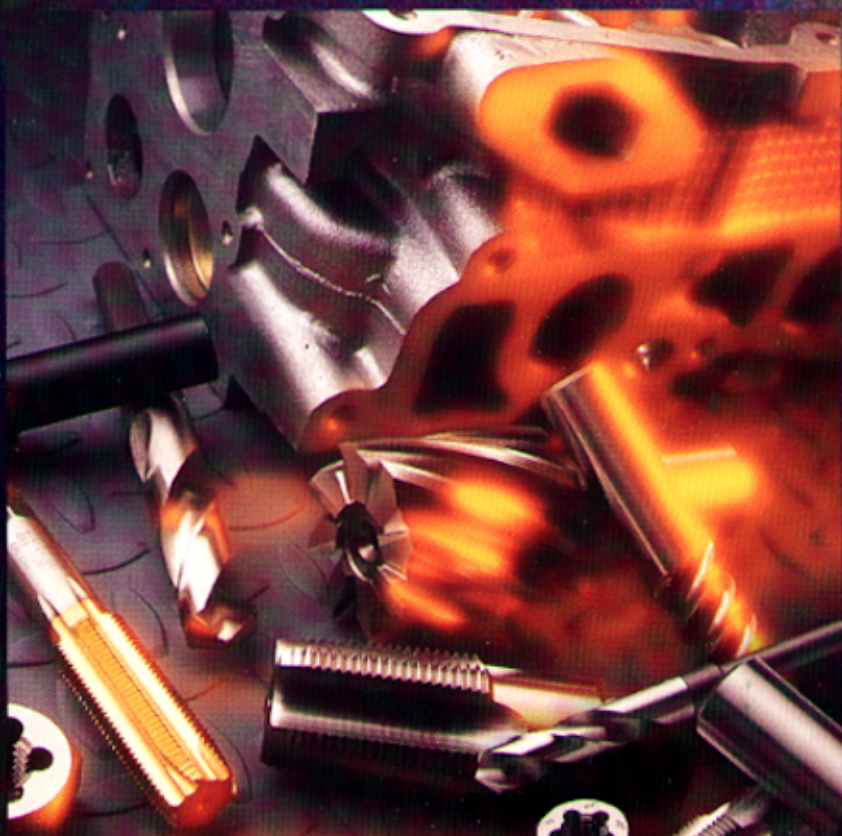




Cleveland Twist Drill

P r o d u c t C a t a l o g



North America's Choice Since 1876

Drills

Reamers

Taps

End Mills

Custom Tools

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Cleveland Twist Drill

P r o d u c t C a t a l o g

Cleveland Twist Drill tools are manufactured at product-specific plants across the globe. On-site development engineers and technical specialists assure that each tool meets the highest performance standards in the industry.

Cleveland Twist Products are manufactured in ISO 9000 registered facilities.



Cleveland Twist Drill products are supported by a complete program of technical support and training. You can contact a Greenfield Industries technical support specialist for information on:

- Additional Product Specifications and Applications
- Technical Assistance
- Distributor Training Schools
- Customer Training Workshops
- In-Plant Seminars
- End-User Productivity Analysis Process



To reach a technical support specialist dial:
888.GFI.TOOL (888.434.8665)

Or fax your request to:
888.GFI.FAXX (888.434.3299)

For information on how to reach your nearest Cleveland Twist Drill distributor in the U.S. and Canada, please call our Customer Service Center at **888.434.4311**.

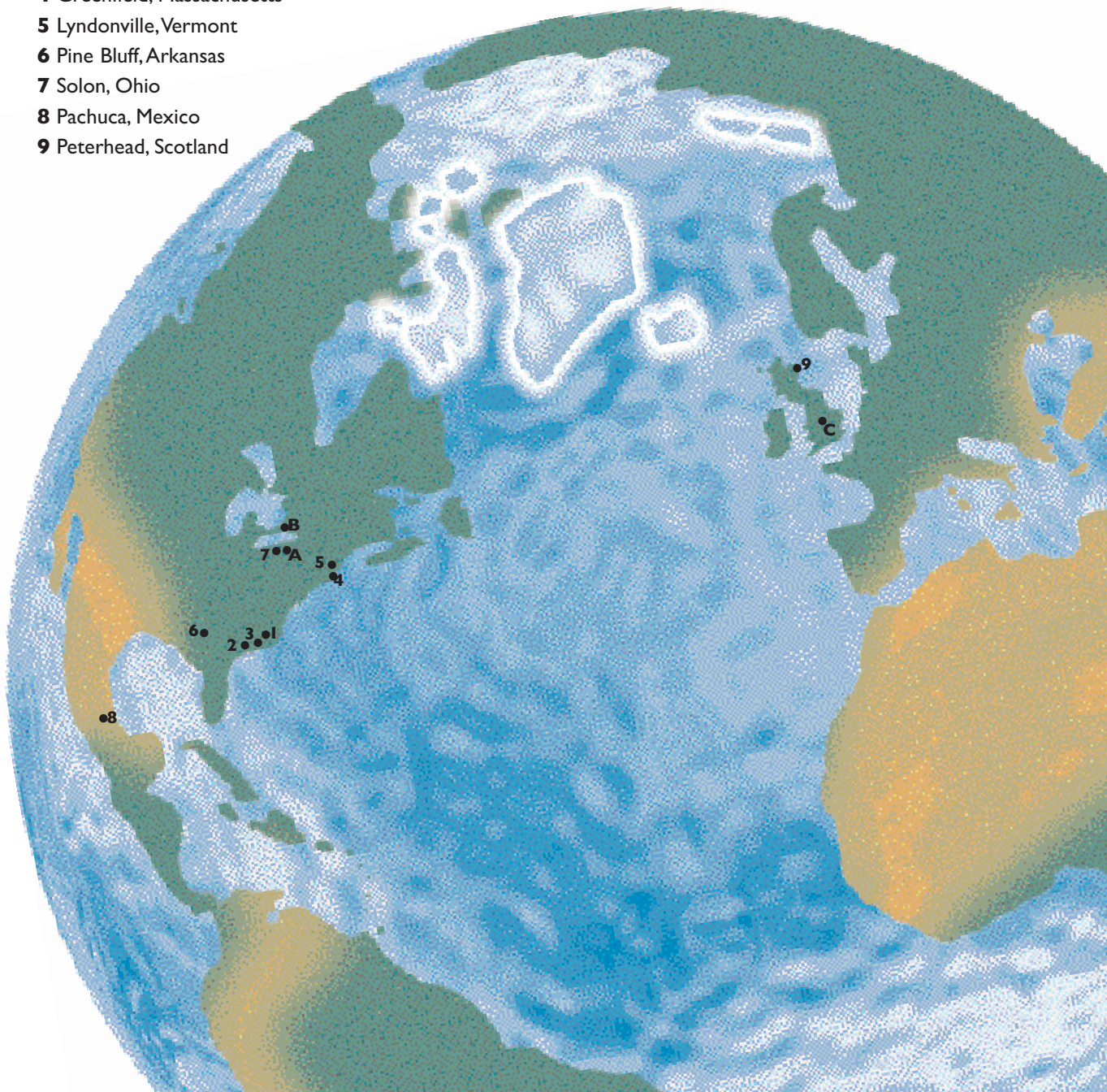
Cleveland *Across* the globe

Manufacturing Locations:

- 1** Asheboro, North Carolina
- 2** Augusta, Georgia
- 3** Clemson, South Carolina
- 4** Greenfield, Massachusetts
- 5** Lyndonville, Vermont
- 6** Pine Bluff, Arkansas
- 7** Solon, Ohio
- 8** Pachuca, Mexico
- 9** Peterhead, Scotland

Distribution Centers:

- A** Parma, Ohio
- B** Rexdale, Ontario, Canada
- C** Birmingham, U.K.



Coatings &

Why use CTD coatings?

Cleveland Selected Products are enhanced with improved TiN and NEW TiCN multi-layer coatings.

Cleveland's cutting tools with TiN or TiCN coatings provide exceptional performance benefits. CTD coatings are matched with designs which are intended for aggressive material removal with significant increases in tool life and machining rates.

- Coatings reduce heat and abrasion to increase tool life.
- Increased lubricity of the coating surface reduces material adhesion and built-up-edge enabling even higher feed rates.
- Coatings reduce the amount of torque required for machining to allow more efficient use of your equipment.
- Coatings require an increase in machining speeds to achieve optimum performance.
- Other "state of the art" coatings can be applied to any tool per your request.

Bright Coating:



- Bronze in color.
- Intended for general machining of steels.
- Operate at conventional cobalt speeds and heavier feed rates.

TiN (Titanium Nitride) Coating:



- Gold in color.
- Intended for aggressive machining of steels.
- Require increase of 25% to 30% in machining speed vs. bright speeds.

TiCN (Titanium Carbonitride) Coating:



- Blue-gray in color.
- Intended for very aggressive machining of stainless steels and non-ferrous materials.
- Extremely hard, wear resistant.
- Require increase of 35% to 50% in machining speeds vs. bright speeds.

TiAlN (Titanium Aluminum Nitride) Coating:



- Violet/blue-gray in color.
- Intended for aggressive machining of stainless steels, high alloy carbon steels, nickel-based high temperature alloys and titanium alloys.
- Extremely hard, wear resistant.
- Require increase of 75% to 100% in machining speeds vs. bright speeds.

Material Applications

The icons pictured for individual tools represent the materials that each tool is designed to most effectively cut. They, however, are not necessarily the only materials that can be cut.

The material icons will appear in a row directly underneath the list number as pictured below.



If you have questions about which tool is right for your application, please call our Technical Service Center at:

888.434.8665

Spec & Info
Drills:



Drills • Picture Index

High Performance:

List #1980 Q PM Coolant Feeding Drill - TiN



Substrate - Powder Metal	Shank - Straight w/Flat
Length - Regular	Point - 140°
Surface Treatment - TiN	Coolant - Coolant Feed



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List #1990 Q Carbide Drill - TiN



Substrate - Micrograin Carbide	Shank - Straight w/Flat
Length - Regular	Point - 140°
Surface Treatment - TiN	



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List #2165 Parabolic Screw Machine Drill



Substrate - HSS	Shank - Straight
Length - Screw Machine Length	Point - 118° Notched
Surface Treatment - Bright	



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List #2165TN Parabolic Screw Machine Drill -TiN



Substrate - HSS	Shank - Straight
Length - Screw Machine Length	Point - 118° Notched
Surface Treatment - TiN	



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List #2065 Parabolic Jobber Drill



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118° Notched
Surface Treatment - Bright	



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List #2065TN Parabolic Jobber -TiN



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118° Notched
Surface Treatment - TiN	



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List #2565 Parabolic Taper Drill



Substrate - HSS	Shank - Straight with Tang
Length - Taper Length	Point - 118° Notched
Surface Treatment - Bright	



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List #2565TN Parabolic Taper Drill -TiN



Substrate - HSS	Shank - Straight with Tang
Length - Taper Length	Point - 118° Notched
Surface Treatment - TiN	



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List #2590 HD Straight Shank Coolant Feeding High Helix Drill



Substrate - HSS	Shank - Straight
Length - Regular	Point - 118° R Notched
Surface Treatment - Black Oxide	Coolant - Coolant Feed



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List #2580 HD Straight Shank Coolant Feeding Low Helix Drill



Substrate - HSS	Shank - Straight
Length - Regular	Point - 118° R Notched
Surface Treatment - Black Oxide	Coolant - Coolant Feed



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List #2480 Taper Shank Coolant Feeding Drill



Substrate - HSS	Shank - Taper with Tang
Length - Taper Shank Length	Point - 118° R Notched
Surface Treatment - Black Oxide	Coolant - Coolant Feed



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Drills • Picture Index

High Performance:

List # 2490 Taper Shank Coolant Feeding Coolant Inducer Drill



Substrate - HSS	Shank - Taper with Tang
Length - Taper Shank Length	Point - 118° R Notched
Surface Treatment - Black Oxide	Coolant - Coolant Feed



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List # 927E Extra Length Coolant Feeding Taper Shank Drill



Substrate - HSS	Shank - Taper with Tang
Length - Extra Length	Point - 118° R Notched
Surface Treatment - Black Oxide	Coolant - Coolant Feed

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List # 3780 AMD Drill



Substrate - Cobalt	Shank - Straight
Length - Jobber Length	Point - Modified 135° Split
Surface Treatment - Black Oxide	



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List # 2635 NC Spotting Drill - Short Length



Substrate - HSS	Shank - Straight
Length - Short Length	Point - 90° and 120° Helical Point
Surface Treatment - Bright	



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List # 2645 NC Spotting Drill - Long Length



Substrate - HSS	Shank - Straight
Length - Long Length	Point - 90° and 120° Helical Point
Surface Treatment - Bright	



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List # 1727 Solid Carbide Heavy Duty Drill



Substrate - Solid Carbide	Shank - Straight
Length - Regular	Point - 4 Facet Point
Surface Treatment - Bright	



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General Purpose:

List # 2120 Right Hand Screw Machine Drill



Substrate - HSS	Shank - Straight
Length - Screw Machine Length	Point - 118°
Surface Treatment - Bright	



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List # 2125 Left Hand Screw Machine Drill



Substrate - HSS	Shank - Straight
Length - Screw Machine Length	Point - 118°
Surface Treatment - Bright	



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List # 2002 Jobber Length GP Bright Finish Drill



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118°
Surface Treatment - Bright	



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Drills • Picture Index

General Purpose:

List # 2001 Jobber Length GP Surface Treated Drill



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 2004 Jobber Length GP Surface Treated Drill - Tanged



Substrate - HSS	Shank - Straight with Tang
Length - Jobber Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 2006 Left Hand GP Jobber Drill



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118°
Surface Treatment - Bright	



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List # 2002TN Jobber Length TiN Coated



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118°
Surface Treatment - TiN	



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List # 2510 Straight Shank Taper Length Drill



Substrate - HSS	Shank - Straight
Length - Taper Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 950E Extra Length Straight Shank Drill



Substrate - HSS	Shank - Straight
Length - Extra Length	Point - 118° K Notched
Surface Treatment - Black Oxide	



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List # 2410 Taper Shank GP Standard Shank Drill



Substrate - HSS	Shank - Taper with Tang
Length - Taper Shank Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 2412 Taper Shank with Oversized Shank Drill



Substrate - HSS	Shank - Taper with Tang
Length - Taper Shank Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 2411 Taper Shank with Undersized Shank Drill



Substrate - HSS	Shank - Taper with Tang
Length - Taper Shank Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 940E Extra Length Taper Shank Drill



Substrate - HSS	Shank - Taper with Tang
Length - Extra Length	Point - 118° K Notched
Surface Treatment - Black Oxide	



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Drills • Picture Index

Special Purpose:

List # 2012 High Helix Straight Shank Jobber Drill



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118°
Surface Treatment - Bright	



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List # 2550 High Helix Taper Length Drill



Substrate - HSS	Shank - Straight
Length - Taper Length	Point - 118°
Surface Treatment - Bright	



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List # 2020 Low Helix Jobber Drill



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118°
Surface Treatment - Bright	



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List # 2130 Aircraft Screw Machine Drill

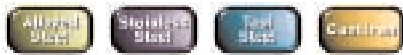


Substrate - HSS	Shank - Straight
Length - Screw Machine Length	Point - 135° Split
Surface Treatment - Black Oxide	



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List # 2022 Aircraft Jobber Drill



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 135° Split
Surface Treatment - Black Oxide	



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List # 2011 Cotter Pin Jobber Length Heavy Duty Drill

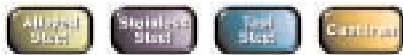


Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 135° Split
Surface Treatment - Black Oxide	



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List # 2540 Automotive Heavy Duty Taper Length Drill

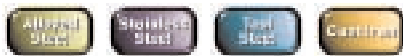


Substrate - HSS	Shank - Straight with Tang
Length - Automotive Taper Length	Point - 118° K Notched
Surface Treatment - Black Oxide	



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List # 2520 Automotive Taper Length Drill



Substrate - HSS	Shank - Straight with Tang
Length - Automotive Taper Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 3917-6 Aircraft Extension Drill - 6"



Substrate - HSS	Shank - Straight
Length - 6"	Point - 118° Split
Surface Treatment - Bright	



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List # 3917-12 Aircraft Extension Drill - 12"



Substrate - HSS	Shank - Straight
Length - 12"	Point - 118° Split
Surface Treatment - Bright	



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List # 3947-6 Aircraft Extension Drill - 6" - Surface Treated



Substrate - HSS	Shank - Straight
Length - 6"	Point - 135° Split
Surface Treatment - Black Oxide	



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Drills • Picture Index

Special Purpose:

List # 3947-12 Aircraft Extension Drill - 12" - Surface Treated



Substrate - HSS
Length - 12"
Surface Treatment - Black Oxide

Shank - Straight
Point - 135° Split



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List # 2420 Taper Shank Chipbreaker Drill



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide

Shank - Taper with Tang
Point - 118°



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List # 2133 Cobalt Screw Machine Drill



Substrate - Cobalt
Length - Screw Machine Length
Surface Treatment - Straw Color

Shank - Straight
Point - 135° Split



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List # 2013 Cobalt Jobber Length Drill



Substrate - Cobalt
Length - Jobber Length
Surface Treatment - Straw Color

Shank - Straight
Point - 135° Split



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List # 2513 Heavy Duty Taper Length Cobalt Drill



Substrate - Cobalt
Length - Taper Length
Surface Treatment - Straw Color

Shank - Straight
Point - 118° K Notched



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List # 2440 Taper Shank Cobalt Drill



