



Premium Solid Carbide & Cobalt HSS End Mills, Drills, & Cutting Tools

www.melintool.com





With Melin's **GENERAL PURPOSE**

PRODUCT LINE, you **BENEFIT FROM THE MANUFACTURER'S ADVANTAGE— All Melin Tool's General Purpose products are manufactured in-house, in our Cleveland, Ohio Facility.** Our advantage

is that we have complete control of the entire manufacturing process. We use the highest quality material and state-of-the-art grinding, inspection and coating equipment. Melin Tool provides **SUPERIOR** performance, with reliable and consistent quality - **EVERY TIME!**



ABOUT Us

Family owned and operated since 1940, Melin Tool began as one of the early manufacturers of end mills. Today, Melin Tool continues to be a leader in offering an ever-expanding product line of our high quality High Performance end mills and other cutting tools such as Drills, Thread Mills, Countersinks, & Specialty Tools.

Our strategy is to manufacture precision rotary shank cutting tools, provide technical solutions, be easy to do business with and exceed all customer expectations.

We are committed to market and support our products and services through industrial distributor partners.

At Melin Tool Company, It is understood that we will not prosper without COMPLETE customer satisfaction. Success at Melin is measured by how well we serve the customers who distribute and use our products.

Quality is an attitude at Melin. It is an every day, every tool, every order commitment to supply products which meet or exceed ALL of the detailed specifications of our customers. Another major quality goal is to monitor and , where possible, improve upon the processes used to achieve this HIGH QUALITY.

[Melin Is Committed To Our Customers](#)

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GENERAL PURPOSE CARBIDE

General Purpose Single End



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Corner Radius - 2 Flute
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Ball Nose End Mill - 2 Flute
Series: **AMG-__-B**, or **AMGN-__-B** (Metric pg: 24)

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Square End Mill - 3 Flute
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Ball Nose End Mill - 3 Flute
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Square End Mill - 4 Flute
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Corner Radius - 4 Flute
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Ball Nose End Mill - 4 Flute
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NC Tolerance - 2 Flute
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NC Tolerance Ball Nose - 2 Flute
Series: **AMG-__-NCB**

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NC Tolerance - 4 Flute
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NC Tolerance Ball Nose - 4 Flute
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Double End



Double End Stub End Mill - 2 Flute
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Double End Mill - 2 Flute
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Double End Stub Ball Nose End Mill - 2 Flute
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Double End Stub End Mill - 4 Flute
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Double End Mill - 4 Flute
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Double End Stub Ball Nose End Mill - 4 Flute
Series: **DDSMG-__-B**

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Double End Ball Nose End Mill - 4 Flute
Series: **DDMG-__-B**

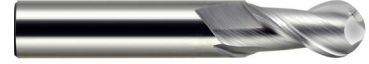
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40° Helix



40° Helix - 2 Flute
Series: **AMG40**

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40° Helix - 2 Flute Ball End
Series: **AMG40-__-B**

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40° Helix - 3 Flute
Series: **EMG40**

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40° Helix - 4 Flute
Series: **CCMG40**

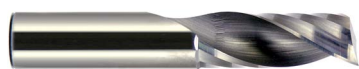
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40° Helix - 4 Flute Ball End
Series: **CCMG40-__-B**

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Routers & Corner Round



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Routers For Aluminum - 1 Flute
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Routers For Plastic - 1 Flute
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Wood Router - Up Cut - 2 Flute
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Wood Router - Down Cut - 2 Flute
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Die Sinking End Mills - 2 Flute - 3°, 5°, 7°, 10°
Series: **AMGDS**



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Tapered End Mills - 3 Flute
Series: **EMG-__-T**



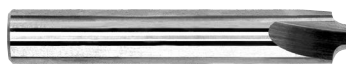
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Tapered Ball Nose End Mills - 3 Flute
Series: **EMG-__-TB**



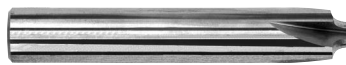
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Double End Corner Rounding
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Corner Rounding - 3 Flute
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Corner Rounding - 4 Flute
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Chamfer & Drill Point



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Chamfer End Mills - 2 Flute - 60° or 90°
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Double End Chamfer End Mills - 2 Flute - 90°
Series: **DMG2**



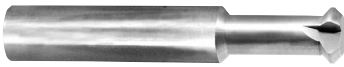
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Chamfer End Mills - 4 Flute - 60° or 90°
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Back Chamfer- Multiple Flute
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Chamfer Mills - 3 Flute - 60°, 90°, 120°
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Chamfer Mills - 5 Flute - 60°, 90°, 120°
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Drill Point - 2 Flute - 60°, 82°, or 90°
Series: **AMG-__-DP__**



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Drill Point - 4 Flute - 60°, 82°, or 90°
Series: **CCMG-__-DP__**

Carbide Blanks



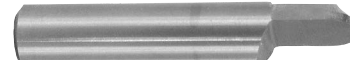
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Centerless Ground
Series: **Carbide Blanks**



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Engraving Blanks - Single & Double End
Series: **Carbide Blanks**



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Series: **Carbide Blanks**



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Half Round 60° Conical Blanks
Series: **Carbide Blanks**



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Conical Blanks - 30°, 60°, or 90°
Series: **Carbide Blanks**



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Double End Conical Blanks - 30°, 60°, or 90°
Series: **Carbide Blanks**



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Double End Ball Nose Split Blanks
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POWDERED METAL END MILLS

Powdered Metal



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Coarse Pitch CC Roughing - Multiple Flute
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CC Finishing End Mills - 4 Flute
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CC Variable Flute - 4 Flute
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COBALT M42(8%) & HSS ROUGHING END MILLS

Roughing End Mills



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Fine Pitch CC Roughing - Multiple Flute
Series: **CCFP (Metric pg: 68)**



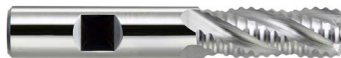
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Fine Pitch NCC Roughing - Multiple Flute
Series: **CFP**



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Fine Pitch Ball Nose CC Roughing - Multiple Flute
Series: **CCFP-__-B**



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Coarse Pitch NCC Roughing - Multiple Flute - HSS
Series: **CR**



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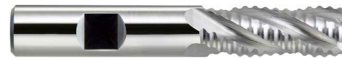
Coarse Pitch T-Slot Roughing - Multiple Flute
Series: **CRPN**



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Coarse Pitch CC Roughing - Multiple Flute
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Roughing End Mills



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Coarse Pitch NCC Roughing - Multiple Flute
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Fine Pitch Rougher w/35° High Helix for Alum - 3 FL
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Coarse Pitch Rougher w/35° Helix for Alum - 3 FL
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Roughing/ Finishing End Mills



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Fine Pitch Rougher Finisher w/35° Helix for Alum - 3 FL
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CC Rougher/Finisher - Multiple Flute
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2 & 3 Flute Cobalt & HSS End Mills



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CC End Mills - 2 Flute Radius
Series: **A-__-R**



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CC End Mills - 2 Flute - Metric/Inch
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CC Ball Nose End Mills - 2 Flute
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CC Ball Nose End Mills - 2 Flute - Metric/Inch
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CC End Mills - 2 Flute - Extended Neck
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CC Ball Nose End Mills - 2 Flute - Extended Neck
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CC End Mills - 2 Flute - Keyway Tolerances
Series: **AK**



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CC End Mills - 3 Flute
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CC End Mills - 3 Flute - Extended Neck
Series: **EN**



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CC Ball Nose End Mills - 3 Flute
Series: **E-__-B**

4 Flute Cobalt & HSS End Mills



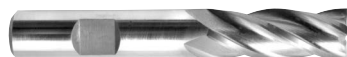
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Micro CC End Mills - 4 Flute
Series: **C**



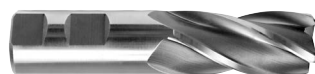
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CC End Mills - 4 and 6 Flute
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NCC End Mills - 4, 6, and 8 Flute
Series: **C** (Metric pg: 96)



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CC End Mills - 4 Flute - Radius
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CC End Mills - 4 Flute - Metric/Inch
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CC End Mills - 4 Flute - Extended Neck
Series: **CCN**



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NCC End Mills - 4 Flute - Extended Neck
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CC Ball Nose End Mills - 4 Flute
Series: **CC-__-B** (Metric pg: 99)



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CC Ball Nose End Mills - 4 Flute -Metric/Inch
Series: **CCP-__-M-__-B**



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CC Ball Nose End Mills - 4 Flute -Extended Neck
Series: **CCN-__-B**

40° Helix Cobalt & HSS End Mills



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40° Helix CC For Aluminum - 2 Flute
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40° Helix Ball Nose CC For Aluminum - 2 Flute
Series: **AA-__-B**

Cobalt & HSS End Mills



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60° Helix CC End Mills - 3 Flute
Series: **E60**



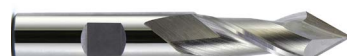
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NCC Corner Rounding End Mill - 3 Flute
Series: **R**



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NCC Corner Rounding End Mill - 4 Flute
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Drill Point - 2 Flute - 60°, 82°, 90°, 100° & 120°
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Angle Double & Single End Mill - 2 Flute
Series: **AM**



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NC Spotting Drill 82°, 90°, & 120°
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COBALT & HSS END MILLS

2 Flute Double End Mills



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DE Micro CC End Mills - 2 Flute
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DE CC End Mills - 2 Flute
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DE CC End Mills - 2 Flute - Left Hand Spiral/Cut
Series: **XB**



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DE CC End Mills - 2 Flute - Metric/Inch
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DE Micro CC Ball Nose End Mills - 2 Flute
Series: **B-__-B**



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DE CC Ball Nose End Mills - 2 Flute
Series: **B-__-B**

3 Flute Double End Mills



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DE CC End Mills - 3 Flute
Series: **F**



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DE CC Ball Nose End Mills - 3 Flute
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4 Flute Double End Mills



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DE Micro CC End Mills - 4 Flute
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DE CC End Mills - 4 Flute
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DE NCC End Mills - 4 Flute
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DE CC End Mills - 4 Flute - Metric/Inch
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DE CC Ball Nose End Mills - 4 Flute
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DE CC End Mills - 4 Flute - Left Hand Spiral/Cut
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CARBIDE DRILLS

General Purpose Carbide Drills



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Stub Length Drills
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Straight Flute Drills
Series: **JDR**

Combined Carbide Drills



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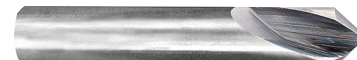
60° DE Combined Drills & Countersinks
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60° DE Combined Drills & Countersinks - HSS
Series: **HSCD**

NC Spotting Drills



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NC Carbide Spotting Drills, 60°, 90°, & 120°
Series: **HDRNC**



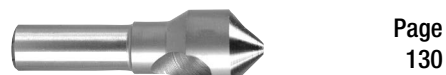
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NC HSSCo Spotting Drills, 82°, 90°, & 120°
Series: **HSNC**

Countersinks



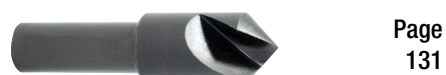
Zero Flute Countersink- HSS
Series: **HSO**



Zero Flute Countersink - M42 8% Cobalt
Series: **HSP0**



Single Flute Countersink -Single End-Carbide
Series: **C1**



Single Flute Countersink - HSS
Series: **HS1**



Single Flute Extra Long Countersinks - HSS
Series: **HS1EL**



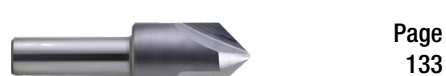
Single Flute Countersink - M42 8% Cobalt
Series: **HSP1 & HSP1-___-T**



3 Flute Countersink - Single End - Carbide
Series: **C3**



3 Flute Countersink - HSS
Series: **HS3-___-T**



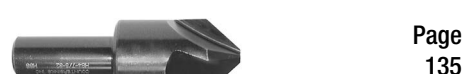
3 Flute Countersinks - M42 8% Cobalt
Series: **HSP3 & HSP3-___-T (page 132)**



3 & 4 Flute Center Reamer - Single End - HSS
Series: **HSCR**



4 Flute Countersink -Single End-Carbide
Series: **C4**



4 Flute Countersink - HSS
Series: **HS4**

Countersinks



4 Flute Drill Point - Single End - HSS
Series: **HS4DP**



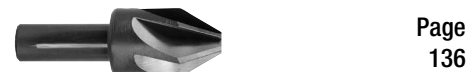
4 Flute Machine Countersinks -Single End-HSS
Series: **HSMC**



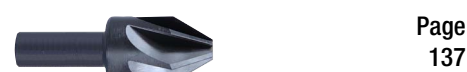
6 Flute Countersink -Single End-Carbide
Series: **C6**



6 Flute CNC Precision Countersink-Carbide
Series: **C6NC**



6 Flute CNC Precision Countersinks - HSS
Series: **HS6NC**



6 Flute Countersinks - HSS
Series: **HS6**



6 Flute Countersinks - M42 8% Cobalt
Series: **HSP6-___-T**



6 Flute Extra Long Countersinks - HSS
Series: **HS6EL**

DE Countersinks



Combined Drill & Countersink - HSS
Series: **HSCD**



2 Flute Drill & Countersink - Carbide
Series: **KDR**



Single Flute Countersink -Double End-Carbide
Series: **DC1**



Single Flute Countersink -Double End-HSS
Series: **DHS1**



4 Flute Drill Point Countersink- Double End-Carbide
Series: **DC4DP**



4 Flute Countersink - Double End - Carbide
Series: **DC4**



4 Flute Countersink - Double End - HSS
Series: **DHS4**



4 Flute Drill Point - Double End - HSS
Series: **DHS4DP**



6 Flute Countersink - Double End - Carbide
Series: **DC6**



6 Flute Countersinks - Double End - HSS
Series: **DHS6**



Countersink Sets
Series: **MS**

Carbide Burs



SA Burs- Double Cut, Cylindrical No Endcut
Series: **SA**



SB Burs- Double Cut, Cylindrical With Endcut
Series: **SB**



SC Burs- Double Cut, Radius Cylinder
Series: **SC**



SD Burs- Double Cut, Ball Shape
Series: **SD**



SE Burs- Double Cut, Oval Shape
Series: **SE**



SF Burs- Double Cut, Tree Shape
Series: **SF**



SG Burs- Double Cut, Pointed Tree Shape
Series: **SG**



SH Burs- Double Cut, Flame Shape
Series: **SH**



SJ Burs- Single Cut, 60° Included Cone
Series: **SJ**



SK Burs- Single Cut, 90° Included Cone
Series: **SK**



SL Burs- Double Cut, 8° Or 14° Included Cone
Series: **SL**

Carbide Burs



SM Burs- Double Cut, Pointed Cone Shape
Series: **SM**



SN Burs- Double Cut, Inverted Cone Shape
Series: **SN**

TECHNICAL

COATING CHARTS

Explore our diverse coating options to maximize performance

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ICON GLOSSARY

Tool characteristics, target work piece hardness, ISO material group & machining operations

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CUSTOM TOOLING

Explore our options for getting you the perfect tool for the job

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OUR PART NUMBERS

Understand our part number to order tools quickly

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SPEED & FEED

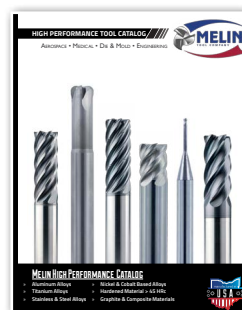
Speed and Feed Charts - Also listed online at www.melintool.com

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ADDITIONAL PRODUCT

Melin offers additional products in our [HIGH PERFORMANCE CATALOG](#) and [MICRO END MILL CATALOG](#).

Online at www.melintool.com or call customer service at PH: 216-362-4200 or 1-800-521-1078



MELIN HIGH PERFORMANCE CATALOG



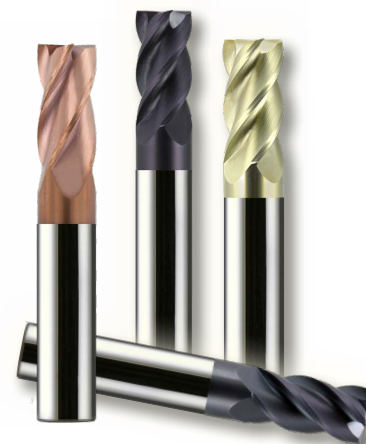
MICRO CATALOG

MELIN COATINGS:

- TiN
- TiCN
- AlTiN
- nACo
- nACRo
- ZrN
- DLC Diamond
- CVD Diamond
- TiXCo
- TiB₂

COATING

IN HOUSE coating allows us to provide you with the best coating for your applications. We can put any coating, **EVEN DIAMOND** on any tool style and size you need!



Melin Tool operates our own, **IN-HOUSE** PVD (Physical Vapor Deposition) coating work center in order to provide our customers with the highest level of consistency in coating composition and the most **FLEXIBILITY** in coating selection. We've chosen Platit coating centers because of the superior performance their coating process provides for Melin's solid round cutting tools. With Platit's revolutionary and patented LARC® (Lateral Rotating Cathodes) and CERC® (Central Rotating Cathodes) technologies, Melin is able to provide far greater consistency from batch to batch and superior adhesion for its conventional coatings, as well as unique, specially tailored coatings designed for enhancing performance in specific applications.

We currently house several **PLATIT** machines, including the n411, which has more than 4 times the chamber capacity of our other units. We now have the ability to do next generation high performance triple coatings. Our equipment enables us to coat more tools, provide more coating types and to do so with shorter setups and changeover time. Equally important, we can provide our customers with unique coatings for their specific application to truly maximize the performance achievable with Melin cutting tools.

THE MANUFACTURER ADVANTAGE -

Melin's highest quality manufacturing on state-of-the-art CNC equipment ensures superior performance with reliable, as well as consistent quality!

Test Melin PVD Coatings and prove to yourself...

Not all coatings are the same.

COATING PROPERTIES

		Hardness	Coefficient of Friction	Thermal Stability	1st Digit of Coated EDP
TiN	Titanium Nitride	24GPa	0.40	1112F (600C)	2
TiCN	Titanium Carbonitride	37GPa	0.25	752F (400C)	4
AlTiN	Aluminum Titanium Nitride	38GPa	0.60	1472F (800C)	5
nACo	Aluminum Titanium Nitride + Silicon Nitride	45GPa	0.40	2192F (1200C)	8
nACRo	Aluminum Chrome Nitride + Silicon Nitride	40GPa	0.45	2012F (1100C)	3
ZrN	Zirconium Nitride	25GPa	0.40	1049F (565C)	6
TiXCo	Titanium Silicon Nitride + nACo	45GPa	0.35	1832F (1000C)	-
TiB ₂	Titanium DiBoride	39GPa	0.45	1562F (850C)	-
DIA	CVD Diamond	80-100GPa	0.10	1094F (590C)	-
DLC	DLC Amorphous Diamond	50GPa	0.10	932F (500C)	7



Titanium Carbonitride has an exceptional high hardness & low coefficient of friction coating which provides excellent wear resistance. **TiCN** performs well cutting **Alloy Steels, Stainless Steels, and in high speed cutting where moderate temperatures are generated at the cutting edge**. High lubricity facilitates chip flow, prevents build up and reduces cutting forces & temperature. Provides excellent surface quality on machined components. Also, excellent in applications which require high feed & speed rates.

TiCN

Our unique Titanium Nitride coating is ideal for a wide range of applications, materials, and cutting conditions where tool life and higher feeds and speeds are operating objectives. **TiN** reduces wear and improves chip formation to extend tool life. **TiN** is a good choice for the machining of iron-based materials, molding of plastics, and for components requiring resistance to abrasive and adhesive wear.

TiN

Aluminum Titanium Nitride is ideal for high temperature cutting operation in many materials such as **Titanium & Nickel Alloys, Co-Cr-Mo, Stainless Steel, Alloy Steels & Cast Iron**. When exposed to higher temperatures, it forms a **HARD** aluminum oxide layer and, as temperatures increase, the coating insulates the tool transferring heat into the chips. It is an **EXTREMELY TOUGH** coating that will hold up in heavy and interrupted cuts. Contains a higher aluminum content than the similar TiAlN coating which makes it harder & smoother than TiAlN. **AlTiN** is ideal for smaller depths of cut and excels in high speed and dry machining applications and when machining hardened steel.

AlTiN

Aluminum Titanium Nitride + Silicon Nitride coating is extremely well suited for high performance **DRILLING** and **MILLING** applications. It has a great ability to resist high heat up to 1200°C before it starts to oxidize and break down. It has a tough core with **HIGH** wear and heat resistance. A top layer with extreme high Nanohardness. A very low coefficient of friction for less resistance. Up to (1-7) µm thickness in coating layers for the most protection against heat and tool breakdown.

nACo

Aluminum Chrome Nitride + Silicon Nitride coating is an excellent coating for high **ABRASIVE** wear and **HEAT** resistance. A top layer with high hardness and toughness. Heat resistance of up to 1100°C before it starts to oxidize and break down. It has a wide application range and is good in **Super Alloys** applications. It has a very low coefficient of friction for less resistance (0.35). Best in very tough operations. Up to (1-7) µm thickness in coating layers. A premium coating for those difficult applications.

nACRo

Zirconium Nitride coating is a coating developed specifically for machining **ALUMINUM**, yet excellent when **machining all Non-Ferrous materials**. **ZrN** is also highly recommended for machining **Fiberglass, Nylon and most Polymer** materials. The Maximum working temperature = 600°C/1110°F. It has a coating thickness of 1 to 2 microns. The coefficient of friction against steel (dry) is 0.55 and the micro hardness (HV 0.05) is equal to 3000.

ZrN

CVD diamond coating takes place in a vacuum chamber using a hot-filament, chemical vapor deposition (**CVD**) process. Carbon gases are introduced into the vacuum chamber where high temperatures cause carbon atoms to re-bond into a 100% pure crystalline diamond structure. The crystalline diamond slowly grows on the surface of cutting tools, forming a continuous coating of up to 20 microns in thickness. **CVD diamond** coated end mills are a standard choice among **Mold and Die shops for Machining Graphite**, and among manufacturers machining component parts made of **Hard Carbon, High-Silicon Aluminum and other Non-Ferrous materials**.

CVD Diamond

DLC amorphous diamond coating is a less expensive alternative to CVD Diamond. This PVD process of applying **DLC** coating produces hard, smooth, hydrogen free diamond like carbon (**DLC**) film. This coating can be applied to any uncoated carbide tool (CVD Diamond requires a special carbide substrate).

DLC Diamond

TiXCo is a nACo based coating with a top layer of Titanium Silicon Nitride. It is a very hard coating with a low coefficient of friction. It is best suited for **Super Hard Drilling and milling of Die and Mold Steels**. It can also be used in **Graphite and some Composites**.

TiXCo

COATING

MELIN COATINGS:

- TiN
- TiCN
- AlTiN
- nACo
- nACRo
- ZrN
- DLC Diamond
- CVD Diamond
- TiXCo

CONVENTIONAL COATINGS



gold
TiN -
Titanium
Nitride



blue-grey
TiCN -
Titanium
Carbonitride



blue-black
AlTiN -
Aluminum
Titanium Nitride

HIGH PERFORMANCE COATINGS



violet-blue
nACo -
Aluminum
Titanium Nitride +
Silicon Nitride



blue-grey
nACRo -
Aluminum
Chrome Nitride +
Silicon Nitride



grey-black
Diamond -
CVD Diamond
Amorphous Diamond-
DLC



Copper
TiXCo -
TiN-nACo-TiSiN



White-gold
ZrN -
Zirconium Nitride

Material	Hardness	TiCN	AlTiN	nACo	nACRo	ZrN	DIA	DLC	TiXCo
Austenitic Stainless Steel	< 35 HRc	*	*		X				
Martensitic Stainless Steel	< 35 HRc	*	*		X				
Martensitic Stainless Steel	>= 35 HRc	*	*		X				
PH Stainless Steel	< 35 HRc	*	*		X				
PH Stainless Steel	>= 35 HRc	*	*		X				
Ni, Co, Fe Based Super Alloys		*	*		X				
Titanium		*	*		X				
Alloy Steel	16-23 HRc	*	*	X					
Alloy Steel	23-38 HRc	*	*	X					
Alloy Steel	> 38 HRc	*	*	X					X
Carbon Steel	16-23 HRc	*	*	X					
Carbon Steel	23-38 HRc	*	*	X					
Carbon Steel	> 38 HRc	*	*	X					
Low Carbon Steel	13-23 HRc	*	*	X					
Low Carbon Steel	23-38 HRc	*	*	X					
Low Carbon Steel	> 38 HRc	*	*	X					X
Gray Cast Iron	18-22 HRc	X		*	*				
Nodular Cast Iron	22-32 HRc	X		*	*				
Aluminium <10% Si		*				X		X	
Aluminium >10% Si		*			*		X		
Graphite							X	*	*
Composites							X	*	*
Hardened Steel	>45 HRc			X					X

X = For BEST performance

* = Additional recommended coating options

How To ORDER A TOOL WITH A NON-STANDARD COATING

How To ORDER COATING:

2 ways to order a coating on a bright tool

1 Add the coating term, -TiN, -TiCN, -AlTiN, -nACo, -nACRo, -ZrN, or -DLC after the tool name and diameter.

Example: Bright Part - CCMG-I616
AlTiN Part - CCMG-I616-**ALTiN**

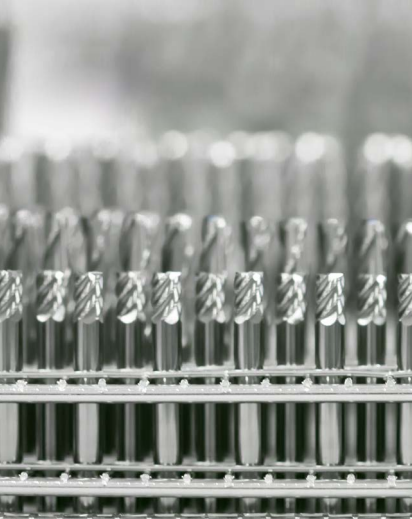
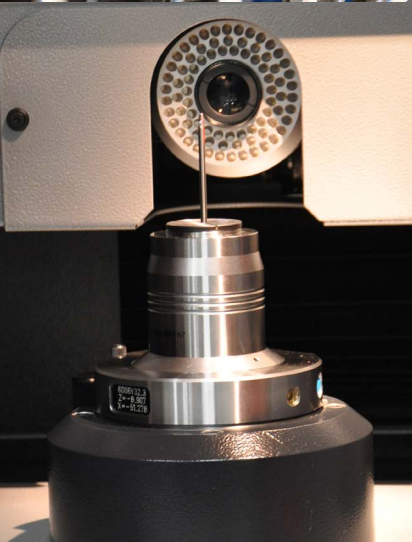
2 Change first digit of the EDP to the specific number designated for each coating. See chart below.

Example: Bright Part & EDP - AMG-I616 = EDP 14042
AlTiN Part & EDP - AMG-I616-**AlTiN** = EDP **5**4042

NOTE: EDPs with "H" as the leading digit: DO NOT change the EDP structure. - Please call customer service for a new "H" coated EDP or add the desired coating to the end of the part name. Also, CVD Diamond is only offered on specific series throughout this catalog or by special request.

Leading Digit of EDP	Coating Designation
2	-TiN
3	-nACRo
4	-TiCN
5	-AlTiN
6	-ZrN
7	-DLC
8	-nACo

PREFERRED COATING: Melin has listed what we believe to be the most efficient coating throughout the General purpose Catalog. Our preferred coating is our recommended and stocked coating. You can always order any of the Melin coatings on our bright parts, these are our suggestions.



Icon Glossary

TOOL CHARACTERISTICS

SUBSTRATE	CARBIDE	HSSCo PM	HSSCo M42	HSS	- Tool substrate for each tool series				
FLUTES	2	3	4	5	6	7	9	10	- # of flutes for each series.
HELIX	30°	40°	45°	60°	30°	- Helix angle for each series.			
TOLERANCE	+0.000 -0.002	+0.0005 -0.0005 ≤1/8	+0.000 -0.002 ≥1/8	+0.000mm -0.050mm	+0.013 -0.013 ≤3mm	+0.000 -0.05 ≥3mm	- Cutting diameter tolerance		
CORNER	SQUARE	BALL END	CHAMFER	RADIUS	CORNER ROUND	DRILL POINT	- Corner style for each series.		
PROFILE	Coarse Pitch	Fine Pitch	Rough/Finish	Rougher	60°	- Profile of cutting edge			
MISC.	Center Cutting	Non - Center Cutting							

COATINGS

COATING TYPES	Bright	TiN	TiCN	AlTiN	nAlCo	nAlCrO	ZrN	CVD Diamond	DLC Diamond	TiXCo	- Coated icon when series comes coated as standard
		Bright TiCN	Bright AlTiN	Bright nAlCo	Bright nAlCrO	Bright ZrN				TiXCo nAlCo	- Coated icon when series comes standard bright/or coated with a recommended preferred coating or additional stocked coating option

TARGETED WORKPIECE HARDNESS

HRC	HRC	HRC	HRC	- Range of work piece material hardness
<40	<48	<54	<70	

ISO MATERIAL GROUP

P M H	K S N	CODE	MATERIAL GROUP	MATERIAL SELECTION	CODE	MATERIAL GROUP	MATERIAL SELECTION
P			Steels	Carbon Steel, Alloy Steels, Die Steels 1018, 1045, 4140, D-2	K	Cast Iron	Grey-Cast Iron & Ductile Iron Class-20, (60-40-18)
M			Stainless	Martensitic & Austenitic 304, 316, 312, 316L, 421, 420, 17-4PH	S	Special Alloys	Inconel, Hastelloy, Titanium, etc Inconel 718, Hastello B, 6Al-4V
H			Hardened Steels	D-2, 4340, H-13	N	Non-Ferrous	Aluminum-6060-T6, 7075, Plastics, Delron, Graphite, Fiberglass

MACHINING OPERATIONS

SLOT	PROFILE	PLUNGING	RAMPING	PROFILE CUTTING	DRILLING	CHAMFER	DEEP CAVITY
RADIUS	UNDERCUT	SLOT WITH RADIUS	TROCHOIDAL MILLING	HELICAL INTERPOLATION	FACE MILLING	3D PROFILE MILLING	THREAD MILLING

Service & Customs

- Metal Max Testing
- FAST TurnAround SPL
- Second Look Quoting

Custom Tooling & Services

Melin continues to provide our customers with the latest technology to enhance the benefits our high performance tools already provide.

Listed below are specialized and customized services and features

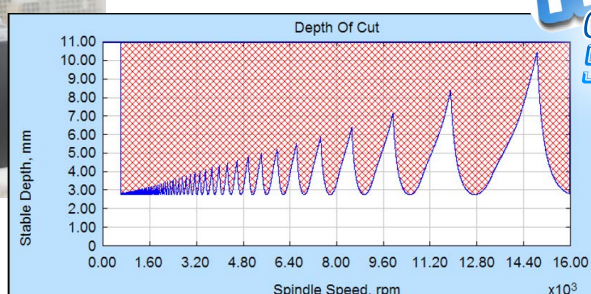
Melin can ADD to our standard high performance offering

METALMAX TESTING

Melin's EXPERT technical field application engineers are available to provide **FREE** on-site, "tap testing" analysis of your machine, for fine tuning cutting parameters to dramatically reduce vibration and optimize productivity. Contact your local distributor, our regional sales rep, Melin customer service, or visit us Online to submit a request. www.melintool.com



METALMAX™



Free
OnThe
SPINDLE

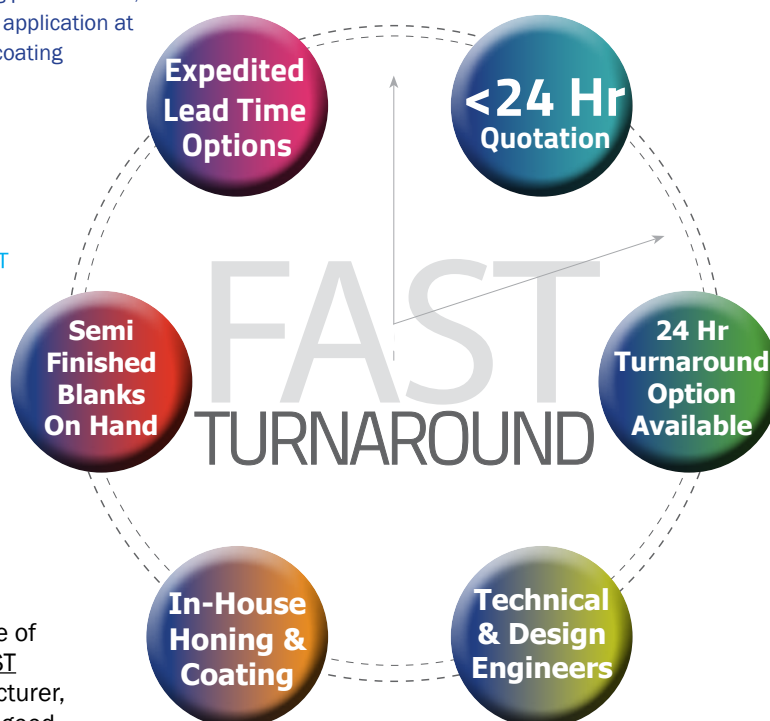
FAST DELIVERY ON SPECIALS

Melin Now Offers Expedited Special Solutions

Get your special QUICKLY! Getting the MOST from your tooling & maximizing performance, requires completely aligned tooling & set up process' tailored to the specific application at hand. Many times, that requires customizing the cutting tool geometry and coating to provide the least amount of machining time.

- Melin Tool is set up to deliver what you need... **FAST!**

- QUOTATIONS GUARANTEED WITHIN 24 HOURS
Most often "SAME DAY"
- EXPEDITED DELIVERY OPTION ON SPECIALS AVAILABLE BY REQUEST
- SIMPLE, COMPLEX & CUSTOM DESIGN INCLUDED
- 24 HOUR TURN AROUND IS AVAILABLE ON CERTAIN SERIES



NEED A SECOND LOOK?

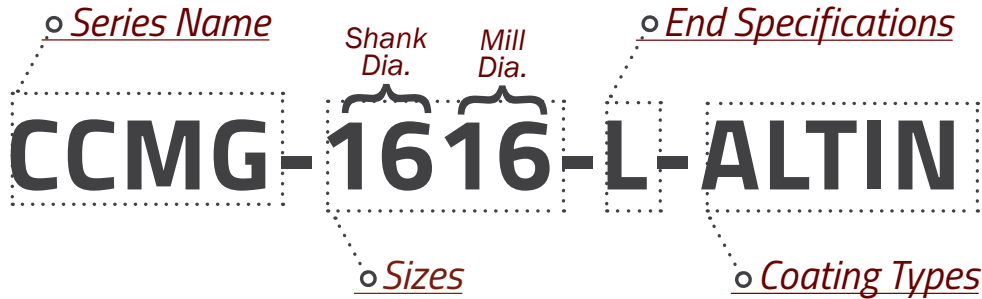
Sometimes the job **can't wait**. We understand... and can take care of you. Our manufacturing processes are highly flexible to enable **FAST** priority adjustments just for this purpose. We're a **LARGE** manufacturer, with small business maneuverability. If our quoted lead time isn't good enough.. **Call us. We'll surprise you at how often we can help!**

Call Customer Service to get your quote with expedited lead times: 216-362-4200

Melin Part Number

MELIN
PART NAME:

- Series Name
- Shank Diameter
- Mill Diameter
- End Specifications
- Coating



Series Name:

The series name is a code that references the number of flutes, the material, machining applications, and being either high performance or a general purpose cutting tool.

(miscellaneous series may not reference every product detail in series name)

EXAMPLES:

- C-** General Purpose / Cobalt / 4 Flute
- E-** General Purpose / Cobalt / 3 Flute
- EMG-** General Purpose / Carbide / 3 Flute
- EXMG-** High Performance / Carbide / 3 Flute

Coating Types:

- TICN- Titanium Carbonitride
- ALTIN- Aluminum Titanium Nitride
- NACO- Aluminum Titanium Nitride + Silicon Nitride
- NACRO- Aluminum Chrome Nitride + Silicon Nitride
- ZRN- Zirconium Nitride
- TiB₂- Titanium DiBoride
- TiXCo- Titanium Silicon Nitride + nACO
- DIA- CVD Diamond
- DLC- Amorphous Diamond

Sizes (Mill & Shank Diameter):

CODES & FRACTIONAL EQUIVALENTS			
code	fraction	code	fraction
0	1/8	11	1 1/8
1	1/4	12	3/8
2	1/2	13	13/16
3	3/4	14	7/8
4	1	15	1 5/8
5	5/8	16	1 1/4
6	3/4	17	1 7/8
7	7/8	18	9/8
8	1	20	5/8
9	9/8	24	3/4
10	5/4	28	7/8
11	1 1/8	32	1

EXAMPLES:

Metric- 7mm DIA x 8mm SHK = CCMG- **M8M7**

End Specifications:

FLUTE LENGTH:

- S: Stub
- M: Medium
- MM: Medium/Medium
- ML: Medium/Long
- L: Long
- LL: Long/Long
- LF: Long Flute
- E: Extra Long
- EL: Extra Long
- EE: Extra/Extra Long
- 3X: 3x Length Drill
- 5X: 5x Length Drill
- 7X: 7x Length Drill
- SF: Short Flute
- LF: Long Flute
- HM: Hard Material

END STYLE:

- B:** Ball End
- H:** Helical
- DP:** Drill Point
- NE:** No End

RADIUS STYLE:

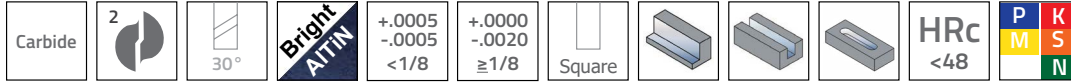
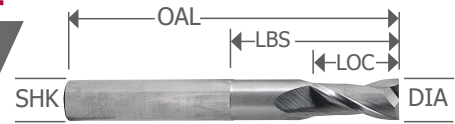
- NR:** No Radius
- R:** Radius

NECK STYLE:

- NN:** No Neck
- N:** Extended Neck



2 FLUTE • GENERAL PURPOSE END MILLS



SERIES: AMG

DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/64	1/8	3/64		1-1/2	std	AMG-400-1/2	13385	53385
1/32	1/8	1/16		1-1/2	stub	AMGS-401	16146	56146
1/32	1/8	3/32		1-1/2	std	AMG-401	14000	54000
3/64	1/8	3/32		1-1/2	stub	AMGS-401-1/2	16147	56147
3/64	1/8	1/8		1-1/2	std	AMG-401-1/2	14002	54002
1/16	1/8	1/8		1-1/2	stub	AMGS-402	16148	56148
1/16	1/8	3/16		1-1/2	std	AMG-402	14004	54004
1/16	1/8	1/4		1-1/2	med	AMG-402-M	19126	59126
1/16	1/8	3/8		1-1/2	long	AMG-402-L	11521	51521
5/64	1/8	1/8		1-1/2	stub	AMGS-402-1/2	11517	51517
5/64	1/8	3/16		1-1/2	std	AMG-402-1/2	14006	54006
5/64	1/8	1/4		1-1/2	med	AMG-402-1/2-M	19127	59127
3/32	1/8	3/16		1-1/2	stub	AMGS-403	16149	56149
3/32	1/8	3/8		1-1/2	std	AMG-403	14008	54008
3/32	1/8	3/8	3/4	2	ext neck	AMGN-403	19128	59128
3/32	1/8	1/2		1-1/2	med	AMG-403-M	19129	59129
3/32	1/8	9/16		3	long	AMG-403-L	16060	56060
7/64	1/8	7/32		1-1/2	stub	AMGS-403-1/2	14011	54011
7/64	1/8	3/8		1-1/2	std	AMG-403-1/2	14009	54009
1/8	1/8	1/4		1-1/2	stub	AMGS-404	16150	56150
1/8	1/8	1/2		1-1/2	std	AMG-404	14010	54010
1/8	1/8	5/8		2	med	AMG-404-M	11523	51523
1/8	1/8	5/8	1	2	ext neck	AMGN-404	16713	56713
1/8	1/8	3/4		2-1/4	med/long	AMG-404-ML	12751	52751
1/8	1/8	3/4		3	long	AMG-404-L	16061	56061
1/8	1/8	1		3	xl	AMG-404-E	16062	56062
9/64	3/16	9/16		2	std	AMG-604-1/2	15893	55893
5/32	3/16	5/16		1-1/2	stub	AMGS-605	16151	56151
5/32	3/16	9/16		2	std	AMG-605	14020	54020
5/32	3/16	3/4		3	long	AMG-605-L	16063	56063
5/32	3/16	1-1/8		3	xl	AMG-605-E	19130	59130
11/64	3/16	9/16		2	std	AMG-605-1/2	15894	55894
3/16	3/16	3/8		1-1/2	stub	AMGS-606	16152	56152
3/16	3/16	5/8		2	std	AMG-606	14022	54022
3/16	3/16	3/4		2-1/2	med/long	AMG-606-ML	12753	52753
3/16	3/16	3/4		3	long	AMG-606-L	16064	56064
3/16	3/16	1	1-5/8	3	ext neck	AMGN-606	16714	56714
3/16	3/16	1	2-5/8	4	ext neck	AMGN-606-2	16715	56715
3/16	3/16	1	no neck	4	no neck	AMG-606-NN	19131	59131
3/16	3/16	1-1/8		3	xl	AMG-606-E	16065	56065
13/64	1/4	5/8		2-1/2	std	AMG-806-1/2	15895	55895
7/32	1/4	1/2		2	stub	AMGS-807	16153	56153
7/32	1/4	5/8		2-1/2	std	AMG-807	14024	54024
15/64	1/4	3/4		2-1/2	std	AMG-807-1/2	15896	55896
1/4	1/4	1/2		2	stub	AMGS-808	16154	56154
1/4	1/4	3/4		2-1/2	std	AMG-808	14026	54026
1/4	1/4	1	2-1/4	4	ext neck	AMGN-808	16716	56716
1/4	1/4	1-1/8		3	long	AMG-808-L	14028	54028
1/4	1/4	1-1/2		4	xl	AMG-808-E	14030	54030

sizes continued on next page

GENERAL PURPOSE CARBIDE END MILL

2 FLUTE • GENERAL PURPOSE END MILLS

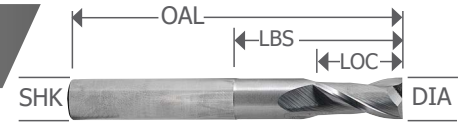
SERIES: AMG

DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/4	1/4	1-1/2	4-1/4	6	ext neck	AMGN-808-2	16717	56717
1/4	1/4	1-1/2	no neck	6	no neck	AMG-808-NN	19132	59132
17/64	5/16	3/4		2-1/2	std	AMG-1008-1/2	15897	55897
9/32	5/16	3/4		2-1/2	std	AMG-1009	15898	55898
19/64	5/16	13/16		2-1/2	std	AMG-1009-1/2	15899	55899
5/16	5/16	1/2		2	stub	AMGS-1010	16155	56155
5/16	5/16	13/16		2-1/2	std	AMG-1010	14032	54032
5/16	5/16	1	2-5/16	4	ext neck	AMGN-1010	16718	56718
5/16	5/16	1-1/8		3	long	AMG-1010-L	16066	56066
5/16	5/16	1-1/2	4-5/16	6	ext neck	AMGN-1010-2	16719	56719
5/16	5/16	1-5/8		4	xl	AMG-1010-E	16027	56027
21/64	3/8	7/8		2-1/2	std	AMG-1210-1/2	16119	56119
11/32	3/8	7/8		2-1/2	std	AMG-1211	15900	55900
23/64	3/8	7/8		2-1/2	std	AMG-1211-1/2	16120	56120
3/8	3/8	5/8		2	stub	AMGS-1212	16156	56156
3/8	3/8	1		2-1/2	std	AMG-1212	14034	54034
3/8	3/8	1	2-3/8	4	ext neck	AMGN-1212	16720	56720
3/8	3/8	1-1/8		3	long	AMG-1212-L	14036	54036
3/8	3/8	1-1/2	4-3/8	6	ext neck	AMGN-1212-2	16721	56721
3/8	3/8	1-1/2	no neck	6	no neck	AMG-1212-NN	19133	59133
3/8	3/8	1-3/4		4	xl	AMG-1212-E	14038	54038
3/8	3/8	2		4	xl	AMG-1212-EL	19134	59134
3/8	3/8	3		6	xxl	AMG-1212-EE	13621	53621
25/64	7/16	1		2-3/4	std	AMG-1412-1/2	16121	56121
13/32	7/16	1		2-3/4	std	AMG-1413	15901	55901
27/64	7/16	1		2-3/4	std	AMG-1413-1/2	16122	56122
7/16	7/16	5/8		2-1/2	stub	AMGS-1414	16157	56157
7/16	7/16	1		2-3/4	std	AMG-1414	14040	54040
7/16	7/16	1	2-1/4	4	ext neck	AMGN-1414	16722	56722
7/16	7/16	1-1/2	4-1/4	6	ext neck	AMGN-1414-2	16723	56723
7/16	7/16	2		4	long	AMG-1414-L	16029	56029
7/16	7/16	3		6	xl	AMG-1414-E	16028	56028
29/64	1/2	1		3	std	AMG-1614-1/2	16123	56123
15/32	1/2	1		3	std	AMG-1615	15902	55902
31/64	1/2	1		3	std	AMG-1615-1/2	16124	56124
1/2	1/2	5/8		2-1/2	stub	AMGS-1616	16158	56158
1/2	1/2	1		3	std	AMG-1616	14042	54042
1/2	1/2	1	2	4	ext neck	AMGN-1616	16724	56724
1/2	1/2	1-1/4		3	med	AMG-1616-M	11529	51529
1/2	1/2	1-1/2		4	med/long	AMG-1616-ML	19135	59135
1/2	1/2	1-1/2	4	6	ext neck	AMGN-1616-2	16725	56725
1/2	1/2	1-1/2	no neck	6	no neck	AMG-1616-NN	11919	51919
1/2	1/2	2		4	long	AMG-1616-L	14044	54044
1/2	1/2	3		6	xl	AMG-1616-E	14046	54046
17/32	9/16	1-1/4		3-1/2	std	AMG-1817	11515	51515
9/16	9/16	1-1/4		3-1/2	std	AMG-1818	15903	55903
9/16	9/16	2	3-3/4	6	ext neck	AMGN-1818	16726	56726
9/16	9/16	3		6	xl	AMG-1818-E	16727	56727
5/8	5/8	3/4		3	stub	AMGS-2020	16159	56159
5/8	5/8	1-1/4		3-1/2	std	AMG-2020	14048	54048
5/8	5/8	2	3-3/4	6	ext neck	AMGN-2020	16728	56728
5/8	5/8	2	no neck	6	no neck	AMG-2020-NN	19136	59136
5/8	5/8	2-1/4		5	long	AMG-2020-L	16067	56067
5/8	5/8	3		6	xl	AMG-2020-E	16068	56068

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2 FLUTE • GENERAL PURPOSE END MILLS

SERIES: AMG



DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
11/16	3/4	1-3/8		4	std	AMG-2422	11918	51918
3/4	3/4	1		3	stub	AMGS-2424	16160	56160
3/4	3/4	1-1/2		4	std	AMG-2424	14050	54050
3/4	3/4	2	3-1/2	6	ext neck	AMGN-2424	16729	56729
3/4	3/4	2-1/4		5	long	AMG-2424-L	16069	56069
3/4	3/4	3		6	xl	AMG-2424-E	14052	54052
7/8	7/8	1-1/2		4	std	AMG-2828	16125	56125
1	1	1-1/2		4	std	AMG-3232	14054	54054
1	1	2	3-1/2	6	ext neck	AMGN-3232	16730	56730
1	1	2-1/4		5	long	AMG-3232-L	12755	52755
1	1	3		6	xl	AMG-3232-E	14056	54056
1	1	4		7	xxl	AMG-3232-EE	14027	54027

2 FLUTE • GENERAL PURPOSE END MILLS



SERIES: AMG-M_M_

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1mm	3mm	2mm	38mm	stub	AMGS-M3M1	13733	53733
1mm	3mm	3mm	38mm	std	AMG-M3M1	16935	56935
1.5mm	3mm	3mm	38mm	stub	AMGS-M3M1.5	14031	54031
1.5mm	3mm	6mm	38mm	std	AMG-M3M1.5	16936	56936
2mm	3mm	4mm	38mm	stub	AMGS-M3M2	13967	53967
2mm	3mm	9mm	38mm	std	AMG-M3M2	15987	55987
2.5mm	3mm	5mm	38mm	stub	AMGS-M3M2.5	14051	54051
2.5mm	3mm	12mm	38mm	std	AMG-M3M2.5	15988	55988
3mm	3mm	6mm	38mm	stub	AMGS-M3M3	13968	53968
3mm	3mm	12mm	38mm	std	AMG-M3M3	15989	55989
3mm	3mm	18mm	57mm	long	AMG-M3M3-L	13972	53972
3mm	6mm	12mm	63mm	std	AMG-M6M3	19750	59750
3.5mm	4mm	7mm	51mm	stub	AMGS-M4M3.5	14023	54023
3.5mm	4mm	12mm	51mm	std	AMG-M4M3.5	15990	55990
4mm	4mm	8mm	51mm	stub	AMGS-M4M4	13969	53969
4mm	4mm	14mm	51mm	std	AMG-M4M4	15991	55991
4mm	4mm	20mm	63mm	long	AMG-M4M4-L	13973	53973
4mm	6mm	14mm	63mm	std	AMG-M6M4	19751	59751
4.5mm	5mm	9mm	51mm	stub	AMGS-M5M4.5	10991	50991
4.5mm	5mm	14mm	51mm	std	AMG-M5M4.5	15992	55992
5mm	5mm	10mm	51mm	stub	AMGS-M5M5	13970	53970
5mm	5mm	20mm	51mm	std	AMG-M5M5	15993	55993
5mm	5mm	25mm	64mm	long	AMG-M5M5-L	13736	53736

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GENERAL PURPOSE CARBIDE END MILL

2 FLUTE • GENERAL PURPOSE END MILLS

SERIES: AMG-M_M_

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
5mm	6mm	20mm	63mm	std	AMG-M6M5	10588	50588
6mm	6mm	12mm	51mm	stub	AMGS-M6M6	13955	53955
6mm	6mm	20mm	63mm	std	AMG-M6M6	15994	55994
6mm	6mm	28mm	75mm	long	AMG-M6M6-L	13961	53961
7mm	8mm	12mm	51mm	stub	AMGS-M8M7	13734	53734
7mm	8mm	20mm	63mm	std	AMG-M8M7	15995	55995
8mm	8mm	12mm	51mm	stub	AMGS-M8M8	13735	53735
8mm	8mm	20mm	63mm	std	AMG-M8M8	15996	55996
8mm	8mm	32mm	75mm	long	AMG-M8M8-L	13974	53974
9mm	10mm	14mm	51mm	stub	AMGS-M10M9	10264	50264
9mm	10mm	22mm	70mm	std	AMG-M10M9	15997	55997
10mm	10mm	14mm	51mm	stub	AMGS-M10M10	13971	53971
10mm	10mm	25mm	70mm	std	AMG-M10M10	15998	55998
10mm	10mm	38mm	76mm	med	AMG-M10M10-M	13965	53965
10mm	10mm	40mm	100mm	long	AMG-M10M10-L	13953	53953
11mm	12mm	25mm	76mm	std	AMG-M12M11	10218	50218
12mm	12mm	25mm	76mm	std	AMG-M12M12	15999	55999
12mm	12mm	50mm	100mm	long	AMG-M12M12-L	13975	53975
14mm	14mm	32mm	89mm	std	AMG-M14M14	16926	56926
16mm	16mm	32mm	89mm	std	AMG-M16M16	16927	56927
16mm	16mm	57mm	127mm	long	AMG-M16M16-L	19752	59752
18mm	18mm	38mm	100mm	std	AMG-M18M18	16928	56928
18mm	18mm	57mm	127mm	long	AMG-M18M18-L	14059	54059
20mm	20mm	38mm	100mm	std	AMG-M20M20	16929	56929
20mm	20mm	57mm	127mm	long	AMG-M20M20-L	19753	59753
22mm	22mm	38mm	100mm	std	AMG-M22M22	16930	56930
25mm	25mm	38mm	100mm	std	AMG-M25M25	16931	56931

2 FLUTE • GENERAL PURPOSE METRIC/INCH END MILLS



SERIES: AMG-_M_

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
3mm	1/8	3/8	1-1/2	std	AMG-4M3	15967	55967
4mm	3/16	1/2	2	std	AMG-6M4	15968	55968
5mm	1/4	5/8	2-1/2	std	AMG-8M5	15969	55969
6mm	1/4	5/8	2-1/2	std	AMG-8M6	15970	55970
7mm	5/16	3/4	2-1/2	std	AMG-10M7	15971	55971
8mm	3/8	7/8	2-1/2	std	AMG-12M8	15972	55972
9mm	3/8	7/8	2-1/2	std	AMG-12M9	15973	55973
10mm	7/16	1	2-3/4	std	AMG-14M10	15974	55974
11mm	7/16	1	2-3/4	std	AMG-14M11	15975	55975
12mm	1/2	1	3	std	AMG-16M12	15976	55976

GENERAL PURPOSE CARBIDE END MILL

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2 FLUTE • CORNER RADIUS END MILLS



SERIES: AMG-__-R__

DIA	SHK	LOC	OAL	RADIUS	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
3/32	1/8	3/8	1-1/2	.010	std	AMG-403-R010	10584	50584
3/32	1/8	3/8	1-1/2	.015	std	AMG-403-R015	10809	50809
1/8	1/8	1/2	1-1/2	.010	std	AMG-404-R010	11328	51328
1/8	1/8	1/2	1-1/2	.015	std	AMG-404-R015	15300	55300
1/8	1/8	1/2	1-1/2	.020	std	AMG-404-R020	11329	51329
1/8	1/8	1/2	1-1/2	.030	std	AMG-404-R030	11330	51330
3/16	3/16	5/8	2	.010	std	AMG-606-R010	11331	51331
3/16	3/16	5/8	2	.015	std	AMG-606-R015	11551	51551
3/16	3/16	5/8	2	.020	std	AMG-606-R020	15302	55302
3/16	3/16	5/8	2	.030	std	AMG-606-R030	15304	55304
3/16	3/16	5/8	2	.045	std	AMG-606-R045	11336	51336
3/16	3/16	5/8	2	.060	std	AMG-606-R060	11343	51343
1/4	1/4	3/4	2-1/2	.010	std	AMG-808-R010	11345	51345
1/4	1/4	3/4	2-1/2	.015	std	AMG-808-R015	16322	56322
1/4	1/4	3/4	2-1/2	.020	std	AMG-808-R020	15306	55306
1/4	1/4	3/4	2-1/2	.030	std	AMG-808-R030	15308	55308
1/4	1/4	3/4	2-1/2	.045	std	AMG-808-R045	15310	55310
1/4	1/4	3/4	2-1/2	.060	std	AMG-808-R060	11348	51348
5/16	5/16	13/16	2-1/2	.020	std	AMG-1010-R020	15312	55312
5/16	5/16	13/16	2-1/2	.030	std	AMG-1010-R030	15314	55314
5/16	5/16	13/16	2-1/2	.045	std	AMG-1010-R045	15316	55316
3/8	3/8	1	2-1/2	.020	std	AMG-1212-R020	15318	55318
3/8	3/8	1	2-1/2	.030	std	AMG-1212-R030	15320	55320
3/8	3/8	1	2-1/2	.045	std	AMG-1212-R045	15322	55322
3/8	3/8	1	2-1/2	.060	std	AMG-1212-R060	11349	51349
1/2	1/2	1	3	.020	std	AMG-1616-R020	15324	55324
1/2	1/2	1	3	.030	std	AMG-1616-R030	15326	55326
1/2	1/2	1	3	.045	std	AMG-1616-R045	15328	55328
1/2	1/2	1	3	.060	std	AMG-1616-R060	15330	55330
1/2	1/2	1	3	.090	std	AMG-1616-R090	11576	51576
1/2	1/2	1	3	.125	std	AMG-1616-R125	11579	51579
5/8	5/8	1-1/4	3-1/2	.020	std	AMG-2020-R020	15332	55332
5/8	5/8	1-1/4	3-1/2	.030	std	AMG-2020-R030	15334	55334
5/8	5/8	1-1/4	3-1/2	.045	std	AMG-2020-R045	15336	55336
5/8	5/8	1-1/4	3-1/2	.060	std	AMG-2020-R060	15338	55338
5/8	5/8	1-1/4	3-1/2	.090	std	AMG-2020-R090	15340	55340
3/4	3/4	1-1/2	4	.020	std	AMG-2424-R020	15342	55342
3/4	3/4	1-1/2	4	.030	std	AMG-2424-R030	15344	55344
3/4	3/4	1-1/2	4	.045	std	AMG-2424-R045	15346	55346
3/4	3/4	1-1/2	4	.060	std	AMG-2424-R060	15348	55348
3/4	3/4	1-1/2	4	.090	std	AMG-2424-R090	15350	55350
3/4	3/4	1-1/2	4	.125	std	AMG-2424-R125	15352	55352
1	1	1-1/2	4	.020	std	AMG-3232-R020	15354	55354
1	1	1-1/2	4	.030	std	AMG-3232-R030	15356	55356
1	1	1-1/2	4	.045	std	AMG-3232-R045	15358	55358
1	1	1-1/2	4	.060	std	AMG-3232-R060	15428	55428
1	1	1-1/2	4	.090	std	AMG-3232-R090	15430	55430
1	1	1-1/2	4	.125	std	AMG-3232-R125	15432	55432

GENERAL PURPOSE CARBIDE END MILL



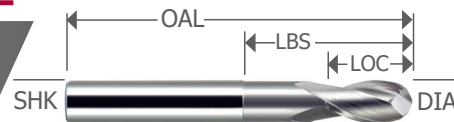
2 FLUTE • CORNER RADIUS END MILLS



SERIES: AMG-M_M_-R_ _

DIA	SHK	LOC	OAL	RADIUS	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
2mm	3mm	9mm	38mm	0.4mm	std	AMG-M3M2-R0.4	16851	56851
2.5mm	3mm	12mm	38mm	0.4mm	std	AMG-M3M2.5-R0.4	16852	56852
3mm	3mm	12mm	38mm	0.4mm	std	AMG-M3M3-R0.4	16853	56853
3.5mm	4mm	12mm	50mm	0.4mm	std	AMG-M4M3.5-R0.4	16854	56854
4mm	4mm	14mm	50mm	0.4mm	std	AMG-M4M4-R0.4	16855	56855
4.5mm	5mm	14mm	50mm	0.4mm	std	AMG-M5M4.5-R0.4	16856	56856
5mm	5mm	20mm	50mm	0.4mm	std	AMG-M5M5-R0.4	16857	56857
6mm	6mm	20mm	63mm	0.5mm	std	AMG-M6M6-R0.5	16858	56858
7mm	8mm	22mm	63mm	0.5mm	std	AMG-M8M7-R0.5	16859	56859
8mm	8mm	22mm	63mm	0.5mm	std	AMG-M8M8-R0.5	16860	56860
9mm	10mm	22mm	70mm	0.7mm	std	AMG-M10M9-R0.7	16861	56861
10mm	10mm	25mm	70mm	0.7mm	std	AMG-M10M10-R0.7	16862	56862
12mm	12mm	25mm	76mm	0.7mm	std	AMG-M12M12-R0.7	16863	56863
14mm	14mm	32mm	89mm	0.8mm	std	AMG-M14M14-R0.8	16864	56864
16mm	16mm	38mm	89mm	0.8mm	std	AMG-M16M16-R0.8	16865	56865
20mm	20mm	38mm	100mm	1.0mm	std	AMG-M20M20-R1.0	16867	56867

2 FLUTE • BALL NOSE END MILLS



SERIES: AMG-__-B

DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/64	1/8	3/64		1-1/2	std	AMG-400-1/2-B	13487	53487
1/32	1/8	1/16		1-1/2	stub	AMGS-401-B	16161	56161
1/32	1/8	3/32		1-1/2	std	AMG-401-B	15904	55904
3/64	1/8	3/32		1-1/2	stub	AMGS-401-1/2-B	16162	56162
3/64	1/8	1/8		1-1/2	std	AMG-401-1/2-B	15905	55905
1/16	1/8	1/8		1-1/2	stub	AMGS-402-B	16163	56163
1/16	1/8	3/16		1-1/2	std	AMG-402-B	15906	55906
1/16	1/8	3/8		1-1/2	long	AMG-402-LB	19537	59537
5/64	1/8	3/16		1-1/2	std	AMG-402-1/2-B	15907	55907
3/32	1/8	3/16		1-1/2	stub	AMGS-403-B	16164	56164
3/32	1/8	3/8		1-1/2	std	AMG-403-B	15908	55908
7/64	1/8	3/8		1-1/2	std	AMG-403-1/2-B	15909	55909
1/8	1/8	1/4		1-1/2	stub	AMGS-404-B	16165	56165
1/8	1/8	1/2		1-1/2	std	AMG-404-B	14058	54058
1/8	1/8	5/8	1	2	ext neck	AMGN-404-B	16749	56749
1/8	1/8	3/4		2-1/4	med	AMG-404-MB	11127	51127
1/8	1/8	3/4		3	long	AMG-404-LB	16110	56110
1/8	1/8	1		3	xl	AMG-404-EB	16176	56176
9/64	3/16	9/16		2	std	AMG-604-1/2-B	16126	56126
5/32	3/16	5/16		1-1/2	stub	AMGS-605-B	16166	56166
5/32	3/16	9/16		2	std	AMG-605-B	15910	55910
11/64	3/16	9/16		2	std	AMG-605-1/2-B	16127	56127
3/16	3/16	3/8		1-1/2	stub	AMGS-606-B	16167	56167
3/16	3/16	5/8		2	std	AMG-606-B	14060	54060
3/16	3/16	3/4		2-1/2	med	AMG-606-MB	19554	59554
3/16	3/16	3/4		3	long	AMG-606-LB	16111	56111
3/16	3/16	1	1-5/8	3	ext neck	AMGN-606-B	16750	56750
3/16	3/16	1	2-5/8	4	ext neck	AMGN-606-2B	16751	56751
3/16	3/16	1-1/8		3	xl	AMG-606-EB	16177	56177
13/64	1/4	5/8		2-1/2	std	AMG-806-1/2-B	16128	56128
7/32	1/4	1/2		2	stub	AMGS-807-B	16168	56168
7/32	1/4	5/8		2-1/2	std	AMG-807-B	15911	55911
15/64	1/4	3/4		2-1/2	std	AMG-807-1/2-B	16129	56129
1/4	1/4	1/2		2	stub	AMGS-808-B	16169	56169
1/4	1/4	3/4		2-1/2	std	AMG-808-B	14062	54062
1/4	1/4	1	2-1/4	4	ext neck	AMGN-808-B	16752	56752
1/4	1/4	1-1/8		3	long	AMG-808-LB	16112	56112
1/4	1/4	1-1/2		4	xl	AMG-808-EB	16178	56178
1/4	1/4	1-1/2	4-1/4	6	ext neck	AMGN-808-2B	16753	56753
17/64	5/16	3/4		2-1/2	std	AMG-1008-1/2-B	16130	56130
9/32	5/16	3/4		2-1/2	std	AMG-1009-B	15912	55912
19/64	5/16	13/16		2-1/2	std	AMG-1009-1/2-B	16131	56131
5/16	5/16	1/2		2	stub	AMGS-1010-B	16170	56170
5/16	5/16	13/16		2-1/2	std	AMG-1010-B	14064	54064
5/16	5/16	1-1/8		3	long	AMG-1010-LB	16113	56113
5/16	5/16	1-5/8		4	xl	AMG-1010-EB	16179	56179
5/16	5/16	1	2-5/16	4	ext neck	AMGN-1010-B	16754	56754

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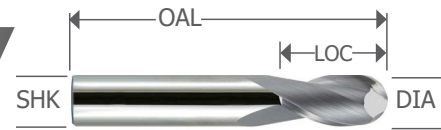
GENERAL PURPOSE CARBIDE END MILL

2 FLUTE • BALL NOSE END MILLS

SERIES: AMG-__-B

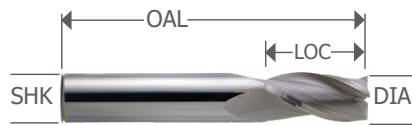
DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
5/16	5/16	1-1/2	4-5/16	6	ext neck	AMGN-1010-2B	16755	56755
21/64	3/8	7/8		2-1/2	std	AMG-1210-1/2-B	16132	56132
11/32	3/8	7/8		2-1/2	std	AMG-1211-B	16133	56133
23/64	3/8	7/8		2-1/2	std	AMG-1211-1/2-B	16134	56134
3/8	3/8	5/8		2	stub	AMGS-1212-B	16171	56171
3/8	3/8	1		2-1/2	std	AMG-1212-B	14066	54066
3/8	3/8	1	2-3/8	4	ext neck	AMGN-1212-B	16756	56756
3/8	3/8	1-1/8		3	long	AMG-1212-LB	16114	56114
3/8	3/8	1-1/2	4-3/8	6	ext neck	AMGN-1212-2B	16757	56757
3/8	3/8	1-3/4		4	xl	AMG-1212-EB	16180	56180
25/64	7/16	1		2-3/4	std	AMG-1412-1/2-B	16135	56135
13/32	7/16	1		2-3/4	std	AMG-1413-B	16136	56136
27/64	7/16	1		2-3/4	std	AMG-1413-1/2-B	16137	56137
7/16	7/16	5/8		2-1/2	stub	AMGS-1414-B	16172	56172
7/16	7/16	1		2-3/4	std	AMG-1414-B	15913	55913
7/16	7/16	1	2-1/4	4	ext neck	AMGN-1414-B	16758	56758
7/16	7/16	1-1/2	4-1/4	6	ext neck	AMGN-1414-2B	16759	56759
7/16	7/16	2		4	long	AMG-1414-LB	16115	56115
7/16	7/16	3		6	xl	AMG-1414-EB	16181	56181
29/64	1/2	1		3	std	AMG-1614-1/2-B	16138	56138
15/32	1/2	1		3	std	AMG-1615-B	16139	56139
31/64	1/2	1		3	std	AMG-1615-1/2-B	16140	56140
1/2	1/2	5/8		2-1/2	stub	AMGS-1616-B	16173	56173
1/2	1/2	1		3	std	AMG-1616-B	14068	54068
1/2	1/2	1	2	4	ext neck	AMGN-1616-B	16760	56760
1/2	1/2	1-1/2	4	6	ext neck	AMGN-1616-2B	16761	56761
1/2	1/2	2		4	long	AMG-1616-LB	16116	56116
1/2	1/2	3		6	xl	AMG-1616-EB	16182	56182
9/16	9/16	1-1/4		3-1/2	std	AMG-1818-B	16141	56141
9/16	9/16	2	3-3/4	6	ext neck	AMGN-1818-B	16762	56762
5/8	5/8	3/4		3	stub	AMGS-2020-B	16174	56174
5/8	5/8	1-1/4		3-1/2	std	AMG-2020-B	16142	56142
5/8	5/8	2	3-3/4	6	ext neck	AMGN-2020-B	16764	56764
5/8	5/8	2-1/4		5	long	AMG-2020-LB	16117	56117
5/8	5/8	3		6	xl	AMG-2020-EB	16183	56183
11/16	3/4	1-3/8		4	std	AMG-2422-B	19575	59575
3/4	3/4	1		3	stub	AMGS-2424-B	16175	56175
3/4	3/4	1-1/2		4	std	AMG-2424-B	16143	56143
3/4	3/4	2	3-1/2	6	ext neck	AMGN-2424-B	16765	56765
3/4	3/4	2-1/4		5	long	AMG-2424-LB	16118	56118
3/4	3/4	3		6	xl	AMG-2424-EB	16184	56184
7/8	7/8	1-1/2		4	std	AMG-2828-B	16144	56144
1	1	1-1/2		4	std	AMG-3232-B	16145	56145
1	1	2	3-1/2	6	ext neck	AMGN-3232-B	16766	56766
1	1	3		6	xl	AMG-3232-EB	16185	56185

