0004 | | | | | |
| 1/4 | | | | | | .0008 | .0012 | .0008 | .0012 | .0008 | | | | | |
| 3/8 | | | | | | .0020 | .0025 | .0020 | .0025 | .0020 | | | | | |
| 1/2 | | | | | | .0033 | .0036 | .0033 | .0036 | .0033 | | | | | |
| 3/4 | | | | | | .0045 | .0049 | .0045 | .0049 | .0045 | | | | | |
| 1 | | | | | | .0059 | .0062 | .0059 | .0062 | .0059 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (250 - 400) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** Not Recommended | | | | | **Steels** (200 - 500) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0004 | .0008 | .0004 | .0008 | .0004 | | | | | | .0004 | .0006 | .0004 | .0006 | .0004 |
| 1/4 | .0008 | .0020 | .0008 | .0020 | .0008 | | | | | | .0012 | .0017 | .0012 | .0018 | .0012 |
| 3/8 | .0018 | .0036 | .0018 | .0036 | .0018 | | | | | | .0022 | .0030 | .0022 | .0030 | .0022 |
| 1/2 | .0025 | .0049 | .0025 | .0049 | .0025 | | | | | | .0030 | .0045 | .0030 | .0045 | .0030 |
| 3/4 | .0033 | .0060 | .0033 | .0060 | .0033 | | | | | | .0039 | .0060 | .0039 | .0060 | .0039 |
| 1 | .0039 | .0071 | .0039 | .0071 | .0039 | | | | | | .0047 | .0071 | .0047 | .0071 | .0047 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (130 - 260) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (25 - 115) SFM (ft/min) | | | | | **Titanium** (35 - 330) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0002 | .0004 | .0002 | .0004 | .0002 | .0002 | .0004 | .0002 | .0004 | .0002 | .0002 | .0004 | .0002 | .0004 | .0002 |
| 1/4 | .0006 | .0008 | .0006 | .0008 | .0006 | .0004 | .0008 | .0004 | .0008 | .0004 | .0006 | .0010 | .0006 | .0010 | .0006 |
| 3/8 | .0010 | .0012 | .0010 | .0012 | .0010 | .0006 | .0011 | .0006 | .0011 | .0006 | .0010 | .0016 | .0010 | .0016 | .0010 |
| 1/2 | .0014 | .0018 | .0014 | .0018 | .0014 | .0008 | .0015 | .0008 | .0015 | .0008 | .0014 | .0022 | .0014 | .0022 | .0014 |
| 3/4 | .0017 | .0024 | .0017 | .0024 | .0017 | .0010 | .0018 | .0010 | .0018 | .0010 | .0017 | .0026 | .0017 | .0026 | .0017 |
| 1 | .0020 | .0031 | .0020 | .0031 | .0020 | .0012 | .0020 | .0012 | .0020 | .0012 | .0020 | .0031 | .0020 | .0031 | .0020 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3215,2002 JIT-General Purpose 2-Flute

Square End - Two 30° RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** (335 - 457) SMM (m/min) | | | | | **Composites** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | .0991 | .1295 | .0991 | .1295 | .0991 | | | | | |
| 6 | | | | | | .1067 | .1499 | .1067 | .1499 | .1067 | | | | | |
| 10 | | | | | | .1168 | .1727 | .1168 | .1727 | .1168 | | | | | |
| 12 | | | | | | .1270 | .1956 | .1270 | .1956 | .1270 | | | | | |
| 20 | | | | | | .1397 | .2235 | .1397 | .2235 | .1397 | | | | | |
| 25 | | | | | | .1499 | .2489 | .1499 | .2489 | .1499 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (121 - 182) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | .0102 | .0152 | .0102 | .0152 | .0102 | | | | | |
| 6 | | | | | | .0203 | .0305 | .0203 | .0305 | .0203 | | | | | |
| 10 | | | | | | .0508 | .0635 | .0508 | .0635 | .0508 | | | | | |
| 12 | | | | | | .0838 | .0914 | .0838 | .0914 | .0838 | | | | | |
| 20 | | | | | | .1143 | .1245 | .1143 | .1245 | .1143 | | | | | |
| 25 | | | | | | .1499 | .1575 | .1499 | .1575 | .1499 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (76 - 121) SMM (m/min) | | | | | **Hardened Steels > 48 RC** Not Recommended | | | | | **Steels** (60 - 152) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0102 | .0203 | .0102 | .0203 | .0102 | | | | | | .0102 | .0152 | .0102 | .0152 | .0102 |
| 6 | .0203 | .0508 | .0203 | .0508 | .0203 | | | | | | .0305 | .0432 | .0305 | .0457 | .0305 |
| 10 | .0457 | .0914 | .0457 | .0914 | .0457 | | | | | | .0559 | .0762 | .0559 | .0762 | .0559 |
| 12 | .0635 | .1245 | .0635 | .1245 | .0635 | | | | | | .0762 | .1143 | .0762 | .1143 | .0762 |
| 20 | .0838 | .1524 | .0838 | .1524 | .0838 | | | | | | .0991 | .1524 | .0991 | .1524 | .0991 |
| 25 | .0991 | .1803 | .0991 | .1803 | .0991 | | | | | | .1194 | .1803 | .1194 | .1803 | .1194 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (39 - 79) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (7 - 35) SMM (m/min) | | | | | **Titanium** (10 - 100) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0051 | .0102 | .0051 | .0102 | .0051 | .0051 | .0102 | .0051 | .0102 | .0051 | .0051 | .0102 | .0051 | .0102 | .0051 |
| 6 | .0152 | .0203 | .0152 | .0203 | .0152 | .0102 | .0203 | .0102 | .0203 | .0102 | .0152 | .0254 | .0152 | .0254 | .0152 |
| 10 | .0254 | .0305 | .0254 | .0305 | .0254 | .0152 | .0279 | .0152 | .0279 | .0152 | .0254 | .0406 | .0254 | .0406 | .0254 |
| 12 | .0356 | .0457 | .0356 | .0457 | .0356 | .0203 | .0381 | .0203 | .0381 | .0203 | .0356 | .0559 | .0356 | .0559 | .0356 |
| 20 | .0432 | .0610 | .0432 | .0610 | .0432 | .0254 | .0457 | .0254 | .0457 | .0254 | .0432 | .0660 | .0432 | .0660 | .0432 |
| 25 | .0508 | .0787 | .0508 | .0787 | .0508 | .0305 | .0508 | .0305 | .0508 | .0305 | .0508 | .0787 | .0508 | .0787 | .0508 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

F.A.S.T. Fullerton Advanced Solutions Team

# 3300,2003 JIT-General Purpose 3-Flute

Square End - Standard Length - Three 30° RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Recommended in Unique Situations | | | | | **Low Si Aluminum ( <10%)** (1000 - 1600) SFM (ft/min) | | | | | **Composites** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | .0010 | .0015 | .0010 | .0015 | .0010 | | | | | |
| 1/4 | - | - | - | - | - | .0030 | .0035 | .0030 | .0035 | .0030 | | | | | |
| 3/8 | - | - | - | - | - | .0045 | .0050 | .0045 | .0050 | .0045 | | | | | |
| 1/2 | - | - | - | - | - | .0065 | .0070 | .0065 | .0070 | .0065 | | | | | |
| 3/4 | - | - | - | - | - | .0085 | .0090 | .0085 | .0090 | .0085 | | | | | |
| 1 | - | - | - | - | - | .0100 | .0110 | .0100 | .0110 | .0100 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (400 - 600) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | .0008 | .0010 | .0008 | .0010 | .0008 | | | | | |
| 1/4 | | | | | | .0015 | .0020 | .0015 | .0020 | .0015 | | | | | |
| 3/8 | | | | | | .0025 | .0030 | .0025 | .0030 | .0025 | | | | | |
| 1/2 | | | | | | .0030 | .0035 | .0030 | .0035 | .0030 | | | | | |
| 3/4 | | | | | | .0035 | .0040 | .0035 | .0040 | .0035 | | | | | |
| 1 | | | | | | .0040 | .0045 | .0040 | .0045 | .0040 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (250 - 400) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** Not Recommended | | | | | **Steels** (200 - 500) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0007 | .0009 | .0007 | .0009 | .0007 | | | | | | .0007 | .0009 | .0007 | .0009 | .0007 |
| 1/4 | .0014 | .0020 | .0014 | .0020 | .0014 | | | | | | .0015 | .0020 | .0015 | .0020 | .0015 |
| 3/8 | .0022 | .0026 | .0022 | .0026 | .0022 | | | | | | .0023 | .0026 | .0023 | .0026 | .0023 |
| 1/2 | .0025 | .0034 | .0025 | .0034 | .0025 | | | | | | .0026 | .0034 | .0026 | .0034 | .0026 |
| 3/4 | .0028 | .0045 | .0028 | .0045 | .0028 | | | | | | .0030 | .0045 | .0030 | .0045 | .0030 |
| 1 | .0035 | .0050 | .0035 | .0050 | .0035 | | | | | | .0040 | .0050 | .0040 | .0050 | .0040 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (130 - 300) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (65 - 130) SFM (ft/min) | | | | | **Titanium** (120 - 210) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0006 | .0008 | .0006 | .0008 | .0006 | .0004 | .0005 | .0004 | .0005 | .0004 | .0004 | .0006 | .0004 | .0006 | .0004 |
| 1/4 | .0014 | .0017 | .0014 | .0017 | .0014 | .0008 | .0009 | .0008 | .0009 | .0008 | .0008 | .0012 | .0008 | .0012 | .0008 |
| 3/8 | .0022 | .0022 | .0022 | .0022 | .0022 | .0011 | .0011 | .0011 | .0011 | .0011 | .0012 | .0016 | .0012 | .0016 | .0012 |
| 1/2 | .0023 | .0029 | .0023 | .0029 | .0023 | .0014 | .0015 | .0014 | .0015 | .0014 | .0016 | .0022 | .0016 | .0022 | .0016 |
| 3/4 | .0025 | .0040 | .0025 | .0040 | .0025 | .0020 | .0021 | .0020 | .0021 | .0020 | .0020 | .0029 | .0020 | .0029 | .0020 |
| 1 | .0030 | .0045 | .0030 | .0045 | .0030 | .0023 | .0025 | .0023 | .0025 | .0023 | .0028 | .0035 | .0028 | .0035 | .0028 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3300,2003 JIT-General Purpose 3-Flute

Square End - Standard Length - Three 30° RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Recommended in Unique Situations | | | | | **Low Si Aluminum ( <10%)** (304 - 487) SMM (m/min) | | | | | **Composites** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | .0254 | .0381 | .0254 | .0381 | .0254 | | | | | |
| 6 | - | - | - | - | - | .0762 | .0889 | .0762 | .0889 | .0762 | | | | | |
| 10 | - | - | - | - | - | .1143 | .1270 | .1143 | .1270 | .1143 | | | | | |
| 12 | - | - | - | - | - | .1651 | .1778 | .1651 | .1778 | .1651 | | | | | |
| 20 | - | - | - | - | - | .2159 | .2286 | .2159 | .2286 | .2159 | | | | | |
| 25 | - | - | - | - | - | .2540 | .2794 | .2540 | .2794 | .2540 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (121 - 182) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | .0203 | .0254 | .0203 | .0254 | .0203 | | | | | |
| 6 | | | | | | .0381 | .0508 | .0381 | .0508 | .0381 | | | | | |
| 10 | | | | | | .0635 | .0762 | .0635 | .0762 | .0635 | | | | | |
| 12 | | | | | | .0762 | .0889 | .0762 | .0889 | .0762 | | | | | |
| 20 | | | | | | .0889 | .1016 | .0889 | .1016 | .0889 | | | | | |
| 25 | | | | | | .1016 | .1143 | .1016 | .1143 | .1016 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (76 - 121) SMM (m/min) | | | | | **Hardened Steels > 48 RC** Not Recommended | | | | | **Steels** (60 - 152) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0178 | .0229 | .0178 | .0229 | .0178 | | | | | | .0178 | .0229 | .0178 | .0229 | .0178 |
| 6 | .0356 | .0508 | .0356 | .0508 | .0356 | | | | | | .0381 | .0508 | .0381 | .0508 | .0381 |
| 10 | .0559 | .0660 | .0559 | .0660 | .0559 | | | | | | .0584 | .0660 | .0584 | .0660 | .0584 |
| 12 | .0635 | .0864 | .0635 | .0864 | .0635 | | | | | | .0660 | .0864 | .0660 | .0864 | .0660 |
| 20 | .0711 | .1143 | .0711 | .1143 | .0711 | | | | | | .0762 | .1143 | .0762 | .1143 | .0762 |
| 25 | .0889 | .1270 | .0889 | .1270 | .0889 | | | | | | .1016 | .1270 | .1016 | .1270 | .1016 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (39 - 91) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (19 - 39) SMM (m/min) | | | | | **Titanium** (36 - 64) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0152 | .0203 | .0152 | .0203 | .0152 | .0102 | .0127 | .0102 | .0127 | .0102 | .0102 | .0152 | .0102 | .0152 | .0102 |
| 6 | .0356 | .0432 | .0356 | .0432 | .0356 | .0203 | .0229 | .0203 | .0229 | .0203 | .0203 | .0305 | .0203 | .0305 | .0203 |
| 10 | .0559 | .0559 | .0559 | .0559 | .0559 | .0279 | .0279 | .0279 | .0279 | .0279 | .0305 | .0406 | .0305 | .0406 | .0305 |
| 12 | .0584 | .0737 | .0584 | .0737 | .0584 | .0356 | .0381 | .0356 | .0381 | .0356 | .0406 | .0559 | .0406 | .0559 | .0406 |
| 20 | .0635 | .1016 | .0635 | .1016 | .0635 | .0508 | .0533 | .0508 | .0533 | .0508 | .0508 | .0737 | .0508 | .0737 | .0508 |
| 25 | .0762 | .1143 | .0762 | .1143 | .0762 | .0584 | .0635 | .0584 | .0635 | .0584 | .0711 | .0889 | .0711 | .0889 | .0711 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

F.A.S.T. Fullerton Advanced Solutions Team

# 3400- Harmon-i-Cut

HARMONICUT

Square End - Four Variable Indexed and Inividually Designed RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | | | | | | - | - | - | - | - |
| 1/4 | | | | | | | | | | | - | - | - | - | - |
| 3/8 | | | | | | | | | | | - | - | - | - | - |
| 1/2 | | | | | | | | | | | - | - | - | - | - |
| 3/4 | | | | | | | | | | | - | - | - | - | - |
| 1 | | | | | | | | | | | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | | | | | | | | | | |
| 1/4 | | | | | | | | | | | | | | | |
| 3/8 | | | | | | | | | | | | | | | |
| 1/2 | | | | | | | | | | | | | | | |
| 3/4 | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (375 - 525) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** (150 - 300) SFM (ft/min) | | | | | **Steels** (300 - 600) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0005 | .0007 | .0005 | .0007 | .0005 | .0002 | .0006 | .0002 | .0006 | .0002 | .0002 | .0007 | .0002 | .0007 | .0002 |
| 1/4 | .0010 | .0012 | .0010 | .0012 | .0010 | .0008 | .0012 | .0008 | .0012 | .0008 | .0010 | .0014 | .0010 | .0014 | .0010 |
| 3/8 | .0020 | .0020 | .0020 | .0020 | .0020 | .0012 | .0018 | .0012 | .0018 | .0012 | .0020 | .0021 | .0020 | .0021 | .0020 |
| 1/2 | .0025 | .0028 | .0025 | .0028 | .0025 | .0020 | .0025 | .0020 | .0025 | .0020 | .0025 | .0028 | .0025 | .0028 | .0025 |
| 3/4 | .0030 | .0035 | .0030 | .0035 | .0030 | .0025 | .0035 | .0025 | .0035 | .0025 | .0030 | .0035 | .0030 | .0035 | .0030 |
| 1 | .0035 | .0045 | .0035 | .0045 | .0035 | .0035 | .0040 | .0035 | .0040 | .0035 | .0035 | .0040 | .0035 | .0040 | .0035 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (200 - 300) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (75 - 125) SFM (ft/min) | | | | | **Titanium** (125 - 200) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0002 | .0007 | .0002 | .0007 | .0002 | .0002 | .0003 | .0002 | .0003 | .0002 | .0002 | .0004 | .0002 | .0004 | .0002 |
| 1/4 | .0008 | .0014 | .0008 | .0014 | .0008 | .0010 | .0010 | .0010 | .0010 | .0010 | .0012 | .0015 | .0012 | .0015 | .0012 |
| 3/8 | .0019 | .0021 | .0019 | .0021 | .0019 | .0013 | .0015 | .0013 | .0015 | .0013 | .0020 | .0025 | .0020 | .0025 | .0020 |
| 1/2 | .0025 | .0028 | .0025 | .0028 | .0025 | .0016 | .0020 | .0016 | .0020 | .0016 | .0025 | .0035 | .0025 | .0035 | .0025 |
| 3/4 | .0029 | .0035 | .0029 | .0035 | .0029 | .0022 | .0025 | .0022 | .0025 | .0022 | .0032 | .0045 | .0032 | .0045 | .0032 |
| 1 | .0033 | .0040 | .0033 | .0040 | .0033 | .0024 | .0030 | .0024 | .0030 | .0024 | .0040 | .0050 | .0040 | .0050 | .0040 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3400- Harmon-i-Cut

F.A.S.T. Fullerton Advanced Solutions Team

HARMONICUT

Square End - Four Variable Indexed and Inividually Designed RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | - | - | - | - | - |
| 6 | | | | | | | | | | | - | - | - | - | - |
| 10 | | | | | | | | | | | - | - | - | - | - |
| 12 | | | | | | | | | | | - | - | - | - | - |
| 20 | | | | | | | | | | | - | - | - | - | - |
| 25 | | | | | | | | | | | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (114 - 160) SMM (m/min) | | | | | **Hardened Steels > 48 RC** (45 - 91) SMM (m/min) | | | | | **Steels** (91 - 182) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0127 | .0178 | .0127 | .0178 | .0127 | .0051 | .0152 | .0051 | .0152 | .0051 | .0051 | .0178 | .0051 | .0178 | .0051 |
| 6 | .0254 | .0305 | .0254 | .0305 | .0254 | .0203 | .0305 | .0203 | .0305 | .0203 | .0254 | .0356 | .0254 | .0356 | .0254 |
| 10 | .0508 | .0508 | .0508 | .0508 | .0508 | .0305 | .0457 | .0305 | .0457 | .0305 | .0508 | .0533 | .0508 | .0533 | .0508 |
| 12 | .0635 | .0711 | .0635 | .0711 | .0635 | .0508 | .0635 | .0508 | .0635 | .0508 | .0635 | .0711 | .0635 | .0711 | .0635 |
| 20 | .0762 | .0889 | .0762 | .0889 | .0762 | .0635 | .0889 | .0635 | .0889 | .0635 | .0762 | .0889 | .0762 | .0889 | .0762 |
| 25 | .0889 | .1143 | .0889 | .1143 | .0889 | .0889 | .1016 | .0889 | .1016 | .0889 | .0889 | .1016 | .0889 | .1016 | .0889 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (60 - 91) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (22 - 38) SMM (m/min) | | | | | **Titanium** (38 - 60) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0051 | .0178 | .0051 | .0178 | .0051 | .0051 | .0076 | .0051 | .0076 | .0051 | .0051 | .0102 | .0051 | .0102 | .0051 |
| 6 | .0203 | .0356 | .0203 | .0356 | .0203 | .0254 | .0254 | .0254 | .0254 | .0254 | .0305 | .0381 | .0305 | .0381 | .0305 |
| 10 | .0483 | .0533 | .0483 | .0533 | .0483 | .0330 | .0381 | .0330 | .0381 | .0330 | .0508 | .0635 | .0508 | .0635 | .0508 |
| 12 | .0635 | .0711 | .0635 | .0711 | .0635 | .0406 | .0508 | .0406 | .0508 | .0406 | .0635 | .0889 | .0635 | .0889 | .0635 |
| 20 | .0737 | .0889 | .0737 | .0889 | .0737 | .0559 | .0635 | .0559 | .0635 | .0559 | .0813 | .1143 | .0813 | .1143 | .0813 |
| 25 | .0838 | .1016 | .0838 | .1016 | .0838 | .0610 | .0762 | .0610 | .0762 | .0610 | .1016 | .1270 | .1016 | .1270 | .1016 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

F.A.S.T. Fullerton Advanced Solutions Team

# 3410-Fantom

Corner Radius - Five Variable Indexed RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | | | | | | - | - | - | - | - |
| 1/4 | | | | | | | | | | | - | - | - | - | - |
| 3/8 | | | | | | | | | | | - | - | - | - | - |
| 1/2 | | | | | | | | | | | - | - | - | - | - |
| 3/4 | | | | | | | | | | | - | - | - | - | - |
| 1 | | | | | | | | | | | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | | | | | | | | | | |
| 1/4 | | | | | | | | | | | | | | | |
| 3/8 | | | | | | | | | | | | | | | |
| 1/2 | | | | | | | | | | | | | | | |
| 3/4 | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (300 - 520) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** (150 - 300) SFM (ft/min) | | | | | **Steels** (400 - 650) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0010 | .0012 | .0010 | .0012 | .0010 | .0007 | .0008 | .0005 | .0010 | .0005 | .0010 | .0012 | .0010 | .0012 | .0010 |
| 1/4 | .0018 | .0018 | .0018 | .0018 | .0018 | .0014 | .0014 | .0010 | .0015 | .0010 | .0018 | .0018 | .0018 | .0018 | .0018 |
| 3/8 | .0027 | .0027 | .0027 | .0027 | .0027 | .0020 | .0026 | .0020 | .0026 | .0020 | .0027 | .0035 | .0035 | .0035 | .0035 |
| 1/2 | .0035 | .0035 | .0035 | .0035 | .0035 | .0026 | .0030 | .0025 | .0030 | .0025 | .0035 | .0039 | .0039 | .0039 | .0039 |
| 3/4 | .0043 | .0043 | .0043 | .0043 | .0043 | .0033 | .0033 | .0030 | .0033 | .0030 | .0043 | .0043 | .0043 | .0043 | .0043 |
| 1 | .0050 | .0050 | .0050 | .0050 | .0050 | .0039 | .0039 | .0040 | .0045 | .0040 | .0050 | .0050 | .0050 | .0050 | .0050 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (225 - 300) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (75 - 125) SFM (ft/min) | | | | | **Titanium** (150 - 275) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0004 | .0008 | .0004 | .0008 | .0004 | .0006 | .0007 | .0006 | .0007 | .0006 | .0003 | .0004 | .0003 | .0004 | .0003 |
| 1/4 | .0010 | .0014 | .0010 | .0014 | .0010 | .0008 | .0010 | .0008 | .0010 | .0008 | .0008 | .0010 | .0008 | .0010 | .0008 |
| 3/8 | .0012 | .0022 | .0012 | .0022 | .0012 | .0010 | .0015 | .0010 | .0015 | .0010 | .0010 | .0015 | .0010 | .0015 | .0010 |
| 1/2 | .0015 | .0030 | .0015 | .0030 | .0015 | .0015 | .0020 | .0015 | .0020 | .0015 | .0015 | .0020 | .0015 | .0020 | .0015 |
| 3/4 | .0030 | .0035 | .0030 | .0035 | .0030 | .0025 | .0030 | .0025 | .0030 | .0025 | .0020 | .0025 | .0020 | .0025 | .0020 |
| 1 | .0040 | .0045 | .0040 | .0045 | .0040 | .0035 | .0040 | .0035 | .0040 | .0035 | .0032 | .0035 | .0032 | .0035 | .0032 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3410-Fantom