Substrate - Cobalt
Length - Taper Shank Length
Surface Treatment - Straw Color

Shank - Taper
Point - 135° K Notched



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List # 2727 Carbide-Tipped Jobber Length Drill



Substrate - Carbide-Tipped
Length - Jobber Length
Surface Treatment - Bright

Shank - Straight
Point - 118° Cam Relieved



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List # 2745 Carbide-Tipped Taper Length Straight Shank Drill



Substrate - Carbide-Tipped
Length - Taper Length
Surface Treatment - Bright

Shank - Straight with Tang
Point - 118°



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List # 2740 Carbide-Tipped Taper Shank Drill



Substrate - Carbide-Tipped
Length - Taper Shank Length
Surface Treatment - Bright

Shank - Taper
Point - 118°



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List # 760 Carbide-Tipped Die Drill



Substrate - Carbide-Tipped
Length - Regular
Surface Treatment - Bright

Shank - Straight
Point - 118° Cam Relieved

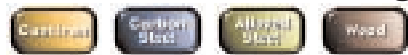


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Drills • Picture Index

Special Purpose:

List # 972 Metalworking Reduced 1/4" Shank Drill



Substrate - HSS	Shank - 1/4" Reduced
Length - Standard	Point - 118° Notched
Surface Treatment - Black Oxide	



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List # 995 Spotting & Centering Drill



Substrate - HSS	Shank - Straight
Length - Short Length	Point - 118°
Surface Treatment - Bright	



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List # 2560 Three Flute Core Drill



Substrate - HSS	Shank - Straight
Length - Taper Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 2570 Four Flute Core Drill



Substrate - HSS	Shank - Straight
Length - Taper Length	Point - 118°
Surface Treatment - Black Oxide	



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List # 2470 Four Flute Taper Shank Core Drill



Substrate - HSS	Shank - Taper
Length - Taper Shank Length	Point - 118°
Surface Treatment - Black Oxide	



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MRO:

List # 936 General Purpose Reduced 1/2" Shank Drill



Substrate - HSS	Shank - Straight
Length - 6"	Point - 118°
Surface Treatment - Black Oxide	



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List # 1890 Cle-Line® Reduced 1/4" Shank Drill



Substrate - HSS	Shank - 1/4" Reduced
Length - 4"	Point - 118°
Surface Treatment - Black Oxide	



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List # 1836 Cle-Line® Reduced Shank Drill - 1/2" - Surface Treated



Substrate - HSS	Shank - 1/2" Reduced
Length - 6"	Point - 118°
Surface Treatment - Black Oxide	



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List # 1830 Cle-Line® Jobber Length Drill - Bright Finish



Substrate - HSS	Shank - Straight
Length - Jobber Length	Point - 118°
Surface Treatment - Bright	



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List # 1810 Cle-Line® Screw Machine Length Drill - Surface Treated



Substrate - HSS	Shank - Straight
Length - Screw Machine length	Point - 135° Split
Surface Treatment - Black Oxide	



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Drills • Picture Index

MRO:

List # 1800 Cle-Line® Jobber Length Drill - Surface Treated



Substrate - HSS
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 118°



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List # 1804 Cle-Line® Jobber Length Drill - Surface Treated with Tang



Substrate - HSS
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Tanged
Point - 135° Split



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List # 1820 Cle-Line® Taper Length Drill - Surface Treated



Substrate - HSS
Length - Taper Length
Surface Treatment - Black Oxide
Shank - Straight with Tang
Point - 118°



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List # 1840 Cle-Line® Taper Length Drill - Surface Treated



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118°



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List # 750 TCT Masonry Drill - Regular Helix



Length - Regular
Surface Treatment - Bright
Shank - Reduced



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List # 749 TCT Masonry Drill - Fast Helix



Length - 18" OAL
Surface Treatment - Bright
Shank - Reduced



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List # 748 TCT Masonry Drill - Fast Helix



Length - 12" OAL
Surface Treatment - Bright
Shank - Reduced



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Countersinks:

List # 610 Center Reamers, 4 Flutes



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List # 791 Single-Flute Carbide Tipped Countersinks



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List # 793 Three-Flute Carbide Tipped Countersinks



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Drills • Picture Index

Countersinks:

List # 991 Three-Flute Carbide Tipped Machine Countersinks



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List # 1001 Single-Flute Countersink - HSS



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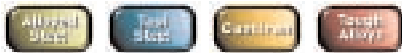
List # 1003 Three-Flute Countersink - HSS



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Drills &

List # 996 (Bell Type) Combined Drill and



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List # 998 (Plain Type) Combined Drill and Countersink



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List # 1798 Solid Carbide Combined Drill and Countersink



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Sockets and Drifts:

List # 100 Rough Sockets for Taper Shank Tool



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List # 102 Fitted Sockets



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List # 103 Screw Machine Sockets



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List # 104 Sleeves or Shell Sockets For Taper Shank



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List # 105 Drill Drifts



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Drills • High Performance

List #1980 Q PM Coolant Feeding Drill -



Substrate - Powder Metal
Length - Regular
Surface Treatment - TiN
Shank - Straight w/Flat
Point - 140°
Coolant - Coolant Feed



Features:

- Controlled 140° point is regrindable on conventional equipment
- Powdered metal for better edge retention & longer life
- Set screw shank prevents drill slippage
- TiN coating for higher feeds & speeds, reduced heat at the cutting edge, added lubricity & longer tool life
- Higher penetration rates

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
13/64	.2031	5.16	4-1/4	1-3/4	C16342
5.5mm	.2165	5.50	4-1/4	1-3/4	C16343
6.0mm	.2362	6.00	4-1/4	1-3/4	C16344
1/4	.2500	6.35	4-1/4	1-3/4	C50227
6.6mm	.2598	6.60	4-3/8	1-7/8	C16345
17/64	.2656	6.75	4-3/8	1-7/8	C50228
1	.2720	6.91	4-1/2	2	C16346
8.0mm	.3150	8.00	4-3/4	2-1/4	C16347
8.5mm	.3346	8.50	4-7/8	2-3/8	C16348
U	.3680	9.35	5-1/8	2-5/8	C16349
9/32	.2812	7.14	4-1/2	2	C50229
19/64	.2969	7.54	4-1/2	2	C50230
5/16	.3125	7.94	4-3/4	2-3/16	C50231
21/64	.3281	8.33	4-3/4	2-1/4	C50232
11/32	.3438	8.73	4-7/8	2-3/8	C50233
3/64	.0469	1.19	5	2-1/2	C50234
3/8	.3750	9.53	5-1/8	2-5/8	C50235
25/64	.3906	9.92	5-3/8	2-3/4	C50236
13/32	.4062	10.32	5-1/2	2-7/8	C50237

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
27/64	.4219	10.72	5-5/8	3	C50238
7/16	.4375	11.11	5-5/8	3	C50239
29/64	.4531	11.51	5-3/4	3-1/8	C50240
12.0mm	.4724	12.00	6	3-3/8	C16350
15/32	.4688	11.91	5-7/8	3-1/4	C50241
31/64	.4844	12.30	6	3-3/8	C50242
12.5mm	.4921	12.50	6	3-1/2	C16351
1/2	.5000	12.70	6	3-1/2	C50243
13.0mm	.5118	13.00	6-1/4	3-7/8	C16352
13.5mm	.5315	13.50	6-1/4	3-7/8	C16353
14.0mm	.5512	14.00	6-1/4	3-7/8	C16354
9/16	.5625	14.29	6-1/4	3-7/8	C50244
14.5mm	.5709	14.50	6-3/4	4-3/8	C16355
15.5mm	.6102	15.50	6-3/4	4-3/8	C16356
5/8	.6250	15.88	6-3/4	4-3/8	C50245
16.5mm	.6496	16.50	7-3/8	4-5/8	C16357
21/32	.6562	16.67	7-3/8	4-5/8	C16358
17.5mm	.6890	17.50	7-5/8	4-7/8	C16359

List #1990 Q Carbide Drill - TiN



Substrate - Micrograin Carbide
Length - Regular
Surface Treatment - TiN
Shank - Straight w/Flat
Point - 140°



Features:

- Optimized point & flute geometry for up to 5 times greater penetration rate than a standard HSS drill
- Size control to .0015 minimizing the need for reaming
- Produces controlled chips at high feed rates
- End mill type shank for use with end mill holders
- Higher penetration rates

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
13/64	.2031	5.16	2-15/16	1-1/16	3/8	C16324
5.5mm	.2165	5.50	2-15/16	1-1/16	3/8	C16325
6.0mm	.2362	6.00	2-15/16	1-1/16	3/8	C16326
1/4	.2500	6.35	2-15/16	1	3/8	C16400
6.5mm	.2559	6.50	2-15/16	1-1/16	3/8	C16327
17/64	.2626	6.67	2-15/16	1-1/16	3/8	C16401
1	.2720	6.91	2-15/16	1-1/8	3/8	C16328
9/32	.2812	7.14	2-15/16	1-1/8	3/8	C16402
19/64	.2969	7.54	2-15/16	1-3/16	3/8	C16403
5/16	.3125	7.94	2-15/16	1-1/4	3/8	C16404
8.0mm	.3150	8.00	2-15/16	1-1/4	3/8	C16329
21/64	.3281	8.33	3-1/8	1-5/16	3/8	C16405
8.5mm	.3346	8.50	3-1/8	1-3/8	3/8	C16330
11/32	.3438	8.73	3-1/8	1-3/8	3/8	C16406
23/64	.3594	9.13	3-1/8	1-7/16	3/8	C16407
U	.3680	9.35	3-1/8	1-1/2	3/8	C16331
3/8	.3750	9.53	3-1/8	1-1/2	3/8	C16408
25/64	.3906	9.92	3-5/8	1-9/16	1/2	C16409
13/32	.4062	10.32	3-5/8	1-5/8	1/2	C16410
27/64	.4219	10.72	3-5/8	1-11/16	1/2	C16411
7/16	.4375	11.11	3-5/8	1-3/4	1/2	C16412

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
29/64	.4531	11.51	3-13/16	1-13/16	1/2	C16413
12.0mm	.4724	12.00	3-13/16	1-15/16	1/2	C16332
15/32	.4688	11.91	3-13/16	1-7/8	1/2	C16414
31/64	.4844	12.30	3-13/16	1-15/16	1/2	C16415
12.5mm	.4921	12.50	3-13/16	2	1/2	C16333
1/2	.5000	12.70	3-13/16	2	1/2	C16416
13.0mm	.5118	13.00	4-7/16	2-1/4	5/8	C16334
13.5mm	.5315	13.50	4-7/16	2-1/4	5/8	C16335
14.0mm	.5512	14.00	4-7/16	2-1/4	5/8	C16336
9/16	.5625	14.29	4-7/16	2-1/4	5/8	C16417
14.5mm	.5709	14.50	4-7/16	2-1/2	5/8	C16337
15.5mm	.6102	15.50	4-7/16	2-1/2	5/8	C16338
5/8	.6250	15.88	4-7/16	2-1/2	5/8	C16418
16.5mm	.6496	16.50	5-1/16	2-3/4	3/4	C16339
21/32	.6562	16.67	5-1/16	2-3/4	3/4	C16340
17.5mm	.6890	17.50	5-1/16	3	3/4	C16341
11/16	.6875	17.46	5-1/16	2-3/4	3/4	C16419
3/4	.7500	19.05	5-1/16	3	3/4	C16420
13/16	.8125	20.64	5-15/16	3-1/4	1	C16421
7/8	.8750	22.23	5-15/16	3-1/2	1	C16422

Drills • High Performance

List #2165 Parabolic Screw Machine Drill



Substrate - HSS
Length - Screw Machine Length
Surface Treatment - Bright
Shank - Straight
Point - 118° Notched



Features:

- High spiral parabolic flute design for superior chip ejection in deep hole drilling
- 118° notched point improves centering
- Design allows drilling to 5x diameter

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/16	.0625	1.59	1-5/8	5/8	C16087
5/64	.0781	1.98	1-11/16	11/16	C16088
3/32	.0938	2.38	1-3/4	3/4	C16089
7/64	.1094	2.78	1-13/16	13/16	C16090
1/8	.1250	3.18	1-7/8	7/8	C16091
9/64	.1406	3.57	1-15/16	15/16	C16092
5/32	.1562	3.97	2-1/16	1	C16093
11/64	.1719	4.37	2-1/8	1-1/16	C16094
3/16	.1875	4.76	2-3/16	1-1/8	C16095
13/64	.2031	5.16	2-1/4	1-3/16	C16096
7/32	.2188	5.56	2-3/8	1-1/4	C16097
15/64	.2344	5.95	2-7/16	1-15/16	C16098
1/4, E	.2500	6.35	2-1/2	1-3/8	C16099
17/64	.2656	6.75	2-5/8	1-7/16	C16100
9/32	.2812	7.14	2-11/16	1-1/2	C16101
19/64	.2969	7.54	2-3/4	1-9/16	C16102
5/16	.3125	7.94	2-13/16	1-5/8	C16103
21/64	.3281	8.33	2-15/16	1-11/16	C16104
11/32	.3438	8.73	3	1-11/16	C16105
23/64	.3594	9.13	3-1/16	1-3/4	C16106
3/8	.3750	9.53	3-1/8	1-13/16	C16107
25/64	.3906	9.92	3-1/4	1-7/8	C16108
13/32	.4062	10.32	3-5/16	1-15/16	C16109
27/64	.4219	10.72	3-3/8	2	C16110
7/16	.4375	11.11	3-7/16	2-1/16	C16111
29/64	.4531	11.51	3-9/16	2-1/8	C16112
15/32	.4688	11.91	3-5/8	2-1/8	C16113
31/64	.4844	12.30	3-11/16	2-3/16	C16114
1/2	.5000	12.70	3-3/4	2-1/4	C16115
1	.2280	5.79	2-7/16	1-5/16	C16272
2	.2210	5.61	2-7/16	1-5/16	C16273
3	.2130	5.41	2-3/8	1-1/4	C16274
4	.2090	5.31	2-3/8	1-1/4	C16275
5	.2055	5.22	2-3/8	1-1/4	C16276
6	.2040	5.18	2-3/8	1-1/4	C16277
7	.2010	5.11	2-1/4	1-3/16	C16278
8	.1990	5.05	2-1/4	1-3/16	C16279
9	.1960	4.98	2-1/4	1-3/16	C16280
10	.1935	4.91	2-1/4	1-3/16	C16281
11	.1910	4.85	2-1/4	1-3/16	C16282
12	.1890	4.80	2-1/4	1-3/16	C16283

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
13	.1850	4.70	2-3/16	1-1/8	C16284
14	.1820	4.62	2-3/16	1-1/8	C16285
15	.1800	4.57	2-3/16	1-1/8	C16286
16	.1770	4.50	2-3/16	1-1/8	C16287
17	.1730	4.39	2-3/16	1-1/8	C16288
18	.1695	4.31	2-1/8	1-1/16	C16289
19	.1660	4.22	2-1/8	1-1/16	C16290
20	.1610	4.09	2-1/8	1-1/16	C16291
21	.1590	4.04	2-1/8	1-1/16	C16292
22	.1570	3.99	2-1/8	1-1/16	C16293
23	.1540	3.91	2-1/16	1	C16294
24	.1520	3.86	2-1/16	1	C16295
25	.1495	3.80	2-1/16	1	C16296
26	.1470	3.73	2-1/16	1	C16297
27	.1440	3.66	2-1/16	1	C16298
28	.1405	3.57	1-15/16	15/16	C16299
29	.1360	3.45	1-15/16	15/16	C16300
30	.1285	3.26	1-15/16	15/16	C16301
31	.1200	3.05	1-7/8	7/8	C16302
32	.1160	2.95	1-7/8	7/8	C16303
33	.1130	2.87	1-7/8	7/8	C16304
34	.1110	2.82	1-7/8	7/8	C16305
35	.1100	2.79	1-7/8	7/8	C16306
36	.1065	2.71	1-13/16	13/16	C16307
37	.1040	2.64	1-13/16	13/16	C16308
38	.1015	2.58	1-13/16	13/16	C16309
39	.0995	2.53	1-13/16	13/16	C16310
40	.0980	2.49	1-13/16	13/16	C16311
41	.0960	2.44	1-13/16	13/16	C16312
42	.0935	2.37	1-3/4	3/4	C16313
43	.0890	2.26	1-3/4	3/4	C16314
44	.0860	2.18	1-3/4	3/4	C16315
45	.0820	2.08	1-3/4	3/4	C16316
46	.0810	2.06	1-3/4	3/4	C16317
47	.0785	1.99	1-11/16	11/16	C16318
48	.0760	1.93	1-11/16	11/16	C16319
49	.0730	1.85	1-11/16	11/16	C16320
50	.0700	1.78	1-11/16	11/16	C16321
51	.0670	1.70	1-11/16	11/16	C16322
52	.0635	1.61	1-11/16	11/16	C16323

Drills • High Performance

List #2165T Parabolic Screw Machine Drill -TiN



Substrate - HSS
Length - Screw Machine Length
Surface Treatment - TiN
Shank - Straight
Point - 118° Notched



Features:

- High spiral parabolic flute design for superior chip ejection in deep hole drilling
- TiN coating for higher feeds & speeds, reduced heat at the cutting edge, added lubricity & longer tool life
- 118° notched point improves centering
- Design allows drilling to 5x diameter