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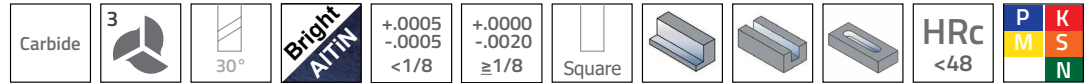
SERIES: AMG-M_M_-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1mm	3mm	2mm	38mm	stub	AMGS-M3M1-B	13976	53976
1mm	3mm	3mm	38mm	std	AMG-M3M1-B	16805	56805
1.5mm	3mm	3mm	38mm	stub	AMGS-M3M1.5-B	14033	54033
1.5mm	3mm	6mm	38mm	std	AMG-M3M1.5-B	16806	56806
2mm	3mm	4mm	38mm	stub	AMGS-M3M2-B	13739	53739
2mm	3mm	9mm	38mm	std	AMG-M3M2-B	16555	56555
2.5mm	3mm	5mm	38mm	stub	AMGS-M3M2.5-B	14063	54063
2.5mm	3mm	12mm	38mm	std	AMG-M3M2.5-B	16556	56556
3mm	3mm	6mm	38mm	stub	AMGS-M3M3-B	13977	53977
3mm	3mm	12mm	38mm	std	AMG-M3M3-B	16557	56557
3mm	3mm	18mm	57mm	long	AMG-M3M3-LB	13979	53979
3.5mm	4mm	7mm	51mm	stub	AMGS-M4M3.5-B	14043	54043
3.5mm	4mm	12mm	51mm	std	AMG-M4M3.5-B	16558	56558
4mm	4mm	8mm	51mm	stub	AMGS-M4M4-B	13963	53963
4mm	4mm	14mm	51mm	std	AMG-M4M4-B	16559	56559
4mm	4mm	20mm	63mm	long	AMG-M4M4-LB	19755	59755
4.5mm	5mm	14mm	51mm	std	AMG-M5M4.5-B	16560	56560
5mm	5mm	10mm	51mm	stub	AMGS-M5M5-B	13956	53956
5mm	5mm	20mm	51mm	std	AMG-M5M5-B	16561	56561
5mm	5mm	25mm	64mm	long	AMG-M5M5-LB	13743	53743
6mm	6mm	12mm	51mm	stub	AMGS-M6M6-B	13740	53740
6mm	6mm	20mm	63mm	std	AMG-M6M6-B	16562	56562
6mm	6mm	28mm	75mm	long	AMG-M6M6-LB	13954	53954
7mm	8mm	12mm	51mm	stub	AMGS-M8M7-B	14045	54045
7mm	8mm	20mm	63mm	std	AMG-M8M7-B	16563	56563
8mm	8mm	12mm	51mm	stub	AMGS-M8M8-B	13741	53741
8mm	8mm	20mm	63mm	std	AMG-M8M8-B	16564	56564
8mm	8mm	32mm	75mm	long	AMG-M8M8-LB	19756	59756
9mm	10mm	22mm	70mm	std	AMG-M10M9-B	16565	56565
10mm	10mm	14mm	51mm	stub	AMGS-M10M10-B	13978	53978
10mm	10mm	25mm	70mm	std	AMG-M10M10-B	16566	56566
10mm	10mm	31mm	76mm	med	AMG-M10M10-MB	19757	59757
10mm	10mm	40mm	100mm	long	AMG-M10M10-LB	19758	59758
11mm	12mm	25mm	76mm	std	AMG-M12M11-B	14067	54067
12mm	12mm	25mm	76mm	std	AMG-M12M12-B	16567	56567
12mm	12mm	50mm	100mm	long	AMG-M12M12-LB	13980	53980
14mm	14mm	32mm	89mm	std	AMG-M14M14-B	16568	56568
16mm	16mm	32mm	89mm	std	AMG-M16M16-B	16569	56569
16mm	16mm	57mm	127mm	long	AMG-M16M16-LB	19759	59759
18mm	18mm	38mm	100mm	std	AMG-M18M18-B	16570	56570
18mm	18mm	57mm	127mm	long	AMG-M18M18-LB	19760	59760
20mm	20mm	38mm	100mm	std	AMG-M20M20-B	16571	56571
20mm	20mm	57mm	127mm	long	AMG-M20M20-LB	19761	59761
22mm	22mm	38mm	100mm	std	AMG-M22M22-B	16807	56807
25mm	25mm	38mm	100mm	std	AMG-M25M25-B	16808	56808



GENERAL PURPOSE CARBIDE END MILL

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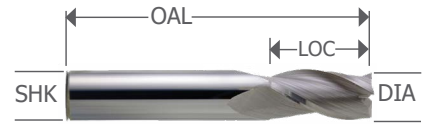
SERIES: EMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/32	1/8	1/16	1-1/2	stub	EMGS-401	17791	57791
1/32	1/8	3/32	1-1/2	std	EMG-401	17792	57792
3/64	1/8	3/32	1-1/2	stub	EMGS-401-1/2	17793	57793
3/64	1/8	1/8	1-1/2	std	EMG-401-1/2	17794	57794
1/16	1/8	1/8	1-1/2	stub	EMGS-402	17795	57795
1/16	1/8	3/16	1-1/2	std	EMG-402	17638	57638
1/16	1/8	1/4	1-1/2	med	EMG-402-M	19137	59137
5/64	1/8	3/16	1-1/2	std	EMG-402-1/2	17796	57796
5/64	1/8	1/4	1-1/2	med	EMG-402-1/2-M	19138	59138
3/32	1/8	3/16	1-1/2	stub	EMGS-403	17797	57797
3/32	1/8	3/8	1-1/2	std	EMG-403	17639	57639
7/64	1/8	3/8	1-1/2	std	EMG-403-1/2	17798	57798
1/8	1/8	1/4	1-1/2	stub	EMGS-404	17799	57799
1/8	1/8	1/2	1-1/2	std	EMG-404	17640	57640
1/8	1/8	3/4	2-1/4	med/long	EMG-404-ML	19730	59730
1/8	1/8	3/4	3	long	EMG-404-L	17800	57800
1/8	1/8	1	3	xl	EMG-404-E	19566	59566
9/64	3/16	1/2	2	std	EMG-604-1/2	14049	54049
5/32	3/16	9/16	2	std	EMG-605	17641	57641
3/16	3/16	3/8	1-1/2	stub	EMGS-606	17801	57801
3/16	3/16	5/8	2	std	EMG-606	17642	57642
3/16	3/16	3/4	2-1/2	med/long	EMG-606-ML	19731	59731
3/16	3/16	3/4	3	long	EMG-606-L	17802	57802
3/16	3/16	1-1/8	3	xl	EMG-606-E	19567	59567
13/64	1/4	5/8	2-1/2	std	EMG-806-1/2	10586	50586
7/32	1/4	5/8	2-1/2	std	EMG-807	13744	53744
15/64	1/4	3/4	2-1/2	std	EMG-807-1/2	14039	54039
1/4	1/4	1/2	2	stub	EMGS-808	17803	57803
1/4	1/4	3/4	2-1/2	std	EMG-808	17644	57644
1/4	1/4	1-1/8	3	long	EMG-808-L	17804	57804
1/4	1/4	1-1/2	4	xl	EMG-808-E	19568	59568
17/64	5/16	3/4	2-1/2	std	EMG-1008-1/2	13745	53745
9/32	5/16	3/4	2-1/2	std	EMG-1009	13746	53746
19/64	5/16	13/16	2-1/2	std	EMG-1009-1/2	13952	53952
5/16	5/16	1/2	2	stub	EMGS-1010	17805	57805
5/16	5/16	13/16	2-1/2	std	EMG-1010	17646	57646
5/16	5/16	1-1/8	3	long	EMG-1010-L	17806	57806
5/16	5/16	1-5/8	4	xl	EMG-1010-E	19569	59569
11/32	3/8	7/8	2-1/2	std	EMG-1211	12890	52890
3/8	3/8	5/8	2	stub	EMGS-1212	17807	57807
3/8	3/8	1	2-1/2	std	EMG-1212	17648	57648
3/8	3/8	1-1/8	3	long	EMG-1212-L	17808	57808
3/8	3/8	1-3/4	4	xl	EMG-1212-E	19570	59570
13/32	7/16	1	2-3/4	std	EMG-1413	12807	52807
7/16	7/16	1	2-3/4	std	EMG-1414	17650	57650
7/16	7/16	2	4	long	EMG-1414-L	19571	59571
1/2	1/2	5/8	2-1/2	stub	EMGS-1616	17809	57809
1/2	1/2	1	3	std	EMG-1616	17652	57652
1/2	1/2	2	4	long	EMG-1616-L	17810	57810
1/2	1/2	3	6	xl	EMG-1616-E	19572	59572
9/16	9/16	1-1/4	3-1/2	std	EMG-1818	11299	51299
5/8	5/8	3/4	3	stub	EMGS-2020	17811	57811
5/8	5/8	1-1/4	3-1/2	std	EMG-2020	17654	57654
5/8	5/8	2-1/4	5	long	EMG-2020-L	17812	57812
5/8	5/8	3	6	xl	EMG-2020-E	19573	59573

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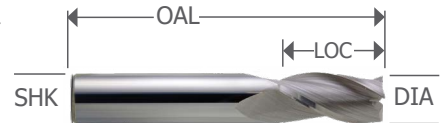
3 FLUTE • GENERAL PURPOSE END MILLS

SERIES: EMG



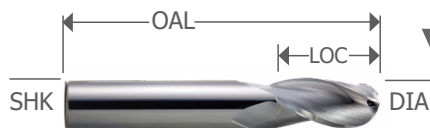
DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
11/16	3/4	1-3/8	4	std	EMG-2422	12795	52795
3/4	3/4	1-1/2	4	std	EMG-2424	17655	57655
3/4	3/4	2-1/4	5	long	EMG-2424-L	11189	51189
3/4	3/4	3	6	xl	EMG-2424-E	19574	59574
7/8	7/8	1-1/2	4	std	EMG-2828	14041	54041
1	1	1-1/2	4	std	EMG-3232	11191	51191

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SERIES: EMG-M_M_

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1mm	3mm	3mm	38mm	std	EMG-M3M1	16809	56809
1.5mm	3mm	6mm	38mm	std	EMG-M3M1.5	16810	56810
2mm	3mm	9mm	38mm	std	EMG-M3M2	16811	56811
2.5mm	3mm	12mm	38mm	std	EMG-M3M2.5	16812	56812
3mm	3mm	12mm	38mm	std	EMG-M3M3	16813	56813
3.5mm	4mm	12mm	51mm	std	EMG-M4M3.5	16814	56814
4mm	4mm	14mm	51mm	std	EMG-M4M4	16815	56815
4.5mm	5mm	14mm	51mm	std	EMG-M5M4.5	16816	56816
5mm	5mm	20mm	51mm	std	EMG-M5M5	16817	56817
6mm	6mm	20mm	63mm	std	EMG-M6M6	16818	56818
6mm	6mm	25mm	100mm	med	EMG-M6M6-ML	14787	54787
7mm	8mm	20mm	63mm	std	EMG-M8M7	16819	56819
8mm	8mm	20mm	63mm	std	EMG-M8M8	16820	56820
8mm	8mm	50mm	150mm	xl	EMG-M8M8-E	14788	54788
9mm	10mm	22mm	70mm	std	EMG-M10M9	16821	56821
10mm	10mm	25mm	70mm	std	EMG-M10M10	16822	56822
10mm	10mm	50mm	100mm	x long	EMG-M10M10-LL	14779	54779
10mm	10mm	75mm	150mm	xl	EMG-M10M10-E	14780	54780
12mm	12mm	25mm	76mm	std	EMG-M12M12	16823	56823
14mm	14mm	32mm	89mm	std	EMG-M14M14	16824	56824
14mm	14mm	50mm	100mm	med	EMG-M14M14-ML	14783	54783
16mm	16mm	32mm	89mm	std	EMG-M16M16	16825	56825
16mm	16mm	75mm	150mm	xl	EMG-M16M16-E	14784	54784
18mm	18mm	38mm	100mm	std	EMG-M18M18	16826	56826
18mm	18mm	50mm	150mm	x long	EMG-M18M18-LL	14786	54786
18mm	18mm	75mm	150mm	xl	EMG-M18M18-E	14785	54785
20mm	20mm	38mm	100mm	std	EMG-M20M20	16827	56827
22mm	22mm	38mm	100mm	std	EMG-M22M22	16828	56828
25mm	25mm	38mm	100mm	std	EMG-M25M25	16829	56829



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SERIES: EMG-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/64	1/8	3/64	1-1/2	std	EMG-400-1/2-B	19577	59577
1/32	1/8	1/16	1-1/2	stub	EMGS-401-B	17814	57814
1/32	1/8	3/32	1-1/2	std	EMG-401-B	17815	57815
3/64	1/8	3/32	1-1/2	stub	EMGS-401-1/2-B	17816	57816
3/64	1/8	1/8	1-1/2	std	EMG-401-1/2-B	17817	57817
1/16	1/8	1/8	1-1/2	stub	EMGS-402-B	17818	57818
1/16	1/8	3/16	1-1/2	std	EMG-402-B	17819	57819
5/64	1/8	3/16	1-1/2	std	EMG-402-1/2-B	17820	57820
3/32	1/8	3/16	1-1/2	stub	EMGS-403-B	17821	57821
3/32	1/8	3/8	1-1/2	std	EMG-403-B	17822	57822
7/64	1/8	3/8	1-1/2	std	EMG-403-1/2-B	17823	57823
1/8	1/8	1/4	1-1/2	stub	EMGS-404-B	17824	57824
1/8	1/8	1/2	1-1/2	std	EMG-404-B	17825	57825
1/8	1/8	3/4	2-1/4	med	EMG-404-MB	19557	59557
1/8	1/8	3/4	3	long	EMG-404-LB	17826	57826
1/8	1/8	1	3	xl	EMG-404-EB	19578	59578
9/64	3/16	1/2	2	std	EMG-604-1/2-B	10322	50322
5/32	3/16	9/16	2	std	EMG-605-B	17827	57827
11/64	3/16	9/16	2	std	EMG-605-1/2-B	10288	50288
3/16	3/16	5/16	1-1/2	stub	EMGS-606-B	17828	57828
3/16	3/16	5/8	2	std	EMG-606-B	17829	57829
3/16	3/16	3/4	2-1/2	med	EMG-606-MB	19558	59558
3/16	3/16	3/4	3	long	EMG-606-LB	17830	57830
3/16	3/16	1-1/8	3	xl	EMG-606-EB	19581	59581
13/64	1/4	5/8	2-1/2	std	EMG-806-1/2-B	10348	50348
7/32	1/4	5/8	2-1/2	std	EMG-807-B	14061	54061
15/64	1/4	3/4	2-1/2	std	EMG-807-1/2-B	19584	59584
1/4	1/4	1/2	2	stub	EMGS-808-B	17831	57831
1/4	1/4	3/4	2-1/2	std	EMG-808-B	17832	57832
1/4	1/4	1-1/8	3	long	EMG-808-LB	17833	57833
1/4	1/4	1-1/2	4	xl	EMG-808-EB	19585	59585
17/64	5/16	3/4	2-1/2	std	EMG-1008-1/2-B	19586	59586
9/32	5/16	3/4	2-1/2	std	EMG-1009-B	19587	59587
19/64	5/16	13/16	2-1/2	std	EMG-1009-1/2-B	19588	59588
5/16	5/16	1/2	2	stub	EMGS-1010-B	17834	57834
5/16	5/16	13/16	2-1/2	std	EMG-1010-B	17835	57835
5/16	5/16	1-1/8	3	long	EMG-1010-LB	17836	57836
5/16	5/16	1-5/8	4	xl	EMG-1010-EB	19589	59589
21/64	3/8	7/8	2-1/2	std	EMG-1210-1/2-B	19590	59590
11/32	3/8	7/8	2-1/2	std	EMG-1211-B	19591	59591
23/64	3/8	7/8	2-1/2	std	EMG-1211-1/2-B	19592	59592
3/8	3/8	5/8	2	stub	EMGS-1212-B	17837	57837
3/8	3/8	1	2-1/2	std	EMG-1212-B	17838	57838
3/8	3/8	1-1/8	3	long	EMG-1212-LB	17839	57839
3/8	3/8	1-3/4	4	xl	EMG-1212-EB	19593	59593
13/32	7/16	1	2-3/4	std	EMG-1413-B	19594	59594
27/64	7/16	1	2-3/4	std	EMG-1413-1/2-B	19595	59595
7/16	7/16	1	2-3/4	std	EMG-1414-B	17840	57840
7/16	7/16	2	4	long	EMG-1414-LB	19596	59596
29/64	1/2	1	3	std	EMG-1614-1/2-B	19597	59597

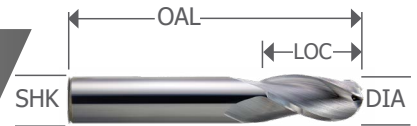
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GENERAL PURPOSE CARBIDE END MILL

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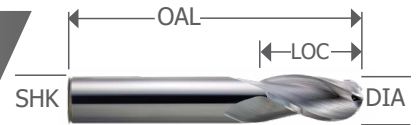
3 FLUTE • GENERAL PURPOSE BALL NOSE END MILLS

SERIES: EMG-__-B



DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
15/32	1/2	1	3	std	EMG-1615-B	19598	59598
31/64	1/2	1	3	std	EMG-1615-1/2-B	19599	59599
1/2	1/2	5/8	2-1/2	stub	EMGS-1616-B	17841	57841
1/2	1/2	1	3	std	EMG-1616-B	17842	57842
1/2	1/2	2	4	long	EMG-1616-LB	17843	57843
1/2	1/2	3	6	xl	EMG-1616-EB	19559	59559
9/16	9/16	1-1/8	3-1/2	std	EMG-1818-B	19560	59560
5/8	5/8	3/4	3	stub	EMGS-2020-B	17844	57844
5/8	5/8	1-1/4	3-1/2	std	EMG-2020-B	17845	57845
5/8	5/8	2-1/4	5	long	EMG-2020-LB	17846	57846
5/8	5/8	3	6	xl	EMG-2020-EB	19561	59561
11/16	3/4	1-3/8	4	std	EMG-2422-B	19562	59562
3/4	3/4	1-1/2	4	std	EMG-2424-B	17847	57847
3/4	3/4	2-1/4	5	long	EMG-2424-LB	19563	59563
3/4	3/4	3	6	xl	EMG-2424-EB	19564	59564
7/8	7/8	1-1/2	4	std	EMG-2828-B	19565	59565
1	1	1-1/2	4	std	EMG-3232-B	11397	51397

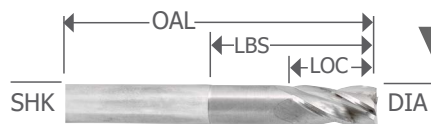
3 FLUTE • GENERAL PURPOSE BALL NOSE END MILLS



SERIES: EMG-M_M-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1mm	3mm	3mm	38mm	std	EMG-M3M1-B	16830	56830
1.5mm	3mm	6mm	38mm	std	EMG-M3M1.5-B	16831	56831
2mm	3mm	9mm	38mm	std	EMG-M3M2-B	16832	56832
2.5mm	3mm	12mm	38mm	std	EMG-M3M2.5-B	16833	56833
3mm	3mm	12mm	38mm	std	EMG-M3M3-B	16834	56834
3.5mm	4mm	12mm	51mm	std	EMG-M4M3.5-B	16835	56835
4mm	4mm	14mm	51mm	std	EMG-M4M4-B	16836	56836
4.5mm	5mm	14mm	51mm	std	EMG-M5M4.5-B	16837	56837
5mm	5mm	20mm	51mm	std	EMG-M5M5-B	16838	56838
6mm	6mm	20mm	63mm	std	EMG-M6M6-B	16839	56839
7mm	8mm	20mm	63mm	std	EMG-M8M7-B	16840	56840
8mm	8mm	20mm	63mm	std	EMG-M8M8-B	16841	56841
9mm	10mm	22mm	70mm	std	EMG-M10M9-B	16842	56842
10mm	10mm	25mm	70mm	std	EMG-M10M10-B	16843	56843
12mm	12mm	25mm	76mm	std	EMG-M12M12-B	16844	56844
14mm	14mm	32mm	89mm	std	EMG-M14M14-B	16845	56845
16mm	16mm	32mm	89mm	std	EMG-M16M16-B	16846	56846
18mm	18mm	38mm	100mm	std	EMG-M18M18-B	16847	56847
20mm	20mm	38mm	100mm	std	EMG-M20M20-B	16848	56848
22mm	22mm	38mm	100mm	std	EMG-M22M22-B	16849	56849
25mm	25mm	38mm	100mm	std	EMG-M25M25-B	16850	56850

GENERAL PURPOSE CARBIDE END MILL



4 FLUTE • GENERAL PURPOSE END MILLS



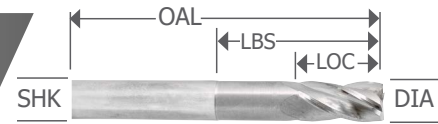
SERIES: CCMG

DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/64	1/8	3/64		1-1/2	std	CCMG-400-1/2	13386	53386
1/32	1/8	1/16		1-1/2	stub	CCMGS-401	16224	56224
1/32	1/8	3/32		1-1/2	std	CCMG-401	14121	54121
1/32	1/8	9/64		1-1/2	long	CCMG-401-L	19139	59139
1/32	1/8	0.150		2-1/2	long	CCMG-401-LF	12382	52382
3/64	1/8	3/32		1-1/2	stub	CCMGS-401-1/2	16225	56225
3/64	1/8	1/8		1-1/2	std	CCMG-401-1/2	14122	54122
3/64	1/8	3/16		1-1/2	long	CCMG-401-1/2-L	12365	52365
3/64	1/8	1/4		2-1/2	long	CCMG-401-1/2-LF	12385	52385
1/16	1/8	1/8		1-1/2	stub	CCMGS-402	16226	56226
1/16	1/8	3/16		1-1/2	std	CCMG-402	14124	54124
1/16	1/8	1/4		1-1/2	med	CCMG-402-M	11040	51040
1/16	1/8	3/8		1-1/2	long	CCMG-402-L	17860	57860
1/16	1/8	1/2		2-1/2	long	CCMG-402-LF	12388	52388
5/64	1/8	1/8		1-1/2	stub	CCMGS-402-1/2	16595	56595
5/64	1/8	3/16		1-1/2	std	CCMG-402-1/2	14126	54126
5/64	1/8	1/4		1-1/2	med	CCMG-402-1/2-M	11042	51042
5/64	1/8	3/8		1-1/2	med/long	CCMG-402-1/2-ML	19149	59149
5/64	1/8	1/2		1-1/2	long	CCMG-402-1/2-L	19141	59141
5/64	1/8	1/2		2-1/2	long	CCMG-402-1/2-LF	10540	50540
3/32	1/8	3/16		1-1/2	stub	CCMGS-403	16227	56227
3/32	1/8	3/8		1-1/2	std	CCMG-403	14128	54128
3/32	1/8	3/8	3/4	2	ext neck	CCMGN-403	19142	59142
3/32	1/8	1/2		1-1/2	med	CCMG-403-M	19150	59150
3/32	1/8	9/16		3	long	CCMG-403-L	16186	56186
3/32	1/8	0.600		2-1/2	long	CCMG-403-LF	12589	52589
7/64	1/8	7/32		1-1/2	stub	CCMGS-403-1/2	14025	54025
7/64	1/8	3/8		1-1/2	std	CCMG-403-1/2	14130	54130
7/64	1/8	3/4		2	long	CCMG-403-1/2-L	19143	59143
1/8	1/8	1/4		1-1/2	stub	CCMGS-404	16228	56228
1/8	1/8	1/2		1-1/2	std	CCMG-404	14132	54132
1/8	1/8	5/8		2	med	CCMG-404-M	11489	51489
1/8	1/8	5/8	1	2	ext neck	CCMGN-404	16731	56731
1/8	1/8	3/4		2-1/4	med/long	CCMG-404-ML	12745	52745
1/8	1/8	3/4		3	long	CCMG-404-L	16071	56071
1/8	1/8	1		3	xl	CCMG-404-E	16072	56072
9/64	3/16	9/32		2	stub	CCMGS-604-1/2	10965	50965
9/64	3/16	9/16		2	std	CCMG-604-1/2	14134	54134
5/32	3/16	5/16		1-1/2	stub	CCMGS-605	16229	56229
5/32	3/16	9/16		2	std	CCMG-605	14136	54136
5/32	3/16	3/4		3	long	CCMG-605-L	16187	56187
11/64	3/16	9/16		2	std	CCMG-605-1/2	15919	55919
3/16	3/16	3/8		1-1/2	stub	CCMGS-606	16230	56230
3/16	3/16	5/8		2	std	CCMG-606	14138	54138
3/16	3/16	3/4		2-1/2	med/long	CCMG-606-ML	12747	52747
3/16	3/16	3/4		3	long	CCMG-606-L	16073	56073
3/16	3/16	1	1-5/8	3	ext neck	CCMGN-606	16732	56732
3/16	3/16	1	2-5/8	4	ext neck	CCMGN-606-2	16733	56733
3/16	3/16	1		4	no neck	CCMG-606-NN	11922	51922
3/16	3/16	1-1/8		3	xl	CCMG-606-E	16074	56074

sizes continued on next page

4 FLUTE • GENERAL PURPOSE END MILLS

SERIES: CCMG



DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
13/64	1/4	5/8		2-1/2	std	CCMG-806-1/2	15920	55920
7/32	1/4	1/2		2	stub	CCMGS-807	16231	56231
7/32	1/4	5/8		2-1/2	std	CCMG-807	14140	54140
15/64	1/4	3/4		2-1/2	std	CCMG-807-1/2	15921	55921
1/4	1/4	1/2		2	stub	CCMGS-808	16232	56232
1/4	1/4	3/4		2-1/2	std	CCMG-808	14142	54142
1/4	1/4	1	2-1/4	4	ext neck	CCMGN-808	16734	56734
1/4	1/4	1-1/8		3	long	CCMG-808-L	14144	54144
1/4	1/4	1-1/2		4	xl	CCMG-808-E	14146	54146
1/4	1/4	1-1/2	4-1/4	6	ext neck	CCMGN-808-2	16735	56735
1/4	1/4	1-1/2	no neck	6	no neck	CCMG-808-NN	19144	59144
17/64	5/16	3/4		2-1/2	std	CCMG-1008-1/2	15922	55922
9/32	5/16	3/4		2-1/2	std	CCMG-1009	14148	54148
19/64	5/16	13/16		2-1/2	std	CCMG-1009-1/2	15923	55923
5/16	5/16	1/2		2	stub	CCMGS-1010	16233	56233
5/16	5/16	13/16		2-1/2	std	CCMG-1010	14150	54150
5/16	5/16	1	2-5/16	4	ext neck	CCMGN-1010	16736	56736
5/16	5/16	1-1/8		3	long	CCMG-1010-L	16075	56075
5/16	5/16	1-1/2	4-5/16	6	ext neck	CCMGN-1010-2	16737	56737
5/16	5/16	1-5/8		4	xl	CCMG-1010-E	16076	56076
21/64	3/8	7/8		2-1/2	std	CCMG-1210-1/2	16197	56197
11/32	3/8	7/8		2-1/2	std	CCMG-1211	15924	55924
23/64	3/8	7/8		2-1/2	std	CCMG-1211-1/2	16198	56198
3/8	3/8	5/8		2	stub	CCMGS-1212	16234	56234
3/8	3/8	1		2-1/2	std	CCMG-1212	14152	54152
3/8	3/8	1	2-3/8	4	ext neck	CCMGN-1212	16738	56738
3/8	3/8	1-1/8		3	long	CCMG-1212-L	14154	54154
3/8	3/8	1-1/2		6	xl	CCMG-1212-LL	11881	51881
3/8	3/8	1-1/2	4-3/8	6	ext neck	CCMGN-1212-2	16739	56739
3/8	3/8	1-1/2	no neck	6	no neck	CCMG-1212-NN	11940	51940
3/8	3/8	1-3/4		4	xl	CCMG-1212-E	14156	54156
3/8	3/8	2		4	xl	CCMG-1212-EL	19145	59145
3/8	3/8	3		6	xxl	CCMG-1212-EE	17735	57735
25/64	7/16	1		2-3/4	std	CCMG-1412-1/2	16199	56199
13/32	7/16	1		2-3/4	std	CCMG-1413	15925	55925
27/64	7/16	1		2-3/4	std	CCMG-1413-1/2	16200	56200
7/16	7/16	5/8		2-1/2	stub	CCMGS-1414	16235	56235
7/16	7/16	1		2-3/4	std	CCMG-1414	14158	54158
7/16	7/16	1	2-1/4	4	ext neck	CCMGN-1414	16740	56740
7/16	7/16	1-1/2	4-1/4	6	ext neck	CCMGN-1414-2	16741	56741
7/16	7/16	2		4	long	CCMG-1414-L	16077	56077
7/16	7/16	3		6	xl	CCMG-1414-E	16078	56078
29/64	1/2	1		3	std	CCMG-1614-1/2	16201	56201
15/32	1/2	1		3	std	CCMG-1615	15926	55926
31/64	1/2	1		3	std	CCMG-1615-1/2	16202	56202
1/2	1/2	5/8		2-1/2	stub	CCMGS-1616	16236	56236
1/2	1/2	1		3	std	CCMG-1616	14160	54160
1/2	1/2	1	2	4	ext neck	CCMGN-1616	16742	56742
1/2	1/2	1-1/4		3	med	CCMG-1616-M	16466	56466
1/2	1/2	1-1/2		4	med/long	CCMG-1616-ML	19146	59146

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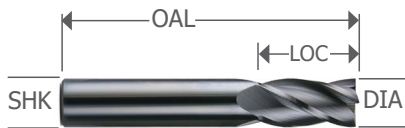
GENERAL PURPOSE CARBIDE END MILL

4 FLUTE • GENERAL PURPOSE END MILLS

SERIES: CCMG

DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/2	1/2	1-1/2	4	6	ext neck	CCMGN-1616-2	16743	56743
1/2	1/2	1-1/2	no neck	6	no neck	CCMG-1616-NN	11941	51941
1/2	1/2	2		4	long	CCMG-1616-L	14162	54162
1/2	1/2	1-1/2		6	xl	CCMG-1616-LL	11883	51883
1/2	1/2	3		6	xl	CCMG-1616-E	14164	54164
17/32	9/16	1-1/4		3-1/2	std	CCMG-1817	16785	56785
9/16	9/16	1/2		3-1/2	stub	CCMGS-1818	12731	52731
9/16	9/16	1-1/4		3-1/2	std	CCMG-1818	15927	55927
9/16	9/16	2	3-3/4	6	ext neck	CCMGN-1818	16744	56744
5/8	5/8	3/4		3	stub	CCMGS-2020	16237	56237
5/8	5/8	1-1/4		3-1/2	std	CCMG-2020	14166	54166
5/8	5/8	2-1/4		5	long	CCMG-2020-L	16079	56079
5/8	5/8	2		6	xl	CCMG-2020-LL	11885	51885
5/8	5/8	2	3-3/4	6	ext neck	CCMGN-2020	16746	56746
5/8	5/8	3		6	xl	CCMG-2020-E	16080	56080
11/16	3/4	1-3/8		4	std	CCMG-2422	15723	55723
3/4	3/4	1		3	stub	CCMGS-2424	16238	56238
3/4	3/4	1-1/2		4	std	CCMG-2424	14168	54168
3/4	3/4	2	3-1/2	6	ext neck	CCMGN-2424	16747	56747
3/4	3/4	2	no neck	6	no neck	CCMG-2424-NN	19147	59147
3/4	3/4	2-1/4		5	long	CCMG-2424-L	16081	56081
3/4	3/4	3		6	xl	CCMG-2424-E	14170	54170
3/4	3/4	4		7	xxl	CCMG-2424-EE	17736	57736
7/8	7/8	1-1/2		4	std	CCMG-2828	16203	56203
1	1	1-1/2		4	std	CCMG-3232	14172	54172
1	1	2	3-1/2	6	ext neck	CCMGN-3232	16748	56748
1	1	2	no neck	6	no neck	CCMG-3232-NN	19148	59148
1	1	2-1/4		5	long	CCMG-3232-L	12749	52749
1	1	3		6	xl	CCMG-3232-E	14174	54174
1	1	4		7	xxl	CCMG-3232-EE	16315	56315

4 FLUTE • GENERAL PURPOSE METRIC/INCH END MILLS



SERIES: CCMG-_M_

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
3mm	1/8	3/8	1-1/2	std	CCMG-4M3	15977	55977
4mm	3/16	1/2	2	std	CCMG-6M4	15978	55978
5mm	1/4	5/8	2-1/2	std	CCMG-8M5	15979	55979
6mm	1/4	5/8	2-1/2	std	CCMG-8M6	15980	55980
7mm	5/16	3/4	2-1/2	std	CCMG-10M7	15981	55981
8mm	3/8	7/8	2-1/2	std	CCMG-12M8	15982	55982
9mm	3/8	7/8	2-1/2	std	CCMG-12M9	15983	55983
10mm	7/16	1	2-3/4	std	CCMG-14M10	15984	55984
11mm	7/16	1	2-3/4	std	CCMG-14M11	15985	55985
12mm	1/2	1	3	std	CCMG-16M12	15986	55986

GENERAL PURPOSE CARBIDE END MILL

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4 FLUTE • GENERAL PURPOSE END MILLS



SERIES: CCMG-M_M_

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1mm	3mm	2mm	38mm	stub	CCMGS-M3M1	13747	53747
1mm	3mm	3mm	38mm	std	CCMG-M3M1	16933	56933
1.5mm	3mm	3mm	38mm	stub	CCMGS-M3M1.5	13957	53957
1.5mm	3mm	6mm	38mm	std	CCMG-M3M1.5	16934	56934
2mm	3mm	4mm	38mm	stub	CCMGS-M3M2	13981	53981
2mm	3mm	9mm	38mm	std	CCMG-M3M2	16000	56000
2.5mm	3mm	5mm	38mm	stub	CCMGS-M3M2.5	14053	54053
2.5mm	3mm	12mm	38mm	std	CCMG-M3M2.5	16001	56001
3mm	3mm	6mm	38mm	stub	CCMGS-M3M3	13982	53982
3mm	3mm	12mm	38mm	std	CCMG-M3M3	16002	56002
3mm	6mm	12mm	63mm	std	CCMG-M6M3	11693	51693
3mm	3mm	18mm	57mm	long	CCMG-M3M3-L	13637	53637
3mm	3mm	20mm	75mm	xl	CCMG-M3M3-E	14729	54729
3.5mm	4mm	7mm	51mm	stub	CCMGS-M4M3.5	14055	54055
3.5mm	4mm	12mm	51mm	std	CCMG-M4M3.5	16003	56003
4mm	4mm	8mm	51mm	stub	CCMGS-M4M4	13983	53983
4mm	4mm	14mm	51mm	std	CCMG-M4M4	16004	56004
4mm	6mm	14mm	63mm	std	CCMG-M6M4	11694	51694
4mm	4mm	20mm	63mm	long	CCMG-M4M4-L	13638	53638
4mm	4mm	20mm	75mm	x long	CCMG-M4M4-LL	14731	54731
4mm	4mm	25mm	75mm	xl	CCMG-M4M4-E	14732	54732
4.5mm	5mm	9mm	51mm	stub	CCMGS-M5M4.5	13709	53709
4.5mm	5mm	14mm	51mm	std	CCMG-M5M4.5	16005	56005
5mm	5mm	10mm	51mm	stub	CCMGS-M5M5	19747	59747
5mm	5mm	20mm	51mm	std	CCMG-M5M5	16006	56006
5mm	6mm	20mm	63mm	std	CCMG-M6M5	10889	50889
5mm	5mm	25mm	64mm	long	CCMG-M5M5-L	13986	53986
5mm	5mm	25mm	75mm	x long	CCMG-M5M5-LL	14735	54735
6mm	6mm	12mm	51mm	stub	CCMGS-M6M6	13748	53748
6mm	6mm	20mm	63mm	std	CCMG-M6M6	16007	56007
6mm	6mm	28mm	75mm	long	CCMG-M6M6-L	13639	53639
6mm	6mm	32mm	100mm	x long	CCMG-M6M6-LL	14741	54741
6mm	6mm	38mm	150mm	xl	CCMG-M6M6-E	14744	54744
7mm	8mm	12mm	51mm	stub	CCMGS-M8M7	14037	54037
7mm	8mm	20mm	63mm	std	CCMG-M8M7	16008	56008
8mm	8mm	12mm	51mm	stub	CCMGS-M8M8	19748	59748
8mm	8mm	20mm	63mm	std	CCMG-M8M8	16009	56009
8mm	8mm	32mm	75mm	long	CCMG-M8M8-L	13640	53640
8mm	8mm	41mm	100mm	x long	CCMG-M8M8-LL	14751	54751
9mm	10mm	14mm	51mm	stub	CCMGS-M10M9	19749	59749
9mm	10mm	22mm	70mm	std	CCMG-M10M9	16010	56010
10mm	10mm	14mm	51mm	stub	CCMGS-M10M10	11679	51679
10mm	10mm	25mm	70mm	std	CCMG-M10M10	16011	56011
10mm	10mm	38mm	76mm	med	CCMG-M10M10-M	13966	53966
10mm	10mm	40mm	100mm	long	CCMG-M10M10-L	13641	53641
11mm	12mm	25mm	76mm	std	CCMG-M12M11	13988	53988
12mm	12mm	16mm	64mm	stub	CCMGS-M12M12	13059	53059
12mm	12mm	25mm	76mm	std	CCMG-M12M12	16012	56012
12mm	12mm	50mm	100mm	long	CCMG-M12M12-L	13642	53642
12mm	12mm	75mm	150mm	xl	CCMG-M12M12-E	14768	54768

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GENERAL PURPOSE CARBIDE END MILL

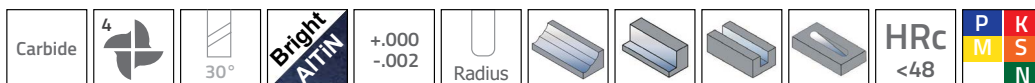
4 FLUTE • GENERAL PURPOSE END MILLS

SERIES: CCMG-M_M_

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
13mm	13mm	26mm	76mm	std	CCMG-M13M13	12762	52762
14mm	14mm	32mm	89mm	std	CCMG-M14M14	16795	56795
14mm	14mm	51mm	127mm	long	CCMG-M14M14-L	13749	53749
14mm	14mm	75mm	150mm	xl	CCMG-M14M14-E	14769	5476914768
16mm	16mm	32mm	89mm	std	CCMG-M16M16	16796	56796
16mm	16mm	57mm	127mm	long	CCMG-M16M16-L	19754	59754
16mm	16mm	50mm	150mm	x long	CCMG-M16M16-LL	14776	54776
16mm	16mm	75mm	150mm	xl	CCMG-M16M16-E	14777	54777
18mm	18mm	38mm	100mm	std	CCMG-M18M18	16797	56797
18mm	18mm	57mm	127mm	long	CCMG-M18M18-L	14869	54869
20mm	20mm	38mm	100mm	std	CCMG-M20M20	16798	56798
20mm	20mm	57mm	127mm	long	CCMG-M20M20-L	13990	53990
20mm	20mm	75mm	150mm	xl	CCMG-M20M20-E	14781	54781
22mm	22mm	38mm	100mm	std	CCMG-M22M22	16799	56799
25mm	25mm	38mm	100mm	std	CCMG-M25M25	16800	56800



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SERIES: CCMG-__-R__

DIA	SHK	LOC	OAL	RADIUS	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
3/32	1/8	3/8	1-1/2	0.010	std	CCMG-403-R010	11061	51061
3/32	1/8	3/8	1-1/2	0.015	std	CCMG-403-R015	11063	51063
3/32	1/8	3/8	1-1/2	0.020	std	CCMG-403-R020	11065	51065
1/8	1/8	1/4	1-1/2	0.010	stub	CCMGS-404-R010	16904	56904
1/8	1/8	1/2	1-1/2	0.005	std	CCMG-404-R005	H1906	H1907
1/8	1/8	1/2	1-1/2	0.010	std	CCMG-404-R010	11067	51067
1/8	1/8	1/2	1-1/2	0.015	std	CCMG-404-R015	15422	55422
1/8	1/8	1/2	1-1/2	0.020	std	CCMG-404-R020	11069	51069
1/8	1/8	1/2	1-1/2	0.030	std	CCMG-404-R030	11071	51071
5/32	3/16	5/16	2	0.010	stub	CCMGS-605-R010	16905	56905
5/32	3/16	5/16	2	0.010	std	CCMG-605-R010	H2076	H1910
5/32	3/16	5/16	2	0.015	std	CCMG-605-R015	H1911	H1912
5/32	3/16	5/16	2	0.030	std	CCMG-605-R030	H1913	H1914
3/16	3/16	5/16	2	0.010	stub	CCMGS-606-R010	16906	56906
3/16	3/16	5/8	2	0.010	std	CCMG-606-R010	11073	51073
3/16	3/16	5/8	2	0.015	std	CCMG-606-R015	11075	51075
3/16	3/16	5/8	2	0.020	std	CCMG-606-R020	15424	55424
3/16	3/16	5/8	2	0.030	std	CCMG-606-R030	15426	55426
3/16	3/16	5/8	2	0.045	std	CCMG-606-R045	H1915	H1916
7/32	1/4	3/8	2	0.020	stub	CCMGS-807-R020	16907	56907
1/4	1/4	1/2	2	0.020	stub	CCMGS-808-R020	16463	56463
1/4	1/4	3/4	2-1/2	0.010	std	CCMG-808-R010	H1918	H1919
1/4	1/4	3/4	2-1/2	0.015	std	CCMG-808-R015	15360	55360
1/4	1/4	3/4	2-1/2	0.020	std	CCMG-808-R020	15362	55362
1/4	1/4	3/4	2-1/2	0.030	std	CCMG-808-R030	15364	55364
1/4	1/4	3/4	2-1/2	0.045	std	CCMG-808-R045	15366	55366
1/4	1/4	3/4	2-1/2	0.060	std	CCMG-808-R060	H1921	H1922

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SERIES: CCMG-__-R__

DIA	SHK	LOC	OAL	RADIUS	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
5/16	5/16	7/16	2	0.020	stub	CCMGS-1010-R020	16909	56909
5/16	5/16	1/2	2	0.030	stub	CCMGS-1010-R030	16338	56338
5/16	5/16	13/16	2-1/2	0.015	std	CCMG-1010-R015	11077	51077
5/16	5/16	13/16	2-1/2	0.020	std	CCMG-1010-R020	15368	55368
5/16	5/16	13/16	2-1/2	0.030	std	CCMG-1010-R030	15370	55370
5/16	5/16	13/16	2-1/2	0.045	std	CCMG-1010-R045	15372	55372
5/16	5/16	13/16	2-1/2	0.060	std	CCMG-1010-R060	11079	51079
3/8	3/8	1/2	2	0.020	stub	CCMGS-1212-R020	16910	56910
3/8	3/8	1	2-1/2	0.015	std	CCMG-1212-R015	11081	51081
3/8	3/8	1	2-1/2	0.020	std	CCMG-1212-R020	15374	55374
3/8	3/8	1	2-1/2	0.030	std	CCMG-1212-R030	15376	55376
3/8	3/8	1	2-1/2	0.045	std	CCMG-1212-R045	15378	55378
3/8	3/8	1	2-1/2	0.060	std	CCMG-1212-R060	11083	51083
7/16	7/16	9/16	2-1/2	0.020	stub	CCMGS-1414-R020	16911	56911
1/2	1/2	5/8	2-1/2	0.030	stub	CCMGS-1616-R030	16912	56912
1/2	1/2	1	3	0.015	std	CCMG-1616-R015	11085	51085
1/2	1/2	1	3	0.020	std	CCMG-1616-R020	15380	55380
1/2	1/2	1	3	0.030	std	CCMG-1616-R030	15382	55382
1/2	1/2	1	3	0.045	std	CCMG-1616-R045	15384	55384
1/2	1/2	1	3	0.060	std	CCMG-1616-R060	15386	55386
1/2	1/2	1	3	0.090	std	CCMG-1616-R090	11087	51087
1/2	1/2	1	3	0.125	std	CCMG-1616-R125	11089	51089
5/8	5/8	3/4	3	0.030	stub	CCMGS-2020-R030	16913	56913
5/8	5/8	1-1/4	3-1/2	0.015	std	CCMG-2020-R015	11091	51091
5/8	5/8	1-1/4	3-1/2	0.020	std	CCMG-2020-R020	15388	55388
5/8	5/8	1-1/4	3-1/2	0.030	std	CCMG-2020-R030	15390	55390
5/8	5/8	1-1/4	3-1/2	0.045	std	CCMG-2020-R045	15392	55392
5/8	5/8	1-1/4	3-1/2	0.060	std	CCMG-2020-R060	15394	55394
5/8	5/8	1-1/4	3-1/2	0.090	std	CCMG-2020-R090	15396	55396
3/4	3/4	1	3	0.030	stub	CCMGS-2424-R030	16914	56914
3/4	3/4	1-1/2	4	0.015	std	CCMG-2424-R015	11093	51093
3/4	3/4	1-1/2	4	0.020	std	CCMG-2424-R020	15398	55398
3/4	3/4	1-1/2	4	0.030	std	CCMG-2424-R030	15400	55400
3/4	3/4	1-1/2	4	0.045	std	CCMG-2424-R045	15402	55402
3/4	3/4	1-1/2	4	0.060	std	CCMG-2424-R060	15404	55404
3/4	3/4	1-1/2	4	0.090	std	CCMG-2424-R090	15406	55406
3/4	3/4	1-1/2	4	0.125	std	CCMG-2424-R125	15408	55408
1	1	1-1/2	4	0.015	std	CCMG-3232-R015	11095	51095
1	1	1-1/2	4	0.020	std	CCMG-3232-R020	15410	55410
1	1	1-1/2	4	0.030	std	CCMG-3232-R030	15412	55412
1	1	1-1/2	4	0.045	std	CCMG-3232-R045	15414	55414
1	1	1-1/2	4	0.060	std	CCMG-3232-R060	15416	55416
1	1	1-1/2	4	0.090	std	CCMG-3232-R090	15418	55418
1	1	1-1/2	4	0.125	std	CCMG-3232-R125	15420	55420

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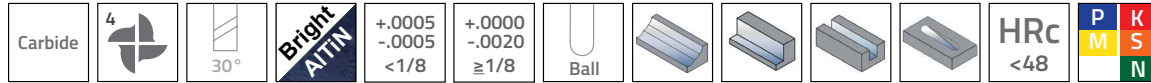
SERIES: CCMG-M_M_-R_ _

DIA	SHK	LOC	OAL	RADIUS	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
2mm	3mm	9mm	38mm	0.4mm	std	CCMG-M3M2-R0.4	16870	56870
2.5mm	3mm	12mm	38mm	0.4mm	std	CCMG-M3M2.5-R0.4	16871	56871
3mm	3mm	12mm	38mm	0.2mm	std	CCMG-M3M3-R0.2	14728	54728
3mm	3mm	12mm	38mm	0.4mm	std	CCMG-M3M3-R0.4	16872	56872
3.5mm	4mm	12mm	50mm	0.4mm	std	CCMG-M4M3.5-R0.4	16873	56873
4mm	4mm	14mm	50mm	0.4mm	std	CCMG-M4M4-R0.4	16874	56874
4.5mm	5mm	14mm	50mm	0.4mm	std	CCMG-M5M4.5-R0.4	16875	56875
5mm	5mm	16mm	50mm	0.3mm	std	CCMG-M5M5-R0.3	14733	54733
5mm	5mm	16mm	50mm	0.4mm	std	CCMG-M5M5-R0.4	16876	56876
5mm	5mm	16mm	65mm	0.5mm	med	CCMG-M5M5-MR0.5	14734	54734
6mm	6mm	20mm	63mm	0.5mm	std	CCMG-M6M6-R0.5	16877	56877
6mm	6mm	20mm	63mm	0.8mm	std	CCMG-M6M6-R0.8	14736	54736
6mm	6mm	20mm	63mm	1.0mm	std	CCMG-M6M6-R1.0	14737	54737
6mm	6mm	20mm	63mm	1.5mm	std	CCMG-M6M6-R1.5	14738	54738
6mm	6mm	20mm	63mm	2.0mm	std	CCMG-M6M6-R2.0	14739	54739
7mm	8mm	22mm	63mm	0.5mm	std	CCMG-M8M7-R0.5	16878	56878
8mm	8mm	22mm	63mm	0.5mm	std	CCMG-M8M8-R0.5	16879	56879
8mm	8mm	22mm	63mm	0.8mm	std	CCMG-M8M8-R0.8	14745	54745
8mm	8mm	22mm	63mm	1.0mm	std	CCMG-M8M8-R1.0	14746	54746
8mm	8mm	22mm	63mm	1.5mm	std	CCMG-M8M8-R1.5	14747	54747
8mm	8mm	22mm	63mm	2.0mm	std	CCMG-M8M8-R2.0	14748	54748
8mm	8mm	22mm	63mm	2.5mm	std	CCMG-M8M8-R2.5	14749	54749
8mm	8mm	22mm	63mm	3.0mm	std	CCMG-M8M8-R3.0	14750	54750
9mm	10mm	22mm	70mm	0.7mm	std	CCMG-M10M9-R0.7	16880	56880
10mm	10mm	25mm	70mm	0.5mm	std	CCMG-M10M10-R0.5	14753	54753
10mm	10mm	25mm	70mm	0.7mm	std	CCMG-M10M10-R0.7	16881	56881
10mm	10mm	25mm	70mm	0.8mm	std	CCMG-M10M10-R0.8	14759	54759
10mm	10mm	25mm	70mm	1.0mm	std	CCMG-M10M10-R1.0	14754	54754
10mm	10mm	25mm	70mm	1.5mm	std	CCMG-M10M10-R1.5	14755	54755
10mm	10mm	25mm	70mm	2.0mm	std	CCMG-M10M10-R2.0	14756	54756
10mm	10mm	25mm	70mm	2.5mm	std	CCMG-M10M10-R2.5	14757	54757
10mm	10mm	25mm	70mm	3.0mm	std	CCMG-M10M10-R3.0	14758	54758
12mm	12mm	25mm	76mm	0.5mm	std	CCMG-M12M12-R0.5	14762	54762
12mm	12mm	25mm	76mm	0.7mm	std	CCMG-M12M12-R0.7	16882	56882
12mm	12mm	25mm	76mm	1.0mm	std	CCMG-M12M12-R1.0	14763	54763
12mm	12mm	25mm	76mm	1.5mm	std	CCMG-M12M12-R1.5	14764	54764
12mm	12mm	25mm	76mm	2.0mm	std	CCMG-M12M12-R2.0	14765	54765
12mm	12mm	25mm	76mm	2.5mm	std	CCMG-M12M12-R2.5	14766	54766
12mm	12mm	25mm	76mm	3.0mm	std	CCMG-M12M12-R3.0	14767	54767
14mm	14mm	32mm	89mm	0.8mm	std	CCMG-M14M14-R0.8	16883	56883
16mm	16mm	38mm	89mm	0.5mm	std	CCMG-M16M16-R0.5	14771	54771
16mm	16mm	38mm	89mm	0.8mm	std	CCMG-M16M16-R0.8	16884	56884
16mm	16mm	38mm	89mm	1.0mm	std	CCMG-M16M16-R1.0	14772	54772
16mm	16mm	38mm	89mm	2.0mm	std	CCMG-M16M16-R2.0	14773	54773
16mm	16mm	38mm	89mm	2.5mm	std	CCMG-M16M16-R2.5	14770	54770
16mm	16mm	38mm	89mm	3.0mm	std	CCMG-M16M16-R3.0	14774	54774
16mm	16mm	38mm	89mm	4.0mm	std	CCMG-M16M16-R4.0	14775	54775
20mm	20mm	38mm	100mm	1.0mm	std	CCMG-M20M20-R1.0	16886	56886
20mm	20mm	38mm	100mm	2.0mm	std	CCMG-M20M20-R2.0	14778	54778

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SERIES: CCMG-__-B

DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/64	1/8	3/64		1-1/2	std	CCMG-400-1/2-B	13488	53488
1/32	1/8	1/16		1-1/2	stub	CCMGS-401-B	16239	56239
1/32	1/8	3/32		1-1/2	std	CCMG-401-B	15928	55928
1/32	1/8	0.150		2-1/2	long	CCMG-401-LF-B	12395	52395
3/64	1/8	3/32		1-1/2	stub	CCMGS-401-1/2-B	16240	56240
3/64	1/8	1/8		1-1/2	std	CCMG-401-1/2-B	15929	55929
3/64	1/8	1/4		2-1/2	long	CCMG-401-1/2-LF-B	12398	52398
1/16	1/8	1/8		1-1/2	stub	CCMGS-402-B	16241	56241
1/16	1/8	3/16		1-1/2	std	CCMG-402-B	15930	55930
1/16	1/8	1/4		1-1/2	med	CCMG-402-MB	11205	51205
1/16	1/8	3/8		1-1/2	long	CCMG-402-LB	19528	59528
1/16	1/8	1/2		2-1/2	long	CCMG-402-LF-B	12401	52401
5/64	1/8	3/16		1-1/2	std	CCMG-402-1/2-B	15931	55931
5/64	1/8	1/2		2-1/2	long	CCMG-402-1/2-LF-B	13023	53023
3/32	1/8	3/16		1-1/2	stub	CCMGS-403-B	16242	56242
3/32	1/8	3/8		1-1/2	std	CCMG-403-B	15932	55932
3/32	1/8	1/2		2	med	CCMG-403-MB	19529	59529
3/32	1/8	0.600		2-1/2	long	CCMG-403-LF-B	12595	52595
7/64	1/8	7/32		1-1/2	stub	CCMGS-403-1/2-B	13985	53985
7/64	1/8	3/8		1-1/2	std	CCMG-403-1/2-B	15933	55933
1/8	1/8	1/4		1-1/2	stub	CCMGS-404-B	16243	56243
1/8	1/8	1/2		1-1/2	std	CCMG-404-B	14176	54176
1/8	1/8	5/8	1	2	ext neck	CCMGN-404-B	16767	56767
1/8	1/8	3/4		2-1/4	med	CCMG-404-MB	10997	50997
1/8	1/8	3/4		3	long	CCMG-404-LB	16188	56188
1/8	1/8	1		3	xl	CCMG-404-EB	16254	56254
9/64	3/16	9/32		1-1/2	stub	CCMGS-604-1/2-B	10970	50970
9/64	3/16	9/16		2	std	CCMG-604-1/2-B	16204	56204
5/32	3/16	5/16		1-1/2	stub	CCMGS-605-B	16244	56244
5/32	3/16	9/16		2	std	CCMG-605-B	15852	55852
11/64	3/16	9/16		2	std	CCMG-605-1/2-B	16205	56205
3/16	3/16	3/8		1-1/2	stub	CCMGS-606-B	16245	56245
3/16	3/16	5/8		2	std	CCMG-606-B	14178	54178
3/16	3/16	3/4		2-1/2	med	CCMG-606-MB	19556	59556
3/16	3/16	1	1-5/8	3	ext neck	CCMGN-606-B	16768	56768
3/16	3/16	3/4		3	long	CCMG-606-LB	16189	56189
3/16	3/16	1	2-5/8	4	ext neck	CCMGN-606-2B	16769	56769
3/16	3/16	1-1/8		3	xl	CCMG-606-EB	16255	56255
13/64	1/4	5/8		2-1/2	std	CCMG-806-1/2-B	16206	56206
7/32	1/4	1/2		2	stub	CCMGS-807-B	16246	56246
7/32	1/4	5/8		2-1/2	std	CCMG-807-B	15934	55934
15/64	1/4	3/4		2-1/2	std	CCMG-807-1/2-B	16207	56207
1/4	1/4	1/2		2	stub	CCMGS-808-B	16247	56247
1/4	1/4	3/4		2-1/2	std	CCMG-808-B	14180	54180
1/4	1/4	1	2-1/4	4	ext neck	CCMGN-808-B	16770	56770
1/4	1/4	1-1/8		3	long	CCMG-808-LB	16190	56190
1/4	1/4	1-1/2		4	xl	CCMG-808-EB	16256	56256
1/4	1/4	1-1/2	4-1/4	6	ext neck	CCMGN-808-2B	16771	56771
17/64	5/16	3/4		2-1/2	std	CCMG-1008-1/2-B	16208	56208

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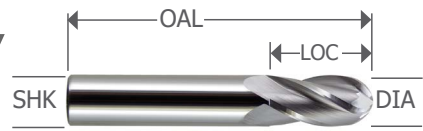
GENERAL PURPOSE CARBIDE END MILL

4 FLUTE • BALL NOSE END MILLS

SERIES: CCMG-__-B

DIA	SHK	LOC	LBS	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
9/32	5/16	3/4		2-1/2	std	CCMG-1009-B	15935	55935
19/64	5/16	13/16		2-1/2	std	CCMG-1009-1/2-B	16209	56209
5/16	5/16	1/2		2	stub	CCMGS-1010-B	16248	56248
5/16	5/16	13/16		2-1/2	std	CCMG-1010-B	14182	54182
5/16	5/16	1	2-5/16	4	ext neck	CCMGN-1010-B	16772	56772
5/16	5/16	1-1/8		3	long	CCMG-1010-LB	16191	56191
5/16	5/16	1-1/2	4-5/16	6	ext neck	CCMGN-1010-2B	16773	56773
5/16	5/16	1-5/8		4	xl	CCMG-1010-EB	16257	56257
21/64	3/8	7/8		2-1/2	std	CCMG-1210-1/2-B	16210	56210
11/32	3/8	7/8		2-1/2	std	CCMG-1211-B	16211	56211
23/64	3/8	7/8		2-1/2	std	CCMG-1211-1/2-B	16212	56212
3/8	3/8	5/8		2	stub	CCMGS-1212-B	16249	56249
3/8	3/8	1		2-1/2	std	CCMG-1212-B	14184	54184
3/8	3/8	1	2-3/8	4	ext neck	CCMGN-1212-B	16774	56774
3/8	3/8	1-1/8		3	long	CCMG-1212-LB	16192	56192
3/8	3/8	1-1/2	4-3/8	6	ext neck	CCMGN-1212-2B	16775	56775
3/8	3/8	1-3/4		4	xl	CCMG-1212-EB	16258	56258
25/64	7/16	1		2-3/4	std	CCMG-1412-1/2-B	16213	56213
13/32	7/16	1		2-3/4	std	CCMG-1413-B	16214	56214
27/64	7/16	1		2-3/4	std	CCMG-1413-1/2-B	16215	56215
7/16	7/16	5/8		2-1/2	stub	CCMGS-1414-B	16250	56250
7/16	7/16	1		2-3/4	std	CCMG-1414-B	15936	55936
7/16	7/16	1	2-1/4	4	ext neck	CCMGN-1414-B	16776	56776
7/16	7/16	1-1/2	4-1/4	6	ext neck	CCMGN-1414-2B	16777	56777
7/16	7/16	2		4	long	CCMG-1414-LB	16193	56193
7/16	7/16	3		6	xl	CCMG-1414-EB	16259	56259
29/64	1/2	1		3	std	CCMG-1614-1/2-B	16216	56216
15/32	1/2	1		3	std	CCMG-1615-B	16217	56217
31/64	1/2	1		3	std	CCMG-1615-1/2-B	16218	56218
1/2	1/2	5/8		2-1/2	stub	CCMGS-1616-B	16251	56251
1/2	1/2	1		3	std	CCMG-1616-B	14186	54186
1/2	1/2	1	2	4	ext neck	CCMGN-1616-B	16778	56778
1/2	1/2	1-1/2		4	med	CCMG-1616-MB	11078	51078
1/2	1/2	1-1/2	4	6	ext neck	CCMGN-1616-2B	16779	56779
1/2	1/2	2		4	long	CCMG-1616-LB	16194	56194
1/2	1/2	3		6	xl	CCMG-1616-EB	16260	56260
9/16	9/16	1-1/4		3-1/2	std	CCMG-1818-B	16219	56219
9/16	9/16	2	3-3/4	6	ext neck	CCMGN-1818-B	16780	56780
5/8	5/8	3/4		3	stub	CCMGS-2020-B	16252	56252
5/8	5/8	1-1/4		3-1/2	std	CCMG-2020-B	16220	56220
5/8	5/8	2	3-3/4	6	ext neck	CCMGN-2020-B	16782	56782
5/8	5/8	2-1/4		5	long	CCMG-2020-LB	16195	56195
5/8	5/8	3		6	xl	CCMG-2020-EB	16261	56261
11/16	3/4	1-3/8		4	std	CCMG-2422-B	19576	59576
3/4	3/4	1		3	stub	CCMGS-2424-B	16253	56253
3/4	3/4	1-1/2		4	std	CCMG-2424-B	16221	56221
3/4	3/4	2	3-1/2	6	ext neck	CCMGN-2424-B	16783	56783
3/4	3/4	2-1/4		5	long	CCMG-2424-LB	16196	56196
3/4	3/4	3		6	xl	CCMG-2424-EB	16262	56262
7/8	7/8	1-1/2		4	std	CCMG-2828-B	16222	56222
1	1	1-1/2		4	std	CCMG-3232-B	16223	56223
1	1	2	3-1/2	6	ext neck	CCMGN-3232-B	16784	56784
1	1	3		6	xl	CCMG-3232-EB	16263	56263

4 FLUTE • BALL NOSE END MILLS



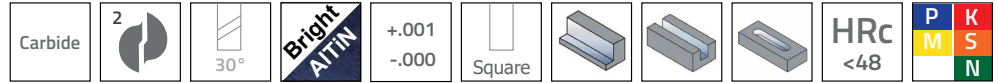
SERIES: CCMG-M_M_-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1mm	3mm	2mm	38mm	stub	CCMGS-M3M1-B	19546	59546
1mm	3mm	3mm	38mm	std	CCMG-M3M1-B	16801	56801
1.5mm	3mm	3mm	38mm	stub	CCMGS-M3M1.5-B	10804	50804
1.5mm	3mm	6mm	38mm	std	CCMG-M3M1.5-B	16802	56802
2mm	3mm	4mm	38mm	stub	CCMGS-M3M2-B	19547	59547
2mm	3mm	9mm	38mm	std	CCMG-M3M2-B	16572	56572
2.5mm	3mm	5mm	38mm	stub	CCMGS-M3M2.5-B	19548	59548
2.5mm	3mm	12mm	38mm	std	CCMG-M3M2.5-B	16573	56573
3mm	3mm	6mm	38mm	stub	CCMGS-M3M3-B	11211	51211
3mm	3mm	12mm	38mm	std	CCMG-M3M3-B	16574	56574
3mm	3mm	18mm	57mm	long	CCMG-M3M3-LB	13643	53643
3.5mm	4mm	7mm	51mm	stub	CCMGS-M4M3.5-B	19550	59550
3.5mm	4mm	12mm	51mm	std	CCMG-M4M3.5-B	16575	56575
4mm	4mm	8mm	51mm	stub	CCMGS-M4M4-B	19551	59551
4mm	4mm	14mm	51mm	std	CCMG-M4M4-B	16576	56576
4mm	4mm	20mm	63mm	long	CCMG-M4M4-LB	13644	53644
4.5mm	5mm	14mm	51mm	std	CCMG-M5M4.5-B	16577	56577
5mm	5mm	10mm	51mm	stub	CCMGS-M5M5-B	19552	59552
5mm	5mm	20mm	51mm	std	CCMG-M5M5-B	16578	56578
5mm	5mm	25mm	64mm	long	CCMG-M5M5-LB	14029	54029
6mm	6mm	12mm	51mm	stub	CCMGS-M6M6-B	19727	59727
6mm	6mm	20mm	63mm	std	CCMG-M6M6-B	16579	56579
6mm	6mm	28mm	75mm	long	CCMG-M6M6-LB	13645	53645
6mm	6mm	32mm	100mm	x long	CCMG-M6M6-LLB	14743	54743
7mm	8mm	12mm	51mm	stub	CCMGS-M8M7-B	19728	59728
7mm	8mm	20mm	63mm	std	CCMG-M8M7-B	16580	56580
8mm	8mm	12mm	51mm	stub	CCMGS-M8M8-B	19729	59729
8mm	8mm	20mm	63mm	std	CCMG-M8M8-B	16581	56581
8mm	8mm	32mm	75mm	long	CCMG-M8M8-LB	13646	53646
8mm	8mm	41mm	100mm	x long	CCMG-M8M8-LLB	14752	54752
9mm	10mm	22mm	70mm	std	CCMG-M10M9-B	16582	56582
10mm	10mm	25mm	70mm	std	CCMG-M10M10-B	16583	56583
10mm	10mm	29mm	76mm	med	CCMG-M10M10-MB	10304	50304
10mm	10mm	40mm	100mm	long	CCMG-M10M10-LB	13647	53647
10mm	10mm	50mm	100mm	x long	CCMG-M10M10-LLB	14760	54760
10mm	10mm	75mm	150mm	xl	CCMG-M10M10-EB	14761	54761
11mm	12mm	25mm	75mm	std	CCMG-M12M11-B	10286	50286
12mm	12mm	25mm	76mm	std	CCMG-M12M12-B	16584	56584
12mm	12mm	50mm	100mm	long	CCMG-M12M12-LB	13648	53648
14mm	14mm	32mm	89mm	std	CCMG-M14M14-B	16585	56585
16mm	16mm	32mm	89mm	std	CCMG-M16M16-B	16586	56586
16mm	16mm	57mm	127mm	long	CCMG-M16M16-LB	19762	59762
18mm	18mm	38mm	100mm	std	CCMG-M18M18-B	16587	56587
18mm	18mm	57mm	127mm	long	CCMG-M18M18-LB	19763	59763
20mm	20mm	38mm	100mm	std	CCMG-M20M20-B	16588	56588
20mm	20mm	57mm	127mm	long	CCMG-M20M20-LB	13962	53962
22mm	22mm	38mm	100mm	std	CCMG-M22M22-B	16803	56803
25mm	25mm	38mm	100mm	std	CCMG-M25M25-B	16804	56804

GENERAL PURPOSE CARBIDE END MILL

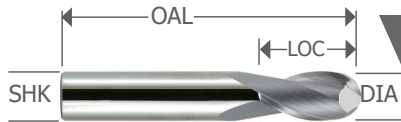


2 FLUTE • NC TOLERANCE END MILLS

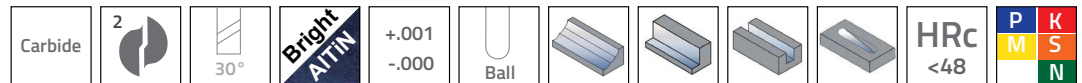


SERIES: AMG-__-NC

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/16	1/8	3/16	1-1/2	std	AMG-402-NC	16968	56968
3/32	1/8	3/8	1-1/2	std	AMG-403-NC	16969	56969
1/8	1/8	1/2	1-1/2	std	AMG-404-NC	16970	56970
5/32	3/16	9/16	2	std	AMG-605-NC	16971	56971
3/16	3/16	5/8	2	std	AMG-606-NC	16972	56972
7/32	1/4	5/8	2-1/2	std	AMG-807-NC	16973	56973
1/4	1/4	3/4	2-1/2	std	AMG-808-NC	16974	56974
9/32	5/16	3/4	2-1/2	std	AMG-1009-NC	16975	56975
5/16	5/16	13/16	2-1/2	std	AMG-1010-NC	16976	56976
3/8	3/8	1	2-1/2	std	AMG-1212-NC	16977	56977
7/16	7/16	1	2-3/4	std	AMG-1414-NC	16978	56978
1/2	1/2	1	3	std	AMG-1616-NC	16979	56979
5/8	5/8	1-1/4	3-1/2	std	AMG-2020-NC	16980	56980
3/4	3/4	1-1/2	4	std	AMG-2424-NC	16981	56981
1	1	1-1/2	4	std	AMG-3232-NC	16982	56982