Corner Radius - Five Variable Indexed RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | - | - | - | - | - |
| 6 | | | | | | | | | | | - | - | - | - | - |
| 10 | | | | | | | | | | | - | - | - | - | - |
| 12 | | | | | | | | | | | - | - | - | - | - |
| 20 | | | | | | | | | | | - | - | - | - | - |
| 25 | | | | | | | | | | | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (91-158) SMM (m/min) | | | | | **Hardened Steels > 48 RC** (45-91) SMM (m/min) | | | | | **Steels** (121-198) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0254 | .0305 | .0254 | .0305 | .0254 | .0178 | .0203 | .0127 | .0254 | .0127 | .0254 | .0305 | .0254 | .0305 | .0254 |
| 6 | .0457 | .0457 | .0457 | .0457 | .0457 | .0356 | .0356 | .0254 | .0381 | .0254 | .0457 | .0457 | .0457 | .0457 | .0457 |
| 10 | .0686 | .0686 | .0686 | .0686 | .0686 | .0508 | .0660 | .0508 | .0660 | .0508 | .0686 | .0889 | .0889 | .0889 | .0889 |
| 12 | .0889 | .0889 | .0889 | .0889 | .0889 | .0660 | .0762 | .0635 | .0762 | .0635 | .0889 | .0991 | .0991 | .0991 | .0991 |
| 20 | .1092 | .1092 | .1092 | .1092 | .1092 | .0838 | .0838 | .0762 | .0838 | .0762 | .1092 | .1092 | .1092 | .1092 | .1092 |
| 25 | .1270 | .1270 | .1270 | .1270 | .1270 | .0991 | .0991 | .1016 | .1143 | .1016 | .1270 | .1270 | .1270 | .1270 | .1270 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (68-91) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (22-38) SMM (m/min) | | | | | **Titanium** (45-83) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0102 | .0203 | .0102 | .0203 | .0102 | .0152 | .0178 | .0152 | .0178 | .0152 | .0076 | .0102 | .0076 | .0102 | .0076 |
| 6 | .0254 | .0356 | .0254 | .0356 | .0254 | .0203 | .0254 | .0203 | .0254 | .0203 | .0203 | .0254 | .0203 | .0254 | .0203 |
| 10 | .0305 | .0559 | .0305 | .0559 | .0305 | .0254 | .0381 | .0254 | .0381 | .0254 | .0254 | .0381 | .0254 | .0381 | .0254 |
| 12 | .0381 | .0762 | .0381 | .0762 | .0381 | .0381 | .0508 | .0381 | .0508 | .0381 | .0381 | .0508 | .0381 | .0508 | .0381 |
| 20 | .0762 | .0889 | .0762 | .0889 | .0762 | .0635 | .0762 | .0635 | .0762 | .0635 | .0508 | .0635 | .0508 | .0635 | .0508 |
| 25 | .1016 | .1143 | .1016 | .1143 | .1016 | .0889 | .1016 | .0889 | .1016 | .0889 | .0813 | .0889 | .0813 | .0889 | .0813 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3500-Fury

Square End - Four Variable Indexed and Individualld Designed RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Recommended in Unique Situations | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 1/4 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 3/8 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 1/2 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 3/4 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 1 | - | - | - | - | - | | | | | | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | | | | | | | | | | |
| 1/4 | | | | | | | | | | | | | | | |
| 3/8 | | | | | | | | | | | | | | | |
| 1/2 | | | | | | | | | | | | | | | |
| 3/4 | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** Not Recommended | | | | | **Hardened Steels > 48 RC** (120 - 170) SFM (ft/min) | | | | | **Steels** (200 - 800) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | .0006 | .0007 | .0006 | .0007 | .0006 | .0007 | .0009 | .0007 | .0009 | .0007 |
| 1/4 | | | | | | .0012 | .0014 | .0012 | .0014 | .0012 | .0015 | .0018 | .0015 | .0018 | .0015 |
| 3/8 | | | | | | .0018 | .0020 | .0018 | .0020 | .0018 | .0020 | .0022 | .0020 | .0022 | .0020 |
| 1/2 | | | | | | .0020 | .0022 | .0020 | .0022 | .0020 | .0022 | .0024 | .0022 | .0024 | .0022 |
| 3/4 | | | | | | .0024 | .0026 | .0024 | .0026 | .0024 | .0026 | .0028 | .0026 | .0028 | .0026 |
| 1 | | | | | | .0025 | .0027 | .0025 | .0027 | .0025 | .0028 | .0030 | .0028 | .0030 | .0028 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (220 - 500) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (20 - 170) SFM (ft/min) | | | | | **Titanium** (60 - 500) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting | Plunge | Rough | Finish | Pocket | Slotting | Plunge | Rough | Finish | Pocket | Slotting | Plunge | Rough | Finish | Pocket |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0004 | .0007 | .0007 | .0010 | .0007 | .0004 | .0005 | .0004 | .0008 | .0004 | .0004 | .0005 | .0004 | .0010 | .0004 |
| 1/4 | .0010 | .0010 | .0013 | .0015 | .0015 | .0008 | .0010 | .0008 | .0010 | .0008 | .0008 | .0010 | .0008 | .0018 | .0008 |
| 3/8 | .0013 | .0012 | .0020 | .0026 | .0024 | .0013 | .0015 | .0013 | .0020 | .0013 | .0012 | .0015 | .0012 | .0025 | .0012 |
| 1/2 | .0015 | .0013 | .0022 | .0028 | .0026 | .0019 | .0020 | .0019 | .0025 | .0019 | .0016 | .0018 | .0016 | .0035 | .0016 |
| 3/4 | .0018 | .0015 | .0030 | .0032 | .0028 | .0025 | .0028 | .0025 | .0040 | .0025 | .0020 | .0022 | .0020 | .0045 | .0020 |
| 1 | .0020 | .0016 | .0035 | .0035 | .0030 | .0027 | .0030 | .0027 | .0045 | .0027 | .0028 | .0030 | .0028 | .0050 | .0028 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

Rev -001B 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3500-Fury

Square End - Four Variable Indexed and Individualld Designed RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Recommended in Unique Situations | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 6 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 10 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 12 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 20 | - | - | - | - | - | | | | | | - | - | - | - | - |
| 25 | - | - | - | - | - | | | | | | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** Not Recommended | | | | | **Hardened Steels > 48 RC** (39-51) SMM (m/min) | | | | | **Steels** (91-182) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | .0152 | .0178 | .0152 | .0178 | .0152 | .0178 | .0229 | .0178 | .0229 | .0178 |
| 6 | | | | | | .0305 | .0356 | .0305 | .0356 | .0305 | .0381 | .0457 | .0381 | .0457 | .0381 |
| 10 | | | | | | .0457 | .0508 | .0457 | .0508 | .0457 | .0508 | .0559 | .0508 | .0559 | .0508 |
| 12 | | | | | | .0508 | .0559 | .0508 | .0559 | .0508 | .0559 | .0610 | .0559 | .0610 | .0559 |
| 20 | | | | | | .0610 | .0660 | .0610 | .0660 | .0610 | .0660 | .0711 | .0660 | .0711 | .0660 |
| 25 | | | | | | .0635 | .0686 | .0635 | .0686 | .0635 | .0711 | .0762 | .0711 | .0762 | .0711 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (76-91) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (30-36) SMM (m/min) | | | | | **Titanium** (36-45) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0102 | .0178 | .0178 | .0254 | .0178 | .0102 | .0127 | .0102 | .0203 | .0102 | .0102 | .0127 | .0102 | .0254 | .0102 |
| 6 | .0254 | .0254 | .0330 | .0381 | .0381 | .0203 | .0254 | .0203 | .0254 | .0203 | .0203 | .0254 | .0203 | .0457 | .0203 |
| 10 | .0330 | .0305 | .0508 | .0660 | .0610 | .0330 | .0381 | .0330 | .0508 | .0330 | .0305 | .0381 | .0305 | .0635 | .0305 |
| 12 | .0381 | .0330 | .0559 | .0711 | .0660 | .0483 | .0508 | .0483 | .0635 | .0483 | .0406 | .0457 | .0406 | .0889 | .0406 |
| 20 | .0457 | .0381 | .0762 | .0813 | .0711 | .0635 | .0711 | .0635 | .1016 | .0635 | .0508 | .0559 | .0508 | .1143 | .0508 |
| 25 | .0508 | .0406 | .0889 | .0889 | .0762 | .0686 | .0762 | .0686 | .1143 | .0686 | .0711 | .0762 | .0711 | .1270 | .0711 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001B 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3800-Twister

F.A.S.T. Fullerton Advanced Solutions Team

Square End - Standard Length - Three 60° RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | | | | | | - | - | - | - | - |
| 1/4 | | | | | | | | | | | - | - | - | - | - |
| 3/8 | | | | | | | | | | | - | - | - | - | - |
| 1/2 | | | | | | | | | | | - | - | - | - | - |
| 3/4 | | | | | | | | | | | - | - | - | - | - |
| 1 | | | | | | | | | | | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Recommended in Unique Situations | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | - | - | - | - | - | | | | | |
| 1/4 | | | | | | - | - | - | - | - | | | | | |
| 3/8 | | | | | | - | - | - | - | - | | | | | |
| 1/2 | | | | | | - | - | - | - | - | | | | | |
| 3/4 | | | | | | - | - | - | - | - | | | | | |
| 1 | | | | | | - | - | - | - | - | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** Not Recommended | | | | | **Hardened Steels > 48 RC** Recommended in Unique Situations | | | | | **Steels** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | - | - | - | - | - | | | | | |
| 1/4 | | | | | | - | - | - | - | - | | | | | |
| 3/8 | | | | | | - | - | - | - | - | | | | | |
| 1/2 | | | | | | - | - | - | - | - | | | | | |
| 3/4 | | | | | | - | - | - | - | - | | | | | |
| 1 | | | | | | - | - | - | - | - | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** Recommended in Unique Situations | | | | | **Super Alloys (Nickel based, Inconel)** (70 - 110) SFM (ft/min) | | | | | **Titanium** (150 - 325) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | .0003 | .0005 | .0003 | .0005 | .0003 | .0003 | .0006 | .0003 | .0006 | .0003 |
| 1/4 | - | - | - | - | - | .0007 | .0009 | .0007 | .0009 | .0007 | .0007 | .0012 | .0007 | .0012 | .0007 |
| 3/8 | - | - | - | - | - | .0011 | .0014 | .0011 | .0014 | .0011 | .0011 | .0017 | .0011 | .0017 | .0011 |
| 1/2 | - | - | - | - | - | .0014 | .0019 | .0014 | .0019 | .0014 | .0015 | .0023 | .0015 | .0023 | .0015 |
| 3/4 | - | - | - | - | - | .0022 | .0028 | .0022 | .0028 | .0022 | .0022 | .0034 | .0022 | .0034 | .0022 |
| 1 | - | - | - | - | - | .0028 | .0038 | .0028 | .0038 | .0028 | .0030 | .0046 | .0030 | .0046 | .0030 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3800-Twister

Square End - Standard Length - Three 60° RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | - | - | - | - | - |
| 6 | | | | | | | | | | | - | - | - | - | - |
| 10 | | | | | | | | | | | - | - | - | - | - |
| 12 | | | | | | | | | | | - | - | - | - | - |
| 20 | | | | | | | | | | | - | - | - | - | - |
| 25 | | | | | | | | | | | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Recommended in Unique Situations | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | - | - | - | - | - | | | | | |
| 6 | | | | | | - | - | - | - | - | | | | | |
| 10 | | | | | | - | - | - | - | - | | | | | |
| 12 | | | | | | - | - | - | - | - | | | | | |
| 20 | | | | | | - | - | - | - | - | | | | | |
| 25 | | | | | | - | - | - | - | - | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** Not Recommended | | | | | **Hardened Steels > 48 RC** Recommended in Unique Situations | | | | | **Steels** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | - | - | - | - | - | | | | | |
| 6 | | | | | | - | - | - | - | - | | | | | |
| 10 | | | | | | - | - | - | - | - | | | | | |
| 12 | | | | | | - | - | - | - | - | | | | | |
| 20 | | | | | | - | - | - | - | - | | | | | |
| 25 | | | | | | - | - | - | - | - | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** Recommended in Unique Situations | | | | | **Super Alloys (Nickel based, Inconel)** (21 - 33) SMM (m/min) | | | | | **Titanium** (45 - 99) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | .0076 | .0127 | .0076 | .0127 | .0076 | .0076 | .0152 | .0076 | .0152 | .0076 |
| 6 | - | - | - | - | - | .0178 | .0229 | .0178 | .0229 | .0178 | .0178 | .0305 | .0178 | .0305 | .0178 |
| 10 | - | - | - | - | - | .0279 | .0356 | .0279 | .0356 | .0279 | .0279 | .0432 | .0279 | .0432 | .0279 |
| 12 | - | - | - | - | - | .0356 | .0483 | .0356 | .0483 | .0356 | .0381 | .0584 | .0381 | .0584 | .0381 |
| 20 | - | - | - | - | - | .0559 | .0711 | .0559 | .0711 | .0559 | .0559 | .0864 | .0559 | .0864 | .0559 |
| 25 | - | - | - | - | - | .0711 | .0965 | .0711 | .0965 | .0711 | .0762 | .1168 | .0762 | .1168 | .0762 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3810-The Dream

F.A.S.T. Fullerton Advanced Solutions Team

Corner Radius

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Do Not Use | | | | | **Low Si Aluminum ( <10%)** Do Not Use | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Do Not Use | | | | | **Brass & Copper** Do Not Use | | | | | **Graphite** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** (200 - 600) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | .0030 | - | - | .0040 | .0040 |
| 1 | - | - | - | - | - | - | - | - | - | - | .0040 | - | - | .0050 | .0050 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3810-The Dream

Corner Radius

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Do Not Use | | | | | **Low Si Aluminum ( <10%)** Do Not Use | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Do Not Use | | | | | **Brass & Copper** Do Not Use | | | | | **Graphite** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** (60 - 182) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | .0762 | - | - | .1016 | .1016 |
| 25 | - | - | - | - | - | - | - | - | - | - | .1016 | - | - | .1270 | .1270 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3815-Aluma-Mill

F.A.S.T. Fullerton Advanced Solutions Team


Chamfer End - Two 45° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (500 - 1000) SFM (ft/min) | | | | | **Low Si Aluminum ( <10%)** (1500 - 2000) SFM (ft/min) | | | | | **Composites** (400 - 800) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0010 | .0011 | .0010 | .0011 | .0010 | .0010 | .0012 | .0010 | .0012 | .0010 | .0030 | .0035 | .0030 | .0035 | .0030 |
| 1/4 | .0030 | .0032 | .0030 | .0032 | .0030 | .0030 | .0033 | .0030 | .0033 | .0030 | .0060 | .0065 | .0060 | .0065 | .0060 |
| 3/8 | .0045 | .0050 | .0045 | .0050 | .0045 | .0045 | .0050 | .0045 | .0050 | .0045 | .0080 | .0085 | .0080 | .0085 | .0080 |
| 1/2 | .0060 | .0065 | .0060 | .0065 | .0060 | .0060 | .0070 | .0060 | .0070 | .0060 | .0100 | .0105 | .0100 | .0105 | .0100 |
| 3/4 | .0080 | .0090 | .0080 | .0090 | .0080 | .0080 | .0095 | .0080 | .0095 | .0080 | .0140 | .0145 | .0140 | .0145 | .0140 |
| 1 | .0100 | .0110 | .0100 | .0110 | .0100 | .0100 | .0110 | .0100 | .0110 | .0100 | .0180 | .0185 | .0180 | .0185 | .0180 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** (1000 - 1400) SFM (ft/min) | | | | | **Brass & Copper** (800 - 1000) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0030 | .0035 | .0030 | .0035 | .0030 | .0010 | .0015 | .0010 | .0015 | .0010 | | | | | |
| 1/4 | .0060 | .0065 | .0060 | .0065 | .0060 | .0020 | .0025 | .0020 | .0025 | .0020 | | | | | |
| 3/8 | .0080 | .0085 | .0080 | .0085 | .0080 | .0025 | .0030 | .0025 | .0030 | .0025 | | | | | |
| 1/2 | .0100 | .0105 | .0100 | .0105 | .0100 | .0030 | .0035 | .0030 | .0035 | .0030 | | | | | |
| 3/4 | .0140 | .0145 | .0140 | .0145 | .0140 | .0040 | .0045 | .0040 | .0045 | .0040 | | | | | |
| 1 | .0180 | .0185 | .0180 | .0185 | .0180 | .0050 | .0055 | .0050 | .0055 | .0050 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1/4 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 3/8 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1/2 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 3/4 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1 | - | - | - | - | - | - | - | - | - | - | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3815-Aluma-Mill


Chamfer End - Two 45° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (152 - 304) SMM (m/min) | | | | | **Low Si Aluminum ( <10%)** (457 - 609) SMM (m/min) | | | | | **Composites** (121 - 243) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0254 | .0279 | .0254 | .0279 | .0254 | .0254 | .0305 | .0254 | .0305 | .0254 | .0762 | .0889 | .0762 | .0889 | .0762 |
| 6 | .0762 | .0813 | .0762 | .0813 | .0762 | .0762 | .0838 | .0762 | .0838 | .0762 | .1524 | .1651 | .1524 | .1651 | .1524 |
| 10 | .1143 | .1270 | .1143 | .1270 | .1143 | .1143 | .1270 | .1143 | .1270 | .1143 | .2032 | .2159 | .2032 | .2159 | .2032 |
| 12 | .1524 | .1651 | .1524 | .1651 | .1524 | .1524 | .1778 | .1524 | .1778 | .1524 | .2540 | .2667 | .2540 | .2667 | .2540 |
| 20 | .2032 | .2286 | .2032 | .2286 | .2032 | .2032 | .2413 | .2032 | .2413 | .2032 | .3556 | .3683 | .3556 | .3683 | .3556 |
| 25 | .2540 | .2794 | .2540 | .2794 | .2540 | .2540 | .2794 | .2540 | .2794 | .2540 | .4572 | .4699 | .4572 | .4699 | .4572 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** (304 - 426) SMM (m/min) | | | | | **Brass & Copper** (243 - 304) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0762 | .0889 | .0762 | .0889 | .0762 | .0254 | .0381 | .0254 | .0381 | .0254 | | | | | |
| 6 | .1524 | .1651 | .1524 | .1651 | .1524 | .0508 | .0635 | .0508 | .0635 | .0508 | | | | | |
| 10 | .2032 | .2159 | .2032 | .2159 | .2032 | .0635 | .0762 | .0635 | .0762 | .0635 | | | | | |
| 12 | .2540 | .2667 | .2540 | .2667 | .2540 | .0762 | .0889 | .0762 | .0889 | .0762 | | | | | |
| 20 | .3556 | .3683 | .3556 | .3683 | .3556 | .1016 | .1143 | .1016 | .1143 | .1016 | | | | | |
| 25 | .4572 | .4699 | .4572 | .4699 | .4572 | .1270 | .1397 | .1270 | .1397 | .1270 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 6 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 10 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 12 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 20 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 25 | - | - | - | - | - | - | - | - | - | - | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

F.A.S.T. Fullerton Advanced Solutions Team

# 3820-Hercules

Corner Radius

**Imperial Units**

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Do Not Use | | | | | **Low Si Aluminum ( <10%)** Do Not Use | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Do Not Use | | | | | **Brass & Copper** Do Not Use | | | | | **Graphite** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | .0025 | - | - | .0025 | .0025 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3820-Hercules

Corner Radius

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Do Not Use | | | | | **Low Si Aluminum ( <10%)** Do Not Use | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Do Not Use | | | | | **Brass & Copper** Do Not Use | | | | | **Graphite** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3825-Aluma-Mill