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/16	.0625	1.59	1-5/8	5/8	C16000
5/64	.0781	1.98	1-11/16	11/16	C16001
3/32	.0938	2.38	1-3/4	3/4	C16002
7/64	.1094	2.78	1-13/16	13/16	C16003
1/8	.1250	3.18	1-7/8	7/8	C16004
9/64	.1406	3.57	1-15/16	15/16	C16005
5/32	.1562	3.97	2-1/16	1	C16006
11/64	.1719	4.37	2-1/8	1-1/16	C16007
3/16	.1875	4.76	2-3/16	1-1/8	C16008
13/64	.2031	5.16	2-1/4	1-3/16	C16009
7/32	.2188	5.56	2-3/8	1-1/4	C16010
15/64	.2344	5.95	2-7/16	1-15/16	C16011
1/4, E	.2500	6.35	2-1/2	1-3/8	C16012
17/64	.2656	6.75	2-5/8	1-7/16	C16013
9/32	.2812	7.14	2-11/16	1-1/2	C16014
19/64	.2969	7.54	2-3/4	1-9/16	C16015
5/16	.3125	7.94	2-13/16	1-5/8	C16016
21/64	.3281	8.33	2-15/16	1-11/16	C16017
11/32	.3438	8.73	3	1-11/16	C16108
23/64	.3594	9.13	3-1/16	1-3/4	C16019
3/8	.3750	9.53	3-1/8	1-13/16	C16020
25/64	.3906	9.92	3-1/4	1-7/8	C16021
13/32	.4062	10.32	3-5/16	1-15/16	C16022
27/64	.4219	10.72	3-3/8	2	C16023
7/16	.4375	11.11	3-7/16	2-1/16	C16024
29/64	.4531	11.51	3-9/16	2-1/8	C16025
15/32	.4688	11.91	3-5/8	2-1/8	C16026
31/64	.4844	12.30	3-11/16	2-3/16	C16027
1/2	.5000	12.70	3-3/4	2-1/4	C16028
1	.2280	5.79	2-7/16	1-5/16	C16116
2	.2210	5.61	2-7/16	1-5/16	C16117
3	.2130	5.41	2-3/8	1-1/4	C16118
4	.2090	5.31	2-3/8	1-1/4	C16119
5	.2055	5.22	2-3/8	1-1/4	C16120
6	.2040	5.18	2-3/8	1-1/4	C16121
7	.2010	5.11	2-1/4	1-3/16	C16122
8	.1990	5.05	2-1/4	1-3/16	C16123
9	.1960	4.98	2-1/4	1-3/16	C16124
10	.1935	4.91	2-1/4	1-3/16	C16125
11	.1910	4.85	2-1/4	1-3/16	C16126
12	.1890	4.80	2-1/4	1-3/16	C16127

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
13	.1850	4.70	2-3/16	1-1/8	C16128
14	.1820	4.62	2-3/16	1-1/8	C16129
15	.1800	4.57	2-3/16	1-1/8	C16130
16	.1770	4.50	2-3/16	1-1/8	C16131
17	.1730	4.39	2-3/16	1-1/8	C16132
18	.1695	4.31	2-1/8	1-1/16	C16133
19	.1660	4.22	2-1/8	1-1/16	C16134
20	.1610	4.09	2-1/8	1-1/16	C16135
21	.1590	4.04	2-1/8	1-1/16	C16136
22	.1570	3.99	2-1/8	1-1/16	C16137
23	.1540	3.91	2-1/16	1	C16138
24	.1520	3.86	2-1/16	1	C16139
25	.1495	3.80	2-1/16	1	C16140
26	.1470	3.73	2-1/16	1	C16141
27	.1440	3.66	2-1/16	1	C16142
28	.1405	3.57	1-15/16	15/16	C16143
29	.1360	3.45	1-15/16	15/16	C16144
30	.1285	3.26	1-15/16	15/16	C16145
31	.1200	3.05	1-7/8	7/8	C16146
32	.1160	2.95	1-7/8	7/8	C16147
33	.1130	2.87	1-7/8	7/8	C16148
34	.1110	2.82	1-7/8	7/8	C16149
35	.1100	2.79	1-7/8	7/8	C16150
36	.1065	2.71	1-13/16	13/16	C16151
37	.1040	2.64	1-13/16	13/16	C16152
38	.1015	2.58	1-13/16	13/16	C16153
39	.0995	2.53	1-13/16	13/16	C16154
40	.0980	2.49	1-13/16	13/16	C16155
41	.0960	2.44	1-13/16	13/16	C16156
42	.0935	2.37	1-3/4	3/4	C16157
43	.0890	2.26	1-3/4	3/4	C16158
44	.0860	2.18	1-3/4	3/4	C16159
45	.0820	2.08	1-3/4	3/4	C16160
46	.0810	2.06	1-3/4	3/4	C16161
47	.0785	1.99	1-11/16	11/16	C16162
48	.0760	1.93	1-11/16	11/16	C16163
49	.0730	1.85	1-11/16	11/16	C16164
50	.0700	1.78	1-11/16	11/16	C16165
51	.0670	1.70	1-11/16	11/16	C16166
52	.0635	1.61	1-11/16	11/16	C16167

Drills • High Performance

List #2065 Parabolic Jobber Drill



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118° Notched



Features:

- High spiral parabolic flute design for superior chip ejection in deep hole drilling
- 118° notched point improves centering
- Design allows drilling to 10x diameter without pecking

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1.60mm	.0630	1.60	48mm	22mm	C03166
1.65mm	.0650	1.65	51mm	25mm	C03167
1.70mm	.0669	1.70	51mm	25mm	C03168
1.75mm	.0689	1.75	51mm	25mm	C03169
1.80mm	.0709	1.80	51mm	25mm	C03170
1.85mm	.0728	1.85	51mm	25mm	C03171
1.90mm	.0748	1.90	51mm	25mm	C03172
1.95mm	.0768	1.95	51mm	25mm	C03173
2.00mm	.0787	2.00	54mm	29mm	C03174
2.05mm	.0807	2.05	54mm	29mm	C03175
2.10mm	.0827	2.10	54mm	29mm	C03176
2.15mm	.0846	2.15	54mm	29mm	C03177
2.20mm	.0866	2.20	57mm	32mm	C03178
2.25mm	.0886	2.25	57mm	32mm	C03179
2.30mm	.0906	2.30	57mm	32mm	C03180
2.35mm	.0925	2.35	57mm	32mm	C03181
2.40mm	.0945	2.40	60mm	35mm	C03182
2.45mm	.0965	2.45	60mm	35mm	C03183
2.50mm	.0984	2.50	60mm	35mm	C03184
2.60mm	.1024	2.60	64mm	37mm	C03185
2.70mm	.1063	2.70	64mm	37mm	C03186
2.80mm	.1102	2.80	67mm	38mm	C03187
2.90mm	.1142	2.90	70mm	41mm	C03188
3.00mm	.1181	3.00	70mm	41mm	C03189
3.10mm	.1220	3.10	70mm	41mm	C03190
3.20mm	.1260	3.20	70mm	41mm	C03191
3.30mm	.1299	3.30	73mm	45mm	C03192
3.40mm	.1339	3.40	73mm	45mm	C03193
3.50mm	.1378	3.50	73mm	45mm	C03194
3.60mm	.1417	3.60	76mm	48mm	C03195
3.70mm	.1457	3.70	76mm	48mm	C03196
3.80mm	.1496	3.80	79mm	51mm	C03197
3.90mm	.1535	3.90	79mm	51mm	C03198
4.00mm	.1575	4.00	83mm	54mm	C03199
4.10mm	.1614	4.10	83mm	54mm	C03200
4.20mm	.1654	4.20	83mm	54mm	C03201
4.30mm	.1693	4.30	83mm	54mm	C03202
4.40mm	.1732	4.40	86mm	56mm	C03203
4.50mm	.1772	4.50	86mm	56mm	C03204
4.60mm	.1811	4.60	86mm	56mm	C03205
4.70mm	.1850	4.70	89mm	59mm	C03206
4.80mm	.1890	4.80	89mm	59mm	C03207
4.90mm	.1929	4.90	92mm	62mm	C03208
5.00mm	.1969	5.00	92mm	62mm	C03209
5.10mm	.2008	5.10	92mm	62mm	C03210
5.20mm	.2047	5.20	95mm	64mm	C03211
5.30mm	.2087	5.30	95mm	64mm	C03212
5.40mm	.2126	5.40	95mm	64mm	C03213
5.50mm	.2165	5.50	95mm	64mm	C03214
5.60mm	.2205	5.60	95mm	67mm	C03215
5.70mm	.2244	5.70	98mm	67mm	C03216
5.80mm	.2283	5.80	98mm	67mm	C03217
5.90mm	.2323	5.90	98mm	67mm	C03218
6.00mm	.2362	6.00	102mm	70mm	C03219
6.10mm	.2402	6.10	102mm	70mm	C03220
6.20mm	.2441	6.20	102mm	70mm	C03221
6.30mm	.2480	6.30	102mm	70mm	C03222

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
6.40mm	.2520	6.40	105mm	73mm	C03223
6.50mm	.2559	6.50	105mm	73mm	C03224
6.60mm	.2598	6.60	105mm	73mm	C03225
6.70mm	.2638	6.70	105mm	73mm	C03226
6.80mm	.2677	6.80	105mm	73mm	C03227
6.90mm	.2717	6.90	105mm	73mm	C03228
7.00mm	.2756	7.00	105mm	73mm	C03229
7.10mm	.2795	7.10	108mm	75mm	C03230
7.20mm	.2835	7.20	108mm	75mm	C03231
7.30mm	.2874	7.30	108mm	75mm	C03232
7.40mm	.2913	7.40	111mm	78mm	C03233
7.50mm	.2953	7.50	111mm	78mm	C03234
7.60mm	.2992	7.60	111mm	78mm	C03235
7.70mm	.3031	7.70	114mm	81mm	C03236
7.80mm	.3071	7.80	114mm	81mm	C03237
7.90mm	.3110	7.90	114mm	81mm	C03238
8.00mm	.3150	8.00	114mm	81mm	C03239
8.10mm	.3189	8.10	114mm	84mm	C03240
8.20mm	.3228	8.20	114mm	84mm	C03241
8.30mm	.3268	8.30	114mm	84mm	C03242
8.40mm	.3307	8.40	121mm	87mm	C03243
8.50mm	.3346	8.50	121mm	87mm	C03244
8.60mm	.3386	8.60	121mm	87mm	C03245
8.70mm	.3425	8.70	121mm	87mm	C03246
8.80mm	.3465	8.80	124mm	89mm	C03247
8.90mm	.3504	8.90	124mm	89mm	C03248
9.00mm	.3543	9.00	124mm	89mm	C03249
9.10mm	.3583	9.10	124mm	89mm	C03250
9.20mm	.3622	9.20	127mm	92mm	C03251
9.30mm	.3661	9.30	127mm	92mm	C03252
9.40mm	.3701	9.40	127mm	92mm	C03253
9.50mm	.3740	9.50	127mm	92mm	C03254
9.60mm	.3780	9.60	130mm	95mm	C03255
9.70mm	.3819	9.70	130mm	95mm	C03256
9.80mm	.3858	9.80	130mm	95mm	C03257
9.90mm	.3898	9.90	130mm	95mm	C03258
10.00mm	.3937	10.00	130mm	95mm	C03259
10.20mm	.4016	10.20	133mm	98mm	C03260
10.30mm	.4055	10.30	133mm	98mm	C03261
10.50mm	.4134	10.50	137mm	100mm	C03262
10.80mm	.4252	10.80	140mm	103mm	C03263
11.00mm	.4331	11.00	140mm	103mm	C03264
11.20mm	.4409	11.20	143mm	106mm	C03265
11.50mm	.4528	11.50	143mm	106mm	C03266
11.80mm	.4646	11.80	146mm	110mm	C03267
12.00mm	.4724	12.00	150mm	111mm	C03268
12.20mm	.4803	12.20	150mm	111mm	C03269
12.50mm	.4921	12.50	152mm	114mm	C03270
A	.2340	5.94	3-7/8	2-5/8	C03376
B	.2380	6.05	4	2-3/4	C03377
C	.2420	6.15	4	2-3/4	C03378
D	.2460	6.25	4	2-3/4	C03379
F	.2570	6.53	4-1/8	2-7/8	C03380
G	.2610	6.63	4-1/8	2-7/8	C03381
H	.2660	6.76	4-1/8	2-7/8	C03382
I	.2720	6.91	4-1/8	2-7/8	C03383
J	.2770	7.04	4-1/8	2-7/8	C03384

(Continued on next page)

Drills • High Performance

List #2065 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
K	.2810	7.14	4-1/4	2-15/16	C03385
L	.2900	7.37	4-1/4	2-15/16	C03386
M	.2950	7.49	4-3/8	3-1/16	C03387
N	.3020	7.67	4-3/8	3-1/16	C03388
O	.3160	8.03	4-1/2	3-3/16	C03389
P	.3230	8.20	4-5/8	3-5/16	C03390
Q	.3320	8.43	4-3/4	3-7/16	C03391
R	.3390	8.61	4-3/4	3-7/16	C03392
S	.3480	8.84	4-7/8	3-1/2	C03393
T	.3580	9.09	4-7/8	3-1/2	C03394
U	.3680	9.35	5	3-5/8	C03395
V	.3770	9.58	5	3-5/8	C03396
W	.3860	9.80	5-1/8	3-3/4	C03397
X	.3970	10.08	5-1/8	3-3/4	C03398
Y	.4040	10.26	5-1/4	3-7/8	C03399
Z	.4130	10.49	5-1/4	3-7/8	C03400
1/16	.0625	1.59	1-7/8	7/8	C16029
5/64	.0781	1.98	2	1	C16030
3/32	.0938	2.38	2-1/4	1-1/4	C16031
7/64	.1094	2.78	2-5/8	1-1/2	C16032
1/3	.1250	3.18	2-3/4	1-5/8	C16033
9/64	.1406	3.57	2-7/8	1-3/4	C16034
5/32	.1562	3.97	3-1/8	2	C16035
11/64	.1719	4.37	3-1/4	2-1/8	C16036
3/16	.1875	4.76	13-1/2	2-5/16	C16037
13/64	.2031	5.16	3-5/8	2-7/16	C16038
7/32	.2188	5.56	3-3/4	2-1/2	C16039
15/64	.2344	5.95	3-7/8	2-5/8	C16040
1/4	.2500	6.35	4	2-3/4	C16041
17/64	.2656	6.75	4-1/8	2-7/8	C16042
9/32	.2812	7.14	4-1/4	2-15/16	C16043
19/64	.2969	7.54	4-3/8	3-1/16	C16044
5/16	.3125	7.94	4-1/2	3-3/16	C16045
21/64	.3281	8.33	4-5/8	3-5/16	C16046
11/32	.3438	8.73	4-3/4	3-7/16	C16047
23/64	.3594	9.13	4-7/8	3-1/2	C16048
3/8	.3750	9.53	5	3-5/8	C16049
25/64	.3906	9.92	5-1/8	3-3/4	C16050
13/32	.4062	10.32	5-1/4	3-7/8	C16051
27/64	.4219	10.72	5-3/8	3-15/16	C16052
7/16	.4375	11.11	5-1/2	4-1/16	C16053
29/64	.4531	11.51	5-5/8	4-3/16	C16054
15/32	.4688	11.91	5-3/4	4-5/16	C16055
31/64	.4844	12.30	5-7/8	4-3/8	C16056
1/2	.5000	12.70	6	4-1/2	C16057
1	.2280	5.79	3-7/8	2-5/8	C16168
2	.2210	5.61	3-7/8	2-5/8	C16169
3	.2130	5.41	3-3/4	2-1/2	C16170
4	.2090	5.31	3-3/4	2-1/2	C16171

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
5	.2055	5.22	3-3/4	2-1/2	C16172
6	.2040	5.18	3-3/4	2-1/2	C16173
7	.2010	5.11	3-5/8	2-7/16	C16174
8	.1990	5.05	3-5/8	2-7/16	C16175
9	.1960	4.98	3-5/8	2-7/16	C16176
10	.1935	4.91	3-5/8	2-7/16	C16177
11	.1910	4.85	3-1/2	2-5/16	C16178
12	.1890	4.80	3-1/2	2-5/16	C16179
13	.1850	4.70	3-1/2	2-5/16	C16180
14	.1820	4.62	3-3/8	2-3/16	C16181
15	.1800	4.57	3-3/8	2-3/16	C16182
16	.1770	4.50	3-3/8	2-3/16	C16183
17	.1730	4.39	3-3/8	2-3/16	C16184
18	.1695	4.31	3-1/4	2-1/8	C16185
19	.1660	4.22	3-1/4	2-1/8	C16186
20	.1610	4.09	3-1/4	2-1/8	C16187
21	.1590	4.04	3-1/4	2-1/8	C16188
22	.1570	3.99	3-1/8	2	C16189
23	.1540	3.91	3-1/8	2	C16190
24	.1520	3.86	3-1/8	2	C16191
25	.1495	3.80	3	1-7/8	C16192
26	.1470	3.73	3	1-7/8	C16193
27	.1440	3.66	3	1-7/8	C16194
28	.1405	3.57	2-7/8	1-3/4	C16195
29	.1360	3.45	2-7/8	1-3/4	C16196
30	.1285	3.26	2-3/4	1-5/8	C16197
31	.1200	3.05	2-3/4	1-5/8	C16198
32	.1160	2.95	2-3/4	1-5/8	C16199
33	.1130	2.87	2-5/8	1-1/2	C16200
34	.1110	2.82	2-5/8	1-1/2	C16201
35	.1100	2.79	2-5/8	1-1/2	C16202
36	.1065	2.71	2-1/2	1-7/16	C16203
37	.1040	2.64	2-1/2	1-7/16	C16204
38	.1015	2.58	2-1/2	1-7/16	C16205
39	.0995	2.53	2-3/8	1-3/8	C16206
40	.0980	2.49	2-3/8	1-3/8	C16207
41	.0960	2.44	2-3/8	1-3/8	C16208
42	.0935	2.37	2-1/4	1-1/4	C16209
43	.0890	2.26	2-1/4	1-1/4	C16210
44	.0860	2.18	2-1/8	1-1/8	C16211
45	.0820	2.08	2-1/8	1-1/8	C16212
46	.0810	2.06	2-1/8	1-1/8	C16213
47	.0785	1.99	2	1	C16214
48	.0760	1.93	2	1	C16215
49	.0730	1.85	2	1	C16216
50	.0700	1.78	2	1	C16217
51	.0670	1.70	2	1	C16218
52	.0635	1.61	1-7/8	7/8	C16219