2 FLUTE • NC TOLERANCE BALL NOSE END MILLS



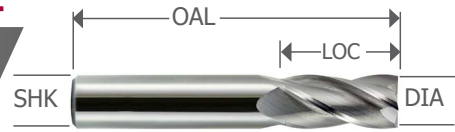
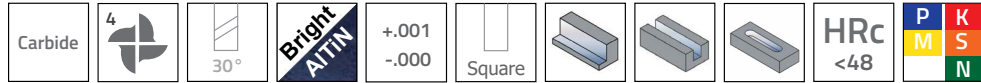
SERIES: AMG-__-NCB

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/16	1/8	3/16	1-1/2	std	AMG-402-NCB	16938	56938
3/32	1/8	3/8	1-1/2	std	AMG-403-NCB	16939	56939
1/8	1/8	1/2	1-1/2	std	AMG-404-NCB	16940	56940
5/32	3/16	9/16	2	std	AMG-605-NCB	16941	56941
3/16	3/16	5/8	2	std	AMG-606-NCB	16942	56942
7/32	1/4	5/8	2-1/2	std	AMG-807-NCB	16943	56943
1/4	1/4	3/4	2-1/2	std	AMG-808-NCB	16944	56944
9/32	5/16	3/4	2-1/2	std	AMG-1009-NCB	16945	56945
5/16	5/16	13/16	2-1/2	std	AMG-1010-NCB	16946	56946
3/8	3/8	1	2-1/2	std	AMG-1212-NCB	16947	56947
7/16	7/16	1	2-3/4	std	AMG-1414-NCB	16948	56948
1/2	1/2	1	3	std	AMG-1616-NCB	16949	56949
5/8	5/8	1-1/4	3-1/2	std	AMG-2020-NCB	16950	56950
3/4	3/4	1-1/2	4	std	AMG-2424-NCB	16951	56951
1	1	1-1/2	4	std	AMG-3232-NCB	16952	56952

GENERAL PURPOSE CARBIDE END MILL

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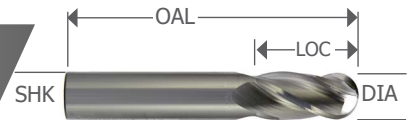
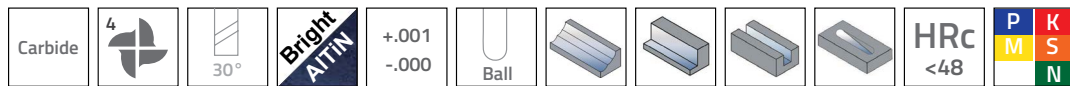
4 FLUTE • NC TOLERANCE END MILLS



SERIES: CCMG-__-NC

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/16	1/8	3/16	1-1/2	std	CCMG-402-NC	16983	56983
3/32	1/8	3/8	1-1/2	std	CCMG-403-NC	16984	56984
1/8	1/8	1/2	1-1/2	std	CCMG-404-NC	16985	56985
5/32	3/16	9/16	2	std	CCMG-605-NC	16986	56986
3/16	3/16	5/8	2	std	CCMG-606-NC	16987	56987
7/32	1/4	5/8	2-1/2	std	CCMG-807-NC	16988	56988
1/4	1/4	3/4	2-1/2	std	CCMG-808-NC	16989	56989
9/32	5/16	3/4	2-1/2	std	CCMG-1009-NC	16990	56990
5/16	5/16	13/16	2-1/2	std	CCMG-1010-NC	16991	56991
3/8	3/8	1	2-1/2	std	CCMG-1212-NC	16992	56992
7/16	7/16	1	2-3/4	std	CCMG-1414-NC	16993	56993
1/2	1/2	1	3	std	CCMG-1616-NC	16994	56994
5/8	5/8	1-1/4	3-1/2	std	CCMG-2020-NC	16995	56995
3/4	3/4	1-1/2	4	std	CCMG-2424-NC	16996	56996
1	1	1-1/2	4	std	CCMG-3232-NC	16997	56997

4 FLUTE • NC TOLERANCE BALL NOSE END MILLS



SERIES: CCMG-__-NCB

DIA D ₁	SHK D ₂	LOC L ₂	OAL L ₁	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/16	1/8	3/16	1-1/2	std	CCMG-402-NCB	16953	56953
3/32	1/8	3/8	1-1/2	std	CCMG-403-NCB	16954	56954
1/8	1/8	1/2	1-1/2	std	CCMG-404-NCB	16955	56955
5/32	3/16	9/16	2	std	CCMG-605-NCB	16956	56956
3/16	3/16	5/8	2	std	CCMG-606-NCB	16957	56957
7/32	1/4	5/8	2-1/2	std	CCMG-807-NCB	16958	56958
1/4	1/4	3/4	2-1/2	std	CCMG-808-NCB	16959	56959
9/32	5/16	3/4	2-1/2	std	CCMG-1009-NCB	16960	56960
5/16	5/16	13/16	2-1/2	std	CCMG-1010-NCB	16961	56961
3/8	3/8	1	2-1/2	std	CCMG-1212-NCB	16962	56962
7/16	7/16	1	2-3/4	std	CCMG-1414-NCB	16963	56963
1/2	1/2	1	3	std	CCMG-1616-NCB	16964	56964
5/8	5/8	1-1/4	3-1/2	std	CCMG-2020-NCB	16965	56965
3/4	3/4	1-1/2	4	std	CCMG-2424-NCB	16966	56966
1	1	1-1/2	4	std	CCMG-3232-NCB	16967	56967

GENERAL PURPOSE CARBIDE END MILL

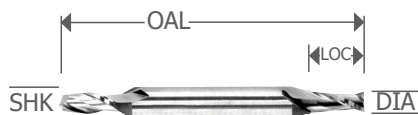


2 FLUTE • DOUBLE END STUB LENGTH END MILLS



SERIES: BSMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/32	1/8	1/16	1-1/2	stub	BSMG-401	14070
3/64	1/8	3/32	1-1/2	stub	BSMG-401-1/2	14072
1/16	1/8	1/8	1-1/2	stub	BSMG-402	14074
5/64	1/8	1/8	1-1/2	stub	BSMG-402-1/2	14076
3/32	1/8	3/16	1-1/2	stub	BSMG-403	14078
7/64	1/8	1/4	1-1/2	stub	BSMG-403-1/2	17848
1/8	1/8	1/4	1-1/2	stub	BSMG-404	14080
1/8	3/16	1/4	2	stub	BSMG-604	11739
9/64	3/16	5/16	2	stub	BSMG-604-1/2	17849
5/32	3/16	5/16	2	stub	BSMG-605	14084
11/64	3/16	3/8	2	stub	BSMG-605-1/2	16319
3/16	3/16	3/8	2	stub	BSMG-606	14086
13/64	1/4	1/2	2-1/2	stub	BSMG-806-1/2	17850
7/32	1/4	1/2	2-1/2	stub	BSMG-807	14092
15/64	1/4	1/2	2-1/2	stub	BSMG-807-1/2	16320
1/4	1/4	1/2	2-1/2	stub	BSMG-808	14094
5/16	5/16	1/2	2-1/2	stub	BSMG-1010	14098
3/8	3/8	9/16	2-1/2	stub	BSMG-1212	14102
7/16	7/16	5/8	3	stub	BSMG-1414	15915
1/2	1/2	5/8	3	stub	BSMG-1616	14106
5/8	5/8	3/4	4	stub	BSMG-2020	17851
3/4	3/4	1	4	stub	BSMG-2424	17852



2 FLUTE • DOUBLE END, END MILLS



SERIES: BMG

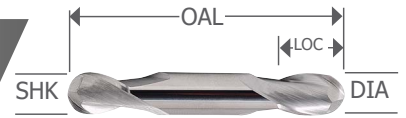
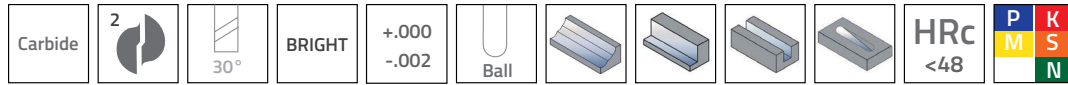
DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	3/8	2	std	BMG-404	16070
1/8	3/8	3/8	3-1/16	std	BMG-1204	14082
5/32	3/8	7/16	3-1/4	std	BMG-1205	11357
3/16	3/8	1/2	3-1/4	std	BMG-1206	14090
7/32	3/8	5/8	3-1/2	std	BMG-1207	11581
1/4	3/8	5/8	3-1/2	std	BMG-1208	14096
9/32	3/8	11/16	3-1/2	std	BMG-1209	15914
5/16	3/8	3/4	3-1/2	std	BMG-1210	14100
3/8	3/8	3/4	3-1/2	std	BMG-1212*	14104
1/2	1/2	1	4	std	BMG-1616*	14108

* = Weldon Flat

GENERAL PURPOSE CARBIDE END MILL

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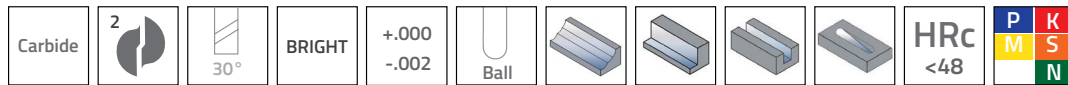
2 FLUTE • DOUBLE END STUB BALL NOSE END MILLS



SERIES: BSMG-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	1/4	1-1/2	stub	BSMG-404-B	14110
1/8	3/16	1/4	2	stub	BSMG-604-B	11795
5/32	3/16	5/16	2	stub	BSMG-605-B	15916
3/16	3/16	3/8	2	stub	BSMG-606-B	14112
7/32	1/4	1/2	2-1/2	stub	BSMG-807-B	15917
1/4	1/4	1/2	2-1/2	stub	BSMG-808-B	14114
5/16	5/16	1/2	2-1/2	stub	BSMG-1010-B	14116
3/8	3/8	9/16	2-1/2	stub	BSMG-1212-B	14118
7/16	7/16	5/8	3	stub	BSMG-1414-B	15918
1/2	1/2	5/8	3	stub	BSMG-1616-B	14120

2 FLUTE • DOUBLE END BALL NOSE END MILLS



SERIES: BMG-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	3/8	2	std	BMG-404-B	11696
1/8	3/8	3/8	3-1/16	std	BMG-1204-B	16271
5/32	3/8	7/16	3-1/4	std	BMG-1205-B	10438
3/16	3/8	1/2	3-1/4	std	BMG-1206-B	16272
7/32	3/8	5/8	3-1/2	std	BMG-1207-B	16317
1/4	3/8	5/8	3-1/2	std	BMG-1208-B	16273
9/32	3/8	11/16	3-1/2	std	BMG-1209-B	16274
5/16	3/8	3/4	3-1/2	std	BMG-1210-B	16275
11/32	3/8	3/4	3-1/2	std	BMG-1211-B	10196
3/8	3/8	3/4	3-1/2	std	BMG-1212-B*	16276
1/2	1/2	1	4	std	BMG-1616-B*	16277

* = Weldon Flat

GENERAL PURPOSE CARBIDE END MILL

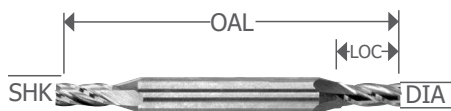


4 FLUTE • DOUBLE END STUB LENGTH END MILLS

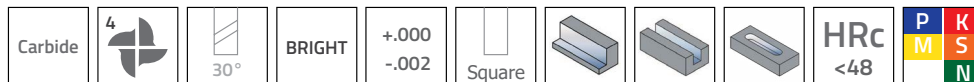


SERIES: DDSMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/32	1/8	1/16	1-1/2	stub	DDSMG-401	14188
3/64	1/8	3/32	1-1/2	stub	DDSMG-401-1/2	14190
1/16	1/8	1/8	1-1/2	stub	DDSMG-402	14192
5/64	1/8	1/8	1-1/2	stub	DDSMG-402-1/2	14194
3/32	1/8	3/16	1-1/2	stub	DDSMG-403	14196
7/64	1/8	1/4	1-1/2	stub	DDSMG-403-1/2	17853
1/8	1/8	1/4	1-1/2	stub	DDSMG-404	14198
1/8	3/16	1/4	2	stub	DDSMG-604	13075
9/64	3/16	5/16	2	stub	DDSMG-604-1/2	17854
5/32	3/16	5/16	2	stub	DDSMG-605	14202
11/64	3/16	3/8	2	stub	DDSMG-605-1/2	17855
3/16	3/16	3/8	2	stub	DDSMG-606	14204
13/64	1/4	1/2	2-1/2	stub	DDSMG-806-1/2	17856
7/32	1/4	1/2	2-1/2	stub	DDSMG-807	14208
15/64	1/4	1/2	2-1/2	stub	DDSMG-807-1/2	17857
1/4	1/4	1/2	2-1/2	stub	DDSMG-808	14210
5/16	5/16	1/2	2-1/2	stub	DDSMG-1010	14214
3/8	3/8	9/16	2-1/2	stub	DDSMG-1212	14218
7/16	7/16	5/8	3	stub	DDSMG-1414	15938
1/2	1/2	5/8	3	stub	DDSMG-1616	14222
5/8	5/8	3/4	4	stub	DDSMG-2020	17858
3/4	3/4	1	4	stub	DDSMG-2424	17859



4 FLUTE • DOUBLE END, END MILLS

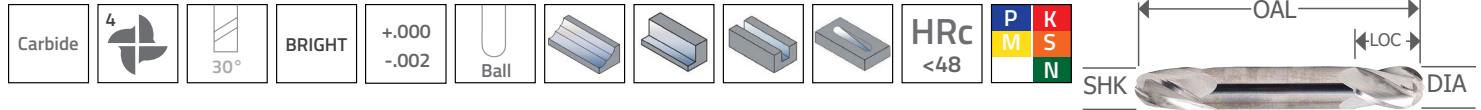


SERIES: DDMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	3/8	2	std	DDMG-404	16321
1/8	3/8	3/8	3-1/16	std	DDMG-1204	14200
5/32	3/8	7/16	3-1/4	std	DDMG-1205	10845
3/16	3/8	1/2	3-1/4	std	DDMG-1206	14206
7/32	3/8	5/8	3-1/2	std	DDMG-1207	12217
1/4	3/8	5/8	3-1/2	std	DDMG-1208	14212
9/32	3/8	11/16	3-1/2	std	DDMG-1209	15937
5/16	3/8	3/4	3-1/2	std	DDMG-1210	14216
11/32	3/8	3/4	3-1/2	std	DDMG-1211	13937
3/8	3/8	3/4	3-1/2	std	DDMG-1212*	14220
7/16	1/2	7/8	4	std	DDMG-1614	13061
1/2	1/2	1	4	std	DDMG-1616*	14224

* = Weldon Flat

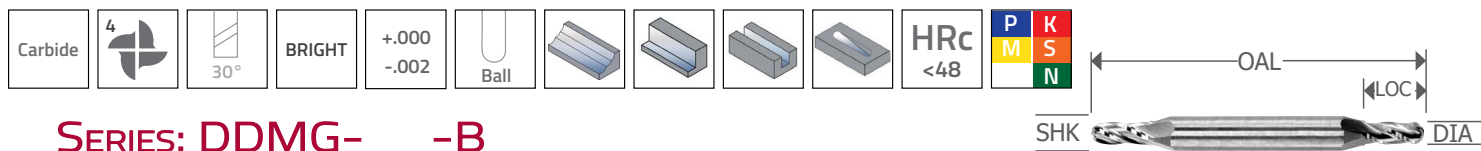
4 FLUTE • DOUBLE END STUB LENGTH BALL NOSE END MILLS



SERIES: DDSMG-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	1/4	1-1/2	stub	DDSMG-404-B	14226
1/8	3/16	1/4	2	stub	DDSMG-604-B	11730
5/32	3/16	5/16	2	stub	DDSMG-605-B	15939
3/16	3/16	3/8	2	stub	DDSMG-606-B	14228
7/32	1/4	1/2	2-1/2	stub	DDSMG-807-B	15940
1/4	1/4	1/2	2-1/2	stub	DDSMG-808-B	14230
5/16	5/16	1/2	2-1/2	stub	DDSMG-1010-B	14232
3/8	3/8	9/16	2-1/2	stub	DDSMG-1212-B	14234
7/16	7/16	5/8	3	stub	DDSMG-1414-B	15941
1/2	1/2	5/8	3	stub	DDSMG-1616-B	14236

4 FLUTE • DOUBLE END BALL NOSE END MILLS



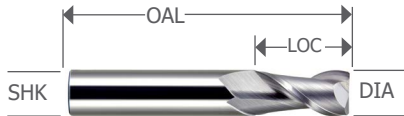
SERIES: DDMG-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	3/8	2	std	DDMG-404-B	11791
1/8	3/8	3/8	3-1/16	std	DDMG-1204-B	16264
5/32	3/8	7/16	3-1/4	std	DDMG-1205-B	10951
3/16	3/8	1/2	3-1/4	std	DDMG-1206-B	16265
7/32	3/8	5/8	3-1/2	std	DDMG-1207-B	16318
1/4	3/8	5/8	3-1/2	std	DDMG-1208-B	16266
9/32	3/8	11/16	3-1/2	std	DDMG-1209-B	16267
5/16	3/8	3/4	3-1/2	std	DDMG-1210-B	16268
3/8	3/8	3/4	3-1/2	std	DDMG-1212-B*	16269
1/2	1/2	1	4	std	DDMG-1616-B*	16270

* = Weldon Flat

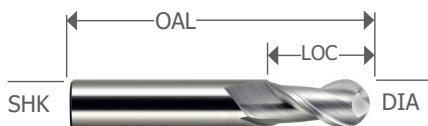
GENERAL PURPOSE CARBIDE END MILL

2 FLUTE • 40° HELIX END MILLS



SERIES: AMG40

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/32	1/8	3/32	1-1/2	std	AMG40-401	12191	52191
3/64	1/8	1/8	1-1/2	std	AMG40-401-1/2	12121	52121
1/16	1/8	3/16	1-1/2	std	AMG40-402	12081	52081
1/16	1/8	1/8	1-1/2	stub	AMGS40-402	12202	52202
3/32	1/8	3/8	1-1/2	std	AMG40-403	12083	52083
1/8	1/8	1/2	1-1/2	std	AMG40-404	11997	51997
1/8	1/8	1/4	1-1/2	stub	AMGS40-404	12203	52203
9/64	3/16	9/16	2	std	AMG40-604-1/2	12129	52129
5/32	3/16	9/16	2	std	AMG40-605	12085	52085
11/64	3/16	9/16	2	std	AMG40-605-1/2	12131	52131
3/16	3/16	3/8	1-1/2	stub	AMGS40-606	12115	52115
3/16	3/16	5/8	2	std	AMG40-606	11999	51999
13/64	1/4	5/8	2-1/2	std	AMG40-806-1/2	12135	52135
7/32	1/4	5/8	2-1/2	std	AMG40-807	12137	52137
15/64	1/4	3/4	2-1/2	std	AMG40-807-1/2	12001	52001
1/4	1/4	1/2	2	stub	AMGS40-808	12035	52035
1/4	1/4	3/4	2-1/2	std	AMG40-808	12003	52003
1/4	1/4	1-1/2	4	xl	AMG40-808-E	13987	53987
17/64	5/16	3/4	2-1/2	std	AMG40-1008-1/2	12117	52117
5/16	5/16	13/16	2-1/2	std	AMG40-1010	12118	52118
5/16	5/16	1-5/8	4	xl	AMG40-1010-E	13948	53948
3/8	3/8	5/8	2	stub	AMGS40-1212	12204	52204
3/8	3/8	1	2-1/2	std	AMG40-1212	12005	52005
3/8	3/8	1-1/8	3	long	AMG40-1212-L	14047	54047
25/64	7/16	1	2-3/4	std	AMG40-1412-1/2	12007	52007
7/16	7/16	1	2-3/4	std	AMG40-1414	13091	53091
1/2	1/2	5/8	2-1/2	stub	AMGS40-1616	12113	52113
1/2	1/2	1	3	std	AMG40-1616	12075	52075
1/2	1/2	2	4	long	AMG40-1616-L	13730	53730
5/8	5/8	1-1/4	3-1/2	std	AMG40-2020	13093	53093
5/8	5/8	2-1/4	5	long	AMG40-2020-L	13731	53731
3/4	3/4	1-1/2	4	std	AMG40-2424	12080	52080



2 FLUTE • 40° HELIX BALL NOSE END MILLS



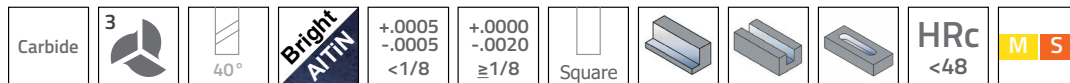
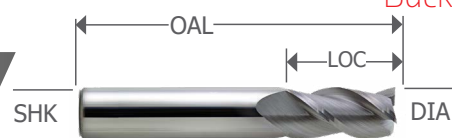
SERIES: AMG40-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/32	1/8	3/32	1-1/2	std	AMG40-401-B	12123	52123
1/16	1/8	3/16	1-1/2	std	AMG40-402-B	12125	52125
3/32	1/8	3/8	1-1/2	std	AMG40-403-B	12127	52127
1/8	1/8	1/2	1-1/2	std	AMG40-404-B	12009	52009
5/32	3/16	9/16	2	std	AMG40-605-B	12099	52099
3/16	3/16	5/8	2	std	AMG40-606-B	12133	52133
1/4	1/4	3/4	2-1/2	std	AMG40-808-B	12139	52139
5/16	5/16	13/16	2-1/2	std	AMG40-1010-B	13095	53095
3/8	3/8	1	2-1/2	std	AMG40-1212-B	12119	52119
1/2	1/2	1	3	std	AMG40-1616-B	12079	52079

GENERAL PURPOSE CARBIDE END MILL

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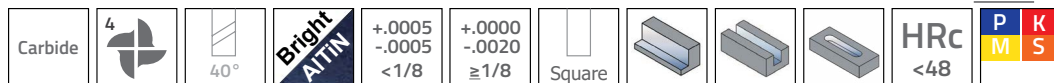
3 FLUTE • 40° HELIX END MILLS



SERIES: EMG40

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/32	1/8	3/32	1-1/2	std	EMG40-401	10722	50722
3/64	1/8	1/8	1-1/2	std	EMG40-401-1/2	10724	50724
1/16	1/8	1/8	1-1/2	stub	EMGS40-402	19485	59485
1/16	1/8	3/16	1-1/2	std	EMG40-402	10726	50726
3/32	1/8	3/8	1-1/2	std	EMG40-403	10728	50728
1/8	1/8	1/4	1-1/2	stub	EMGS40-404	19500	59500
1/8	1/8	1/2	1-1/2	std	EMG40-404	10730	50730
9/64	3/16	9/16	2	std	EMG40-604-1/2	10732	50732
5/32	3/16	9/16	2	std	EMG40-605	10750	50750
11/64	3/16	9/16	2	std	EMG40-605-1/2	10754	50754
3/16	3/16	3/8	1-1/2	stub	EMGS40-606	19290	59290
3/16	3/16	5/8	2	std	EMG40-606	10768	50768
13/64	1/4	5/8	2-1/2	std	EMG40-806-1/2	10772	50772
7/32	1/4	5/8	2-1/2	std	EMG40-807	10776	50776
15/64	1/4	3/4	2-1/2	std	EMG40-807-1/2	10780	50780
1/4	1/4	3/4	2-1/2	std	EMG40-808	10782	50782
17/64	5/16	3/4	2-1/2	std	EMG40-1008-1/2	10784	50784
5/16	5/16	13/16	2-1/2	std	EMG40-1010	10786	50786
5/16	5/16	1-5/8	4	xl	EMG40-1010-E	10788	50788
3/8	3/8	5/8	2	stub	EMGS40-1212	11990	51990
3/8	3/8	1	2-1/2	std	EMG40-1212	10790	50790
3/8	3/8	1-1/8	3	long	EMG40-1212-L	10796	50796
7/16	7/16	1	2-3/4	std	EMG40-1414	10453	50453
1/2	1/2	5/8	2-1/2	stub	EMGS40-1616	19527	59527
1/2	1/2	1	3	std	EMG40-1616	10798	50798
1/2	1/2	2	4	long	EMG40-1616-L	10799	50799
5/8	5/8	1-1/4	3-1/2	std	EMG40-2020	10800	50800
5/8	5/8	2-1/4	5	long	EMG40-2020-L	10801	50801
3/4	3/4	1-1/2	4	std	EMG40-2424	10802	50802

4 FLUTE • 40° HELIX END MILLS

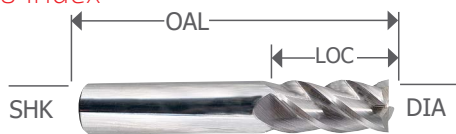


SERIES: CCMG40

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/32	1/8	3/32	1-1/2	std	CCMG40-401	12169	52169
3/64	1/8	1/8	1-1/2	std	CCMG40-401-1/2	12171	52171
1/16	1/8	1/8	1-1/2	stub	CCMG40-402	12109	52109
1/16	1/8	3/16	1-1/2	std	CCMG40-402	12175	52175
5/64	1/8	3/16	1-1/2	std	CCMG40-402-1/2	12177	52177
3/32	1/8	3/16	1-1/2	stub	CCMG40-403	12111	52111
3/32	1/8	3/8	1-1/2	std	CCMG40-403	12087	52087
7/64	1/8	3/8	1-1/2	std	CCMG40-403-1/2	12013	52013
1/8	1/8	1/4	1-1/2	stub	CCMG40-404	12102	52102
1/8	1/8	1/2	1-1/2	std	CCMG40-404	12076	52076

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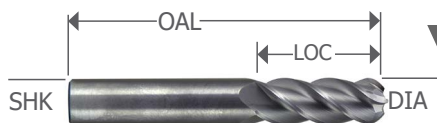
GENERAL PURPOSE CARBIDE END MILL



4 FLUTE • 40° HELIX END MILLS

SERIES: CCMG40

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
9/64	3/16	9/16	2	std	CCMG40-604-1/2	12015	52015
5/32	3/16	3/8	1-1/2	stub	CCMG40-605	12097	52097
5/32	3/16	9/16	2	std	CCMG40-605	12017	52017
11/64	3/16	9/16	2	std	CCMG40-605-1/2	12181	52181
3/16	3/16	3/8	1-1/2	stub	CCMG40-606	12065	52065
3/16	3/16	5/8	2	std	CCMG40-606	12019	52019
13/64	1/4	5/8	2-1/2	std	CCMG40-806-1/2	12183	52183
7/32	1/4	5/8	2-1/2	std	CCMG40-807	12185	52185
15/64	1/4	3/4	2-1/2	std	CCMG40-807-1/2	12187	52187
1/4	1/4	1/2	2	stub	CCMG40-808	12037	52037
1/4	1/4	3/4	2-1/2	std	CCMG40-808	12089	52089
17/64	5/16	3/4	2-1/2	std	CCMG40-1008-1/2	12020	52020
9/32	5/16	3/4	2-1/2	std	CCMG40-1009	12021	52021
5/16	5/16	1/2	2	stub	CCMG40-1010	12107	52107
5/16	5/16	13/16	2-1/2	std	CCMG40-1010	12023	52023
21/64	3/8	7/8	2-1/2	std	CCMG40-1210-1/2	12143	52143
11/32	3/8	7/8	2-1/2	std	CCMG40-1211	12145	52145
3/8	3/8	5/8	2	stub	CCMG40-1212	12103	52103
3/8	3/8	1	2-1/2	std	CCMG40-1212	12147	52147
13/32	7/16	1	2-3/4	std	CCMG40-1413	12151	52151
27/64	7/16	1	2-3/4	std	CCMG40-1413-1/2	12153	52153
7/16	7/16	1	2-3/4	std	CCMG40-1414	12155	52155
29/64	1/2	1	3	std	CCMG40-1614-1/2	12157	52157
1/2	1/2	5/8	2-1/2	stub	CCMG40-1616	12063	52063
1/2	1/2	1	3	std	CCMG40-1616	12077	52077
9/16	9/16	1-1/4	3-1/2	std	CCMG40-1818	12161	52161
5/8	5/8	3/4	3	stub	CCMG40-2020	12105	52105
5/8	5/8	1-1/4	3-1/2	std	CCMG40-2020	12163	52163
3/4	3/4	1-1/2	4	std	CCMG40-2424	12165	52165
1	1	1-1/2	4	std	CCMG40-3232	12167	52167



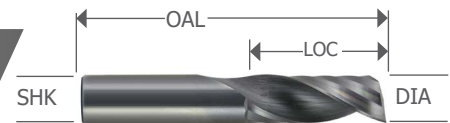
4 FLUTE • 40° HELIX BALL NOSE END MILLS



SERIES: CCMG40-__-B

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
1/32	1/8	3/32	1-1/2	std	CCMG40-401-B	12173	52173
1/16	1/8	3/16	1-1/2	std	CCMG40-402-B	12101	52101
3/32	1/8	3/8	1-1/2	std	CCMG40-403-B	12179	52179
1/8	1/8	1/2	1-1/2	std	CCMG40-404-B	12025	52025
5/32	3/16	9/16	2	std	CCMG40-605-B	12027	52027
3/16	3/16	5/8	2	std	CCMG40-606-B	12029	52029
7/32	1/4	5/8	2-1/2	std	CCMG40-807-B	12189	52189
1/4	1/4	3/4	2-1/2	std	CCMG40-808-B	12031	52031
5/16	5/16	13/16	2-1/2	std	CCMG40-1010-B	12141	52141
3/8	3/8	1	2-1/2	std	CCMG40-1212-B	12149	52149
1/2	1/2	1	3	std	CCMG40-1616-B	12159	52159

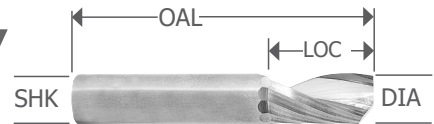
1 FLUTE • ROUTERS FOR ALUMINUM



SERIES: ARMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	TICN EDP
1/16	1/8	1/4	1-1/2	std	ARMG-402	12855	42855
1/16	1/4	1/4	2	std	ARMG-802	12865	42865
1/8	1/8	1/4	1-1/2	stub	ARMG-404-S	12857	42857
1/8	1/8	1/2	1-1/2	std	ARMG-404	12859	42859
1/8	1/4	1/4	2	stub	ARMG-804-S	12867	42867
1/8	1/4	1/2	2	std	ARMG-804	12869	42869
3/16	3/16	3/8	2	stub	ARMG-606-S	12861	42861
3/16	1/4	1/2	2	stub	ARMG-806-S	12873	42873
3/16	3/16	5/8	2	std	ARMG-606	12863	42863
3/16	1/4	5/8	2	std	ARMG-806	12875	42875
5/32	1/4	5/8	2	std	ARMG-805	12871	42871
7/32	1/4	3/4	2-1/2	std	ARMG-807	12877	42877
1/4	1/4	3/8	2-1/2	stub	ARMG-808-S	12879	42879
1/4	1/4	3/4	2-1/2	std	ARMG-808	12881	42881
1/4	1/4	1-1/4	3	long	ARMG-808-L	12883	42883
3/8	3/8	1-1/8	3	std	ARMG-1212	12885	42885
1/2	1/2	1	3	std	ARMG-1616	12887	42887
1/2	1/2	1-1/2	3-1/2	med	ARMG-1616-M	12889	42889

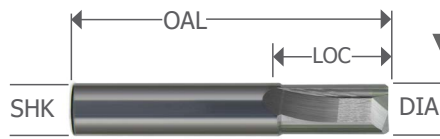
1 FLUTE • ROUTERS FOR PLASTIC



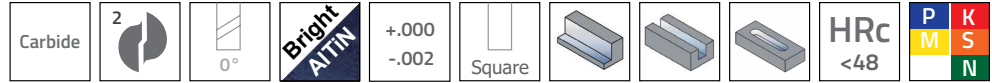
SERIES: PRMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	TICN EDP
1/16	1/8	1/4	1-1/2	std	PRMG-402	12819	42819
1/16	1/4	1/4	2	std	PRMG-802	12829	42829
1/8	1/8	1/4	1-1/2	stub	PRMG-404-S	12821	42821
1/8	1/4	1/4	2	stub	PRMG-804-S	12831	42831
1/8	1/8	1/2	1-1/2	std	PRMG-404	12823	42823
1/8	1/4	1/2	2	std	PRMG-804	12833	42833
3/16	3/16	3/8	2	stub	PRMG-606-S	12825	42825
3/16	1/4	1/2	2	stub	PRMG-806-S	12837	42837
3/16	3/16	5/8	2	std	PRMG-606	12827	42827
3/16	1/4	5/8	2	std	PRMG-806	12839	42839
5/32	1/4	5/8	2	std	PRMG-805	12835	42835
7/32	1/4	3/4	2-1/2	std	PRMG-807	12841	42841
1/4	1/4	3/8	2-1/2	stub	PRMG-808-S	12843	42843
1/4	1/4	3/4	2-1/2	std	PRMG-808	12845	42845
1/4	1/4	1-1/4	3	long	PRMG-808-L	12847	42847
3/8	3/8	1-1/8	3	std	PRMG-1212	12849	42849
1/2	1/2	1	3	std	PRMG-1616	12851	42851
1/2	1/2	1-1/2	3-1/2	med	PRMG-1616-M	12853	42853

SPECIAL USE CARBIDE END MILLS

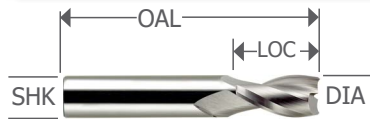


2 FLUTE • STRAIGHT FLUTE END MILLS

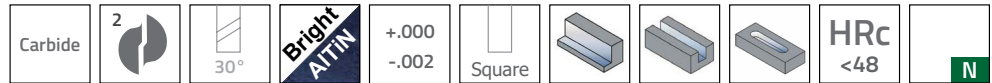


SERIES: SAMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/16	1/8	3/16	1-1/2	std	SAMG-402	11493	51493
3/32	1/8	9/32	1-1/2	std	SAMG-403	11495	51495
1/8	1/8	1/2	1-1/2	std	SAMG-404	11497	51497
5/32	3/16	1/2	2	std	SAMG-605	11499	51499
3/16	3/16	5/8	2	std	SAMG-606	11501	51501
7/32	1/4	5/8	2-1/2	std	SAMG-807	11503	51503
1/4	1/4	3/4	2-1/2	std	SAMG-808	11505	51505
5/16	5/16	13/16	2-1/2	std	SAMG-1010	11507	51507
3/8	3/8	1	2-1/2	std	SAMG-1212	11509	51509
7/16	7/16	1	2-3/4	std	SAMG-1414	11511	51511
1/2	1/2	1	3	std	SAMG-1616	11513	51513

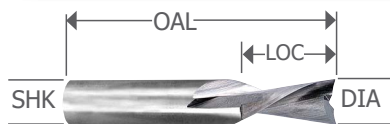


2 FLUTE • WOOD ROUTER - UP CUT (RHS/RHC)



SERIES: WRUMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/8	1/8	1/2	1-1/2	std	WRUMG-404	10693	50693
1/8	1/4	1/2	2-1/2	std	WRUMG-804	10695	50695
3/16	1/4	5/8	2-1/2	std	WRUMG-806	10697	50697
1/4	1/4	3/4	2-1/2	std	WRUMG-808	10699	50699
1/4	1/4	1-1/8	3	long	WRUMG-808-L	10701	50701
5/16	5/16	13/16	2-1/2	std	WRUMG-1010	10703	50703
3/8	3/8	7/8	2-1/2	std	WRUMG-1212	10705	50705
3/8	3/8	1-1/4	3	long	WRUMG-1212-L	10707	50707
1/2	1/2	1	3	std	WRUMG-1616	10709	50709
1/2	1/2	2	4	long	WRUMG-1616-L	10711	50711



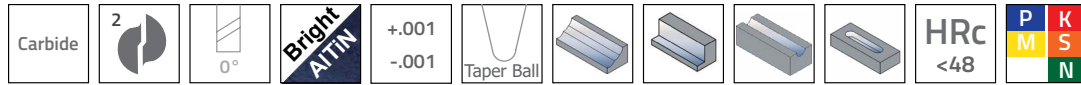
2 FLUTE • WOOD ROUTER - DOWN CUT (LHS/RHC)



SERIES: WRDMG

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/8	1/8	1/2	1-1/2	std	WRDMG-404	10713	50713
1/8	1/4	1/2	2-1/2	std	WRDMG-804	10715	50715
3/16	1/4	5/8	2-1/2	std	WRDMG-806	10717	50717
1/4	1/4	3/4	2-1/2	std	WRDMG-808	10719	50719
1/4	1/4	1-1/8	3	long	WRDMG-808-L	10721	50721
5/16	5/16	13/16	2-1/2	std	WRDMG-1010	10723	50723
3/8	3/8	7/8	2-1/2	std	WRDMG-1212	10725	50725
3/8	3/8	1-1/4	3	long	WRDMG-1212-L	10727	50727
1/2	1/2	1	3	std	WRDMG-1616	10729	50729
1/2	1/2	2	4	long	WRDMG-1616-L	10731	50731

2 FLUTE • DIE SINKING END MILLS



SERIES: AMGDS

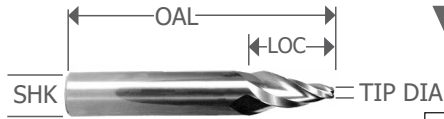
DEG/ SIDE	TIP RADIUS	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
3°	.0156	1/8	7/8	2	std	AMGDS-401-3B	16998	56998
3°	.0313	1/8	9/16	2	std	AMGDS-402-3B	16999	56999
3°	.0469	3/16	7/8	2	std	AMGDS-603-3B	17607	57607
3°	.0625	1/4	1	2-1/2	std	AMGDS-804-3B	17608	57608
3°	.0781	5/16	1	2-1/2	std	AMGDS-1005-3B	17609	57609
3°	.0938	3/8	1	2-1/2	std	AMGDS-1206-3B	17610	57610
3°	.1094	7/16	1	2-3/4	std	AMGDS-1407-3B	17611	57611
3°	.1250	1/2	1	3	std	AMGDS-1608-3B	17612	57612

DEG/ SIDE	TIP RADIUS	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
5°	.0156	1/8	1/2	2	std	AMGDS-401-5B	17613	57613
5°	.0313	1/8	5/16	2	std	AMGDS-402-5B	17614	57614
5°	.0469	3/16	1/2	2	std	AMGDS-603-5B	17615	57615
5°	.0625	1/4	11/16	2-1/2	std	AMGDS-804-5B	17616	57616
5°	.0781	5/16	7/8	2-1/2	std	AMGDS-1005-5B	17617	57617
5°	.0938	3/8	1	2-1/2	std	AMGDS-1206-5B	17618	57618
5°	.1094	7/16	1	2-3/4	std	AMGDS-1407-5B	17619	57619
5°	.1250	1/2	1	3	std	AMGDS-1608-5B	17620	57620

DEG/ SIDE	TIP RADIUS	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
7°	.0156	1/8	3/8	1-1/2	std	AMGDS-401-7B	17621	57621
7°	.0313	1/8	1/4	1-1/2	std	AMGDS-402-7B	17622	57622
7°	.0469	3/16	3/8	2	std	AMGDS-603-7B	17623	57623
7°	.0625	1/4	1/2	2-1/2	std	AMGDS-804-7B	17624	57624
7°	.0781	5/16	5/8	2-1/2	std	AMGDS-1005-7B	17625	57625
7°	.0938	3/8	3/4	2-1/2	std	AMGDS-1206-7B	17626	57626
7°	.1094	7/16	7/8	2-3/4	std	AMGDS-1407-7B	17627	57627
7°	.1250	1/2	1	3	std	AMGDS-1608-7B	17628	57628

DEG/ SIDE	TIP RADIUS	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
10°	.0156	1/8	1/4	1-1/2	std	AMGDS-401-10B	17629	57629
10°	.0313	1/8	3/16	1-1/2	std	AMGDS-402-10B	17630	57630
10°	.0469	3/16	1/4	2	std	AMGDS-603-10B	17631	57631
10°	.0625	1/4	5/16	2-1/2	std	AMGDS-804-10B	17632	57632
10°	.0781	5/16	7/16	2-1/2	std	AMGDS-1005-10B	17633	57633
10°	.0938	3/8	9/16	2-1/2	std	AMGDS-1206-10B	17634	57634
10°	.1094	7/16	5/8	2-3/4	std	AMGDS-1407-10B	17635	57635
10°	.1250	1/2	11/16	3	std	AMGDS-1608-10B	17636	57636

SPECIAL USE CARBIDE END MILLS

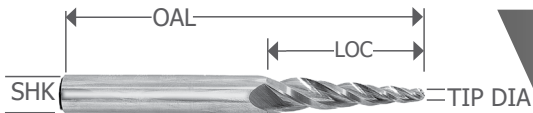


3 FLUTE • TAPERED END MILLS

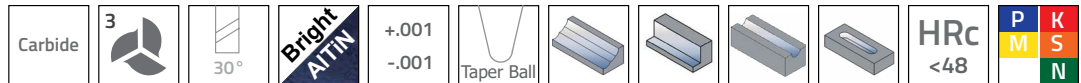


SERIES: EMG-__-__T

TAPER/ SIDE	TIP DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1°	1/8	1/4	1-1/2	3	std	EMG-804-1T	10257	50257
1°	3/16	3/8	1-3/4	3-1/2	std	EMG-1206-1T	10259	50259
1° 30'	1/8	1/4	1-1/2	3	std	EMG-804-1.5T	10261	50261
1° 30'	3/16	3/8	1-3/4	3-1/2	std	EMG-1206-1.5T	10263	50263
2°	1/8	1/4	1	3	std	EMG-804-2T	10265	50265
2°	3/16	3/8	1-3/4	3-1/2	std	EMG-1206-2T	10267	50267
2°	1/4	1/2	2	4	std	EMG-1608-2T	10269	50269
3°	1/8	1/4	1	3	std	EMG-804-3T	10271	50271
3°	5/32	3/8	1-3/4	3-1/2	std	EMG-1205-3T	10273	50273
3°	1/4	1/2	2	4	std	EMG-1608-3T	10275	50275
5°	1/8	1/4	3/4	3	std	EMG-804-5T	10277	50277
5°	1/8	3/8	1-1/2	3-1/2	std	EMG-1204-5T	10279	50279
5°	1/4	1/2	1-1/4	4	std	EMG-1608-5T	10281	50281
7°	1/8	1/4	1/2	3	std	EMG-804-7T	10283	50283
7°	5/32	3/8	3/4	3-1/2	std	EMG-1205-7T	10285	50285
7°	3/16	1/2	1-1/4	4	std	EMG-1606-7T	10287	50287



3 FLUTE • TAPERED BALL NOSE END MILLS



SERIES: EMG-__-__TB

TAPER/ SIDE	TIP DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1°	1/8	1/4	1-1/2	3	std	EMG-804-1TB	10289	50289
1°	3/16	3/8	1-3/4	3-1/2	std	EMG-1206-1TB	10291	50291
1° 30'	1/8	1/4	1-1/2	3	std	EMG-804-1.5TB	10293	50293
1° 30'	3/16	3/8	1-3/4	3-1/2	std	EMG-1206-1.5TB	10295	50295
2°	1/8	1/4	1	3	std	EMG-804-2TB	10297	50297
2°	3/16	3/8	1-3/4	3-1/2	std	EMG-1206-2TB	10299	50299
2°	1/4	1/2	2	4	std	EMG-1608-2TB	10301	50301
3°	1/8	1/4	1	3	std	EMG-804-3TB	10303	50303
3°	5/32	3/8	1-3/4	3-1/2	std	EMG-1205-3TB	10305	50305
3°	1/4	1/2	2	4	std	EMG-1608-3TB	10307	50307
5°	1/8	1/4	3/4	3	std	EMG-804-5TB	10309	50309
5°	1/8	3/8	1-1/2	3-1/2	std	EMG-1204-5TB	10311	50311
5°	1/4	1/2	1-1/4	4	std	EMG-1608-5TB	10313	50313
7°	1/8	1/4	1/2	3	std	EMG-804-7TB	10315	50315
7°	5/32	3/8	3/4	3-1/2	std	EMG-1205-7TB	10317	50317
7°	3/16	1/2	1-1/4	4	std	EMG-1606-7TB	10319	50319

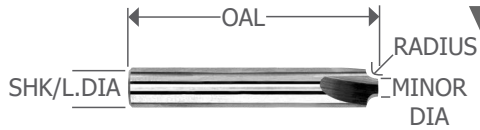
2 FLUTE • DOUBLE END CORNER ROUNDERS



SERIES: BRMG

RADIUS	MINOR DIA	SHK/ LARGE DIA	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
0.010	0.047	1/8	1-1/2	stub	BRMG-4010-S	11178	51178
0.010	0.105	1/8	1-1/2	std	BRMG-4010	16293	56293
0.015	0.047	1/8	1-1/2	stub	BRMG-4015-S	11179	51179
0.015	0.095	1/8	1-1/2	std	BRMG-4015	16294	56294
0.020	0.047	1/8	1-1/2	stub	BRMG-4020-S	11181	51181
0.020	0.085	1/8	1-1/2	std	BRMG-4020	16295	56295
0.025	0.075	1/8	1-1/2	std	BRMG-4025	16296	56296
0.030	0.047	1/8	1-1/2	stub	BRMG-4030-S	11703	51703
0.031	0.047	1/8	1-1/2	stub	BRMG-4031-S	11182	51182
0.031	0.063	1/8	1-1/2	std	BRMG-4031	16297	56297
0.035	0.055	1/8	1-1/2	std	BRMG-4035	16298	56298
0.039	0.047	1/8	1-1/2	std	BRMG-4039	16299	56299
0.047	0.047	3/16	2	stub	BRMG-6047-S	11183	51183
0.047	0.094	3/16	2	std	BRMG-6047	16300	56300
0.050	0.088	3/16	2	std	BRMG-6050	16301	56301
0.055	0.078	3/16	2	std	BRMG-6055	16302	56302
0.062	0.047	3/16	2	stub	BRMG-6062-S	11185	51185
0.062	0.064	3/16	2	std	BRMG-6062	16303	56303
0.072	0.106	1/4	2-1/2	std	BRMG-8072	16304	56304
0.078	0.047	1/4	2	stub	BRMG-8078-S	11186	51186
0.078	0.094	1/4	2-1/2	std	BRMG-8078	16305	56305
0.093	0.064	1/4	2-1/2	std	BRMG-8093	16306	56306
0.094	0.047	1/4	2	stub	BRMG-8094-S	11187	51187
0.100	0.050	1/4	2-1/2	std	BRMG-8100	16307	56307
0.109	0.095	5/16	2-1/2	std	BRMG-10109	16308	56308
0.118	0.077	5/16	2-1/2	std	BRMG-10118	16309	56309
0.125	0.063	5/16	2-1/2	std	BRMG-10125	16310	56310
0.140	0.095	3/8	2-1/2	std	BRMG-12140	16311	56311
0.156	0.063	3/8	2-1/2	std	BRMG-12156	16312	56312

SPECIAL USE CARBIDE END MILLS



3 FLUTE • CORNER ROUNDING END MILLS



SERIES: RMG

RADIUS	MINOR DIA	SHK/LARGE DIA	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/32	1/8	3/16	2	std	RMG-601	16092	56092
1/16	1/8	1/4	2-1/2	std	RMG-802	16093	56093
3/32	3/16	3/8	2-1/2	std	RMG-1203	16094	56094
1/8	1/4	1/2	3	std	RMG-1604	16095	56095
5/32	5/16	5/8	3-1/2	std	RMG-2005	16096	56096
3/16	3/8	3/4	4	std	RMG-2406	16097	56097
1/4	1/2	1	4	std	RMG-3208	16098	56098

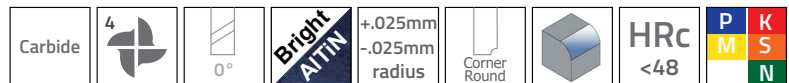
4 FLUTE • CORNER ROUNDING END MILLS



SERIES: RCMG

RADIUS	MINOR DIA	SHK/LARGE DIA	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/32	1/8	3/16	2	std	RCMG-601	16099	56099
1/16	1/8	1/4	2-1/2	std	RCMG-802	16100	56100
3/32	3/16	3/8	2-1/2	std	RCMG-1203	16101	56101
1/8	1/4	1/2	3	std	RCMG-1604	16102	56102
5/32	5/16	5/8	3-1/2	std	RCMG-2005	16103	56103
3/16	3/8	3/4	4	std	RCMG-2406	16104	56104
1/4	1/2	1	4	std	RCMG-3208	16105	56105

4 FLUTE • CORNER ROUNDING END MILLS



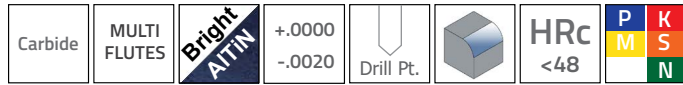
SERIES: RCMG

RADIUS	MINOR DIA	SHK/LARGE DIA	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1mm	4mm	6mm	63mm	std	RCMG-M6M1	13632	53632
1.5mm	3mm	6mm	63mm	std	RCMG-M6M1.5	13633	53633
2mm	4mm	8mm	63mm	std	RCMG-M8M2	13634	53634
3mm	6mm	12mm	76mm	std	RCMG-M12M3	13635	53635
4mm	8mm	16mm	89mm	std	RCMG-M16M4	13636	53636

SPECIAL USE CARBIDE END MILLS

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2 FLUTE • 60° OR 90° CHAMFER END MILLS



SERIES: CMG2

60°

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/4	1/4	3/16	2-1/2	std	CMG2-808-60	16281	56281
3/8	3/8	5/16	2-1/2	std	CMG2-1212-60	16282	56282
1/2	1/2	7/16	3	std	CMG2-1616-60	16283	56283
3/4	3/4	5/8	4	std	CMG2-2424-60	11575	51575

90°

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/8	1/8	1/16	1-1/2	std	CMG2-404-90	12091	52091
1/4	1/4	1/8	2-1/2	std	CMG2-808-90	16284	56284
3/8	3/8	3/16	2-1/2	std	CMG2-1212-90	16278	56278
1/2	1/2	1/4	3	std	CMG2-1616-90	16285	56285
3/4	3/4	3/8	4	std	CMG2-2424-90	12293	52293

2 FLUTE • 90° DOUBLE END CHAMFER END MILLS



SERIES: DMG2

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP
1/8	1/8	1/16	1-1/2	std	DMG2-404-90	10971
3/16	3/16	3/32	2	std	DMG2-606-90	10973
1/4	1/4	1/8	2-1/2	std	DMG2-808-90	10975
3/8	3/8	3/16	2-1/2	std	DMG2-1212-90	10977
1/2	1/2	1/4	3	std	DMG2-1616-90	10979
5/8	5/8	5/16	3-1/2	std	DMG2-2020-90	13097
3/4	3/4	3/8	4	std	DMG2-2424-90	13099

4 FLUTE • 60° OR 90° CHAMFER END MILLS



SERIES: CMG4

60°

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/4	1/4	3/16	2-1/2	std	CMG4-808-60	16286	56286
3/8	3/8	5/16	2-1/2	std	CMG4-1212-60	16287	56287
1/2	1/2	7/16	3	std	CMG4-1616-60	16288	56288
3/4	3/4	5/8	4	std	CMG4-2424-60	16289	56289

90°

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/4	1/4	1/8	2-1/2	std	CMG4-808-90	16290	56290
3/8	3/8	3/16	2-1/2	std	CMG4-1212-90	16279	56279
1/2	1/2	1/4	3	std	CMG4-1616-90	16291	56291
3/4	3/4	3/8	4	std	CMG4-2424-90	16292	56292

SPECIAL USE CARBIDE END MILLS

MULTI FLUTE • BACK CHAMFER END MILLS

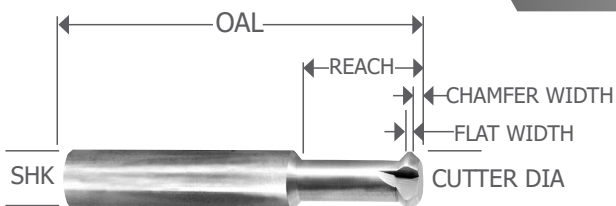


Carbide	MULTI FLUTES	 0°	BRIGHT	+.0000 -.0050 O.D.	HRC <48	<table><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td></td><td>N</td></tr></table>	P	K	M	S		N
P	K											
M	S											
	N											

SERIES: BC

CUTTER DIA	SHANK DIA	OAL	WIDTH	FLAT	NECK DIA	NECK WIDTH	FLUTES	TOOL	BRIGHT EDP
3/8	1/4	2-5/8	.125	0.031	.220	.365	4	BC-3/8	12340
1/2	5/16	2-5/8	.125	0.031	.295	.365	5	BC-1/2	12341
3/4	3/8	2-21/32	.156	0.031	----	----	6	BC-3/4	12342
1	1/2	3-3/16	.188	0.031	----	----	7	BC-1	12343

1 FLUTE • BACK CHAMFER FOR LATHES



Carbide	 	 	BRIGHT	+0.0000 -0.0050 O.D.	HRC <48	<table><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td></td><td>N</td></tr></table>	P	K	M	S		N
P	K											
M	S											
	N											

SERIES: BCL

CUTTER DIA	SHANK DIA	OAL	CHAMFER WIDTH	FLAT WIDTH	NECK DIA	REACH	TOOL	BRIGHT EDP
.177	3/16	2-1/2	0.026	0.031	0.125	0.775	BCL-3/16	12333
1/4	1/4	2-1/2	0.035	0.031	0.170	0.775	BCL-1/4	12334
1/4	1/4	2-1/2	0.035	0.031	0.170	1.275	BCL-1/4-L	12335
.300	5/16	2-1/2	0.045	0.031	0.210	0.775	BCL-5/16	12336
.360	3/8	2-1/2	0.055	0.031	0.250	0.775	BCL-3/8	12337
.360	3/8	2-1/2	0.055	0.031	0.250	1.275	BCL-3/8-L	12338
.490	1/2	3	0.070	0.031	0.350	1.000	BCL-1/2	12339

3 FLUTE • 60°, 90°, 120° CHAMFER MILL

- Helical flutes for superior finishes
- Geometry designed for added strength and programming accuracy
- H6 Tolerance shank for use in shrink fit holders
- ZrN coating designed for aluminum and non-ferrous alloys
- Geometry design enables aggressive machining while providing excellent finish



SHK D ₂	LOC L ₂	OAL L ₁	INC ANGLE B	Tip Diameter	PART NAME	Bright EDP	AlTiN EDP	ZrN EDP
1/4	0.164	2-1/2	60°	0.06	CMG3H-808-60	H7745	H7746	H7747
3/8	0.264	2-1/2	60°	0.07	CMG3H-1212-60	H7748	H7749	H7750
1/2	0.364	3	60°	0.08	CMG3H-1616-60	H7751	H7752	H7753
5/8	0.463	3	60°	0.09	CMG3H-2020-60	H7754	H7755	H7756
3/4	0.562	3	60°	0.10	CMG3H-2424-60	H7757	H7758	H7759
1/4	0.095	2-1/2	90°	0.06	CMG3H-808-90	H7760	H7763	H7764
3/8	0.153	2-1/2	90°	0.07	CMG3H-1212-90	H7741	H7766	H7767
1/2	0.210	3	90°	0.08	CMG3H-1616-90	H7743	H7768	H7769
5/8	0.268	3	90°	0.09	CMG3H-2020-90	H7770	H7773	H7774
3/4	0.325	3	90°	0.10	CMG3H-2424-90	H7775	H7776	H7782
1/4	0.057	2-1/2	120°	0.06	CMG3H-808-120	H7785	H7786	H7789
3/8	0.091	2-1/2	120°	0.07	CMG3H-1212-120	H7795	H7796	H7797
1/2	0.126	3	120°	0.08	CMG3H-1616-120	H7798	H7805	H7817
5/8	0.157	3	120°	0.09	CMG3H-2020-120	H7818	H7819	H7820
3/4	0.195	3	120°	0.10	CMG3H-2424-120	H7821	H7822	H7823

Speed & Feed: page 197

SPECIAL USE CARBIDE END MILLS



5 FLUTE • 60°, 90°, 120° CHAMFER MILL

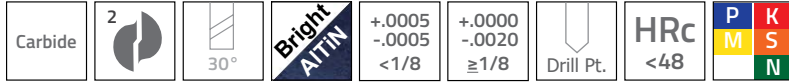
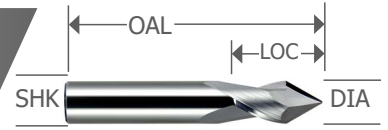
- Helical flutes for superior finishes
- Geometry designed to allow aggressive machining while providing outstanding finishes in all material.
- H6 Tolerance shank for use in shrink fit holders
- AlTiN coating designed to add lubricity, allows for high speed and feeds



SHK D ₂	LOC L ₂	OAL L ₁	INC ANGLE B	Tip Diameter	PART NAME	Bright EDP	AlTiN EDP
1/4	0.164	2-1/2	60°	0.06	CMG5H-808-60	H7829	H7830
3/8	0.264	2-1/2	60°	0.07	CMG5H-1212-60	H7831	H7832
1/2	0.364	3	60°	0.08	CMG5H-1616-60	H7833	H7834
5/8	0.463	3	60°	0.09	CMG5H-2020-60	H7835	H7836
3/4	0.562	3	60°	0.1	CMG5H-2424-60	H7837	H7838
1/4	0.095	2-1/2	90°	0.06	CMG5H-808-90	H7839	H7840
3/8	0.153	2-1/2	90°	0.07	CMG5H-1212-90	H7841	H7842
3/8	0.153	4	90°	0.07	CMG5H-1212-L-90	H7827	H7828
1/2	0.210	3	90°	0.08	CMG5H-1616-90	H7843	H7844
1/2	0.210	6	90°	0.08	CMG5H-1616-L-90	H7845	H7846
5/8	0.268	3	90°	0.09	CMG5H-2020-90	H7847	H7848
3/4	0.325	3	90°	0.1	CMG5H-2424-90	H7849	H7850
1/4	0.057	2-1/2	120°	0.06	CMG5H-808-120	H7851	H7852
3/8	0.091	2-1/2	120°	0.07	CMG5H-1212-120	H7853	H7854
1/2	0.126	3	120°	0.08	CMG5H-1616-120	H7855	H7856
5/8	0.157	3	120°	0.09	CMG5H-2020-120	H7857	H7858
3/4	0.195	3	120°	0.1	CMG5H-2424-120	H7859	H7860

Speed & Feed: page 198

2 FLUTE • 60°, 82° & 90° DRILL POINT END MILLS



SERIES: AMG-__-DP60

DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/16	1/8	3/16	1-1/2	60°	std	AMG-402-DP60	12199	52199
3/32	1/8	3/8	1-1/2	60°	std	AMG-403-DP60	12200	52200
1/8	1/8	1/2	1-1/2	60°	std	AMG-404-DP60	11663	51663
3/16	3/16	5/8	2	60°	std	AMG-606-DP60	12201	52201
1/4	1/4	3/4	2-1/2	60°	std	AMG-808-DP60	11665	51665
5/16	5/16	13/16	2-1/2	60°	std	AMG-1010-DP60	12193	52193
3/8	3/8	1	2-1/2	60°	std	AMG-1212-DP60	11667	51667
7/16	7/16	1	2-3/4	60°	std	AMG-1414-DP60	12195	52195
1/2	1/2	1	3	60°	std	AMG-1616-DP60	11669	51669
5/8	5/8	1-1/4	3-1/2	60°	std	AMG-2020-DP60	12196	52196
3/4	3/4	1-1/2	4	60°	std	AMG-2424-DP60	12197	52197

SERIES: AMG-__-DP82

DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/8	1/8	1/2	1-1/2	82°	std	AMG-404-DP82	12455	52455
1/4	1/4	3/4	2-1/2	82°	std	AMG-808-DP82	16590	56590
3/8	3/8	1	2-1/2	82°	std	AMG-1212-DP82	16591	56591
1/2	1/2	1	3	82°	std	AMG-1616-DP82	16592	56592
5/8	5/8	1-1/4	3-1/2	82°	std	AMG-2020-DP82	16593	56593
3/4	3/4	1-1/2	4	82°	std	AMG-2424-DP82	16594	56594

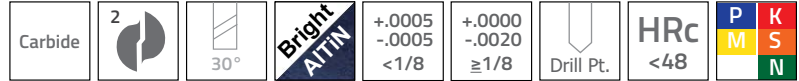
SERIES: AMG-__-DP

DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
.015	1/8	.045	1-1/2	90°	std	AMG-.015-DP	13039	53039
.020	1/8	.060	1-1/2	90°	std	AMG-.020-DP	13029	53029
.025	1/8	.075	1-1/2	90°	std	AMG-.025-DP	13031	53031
.030	1/8	.090	1-1/2	90°	std	AMG-.030-DP	13033	53033
.045	1/8	.105	1-1/2	90°	std	AMG-.045-DP	13035	53035
.060	1/8	.180	1-1/2	90°	std	AMG-.060-DP	13037	53037
1/16	1/8	3/16	1-1/2	90°	std	AMG-402-DP	11623	51623
3/32	1/8	3/8	1-1/2	90°	std	AMG-403-DP	11625	51625
1/8	1/8	1/2	1-1/2	90°	std	AMG-404-DP	16083	56083
1/8	1/8	1/2	1-1/2	90°	std	AMG-404-DP1	16703	56703
3/16	3/16	5/8	2	90°	std	AMG-606-DP	16084	56084
3/16	3/16	5/8	2	90°	std	AMG-606-DP-1	16704	56704
1/4	1/4	3/4	2-1/2	90°	std	AMG-808-DP	16085	56085
1/4	1/4	3/4	2-1/2	90°	std	AMG-808-DP-1	16712	56712
5/16	5/16	13/16	2-1/2	90°	std	AMG-1010-DP	16086	56086
5/16	5/16	13/16	2-1/2	90°	std	AMG-1010-DP-1	16705	56705
3/8	3/8	1	2-1/2	90°	std	AMG-1212-DP	16087	56087
3/8	3/8	1	2-1/2	90°	std	AMG-1212-DP-1	16462	56462
7/16	7/16	1	2-3/4	90°	std	AMG-1414-DP	16088	56088
1/2	1/2	1	3	90°	std	AMG-1616-DP	16089	56089
1/2	1/2	1	3	90°	std	AMG-1616-DP-1	16707	56707
5/8	5/8	1-1/4	3-1/2	90°	std	AMG-2020-DP	16090	56090
5/8	5/8	1-1/4	3-1/2	90°	std	AMG-2020-DP-1	16706	56706
3/4	3/4	1-1/2	4	90°	std	AMG-2424-DP	16091	56091

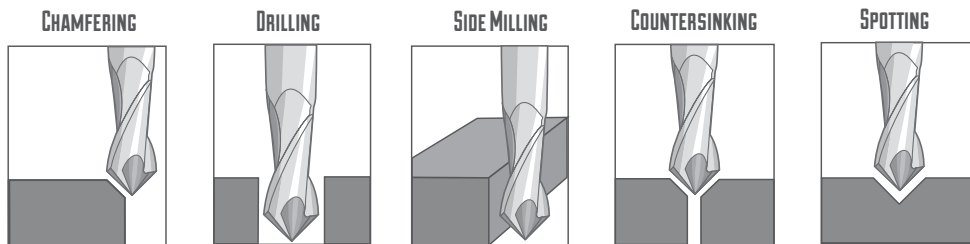
Tool names with "-1" have a .005 sharp point for groove milling

2 FLUTE • 90° DRILL POINT END MILLS

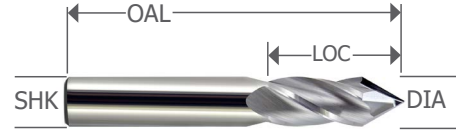
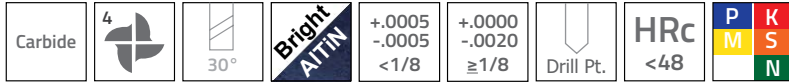
SERIES: AMG-__-DP



DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
0.5mm	3mm	2.0mm	38mm	90°	std	AMG-M3M0.5-DP	13364	53364
0.6mm	3mm	2.5mm	38mm	90°	std	AMG-M3M0.6-DP	13365	53365
0.7mm	3mm	2.5mm	38mm	90°	std	AMG-M3M0.7-DP	13366	53366
0.8mm	3mm	3.0mm	38mm	90°	std	AMG-M3M0.8-DP	13367	53367
0.9mm	3mm	3.5mm	38mm	90°	std	AMG-M3M0.9-DP	13368	53368
1.0mm	3mm	4.0mm	38mm	90°	std	AMG-M3M1-DP	13369	53369
1.2mm	3mm	4.5mm	38mm	90°	std	AMG-M3M1.2-DP	13370	53370
1.4mm	3mm	5.5mm	38mm	90°	std	AMG-M3M1.4-DP	13371	53371
1.5mm	3mm	6.0mm	38mm	90°	std	AMG-M3M1.5-DP	13372	53372
1.8mm	3mm	7.0mm	38mm	90°	std	AMG-M3M1.8-DP	13373	53373
2.0mm	3mm	8.0mm	38mm	90°	std	AMG-M3M2-DP	13374	53374
2.5mm	3mm	10mm	38mm	90°	std	AMG-M3M2.5-DP	13375	53375
3.0mm	3mm	12mm	38mm	90°	std	AMG-M3M3-DP	13376	53376
4.0mm	4mm	14mm	51mm	90°	std	AMG-M4M4-DP	13377	53377
5.0mm	5mm	20mm	51mm	90°	std	AMG-M5M5-DP	13378	53378
6.0mm	6mm	20mm	63mm	90°	std	AMG-M6M6-DP	13379	53379
8.0mm	8mm	20mm	63mm	90°	std	AMG-M8M8-DP	13380	53380
10.0mm	10mm	25mm	70mm	90°	std	AMG-M10M10-DP	13381	53381
12.0mm	12mm	25mm	76mm	90°	std	AMG-M12M12-DP	13382	53382
16.0mm	16mm	32mm	89mm	90°	std	AMG-M16M16-DP	13383	53383
20.0mm	20mm	38mm	100mm	90°	std	AMG-M20M20-DP	13384	53384



4 FLUTE • 60°, 82°, 90° DRILL POINT END MILLS



SERIES: CCMG-__-DP60

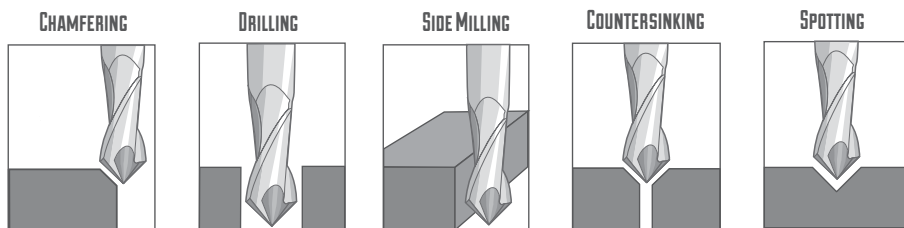
DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/16	1/8	3/16	1-1/2	60°	std	CCMG-402-DP60	19764	59764
3/32	1/8	3/8	1-1/2	60°	std	CCMG-403-DP60	19765	59765
1/8	1/8	1/2	1-1/2	60°	std	CCMG-404-DP60	19766	59766
3/16	3/16	5/8	2	60°	std	CCMG-606-DP60	19767	59767
1/4	1/4	3/4	2-1/2	60°	std	CCMG-808-DP60	19768	59768
5/16	5/16	13/16	2-1/2	60°	std	CCMG-1010-DP60	19769	59769
3/8	3/8	1	2-1/2	60°	std	CCMG-1212-DP60	19770	59770
7/16	7/16	1	2-3/4	60°	std	CCMG-1414-DP60	19771	59771
1/2	1/2	1	3	60°	std	CCMG-1616-DP60	19772	59772
5/8	5/8	1-1/4	3-1/2	60°	std	CCMG-2020-DP60	19773	59773
3/4	3/4	1-1/2	4	60°	std	CCMG-2424-DP60	19774	59774