F.A.S.T. Fullerton Advanced Solutions Team


Square End - Two 45° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (800 - 1000) SFM (ft/min) | | | | | **Low Si Aluminum ( <10%)** (1300 - 2500) SFM (ft/min) | | | | | **Composites** (400 - 800) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0010 | .0011 | .0010 | .0011 | .0010 | .0010 | .0012 | .0010 | .0012 | .0010 | .0030 | .0035 | .0030 | .0035 | .0030 |
| 1/4 | .0030 | .0032 | .0025 | .0035 | .0025 | .0030 | .0033 | .0030 | .0033 | .0030 | .0060 | .0065 | .0060 | .0065 | .0060 |
| 3/8 | .0045 | .0050 | .0035 | .0050 | .0035 | .0045 | .0050 | .0045 | .0050 | .0045 | .0080 | .0085 | .0080 | .0085 | .0080 |
| 1/2 | .0060 | .0065 | .0055 | .0070 | .0055 | .0060 | .0070 | .0060 | .0070 | .0060 | .0100 | .0105 | .0100 | .0105 | .0100 |
| 3/4 | .0080 | .0090 | .0075 | .0090 | .0075 | .0080 | .0095 | .0080 | .0095 | .0080 | .0140 | .0145 | .0140 | .0145 | .0140 |
| 1 | .0100 | .0110 | .0095 | .0110 | .0095 | .0100 | .0110 | .0100 | .0110 | .0100 | .0180 | .0185 | .0180 | .0185 | .0180 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** (1000 - 1400) SFM (ft/min) | | | | | **Brass & Copper** (1000 - 1400) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0030 | .0035 | .0030 | .0035 | .0030 | .0030 | .0035 | .0030 | .0035 | .0030 | | | | | |
| 1/4 | .0060 | .0065 | .0060 | .0065 | .0060 | .0060 | .0065 | .0060 | .0065 | .0060 | | | | | |
| 3/8 | .0080 | .0085 | .0080 | .0085 | .0080 | .0080 | .0085 | .0080 | .0085 | .0080 | | | | | |
| 1/2 | .0100 | .0105 | .0100 | .0105 | .0100 | .0100 | .0105 | .0100 | .0105 | .0100 | | | | | |
| 3/4 | .0140 | .0145 | .0140 | .0145 | .0140 | .0140 | .0145 | .0140 | .0145 | .0140 | | | | | |
| 1 | .0180 | .0185 | .0180 | .0185 | .0180 | .0180 | .0185 | .0180 | .0185 | .0180 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1/4 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 3/8 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1/2 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 3/4 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1 | - | - | - | - | - | - | - | - | - | - | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3825-Aluma-Mill


Square End - Two 45° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (243 - 304) SMM (m/min) | | | | | **Low Si Aluminum ( <10%)** (396 - 762) SMM (m/min) | | | | | **Composites** (121 - 243) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0254 | .0279 | .0254 | .0279 | .0254 | .0254 | .0305 | .0254 | .0305 | .0254 | .0762 | .0889 | .0762 | .0889 | .0762 |
| 6 | .0762 | .0813 | .0635 | .0889 | .0635 | .0762 | .0838 | .0762 | .0838 | .0762 | .1524 | .1651 | .1524 | .1651 | .1524 |
| 10 | .1143 | .1270 | .0889 | .1270 | .0889 | .1143 | .1270 | .1143 | .1270 | .1143 | .2032 | .2159 | .2032 | .2159 | .2032 |
| 12 | .1524 | .1651 | .1397 | .1778 | .1397 | .1524 | .1778 | .1524 | .1778 | .1524 | .2540 | .2667 | .2540 | .2667 | .2540 |
| 20 | .2032 | .2286 | .1905 | .2286 | .1905 | .2032 | .2413 | .2032 | .2413 | .2032 | .3556 | .3683 | .3556 | .3683 | .3556 |
| 25 | .2540 | .2794 | .2413 | .2794 | .2413 | .2540 | .2794 | .2540 | .2794 | .2540 | .4572 | .4699 | .4572 | .4699 | .4572 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** (304 - 426) SMM (m/min) | | | | | **Brass & Copper** (304 - 426) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0762 | .0889 | .0762 | .0889 | .0762 | .0762 | .0889 | .0762 | .0889 | .0762 | | | | | |
| 6 | .1524 | .1651 | .1524 | .1651 | .1524 | .1524 | .1651 | .1524 | .1651 | .1524 | | | | | |
| 10 | .2032 | .2159 | .2032 | .2159 | .2032 | .2032 | .2159 | .2032 | .2159 | .2032 | | | | | |
| 12 | .2540 | .2667 | .2540 | .2667 | .2540 | .2540 | .2667 | .2540 | .2667 | .2540 | | | | | |
| 20 | .3556 | .3683 | .3556 | .3683 | .3556 | .3556 | .3683 | .3556 | .3683 | .3556 | | | | | |
| 25 | .4572 | .4699 | .4572 | .4699 | .4572 | .4572 | .4699 | .4572 | .4699 | .4572 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 6 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 10 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 12 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 20 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 25 | - | - | - | - | - | - | - | - | - | - | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3833-Aluma-Mill G3

F.A.S.T. Fullerton Advanced Solutions Team

Square End - Three 36° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (800 - 1500) SFM (ft/min) | | | | | **Low Si Aluminum ( <10%)** (1500 - 2500) SFM (ft/min) | | | | | **Composites** (400 - 900) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0010 | .0020 | .0010 | .0030 | .0010 | .0010 | .0020 | .0010 | .0030 | .0010 | .0015 | .0020 | .0015 | .0020 | .0015 |
| 1/4 | .0020 | .0030 | .0020 | .0040 | .0020 | .0015 | .0020 | .0020 | .0035 | .0020 | .0020 | .0025 | .0020 | .0025 | .0020 |
| 3/8 | .0030 | .0040 | .0040 | .0060 | .0040 | .0035 | .0040 | .0045 | .0055 | .0045 | .0025 | .0030 | .0025 | .0030 | .0025 |
| 1/2 | .0040 | .0060 | .0050 | .0075 | .0050 | .0050 | .0050 | .0055 | .0065 | .0055 | .0035 | .0040 | .0040 | .0045 | .0040 |
| 3/4 | .0070 | .0080 | .0085 | .0110 | .0085 | .0060 | .0085 | .0080 | .0090 | .0080 | .0050 | .0055 | .0055 | .0070 | .0055 |
| 1 | .0080 | .0100 | .0095 | .0120 | .0095 | .0080 | .0100 | .0100 | .0110 | .0100 | .0060 | .0065 | .0060 | .0075 | .0060 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Recommended in Unique Situations | | | | | **Brass & Copper** (800 - 1500) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | .0030 | .0035 | .0020 | .0025 | .0020 | | | | | |
| 1/4 | - | - | - | - | - | .0040 | .0045 | .0030 | .0035 | .0030 | | | | | |
| 3/8 | - | - | - | - | - | .0050 | .0055 | .0040 | .0045 | .0040 | | | | | |
| 1/2 | - | - | - | - | - | .0060 | .0065 | .0045 | .0055 | .0045 | | | | | |
| 3/4 | - | - | - | - | - | .0080 | .0085 | .0060 | .0075 | .0060 | | | | | |
| 1 | - | - | - | - | - | .0100 | .0110 | .0070 | .0085 | .0070 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1/4 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 3/8 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1/2 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 3/4 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1 | - | - | - | - | - | - | - | - | - | - | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**METRIC Units**

# 3833-Aluma-Mill G3

F.A.S.T. Fullerton Advanced Solutions Team

Square End - Three 36° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (243-457) SMM (m/min) | | | | | **Low Si Aluminum ( <10%)** (457-762) SMM (m/min) | | | | | **Composites** (121-274) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0254 | .0508 | .0254 | .0762 | .0254 | .0254 | .0508 | .0254 | .0762 | .0254 | .0381 | .0508 | .0381 | .0508 | .0381 |
| 6 | .0508 | .0762 | .0508 | .1016 | .0508 | .0381 | .0508 | .0508 | .0889 | .0508 | .0508 | .0635 | .0508 | .0635 | .0508 |
| 10 | .0762 | .1016 | .1016 | .1524 | .1016 | .0889 | .1016 | .1143 | .1397 | .1143 | .0635 | .0762 | .0635 | .0762 | .0635 |
| 12 | .1016 | .1524 | .1270 | .1905 | .1270 | .1270 | .1270 | .1397 | .1651 | .1397 | .0889 | .1016 | .1016 | .1143 | .1016 |
| 20 | .1778 | .2032 | .2159 | .2794 | .2159 | .1524 | .2159 | .2032 | .2286 | .2032 | .1270 | .1397 | .1397 | .1778 | .1397 |
| 25 | .2032 | .2540 | .2413 | .3048 | .2413 | .2032 | .2540 | .2540 | .2794 | .2540 | .1524 | .1651 | .1524 | .1905 | .1524 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Recommended in Unique Situations | | | | | **Brass & Copper** (243-457) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | .0762 | .0889 | .0508 | .0635 | .0508 | | | | | |
| 6 | - | - | - | - | - | .1016 | .1143 | .0762 | .0889 | .0762 | | | | | |
| 10 | - | - | - | - | - | .1270 | .1397 | .1016 | .1143 | .1016 | | | | | |
| 12 | - | - | - | - | - | .1524 | .1651 | .1143 | .1397 | .1143 | | | | | |
| 20 | - | - | - | - | - | .2032 | .2159 | .1524 | .1905 | .1524 | | | | | |
| 25 | - | - | - | - | - | .2540 | .2794 | .1778 | .2159 | .1778 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 6 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 10 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 12 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 20 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 25 | - | - | - | - | - | - | - | - | - | - | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev 001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3835-Aluma-Mill

F.A.S.T. Fullerton Advanced Solutions Team


Square End - Three 36° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (800 - 1500) SFM (ft/min) | | | | | **Low Si Aluminum ( <10%)** (1500 - 2500) SFM (ft/min) | | | | | **Composites** (400 - 900) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0010 | .0020 | .0020 | .0030 | .0020 | .0010 | .0020 | .0010 | .0030 | .0010 | .0015 | .0020 | .0015 | .0020 | .0015 |
| 1/4 | .0020 | .0030 | .0030 | .0040 | .0030 | .0015 | .0020 | .0020 | .0035 | .0020 | .0020 | .0025 | .0020 | .0025 | .0020 |
| 3/8 | .0030 | .0040 | .0040 | .0050 | .0040 | .0035 | .0040 | .0045 | .0055 | .0045 | .0025 | .0030 | .0025 | .0030 | .0025 |
| 1/2 | .0040 | .0060 | .0050 | .0065 | .0050 | .0050 | .0050 | .0055 | .0065 | .0055 | .0035 | .0040 | .0040 | .0045 | .0040 |
| 3/4 | .0070 | .0080 | .0065 | .0075 | .0065 | .0060 | .0085 | .0080 | .0090 | .0080 | .0050 | .0055 | .0055 | .0070 | .0055 |
| 1 | .0080 | .0100 | .0075 | .0085 | .0075 | .0080 | .0100 | .0110 | .0110 | .0110 | .0060 | .0065 | .0060 | .0075 | .0060 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Recommended in Unique Situations | | | | | **Brass & Copper** (600 - 900) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | .0015 | .0020 | .0015 | .0020 | .0015 | | | | | |
| 1/4 | - | - | - | - | - | .0020 | .0025 | .0020 | .0025 | .0020 | | | | | |
| 3/8 | - | - | - | - | - | .0025 | .0030 | .0025 | .0030 | .0025 | | | | | |
| 1/2 | - | - | - | - | - | .0035 | .0040 | .0040 | .0045 | .0040 | | | | | |
| 3/4 | - | - | - | - | - | .0050 | .0055 | .0055 | .0070 | .0055 | | | | | |
| 1 | - | - | - | - | - | .0060 | .0065 | .0060 | .0075 | .0060 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1/2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 3/4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1/4 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 3/8 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1/2 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 3/4 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 1 | - | - | - | - | - | - | - | - | - | - | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3835-Aluma-Mill

F.A.S.T. Fullerton Advanced Solutions Team


Square End - Three 36° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (243 - 457) SMM (m/min) | | | | | **Low Si Aluminum ( <10%)** 762 SMM (m/min) | | | | | **Composites** (121 - 274) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0254 | .0508 | .0508 | .0762 | .0508 | .0254 | .0508 | .0254 | .0762 | .0254 | .0381 | .0508 | .0381 | .0508 | .0381 |
| 6 | .0508 | .0762 | .0762 | .1016 | .0762 | .0381 | .0508 | .0508 | .0889 | .0508 | .0508 | .0635 | .0508 | .0635 | .0508 |
| 10 | .0762 | .1016 | .1016 | .1270 | .1016 | .0889 | .1016 | .1143 | .1397 | .1143 | .0635 | .0762 | .0635 | .0762 | .0635 |
| 12 | .1016 | .1524 | .1270 | .1651 | .1270 | .1270 | .1270 | .1397 | .1651 | .1397 | .0889 | .1016 | .1016 | .1143 | .1016 |
| 20 | .1778 | .2032 | .1651 | .1905 | .1651 | .1524 | .2159 | .2032 | .2286 | .2032 | .1270 | .1397 | .1397 | .1778 | .1397 |
| 25 | .2032 | .2540 | .1905 | .2159 | .1905 | .2032 | .2540 | .2794 | .2794 | .2794 | .1524 | .1651 | .1524 | .1905 | .1524 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Recommended in Unique Situations | | | | | **Brass & Copper** (182 - 274) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | .0381 | .0508 | .0381 | .0508 | .0381 | | | | | |
| 6 | - | - | - | - | - | .0508 | .0635 | .0508 | .0635 | .0508 | | | | | |
| 10 | - | - | - | - | - | .0635 | .0762 | .0635 | .0762 | .0635 | | | | | |
| 12 | - | - | - | - | - | .0889 | .1016 | .1016 | .1143 | .1016 | | | | | |
| 20 | - | - | - | - | - | .1270 | .1397 | .1397 | .1778 | .1397 | | | | | |
| 25 | - | - | - | - | - | .1524 | .1651 | .1524 | .1905 | .1524 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** Do Not Use | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 25 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** Do Not Use | | | | | **Titanium** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 6 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 10 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 12 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 20 | - | - | - | - | - | - | - | - | - | - | | | | | |
| 25 | - | - | - | - | - | - | - | - | - | - | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3845-Falcon

Alloy Steel Finisher - Five 45° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | | | | | | - | - | - | - | - |
| 1/4 | | | | | | | | | | | - | - | - | - | - |
| 3/8 | | | | | | | | | | | - | - | - | - | - |
| 1/2 | | | | | | | | | | | - | - | - | - | - |
| 3/4 | | | | | | | | | | | - | - | - | - | - |
| 1 | | | | | | | | | | | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | | | | | | | | | | |
| 1/4 | | | | | | | | | | | | | | | |
| 3/8 | | | | | | | | | | | | | | | |
| 1/2 | | | | | | | | | | | | | | | |
| 3/4 | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (390 - 520) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** (150 - 300) SFM (ft/min) | | | | | **Steels** (490 - 660) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0008 | .0009 | .0008 | .0009 | .0008 | .0006 | .0007 | .0006 | .0007 | .0006 | .0010 | .0009 | .0010 | .0009 | .0010 |
| 1/4 | .0016 | .0018 | .0016 | .0018 | .0016 | .0013 | .0014 | .0013 | .0014 | .0013 | .0017 | .0018 | .0017 | .0018 | .0017 |
| 3/8 | .0025 | .0027 | .0025 | .0027 | .0025 | .0018 | .0020 | .0018 | .0020 | .0018 | .0023 | .0027 | .0023 | .0027 | .0023 |
| 1/2 | .0030 | .0035 | .0030 | .0035 | .0030 | .0024 | .0026 | .0024 | .0026 | .0024 | .0033 | .0035 | .0033 | .0035 | .0033 |
| 3/4 | .0035 | .0043 | .0035 | .0043 | .0035 | .0030 | .0033 | .0030 | .0033 | .0030 | .0040 | .0043 | .0040 | .0043 | .0040 |
| 1 | .0040 | .0050 | .0040 | .0050 | .0040 | .0035 | .0039 | .0035 | .0039 | .0035 | .0045 | .0050 | .0045 | .0050 | .0045 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (260 - 330) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (160 - 260) SFM (ft/min) | | | | | **Titanium** (100 - 250) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0006 | .0007 | .0006 | .0007 | .0006 | .0005 | .0006 | .0005 | .0006 | .0005 | .0005 | .0006 | .0005 | .0006 | .0005 |
| 1/4 | .0010 | .0015 | .0010 | .0015 | .0010 | .0010 | .0012 | .0010 | .0012 | .0010 | .0010 | .0012 | .0010 | .0012 | .0010 |
| 3/8 | .0012 | .0023 | .0012 | .0023 | .0012 | .0012 | .0018 | .0012 | .0018 | .0012 | .0012 | .0018 | .0012 | .0018 | .0012 |
| 1/2 | .0020 | .0029 | .0020 | .0029 | .0020 | .0018 | .0023 | .0018 | .0023 | .0018 | .0018 | .0023 | .0018 | .0023 | .0018 |
| 3/4 | .0030 | .0038 | .0030 | .0038 | .0030 | .0025 | .0030 | .0025 | .0030 | .0025 | .0025 | .0030 | .0025 | .0030 | .0025 |
| 1 | .0040 | .0046 | .0040 | .0046 | .0040 | .0030 | .0036 | .0030 | .0036 | .0030 | .0030 | .0036 | .0030 | .0036 | .0030 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3845-Falcon

F.A.S.T. Fullerton Advanced Solutions Team

Alloy Steel Finisher - Five 45° RH Spiral RH Cut Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** Not Recommended | | | | | **Low Si Aluminum ( <10%)** Not Recommended | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | - | - | - | - | - |
| 6 | | | | | | | | | | | - | - | - | - | - |
| 10 | | | | | | | | | | | - | - | - | - | - |
| 12 | | | | | | | | | | | - | - | - | - | - |
| 20 | | | | | | | | | | | - | - | - | - | - |
| 25 | | | | | | | | | | | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (118 - 158) SMM (m/min) | | | | | **Hardened Steels > 48 RC** (45 - 91) SMM (m/min) | | | | | **Steels** (149 - 201) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0203 | .0229 | .0203 | .0229 | .0203 | .0152 | .0178 | .0152 | .0178 | .0152 | .0254 | .0229 | .0254 | .0229 | .0254 |
| 6 | .0406 | .0457 | .0406 | .0457 | .0406 | .0330 | .0356 | .0330 | .0356 | .0330 | .0432 | .0457 | .0432 | .0457 | .0432 |
| 10 | .0635 | .0686 | .0635 | .0686 | .0635 | .0457 | .0508 | .0457 | .0508 | .0457 | .0584 | .0686 | .0584 | .0686 | .0584 |
| 12 | .0762 | .0889 | .0762 | .0889 | .0762 | .0610 | .0660 | .0610 | .0660 | .0610 | .0838 | .0889 | .0838 | .0889 | .0838 |
| 20 | .0889 | .1092 | .0889 | .1092 | .0889 | .0762 | .0838 | .0762 | .0838 | .0762 | .1016 | .1092 | .1016 | .1092 | .1016 |
| 25 | .1016 | .1270 | .1016 | .1270 | .1016 | .0889 | .0991 | .0889 | .0991 | .0889 | .1143 | .1270 | .1143 | .1270 | .1143 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (79 - 100) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (48 - 79) SMM (m/min) | | | | | **Titanium** (48 - 79) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0152 | .0178 | .0152 | .0178 | .0152 | .0127 | .0152 | .0127 | .0152 | .0127 | .0127 | .0152 | .0127 | .0152 | .0127 |
| 6 | .0254 | .0381 | .0254 | .0381 | .0254 | .0254 | .0305 | .0254 | .0305 | .0254 | .0254 | .0305 | .0254 | .0305 | .0254 |
| 10 | .0305 | .0584 | .0305 | .0584 | .0305 | .0305 | .0457 | .0305 | .0457 | .0305 | .0305 | .0457 | .0305 | .0457 | .0305 |
| 12 | .0508 | .0737 | .0508 | .0737 | .0508 | .0457 | .0584 | .0457 | .0584 | .0457 | .0457 | .0584 | .0457 | .0584 | .0457 |
| 20 | .0762 | .0965 | .0762 | .0965 | .0762 | .0635 | .0762 | .0635 | .0762 | .0635 | .0635 | .0762 | .0635 | .0762 | .0635 |
| 25 | .1016 | .1168 | .1016 | .1168 | .1016 | .0762 | .0914 | .0762 | .0914 | .0762 | .0762 | .0914 | .0762 | .0914 | .0762 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3975-Hoggers

F.A.S.T. Fullerton Advanced Solutions Team

Sinusoidal Geometry - Radial Relief - 30° RH Spiral Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (200 - 600) SFM (ft/min) | | | | | **Low Si Aluminum ( <10%)** (300 - 800) SFM (ft/min) | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0004 | .0001 | .0004 | - | .0004 | .0004 | .0001 | .0004 | - | .0004 | - | - | - | - | - |
| 1/4 | .0006 | .0002 | .0006 | - | .0006 | .0006 | .0002 | .0006 | - | .0006 | - | - | - | - | - |
| 3/8 | .0008 | .0004 | .0008 | - | .0008 | .0008 | .0004 | .0008 | - | .0008 | - | - | - | - | - |
| 1/2 | .0010 | .0006 | .0010 | - | .0010 | .0010 | .0006 | .0010 | - | .0010 | - | - | - | - | - |
| 3/4 | .0012 | .0008 | .0012 | - | .0012 | .0012 | .0008 | .0012 | - | .0012 | - | - | - | - | - |
| 1 | .0015 | .0010 | .0015 | - | .0015 | .0015 | .0010 | .0015 | - | .0015 | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | - | - | - | - | - | | | | | |
| 1/4 | | | | | | - | - | - | - | - | | | | | |
| 3/8 | | | | | | - | - | - | - | - | | | | | |
| 1/2 | | | | | | - | - | - | - | - | | | | | |
| 3/4 | | | | | | - | - | - | - | - | | | | | |
| 1 | | | | | | - | - | - | - | - | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (400 - 600) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** (100 - 300) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0008 | - | - | - | - | - | - | - | - | - | .0004 | .0001 | .0004 | - | .0004 |
| 1/4 | .0015 | - | - | - | - | - | - | - | - | - | .0006 | .0002 | .0006 | - | .0006 |
| 3/8 | .0023 | - | - | - | - | - | - | - | - | - | .0008 | .0004 | .0008 | - | .0008 |
| 1/2 | .0030 | - | - | - | - | - | - | - | - | - | .0010 | .0006 | .0010 | - | .0010 |
| 3/4 | .0045 | - | - | - | - | - | - | - | - | - | .0012 | .0008 | .0012 | - | .0012 |
| 1 | .0061 | - | - | - | - | - | - | - | - | - | .0015 | .0010 | .0015 | - | .0015 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** (100 - 250) SFM (ft/min) | | | | | **Titanium** (100 - 250) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | - | - | - | - | - | .0002 | - | - | - | - | .0002 | - | - | - | - |
| 1/4 | - | - | - | - | - | .0003 | - | - | - | - | .0003 | - | - | - | - |
| 3/8 | - | - | - | - | - | .0005 | - | - | - | - | .0005 | - | - | - | - |
| 1/2 | - | - | - | - | - | .0007 | - | - | - | - | .0007 | - | - | - | - |
| 3/4 | - | - | - | - | - | .0010 | - | - | - | - | .0010 | - | - | - | - |
| 1 | - | - | - | - | - | .0013 | - | - | - | - | .0013 | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