Drills • High Performance

List #2065TN Parabolic Jobber -TiN



Substrate - HSS
Length - Jobber Length
Surface Treatment - TiN
Shank - Straight
Point - 118° Notched



Features:

- High spiral parabolic flute design for superior chip ejection in deep hole drilling
- TiN coating for higher feeds & speeds, reduced heat at the cutting edge, added lubricity & longer tool life
- 118° notched point for superior chip ejection in deep hole drilling
- Design allows drilling to 10x diameter

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1.60mm	.0630	1.60	48mm	22mm	C03271
1.65mm	.0650	1.65	51mm	25mm	C03272
1.70mm	.0669	1.70	51mm	25mm	C03273
1.75mm	.0689	1.75	51mm	25mm	C03274
1.80mm	.0709	1.80	51mm	25mm	C03275
1.85mm	.0728	1.85	51mm	25mm	C03276
1.90mm	.0748	1.90	51mm	25mm	C03277
1.95mm	.0768	1.95	51mm	25mm	C03278
2.00mm	.0787	2.00	54mm	29mm	C03279
2.05mm	.0807	2.05	54mm	29mm	C03280
2.10mm	.0827	2.10	54mm	29mm	C03281
2.15mm	.0846	2.15	54mm	29mm	C03282
2.20mm	.0866	2.20	57mm	32mm	C03283
2.25mm	.0886	2.25	57mm	32mm	C03284
2.30mm	.0906	2.30	57mm	32mm	C03285
2.35mm	.0925	2.35	57mm	32mm	C03286
2.40mm	.0945	2.40	60mm	35mm	C03287
2.45mm	.0965	2.45	60mm	35mm	C03288
2.50mm	.0984	2.50	60mm	35mm	C03289
2.60mm	.1024	2.60	64mm	37mm	C03290
2.70mm	.1063	2.70	64mm	37mm	C03291
2.80mm	.1102	2.80	67mm	38mm	C03292
2.90mm	.1142	2.90	70mm	41mm	C03293
3.00mm	.1181	3.00	70mm	41mm	C03294
3.10mm	.1220	3.10	70mm	41mm	C03295
3.20mm	.1260	3.20	70mm	41mm	C03296
3.30mm	.1299	3.30	73mm	45mm	C03297
3.40mm	.1339	3.40	73mm	45mm	C03298
3.50mm	.1378	3.50	73mm	45mm	C03299
3.60mm	.1417	3.60	76mm	48mm	C03300
3.70mm	.1457	3.70	76mm	48mm	C03301
3.80mm	.1496	3.80	79mm	51mm	C03302
3.90mm	.1535	3.90	79mm	51mm	C03303
4.00mm	.1575	4.00	83mm	54mm	C03304
4.10mm	.1614	4.10	83mm	54mm	C03305
4.20mm	.1654	4.20	83mm	54mm	C03306
4.30mm	.1693	4.30	83mm	54mm	C03307
4.40mm	.1732	4.40	86mm	56mm	C03308
4.50mm	.1772	4.50	86mm	56mm	C03309
4.60mm	.1811	4.60	86mm	56mm	C03310
4.70mm	.1850	4.70	89mm	59mm	C03311
4.80mm	.1890	4.80	89mm	59mm	C03312
4.90mm	.1929	4.90	92mm	62mm	C03313
5.00mm	.1969	5.00	92mm	62mm	C03314
5.10mm	.2008	5.10	92mm	62mm	C03315
5.20mm	.2047	5.20	95mm	64mm	C03316
5.30mm	.2087	5.30	95mm	64mm	C03317
5.40mm	.2126	5.40	95mm	64mm	C03318
5.50mm	.2165	5.50	95mm	64mm	C03319
5.60mm	.2205	5.60	95mm	67mm	C03320
5.70mm	.2244	5.70	98mm	67mm	C03321
5.80mm	.2283	5.80	98mm	67mm	C03322
5.90mm	.2323	5.90	98mm	67mm	C03323
6.00mm	.2362	6.00	102mm	70mm	C03324
6.10mm	.2402	6.10	102mm	70mm	C03325
6.20mm	.2441	6.20	102mm	70mm	C03326
6.30mm	.2480	6.30	102mm	70mm	C03327

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
6.40mm	.2520	6.40	105mm	73mm	C03328
6.50mm	.2559	6.50	105mm	73mm	C03329
6.60mm	.2598	6.60	105mm	73mm	C03330
6.70mm	.2638	6.70	105mm	73mm	C03331
6.80mm	.2677	6.80	105mm	73mm	C03332
6.90mm	.2717	6.90	105mm	73mm	C03333
7.00mm	.2756	7.00	105mm	73mm	C03334
7.10mm	.2795	7.10	108mm	75mm	C03335
7.20mm	.2835	7.20	108mm	75mm	C03336
7.30mm	.2874	7.30	108mm	75mm	C03337
7.40mm	.2913	7.40	111mm	78mm	C03338
7.50mm	.2953	7.50	111mm	78mm	C03339
7.60mm	.2992	7.60	111mm	78mm	C03340
7.70mm	.3031	7.70	114mm	81mm	C03341
7.80mm	.3071	7.80	114mm	81mm	C03342
7.90mm	.3110	7.90	114mm	81mm	C03343
8.00mm	.3150	8.00	114mm	81mm	C03344
8.10mm	.3189	8.10	114mm	84mm	C03345
8.20mm	.3228	8.20	114mm	84mm	C03346
8.30mm	.3268	8.30	114mm	84mm	C03347
8.40mm	.3307	8.40	121mm	87mm	C03348
8.50mm	.3346	8.50	121mm	87mm	C03349
8.60mm	.3386	8.60	121mm	87mm	C03350
8.70mm	.3425	8.70	121mm	87mm	C03351
8.80mm	.3465	8.80	124mm	89mm	C03352
8.90mm	.3504	8.90	124mm	89mm	C03353
9.00mm	.3543	9.00	124mm	89mm	C03354
9.10mm	.3583	9.10	124mm	89mm	C03355
9.20mm	.3622	9.20	127mm	92mm	C03356
9.30mm	.3661	9.30	127mm	92mm	C03357
9.40mm	.3701	9.40	127mm	92mm	C03358
9.50mm	.3740	9.50	127mm	92mm	C03359
9.60mm	.3780	9.60	130mm	95mm	C03360
9.70mm	.3819	9.70	130mm	95mm	C03361
9.80mm	.3858	9.80	130mm	95mm	C03362
9.90mm	.3898	9.90	130mm	95mm	C03363
10.00mm	.3937	10.00	130mm	95mm	C03364
10.20mm	.4016	10.20	133mm	98mm	C03365
10.30mm	.4055	10.30	133mm	98mm	C03366
10.50mm	.4134	10.50	137mm	100mm	C03367
10.80mm	.4252	10.80	140mm	103mm	C03368
11.00mm	.4331	11.00	140mm	103mm	C03369
11.20mm	.4409	11.20	143mm	106mm	C03370
11.50mm	.4528	11.50	143mm	106mm	C03371
11.80mm	.4646	11.80	146mm	110mm	C03372
12.00mm	.4724	12.00	150mm	111mm	C03373
12.20mm	.4803	12.20	150mm	111mm	C03374
12.50mm	.4921	12.50	152mm	114mm	C03375
A	.2340	5.94	3-7/8	2-5/8	C03401
B	.2380	6.05	4	2-3/4	C03402
C	.2420	6.15	4	2-3/4	C03403
D	.2460	6.25	4	2-3/4	C03404
F	.2570	6.53	4-1/8	2-7/8	C03405
G	.2610	6.63	4-1/8	2-7/8	C03406
H	.2660	6.76	4-1/8	2-7/8	C03407
I	.2720	6.91	4-1/8	2-7/8	C03408
J	.2770	7.04	4-1/8	2-7/8	C03409

(Continued on next page)

Drills • High Performance

List #2065TN continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
K	.2810	7.14	4-1/4	2-15/16	C03410
L	.2900	7.37	4-1/4	2-15/16	C03411
M	.2950	7.49	4-3/8	3-1/16	C03412
N	.3020	7.67	4-3/8	3-1/16	C03413
O	.3160	8.03	4-1/2	3-3/16	C03414
P	.3230	8.20	4-5/8	3-5/16	C03415
Q	.3320	8.43	4-3/4	3-7/16	C03416
R	.3390	8.61	4-3/4	3-7/16	C03417
S	.3480	8.84	4-7/8	3-1/2	C03418
T	.3580	9.09	4-7/8	3-1/2	C03419
U	.3680	9.35	5	3-5/8	C03420
V	.3770	9.58	5	3-5/8	C03421
W	.3860	9.80	5-1/8	3-3/4	C03422
X	.3970	10.08	5-1/8	3-3/4	C03423
Y	.4040	10.26	5-1/4	3-7/8	C03424
Z	.4130	10.49	5-1/4	3-7/8	C03425
1/16	.0625	1.59	1-7/8	7/8	C03705
5/64	.0781	1.98	2	1	C03711
3/32	.0938	2.38	2-1/4	1-1/4	C03718
7/64	.1094	2.78	2-5/8	1-1/2	C03725
1/3	.1250	3.18	2-3/4	1-5/8	C03731
9/64	.1406	3.57	2-7/8	1-3/4	C03735
5/32	.1562	3.97	3-1/8	2	C03741
11/64	.1719	4.37	3-1/4	2-1/8	C03747
3/16	.1875	4.76	13-1/2	2-5/16	C03753
13/64	.2031	5.16	3-5/8	2-7/16	C03760
7/32	.2188	5.56	3-3/4	2-1/2	C03765
15/64	.2344	5.95	3-7/8	2-5/8	C03769
1/4	.2500	6.35	4	2-3/4	C03773
17/64	.2656	6.75	4-1/8	2-7/8	C03776
9/32	.2812	7.14	4-1/4	2-15/16	C03781
19/64	.2969	7.54	4-3/8	3-1/16	C03784
5/16	.3125	7.94	4-1/2	3-3/16	C03786
21/64	.3281	8.33	4-5/8	3-5/16	C03787
11/32	.3438	8.73	4-3/4	3-7/16	C03790
23/64	.3594	9.13	4-7/8	3-1/2	C03793
3/8	.3750	9.53	5	3-5/8	C03795
25/64	.3906	9.92	5-1/8	3-3/4	C03798
13/32	.4062	10.32	5-1/4	3-7/8	C03801
27/64	.4219	10.72	5-3/8	3-15/16	C03803
7/16	.4375	11.11	5-1/2	4-1/16	C03804
29/64	.4531	11.51	5-5/8	4-3/16	C03805
15/32	.4688	11.91	5-3/4	4-5/16	C03806
31/64	.4844	12.30	5-7/8	4-3/8	C03807
1/2	.5000	12.70	6	4-1/2	C03808
1	.2280	5.79	3-7/8	2-5/8	C03767
2	.2210	5.61	3-7/8	2-5/8	C03766
3	.2130	5.41	3-3/4	2-1/2	C03764
4	.2090	5.31	3-3/4	2-1/2	C03763

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
5	.2055	5.22	3-3/4	2-1/2	C03762
6	.2040	5.18	3-3/4	2-1/2	C03761
7	.2010	5.11	3-5/8	2-7/16	C03759
8	.1990	5.05	3-5/8	2-7/16	C03758
9	.1960	4.98	3-5/8	2-7/16	C03757
10	.1935	4.91	3-5/8	2-7/16	C03756
11	.1910	4.85	3-1/2	2-5/16	C03755
12	.1890	4.80	3-1/2	2-5/16	C03754
13	.1850	4.70	3-1/2	2-5/16	C03752
14	.1820	4.62	3-3/8	2-3/16	C03751
15	.1800	4.57	3-3/8	2-3/16	C03750
16	.1770	4.50	3-3/8	2-3/16	C03749
17	.1730	4.39	3-3/8	2-3/16	C03748
18	.1695	4.31	3-1/4	2-1/8	C03746
19	.1660	4.22	3-1/4	2-1/8	C03745
20	.1610	4.09	3-1/4	2-1/8	C03744
21	.1590	4.04	3-1/4	2-1/8	C03743
22	.1570	3.99	3-1/8	2	C03742
23	.1540	3.91	3-1/8	2	C03740
24	.1520	3.86	3-1/8	2	C03739
25	.1495	3.80	3	1-7/8	C03738
26	.1470	3.73	3	1-7/8	C03737
27	.1440	3.66	3	1-7/8	C03736
28	.1405	3.57	2-7/8	1-3/4	C03734
29	.1360	3.45	2-7/8	1-3/4	C03733
30	.1285	3.26	2-3/4	1-5/8	C03732
31	.1200	3.05	2-3/4	1-5/8	C03730
32	.1160	2.95	2-3/4	1-5/8	C03729
33	.1130	2.87	2-5/8	1-1/2	C03728
34	.1110	2.82	2-5/8	1-1/2	C03727
35	.1100	2.79	2-5/8	1-1/2	C03726
36	.1065	2.71	2-1/2	1-7/16	C03724
37	.1040	2.64	2-1/2	1-7/16	C03723
38	.1015	2.58	2-1/2	1-7/16	C03722
39	.0995	2.53	2-3/8	1-3/8	C03721
40	.0980	2.49	2-3/8	1-3/8	C03720
41	.0960	2.44	2-3/8	1-3/8	C03719
42	.0935	2.37	2-1/4	1-1/4	C03717
43	.0890	2.26	2-1/4	1-1/4	C03716
44	.0860	2.18	2-1/8	1-1/8	C03715
45	.0820	2.08	2-1/8	1-1/8	C03714
46	.0810	2.06	2-1/8	1-1/8	C03713
47	.0785	1.99	2	1	C03712
48	.0760	1.93	2	1	C03710
49	.0730	1.85	2	1	C03709
50	.0700	1.78	2	1	C03708
51	.0670	1.70	2	1	C03707
52	.0635	1.61	1-7/8	7/8	C03706

Drills • High Performance

List #2565 Parabolic Taper Drill



Substrate - HSS
Length - Taper Length
Surface Treatment - Bright
Shank - Straight with Tang
Point - 118° Notched



Features:

- High spiral parabolic flute design for superior chip ejection in deep hole drilling
- 118° notched point for superior chip ejection in deep hole drilling
- Design allows drilling to 10x diameter or more without pecking (sufficient coolant required)

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
A	.2340	5.94	6-1/8	3-3/4	C03426
B	.2380	6.05	6-1/8	3-3/4	C03427
C	.2420	6.15	6-1/8	3-3/4	C03428
D	.2460	6.25	6-1/8	3-3/4	C03429
F	.2570	6.53	6-1/4	3-7/8	C03430
G	.2610	6.63	6-1/4	3-7/8	C03431
H	.2660	6.76	6-1/4	3-7/8	C03432
I	.2720	6.91	6-1/4	3-7/8	C03433
J	.2770	7.04	6-1/4	3-7/8	C03434
K	.2810	7.14	6-1/4	3-7/8	C03435
L	.2900	7.37	6-3/8	4	C03436
M	.2950	7.49	6-3/8	4	C03437
N	.3020	7.67	6-3/8	4	C03438
O	.3160	8.03	6-1/2	4-1/8	C03439
P	.3230	8.20	6-1/2	4-1/8	C03440
Q	.3320	8.43	6-1/2	4-1/8	C03441
R	.3390	8.61	6-1/2	4-1/8	C03442
S	.3480	8.84	6-3/4	4-1/4	C03443
T	.3580	9.09	6-3/4	4-1/4	C03444
U	.3680	9.35	6-3/4	4-1/4	C03445
V	.3770	9.58	7	4-3/8	C03446
W	.3860	9.80	7	4-3/8	C03447
X	.3970	10.08	7	4-3/8	C03448
Y	.4040	10.26	7	4-3/8	C03449
Z	.4130	10.49	7-1/4	4-5/8	C03450
1.60mm	.0630	1.60	95mm	51mm	C03810
1.65mm	.0650	1.65	95mm	51mm	C03811
1.70mm	.0669	1.70	95mm	51mm	C03812
1.75mm	.0689	1.75	95mm	51mm	C03813
1.80mm	.0709	1.80	95mm	51mm	C03814
1.85mm	.0728	1.85	95mm	51mm	C03815
1.90mm	.0748	1.90	95mm	51mm	C03816
1.95mm	.0768	1.95	95mm	51mm	C03817
2.00mm	.0787	2.00	108mm	57mm	C03818
2.05mm	.0807	2.05	108mm	57mm	C03819
2.10mm	.0827	2.10	108mm	57mm	C03820
2.15mm	.0846	2.15	108mm	57mm	C03821
2.20mm	.0866	2.20	108mm	57mm	C03822
2.25mm	.0886	2.25	108mm	57mm	C03823
2.30mm	.0906	2.30	108mm	57mm	C03824
2.35mm	.0925	2.35	108mm	57mm	C03825
2.40mm	.0945	2.40	117mm	64mm	C03826
2.45mm	.0965	2.45	117mm	64mm	C03827
2.50mm	.0984	2.50	117mm	64mm	C03828
2.60mm	.1024	2.60	117mm	64mm	C03829
2.70mm	.1063	2.70	117mm	64mm	C03830
2.80mm	.1102	2.80	130mm	70mm	C03831
2.90mm	.1142	2.90	130mm	70mm	C03832
3.00mm	.1181	3.00	130mm	70mm	C03833
3.10mm	.1220	3.10	130mm	70mm	C03834
3.20mm	.1260	3.20	137mm	76mm	C03835
3.30mm	.1299	3.30	137mm	76mm	C03836
3.40mm	.1339	3.40	137mm	76mm	C03837
3.50mm	.1378	3.50	137mm	76mm	C03838
3.60mm	.1417	3.60	137mm	76mm	C03839
3.70mm	.1457	3.70	137mm	76mm	C03840
3.80mm	.1496	3.80	137mm	76mm	C03841