SERIES: CCMG-__-DP82

DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/16	1/8	3/16	1-1/2	82°	std	CCMG-402-DP82	19775	59775
3/32	1/8	3/8	1-1/2	82°	std	CCMG-403-DP82	19776	59776
1/8	1/8	1/2	1-1/2	82°	std	CCMG-404-DP82	19777	59777
3/16	3/16	5/8	2	82°	std	CCMG-606-DP82	19778	59778
1/4	1/4	3/4	2-1/2	82°	std	CCMG-808-DP82	19779	59779
5/16	5/16	13/16	2-1/2	82°	std	CCMG-1010-DP82	19780	59780
3/8	3/8	1	2-1/2	82°	std	CCMG-1212-DP82	19781	59781
1/2	1/2	1	3	82°	std	CCMG-1616-DP82	19783	59783
5/8	5/8	1-1/4	3-1/2	82°	std	CCMG-2020-DP82	19784	59784
3/4	3/4	1-1/2	4	82°	std	CCMG-2424-DP82	19785	59785

SERIES: CCMG-__-DP

DIA	SHK	LOC	OAL	ANGLE	LENGTH	TOOL	BRIGHT EDP	ALTiN EDP
1/16	1/8	3/16	1-1/2	90°	std	CCMG-402-DP	11629	51629
3/32	1/8	3/8	1-1/2	90°	std	CCMG-403-DP	11631	51631
1/8	1/8	1/2	1-1/2	90°	std	CCMG-404-DP	11633	51633
3/16	3/16	5/8	2	90°	std	CCMG-606-DP	11635	51635
1/4	1/4	3/4	2-1/2	90°	std	CCMG-808-DP	11637	51637
5/16	5/16	13/16	2-1/2	90°	std	CCMG-1010-DP	11639	51639
3/8	3/8	1	2-1/2	90°	std	CCMG-1212-DP	11640	51640
7/16	7/16	1	2-3/4	90°	std	CCMG-1414-DP	11641	51641
1/2	1/2	1	3	90°	std	CCMG-1616-DP	11642	51642
5/8	5/8	1-1/4	3-1/2	90°	std	CCMG-2020-DP	11643	51643
3/4	3/4	1-1/2	4	90°	std	CCMG-2424-DP	11644	51644



SPECIAL USE CARBIDE END MILLS



BLANKS • CENTERLESS GROUND BLANKS

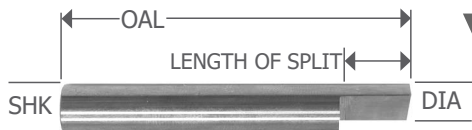
Carbide

BRIGHT

+ .0010
- .0000

SIZE	CENTERLESS GROUND EDP
1/8 x 1-1/2	10455
1/8 x 2	10457
1/8 x 3	10459
3/16 x 2	10461
3/16 x 3	10463
1/4 x 2	10465
1/4 x 2-1/2	10467
1/4 x 3	10469
1/4 x 4	10471
5/16 x 2-1/2	10473
5/16 x 3	10475
5/16 x 4	10477
3/8 x 2-1/2	10479
3/8 x 3	10481
3/8 x 3-1/2	10483
3/8 x 4	10485
3/8 x 6	10487

SIZE	CENTERLESS GROUND EDP
7/16 x 2-1/2	10489
7/16 x 2-3/4	10491
7/16 x 3	10493
7/16 x 4	10495
1/2 x 3	10499
1/2 x 4	10501
1/2 x 6	10503
9/16 x 3-1/2	10505
5/8 x 3-1/2	10507
5/8 x 6	10509
3/4 x 4	10511
3/4 x 6	10513
7/8 x 4	10515
1 x 4	10517
1 x 6	10519



BLANKS • ENGRAVING BLANKS

DIA	SHK	LENGTH OF SPLIT	OAL	SINGLE END EDP	DOUBLE END EDP
1/8	1/8	3/8	1-1/2	10521	10565
1/8	1/8	3/8	2	10523	10567
1/8	1/8	3/8	3	10525	10569
3/16	3/16	1/2	2	10527	10571
3/16	3/16	1/2	3	10529	10573
1/4	1/4	1/2	2	10531	10575
1/4	1/4	1/2	2-1/2	10533	10577
1/4	1/4	1/2	3	10535	10579
1/4	1/4	1/2	4	10537	10581
5/16	5/16	1/2	2-1/2	10539	10583
5/16	5/16	1/2	3	10541	10585
5/16	5/16	1/2	4	10543	10587
3/8	3/8	1/2	2-1/2	10545	10589
3/8	3/8	1/2	3	10547	10591
3/8	3/8	1/2	4	10549	10593
3/8	3/8	1/2	6	10551	10595
7/16	7/16	5/8	2-1/2	10553	10597
7/16	7/16	5/8	3	10555	10599
7/16	7/16	5/8	4	10557	10601
1/2	1/2	5/8	3	10559	10603
1/2	1/2	5/8	4	10561	10605
1/2	1/2	5/8	6	10563	10607

BLANKS • HALF ROUND - RELIEVED FOR RIGHT HAND CUT

Carbide	BRIGHT	+0.0010 -0.0000	
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DIA	SHK	LENGTH OF SPLIT	OAL	HALF ROUND BALL
1/8	1/8	3/16	1-1/2	91073
5/32	5/32	3/16	1-1/2	91074
3/16	3/16	1/4	1-1/2	91075
1/4	1/4	3/8	2	91076
5/16	5/16	3/8	2	91077
3/8	3/8	1/2	2	91078
7/16	7/16	1/2	2	91079
1/2	1/2	9/16	2	91080

BLANKS • HALF ROUND 60° CONICAL- RELIEVED FOR RIGHT HAND CUT

Carbide	BRIGHT	+0.0010 -0.0000	
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DIA	SHK	LENGTH OF SPLIT	OAL	HALF ROUND 60° CONICAL
1/8	1/8	3/16	1-1/2	91081
5/32	5/32	3/16	1-1/2	91082
3/16	3/16	1/4	1-1/2	91083
1/4	1/4	3/8	2	91084
5/16	5/16	3/8	2	91085
3/8	3/8	1/2	2	91086
7/16	7/16	1/2	2	91087
1/2	1/2	1/2	2	91088

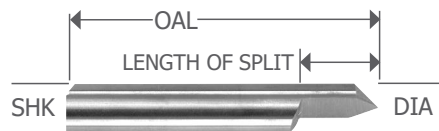
BLANKS • HALF ROUND SQUARE - RELIEVED FOR RIGHT HAND CUT

Carbide	BRIGHT	+0.0010 -0.0000	
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DIA	SHK	LENGTH OF SPLIT	OAL	HALF ROUND SQUARE
1/8	1/8	3/16	1-1/2	91089
5/32	5/32	3/16	1-1/2	91090
3/16	3/16	1/4	1-1/2	91091
1/4	1/4	3/8	2	91092
5/16	5/16	3/8	2	91093
3/8	3/8	1/2	2	91094
7/16	7/16	1/2	2	91095
1/2	1/2	1/2	2	91096

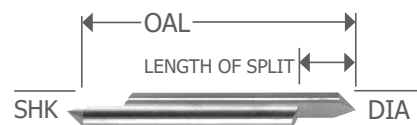
BLANKS • 30°, 60°, 90° CONICAL - RELIEVED FOR RIGHT HAND CUT



Carbide	BRIGHT	+0.0010 -0.0000	
---------	--------	--------------------	--

DIA	SHK	LENGTH OF SPLIT	OAL	30°	60°	90°
1/8	1/8	3/8	1-1/2	91001	91013	91025
1/8	1/8	3/8	3	91002	91014	91026
3/16	3/16	7/16	2	91003	91015	91027
3/16	3/16	7/16	3	91004	91016	91028
1/4	1/4	1/2	2	91005	91017	91029
1/4	1/4	1/2	4	91006	91018	91030
5/16	5/16	1/2	2-1/2	91007	91019	91031
5/16	5/16	1/2	4	91008	91020	91032
3/8	3/8	1/2	2-1/2	91009	91021	91033
3/8	3/8	1/2	4	91010	91022	91034
1/2	1/2	5/8	3	91011	91023	91035
1/2	1/2	5/8	4	91012	91024	91036

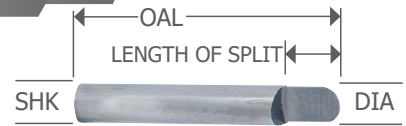
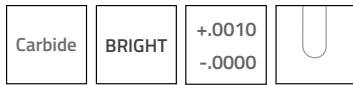
BLANKS • 30°, 60°, 90° DOUBLE END CONICAL - RELIEVED FOR RIGHT HAND CUT



Carbide	BRIGHT	+0.0010 -0.0000	
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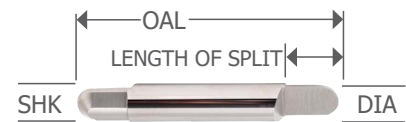
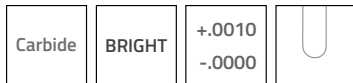
DIA	SHK	LENGTH OF SPLIT	OAL	30°	60°	90°
1/8	1/8	3/8	2	91037	91049	91061
1/8	1/8	3/8	3	91038	91050	91062
3/16	3/16	7/16	2	91039	91051	91063
3/16	3/16	7/16	3	91040	91052	91064
1/4	1/4	1/2	2-1/2	91041	91053	91065
1/4	1/4	1/2	4	91042	91054	91066
5/16	5/16	1/2	2-1/2	91043	91055	91067
5/16	5/16	1/2	4	91044	91056	91068
3/8	3/8	1/2	2-1/2	91045	91057	91069
3/8	3/8	1/2	4	91046	91058	91070
1/2	1/2	5/8	3	91047	91059	91071
1/2	1/2	5/8	4	91048	91060	91072

BLANKS • SPLIT BALL NOSE - RELIEVED FOR RIGHT HAND CUT



DIA	SHK	LENGTH OF SPLIT	OAL	SINGLE END
1/8	1/8	3/8	1-1/2	12344
1/8	1/8	3/8	3	12345
3/16	3/16	3/8	2	12346
3/16	3/16	3/8	3	12347
1/4	1/4	3/8	2-1/2	12348
1/4	1/4	3/8	4	12349
5/16	5/16	1/2	2-1/2	12350
3/8	3/8	1/2	2-1/2	12351
1/2	1/2	5/8	3	12352

BLANKS • Double End SPLIT BALL NOSE - RELIEVED FOR RIGHT HAND CUT



DIA	SHK	LENGTH OF SPLIT	OAL	DOUBLE END
1/8	1/8	3/8	1-1/2	12353
1/8	1/8	3/8	3	12354
3/16	3/16	3/8	2	12355
3/16	3/16	3/8	3	12356
1/4	1/4	3/8	2-1/2	12357
1/4	1/4	3/8	4	12358
5/16	5/16	1/2	2-1/2	12359
3/8	3/8	1/2	2-1/2	12360
1/2	1/2	5/8	3	12361
1/2	1/2	5/8	4	12363

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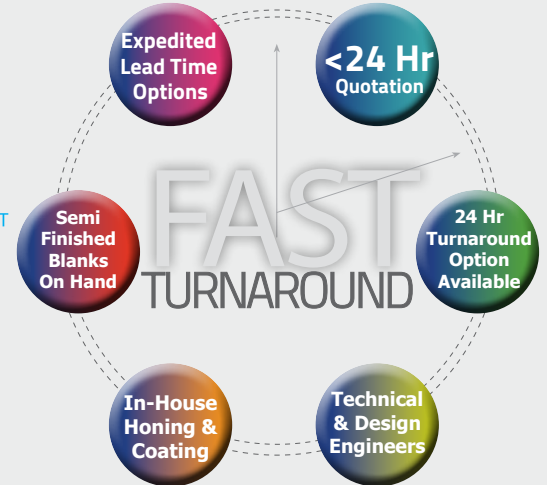


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Most often "SAME DAY"

EXPEDITED DELIVERY OPTION ON SPECIALS AVAILABLE BY REQUEST

SIMPLE, COMPLEX & CUSTOM DESIGN INCLUDED

24 HOUR TURN AROUND IS AVAILABLE ON CERTAIN SERIES



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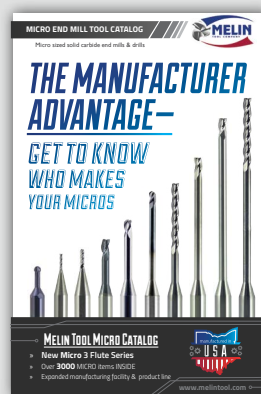
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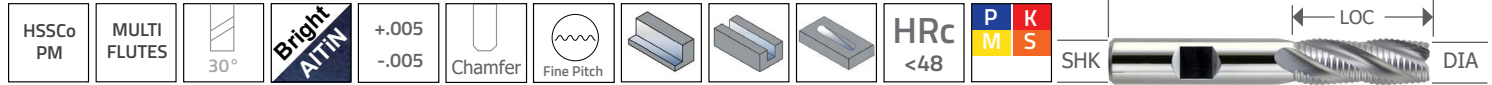


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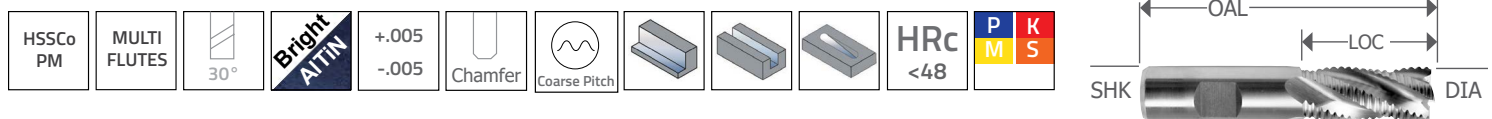
MULTI FLUTE • FINE PITCH CC ROUGHING END MILLS



SERIES: CCFPM

DIA	SHK	LOC	OAL	LENGTH	FLUTE	TOOL	BRIGHT EDP	ALTIN EDP
3/8	3/8	3/4	2-1/2	std	4	CCFPM-1212	12893	52893
3/8	3/8	1-1/2	3-1/4	long	4	CCFPM-1212-L	12895	52895
1/2	1/2	5/8	2-5/8	stub	4	CCFPM-1616-S	12897	52897
1/2	1/2	1-1/4	3-1/4	std	4	CCFPM-1616	12899	52899
1/2	1/2	2	4	long	4	CCFPM-1616-L	12901	52901
5/8	5/8	3/4	2-7/8	stub	4	CCFPM-2020-S	12903	52903
5/8	5/8	1-5/8	3-3/4	std	4	CCFPM-2020	12905	52905
5/8	5/8	2-1/2	4-5/8	long	4	CCFPM-2020-L	12907	52907
3/4	3/4	3/4	3	stub	4	CCFPM-2424-S	12909	52909
3/4	3/4	1-5/8	3-7/8	std	4	CCFPM-2424	12911	52911
3/4	3/4	2-1/4	4-1/2	med	4	CCFPM-2424-M	12913	52913
3/4	3/4	3	5-1/4	long	4	CCFPM-2424-L	12915	52915
1	1	2	4-1/2	std	5	CCFPM-3232	12917	52917
1	1	3	5-1/2	med	5	CCFPM-3232-M	12919	52919
1	1	4	6-1/2	long	5	CCFPM-3232-L	12921	52921
1-1/4	1-1/4	2	4-1/2	std	6	CCFPM-4040	12923	52923
1-1/4	1-1/4	4	6-1/2	long	6	CCFPM-4040-L	12925	52925

MULTI FLUTE • COARSE PITCH CC ROUGHING END MILLS

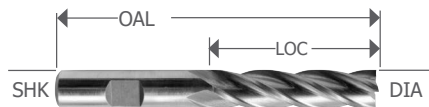


SERIES: CCRPM

DIA	SHK	LOC	OAL	LENGTH	FLUTE	TOOL	BRIGHT EDP	ALTIN EDP
3/8	3/8	3/4	2-1/2	std	4	CCRPM-1212	12927	52927
3/8	3/8	1-1/2	3-1/4	long	4	CCRPM-1212-L	12929	52929
1/2	1/2	5/8	2-5/8	stub	4	CCRPM-1616-S	12931	52931
1/2	1/2	1-1/4	3-1/4	std	4	CCRPM-1616	12933	52933
1/2	1/2	2	4	long	4	CCRPM-1616-L	12935	52935
5/8	5/8	3/4	2-7/8	stub	4	CCRPM-2020-S	12937	52937
5/8	5/8	1-5/8	3-3/4	std	4	CCRPM-2020	12939	52939
5/8	5/8	2-1/2	4-5/8	long	4	CCRPM-2020-L	12941	52941
3/4	3/4	3/4	3	stub	4	CCRPM-2424-S	12943	52943
3/4	3/4	1-5/8	3-7/8	std	4	CCRPM-2424	12945	52945
3/4	3/4	2-1/4	4-1/2	med	4	CCRPM-2424-M	12947	52947
3/4	3/4	3	5-1/4	long	4	CCRPM-2424-L	12949	52949
1	1	2	4-1/2	std	5	CCRPM-3232	12951	52951
1	1	3	5-1/2	med	5	CCRPM-3232-M	12953	52953
1	1	4	6-1/2	long	5	CCRPM-3232-L	12955	52955
1-1/4	1-1/4	2	4-1/2	std	6	CCRPM-4040	12959	52959
1-1/4	1-1/4	4	6-1/2	long	6	CCRPM-4040-L	12961	52961

GENERAL PURPOSE POWDERED METAL END MILLS

4 FLUTE • CC FINISHING END MILLS



HSSCo
PM



Bright
ALTIN

+0.0015
-0.0000

Square



HRC
<48

P
M
K
S

SERIES: CCPM

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	ALTIN EDP
3/8	3/8	3/4	2-1/2	std	CCPM-1212	12969	52969
3/8	3/8	1-1/2	3-1/4	long	CCPM-1212-L	12971	52971
1/2	1/2	5/8	2-5/8	stub	CCPM-1616-S	12973	52973
1/2	1/2	1-1/4	3-1/4	std	CCPM-1616	12975	52975
1/2	1/2	2	4	long	CCPM-1616-L	12977	52977
5/8	5/8	3/4	2-7/8	stub	CCPM-2020-S	12979	52979
5/8	5/8	1-5/8	3-3/4	std	CCPM-2020	12981	52981
5/8	5/8	2-1/2	4-5/8	long	CCPM-2020-L	12983	52983
3/4	3/4	3/4	3	stub	CCPM-2424-S	12985	52985
3/4	3/4	1-5/8	3-7/8	std	CCPM-2424	12987	52987
3/4	3/4	2-1/4	4-1/2	med	CCPM-2424-M	12989	52989
3/4	3/4	3	5-1/4	long	CCPM-2424-L	12991	52991
1	1	2	4-1/2	std	CCPM-3232	12993	52993
1	1	3	5-1/2	med	CCPM-3232-M	12995	52995
1	1	4	6-1/2	long	CCPM-3232-L	12997	52997
1-1/4	1-1/4	2	4-1/2	std	CCPM-4040	12999	52999
1-1/4	1-1/4	4	6-1/2	long	CCPM-4040-L	13001	53001



HSSCo
PM



Variable

nAcO

+0.0015
-0.0000

Radius



HRC
<48

P
M
K
S

4 FLUTE • CC VARIABLE FLUTE END MILLS

SERIES: VHPM

DIA	SHK	LOC	OAL	RADIUS	LENGTH	TOOL	NACO EDP
3/8	3/8	3/4	2-1/2	0.015-0.020	std	VHPM-1212	13003
1/2	1/2	5/8	2-5/8	0.025-0.030	stub	VHPM-1616-S	13005
1/2	1/2	1-1/4	3-1/4	0.025-0.030	std	VHPM-1616	13007
5/8	5/8	3/4	2-7/8	0.030-0.035	stub	VHPM-2020-S	13009
5/8	5/8	1-5/8	3-3/4	0.030-0.035	std	VHPM-2020	13011
3/4	3/4	3/4	3	0.030-0.035	stub	VHPM-2424-S	13013
3/4	3/4	1-5/8	3-7/8	0.030-0.035	std	VHPM-2424	13015
1	1	2	4-1/2	0.030-0.035	std	VHPM-3232	13017
1-1/4	1-1/4	2	4-1/2	0.030-0.035	std	VHPM-4040	13019

MULTI FLUTE • FINE PITCH CENTER CUTTING ROUGHING END MILLS



SERIES: CCFP

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
3/16	3/8	1/2	2-3/8	4	std	CCFP-1206	17672	47672
1/4	3/8	5/8	2-7/16	4	std	CCFP-1208	17673	47673
1/4	3/8	1-1/8	3-1/16	4	long	CCFP-1208-L	17674	47674
5/16	3/8	3/4	2-1/2	4	std	CCFP-1210	17675	47675
5/16	3/8	1-3/8	3-1/8	4	long	CCFP-1210-L	17676	47676
3/8	3/8	3/8	2-1/8	4	stub	CCFPS-1212	16453	46453
3/8	3/8	3/4	2-1/2	4	std	CCFP-1212	17677	47677
3/8	3/8	1-1/2	3-1/4	4	long	CCFP-1212-L	17678	47678
7/16	3/8	1	2-11/16	4	std	CCFP-1214	17679	47679
1/2	1/2	1/2	2-1/2	4	stub	CCFPS-1616	16454	46454
1/2	1/2	5/8	2-5/8	4	stub	CCFP-1616-2	17680	47680
1/2	1/2	1	3	4	std	CFPS-1616	15536	45536
1/2	1/2	1-1/4	3-1/4	4	std	CCFP-1616	17681	47681
1/2	1/2	1-5/8	3-5/8	4	med	CCFP-1616-M	17682	47682
1/2	1/2	2	4	4	long	CCFP-1616-L	16031	46031
1/2	1/2	2-1/2	4-1/2	4	long	CFP-1616-LL	15682	45682
1/2	1/2	3	5	4	xl	CFP-1616-E	15684	45684
9/16	1/2	1-3/8	3-3/8	4	std	CFP-1618	15540	45540
5/8	5/8	5/8	2-3/4	4	stub	CCFPS-2020	16455	46455
5/8	5/8	3/4	2-7/8	4	stub	CFPS-2020	15544	45544
5/8	5/8	1-1/4	3-3/4	4	std	CFP-2020-2	15686	45686
5/8	5/8	1-5/8	3-3/4	4	std	CCFP-2020	17683	47683
5/8	5/8	2-1/8	4-1/4	4	med	CFP-2020-M	15688	45688
5/8	5/8	2-1/2	4-5/8	4	long	CCFP-2020-L	16032	46032
5/8	5/8	3-1/8	5-1/4	4	xl	CFP-2020-E	15692	45692
3/4	5/8	1-5/8	3-3/4	4	std	CCFP-2024	17684	47684
3/4	3/4	3/4	3	4	stub	CCFPS-2424	16456	46456
3/4	3/4	1-5/8	3-7/8	4	std	CCFP-2424	17685	47685
3/4	3/4	2-1/4	4-1/2	4	med	CCFP-2424-M	17686	47686
3/4	3/4	3	5-1/4	4	long	CCFP-2424-L	16033	46033
7/8	3/4	1-7/8	4-1/8	5	std	CCFP-2428	12324	42324
1	3/4	2	4-1/4	5	med	CCFP-2432-M	17687	47687
1	1	2	4-1/2	5	std	CCFP-3232	17688	47688
1	1	3	5-1/2	5	med	CCFP-3232-M	17689	47689
1	1	4	6-1/2	5	long	CCFP-3232-L	16034	46034
1-1/4	1-1/4	1-3/8	3-7/8	6	stub	CCFPS-4040	11319	41319
1-1/4	1-1/4	2	4-1/2	6	std	CCFP-4040	10733	40733
1-1/4	1-1/4	3	5-1/2	6	med	CCFP-4040-M	16035	46035
1-1/4	1-1/4	4	6-1/2	6	long	CCFP-4040-L	16036	46036
1-1/2	1-1/4	2	4-1/2	6	std	CCFP-4048	12568	42568
1-1/2	1-1/4	3	5-1/2	6	med	CCFP-4048-M	12781	42781
1-1/2	1-1/4	4	6-1/2	6	long	CCFP-4048-L	12323	42323

MULTI FLUTE • FINE PITCH NON-CENTER CUTTING ROUGHING END MILLS



HSSCo
M42

MULTI
FLUTES

30°

Bright
TiCN

+0.005
-0.005

Chamfer

Fine Pitch



HRC
<44

P
M
K
S

SERIES: CFP

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
* All roughers 5/8 and under are only available center cutting. See table on page 134								
11/16	5/8	1-5/8	3-3/4	4	std	CFP-2022	15694	45694
3/4	3/4	3/4	3	4	stub	CFPS-2424	15548	45548
3/4	3/4	1-1/4	3-1/2	4	std	CFP-2424-2	15698	45698
3/4	5/8	1-5/8	3-3/4	4	std	CFP-2024	15696	45696
3/4	3/4	1-5/8	3-7/8	4	std	CFP-2424	15546	45546
3/4	3/4	2-1/2	4-3/4	4	med	CFP-2424-M	15550	45550
3/4	3/4	3	5-1/4	4	long	CFP-2424-L	15552	45552
3/4	3/4	4-1/8	6-3/8	4	xl	CFP-2424-E	15700	45700
13/16	3/4	1-7/8	4-1/8	5	std	CFP-2426	15702	45702
7/8	3/4	1-1/8	3-3/8	5	stub	CFPS-2428	15706	45706
7/8	3/4	1-7/8	4-1/8	5	std	CFP-2428	15704	45704
7/8	7/8	1-7/8	4-1/8	5	std	CFP-2828	15738	45738
7/8	3/4	3-1/2	5-3/4	5	long	CFP-2428-L	15708	45708
7/8	7/8	3-1/2	5-3/4	5	long	CFP-2828-L	15740	45740
1	3/4	1-1/8	3-3/8	5	stub	CFPS-2432	15554	45554
1	1	1-1/8	3-5/8	5	stub	CFPS-3232-2	15742	45742
1	3/4	1-1/2	3-3/4	5	std	CFP-2432	15794	45794
1	1	1-5/8	4-1/8	5	stub	CFPS-3232	15560	45560
1	3/4	2	4-1/4	5	med	CFP-2432-M	15556	45556
1	1	2	4-1/2	5	std	CFP-3232	15558	45558
1	1	3	5-1/2	5	med	CFP-3232-M	15562	45562
1	3/4	4	6-1/4	5	long	CFP-2432-L	15710	45710
1	1	4	6-1/2	5	long	CFP-3232-L	15744	45744
1	1	6	8-1/2	5	xl	CFP-3232-E	15746	45746
1-1/8	3/4	1-1/8	3-3/8	6	stub	CFPS-2436	15714	45714
1-1/8	3/4	2	4-1/4	6	std	CFP-2436	15712	45712
1-1/8	1	2	4-1/2	6	std	CFP-3236	15748	45748
1-1/8	1	3-1/2	6	6	long	CFP-3236-L	15750	45750
1-1/4	3/4	1-1/8	3-3/8	6	stub	CFPS-2440	15716	45716
1-1/4	3/4	2	4-1/4	6	med	CFP-2440-M	15718	45718
1-1/4	1-1/4	2	4-1/2	6	std	CFP-4040	15564	45564
1-1/4	1-1/4	3	5-1/2	6	med	CFP-4040-M	15566	45566
1-1/4	1-1/4	4	6-1/2	6	long	CFP-4040-L	15568	45568
1-1/4	1-1/4	6	8-1/2	6	xl	CFP-4040-E	15570	45570
1-3/8	3/4	1-1/8	3-3/8	6	stub	CFPS-2444	15722	45722
1-3/8	3/4	2	4-1/4	6	std	CFP-2444	15720	45720
1-1/2	3/4	1-1/8	3-3/8	6	stub	CFPS-2448	15728	45728
1-1/2	3/4	1-1/2	3-3/4	6	std	CFP-2448	15724	45724
1-1/2	3/4	2	4-1/4	6	std	CFP-2448-2	15726	45726
1-1/2	1-1/4	2	4-1/2	6	std	CFP-4048	15752	45752
1-1/2	1-1/4	3	5-1/2	6	med	CFP-4048-M	15754	45754
1-1/2	1-1/4	4	6-1/2	6	long	CFP-4048-L	15756	45756
1-1/2	1-1/4	6	8-1/2	6	xl	CFP-4048-E	15758	45758
1-3/4	3/4	1-1/8	3-3/8	6	stub	CFPS-2456	15732	45732
1-3/4	3/4	2	4-1/4	6	std	CFP-2456	15730	45730
2	3/4	1-1/8	3-3/8	8	stub	CFPS-2464	15736	45736
2	3/4	2	4-1/4	8	std	CFP-2464	15734	45734
2	1-1/4	2	4-1/2	8	std	CFP-4064	15760	45760
2	2	4	7-3/4	8	med	CFP-6464-M	15764	45764

MULTI FLUTE • FINE PITCH CENTER CUTTING ROUGHING END MILLS

HSSCo
M42

MULTI
FLUTES

30°

Bright
TiCN

+.125mm
-.125mm

Chamfer

Fine Pitch

HRC
<44

P
M
K
S

SERIES: CCFP

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
6mm	6mm	13mm	57mm	3	std	CCFP-M6M6	16391	46391
7mm	10mm	16mm	69mm	3	std	CCFP-M10M7	16392	46392
8mm	10mm	19mm	69mm	3	std	CCFP-M10M8	16393	46393
9mm	10mm	19mm	69mm	4	std	CCFP-M10M9	16394	46394
10mm	10mm	22mm	72mm	4	std	CCFP-M10M10	16395	46395
11mm	12mm	22mm	79mm	4	std	CCFP-M12M11	16396	46396
12mm	12mm	26mm	83mm	4	std	CCFP-M12M12	16397	46397
13mm	12mm	26mm	83mm	4	std	CCFP-M12M13	16398	46398
14mm	12mm	26mm	83mm	4	std	CCFP-M12M14	16399	46399
15mm	12mm	26mm	83mm	4	std	CCFP-M12M15	16400	46400
16mm	16mm	32mm	92mm	4	std	CCFP-M16M16	16401	46401
18mm	16mm	32mm	92mm	4	std	CCFP-M16M18	16402	46402
20mm	20mm	38mm	104mm	4	std	CCFP-M20M20	16403	46403
22mm	20mm	38mm	104mm	5	std	CCFP-M20M22	16404	46404
24mm	25mm	45mm	121mm	5	std	CCFP-M25M24	16405	46405
25mm	25mm	45mm	121mm	5	std	CCFP-M25M25	16406	46406
28mm	25mm	45mm	121mm	6	std	CCFP-M25M28*	16407	46407
32mm	32mm	53mm	133mm	6	std	CCFP-M32M32*	16409	46409

*=Non-Centercutting

MULTI FLUTE • FINE PITCH CENTER CUTTING BALL NOSE ROUGHING END MILLS

HSSCo
M42

MULTI
FLUTES

30°

Bright
TiCN

+.005
-.005

Ball

Fine Pitch

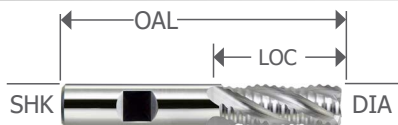
HRC
<44

P
M
K
S

SERIES: CCFP-__-B

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
1/4	3/8	5/8	2-7/16	4	std	CCFP-1208-B	15840	45840
3/8	3/8	3/4	2-1/2	4	std	CCFP-1212-B	15842	45842
1/2	1/2	1-1/4	3-1/4	4	std	CCFP-1616-B	15844	45844
5/8	5/8	1-5/8	3-3/4	4	std	CCFP-2020-B	15846	45846
3/4	3/4	1-5/8	3-7/8	4	std	CCFP-2424-B	15848	45848
1	1	2	4-1/2	5	std	CCFP-3232-B	15850	45850

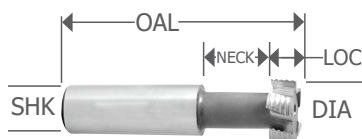
MULTI FLUTE • COARSE PITCH NON-CENTER CUTTING ROUGHING END MILL



SERIES: CR

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
3/8	3/8	3/4	2-1/2	4	std	CR-1212	16510	46510
3/8	3/8	1-1/2	3-1/4	4	long	CR-1212-L	16601	46601
7/16	3/8	1	2-11/16	4	std	CR-1214	16698	46698
1/2	1/2	1-1/4	3-1/4	4	std	CR-1616	16511	46511
1/2	1/2	1	3	4	stub	CRS-1616	16512	46512
1/2	1/2	2	4	4	long	CR-1616-L	16513	46513
5/8	5/8	1-5/8	3-3/4	4	std	CR-2020	16514	46514
5/8	5/8	2-1/2	4-5/8	4	long	CR-2020-L	16515	46515
3/4	5/8	1-5/8	3-3/4	4	std	CR-2024	16602	46602
3/4	3/4	1-5/8	3-7/8	4	std	CR-2424	16516	46516
3/4	3/4	3/4	3	4	stub	CRS-2424	16603	46603
3/4	3/4	3	5-1/4	4	long	CR-2424-L	16517	46517
7/8	3/4	1-1/8	3-3/8	5	std	CR-2428	16518	46518
7/8	3/4	3-1/2	5-3/4	5	long	CR-2428-L	16519	46519
1	3/4	1-1/2	3-3/4	5	std	CR-2432	16699	46699
1	3/4	1-1/8	3-3/8	5	stub	CRS-2432	16520	46520
1	3/4	1-7/8	4-1/8	5	med	CR-2432-M	16521	46521
1	3/4	4	6-1/4	5	long	CR-2432-L	16522	46522
1-1/8	3/4	1-1/8	3-3/8	6	stub	CRS-2436	16523	46523
1-1/4	3/4	1-1/2	3-3/4	6	std	CR-2440	16700	46700
1-1/4	3/4	1-1/8	3-3/8	6	stub	CRS-2440-2	16524	46524
1-1/4	3/4	2	4-1/2	6	med	CR-2440-M	16525	46525
1-1/2	3/4	1-1/2	3-3/4	6	std	CR-2448	16605	46605
1-1/2	3/4	2-1/4	4-1/2	6	std	CR-2448-2	16526	46526
1-1/2	3/4	1-1/8	3-3/8	6	stub	CRS-2448-2	16527	46527
2	3/4	1-1/8	3-3/8	8	stub	CRS-2464-2	16528	46528
1	1	2	4-1/2	5	std	CR-3232	16529	46529
1	1	3	5-1/2	5	med	CR-3232-M	16530	46530
1	1	4	6-1/2	5	long	CR-3232-L	16531	46531
1-1/8	1	2	4-1/2	6	std	CR-3236	16701	46701
1-1/4	1-1/4	2	4-1/2	6	std	CR-4040	16532	46532
1-1/4	1-1/4	3	5-1/2	6	med	CR-4040-M	16533	46533
1-1/4	1-1/4	4	6-1/2	6	long	CR-4040-L	16534	46534
1-1/2	1-1/4	2	4-1/2	6	std	CR-4048	16535	46535
1-1/2	1-1/4	3	5-1/2	6	med	CR-4048-M	16536	46536
1-1/2	1-1/4	4	6-1/2	6	long	CR-4048-L	16537	46537

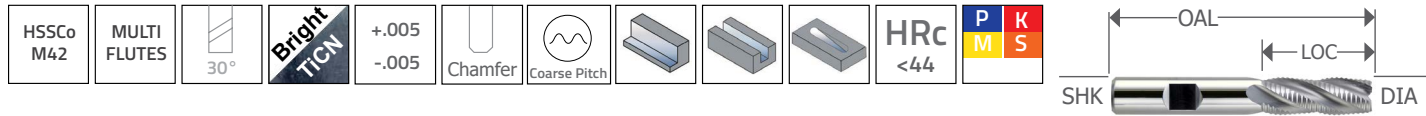
MULTI FLUTE • COARSE PITCH T-SLOT ROUGHING END MILLS



SERIES: CRPN

DIA	SHK	LOC	NECK	OAL	BOLT SIZE	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
0.9588	3/4	.3856	1.019	3-7/16	1/2	5	std	CRPN-2431	12757	42757
1.2400	1	.4790	1.117	3-15/16	5/8	6	std	CRPN-3240	12759	42759
1.4590	1	.6200	1.537	4-7/16	3/4	6	std	CRPN-3247	12761	42761
1.8338	1-1/4	.8230	1.706	4-13/16	1	8	std	CRPN-4059	12763	42763
2.2090	1-1/4	1.088	2.006	5-3/8	1-1/4	8	std	CRPN-4071	12765	42765
2.6460	1-1/4	1.339	2.296	5-29/32	1-1/2	8	std	CRPN-4085	12767	42767

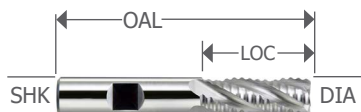
MULTI FLUTE • COARSE PITCH CENTER CUTTING ROUGHING END MILL



SERIES: CCRP

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
3/16	3/8	1/2	2-3/8	4	std	CCRP-1206	15600	45600
1/4	3/8	5/8	2-7/16	4	std	CCRP-1208	15602	45602
1/4	3/8	1-1/8	3-1/16	4	long	CCRP-1208-L	15604	45604
1/4	3/8	1-1/4	3-1/16	4	long	CRP-1208-LL	15766	45766
5/16	3/8	3/4	2-1/2	4	std	CCRP-1210	15606	45606
5/16	3/8	1-3/8	3-1/8	4	long	CCRP-1210-L	15608	45608
3/8	3/8	3/4	2-1/2	4	std	CCRP-1212	15610	45610
3/8	3/8	1-1/2	3-1/4	4	long	CCRP-1212-L	15612	45612
7/16	3/8	1	2-11/16	4	std	CCRP-1214	15614	45614
1/2	1/2	5/8	2-5/8	4	std	CCRP-1616-2	15796	45796
1/2	1/2	1	3	4	stub	CCRPS-1616	15616	45616
1/2	1/2	1-1/4	3-1/4	4	std	CCRP-1616	12664	42664
1/2	1/2	1-5/8	3-5/8	4	med	CCRP-1616-M	15618	45618
1/2	1/2	2	4	4	long	CCRP-1616-L	12678	42678
9/16	1/2	1-3/8	3-3/8	4	std	CRP-1618	15584	45584
5/8	5/8	3/4	2-7/8	4	stub	CRPS-2020	15586	45586
5/8	5/8	1-5/8	3-3/4	4	std	CCRP-2020	12666	42666
5/8	5/8	2-1/2	4-5/8	4	long	CCRP-2020-L	12680	42680
3/4	5/8	1-5/8	3-3/4	4	std	CCRP-2024	15620	45620
3/4	3/4	1-5/8	3-7/8	4	std	CCRP-2424	12668	42668
3/4	3/4	2-1/4	4-1/2	4	med	CCRP-2424-M	15622	45622
3/4	3/4	3	5-1/4	4	long	CCRP-2424-L	12682	42682
7/8	3/4	1-7/8	4-1/8	5	std	CCRP-2428	12451	42451
1	3/4	2	4-1/4	5	med	CCRP-2432-M	15624	45624
1	1	2	4-1/2	5	std	CCRP-3232	12670	42670
1	1	3	5-1/2	5	med	CCRP-3232-M	15626	45626
1	1	4	6-1/2	5	long	CCRP-3232-L	12684	42684
1-1/4	3/4	2	4-1/4	6	med	CCRP-2440-M	13055	43055
1-1/4	1-1/4	2	4-1/2	6	std	CCRP-4040	12672	42672
1-1/4	1-1/4	3	5-1/2	6	med	CCRP-4040-M	12457	42457
1-1/4	1-1/4	4	6-1/2	6	long	CCRP-4040-L	12686	42686
1-1/2	1-1/4	2	4-1/2	6	std	CCRP-4048	12674	42674
1-1/2	1-1/4	3	5-1/2	6	med	CCRP-4048-M	12459	42459
1-1/2	1-1/4	4	6-1/2	6	long	CCRP-4048-L	12688	42688

MULTI FLUTE • COARSE PITCH NON-CENTER CUTTING ROUGHING END MILL



SERIES: CRP

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
* All roughers 5/8 and under are only available center cutting. See table on page 138								
11/16	5/8	1-5/8	3-3/4	4	std	CRP-2022	15588	45588
3/4	3/4	3/4	3	4	stub	CRPS-2424	12588	42588
3/4	5/8	1-5/8	3-3/4	4	std	CRP-2024	12584	42584
3/4	3/4	1-5/8	3-7/8	4	std	CRP-2424	12586	42586
3/4	3/4	2-1/2	4-3/4	4	med	CRP-2424-M	15590	45590
3/4	3/4	3	5-1/4	4	long	CRP-2424-L	12624	42624
13/16	3/4	1-7/8	4-1/8	4	std	CRP-2426	15592	45592
7/8	3/4	1-7/8	4-1/8	5	std	CRP-2428	12590	42590
7/8	7/8	1-7/8	4-1/8	5	std	CRP-2828	12606	42606
7/8	3/4	3-1/2	5-3/4	5	long	CRP-2428-L	12626	42626
7/8	7/8	3-1/2	5-3/4	5	long	CRP-2828-L	12628	42628
1	3/4	3/4	3	5	stub	CRPS-2432	12594	42594
1	3/4	1-1/2	3-3/4	5	std	CRP-2432	12592	42592
1	1	1-5/8	4-1/8	5	stub	CRPS-3232	15598	45598
1	3/4	2	4-1/4	5	med	CRP-2432-M	15594	45594
1	1	2	4-1/2	5	std	CRP-3232	12608	42608
1	1	3	5-1/2	5	med	CRP-3232-M	12630	42630
1	1	4	6-1/2	5	long	CRP-3232-L	12632	42632
1	1	6	8-1/2	5	xl	CRP-3232-E	12634	42634
1-1/8	1	2	4-1/2	6	std	CRP-3236	12610	42610
1-1/4	3/4	3/4	3	6	stub	CRPS-2440	12598	42598
1-1/4	3/4	1-1/2	3-3/4	6	std	CRP-2440	12596	42596
1-1/4	3/4	2	4-1/2	6	med	CRP-2440-M	15596	45596
1-1/4	1-1/4	2	4-1/2	6	std	CRP-4040	12612	42612
1-1/4	1-1/4	3	5-1/2	6	med	CRP-4040-M	12636	42636
1-1/4	1-1/4	4	6-1/2	6	long	CRP-4040-L	12638	42638
1-1/4	1-1/4	6	8-1/2	6	xl	CRP-4040-E	12640	42640
1-1/2	3/4	3/4	3	6	stub	CRPS-2448	12602	42602
1-1/2	3/4	1-1/2	3-3/4	6	std	CRP-2448	12600	42600
1-1/2	1-1/4	2	4-1/2	6	std	CRP-4048	12614	42614
1-1/2	1-1/4	3	5-1/2	6	med	CRP-4048-M	12642	42642
1-1/2	1-1/4	4	6-1/2	6	long	CRP-4048-L	12644	42644
1-1/2	1-1/4	5	7-1/2	6	xl	CRP-4048-E	12646	42646
1-1/2	1-1/4	8	10-1/2	6	xxl	CRP-4048-EE	12648	42648
1-3/4	1-1/4	2-1/2	5-1/4	6	std	CRP-4056	12616	42616
1-3/4	1-1/4	4	6-1/2	6	long	CRP-4056-L	12650	42650
2	3/4	3/4	3	8	stub	CRPS-2464	12604	42604
2	1-1/4	2	4-1/2	8	std	CRP-4064	12618	42618
2	2	4	7-3/4	8	med	CRP-6464-M	15882	45882
2	2	6	9-3/4	8	long	CRP-6464-L	12658	42658

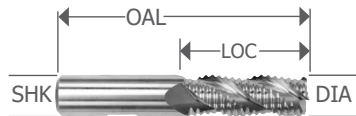
3 FLUTE • FINE PITCH ROUGHERS WITH 35° HIGH HELIX FOR ALUMINUM



SERIES: EFP

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	TICN EDP
1/4	3/8	1/4	2-1/8	stub	EFPS-1208	15784	45784
1/4	3/8	5/8	2-1/2	std	EFP-1208	15786	45786
5/16	3/8	3/4	2-1/2	std	EFP-1210	10993	40993
3/8	3/8	3/8	2-1/8	stub	EFPS-1212	15788	45788
3/8	3/8	3/4	2-1/2	std	EFP-1212	15884	45884
1/2	1/2	1/2	2-9/16	stub	EFPS-1616-2	15790	45790
1/2	1/2	1-1/4	3-1/4	std	EFP-1616	15886	45886
1/2	1/2	2	4	long	EFP-1616-L	16458	46458
5/8	5/8	1-5/8	3-3/4	std	EFP-2020	15888	45888
3/4	3/4	3/4	3	stub	EFPS-2424	15792	45792
3/4	3/4	1-5/8	3-7/8	std	EFP-2424	15890	45890
3/4	3/4	2-1/4	4-1/2	med	EFP-2424-M	10268	40268
3/4	3/4	3	5-1/4	long	EFP-2424-L	16460	46460
1	1	2	4-1/2	std	EFP-3232	15892	45892

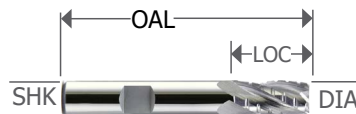
3 FLUTE • COARSE PITCH ROUGHERS WITH 35° HIGH HELIX FOR ALUMINUM



SERIES: ERP

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	TICN EDP
3/16	3/8	1/2	2-3/8	std	ERP-1206	15628	45628
1/4	3/8	5/8	2-7/16	std	ERP-1208	15630	45630
1/4	3/8	1-1/8	2-15/16	long	ERP-1208-L	15632	45632
5/16	3/8	3/4	2-1/2	std	ERP-1210	15634	45634
5/16	3/8	1-3/8	3-1/8	long	ERP-1210-L	15636	45636
3/8	3/8	3/4	2-1/2	std	ERP-1212	15638	45638
3/8	3/8	1-1/2	3-1/4	long	ERP-1212-L	15640	45640
7/16	3/8	1	2-11/16	std	ERP-1214	15642	45642
1/2	1/2	1/2	2-9/16	stub	ERPS-1616-2	15780	45780
1/2	1/2	1	3	stub	ERPS-1616	15646	45646
1/2	1/2	1-1/4	3-1/4	std	ERP-1616	15644	45644
1/2	1/2	1-5/8	3-5/8	med	ERP-1616-M	15648	45648
1/2	1/2	2	4	long	ERP-1616-L	15650	45650
5/8	5/8	3/4	2-7/8	stub	ERPS-2020	15654	45654
5/8	5/8	1-5/8	3-3/4	std	ERP-2020	15652	45652
5/8	5/8	2-1/2	4-5/8	long	ERP-2020-L	15656	45656
3/4	3/4	3/4	3	stub	ERPS-2424	15660	45660
3/4	3/4	1-5/8	3-7/8	std	ERP-2424	15658	45658
3/4	3/4	2	4-1/4	std	ERP-2424-2	15798	45798
3/4	3/4	2-1/2	4-3/4	med	ERP-2424-M	15662	45662
3/4	3/4	3	5-1/4	long	ERP-2424-L	15664	45664
1	3/4	1-1/8	3-3/8	stub	ERPS-2432	15782	45782
1	3/4	1-1/2	3-3/4	std	ERP-2432	15778	45778
1	1	2	4-1/2	std	ERP-3232	15666	45666
1	1	3	5-1/2	med	ERP-3232-M	15668	45668
1	1	4	6-1/2	long	ERP-3232-L	13089	43089

3 FLUTE • FINE PITCH ROUGHER/FINISHERS WITH 35° HIGH HELIX FOR ALUMINUM



SERIES: ERFP

DIA	SHK	LOC	OAL	LENGTH	TOOL	BRIGHT EDP	TICN EDP
3/16	3/8	1/2	2-3/8	std	ERFP-1206	17691	47691
1/4	3/8	5/8	2-7/16	std	ERFP-1208	17692	47692
3/8	3/8	3/4	2-1/2	std	ERFP-1212	17693	47693
1/2	1/2	1-1/4	3-1/4	std	ERFP-1616	17694	47694
5/8	5/8	1-5/8	3-3/4	std	ERFP-2020	16711	46711
3/4	3/4	1-5/8	3-7/8	std	ERFP-2424	17695	47695
1	1	2	4-1/2	std	ERFP-3232	17696	47696

MULTI FLUTE • CENTER CUTTING ROUGHER/FINISHER



SERIES: CCRFP

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
3/16	3/8	1/2	2-3/8	4	std	CCRFP-1206	13101	43101
1/4	3/8	5/8	2-7/16	4	std	CCRFP-1208	13103	43103
5/16	3/8	3/4	2-1/2	4	std	CCRFP-1210	11907	41907
5/16	3/8	1-3/8	3-1/8	4	long	CCRFP-1210-L	11839	41839
3/8	3/8	3/4	2-1/2	4	std	CCRFP-1212	11841	41841
7/16	3/8	1	2-11/16	4	std	CCRFP-1214	12281	42281
1/2	1/2	1	3	4	stub	CRFPS-1616	15510	45510
1/2	1/2	1-1/4	3-1/4	4	std	CCRFP-1616	11873	41873
1/2	1/2	1-5/8	3-5/8	4	med	CRFP-1616-M	15512	45512
1/2	1/2	2	4	4	long	CCRFP-1616-L	12236	42236
1/2	1/2	3	5	4	xl	CCRFP-1616-E	11843	41843
9/16	1/2	1-3/8	3-3/8	4	std	CCRFP-1618	11875	41875
5/8	5/8	1-1/4	3-3/4	4	std	CRFP-2020-2	11255	41255
5/8	5/8	1-5/8	3-3/4	4	std	CCRFP-2020	11877	41877
5/8	5/8	2-1/2	4-5/8	4	long	CCRFP-2020-L	11879	41879
11/16	5/8	1-5/8	3-3/4	4	std	CCRFP-2022	11845	41845
3/4	5/8	1-5/8	3-3/4	4	std	CCRFP-2024	11847	41847
3/4	3/4	1-5/8	3-7/8	4	std	CCRFP-2424	11849	41849
3/4	3/4	3	5-1/4	4	long	CCRFP-2424-L	11851	41851
3/4	3/4	4-1/8	6-3/8	4	xl	CCRFP-2424-E	11853	41853
13/16	3/4	1-7/8	4-1/8	5	std	CCRFP-2426	11855	41855
7/8	3/4	1-7/8	4-1/8	5	std	CCRFP-2428	11857	41857
1	3/4	2	4-1/4	5	med	CCRFP-2432-M	12539	42539
1-1/8	3/4	2	4-1/4	6	std	CCRFP-2436	11913	41913
1-1/2	3/4	2	4-1/4	6	std	CCRFP-2448	11911	41911
1	1	2	4-1/2	5	std	CCRFP-3232	11861	41861
1	1	3	5-1/2	5	med	CCRFP-3232-M	11865	41865
1	1	4	6-1/2	5	long	CCRFP-3232-L	11863	41863
1	1	6	8-1/2	5	xl	CCRFP-3232-E	11909	41909
1-1/4	3/4	2	4-1/2	6	med	CCRFP-2440-M	10987	40987
1-1/4	1-1/4	2	4-1/2	6	std	CCRFP-4040	13053	43053
1-1/4	1-1/4	3	5-1/2	6	med	CCRFP-4040-M	12891	42891
1-1/4	1-1/4	4	6-1/2	6	long	CCRFP-4040-L	12331	42331
1-1/4	1-1/4	6	8-1/2	6	xl	CCRFP-4040-E	11867	41867
1-1/2	1-1/4	2	4-1/2	6	std	CCRFP-4048	11869	41869
1-1/2	1-1/4	3	5-1/2	6	med	CCRFP-4048-M	10262	40262
1-1/2	1-1/4	4	6-1/2	6	long	CCRFP-4048-L	11915	41915
1-1/2	1-1/4	6	8-1/2	6	xl	CCRFP-4048-E	12332	42332

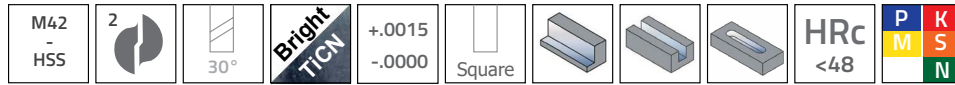
MULTI FLUTE • NON-CENTER CUTTING ROUGHER/FINISHER



SERIES: CRFP

DIA	SHK	LOC	OAL	FLUTE	LENGTH	TOOL	BRIGHT EDP	TICN EDP
* All rougher/finishers 5/8 and under are only available center cutting. See table on page 144								
3/4	3/4	3/4	3	4	stub	CRFPS-2424	11259	41259
3/4	3/4	1-1/4	3-1/2	4	std	CRFP-2424-2	11257	41257
3/4	3/4	1-5/8	3-7/8	4	std	CRFP-2424	15514	45514
3/4	3/4	2-1/2	4-3/4	4	med	CRFP-2424-M	15516	45516
3/4	3/4	3	5-1/4	4	long	CRFP-2424-L	15518	45518
1	3/4	2	4-1/4	5	med	CRFP-2432-M	11261	41261
1	1	2	4-1/2	5	std	CRFP-3232	15520	45520
1	1	3	5-1/2	5	med	CRFP-3232-M	15522	45522
1	1	4	6-1/2	5	long	CRFP-3232-L	11263	41263
1-1/4	1-1/4	6	8-1/2	6	xl	CRFP-4040-E	11265	41265

2 FLUTE • CENTER CUTTING END MILLS



SERIES: A

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/32	3/16	3/32	1-1/2	std	M42	A-601	10002	40002
3/64	3/16	9/64	1-1/2	std	M42	A-601-1/2	10004	40004
1/16	3/16	3/16	1-1/2	std	M42	A-602	10006	40006
5/64	3/16	15/64	1-1/2	std	M42	A-602-1/2	10008	40008
3/32	3/16	9/32	1-1/2	std	M42	A-603	10010	40010
7/64	3/16	21/64	1-1/2	std	M42	A-603-1/2	10012	40012
1/8	3/16	3/8	1-1/2	std	M42	A-604	10014	40014
9/64	3/16	27/64	1-1/2	std	M42	A-604-1/2	10016	40016
5/32	3/16	7/16	1-1/2	std	M42	A-605	10018	40018
11/64	3/16	1/2	1-1/2	std	M42	A-605-1/2	10020	40020
3/16	3/16	1/2	1-1/2	std	M42	A-606	10022	40022
1/4	1/4	3/4	2-1/2	std	M42	A-808	10024	40024

If shank and mill diameters are the same, tolerance is +.0000/-0.0025

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/32	3/8	5/16	2-1/4	std	M42	A-1203	10026	40026
1/8	3/8	3/16	2-1/8	stub	M42	AS-1204	10030	40030
1/8	3/8	3/8	2-5/16	std	M42	A-1204	10028	40028
1/8	3/8	1/2	2-3/8	med	M42	A-1204-M	12802	42802
1/8	3/8	3/4	2-5/8	long	M42	A-1204-L	12804	42804
5/32	3/8	3/16	2-1/16	stub	M42	AS-1205	10034	40034
5/32	3/8	7/16	2-5/16	std	M42	A-1205	10032	40032
5/32	3/8	5/8	2-1/2	med	M42	A-1205-M	12806	42806
5/32	3/8	3/4	2-5/8	long	M42	A-1205-L	12808	42808
3/16	3/8	3/16	2-1/16	stub	M42	AS-1206	10038	40038
3/16	3/8	7/16	2-5/16	std	M42	A-1206	10036	40036
3/16	3/8	5/8	2-1/2	med	M42	A-1206-M	12810	42810
3/16	3/8	3/4	2-5/8	long	M42	A-1206-L	10474	40474
3/16	3/8	1-1/4	3-1/8	xl	M42	A-1206-E	12812	42812
7/32	3/8	1/4	2-1/8	stub	M42	AS-1207	10042	40042
7/32	3/8	1/2	2-3/8	std	M42	A-1207	10040	40040
7/32	3/8	7/8	2-3/4	med	M42	A-1207-M	12814	42814
7/32	3/8	1-1/4	3-1/8	long	M42	A-1207-L	10476	40476
7/32	3/8	1-1/2	3-3/8	xl	M42	A-1207-E	12816	42816
1/4	3/8	1/4	2-1/16	stub	M42	AS-1208	10046	40046
1/4	3/8	1/2	2-5/16	std	M42	A-1208	10044	40044
1/4	3/8	7/8	2-3/4	med	M42	A-1208-M	12818	42818
1/4	3/8	1-1/4	3-1/16	long	M42	A-1208-L	10478	40478
1/4	3/8	1-3/4	3-9/16	xl	M42	A-1208-E	12820	42820
9/32	3/8	5/16	2-1/8	stub	M42	AS-1209	10050	40050
9/32	3/8	9/16	2-3/8	std	M42	A-1209	10048	40048
9/32	3/8	1	2-3/4	med	M42	A-1209-M	12822	42822
9/32	3/8	1-3/8	3-1/8	long	M42	A-1209-L	10480	40480
9/32	3/8	1-3/4	3-5/8	xl	M42	A-1209-E	12824	42824
19/64	3/8	9/16	2-5/16	std	M42	A-1209-1/2	14414	44414
5/16	3/8	5/16	2-1/16	stub	M42	AS-1210	10054	40054
5/16	3/8	9/16	2-5/16	std	M42	A-1210	10052	40052
5/16	3/8	1	2-3/4	med	M42	A-1210-M	12826	42826
5/16	3/8	1-3/8	3-1/8	long	M42	A-1210-L	10482	40482
5/16	3/8	2	3-3/4	xl	M42	A-1210-E	12828	42828
11/32	3/8	3/8	2-3/16	stub	M42	AS-1211	10058	40058
11/32	3/8	3/4	2-1/2	std	M42	A-1211	10056	40056
11/32	3/8	1	2-3/4	med	M42	A-1211-M	12830	42830
11/32	3/8	1-1/2	3-1/4	long	M42	A-1211-L	10484	40484
11/32	3/8	2	3-3/4	xl	M42	A-1211-E	12832	42832

sizes continued on next page

GENERAL PURPOSE COBALT & HSS END MILLS

2 FLUTE • CENTER CUTTING END MILLS

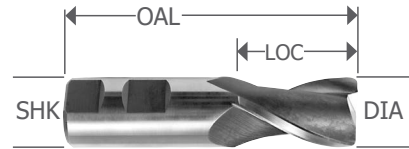
SERIES: A

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/8	3/8	3/8	2-1/8	stub	M42	AS-1212	10062	40062
3/8	3/8	9/16	2-5/16	std	M42	A-1212	10060	40060
3/8	3/8	1	2-3/4	med	M42	A-1212-M	10486	40486
3/8	3/8	1-1/2	3-1/4	long	M42	A-1212-L	10488	40488
3/8	3/8	2-1/2	4-1/4	xl	M42	A-1212-E	10490	40490
13/32	3/8	13/16	2-1/2	std	M42	A-1213	10064	40064
7/16	3/8	7/16	2-1/8	stub	M42	AS-1214	12794	42794
7/16	3/8	13/16	2-1/2	std	M42	A-1214	10066	40066
7/16	1/2	13/16	2-13/16	std	M42	A-1614	10070	40070
7/16	3/8	1-1/4	3-1/4	med	M42	A-1214-M	12834	42834
7/16	1/2	1-3/4	3-3/4	long	M42	A-1614-L	10492	40492
7/16	3/8	2-3/4	4-3/4	xl	M42	A-1214-E	12836	42836
15/32	1/2	1	3	std	M42	A-1615	10072	40072
1/2	3/8	1/2	2-3/16	stub	M42	AS-1216	12796	42796
1/2	3/8	13/16	2-1/2	std	M42	A-1216	10068	40068
1/2	1/2	1	3	std	M42	A-1616	10074	40074
1/2	1/2	1-1/2	3-1/2	med	M42	A-1616-M	10494	40494
1/2	1/2	2	4	long	M42	A-1616-L	10496	40496
1/2	1/2	3	5	xl	M42	A-1616-E	10498	40498
17/32	1/2	1-1/8	3-1/8	std	M42	A-1617	10076	40076
9/16	1/2	1-1/8	3-1/8	std	M42	A-1618	10078	40078
19/32	1/2	1-1/8	3-1/8	std	M42	A-1619	10080	40080
5/8	1/2	5/8	2-3/4	stub	M42	AS-1620	12798	42798
5/8	1/2	1-1/8	3-1/8	std	M42	A-1620	10082	40082
5/8	5/8	1-5/16	3-7/16	std	M42	A-2020	10108	40108
5/8	5/8	2	4-1/8	med	M42	A-2020-M	10500	40500
5/8	5/8	2-1/2	4-5/8	long	M42	A-2020-L	10502	40502
5/8	5/8	4	6-1/8	xl	M42	A-2020-E	12838	42838
21/32	1/2	1-5/16	3-5/16	std	M42	A-1621	10084	40084
11/16	1/2	1-5/16	3-5/16	std	M42	A-1622	10086	40086
11/16	5/8	1-5/16	3-7/16	std	M42	A-2022	10110	40110
23/32	1/2	1-5/16	3-5/16	std	M42	A-1623	10088	40088
3/4	1/2	5/8	2-5/8	stub	M42	AS-1624	16470	46470
3/4	1/2	1-5/16	3-5/16	std	M42	A-1624	10090	40090
3/4	5/8	1-5/16	3-7/16	std	M42	A-2024	10112	40112
3/4	3/4	3/4	3	stub	M42	AS-2424	12800	42800
3/4	3/4	1-5/16	3-9/16	std	M42	A-2424	10122	40122
3/4	3/4	2-1/4	4-1/2	med	M42	A-2424-M	10504	40504
3/4	3/4	3	5-1/4	long	M42	A-2424-L	10506	40506
3/4	3/4	4	6-1/4	xl	M42	A-2424-E	12840	42840
25/32	1/2	1-1/2	3-1/2	std	M42	A-1625	10092	40092
13/16	1/2	1-1/2	3-1/2	std	M42	A-1626	10094	40094
13/16	5/8	1-1/2	3-5/8	std	M42	A-2026	10114	40114
13/16	3/4	1-1/2	3-3/4	std	M42	A-2426	10124	40124
27/32	1/2	1-1/2	3-1/2	std	M42	A-1627	10096	40096
7/8	1/2	5/8	2-5/8	stub	M42	AS-1628	16471	46471
7/8	1/2	1-1/2	3-1/2	std	M42	A-1628	10098	40098
7/8	5/8	1-1/2	3-5/8	std	M42	A-2028	10116	40116
7/8	3/4	1-1/2	3-3/4	std	M42	A-2428	10126	40126
7/8	7/8	1-1/2	3-3/4	std	M42	A-2828	10152	40152
7/8	7/8	2-1/2	4-3/4	med	M42	A-2828-M	10508	40508
7/8	7/8	3-1/2	5-3/4	long	M42	A-2828-L	10510	40510
29/32	1/2	1-1/2	3-1/2	std	M42	A-1629	10100	40100
29/32	7/8	1-5/8	3-3/4	std	M42	A-2829	14418	44418
15/16	1/2	1-1/2	3-1/2	std	M42	A-1630	10102	40102
15/16	5/8	1-1/2	3-5/8	std	M42	A-2030	10118	40118
15/16	3/4	1-1/2	3-3/4	std	M42	A-2430	10128	40128
15/16	7/8	1-1/2	3-3/4	std	M42	A-2830	10154	40154

sizes continued on next page

2 FLUTE • CENTER CUTTING END MILLS

SERIES: A



DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
31/32	1/2	1-1/2	3-1/2	std	M42	A-1631	10104	40104
31/32	1	1-5/8	4-1/8	std	M42	A-3231	14417	44417
1	1/2	3/4	2-3/4	stub	M42	AS-1632	16472	46472
1	1/2	1-1/2	3-1/2	std	M42	A-1632	10106	40106
1	5/8	3/4	2-7/8	stub	M42	AS-2032	16474	46474
1	5/8	1-1/2	3-5/8	std	M42	A-2032	10120	40120
1	3/4	3/4	3	stub	M42	AS-2432	16476	46476
1	3/4	1-1/2	3-3/4	std	M42	A-2432	10130	40130
1	7/8	1-1/2	3-3/4	std	M42	A-2832	10156	40156
1	1	1-5/8	4-1/8	std	M42	A-3232	10162	40162
1	1	3	5-1/2	med	M42	A-3232-M	10512	40512
1	1	4	6-1/2	long	M42	A-3232-L	10514	40514
1-1/16	3/4	1-1/2	3-3/4	std	M42	A-2434	10132	40132
1-1/16	1	1-5/8	4-1/8	std	M42	A-3234	10164	40164
1-1/8	3/4	3/4	3	stub	M42	AS-2436	16477	46477
1-1/8	3/4	1-5/8	3-7/8	std	M42	A-2436	10134	40134
1-1/8	7/8	1-5/8	3-7/8	std	M42	A-2836	10158	40158
1-1/8	1	1-5/8	4-1/8	std	M42	A-3236	10166	40166
1-1/8	1	3	5-1/2	med	M42	A-3236-M	10516	40516
1-3/16	3/4	1-5/8	3-7/8	std	M42	A-2438	10136	40136
1-3/16	1	1-5/8	4-1/8	std	M42	A-3238	10168	40168
1-1/4	1/2	3/4	2-3/4	stub	M42	AS-1640	16473	46473
1-1/4	5/8	3/4	2-7/8	stub	M42	AS-2040	16475	46475
1-1/4	3/4	3/4	3	stub	M42	AS-2440	16478	46478
1-1/4	3/4	1-5/8	3-7/8	std	M42	A-2440	10138	40138
1-1/4	7/8	1-5/8	3-7/8	std	M42	A-2840	10160	40160
1-1/4	1	1-5/8	4-1/8	std	M42	A-3240	10170	40170
1-1/4	1-1/4	1-5/8	4-1/8	std	M42	A-4040	10180	40180
1-1/4	1	3	5-1/2	med	M42	A-3240-M	10518	40518
1-1/4	1-1/4	3	5-1/2	med	M42	A-4040-M	10522	40522
1-1/4	1-1/4	4	6-1/2	long	M42	A-4040-L	10524	40524
1-5/16	1	1-5/8	4-1/8	std	HSS	A-3242	10172	40172
1-3/8	3/4	3/4	3	stub	HSS	AS-2444	16479	46479
1-3/8	3/4	1-5/8	3-7/8	std	HSS	A-2444	10140	40140
1-3/8	1	1-5/8	4-1/8	std	HSS	A-3244	10174	40174
1-3/8	1	3	5-1/2	med	HSS	A-3244-M	10520	40520
1-7/16	1	1-5/8	4-1/8	std	HSS	A-3246	10176	40176
1-1/2	3/4	1-5/8	3-7/8	std	HSS	A-2448	10142	40142
1-1/2	1	1-5/8	4-1/8	std	HSS	A-3248	10178	40178
1-1/2	1-1/4	1-5/8	4-1/8	std	HSS	A-4048	10184	40184
1-1/2	3/4	3/4	3	stub	HSS	AS-2448	16480	46480
1-1/2	3/4	1-5/8	3-7/8	std	M42	AP-2448	15278	45278
1-1/2	1-1/4	1-5/8	4-1/8	std	M42	AP-4048	10792	40792
1-1/2	1-1/4	3	5-1/2	med	HSS	A-4048-M	10526	40526
1-1/2	1-1/4	4	6-1/2	long	HSS	A-4048-L	10528	40528
1-9/16	1-1/4	1-5/8	4-1/8	std	HSS	A-4050	10186	40186
1-5/8	3/4	1-5/8	3-7/8	std	HSS	A-2452	10144	40144
1-5/8	1-1/4	1-5/8	4-1/8	std	HSS	A-4052	10188	40188
1-3/4	3/4	1-5/8	3-7/8	std	HSS	A-2456	10146	40146
1-3/4	1-1/4	1-5/8	4-1/8	std	HSS	A-4056	10190	40190
1-3/4	1-1/4	1-5/8	4-1/8	std	M42	AP-4056	10794	40794
1-3/4	1-1/4	3	5-1/2	med	HSS	A-4056-M	10532	40532
1-7/8	3/4	1-5/8	3-7/8	std	HSS	A-2460	10148	40148
1-7/8	1-1/4	1-5/8	4-1/8	std	HSS	A-4060	10192	40192
1-7/8	1-1/4	3	5-1/2	med	HSS	A-4060-M	10536	40536
2	3/4	1-5/8	3-7/8	std	HSS	A-2464	10150	40150
2	1-1/4	1-5/8	4-1/8	std	HSS	A-4064	10194	40194