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*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3975-Hoggers

Sinusoidal Geometry - Radial Relief - 30° RH Spiral Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (60 - 182) SMM (m/min) | | | | | **Low Si Aluminum ( <10%)** (91 - 243) SMM (m/min) | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0102 | .0025 | .0102 | - | .0102 | .0102 | .0025 | .0102 | - | .0102 | - | - | - | - | - |
| 6 | .0152 | .0051 | .0152 | - | .0152 | .0152 | .0051 | .0152 | - | .0152 | - | - | - | - | - |
| 10 | .0203 | .0102 | .0203 | - | .0203 | .0203 | .0102 | .0203 | - | .0203 | - | - | - | - | - |
| 12 | .0254 | .0152 | .0254 | - | .0254 | .0254 | .0152 | .0254 | - | .0254 | - | - | - | - | - |
| 20 | .0305 | .0203 | .0305 | - | .0305 | .0305 | .0203 | .0305 | - | .0305 | - | - | - | - | - |
| 25 | .0381 | .0254 | .0381 | - | .0381 | .0381 | .0254 | .0381 | - | .0381 | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** Not Recommended | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (121 - 182) SMM (m/min) | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** (30 - 91) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .0203 | - | - | - | - | - | - | - | - | - | .0102 | .0025 | .0102 | - | .0102 |
| 6 | .0381 | - | - | - | - | - | - | - | - | - | .0152 | .0051 | .0152 | - | .0152 |
| 10 | .0584 | - | - | - | - | - | - | - | - | - | .0203 | .0102 | .0203 | - | .0203 |
| 12 | .0762 | - | - | - | - | - | - | - | - | - | .0254 | .0152 | .0254 | - | .0254 |
| 20 | .1143 | - | - | - | - | - | - | - | - | - | .0305 | .0203 | .0305 | - | .0305 |
| 25 | .1549 | - | - | - | - | - | - | - | - | - | .0381 | .0254 | .0381 | - | .0381 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** Do Not Use | | | | | **Super Alloys (Nickel based, Inconel)** (30 - 76) SMM (m/min) | | | | | **Titanium** (30 - 76) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | - | - | - | - | - | .0051 | - | - | - | - | .0051 | - | - | - | - |
| 6 | - | - | - | - | - | .0076 | - | - | - | - | .0076 | - | - | - | - |
| 10 | - | - | - | - | - | .0127 | - | - | - | - | .0127 | - | - | - | - |
| 12 | - | - | - | - | - | .0178 | - | - | - | - | .0178 | - | - | - | - |
| 20 | - | - | - | - | - | .0254 | - | - | - | - | .0254 | - | - | - | - |
| 25 | - | - | - | - | - | .0330 | - | - | - | - | .0330 | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Imperial Units**

# 3990,3995-Hoggers

F.A.S.T. Fullerton Advanced Solutions Team

Sinusoidal Geometry - Eccentric Relief - Three 40° RH Spiral Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (200 - 600) SFM (ft/min) | | | | | **Low Si Aluminum ( <10%)** (300 - 800) SFM (ft/min) | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0004 | .0001 | .0004 | - | .0004 | .0004 | .0001 | .0004 | - | .0004 | - | - | - | - | - |
| 1/4 | .0006 | .0002 | .0006 | - | .0006 | .0006 | .0002 | .0006 | - | .0006 | - | - | - | - | - |
| 3/8 | .0008 | .0004 | .0008 | - | .0008 | .0008 | .0004 | .0008 | - | .0008 | - | - | - | - | - |
| 1/2 | .0010 | .0006 | .0010 | - | .0010 | .0010 | .0006 | .0010 | - | .0010 | - | - | - | - | - |
| 3/4 | .0012 | .0008 | .0012 | - | .0012 | .0012 | .0008 | .0012 | - | .0012 | - | - | - | - | - |
| 1 | .0015 | .0010 | .0015 | - | .0015 | .0015 | .0010 | .0015 | - | .0015 | - | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (200 - 0) SFM (ft/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | | | | | | .0004 | .0001 | .0004 | - | .0004 | | | | | |
| 1/4 | | | | | | .0006 | .0002 | .0006 | - | .0006 | | | | | |
| 3/8 | | | | | | .0008 | .0004 | .0008 | - | .0008 | | | | | |
| 1/2 | | | | | | .0010 | .0006 | .0010 | - | .0010 | | | | | |
| 3/4 | | | | | | .0012 | .0008 | .0012 | - | .0012 | | | | | |
| 1 | | | | | | .0015 | .0010 | .0015 | - | .0015 | | | | | |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Cast Iron** (400 - 600) SFM (ft/min) | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** (100 - 300) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0008 | - | - | - | - | - | - | - | - | - | .0004 | .0001 | .0004 | - | .0004 |
| 1/4 | .0015 | - | - | - | - | - | - | - | - | - | .0006 | .0002 | .0006 | - | .0006 |
| 3/8 | .0023 | - | - | - | - | - | - | - | - | - | .0008 | .0004 | .0008 | - | .0008 |
| 1/2 | .0030 | - | - | - | - | - | - | - | - | - | .0010 | .0006 | .0010 | - | .0010 |
| 3/4 | .0045 | - | - | - | - | - | - | - | - | - | .0012 | .0008 | .0012 | - | .0012 |
| 1 | .0061 | - | - | - | - | - | - | - | - | - | .0015 | .0010 | .0015 | - | .0015 |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

| | **Stainless Steels** (100 - 250) SFM (ft/min) | | | | | **Super Alloys (Nickel based, Inconel)** (100 - 250) SFM (ft/min) | | | | | **Titanium** (100 - 250) SFM (ft/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 1/8 | .0004 | .0001 | .0004 | - | .0004 | .0002 | - | - | - | - | .0002 | - | - | - | - |
| 1/4 | .0006 | .0002 | .0006 | - | .0006 | .0003 | - | - | - | - | .0003 | - | - | - | - |
| 3/8 | .0008 | .0004 | .0008 | - | .0008 | .0005 | - | - | - | - | .0005 | - | - | - | - |
| 1/2 | .0010 | .0006 | .0010 | - | .0010 | .0007 | - | - | - | - | .0007 | - | - | - | - |
| 3/4 | .0012 | .0008 | .0012 | - | .0012 | .0010 | - | - | - | - | .0010 | - | - | - | - |
| 1 | .0015 | .0010 | .0015 | - | .0015 | .0013 | - | - | - | - | .0013 | - | - | - | - |
| | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | | IPT (in/tooth) | | | | |

*(1 x D) or greater slot and pocket, reduce chip load by 25%

**Metric Units**

# 3990,3995-Hoggers

F.A.S.T. Fullerton Advanced Solutions Team

Sinusoidal Geometry - Eccentric Relief - Three 40° RH Spiral Flutes

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%**

*All speed and feed recommendations should be considered only as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.*

| | **High Si Aluminum ( >10%)** (60 - 182) SMM (m/min) | | | | | **Low Si Aluminum ( <10%)** (91 - 243) SMM (m/min) | | | | | **Composites** Do Not Use | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .2581 | .0645 | .2581 | - | .2581 | .0102 | .0025 | .0102 | - | .0102 | - | - | - | - | - |
| 6 | .3871 | .1290 | .3871 | - | .3871 | .0152 | .0051 | .0152 | - | .0152 | - | - | - | - | - |
| 10 | .5161 | .2581 | .5161 | - | .5161 | .0203 | .0102 | .0203 | - | .0203 | - | - | - | - | - |
| 12 | .6452 | .3871 | .6452 | - | .6452 | .0254 | .0152 | .0254 | - | .0254 | - | - | - | - | - |
| 20 | .7742 | .5161 | .7742 | - | .7742 | .0305 | .0203 | .0305 | - | .0305 | - | - | - | - | - |
| 25 | .9677 | .6452 | .9677 | - | .9677 | .0381 | .0254 | .0381 | - | .0381 | - | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Plastics** Not Recommended | | | | | **Brass & Copper** (60 - 182) SMM (m/min) | | | | | **Graphite** Not Recommended | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | | | | | | .2581 | .0645 | .2581 | - | .2581 | | | | | |
| 6 | | | | | | .3871 | .1290 | .3871 | - | .3871 | | | | | |
| 10 | | | | | | .5161 | .2581 | .5161 | - | .5161 | | | | | |
| 12 | | | | | | .6452 | .3871 | .6452 | - | .6452 | | | | | |
| 20 | | | | | | .7742 | .5161 | .7742 | - | .7742 | | | | | |
| 25 | | | | | | .9677 | .6452 | .9677 | - | .9677 | | | | | |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Cast Iron** (121 - 182) SMM (m/min) | | | | | **Hardened Steels > 48 RC** Do Not Use | | | | | **Steels** (30 - 91) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .5161 | - | - | - | - | - | - | - | - | - | .2581 | .0645 | .2581 | - | .2581 |
| 6 | .9677 | - | - | - | - | - | - | - | - | - | .3871 | .1290 | .3871 | - | .3871 |
| 10 | 1.4839 | - | - | - | - | - | - | - | - | - | .5161 | .2581 | .5161 | - | .5161 |
| 12 | 1.9355 | - | - | - | - | - | - | - | - | - | .6452 | .3871 | .6452 | - | .6452 |
| 20 | 2.9032 | - | - | - | - | - | - | - | - | - | .7742 | .5161 | .7742 | - | .7742 |
| 25 | 3.9355 | - | - | - | - | - | - | - | - | - | .9677 | .6452 | .9677 | - | .9677 |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

| | **Stainless Steels** (30 - 76) SMM (m/min) | | | | | **Super Alloys (Nickel based, Inconel)** (30 - 76) SMM (m/min) | | | | | **Titanium** (30 - 76) SMM (m/min) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Profile | | | | | Profile | | | | | Profile | | |
| | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* | Slotting* | Plunge* | Rough | Finish | Pocket* |
| Axial Depth | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) | < (1 x D) | < (1 x D) | 1.5 x D | 1 x D | < (1 x D) |
| Radial Width | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D | full | full | (.3 - .5) x D | (.010 - .015) | (.3 - .5) x D |
| 3 | .2581 | .0645 | .2581 | - | .2581 | .1290 | - | - | - | - | .1290 | - | - | - | - |
| 6 | .3871 | .1290 | .3871 | - | .3871 | .1935 | - | - | - | - | .1935 | - | - | - | - |
| 10 | .5161 | .2581 | .5161 | - | .5161 | .3226 | - | - | - | - | .3226 | - | - | - | - |
| 12 | .6452 | .3871 | .6452 | - | .6452 | .4516 | - | - | - | - | .4516 | - | - | - | - |
| 20 | .7742 | .5161 | .7742 | - | .7742 | .6452 | - | - | - | - | .6452 | - | - | - | - |
| 25 | .9677 | .6452 | .9677 | - | .9677 | .8387 | - | - | - | - | .8387 | - | - | - | - |
| | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | | MMPT (mm/tooth) | | | | |

Rev -001A 9-May-13 

*(1 x D) or greater slot and pocket, reduce chip load by 25%

# Drill Speed and Feed Recommendations

***Maximizing Performance and Tool Life***

## General Recommendations

**For latest speed and feed information and charts, please visit FullertonTool.com.**

***All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process, then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for additional support.***

***The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.***

**Rigidity**
Maximize rigidity to reduce chatter and increase tool life. Ways to improve rigidity include choosing the largest diameter possible to perform your milling task, using the shortest LOC (Length of Cut) available, and using the tool holder which offers the shortest gage line (Shortest Tool Holder Length).

**Chatter**
If chatter is present increase feed or reduce speed.

**TIR or Total Indicatior Runout**
This condition should be held to a minimum at all times. As this value increases, the effectiveness of the tool's performance decreases thus reducing tool life.

**Re-Cutting Chips**
Use a coolant or air blast to evacuate chips to avoid premature damage to your carbide cutting tool, which may occur if chips are recut.

**Formulas to determine speed, feed, and chip load after the type and diameter of the cutting tool is determined.**

**US Customary Units (Imperial)**
D = cutter diameter (in)
T = tooth count (flute)
IPT chip load (in/flute) = IPM ÷ RPM ÷ T
IPR feed per revolution (in/rev) = IPM ÷ RPM
SFM surface speed (ft/min) = 0.2618 x RPM x D
RPM spindle speed (rev/min) = 3.82 x SFM ÷ D
IPM feed rate (in/min) = RPM x IPT x T

**SI Units (Metric)**
D = cutter diameter (mm)
T = tooth count (flute)
MMPT chip load (mm/flute)
MMPR feed per revolution (mm/rev) = MMPM ÷ RPM
SMPM surface speed (m/min) = 0.00314 x RPM x D
RPM spindle speed (rev/min) = 318.3 x SMPM ÷ D
MMPM feed rate (mm/min) = RPM x MMPT x T

**Feed Rate Conversion**
MMPM (mm/min) = IPM (in/min) x 25.4 (mm/in)
IPM (in/min) = MMPM (mm/min) x 0.0394 (in/mm)

**Surface Speed Conversion**
SMPM (m/min) = SFM (ft/min) x 0.3048 (m/ft)
SFM (ft/min) = SMPM (m/min) x 3.2808 (ft/m)

**Unit Conversion**
1 in = 25.4 mm
1 ft = 304.8 mm = 0.3048 m
1 mm = .03937 in
1 m = 3.2808 ft = 39.370 in

For assistance in selecting the best tool for your application and how to apply it, we provide the latest selection guides and speed & feed charts on our website FullertonTool.com.

We also have an experienced technical staff available to assist you with any support you need on your application.

Call 1-800-248-8315
Mark Donze - Ext. 204
Steve Oszust - Ext. 232
Tom McKimmy - Ext. 218
John Winebrenner - 989-751-4154

## OPERATING PARAMETERS

**To achieve optimal performance, attention must be paid to the following:**

1. The machine utilizing the tooling must have the necessary rigidity to minimize spindle deflection and sufficient horsepower to perform at recommended speeds and feeds.
2. Make sure holders and collets give good concentricity between tool and machine spindle.
3. Rigidly clamp and support workpiece to minimize deflection.
4. Use as short a drill as the application will permit to give maximum tool rigidity.
5. Use coolant, as recommended, to improve tool life. Direct the flow of coolant to the cutting edges. Insufficient or poorly directed coolant can result in poor tool life.
6. Use the correct speeds and feeds to suit the application and material being machined.
7. Re-sharpen or replace drills at first indication of cutting lip dulling or corner of cutting lip rounding.

**Speeds and Feeds for Deep-Hole Drilling**
Holes which must be drilled three diameters deep or more fall into the "deep hole" drilling class and some adjustment of feeds and speeds is necessary.

The deeper the hole, the greater the tendency there is for chips to pack and clog the flutes of the drill. This increases the amount of heat generated and prevents the coolant from conducting the heat away from the point. A buildup of heat at the point will eventually result in premature failure.

Peck drilling, or the practice of drilling a short distance then withdrawing the drill, will often reduce the chip packing. The deeper the hole, the more frequent the drill must be retracted to be effective.

A reduction in speed and feed to reduce the amount of heat generated is generally required in most deep hole applications where coolant cannot be effectively applied.

F.A.S.T. Fullerton Advanced Solutions Team

# Series 1500

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Two 30° RH Spiral Flutes • Standard Length • Sizes #70 to 1' Diameter • 135° Notched Cam Point**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | 9,932 | 4,966 | 3,311 | 2,483 | 1,655 | 1,242 | RPM | 10,510 | 5,255 | 3,153 | 2,628 | 1,660 | 1,261 |
| | IPM | 12 | 15 | 13 | 15 | 13 | 12 | FR | 303 | 378 | 336 | 378 | 336 | 315 |
| | SFM | 325 | 325 | 325 | 325 | 325 | 325 | SMPM | 99 | 99 | 99 | 99 | 99 | 99 |
| | IPR | .001 | .003 | .004 | .006 | .008 | .010 | MMPR | 0.03 | 0.07 | 0.11 | 0.14 | 0.20 | 0.25 |
| Low Si Aluminum <10% | RPM | 13,752 | 6,876 | 4,584 | 3,438 | 2,292 | 1,719 | RPM | 14,553 | 7,276 | 4,366 | 3,638 | 2,298 | 1,746 |
| | IPM | 23 | 17 | 14 | 17 | 18 | 17 | FR | 594 | 437 | 349 | 437 | 466 | 437 |
| | SFM | 450 | 450 | 450 | 450 | 450 | 450 | SMPM | 137 | 137 | 137 | 137 | 137 | 137 |
| | IPR | .002 | .003 | .003 | .005 | .008 | .010 | MMPR | 0.04 | 0.06 | 0.08 | 0.12 | 0.20 | 0.25 |
| Composites | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Plastics | RPM | 4,278 | 2,139 | 1,426 | 1,070 | 713 | 535 | RPM | 4,527 | 2,264 | 1,358 | 1,132 | 715 | 543 |
| | IPM | 5 | 6 | 7 | 7 | 6 | 5 | FR | 130 | 163 | 181 | 177 | 145 | 136 |
| | SFM | 140 | 140 | 140 | 140 | 140 | 140 | SMPM | 43 | 43 | 43 | 43 | 43 | 43 |
| | IPR | .001 | .003 | .005 | .007 | .008 | .010 | MMPR | 0.03 | 0.07 | 0.13 | 0.16 | 0.20 | 0.25 |
| Brass and Copper | RPM | 7,640 | 3,820 | 2,547 | 1,910 | 1,273 | 955 | RPM | 8,085 | 4,042 | 2,425 | 2,021 | 1,277 | 970 |
| | IPM | 5 | 8 | 8 | 8 | 4 | 6 | FR | 136 | 194 | 194 | 194 | 97 | 146 |
| | SFM | 250 | 250 | 250 | 250 | 250 | 250 | SMPM | 76 | 76 | 76 | 76 | 76 | 76 |
| | IPR | .001 | .002 | .003 | .004 | .003 | .006 | MMPR | 0.02 | 0.05 | 0.08 | 0.10 | 0.08 | 0.15 |
| Graphite | RPM | 12,224 | 6,112 | 4,075 | 3,056 | 2,037 | 1,528 | RPM | 12,936 | 6,468 | 3,881 | 3,234 | 2,042 | 1,552 |
| | IPM | 18 | 18 | 20 | 21 | 16 | 15 | FR | 466 | 466 | 517 | 543 | 414 | 388 |
| | SFM | 400 | 400 | 400 | 400 | 400 | 400 | SMPM | 122 | 122 | 122 | 122 | 122 | 122 |
| | IPR | .002 | .003 | .005 | .007 | .008 | .010 | MMPR | 0.04 | 0.07 | 0.13 | 0.17 | 0.20 | 0.25 |
| Cast Iron | RPM | 6,876 | 3,438 | 2,292 | 1,719 | 1,146 | 860 | RPM | 7,276 | 3,638 | 2,183 | 1,819 | 1,149 | 873 |
| | IPM | 8 | 10 | 11 | 10 | 9 | 9 | FR | 210 | 262 | 291 | 262 | 233 | 218 |
| | SFM | 225 | 225 | 225 | 225 | 225 | 225 | SMPM | 69 | 69 | 69 | 69 | 69 | 69 |
| | IPR | .001 | .003 | .005 | .006 | .008 | .010 | MMPR | 0.03 | 0.07 | 0.13 | 0.14 | 0.20 | 0.25 |
| Hardened Steels >48 RC | RPM | 1,986 | 993 | 662 | 497 | 331 | 248 | RPM | 2,102 | 1,051 | 631 | 526 | 332 | 252 |
| | IPM | 2 | 2 | 3 | 2 | 2 | 1 | FR | 50 | 50 | 67 | 63 | 46 | 38 |
| | SFM | 65 | 65 | 65 | 65 | 65 | 65 | SMPM | 20 | 20 | 20 | 20 | 20 | 20 |
| | IPR | .001 | .002 | .004 | .005 | .006 | .006 | MMPR | 0.02 | 0.05 | 0.11 | 0.12 | 0.14 | 0.15 |
| Steels | RPM | 4,584 | 2,292 | 1,528 | 1,146 | 764 | 573 | RPM | 4,851 | 2,425 | 1,455 | 1,213 | 766 | 582 |
| | IPM | 5 | 5 | 5 | 5 | 4 | 4 | FR | 116 | 116 | 136 | 131 | 107 | 102 |
| | SFM | 150 | 150 | 150 | 150 | 150 | 150 | SMPM | 46 | 46 | 46 | 46 | 46 | 46 |
| | IPR | .001 | .002 | .004 | .005 | .006 | .007 | MMPR | 0.02 | 0.05 | 0.09 | 0.11 | 0.14 | 0.18 |
| Stainless Steels | RPM | 2,750 | 1,375 | 917 | 688 | 458 | 344 | RPM | 2,911 | 1,455 | 873 | 728 | 460 | 349 |
| | IPM | 3 | 3 | 3 | 3 | 2 | 2 | FR | 70 | 80 | 81 | 70 | 58 | 57 |
| | SFM | 90 | 90 | 90 | 90 | 90 | 90 | SMPM | 27 | 27 | 27 | 27 | 27 | 27 |
| | IPR | .001 | .002 | .004 | .004 | .005 | .007 | MMPR | 0.02 | 0.06 | 0.09 | 0.10 | 0.13 | 0.16 |
| Super Alloy (Nickel based, Inconel) | RPM | 1,222 | 611 | 407 | 306 | 204 | 153 | RPM | 1,294 | 647 | 388 | 323 | 204 | 155 |
| | IPM | 1 | 2 | 1 | 1 | 1 | 1 | FR | 31 | 39 | 31 | 31 | 26 | 25 |
| | SFM | 40 | 40 | 40 | 40 | 40 | 40 | SMPM | 12 | 12 | 12 | 12 | 12 | 12 |
| | IPR | .001 | .003 | .003 | .004 | .005 | .007 | MMPR | 0.02 | 0.06 | 0.08 | 0.10 | 0.13 | 0.16 |
| Titanium | RPM | 1,528 | 764 | 509 | 382 | 255 | 191 | RPM | 1,617 | 808 | 485 | 404 | 255 | 194 |
| | IPM | 2 | 2 | 2 | 2 | 1 | 1 | FR | 39 | 39 | 45 | 44 | 32 | 29 |
| | SFM | 50 | 50 | 50 | 50 | 50 | 50 | SMPM | 15 | 15 | 15 | 15 | 15 | 15 |
| | IPR | .001 | .002 | .004 | .005 | .005 | .006 | MMPR | 0.02 | 0.05 | 0.09 | 0.11 | 0.13 | 0.15 |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