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
3.90mm	.1535	3.90	137mm	76mm	C03842
4.00mm	.1575	4.00	146mm	86mm	C03843
4.10mm	.1614	4.10	146mm	86mm	C03844
4.20mm	.1654	4.20	146mm	86mm	C03845
4.30mm	.1693	4.30	146mm	86mm	C03846
4.40mm	.1732	4.40	146mm	86mm	C03847
4.50mm	.1772	4.50	146mm	86mm	C03848
4.60mm	.1811	4.60	146mm	86mm	C03849
4.70mm	.1850	4.70	146mm	86mm	C03850
4.80mm	.1890	4.80	152mm	92mm	C03853
4.90mm	.1929	4.90	152mm	92mm	C03854
5.00mm	.1969	5.00	152mm	92mm	C03855
5.10mm	.2008	5.10	152mm	92mm	C03856
5.20mm	.2047	5.20	152mm	92mm	C03857
5.30mm	.2087	5.30	152mm	92mm	C03858
5.40mm	.2126	5.40	152mm	92mm	C03859
5.50mm	.2165	5.50	152mm	92mm	C03860
5.60mm	.2205	5.60	156mm	95mm	C03861
5.70mm	.2244	5.70	156mm	95mm	C03862
5.80mm	.2283	5.80	156mm	95mm	C03863
5.90mm	.2323	5.90	156mm	95mm	C03864
6.00mm	.2362	6.00	156mm	95mm	C03865
6.10mm	.2402	6.10	156mm	95mm	C03866
6.20mm	.2441	6.20	156mm	95mm	C03867
6.30mm	.2480	6.30	156mm	95mm	C03868
6.40mm	.2520	6.40	159mm	98mm	C03869
6.50mm	.2559	6.50	159mm	98mm	C03870
6.60mm	.2598	6.60	159mm	98mm	C03871
6.70mm	.2638	6.70	159mm	98mm	C03872
6.80mm	.2677	6.80	159mm	98mm	C03873
6.90mm	.2717	6.90	159mm	98mm	C03874
7.00mm	.2756	7.00	159mm	98mm	C03875
7.10mm	.2795	7.10	159mm	98mm	C03876
7.20mm	.2835	7.20	162mm	102mm	C03877
7.30mm	.2874	7.30	162mm	102mm	C03878
7.40mm	.2913	7.40	162mm	102mm	C03879
7.50mm	.2953	7.50	162mm	102mm	C03880
7.60mm	.2992	7.60	162mm	102mm	C03881
7.70mm	.3031	7.70	162mm	102mm	C03882
7.80mm	.3071	7.80	162mm	102mm	C03883
7.90mm	.3110	7.90	162mm	102mm	C03884
8.00mm	.3150	8.00	165mm	105mm	C03885
8.10mm	.3189	8.10	165mm	105mm	C03886
8.20mm	.3228	8.20	165mm	105mm	C03887
8.30mm	.3268	8.30	165mm	105mm	C03888
8.40mm	.3307	8.40	165mm	105mm	C03889
8.50mm	.3346	8.50	165mm	105mm	C03890
8.60mm	.3386	8.60	165mm	105mm	C03891
8.70mm	.3425	8.70	165mm	105mm	C03892
8.80mm	.3465	8.80	171mm	108mm	C03893
8.90mm	.3504	8.90	171mm	108mm	C03894
9.00mm	.3543	9.00	171mm	108mm	C03895
9.10mm	.3583	9.10	171mm	108mm	C03896
9.20mm	.3622	9.20	171mm	108mm	C03897
9.30mm	.3661	9.30	171mm	108mm	C03898
9.40mm	.3701	9.40	171mm	108mm	C03899
9.50mm	.3740	9.50	171mm	108mm	C03900

(Continued on next page)

Drills • High Performance

List #2565 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9.60mm	.3780	9.60	178mm	111mm	C03901
9.70mm	.3819	9.70	178mm	111mm	C03902
9.80mm	.3858	9.80	178mm	111mm	C03903
9.90mm	.3898	9.90	178mm	111mm	C03904
10.00mm	.3937	10.00	178mm	111mm	C03905
10.20mm	.4016	10.20	178mm	111mm	C03906
10.30mm	.4055	10.30	178mm	111mm	C03907
10.50mm	.4134	10.50	184mm	117mm	C03908
10.80mm	.4252	10.80	184mm	117mm	C03909
11.00mm	.4331	11.00	184mm	117mm	C03910
11.20mm	.4409	11.20	190mm	121mm	C03911
11.50mm	.4528	11.50	190mm	121mm	C03912
11.80mm	.4646	11.80	290mm	121mm	C03913
12.00mm	.4724	12.00	197mm	121mm	C03914
12.20mm	.4803	12.20	197mm	121mm	C03915
12.50mm	.4921	12.50	197mm	121mm	C03916
1/16	.0625	1.59	3	1-3/4	C16058
5/64	.0781	1.98	3-3/4	2	C16059
3/32	.0938	2.38	4-1/4	2-1/4	C16060
7/64	.1094	2.78	4-5/8	2-1/2	C16061
1/8	.1250	3.18	5-1/8	2-3/4	C16062
9/64	.1406	3.57	5-3/8	3	C16063
5/32	.1562	3.97	5-3/8	3	C16064
11/64	.1719	4.37	5-3/4	3-3/8	C16065
3/16	.1875	4.76	5-3/4	3-3/8	C16066
13/64	.2031	5.16	6	3-5/8	C16067
7/32	.2188	5.56	6	3-5/8	C16068
15/64	.2344	5.95	6-1/8	3-3/4	C16069
1/4	.2500	6.35	6-1/8	3-3/4	C16070
17/64	.2656	6.75	6-1/4	3-7/8	C16071
9/32	.2812	7.14	6-1/4	3-7/8	C16072
19/64	.2969	7.54	6-3/8	4	C16073
5/16	.3125	7.94	6-3/8	4	C16074
21/64	.3281	8.33	6-1/2	4-1/8	C16075
11/32	.3438	8.73	6-1/2	4-1/8	C16076
23/64	.3594	9.13	6-3/4	4-1/4	C16077
3/8	.3750	9.53	6-3/4	4-1/4	C16078
25/64	.3906	9.92	7	4-3/8	C16079
13/32	.4062	10.32	7	4-3/8	C16080
27/64	.4219	10.72	7-1/4	4-5/8	C16081
7/16	.4375	11.11	7-1/4	4-5/8	C16082
29/64	.4531	11.51	7-1/2	4-3/4	C16083
15/32	.4688	11.91	7-1/2	4-3/4	C16084
31/64	.4844	12.30	7-3/4	4-3/4	C16085
1/2	.5000	12.70	7-3/4	4-3/4	C16086
1	.2280	5.79	6-1/8	3-3/4	C16220
2	.2210	5.61	6-1/8	3-3/4	C16221
3	.2130	5.41	6	3-5/8	C16222
4	.2090	5.31	6	3-5/8	C16223

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
5	.2055	5.22	6	3-5/8	C16224
6	.2040	5.18	6	3-5/8	C16225
7	.2010	5.11	6	3-5/8	C16226
8	.1990	5.05	6	3-5/8	C16227
9	.1960	4.98	6	3-5/8	C16228
10	.1935	4.91	6	3-5/8	C16229
11	.1910	4.85	6	3-5/8	C16230
12	.1890	4.80	6	3-5/8	C16231
13	.1850	4.70	5-3/4	3-3/8	C16232
14	.1820	4.62	5-3/4	3-3/8	C16233
15	.1800	4.57	5-3/4	3-3/8	C16234
16	.1770	4.50	5-3/4	3-3/8	C16235
17	.1730	4.39	5-3/4	3-3/8	C16236
18	.1695	4.31	5-3/4	3-3/8	C16237
19	.1660	4.22	5-3/4	3-3/8	C16238
20	.1610	4.09	5-3/4	3-3/8	C16239
21	.1590	4.04	5-3/4	3-3/8	C16240
22	.1570	3.99	5-3/4	3-3/8	C16241
23	.1540	3.91	5-3/8	3	C16242
24	.1520	3.86	5-3/8	3	C16243
25	.1495	3.80	5-3/8	3	C16244
26	.1470	3.73	5-3/8	3	C16245
27	.1440	3.66	5-3/8	3	C16246
28	.1405	3.57	5-3/8	3	C16247
29	.1360	3.45	5-3/8	3	C16248
30	.1285	3.26	5-3/8	3	C16249
31	.1200	3.05	5-1/8	2-3/4	C16250
32	.1160	2.95	5-1/8	2-3/4	C16251
33	.1130	2.87	5-1/8	2-3/4	C16252
34	.1110	2.82	5-1/8	2-3/4	C16253
35	.1100	2.79	5-1/8	2-3/4	C16254
36	.1065	2.71	4-5/8	2-1/2	C16255
37	.1040	2.64	4-5/8	2-1/2	C16256
38	.1015	2.58	4-5/8	2-1/2	C16257
39	.0995	2.53	4-5/8	2-1/2	C16258
40	.0980	2.49	4-5/8	2-1/2	C16259
41	.0960	2.44	4-5/8	2-1/2	C16260
42	.0935	2.37	4-1/4	2-1/4	C16261
43	.0890	2.26	4-1/4	2-1/4	C16262
44	.0860	2.18	4-1/4	2-1/4	C16263
45	.0820	2.08	4-1/4	2-1/4	C16264
46	.0810	2.06	4-1/4	2-1/4	C16265
47	.0785	1.99	4-1/4	2-1/4	C16266
48	.0760	1.93	3-3/4	2	C16267
49	.0730	1.85	3-3/4	2	C16268
50	.0700	1.78	3-3/4	2	C16269
51	.0670	1.70	3-3/4	2	C16270
52	.0635	1.61	3-3/4	2	C16271

Drills • High Performance

List #2565TN Parabolic Taper Drill -TiN



Substrate - HSS
Length - Taper Length
Surface Treatment - TiN
Shank - Straight with Tang
Point - 118° Notched



Features:

- High spiral parabolic flute design for superior chip ejection in deep hole drilling
- TiN coating for higher feeds & speeds, reduced heat at the cutting edge, added lubricity & longer tool life
- 118° notched point for superior chip ejection in deep hole drilling
- Design allows drilling to 10x diameter or more without pecking (sufficient coolant required)

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
A	.2340	5.94	6-1/8	3-3/4	C03970
B	.2380	6.05	6-1/8	3-3/4	C03972
C	.2420	6.15	6-1/8	3-3/4	C03974
D	.2460	6.25	6-1/8	3-3/4	C03976
F	.2570	6.53	6-1/4	3-7/8	C03980
G	.2610	6.63	6-1/4	3-7/8	C03982
H	.2660	6.76	6-1/4	3-7/8	C03984
I	.2720	6.91	6-1/4	3-7/8	C03987
J	.2770	7.04	6-1/4	3-7/8	C03989
K	.2810	7.14	6-1/4	3-7/8	C03991
L	.2900	7.37	6-3/8	4	C03994
M	.2950	7.49	6-3/8	4	C03996
N	.3020	7.67	6-3/8	4	C03999
O	.3160	8.03	6-1/2	4-1/8	C04004
P	.3230	8.20	6-1/2	4-1/8	C04007
Q	.3320	8.43	6-1/2	4-1/8	C04010
R	.3390	8.61	6-1/2	4-1/8	C04013
S	.3480	8.84	6-3/4	4-1/4	C04016
T	.3580	9.09	6-3/4	4-1/4	C04019
U	.3680	9.35	6-3/4	4-1/4	C04023
V	.3770	9.58	7	4-3/8	C04026
W	.3860	9.80	7	4-3/8	C04030
X	.3970	10.08	7	4-3/8	C04033
Y	.4040	10.26	7	4-3/8	C04035
Z	.4130	10.49	7-1/4	4-5/8	C04037
1.60mm	.0630	1.60	95mm	51mm	C03917
1.65mm	.0650	1.65	95mm	51mm	C03918
1.70mm	.0669	1.70	95mm	51mm	C03919
1.75mm	.0689	1.75	95mm	51mm	C03920
1.80mm	.0709	1.80	95mm	51mm	C03921
1.85mm	.0728	1.85	95mm	51mm	C03922
1.90mm	.0748	1.90	95mm	51mm	C03923
1.95mm	.0768	1.95	95mm	51mm	C03924
2.00mm	.0787	2.00	108mm	57mm	C03925
2.05mm	.0807	2.05	108mm	57mm	C03926
2.10mm	.0827	2.10	108mm	57mm	C03927
2.15mm	.0846	2.15	108mm	57mm	C03928
2.20mm	.0866	2.20	108mm	57mm	C03929
2.25mm	.0886	2.25	108mm	57mm	C03930
2.30mm	.0906	2.30	108mm	57mm	C03931
2.35mm	.0925	2.35	108mm	57mm	C03932
2.40mm	.0945	2.40	117mm	64mm	C03933
2.45mm	.0965	2.45	117mm	64mm	C03934
2.50mm	.0984	2.50	117mm	64mm	C03935
2.60mm	.1024	2.60	117mm	64mm	C03936
2.70mm	.1063	2.70	117mm	64mm	C03937
2.80mm	.1102	2.80	130mm	70mm	C03938
2.90mm	.1142	2.90	130mm	70mm	C03939
3.00mm	.1181	3.00	130mm	70mm	C03940
3.10mm	.1220	3.10	130mm	70mm	C03941
3.20mm	.1260	3.20	137mm	76mm	C03942
3.30mm	.1299	3.30	137mm	76mm	C03943
3.40mm	.1339	3.40	137mm	76mm	C03944
3.50mm	.1378	3.50	137mm	76mm	C03945
3.60mm	.1417	3.60	137mm	76mm	C03946
3.70mm	.1457	3.70	137mm	76mm	C03947
3.80mm	.1496	3.80	137mm	76mm	C03948

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
3.90mm	.1535	3.90	137mm	76mm	C03949
4.00mm	.1575	4.00	146mm	86mm	C03950
4.10mm	.1614	4.10	146mm	86mm	C03951
4.20mm	.1654	4.20	146mm	86mm	C03952
4.30mm	.1693	4.30	146mm	86mm	C03953
4.40mm	.1732	4.40	146mm	86mm	C03954
4.50mm	.1772	4.50	146mm	86mm	C03955
4.60mm	.1811	4.60	146mm	86mm	C03956
4.70mm	.1850	4.70	146mm	86mm	C03957
4.80mm	.1890	4.80	152mm	92mm	C03958
4.90mm	.1929	4.90	152mm	92mm	C03959
5.00mm	.1969	5.00	152mm	92mm	C03960
5.10mm	.2008	5.10	152mm	92mm	C03961
5.20mm	.2047	5.20	152mm	92mm	C03962
5.30mm	.2087	5.30	152mm	92mm	C03963
5.40mm	.2126	5.40	152mm	92mm	C03964
5.50mm	.2165	5.50	152mm	92mm	C03965
5.60mm	.2205	5.60	156mm	95mm	C03966
5.70mm	.2244	5.70	156mm	95mm	C03967
5.80mm	.2283	5.80	156mm	95mm	C03968
5.90mm	.2323	5.90	156mm	95mm	C03969
6.00mm	.2362	6.00	156mm	95mm	C03971
6.10mm	.2402	6.10	156mm	95mm	C03973
6.20mm	.2441	6.20	156mm	95mm	C03975
6.30mm	.2480	6.30	156mm	95mm	C03977
6.40mm	.2520	6.40	159mm	98mm	C03978
6.50mm	.2559	6.50	159mm	98mm	C03979
6.60mm	.2598	6.60	159mm	98mm	C03981
6.70mm	.2638	6.70	159mm	98mm	C03983
6.80mm	.2677	6.80	159mm	98mm	C03985
6.90mm	.2717	6.90	159mm	98mm	C03986
7.00mm	.2756	7.00	159mm	98mm	C03988
7.10mm	.2795	7.10	159mm	98mm	C03990
7.20mm	.2835	7.20	162mm	102mm	C03992
7.30mm	.2874	7.30	162mm	102mm	C03993
7.40mm	.2913	7.40	162mm	102mm	C03995
7.50mm	.2953	7.50	162mm	102mm	C03997
7.60mm	.2992	7.60	162mm	102mm	C03998
7.70mm	.3031	7.70	162mm	102mm	C04000
7.80mm	.3071	7.80	162mm	102mm	C04001
7.90mm	.3110	7.90	162mm	102mm	C04002
8.00mm	.3150	8.00	165mm	105mm	C04003
8.10mm	.3189	8.10	165mm	105mm	C04005
8.20mm	.3228	8.20	165mm	105mm	C04006
8.30mm	.3268	8.30	165mm	105mm	C04008
8.40mm	.3307	8.40	165mm	105mm	C04009
8.50mm	.3346	8.50	165mm	105mm	C04011
8.60mm	.3386	8.60	165mm	105mm	C04012
8.70mm	.3425	8.70	165mm	105mm	C04014
8.80mm	.3465	8.80	171mm	108mm	C04015
8.90mm	.3504	8.90	171mm	108mm	C04017
9.00mm	.3543	9.00	171mm	108mm	C04018
9.10mm	.3583	9.10	171mm	108mm	C04020
9.20mm	.3622	9.20	171mm	108mm	C04021
9.30mm	.3661	9.30	171mm	108mm	C04022
9.40mm	.3701	9.40	171mm	108mm	C04024
9.50mm	.3740	9.50	171mm	108mm	C04025