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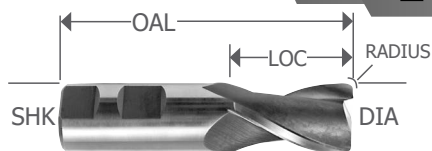
GENERAL PURPOSE COBALT & HSS END MILLS

SERIES: A

2 FLUTE • CENTER CUTTING END MILLS

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
2	3/4	1-5/8	3-7/8	std	M42	AP-2464	15286	45286
2	1-1/4	3	5-1/2	med	HSS	A-4064-M	10538	40538
2-1/8	1-1/4	1-5/8	4-1/8	std	HSS	A-4068	10198	40198
2-1/4	1-1/4	1-5/8	4-1/8	std	HSS	A-4072	10200	40200
2-1/4	1-1/4	3	5-1/2	med	HSS	A-4072-M	10542	40542
2-1/2	1-1/4	1-5/8	4-1/8	std	HSS	A-4080	10202	40202
2-1/2	1-1/4	3	5-1/2	med	HSS	A-4080-M	10544	40544

2 FLUTE • CORNER RADIUS CENTER CUTTING END MILLS

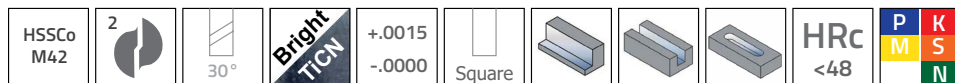
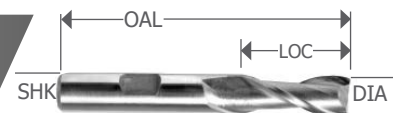


HSSCo M42	2	 30°	Bright TTCN	+0.015 -0.000	 Radius					HRc <48	<table><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td>N</td><td></td></tr></table>	P	K	M	S	N	
P	K																
M	S																
N																	

SERIES: A-__-R__

DIA	SHK	LOC	OAL	RADIUS	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/8	3/8	3/8	2-5/16	0.015	std	M42	A-1204-R015	15146	45146
3/16	3/8	7/16	2-5/16	0.020	std	M42	A-1206-R020	15148	45148
3/16	3/8	7/16	2-5/16	0.030	std	M42	A-1206-R030	15150	45150
1/4	3/8	1/2	2-5/16	0.020	std	M42	A-1208-R020	15152	45152
1/4	3/8	1/2	2-5/16	0.030	std	M42	A-1208-R030	15154	45154
1/4	3/8	1/2	2-5/16	0.045	std	M42	A-1208-R045	15156	45156
5/16	3/8	9/16	2-5/16	0.020	std	M42	A-1210-R020	15158	45158
5/16	3/8	9/16	2-5/16	0.030	std	M42	A-1210-R030	15160	45160
5/16	3/8	9/16	2-5/16	0.045	std	M42	A-1210-R045	15162	45162
3/8	3/8	9/16	2-5/16	0.020	std	M42	A-1212-R020	15164	45164
3/8	3/8	9/16	2-5/16	0.030	std	M42	A-1212-R030	15166	45166
3/8	3/8	9/16	2-5/16	0.045	std	M42	A-1212-R045	15168	45168
1/2	1/2	1	3	0.020	std	M42	A-1616-R020	15170	45170
1/2	1/2	1	3	0.030	std	M42	A-1616-R030	15172	45172
1/2	1/2	1	3	0.045	std	M42	A-1616-R045	15174	45174
1/2	1/2	1	3	0.060	std	M42	A-1616-R060	15176	45176
5/8	5/8	1-5/16	3-7/16	0.020	std	M42	A-2020-R020	15178	45178
5/8	5/8	1-5/16	3-7/16	0.030	std	M42	A-2020-R030	15180	45180
5/8	5/8	1-5/16	3-7/16	0.045	std	M42	A-2020-R045	15182	45182
5/8	5/8	1-5/16	3-7/16	0.060	std	M42	A-2020-R060	15184	45184
5/8	5/8	1-5/16	3-7/16	0.090	std	M42	A-2020-R090	15186	45186
3/4	3/4	1-5/16	3-9/16	0.020	std	M42	A-2424-R020	15188	45188
3/4	3/4	1-5/16	3-9/16	0.030	std	M42	A-2424-R030	15190	45190
3/4	3/4	1-5/16	3-9/16	0.045	std	M42	A-2424-R045	15192	45192
3/4	3/4	1-5/16	3-9/16	0.060	std	M42	A-2424-R060	15194	45194
3/4	3/4	1-5/16	3-9/16	0.090	std	M42	A-2424-R090	15196	45196
3/4	3/4	1-5/16	3-9/16	0.125	std	M42	A-2424-R125	15198	45198
1	1	1-5/8	4-1/8	0.020	std	M42	A-3232-R020	15200	45200
1	1	1-5/8	4-1/8	0.030	std	M42	A-3232-R030	15202	45202
1	1	1-5/8	4-1/8	0.045	std	M42	A-3232-R045	15204	45204
1	1	1-5/8	4-1/8	0.060	std	M42	A-3232-R060	15206	45206
1	1	1-5/8	4-1/8	0.090	std	M42	A-3232-R090	15208	45208
1	1	1-5/8	4-1/8	0.125	std	M42	A-3232-R125	15210	45210

2 FLUTE • CENTER CUTTING METRIC/INCH END MILLS



SERIES: AP- _M_

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3mm	3/8	3/8	2-5/16	std	M42	AP-12M3	10812	40812
3.5mm	3/8	7/16	2-5/16	std	M42	AP-12M3.5	11813	41813
4mm	3/8	7/16	2-5/16	std	M42	AP-12M4	10814	40814
4.5mm	3/8	7/16	2-5/16	std	M42	AP-12M4.5	10815	40815
5mm	3/8	1/2	2-5/16	std	M42	AP-12M5	10816	40816
5.5mm	3/8	1/2	2-3/8	std	M42	AP-12M5.5	10817	40817
6mm	3/8	1/2	2-5/16	std	M42	AP-12M6	10818	40818
6.5mm	3/8	9/16	2-3/8	std	M42	AP-12M6.5	10819	40819
7mm	3/8	9/16	2-3/8	std	M42	AP-12M7	10820	40820
7.5mm	3/8	9/16	2-5/16	std	M42	AP-12M7.5	10821	40821
8mm	3/8	9/16	2-5/16	std	M42	AP-12M8	10822	40822
8.5mm	3/8	9/16	2-5/16	std	M42	AP-12M8.5	10823	40823
9mm	3/8	9/16	2-5/16	std	M42	AP-12M9	10824	40824
9.5mm	3/8	9/16	2-5/16	std	M42	AP-12M9.5	10825	40825
10mm	3/8	13/16	2-1/2	std	M42	AP-12M10	10826	40826
10.5mm	3/8	13/16	2-1/2	std	M42	AP-12M10.5	10827	40827
11mm	3/8	13/16	2-1/2	std	M42	AP-12M11	10828	40828
11.5mm	3/8	13/16	2-1/2	std	M42	AP-12M11.5	10829	40829
12mm	3/8	13/16	2-1/2	std	M42	AP-12M12	10830	40830
12.5mm	1/2	1	3	std	M42	AP-16M12.5	10831	40831
13mm	1/2	1-1/8	3-1/8	std	M42	AP-16M13	10832	40832
13.5mm	1/2	1-1/8	3-1/8	std	M42	AP-16M13.5	10833	40833
14mm	1/2	1-1/8	3-1/8	std	M42	AP-16M14	10834	40834
14.5mm	1/2	1-1/8	3-1/8	std	M42	AP-16M14.5	10835	40835
15mm	1/2	1-1/8	3-1/8	std	M42	AP-16M15	10836	40836
16mm	5/8	1-5/16	3-7/16	std	M42	AP-20M16	10838	40838
17mm	5/8	1-5/16	3-7/16	std	M42	AP-20M17	10840	40840
18mm	5/8	1-5/16	3-7/16	std	M42	AP-20M18	10842	40842
19mm	3/4	1-5/8	3-7/8	std	M42	AP-24M19	10844	40844
20mm	3/4	1-1/2	3-3/4	std	M42	AP-24M20	10846	40846
21mm	3/4	1-1/2	3-3/4	std	M42	AP-24M21	10848	40848
22mm	3/4	1-1/2	3-3/4	std	M42	AP-24M22	10850	40850
23mm	7/8	1-7/8	4-1/8	std	M42	AP-28M23	10852	40852
24mm	1	2	4-1/2	std	M42	AP-32M24	10854	40854
25mm	1	2	4-1/2	std	M42	AP-32M25	10856	40856
28mm	1	2	4-1/2	std	M42	AP-32M28	10858	40858
32mm	1	2	4-1/2	std	M42	AP-32M32	10860	40860
35mm	1	2	4-1/2	std	M42	AP-32M35	10862	40862
36mm	1	2	4-1/2	std	M42	AP-32M36	10864	40864
40mm	1-1/4	2	4-1/2	std	M42	AP-40M40	10866	40866
45mm	1-1/4	2	4-1/2	std	M42	AP-40M45	10868	40868
50mm	1-1/4	2	4-1/2	std	M42	AP-40M50	10870	40870

GENERAL PURPOSE COBALT & HSS END MILLS



2 FLUTE • CENTER CUTTING END MILLS



SERIES: A-M_M_M_

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
2mm	6mm	7mm	57mm	std	M42	A-M6M2	16339	46339
3mm	6mm	8mm	57mm	std	M42	A-M6M3	16340	46340
4mm	6mm	11mm	57mm	std	M42	A-M6M4	16341	46341
5mm	6mm	13mm	57mm	std	M42	A-M6M5	16342	46342
6mm	6mm	13mm	57mm	std	M42	A-M6M6	16343	46343
7mm	10mm	16mm	69mm	std	M42	A-M10M7	16344	46344
8mm	10mm	19mm	69mm	std	M42	A-M10M8	16345	46345
9mm	10mm	19mm	69mm	std	M42	A-M10M9	16346	46346
10mm	10mm	22mm	72mm	std	M42	A-M10M10	16347	46347
11mm	12mm	22mm	79mm	std	M42	A-M12M11	16348	46348
12mm	12mm	26mm	83mm	std	M42	A-M12M12	16349	46349
13mm	12mm	26mm	83mm	std	M42	A-M12M13	16350	46350
14mm	12mm	26mm	83mm	std	M42	A-M12M14	16351	46351
15mm	12mm	26mm	83mm	std	M42	A-M12M15	16352	46352
16mm	16mm	32mm	92mm	std	M42	A-M16M16	16353	46353
17mm	16mm	32mm	92mm	std	M42	A-M16M17	16354	46354
18mm	16mm	32mm	92mm	std	M42	A-M16M18	16355	46355
19mm	16mm	32mm	92mm	std	M42	A-M16M19	16356	46356
20mm	20mm	38mm	104mm	std	M42	A-M20M20	16357	46357
21mm	20mm	38mm	104mm	std	M42	A-M20M21	16358	46358
22mm	20mm	38mm	104mm	std	M42	A-M20M22	16359	46359
23mm	20mm	38mm	104mm	std	M42	A-M20M23	16360	46360
24mm	25mm	45mm	121mm	std	M42	A-M25M24	16361	46361
25mm	25mm	45mm	121mm	std	M42	A-M25M25	16362	46362
30mm	25mm	45mm	121mm	std	M42	A-M25M30	16363	46363
32mm	32mm	53mm	133mm	std	M42	A-M32M32	16364	46364

2 FLUTE • CENTER CUTTING BALL NOSE END MILL



M42
-
HSS

2

30°

Bright
TiCN

+0.0005
-0.0005
≤5/8

+0.0010
-0.0010
>5/8

Ball

HRC
<48

P

M

K

S

N

SERIES: A-__-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/32	3/8	5/16	2-1/4	std	M42	A-1203-B	10350	40350
1/8	3/8	3/8	2-5/16	std	M42	A-1204-B	10352	40352
5/32	3/8	7/16	2-5/16	std	M42	A-1205-B	10354	40354
3/16	3/8	1/2	2-3/8	std	M42	A-1206-B	10356	40356
3/16	3/8	3/4	2-5/8	long	M42	A-1206-LB	10546	40546
7/32	3/8	9/16	2-3/8	std	M42	A-1207-B	10358	40358
7/32	3/8	1-1/4	3-1/8	long	M42	A-1207-LB	10548	40548
1/4	3/8	5/8	2-7/16	std	M42	A-1208-B	10360	40360
1/4	3/8	1-1/4	3-1/16	long	M42	A-1208-LB	10550	40550
9/32	3/8	9/16	2-3/8	std	M42	A-1209-B	10362	40362
9/32	3/8	1-3/8	3-1/8	long	M42	A-1209-LB	10552	40552
5/16	3/8	3/4	2-1/2	std	M42	A-1210-B	10364	40364
5/16	3/8	1-3/8	3-1/8	long	M42	A-1210-LB	10554	40554
11/32	3/8	3/4	2-1/2	std	M42	A-1211-B	10366	40366
11/32	3/8	1-1/2	3-1/4	long	M42	A-1211-LB	10556	40556
3/8	3/8	3/4	2-1/2	std	M42	A-1212-B	10368	40368
3/8	3/8	1	2-3/4	med	M42	A-1212-MB	10558	40558
3/8	3/8	1-1/2	3-1/4	long	M42	A-1212-LB	10560	40560
13/32	3/8	13/16	2-1/2	std	M42	A-1213-B	10370	40370
7/16	3/8	13/16	2-1/2	std	M42	A-1214-B	10372	40372
7/16	1/2	1	3	std	M42	A-1614-B	10376	40376
7/16	1/2	1-3/4	3-3/4	long	M42	A-1614-LB	10562	40562
15/32	1/2	1	3	std	M42	A-1615-B	10378	40378
1/2	3/8	13/16	2-1/2	std	M42	A-1216-B	10374	40374
1/2	1/2	1	3	std	M42	A-1616-B	10380	40380
1/2	1/2	1-1/2	3-1/2	med	M42	A-1616-MB	10564	40564
1/2	1/2	2	4	long	M42	A-1616-LB	10566	40566
17/32	1/2	1-1/8	3-1/8	std	M42	A-1617-B	10382	40382
9/16	1/2	1-1/8	3-1/8	std	M42	A-1618-B	10384	40384
19/32	1/2	1-1/8	3-1/8	std	M42	A-1619-B	10386	40386
5/8	1/2	1-1/8	3-1/8	std	M42	A-1620-B	10388	40388
5/8	5/8	1-3/8	3-1/2	std	M42	A-2020-B	10414	40414
5/8	5/8	2	4-1/8	med	M42	A-2020-MB	10568	40568
5/8	5/8	2-1/2	4-5/8	long	M42	A-2020-LB	10570	40570
21/32	1/2	1-5/16	3-5/16	std	M42	A-1621-B	10390	40390
11/16	1/2	1-5/16	3-5/16	std	M42	A-1622-B	10392	40392
11/16	5/8	1-5/16	3-7/16	std	M42	A-2022-B	10416	40416
23/32	1/2	1-5/16	3-5/16	std	M42	A-1623-B	10394	40394
3/4	1/2	1-5/16	3-5/16	std	M42	A-1624-B	10396	40396
3/4	5/8	1-5/16	3-7/16	std	M42	A-2024-B	10418	40418
3/4	3/4	1-5/8	3-7/8	std	M42	A-2424-B	10428	40428
3/4	3/4	2-1/4	4-1/2	med	M42	A-2424-MB	10572	40572
3/4	3/4	3	5-1/4	long	M42	A-2424-LB	10574	40574
25/32	1/2	1-1/2	3-1/2	std	M42	A-1625-B	10398	40398
13/16	1/2	1-1/2	3-1/2	std	M42	A-1626-B	10400	40400
13/16	5/8	1-1/2	3-5/8	std	M42	A-2026-B	10420	40420
27/32	1/2	1-1/2	3-1/2	std	M42	A-1627-B	10402	40402
7/8	1/2	1-1/2	3-1/2	std	M42	A-1628-B	10404	40404
7/8	3/4	2	4-1/4	std	M42	A-2428-B	10430	40430
7/8	7/8	2	4-1/4	std	M42	A-2828-B	10434	40434
29/32	1/2	1-1/2	3-1/2	std	M42	A-1629-B	10406	40406

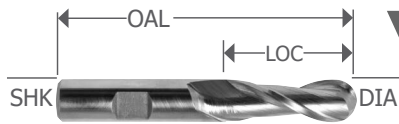
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GENERAL PURPOSE COBALT & HSS END MILLS

2 FLUTE • CENTER CUTTING BALL NOSE END MILL

SERIES: A-__-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
15/16	1/2	1-1/2	3-1/2	std	M42	A-1630-B	10408	40408
15/16	5/8	1-1/2	3-5/8	std	M42	A-2030-B	10424	40424
15/16	7/8	1-1/2	3-3/4	std	M42	A-2830-B	10436	40436
31/32	1/2	1-1/2	3-1/2	std	M42	A-1631-B	10410	40410
1	1/2	1-1/2	3-1/2	std	M42	A-1632-B	10412	40412
1	5/8	1-1/2	3-5/8	std	M42	A-2032-B	10426	40426
1	3/4	2-1/4	4-1/2	std	M42	A-2432-B	10432	40432
1	1	2-1/4	4-3/4	std	M42	A-3232-B	10444	40444
1	1	3	5-1/2	med	M42	A-3232-MB	10580	40580
1	1	4	6-1/2	long	M42	A-3232-LB	10582	40582
1-1/16	1	1-5/8	4-1/8	std	M42	A-3234-B	10446	40446
1-1/8	1	2-1/4	4-3/4	std	M42	A-3236-B	10448	40448
1-3/16	1	1-5/8	4-1/8	std	M42	A-3238-B	10450	40450
1-1/4	7/8	1-5/8	3-7/8	std	M42	A-2840-B	10442	40442
1-1/4	1	1-5/8	4-1/8	std	M42	A-3240-B	10452	40452
1-1/4	1-1/4	2-1/2	5	std	M42	A-4040-B	10462	40462
1-5/16	1	1-5/8	4-1/8	std	HSS	A-3242-B	10454	40454
1-3/8	1	1-5/8	4-1/8	std	HSS	A-3244-B	10456	40456
1-7/16	1	1-5/8	4-1/8	std	HSS	A-3246-B	10458	40458
1-1/2	1	1-5/8	4-1/8	std	HSS	A-3248-B	10460	40460
1-1/2	1-1/4	2-1/2	5	std	HSS	A-4048-B	10464	40464
1-5/8	1-1/4	1-5/8	4-1/8	std	HSS	A-4052-B	10466	40466
1-3/4	1-1/4	1-5/8	4-1/8	std	HSS	A-4056-B	10468	40468
1-7/8	1-1/4	1-5/8	4-1/8	std	HSS	A-4060-B	10470	40470
2	1-1/4	1-5/8	4-1/8	std	HSS	A-4064-B	10472	40472



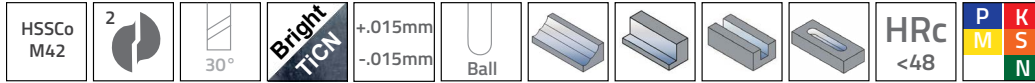
2 FLUTE • CENTER CUTTING BALL NOSE END MILL



SERIES: AP-_M_-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3mm	3/8	5/16	2-5/16	std	M42	AP-12M3-B	12898	42898
4mm	3/8	7/16	2-5/16	std	M42	AP-12M4-B	12900	42900
5mm	3/8	1/2	2-5/16	std	M42	AP-12M5-B	12902	42902
6mm	3/8	1/2	2-5/16	std	M42	AP-12M6-B	12904	42904
7mm	3/8	9/16	2-3/8	std	M42	AP-12M7-B	12906	42906
8mm	3/8	9/16	2-5/16	std	M42	AP-12M8-B	12908	42908
9mm	3/8	9/16	2-5/16	std	M42	AP-12M9-B	12910	42910
10mm	3/8	13/16	2-1/2	std	M42	AP-12M10-B	12912	42912
11mm	3/8	13/16	2-1/2	std	M42	AP-12M11-B	12914	42914
12mm	3/8	13/16	2-1/2	std	M42	AP-12M12-B	12916	42916
13mm	1/2	1-1/8	3-1/8	std	M42	AP-16M13-B	12918	42918
14mm	1/2	1-1/8	3-1/8	std	M42	AP-16M14-B	12920	42920

2 FLUTE • CENTER CUTTING BALL NOSE END MILL

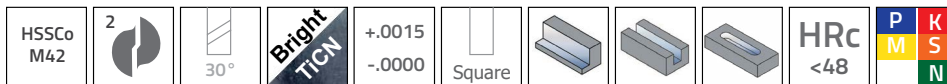


SERIES: A-M_M_-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
2mm	6mm	7mm	57mm	std	M42	A-M6M2-B	16411	46411
3mm	6mm	8mm	57mm	std	M42	A-M6M3-B	16412	46412
4mm	6mm	11mm	57mm	std	M42	A-M6M4-B	16413	46413
5mm	6mm	13mm	57mm	std	M42	A-M6M5-B	16414	46414
6mm	6mm	13mm	57mm	std	M42	A-M6M6-B	16415	46415
7mm	10mm	16mm	69mm	std	M42	A-M10M7-B	16416	46416
8mm	10mm	19mm	69mm	std	M42	A-M10M8-B	16417	46417
9mm	10mm	19mm	69mm	std	M42	A-M10M9-B	16418	46418
10mm	10mm	22mm	72mm	std	M42	A-M10M10-B	16419	46419
11mm	12mm	22mm	79mm	std	M42	A-M12M11-B	16420	46420
12mm	12mm	26mm	83mm	std	M42	A-M12M12-B	16421	46421
13mm	12mm	26mm	83mm	std	M42	A-M12M13-B	16422	46422
14mm	12mm	26mm	83mm	std	M42	A-M12M14-B	16423	46423
15mm	12mm	26mm	83mm	std	M42	A-M12M15-B	16424	46424
16mm	16mm	32mm	92mm	std	M42	A-M16M16-B	16425	46425
17mm	16mm	32mm	92mm	std	M42	A-M16M17-B	16426	46426
18mm	16mm	32mm	92mm	std	M42	A-M16M18-B	16427	46427
19mm	16mm	32mm	92mm	std	M42	A-M16M19-B	16428	46428
20mm	20mm	38mm	104mm	std	M42	A-M20M20-B	16429	46429
21mm	20mm	38mm	104mm	std	M42	A-M20M21-B	16430	46430
22mm	20mm	38mm	104mm	std	M42	A-M20M22-B	14631	44631
23mm	20mm	38mm	104mm	std	M42	A-M20M23-B	16432	46432
24mm	25mm	45mm	121mm	std	M42	A-M25M24-B	16433	46433
25mm	25mm	45mm	121mm	std	M42	A-M25M25-B	16434	46434
30mm	25mm	45mm	121mm	std	M42	A-M25M30-B	16435	46435
32mm	32mm	53mm	133mm	std	M42	A-M32M32-B	16436	46436

Note: under 20mm shank will not have flat

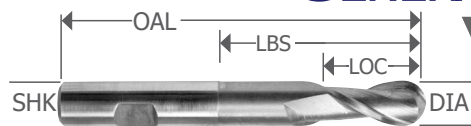
2 FLUTE • CENTER CUTTING EXTENDED NECK



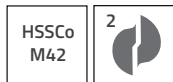
SERIES: AN

DIA	SHK	LOC	LBS	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/8	3/8	3/8	1	2-9/16	std	M42	AN-1204	10734	40734
3/16	3/8	1/2	1-1/8	2-11/16	std	M42	AN-1206	10736	40736
1/4	3/8	5/8	1-1/2	3-1/16	std	M42	AN-1208	10738	40738
5/16	3/8	3/4	1-3/4	3-5/16	std	M42	AN-1210	10740	40740
3/8	3/8	3/4	1-3/4	3-5/16	std	M42	AN-1212	10742	40742
1/2	1/2	1	2-1/4	4	std	M42	AN-1616	10744	40744
5/8	5/8	1-3/8	2-3/4	4-5/8	std	M42	AN-2020	10746	40746
3/4	3/4	1-5/8	3-3/8	5-3/8	std	M42	AN-2424	10748	40748
1	1	2-1/2	5	7-1/4	std	M42	AN-3232	10752	40752

GENERAL PURPOSE COBALT & HSS END MILLS



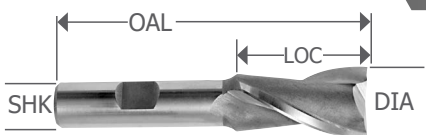
2 FLUTE • CENTER CUTTING EXTENDED NECK



SERIES: AN-__-B

DIA	SHK	LOC	LBS	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/8	3/8	3/8	1	2-9/16	std	M42	AN-1204-B	10756	40756
3/16	3/8	1/2	1-1/8	2-11/16	std	M42	AN-1206-B	10758	40758
1/4	3/8	5/8	1-1/2	3-1/16	std	M42	AN-1208-B	10760	40760
5/16	3/8	3/4	1-3/4	3-5/16	std	M42	AN-1210-B	10762	40762
3/8	3/8	3/4	1-3/4	3-5/16	std	M42	AN-1212-B	10764	40764
1/2	1/2	1	2-1/4	4	std	M42	AN-1616-B	10766	40766
3/4	3/4	1-5/8	3-3/8	5-3/8	std	M42	AN-2424-B	10770	40770
1	1	2-1/2	5	7-1/4	std	M42	AN-3232-B	10774	40774

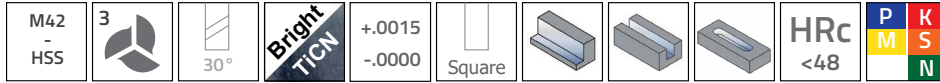
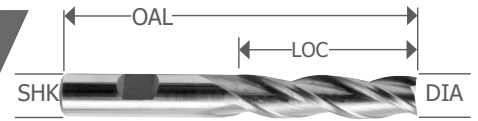
2 FLUTE • CENTER CUTTING KEYWAY TOLERANCES



SERIES: AK

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
1/8	3/8	3/8	2-5/16	std	M42	AK-1204	10208
3/16	3/8	7/16	2-5/16	std	M42	AK-1206	10212
1/4	3/8	1/2	2-5/16	std	M42	AK-1208	10216
5/16	3/8	9/16	2-5/16	std	M42	AK-1210	10220
3/8	3/8	9/16	2-5/16	std	M42	AK-1212	10224
7/16	3/8	13/16	2-1/2	std	M42	AK-1214	10228
1/2	3/8	13/16	2-1/2	std	M42	AK-1216	10230
1/2	1/2	1	3	std	M42	AK-1616	10236
9/16	1/2	1-1/8	3-1/8	std	M42	AK-1618	10240
5/8	1/2	1-1/8	3-1/8	std	M42	AK-1620	10244
5/8	5/8	1-5/16	3-7/16	std	M42	AK-2020	10270
3/4	5/8	1-5/16	3-7/16	std	M42	AK-2024	10274
3/4	3/4	1-5/16	3-9/16	std	M42	AK-2424	10284
7/8	5/8	1-1/2	3-5/8	std	M42	AK-2028	10278
7/8	7/8	1-1/2	3-3/4	std	M42	AK-2828	10306
1	5/8	1-1/2	3-5/8	std	M42	AK-2032	10282
1	1	1-5/8	4-1/8	std	M42	AK-3232	10316
1-1/4	1	1-5/8	4-1/8	std	M42	AK-3240	10324
1-1/2	1-1/4	1-5/8	4-1/8	std	HSS	AK-4048	10336
2	1-1/4	1-5/8	4-1/8	std	HSS	AK-4064	10344

3 FLUTE • CENTER CUTTING END MILL



SERIES: E

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/32	3/8	5/16	2-1/4	std	M42	E-1203	12022	42022
1/8	3/8	3/8	2-5/16	std	M42	E-1204	12024	42024
5/32	3/8	7/16	2-5/16	std	M42	E-1205	12026	42026
3/16	3/8	1/2	2-3/8	std	M42	E-1206	12028	42028
3/16	3/8	3/4	2-5/8	long	M42	E-1206-L	12266	42266
7/32	3/8	1/2	2-3/8	std	M42	E-1207	12030	42030
7/32	3/8	1-1/4	3-1/8	long	M42	E-1207-L	12268	42268
1/4	3/8	5/8	2-7/16	std	M42	E-1208	12032	42032
1/4	3/8	1-1/4	3-1/16	long	M42	E-1208-L	12270	42270
9/32	3/8	11/16	2-1/2	std	M42	E-1209	12034	42034
9/32	3/8	1-3/8	3-1/8	long	M42	E-1209-L	12272	42272
5/16	3/8	3/4	2-1/2	std	M42	E-1210	12036	42036
5/16	3/8	1-3/8	3-1/8	long	M42	E-1210-L	12274	42274
11/32	3/8	3/4	2-1/2	std	M42	E-1211	12038	42038
11/32	3/8	1-1/2	3-1/4	long	M42	E-1211-L	12276	42276
3/8	3/8	3/4	2-1/2	std	M42	E-1212	12040	42040
3/8	3/8	1-1/2	3-1/4	long	M42	E-1212-L	12278	42278
13/32	3/8	1	2-11/16	std	M42	E-1213	12042	42042
7/16	3/8	1	2-11/16	std	M42	E-1214	12044	42044
7/16	1/2	1-3/4	3-3/4	long	M42	E-1614-L	12280	42280
15/32	1/2	1-1/4	3-1/4	std	M42	E-1615	12048	42048
1/2	3/8	1	2-11/16	std	M42	E-1216	12046	42046
1/2	1/2	1-1/4	3-1/4	std	M42	E-1616	12050	42050
1/2	1/2	2	4	long	M42	E-1616-L	12282	42282
17/32	1/2	1-3/8	3-3/8	std	M42	E-1617	12052	42052
9/16	1/2	1-3/8	3-3/8	std	M42	E-1618	12054	42054
19/32	1/2	1-3/8	3-3/8	std	M42	E-1619	12056	42056
5/8	1/2	1-3/8	3-3/8	std	M42	E-1620	12058	42058
5/8	5/8	1-5/8	3-3/4	std	M42	E-2020	12084	42084
5/8	5/8	2-1/2	4-5/8	long	M42	E-2020-L	12284	42284
21/32	1/2	1-5/8	3-5/8	std	M42	E-1621	12060	42060
11/16	1/2	1-5/8	3-5/8	std	M42	E-1622	12062	42062
23/32	1/2	1-5/8	3-5/8	std	M42	E-1623	12064	42064
3/4	1/2	1-5/8	3-5/8	std	M42	E-1624	12066	42066
3/4	5/8	1-5/8	3-3/4	std	M42	E-2024	12086	42086
3/4	3/4	1-5/8	3-7/8	std	M42	E-2424	12096	42096
3/4	3/4	3	5-1/4	long	M42	E-2424-L	12286	42286
25/32	1/2	1-5/8	3-5/8	std	M42	E-1625	12068	42068
13/16	1/2	1-5/8	3-5/8	std	M42	E-1626	12070	42070
13/16	5/8	1-7/8	4	std	M42	E-2026	12088	42088
13/16	3/4	1-7/8	4-1/8	std	M42	E-2426	12098	42098
27/32	1/2	1-5/8	3-5/8	std	M42	E-1627	12072	42072
7/8	1/2	1-5/8	3-5/8	std	M42	E-1628	12074	42074
7/8	5/8	1-7/8	4	std	M42	E-2028	12090	42090
7/8	3/4	1-7/8	4-1/8	std	M42	E-2428	12100	42100
7/8	7/8	1-7/8	4-1/8	std	M42	E-2828	12116	42116
15/16	1/2	1-7/8	3-7/8	std	M42	E-1630	12078	42078
15/16	5/8	1-7/8	4	std	M42	E-2030	12092	42092
1	1/2	1-7/8	3-7/8	std	M42	E-1632	12082	42082
1	3/4	1-7/8	4-1/8	std	M42	E-2432	12104	42104
1	1	2	4-1/2	std	M42	E-3232	12122	42122
1	1	3	5-1/2	med	M42	E-3232-M	12292	42292
1	1	4	6-1/2	long	M42	E-3232-L	12294	42294

sizes continued on next page

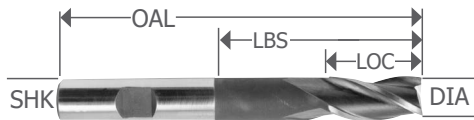
GENERAL PURPOSE COBALT & HSS END MILLS

3 FLUTE • CENTER CUTTING END MILL

SERIES: E

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1-1/16	3/4	2	4-1/4	std	M42	E-2434	12106	42106
1-1/16	1	2	4-1/2	std	M42	E-3234	12124	42124
1-1/8	3/4	2	4-1/4	std	M42	E-2436	12108	42108
1-1/8	1	2	4-1/2	std	M42	E-3236	12126	42126
1-3/16	3/4	2	4-1/4	std	M42	E-2438	12110	42110
1-3/16	1	2	4-1/2	std	M42	E-3238	12128	42128
1-1/4	3/4	2	4-1/4	std	M42	E-2440	12112	42112
1-1/4	1	2	4-1/2	std	M42	E-3240	12130	42130
1-1/4	1-1/4	4	6-1/2	long	M42	E-4040-L	12296	42296
1-5/16	1	2	4-1/2	std	HSS	E-3242	12132	42132
1-3/8	1	2	4-1/2	std	HSS	E-3244	12134	42134
1-1/2	1-1/4	2	4-1/2	std	HSS	E-4048	12144	42144
1-3/4	1-1/4	2	4-1/2	std	HSS	E-4056	11660	41660
2	1-1/4	2	4-1/2	std	HSS	E-4064	12150	42150

3 FLUTE • CENTER CUTTING EXTENDED NECK



HSSCo M42	3	30°	Bright TiCN	+.0015 -.0000	Square					HRC <48	P M N	K S N
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SERIES: EN

DIA	SHK	LOC	LBS	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/8	3/8	3/8	1	2-9/16	std	M42	EN-1204	12362	42362
3/16	3/8	1/2	1-5/16	2-7/8	std	M42	EN-1206	12366	42366
1/4	3/8	5/8	1-1/2	3-1/16	std	M42	EN-1208	12370	42370
5/16	3/8	3/4	1-3/4	3-5/16	std	M42	EN-1210	12372	42372
3/8	3/8	3/4	1-3/4	3-5/16	std	M42	EN-1212	12374	42374
1/2	1/2	1	2-7/32	4-1/16	std	M42	EN-1616	12378	42378

Melin Distributes Across the Globe

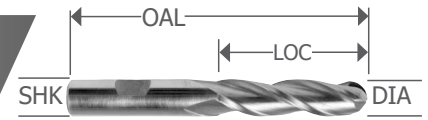
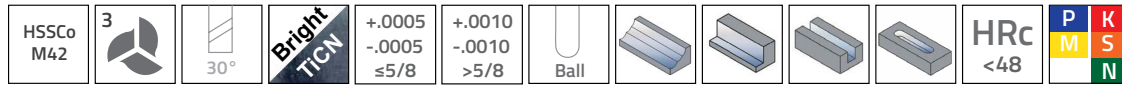
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GENERAL PURPOSE COBALT & HSS END MILLS

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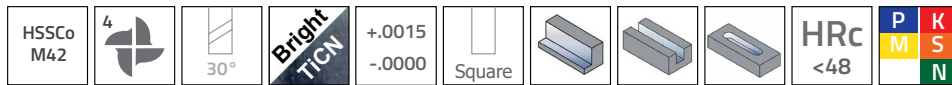
3 FLUTE • CENTER CUTTING BALL NOSE END MILLS



SERIES: E-__-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/8	3/8	3/8	2-5/16	std	M42	E-1204-B	12156	42156
3/16	3/8	1/2	2-3/8	std	M42	E-1206-B	12160	42160
3/16	3/8	3/4	2-5/8	long	M42	E-1206-LB	12306	42306
1/4	3/8	5/8	2-1/2	std	M42	E-1208-B	12164	42164
1/4	3/8	1-1/4	3-1/16	long	M42	E-1208-LB	12310	42310
5/16	3/8	3/4	2-1/2	std	M42	E-1210-B	12168	42168
5/16	3/8	1-3/8	3-1/8	long	M42	E-1210-LB	12314	42314
3/8	3/8	3/4	2-1/2	std	M42	E-1212-B	12172	42172
3/8	3/8	1-1/2	3-1/4	long	M42	E-1212-LB	12318	42318
7/16	1/2	1-3/4	3-3/4	long	M42	E-1614-LB	12320	42320
1/2	1/2	1-1/4	3-1/4	std	M42	E-1616-B	12182	42182
1/2	1/2	2	4	long	M42	E-1616-LB	12322	42322
17/32	1/2	1-3/8	3-3/8	std	M42	E-1617-B	12184	42184
9/16	1/2	1-3/8	3-3/8	std	M42	E-1618-B	12186	42186
5/8	5/8	1-5/8	3-3/4	std	M42	E-2020-B	12216	42216
3/4	1/2	1-5/8	3-5/8	std	M42	E-1624-B	12198	42198
3/4	3/4	3	5-1/4	long	M42	E-2424-LB	12326	42326
13/16	5/8	1-7/8	4	std	M42	E-2026-B	12220	42220
7/8	3/4	1-7/8	4-1/8	std	M42	E-2428-B	12230	42230
1	3/4	1-7/8	4-1/8	std	M42	E-2432-B	12232	42232

4 FLUTE • CENTER CUTTING END MILLS



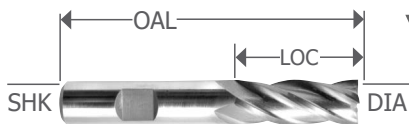
SERIES: C

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/16	3/16	3/16	1-1/2	std	M42	C-602	11136	41136
5/64	3/16	1/4	1-1/2	std	M42	C-602-1/2	11138	41138
3/32	3/16	9/32	1-1/2	std	M42	C-603	11140	41140
7/64	3/16	21/64	1-1/2	std	M42	C-603-1/2	11142	41142
1/8	3/16	3/8	1-1/2	std	M42	C-604	11144	41144
9/64	3/16	27/64	1-1/2	std	M42	C-604-1/2	11146	41146
5/32	3/16	7/16	1-1/2	std	M42	C-605	11148	41148
11/64	3/16	1/2	1-1/2	std	M42	C-605-1/2	11150	41150
3/16	3/16	1/2	1-1/2	std	M42	C-606*	11152	41152
1/4	1/4	5/8	2-1/2	std	M42	C-808*	11154	41154

* Tolerance is +.000/- .0025

sizes continued on next page

GENERAL PURPOSE COBALT & HSS END MILLS



MULTI FLUTE • CENTER CUTTING END MILLS

HSSCo
M42



Bright
TiCN

+0.0015
-0.0000

Square



HRC
<48



SERIES: CC

DIA	SHK	LOC	OAL	FLUTE	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/8	3/8	3/16	2-1/8	4	stub	M42	CCS-1204	11434	41434
1/8	3/8	3/8	2-5/16	4	std	M42	CC-1204	11432	41432
1/8	3/8	1/2	2-3/8	4	med	M42	CC-1204-M	12972	42972
1/8	3/8	3/4	2-5/8	4	long	M42	CC-1204-L	12974	42974
9/64	3/8	7/16	2-5/16	4	std	M42	CC-1204-1/2	11369	41369
5/32	3/8	3/16	2-1/8	4	stub	M42	CCS-1205	11438	41438
5/32	3/8	7/16	2-5/16	4	std	M42	CC-1205	11436	41436
5/32	3/8	5/8	2-1/2	4	med	M42	CC-1205-M	12976	42976
5/32	3/8	3/4	2-5/8	4	long	M42	CC-1205-L	12978	42978
11/64	3/8	1/2	2-3/8	4	std	M42	CC-1205-1/2	11389	41389
3/16	3/8	3/16	2-1/16	4	stub	M42	CCS-1206	11442	41442
3/16	3/8	1/2	2-3/8	4	std	M42	CC-1206	11440	41440
3/16	3/8	5/8	2-1/2	4	med	M42	CC-1206-M	12980	42980
3/16	3/8	3/4	2-5/8	4	long	M42	CC-1206-L	11582	41582
3/16	3/8	1-1/4	3-1/8	4	xl	M42	CC-1206-E	12962	42962
3/16	3/8	1-3/4	3-9/16	4	xxl	M42	CC-1206-EE	11273	41273
13/64	3/8	1/2	2-3/8	4	std	M42	CC-1206-1/2	11365	41365
7/32	3/8	1/4	2-3/16	4	stub	M42	CCS-1207	11446	41446
7/32	3/8	1/2	2-3/8	4	std	M42	CC-1207	11444	41444
7/32	3/8	7/8	2-3/4	4	med	M42	CC-1207-M	12982	42982
7/32	3/8	1-1/4	3-1/8	4	long	M42	CC-1207-L	11584	41584
7/32	3/8	1-1/2	3-5/16	4	xl	M42	CC-1207-E	12964	42964
7/32	3/8	1-3/4	3-9/16	4	xxl	M42	CC-1207-EE	11339	41339
15/64	3/8	5/8	2-7/16	4	std	M42	CC-1207-1/2	11337	41337
1/4	3/8	1/4	2-1/8	4	stub	M42	CCS-1208	11450	41450
1/4	3/8	5/8	2-7/16	4	std	M42	CC-1208	11448	41448
1/4	3/8	7/8	2-11/16	4	med	M42	CC-1208-M	11588	41588
1/4	3/8	1-1/4	3-1/16	4	long	M42	CC-1208-L	11586	41586
1/4	3/8	1-3/4	3-9/16	4	xl	M42	CC-1208-E	11536	41536
1/4	3/8	2-1/4	4-1/8	4	xxl	M42	CC-1208-EE	11538	41538
17/64	3/8	11/16	2-1/2	4	std	M42	CC-1208-1/2	11207	41207
9/32	3/8	5/16	2-1/8	4	stub	M42	CCS-1209	11454	41454
9/32	3/8	11/16	2-1/2	4	std	M42	CC-1209	11452	41452
9/32	3/8	1	2-3/4	4	med	M42	CC-1209-M	12984	42984
9/32	3/8	1-3/8	3-1/8	4	long	M42	CC-1209-L	11590	41590
9/32	3/8	1-3/4	3-1/2	4	xl	M42	CC-1209-E	12966	42966
19/64	3/8	3/4	2-1/2	4	std	M42	CC-1209-1/2	11390	41390
5/16	3/8	5/16	2-1/16	4	stub	M42	CCS-1210	11458	41458
5/16	3/8	3/4	2-1/2	4	std	M42	CC-1210	11456	41456
5/16	3/8	1	2-3/4	4	med	M42	CC-1210-M	12986	42986
5/16	3/8	1-3/8	3-1/8	4	long	M42	CC-1210-L	11592	41592
5/16	3/8	2	3-3/4	4	xl	M42	CC-1210-E	11540	41540
21/64	3/8	3/4	2-1/2	4	std	M42	CC-1210-1/2	11367	41367
11/32	3/8	3/8	2-1/8	4	stub	M42	CCS-1211	11462	41462
11/32	3/8	3/4	2-1/2	4	std	M42	CC-1211	11460	41460
11/32	3/8	1	2-3/4	4	med	M42	CC-1211-M	12988	42988
11/32	3/8	1-1/2	3-1/4	4	long	M42	CC-1211-L	11594	41594
11/32	3/8	2-1/2	4-1/4	4	xl	M42	CC-1211-E	12968	42968
23/64	3/8	3/4	2-1/2	4	std	M42	CC-1211-1/2	11340	41340
3/8	3/8	3/8	2-1/8	4	stub	M42	CCS-1212	11466	41466
3/8	3/8	3/4	2-1/2	4	std	M42	CC-1212	11464	41464
3/8	3/8	1	2-3/4	4	med	M42	CC-1212-M	12990	42990
3/8	3/8	1-1/2	3-1/4	4	long	M42	CC-1212-L	11596	41596
3/8	3/8	2-1/2	4-1/4	4	xl	M42	CC-1212-E	11542	41542

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MULTI FLUTE • CENTER CUTTING END MILL

SERIES: CC



DIA	SHK	LOC	OAL	FLUTE	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
25/64	3/8	1	2-11/16	4	std	M42	CC-1212-1/2	11311	41311
13/32	3/8	1	2-11/16	4	std	M42	CC-1213	11174	41174
27/64	3/8	1	2-11/16	4	std	M42	CC-1213-1/2	11335	41335
7/16	3/8	9/16	2-1/4	4	stub	M42	CCS-1214	12956	42956
7/16	3/8	1	2-11/16	4	std	M42	CC-1214	11468	41468
7/16	3/8	1-3/4	3-3/4	4	long	M42	CC-1214-L	11338	41338
7/16	1/2	1-1/4	3-1/4	4	med	M42	CC-1614-M	12992	42992
7/16	1/2	1-3/4	3-3/4	4	long	M42	CC-1614-L	12994	42994
7/16	1/2	2-3/4	4-3/4	4	xl	M42	CC-1614-E	12970	42970
29/64	3/8	1	2-11/16	4	std	M42	CC-1214-1/2	14419	44419
15/32	3/8	1	2-11/16	4	std	M42	CC-1215	10310	40310
15/32	1/2	1-1/4	3-1/4	4	std	M42	CC-1615	11180	41180
31/64	1/2	1-1/4	3-1/4	4	std	M42	CC-1615-1/2	11363	41363
1/2	1/2	1/2	2-1/2	4	stub	M42	CCS-1616	12957	42957
1/2	3/8	1	2-11/16	4	std	M42	CC-1216	11470	41470
1/2	1/2	1-1/4	3-1/4	4	std	M42	CC-1616	11472	41472
1/2	1/2	1-1/4	3-1/4	6	std	M42	CC-1616-A	15050	45050
1/2	1/2	1-5/8	3-5/8	4	med	M42	CC-1616-M	12996	42996
1/2	1/2	2	4	4	long	M42	CC-1616-L	11598	41598
1/2	1/2	3	5	4	xl	M42	CC-1616-E	11544	41544
1/2	1/2	4	6	4	xxl	M42	CC-1616-EE	11344	41344
33/64	1/2	1-1/4	3-1/4	4	std	M42	CC-1616-1/2	12540	42540
17/32	1/2	1-3/8	3-3/8	4	std	M42	CC-1617	11184	41184
9/16	1/2	1-3/8	3-3/8	4	std	M42	CC-1618	11474	41474
9/16	1/2	2-1/2	4-1/2	4	long	M42	CC-1618-L	11392	41392
9/16	1/2	3-1/2	5-1/2	4	xl	M42	CC-1618-E	11346	41346
19/32	1/2	1-3/8	3-3/8	4	std	M42	CC-1619	11188	41188
5/8	5/8	5/8	2-3/4	4	stub	M42	CCS-2020	12958	42958
5/8	1/2	1-3/8	3-3/8	4	std	M42	CC-1620	11190	41190
5/8	5/8	1-5/8	3-3/4	4	std	M42	CC-2020	11476	41476
5/8	5/8	1-5/8	3-3/4	6	std	M42	CC-2020-A	15054	45054
5/8	5/8	2	4-1/8	4	med	M42	CC-2020-M	12998	42998
5/8	5/8	2-1/2	4-5/8	4	long	M42	CC-2020-L	11600	41600
5/8	5/8	4	6-1/8	4	xl	M42	CC-2020-E	11546	41546
5/8	5/8	5	7-1/8	4	xxl	M42	CC-2020-EE	11548	41548
41/64	5/8	1-5/8	3-3/4	4	std	M42	CC-2020-1/2	14411	44411
21/32	5/8	1-5/8	3-3/4	4	std	M42	CC-2021	14412	44412
11/16	1/2	1-5/8	3-5/8	4	std	M42	CC-1622	11355	41355
11/16	5/8	1-5/8	3-3/4	4	std	M42	CC-2022	11478	41478
23/32	3/4	1-5/8	3-7/8	4	std	M42	CC-2423	14409	44409
3/4	1/2	1-5/8	3-5/8	4	std	M42	CC-1624	11201	41201
3/4	1/2	3	5	4	std	M42	CC-1624-L	14410	44410
3/4	3/4	3/4	3	4	stub	M42	CCS-2424	12960	42960
3/4	5/8	1-5/8	3-3/4	4	std	M42	CC-2024	15058	45058
3/4	3/4	1-5/8	3-7/8	4	std	M42	CC-2424	11480	41480
3/4	3/4	1-5/8	3-7/8	6	std	M42	CC-2424-A	15062	45062
3/4	3/4	2-1/4	4-1/2	4	med	M42	CC-2424-M	13000	43000
3/4	3/4	3	5-1/4	4	long	M42	CC-2424-L	11602	41602
3/4	3/4	3	5-1/4	6	long	M42	CC-2424-LA	11383	41383
3/4	3/4	4	6-1/4	4	xl	M42	CC-2424-E	11550	41550
3/4	3/4	4	6-1/4	6	xl	M42	CC-2424-EA	10805	40805
3/4	3/4	6	8-1/4	4	xxl	M42	CC-2424-EE	11552	41552
49/64	3/4	1-7/8	4-1/8	4	std	M42	CC-2424-1/2	12541	42541
25/32	3/4	1-7/8	4-1/8	4	std	M42	CC-2425	14413	44413
13/16	3/4	1-7/8	4-1/8	4	std	M42	CC-2426	11482	41482

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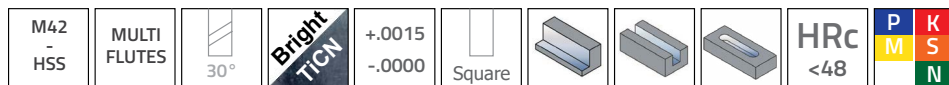
GENERAL PURPOSE COBALT & HSS END MILLS

MULTI FLUTE • CENTER CUTTING END MILL

SERIES: CC

DIA	SHK	LOC	OAL	FLUTE	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
27/32	7/8	1-7/8	4-1/8	4	std	M42	CC-2827	12544	42544
7/8	1/2	1-5/8	3-5/8	4	std	M42	CC-1628	15854	45854
7/8	3/4	1-7/8	4-1/8	4	std	M42	CC-2428	15066	45066
7/8	7/8	1-7/8	4-1/8	4	std	M42	CC-2828	11484	41484
7/8	7/8	1-7/8	4-1/8	6	std	M42	CC-2828-A	15096	45096
7/8	7/8	3-1/2	5-3/4	4	long	M42	CC-2828-L	11604	41604
7/8	7/8	5	7-1/4	4	xl	M42	CC-2828-E	11554	41554
29/32	7/8	1-7/8	4-1/8	4	std	M42	CC-2829	14421	44421
15/16	3/4	1-7/8	4-1/8	4	std	M42	CC-2430	15068	45068
15/16	7/8	1-7/8	4-1/8	4	std	M42	CC-2830	11486	41486
1	5/8	1-7/8	4	4	std	M42	CC-2032	15060	45060
1	3/4	1-7/8	4-1/8	4	std	M42	CC-2432	15070	45070
1	1/2	1-7/8	3-7/8	4	std	M42	CC-1632	15856	45856
1	1	2	4-1/2	4	std	M42	CC-3232	11488	41488
1	1	2	4-1/2	6	std	M42	CC-3232-A	15098	45098
1	1	3	5-1/2	4	med	M42	CC-3232-M	11608	41608
1	1	4	6-1/2	4	long	M42	CC-3232-L	11606	41606
1	1	4	6-1/2	6	long	M42	CC-3232-LA	11385	41385
1	1	6	8-1/2	4	xl	M42	CC-3232-E	11556	41556
1	1	8	10-1/2	4	xxl	M42	CC-3232-EE	11558	41558
1-1/16	3/4	1-5/8	3-7/8	6	std	M42	CC-2434	15072	45072
1-1/8	3/4	1-5/8	3-7/8	6	std	M42	CC-2436	15074	45074
1-1/8	1	2	4-1/2	4	std	M42	CC-3236	11490	41490
1-3/16	3/4	1-5/8	3-7/8	6	std	M42	CC-2438	15076	45076
1-1/4	3/4	1-5/8	3-7/8	6	std	M42	CC-2440	15078	45078
1-1/4	1	2	4-1/2	6	std	M42	CC-3240	15102	45102
1-1/4	1-1/4	2	4-1/2	4	std	M42	CC-4040	11492	41492
1-1/4	1-1/4	2	4-1/2	6	std	M42	CC-4040-A	11662	41662
1-1/4	1-1/4	4	6-1/2	4	long	M42	CC-4040-L	11610	41610
1-1/4	1-1/4	4	6-1/2	6	long	M42	CC-4040-LA	11386	41386
1-1/4	1-1/4	6	8-1/2	4	xl	M42	CC-4040-E	11560	41560
1-1/4	1-1/4	6	8-1/2	6	xl	M42	CC-4040-EA	11230	41230
1-5/16	3/4	2	4-1/4	6	std	M42	CCP-2442	15080	45080
1-3/8	3/4	2	4-1/4	6	std	M42	CCP-2444	15082	45082
1-7/16	3/4	2	4-1/4	6	std	M42	CCP-2446	15084	45084
1-1/2	3/4	2	4-1/4	6	std	M42	CCP-2448	15086	45086
1-1/2	1	2	4-1/2	6	std	M42	CCP-3248	15106	45106
1-1/2	1	4	6-1/2	4	long	HSS	CC-3248-L	11271	41271
1-1/2	1-1/4	2	4-1/2	4	std	HSS	CC-4048	11494	41494
1-1/2	1-1/4	2	4-1/2	4	std	M42	CCP-4048	11664	41664
1-1/2	1-1/4	2	4-1/2	6	std	HSS	CC-4048-A	11269	41269
1-1/2	1-1/4	2	4-1/2	6	std	M42	CCP-4048-A	11666	41666
1-1/2	1-1/4	4	6-1/2	4	long	HSS	CC-4048-L	11612	41612
1-1/2	1-1/4	8	10-1/2	4	xl	M42	CCP-4048-E	11698	41698
1-5/8	3/4	2	4-1/4	6	std	M42	CCP-2452	15088	45088
1-5/8	1-1/4	2	4-1/2	6	std	M42	CCP-4052	11673	41673
1-3/4	3/4	2	4-1/4	6	std	M42	CCP-2456	15090	45090
1-3/4	1-1/4	2	4-1/2	6	std	M42	CCP-4056	15108	45108
1-7/8	3/4	2	4-1/4	6	std	M42	CCP-2460	15092	45092
2	3/4	2	4-1/4	6	std	M42	CCP-2464	15094	45094
2	1-1/4	2	4-1/2	4	std	M42	CCP-4064	11668	41668
2	1-1/4	2	4-1/2	6	std	M42	CCP-4064-A	11670	41670
2	1-1/4	4	6-1/2	4	long	M42	CCP-4064-L	11712	41712

MULTI FLUTE • Non-CENTER CUTTING END MILL



SERIES: C

DIA	SHK	LOC	OAL	FLUTE	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
21/32	1/2	1-5/8	3-5/8	4	std	M42	C-1621	11192	41192
11/16	1/2	1-5/8	3-5/8	4	std	M42	C-1622	11194	41194
11/16	5/8	1-5/8	3-3/4	4	std	M42	C-2022	11218	41218
23/32	1/2	1-5/8	3-5/8	4	std	M42	C-1623	11196	41196
3/4	1/2	5/8	2-5/8	4	stub	M42	CS-1624	16481	46481
3/4	1/2	5/8	2-5/8	6	stub	M42	CS-1624-A	16482	46482
3/4	1/2	1-5/8	3-5/8	4	std	M42	C-1624	11198	41198
3/4	5/8	1-5/8	3-3/4	4	std	M42	C-2024	11220	41220
3/4	3/4	1-1/2	3-7/8	6	std	M42	C-2424-A	16491	46491
3/4	3/4	1-5/8	3-7/8	4	std	M42	C-2424	11238	41238
3/4	3/4	3	5-1/4	4	long	M42	C-2424-L	11396	41396
3/4	3/4	4	6-1/4	4	xl	M42	C-2424-E	11352	41352
3/4	3/4	6	8-1/4	4	xxl	M42	C-2424-EE	11354	41354
25/32	1/2	1-5/8	3-5/8	4	std	M42	C-1625	11200	41200
13/16	1/2	1-5/8	3-5/8	4	std	M42	C-1626	11202	41202
13/16	5/8	1-7/8	4	4	std	M42	C-2026	11222	41222
13/16	5/8	1-7/8	4	6	std	M42	C-2026-A	11224	41224
13/16	3/4	1-7/8	4-1/8	4	std	M42	C-2426	11240	41240
27/32	1/2	1-5/8	3-5/8	4	std	M42	C-1627	11204	41204
7/8	1/2	5/8	2-5/8	4	stub	M42	CS-1628	16483	46483
7/8	1/2	5/8	2-5/8	6	stub	M42	CS-1628-A	16484	46484
7/8	1/2	1-5/8	3-5/8	4	std	M42	C-1628	11206	41206
7/8	5/8	1-7/8	4	4	std	M42	C-2028	11226	41226
7/8	5/8	1-7/8	4	6	std	M42	C-2028-A	11228	41228
7/8	3/4	1-7/8	4-1/8	4	std	M42	C-2428	11242	41242
7/8	7/8	1-7/8	4-1/8	4	std	M42	C-2828	11268	41268
7/8	7/8	3-1/2	5-3/4	4	long	M42	C-2828-L	11398	41398
7/8	7/8	5	7-1/4	4	xl	M42	C-2828-E	11356	41356
29/32	1/2	1-7/8	3-7/8	4	std	M42	C-1629	11208	41208
15/16	1/2	1-7/8	3-7/8	4	std	M42	C-1630	11210	41210
15/16	5/8	1-7/8	4	6	std	M42	C-2030-A	11232	41232
15/16	3/4	1-7/8	4-1/8	4	std	M42	C-2430	11244	41244
31/32	1/2	1-7/8	3-7/8	4	std	M42	C-1631	11212	41212
1	1/2	3/4	2-3/4	4	stub	M42	CS-1632	16485	46485
1	1/2	3/4	2-3/4	8	stub	M42	CS-1632-A8	16486	46486
1	1/2	1-7/8	3-7/8	4	std	M42	C-1632	11214	41214
1	5/8	3/4	2-7/8	8	stub	M42	CS-2032-A8	16487	46487
1	5/8	1-7/8	4	4	std	M42	C-2032	11234	41234
1	5/8	1-7/8	4	6	std	M42	C-2032-A	11236	41236
1	3/4	3/4	3	4	stub	M42	CS-2432	16492	46492
1	3/4	3/4	3	8	stub	M42	CS-2432-A8	16493	46493
1	3/4	1-1/2	3-3/4	8	std	M42	C-2432-A8	16494	46494
1	3/4	1-7/8	4-1/8	4	std	M42	C-2432	11246	41246
1	7/8	1-7/8	4-1/8	4	std	M42	C-2832	11272	41272
1	1	2	4-1/2	4	std	M42	C-3232	11278	41278
1	1	3	5-1/2	4	med	M42	C-3232-M	11400	41400
1	1	4	6-1/2	4	long	M42	C-3232-L	11402	41402
1	1	6	8-1/2	4	xl	M42	C-3232-E	11358	41358
1	1	8	10-1/2	4	xxl	M42	C-3232-EE	11360	41360
1-1/16	3/4	2	4-1/4	6	std	M42	C-2434	11248	41248
1-1/16	1	2	4-1/2	6	std	M42	C-3234	11280	41280

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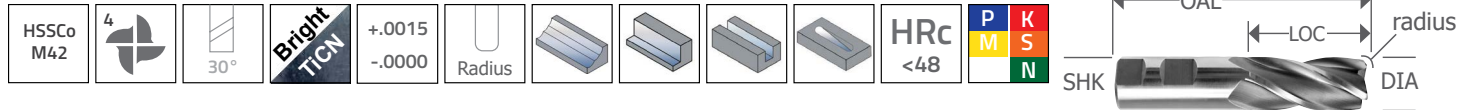
GENERAL PURPOSE COBALT & HSS END MILLS

SERIES: C

MULTI FLUTE • Non-CENTER CUTTING END MILL

DIA	SHK	LOC	OAL	FLUTE	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1-1/8	5/8	3/4	2-7/8	8	stub	M42	CS-2036-A8	16488	46488
1-1/8	3/4	3/4	3	6	stub	M42	CS-2436-A	16495	46495
1-1/8	3/4	3/4	3	8	stub	M42	CS-2436-A8	16497	46497
1-1/8	3/4	1-1/2	3-3/4	6	std	M42	C-2436-A	16496	46496
1-1/8	3/4	1-1/2	3-3/4	8	std	M42	C-2436-A8	16498	46498
1-1/8	3/4	2	4-1/4	6	std	M42	C-2436	11250	41250
1-1/8	1	2	4-1/2	6	std	M42	C-3236	11282	41282
1-1/8	1	4	6-1/2	6	long	M42	C-3236-L	11404	41404
1-3/16	3/4	2	4-1/4	6	std	M42	C-2438	11252	41252
1-3/16	1	2	4-1/2	6	std	M42	C-3238	11284	41284
1-1/4	5/8	3/4	2-7/8	6	stub	M42	CS-2040-A	16489	46489
1-1/4	3/4	3/4	3	6	stub	M42	CS-2440-A	16499	46499
1-1/4	3/4	1-1/2	3-3/4	6	std	M42	C-2440-A	16500	46500
1-1/4	3/4	1-1/2	3-3/4	8	std	M42	C-2440-A8	16501	46501
1-1/4	3/4	2	4-1/4	6	std	M42	C-2440	11254	41254
1-1/4	1	2	4-1/2	6	std	M42	C-3240	11286	41286
1-1/4	1-1/4	2	4-1/2	6	std	M42	C-4040	11296	41296
1-1/4	1-1/4	3	5-1/2	4	med	M42	C-4040-M	11412	41412
1-1/4	1	4	6-1/2	6	long	M42	C-3240-L	11406	41406
1-1/4	1-1/4	4	6-1/2	6	long	M42	C-4040-L	11414	41414
1-1/4	1-1/4	6	8-1/2	6	xl	M42	C-4040-E	11362	41362
1-5/16	1	2	4-1/2	6	std	HSS	C-3242	11288	41288
1-3/8	5/8	3/4	2-7/8	6	stub	HSS	CS-2044-A	16490	46490
1-3/8	3/4	3/4	3	6	stub	HSS	CS-2444-A	16502	46502
1-3/8	3/4	1-1/2	3-7/8	6	std	HSS	C-2444-A	16503	46503
1-3/8	3/4	2	4-1/4	6	std	HSS	C-2444	11256	41256
1-3/8	1	2	4-1/2	6	std	HSS	C-3244	11290	41290
1-3/8	1-1/4	2	4-1/2	6	std	HSS	C-4044	11298	41298
1-3/8	1	4	6-1/2	6	long	HSS	C-3244-L	11408	41408
1-7/16	1	2	4-1/2	6	std	HSS	C-3246	11292	41292
1-1/2	3/4	3/4	3	6	stub	HSS	CS-2448-A	16504	46504
1-1/2	3/4	1-1/2	3-3/4	6	std	HSS	C-2448-A	16505	46505
1-1/2	3/4	2	4-1/4	6	std	HSS	C-2448	11258	41258
1-1/2	3/4	2	4-1/4	8	std	HSS	C-2448-A8	16506	46506
1-1/2	1	2	4-1/2	6	std	HSS	C-3248	11294	41294
1-1/2	1	4	6-1/2	6	long	HSS	C-3248-L	11270	41270
1-1/2	1-1/4	2	4-1/2	6	std	HSS	C-4048	11300	41300
1-1/2	1-1/4	2	4-1/2	6	std	M42	CP-4048	15046	45046
1-1/2	1-1/4	4	6-1/2	6	long	HSS	C-4048-L	11418	41418
1-1/2	1-1/4	8	10-1/2	6	xl	HSS	C-4048-E	11364	41364
1-9/16	1-1/4	2	4-1/2	6	std	HSS	C-4050	11302	41302
1-5/8	3/4	2	4-1/4	6	std	HSS	C-2452	11260	41260
1-5/8	1-1/4	2	4-1/2	6	std	HSS	C-4052	11304	41304
1-3/4	3/4	1-1/2	3-3/4	6	std	HSS	C-2456-A	16507	46507
1-3/4	3/4	2	4-1/4	6	std	HSS	C-2456	11262	41262
1-3/4	1-1/4	2	4-1/2	6	std	HSS	C-4056	10978	40978
1-3/4	1-1/4	4	6-1/2	6	long	HSS	C-4056-L	11420	41420
1-3/4	1-1/4	8	10-1/2	8	xl	HSS	C-4056-E	11366	41366
1-7/8	3/4	2	4-1/4	6	std	HSS	C-2460	11264	41264
2	3/4	2	4-1/4	6	std	HSS	C-2464	11266	41266
2	1-1/4	2	4-1/2	6	std	HSS	C-4064-A	11312	41312
2	3/4	2	4-1/4	8	std	HSS	C-2464-8	10959	40959
2	1-1/4	2	4-1/2	8	std	HSS	C-4064	11314	41314
2	1-1/4	2	4-1/2	6	std	M42	CP-4064	15048	45048
2	1-1/4	4	6-1/2	8	long	HSS	C-4064-L	11426	41426
2	2	6	9-3/4	6	long	HSS	C-6464-L	11430	41430
2	2	10	13-3/4	6	xxl	HSS	C-6464-EE	11372	41372
2-1/8	1-1/4	2	4-1/2	4	std	HSS	C-4068	11316	41316
2-1/4	1-1/4	2	4-1/2	4	std	HSS	C-4072	11318	41318
2-1/2	1-1/4	2	4-1/2	6	std	HSS	C-4080-A	11322	41322

4 FLUTE • CENTER CUTTING CORNER RADIUS END MILL



SERIES: CC-__-R

DIA	SHK	LOC	OAL	LENGTH	RADIUS	MAT	TOOL	BRIGHT EDP	TICN EDP
1/8	3/8	3/8	2-5/16	std	0.015	M42	CC-1204-R015	15212	45212
3/16	3/8	1/2	2-3/8	std	0.020	M42	CC-1206-R020	15214	45214
3/16	3/8	1/2	2-3/8	std	0.030	M42	CC-1206-R030	15216	45216
1/4	3/8	5/8	2-7/16	std	0.020	M42	CC-1208-R020	15218	45218
1/4	3/8	5/8	2-7/16	std	0.030	M42	CC-1208-R030	15220	45220
1/4	3/8	5/8	2-7/16	std	0.045	M42	CC-1208-R045	15222	45222
5/16	3/8	3/4	2-1/2	std	0.020	M42	CC-1210-R020	15224	45224
5/16	3/8	3/4	2-1/2	std	0.030	M42	CC-1210-R030	15226	45226
5/16	3/8	3/4	2-1/2	std	0.045	M42	CC-1210-R045	15228	45228
3/8	3/8	3/4	2-1/2	std	0.020	M42	CC-1212-R020	15230	45230
3/8	3/8	3/4	2-1/2	std	0.030	M42	CC-1212-R030	15232	45232
3/8	3/8	3/4	2-1/2	std	0.045	M42	CC-1212-R045	15234	45234
1/2	1/2	1-1/4	3-1/4	std	0.020	M42	CC-1616-R020	15236	45236
1/2	1/2	1-1/4	3-1/4	std	0.030	M42	CC-1616-R030	15238	45238
1/2	1/2	1-1/4	3-1/4	std	0.045	M42	CC-1616-R045	15240	45240
1/2	1/2	1-1/4	3-1/4	std	0.060	M42	CC-1616-R060	15242	45242
5/8	5/8	1-5/8	3-3/4	std	0.020	M42	CC-2020-R020	15244	45244
5/8	5/8	1-5/8	3-3/4	std	0.030	M42	CC-2020-R030	15246	45246
5/8	5/8	1-5/8	3-3/4	std	0.045	M42	CC-2020-R045	15248	45248
5/8	5/8	1-5/8	3-3/4	std	0.060	M42	CC-2020-R060	15250	45250
5/8	5/8	1-5/8	3-3/4	std	0.090	M42	CC-2020-R090	15252	45252
3/4	3/4	1-5/8	3-7/8	std	0.020	M42	CC-2424-R020	15254	45254
3/4	3/4	1-5/8	3-7/8	std	0.030	M42	CC-2424-R030	15256	45256
3/4	3/4	1-5/8	3-7/8	std	0.045	M42	CC-2424-R045	15258	45258
3/4	3/4	1-5/8	3-7/8	std	0.060	M42	CC-2424-R060	15260	45260
3/4	3/4	1-5/8	3-7/8	std	0.090	M42	CC-2424-R090	15262	45262
3/4	3/4	1-5/8	3-7/8	std	0.125	M42	CC-2424-R125	15264	45264
1	1	2	4-1/2	std	0.020	M42	CC-3232-R020	15266	45266
1	1	2	4-1/2	std	0.030	M42	CC-3232-R030	15268	45268
1	1	2	4-1/2	std	0.045	M42	CC-3232-R045	15270	45270
1	1	2	4-1/2	std	0.060	M42	CC-3232-R060	15272	45272
1	1	2	4-1/2	std	0.090	M42	CC-3232-R090	15274	45274
1	1	2	4-1/2	std	0.125	M42	CC-3232-R125	15276	45276