Rev-001B 4/23/2013

F.A.S.T. Fullerton Advanced Solutions Team

# Series 1505 - Non-Coolant Dominator

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Two 30° RH Spiral Flutes • 144° High Performance Point • Non-Coolant**

| | | Inches (in) | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | 12,224 | 6,112 | 4,075 | 3,056 | 2,037 | 1,528 | 12,936 | 6,468 | 3,881 | 3,234 | 2,042 | 1,552 |
| | IPM | 49 | 43 | 37 | 31 | 29 | 24 | 1242 | 1087 | 931 | 776 | 724 | 621 |
| | SFM | 400 | 400 | 400 | 400 | 400 | 400 | 122 | 122 | 122 | 122 | 122 | 122 |
| | IPR | .004 | .007 | .009 | .010 | .014 | .016 | 0.10 | 0.17 | 0.24 | 0.24 | 0.35 | 0.40 |
| Low Si Aluminum <10% | RPM | 18,336 | 9,168 | 6,112 | 4,584 | 3,056 | 2,292 | 19,404 | 9,702 | 5,821 | 4,851 | 3,064 | 2,328 |
| | IPM | 73 | 64 | 55 | 46 | 43 | 37 | 1863 | 1630 | 1397 | 1164 | 1087 | 931 |
| | SFM | 600 | 600 | 600 | 600 | 600 | 600 | 183 | 183 | 183 | 183 | 183 | 183 |
| | IPR | .004 | .007 | .009 | .010 | .014 | .016 | 0.10 | 0.17 | 0.24 | 0.24 | 0.35 | 0.40 |
| Composites | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Brass and Copper | RPM | 10,696 | 5,348 | 3,565 | 2,674 | 1,783 | 1,337 | 11,319 | 5,659 | 3,396 | 2,830 | 1,787 | 1,358 |
| | IPM | 43 | 32 | 29 | 27 | 21 | 19 | 1087 | 815 | 724 | 679 | 543 | 475 |
| | SFM | 350 | 350 | 350 | 350 | 350 | 350 | 107 | 107 | 107 | 107 | 107 | 107 |
| | IPR | .004 | .006 | .008 | .010 | .012 | .014 | 0.10 | 0.14 | 0.21 | 0.24 | 0.30 | 0.35 |
| Graphite | RPM | 15,280 | 7,640 | 5,093 | 3,820 | 2,547 | 1,910 | 16,170 | 8,085 | 4,851 | 4,042 | 2,553 | 1,940 |
| | IPM | 76 | 50 | 38 | 34 | 31 | 31 | 1940 | 1261 | 970 | 873 | 776 | 776 |
| | SFM | 500 | 500 | 500 | 500 | 500 | 500 | 152 | 152 | 152 | 152 | 152 | 152 |
| | IPR | .005 | .007 | .008 | .009 | .012 | .016 | 0.12 | 0.16 | 0.20 | 0.22 | 0.30 | 0.40 |
| Cast Iron | RPM | 10,696 | 5,348 | 3,565 | 2,674 | 1,783 | 1,337 | 11,319 | 5,659 | 3,396 | 2,830 | 1,787 | 1,358 |
| | IPM | 86 | 67 | 57 | 53 | 39 | 33 | 2173 | 1698 | 1449 | 1358 | 996 | 849 |
| | SFM | 350 | 350 | 350 | 350 | 350 | 350 | 107 | 107 | 107 | 107 | 107 | 107 |
| | IPR | .008 | .013 | .016 | .020 | .022 | .025 | 0.19 | 0.30 | 0.43 | 0.48 | 0.56 | 0.63 |
| Hardened Steels >48 RC | RPM | 1,834 | 917 | 611 | 458 | 306 | 229 | 1,940 | 970 | 582 | 485 | 306 | 233 |
| | IPM | 4 | 3 | 2 | 2 | 2 | 1 | 93 | 70 | 62 | 58 | 39 | 29 |
| | SFM | 60 | 60 | 60 | 60 | 60 | 60 | 18 | 18 | 18 | 18 | 18 | 18 |
| | IPR | .002 | .003 | .004 | .005 | .005 | .005 | 0.05 | 0.07 | 0.11 | 0.12 | 0.13 | 0.13 |
| Steels | RPM | 3,667 | 1,834 | 1,222 | 917 | 611 | 458 | 3,881 | 1,940 | 1,164 | 970 | 613 | 466 |
| | IPM | 9 | 7 | 10 | 9 | 8 | 6 | 233 | 186 | 248 | 233 | 194 | 146 |
| | SFM | 120 | 120 | 120 | 120 | 120 | 120 | 37 | 37 | 37 | 37 | 37 | 37 |
| | IPR | .003 | .004 | .008 | .010 | .013 | .013 | 0.06 | 0.10 | 0.21 | 0.24 | 0.32 | 0.31 |
| Stainless Steels | RPM | 3,056 | 1,528 | 1,019 | 764 | 509 | 382 | 3,234 | 1,617 | 970 | 808 | 511 | 388 |
| | IPM | 8 | 5 | 5 | 5 | 4 | 3 | 194 | 136 | 129 | 126 | 103 | 78 |
| | SFM | 100 | 100 | 100 | 100 | 100 | 100 | 30 | 30 | 30 | 30 | 30 | 30 |
| | IPR | .003 | .004 | .005 | .007 | .008 | .008 | 0.06 | 0.08 | 0.13 | 0.16 | 0.20 | 0.20 |
| Super Alloy (Nickel based, Inconel) | RPM | 1,834 | 917 | 611 | 458 | 306 | 229 | 1,940 | 970 | 582 | 485 | 306 | 233 |
| | IPM | 6 | 5 | 4 | 4 | 2 | 2 | 140 | 116 | 101 | 93 | 62 | 47 |
| | SFM | 60 | 60 | 60 | 60 | 60 | 60 | 18 | 18 | 18 | 18 | 18 | 18 |
| | IPR | .003 | .005 | .007 | .008 | .008 | .008 | 0.07 | 0.12 | 0.17 | 0.19 | 0.20 | 0.20 |
| Titanium | RPM | 3,056 | 1,528 | 1,019 | 764 | 509 | 382 | 3,234 | 1,617 | 970 | 808 | 511 | 388 |
| | IPM | 8 | 6 | 5 | 5 | 3 | 3 | 194 | 155 | 129 | 126 | 84 | 68 |
| | SFM | 100 | 100 | 100 | 100 | 100 | 100 | 30 | 30 | 30 | 30 | 30 | 30 |
| | IPR | .003 | .004 | .005 | .007 | .007 | .007 | 0.06 | 0.10 | 0.13 | 0.16 | 0.16 | 0.18 |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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F.A.S.T. Fullerton Advanced Solutions Team

# Series 1505 - Coolant Dominator

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Two 30° RH Spiral Flutes • 144° High Performance Point • Coolant Drill**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | 21,392 | 10,696 | 7,131 | 5,348 | 3,565 | 2,674 | RPM | 22,637 | 11,319 | 6,791 | 5,659 | 3,574 | 2,716 |
| | IPM | 86 | 75 | 64 | 53 | 50 | 43 | FR | 2173 | 1902 | 1630 | 1358 | 1268 | 1087 |
| | SFM | 700 | 700 | 700 | 700 | 700 | 700 | SMPM | 213 | 213 | 213 | 213 | 213 | 213 |
| | IPR | .004 | .007 | .009 | .010 | .014 | .016 | MMPR | 0.10 | 0.17 | 0.24 | 0.24 | 0.35 | 0.40 |
| Low Si Aluminum <10% | RPM | 25,976 | 12,988 | 8,659 | 6,494 | 4,329 | 3,247 | RPM | 27,488 | 13,744 | 8,247 | 6,872 | 4,340 | 3,299 |
| | IPM | 104 | 91 | 78 | 65 | 61 | 52 | FR | 2639 | 2309 | 1979 | 1649 | 1539 | 1319 |
| | SFM | 850 | 850 | 850 | 850 | 850 | 850 | SMPM | 259 | 259 | 259 | 259 | 259 | 259 |
| | IPR | .004 | .007 | .009 | .010 | .014 | .016 | MMPR | 0.10 | 0.17 | 0.24 | 0.24 | 0.35 | 0.40 |
| Composites | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Brass and Copper | RPM | 15,280 | 7,640 | 5,093 | 3,820 | 2,547 | 1,910 | RPM | 16,170 | 8,085 | 4,851 | 4,042 | 2,553 | 1,940 |
| | IPM | 61 | 46 | 41 | 38 | 31 | 27 | FR | 1552 | 1164 | 1035 | 970 | 776 | 679 |
| | SFM | 500 | 500 | 500 | 500 | 500 | 500 | SMPM | 152 | 152 | 152 | 152 | 152 | 152 |
| | IPR | .004 | .006 | .008 | .010 | .012 | .014 | MMPR | 0.10 | 0.14 | 0.21 | 0.24 | 0.30 | 0.35 |
| Graphite | RPM | 18,336 | 9,168 | 6,112 | 4,584 | 3,056 | 2,292 | RPM | 19,404 | 9,702 | 5,821 | 4,851 | 3,064 | 2,328 |
| | IPM | 92 | 60 | 46 | 41 | 37 | 37 | FR | 2328 | 1513 | 1164 | 1048 | 931 | 931 |
| | SFM | 600 | 600 | 600 | 600 | 600 | 600 | SMPM | 183 | 183 | 183 | 183 | 183 | 183 |
| | IPR | .005 | .007 | .008 | .009 | .012 | .016 | MMPR | 0.12 | 0.16 | 0.20 | 0.22 | 0.30 | 0.40 |
| Cast Iron | RPM | 15,280 | 7,640 | 5,093 | 3,820 | 2,547 | 1,910 | RPM | 16,170 | 8,085 | 4,851 | 4,042 | 2,553 | 1,940 |
| | IPM | 122 | 96 | 81 | 76 | 56 | 48 | FR | 3105 | 2425 | 2070 | 1940 | 1423 | 1213 |
| | SFM | 500 | 500 | 500 | 500 | 500 | 500 | SMPM | 152 | 152 | 152 | 152 | 152 | 152 |
| | IPR | .008 | .013 | .016 | .020 | .022 | .025 | MMPR | 0.19 | 0.30 | 0.43 | 0.48 | 0.56 | 0.63 |
| Hardened Steels >48 RC | RPM | 3,056 | 1,528 | 1,019 | 764 | 509 | 382 | RPM | 3,234 | 1,617 | 970 | 808 | 511 | 388 |
| | IPM | 6 | 5 | 4 | 4 | 3 | 2 | FR | 155 | 116 | 103 | 97 | 65 | 49 |
| | SFM | 100 | 100 | 100 | 100 | 100 | 100 | SMPM | 30 | 30 | 30 | 30 | 30 | 30 |
| | IPR | .002 | .003 | .004 | .005 | .005 | .005 | MMPR | 0.05 | 0.07 | 0.11 | 0.12 | 0.13 | 0.13 |
| Steels | RPM | 12,224 | 6,112 | 4,075 | 3,056 | 2,037 | 1,528 | RPM | 12,936 | 6,468 | 3,881 | 3,234 | 2,042 | 1,552 |
| | IPM | 31 | 24 | 33 | 31 | 25 | 19 | FR | 776 | 621 | 828 | 776 | 647 | 485 |
| | SFM | 400 | 400 | 400 | 400 | 400 | 400 | SMPM | 122 | 122 | 122 | 122 | 122 | 122 |
| | IPR | .003 | .004 | .008 | .010 | .013 | .013 | MMPR | 0.06 | 0.10 | 0.21 | 0.24 | 0.32 | 0.31 |
| Stainless Steels | RPM | 5,195 | 2,598 | 1,732 | 1,299 | 866 | 649 | RPM | 5,498 | 2,749 | 1,649 | 1,374 | 868 | 660 |
| | IPM | 13 | 9 | 9 | 8 | 7 | 5 | FR | 330 | 231 | 220 | 214 | 176 | 132 |
| | SFM | 170 | 170 | 170 | 170 | 170 | 170 | SMPM | 52 | 52 | 52 | 52 | 52 | 52 |
| | IPR | .003 | .004 | .005 | .007 | .008 | .008 | MMPR | 0.06 | 0.08 | 0.13 | 0.16 | 0.20 | 0.20 |
| Super Alloy (Nickel based, Inconel) | RPM | 2,445 | 1,222 | 815 | 611 | 407 | 306 | RPM | 2,587 | 1,294 | 776 | 647 | 408 | 310 |
| | IPM | 7 | 6 | 5 | 5 | 3 | 2 | FR | 186 | 155 | 135 | 124 | 83 | 62 |
| | SFM | 80 | 80 | 80 | 80 | 80 | 80 | SMPM | 24 | 24 | 24 | 24 | 24 | 24 |
| | IPR | .003 | .005 | .007 | .008 | .008 | .008 | MMPR | 0.07 | 0.12 | 0.17 | 0.19 | 0.20 | 0.20 |
| Titanium | RPM | 3,820 | 1,910 | 1,273 | 955 | 637 | 478 | RPM | 4,042 | 2,021 | 1,213 | 1,011 | 638 | 485 |
| | IPM | 10 | 8 | 6 | 6 | 4 | 3 | FR | 243 | 194 | 162 | 158 | 105 | 85 |
| | SFM | 125 | 125 | 125 | 125 | 125 | 125 | SMPM | 38 | 38 | 38 | 38 | 38 | 38 |
| | IPR | .003 | .004 | .005 | .007 | .007 | .007 | MMPR | 0.06 | 0.10 | 0.13 | 0.16 | 0.16 | 0.18 |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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F.A.S.T. Fullerton Advanced Solutions Team

# Series 1510

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Two 25° RH Spiral Flutes • Standard Length • Sizes #70 to 1" Diameter • 118° Four Facet Point**

| | | Inches (in) | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | 10,696 | 5,348 | 3,565 | 2,674 | 1,783 | 1,337 | 11,319 | 5,659 | 3,396 | 2,830 | 1,787 | 1,358 |
| | IPM | 32 | 27 | 23 | 21 | 16 | 13 | 815 | 679 | 589 | 543 | 407 | 340 |
| | SFM | 350 | 350 | 350 | 350 | 350 | 350 | 107 | 107 | 107 | 107 | 107 | 107 |
| | IPR | .003 | .005 | .007 | .008 | .009 | .010 | 0.07 | 0.12 | 0.17 | 0.19 | 0.23 | 0.25 |
| Low Si Aluminum <10% | RPM | 12,988 | 6,494 | 4,329 | 3,247 | 2,165 | 1,624 | 13,744 | 6,872 | 4,123 | 3,436 | 2,170 | 1,649 |
| | IPM | 39 | 36 | 30 | 29 | 22 | 19 | 990 | 907 | 770 | 742 | 550 | 495 |
| | SFM | 425 | 425 | 425 | 425 | 425 | 425 | 130 | 130 | 130 | 130 | 130 | 130 |
| | IPR | .003 | .006 | .007 | .009 | .010 | .012 | 0.07 | 0.13 | 0.19 | 0.22 | 0.25 | 0.30 |
| Composites | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Brass and Copper | RPM | 8,251 | 4,126 | 2,750 | 2,063 | 1,375 | 1,031 | 8,732 | 4,366 | 2,619 | 2,183 | 1,379 | 1,048 |
| | IPM | 25 | 21 | 19 | 19 | 14 | 12 | 629 | 524 | 489 | 472 | 349 | 314 |
| | SFM | 270 | 270 | 270 | 270 | 270 | 270 | 82 | 82 | 82 | 82 | 82 | 82 |
| | IPR | .003 | .005 | .007 | .009 | .010 | .012 | 0.07 | 0.12 | 0.19 | 0.22 | 0.25 | 0.30 |
| Graphite | RPM | 10,696 | 5,348 | 3,565 | 2,674 | 1,783 | 1,337 | 11,319 | 5,659 | 3,396 | 2,830 | 1,787 | 1,358 |
| | IPM | 32 | 27 | 23 | 21 | 16 | 13 | 815 | 679 | 589 | 543 | 407 | 340 |
| | SFM | 350 | 350 | 350 | 350 | 350 | 350 | 107 | 107 | 107 | 107 | 107 | 107 |
| | IPR | .003 | .005 | .007 | .008 | .009 | .010 | 0.07 | 0.12 | 0.17 | 0.19 | 0.23 | 0.25 |
| Cast Iron | RPM | 3,667 | 1,834 | 1,222 | 917 | 611 | 458 | 3,881 | 1,940 | 1,164 | 970 | 613 | 466 |
| | IPM | 11 | 9 | 8 | 7 | 6 | 5 | 279 | 233 | 202 | 186 | 140 | 116 |
| | SFM | 120 | 120 | 120 | 120 | 120 | 120 | 37 | 37 | 37 | 37 | 37 | 37 |
| | IPR | .003 | .005 | .007 | .008 | .009 | .010 | 0.07 | 0.12 | 0.17 | 0.19 | 0.23 | 0.25 |
| Hardened Steels >48 RC | RPM | 1,834 | 917 | 611 | 458 | 306 | 229 | 1,940 | 970 | 582 | 485 | 306 | 233 |
| | IPM | 4 | 3 | 2 | 3 | 2 | 2 | 93 | 81 | 62 | 64 | 50 | 44 |
| | SFM | 60 | 60 | 60 | 60 | 60 | 60 | 18 | 18 | 18 | 18 | 18 | 18 |
| | IPR | .002 | .004 | .004 | .006 | .007 | .008 | 0.05 | 0.08 | 0.11 | 0.13 | 0.16 | 0.19 |
| Steels | RPM | 3,362 | 1,681 | 1,121 | 840 | 560 | 420 | 3,557 | 1,779 | 1,067 | 889 | 562 | 427 |
| | IPM | 8 | 7 | 6 | 5 | 4 | 4 | 213 | 171 | 157 | 139 | 107 | 91 |
| | SFM | 110 | 110 | 110 | 110 | 110 | 110 | 34 | 34 | 34 | 34 | 34 | 34 |
| | IPR | .003 | .004 | .006 | .007 | .008 | .009 | 0.06 | 0.10 | 0.15 | 0.16 | 0.19 | 0.21 |
| Stainless Steels | RPM | 2,445 | 1,222 | 815 | 611 | 407 | 306 | 2,587 | 1,294 | 776 | 647 | 408 | 310 |
| | IPM | 5 | 4 | 4 | 3 | 3 | 2 | 124 | 109 | 93 | 85 | 67 | 58 |
| | SFM | 80 | 80 | 80 | 80 | 80 | 80 | 24 | 24 | 24 | 24 | 24 | 24 |
| | IPR | .002 | .004 | .005 | .006 | .007 | .008 | 0.05 | 0.08 | 0.12 | 0.13 | 0.16 | 0.19 |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Titanium | RPM | 1,375 | 688 | 458 | 344 | 229 | 172 | 1,455 | 728 | 437 | 364 | 230 | 175 |
| | IPM | 3 | 2 | 2 | 2 | 1 | 1 | 70 | 61 | 47 | 48 | 38 | 33 |
| | SFM | 45 | 45 | 45 | 45 | 45 | 45 | 14 | 14 | 14 | 14 | 14 | 14 |
| | IPR | .002 | .004 | .004 | .006 | .007 | .008 | 0.05 | 0.08 | 0.11 | 0.13 | 0.16 | 0.19 |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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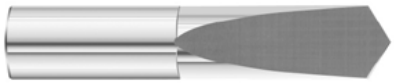
F.A.S.T. Fullerton Advanced Solutions Team

# Series 1530

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.