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Drills • High Performance

List #2565TN continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9.60mm	.3780	9.60	178mm	111mm	C04027
9.70mm	.3819	9.70	178mm	111mm	C04028
9.80mm	.3858	9.80	178mm	111mm	C04029
9.90mm	.3898	9.90	178mm	111mm	C04031
10.00mm	.3937	10.00	178mm	111mm	C04032
10.20mm	.4016	10.20	178mm	111mm	C04034
10.30mm	.4055	10.30	178mm	111mm	C04036
10.50mm	.4134	10.50	184mm	117mm	C04038
10.80mm	.4252	10.80	184mm	117mm	C04039
11.00mm	.4331	11.00	184mm	117mm	C04040
11.20mm	.4409	11.20	190mm	121mm	C04041
11.50mm	.4528	11.50	190mm	121mm	C04042
11.80mm	.4646	11.80	290mm	121mm	C04043
12.00mm	.4724	12.00	197mm	121mm	C04044
12.20mm	.4803	12.20	197mm	121mm	C04045
12.50mm	.4921	12.50	197mm	121mm	C04046
1/16	.0625	1.59	3	1-3/4	C05105
5/64	.0781	1.98	3-3/4	2	C05111
3/32	.0938	2.38	4-1/4	2-1/4	C05118
7/64	.1094	2.78	4-5/8	2-1/2	C05125
1/8	.1250	3.18	5-1/8	2-3/4	C05131
9/64	.1406	3.57	5-3/8	3	C05135
5/32	.1562	3.97	5-3/8	3	C05141
11/64	.1719	4.37	5-3/4	3-3/8	C05147
3/16	.1875	4.76	5-3/4	3-3/8	C05153
13/64	.2031	5.16	6	3-5/8	C05160
7/32	.2188	5.56	6	3-5/8	C05165
15/64	.2344	5.95	6-1/8	3-3/4	C05169
1/4	.2500	6.35	6-1/8	3-3/4	C05173
17/64	.2656	6.75	6-1/4	3-7/8	C05176
9/32	.2812	7.14	6-1/4	3-7/8	C05181
19/64	.2969	7.54	6-3/8	4	C05184
5/16	.3125	7.94	6-3/8	4	C05186
21/64	.3281	8.33	6-1/2	4-1/8	C05187
11/32	.3438	8.73	6-1/2	4-1/8	C05190
23/64	.3594	9.13	6-3/4	4-1/4	C05193
3/8	.3750	9.53	6-3/4	4-1/4	C05195
25/64	.3906	9.92	7	4-3/8	C05198
13/32	.4062	10.32	7	4-3/8	C05201
27/64	.4219	10.72	7-1/4	4-5/8	C05203
7/16	.4375	11.11	7-1/4	4-5/8	C05204
29/64	.4531	11.51	7-1/2	4-3/4	C05205
15/32	.4688	11.91	7-1/2	4-3/4	C05206
31/64	.4844	12.30	7-3/4	4-3/4	C05207
1/2	.5000	12.70	7-3/4	4-3/4	C05208
1	.2280	5.79	6-1/8	3-3/4	C05167
2	.2210	5.61	6-1/8	3-3/4	C05166
3	.2130	5.41	6	3-5/8	C05164
4	.2090	5.31	6	3-5/8	C05163

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
5	.2055	5.22	6	3-5/8	C05162
6	.2040	5.18	6	3-5/8	C05161
7	.2010	5.11	6	3-5/8	C05159
8	.1990	5.05	6	3-5/8	C05158
9	.1960	4.98	6	3-5/8	C05157
10	.1935	4.91	6	3-5/8	C05156
11	.1910	4.85	6	3-5/8	C05155
12	.1890	4.80	6	3-5/8	C05154
13	.1850	4.70	5-3/4	3-3/8	C05152
14	.1820	4.62	5-3/4	3-3/8	C05151
15	.1800	4.57	5-3/4	3-3/8	C05150
16	.1770	4.50	5-3/4	3-3/8	C05149
17	.1730	4.39	5-3/4	3-3/8	C05148
18	.1695	4.31	5-3/4	3-3/8	C05146
19	.1660	4.22	5-3/4	3-3/8	C05145
20	.1610	4.09	5-3/4	3-3/8	C05144
21	.1590	4.04	5-3/4	3-3/8	C05143
22	.1570	3.99	5-3/4	3-3/8	C05142
23	.1540	3.91	5-3/8	3	C05140
24	.1520	3.86	5-3/8	3	C05139
25	.1495	3.80	5-3/8	3	C05138
26	.1470	3.73	5-3/8	3	C05137
27	.1440	3.66	5-3/8	3	C05136
28	.1405	3.57	5-3/8	3	C05134
29	.1360	3.45	5-3/8	3	C05133
30	.1285	3.26	5-3/8	3	C05132
31	.1200	3.05	5-1/8	2-3/4	C05130
32	.1160	2.95	5-1/8	2-3/4	C05129
33	.1130	2.87	5-1/8	2-3/4	C05128
34	.1110	2.82	5-1/8	2-3/4	C05127
35	.1100	2.79	5-1/8	2-3/4	C05126
36	.1065	2.71	4-5/8	2-1/2	C05124
37	.1040	2.64	4-5/8	2-1/2	C05123
38	.1015	2.58	4-5/8	2-1/2	C05122
39	.0995	2.53	4-5/8	2-1/2	C05121
40	.0980	2.49	4-5/8	2-1/2	C05120
41	.0960	2.44	4-5/8	2-1/2	C05119
42	.0935	2.37	4-1/4	2-1/4	C05117
43	.0890	2.26	4-1/4	2-1/4	C05116
44	.0860	2.18	4-1/4	2-1/4	C05115
45	.0820	2.08	4-1/4	2-1/4	C05114
46	.0810	2.06	4-1/4	2-1/4	C05113
47	.0785	1.99	4-1/4	2-1/4	C05112
48	.0760	1.93	3-3/4	2	C05110
49	.0730	1.85	3-3/4	2	C05109
50	.0700	1.78	3-3/4	2	C05108
51	.0670	1.70	3-3/4	2	C05107
52	.0635	1.61	3-3/4	2	C05106

Drills • High Performance

List #2590 HD Straight Shank Coolant Feeding High Helix Drill



Substrate - HSS
Length - Regular
Surface Treatment - Black Oxide
Shank - Straight
Point - 118° R Notched
Coolant - Coolant Feed



Features:

- Heavy duty construction to increase tool strength
- High helix 34° angle/heavy parallel web for more efficient chip removal, particularly in deep hole non-ferrous applications
- Coolant feeding for deeper hole drilling & higher penetration rates. Keeps the cutting edge cooler for added tool life.

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
3/8	.3750	9.53	6-3/4	4-1/4	C10878
25/64	.3906	9.92	7	4-3/8	C10884
13/32	.4062	10.32	7	4-3/8	C10887
27/64	.4219	10.72	7-1/4	4-5/8	C10889
7/16	.4375	11.11	7-1/4	4-5/8	C10892
29/64	.4531	11.51	7-1/2	4-7/8	C10895
15/32	.4688	11.91	7-1/2	4-7/8	C10897
31/64	.4844	12.30	7-3/4	5	C10900
1/2	.5000	12.70	7-3/4	5	C10902
33/64	.5156	13.10	8	5-1/4	C10905
17/32	.5312	13.49	8	5-1/4	C10907
35/64	.5469	13.89	8-1/4	5-3/8	C10910
9/16	.5625	14.29	8-1/4	5-3/8	C10913
37/64	.5781	14.68	8-1/2	5-5/8	C10915
19/32	.5938	15.08	8-1/2	5-5/8	C10918
39/64	.6094	15.48	8-3/4	5-3/4	C10920
5/8	.6250	15.88	8-3/4	5-3/4	C10923
41/64	.6406	16.27	9	5-7/8	C10926
21/32	.6562	16.67	9	5-7/8	C10928
43/64	.6719	17.07	9-1/4	6	C10931
11/16	.6875	17.46	9-1/4	6	C10933
45/64	.7031	17.86	9-1/2	6-3/16	C10935
23/32	.7188	18.26	9-1/2	6-3/16	C10937
47/64	.7344	18.65	9-3/4	6-3/8	C10939
3/4	.7500	19.05	9-3/4	6-3/8	C10941
49/64	.7656	19.45	9-7/8	6-1/2	C10942
25/32	.7812	19.84	9-7/8	6-1/2	C10944

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
51/64	.7969	20.24	10	6-5/8	C10946
13/16	.8125	20.64	10	6-5/8	C10948
53/64	.8281	21.03	10-1/4	6-3/4	C10950
27/32	.8438	21.43	10-1/4	6-3/4	C10951
55/64	.8594	21.83	10-1/2	7	C10953
7/8	.8750	22.23	10-1/2	7	C10955
57/64	.8906	22.62	10-5/8	7	C10957
29/32	.9062	23.02	10-5/8	7	C10959
59/64	.9219	23.42	10-3/4	7	C10960
15/16	.9375	23.81	10-3/4	7	C10962
61/64	.9531	24.21	10-7/8	7-1/8	C10964
31/32	.9688	24.61	10-7/8	7-1/8	C10966
63/64	.9844	25.00	11	7-3/16	C10968
1	1.0000	25.40	11	7-3/16	C10969
1-1/32	1.0312	26.19	11-1/8	7-5/16	C10973
1-1/16	1.0625	26.99	11-1/4	7-3/8	C10976
1-3/32	1.0938	27.78	11-1/2	7-5/8	C10980
1-1/8	1.1250	28.58	11-3/4	7-7/8	C10984
1-5/32	1.1562	29.37	11-7/8	8	C10987
1-3/16	1.1875	30.16	12	8-1/8	C10991
1-7/32	1.2188	30.96	12-1/8	8-1/8	C10994
1-1/4	1.2500	31.75	12-1/2	8-1/2	C10998
1-5/16	1.3125	33.34	14-1/4	9-1/4	C11005
1-3/8	1.3750	34.93	14-1/2	9-1/2	C11012
1-7/16	1.4375	36.51	14-3/4	9-5/8	C11020
1-1/2	1.5000	38.10	15	9-7/8	C11027

List #2580 HD Straight Shank Coolant Feeding Low Helix Drill



Substrate - HSS
Length - Regular
Surface Treatment - Black Oxide
Shank - Straight
Point - 118° R Notched
Coolant - Coolant Feed



Features:

- Heavy duty construction to increase tool strength
- Low helix 14° angle ideal for harder materials & horizontal applications, improves chip ejection
- Coolant feeding for deeper hole drilling & higher penetration rates. Keeps the cutting edge cooler for added tool life.

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
3/8	.3750	9.53	6-3/4	4-1/4	C10696
25/64	.3906	9.92	7	4-3/8	C10702
13/32	.4062	10.32	7	4-3/8	C10705
27/64	.4219	10.72	7-1/4	4-5/8	C10707
7/16	.4375	11.11	7-1/4	4-5/8	C10710
29/64	.4531	11.51	7-1/2	4-7/8	C10713
15/32	.4688	11.91	7-1/2	4-7/8	C10715

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
31/64	.4844	12.30	7-3/4	5	C10718
1/2	.5000	12.70	7-3/4	5	C10720
33/64	.5156	13.10	8	5-1/4	C10723
17/32	.5312	13.49	8	5-1/4	C10725
35/64	.5469	13.89	8-1/4	5-3/8	C10728
9/16	.5625	14.29	8-1/4	5-3/8	C10731
37/64	.5781	14.68	8-1/2	5-5/8	C10733

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Drills • High Performance

List #2580 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
19/32	.5938	15.08	8-1/2	5-5/8	C10736
39/64	.6094	15.48	8-3/4	5-3/4	C10738
5/8	.6250	15.88	8-3/4	5-3/4	C10741
41/64	.6406	16.27	9	5-7/8	C10744
21/32	.6562	16.67	9	5-7/8	C10746
43/64	.6719	17.07	9-1/4	6	C10749
11/16	.6875	17.46	9-1/4	6	C10751
45/64	.7031	17.86	9-1/2	6-3/16	C10753
23/32	.7188	18.26	9-1/2	6-3/16	C10755
47/64	.7344	18.65	9-3/4	6-3/8	C10757
3/4	.7500	19.05	9-3/4	6-3/8	C10759
49/64	.7656	19.45	9-7/8	6-1/2	C10760
25/32	.7812	19.84	9-7/8	6-1/2	C10762
51/64	.7969	20.24	10	6-5/8	C10764
13/16	.8125	20.64	10	6-5/8	C10766
53/64	.8281	21.03	10-1/4	6-3/4	C10768
27/32	.8438	21.43	10-1/4	6-3/4	C10769
55/64	.8594	21.83	10-1/2	7	C10771
7/8	.8750	22.23	10-1/2	7	C10773
57/64	.8906	22.62	10-5/8	7	C10775

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
29/32	.9062	23.02	10-5/8	7	C10777
59/64	.9219	23.42	10-3/4	7	C10778
15/16	.9375	23.81	10-3/4	7	C10780
61/64	.9531	24.21	10-7/8	7-1/8	C10782
31/32	.9688	24.61	10-7/8	7-1/8	C10784
63/64	.9844	25.00	11	7-3/16	C10786
1	1.0000	25.40	11	7-3/16	C10787
1-1/32	1.0312	26.19	11-1/8	7-5/16	C10791
1-1/16	1.0625	26.99	11-1/4	7-3/8	C10794
1-3/32	1.0938	27.78	11-1/2	7-5/8	C10798
1-1/8	1.1250	28.58	11-3/4	7-7/8	C10802
1-5/32	1.1562	29.37	11-7/8	8	C10805
1-3/16	1.1875	30.16	12	8-1/8	C10809
1-7/32	1.2188	30.96	12-1/8	8-1/8	C10812
1-1/4	1.2500	31.75	12-1/2	8-1/2	C10816
1-5/16	1.3125	33.34	14-1/4	9-1/4	C10823
1-3/8	1.3750	34.93	14-1/2	9-1/2	C10830
1-7/16	1.4375	36.51	14-3/4	9-5/8	C10838
1-1/2	1.5000	38.10	15	9-7/8	C10845

List #2480 Taper Shank Coolant Feeding



Substrate - HSS
 Length - Taper Shank Length
 Surface Treatment - Black Oxide
 Shank - Taper with Tang
 Point - 118° R Notched
 Coolant - Coolant Feed



Features:

- High helix for more efficient chip removal, particularly in deep hole non-ferrous applications
- Coolant feeding for deeper hole drilling & higher penetration rates for keeping the cutting edge cooler
- Heavy duty construction for increased tool strength
- 118° R notched point for self centering, reducing thrust for ease of penetration & for heavy duty applications

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
31/64	.4844	12.30	9	4-3/8	C13593
1/2	.5000	12.70	9	4-3/8	C13595
33/64	.5156	13.10	9-1/4	4-5/8	C13598
17/32	.5312	13.49	9-1/4	4-5/8	C13600
35/64	.5469	13.89	9-1/2	4-7/8	C13603
9/16	.5625	14.29	9-1/2	4-7/8	C13606
37/64	.5781	14.68	9-1/2	4-7/8	C13608
19/32	.5938	15.08	9-1/2	4-7/8	C13611
39/64	.6094	15.48	9-1/2	4-7/8	C13613
5/8	.6250	15.88	9-1/2	4-7/8	C13616
41/64	.6406	16.27	9-3/4	5-1/8	C13619
21/32	.6562	16.67	9-3/4	5-1/8	C13621
43/64	.6719	17.07	10	5-3/8	C13624
11/16	.6875	17.46	10	5-3/8	C13626
45/64	.7031	17.86	10-1/4	5-5/8	C13628
23/32	.7188	18.26	10-1/4	5-5/8	C13630
47/64	.7344	18.65	10-1/2	5-7/8	C13632
3/4	.7500	19.05	10-1/2	5-7/8	C13634
49/64	.7656	19.45	10-5/8	6	C13635
25/32	.7812	19.84	10-5/8	6	C13637
51/64	.7969	20.24	10-3/4	6-1/8	C13639
13/16	.8125	20.64	10-3/4	6-1/8	C13641
53/64	.8281	21.03	10-3/4	6-1/8	C13643
27/32	.8438	21.43	10-3/4	6-1/8	C13644
55/64	.8594	21.83	10-3/4	6-1/8	C13646
7/8	.8750	22.23	10-3/4	6-1/8	C13648
57/64	.8906	22.62	10-3/4	6-1/8	C13650
29/32	.9062	23.02	10-3/4	6-1/8	C13652
59/64	.9219	23.42	10-3/4	6-1/8	C13653
15/16	.9375	23.81	10-3/4	6-1/8	C13655