GENERAL PURPOSE COBALT & HSS END MILLS

4 FLUTE • CENTER CUTTING METRIC/INCH END MILL



HSSCo
M42



Bright
TiCN

+0.015
-0.000

Square



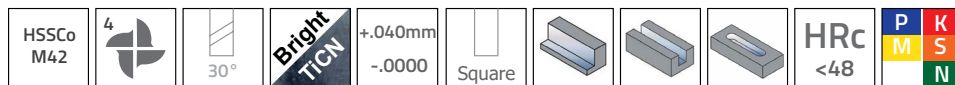
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P
M
K
S
N

SERIES: CCP

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3mm	3/8	3/8	2-5/16	std	M42	CCP-12M3	11740	41740
3.5mm	3/8	7/16	2-5/16	std	M42	CCP-12M3.5	11741	41741
4mm	3/8	7/16	2-5/16	std	M42	CCP-12M4	11742	41742
4.5mm	3/8	7/16	2-5/16	std	M42	CCP-12M4.5	11743	41743
5mm	3/8	9/16	2-1/2	std	M42	CCP-12M5	11744	41744
5.5mm	3/8	5/8	2-1/2	std	M42	CCP-12M5.5	11745	41745
6mm	3/8	5/8	2-1/2	std	M42	CCP-12M6	11746	41746
6.5mm	3/8	11/16	2-1/2	std	M42	CCP-12M6.5	11747	41747
7mm	3/8	11/16	2-1/2	std	M42	CCP-12M7	11748	41748
7.5mm	3/8	3/4	2-1/2	std	M42	CCP-12M7.5	11749	41749
8mm	3/8	3/4	2-1/2	std	M42	CCP-12M8	11750	41750
8.5mm	3/8	3/4	2-1/2	std	M42	CCP-12M8.5	11751	41751
9mm	3/8	3/4	2-1/2	std	M42	CCP-12M9	11752	41752
9.5mm	3/8	3/4	2-1/2	std	M42	CCP-12M9.5	11753	41753
10mm	3/8	1	2-11/16	std	M42	CCP-12M10	11754	41754
10.5mm	3/8	1	2-11/16	std	M42	CCP-12M10.5	11755	41755
11mm	3/8	1	2-11/16	std	M42	CCP-12M11	11756	41756
11.5mm	3/8	1	2-11/16	std	M42	CCP-12M11.5	11757	41757
12mm	3/8	1	2-11/16	std	M42	CCP-12M12	11758	41758
12.5mm	1/2	1-1/4	3-1/4	std	M42	CCP-16M12.5	11759	41759
13mm	1/2	1-3/8	3-3/8	std	M42	CCP-16M13	11760	41760
13.5mm	1/2	1-3/8	3-3/8	std	M42	CCP-16M13.5	11761	41761
14mm	1/2	1-3/8	3-3/8	std	M42	CCP-16M14	11762	41762
14.5mm	1/2	1-3/8	3-3/8	std	M42	CCP-16M14.5	11763	41763
15mm	1/2	1-3/8	3-3/8	std	M42	CCP-16M15	11764	41764
16mm	5/8	1-5/8	3-3/4	std	M42	CCP-20M16	11766	41766
17mm	5/8	1-5/8	3-3/4	std	M42	CCP-20M17	11768	41768
18mm	5/8	1-5/8	3-3/4	std	M42	CCP-20M18	11770	41770
19mm	3/4	1-5/8	3-7/8	std	M42	CCP-24M19	11772	41772
20mm	3/4	1-7/8	4-1/8	std	M42	CCP-24M20	11774	41774
21mm	3/4	1-7/8	4-1/8	std	M42	CCP-24M21	11776	41776
22mm	3/4	1-7/8	4-1/8	std	M42	CCP-24M22	11778	41778
23mm	7/8	1-7/8	4-1/8	std	M42	CCP-28M23	11780	41780
24mm	1	2	4-1/2	std	M42	CCP-32M24	11782	41782
25mm	1	2	4-1/2	std	M42	CCP-32M25	11784	41784
28mm	1	2	4-1/2	std	M42	CCP-32M28	11786	41786
32mm	1	2	4-1/2	std	M42	CCP-32M32	11788	41788
35mm	1	2	4-1/2	std	M42	CCP-32M35	11790	41790
36mm	1	2	4-1/2	std	M42	CCP-32M36	11792	41792
40mm	1-1/4	2	4-1/2	std	M42	CCP-40M40	11794	41794
45mm	1-1/4	2	4-1/2	std	M42	CCP-40M45	11796	41796
50mm	1-1/4	2	4-1/2	std	M42	CCP-40M50	11798	41798

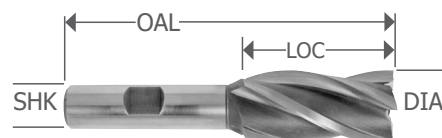
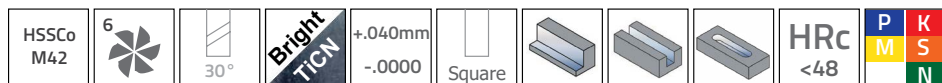
4 FLUTE • CENTER CUTTING METRIC END MILL



SERIES: CC-M_M_

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
2mm	6mm	7mm	57mm	std	M42	CC-M6M2	16365	46365
3mm	6mm	8mm	57mm	std	M42	CC-M6M3	16366	46366
4mm	6mm	11mm	57mm	std	M42	CC-M6M4	16367	46367
5mm	6mm	13mm	57mm	std	M42	CC-M6M5	16368	46368
6mm	6mm	13mm	57mm	std	M42	CC-M6M6	16369	46369
7mm	10mm	16mm	69mm	std	M42	CC-M10M7	16370	46370
8mm	10mm	19mm	69mm	std	M42	CC-M10M8	16371	46371
9mm	10mm	19mm	69mm	std	M42	CC-M10M9	16372	46372
10mm	10mm	22mm	72mm	std	M42	CC-M10M10	16373	46373
11mm	12mm	22mm	79mm	std	M42	CC-M12M11	16374	46374
12mm	12mm	26mm	83mm	std	M42	CC-M12M12	16375	46375
13mm	12mm	26mm	83mm	std	M42	CC-M12M13	16376	46376
14mm	12mm	26mm	83mm	std	M42	CC-M12M14	16377	46377
15mm	12mm	26mm	83mm	std	M42	CC-M12M15	16378	46378
16mm	16mm	32mm	92mm	std	M42	CC-M16M16	16379	46379
17mm	16mm	32mm	92mm	std	M42	CC-M16M17	16380	46380
18mm	16mm	32mm	92mm	std	M42	CC-M16M18	16381	46381
19mm	16mm	32mm	92mm	std	M42	CC-M16M19	16382	46382
20mm	20mm	38mm	104mm	std	M42	CC-M20M20	16383	46383

6 FLUTE • Non-CENTER CUTTING METRIC END MILL

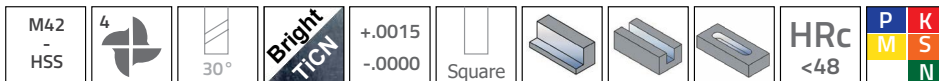
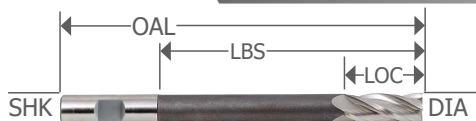


SERIES: C-M_M_

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
21mm	20mm	38mm	104mm	std	M42	C-M20M21	16384	46384
22mm	20mm	38mm	104mm	std	M42	C-M20M22	16385	46385
23mm	20mm	38mm	104mm	std	M42	C-M20M23	16386	46386
24mm	25mm	45mm	121mm	std	M42	C-M25M24	16387	46387
25mm	25mm	45mm	121mm	std	M42	C-M25M25	16388	46388
30mm	25mm	45mm	121mm	std	M42	C-M25M30	16389	46389
32mm	32mm	53mm	133mm	std	M42	C-M32M32	16390	46390

GENERAL PURPOSE COBALT & HSS END MILLS

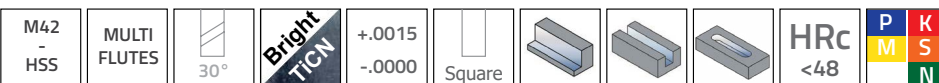
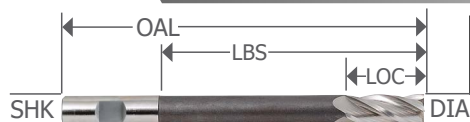
4 FLUTE • CENTER CUTTING EXTENDED NECK END MILL



SERIES: CCN

DIA	SHK	LOC	LBS	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/8	3/8	1	3-1/4	5	std	M42	CCN-1212	11235	41235
1/2	1/2	1-1/4	4	6	std	HSS	CCN-1616	11237	41237
5/8	5/8	1-1/2	5	7-1/8	std	HSS	CCN-2020	11239	41239
3/4	3/4	2	6	8-1/4	std	HSS	CCN-2424	11241	41241
1	1	2-1/2	8	10-1/4	std	HSS	CCN-3232	11243	41243

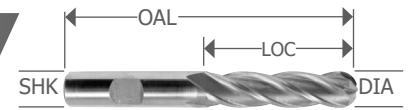
MULTI FLUTE • Non-CENTER CUTTING EXTENDED NECK END MILL



SERIES: CN

DIA	SHK	LOC	LBS	OAL	FLUTE	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/8	3/8	1	3	5	4	std	M42	CN-1212	11221	41221
1/2	1/2	1-1/4	4	6	4	std	HSS	CN-1616	11223	41223
5/8	5/8	1-1/2	5	7-1/8	4	std	HSS	CN-2020	11225	41225
3/4	3/4	2	6	8-1/4	4	std	HSS	CN-2424	11227	41227
1	1	2-1/2	8	10-1/4	4	std	HSS	CN-3232	11229	41229
1-1/4	1-1/4	3-1/2	10	12-1/2	6	std	HSS	CN-4040	11231	41231
2	2	4	12	15-1/4	6	std	HSS	CN-6464	11233	41233

4 FLUTE • CENTER CUTTING BALL NOSE END MILL



M42
-
HSS

4

30°

Bright
TICN

+0.0005
-0.0005
≤5/8

+0.0010
-0.0010
≥5/8

Ball

HRC
<48

P

M

S

N

K

S

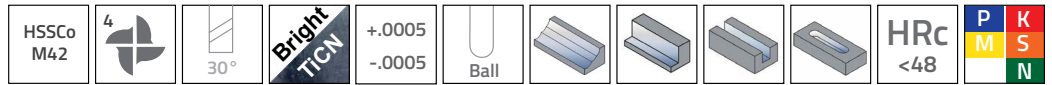
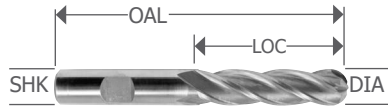
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SERIES: CC-__-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/8	3/8	3/8	2-5/16	std	M42	CC-1204-B	11496	41496
5/32	3/8	7/16	2-5/16	std	M42	CC-1205-B	11498	41498
3/16	3/8	1/2	2-3/8	std	M42	CC-1206-B	11500	41500
3/16	3/8	3/4	2-5/8	long	M42	CC-1206-LB	11614	41614
7/32	3/8	1/2	2-3/8	std	M42	CC-1207-B	11502	41502
1/4	3/8	3/4	2-9/16	std	M42	CC-1208-B	11504	41504
1/4	3/8	1-1/4	3-1/16	long	M42	CC-1208-LB	11618	41618
1/4	3/8	1-3/4	3-9/16	xl	M42	CC-1208-EB	11564	41564
9/32	3/8	11/16	2-1/2	std	M42	CC-1209-B	11506	41506
9/32	3/8	1-3/8	3-1/8	long	M42	CC-1209-LB	11620	41620
5/16	3/8	1	2-3/4	std	M42	CC-1210-B	11508	41508
5/16	3/8	1-3/8	3-1/8	long	M42	CC-1210-LB	11622	41622
5/16	3/8	2	3-3/4	xl	M42	CC-1210-EB	11566	41566
11/32	3/8	3/4	2-1/2	std	M42	CC-1211-B	11510	41510
11/32	3/8	1-1/2	3-1/4	long	M42	CC-1211-LB	11624	41624
3/8	3/8	1	2-3/4	std	M42	CC-1212-B	11512	41512
3/8	3/8	1-1/2	3-1/4	long	M42	CC-1212-LB	11626	41626
3/8	3/8	2-1/2	4-1/4	xl	M42	CC-1212-EB	11568	41568
7/16	3/8	1	2-11/16	std	M42	CC-1214-B	11514	41514
1/2	3/8	1	2-11/16	std	M42	CC-1216-B	11516	41516
1/2	1/2	1-1/4	3-1/4	std	M42	CC-1616-B	11518	41518
1/2	1/2	2	4	long	M42	CC-1616-LB	11628	41628
1/2	1/2	3	5	xl	M42	CC-1616-EB	11570	41570
5/8	5/8	1-5/8	3-3/4	std	M42	CC-2020-B	11520	41520
5/8	5/8	2-1/2	4-5/8	long	M42	CC-2020-LB	11630	41630
5/8	5/8	4	6-1/8	xl	M42	CC-2020-EB	11572	41572
11/16	5/8	1-5/8	3-3/4	std	M42	CC-2022-B	11522	41522
3/4	3/4	1-5/8	3-7/8	std	M42	CC-2424-B	11524	41524
3/4	3/4	3	5-1/4	long	M42	CC-2424-LB	11632	41632
3/4	3/4	4	6-1/4	xl	M42	CC-2424-EB	11574	41574
7/8	7/8	1-7/8	4-1/8	std	M42	CC-2828-B	11526	41526
7/8	7/8	3-1/2	5-3/4	long	M42	CC-2828-LB	11634	41634
1	1	2	4-1/2	std	M42	CC-3232-B	11528	41528
1	1	4	6-1/2	long	M42	CC-3232-LB	11636	41636
1	1	6	8-1/2	xl	M42	CC-3232-EB	11578	41578
1-1/8	1	2	4-1/2	std	M42	CC-3236-B	11530	41530
1-1/4	1-1/4	2	4-1/2	std	M42	CC-4040-B	11532	41532
1-1/4	1-1/4	4	6-1/2	long	M42	CC-4040-LB	11638	41638
1-1/4	1-1/4	6	8-1/2	xl	M42	CC-4040-EB	11580	41580
1-1/2	1-1/4	2	4-1/2	std	HSS	CC-4048-B	11534	41534
1-1/2	1-1/4	4	6-1/2	long	HSS	CC-4048-LB	11333	41333

GENERAL PURPOSE COBALT & HSS END MILLS

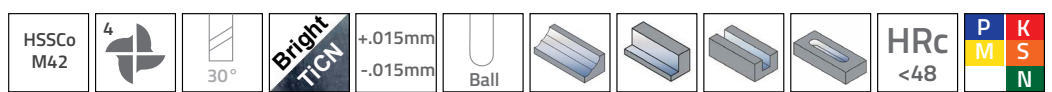
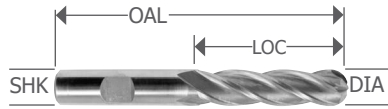
4 FLUTE • CENTER CUTTING BALL NOSE METRIC/ INCH END MILL



SERIES: CCP- _M_-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3mm	3/8	3/8	2-5/16	std	M42	CCP-12M3-B	13002	43002
4mm	3/8	7/16	2-5/16	std	M42	CCP-12M4-B	13004	43004
5mm	3/8	9/16	2-1/2	std	M42	CCP-12M5-B	13006	43006
6mm	3/8	5/8	2-1/2	std	M42	CCP-12M6-B	13008	43008
7mm	3/8	11/16	2-1/2	std	M42	CCP-12M7-B	13010	43010
8mm	3/8	3/4	2-1/2	std	M42	CCP-12M8-B	13012	43012
9mm	3/8	3/4	2-1/2	std	M42	CCP-12M9-B	13014	43014
10mm	3/8	1	2-11/16	std	M42	CCP-12M10-B	13016	43016
11mm	3/8	1	2-11/16	std	M42	CCP-12M11-B	13018	43018
12mm	3/8	1	2-11/16	std	M42	CCP-12M12-B	13020	43020
13mm	1/2	1-1/4	3-1/4	std	M42	CCP-16M13-B	13022	43022
14mm	1/2	1-3/8	3-3/8	std	M42	CCP-16M14-B	13024	43024

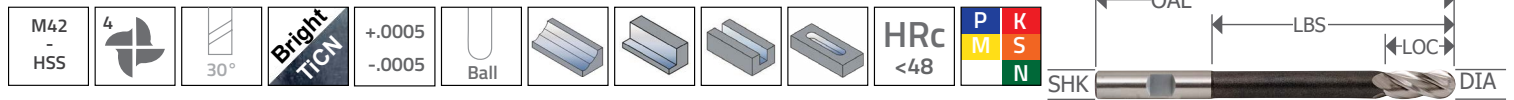
4 FLUTE • CENTER CUTTING BALL NOSE METRIC END MILL



SERIES: CC-M _M_-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
2mm	6mm	7mm	57mm	std	M42	CC-M6M2-B	17964	47964
3mm	6mm	8mm	57mm	std	M42	CC-M6M3-B	17965	47965
4mm	6mm	11mm	57mm	std	M42	CC-M6M4-B	17966	47966
5mm	6mm	13mm	57mm	std	M42	CC-M6M5-B	17967	47967
6mm	6mm	13mm	57mm	std	M42	CC-M6M6-B	17968	47968
7mm	10mm	16mm	69mm	std	M42	CC-M10M7-B	17969	47969
8mm	10mm	19mm	69mm	std	M42	CC-M10M8-B	17970	47970
9mm	10mm	19mm	69mm	std	M42	CC-M10M9-B	17971	47971
10mm	10mm	22mm	72mm	std	M42	CC-M10M10-B	17972	47972
11mm	12mm	22mm	79mm	std	M42	CC-M12M11-B	17973	47973
12mm	12mm	26mm	83mm	std	M42	CC-M12M12-B	17974	47974
13mm	12mm	26mm	83mm	std	M42	CC-M12M13-B	17975	47975
14mm	12mm	26mm	83mm	std	M42	CC-M12M14-B	17976	47976
15mm	12mm	26mm	83mm	std	M42	CC-M12M15-B	17977	47977
16mm	16mm	32mm	92mm	std	M42	CC-M16M16-B	17978	47978
17mm	16mm	32mm	92mm	std	M42	CC-M16M17-B	17979	47979
18mm	16mm	32mm	92mm	std	M42	CC-M16M18-B	17980	47980
19mm	16mm	32mm	92mm	std	M42	CC-M16M19-B	17981	47981
20mm	20mm	38mm	104mm	std	M42	CC-M20M20-B	17982	47982
21mm	20mm	38mm	104mm	std	M42	CC-M20M21-B	17983	47983
22mm	20mm	38mm	104mm	std	M42	CC-M20M22-B	17984	47984
23mm	20mm	38mm	104mm	std	M42	CC-M20M23-B	17985	47985
24mm	25mm	45mm	121mm	std	M42	CC-M25M24-B	17986	47986
25mm	25mm	45mm	121mm	std	M42	CC-M25M25-B	17987	47987
30mm	25mm	45mm	121mm	std	M42	CC-M25M30-B	17988	47988
32mm	32mm	53mm	133mm	std	M42	CC-M32M32-B	17989	47989

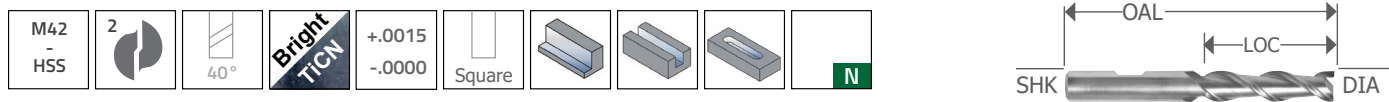
4 FLUTE • CENTER CUTTING BALL NOSE EXTENDED NECK



SERIES: CCN-__-B

DIA	SHK	LOC	LBS	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/8	3/8	1	3	5	std	M42	CCN-1212-B	11245	41245
1/2	1/2	1-1/4	4	6	std	HSS	CCN-1616-B	11247	41247
5/8	5/8	1-1/2	5	7-1/8	std	HSS	CCN-2020-B	11249	41249
3/4	3/4	2	6	8-1/4	std	HSS	CCN-2424-B	11251	41251
1	1	2-1/2	8	10-1/4	std	HSS	CCN-3232-B	11253	41253

2 FLUTE • 40° CENTER CUTTING FOR ALUMINUM END MILL



SERIES: AA

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/16	3/8	7/16	2-5/16	std	M42	AA-1206	10614	40614
3/16	3/8	3/4	2-5/8	long	M42	AA-1206-L	10646	40646
3/16	3/8	1-1/4	3-1/8	xl	M42	AA-1206-E	10698	40698
1/4	3/8	1/2	2-5/16	std	M42	AA-1208	10616	40616
1/4	3/8	5/8	2-7/16	med	M42	AA-1208-M	10648	40648
1/4	3/8	3/4	2-5/8	med/med	M42	AA-1208-MM	10650	40650
1/4	3/8	1	2-7/8	med/long	M42	AA-1208-ML	10652	40652
1/4	3/8	1-1/4	3-1/16	long	M42	AA-1208-L	10654	40654
1/4	3/8	1-1/2	3-3/8	long/long	M42	AA-1208-LL	10656	40656
1/4	3/8	1-3/4	3-9/16	xl	M42	AA-1208-E	10700	40700
5/16	3/8	9/16	2-5/16	std	M42	AA-1210	10618	40618
5/16	3/8	3/4	2-1/2	med	M42	AA-1210-M	10658	40658
5/16	3/8	1	2-3/4	med/med	M42	AA-1210-MM	10660	40660
5/16	3/8	1-3/8	3-1/8	long	M42	AA-1210-L	10662	40662
5/16	3/8	2	3-3/4	xl	M42	AA-1210-E	10702	40702
3/8	3/8	9/16	2-5/16	std	M42	AA-1212	10620	40620
3/8	3/8	3/4	2-1/2	med	M42	AA-1212-M	10664	40664
3/8	3/8	1	2-3/4	med/med	M42	AA-1212-MM	10666	40666
3/8	3/8	1-1/2	3-1/4	long	M42	AA-1212-L	10668	40668
3/8	3/8	2	3-3/4	long/long	M42	AA-1212-LL	10670	40670
3/8	3/8	2-1/2	4-1/4	xl	M42	AA-1212-E	10704	40704
7/16	3/8	1	2-11/16	std	M42	AA-1214	10622	40622
7/16	1/2	1-3/4	3-3/4	long	M42	AA-1614-L	10672	40672
1/2	1/2	1	3	std	M42	AA-1616	10624	40624
1/2	1/2	1-1/4	3-1/4	med	M42	AA-1616-M	10674	40674
1/2	1/2	1-3/4	3-3/4	med/med	M42	AA-1616-MM	10676	40676
1/2	1/2	2	4	long	M42	AA-1616-L	10678	40678
1/2	1/2	2-1/2	4-1/2	long/long	M42	AA-1616-LL	10680	40680
1/2	1/2	3	5	xl	M42	AA-1616-E	10708	40708
5/8	5/8	1-3/8	3-1/2	stub	M42	AAS-2020	10628	40628
5/8	5/8	1-5/8	3-3/4	std	M42	AA-2020	10626	40626
5/8	5/8	2-1/2	4-5/8	long	M42	AA-2020-L	10682	40682
5/8	5/8	4	6-1/8	xl	M42	AA-2020-E	10710	40710

sizes continued on next page

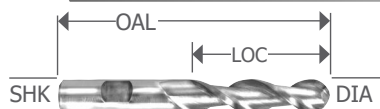
GENERAL PURPOSE COBALT & HSS END MILLS

2 FLUTE • 40° CENTER CUTTING FOR ALUMINUM END MILL

SERIES: AA

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
3/4	3/4	1-5/8	3-7/8	std	M42	AA-2424	10630	40630
3/4	3/4	2	4-1/4	med	M42	AA-2424-M	10684	40684
3/4	3/4	3	5-1/4	long	M42	AA-2424-L	10686	40686
3/4	3/4	4	6-1/4	xl	M42	AA-2424-E	10712	40712
7/8	7/8	1-7/8	4-1/8	std	M42	AA-2828	10634	40634
1	3/4	1-7/8	4-1/8	std	M42	AA-2432	10632	40632
1	1	2	4-1/2	std	M42	AA-3232	10636	40636
1	1	4	6-1/2	long	M42	AA-3232-L	10690	40690
1	1	6	8-1/2	xl	M42	AA-3232-E	10716	40716
1-1/4	1-1/4	2	4-1/2	std	M42	AA-4040	10638	40638
1-1/2	1-1/4	2	4-1/2	std	HSS	AA-4048	10640	40640
1-1/2	1-1/4	4	6-1/2	long	HSS	AA-4048-L	10694	40694

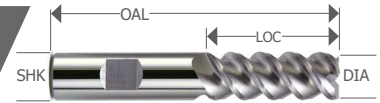
2 FLUTE • 40° CENTER CUTTING BALL NOSE FOR ALUMINUM END MILL



SERIES: AA-__-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP	TICN EDP
1/4	3/8	1/2	2-5/16	std	M42	AA-1208-B	12842	42842
1/4	3/8	5/8	2-1/2	med	M42	AA-1208-MB	11713	41713
1/4	3/8	1-1/4	3-1/16	long	M42	AA-1208-LB	12844	42844
1/4	3/8	1-3/4	3-9/16	xl	M42	AA-1208-EB	12846	42846
5/16	3/8	9/16	2-5/16	std	M42	AA-1210-B	12848	42848
5/16	3/8	3/4	2-1/2	med	M42	AA-1210-MB	11714	41714
5/16	3/8	1-3/8	3-1/8	long	M42	AA-1210-LB	12850	42850
5/16	3/8	2	3-3/4	xl	M42	AA-1210-EB	12852	42852
3/8	3/8	9/16	2-5/16	std	M42	AA-1212-B	12854	42854
3/8	3/8	3/4	2-1/2	med	M42	AA-1212-MB	11715	41715
3/8	3/8	1-1/2	3-1/4	long	M42	AA-1212-LB	12856	42856
3/8	3/8	2-1/2	4-1/4	xl	M42	AA-1212-EB	12858	42858
7/16	3/8	1	2-11/16	std	M42	AA-1214-B	12860	42860
7/16	1/2	1-3/4	3-3/4	long	M42	AA-1614-LB	12862	42862
7/16	1/2	2-3/4	4-3/4	xl	M42	AA-1614-EB	12864	42864
1/2	1/2	1	3	std	M42	AA-1616-B	12866	42866
1/2	1/2	2	4	long	M42	AA-1616-LB	12868	42868
1/2	1/2	3	5	xl	M42	AA-1616-EB	12870	42870
5/8	5/8	1-5/8	3-3/4	std	M42	AA-2020-B	12872	42872
5/8	5/8	2-1/2	4-5/8	long	M42	AA-2020-LB	12874	42874
5/8	5/8	4	6-1/8	xl	M42	AA-2020-EB	12876	42876
3/4	3/4	1-5/8	3-7/8	std	M42	AA-2424-B	12878	42878
3/4	3/4	3	5-1/4	long	M42	AA-2424-LB	12880	42880
3/4	3/4	4	6-1/4	xl	M42	AA-2424-EB	12882	42882
7/8	7/8	1-7/8	4-1/8	std	M42	AA-2828-B	12886	42886
7/8	7/8	3-1/2	5-3/4	long	M42	AA-2828-LB	12888	42888
1	3/4	1-7/8	4-1/8	std	M42	AA-2432-B	12884	42884
1	1	2	4-1/2	std	M42	AA-3232-B	12892	42892
1	1	4	6-1/2	long	M42	AA-3232-LB	12894	42894
1	1	6	8-1/2	xl	M42	AA-3232-EB	12896	42896

3 FLUTE • 60° HELIX CENTER CUTTING END MILL



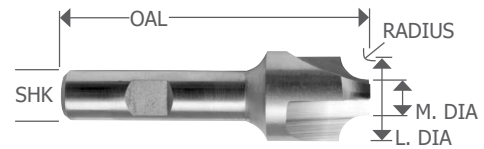
HSSCo M42	3	60°	BRIGHT	+0.015 -0.000	Square				HRC <48	P M S
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SERIES: E60

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
1/4	3/8	5/8	2-7/16	std	M42	E60-1208	15460
5/16	3/8	3/4	2-1/2	std	M42	E60-1210	15462
3/8	3/8	3/4	2-1/2	std	M42	E60-1212	15464
3/8	3/8	1-1/2	3-1/4	long	M42	E60-1212-L	15466
1/2	1/2	1-1/4	3-1/4	std	M42	E60-1616	15468
1/2	1/2	2	4	long	M42	E60-1616-L	15470
1/2	1/2	3	5	xl	M42	E60-1616-E	15472
5/8	5/8	1-5/8	3-3/4	std	M42	E60-2020	15474
5/8	5/8	2-1/2	4-5/8	long	M42	E60-2020-L	15476
3/4	3/4	1-5/8	3-7/8	std	M42	E60-2424	15478
3/4	3/4	3	5-1/4	long	M42	E60-2424-L	15480
1	1	2	4-1/2	std	M42	E60-3232	15486
1	1	4	6-1/2	long	M42	E60-3232-L	15488

3 FLUTE • NON-CENTER CUTTING CORNER ROUNDING END MILL

M42 - HSS	3	Non - Center Cutting	0°	BRIGHT	+0.01 -0.01 radius	Corner Round			HRC <48	P M S K N
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SERIES: R

RADIUS	MINOR DIA	LARGE DIA	SHK	OAL	MAT	TOOL	BRIGHT EDP
1/32	5/16	3/8	3/8	2-1/2	M42	R-1201	12694
1/32	7/16	1/2	1/2	2-5/8	M42	R-1601	12700
1/16	5/16	7/16	3/8	2-1/2	M42	R-1202	12696
1/16	3/8	1/2	1/2	2-5/8	M42	R-1602	12702
3/32	5/16	1/2	3/8	2-1/2	M42	R-1203	12698
3/32	5/16	1/2	1/2	2-5/8	M42	R-1603	12704
1/8	3/8	5/8	1/2	2-7/8	M42	R-1604	12706
5/32	5/16	5/8	1/2	2-7/8	M42	R-1605	12708
3/16	3/8	3/4	1/2	3	M42	R-1606	12710
3/16	3/8	3/4	3/4	3-1/8	M42	R-2406	12732
7/32	7/16	7/8	1/2	3	M42	R-1607	12712
1/4	3/8	7/8	1/2	3	M42	R-1608	12714
1/4	3/8	7/8	3/4	3-1/4	M42	R-2408	12734
9/32	7/16	1	1/2	3	M42	R-1609	12716
5/16	3/8	1	1/2	3	M42	R-1610	12718
5/16	3/8	1	3/4	3-1/4	M42	R-2410	12736
11/32	7/16	1-1/8	1/2	3-1/4	M42	R-1611	12720
3/8	3/8	1-1/8	1/2	3-1/4	M42	R-1612	12722
3/8	3/8	1-1/8	3/4	3-1/2	M42	R-2412	12738
13/32	7/16	1-1/4	1/2	3-1/2	M42	R-1613	12724
7/16	3/8	1-1/4	1/2	3-1/2	M42	R-1614	12726
15/32	7/16	1-3/8	1/2	3-1/2	HSS	R-1615	12728
1/2	3/8	1-3/8	1/2	3-1/2	HSS	R-1616	12730
1/2	3/8	1-3/8	3/4	3-3/4	HSS	R-2416	12740
9/16	3/8	1-1/2	3/4	3-3/4	HSS	R-2418	12742
5/8	3/8	1-5/8	3/4	3-3/4	HSS	R-2420	12744
3/4	3/8	1-7/8	3/4	3-3/4	HSS	R-2424	12746
1	3/4	2-3/4	3/4	4-1/2	HSS	R-2432	12748

GENERAL PURPOSE COBALT & HSS END MILLS

4 FLUTE • NON-CENTER CUTTING CORNER ROUNDING END MILL



M42
-
HSS



Non -
Center
Cutting



BRIGHT

+0.01
-0.01
radius



HRC
<48



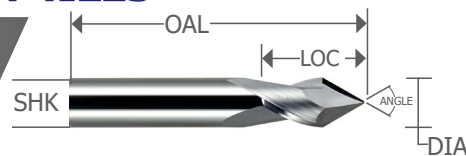
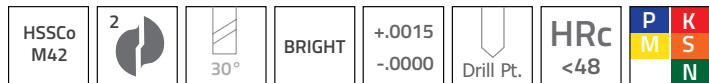
SERIES: RC

RADIUS	MINOR DIA	LARGE DIA	SHK	OAL	FLT	MAT	TOOL	BRIGHT EDP
1/32	3/8	7/16	3/8	2-1/2	4	M42	RC-1201	13060
1/16	5/16	7/16	3/8	2-1/2	4	M42	RC-1202	13062
3/32	5/16	1/2	3/8	2-1/2	4	M42	RC-1203	13064
1/8	3/8	5/8	1/2	3	4	M42	RC-1604	13066
5/32	7/16	3/4	1/2	3	4	M42	RC-1605	13068
3/16	1/2	7/8	1/2	2-15/16	4	M42	RC-1606	13070
3/16	1/2	7/8	3/4	3-1/8	4	M42	RC-2406	13078
1/4	1/2	1	1/2	3	4	M42	RC-1608	13072
1/4	1/2	1	3/4	3-1/4	4	M42	RC-2408	13080
5/16	1/2	1-1/8	1/2	3-1/2	4	M42	RC-1610	13074
5/16	1/2	1-1/8	7/8	3-1/2	4	M42	RC-2810	13092
3/8	1/2	1-1/4	1/2	3-3/4	4	M42	RC-1612	13076
3/8	1/2	1-1/4	7/8	3-3/4	4	M42	RC-2812	13094
7/16	1/2	1-3/8	3/4	3-3/4	4	HSS	RC-2414	13082
7/16	1/2	1-3/8	1	4	4	HSS	RC-3214	13096
1/2	1/2	1-1/2	3/4	3-7/8	4	HSS	RC-2416	13084
1/2	1/2	1-1/2	1	4-1/8	4	HSS	RC-3216	13098
5/8	11/16	1-15/16	3/4	4	4	HSS	RC-2420	13086
5/8	11/16	1-15/16	1	4-1/4	4	HSS	RC-3220	13100
3/4	3/4	2-1/4	3/4	4-1/8	4	HSS	RC-2424	13088
3/4	3/4	2-1/4	1	4-5/16	4	HSS	RC-3224	13102
1	3/4	2-3/4	3/4	4-1/2	4	HSS	RC-2432	13090
1	3/4	2-3/4	1	4-3/4	4	HSS	RC-3232	13104

GENERAL PURPOSE COBALT & HSS END MILLS

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2 FLUTE • 60° AND 82° DRILL POINT END MILL



SERIES: A-__-DP60

DIA	SHK	LOC	OAL	ANGLE	LENGTH	MAT	TOOL	BRIGHT EDP
1/8	3/8	3/8	2-5/16	60°	std	M42	A-1204-DP60	16335
3/16	3/8	7/16	2-5/16	60°	std	M42	A-1206-DP60	16337
1/4	3/8	5/8	2-7/16	60°	std	M42	A-1208-DP60	16037
1/4	3/8	5/8	2-7/16	60°	std	M42	A-1208-DP60-1	16324
5/16	3/8	23/32	2-15/32	60°	std	M42	A-1210-DP60	16038
3/8	3/8	3/4	2-1/2	60°	std	M42	A-1212-DP60	16039
3/8	3/8	3/4	2-1/2	60°	std	M42	A-1212-DP60-1	16327
1/2	1/2	1-1/4	3-1/4	60°	std	M42	A-1616-DP60	16041
1/2	1/2	1-1/4	3-1/4	60°	std	M42	A-1616-DP60-1	16329
5/8	5/8	1-5/8	3-3/4	60°	std	M42	A-2020-DP60	16042
3/4	3/4	1-11/16	3-15/16	60°	std	M42	A-2424-DP60	16044
3/4	3/4	1-11/16	3-15/16	60°	std	M42	A-2424-DP60-1	16331
7/8	3/4	1-15/16	4-3/16	60°	std	M42	A-2428-DP60	16045
1	3/4	2	4-1/4	60°	std	M42	A-2432-DP60	16047

Tool names with "-1" have a .005" sharp point for groove milling

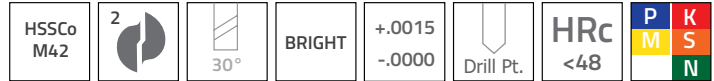
SERIES: A-__-DP82

DIA	SHK	LOC	OAL	ANGLE	LENGTH	MAT	TOOL	BRIGHT EDP
1/8	3/8	3/8	2-5/16	82°	std	M42	A-1204-DP82	16440
3/16	3/8	7/16	2-5/16	82°	std	M42	A-1206-DP82	16441
1/4	3/8	5/8	2-7/16	82°	std	M42	A-1208-DP82	16442
5/16	3/8	23/32	2-15/32	82°	std	M42	A-1210-DP82	16443
3/8	3/8	3/4	2-1/2	82°	std	M42	A-1212-DP82	16444
1/2	1/2	1-1/4	3-1/4	82°	std	M42	A-1616-DP82	16446
9/16	1/2	1-13/32	3-13/32	82°	std	M42	A-1618-DP82	16447
5/8	5/8	1-5/8	3-3/4	82°	std	M42	A-2020-DP82	16448

sizes continued on next page

GENERAL PURPOSE COBALT & HSS END MILLS

2 FLUTE • 90°, 100° & 120° DRILL POINT END MILL



SERIES: A-__-DP

DIA	SHK	LOC	OAL	ANGLE	LENGTH	MAT	TOOL	BRIGHT EDP
1/8	3/8	3/8	2-5/16	90°	std	M42	A-1204-DP	16334
1/8	3/8	3/8	2-5/16	90°	std	M42	A-1204-DP-1	16710
3/16	3/8	7/16	2-5/16	90°	std	M42	A-1206-DP	16336
3/16	3/8	7/16	2-5/16	90°	std	M42	A-1206-DP-1	16452
1/4	3/8	5/8	2-7/16	90°	std	M42	A-1208-DP	15434
1/4	3/8	5/8	2-7/16	90°	std	M42	A-1208-DP-1	16323
5/16	3/8	23/32	2-15/32	90°	std	M42	A-1210-DP	15436
5/16	3/8	23/32	2-15/32	90°	std	M42	A-1210-DP-1	16325
3/8	3/8	3/4	2-1/2	90°	std	M42	A-1212-DP	15438
3/8	3/8	3/4	2-1/2	90°	std	M42	A-1212-DP-1	16326
7/16	3/8	1-1/32	2-23/32	90°	std	M42	A-1214-DP	15440
7/16	3/8	1-1/32	2-23/32	90°	std	M42	A-1214-DP-1	16449
1/2	1/2	1-1/4	3-1/4	90°	std	M42	A-1616-DP	15442
1/2	1/2	1-1/4	3-1/4	90°	std	M42	A-1616-DP-1	16328
9/16	1/2	1-13/32	3-13/32	90°	std	M42	A-1618-DP	15444
9/16	1/2	1-13/32	3-13/32	90°	std	M42	A-1618-DP-1	16450
5/8	5/8	1-5/8	3-3/4	90°	std	M42	A-2020-DP	15446
5/8	5/8	1-5/8	3-3/4	90°	std	M42	A-2020-DP-1	16451
11/16	5/8	1-21/32	3-25/32	90°	std	M42	A-2022-DP	15448
3/4	3/4	1-11/16	3-15/16	90°	std	M42	A-2424-DP	15450
3/4	3/4	1-11/16	3-15/16	90°	std	M42	A-2424-DP-1	16330
13/16	3/4	1-29/32	4-5/32	90°	std	M42	A-2426-DP	15452
7/8	3/4	1-15/16	4-3/16	90°	std	M42	A-2428-DP	15454
15/16	3/4	1-31/32	4-7/32	90°	std	M42	A-2430-DP	15456
1	3/4	2	4-1/4	90°	std	M42	A-2432-DP	15458
1	3/4	2	4-1/4	90°	std	M42	A-2432-DP-1	16332

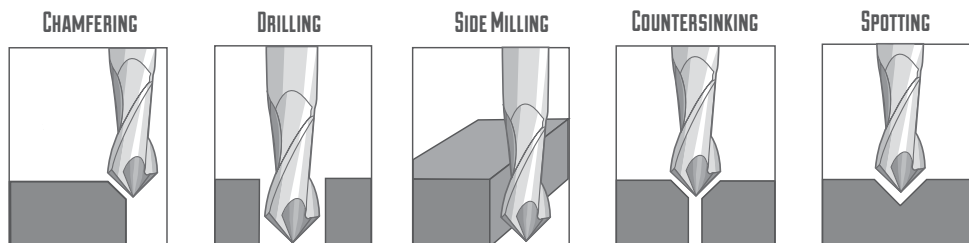
Tool names with "-1" have a .005" sharp point for groove milling

SERIES: A-__-DP100

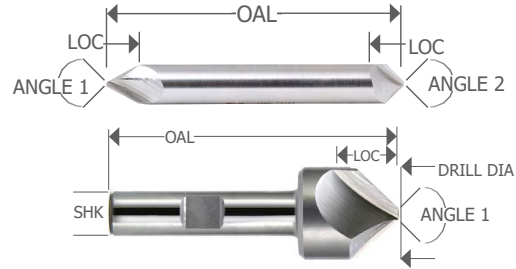
DIA	SHK	LOC	OAL	ANGLE	LENGTH	MAT	TOOL	BRIGHT EDP
1/4	3/8	5/8	2-7/16	100°	std	M42	A-1208-DP100	16596
3/8	3/8	3/4	2-1/2	100°	std	M42	A-1212-DP100	16597

SERIES: A-__-DP120

DIA	SHK	LOC	OAL	ANGLE	LENGTH	MAT	TOOL	BRIGHT EDP
1/2	1/2	1-1/4	3-1/4	120°	std	M42	A-1616-DP120	16040
3/4	3/4	1-11/16	3-15/16	120°	std	M42	A-2424-DP120	16043
1	3/4	2	4-1/4	120°	std	M42	A-2432-DP120	16046



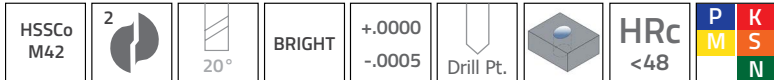
2 FLUTE • SINGLE/DOUBLE END ANGLE END MILLS



SERIES: AM

DIA	SHK	OAL	END	LENGTH	ANGLE 1	ANGLE 2	MAT	TOOL	BRIGHT EDP
3/8	3/8	2-3/4	DE	std	60°	90°	M42	AM-3/8-60/90	19242
3/8	3/8	2-3/4	DE	std	82°	90°	M42	AM-3/8-82/90	19241
3/8	3/8	2-3/4	DE	std	90°	90°	M42	AM-3/8-90/90	19240
1/2	1/2	3-3/8	DE	std	60°	90°	M42	AM-1/2-60/90	19247
1/2	1/2	3-3/16	DE	std	82°	90°	M42	AM-1/2-82/90	19246
1/2	1/2	3-3/16	DE	std	90°	90°	M42	AM-1/2-90/90	19245
3/4	3/4	3-3/8	DE	std	60°	90°	M42	AM-3/4-60/90	19252
3/4	3/4	3-3/16	DE	std	82°	90°	M42	AM-3/4-82/90	19251
3/4	3/8	2-3/8	SE	std	90°	-	M42	AM-3/4-90	19243
3/4	3/4	3-3/16	DE	std	90°	90°	M42	AM-3/4-90/90	19250
1	1/2	2-15/16	SE	std	90°	-	M42	AM-1-90	19248
1-1/4	3/4	3-3/8	SE	std	90°	-	M42	AM-1-1/4-90	19253

2 FLUTE • 82°, 90° OR 120° NC SPOTTING DRILLS

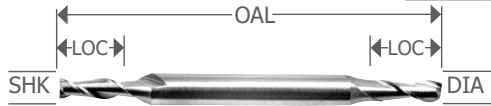


SERIES: HSNC

DRILL DIA	SHK	LOC	OAL	LENGTH	DRILL POINT	MAT	TOOL	BRIGHT EDP
4mm	4mm	12mm	52mm	std	82°	M42	HSNC-4M-82	10847
4mm	4mm	12mm	52mm	std	90°	M42	HSNC-4M-90	10849
4mm	4mm	12mm	52mm	std	120°	M42	HSNC-4M-120	10851
1/4	1/4	7/8	2-5/8	std	82°	M42	HSNC-1/4-82	10853
1/4	1/4	7/8	2-5/8	std	90°	M42	HSNC-1/4-90	10855
1/4	1/4	7/8	2-5/8	std	120°	M42	HSNC-1/4-120	10857
8mm	8mm	25mm	79mm	std	82°	M42	HSNC-8M-82	10859
8mm	8mm	25mm	79mm	std	90°	M42	HSNC-8M-90	10861
8mm	8mm	25mm	79mm	std	120°	M42	HSNC-8M-120	10863
3/8	3/8	1	3-1/2	std	82°	M42	HSNC-3/8-82	10865
3/8	3/8	1	3-1/2	std	90°	M42	HSNC-3/8-90	10867
3/8	3/8	1	3-1/2	std	120°	M42	HSNC-3/8-120	10869
1/2	1/2	1-3/8	4	std	82°	M42	HSNC-1/2-82	10871
1/2	1/2	1-3/8	4	std	90°	M42	HSNC-1/2-90	10873
1/2	1/2	1-3/8	4	std	120°	M42	HSNC-1/2-120	10875
5/8	5/8	1-3/8	4-1/2	std	82°	M42	HSNC-5/8-82	10877
5/8	5/8	1-3/8	4-1/2	std	90°	M42	HSNC-5/8-90	10879
5/8	5/8	1-3/8	4-1/2	std	120°	M42	HSNC-5/8-120	10881
3/4	3/4	1-1/2	5-3/16	std	82°	M42	HSNC-3/4-82	10883
3/4	3/4	1-1/2	5-3/16	std	90°	M42	HSNC-3/4-90	10885
3/4	3/4	1-1/2	5-3/16	std	120°	M42	HSNC-3/4-120	10887

GENERAL PURPOSE COBALT & HSS END MILLS

2 FLUTE • DOUBLE END CENTER CUTTING END MILLS



HSSCo
M42



BRIGHT

+.0000
-.0015



HRC
<48



SERIES: B

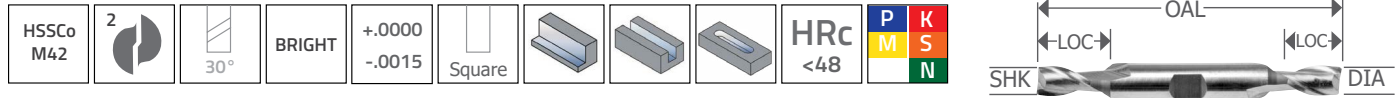
DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
1/32	3/16	3/64	2	stub	M42	BS-601	11082
1/32	3/16	3/32	2-1/4	std	M42	B-601	10872
3/64	3/16	1/16	2	stub	M42	BS-601-1/2	11084
3/64	3/16	9/64	2-1/4	std	M42	B-601-1/2	10874
1/16	3/16	3/32	2	stub	M42	BS-602	11086
1/16	3/16	3/16	2-1/4	std	M42	B-602	10876
1/16	3/16	7/32	2-1/2	long	M42	B-602-L	11048
5/64	3/16	1/8	2	stub	M42	BS-602-1/2	11088
5/64	3/16	15/64	2-1/4	std	M42	B-602-1/2	10878
3/32	3/16	9/64	2	stub	M42	BS-603	11090
3/32	3/16	9/32	2-1/4	std	M42	B-603	10880
3/32	3/16	1/2	2-5/8	long	M42	B-603-L	11050
7/64	3/16	5/32	2	stub	M42	BS-603-1/2	11092
7/64	3/16	21/64	2-1/4	std	M42	B-603-1/2	10882
1/8	3/16	3/16	2	stub	M42	BS-604	11094
1/8	3/16	3/8	2-1/4	std	M42	B-604	10884
1/8	3/16	3/4	3-1/8	long	M42	B-604-L	11052
9/64	3/16	7/32	2	stub	M42	BS-604-1/2	11096
9/64	3/16	13/32	2-1/4	std	M42	B-604-1/2	10886
5/32	3/16	15/64	2	stub	M42	BS-605	11098
5/32	3/16	7/16	2-1/4	std	M42	B-605	10888
5/32	3/16	7/8	3-1/4	long	M42	B-605-L	11054
11/64	3/16	1/4	2	stub	M42	BS-605-1/2	11100
11/64	3/16	1/2	2-1/4	std	M42	B-605-1/2	10890
3/16	3/16	9/32	2	stub	M42	BS-606	11102
3/16	3/16	1/2	2-1/4	std	M42	B-606	10892
3/16	3/16	1	3-3/8	long	M42	B-606-L	11056

If shank and mill diameters are the same, tolerance is +.0000/- .0025

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
5/64	3/8	5/16	3-1/16	std	M42	B-1202-1/2	10894
3/32	3/8	5/16	3-1/16	std	M42	B-1203	10896
7/64	3/8	3/8	3-1/16	std	M42	B-1203-1/2	10898
1/8	3/8	3/16	2-3/4	stub	M42	BS-1204	11104
1/8	3/8	3/8	3-1/16	std	M42	B-1204	10900
9/64	3/8	7/16	3-1/8	std	M42	B-1204-1/2	10902
5/32	3/8	15/64	2-3/4	stub	M42	BS-1205	11106
5/32	3/8	7/16	3-1/8	std	M42	B-1205	10904
11/64	3/8	7/16	3-1/8	std	M42	B-1205-1/2	10906
3/16	3/8	9/32	2-3/4	stub	M42	BS-1206	11108
3/16	3/8	7/16	3-1/4	std	M42	B-1206	10908
13/64	3/8	1/2	3-1/4	std	M42	B-1206-1/2	10910
7/32	3/8	21/64	2-3/4	stub	M42	BS-1207	11110
7/32	3/8	1/2	3-1/4	std	M42	B-1207	10912
15/64	3/8	1/2	3-3/8	std	M42	B-1207-1/2	10914
1/4	3/8	3/8	2-3/4	stub	M42	BS-1208	11112
1/4	3/8	1/2	3-3/8	std	M42	B-1208	10916
17/64	3/8	9/16	3-3/8	std	M42	B-1208-1/2	10918
9/32	3/8	9/16	3-3/8	std	M42	B-1209	10920
19/64	3/8	9/16	3-1/2	std	M42	B-1209-1/2	10922
5/16	3/8	9/16	3-1/2	std	M42	B-1210	10924
21/64	3/8	9/16	3-1/2	std	M42	B-1210-1/2	10926
11/32	3/8	9/16	3-1/2	std	M42	B-1211	10928

sizes continued on next page

2 FLUTE • DOUBLE END CENTER CUTTING END MILLS



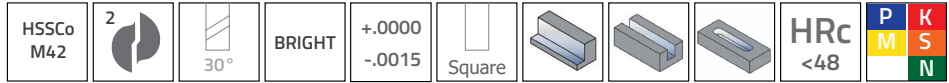
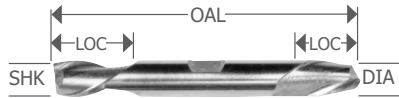
SERIES: B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
23/64	3/8	9/16	3-1/2	std	M42	B-1211-1/2	10930
3/8	3/8	9/16	3-1/2	std	M42	B-1212	10932
25/64	1/2	13/16	4-1/8	std	M42	B-1612-1/2	10934
13/32	1/2	13/16	4-1/8	std	M42	B-1613	10936
27/64	1/2	13/16	4-1/8	std	M42	B-1613-1/2	10938
7/16	1/2	13/16	4-1/8	std	M42	B-1614	10940
29/64	1/2	13/16	4-1/8	std	M42	B-1614-1/2	10942
15/32	1/2	13/16	4-1/8	std	M42	B-1615	10944
31/64	1/2	13/16	4-1/8	std	M42	B-1615-1/2	10946
1/2	1/2	13/16	4-1/8	std	M42	B-1616	10948
17/32	5/8	1-1/8	5	std	M42	B-2017	10950
9/16	5/8	1-1/8	5	std	M42	B-2018	10952
19/32	5/8	1-1/8	5	std	M42	B-2019	10954
5/8	5/8	1-1/8	5	std	M42	B-2020	10956
21/32	3/4	1-5/16	5	std	M42	B-2421	10958
11/16	3/4	1-5/16	5	std	M42	B-2422	10960
23/32	3/4	1-5/16	5	std	M42	B-2423	10962
3/4	3/4	1-5/16	5	std	M42	B-2424	10964
25/32	7/8	1-9/16	5-1/2	std	M42	B-2825	10966
13/16	7/8	1-9/16	5-1/2	std	M42	B-2826	10968
7/8	7/8	1-9/16	5-1/2	std	M42	B-2828	10972
15/16	1	1-5/8	5-7/8	std	M42	B-3230	10976
1	1	1-5/8	5-7/8	std	M42	B-3232	10980

If shank and mill diameters are the same, tolerance is +.0000/-.0025

GENERAL PURPOSE COBALT & HSS END MILLS

2 FLUTE • DE CC LEFT HAND SPIRAL, LEFT HAND CUT END MILL



SERIES: XB

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
1/8	3/8	3/8	3-1/16	std	M42	XB-1204	12235
3/16	3/8	7/16	3-1/4	std	M42	XB-1206	12750
1/4	3/8	1/2	3-3/8	std	M42	XB-1208	12752
5/16	3/8	9/16	3-1/2	std	M42	XB-1210	12754
3/8	3/8	9/16	3-1/2	std	M42	XB-1212	12756
7/16	1/2	13/16	4-1/8	std	M42	XB-1614	12758
1/2	1/2	13/16	4-1/8	std	M42	XB-1616	12760

Tolerance +.0000/-.0015. If shank and mill diameters are the same, tolerance is +.0000/-.0025

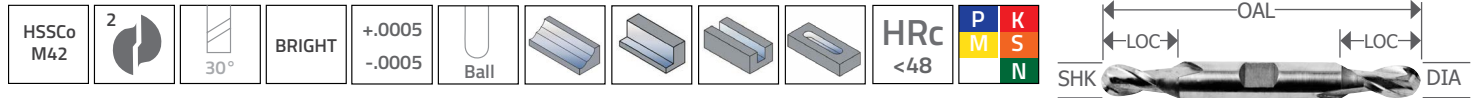
2 FLUTE • DOUBLE END CENTER CUTTING METRIC/INCH END MILL



SERIES: B- _M_

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
3mm	3/8	3/8	3-1/16	std	M42	B-12M3	12922
4mm	3/8	7/16	3-1/8	std	M42	B-12M4	12924
5mm	3/8	1/2	3-1/4	std	M42	B-12M5	12926
6mm	3/8	1/2	3-3/8	std	M42	B-12M6	12928
7mm	3/8	9/16	3-3/8	std	M42	B-12M7	12930
8mm	3/8	9/16	3-1/2	std	M42	B-12M8	12932
9mm	3/8	9/16	3-1/2	std	M42	B-12M9	12934
10mm	1/2	13/16	4-1/8	std	M42	B-16M10	12936
11mm	1/2	13/16	4-1/8	std	M42	B-16M11	12938
12mm	1/2	13/16	4-1/8	std	M42	B-16M12	12940
13mm	5/8	1-1/8	5	std	M42	B-20M13	12942
14mm	5/8	1-1/8	5	std	M42	B-20M14	12944
15mm	5/8	1-1/8	5	std	M42	B-20M15	12946
16mm	3/4	1-5/16	5	std	M42	B-24M16	12948
18mm	3/4	1-5/16	5	std	M42	B-24M18	12950
20mm	7/8	1-9/16	5-1/2	std	M42	B-28M20	12952
22mm	7/8	1-9/16	5-1/2	std	M42	B-28M22	12954

2 FLUTE • DOUBLE END BALL NOSE CENTER CUTTING END MILLS



SERIES: B-__-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
1/32	3/16	3/64	2	stub	M42	BS-601-B	11114
1/32	3/16	3/32	2-1/4	std	M42	B-601-B	10982
3/64	3/16	1/16	2	stub	M42	BS-601-1/2-B	11116
3/64	3/16	9/64	2-1/4	std	M42	B-601-1/2-B	10984
1/16	3/16	3/32	2	stub	M42	BS-602-B	11118
1/16	3/16	3/16	2-1/4	std	M42	B-602-B	10986
1/16	3/16	7/32	2-1/2	long	M42	B-602-LB	11058
5/64	3/16	1/8	2	stub	M42	BS-602-1/2-B	11120
5/64	3/16	15/64	2-1/4	std	M42	B-602-1/2-B	10988
3/32	3/16	9/64	2	stub	M42	BS-603-B	11122
3/32	3/16	9/32	2-1/4	std	M42	B-603-B	10990
3/32	3/16	1/2	2-5/8	long	M42	B-603-LB	11060
7/64	3/16	5/32	2	stub	M42	BS-603-1/2-B	11124
7/64	3/16	21/64	2-1/4	std	M42	B-603-1/2-B	10992
1/8	3/16	3/16	2	stub	M42	BS-604-B	11126
1/8	3/16	3/8	2-1/4	std	M42	B-604-B	10994
1/8	3/16	3/4	3-1/8	long	M42	B-604-LB	11062
9/64	3/16	7/32	2	stub	M42	BS-604-1/2-B	11128
9/64	3/16	13/32	2-1/4	std	M42	B-604-1/2-B	10996
5/32	3/16	15/64	2	stub	M42	BS-605-B	11130
5/32	3/16	7/16	2-1/4	std	M42	B-605-B	10998
5/32	3/16	7/8	3-1/4	long	M42	B-605-LB	11064
11/64	3/16	1/4	2	stub	M42	BS-605-1/2-B	11132
11/64	3/16	1/2	2-1/4	std	M42	B-605-1/2-B	11000
3/16	3/16	9/32	2	stub	M42	BS-606-B	11134
3/16	3/16	1/2	2-1/4	std	M42	B-606-B	11002
3/16	3/16	1	3-3/8	long	M42	B-606-LB	11066

If shank and mill diameters are the same, tolerance is +.0000/-0.0025

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
3/32	3/8	5/16	3-1/16	std	M42	B-1203-B	11004
1/8	3/8	3/8	3-1/16	std	M42	B-1204-B	11006
5/32	3/8	7/16	3-1/8	std	M42	B-1205-B	11008
3/16	3/8	7/16	3-1/4	std	M42	B-1206-B	11010
7/32	3/8	1/2	3-1/4	std	M42	B-1207-B	11012
1/4	3/8	1/2	3-3/8	std	M42	B-1208-B	11014
9/32	3/8	9/16	3-3/8	std	M42	B-1209-B	11016
5/16	3/8	9/16	3-1/2	std	M42	B-1210-B	11018
11/32	3/8	9/16	3-1/2	std	M42	B-1211-B	11020
3/8	3/8	9/16	3-1/2	std	M42	B-1212-B	11022
13/32	1/2	13/16	4-1/8	std	M42	B-1613-B	11024
7/16	1/2	13/16	4-1/8	std	M42	B-1614-B	11026
15/32	1/2	13/16	4-1/8	std	M42	B-1615-B	11028
1/2	1/2	13/16	4-1/8	std	M42	B-1616-B	11030
9/16	5/8	1-1/8	5	std	M42	B-2018-B	11032
5/8	5/8	1-1/8	5	std	M42	B-2020-B	11034
11/16	3/4	1-5/16	5	std	M42	B-2422-B	11036
3/4	3/4	1-5/16	5	std	M42	B-2424-B	11038

If shank and mill diameters are the same, tolerance is +.0000/-0.0025

GENERAL PURPOSE COBALT & HSS END MILLS

3 FLUTE • DOUBLE END CENTER CUTTING END MILL



HSSCo
M42



BRIGHT

+0.0005
-0.0015



HRC
<48



SERIES: F

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
3/32	3/16	5/32	2	stub	M42	FS-603	12564
3/32	3/16	5/16	2-1/4	std	M42	F-603	12428
1/8	3/16	3/16	2	stub	M42	FS-604	12566
1/8	3/16	3/8	2-1/4	std	M42	F-604	12430
3/16	3/16	1/2	2-1/4	std	M42	F-606	12434
5/64	3/8	5/16	3-1/16	std	M42	F-1202-1/2	12436
3/32	3/8	5/16	3-1/16	std	M42	F-1203	12438
7/64	3/8	3/8	3-1/16	std	M42	F-1203-1/2	12440
1/8	3/8	3/8	3-1/16	std	M42	F-1204	12442
9/64	3/8	7/16	3-1/8	std	M42	F-1204-1/2	12444
5/32	3/8	7/16	3-1/8	std	M42	F-1205	12446
11/64	3/8	1/2	3-1/8	std	M42	F-1205-1/2	12448
3/16	3/8	1/2	3-1/4	std	M42	F-1206	12450
13/64	3/8	9/16	3-1/4	std	M42	F-1206-1/2	12452
7/32	3/8	9/16	3-1/4	std	M42	F-1207	12454
15/64	3/8	5/8	3-3/8	std	M42	F-1207-1/2	12456
1/4	3/8	5/8	3-3/8	std	M42	F-1208	12458
17/64	3/8	11/16	3-3/8	std	M42	F-1208-1/2	12460
9/32	3/8	11/16	3-3/8	std	M42	F-1209	12462
19/64	3/8	3/4	3-1/2	std	M42	F-1209-1/2	12464
5/16	3/8	3/4	3-1/2	std	M42	F-1210	12466
21/64	3/8	3/4	3-1/2	std	M42	F-1210-1/2	12468
11/32	3/8	3/4	3-1/2	std	M42	F-1211	12470
23/64	3/8	3/4	3-1/2	std	M42	F-1211-1/2	12472
3/8	3/8	3/4	3-1/2	std	M42	F-1212	12474
25/64	1/2	1	4-1/8	std	M42	F-1612-1/2	12476
13/32	1/2	1	4-1/8	std	M42	F-1613	12478
27/64	1/2	1	4-1/8	std	M42	F-1613-1/2	12480
7/16	1/2	1	4-1/8	std	M42	F-1614	12482
29/64	1/2	1	4-1/8	std	M42	F-1614-1/2	12484
15/32	1/2	1	4-1/8	std	M42	F-1615	12486
1/2	1/2	1	4-1/8	std	M42	F-1616	12490
17/32	5/8	1-3/8	5	std	M42	F-2017	12492
9/16	5/8	1-3/8	5	std	M42	F-2018	12494
5/8	5/8	1-3/8	5	std	M42	F-2020	12498
3/4	3/4	1-5/8	5-5/8	std	M42	F-2424	12506

If shank and mill diameters are the same, tolerance is +.0000/-0.0025



3 FLUTE • DOUBLE END CENTER CUTTING END MILL

HSSCo
M42



BRIGHT

+0.0005
-0.0015



HRC
<48

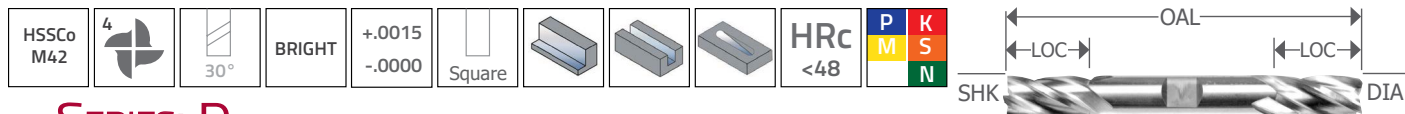


SERIES: F-__-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
3/32	3/8	5/16	3-1/16	std	M42	F-1203-B	12524
1/8	3/8	3/8	3-1/16	std	M42	F-1204-B	12526
3/16	3/8	1/2	3-1/4	std	M42	F-1206-B	12530
1/4	3/8	5/8	3-3/8	std	M42	F-1208-B	12534
5/16	3/8	3/4	3-1/2	std	M42	F-1210-B	12538
3/8	3/8	3/4	3-1/2	std	M42	F-1212-B	12542
1/2	1/2	1	4-1/8	std	M42	F-1616-B	12546

If shank and mill diameters are the same, tolerance is +.0000/-0.0025

4 FLUTE • DOUBLE END CENTER CUTTING END MILL



SERIES: D

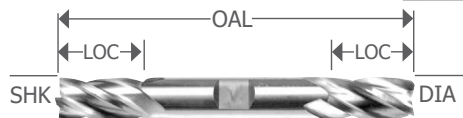
DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
1/16	3/16	3/32	2	stub	M42	DS-602	11992
1/16	3/16	3/16	2-1/4	std	M42	D-602	11800
1/16	3/16	7/32	2-1/2	long	M42	D-602-L	11902
5/64	3/16	1/8	2	stub	M42	DS-602-1/2	11994
5/64	3/16	15/64	2-1/4	std	M42	D-602-1/2	11802
3/32	3/16	9/64	2	stub	M42	DS-603	11996
3/32	3/16	9/32	2-1/4	std	M42	D-603	11804
3/32	3/16	1/2	2-5/8	long	M42	D-603-L	11904
7/64	3/16	5/32	2	stub	M42	DS-603-1/2	11998
7/64	3/16	21/64	2-1/4	std	M42	D-603-1/2	11806
1/8	3/16	3/16	2	stub	M42	DS-604	12000
1/8	3/16	3/8	2-1/4	std	M42	D-604	11808
1/8	3/16	3/4	3-1/8	long	M42	D-604-L	11906
9/64	3/16	3/16	2	stub	M42	DS-604-1/2	12002
9/64	3/16	27/64	2-1/4	std	M42	D-604-1/2	11810
5/32	3/16	15/64	2	stub	M42	DS-605	12004
5/32	3/16	7/16	2-1/4	std	M42	D-605	11812
5/32	3/16	7/8	3-1/4	long	M42	D-605-L	11908
11/64	3/16	1/4	2	stub	M42	DS-605-1/2	12006
11/64	3/16	33/64	2-1/4	std	M42	D-605-1/2	11814
3/16	3/16	9/32	2	stub	M42	DS-606	12008
3/16	3/16	1/2	2-1/4	std	M42	D-606	11816
3/16	3/16	1	3-3/8	long	M42	D-606-L	11910

If shank and mill diameters are the same, tolerance is +.0000/-.0025

sizes continued on next page

GENERAL PURPOSE COBALT & HSS END MILLS

4 FLUTE • DOUBLE END CENTER CUTTING END MILL


HSSCo
M42


BRIGHT

+.0000
-.0015

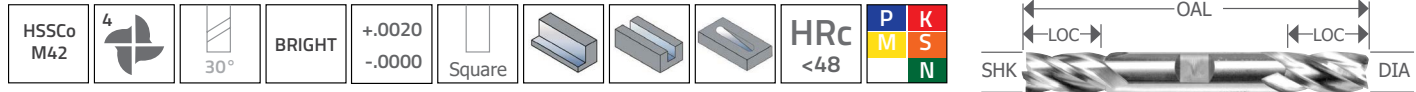
HRc
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SERIES: DD