**Two Flat RH Cut Flutes • 118° Drill Point**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Low Si Aluminum <10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Composites | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Brass and Copper | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | .000 | .000 | .000 | .000 | .000 | .000 | MMPR | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Graphite | RPM | 10,696 | 5,348 | 3,565 | 2,674 | 1,783 | 1,337 | RPM | 11,319 | 5,659 | 3,396 | 2,830 | 1,787 | 1,358 |
| | IPM | 32 | 27 | 23 | 21 | 16 | 13 | FR | 815 | 679 | 589 | 543 | 407 | 340 |
| | SFM | 350 | 350 | 350 | 350 | 350 | 350 | SMPM | 107 | 107 | 107 | 107 | 107 | 107 |
| | IPR | .003 | .005 | .007 | .008 | .009 | .010 | MMPR | 0.07 | 0.12 | 0.17 | 0.19 | 0.23 | 0.25 |
| Cast Iron | RPM | 3,667 | 1,834 | 1,222 | 917 | 611 | 458 | RPM | 3,881 | 1,940 | 1,164 | 970 | 613 | 466 |
| | IPM | 11 | 9 | 8 | 7 | 6 | 5 | FR | 279 | 233 | 202 | 186 | 140 | 116 |
| | SFM | 120 | 120 | 120 | 120 | 120 | 120 | SMPM | 37 | 37 | 37 | 37 | 37 | 37 |
| | IPR | .003 | .005 | .007 | .008 | .009 | .010 | MMPR | 0.07 | 0.12 | 0.17 | 0.19 | 0.23 | 0.25 |
| Hardened Steels >48 RC | RPM | 1,528 | 764 | 509 | 382 | 255 | 191 | RPM | 1,617 | 808 | 485 | 404 | 255 | 194 |
| | IPM | 3 | 3 | 2 | 2 | 2 | 1 | FR | 78 | 68 | 52 | 53 | 42 | 36 |
| | SFM | 50 | 50 | 50 | 50 | 50 | 50 | SMPM | 15 | 15 | 15 | 15 | 15 | 15 |
| | IPR | .002 | .004 | .004 | .006 | .007 | .008 | MMPR | 0.05 | 0.08 | 0.11 | 0.13 | 0.16 | 0.19 |
| Steels | RPM | 3,362 | 1,681 | 1,121 | 840 | 560 | 420 | RPM | 3,557 | 1,779 | 1,067 | 889 | 562 | 427 |
| | IPM | 8 | 7 | 6 | 5 | 4 | 4 | FR | 213 | 171 | 157 | 139 | 107 | 91 |
| | SFM | 110 | 110 | 110 | 110 | 110 | 110 | SMPM | 34 | 34 | 34 | 34 | 34 | 34 |
| | IPR | .003 | .004 | .006 | .007 | .008 | .009 | MMPR | 0.06 | 0.10 | 0.15 | 0.16 | 0.19 | 0.21 |
| Stainless Steels | RPM | 2,445 | 1,222 | 815 | 611 | 407 | 306 | RPM | 2,587 | 1,294 | 776 | 647 | 408 | 310 |
| | IPM | 5 | 4 | 4 | 3 | 3 | 2 | FR | 124 | 109 | 93 | 85 | 67 | 58 |
| | SFM | 80 | 80 | 80 | 80 | 80 | 80 | SMPM | 24 | 24 | 24 | 24 | 24 | 24 |
| | IPR | .002 | .004 | .005 | .006 | .007 | .008 | MMPR | 0.05 | 0.08 | 0.12 | 0.13 | 0.16 | 0.19 |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Titanium | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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F.A.S.T. Fullerton Advanced Solutions Team

# Series 1535

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Two RH Spiral Flutes • Cam Relieved • Solid Carbide NC Spotting Drills**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Low Si Aluminum <10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Composites | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Brass and Copper | RPM | 8,251 | 4,126 | 2,750 | 2,063 | 1,375 | 1,031 | RPM | 8,732 | 4,366 | 2,619 | 2,183 | 1,379 | 1,048 |
| | IPM | 25 | 21 | 19 | 19 | 14 | 12 | FR | 629 | 524 | 489 | 472 | 349 | 314 |
| | SFM | 270 | 270 | 270 | 270 | 270 | 270 | SMPM | 82 | 82 | 82 | 82 | 82 | 82 |
| | IPR | .003 | .005 | .007 | .009 | .010 | .012 | MMPR | 0.07 | 0.12 | 0.19 | 0.22 | 0.25 | 0.30 |
| Graphite | RPM | 10,696 | 5,348 | 3,565 | 2,674 | 1,783 | 1,337 | RPM | 11,319 | 5,659 | 3,396 | 2,830 | 1,787 | 1,358 |
| | IPM | 32 | 27 | 23 | 21 | 16 | 13 | FR | 815 | 679 | 589 | 543 | 407 | 340 |
| | SFM | 350 | 350 | 350 | 350 | 350 | 350 | SMPM | 107 | 107 | 107 | 107 | 107 | 107 |
| | IPR | .003 | .005 | .007 | .008 | .009 | .010 | MMPR | 0.07 | 0.12 | 0.17 | 0.19 | 0.23 | 0.25 |
| Cast Iron | RPM | 3,667 | 1,834 | 1,222 | 917 | 611 | 458 | RPM | 3,881 | 1,940 | 1,164 | 970 | 613 | 466 |
| | IPM | 11 | 9 | 8 | 7 | 6 | 5 | FR | 279 | 233 | 202 | 186 | 140 | 116 |
| | SFM | 120 | 120 | 120 | 120 | 120 | 120 | SMPM | 37 | 37 | 37 | 37 | 37 | 37 |
| | IPR | .003 | .005 | .007 | .008 | .009 | .010 | MMPR | 0.07 | 0.12 | 0.17 | 0.19 | 0.23 | 0.25 |
| Hardened Steels >48 RC | RPM | 1,834 | 917 | 611 | 458 | 306 | 229 | RPM | 1,940 | 970 | 582 | 485 | 306 | 233 |
| | IPM | 4 | 3 | 2 | 3 | 2 | 2 | FR | 93 | 81 | 62 | 64 | 50 | 44 |
| | SFM | 60 | 60 | 60 | 60 | 60 | 60 | SMPM | 18 | 18 | 18 | 18 | 18 | 18 |
| | IPR | .002 | .004 | .004 | .006 | .007 | .008 | MMPR | 0.05 | 0.08 | 0.11 | 0.13 | 0.16 | 0.19 |
| Steels | RPM | 3,362 | 1,681 | 1,121 | 840 | 560 | 420 | RPM | 3,557 | 1,779 | 1,067 | 889 | 562 | 427 |
| | IPM | 8 | 7 | 6 | 5 | 4 | 4 | FR | 213 | 171 | 157 | 139 | 107 | 91 |
| | SFM | 110 | 110 | 110 | 110 | 110 | 110 | SMPM | 34 | 34 | 34 | 34 | 34 | 34 |
| | IPR | .003 | .004 | .006 | .007 | .008 | .009 | MMPR | 0.06 | 0.10 | 0.15 | 0.16 | 0.19 | 0.21 |
| Stainless Steels | RPM | 2,445 | 1,222 | 815 | 611 | 407 | 306 | RPM | 2,587 | 1,294 | 776 | 647 | 408 | 310 |
| | IPM | 5 | 4 | 4 | 3 | 3 | 2 | FR | 124 | 109 | 93 | 85 | 67 | 58 |
| | SFM | 80 | 80 | 80 | 80 | 80 | 80 | SMPM | 24 | 24 | 24 | 24 | 24 | 24 |
| | IPR | .002 | .004 | .005 | .006 | .007 | .008 | MMPR | 0.05 | 0.08 | 0.12 | 0.13 | 0.16 | 0.19 |
| Super Alloy (Nickel based, Inconel) | RPM | 1,222 | 611 | 407 | 306 | 204 | 153 | RPM | 1,294 | 647 | 388 | 323 | 204 | 155 |
| | IPM | 1 | 2 | 1 | 1 | 1 | 1 | FR | 31 | 39 | 31 | 31 | 26 | 25 |
| | SFM | 40 | 40 | 40 | 40 | 40 | 40 | SMPM | 12 | 12 | 12 | 12 | 12 | 12 |
| | IPR | .001 | .003 | .003 | .004 | .005 | .007 | MMPR | 0.02 | 0.06 | 0.08 | 0.10 | 0.13 | 0.16 |
| Titanium | RPM | 1,375 | 688 | 458 | 344 | 229 | 172 | RPM | 1,455 | 728 | 437 | 364 | 230 | 175 |
| | IPM | 3 | 2 | 2 | 2 | 1 | 1 | FR | 70 | 61 | 47 | 48 | 38 | 33 |
| | SFM | 45 | 45 | 45 | 45 | 45 | 45 | SMPM | 14 | 14 | 14 | 14 | 14 | 14 |
| | IPR | .002 | .004 | .004 | .006 | .007 | .008 | MMPR | 0.05 | 0.08 | 0.11 | 0.13 | 0.16 | 0.19 |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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F.A.S.T. Fullerton Advanced Solutions Team

# Series 1540

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Three 30° RH Spiral Flutes • 150° Thinned Point**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Low Si Aluminum <10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Composites | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Brass and Copper | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Graphite | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Cast Iron | RPM | 9,168 | 4,584 | 3,056 | 2,292 | 1,528 | 1,146 | RPM | 9,702 | 4,851 | 2,911 | 2,425 | 1,532 | 1,164 |
| | IPM | 37 | 28 | 24 | 23 | 18 | 16 | FR | 931 | 699 | 621 | 582 | 466 | 407 |
| | SFM | 300 | 300 | 300 | 300 | 300 | 300 | SMPM | 91 | 91 | 91 | 91 | 91 | 91 |
| | IPR | .004 | .006 | .008 | .010 | .012 | .014 | MMPR | 0.10 | 0.14 | 0.21 | 0.24 | 0.30 | 0.35 |
| Hardened Steels >48 RC | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Steels | RPM | 4,890 | 2,445 | 1,630 | 1,222 | 815 | 611 | RPM | 5,174 | 2,587 | 1,552 | 1,294 | 817 | 621 |
| | IPM | 15 | 12 | 10 | 10 | 8 | 7 | FR | 373 | 310 | 248 | 248 | 207 | 186 |
| | SFM | 160 | 160 | 160 | 160 | 160 | 160 | SMPM | 49 | 49 | 49 | 49 | 49 | 49 |
| | IPR | .003 | .005 | .006 | .008 | .010 | .012 | MMPR | 0.07 | 0.12 | 0.16 | 0.19 | 0.25 | 0.30 |
| Stainless Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Titanium | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |

* Recommendations are for starting parameters only. NR-Not recommened, but may work x-Recommended in Unique Situations



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# Series 1565 - Aluma-Drill

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Three 30° RH Spiral Flutes • 130° High Performance Point**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | 12,224 | 6,112 | 4,075 | 3,056 | 2,037 | 1,528 | RPM | 12,936 | 6,468 | 3,881 | 3,234 | 2,042 | 1,552 |
| | IPM | 49 | 40 | 41 | 31 | 33 | 31 | FR | 1242 | 1009 | 1035 | 776 | 828 | 776 |
| | SFM | 400 | 400 | 400 | 400 | 400 | 400 | SMPM | 122 | 122 | 122 | 122 | 122 | 122 |
| | IPR | .004 | .007 | .010 | .010 | .016 | .020 | MMPR | 0.10 | 0.16 | 0.27 | 0.24 | 0.41 | 0.50 |
| Low Si Aluminum <10% | RPM | 15,280 | 7,640 | 5,093 | 3,820 | 2,547 | 1,910 | RPM | 16,170 | 8,085 | 4,851 | 4,042 | 2,553 | 1,940 |
| | IPM | 76 | 61 | 64 | 48 | 51 | 48 | FR | 1940 | 1552 | 1617 | 1213 | 1294 | 1213 |
| | SFM | 500 | 500 | 500 | 500 | 500 | 500 | SMPM | 152 | 152 | 152 | 152 | 152 | 152 |
| | IPR | .005 | .008 | .013 | .013 | .020 | .025 | MMPR | 0.12 | 0.19 | 0.33 | 0.30 | 0.51 | 0.63 |
| Composites | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Plastics | RPM | 12,224 | 6,112 | 4,075 | 3,056 | 2,037 | 1,528 | RPM | 12,936 | 6,468 | 3,881 | 3,234 | 2,042 | 1,552 |
| | IPM | 49 | 40 | 41 | 31 | 33 | 31 | FR | 1242 | 1009 | 1035 | 776 | 828 | 776 |
| | SFM | 400 | 400 | 400 | 400 | 400 | 400 | SMPM | 122 | 122 | 122 | 122 | 122 | 122 |
| | IPR | .004 | .007 | .010 | .010 | .016 | .020 | MMPR | 0.10 | 0.16 | 0.27 | 0.24 | 0.41 | 0.50 |
| Brass and Copper | RPM | 16,808 | 8,404 | 5,603 | 4,202 | 2,801 | 2,101 | RPM | 17,787 | 8,893 | 5,336 | 4,447 | 2,808 | 2,134 |
| | IPM | 67 | 55 | 56 | 53 | 45 | 42 | FR | 1708 | 1387 | 1423 | 1334 | 1138 | 1067 |
| | SFM | 550 | 550 | 550 | 550 | 550 | 550 | SMPM | 168 | 168 | 168 | 168 | 168 | 168 |
| | IPR | .004 | .007 | .010 | .013 | .016 | .020 | MMPR | 0.10 | 0.16 | 0.27 | 0.30 | 0.41 | 0.50 |
| Graphite | RPM | 7,640 | 3,820 | 2,547 | 1,910 | 1,273 | 955 | RPM | 8,085 | 4,042 | 2,425 | 2,021 | 1,277 | 970 |
| | IPM | 31 | 25 | 25 | 19 | 20 | 19 | FR | 776 | 631 | 647 | 485 | 517 | 485 |
| | SFM | 250 | 250 | 250 | 250 | 250 | 250 | SMPM | 76 | 76 | 76 | 76 | 76 | 76 |
| | IPR | .004 | .007 | .010 | .010 | .016 | .020 | MMPR | 0.10 | 0.16 | 0.27 | 0.24 | 0.41 | 0.50 |
| Cast Iron | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Hardened Steels >48 RC | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Stainless Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Titanium | RPM | 3,056 | 1,528 | 1,019 | 764 | 509 | 382 | RPM | 3,234 | 1,617 | 970 | 808 | 511 | 388 |
| | IPM | 8 | 6 | 5 | 5 | 3 | 3 | FR | 194 | 155 | 129 | 126 | 84 | 68 |
| | SFM | 100 | 100 | 100 | 100 | 100 | 100 | SMPM | 30 | 30 | 30 | 30 | 30 | 30 |
| | IPR | .003 | .004 | .005 | .007 | .007 | .007 | MMPR | 0.06 | 0.10 | 0.13 | 0.16 | 0.16 | 0.18 |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



Rev-001B 4/23/2013

F.A.S.T. Fullerton Advanced Solutions Team

# Series 1566 TiALN

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Three RH Spiral Flutes • 90° Point**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Low Si Aluminum <10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Composites | RPM | 1,681 | 840 | 560 | 420 | 280 | 210 | RPM | 1,779 | 889 | 534 | 445 | 281 | 213 |
| | IPM | 1 | 1 | 1 | 1 | 1 | 1 | FR | 21 | 15 | 14 | 21 | 21 | 19 |
| | SFM | 55 | 55 | 55 | 55 | 55 | 55 | SMPM | 17 | 17 | 17 | 17 | 17 | 17 |
| | IPR | .001 | .001 | .001 | .002 | .003 | .004 | MMPR | 0.01 | 0.02 | 0.03 | 0.05 | 0.08 | 0.09 |
| Plastics | RPM | 1,681 | 840 | 560 | 420 | 280 | 210 | RPM | 1,779 | 889 | 534 | 445 | 281 | 213 |
| | IPM | 1 | 1 | 1 | 1 | 1 | 1 | FR | 21 | 15 | 14 | 21 | 21 | 19 |
| | SFM | 55 | 55 | 55 | 55 | 55 | 55 | SMPM | 17 | 17 | 17 | 17 | 17 | 17 |
| | IPR | .001 | .001 | .001 | .002 | .003 | .004 | MMPR | 0.01 | 0.02 | 0.03 | 0.05 | 0.08 | 0.09 |
| Brass and Copper | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Graphite | RPM | 2,139 | 1,070 | 713 | 535 | 357 | 267 | RPM | 2,264 | 1,132 | 679 | 566 | 357 | 272 |
| | IPM | 1 | 1 | 1 | 1 | 1 | 1 | FR | 33 | 22 | 18 | 27 | 27 | 27 |
| | SFM | 70 | 70 | 70 | 70 | 70 | 70 | SMPM | 21 | 21 | 21 | 21 | 21 | 21 |
| | IPR | .001 | .001 | .001 | .002 | .003 | .004 | MMPR | 0.01 | 0.02 | 0.03 | 0.05 | 0.08 | 0.10 |
| Cast Iron | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Hardened Steels >48 RC | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Stainless Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Titanium | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NO | NO | NO | NO | NO | NO | SMPM | NO | NO | NO | NO | NO | NO |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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F.A.S.T. Fullerton Advanced Solutions Team

# Series 1570 - Micro Drill

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Two Straight Flutes • 135° Notched Point**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Low Si Aluminum <10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Composites | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Brass and Copper | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Graphite | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Cast Iron | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Hardened Steels >48 RC | RPM | 1,834 | 917 | 611 | 458 | 306 | 229 | RPM | 1,940 | 970 | 582 | 485 | 306 | 233 |
| | IPM | 1 | 1 | 1 | 1 | 1 | 1 | FR | 23 | 16 | 16 | 23 | 23 | 20 |
| | SFM | 60 | 60 | 60 | 60 | 60 | 60 | SMPM | 18 | 18 | 18 | 18 | 18 | 18 |
| | IPR | .001 | .001 | .001 | .002 | .003 | .004 | MMPR | 0.01 | 0.02 | 0.03 | 0.05 | 0.08 | 0.09 |
| Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | SMPM | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Stainless Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Titanium | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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# Series 1585 -DB Drill (G Drill w/ hone)

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Two Straight Flutes • 135° Notched Point • 4 Lands for Bushings**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Low Si Aluminum <10% | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Composites | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Brass and Copper | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Graphite | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Cast Iron | RPM | 7,640 | 3,820 | 2,547 | 1,910 | 1,273 | 955 | RPM | 8,085 | 4,042 | 2,425 | 2,021 | 1,277 | 970 |
| | IPM | 50 | 38 | 32 | 31 | 23 | 19 | FR | 1261 | 970 | 808 | 776 | 582 | 485 |
| | SFM | 250 | 250 | 250 | 250 | 250 | 250 | SMPM | 76 | 76 | 76 | 76 | 76 | 76 |
| | IPR | .007 | .010 | .013 | .016 | .018 | .020 | MMPR | 0.16 | 0.24 | 0.33 | 0.38 | 0.46 | 0.50 |
| Hardened Steels >48 RC | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Stainless Steels | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Titanium | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | X | X | X | X | X | X | SMPM | X | X | X | X | X | X |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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# Series 1590

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**1/8" Shank • 1-1/2" Overall Length • 2 RH Spiral Flutes • 130° or 150° Four Facet Point**

| | | Inches (in) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1/64 | 1/32 | 1/16 | 1/8 | 3/16 | 1/4 |
| High Si Aluminum >10% | RPM | 79,456 | 39,728 | 19,864 | 9,932 | 6,621 | 4,966 |
| | IPM | 16 | 12 | 16 | 15 | 12 | 10 |
| | SFM | 325 | 325 | 325 | 325 | 325 | 325 |
| | IPR | .000 | .000 | .001 | .002 | .002 | .002 |
| Low Si Aluminum <10% | RPM | 97,792 | 48,896 | 24,448 | 12,224 | 8,149 | 6,112 |
| | IPM | 20 | 15 | 20 | 18 | 15 | 12 |
| | SFM | 400 | 400 | 400 | 400 | 400 | 400 |
| | IPR | .000 | .000 | .001 | .002 | .002 | .002 |
| Composites | RPM | 73,344 | 36,672 | 18,336 | 9,168 | 6,112 | 4,584 |
| | IPM | 15 | 11 | 15 | 14 | 11 | 9 |
| | SFM | 300 | 300 | 300 | 300 | 300 | 300 |
| | IPR | .000 | .000 | .001 | .002 | .002 | .002 |
| Plastics | RPM | 97,792 | 48,896 | 24,448 | 12,224 | 8,149 | 6,112 |
| | IPM | 39 | 39 | 24 | 18 | 15 | 15 |
| | SFM | 400 | 400 | 400 | 400 | 400 | 400 |
| | IPR | .000 | .001 | .001 | .002 | .002 | .003 |
| Brass and Copper | RPM | 48,896 | 24,448 | 12,224 | 6,112 | 4,075 | 3,056 |
| | IPM | 10 | 7 | 10 | 9 | 7 | 6 |
| | SFM | 200 | 200 | 200 | 200 | 200 | 200 |
| | IPR | .000 | .000 | .001 | .002 | .002 | .002 |
| Graphite | RPM | 97,792 | 48,896 | 24,448 | 12,224 | 8,149 | 6,112 |
| | IPM | 39 | 39 | 24 | 18 | 15 | 15 |
| | SFM | 400 | 400 | 400 | 400 | 400 | 400 |
| | IPR | .000 | .001 | .001 | .002 | .002 | .003 |
| Cast Iron | RPM | 91,680 | 45,840 | 22,920 | 11,460 | 7,640 | 5,730 |
| | IPM | 18 | 14 | 18 | 17 | 14 | 11 |
| | SFM | 375 | 375 | 375 | 375 | 375 | 375 |
| | IPR | .000 | .000 | .001 | .002 | .002 | .002 |
| Hardened Steels >48 RC | RPM | 29,338 | 14,669 | 7,334 | 3,667 | 2,445 | 1,834 |
| | IPM | 6 | 4 | 4 | 3 | 2 | 3 |
| | SFM | 120 | 120 | 120 | 120 | 120 | 120 |
| | IPR | .000 | .000 | .001 | .001 | .001 | .002 |
| Steels | RPM | 48,896 | 24,448 | 12,224 | 6,112 | 4,075 | 3,056 |
| | IPM | 10 | 7 | 10 | 9 | 7 | 6 |
| | SFM | 200 | 200 | 200 | 200 | 200 | 200 |
| | IPR | .000 | .000 | .001 | .002 | .002 | .002 |
| Stainless Steels | RPM | 42,784 | 21,392 | 10,696 | 5,348 | 3,565 | 2,674 |
| | IPM | 9 | 6 | 6 | 4 | 4 | 4 |
| | SFM | 175 | 175 | 175 | 175 | 175 | 175 |
| | IPR | .000 | .000 | .001 | .001 | .001 | .002 |
| Super Alloy (Nickel based, Inconel) | RPM | 12,224 | 6,112 | 3,056 | 1,528 | 1,019 | 764 |
| | IPM | 2 | 2 | 2 | 1 | 1 | 1 |
| | SFM | 50 | 50 | 50 | 50 | 50 | 50 |
| | IPR | .000 | .000 | .001 | .001 | .001 | .002 |
| Titanium | RPM | 17,114 | 8,557 | 4,278 | 2,139 | 1,426 | 1,070 |
| | IPM | 3 | 3 | 3 | 2 | 1 | 2 |
| | SFM | 70 | 70 | 70 | 70 | 70 | 70 |
| | IPR | .000 | .000 | .001 | .001 | .001 | .002 |

| | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|
| | 0.5 | 1 | 2 | 3 | 5 | 6 |
| RPM | 63,062 | 39,724 | 19,862 | 9,931 | 6,621 | 4,965 |
| FR | 404 | 303 | 404 | 378 | 303 | 252 |
| SMPM | 99 | 99 | 99 | 99 | 99 | 99 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 |
| RPM | 77,614 | 48,891 | 24,445 | 12,223 | 8,148 | 6,111 |
| FR | 497 | 373 | 497 | 466 | 373 | 310 |
| SMPM | 122 | 122 | 122 | 122 | 122 | 122 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 |
| RPM | 58,211 | 36,668 | 18,334 | 9,167 | 6,111 | 4,584 |
| FR | 373 | 279 | 373 | 349 | 279 | 233 |
| SMPM | 91 | 91 | 91 | 91 | 91 | 91 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 |
| RPM | 77,614 | 48,891 | 24,445 | 12,223 | 8,148 | 6,111 |
| FR | 993 | 993 | 621 | 466 | 373 | 388 |
| SMPM | 122 | 122 | 122 | 122 | 122 | 122 |
| MMPR | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 |
| RPM | 38,807 | 24,445 | 12,223 | 6,111 | 4,074 | 3,056 |
| FR | 248 | 186 | 248 | 233 | 186 | 155 |
| SMPM | 61 | 61 | 61 | 61 | 61 | 61 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 |
| RPM | 77,614 | 48,891 | 24,445 | 12,223 | 8,148 | 6,111 |
| FR | 993 | 993 | 621 | 466 | 373 | 388 |
| SMPM | 122 | 122 | 122 | 122 | 122 | 122 |
| MMPR | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 |
| RPM | 72,763 | 45,835 | 22,918 | 11,459 | 7,639 | 5,729 |
| FR | 466 | 349 | 466 | 437 | 349 | 291 |
| SMPM | 114 | 114 | 114 | 114 | 114 | 114 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 |
| RPM | 23,284 | 14,667 | 7,334 | 3,667 | 2,445 | 1,833 |
| FR | 149 | 112 | 112 | 75 | 62 | 70 |
| SMPM | 37 | 37 | 37 | 37 | 37 | 37 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| RPM | 38,807 | 24,445 | 12,223 | 6,111 | 4,074 | 3,056 |
| FR | 248 | 186 | 248 | 233 | 186 | 155 |
| SMPM | 61 | 61 | 61 | 61 | 61 | 61 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 |
| RPM | 33,956 | 21,390 | 10,695 | 5,347 | 3,565 | 2,674 |
| FR | 217 | 163 | 163 | 109 | 91 | 102 |
| SMPM | 53 | 53 | 53 | 53 | 53 | 53 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |
| RPM | 9,702 | 6,111 | 3,056 | 1,528 | 1,019 | 764 |
| FR | 62 | 47 | 39 | 31 | 26 | 29 |
| SMPM | 15 | 15 | 15 | 15 | 15 | 15 |
| MMPR | 0.01 | 0.01 | 0.01 | 0.02 | 0.03 | 0.04 |
| RPM | 13,582 | 8,556 | 4,278 | 2,139 | 1,426 | 1,069 |
| FR | 87 | 65 | 65 | 43 | 36 | 41 |
| SMPM | 21 | 21 | 21 | 21 | 21 | 21 |
| MMPR | 0.01 | 0.01 | 0.02 | 0.02 | 0.03 | 0.04 |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