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
61/64	.9531	24.21	11	6-3/8	C13657
31/32	.9688	24.61	11	6-3/8	C13659
63/64	.9844	25.00	11	6-3/8	C13661
1	1.0000	25.40	11	6-3/8	C13662
1-1/32	1.0312	26.19	11-1/8	6-1/2	C13666
1-1/16	1.0625	26.99	11-1/4	6-5/8	C13669
1-3/32	1.0938	27.78	12-1/2	6-7/8	C13673
1-1/8	1.1250	28.58	12-3/4	7-1/8	C13677
1-5/32	1.1562	29.37	12-7/8	7-1/4	C13680
1-5/32	1.1562	29.37	12-7/8	7-1/4	C13680
1-3/16	1.1875	30.16	13	7-3/8	C13684
1-7/32	1.2188	30.96	13-1/8	7-1/2	C13687
1-1/4	1.2500	31.75	13-1/2	7-7/8	C13691
1-9/32	1.2812	32.54	14-1/8	8-1/2	C13695
1-5/16	1.3125	33.34	14-1/4	8-5/8	C13698
1-11/32	1.3438	34.13	14-3/8	8-3/4	C13702
1-3/8	1.3750	34.93	14-1/2	9	C13705
1-13/32	1.4062	35.72	14-5/8	9	C13709
1-7/16	1.4375	36.51	14-3/4	9-1/8	C13713
1-15/32	1.4688	37.31	14-7/8	9-1/4	C13716
1-1/2	1.5000	38.10	15	9-3/8	C13720
1-9/16	1.5625	39.69	15-1/4	9-5/8	C13726
1-5/8	1.6250	41.28	15-5/8	10	C13731
1-11/16	1.6875	42.86	15-3/4	10-1/8	C13736
1-3/4	1.7500	44.45	16	10-1/8	C13741
1-13/16	1.8125	46.04	17-1/8	10-1/8	C13747
1-7/8	1.8750	47.63	17-3/8	10-3/8	C13752
1-15/16	1.9375	49.21	17-3/8	10-3/8	C13757
2	2.0000	50.80	17-3/8	10-3/8	C13761

Drills • High Performance

List #2490 Taper Shank Coolant Feeding Coolant Inducer Drill



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118° R Notched
Coolant - Coolant Feed



Features:

- High helix for more efficient chip removal, particularly in deep hole non-ferrous applications
- Coolant feeding for deeper hole drilling & higher penetration rates for keeping the cutting edge cooler
- Heavy duty construction for increased tool strength
- 118° R notched point for self center; reducing thrust for ease of penetration & for heavy duty applications
- Retaining rings are included

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
31/64	.4844	12.30	9-9/16	4-3/8	C13420
1/2	.5000	12.70	9-9/16	4-3/8	C13422
9/16	.5625	14.29	10-1/16	4-7/8	C13433
19/32	.5938	15.08	10-1/16	4-7/8	C13438
39/64	.6094	15.48	10-1/16	4-7/8	C13440
5/8	.6250	15.88	10-1/16	4-7/8	C13443
41/64	.6406	16.27	10-5/16	5-1/8	C13446
21/32	.6562	16.67	10-5/16	5-1/8	C13448
11/16	.6875	17.46	10-9/16	5-3/8	C13453
23/32	.7188	18.26	10-13/16	5-5/8	C13457
47/64	.7344	18.65	11-1/16	5-7/8	C13459
3/4	.7500	19.05	11-1/16	5-7/8	C13461
25/32	.7812	19.84	11-3/16	6	C13464
13/16	.8125	20.64	11-5/16	6-1/8	C13468

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
53/64	.8281	21.03	11-5/16	6-1/8	C13470
27/32	.8438	21.43	11-5/16	6-1/8	C13471
7/8	.8750	22.23	11-5/16	6-1/8	C13475
15/16	.9375	23.81	11-5/16	6-1/8	C13482
31/32	.9688	24.61	11-9/16	6-3/8	C13486
63/64	.9844	25.00	11-9/16	6-3/8	C13488
1	1.0000	25.40	11-9/16	6-3/8	C13489
1-1/32	1.0312	26.19	11-11/16	6-1/2	C13492
1-1/16	1.0625	26.99	11-13/16	6-5/8	C13494
1-1/8	1.1250	28.58	13-15/16	7-1/8	C13500
1-3/16	1.1875	30.16	13-9/16	7-3/8	C13505
1-1/4	1.2500	31.75	14-1/16	7-7/8	C13510
1-3/8	1.3750	34.93	15-1/16	9	C13520

List #927E Extra Length Coolant Feeding Taper Shank Drill



Substrate - HSS
Length - Extra Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118° R Notched
Coolant - Coolant Feed

Features:

- Heavy duty construction to increase tool strength
- High helix 34° angle/heavy parallel web for more efficient chip removal, particularly in deep hole non-ferrous applications
- Coolant feeding for deeper hole drilling & higher penetration rates. Keeps the cutting edge cooler for added tool life.

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
9/16	.5625	14.29	11-5/8	7	3	C09300
19/32	.5938	15.08	11-5/8	7	3	C09301
39/64	.6094	15.48	11-5/8	7	3	C09302
5/8	.6250	15.88	11-5/8	7	3	C09303
41/64	.6406	16.27	11-5/8	7	3	C09304
21/32	.6562	16.67	11-5/8	7	3	C09305
11/16	.6875	17.46	11-5/8	7	3	C09306
23/32	.7188	18.26	11-5/8	7	3	C09307
47/64	.7344	18.65	11-5/8	7	3	C09308
3/4	.7500	19.05	11-5/8	7	3	C09309
9/16	.5625	14.29	12-5/8	8	3	C09310
19/32	.5938	15.08	12-5/8	8	3	C09311
39/64	.6094	15.48	12-5/8	8	3	C09312
5/8	.6250	15.88	12-5/8	8	3	C09313
41/64	.6406	16.27	12-5/8	8	3	C09314
21/32	.6562	16.67	12-5/8	8	3	C09315
11/16	.6875	17.46	12-5/8	8	3	C09316
23/32	.7188	18.26	12-5/8	8	3	C09317
47/64	.7344	18.65	12-5/8	8	3	C09318
3/4	.7500	19.05	12-5/8	8	3	C09319

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
49/64	.7656	19.45	12-5/8	8	3	C09320
25/32	.7812	19.84	12-5/8	8	3	C09321
13/16	.8125	20.64	12-5/8	8	3	C09322
27/32	.8438	21.43	12-5/8	8	3	C09323
7/8	.8750	22.23	12-5/8	8	3	C09324
29/32	.9062	23.02	12-5/8	8	3	C09325
15/16	.9375	23.81	12-5/8	8	3	C09326
31/32	.9688	24.61	12-5/8	8	3	C09327
63/64	.9844	25.00	12-5/8	8	3	C09328
1	1.0000	25.40	12-5/8	8	3	C09329
1-1/64	1.0156	25.80	12-5/8	8	3	C09330
1-1/32	1.0312	26.19	12-5/8	8	3	C09331
1-1/16	1.0625	26.99	12-5/8	8	3	C09332
9/16	.5625	14.29	13-5/8	9	3	C09333
19/32	.5938	15.08	13-5/8	9	3	C09334
39/64	.6094	15.48	13-5/8	9	3	C09335
5/8	.6250	15.88	13-5/8	9	3	C09336
41/64	.6406	16.27	13-5/8	9	3	C09337
21/32	.6562	16.67	13-5/8	9	3	C09338
11/16	.6875	17.46	13-5/8	9	3	C09339

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Drills • General Purpose

List #927E continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
23/32	.7188	18.26	13-5/8	9	3	C09340
47/64	.7344	18.65	13-5/8	9	3	C09341
3/4	.7500	19.05	13-5/8	9	3	C09342
49/64	.7656	19.45	13-5/8	9	3	C09344
25/32	.7812	19.84	13-5/8	9	3	C09345
13/16	.8125	20.64	13-5/8	9	3	C09346
27/32	.8438	21.43	13-5/8	9	3	C09347
7/8	.8750	22.23	13-5/8	9	3	C09348
29/32	.9062	23.02	13-5/8	9	3	C09349
15/16	.9375	23.81	13-5/8	9	3	C09350
31/32	.9688	24.61	13-5/8	9	3	C09351
63/64	.9844	25.00	13-5/8	9	3	C09352
1 INCH	1.0000	25.40	13-5/8	9	3	C09353
1-1/64	1.0156	25.80	13-5/8	9	3	C09354
1-1/32	1.0312	26.19	13-5/8	9	3	C09355
1-1/16	1.0625	26.99	13-5/8	9	3	C09356
9/16	.5625	14.29	14-5/8	10	3	C09357
19/32	.5938	15.08	14-5/8	10	3	C09358
39/64	.6094	15.48	14-5/8	10	3	C09359
5/8	.6250	15.88	14-5/8	10	3	C09360

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
41/64	.6406	16.27	14-5/8	10	3	C09361
21/32	.6562	16.67	14-5/8	10	3	C09362
11/16	.6875	17.46	14-5/8	10	3	C09363
23/32	.7188	18.26	14-5/8	10	3	C09364
47/64	.7344	18.65	14-5/8	10	3	C09365
3/4	.7500	19.05	14-5/8	10	3	C09366
49/64	.7656	19.45	14-5/8	10	3	C09367
25/32	.7812	19.84	14-5/8	10	3	C09368
13/16	.8125	20.64	14-5/8	10	3	C09369
27/32	.8438	21.43	14-5/8	10	3	C09370
7/8	.8750	22.23	14-5/8	10	3	C09371
29/32	.9062	23.02	14-5/8	10	3	C09372
15/16	.9375	23.81	14-5/8	10	3	C09373
31/32	.9688	24.61	14-5/8	10	3	C09374
63/64	.9844	25.00	14-5/8	10	3	C09375
1 INCH	1.0000	25.40	14-5/8	10	3	C09376
1-1/64	1.0156	25.80	14-5/8	10	3	C09377
1-1/32	1.0312	26.19	14-5/8	10	4	C09378
1-1/16	1.0625	26.99	14-5/8	10	4	C09379

List #0482 Feeding “O” Ring For Coolant Inducer

Features:

- “O” ring for coolant inducer

For List No. 932 Inducer No.	Industry Size & Style No.	EDP Number
3	#119	C53723
4	#218	C53724

For List No. 2490 Shank No.	Industry Size & Style No.	EDP Number
5	#224	C53725

List #0932 Coolant Inducer

Features:

- Coolant feeding accessories

Inducer Number	Inducer O.D.	Inducer I.D.	Taper Pipe Tap Hole	Torque Arm Tap Hole	EDP Number
3	1-5/8	.940	1/4-18	5/16-18	C53711
4	2	1.253	1/4-18	3/8-16	C53712

Inducer Number	Inducer O.D.	Inducer I.D.	Taper Pipe Tap Hole	Torque Arm Tap Hole	EDP Number
5	2 1/2	1.753	3/8-18	3/8-16	C53714

List #0475 Taper Shank Coolant Socket

Features:

- For use with #2480 Coolant Inducer drills with the addition of Coolant Inducer #932

Coolant Inducer No.	Description	Overall Length Inches	EDP Number
4	Has #3 hole & #3 Shank	8-1/2	C53703
5	Has #4 hole & #3 Shank	10-7/16	C53704

Coolant Inducer No.	Description	Overall Length Inches	EDP Number
6	Has #5 hole & #5 Shank	13-1/16	C53705

List #0476 Thrust Washer

Features:

- Used with Coolant Inducer Socket

Coolant Inducer No.	Description	EDP Number
4	Has #3 hole & #3 Shank	C53706
5	Has #4 hole & #4 Shank	C53707

Coolant Inducer No.	Description	EDP Number
6	Has #6 hole & #5 Shank	C53708

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List #0474 Taper Shank Coolant Feeding Drill Socket For Use with #2480

Features:

- Coolant inducer socket

Coolant Inducer No.	Description	Overall Length Inches	EDP Number
4	Has #3 hole & #3 Shank	8-1/2	C53700
5	Has #4 hole & #4 Shank	10-7/16	C53701

Coolant Inducer No.	Description	Overall Length Inches	EDP Number
6	Has #5 hole & #5 Shank	13-1/16	C53702

List #0481 Retaining Rings For Taper Shank Coolant Feeding

Features:

- Retaining rings for coolant inducer drills & sockets

For List No. 2490 Shank No.	Industry Size & Style No.	EDP Number
3	#93	C53717
4	#125	C53718

For List No. 2490 Shank No.	Industry Size & Style No.	EDP Number
5	#175	C53719
6	#262	C53720

List #3780 AMD Drill



Substrate - Cobalt
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Straight
Point - Modified 135° Split



Features:

- High helix for more efficient chip removal
- Extra heavy web for superior rigidity. Screw machine flute length for extra tool strength. Ideal for aircraft portable applications
- Modified 135° split point with high positive notch angle for self centering. Preferred point for stainless steel. Minimizes work hardening & reduces thrust for ease of penetration.

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-5/8	1/2	C15880
59	.0410	1.04	1-5/8	1/2	C15881
58	.0420	1.07	1-5/8	1/2	C15882
57	.0430	1.09	1-3/4	1/2	C15883
56	.0465	1.18	1-3/4	1/2	C15884
3/64	.0469	1.19	1-3/4	1/2	C15885
55	.0520	1.32	1-7/8	5/8	C15886
54	.0550	1.40	1-7/8	5/8	C15887
53	.0595	1.51	1-7/8	5/8	C15888
1/16	.0625	1.59	1-7/8	5/8	C15889
52	.0635	1.61	1-7/8	11/16	C15890
51	.0670	1.70	2	11/16	C15891
50	.0700	1.78	2	11/16	C15892
49	.0730	1.85	2	11/16	C15893
48	.0760	1.93	2	11/16	C15894
5/64	.0781	1.98	2	11/16	C15895
47	.0785	1.99	2	11/16	C15896
46	.0810	2.06	2-1/8	3/4	C15897
45	.0820	2.08	2-1/8	3/4	C15898
44	.0860	2.18	2-1/8	3/4	C15899
43	.0890	2.26	2-1/4	3/4	C15900
42	.0935	2.37	2-1/4	3/4	C15901
3/32	.0938	2.38	2-1/4	3/4	C15902
41	.0960	2.44	2-3/8	13/16	C15903
40	.0980	2.49	2-3/8	13/16	C15904
39	.0995	2.53	2-3/8	13/16	C15905
38	.1015	2.58	2-1/2	13/16	C15906
37	.1040	2.64	2-1/2	13/16	C15907
36	.1065	2.71	2-1/2	13/16	C15908
7/64	.1094	2.78	2-5/8	13/16	C15909
35	.1100	2.79	2-5/8	7/8	C15910
34	.1110	2.82	2-5/8	7/8	C15911
33	.1130	2.87	2-5/8	7/8	C15912

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
32	.1160	2.95	2-3/4	7/8	C15913
31	.1200	3.05	2-3/4	7/8	C15914
1/8	.1250	3.18	2-3/4	7/8	C15915
30	.1285	3.26	2-3/4	15/16	C15916
29	.1360	3.45	2-7/8	15/16	C15917
28	.1405	3.57	2-7/8	15/16	C15918
9/64	.1406	3.57	2-7/8	15/16	C15919
27	.1440	3.66	3	1	C15920
26	.1470	3.73	3	1	C15921
25	.1495	3.80	3	1	C15922
24	.1520	3.86	3-1/8	1	C15923
23	.1540	3.91	3-1/8	1	C15924
5/32	.1562	3.97	3-1/8	1	C15925
22	.1570	3.99	3-1/8	1-1/16	C15926
21	.1590	4.04	3-1/4	1-1/16	C15927
20	.1610	4.09	3-1/4	1-1/16	C15928
19	.1660	4.22	3-1/4	1-1/16	C15929
18	.1695	4.31	3-1/4	1-1/16	C15930
11/64	.1719	4.37	3-1/4	1-1/16	C15931
17	.1730	4.39	3-3/8	1-1/8	C15932
16	.1770	4.50	3-3/8	1-1/8	C15933
15	.1800	4.57	3-3/8	1-1/8	C15934
14	.1820	4.62	3-3/8	1-1/8	C15935
13	.1850	4.70	3-1/2	1-1/8	C15936
3/16	.1875	4.76	3-1/2	1-1/8	C15937
12	.1890	4.80	3-1/2	1-3/16	C15938
11	.1910	4.85	3-1/2	1-3/16	C15939
10	.1935	4.91	3-5/8	1-3/16	C15940
9	.1960	4.98	3-5/8	1-3/16	C15941
8	.1990	5.05	3-5/8	1-3/16	C15942
7	.2010	5.11	3-5/8	1-3/16	C15943
13/64	.2031	5.16	3-5/8	1-3/16	C15944
6	.2040	5.18	3-3/4	1-1/4	C15945