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
7/64	3/8	3/8	3-1/16	std	M42	DD-1203-1/2	11818
1/8	3/8	3/16	2-3/4	stub	M42	DDS-1204	12010
1/8	3/8	3/8	3-1/16	std	M42	DD-1204	11820
1/8	3/8	1/2	3-1/4	med	M42	DD-1204-M	11912
1/8	3/8	5/8	3-9/16	long	M42	DD-1204-L	11914
9/64	3/8	7/16	3-1/8	std	M42	DD-1204-1/2	11822
5/32	3/8	15/64	2-3/4	stub	M42	DDS-1205	12012
5/32	3/8	7/16	3-1/8	std	M42	DD-1205	11824
11/64	3/8	1/2	3-1/8	std	M42	DD-1205-1/2	11826
3/16	3/8	9/32	2-3/4	stub	M42	DDS-1206	12014
3/16	3/8	1/2	3-1/4	std	M42	DD-1206	11828
3/16	3/8	7/8	4-1/8	long	M42	DD-1206-L	11916
13/64	3/8	9/16	3-1/4	std	M42	DD-1206-1/2	11830
7/32	3/8	21/64	2-3/4	stub	M42	DDS-1207	12016
7/32	3/8	9/16	3-1/4	std	M42	DD-1207	11832
15/64	3/8	5/8	3-3/8	std	M42	DD-1207-1/2	11834
1/4	3/8	3/8	2-3/4	stub	M42	DDS-1208	12018
1/4	3/8	5/8	3-3/8	std	M42	DD-1208	11836
17/64	3/8	11/16	3-3/8	std	M42	DD-1208-1/2	11838
9/32	3/8	11/16	3-3/8	std	M42	DD-1209	11840
19/64	3/8	3/4	3-1/2	std	M42	DD-1209-1/2	11842
5/16	3/8	3/4	3-1/2	std	M42	DD-1210	11844
21/64	3/8	3/4	3-1/2	std	M42	DD-1210-1/2	11846
11/32	3/8	3/4	3-1/2	std	M42	DD-1211	11848
23/64	3/8	3/4	3-1/2	std	M42	DD-1211-1/2	11850
3/8	3/8	3/4	3-1/2	std	M42	DD-1212	11852
25/64	1/2	1	4-1/8	std	M42	DD-1612-1/2	11854
13/32	1/2	1	4-1/8	std	M42	DD-1613	11856
27/64	1/2	1	4-1/8	std	M42	DD-1613-1/2	11858
7/16	1/2	1	4-1/8	std	M42	DD-1614	11860
29/64	1/2	1	4-1/8	std	M42	DD-1614-1/2	11862
15/32	1/2	1	4-1/8	std	M42	DD-1615	11864
31/64	1/2	1	4-1/8	std	M42	DD-1615-1/2	11866
1/2	1/2	1	4-1/8	std	M42	DD-1616	11868
17/32	5/8	1-3/8	5	std	M42	DD-2017	11870
9/16	5/8	1-3/8	5	std	M42	DD-2018	11872
19/32	5/8	1-3/8	5	std	M42	DD-2019	11874
5/8	5/8	1-3/8	5	std	M42	DD-2020	11876
3/4	3/4	1-5/8	5-5/8	std	M42	DD-2424	11944
7/8	7/8	1-7/8	6-1/8	std	M42	DD-2828	11946
1	1	1-7/8	6-3/8	std	M42	DD-3232	11948

If shank and mill diameters are the same, tolerance is +.0000/- .0025

4 FLUTE • DOUBLE END NON-CENTER CUTTING END MILL

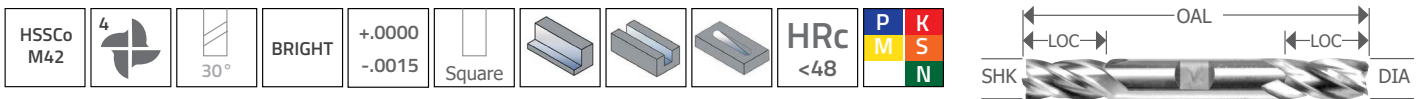


SERIES: D

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
21/32	3/4	1-5/8	5-5/8	std	M42	D-2421	11878
11/16	3/4	1-5/8	5-5/8	std	M42	D-2422	11880
3/4	3/4	1-5/8	5-5/8	std	M42	D-2424	11884
13/16	7/8	1-7/8	6-1/8	std	M42	D-2826	11888
7/8	7/8	1-7/8	6-1/8	std	M42	D-2828	11892
1	1	1-7/8	6-3/8	std	M42	D-3232	11900

If shank and mill diameters are the same, tolerance is +.0000/-.0025

4 FLUTE • DOUBLE END CENTER CUTTING METRIC/INCH END MILL

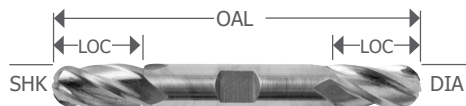


SERIES: DD- _M_

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
3mm	3/8	3/8	3-1/16	std	M42	DD-12M3	13026
4mm	3/8	7/16	3-1/8	std	M42	DD-12M4	13028
5mm	3/8	9/16	3-1/4	std	M42	DD-12M5	13030
6mm	3/8	5/8	3-3/8	std	M42	DD-12M6	13032
7mm	3/8	11/16	3-3/8	std	M42	DD-12M7	13034
8mm	3/8	3/4	3-1/2	std	M42	DD-12M8	13036
9mm	3/8	3/4	3-1/2	std	M42	DD-12M9	13038
10mm	1/2	1	4-1/8	std	M42	DD-16M10	13040
11mm	1/2	1	4-1/8	std	M42	DD-16M11	13042
12mm	1/2	1	4-1/8	std	M42	DD-16M12	13044
13mm	5/8	1-3/8	5	std	M42	DD-20M13	13046
14mm	5/8	1-3/8	5	std	M42	DD-20M14	13048
15mm	5/8	1-3/8	5	std	M42	DD-20M15	13050
16mm	3/4	1-5/8	5-5/8	std	M42	DD-24M16	13052
18mm	3/4	1-5/8	5-5/8	std	M42	DD-24M18	13054
20mm	7/8	1-7/8	6-1/8	std	M42	DD-28M20	13056
22mm	7/8	1-7/8	6-1/8	std	M42	DD-28M22	13058

GENERAL PURPOSE COBALT & HSS END MILLS

4 FLUTE • DOUBLE END BALL NOSE END MILL



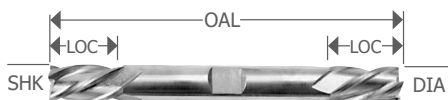
HSSCo M42		 30°	BRIGHT	+0.0005 -0.0005	 Ball					HRC <48	<table><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td></td><td>N</td></tr></table>	P	K	M	S		N
P	K																
M	S																
	N																

SERIES: DD-__-B

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
1/8	3/8	3/8	3-1/8	std	M42	DD-1204-B	11950
5/32	3/8	7/16	3-1/8	std	M42	DD-1205-B	11952
3/16	3/8	1/2	3-1/4	std	M42	DD-1206-B	11954
7/32	3/8	9/16	3-1/4	std	M42	DD-1207-B	11956
1/4	3/8	5/8	3-3/8	std	M42	DD-1208-B	11958
9/32	3/8	11/16	3-3/8	std	M42	DD-1209-B	11960
5/16	3/8	3/4	3-1/2	std	M42	DD-1210-B	11962
11/32	3/8	3/4	3-1/2	std	M42	DD-1211-B	11964
3/8	3/8	3/4	3-1/2	std	M42	DD-1212-B	11966
1/2	1/2	1	4-1/8	std	M42	DD-1616-B	11968
5/8	5/8	1-3/8	5	std	M42	DD-2020-B	11970
3/4	3/4	1-5/8	5-5/8	std	M42	DD-2424-B	11972
1	1	1-7/8	6-3/8	std	M42	DD-3232-B	11976

If shank and mill diameter are the same, tolerance is +.000/-0.0025

4 FLUTE • DOUBLE END CENTER CUTTING LEFT HAND SPIRAL/CUT END MILL



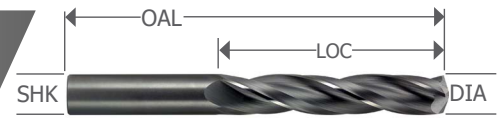
HSSCo M42	4	 30°	BRIGHT	+0.0020 -0.0000	Square				HRC <48	<table><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td></td><td>N</td></tr></table>	P	K	M	S		N
P	K															
M	S															
	N															

SERIES: XD

DIA	SHK	LOC	OAL	LENGTH	MAT	TOOL	BRIGHT EDP
1/8	3/8	7/16	3-1/16	std	M42	XD-1204	12543
3/16	3/8	1/2	3-1/4	std	M42	XD-1206	12772
1/4	3/8	5/8	3-3/8	std	M42	XD-1208	12774
5/16	3/8	3/4	3-1/2	std	M42	XD-1210	12776
3/8	3/8	3/4	3-1/2	std	M42	XD-1212	12778
7/16	1/2	1	4-1/8	std	M42	XD-1614	12780
1/2	1/2	1	4-1/8	std	M42	XD-1616	12782
9/16	5/8	1-3/8	5	std	M42	XD-2018	12784
5/8	5/8	1-3/8	5	std	M42	XD-2020	12786
3/4	3/4	1-5/8	5-5/8	std	M42	XD-2424	12790

Tolerance +.002/-0.000. If shank and mill diameters are the same, tolerance is +.0000/-0.0025

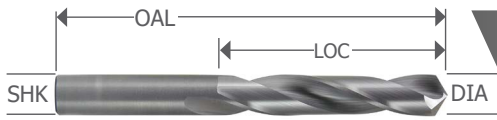
3 FLUTE • GENERAL PURPOSE CARBIDE DRILL



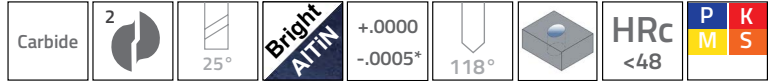
SERIES: LDR

DIAMETER		SHK	LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
7/64	0.1094	1/8	3/4	2-1/4	LDR-7/64	10341	50341
# 33	0.1130	1/8	3/4	2-1/4	LDR-33	10343	50343
3mm	0.1181	1/8	20mm	58mm	LDR-3MM	10345	50345
1/8	0.1250	1/8	3/4	2-1/4	LDR-1/8	10347	50347
# 29	0.1360	4mm	3/4	2-1/4	LDR-29	10349	50349
3.5mm	0.1378	4mm	22mm	64mm	LDR-3.5MM	10351	50351
9/64	0.1406	4mm	7/8	2-1/2	LDR-9/64	10353	50353
5/32	0.1562	4mm	7/8	2-1/2	LDR-5/32	10355	50355
4mm	0.1575	4mm	24mm	64mm	LDR-4MM	10357	50357
# 21	0.1590	3/16	1	2-1/2	LDR-21	10359	50359
11/64	0.1719	3/16	1	2-3/4	LDR-11/64	10361	50361
4.5mm	0.1772	3/16	28mm	70mm	LDR-4.5MM	10363	50363
3/16	0.1875	3/16	1-1/8	2-3/4	LDR-3/16	10365	50365
5mm	0.1969	6mm	30mm	76mm	LDR-5MM	10367	50367
# 7	0.2010	6mm	1-1/4	76mm	LDR-7	10369	50369
13/64	0.2031	6mm	1-1/4	76mm	LDR-13/64	10371	50371
5.5mm	0.2165	6mm	34mm	76mm	LDR-5.5MM	10373	50373
7/32	0.2188	6mm	1-1/4	76mm	LDR-7/32	10375	50375
15/64	0.2344	6mm	1-3/8	76mm	LDR-15/64	10377	50377
6mm	0.2362	6mm	38mm	76mm	LDR-6MM	10379	50379
1/4	0.2500	1/4	1-1/2	3	LDR-1/4	10381	50381
6.5mm	0.2559	8mm	38mm	76mm	LDR-6.5MM	10383	50383
F	0.2570	8mm	1-1/2	76mm	LDR-F	10385	50385
17/64	0.2656	8mm	1-1/2	76mm	LDR-17/64	10387	50387
I	0.2720	8mm	1-1/2	76mm	LDR-I	10389	50389
7mm	0.2756	8mm	42mm	100mm	LDR-7MM	10391	50391
9/32	0.2812	8mm	1-3/4	100mm	LDR-9/32	10393	50393
7.5mm	0.2953	8mm	45mm	100mm	LDR-7.5MM	10395	50395
19/64	0.2969	8mm	1-3/4	100mm	LDR-19/64	10397	50397
5/16	0.3125	8mm	1-7/8	100mm	LDR-5/16	10399	50399
8mm	0.3150	8mm	48mm	100mm	LDR-8MM	10401	50401
21/64	0.3281	3/8	2	4	LDR-21/64	10403	50403
Q	0.3320	3/8	2	4	LDR-Q	10405	50405
8.5mm	0.3346	3/8	52mm	101mm	LDR-8.5MM	10407	50407
11/32	0.3438	3/8	2	4	LDR-11/32	10409	50409
9mm	0.3543	3/8	54mm	101mm	LDR-9MM	10411	50411
23/64	0.3594	3/8	2-1/4	4-1/4	LDR-23/64	10413	50413
U	0.3680	3/8	2-1/4	4-1/4	LDR-U	10415	50415
9.5mm	0.3740	3/8	58mm	108mm	LDR-9.5MM	10417	50417
3/8	0.3750	3/8	2-1/4	4-1/4	LDR-3/8	10419	50419
25/64	0.3906	10mm	2-3/8	4-1/2	LDR-25/64	10421	50421
10mm	0.3937	10mm	60mm	114mm	LDR-10MM	10423	50423
13/32	0.4062	7/16	2-3/8	4-1/2	LDR-13/32	10425	50425
10.5mm	0.4134	7/16	64mm	114mm	LDR-10.5MM	10427	50427
27/64	0.4219	7/16	2-1/2	4-1/2	LDR-27/64	10429	50429
11mm	0.4331	7/16	68mm	114mm	LDR-11MM	10431	50431
7/16	0.4375	7/16	2-1/2	4-1/2	LDR-7/16	10433	50433
11.5mm	0.4528	1/2	70mm	127mm	LDR-11.5MM	10435	50435
29/64	0.4531	1/2	2-3/4	5	LDR-29/64	10437	50437
15/32	0.4688	1/2	2-3/4	5	LDR-15/32	10439	50439
12mm	0.4724	1/2	72mm	127mm	LDR-12MM	10441	50441
31/64	0.4844	1/2	2-3/4	5	LDR-31/64	10443	50443
1/2	0.5000	1/2	2-3/4	5	LDR-1/2	10445	50445
9/16	0.5625	9/16	3-1/4	6	LDR-9/16	10447	50447
5/8	0.6250	5/8	3-1/2	6	LDR-5/8	10449	50449
3/4	0.7500	3/4	3-7/8	6	LDR-3/4	10451	50451

*= coating can increase diameter tolerance by +.0003



2 FLUTE • JOBBER LENGTH CARBIDE DRILL



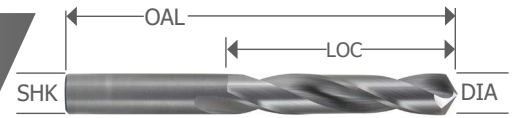
SERIES: HDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTiN* EDP
1mm	0.0394	16mm	38mm	HDR-1MM	11197	51197
# 60	0.0400	3/4	1-1/2	HDR-60	14415	54415
# 58	0.0420	3/4	1-1/2	HDR-58	17114	57114
# 57	0.0430	3/4	1-1/2	HDR-57	17113	57113
# 56	0.0465	3/4	1-1/2	HDR-56	17112	57112
3/64	0.0469	3/4	1-1/2	HDR-3/64	17001	57001
# 55	0.0520	3/4	1-1/2	HDR-55	17111	57111
# 54	0.0550	3/4	1-1/2	HDR-54	17110	57110
1.5mm	0.0591	19mm	38mm	HDR-1.5MM	17393	57393
# 53	0.0595	3/4	1-1/2	HDR-53	17109	57109
1/16	0.0625	3/4	1-1/2	HDR-1/16	17002	57002
# 52	0.0635	3/4	1-1/2	HDR-52	17108	57108
# 51	0.0670	3/4	1-1/2	HDR-51	17107	57107
# 50	0.0700	7/8	1-3/4	HDR-50	17106	57106
# 49	0.0730	7/8	1-3/4	HDR-49	17105	57105
# 48	0.0760	7/8	1-3/4	HDR-48	17104	57104
5/64	0.0781	7/8	1-3/4	HDR-5/64	17003	57003
# 47	0.0785	7/8	1-3/4	HDR-47	17103	57103
2mm	0.0787	22mm	44mm	HDR-2MM	17394	57394
# 46	0.0810	7/8	1-3/4	HDR-46	17102	57102
# 45	0.0820	7/8	1-3/4	HDR-45	17101	57101
# 44	0.0860	1	2	HDR-44	17100	57100
# 43	0.0890	1	2	HDR-43	17099	57099
# 42	0.0935	1	2	HDR-42	17098	57098
3/32	0.0938	1	2	HDR-3/32	17004	57004
# 41	0.0960	1	2	HDR-41	17097	57097
# 40	0.0980	1	2	HDR-40	17096	57096
2.5mm	0.0984	25mm	51mm	HDR-2.5MM	17395	57395
# 39	0.0995	1-1/4	2-1/4	HDR-39	17095	57095
# 38	0.1015	1-1/4	2-1/4	HDR-38	17094	57094
# 37	0.1040	1-1/4	2-1/4	HDR-37	17093	57093
# 36	0.1065	1-1/4	2-1/4	HDR-36	17092	57092
7/64	0.1094	1-1/4	2-1/4	HDR-7/64	17005	57005
# 35	0.1100	1-1/4	2-1/4	HDR-35	17091	57091
# 34	0.1110	1-1/4	2-1/4	HDR-34	17090	57090
# 33	0.1130	1-1/4	2-1/4	HDR-33	17089	57089
# 32	0.1160	1-1/4	2-1/4	HDR-32	17088	57088
3mm	0.1181	32mm	58mm	HDR-3MM	17396	57396
# 31	0.1200	1-1/4	2-1/4	HDR-31	17087	57087
1/8	0.1250	1-1/4	2-1/4	HDR-1/8	17006	57006
# 30	0.1285	1-1/4	2-1/4	HDR-30	17086	57086
# 29	0.1360	1-3/8	2-1/4	HDR-29	17085	57085
3.5mm	0.1378	35mm	64mm	HDR-3.5MM	17397	57397
# 28	0.1405	1-3/8	2-1/2	HDR-28	17084	57084
9/64	0.1406	1-3/8	2-1/2	HDR-9/64	17007	57007
# 27	0.1440	1-3/8	2-1/2	HDR-27	17083	57083
# 26	0.1470	1-3/8	2-1/2	HDR-26	17082	57082
# 25	0.1495	1-3/8	2-1/2	HDR-25	17081	57081
# 24	0.1520	1-3/8	2-1/2	HDR-24	17080	57080
# 23	0.1540	1-3/8	2-1/2	HDR-23	17079	57079
5/32	0.1562	1-3/8	2-1/2	HDR-5/32	17008	57008
# 22	0.1570	1-3/8	2-1/2	HDR-22	17078	57078
4mm	0.1575	35mm	64mm	HDR-4MM	17398	57398
# 21	0.1590	1-3/8	2-1/2	HDR-21	17077	57077

*= coating can increase diameter tolerance by +.0003

sizes continued on next page

2 FLUTE • JOBBER LENGTH CARBIDE DRILLS



SERIES: HDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
# 20	0.1610	1-3/8	2-1/2	HDR-20	17076	57076
# 19	0.1660	1-5/8	2-3/4	HDR-19	17075	57075
# 18	0.1695	1-5/8	2-3/4	HDR-18	17074	57074
11/64	0.1719	1-5/8	2-3/4	HDR-11/64	17009	57009
# 17	0.1730	1-5/8	2-3/4	HDR-17	17073	57073
# 16	0.1770	1-5/8	2-3/4	HDR-16	17072	57072
4.5mm	0.1772	41mm	70mm	HDR-4.5MM	17399	57399
# 15	0.1800	1-5/8	2-3/4	HDR-15	17071	57071
#14	0.1820	1-5/8	2-3/4	HDR-14	17070	57070
# 13	0.1850	1-5/8	2-3/4	HDR-13	17069	57069
3/16	0.1875	1-5/8	2-3/4	HDR-3/16	17010	57010
# 12	0.1890	1-5/8	2-3/4	HDR-12	17068	57068
# 11	0.1910	1-5/8	2-3/4	HDR-11	17067	57067
# 10	0.1935	1-5/8	2-3/4	HDR-10	17066	57066
# 9	0.1960	1-3/4	3	HDR-9	17065	57065
5mm	0.1969	44mm	76mm	HDR-5MM	17400	57400
# 8	0.1990	1-3/4	3	HDR-8	17064	57064
# 7	0.2010	1-3/4	3	HDR-7	17063	57063
13/64	0.2031	1-3/4	3	HDR-13/64	17011	57011
# 6	0.2040	1-3/4	3	HDR-6	17062	57062
# 5	0.2055	1-3/4	3	HDR-5	17061	57061
# 4	0.2090	1-3/4	3	HDR-4	17060	57060
# 3	0.2130	1-3/4	3	HDR-3	17059	57059
5.5mm	0.2165	44mm	76mm	HDR-5.5MM	17401	57401
7/32	0.2188	1-3/4	3	HDR-7/32	17012	57012
# 2	0.2210	1-3/4	3	HDR-2	17058	57058
# 1	0.2280	1-3/4	3	HDR-1	17057	57057
A	0.2340	2	3-1/4	HDR-A	17031	57031
15/64	0.2344	2	3-1/4	HDR-15/64	17013	57013
6mm	0.2362	51mm	83mm	HDR-6MM	17402	57402
B	0.2380	2	3-1/4	HDR-B	17032	57032
C	0.2420	2	3-1/4	HDR-C	17033	57033
D	0.2460	2	3-1/4	HDR-D	17034	57034
E	0.2500	2	3-1/4	HDR-E	17035	57035
1/4	0.2500	2	3-1/4	HDR-1/4	17014	57014
6.5mm	0.2559	51mm	83mm	HDR-6.5MM	17403	57403
F	0.2570	2	3-1/4	HDR-F	17036	57036
G	0.2610	2-1/8	3-1/2	HDR-G	17037	57037
17/64	0.2656	2-1/8	3-1/2	HDR-17/64	17015	57015
H	0.2660	2-1/8	3-1/2	HDR-H	17038	57038
I	0.2720	2-1/8	3-1/2	HDR-I	17039	57039
7mm	0.2756	54mm	90mm	HDR-7MM	17404	57404
J	0.2770	2-1/8	3-1/2	HDR-J	17040	57040
K	0.2810	2-1/8	3-1/2	HDR-K	17041	57041
9/32	0.2812	2-1/8	3-1/2	HDR-9/32	17016	57016
L	0.2900	2-1/8	3-1/2	HDR-L	17042	57042
M	0.2950	2-3/8	3-3/4	HDR-M	17043	57043
7.5mm	0.2953	60mm	95mm	HDR-7.5MM	17405	57405
19/64	0.2969	2-3/8	3-3/4	HDR-19/64	17017	57017
N	0.3020	2-3/8	3-3/4	HDR-N	17044	57044
5/16	0.3125	2-3/8	3-3/4	HDR-5/16	17018	57018
8mm	0.3150	60mm	95mm	HDR-8MM	17406	57406
O	0.3160	2-3/8	3-3/4	HDR-O	17045	57045
P	0.3230	2-3/8	3-3/4	HDR-P	17046	57046
21/64	0.3281	2-1/2	4	HDR-21/64	17019	57019
Q	0.3320	2-1/2	4	HDR-Q	17047	57047

*= coating can increase diameter tolerance by +.0003

sizes continued on next page

2 FLUTE • JOBBER LENGTH CARBIDE DRILL

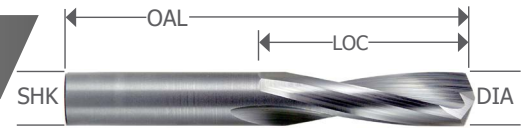
SERIES: HDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
8.5mm	0.3346	64mm	102mm	HDR-8.5MM	17407	57407
R	0.3390	2-1/2	4	HDR-R	17048	57048
11/32	0.3438	2-1/2	4	HDR-11/32	17020	57020
S	0.3480	2-1/2	4	HDR-S	17049	57049
9mm	0.3543	64mm	102mm	HDR-9MM	17408	57408
T	0.3580	2-3/4	4-1/4	HDR-T	17050	57050
23/64	0.3594	2-3/4	4-1/4	HDR-23/64	17021	57021
U	0.3680	2-3/4	4-1/4	HDR-U	17051	57051
9.5mm	0.3740	70mm	108mm	HDR-9.5MM	17409	57409
3/8	0.3750	2-3/4	4-1/4	HDR-3/8	17022	57022
V	0.3770	2-3/4	4-1/4	HDR-V	17052	57052
W	0.3860	2-7/8	4-1/2	HDR-W	17053	57053
25/64	0.3906	2-7/8	4-1/2	HDR-25/64	17023	57023
10mm	0.3937	73mm	114mm	HDR-10MM	17410	57410
X	0.3970	2-7/8	4-1/2	HDR-X	17054	57054
Y	0.4040	2-7/8	4-1/2	HDR-Y	17055	57055
13/32	0.4062	2-7/8	4-1/2	HDR-13/32	17024	57024
Z	0.4130	2-7/8	4-1/2	HDR-Z	17056	57056
10.5mm	0.4134	73mm	114mm	HDR-10.5MM	17411	57411
27/64	0.4219	2-7/8	4-1/2	HDR-27/64	17025	57025
11mm	0.4331	73mm	114mm	HDR-11MM	17412	57412
7/16	0.4375	2-7/8	4-1/2	HDR-7/16	17026	57026
11.5mm	0.4528	76mm	121mm	HDR-11.5MM	17413	57413
29/64	0.4531	3	4-3/4	HDR-29/64	17027	57027
15/32	0.4688	3	4-3/4	HDR-15/32	17028	57028
12mm	0.4724	76mm	121mm	HDR-12MM	17414	57414
31/64	0.4844	3	4-3/4	HDR-31/64	17029	57029
1/2	0.5000	3	4-3/4	HDR-1/2	17030	57030
17/32 (SHK 9/16)	0.5313	3-1/4	6	HDR-17/32	17447	57447
9/16	0.5625	3-1/4	6	HDR-9/16	17990	57990
19/32 (SHK 5/8)	0.5938	3-1/2	6	HDR-19/32	17448	57448
5/8	0.6250	3-1/2	6	HDR-5/8	17991	57991
21/32 (SHK 3/4)	0.6563	3-5/8	6	HDR-21/32	17449	57449
11/16 (SHK 3/4)	0.6875	3-5/8	6	HDR-11/16	17450	57450
23/32 (SHK 3/4)	0.7188	3-7/8	6	HDR-23/32	17451	57451
3/4	0.7500	3-7/8	6	HDR-3/4	17992	57992

*Shank diameter is equal to cutting diameter unless specified.

*= Coating can increase diameter tolerance by +.0003

2 FLUTE • STUB LENGTH CARBIDE DRILLS



SERIES: IDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
# 56	0.0465	1/2	1-1/2	IDR-56	17249	57249
3/64	0.0469	1/2	1-1/2	IDR-3/64	17138	57138
# 55	0.0520	1/2	1-1/2	IDR-55	17248	57248
# 54	0.0550	1/2	1-1/2	IDR-54	17247	57247
1.5mm	0.0591	13mm	38mm	IDR-1.5MM	17415	57415
# 53	0.0595	1/2	1-1/2	IDR-53	17246	57246
1/16	0.0625	5/8	1-5/8	IDR-1/16	17139	57139
# 52	0.0635	11/16	1-11/16	IDR-52	17245	57245
# 51	0.0670	11/16	1-11/16	IDR-51	17244	57244
# 50	0.0700	11/16	1-11/16	IDR-50	17243	57243
# 49	0.0730	11/16	1-11/16	IDR-49	17242	57242
# 48	0.0760	11/16	1-11/16	IDR-48	17241	57241
5/64	0.0781	11/16	1-11/16	IDR-5/64	17140	57140
# 47	0.0785	3/4	1-3/4	IDR-47	17240	57240
2mm	0.0787	19mm	45mm	IDR-2MM	17416	57416
# 46	0.0810	3/4	1-3/4	IDR-46	17239	57239
# 45	0.0820	3/4	1-3/4	IDR-45	17238	57238
# 44	0.0860	3/4	1-3/4	IDR-44	17237	57237
# 43	0.0890	3/4	1-3/4	IDR-43	17236	57236
# 42	0.0935	3/4	1-3/4	IDR-42	17235	57235
3/32	0.0938	3/4	1-3/4	IDR-3/32	17141	57141
# 41	0.0960	13/16	1-13/16	IDR-41	17234	57234
# 40	0.0980	13/16	1-13/16	IDR-40	17233	57233
2.5mm	0.0984	21mm	46mm	IDR-2.5MM	17417	57417
# 39	0.0995	13/16	1-13/16	IDR-39	17232	57232
# 38	0.1015	13/16	1-13/16	IDR-38	17231	57231
# 37	0.1040	13/16	1-13/16	IDR-37	17230	57230
# 36	0.1065	13/16	1-13/16	IDR-36	17229	57229
7/64	0.1094	13/16	1-13/16	IDR-7/64	17142	57142
# 35	0.1100	7/8	1-7/8	IDR-35	17228	57228
# 34	0.1110	7/8	1-7/8	IDR-34	17227	57227
# 33	0.1130	7/8	1-7/8	IDR-33	17226	57226
# 32	0.1160	7/8	1-7/8	IDR-32	17225	57225
3mm	0.1181	22mm	48mm	IDR-3MM	17418	57418
# 31	0.1200	7/8	1-7/8	IDR-31	17224	57224
1/8	0.1250	7/8	1-7/8	IDR-1/8	17143	57143
# 30	0.1285	15/16	1-15/16	IDR-30	17223	57223
# 29	0.1360	15/16	1-15/16	IDR-29	17222	57222
3.5mm	0.1378	24mm	52mm	IDR-3.5MM	17419	57419
# 28	0.1405	15/16	1-15/16	IDR-28	17221	57221
9/64	0.1406	15/16	1-15/16	IDR-9/64	17144	57144
# 27	0.1440	1	2-1/16	IDR-27	17220	57220
# 26	0.1470	1	2-1/16	IDR-26	17219	57219
# 25	0.1495	1	2-1/16	IDR-25	17218	57218
# 24	0.1520	1	2-1/16	IDR-24	17217	57217
# 23	0.1540	1	2-1/16	IDR-23	17216	57216
5/32	0.1562	1	2-1/16	IDR-5/32	17145	57145
# 22	0.1570	1-1/16	2-1/8	IDR-22	17215	57215
4mm	0.1575	27mm	53mm	IDR-4MM	17420	57420
# 21	0.1590	1-1/16	2-1/8	IDR-21	17214	57214
# 20	0.1610	1-1/16	2-1/8	IDR-20	17213	57213
# 19	0.1660	1-1/16	2-1/8	IDR-19	17212	57212
18	0.1695	1-1/16	2-1/8	IDR-18	17211	57211

*= coating can increase diameter tolerance by +.0003

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2 FLUTE • STUB LENGTH CARBIDE DRILLS

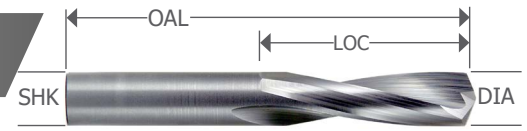
SERIES: IDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
11/64	0.1719	1-1/16	2-1/8	IDR-11/64	17146	57146
# 17	0.1730	1-1/8	2-3/16	IDR-17	17210	57210
# 16	0.1770	1-1/8	2-3/16	IDR-16	17209	57209
4.5mm	0.1772	29mm	55mm	IDR-4.5MM	17421	57421
# 15	0.1800	1-1/8	2-3/16	IDR-15	17208	57208
# 14	0.1820	1-1/8	2-3/16	IDR-14	17207	57207
# 13	0.1850	1-1/8	2-3/16	IDR-13	17206	57206
3/16	0.1875	1-1/8	2-3/16	IDR-3/16	17147	57147
# 12	0.1890	1-3/16	2-1/4	IDR-12	17205	57205
# 11	0.1910	1-3/16	2-1/4	IDR-11	17204	57204
# 10	0.1935	1-3/16	2-1/4	IDR-10	17203	57203
# 9	0.1960	1-3/16	2-1/4	IDR-9	17202	57202
5mm	0.1969	30mm	57mm	IDR-5MM	17422	57422
# 8	0.1990	1-3/16	2-1/4	IDR-8	17201	57201
# 7	0.2010	1-3/16	2-1/4	IDR-7	17200	57200
13/64	0.2031	1-3/16	2-1/4	IDR-13/64	17148	57148
# 6	0.2040	1-1/4	2-3/8	IDR-6	17199	57199
# 5	0.2055	1-1/4	2-3/8	IDR-5	17198	57198
# 4	0.2090	1-1/4	2-3/8	IDR-4	17197	57197
# 3	0.2130	1-1/4	2-3/8	IDR-3	17196	57196
5.5mm	0.2165	32mm	60mm	IDR-5.5MM	17423	57423
7/32	0.2188	1-1/4	2-3/8	IDR-7/32	17149	57149
# 2	0.2210	1-5/16	2-7/16	IDR-2	17195	57195
# 1	0.2280	1-5/16	2-7/16	IDR-1	17194	57194
A	0.2340	1-5/16	2-7/16	IDR-A	17168	57168
15/64	0.2344	1-5/16	2-7/16	IDR-15/64	17150	57150
6mm	0.2362	33mm	61mm	IDR-6MM	17424	57424
B	0.2380	1-3/8	2-1/2	IDR-B	17169	57169
C	0.2420	1-3/8	2-1/2	IDR-C	17170	57170
D	0.2460	1-3/8	2-1/2	IDR-D	17171	57171
E	0.2500	1-3/8	2-1/2	IDR-E	17172	57172
1/4	0.2500	1-3/8	2-1/2	IDR-1/4	17151	57151
6.5mm	0.2559	35mm	63mm	IDR-6.5MM	17425	57425
F	0.2570	1-7/16	2-5/8	IDR-F	17173	57173
G	0.2610	1-7/16	2-5/8	IDR-G	17174	57174
17/64	0.2656	1-7/16	2-5/8	IDR-17/64	17152	57152
H	0.2660	1-1/2	2-11/16	IDR-H	17175	57175
I	0.2720	1-1/2	2-11/16	IDR-I	17176	57176
7mm	0.2756	38mm	68mm	IDR-7MM	17426	57426
J	0.2770	1-1/2	2-11/16	IDR-J	17177	57177
K	0.2810	1-1/2	2-11/16	IDR-K	17178	57178
9/32	0.2812	1-1/2	2-11/16	IDR-9/32	17153	57153
L	0.2900	1-9/16	2-3/4	IDR-L	17179	57179
M	0.2950	1-9/16	2-3/4	IDR-M	17180	57180
7.5mm	0.2953	40mm	70mm	IDR-7.5MM	17427	57427
19/64	0.2969	1-9/16	2-3/4	IDR-19/64	17154	57154
N	0.3020	1-5/8	2-13/16	IDR-N	17181	57181
5/16	0.3125	1-5/8	2-13/16	IDR-5/16	17155	57155
8mm	0.3150	41mm	71mm	IDR-8MM	17428	57428
O	0.3160	1-11/16	2-15/16	IDR-O	17182	57182
P	0.3230	1-11/16	2-15/16	IDR-P	17183	57183
21/64	0.3281	1-11/16	2-15/16	IDR-21/64	17156	57156
Q	0.3320	1-11/16	3	IDR-Q	17184	57184
8.5mm	0.3346	24mm	76mm	IDR-8.5MM	17429	57429
R	0.3390	1-11/16	3	IDR-R	17185	57185
11/32	0.3438	1-11/16	3	IDR-11/32	17157	57157
S	0.3480	1-3/4	3-1/16	IDR-S	17186	57186
9mm	0.3543	44mm	78mm	IDR-9MM	17430	57430

*= coating can increase diameter tolerance by +.0003

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2 FLUTE • STUB LENGTH CARBIDE DRILLS

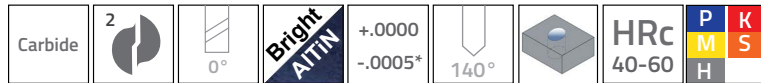
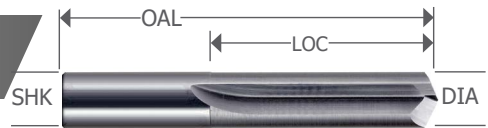


SERIES: IDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
T	0.3580	1-3/4	3-1/16	IDR-T	17187	57187
23/64	0.3594	1-3/4	3-1/16	IDR-23/64	17158	57158
U	0.3680	1-13/16	3-1/8	IDR-U	17188	57188
9.5mm	0.3740	46mm	79mm	IDR-9.5MM	17431	57431
3/8	0.3750	1-13/16	3-1/8	IDR-3/8	17159	57159
V	0.3770	1-7/8	3-1/4	IDR-V	17189	57189
W	0.3860	1-7/8	3-1/4	IDR-W	17190	57190
25/64	0.3906	1-7/8	3-1/4	IDR-25/64	17160	57160
10mm	0.3937	48mm	83mm	IDR-10MM	17432	57432
X	0.3970	1-15/16	3-5/16	IDR-X	17191	57191
Y	0.4040	1-15/16	3-5/16	IDR-Y	17192	57192
13/32	0.4062	1-15/16	3-5/16	IDR-13/32	17161	57161
Z	0.4130	2	3-3/8	IDR-Z	17193	57193
10.5mm	0.4134	51mm	86mm	IDR-10.5MM	17433	57433
27/64	0.4219	2	3-3/8	IDR-27/64	17162	57162
11mm	0.4331	52mm	87mm	IDR-11MM	17434	57434
7/16	0.4375	2-1/16	3-7/16	IDR-7/16	17163	57163
11.5mm	0.4528	54mm	90mm	IDR-11.5MM	17435	57435
29/64	0.4531	2-1/8	3-9/16	IDR-29/64	17164	57164
15/32	0.4688	2-1/8	3-5/8	IDR-15/32	17165	57165
12mm	0.4724	54mm	92mm	IDR-12MM	17436	57436
31/64	0.4844	2-3/16	3-11/16	IDR-31/64	17166	57166
1/2	0.5000	2-1/4	3-3/4	IDR-1/2	17167	57167
9/16	0.5625	2-1/2	4	IDR-9/16	17993	57993
5/8	0.6250	2-3/4	5	IDR-5/8	17994	57994
3/4	0.7500	3	5	IDR-3/4	17995	57995

*= coating can increase diameter tolerance by +.0003

2 FLUTE • STRAIGHT FLUTE CARBIDE DRILLS



SERIES: JDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
# 56	0.0465	1/2	1-1/2	JDR-56	17361	57361
3/64	0.0469	1/2	1-1/2	JDR-3/64	17250	57250
# 55	0.0520	1/2	1-1/2	JDR-55	17360	57360
# 54	0.0550	1/2	1-1/2	JDR-54	17359	57359
1.5mm	0.0591	13mm	38mm	JDR-1.5MM	17371	57371
# 53	0.0595	1/2	1-1/2	JDR-53	17358	57358
1/16	0.0625	5/8	1-5/8	JDR-1/16	17251	57251
# 52	0.0635	11/16	1-11/16	JDR-52	17357	57357
# 51	0.0670	11/16	1-11/16	JDR-51	17356	57356
# 50	0.0700	11/16	1-11/16	JDR-50	17355	57355
# 49	0.0730	11/16	1-11/16	JDR-49	17354	57354
# 48	0.0760	11/16	1-11/16	JDR-48	17353	57353
5/64	0.0781	11/16	1-11/16	JDR-5/64	17252	57252
# 47	0.0785	3/4	1-3/4	JDR-47	17352	57352
2mm	0.0787	19mm	45mm	JDR-2MM	17372	57372

*= coating can increase diameter tolerance by +.0003

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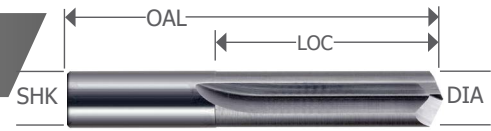
SERIES: JDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
# 46	0.0810	3/4	1-3/4	JDR-46	17351	57351
# 45	0.0820	3/4	1-3/4	JDR-45	17350	57350
# 44	0.0860	3/4	1-3/4	JDR-44	17349	57349
# 43	0.0890	3/4	1-3/4	JDR-43	17348	57348
# 42	0.0935	3/4	1-3/4	JDR-42	17347	57347
3/32	0.0938	3/4	1-3/4	JDR-3/32	17253	57253
# 41	0.0960	13/16	1-13/16	JDR-41	17346	57346
# 40	0.0980	13/16	1-13/16	JDR-40	17345	57345
2.5mm	0.0984	21mm	46mm	JDR-2.5MM	17373	57373
# 39	0.0995	13/16	1-13/16	JDR-39	17344	57344
# 38	0.1015	13/16	1-13/16	JDR-38	17343	57343
# 37	0.1040	13/16	1-13/16	JDR-37	17342	57342
# 36	0.1065	13/16	1-13/16	JDR-36	17341	57341
7/64	0.1094	13/16	1-13/16	JDR-7/64	17254	57254
# 35	0.1100	7/8	1-7/8	JDR-35	17340	57340
# 34	0.1110	7/8	1-7/8	JDR-34	17339	57339
# 33	0.1130	7/8	1-7/8	JDR-33	17338	57338
# 32	0.1160	7/8	1-7/8	JDR-32	17337	57337
3mm	0.1181	22mm	48mm	JDR-3MM	17374	57374
# 31	0.1200	7/8	1-7/8	JDR-31	17336	57336
1/8	0.1250	5/8	1-5/8	JDR-1/8-S	17437	57437
1/8	0.1250	7/8	1-7/8	JDR-1/8	17255	57255
# 30	0.1285	15/16	1-15/16	JDR-30	17335	57335
# 29	0.1360	15/16	1-15/16	JDR-29	17334	57334
3.5mm	0.1378	24mm	52mm	JDR-3.5MM	17375	57375
# 28	0.1405	15/16	1-15/16	JDR-28	17333	57333
9/64	0.1406	15/16	1-15/16	JDR-9/64	17256	57256
# 27	0.1440	1	2-1/16	JDR-27	17332	57332
# 26	0.1470	1	2-1/16	JDR-26	17331	57331
# 25	0.1495	1	2-1/16	JDR-25	17330	57330
# 24	0.1520	1	2-1/16	JDR-24	17329	57329
# 23	0.1540	1	2-1/16	JDR-23	17328	57328
5/32	0.1562	1	2-1/16	JDR-5/32	17257	57257
# 22	0.1570	1-1/16	2-1/8	JDR-22	17327	57327
4mm	0.1575	27mm	53mm	JDR-4MM	17376	57376
# 21	0.1590	1-1/16	2-1/8	JDR-21	17326	57326
# 20	0.1610	1-1/16	2-1/8	JDR-20	17325	57325
# 19	0.1660	1-1/16	2-1/8	JDR-19	17324	57324
# 18	0.1695	1-1/16	2-1/8	JDR-18	17323	57323
11/64	0.1719	1-1/16	2-1/8	JDR-11/64	17258	57258
# 17	0.1730	1-1/8	2-3/16	JDR-17	17322	57322
# 16	0.1770	1-1/8	2-3/16	JDR-16	17321	57321
4.5mm	0.1772	29mm	55mm	JDR-4.5MM	17377	57377
# 15	0.1800	1-1/8	2-3/16	JDR-15	17320	57320
# 14	0.1820	1-1/8	2-3/16	JDR-14	17319	57319
# 13	0.1850	1-1/8	2-3/16	JDR-13	17318	57318
3/16	0.1875	5/8	2	JDR-3/16-S	17438	57438
3/16	0.1875	1-1/8	2-3/16	JDR-3/16	17259	57259
# 12	0.1890	1-3/16	2-1/4	JDR-12	17317	57317
# 11	0.1910	1-3/16	2-1/4	JDR-11	17316	57316
# 10	0.1935	1-3/16	2-1/4	JDR-10	17315	57315
# 9	0.1960	1-3/16	2-1/4	JDR-9	17314	57314
5mm	0.1969	30mm	57mm	JDR-5MM	17378	57378
# 8	0.1990	1-3/16	2-1/4	JDR-8	17313	57313
# 7	0.2010	1-3/16	2-1/4	JDR-7	17312	57312
13/64	0.2031	1-3/16	2-1/4	JDR-13/64	17260	57260

*= coating can increase diameter tolerance by +.0003

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SERIES: JDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIM* EDP
# 6	0.2040	1-1/4	2-3/8	JDR-6	17311	57311
# 5	0.2055	1-1/4	2-3/8	JDR-5	17310	57310
# 4	0.2090	1-1/4	2-3/8	JDR-4	17309	57309
# 3	0.2130	1-1/4	2-3/8	JDR-3	17308	57308
5.5mm	0.2165	32mm	60mm	JDR-5.5MM	17379	57379
7/32	0.2188	1-1/4	2-3/8	JDR-7/32	17261	57261
# 2	0.2210	1-5/16	2-7/16	JDR-2	17307	57307
# 1	0.2280	1-5/16	2-7/16	JDR-1	17306	57306
A	0.2340	1-5/16	2-7/16	JDR-A	17280	57280
15/64	0.2344	1-5/16	2-7/16	JDR-15/64	17262	57262
6mm	0.2362	33mm	61mm	JDR-6MM	17380	57380
B	0.2380	1-3/8	2-1/2	JDR-B	17281	57281
C	0.2420	1-3/8	2-1/2	JDR-C	17282	57282
D	0.2460	1-3/8	2-1/2	JDR-D	17283	57283
E	0.2500	1-3/8	2-1/2	JDR-E	17284	57284
1/4	0.2500	3/4	2	JDR-1/4-S	17439	57439
1/4	0.2500	1-3/8	2-1/2	JDR-1/4	17263	57263
6.5mm	0.2559	35mm	63mm	JDR-6.5MM	17381	57381
F	0.2570	1-7/16	2-5/8	JDR-F	17285	57285
G	0.2610	1-7/16	2-5/8	JDR-G	17286	57286
17/64	0.2656	1-7/16	2-5/8	JDR-17/64	17264	57264
H	0.2660	1-1/2	2-11/16	JDR-H	17287	57287
I	0.2720	1-1/2	2-11/16	JDR-I	17288	57288
7mm	0.2756	38mm	68mm	JDR-7MM	17382	57382
J	0.2770	1-1/2	2-11/16	JDR-J	17289	57289
K	0.2810	1-1/2	2-11/16	JDR-K	17290	57290
9/32	0.2812	1-1/2	2-11/16	JDR-9/32	17265	57265
L	0.2900	1-9/16	2-3/4	JDR-L	17291	57291
M	0.2950	1-9/16	2-3/4	JDR-M	17292	57292
7.5mm	0.2953	40mm	70mm	JDR-7.5MM	17383	57383
19/64	0.2969	1-9/16	2-3/4	JDR-19/64	17266	57266
N	0.3020	1-5/8	2-13/16	JDR-N	17293	57293
5/16	0.3125	3/4	2-1/2	JDR-5/16-S	17440	57440
5/16	0.3125	1-5/8	2-13/16	JDR-5/16	17267	57267
8mm	0.3150	41mm	71mm	JDR-8MM	17384	57384
O	0.3160	1-11/16	2-15/16	JDR-O	17294	57294
P	0.3230	1-11/16	2-15/16	JDR-P	17295	57295
21/64	0.3281	1-11/16	2-15/16	JDR-21/64	17268	57268
Q	0.3320	1-11/16	3	JDR-Q	17296	57296
8.5mm	0.3346	24mm	76mm	JDR-8.5MM	17385	57385
R	0.3390	1-11/16	3	JDR-R	17297	57297
11/32	0.3438	1-11/16	3	JDR-11/32	17269	57269
S	0.3480	1-3/4	3-1/16	JDR-S	17298	57298
9mm	0.3543	44mm	78mm	JDR-9MM	17386	57386
T	0.3580	1-3/4	3-1/16	JDR-T	17299	57299
23/64	0.3594	1-3/4	3-1/16	JDR-23/64	17270	57270
U	0.3680	1-13/16	3-1/8	JDR-U	17300	57300
9.5mm	0.3740	46mm	79mm	JDR-9.5MM	17387	57387
3/8	0.3750	1	2-1/2	JDR-3/8-S	17441	57441
3/8	0.3750	1-13/16	3-1/8	JDR-3/8	17271	57271
V	0.3770	1-7/8	3-1/4	JDR-V	17301	57301
W	0.3860	1-7/8	3-1/4	JDR-W	17302	57302
25/64	0.3906	1-7/8	3-1/4	JDR-25/64	17272	57272
10mm	0.3937	48mm	83mm	JDR-10MM	17388	57388
X	0.3970	1-15/16	3-5/16	JDR-X	17303	57303
Y	0.4040	1-15/16	3-5/16	JDR-Y	17304	57304

*= coating can increase diameter tolerance by +.0003

sizes continued on next page

GENERAL PURPOSE CARBIDE DRILLS

2 FLUTE • STRAIGHT FLUTE CARBIDE DRILLS

SERIES: JDR

DIAMETER		LOC	OAL	TOOL	BRIGHT EDP	ALTIN* EDP
13/32	0.4062	1-15/16	3-5/16	JDR-13/32	17273	57273
Z	0.4130	2	3-3/8	JDR-Z	17305	57305
10.5mm	0.4134	51mm	86mm	JDR-10.5MM	17389	57389
27/64	0.4219	2	3-3/8	JDR-27/64	17274	57274
11mm	0.4331	52mm	87mm	JDR-11MM	17390	57390
7/16	0.4375	1	2-3/4	JDR-7/16-S	17442	57442
7/16	0.4375	2-1/16	3-7/16	JDR-7/16	17275	57275
11.5mm	0.4528	54mm	90mm	JDR-11.5MM	17391	57391
29/64	0.4531	2-1/8	3-9/16	JDR-29/64	17276	57276
15/32	0.4688	2-1/8	3-5/8	JDR-15/32	17277	57277
12mm	0.4724	54mm	92mm	JDR-12MM	17392	57392
31/64	0.4844	2-3/16	3-11/16	JDR-31/64	17278	57278
1/2	0.5000	1	3	JDR-1/2-S	17443	57443
1/2	0.5000	2-1/4	3-3/4	JDR-1/2	17279	57279
9/16	0.5625	1-1/8	3-1/2	JDR-9/16	17444	57444
5/8	0.6250	1-1/4	3-1/2	JDR-5/8	17445	57445
3/4	0.7500	1-1/2	4	JDR-3/4	17446	57446

*= coating can increase diameter tolerance by +.0003

2 FLUTE • 60° DOUBLE END COMBINED DRILL & COUNTERSINK



Carbide	HSS	2	60°	BRIGHT	+0.0000 -0.0005		HRC <48	<table><tr><td>P</td><td>K</td></tr><tr><td>M</td><td>S</td></tr><tr><td>H</td><td>N</td></tr></table>	P	K	M	S	H	N
P	K													
M	S													
H	N													

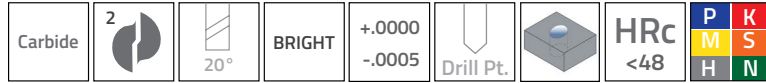
SERIES: KDR(CARBIDE) HSCD(HSS)

SIZE	SHK	DRILL DIA	DRILL LENGTH	OAL	CARBIDE TOOL	BRIGHT EDP	HSS TOOL	BRIGHT EDP
00	1/8	0.025	0.030	1-1/2	KDR-00	17362	HSCD-00*	11587
0	1/8	1/32	0.038	1-1/2	KDR-0	17363	HSCD-0*	11589
1	1/8	3/64	3/64	1-1/2	KDR-1	17364	HSCD-1*	11591
2	3/16	5/64	5/64	2	KDR-2	17365	HSCD-2**	11593
3	1/4	7/64	7/64	2	KDR-3	17366	HSCD-3	11595
4	5/16	1/8	1/8	2-1/8	KDR-4	17367	HSCD-4	11597
5	7/16	3/16	3/16	2-3/4	KDR-5	17368	HSCD-5	11599
6	1/2	7/32	7/32	3	KDR-6	17369	HSCD-6	11601
7	5/8	1/4	1/4	3-1/4	KDR-7	10611	HSCD-7	11603
8	3/4	5/16	5/16	3-1/2	KDR-8	10613	HSCD-8	11605

* = 1-1/4 OAL

** = 1-7/8 OAL

2 FLUTE • 60°, 90°, 120°, 142° NC CARBIDE SPOTTING DRILL

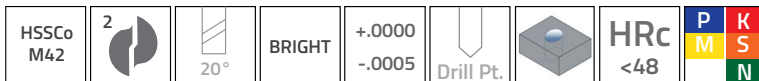
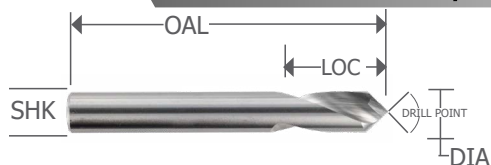


SERIES: HDRNC

DIA	SHK	LOC	OAL	ANGLE DEGREE	TOOL	BRIGHT EDP
3mm	3mm	12mm	38mm	60°	HDRNC-3MM-60	19491
3mm	3mm	12mm	38mm	90°	HDRNC-3MM-90	19492
3mm	4mm	12mm	38mm	120°	HDRNC-3MM-120	19493
1/8	1/8	5/8	2	60°	HDRNC-1/8-60	19257
1/8	1/8	5/8	2	90°	HDRNC-1/8-90	17711
1/8	1/8	5/8	2	120°	HDRNC-1/8-120	17716
1/8	1/8	5/8	2	142°	HDRNC-1/8-142	H8200
4mm	4mm	14mm	51mm	60°	HDRNC-4MM-60	19494
4mm	4mm	14mm	51mm	90°	HDRNC-4MM-90	19498
4mm	5mm	14mm	51mm	120°	HDRNC-4MM-120	19499
3/16	3/16	3/4	2	60°	HDRNC-3/16-60	19486
3/16	3/16	3/4	2	90°	HDRNC-3/16-90	17712
3/16	3/16	3/4	2	120°	HDRNC-3/16-120	17717
3/16	3/16	3/4	2	142°	HDRNC-3/16-142	H8201
5mm	5mm	20mm	51mm	60°	HDRNC-5MM-60	19501
5mm	5mm	20mm	51mm	90°	HDRNC-5MM-90	19502
5mm	6mm	20mm	51mm	120°	HDRNC-5MM-120	19503
6mm	6mm	20mm	63mm	60°	HDRNC-6MM-60	19504
6mm	6mm	20mm	63mm	90°	HDRNC-6MM-90	19505
6mm	8mm	20mm	63mm	120°	HDRNC-6MM-120	19506
1/4	1/4	3/4	2-1/2	60°	HDRNC-1/4-60	19259
1/4	1/4	3/4	2-1/2	90°	HDRNC-1/4-90	17713
1/4	1/4	3/4	2-1/2	120°	HDRNC-1/4-120	17718
1/4	1/4	3/4	2-1/2	142°	HDRNC-1/4-142	H8202
5/16	5/16	1	2-1/2	60°	HDRNC-5/16-60	19487
5/16	5/16	1	2-1/2	90°	HDRNC-5/16-90	19488
5/16	5/16	1	2-1/2	120°	HDRNC-5/16-120	19489
8mm	8mm	20mm	63mm	60°	HDRNC-8MM-60	19507
8mm	8mm	20mm	63mm	90°	HDRNC-8MM-90	19508
8mm	10mm	20mm	63mm	120°	HDRNC-8MM-120	19509
3/8	3/8	1	3	60°	HDRNC-3/8-60	19261
3/8	3/8	1	3	90°	HDRNC-3/8-90	17714
3/8	3/8	1	3	120°	HDRNC-3/8-120	17719
3/8	3/8	1	3	142°	HDRNC-3/8-142	H8203
10mm	10mm	25mm	70mm	60°	HDRNC-10MM-60	19525
10mm	10mm	25mm	70mm	90°	HDRNC-10MM-90	19526
10mm	12mm	25mm	70mm	120°	HDRNC-10MM-120	19553
7/16	7/16	1-1/4	3	60°	HDRNC-7/16-60	19264
7/16	7/16	1-1/4	3	90°	HDRNC-7/16-90	19262
7/16	7/16	1-1/4	3	120°	HDRNC-7/16-120	19263
12mm	12mm	25mm	76mm	60°	HDRNC-12MM-60	19555
12mm	12mm	25mm	76mm	90°	HDRNC-12MM-90	19579
12mm	12mm	25mm	76mm	120°	HDRNC-12MM-120	19580
1/2	1/2	1	3	60°	HDRNC-1/2-60	19266
1/2	1/2	1	3	90°	HDRNC-1/2-90	17715
1/2	1/2	1	3	120°	HDRNC-1/2-120	17720
1/2	1/2	1	3	142°	HDRNC-1/2-142	H8204
5/8	5/8	1-1/4	3	60°	HDRNC-5/8-60	19269
5/8	5/8	1-1/4	3	90°	HDRNC-5/8-90	19267
5/8	5/8	1-1/4	3	120°	HDRNC-5/8-120	19268
5/8	5/8	1-1/4	3	142°	HDRNC-5/8-142	H8205
3/4	3/4	1-3/4	4	60°	HDRNC-3/4-60	19272
3/4	3/4	1-3/4	4	90°	HDRNC-3/4-90	19270
3/4	3/4	1-3/4	4	120°	HDRNC-3/4-120	19271
3/4	3/4	1-3/4	4	142°	HDRNC-3/4-142	H8206
7/8	7/8	1-3/4	4	60°	HDRNC-7/8-60	19490
7/8	7/8	1-3/4	4	90°	HDRNC-7/8-90	19273
7/8	7/8	1-3/4	4	120°	HDRNC-7/8-120	19274
1	1	1-3/4	4	60°	HDRNC-1-60	19277
1	1	1-3/4	4	90°	HDRNC-1-90	19275
1	1	1-3/4	4	120°	HDRNC-1-120	19276

GENERAL PURPOSE CARBIDE DRILLS

2 FLUTE • 82°, 90°, 120° NC HSSCo M42 SPOTTING DRILL



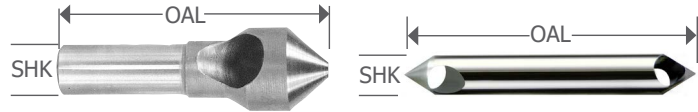
SERIES: HSNC

DIA	SHK	LOC	OAL	ANGLE DEGREE	MAT	TOOL	BRIGHT EDP
4mm	4mm	12mm	52mm	82°	M42	HSNC-4M-82	10847
4mm	4mm	12mm	52mm	90°	M42	HSNC-4M-90	10849
4mm	4mm	12mm	52mm	120°	M42	HSNC-4M-120	10851
1/4	1/4	7/8	2-5/8	82°	M42	HSNC-1/4-82	10853
1/4	1/4	7/8	2-5/8	90°	M42	HSNC-1/4-90	10855
1/4	1/4	7/8	2-5/8	120°	M42	HSNC-1/4-120	10857
8mm	8mm	25mm	79mm	82°	M42	HSNC-8M-82	10859
8mm	8mm	25mm	79mm	90°	M42	HSNC-8M-90	10861
8mm	8mm	25mm	79mm	120°	M42	HSNC-8M-120	10863
3/8	3/8	1	3-1/2	82°	M42	HSNC-3/8-82	10865
3/8	3/8	1	3-1/2	90°	M42	HSNC-3/8-90	10867
3/8	3/8	1	3-1/2	120°	M42	HSNC-3/8-120	10869
1/2	1/2	1-3/8	4	82°	M42	HSNC-1/2-82	10871
1/2	1/2	1-3/8	4	90°	M42	HSNC-1/2-90	10873
1/2	1/2	1-3/8	4	120°	M42	HSNC-1/2-120	10875
5/8	5/8	1-3/8	4-1/2	82°	M42	HSNC-5/8-82	10877
5/8	5/8	1-3/8	4-1/2	90°	M42	HSNC-5/8-90	10879
5/8	5/8	1-3/8	4-1/2	120°	M42	HSNC-5/8-120	10881
3/4	3/4	1-1/2	5-3/16	82°	M42	HSNC-3/4-82	10883
3/4	3/4	1-1/2	5-3/16	90°	M42	HSNC-3/4-90	10885
3/4	3/4	1-1/2	5-3/16	120°	M42	HSNC-3/4-120	10887

0 FLUTE • SINGLE EDGE DOUBLE AND SINGLE END COUNTERSINK



SERIES: HS0



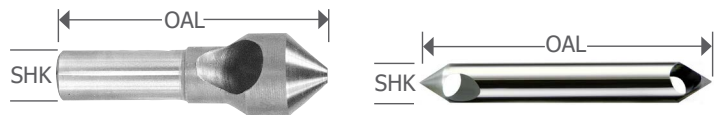
SIZE	SHK	OAL	ENDS	TOOL	EDP
3/16	3/16	1-1/2	DE	HS0-3/16-82	19166
1/4	1/4	2	DE	HS0-1/4-82	19165
7/16	1/4	2-1/32	SE	HS0-7/16-82	19171
9/16	1/4	2	SE	HS0-9/16-82	19172
13/16	1/2	2-5/8	SE	HS0-13/16-82	19173
1-1/8	1/2	2-7/8	SE	HS0-1-1/8-82	19174
1-1/2	1/2	3-1/2	SE	HS0-1-1/2-82	19175

- Designed with a radial relieved single edge for fast removal without chatter.
- 3/16" and 1/4" are double end.

0 FLUTE • SINGLE EDGE DOUBLE AND SINGLE END COUNTERSINK



SERIES: HSP0



SIZE	SHK	OAL	ENDS	TOOL	ANGLE/EDP#		
					60°	82°	90°
1/4	1/4	1-1/2	DE	HSP0-1/4	19210	19211	19212
7/16	1/4	2-1/32	SE	HSP0-7/16	19213	19214	19215
9/16	1/4	2	SE	HSP0-9/16	19216	19217	19218
13/16	1/2	2-5/8	SE	HSP0-13/16	19219	19220	19221
1-1/8	1/2	2-7/8	SE	HSP0-1-1/8	19222	19223	19224

- Designed with a radial relieved single edge for fast removal without chatter.
- Higher heat and abrasion resistance for use on high-tensile alloys, stainless steel, and other hard to machine abrasive materials.

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HSP0-1/4-90).

1 FLUTE • CARBIDE COUNTERSINK



SERIES: C1



SIZE	SHK	OAL	TOOL	ANGLE/EDP#				
				60°	82°	90°	100°	120°
1/8	1/8	1-1/2	C1-1/8	18328	18329	18330	18331	18332
3/16	3/16	1-1/2	C1-3/16	18333	18334	18335	18336	18337
1/4	1/4	2	C1-1/4	18338	18339	18340	18341	18342
5/16	1/4	2-1/2	C1-5/16	18343	18344	18345	18346	18347
3/8	1/4	2-1/2	C1-3/8	18348	18349	18350	18351	18352
1/2	3/8	2-1/2	C1-1/2	18353	18354	18355	18356	18357
5/8	3/8	2-5/8	C1-5/8	18358	18359	18360	18361	18362
3/4	1/2	2-3/4	C1-3/4	18363	18364	18365	18366	18367
1	1/2	3	C1-1	18493	18494	18495	18496	18497

- For highly abrasive and hard to machine materials. Applications in **cast iron, alloy steel, or glass reinforced plastics.**
- Carbide eliminates the high cost of tool changes in production situations.
- Rigid set up is a must - not suited for hand held applications.
- Tools 3/8" and larger have solid carbide heads on hardened steel shanks.

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. C1-1/4-90).



1 FLUTE • SINGLE FLUTE COUNTERSINKS

SERIES: HS1



SIZE	SHK	OAL	TOOL	ANGLE/EDP#				
				60°	82°	90°	100°	120°
1/8	1/8	1-1/2	HS1-1/8	18000	18001	18002	18003	18004
3/16	3/16	1-1/2	HS1-3/16	18005	18006	18007	18008	18009
1/4	1/4	2	HS1-1/4	18010	18011	18012	18013	18014
5/16	1/4	2	HS1-5/16	19201	19202	19203	19204	19186
3/8	1/4	2	HS1-3/8	18015	18016	18017	18018	18019
1/2	3/8	2	HS1-1/2	18020	18021	18022	19100	18024
1/2	1/4	2	HS1-1/2 (1/4)	19095	19097	19099	18023	19191
5/8	3/8	2-1/4	HS1-5/8	19188	19200	10967	19205	19209
5/8	1/4	2-1/4	HS1-5/8 (1/4)	18026	18027	18028	19098	18030
5/8	1/2	2-1/4	HS1-5/8 (1/2)	19074	19088	19101	18029	N/A
3/4	1/2	2-3/4	HS1-3/4	18031	18032	18033	18034	18035
7/8	1/2	2-3/4	HS1-7/8	19206	19207	19208	19198	19187
1	1/2	2-3/4	HS1-1	18036	18037	18038	18039	18040
1-1/4	1/2	3	HS1-1-1/4	18041	18042	18043	19193	19192
1-1/2	3/4	3-1/2	HS1-1-1/2 **	18044	18045	18046	19176	19189
1-3/4	3/4	4-1/4	HS1-1-3/4 **	19194	19195	19197	19199	19185
2	3/4	3-3/4	HS1-2 **	18047	18048	18049	19184	19183
2-1/2	3/4	4-3/4	HS1-2-1/2 **	19182	18050	18051	19181	19180
3	3/4	5	HS1-3 **	19179	19178	19177	19190	19196

- Radial relief ensures smooth, chatter-free cutting without overfeeding and makes the tool self-centering.
- Black oxide surface treatment enhances tool life and prevents galling.
- Excellent countersink for use in hand held applications.

** = Drive tang

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HS1-1/4-90).

1 FLUTE • EXTENDED LENGTH COUNTERSINKS



SERIES: HS1EL

SIZE	SHK	OAL	CORNER	TOOL	EDP
1/8	1/8	4	82°	HS1EL-1/8-82	11945
3/16	3/16	4	82°	HS1EL-3/16-82	11947
1/4	1/4	6	82°	HS1EL-1/4-82	11949
5/16	5/16	6	82°	HS1EL-5/16-82	11951
3/8	3/8	6	82°	HS1EL-3/8-82	11953
1/2	3/8	6	82°	HS1EL-1/2-82	11955
5/8	3/8	6	82°	HS1EL-5/8-82	11979
3/4	1/2	6	82°	HS1EL-3/4-82	11975
1	1/2	6	82°	HS1EL-1-82	11977

- Extended length for hard to reach applications.

1 FLUTE • SINGLE FLUTE COUNTERSINK



SERIES: HSP1

SIZE	SHK	OAL	TOOL	ANGLE/EDP#				
				60°	82°	90°	100°	120°
1/8	1/8	1-1/2	HSP1-1/8	11141	11143	11145	19674	19675
3/16	3/16	1-1/2	HSP1-3/16	11147	11149	11151	10260	19676
1/4	1/4	2	HSP1-1/4	11153	11155	11156	10314	19677
3/8	1/4	2	HSP1-3/8	11157	11158	11159	11675	10326
1/2	3/8	2	HSP1-1/2	11160	11161	11162	10248	10246
5/8	3/8	2-1/4	HSP1-5/8	11163	11164	11165	10440	10422
3/4	1/2	2-3/4	HSP1-3/4	11166	11167	11168	11677	10340
1	1/2	2-3/4	HSP1-1	11169	11170	11171	19678	19679
1-1/4	1/2	3	HSP1-1-1/4	11172	11173	11175	19680	19681
1-1/2	3/4	3-1/2	HSP1-1-1/2 **	19682	19683	19684	N/A	19686
1-3/4	3/4	3-1/2	HSP1-1-3/4 **	19687	19688	19689	N/A	N/A
2	3/4	3-3/4	HSP1-2 **	19692	19693	19694	N/A	N/A

** = Drive Tang.

Excellent for countersinking abrasive, high strength, heat resistant, exotic, and other difficult to machine materials.