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F.A.S.T. Fullerton Advanced Solutions Team

# Series 2305 - Solid Carbide Center Drill

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Double Ended • Two RH Spiral Flutes • 118° Cam relieved • 60°/82°/90° Countersinks**

| | | Inches (in) | | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | 7,640 | 3,820 | 2,547 | 1,910 | 1,273 | 955 | RPM | 8,085 | 4,042 | 2,425 | 2,021 | 1,277 | 970 |
| | IPM | 9 | 7 | 5 | 5 | 4 | 3 | FR | 233 | 175 | 129 | 121 | 97 | 85 |
| | SFM | 250 | 250 | 250 | 250 | 250 | 250 | SMPM | 76 | 76 | 76 | 76 | 76 | 76 |
| | IPR | .001 | .002 | .002 | .003 | .003 | .004 | MMPR | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 |
| Low Si Aluminum <10% | RPM | 9,168 | 4,584 | 3,056 | 2,292 | 1,528 | 1,146 | RPM | 9,702 | 4,851 | 2,911 | 2,425 | 1,532 | 1,164 |
| | IPM | 11 | 8 | 6 | 7 | 5 | 6 | FR | 279 | 210 | 155 | 175 | 136 | 146 |
| | SFM | 300 | 300 | 300 | 300 | 300 | 300 | SMPM | 91 | 91 | 91 | 91 | 91 | 91 |
| | IPR | .001 | .002 | .002 | .003 | .004 | .005 | MMPR | 0.03 | 0.04 | 0.05 | 0.07 | 0.09 | 0.13 |
| Composites | RPM | 13,752 | 6,876 | 4,584 | 3,438 | 2,292 | 1,719 | RPM | 14,553 | 7,276 | 4,366 | 3,638 | 2,298 | 1,746 |
| | IPM | 21 | 10 | 9 | 12 | 9 | 9 | FR | 524 | 262 | 233 | 306 | 233 | 218 |
| | SFM | 450 | 450 | 450 | 450 | 450 | 450 | SMPM | 137 | 137 | 137 | 137 | 137 | 137 |
| | IPR | .002 | .002 | .002 | .004 | .004 | .005 | MMPR | 0.04 | 0.04 | 0.05 | 0.08 | 0.10 | 0.13 |
| Plastics | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Brass and Copper | RPM | 7,640 | 3,820 | 2,547 | 1,910 | 1,273 | 955 | RPM | 8,085 | 4,042 | 2,425 | 2,021 | 1,277 | 970 |
| | IPM | 8 | 6 | 5 | 5 | 5 | 5 | FR | 194 | 146 | 129 | 121 | 129 | 121 |
| | SFM | 250 | 250 | 250 | 250 | 250 | 250 | SMPM | 76 | 76 | 76 | 76 | 76 | 76 |
| | IPR | .001 | .002 | .002 | .003 | .004 | .005 | MMPR | 0.02 | 0.04 | 0.05 | 0.06 | 0.10 | 0.13 |
| Graphite | RPM | 15,280 | 7,640 | 5,093 | 3,820 | 2,547 | 1,910 | RPM | 16,170 | 8,085 | 4,851 | 4,042 | 2,553 | 1,940 |
| | IPM | 31 | 19 | 18 | 17 | 13 | 11 | FR | 776 | 485 | 453 | 437 | 323 | 291 |
| | SFM | 500 | 500 | 500 | 500 | 500 | 500 | SMPM | 152 | 152 | 152 | 152 | 152 | 152 |
| | IPR | .002 | .003 | .004 | .005 | .005 | .006 | MMPR | 0.05 | 0.06 | 0.09 | 0.11 | 0.13 | 0.15 |
| Cast Iron | RPM | 9,168 | 4,584 | 3,056 | 2,292 | 1,528 | 1,146 | RPM | 9,702 | 4,851 | 2,911 | 2,425 | 1,532 | 1,164 |
| | IPM | 11 | 8 | 6 | 6 | 5 | 6 | FR | 279 | 210 | 155 | 146 | 136 | 146 |
| | SFM | 300 | 300 | 300 | 300 | 300 | 300 | SMPM | 91 | 91 | 91 | 91 | 91 | 91 |
| | IPR | .001 | .002 | .002 | .003 | .004 | .005 | MMPR | 0.03 | 0.04 | 0.05 | 0.06 | 0.09 | 0.13 |
| Hardened Steels >48 RC | RPM | 2,445 | 1,222 | 815 | 611 | 407 | 306 | RPM | 2,587 | 1,294 | 776 | 647 | 408 | 310 |
| | IPM | 2 | 2 | 1 | 2 | 1 | 1 | FR | 50 | 43 | 37 | 39 | 31 | 27 |
| | SFM | 80 | 80 | 80 | 80 | 80 | 80 | SMPM | 24 | 24 | 24 | 24 | 24 | 24 |
| | IPR | .001 | .001 | .002 | .003 | .003 | .004 | MMPR | 0.02 | 0.03 | 0.05 | 0.06 | 0.08 | 0.09 |
| Steels | RPM | 7,640 | 3,820 | 2,547 | 1,910 | 1,273 | 955 | RPM | 8,085 | 4,042 | 2,425 | 2,021 | 1,277 | 970 |
| | IPM | 6 | 5 | 5 | 5 | 4 | 4 | FR | 155 | 126 | 129 | 121 | 113 | 97 |
| | SFM | 250 | 250 | 250 | 250 | 250 | 250 | SMPM | 76 | 76 | 76 | 76 | 76 | 76 |
| | IPR | .001 | .001 | .002 | .003 | .004 | .004 | MMPR | 0.02 | 0.03 | 0.05 | 0.06 | 0.09 | 0.10 |
| Stainless Steels | RPM | 4,584 | 2,292 | 1,528 | 1,146 | 764 | 573 | RPM | 4,851 | 2,425 | 1,455 | 1,213 | 766 | 582 |
| | IPM | 4 | 3 | 3 | 3 | 3 | 2 | FR | 93 | 76 | 78 | 73 | 68 | 58 |
| | SFM | 150 | 150 | 150 | 150 | 150 | 150 | SMPM | 46 | 46 | 46 | 46 | 46 | 46 |
| | IPR | .001 | .001 | .002 | .003 | .004 | .004 | MMPR | 0.02 | 0.03 | 0.05 | 0.06 | 0.09 | 0.10 |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | RPM | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | FR | - | - | - | - | - | - |
| | SFM | NR | NR | NR | NR | NR | NR | SMPM | NR | NR | NR | NR | NR | NR |
| | IPR | - | - | - | - | - | - | MMPR | - | - | - | - | - | - |
| Titanium | RPM | 2,750 | 1,375 | 917 | 688 | 458 | 344 | RPM | 2,911 | 1,455 | 873 | 728 | 460 | 349 |
| | IPM | 2 | 2 | 1 | 1 | 1 | 1 | FR | 56 | 42 | 35 | 35 | 35 | 31 |
| | SFM | 90 | 90 | 90 | 90 | 90 | 90 | SMPM | 27 | 27 | 27 | 27 | 27 | 27 |
| | IPR | .001 | .001 | .002 | .002 | .003 | .004 | MMPR | 0.02 | 0.03 | 0.04 | 0.05 | 0.08 | 0.09 |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



Rev-001B 4/23/2013

F.A.S.T. Fullerton Advanced Solutions Team

# G Drill • Polished

**The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.**

All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process. Then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for any additional support.

**Two Straight Flutes • 130° Split Point • Double Margin**

| | | Inches (in) | | | | | | Millimeters (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 | 1 | 3 | 6 | 10 | 12 | 19 | 25 |
| High Si Aluminum >10% | RPM | 18,336 | 9,168 | 6,112 | 4,584 | 3,056 | 2,292 | 19,404 | 9,702 | 5,821 | 4,851 | 3,064 | 2,328 |
| | IPM | 92 | 73 | 76 | 57 | 49 | 46 | 2328 | 1863 | 1940 | 1455 | 1242 | 1164 |
| | SFM | 600 | 600 | 600 | 600 | 600 | 600 | 183 | 183 | 183 | 183 | 183 | 183 |
| | IPR | .005 | .008 | .013 | .013 | .016 | .020 | 0.12 | 0.19 | 0.33 | 0.30 | 0.41 | 0.50 |
| Low Si Aluminum <10% | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Composites | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Plastics | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Brass and Copper | RPM | 7,946 | 3,973 | 2,649 | 1,986 | 1,324 | 993 | 8,408 | 4,204 | 2,522 | 2,102 | 1,328 | 1,009 |
| | IPM | 32 | 26 | 21 | 20 | 15 | 12 | 807 | 656 | 538 | 504 | 370 | 303 |
| | SFM | 260 | 260 | 260 | 260 | 260 | 260 | 79 | 79 | 79 | 79 | 79 | 79 |
| | IPR | .004 | .007 | .008 | .010 | .011 | .012 | 0.10 | 0.16 | 0.21 | 0.24 | 0.28 | 0.30 |
| Graphite | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Cast Iron | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Hardened Steels >48 RC | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Steels | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Stainless Steels | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Super Alloy (Nickel based, Inconel) | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |
| Titanium | RPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | IPM | - | - | - | - | - | - | - | - | - | - | - | - |
| | SFM | x | x | x | x | x | x | x | x | x | x | x | x |
| | IPR | - | - | - | - | - | - | - | - | - | - | - | - |

*** Recommendations are for starting parameters only.** **NR-Not recommened, but may work** **x-Recommended in Unique Situations**



Rev-001B 4/23/2013

# Reamers Speed & Feed Recommendations

***Maximizing Performance and Tool Life***



| Material | Speed SFM | Feed (IPR) | | | SMPM | Feed (MMPR) | | |
|---|---|---|---|---|---|---|---|---|
| | | .1250 | .2500 | .5000 | | 3.00mm | 6.00mm | 12.00mm |
| Low Si Aluminum | 100—300 | .0050 | .0100 | .0150 | 30—91 | .1270 | .2540 | .3810 |
| Hi Si Aluminum | 75—200 | .0040 | .0080 | .0120 | 22—60 | .1016 | .2032 | .3048 |
| Composites | NR | - | - | - | - | - | - | - |
| Plastics | NR | - | - | - | - | - | - | - |
| Brass and Copper | 75—150 | .0030 | .0040 | .0060 | 22—45 | .0762 | .1016 | .1524 |
| Graphite | NR | - | - | - | - | - | - | - |
| Cast Iron | - | - | - | - | - | - | - | - |
| Soft | 75—150 | .0050 | .0080 | .0120 | 22—45 | .1270 | .2032 | .3048 |
| Medium | 60—100 | .0050 | .0080 | .0120 | 18—30 | .1270 | .2032 | .3048 |
| Malleable | 40—100 | .0030 | .0060 | .0100 | 12—30 | .0762 | .1524 | .2540 |
| Bronze | 65—125 | .0030 | .0040 | .0060 | 19—38 | .0762 | .1016 | .1524 |
| Hardened Steels | 30—90 | .0020 | .0020 | .0040 | 9—27 | .0508 | .0508 | .1016 |
| Steels | - | - | - | - | - | - | - | - |
| Low Carbon | 60—125 | .0030 | .0060 | .0100 | 18—38 | .0762 | .1524 | .2540 |
| Medium Carbon | 100—150 | .0030 | .0050 | .0080 | 30—45 | .0762 | .1270 | .2032 |
| Stainless Steels | - | - | - | - | - | - | - | - |
| Free Machining | 50—90 | .0050 | .0080 | .0120 | 15—27 | .1270 | .2032 | .3048 |
| Work Hardening | 30—75 | .0030 | .0060 | .0100 | 9—22 | .0762 | .1524 | .2540 |
| Super Alloys | 40—80 | .0025 | .0035 | .0055 | 12—24 | .0635 | .0889 | .1397 |
| Titanium | - | - | - | - | - | - | - | - |
| Soft | 50—125 | .0030 | .0060 | .0100 | 15—38 | .0762 | .1524 | .2540 |
| Hard | 20—60 | .0020 | .0040 | .0080 | 6—18 | .0508 | .1016 | .2032 |

## Stock Removal

**Sufficient amount of stock should be left in the work area to permit the reamer to cut rather than to burnish or glaze.**

**The amount of stock removal for machine reaming:**

| Reamer Diameter | Suggested Stock Removal |
|---|---|
| .2500″ | .008″—.010″ |
| .2501″—.5000″ | .012″—.015″ |
| .5001″—1.0000″ | .017—.020″ |
| 1.0001″—1.5000″ | .020″—.025″ |

The use of coolants will help produce a superior finish when reaming.

## Flute Styles

**Straight Flutes**
For all types of general reaming applications.

**RH Spiral Flutes**
For blind holes and abrasive, ductile materials. Do not use for holes with interruptions unless material is reasonably soft.

**LH Spiral Flutes**
Produces better finishes on hard materials, such as heat-treated steels. Shear action is excellent for holes with interruptions like keyways, elongated slots, etc.

## General Recommendations

**For latest speed and feed information and charts, please visit FullertonTool.com.**

***All speed and feed recommendations should be considered as a starting point. Start with conservative speeds and feeds while analyzing the rigidity of the process, then cautiously progress incrementally to achieve optimum performance. Contact Fullerton Tool directly for additional support.***

***The parameters listed for tool series that are stocked uncoated are based on running an uncoated tool. If a coating is applied to the tools, the SFM can be increased by approximately 25%.***

**Rigidity**
Maximize rigidity to reduce chatter and increase tool life. Ways to improve rigidity include choosing the largest diameter possible to perform your milling task, using the shortest LOC (Length of Cut) available, and using the tool holder which offers the shortest gage line (Shortest Tool Holder Length).

**Chatter**
If chatter is present increase feed or reduce speed.

**TIR or Total Indicatior Runout**
This condition should be held to a minimum at all times. As this value increases, the effectiveness of the tool's performance decreases thus reducing tool life.

**Re-Cutting Chips**
Use a coolant or air blast to evacuate chips to avoid premature damage to your carbide cutting tool, which may occur if chips are recut.

# Saws Speed & Feed Recommendations

***Maximizing Performance and Tool Life***

All carbide saws are ground with a dish to the arbor hole. Saws which are to be assembled in gangs should have flat hubs with the dish to the hub diameter, to insure spacing accuracy.

Always use arbors for maximum rigidity.

## General Recommendations

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If chatter is present increase feed or reduce speed.

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For assistance in selecting the best tool for your application and how to apply it, we provide the latest selection guides and speed & feed charts on our website FullertonTool.com.

We also have an experienced technical staff available to assist you with any support you need on your application.

Call 1-800-248-8315
Mark Donze - Ext. 204
Steve Oszust - Ext. 232
Tom McKimmy - Ext. 218
John Winebrenner - 989-751-4154

**Formulas to determine speed, feed, and chip load after the type and diameter of the cutting tool is determined.**

**US Customary Units (Imperial)**
D = cutter diameter (in)
T = tooth count (flute)
IPT chip load (in/flute) = IPM ÷ RPM ÷ T
IPR feed per revolution (in/rev) = IPM ÷ RPM
SFM surface speed (ft/min) = 0.2618 x RPM x D
RPM spindle speed (rev/min) = 3.82 x SFM ÷ D
IPM feed rate (in/min) = RPM x IPT x T

**SI Units (Metric)**
D = cutter diameter (mm)
T = tooth count (flute)
MMPT chip load (mm/flute)
MMPR feed per revolution (mm/rev) = MMPM ÷ RPM
SMPM surface speed (m/min) = 0.00314 x RPM x D
RPM spindle speed (rev/min) = 318.3 x SMPM ÷ D
MMPM feed rate (mm/min) = RPM x MMPT x T

**Feed Rate Conversion**
MMPM (mm/min) = IPM (in/min) x 25.4 (mm/in)
IPM (in/min) = MMPM (mm/min) x 0.0394 (in/mm)

**Surface Speed Conversion**
SMPM (m/min) = SFM (ft/min) x 0.3048 (m/ft)
SFM (ft/min) = SMPM (m/min) x 3.2808 (ft/m)

**Unit Conversion**
1 in = 25.4 mm
1 ft = 304.8 mm = 0.3048 m
1 mm = .03937 in
1 m = 3.2808 ft = 39.370 in

**ENGLISH Units**

Saws

# F.A.S.T.
Fullerton Advanced Solutions Team

Diameter from 1/4" to 6"
Series 2450

| SFM (ft/min) | | Low Si Aluminum (Si<10%) (1000 - 2000) SFM (ft/min) | High Si Aluminum ( Si > 10%) (0 - 0) SFM (ft/min) | Composites (1500 - 3000) SFM (ft/min) | Plastics (1500 - 3000) SFM (ft/min) | Brass & Copper (300 - 750) SFM (ft/min) | Graphite (500 - 750) SFM (ft/min) |
|---|---|---|---|---|---|---|---|
| | | Slotting | Slotting | Slotting | Slotting | Slotting | Slotting |
| Diameter | # of Teeth | Rough | Rough | Rough | Rough | Rough | Rough |
| 1/4 | 12 | .0040 | .0000 | .0040 | .0040 | .0040 | .0040 |
| 5/16 | 12 | .0042 | .0000 | .0042 | .0042 | .0042 | .0042 |
| 3/8 | 14 | .0045 | .0000 | .0045 | .0045 | .0045 | .0045 |
| 1/2 | 14 | .0048 | .0000 | .0048 | .0048 | .0048 | .0048 |
| 5/8 | 16 | .0050 | .0000 | .0050 | .0050 | .0050 | .0050 |
| 3/4 | 18 | .0052 | .0000 | .0052 | .0052 | .0052 | .0052 |
| 1 | 20 | .0055 | .0000 | .0055 | .0055 | .0055 | .0055 |
| 1 1/4 | 24 | .0058 | .0000 | .0058 | .0058 | .0058 | .0058 |
| 1 1/2 | 36 | .0060 | .0000 | .0060 | .0060 | .0060 | .0060 |
| 1 3/4 | 38 | .0062 | .0000 | .0062 | .0062 | .0062 | .0062 |
| 2 | 40 | .0065 | .0000 | .0065 | .0065 | .0065 | .0065 |
| 2 1/4 | 44 | .0068 | .0000 | .0068 | .0068 | .0068 | .0068 |
| 2 1/2 | 48 | .0070 | .0000 | .0070 | .0070 | .0070 | .0070 |
| 2 3/4 | 60 | .0072 | .0000 | .0072 | .0072 | .0072 | .0072 |
| 3 | 72 | .0075 | .0000 | .0075 | .0075 | .0075 | .0075 |
| 3 1/2 | 76 | .0078 | .0000 | .0078 | .0078 | .0078 | .0078 |
| 4 | 80 | .0080 | .0000 | .0080 | .0080 | .0080 | .0080 |
| 5 | 100 | .0080 | .0000 | .0080 | .0080 | .0080 | .0080 |
| 6 | 120 | .0080 | .0000 | .0080 | .0080 | .0080 | .0080 |
| | | | | IPT (in/tooth) | | | |

| SFM (ft/min) | | Cast Iron (175 - 400) SFM (ft/min) | Hardened Steels > 48 RC (75 - 150) SFM (ft/min) | Mild Steels < 48 RC (200 - 400) SFM (ft/min) | Stainless Steels (75 - 150) SFM (ft/min) | Super Alloys (50 - 150) SFM (ft/min) | Titanium (100 - 200) SFM (ft/min) |
|---|---|---|---|---|---|---|---|
| | | Slotting | Slotting | Slotting | Slotting | Slotting | Slotting |
| Diameter | # of Teeth | Rough | Rough | Rough | Rough | Rough | Rough |
| 1/4 | 12 | .0030 | .0020 | .0020 | .0020 | .0020 | .0020 |
| 5/16 | 12 | .0033 | .0021 | .0021 | .0021 | .0021 | .0021 |
| 3/8 | 14 | .0035 | .0022 | .0022 | .0022 | .0022 | .0022 |
| 1/2 | 14 | .0038 | .0023 | .0023 | .0023 | .0023 | .0023 |
| 5/8 | 16 | .0040 | .0024 | .0024 | .0024 | .0024 | .0024 |
| 3/4 | 18 | .0042 | .0025 | .0025 | .0025 | .0025 | .0025 |
| 1 | 20 | .0045 | .0026 | .0026 | .0026 | .0026 | .0026 |
| 1 1/4 | 24 | .0049 | .0027 | .0027 | .0027 | .0027 | .0027 |
| 1 1/2 | 36 | .0050 | .0028 | .0028 | .0028 | .0028 | .0028 |
| 1 3/4 | 38 | .0052 | .0029 | .0029 | .0029 | .0029 | .0029 |
| 2 | 40 | .0055 | .0030 | .0030 | .0030 | .0030 | .0030 |
| 2 1/4 | 44 | .0058 | .0033 | .0033 | .0031 | .0031 | .0031 |
| 2 1/2 | 48 | .0060 | .0035 | .0035 | .0032 | .0032 | .0032 |
| 2 3/4 | 60 | .0062 | .0038 | .0038 | .0033 | .0033 | .0033 |
| 3 | 72 | .0065 | .0040 | .0040 | .0034 | .0034 | .0034 |
| 3 1/2 | 76 | .0068 | .0042 | .0042 | .0035 | .0035 | .0035 |
| 4 | 80 | .0070 | .0045 | .0045 | .0037 | .0037 | .0037 |
| 5 | 100 | .0070 | .0048 | .0048 | .0039 | .0039 | .0039 |
| 6 | 120 | .0070 | .0050 | .0050 | .0040 | .0040 | .0040 |
| | | | | IPT (in/tooth) | | | |

rev. 22-Dec-12 

# Keyseat Cutter Speed & Feed Recommendations

***Maximizing Performance and Tool Life***

## General Recommendations

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RPM spindle speed (rev/min) = 3.82 x SFM ÷ D
IPM feed rate (in/min) = RPM x IPT x T

**SI Units (Metric)**
D = cutter diameter (mm)
T = tooth count (flute)
MMPT chip load (mm/flute)
MMPR feed per revolution (mm/rev) = MMPM ÷ RPM
SMPM surface speed (m/min) = 0.00314 x RPM x D
RPM spindle speed (rev/min) = 318.3 x SMPM ÷ D
MMPM feed rate (mm/min) = RPM x MMPT x T

**Feed Rate Conversion**
MMPM (mm/min) = IPM (in/min) x 25.4 (mm/in)
IPM (in/min) = MMPM (mm/min) x 0.0394 (in/mm)

**Surface Speed Conversion**
SMPM (m/min) = SFM (ft/min) x 0.3048 (m/ft)
SFM (ft/min) = SMPM (m/min) x 3.2808 (ft/m)

**Unit Conversion**
1 in = 25.4 mm
1 ft = 304.8 mm = 0.3048 m
1 mm = .03937 in
1 m = 3.2808 ft = 39.370 in

**ENGLISH Units**

Keyseat Cutter

F.A.S.T. Fullerton Advanced Solutions Team

Straight Flute - Solid Head - Steel Shank Except Where Noted

Series 4375

| | | Low Si Aluminum (Si<10%) (1200 - 1500) SFM (ft/min) | High Si Aluminum ( Si > 10%) (750 - 1000) SFM (ft/min) | Plastics (1500 - 2000) SFM (ft/min) | Composites (0 - 0) SFM (ft/min) | Brass & Copper (400 - 550) SFM (ft/min) | Graphite (0 - 0) SFM (ft/min) |
|---|---|---|---|---|---|---|---|
| | | Slotting | Slotting | Slotting | Slotting | Slotting | Slotting |
| Diameter | # of Teeth | Rough | Rough | Rough | Rough | Rough | Rough |
| 3/8 | 8 | .0013 | .0016 | .0013 | .0000 | .0018 | .0000 |
| 1/2 | 10 | .0012 | .0014 | .0012 | .0000 | .0014 | .0000 |
| 5/8 | 10 | .0012 | .0013 | .0011 | .0000 | .0013 | .0000 |
| 3/4 | 10 | .0011 | .0013 | .0011 | .0000 | .0013 | .0000 |
| 7/8 | 12 | .0009 | .0011 | .0009 | .0000 | .0011 | .0000 |
| 1 | 12 | .0012 | .0014 | .0012 | .0000 | .0013 | .0000 |
| 1 1/8 | 14 | .0010 | .0012 | .0009 | .0000 | .0011 | .0000 |
| 1 1/4 | 14 | .0010 | .0011 | .0009 | .0000 | .0010 | .0000 |
| 1 1/2 | 16 | .0008 | .0009 | .0007 | .0000 | .0008 | .0000 |
| | | IPT (in/tooth) | | | | | |

| | | Cast Iron (150 - 350) SFM (ft/min) | Hardened Steels > 48 RC (60 - 140) SFM (ft/min) | Mild Steels < 48 RC (150 - 400) SFM (ft/min) | Stainless Steels (75 - 175) SFM (ft/min) | Super Alloys (50 - 150) SFM (ft/min) | Titanium (75 - 200) SFM (ft/min) |
|---|---|---|---|---|---|---|---|
| | | Slotting | Slotting | Slotting | Slotting | Slotting | Slotting |
| Diameter | # of Teeth | Rough | Rough | Rough | Rough | Rough | Rough |
| 3/8 | 8 | .0023 | .0061 | .0029 | .0021 | .0027 | .0026 |
| 1/2 | 10 | .0017 | .0045 | .0021 | .0016 | .0018 | .0018 |
| 5/8 | 10 | .0015 | .0039 | .0018 | .0014 | .0014 | .0014 |
| 3/4 | 10 | .0013 | .0035 | .0016 | .0013 | .0012 | .0012 |
| 7/8 | 12 | .0011 | .0030 | .0014 | .0011 | .0010 | .0010 |
| 1 | 12 | .0013 | .0035 | .0016 | .0013 | .0012 | .0011 |
| 1 1/8 | 14 | .0011 | .0027 | .0011 | .0011 | .0008 | .0008 |
| 1 1/4 | 14 | .0009 | .0025 | .0010 | .0009 | .0008 | .0008 |
| 1 1/2 | 16 | .0008 | .0019 | .0007 | .0007 | .0007 | .0007 |
| | | IPT (in/tooth) | | | | | |

rev. 22-Dec-12 

**METRIC Units**

Keyseat Cutter

F.A.S.T.
Fullerton Advanced Solutions Team

Straight Flute - Solid Head - Steel Shank Except Where Noted

Series 4375

| | | Low Si Aluminum (Si<10%) (365-457) SMM (m/min) | High Si Aluminum ( Si > 10%) (228-304) SMM (m/min) | Plastics (457-609) SMM (m/min) | Composites (0-0) SMM (m/min) | Brass & Copper (121-167) SMM (m/min) | Graphite (0-0) SMM (m/min) |
|---|---|---|---|---|---|---|---|
| | | Slotting | Slotting | Slotting | Slotting | Slotting | Slotting |
| Diameter | # of Teeth | Rough | Rough | Rough | Rough | Rough | Rough |
| 10 | 8 | .0325 | .0407 | .0332 | .0000 | .0452 | .0000 |
| 12 | 10 | .0305 | .0343 | .0296 | .0000 | .0366 | .0000 |
| 15 | 10 | .0293 | .0332 | .0286 | .0000 | .0342 | .0000 |
| 20 | 10 | .0280 | .0320 | .0278 | .0000 | .0321 | .0000 |
| 22 | 12 | .0235 | .0270 | .0232 | .0000 | .0269 | .0000 |
| 25 | 12 | .0300 | .0345 | .0300 | .0000 | .0338 | .0000 |
| 28 | 14 | .0248 | .0293 | .0240 | .0000 | .0278 | .0000 |
| 31 | 14 | .0242 | .0284 | .0228 | .0000 | .0260 | .0000 |
| 38 | 16 | .0204 | .0224 | .0190 | .0000 | .0215 | .0000 |
| | | MMPT (mm/tooth) | | | | | |

| | | Cast Iron (45-106) SMM (m/min) | Hardened Steels > 48 RC (18-42) SMM (m/min) | Mild Steels < 48 RC (45-121) SMM (m/min) | Stainless Steels (22-53) SMM (m/min) | Super Alloys (15-45) SMM (m/min) | Titanium (22-60) SMM (m/min) |
|---|---|---|---|---|---|---|---|
| | | Slotting | Slotting | Slotting | Slotting | Slotting | Slotting |
| Diameter | # of Teeth | Rough | Rough | Rough | Rough | Rough | Rough |
| 10 | 8 | .0582 | .1558 | .0727 | .0540 | .0686 | .0665 |
| 12 | 10 | .0437 | .1140 | .0532 | .0406 | .0460 | .0455 |
| 15 | 10 | .0374 | .0987 | .0457 | .0356 | .0364 | .0361 |
| 20 | 10 | .0332 | .0887 | .0399 | .0332 | .0315 | .0296 |
| 22 | 12 | .0280 | .0754 | .0345 | .0283 | .0255 | .0251 |
| 25 | 12 | .0332 | .0887 | .0399 | .0328 | .0302 | .0286 |
| 28 | 14 | .0272 | .0680 | .0285 | .0267 | .0214 | .0214 |
| 31 | 14 | .0237 | .0643 | .0254 | .0230 | .0212 | .0213 |
| 38 | 16 | .0192 | .0490 | .0187 | .0178 | .0166 | .0187 |
| | | MMPT (mm/tooth) | | | | | |

rev. 22-Dec-12 

# Decimal Conversion Chart

| SIZE | DECIMAL | SIZE | DECIMAL | SIZE | DECIMAL | SIZE | DECIMAL | SIZE | DECIMAL | SIZE | DECIMAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80 | .0135 | 1/16 | .0625 | 3.3mm | .1299 | 5.4mm | .2126 | O | .3160 | 13.5mm | .5315 |
| .35mm | .0138 | 1.6mm | .0630 | 3.4mm | .1339 | 3 | .2130 | 8.1mm | .3189 | 35/64 | .5469 |
| 79 | .0145 | 52 | .0635 | 29 | .1360 | 5.5mm | .2165 | 8.2mm | .3228 | 14mm | .5512 |
| 1/64 | .0156 | 1.65mm | .0650 | 3.5mm | .1378 | 7/32 | .2188 | P | .3230 | 9/16 | .5625 |
| .4mm | .0157 | 1.7mm | .0669 | 28 | .1405 | 5.6mm | .2205 | 8.25mm | .3248 | 14.5mm | .5709 |
| 78 | .0160 | 51 | .0670 | 9/64 | .1406 | 2 | .2210 | 8.3mm | .3268 | 37/64 | .5781 |
| .45mm | .0177 | 1.75mm | .0689 | 3.6mm | .1417 | 5.7mm | .2244 | 21/64 | .3281 | 15mm | .5906 |
| 77 | .0180 | 50 | .0700 | 27 | .1440 | 5.75mm | .2264 | 8.4mm | .3307 | 19/32 | .5938 |
| .5mm | .0197 | 1.8mm | .0709 | 3.7mm | .1457 | 1 | .2280 | Q | .3320 | 39/64 | .6094 |
| 76 | .0200 | 1.85mm | .0728 | 26 | .1470 | 5.8mm | .2283 | 8.5mm | .3346 | 15.5mm | .6102 |
| 75 | .0210 | 49 | .0730 | 3.75mm | .1476 | 5.9mm | .2323 | 8.6mm | .3386 | 5/8 | .6250 |
| .55mm | .0217 | 1.9mm | .0748 | 25 | .1495 | A | .2340 | R | .3390 | 16mm | .6299 |
| 74 | .0225 | 48 | .0760 | 3.8mm | .1496 | 15/64 | .2344 | 8.7mm | .3425 | 41/64 | .6406 |
| .6mm | .0236 | 1.95mm | .0768 | 24 | .1520 | 6mm | .2362 | 11/32 | .3438 | 16.5mm | .6496 |
| 73 | .0240 | 5/64 | .0781 | 3.9mm | .1535 | B | .2380 | 8.75mm | .3445 | 21/32 | .6562 |
| 72 | .0250 | 47 | .0785 | 23 | .1540 | 6.1mm | .2402 | 8.8mm | .3465 | 17mm | .6693 |
| .65mm | .0256 | 2mm | .0787 | 5/32 | .1562 | C | .2420 | S | .3480 | 43/64 | .6719 |
| 71 | .0260 | 2.05mm | .0807 | 22 | .1570 | 6.2mm | .2441 | 8.9mm | .3504 | 11/16 | .6875 |
| .7mm | .0276 | 46 | .0810 | 4mm | .1575 | D | .2460 | 9mm | .3543 | 17.5mm | .6890 |
| 70 | .0280 | 45 | .0820 | 21 | .1590 | 6.25mm | .2461 | T | .3580 | 45/64 | .7031 |
| 69 | .0292 | 2.1mm | .0827 | 20 | .1610 | 6.3mm | .2480 | 9.1mm | .3583 | 18mm | .7087 |
| .75mm | .0295 | 2.15mm | .0846 | 4.1mm | .1614 | E | .2500 | 23/64 | .3594 | 23/32 | .7188 |
| 68 | .0310 | 44 | .0860 | 4.2mm | .1654 | 1/4 | .2500 | 9.2mm | .3622 | 18.5mm | .7283 |
| 1/32 | .0312 | 2.2mm | .0866 | 19 | .1660 | 6.4mm | .2520 | 9.25mm | .3642 | 47/64 | .7344 |
| .8mm | .0315 | 2.25mm | .0886 | 4.25mm | .1673 | 6.5mm | .2559 | 9.3mm | .3661 | 19mm | .7480 |
| 67 | .0320 | 43 | .0890 | 4.3mm | .1693 | F | .2570 | U | .3680 | 3/4 | .7500 |
| 66 | .0330 | 2.3mm | .0906 | 18 | .1695 | 6.6mm | .2598 | 9.4mm | .3701 | 49/64 | .7656 |
| .85mm | .0335 | 2.35mm | .0925 | 11/64 | .1719 | G | .2610 | 9.5mm | .3740 | 19.5mm | .7677 |
| 65 | .0350 | 42 | .0935 | 17 | .1730 | 6.7mm | .2638 | 3/8 | .3750 | 25/32 | .7812 |
| .9mm | .0354 | 3/32 | .0938 | 4.4mm | .1732 | 17/64 | .2656 | V | .3770 | 20mm | .7874 |
| 64 | .0360 | 2.4mm | .0945 | 16 | .1770 | 6.75mm | .2657 | 9.6mm | .3780 | 51/64 | .7969 |
| 63 | .0370 | 41 | .0960 | 4.5mm | .1772 | H | .2660 | 9.7mm | .3819 | 20.5mm | .8071 |
| .95mm | .0374 | 2.45mm | .0965 | 15 | .1800 | 6.8mm | .2677 | 9.75mm | .3839 | 13/16 | .8125 |
| 62 | .0380 | 40 | .0980 | 4.6mm | .1811 | 6.9mm | .2717 | 9.8mm | .3858 | 21mm | .8268 |
| 61 | .0390 | 2.5mm | .0984 | 14 | .1820 | I | .2720 | W | .3860 | 63/64 | .8281 |
| 1mm | .0394 | 39 | .0995 | 13 | .1850 | 7mm | .2756 | 9.9mm | .3898 | 27/32 | .8438 |
| 60 | .0400 | 38 | .1015 | 4.7mm | .1850 | J | .2770 | 25/64 | .3906 | 21.5mm | .8465 |
| 59 | .0410 | 2.6mm | .1024 | 4.75mm | .1870 | 7.1mm | .2795 | 10mm | .3937 | 55/64 | .8594 |
| 1.05mm | .0413 | 37 | .1040 | 3/16 | .1875 | K | .2810 | X | .3970 | 22mm | .8661 |
| 58 | .0420 | 2.7mm | .1063 | 4.8mm | .1890 | 9/32 | .2812 | Y | .4040 | 7/8 | .8750 |
| 57 | .0430 | 36 | .1065 | 12 | .1890 | 7.2mm | .2835 | 13/32 | .4062 | 22.5mm | .8858 |
| 1.1mm | .0433 | 2.75mm | .1083 | 11 | .1910 | 7.25mm | .2854 | Z | .4130 | 57/64 | .8906 |
| 1.15mm | .0453 | 7/64 | .1094 | 4.9mm | .1929 | 7.3mm | .2874 | 10.5mm | .4134 | 23mm | .9055 |
| 56 | .0465 | 35 | .1100 | 10 | .1935 | L | .2900 | 27/64 | .4219 | 29/32 | .9062 |
| 3/64 | .0469 | 2.8mm | .1102 | 9 | .1960 | 7.4mm | .2913 | 11mm | .4331 | 59/64 | .9219 |
| 1.2mm | .0472 | 34 | .1110 | 5mm | .1969 | M | .2950 | 7/16 | .4375 | 23.5mm | .9252 |
| 1.25mm | .0492 | 33 | .1130 | 8 | .1990 | 7.5mm | .2953 | 11.5mm | .4528 | 15/16 | .9375 |
| 1.3mm | .0512 | 2.9mm | .1142 | 5.1mm | .2008 | 19/64 | .2969 | 29/64 | .4531 | 24mm | .9449 |
| 55 | .0520 | 32 | .1160 | 7 | .2010 | 7.6mm | .2992 | 15/32 | .4688 | 61/64 | .9531 |
| 1.35mm | .0531 | 3mm | .1181 | 13/64 | .2031 | N | .3020 | 12mm | .4724 | 24.5mm | .9646 |
| 54 | .0550 | 31 | .1200 | 6 | .2040 | 7.7mm | .3031 | 31/61 | .4844 | 31/32 | .9688 |
| 1.4mm | .0551 | 3.1mm | .1220 | 5.2mm | .2047 | 7.75mm | .3051 | 12.5mm | .4921 | 25mm | .9843 |
| 1.45mm | .0571 | 1/8 | .1250 | 5 | .2055 | 7.8mm | .3071 | 1/2 | .5000 | 63/64 | .9844 |
| 1.5mm | .0591 | 3.2mm | .1260 | 5.25mm | .2067 | 7.9mm | .3110 | 13mm | .5118 | 1 | 1.0000 |
| 53 | .0595 | 3.25mm | .1280 | 5.3mm | .2087 | 5/16 | .3125 | 33/64 | .5156 | | |
| 1.55mm | .0610 | 30 | .1285 | 4 | .2090 | 8mm | .3150 | 17/32 | .5312 | | |

# Notes

# Notes

# Notes

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# Fullerton Tool is ISO-9001:2008 Certified!

We have been making high quality carbide cutting tools since we opened our doors in 1942 and we are going to keep that high quality for years to come as we are now an ISO-9001:2008 certified company for the manufacturing and distribution of carbide and PCD cutting tools.

Fullerton Tool was Registered in 2012 and has just passed its first Surveillance Audit with no findings! ISO (International Organization for Standardization) is a world-known federation of national standards that registered, and continually-compliant, companies adhere to for quality management and quality assurance. To be ISO registered, a company management system must conform to specific requirements and be audited by an accredited registration company.

# Fullerton Tool Terms and Conditions

**SALES POLICY:** We support the value added services of our partners in industrial distribution. Our products are exclusively sold through selected, authorized industrial distributors that meet our high standards of business ethics and customer service capabilities.

**PAYMENT TERMS AND PRICES:** Our terms are 1% - 15 days - net 30. ***Accounts in arrears are subject to both shipment hold and production hold.*** Freight is F.O.B. shipping point. Prices for special tools are subject to re-quoting after 30 days and catalog prices are subject to change without notice.

**CANCELLATIONS:** Cancellations of orders for "standard catalog product" can be made at no charge, providing the tools have not been shipped and we have not incurred labor expense to finish to a specific size or altered standard markings or packaging. A cancellation fee will be charged in proportion to the amount of the cost accumulated on the order prior to cancellation.

**CUSTOMER ALTERATIONS:** Fullerton Tool Company cannot be responsible for the performance of or compliance to specifications, nor can we accept, for return, any tool that has been altered in any way by our customers. This includes surface treatments, coatings, flats, tangs, markings, or any geometry alterations.

**OVER, UNDER AND EXACT SHIPMENTS:** Unless your order specifies no over shipments, no under shipments or exact quantities required, Fullerton's policy follows standard industry practice on altered standard and special orders which is to start +10% over the quantity ordered. We will ship and bill the quantity completed which could be as much as 10% over or 10% under the quantity ordered. On quantities from 1 piece to 9 pieces, our standard shipping tolerance is plus or minus 1 piece. Orders for special tooling that specify "no over and no under shipments" (exact quantities) are subject to a premium charge. Orders for special tooling that specify "no over shipments" can ship as much as 20% below the order quantity and if less than 10 pieces, up to 2 below the order quantity. Orders for special tooling that specify "no under shipments" can ship as much as 20% above the order quantity and if less than 10 pieces, up to 2 above the order quantity.

**PRODUCT WARRANTY:** We guarantee our products will conform to the specifications listed on customer blueprints, orders, and quotation requests. Dimensions, specifications, and tolerances not listed will be furnished to the current Fullerton Tool Company manufacturing standards. Our warranty is limited to the repair, replacement, or full credit for the tools found not to be within specifications, at our option.

**RETURNED GOODS:** Always contact our customer service department to obtain a "returned goods authorization number" (RGA) prior to returning any material. Fullerton Tool Company will allow a single return of a customer's "slow moving inventory" of standard catalog product once per year. When the return is accompanied by a stock replacement order of equal or greater value, we will issue full credit for the returned product. If the returned product is not accompanied by a stock replacement order, a 20% restocking charge will apply. All products returned must be within 1 year of manufacturing date, in clean resalable condition and in original packaging. We cannot accept any product that has been discontinued or in quantities that are unusually large compared to Fullerton's average sales for any particular item, or any decimal size end mills, reamers and saws.

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# American Made – Family Owned

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