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HSP1-1/4-90).

1 FLUTE • SINGLE FLUTE COUNTERSINK - TiN COATED



SERIES: HSP1-__-T

SIZE	SHK	OAL	TOOL	ANGLE/EDP#				
				60°	82°	90°	100°	120°
1/8	1/8	1-1/2	HSP1-1/8-T	18136	18137	18138	18139	18140
3/16	3/16	1-1/2	HSP1-3/16-T	18141	18142	18143	18144	18145
1/4	1/4	2	HSP1-1/4-T	18146	18147	18148	18149	18150
3/8	1/4	2	HSP1-3/8-T	18151	18152	18153	18154	18155
1/2	3/8	2	HSP1-1/2-T	18156	18157	18158	18159	18160
5/8	3/8	2-1/4	HSP1-5/8-T	18161	18162	18163	18164	18165
3/4	1/2	2-3/4	HSP1-3/4-T	18166	18167	18168	18169	18170
1	1/2	2-3/4	HSP1-1-T	18171	18172	18173	18174	18175
1-1/4	1/2	3	HSP1-1-1/4-T	18176	18177	18178	18179	18181
1-1/2	3/4	3-1/2	HSP1-1-1/2-T *	19630	19631	19632	19633	19634
1-3/4	3/4	4-1/4	HSP1-1-3/4-T *	19635	19636	19637	19638	19639
2	3/4	3-3/4	HSP1-2-T *	19640	19641	19642	19643	N/A

Coating can also help enhance productivity and extend tool life.

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HSP1-1/4-T-90).

* = Drive Tang.



3 FLUTE • CARBIDE COUNTERSINK

SERIES: C3



SIZE	SHK	OAL	TOOL	ANGLE/EDP#		
				60°	82°	90°
1/8	1/8	1-1/2	C3-1/8	11393	11394	11395
3/16	3/16	1-1/2	C3-3/16	11399	11416	11424
1/4	1/4	2	C3-1/4	11410	11422	11487
5/16	1/4	2-1/2	C3-5/16	11491	11519	11525
3/8	1/4	2-1/2	C3-3/8	11527	11531	11533
1/2	3/8	2-1/2	C3-1/2	11535	11537	11539
5/8	3/8	2-5/8	C3-5/8	11541	11543	11545
3/4	1/2	2-3/4	C3-3/4	11547	11549	11553
7/8	1/2	3	C3-7/8	11555	11557	11559
1	1/2	3	C3-1	11561	11562	11563

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. C3-1/4-90).



3 FLUTE • HSS COUNTERSINKS

SERIES: HS3



SIZE	SHK	OAL	TOOL	ANGLE/EDP#				
				60°	82°	90°	100°	120°
1/4	1/4	2	HS3-1/4-T	19600	19601	19602	19603	19604
3/8	1/4	2	HS3-3/8-T	19605	19606	19607	19608	19609
1/2	3/8	2	HS3-1/2-T	19610	19611	19612	19613	19614
5/8	3/8	2-1/4	HS3-5/8-T	19615	19616	19617	19618	19619
3/4	1/2	2-3/4	HS3-3/4-T	19620	19621	19622	19623	19624
1	1/2	2-3/4	HS3-1-T	19625	19626	19627	19628	19629

- Used for countersinking holes for centers or enlarging existing holes.
 - Radial relief on the angle contributes to smooth, chatter-free operation.
- To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HS3-1/4-T-90).



3 FLUTE • HSSCo M42 COUNTERSINKS



SERIES: HSP3

SIZE	SHK	OAL	TOOL	ANGLE/EDP#				
				60°	82°	90°	100°	120°
1/4	1/4	2	HSP3-1/4	19697	19698	19699	19700	19701
3/8	1/4	2	HSP3-3/8	19702	19703	19704	19705	19706
1/2	3/8	2	HSP3-1/2	19707	19708	19709	19710	19711
5/8	3/8	2-1/4	HSP3-5/8	19712	19713	19714	19715	19716
3/4	1/2	2-3/4	HSP3-3/4	19717	19718	19719	19720	19721
1	1/2	2-3/4	HSP3-1	19722	19723	19724	19725	19726

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HSP3-1/4-90).

3 FLUTE • HSSCo M42 TiN COATED COUNTERSINKS

HSSCo M42

3

MULTI°

TiN

HRC <52

P

M

H

K

S

N

- Used for countersinking holes for centers or enlarging existing holes.
- Radial relief on the angle contributes to smooth, chatter-free operations.



SERIES: HSP3-__-T

SIZE	SHK	OAL	TOOL	ANGLE/EDP#				
				60°	82°	90°	100°	120°
1/4	1/4	2	HSP3-1/4-T	19645	19646	19647	19648	19649
3/8	1/4	2	HSP3-3/8-T	19650	19651	19652	19653	19654
1/2	3/8	2	HSP3-1/2-T	19655	19656	10810	19657	19658
5/8	3/8	2-1/4	HSP3-5/8-T	19659	19660	19661	19662	19663
3/4	1/2	2-3/4	HSP3-3/4-T	19664	19665	19666	19667	19668
1	1/2	2-3/4	HSP3-1-T	19669	19670	19671	19672	19673

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HSP3-1/4-T-90).

MULTI FLUTE • CENTER REAMER

HSS

3

4

MULTI°

Black Oxide

HRC <52

P

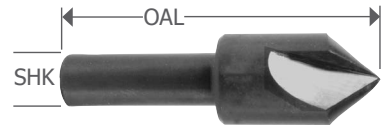
M

H

K

S

N



SERIES: HSCR

SIZE	SHK	OAL	FLUTE	TOOL	ANGLE/EDP#			
					60°	82°	90°	100°
1/4	1/4	2	3	HSCR-1/4	19076	19078	19080	19082
3/8	1/4	2	3	HSCR-3/8	19084	19086	19075	19090
1/2	3/8	2	3	HSCR-1/2	19092	19094	19096	19093
5/8	3/8	2-1/4	3	HSCR-5/8	19091	19089	19087	19085
3/4	1/2	2-3/4	3	HSCR-3/4	19083	19081	19079	19077
1	1/2	2-3/4	3	HSCR-1	19227	19225	19226	12073
1-1/4	1/2	3	4	HSCR-1-1/4	19233	19232	19231	N/A
1-1/2	3/4	3-1/4	4	HSCR-1-1/2	19236	19235	19234	N/A
1-3/4	3/4	3-1/2	4	HSCR-1-3/4	19230	19229	19228	N/A
2	3/4	3-3/4	4	HSCR-2	19237	19238	19239	N/A

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HSCR-1/4-T-90).

4 FLUTE • CARBIDE COUNTERSINK

Carbide

4

MULTI°

BRIGHT

HRC <52

P

M

H

K

S

N



SERIES: C4

- For highly abrasive and hard to machine materials.
- Applications in **cast iron, alloy steel, or glass reinforced plastics.**
- Carbide eliminates the high cost of tool changes in production situations.
- Rigid set up is a must - not suited for hand held applications.
- Tools 3/8" and larger have solid carbide heads on hardened steel shanks.
- See page 147 for Nose Diameter

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	C4-1/8	18956	18823	18957	18958	18959	18960
3/16	3/16	1-1/2	C4-3/16	N/A	18824	N/A	N/A	N/A	N/A
1/4	1/4	2	C4-1/4	18961	18825	18962	18963	18964	18965
5/16	1/4	2-1/2	C4-5/16	N/A	18826	N/A	N/A	N/A	N/A
3/8	1/4	2-1/2	C4-3/8	18966	18827	18967	18968	18969	18970
1/2	3/8	2-1/2	C4-1/2	18971	18828	18972	18973	18974	18975
5/8	3/8	2-5/8	C4-5/8	18976	18829	18977	18978	18979	18980
3/4	1/2	2-3/4	C4-3/4	18981	18830	18982	18983	18984	18985
1	1/2	3	C4-1	18986	18831	18987	18988	18989	18990

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. C4-1/4-90).



4 FLUTE • HSS COUNTERSINK

• See page 147 for Nose Diameter

SERIES: HS4



SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	HS4-1/8	18567	18569	18571	18573	18575	18577
3/16	3/16	1-1/2	HS4-3/16	18579	18581	18583	18585	18587	18589
1/4	1/4	2	HS4-1/4	18591	18593	18595	18597	18599	18601
5/16	1/4	2	HS4-5/16	18603	18605	18607	18609	18611	18613
3/8	1/4	2	HS4-3/8	18615	18617	18619	18621	18623	18625
1/2	3/8	2	HS4-1/2	18627	18629	18631	18633	18635	18637
5/8	3/8	2-1/4	HS4-5/8	18639	18641	18643	18645	18647	18649
3/4	1/2	2-3/4	HS4-3/4	18651	18653	18655	18657	18659	18661
7/8	1/2	2-3/4	HS4-7/8	18663	18665	18667	18669	18671	18673
1	1/2	2-3/4	HS4-1	18675	18677	18679	18681	18683	18685
1-1/4	1/2	3	HS4-1-1/4	18687	18692	18688	18689	18690	18691
1-1/2	3/4	3-1/2	HS4-1-1/2 **	18693	18694	18695	18696	18697	18698
2	3/4	3-3/4	HS4-2 **	18699	18700	18701	18702	18703	18704
2-1/2	3/4	5	HS4-2-1/2 **	18705	18706	18707	10897	N/A	10901
3	3/4	5-1/4	HS4-3 **	18708	18709	18710	10899	N/A	10903

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HS4-1/4-90).

** = Drive tang



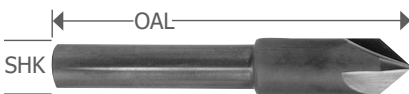
4 FLUTE • DRILL POINT COUNTERSINK

SERIES: HS4DP



SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	HS4DP-1/8	18568	18570	18572	18574	18576	18578
3/16	3/16	1-1/2	HS4DP-3/16	18580	18582	18584	18586	18588	18590
1/4	1/4	2	HS4DP-1/4	18592	18594	18596	18598	18600	18602
5/16	1/4	2	HS4DP-5/16	18604	18606	18608	18610	18612	18614
3/8	1/4	2	HS4DP-3/8	18616	18618	18620	18622	18624	18626
1/2	3/8	2	HS4DP-1/2	18628	18630	18632	18634	18636	18638
5/8	3/8	2-1/4	HS4DP-5/8	18640	18642	18644	18646	18648	18650
3/4	1/2	2-3/4	HS4DP-3/4	18652	18654	18656	18658	18660	18662
7/8	1/2	2-3/4	HS4DP-7/8	18664	18666	18668	18670	18672	18674
1	1/2	2-3/4	HS4DP-1	18676	18678	18680	18682	18684	18686

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HS4DP-1/4-90).



4 FLUTE • MACHINE STYLE COUNTERSINK

SERIES: HSMC



SIZE	SHK	OAL	TOOL	ANGLE/EDP#		
				60°	82°	90°
1/2	1/2	3-7/8	HSMC-1/2	19102	19103	12055
5/8	1/2	4	HSMC-5/8	19104	19105	N/A
3/4	1/2	4-1/4	HSMC-3/4	19106	19107	12783
7/8	1/2	4-1/4	HSMC-7/8	19108	19109	19154
1	1/2	4-3/8	HSMC-1	19110	19111	19255

• Has radial clearance & added shank length for use in turret lathes and screw machine work.

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HSMC-1/2-90).

6 FLUTE • CARBIDE COUNTERSINK



- For highly abrasive and hard to machine materials. Applications in **cast iron, alloy steel, or glass reinforced plastics**.
- Carbide eliminates the high cost of tool changes in production situations.
- Rigid set up is a must - not suited for hand held applications.
- Tools 3/8" and larger have solid carbide heads on hardened steel shanks.
- See page 147 for Nose Diameter

SERIES: C6

SIZE	SHK	OAL	TOOL	ANGLE/EDP#				
				60°	82°	90°	100°	120°
1/8	1/8	1-1/2	C6-1/8	18368	18369	18370	18371	18372
3/16	3/16	1-1/2	C6-3/16	18373	18374	18375	18376	18377
1/4	1/4	2	C6-1/4	18378	18379	18380	18381	18382
5/16	1/4	2-1/2	C6-5/16	18383	18384	18385	18386	18387
3/8	1/4	2-1/2	C6-3/8	18388	18389	18390	18391	18392
1/2	3/8	2-1/2	C6-1/2	18393	18394	18395	18396	18397
5/8	3/8	2-5/8	C6-5/8	18398	18399	18400	18401	18402
3/4	1/2	2-3/4	C6-3/4	18403	18404	18405	18406	18407
7/8	1/2	3	C6-7/8	11565	11567	11569	N/A	N/A
1	1/2	3	C6-1	18488	18489	18490	18491	18492
1-1/4	3/4	3-3/8	C6-1-1/4	10891	10893	10895	N/A	N/A

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. C6-1/4-90).

6 FLUTE • NC - CARBIDE CNC PRECISION COUNTERSINK



- 2 + 2 staggered flute design for smooth, chatter-free cutting.
- Abundant chip clearance to work well in non-ferrous applications such as **aluminum and plastic**.
- See page 147 for Nose Diameter



SERIES: C6NC

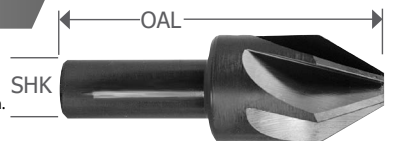
SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
3/16	3/16	1-1/2	C6NC-3/16	N/A	18807	N/A	N/A	N/A	N/A
1/4	1/4	2	C6NC-1/4	18886	18808	18887	18888	18889	18890
5/16	1/4	2-1/2	C6NC-5/16	N/A	18809	N/A	N/A	N/A	N/A
3/8	1/4	2-1/2	C6NC-3/8	18891	19070	18892	18893	18894	18895
1/2	3/8	2-1/2	C6NC-1/2	18896	18810	18897	18898	18899	18900
5/8	3/8	2-5/8	C6NC-5/8	18901	18811	18902	18903	18904	18905
3/4	1/2	2-3/4	C6NC-3/4	18906	18812	18907	18908	18909	18910
7/8	1/2	3	C6NC-7/8	11441	N/A	N/A	N/A	N/A	N/A
1	1/2	3	C6NC-1	18911	18813	18912	18913	18914	18915

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. C6NC-1/4-90).

6 FLUTE • NC - HSS CNC PRECISION COUNTERSINK



- Drill and countersink with one tool.
- A thin web drill point is blended into 2 flutes of a 4 flute countersink to spot drill and countersink in one operation.
- See page 147 for Nose Diameter



SERIES: HS6NC

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
3/16	3/16	1-1/2	HS6NC-3/16	18498	18499	18500	18501	18502	18503
1/4	1/4	2	HS6NC-1/4	18504	18505	18506	18507	18508	18509
5/16	1/4	2	HS6NC-5/16	18510	18511	18512	18513	18515	18516
3/8	1/4	2	HS6NC-3/8	18517	18518	18520	18521	18522	18523
1/2	3/8	2	HS6NC-1/2	18524	18525	18526	18527	18528	18529
5/8	3/8	2-1/4	HS6NC-5/8	18530	18531	18532	18534	18535	18536
3/4	1/2	2-1/4	HS6NC-3/4	18537	18538	18539	18540	18541	18542
7/8	1/2	2-3/4	HS6NC-7/8	18543	18544	18545	18547	18548	18549
1	1/2	2-3/4	HS6NC-1	18550	18551	18552	18553	18554	18555

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HS6NC-1/4-90).



6 FLUTE • HSS COUNTERSINK

• See page 147 for Nose Diameter

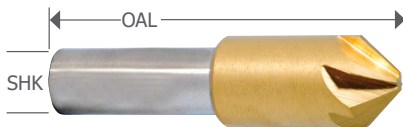


SERIES: HS6

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	HS6-1/8	18052	18053	18054	18055	18056	18057
3/16	3/16	1-1/2	HS6-3/16	18058	18059	18060	18061	18062	18063
1/4	1/4	2	HS6-1/4	18064	18065	18066	18067	18068	18069
5/16	1/4	2	HS6-5/16	18070	18071	18072	18073	18074	18075
3/8	1/4	2	HS6-3/8	18076	18077	18078	18079	18080	18081
1/2	3/8	2	HS6-1/2	18082	18083	18084	18085	18086	18087
1/2	1/4	2	HS6-1/2 (1/4)	19310	19311	19312	N/A	N/A	N/A
5/8	1/4	2-1/4	HS6-5/8 (1/4)	N/A	13041	N/A	N/A	N/A	N/A
5/8	3/8	2-1/4	HS6-5/8	18088	18089	18090	18091	18092	18093
5/8	1/2	2-1/4	HS6-5/8 (1/2)	19313	19314	19315	N/A	N/A	N/A
3/4	1/2	2-3/4	HS6-3/4	18094	18095	18096	18097	18098	18099
7/8	1/2	2-3/4	HS6-7/8	18100	18101	18102	18103	18104	18105
1	1/2	2-3/4	HS6-1	18106	18107	18108	18109	18110	18111
1-1/4	1/2	3	HS6-1-1/4	18112	18113	18114	18115	18116	18117
1-1/4	3/4	3	HS6-1-1/4 (3/4)	19316	19317	19318	N/A	N/A	N/A
1-1/2	3/4	3-1/2	HS6-1-1/2 **	18118	18119	18120	18121	18122	18123
1-3/4	1	4-1/4	HS6-1-3/4	19319	19320	19321	N/A	N/A	N/A
2	3/4	3-3/4	HS6-2 **	18124	18125	18126	18127	18128	18129
2-1/2	3/4	5	HS6-2-1/2 **	18130	18131	18132	N/A	N/A	N/A
3	3/4	5-1/4	HS6-3 **	18133	18134	18135	N/A	N/A	N/A
3	1	5-1/4	HS6-3 (1)	10806	N/A	N/A	N/A	N/A	N/A

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HS6-1/4-90).

**= Drive Tang



6 FLUTE • HSSCo M42 COUNTERSINK

• See page 147 for Nose Diameter



SERIES: HSP6-__-T

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	HSP6-1/8-T	18182	18183	18184	18185	18186	18187
3/16	3/16	1-1/2	HSP6-3/16-T	18188	18189	18190	18191	18192	18193
1/4	1/4	2	HSP6-1/4-T	18194	18195	18196	18197	18198	18199
5/16	1/4	2	HSP6-5/16-T	18200	18201	18202	18203	18204	18205
3/8	1/4	2	HSP6-3/8-T	18206	18207	18208	18209	18210	18211
1/2	3/8	2	HSP6-1/2-T	18212	18213	18214	18215	18216	18217
5/8	3/8	2-1/4	HSP6-5/8-T	18218	18219	18220	18221	18222	18223
3/4	1/2	2-3/4	HSP6-3/4-T	18224	18225	18226	18227	18228	18229
7/8	1/2	2-3/4	HSP6-7/8-T	18230	18231	18232	18233	18234	18235
1	1/2	2-3/4	HSP6-1-T	18236	18237	18238	18239	18240	18241
1-1/4	1/2	3	HSP6-1-1/4-T	18242	18243	18244	N/A	N/A	N/A

• Excellent for countersinking abrasive, high-strength, heat resistant, exotic, and other difficult to machine materials.

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. HSP6-1/4-T-90).

6 FLUTE • EXTENDED LENGTH COUNTERSINK

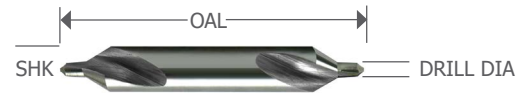
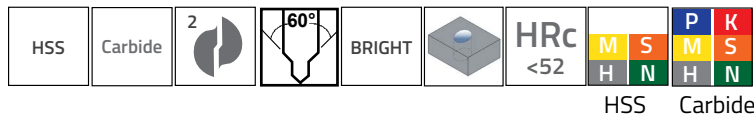


SERIES: HS6EL

SIZE	SHK	OAL	CORNER	TOOL	EDP
1/8	1/8	4	82°	HS6EL-1/8-82	11961
3/16	3/16	4	82°	HS6EL-3/16-82	11963
1/4	1/4	6	82°	HS6EL-1/4-82	11965
5/16	5/16	6	82°	HS6EL-5/16-82	11967
3/8	3/8	6	82°	HS6EL-3/8-82	11969
1/2	3/8	6	82°	HS6EL-1/2-82	11971
5/8	3/8	6	82°	HS6EL-5/8-82	11973
3/4	1/2	6	82°	HS6EL-3/4-82	11957
1	1/2	6	82°	HS6EL-1-82	11959

- Extended length for hard to reach applications.

2 FLUTE • 60° DOUBLE END COMBINED DRILL COUNTERSINK



SERIES: HSCD OR KDR

SIZE	SHK	DRILL DIA	DRILL LENGTH	OAL	HSS TOOL	HSS BRIGHT EDP	CARBIDE TOOL	CARBIDE BRIGHT EDP
00	1/8	0.025	0.030	1-1/2	HSCD-00*	11587	KDR-00	17362
0	1/8	1/32	0.038	1-1/2	HSCD-0*	11589	KDR-0	17363
1	1/8	3/64	3/64	1-1/2	HSCD-1*	11591	KDR-1	17364
2	3/16	5/64	5/64	2	HSCD-2**	11593	KDR-2	17365
3	1/4	7/64	7/64	2	HSCD-3	11595	KDR-3	17366
4	5/16	1/8	1/8	2-1/8	HSCD-4	11597	KDR-4	17367
5	7/16	3/16	3/16	2-3/4	HSCD-5	11599	KDR-5	17368
6	1/2	7/32	7/32	3	HSCD-6	11601	KDR-6	17369
7	5/8	1/4	1/4	3-1/4	HSCD-7	11603	KDR-7	10611
8	3/4	5/16	5/16	3-1/2	HSCD-8	11605	KDR-8	10613

- For centering and spot drilling applications when high accuracy is necessary
- * = 1-1/4 OAL
- ** = 1-7/8 OAL



1 FLUTE • DOUBLE END CARBIDE COUNTERSINK



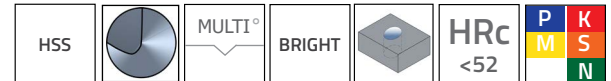
SERIES: DC1

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	DC1-1/8	18408	18409	18410	18411	10919	18412
3/16	3/16	2	DC1-3/16	18413	18414	18415	18416	10921	18417
1/4	1/4	2	DC1-1/4	18418	18419	18420	18421	10923	18422
5/16	5/16	2-1/2	DC1-5/16	18423	18424	18425	18426	10925	18427
3/8	3/8	2-1/2	DC1-3/8	18428	18429	18430	18431	10927	18432
1/2	1/2	3	DC1-1/2	18433	18434	18435	18436	10929	18437
5/8	5/8	3-1/2	DC1-5/8	18438	18439	18440	18441	10931	18442
3/4	3/4	4	DC1-3/4	18443	18444	18445	18446	10933	18447

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. DC1-1/4-90).



1 FLUTE • DOUBLE END HSS COUNTERSINK



SERIES: DHS1

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	DHS1-1/8	18248	18249	18250	18251	10905	18252
3/16	3/16	2	DHS1-3/16	18253	18254	18255	18256	10907	18257
1/4	1/4	2	DHS1-1/4	18258	18259	18260	18261	10909	18262
5/16	5/16	2-1/2	DHS1-5/16	18263	18264	18265	18266	10911	18267
3/8	3/8	2-1/2	DHS1-3/8	18268	18269	18270	18271	10913	18272
1/2	1/2	3	DHS1-1/2	18273	18274	18275	18276	19163	18277
5/8	5/8	3-1/2	DHS1-5/8	18278	18279	18280	18281	10915	18282
3/4	3/4	4	DHS1-3/4	18283	18284	18285	18286	10917	18287

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. DHS1-1/4-90).

4 FLUTE • DOUBLE END CARBIDE DRILL POINT COUNTERSINK



SERIES: DC4DP

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	DC4DP-1/8	18992	18833	18994	18996	18998	19000
3/16	3/16	2	DC4DP-3/16	19002	18835	19004	19006	19008	19010
1/4	1/4	2	DC4DP-1/4	19012	18837	19014	19016	19018	19020
5/16	5/16	2-1/2	DC4DP-5/16	19022	19071	19024	19026	19028	19030
3/8	3/8	2-1/2	DC4DP-3/8	19032	18840	19034	19036	19038	19040
1/2	1/2	3	DC4DP-1/2	19042	18842	19044	19046	19048	19050
5/8	5/8	3-1/2	DC4DP-5/8	19052	18843	19054	19056	19058	19060
3/4	3/4	4	DC4DP-3/4	19061	18845	19063	19065	19067	19069

- Drill and countersink with one tool.
 - Can save setup and production time by combining two operations into one.
- To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. DHS1-1/4-90).

4 FLUTE • DOUBLE END CARBIDE COUNTERSINK



SERIES: DC4

SIZE	SHK	OAL	TOOL	60°	82°	ANGLE/EDP#			
1/8	1/8	1-1/2	DC4-1/8	18991	18832	18993	18995	18997	18999
3/16	3/16	2	DC4-3/16	19001	18834	19003	19005	19007	19009
1/4	1/4	2	DC4-1/4	19011	18836	19013	19015	19017	19019
5/16	5/16	2-1/2	DC4-5/16	19021	18838	19023	19025	19027	19029
3/8	3/8	2-1/2	DC4-3/8	19031	18839	19033	19035	19037	19039
1/2	1/2	3	DC4-1/2	19041	18841	19043	19045	19047	19049
5/8	5/8	3-1/2	DC4-5/8	19051	18479	19053	19055	19057	19059
3/4	3/4	4	DC4-3/4	19072	18844	19062	19064	19066	19068

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. DC4-1/4-90).

4 FLUTE • DOUBLE END HSS COUNTERSINK

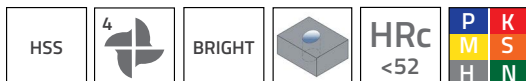


SERIES: DHS4

SIZE	SHK	OAL	TOOL	60°	82°	ANGLE/EDP#			
1/8	1/8	1-1/2	DHS4-1/8	18711	18713	18715	18717	18719	18721
3/16	3/16	2	DHS4-3/16	18723	18725	18727	18729	18731	18733
1/4	1/4	2	DHS4-1/4	18735	18737	18739	18741	18743	18745
5/16	5/16	2-1/2	DHS4-5/16	18747	18749	18751	18753	18755	18757
3/8	3/8	2-1/2	DHS4-3/8	18759	18761	18763	18765	18767	18769
1/2	1/2	3	DHS4-1/2	18771	18773	18775	18777	18779	18781
5/8	5/8	3-1/2	DHS4-5/8	18783	18785	18787	18789	18791	18793
3/4	3/4	4	DHS4-3/4	18795	18797	18799	18801	18803	18805

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. DHS4-1/4-90).

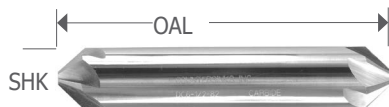
4 FLUTE • DOUBLE END HSS DRILL POINT COUNTERSINK



SERIES: DHS4DP

SIZE	SHK	OAL	TOOL	60°	82°	ANGLE/EDP#			
1/8	1/8	1-1/2	DHS4DP-1/8	18712	18714	18716	18718	18720	18722
3/16	3/16	2	DHS4DP-3/16	18724	18726	18728	18730	18732	18734
1/4	1/4	2	DHS4DP-1/4	18736	18738	18740	18742	18744	18746
5/16	5/16	2-1/2	DHS4DP-5/16	18748	18750	18752	18754	18756	18758
3/8	3/8	2-1/2	DHS4DP-3/8	18760	18762	18764	18766	18768	18770
1/2	1/2	3	DHS4DP-1/2	18772	18774	18776	18778	18780	18782
5/8	5/8	3-1/2	DHS4DP-5/8	18784	18786	18788	18790	18792	18794
3/4	3/4	4	DHS4DP-3/4	18796	18798	18800	18802	18804	18806

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. DHS4DP-1/4-90).



6 FLUTE • DOUBLE END CARBIDE COUNTERSINK

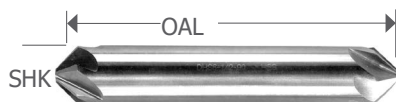
• See page 147 for Nose Diameter



SERIES: DC6

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	DC6-1/8	18448	18449	18450	18451	N/A	18452
3/16	3/16	2	DC6-3/16	18453	18454	18455	18456	N/A	18457
1/4	1/4	2	DC6-1/4	18458	18459	18460	18461	19073	18462
5/16	5/16	2-1/2	DC6-5/16	18463	18464	18465	18466	N/A	18467
3/8	3/8	2-1/2	DC6-3/8	18468	18469	18470	18471	N/A	18472
1/2	1/2	3	DC6-1/2	18473	18474	18475	18476	N/A	18477
5/8	5/8	3-1/2	DC6-5/8	18478	18820	18480	18481	N/A	18482
3/4	3/4	4	DC6-3/4	18483	18484	18485	18486	N/A	18487

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. DC6-1/4-90).



4 FLUTE • DOUBLE END HSS COUNTERSINK



SERIES: DHS6

SIZE	SHK	OAL	TOOL	ANGLE/EDP#					
				60°	82°	90°	100°	110°	120°
1/8	1/8	1-1/2	DHS6-1/8	18288	18289	18290	18291	19162	18292
3/16	3/16	2	DHS6-3/16	18293	18294	18295	18296	18558	18297
1/4	1/4	2	DHS6-1/4	18298	18299	18300	18301	18560	18302
5/16	5/16	2-1/2	DHS6-5/16	18303	18304	18305	18306	18562	18307
3/8	3/8	2-1/2	DHS6-3/8	18308	18309	18310	18311	N/A	18312
1/2	1/2	3	DHS6-1/2	18313	18314	18315	18316	N/A	18317
5/8	5/8	3-1/2	DHS6-5/8	18318	18319	18320	18321	N/A	18322
3/4	3/4	4	DHS6-3/4	18323	18324	18325	18326	N/A	18327

To order countersinks: Use the EDP # listed or add the angle to the end of the tool name (i.e. DHS6-1/4-90).



COUNTERSINK SETS

HSS					
PCS	ANGLE	FLT	MATERIAL	SIZES	EDP
4	82	0	HSS	1/4, 7/16, 9/16, 13/16"	19170
5	82	1	HSS	1/4 to 1"	19169
5	90	1	HSS	1/4 to 1"	19168
6	82	6	HSS	1/4 to 1"	19167
8	60	6	HSS	1/4 to 1"	90022
8	82	6	HSS	1/4 to 1"	90023
8	90	6	HSS	1/4 to 1"	90021
10	60	6	HSS	1/4 to 1-1/2"	90024
10	82	6	HSS	1/4 to 1-1/2"	90025
10	90	6	HSS	1/4 to 1-1/2"	90020

CARBIDE					
PCS	ANGLE	FLT	MATERIAL	SIZES	EDP
5	60	1	CARBIDE	1/4 to 1"	90026
5	82	1	CARBIDE	1/4 to 1"	90027
5	90	1	CARBIDE	1/4 to 1"	90028
5	60	6	CARBIDE	1/4 to 1"	15545
5	82	6	CARBIDE	1/4 to 1"	15547
5	90	6	CARBIDE	1/4 to 1"	15549
8	60	6	CARBIDE	1/4 to 1"	90029
8	82	6	CARBIDE	1/4 to 1"	90030
8	90	6	CARBIDE	1/4 to 1"	90031

Multiple Shape • GENERAL PURPOSE CARBIDE BURS

Series: SA - DOUBLE CUT
CYLINDRICAL NO ENDCUT



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
3/32	1/8	7/16	1-1/2	SA-42DC	13489
1/8	1/8	9/16	1-1/2	SA-43DC	13490
1/4	1/8	1/2	2	SA-51DC	13491
1/4	1/4	5/8	2	SA-1DC	13492
3/8	1/4	3/4	2-1/2	SA-3DC	13493
1/2	1/4	1	2-3/4	SA-5DC	13494
5/8	1/4	1	2-3/4	SA-6DC	13495
3/4	1/4	1	2-3/4	SA-7DC	13496
1	1/4	1	2-3/4	SA-9DC	13497

Series: SB - DOUBLE CUT
CYLINDRICAL WITH ENDCUT



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	9/16	1-1/2	SB-43DC	13498
1/4	1/8	3/16	2-15/16	SB-51DC	13499
1/4	1/4	5/8	2	SB-1DC	13500
3/8	1/4	3/4	2-1/2	SB-3DC	13501
1/2	1/4	1	2-3/4	SB-5DC	13502
5/8	1/4	1	2-3/4	SB-6DC	13503
3/4	1/4	1	2-3/4	SB-7DC	13504
1	1/4	1	2-3/4	SB-9DC	13505

Series: SC - DOUBLE CUT
RADIUS CYLINDRICAL



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
3/32	1/8	7/16	1-1/2	SC-41DC	13506
1/8	1/8	9/16	1-1/2	SC-42DC	13507
1/4	1/8	1/2	2	SC-51DC	13508
1/4	1/4	5/8	2	SC-1DC	13509
3/8	1/4	3/4	2-1/2	SC-3DC	13510
1/2	1/4	1	2-3/4	SC-5DC	13511
5/8	1/4	1	2-3/4	SC-6DC	13512
3/4	1/4	1	2-3/4	SC-7DC	13513

Series: SD - DOUBLE CUT
BALL SHAPE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	1/8	1-1/2	SD-42DC	13514
1/4	1/8	7/32	2	SD-51DC	13515
1/4	1/4	7/32	2	SD-1DC	13516
3/8	1/4	5/16	2-1/8	SD-3DC	13517
1/2	1/4	7/16	2-1/4	SD-5DC	13518
5/8	1/4	9/16	2-3/8	SD-6DC	13519
3/4	1/4	11/16	2-1/2	SD-7DC	13520
1	1/4	15/16	2-3/4	SD-9DC	13521

Series: SE - DOUBLE CUT
OVAL SHAPE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	7/32	1-1/2	SE-41DC	13522
1/4	1/8	3/8	1-3/4	SE-51DC	13523
1/4	1/4	3/8	2	SE-1DC	13524
3/8	1/4	5/8	2-3/8	SE-3DC	13525
1/2	1/4	7/8	2-5/8	SE-5DC	13526
5/8	1/4	1	2-3/4	SE-6DC	13527
3/4	1/4	1	2-3/4	SE-7DC	13528

Series: SF - DOUBLE CUT
TREE SHAPE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	1/4	1-1/2	SF-41DC	13529
1/8	1/8	1/2	1-1/2	SF-42DC	13530
1/4	1/4	5/8	2	SF-1DC	13531
3/8	1/4	3/4	2-1/2	SF-3DC	13532
1/2	1/4	1	2-3/4	SF-5DC	13533
5/8	1/4	1	2-3/4	SF-6DC	13534
3/4	1/4	1	2-3/4	SF-7DC	13535

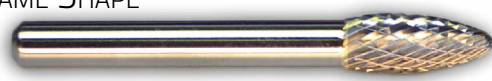
Multiple Shape • GENERAL PURPOSE CARBIDE BURS

Series: SG - DOUBLE CUT
POINTED TREE SHAPE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	1/4	1-1/2	SG-41DC	13536
1/8	1/8	3/8	1-1/2	SG-43DC	13537
1/4	1/8	1/2	2	SG-51DC	13538
1/4	1/4	5/8	2	SG-1DC	13539
3/8	1/4	3/4	2-1/2	SG-3DC	13540
1/2	1/4	1	2-3/4	SG-5DC	13541
5/8	1/4	1	2-3/4	SG-6DC	13542
3/4	1/4	1	2-3/4	SG-7DC	13543

Series: SH - DOUBLE CUT
FLAME SHAPE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	1/4	1-1/2	SH-41DC	13544
1/4	1/4	1/2	2	SH-1DC	13545
1/2	1/4	1-1/4	3	SH-5DC	13546
5/8	1/4	1-7/16	3-3/16	SH-6DC	13547
3/4	1/4	1-5/8	3-3/8	SH-7DC	13548

Series: SJ - SINGLE CUT
60° INCLUDED CONE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	3/32	1-1/2	SJ-42SC	13586
1/4	1/4	3/16	2	SJ-1SC	13549
3/8	1/4	5/16	2-1/16	SJ-3SC	13550
1/2	1/4	7/16	2-3/16	SJ-5SC	13551
5/8	1/4	9/16	2-5/16	SJ-6SC	13552
3/4	1/4	11/16	2-7/16	SJ-7SC	13553
1	1/4	15/16	2-9/16	SJ-9SC	13554

Series: SK - SINGLE CUT
90° INCLUDED CONE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	1/16	1-1/2	SK-42SC	13555
1/4	1/4	1/8	2	SK-1SC	13556
3/8	1/4	3/16	1-15/16	SK-3SC	13557
1/2	1/4	1/4	2	SK-5SC	13558
5/8	1/4	5/16	2-1/16	SK-6SC	13559
3/4	1/4	3/8	2-1/8	SK-7SC	13560
1	1/4	1/2	2-1/4	SK-9SC	13561

Series: SL - DOUBLE CUT
8° OR 14° INCLUDED CONE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	3/8	1-1/2	SL-41DC	13562
1/8	1/8	1/2	1-1/2	SL-42DC	13563
1/4	1/4	5/8	2	SL-1DC	13564
3/8	1/4	1-1/16	2-13/16	SL-3DC	13565
1/2	1/4	1-1/8	2-7/8	SL-4DC	13566
5/8	1/4	1-5/16	3-1/16	SL-6DC	13567
3/4	1/4	1-1/2	3-1/4	SL-7DC	13568

Series: SM - DOUBLE CUT
POINTED CONE SHAPE



DIA	SHK	LOC	OAL	TOOL	BRIGHT EDP
1/8	1/8	11/32	1-1/2	SM-41DC	13569
1/8	1/8	7/16	1-1/2	SM-42DC	13570
1/8	1/8	5/8	1-1/2	SM-43DC	13571
1/4	1/8	1/2	2-1/8	SM-51DC	13572
1/4	1/4	1/2	2	SM-1DC	13573
1/4	1/4	3/4	2	SM-2DC	13574
1/4	1/4	1	2	SM-3DC	13575
3/8	1/4	5/8	2-3/8	SM-4DC	13576
1/2	1/4	7/8	2-5/8	SM-5DC	13577
5/8	1/4	1	2-3/4	SM-6DC	13578

Series: SN - DOUBLE CUT
INVERTED CONE SHAPE



DIA	SHK	LOC	OAL	ANGLE	TOOL	BRIGHT EDP
1/8	1/8	3/16	1-1/2	10°	SN-42DC	13579
1/4	1/8	1/4	1-3/4	10°	SN-51DC	13580
1/4	1/4	5/16	2	10°	SN-1DC	13581
1/2	1/4	1/2	2-1/4	16°	SN-3DC	13582
1/2	1/4	1/2	2-1/4	28°	SN-4DC	13583
5/8	1/4	3/4	2-1/2	18°	SN-6DC	13584
3/4	1/4	5/8	2-3/8	30°	SN-7DC	13585

General Purpose Carbide End Mills

SERIES: General Purpose Carbide End Mills

MATERIAL		CONDITIONS		CUTTING DIAMETER							
				1/8"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"
		Under 32 HRc	Over 32 HRc	CHIP PER TOOTH							
STAINLESS STEELS		ISO-M									
Precipitation 13-8, 15-5, 17-4PH	Slotting .5 x Dia.	110-200	80-115	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040
	Profiling ≤ .5 x Dia.	110-200	80-115	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050
Austenitic 302, 303, 304L, 316L	Slotting .5 x Dia.	150-275	80-180	0.0005	0.0011	0.0014	0.0016	0.0023	0.0029	0.0035	0.0046
	Profiling ≤ .5 x Dia.	150-275	80-180	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.0060
Martensitic 403, 410, 416	Slotting .5 x Dia.	200-400	80-160	0.0005	0.0011	0.0014	0.0016	0.0023	0.0029	0.0035	0.0046
	Profiling ≤ .5 x Dia.	200-400	80-160	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.0060
HIGH TEMP ALLOYS		ISO-S									
Cobalt Base Stellite, Haynes 25, 188, X-40, L-605	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040
Nickel Base Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Incoly 600	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040
Iron Base Incoloy 800-802, Multimet N-155, Timken 16-26-6	Slotting .5 x Dia.	60-125	60-125	0.0004	0.0007	0.0009	0.0011	0.0015	0.0019	0.0023	0.0030
	Profiling ≤ .5 x Dia.	60-125	60-125	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040
STEELS		ISO-P									
High Strength Steels 4140, 4340, 52100	Slotting .5 x Dia.	150-300	80-180	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004
	Profiling ≤ .5 x Dia.	150-300	80-180	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005
High Alloy Steels - Mold & Die A-2, P20, 01, 02, D2, H-13	Slotting .5 x Dia.	150-275	80-185	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004
	Profiling ≤ .5 x Dia.	150-275	80-185	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005
Medium Alloy Steels 200, 250, 300	Slotting .5 x Dia.	175-350	100-225	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.004
	Profiling ≤ .5 x Dia.	175-350	100-225	0.0006	0.0010	0.0012	0.0018	0.0025	0.0031	0.0038	0.005
Low Alloy Steels-Maraging 10XX, 11XX, 13XX	Slotting .5 x Dia.	200-450	100-250	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.005
	Profiling ≤ .5 x Dia.	200-450	100-250	0.0007	0.0014	0.0018	0.0021	0.0030	0.0038	0.0045	0.006
CAST IRONS		ISO-K									
Ductile Iron Ductile Cast Iron	Slotting .5 x Dia.	120-325	80-140	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040
	Profiling ≤ .5 x Dia.	120-325	80-140	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050
Cast Iron Grey Cast Iron	Slotting .5 x Dia.	250-425	125-285	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040
	Profiling ≤ .5 x Dia.	250-425	125-285	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050
TITANIUMS		ISO-S									
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S For 5553, decrease SFM and IPM by 25%	Slotting .5 x Dia.	140-200	90-145	0.0005	0.0010	0.0012	0.0014	0.0020	0.0025	0.0030	0.0040
	Profiling ≤ .5 x Dia.	140-200	90-145	0.0006	0.0012	0.0015	0.0018	0.0025	0.0031	0.0038	0.0050
ALUMINUM		ISO-N									
Aluminum Alloys 6061-T6, 7075	Slotting .5 x Dia.	600-1000	NA	0.0006	0.0012	0.0015	0.0018	0.003	0.005	0.006	0.0080
	Profiling ≤ .5 x Dia.	600-1000	NA	0.0007	0.0014	0.0018	0.0025	0.0035	0.006	0.0068	0.0100

All technical data provided are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE TEAM with questions.

TECHNICAL INFORMATION

Powdered Metal End Mills

SERIES: CCFPM, CCRPM, CCPM

MATERIAL	CONDITION	SFM	CUTTING DIAMETER							
			1/8-3/16"	1/4-3/8"	1/2-3/4"	7/8-1-1/8"	1-1/4-1-1/2"	1-5/8-2"		
	Uncoated	Coated	CHIP PER TOOTH							
STAINLESS STEELS ISO-M										
	Slotting	30-100	40-140	.0007- .0010	.0010- .0015	.0020- .0032	.0036-.0042	.0050-.0068	.0070- .0090	
	Heavy Profiling	30-100	40-140	.0008- .0013	.0015- .0020	.0022-.0032	.0034-.0047	.0052-.0072	.0073-.0097	
HIGH TEMP ALLOYS ISO-S										
	Slotting	15-50	20-65	.0005- .0007	.0008- .0011	.0015- .0019	.0019-.0027	.0030-.0040	.0043-.0054	
	Heavy Profiling	15-50	20-65	.0005- .0007	.0008- .0011	.0015-.0019	.0019-.0027	.0030-.0040	.0043-.0054	
STEELS		ISO-P								
	Slotting	40-120	50-170	.0006-.0009	.0010- .0015	.0020- .0026	.0026-.0038	.0046-.0060	.0072-.0100	
	Heavy Profiling	40-120	50-170	.0007-.0013	.0013- .0019	.0023- .0030	.0032- .0042	.0048-.0062	.0076-.0120	
TITANIUM		ISO-S								
	Slotting	40-85	50-115	.0007-.0010	.0013- .0019	.0025- .0037	.0039- .0042	.0043-.0050	.0052- .0060	
	Heavy Profiling	40-85	50-115	.0007-.0013	.0015- .0021	.0027- .0039	.0042- .0045	.0046-.0052	.0053-.0064	
ALUMINUM		ISO-N								
	Slotting	450-650	550-775	.0010- .0020	.0024- .0038	.0042- .0070	.0072- .0110	.0115-.0190	.0195-.0220	
	Heavy Profiling	450-650	550-775	.0014- .0022	.0027- .0040	.0046- .0080	.0080- .0130	.0135- .021	.0220- .0300	

SERIES: VHFM

MATERIAL	CONDITION	SFM	CUTTING DIAMETER					
			3/8"	1/2"	5/8"	3/4"	1"	1-1/4"
			CHIP PER TOOTH					
STAINLESS STEELS		ISO-M						
	Slotting	40-150	0.0016	0.0022	0.0026	0.0033	0.0046	0.0057
	Heavy Profiling	40-150	0.0020	0.0026	0.0031	0.0037	0.0052	0.0063
HIGH TEMP ALLOYS		ISO-S						
	Slotting	20-80	0.0011	0.0017	0.0019	0.0021	0.0028	0.0037
	Heavy Profiling	20-80	0.0011	0.0017	0.002	0.0022	0.0032	0.0041
STEELS		ISO-P						
	Slotting	50-200	0.0015	0.0021	0.0024	0.0027	0.0037	0.0047
	Heavy Profiling	50-200	0.0015	0.0021	0.0026	0.0030	0.0040	0.0052
TITANIUM		ISO-S						
	Slotting	50-115	0.0016	0.0021	0.0025	0.0030	0.0042	0.0054
	Heavy Profiling	50-115	0.0018	0.0024	0.0029	0.0034	0.0047	0.0059

All technical data provided are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE TEAM with questions.

Roughing End Mills

SERIES: Cobalt/HSS Roughing End Mills

MATERIAL		CONDITIONS	START- ING SFM	START- ING SFM	CUTTING DIAMETER						
					1/4"	1/2"	3/4"	1.00"	1-1/4"	1-1/2"	2.00"
			UNCOATED	COATED	CHIP PER TOOTH						
STAINLESS STEELS ISO-M											
Precipitation 13-8, 15-5, 17-4PH		Slotting Axial 1 x D	60-80	100-150	0.0015	0.0020	0.0026	0.0036	0.0046	0.0054	0.0070
		Heavy Profiling			0.0015	0.0020	0.0029	0.0040	0.0050	0.0060	0.0075
Austenitic 302, 303, 304L, 316L		Slotting 1 x D	60-80	100-150	0.0015	0.0020	0.003	0.0045	0.0056	0.0067	0.0090
		Heavy Profiling			0.0019	0.0025	0.0034	0.0049	0.0061	0.0074	0.0098
Martensitic 403, 410, 416		Slotting Axial 1 x D	60-100	100-170	0.0015	0.0020	0.0030	0.0045	0.0056	0.0067	0.0090
		Heavy Profiling			0.0019	0.0025	0.0034	0.0049	0.0061	0.0074	0.0098
HIGH TEMP ALLOYS ISO-S											
Cobalt Base Stellite, Haynes 25, 188, X-40, L-605		Slotting 1 x D	5-25	10-40	0.0011	0.0014	0.0018	0.0026	0.0033	0.0040	0.0053
		Heavy Profiling			0.0011	0.0014	0.0020	0.0029	0.0037	0.0045	0.0059
Nickel Base Inconel 600, 625, 718, Nickel 200, 270, Invar, Monel 400, 405, K-Monel, PermaNickel 300, Incoly 600		Slotting Axial 1 x D	10-20	20-40	0.0011	0.0014	0.0018	0.0026	0.0033	0.0040	0.0053
		Heavy Profiling			0.0011	0.0014	0.0020	0.0029	0.0037	0.0045	0.0059
Iron Base Incoloy 800-802, Multimet N-155, Timken 16-26-6		Slotting 1 x D	15-35	30-60	0.0011	0.0014	0.0018	0.0026	0.0033	0.0040	0.0053
		Heavy Profiling			0.0011	0.0014	0.0020	0.0029	0.0037	0.0045	0.0059
STEELS ISO-P											
High Strength Steels 4140, 4340, 52100		Slotting Axial 1 x D	50-80	100-150	0.0015	0.0020	0.0025	0.0035	0.0045	0.0053	0.0071
		Heavy Profiling			0.0015	0.0020	0.0028	0.0039	0.0050	0.0059	0.0079
High Alloy Steels - Mold & Die A-2, P20, 01, 02, D2, H-13		Slotting 1 x D	40-65	80-115	0.0015	0.0020	0.0025	0.0035	0.0045	0.0053	0.0071
		Heavy Profiling			0.0015	0.0020	0.0028	0.0039	0.005	0.0059	0.0079
Medium Alloy Steels 200, 250, 300		Slotting Axial 1 x D	60-120	100-180	0.0016	0.0023	0.0033	0.0050	0.0062	0.0075	0.0093
		Heavy Profiling			0.0020	0.0027	0.0040	0.0054	0.007	0.0082	0.0110
Low Alloy Steels-Maraging 10XX, 11XX, 13XX		Slotting 1 x D	70-150	130-200	0.0018	0.0025	0.0037	0.0053	0.0068	0.0080	0.0100
		Heavy Profiling			0.0022	0.0029	0.0042	0.0059	0.0074	0.0090	0.0115
CAST IRONS ISO-K											
Ductile Iron Ductile Cast Iron		Slotting Axial 1 x D	40-80	70-130	0.0015	0.0019	0.0030	0.0042	0.0056	0.0065	0.0087
		Heavy Profiling			0.0018	0.0024	0.0034	0.0048	0.0061	0.0073	0.0093
Cast Iron Grey Cast Iron		Slotting 1 x D	60-150	120-200	0.0014	0.0018	0.0024	0.0034	0.0044	0.0053	0.0070
		Heavy Profiling			0.0014	0.0018	0.0027	0.0038	0.0050	0.0058	0.0078
TITANIUMS ISO-S											
Titanium Alloys 6AL-4V, ASTM 1, 2, 3, 6AL-2S For 5553, decrease SFM and IPM by 25%		Slotting Axial 1 x D	50-90	75-150	0.0015	0.0020	0.0028	0.0040	0.0052	0.0062	0.0080
		Heavy Profiling			0.0017	0.0022	0.0032	0.0045	0.0057	0.0067	0.0090
ALUMINUM ISO-N											
Aluminum Alloys 6061-T6, 7075		Slotting Axial 1 x D	400-650	650-950	0.0024	0.0058	0.0067	0.0103	0.0112	0.0180	0.0210
		Heavy Profiling			0.0027	0.0058	0.0076	0.0110	0.0120	0.0205	0.0260
					For Light Periphery Profiling increase above profiling chip load by 25 - 35 %						

All technical data provided are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE TEAM with questions.

Cobalt & HSS End Mills

MATERIAL	HEAT-RESISTANT COBALT BASE ALLOYS, HIGH TENSILE STEELS (50-55 C)				HEAT-RESISTANT BASE ALLOYS, HIGH STRENGTH STAINLESS STEELS, HIGH STRENGTH TITANIUM ALLOYS				HEAT-RESISTANT FERRITIC BASE ALLOYS MEDIUM STRENGTH STAINLESS STEELS UNALLOYED TITANIUM TOOL STEELS (30-40 C)				MACHINE STEEL, HARD BRASS AND BRONZE, ELECTROLYTIC COPPER MILD STEEL FORGINGS (20-30 C)				CAST IRON, MILD STEEL, HALF-HARD BRASS AND BRONZE				BRASS, BRONZE, ALLOYED ALUMINUM, ABRASIVE PLASTICS				ALUMINUM, PLASTICS, WOOD																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	SPEED	FEED	CHIP LOAD	PER TOOTH	SPEED	FEED	CHIP LOAD	PER TOOTH	SPEED	FEED	CHIP LOAD	PER TOOTH	SPEED	FEED	CHIP LOAD	PER TOOTH	SPEED	FEED	CHIP LOAD	PER TOOTH	SPEED	FEED	CHIP LOAD	PER TOOTH	SPEED	FEED	CHIP LOAD	PER TOOTH	SPEED	FEED	CHIP LOAD	PER TOOTH																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
DIA. OF END MILLS	5-10 SFM	10-15 SFM	15-20 SFM	20-40 SFM	40-60 SFM	60-80 SFM	80-100 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM	100-200 SFM	200-600 SFM																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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-.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	0005 -.002	12222-1528	0005 -.002	1528-3056	0005 -.002	3056-9168	0005 -.002	9168-12222	00

SPEED & FEED INFORMATION

Carbide Drills

SERIES: HDR, IDR, JDR, LDR, HDRNC

MATERIAL	ISO	CARBIDE SFM	HSSCO SFM	FEED RATE PER TOOTH (IPR)			
				1/16"	1/8"	1/4"	1/2"
Stainless Steels-Soft	M	80-300	20-40	0.0005	0.0005	0.0020	0.0040
Stainless Steels-Hard (PH)	M	40-100	15-25	0.0005	0.0005	0.0010	0.0015
Nickel Base Alloys	S	75-200	15-25	0.0005	0.0006	0.0010	0.0015
Inconel/Monel/Hastelloy	S	75-200	15-25	0.0005	0.0005	0.0010	0.0015
Titanium-Soft	S	80-350	20-25	0.0005	0.0020	0.0040	0.0050
Titanium-Hard	S	40-100	20-25	0.0005	0.0008	0.0020	0.0040
Low Carbon Steels	P	150-300	75-130	0.0005	0.0010	0.0020	0.0040
Die Steels	P	60-130	30-45	0.0005	0.0005	0.0020	0.0040
Hardened Steels > HRc 50	H	25-75	-	0.0005	0.0010	0.0020	0.0030
Cast Iron	K	100-300	60-110	0.0010	0.0020	0.0030	0.0050
Malleable Iron	K	65-200	40-80	0.0010	0.0020	0.0030	0.0050
Aluminium Alloys	N	100-400	150-250	0.0010	0.0020	0.0030	0.0050
Brass & Bronze	N	150-300	100-150	0.0005	0.0010	0.0020	0.0040
Copper	N	150-300	75-150	0.0010	0.0030	0.0050	0.0060
Magnesium	N	300-600	200-350	0.0015	0.0030	0.0050	0.0080
Plastics	N	150-450	70-150	0.0015	0.0030	0.0040	0.0060

Countersinks

MATERIAL	ISO	HSS SFM	COUNTERSINK TYPE	
			M42 8% COBALT WITH <u>TIN</u> SFM	CARBIDE SFM
Stainless Steels - Free Machining	M	30-80	40-100	80-125
Stainless Steels - Others	M	15-50	20-65	50-75
Inconels/Monels	S	30-50	40-65	50-75
Titaniums (6Al4V)	S	50-60	60-75	60-90
Steels Annealed	P	40-50	50-65	50-80
Steels HRc 18-24	P	30-40	40-50	40-60
Steels HRc 25-37	P	25-35	30-45	35-55
Mild Steels	P	70-100	85-125	80-170
Cast Iron	K	75-125	95-150	125-225
Malleable Iron	K	80-90	100-115	90-150
Aluminums Alloys	N	150-250	180-300	300-500
Brass (Bronze)	N	75-125	95-150	150-250
Magnesium	N	125-250	150-300	250-400
Plastics	N	100-250	125-300	250-400

► Multiple flute countersinks are designed for increased feed rates. A controlled feed rate will result in better surface finish.

► All Melin countersinks are manufactured on CNC grinders to ensure consistent and accurate flute spacing. Carbide countersinks should be used in rigid tool holders to maximize tool life.

All technical data provided are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE TEAM with questions.

Countersinks

Nose Diameter for Pre-Setting CNC Precision Countersinks

SIZE	NC POINT DIAMETER					
	60°	82°	90°	100°	110°	120°
0.188	0.058	0.032	0.032	0.032	0.032	0.032
0.250	0.078	0.046	0.046	0.046	0.046	0.046
0.313	0.080	0.047	0.047	0.047	0.047	0.047
0.375	0.125	0.078	0.078	0.078	0.062	0.062
0.438	0.140	0.096	0.096	0.096	0.070	0.070
0.500	0.156	0.109	0.109	0.109	0.078	0.078
0.625	0.203	0.125	0.125	0.125	0.109	0.109
0.750	0.250	0.156	0.156	0.156	0.125	0.125
0.875	0.281	0.172	0.172	0.172	0.140	0.140
1.000	0.328	0.203	0.203	0.203	0.171	0.171

Carbide Burs

SERIES: Carbide Burs

Bur Diameter	RPM
1/8 Solid Carbide	45,000-50,000
3/16 Solid Carbide	35,000-40,000
3/16 Carbide Head Brazed to 1/8 Steel Shank	30,000-35,000
1/4 Solid Carbide	30,000-35,000
Carbide Head Brazed to 1/8 Steel Shank	25,000-30,000
5/16 Carbide Head Brazed to 1/4 Steel Shank	25,000-30,000
3/8 Carbide Head Brazed to 1/4 Steel Shank	25,000-30,000
7/16 Carbide Head Brazed to 1/4 Steel Shank	20,000-25,000
1/2 Carbide Head Brazed to 1/4 Steel Shank	20,000-25,000
5/8 Carbide Head Brazed to 1/4 Steel Shank	15,000-20,000
3/4 Carbide Head Brazed to 1/4 Steel Shank	15,000-20,000
1 Carbide Head Brazed to 1/4 Steel Shank	12,000-18,000

All technical data provided are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc. Call our TECHNICAL SERVICE TEAM with questions.

SPEED & FEED INFORMATION

Calculations

End mill speed & feed formulas are the various individual equations that determine the proper overall machining setup or more specifically the speed of the cutting tool and the rate which it is fed into the work piece. Each individual formula is distinct in what it determines but coordinates with the others to ensure successful cutting tool application. You can visit the **TECHNICAL** section on www.melintool.com for more information.

INCH

$$\text{RPM} = \frac{\text{Revolutions Per Minute}}{3.82 \times \text{SFM} / \text{Tool Dia}}$$

$$\text{SFM} = \frac{\text{Surface Foot Per Minute}}{.262 \times \text{RPM} \times \text{Tool Dia}}$$

$$\text{CPT or IPT} = \frac{\text{Chip-Load Per Tooth}}{\text{IPM} / \text{RPM} / \text{No. Of Flutes}}$$

$$\text{IPM} = \frac{\text{Inches Per Minute}}{\text{CPT} \times \text{RPM} \times \text{No. Of Flutes}}$$

$$\text{MRRCI} = \frac{\text{Metal Removal Rate Cubic Inches}}{\text{IPM} \times \text{Axial Doc} \times \text{Radial Woc}}$$

$$\text{IPR} = \frac{\text{Inches Per Revolution}}{\text{IPM} / \text{RPM}}$$

METRIC

$$\text{RPM} = \frac{\text{Revolutions Per Minute}}{1000 \times \text{M/MIN} / (3.14 \times \text{D})}$$

$$\text{M/MIN} = \frac{\text{Meters Per Minute}}{(3.14 \times \text{D} \times \text{RPM}) / 1000}$$

$$\text{Fz OR CPT} = \frac{\text{Chip-Load Per Tooth}}{\text{Feedrate (mm) per MIN} / (\text{Z} \times \text{RPM})}$$

$$\text{VF OR FPM} = \frac{\text{Feedrate (mm) Per Minute}}{\text{Feedrate (mm) per Tooth} \times \text{Z} \times \text{RPM}}$$

$$\begin{aligned} \text{D} &= \text{Cutter Dia.} \\ \text{Z} &= \text{No. Of Teeth.} \end{aligned}$$

EQUIVALENTS & CONVERSIONS:

ABBREVIATIONS

RPM	Revolutions Per Minute
SFM	Surface Feet Per Minute
CPT	Chip Load Per Tooth
IPM	Inches Per Minute
V _f	Millimeters Per Minute
ae	Radial Width of Cut
ap	Axial Depth of Cut
V _f	Millimeters Per Minute
Vc	Surface Meters Per Minute
Fz	Metric Chip Load Per Tooth

$$\text{N, n or Min}^{-1} = \text{RPM}$$

$$\text{Vc or M/MIN} = \text{SFM}$$

$$\text{Fz or mm/TOOTH} = \text{CPT}$$

$$\text{V}_f \text{ or mm/MIN} = \text{IPM}$$

$$\text{SFM} / 3.281 = \text{M/MIN}$$

$$\text{M/MIN} \times 3.281 = \text{SFM}$$

$$\text{mm/MIN} / 25.4 = \text{IPM}$$

$$\text{mm/TOOTH} / 25.4 = \text{CPT}$$



IMPERIAL

METRIC

$$\text{Inch} \times 25.4 = \text{Millimeter}$$

$$\text{Millimeter} \times .03937 = \text{Inch}$$

DECIMAL EQUIVALENT CHART

SIZE	DECIMAL	SIZE	DECIMAL	SIZE	DECIMAL	SIZE	DECIMAL	SIZE	DECIMAL
97	.0059	54	.0550	25	.1495	6.7mm	.2638	7/16"	.4375
96	.0063	1.4mm	.0551	3.8mm	.1496	17/64"	.2656	11.5mm	.4528
95	.0067	1.45mm	.0571	24	.1520	6.75mm	.2657	29/64"	.4531
94	.0071	1.5mm	.0591	3.9mm	.1535	H	.2660	15/32"	.4688
93	.0075	53	.0595	23	.1540	6.8mm	.2677	12mm	.4724
92	.0079	1.55mm	.0610	5/32"	.1562	6.9mm	.2717	31/64"	.4844
.2mm	.0079	1/16"	.0625	22	.1570	I	.2720	12.5mm	.4921
91	.0083	1.6mm	.0630	4mm	.1575	7mm	.2756	1/2"	.5000
90	.0087	52	.0635	21	.1590	J	.2770	13mm	.5118
.22mm	.0087	1.65mm	.0650	20	.1610	7.1mm	.2795	33/64"	.5156
89	.0091	1.7mm	.0669	4.1mm	.1614	K	.2810	17/32"	.5312
88	.0095	51	.0670	4.2mm	.1654	9/32"	.2812	13.5mm	.5315
.25mm	.0098	1.75mm	.0689	19	.1660	7.2mm	.2835	35/64"	.5469
87	.0100	50	.0700	4.25mm	.1673	7.25mm	.2854	14mm	.5512
86	.0105	1.8mm	.0709	4.3mm	.1693	7.3mm	.2874	9/16"	.5625
85	.0110	1.85mm	.0728	18	.1695	L	.2900	14.5mm	.5709
.28mm	.0110	49	.0730	11/64"	.1719	7.4mm	.2913	37/64"	.5781
84	.0115	1.9mm	.0748	17	.1730	M	.2950	15mm	.5906
.3mm	.0118	48	.0760	4.4mm	.1732	7.5mm	.2953	19/32"	.5938
83	.0120	1.95mm	.0768	16	.1770	19/64"	.2969	39/64"	.6094
82	.0125	5/64"	.0781	4.5mm	.1772	7.6mm	.2992	15.5mm	.6102
.32mm	.0126	47	.0785	15	.1800	N	.3020	5/8"	.6250
81	.0130	2mm	.0787	4.6mm	.1811	7.7mm	.3031	16mm	.6299
80	.0135	2.05mm	.0807	14	.1820	7.75mm	.3051	41/64"	.6406
.35mm	.0138	46	.0810	13	.1850	7.8mm	.3071	16.5mm	.6496
79	.0145	45	.0820	4.7mm	.1850	7.9mm	.3110	21/32"	.6562
1/64"	.0156	2.1mm	.0827	4.75mm	.1870	5/16"	.3125	17mm	.6693
.4mm	.0157	2.15mm	.0846	3/16"	.1875	8mm	.3150	43/64"	.6719
78	.0160	44	.0860	4.8mm	.1890	O	.3160	11/16"	.6875
.45mm	.0177	2.2mm	.0866	12	.1890	8.1mm	.3189	17.5mm	.6890
77	.0180	2.25mm	.0886	11	.1910	8.2mm	.3228	45/64"	.7031
.5mm	.0197	43	.0890	4.9mm	.1929	P	.3230	18mm	.7087
76	.0200	2.3mm	.0906	10	.1935	8.25mm	.3248	23/32"	.7188
75	.0210	2.35mm	.0925	9	.1960	8.3mm	.3268	18.5mm	.7283
.55mm	.0217	42	.0935	5mm	.1969	21/64"	.3281	47/64"	.7344
74	.0225	3/32"	.0938	8	.1990	8.4mm	.3307	19mm	.7480
.6mm	.0236	2.4mm	.0945	5.1mm	.2008	Q	.3320	3/4"	.7500
73	.0240	41	.0960	7	.2010	8.5mm	.3346	49/64"	.7656
72	.0250	2.45mm	.0965	13/64"	.2031	8.6mm	.3386	19.5mm	.7677
.65mm	.0256	40	.0980	6	.2040	R	.3390	25/32"	.7812
71	.0260	2.5mm	.0984	5.2mm	.2047	8.7mm	.3425	20mm	.7874
.7mm	.0276	39	.0995	5	.2055	11/32"	.3438	51/64"	.7969
70	.0280	38	.1015	5.25mm	.2067	8.75mm	.3445	20.5mm	.8071
69	.0292	2.6mm	.1024	5.3mm	.2087	8.8mm	.3465	13/16"	.8125
.75mm	.0295	37	.1040	4	.2090	S	.3480	21mm	.8268
68	.0310	2.7mm	.1063	5.4mm	.2126	8.9mm	.3504	53/64"	.8281
1/32"	.0312	36	.1065	3	.2130	9mm	.3543	27/32"	.8438
.8mm	.0315	2.75mm	.1083	5.5mm	.2165	T	.3580	21.5mm	.8465
67	.0320	7/64"	.1094	7/32"	.2188	9.1mm	.3583	55/64"	.8594
66	.0330	35	.1100	5.6mm	.2205	23/64"	.3594	22mm	.8661
.85mm	.0335	2.8mm	.1102	2	.2210	9.2mm	.3622	7/8"	.8750
65	.0350	34	.1110	5.7mm	.2244	9.25mm	.3642	22.5mm	.8858
.9mm	.0354	33	.1130	5.75mm	.2264	9.3mm	.3661	57/64"	.8906
64	.0360	2.9mm	.1142	1	.2280	U	.3680	23mm	.9055
63	.0370	32	.1160	5.8mm	.2283	9.4mm	.3701	29/32"	.9062
.95mm	.0374	3mm	.1181	5.9mm	.2323	9.5mm	.3740	59/64"	.9219
62	.0380	31	.1200	A	.2340	3/8"	.3750	23.5mm	.9252
61	.0390	3.1mm	.1220	15/64"	.2344	V	.3770	15/16"	.9375
1mm	.0394	1/8"	.1250	6mm	.2362	9.6mm	.3780	24mm	.9449
60	.0400	3.2mm	.1260	B	.2380	9.7mm	.3819	61/64"	.9531
59	.0410	3.25mm	.1280	6.1mm	.2402	9.75mm	.3839	24.5mm	.9646
1.05mm	.0413	30	.1285	C	.2420	9.8mm	.3858	31/32"	.9688
58	.0420	3.3mm	.1299	6.2mm	.2441	W	.3860	25mm	.9843
57	.0430	3.4mm	.1339	D	.2460	9.9mm	.3898	63/64"	.9844
1.1mm	.0433	29	.1360	6.25mm	.2461	25/64"	.3906	1"	1.0000
1.15mm	.0453	3.5mm	.1378	6.3mm	.2480	10mm	.3937		
56	.0465	28	.1405	E	.2500	X	.3970		
3/64"	.0469	9/64"	.1406	1/4"	.2500	Y	.4040		
1.2mm	.0472	3.6mm	.1417	6.4mm	.2520	13/32"	.4062		
1.25mm	.0492	27	.1440	6.5mm	.2559	Z	.4130		
1.3mm	.0512	3.7mm	.1457	F	.2570	10.5mm	.4134		
55	.0520	26	.1470	6.6mm	.2598	27/64"	.4219		
1.35mm	.0531	3.75mm	.1476	G	.2610	11mm	.4331		



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