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Drills • High Performance

List #3780 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
5	.2055	5.22	3-3/4	1-1/4	C15946
4	.2090	5.31	3-3/4	1-1/4	C15947
3	.2130	5.41	3-3/4	1-1/4	C15948
7/32	.2188	5.56	3-3/4	1-1/4	C15949
2	.2210	5.61	3-7/8	1-5/16	C15950
1	.2280	5.79	3-7/8	1-5/16	C15951
A	.2340	5.94	3-7/8	1-5/16	C15952
15/64	.2344	5.95	3-7/8	1-5/16	C15953
B	.2380	6.05	4	1-3/8	C15954
C	.2420	6.15	4	1-3/8	C15955
D	.2460	6.25	4	1-3/8	C15956
1/4,E	.2500	6.35	4	1-3/8	C15957
F	.2570	6.53	4-1/8	1-7/16	C15958
G	.2610	6.63	4-1/8	1-7/16	C15959
17/64	.2656	6.75	4-1/8	1-7/16	C15960
H	.2660	6.76	4-1/8	1-1/2	C15961
I	.2720	6.91	4-1/8	1-1/2	C15962
J	.2770	7.04	4-1/8	1-1/2	C15963
K	.2810	7.14	4-1/4	1-1/2	C15964
9/32	.2812	7.14	4-1/4	1-1/2	C15965
L	.2900	7.37	4-1/4	1-9/16	C15966
M	.2950	7.49	4-3/8	1-9/16	C15967
19/64	.2969	7.54	4-3/8	1-9/16	C15968
N	.3020	7.67	4-3/8	1-5/8	C15969
5/16	.3125	7.94	4-1/2	1-5/8	C15970

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
O	.3160	8.03	4-1/2	1-11/16	C15971
P	.3230	8.20	4-5/8	1-11/16	C15972
21/64	.3281	8.33	4-5/8	1-11/16	C15973
Q	.3320	8.43	4-3/4	1-11/16	C15974
R	.3390	8.61	4-3/4	1-11/16	C15975
11/32	.3438	8.73	4-3/4	1-11/16	C15976
S	.3480	8.84	4-7/8	1-3/4	C15977
T	.3580	9.09	4-7/8	1-3/4	C15978
23/64	.3594	9.13	4-7/8	1-3/4	C15979
U	.3680	9.35	5	1-13/16	C15980
3/8	.3750	9.53	5	1-13/16	C15981
V	.3770	9.58	5	1-7/8	C15982
W	.3860	9.80	5-1/8	1-7/8	C15983
25/64	.3906	9.92	5-1/8	1-7/8	C15984
X	.3970	10.08	5-1/8	1-15/16	C15985
Y	.4040	10.26	5-1/4	1-15/16	C15986
13/32	.4062	10.32	5-1/4	1-15/16	C15987
Z	.4130	10.49	5-1/4	2	C15988
27/64	.4219	10.72	5-3/8	2	C15989
7/16	.4375	11.11	5-1/2	2-1/16	C15990
29/64	.4531	11.51	5-5/8	2-1/8	C15991
15/32	.4688	11.91	5-3/4	2-1/8	C15992
31/64	.4844	12.30	5-7/8	2-3/16	C15993
1/2	.5000	12.70	6	2-1/4	C15994

List #2635 NC Spotting Drill - Short Length



Substrate - HSS
Length - Short Length
Surface Treatment - Bright
Shank - Straight
Point - 90° and 120° Helical Point



- Used for locating 118° and 135° point drills
- Excellent centering capability
- .0005 diameter tolerance for better accuracy
- .001 maximum lip height variation
- Available in sets

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Point Angle	EDP Number
1/4	.2500	6.35	a2-1/2	1	90	C24167
3/8	.3750	9.53	3-1/8	1-1/8	90	C24168
1/2	.5000	12.70	3-3/4	1-1/2	90	C24169
5/8	.6250	15.88	4-1/4	1-5/8	90	C24170
3/4	.7500	19.05	5	1-3/4	90	C24171
1	1.0000	25.40	6	1-3/4	90	C24172

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Point Angle	EDP Number
1/4	.2500	6.35	2-1/2	1	120	C24174
3/8	.3750	9.53	3-1/8	1-1/8	120	C24175
1/2	.5000	12.70	3-3/4	1-1/2	120	C24176
5/8	.6250	15.88	4-1/4	1-5/8	120	C24177
3/4	.7500	19.05	5	1-3/4	120	C24178
1	1.0000	25.40	6	1-3/4	120	C24179

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List #2645 NC Spotting Drill - Long Length



Substrate - HSS
Length - Long Length
Surface Treatment - Bright
Shank - Straight
Point - 90° and 120° Helical Point



Features:

- Used for locating 118° and 135° point drills
- Excellent centering capability
- .0005 diameter tolerance for better accuracy
- .001 maximum lip height variation
- Long length provides greater reach
- Available in sets

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Point Angle	EDP Number
1/4	.2500	6.35	4	1	90	C24181
3/8	.3750	9.53	5	1-1/8	90	C24182
1/2	.5000	12.70	6	1-1/2	90	C24183
5/8	.6250	15.88	7-1/8	1-5/8	90	C24184
3/4	.7500	19.05	8	1-3/4	90	C24185
1	1.0000	25.40	8	1-3/4	90	C24186

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Point Angle	EDP Number
1/4	.2500	6.35	4	1	120	C24188
3/8	.3750	9.53	5	1-1/8	120	C24189
1/2	.5000	12.70	6	1-1/2	120	C24190
5/8	.6250	15.88	7-1/8	1-5/8	120	C24191
3/4	.7500	19.05	8	1-3/4	120	C24192
1	1.0000	25.40	8	1-3/4	120	C24193

List #1727 Solid Carbide Heavy Duty Drill



Substrate - Solid Carbide
Length - Regular
Surface Treatment - Bright
Shank - Straight
Point - 4 Facet Point



Features:

- 4 facet point for stronger cutting edges
- Heavy duty construction for extra tool strength
- Solid carbide for longer tool life. Ideal for highly abrasive materials. Increased strength & more resistant to chipping & breakage
- Carbide for excellent heat dissipation

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
80	.0135	0.34	1-1/4	1/4	C47460
79	.0145	0.37	1-1/4	1/4	C47462
1/64	.0156	0.40	1-1/4	1/4	C47464
78	.0160	0.41	1-1/4	1/4	C47466
77	.0180	0.46	1-1/4	1/4	C47469
76	.0200	0.51	1-1/4	1/4	C47472
75	.0210	0.53	1-1/4	1/4	C47473
74	.0225	0.57	1-1/4	1/4	C47475
73	.0240	0.61	1-1/4	1/4	C47477
72	.0250	0.64	1-1/4	5/16	C47478
71	.0260	0.66	1-1/4	5/16	C47480
70	.0280	0.71	1-1/4	5/16	C47482
69	.0292	0.74	1-1/4	5/16	C47483
68	.0310	0.79	1-1/4	5/16	C47485
1/32	.0312	0.79	1-1/4	5/16	C47486
67	.0320	0.81	1-1/4	5/16	C47488
66	.0330	0.84	1-1/4	5/16	C47489
65	.0350	0.89	1-1/4	5/8	C47491
64	.0360	0.91	1-1/4	5/8	C47493
63	.0370	0.94	1-1/4	5/8	C47494
62	.0380	0.97	1-1/4	5/8	C47496
61	.0390	0.99	1-1/4	5/8	C47497
60	.0400	1.02	1-1/2	5/8	C47499
59	.0410	1.04	1-1/2	3/4	C47500
58	.0420	1.07	1-1/2	3/4	C47502
57	.0430	1.09	1-1/2	3/4	C47503
56	.0465	1.18	1-1/2	3/4	C47506
3/64	.0469	1.19	1-1/2	3/4	C47507
55	.0520	1.32	1-1/2	3/4	C47511
54	.0550	1.40	1-1/2	3/4	C47513
53	.0595	1.51	1-1/2	3/4	C47517

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/16	.0625	1.59	1-1/2	3/4	C47519
52	.0635	1.61	1-1/2	3/4	C47521
51	.0670	1.70	1-1/2	3/4	C47524
50	.0700	1.78	1-3/4	7/8	C47526
49	.0730	1.85	1-3/4	7/8	C47529
48	.0760	1.93	1-3/4	7/8	C47531
5/64	.0781	1.98	1-3/4	7/8	C47533
47	.0785	1.99	1-3/4	7/8	C47534
46	.0810	2.06	1-3/4	7/8	C47537
45	.0820	2.08	1-3/4	7/8	C47538
44	.0860	2.18	2	1	C47541
43	.0890	2.26	2	1	C47544
42	.0935	2.37	2	1	C47547
3/32	.0938	2.38	2	1	C47548
41	.0960	2.44	2	1	C47550
40	.0980	2.49	2	1	C47552
39	.0995	2.53	2-1/4	1-1/4	C47554
38	.1015	2.58	2-1/4	1-1/4	C47555
37	.1040	2.64	2-1/4	1-1/4	C47557
36	.1065	2.71	2-1/4	1-1/4	C47559
7/64	.1094	2.78	2-1/4	1-1/4	C47561
35	.1100	2.79	2-1/4	1-1/4	C47562
34	.1110	2.82	2-1/4	1-1/4	C47564
33	.1130	2.87	2-1/4	1-1/4	C47565
32	.1160	2.95	2-1/4	1-1/4	C47567
31	.1200	3.05	2-1/4	1-1/4	C47569
1/8	.1250	3.18	2-1/4	1-1/4	C47571
30	.1285	3.26	2-1/4	1-1/4	C47574
29	.1360	3.45	2-1/2	1-3/8	C47577
28	.1405	3.57	2-1/2	1-3/8	C47579
9/64	.1406	3.57	2-1/2	1-3/8	C47580

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Drills • High Performance

List #1727 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
27	.1440	3.66	2-1/2	1-3/8	C47582
26	.1470	3.73	2-1/2	1-3/8	C47584
25	.1495	3.80	2-1/2	1-3/8	C47586
24	.1520	3.86	2-1/2	1-3/8	C47588
23	.1540	3.91	2-1/2	1-3/8	C47590
5/32	.1562	3.97	2-1/2	1-3/8	C47591
22	.1570	3.99	2-1/2	1-3/8	C47592
21	.1590	4.04	2-1/2	1-3/8	C47594
20	.1610	4.09	2-1/2	1-3/8	C47595
19	.1660	4.22	2-3/4	1-5/8	C47598
18	.1695	4.31	2-3/4	1-5/8	C47601
11/64	.1719	4.37	2-3/4	1-5/8	C47602
17	.1730	4.39	2-3/4	1-5/8	C47603
16	.1770	4.50	2-3/4	1-5/8	C47605
15	.1800	4.57	2-3/4	1-5/8	C47607
14	.1820	4.62	2-3/4	1-5/8	C47609
13	.1850	4.70	2-3/4	1-5/8	C47610
3/16	.1875	4.76	2-3/4	1-5/8	C47613
12	.1890	4.80	2-3/4	1-5/8	C47614
11	.1910	4.85	2-3/4	1-5/8	C47616
10	.1935	4.91	2-3/4	1-5/8	C47618
9	.1960	4.98	3	1-3/4	C47619
8	.1990	5.05	3	1-3/4	C47621
7	.2010	5.11	3	1-3/4	C47623
13/64	.2031	5.16	3	1-3/4	C47624

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
6	.2040	5.18	3	1-3/4	C47625
5	.2055	5.22	3	1-3/4	C47627
4	.2090	5.31	3	1-3/4	C47630
3	.2130	5.41	3	1-3/4	C47632
7/32	.2188	5.56	3	1-3/4	C47634
2	.2210	5.61	3	1-3/4	C47636
1	.2280	5.79	3	1-3/4	C47639
15/64	.2344	5.95	3-1/4	2	C47642
1/4	.2500	6.35	3-1/4	2	C47648
17/64	.2656	6.75	3-1/2	2-1/8	C47653
9/32	.2812	7.14	3-1/2	2-1/8	C47662
19/64	.2969	7.54	3-3/4	2-3/8	C47665
5/16	.3125	7.94	3-3/4	2-3/8	C47671
21/64	.3281	8.33	4	2-1/2	C47677
11/32	.3438	8.73	4	2-1/2	C47682
23/64	.3594	9.13	4-1/4	2-3/4	C47688
3/8	.3750	9.53	4-1/4	2-3/4	C47694
25/64	.3906	9.92	4-1/2	2-7/8	C47700
13/32	.4062	10.32	4-1/2	2-7/8	C47703
27/64	.4219	10.72	4-1/2	2-7/8	C47705
7/16	.4375	11.11	4-1/2	2-7/8	C47708
29/64	.4531	11.51	4-3/4	3	C47711
15/32	.4688	11.91	4-3/4	3	C47713
31/64	.4844	12.30	4-3/4	3	C47716
1/2	.5000	12.70	4-3/4	3	C47718

Drills • General Purpose

List #2120 Right Hand Screw Machine Drill



Substrate - HSS
Length - Screw Machine Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- Short flute length for enhanced rigidity
- Bright finish, excellent for non-ferrous applications & low tensile steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-3/8	1/2	C04356
59	.0410	1.04	1-3/8	1/2	C04357
58	.0420	1.07	1-3/8	1/2	C04359
57	.0430	1.09	1-3/8	1/2	C04360
56	.0465	1.18	1-3/8	1/2	C04363
3/64	.0469	1.19	1-3/8	1/2	C04364
55	.0520	1.32	1-5/8	5/8	C04368
54	.0550	1.40	1-5/8	5/8	C04370
53	.0595	1.51	1-5/8	5/8	C04374
1/16	.0625	1.59	1-5/8	5/8	C04376
52	.0635	1.61	1-11/16	11/16	C04378
51	.0670	1.70	1-11/16	11/16	C04381
50	.0700	1.78	1-11/16	11/16	C04383
49	.0730	1.85	1-11/16	11/16	C04386
48	.0760	1.93	1-11/16	11/16	C04388
5/64	.0781	1.98	1-11/16	11/16	C04390
47	.0785	1.99	1-11/16	11/16	C04391
46	.0810	2.06	1-3/4	3/4	C04394
45	.0820	2.08	1-3/4	3/4	C04395
44	.0860	2.18	1-3/4	3/4	C04398
43	.0890	2.26	1-3/4	3/4	C04401
42	.0935	2.37	1-3/4	3/4	C04404
3/32	.0938	2.38	1-3/4	3/4	C04405
41	.0960	2.44	1-13/16	13/16	C04407
40	.0980	2.49	1-13/16	13/16	C04409
39	.0995	2.53	1-13/16	13/16	C04411
38	.1015	2.58	1-13/16	13/16	C04412
37	.1040	2.64	1-13/16	13/16	C04414
36	.1065	2.71	1-13/16	13/16	C04416
7/64	.1094	2.78	1-13/16	13/16	C04418
35	.1100	2.79	1-7/8	7/8	C04419
34	.1110	2.82	1-7/8	7/8	C04421
33	.1130	2.87	1-7/8	7/8	C04422
32	.1160	2.95	1-7/8	7/8	C04424
31	.1200	3.05	1-7/8	7/8	C04426
1/8	.1250	3.18	1-7/8	7/8	C04428
30	.1285	3.26	1-15/16	15/16	C04431
29	.1360	3.45	1-15/16	15/16	C04434
28	.1405	3.57	1-15/16	15/16	C04436
9/64	.1406	3.57	1-15/16	15/16	C04437
27	.1440	3.66	2-1/16	1	C04439
26	.1470	3.73	2-1/16	1	C04441
25	.1495	3.80	2-1/16	1	C04443
24	.1520	3.86	2-1/16	1	C04445
23	.1540	3.91	2-1/16	1	C04447
5/32	.1562	3.97	2-1/16	1	C04448
22	.1570	3.99	2-1/8	1-1/16	C04449
21	.1590	4.04	2-1/8	1-1/16	C04451
20	.1610	4.09	2-1/8	1-1/16	C04452
19	.1660	4.22	2-1/8	1-1/16	C04455
18	.1695	4.31	2-1/8	1-1/16	C04458
11/64	.1719	4.37	2-1/8	1-1/16	C04459
17	.1730	4.39	2-3/16	1-1/8	C04460
16	.1770	4.50	2-3/16	1-1/8	C04462
15	.1800	4.57	2-3/16	1-1/8	C04464
14	.1820	4.62	2-3/16	1-1/8	C04466
13	.1850	4.70	2-3/16	1-1/8	C04467

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
3/16	.1875	4.76	2-3/16	1-1/8	C04470
12	.1890	4.80	2-1/4	1-3/16	C04471
11	.1910	4.85	2-1/4	1-3/16	C04473
10	.1935	4.91	2-1/4	1-3/16	C04475
9	.1960	4.98	2-1/4	1-3/16	C04476
8	.1990	5.05	2-1/4	1-3/16	C04478
7	.2010	5.11	2-1/4	1-3/16	C04480
13/64	.2031	5.16	2-1/4	1-3/16	C04481
6	.2040	5.18	2-3/8	1-1/4	C04482
5	.2055	5.22	2-3/8	1-1/4	C04484
4	.2090	5.31	2-3/8	1-1/4	C04487
3	.2130	5.41	2-3/8	1-1/4	C04489
7/32	.2188	5.56	2-3/8	1-1/4	C04491
2	.2210	5.61	2-7/16	1-5/16	C04493
1	.2280	5.79	2-7/16	1-5/16	C04496
A	.2340	5.94	2-7/16	1-5/16	C04499
15/64	.2344	5.95	2-7/16	1-5/16	C04500
B	.2380	6.05	2-1/2	1-3/8	C04502
C	.2420	6.15	2-1/2	1-3/8	C04504
D	.2460	6.25	2-1/2	1-3/8	C04506
1/4	.2500	6.35	2-1/2	1-3/8	C04509
F	.2570	6.53	2-5/8	1-7/16	C04513
G	.2610	6.63	2-5/8	1-7/16	C04515
17/64	.2656	6.75	2-5/8	1-7/16	C04517
H	.2660	6.76	2-11/16	1-1/2	C04519
I	.2720	6.91	2-11/16	1-1/2	C04522
J	.2770	7.04	2-11/16	1-1/2	C04524
K	.2810	7.14	2-11/16	1-1/2	C04526
L	.2900	7.37	2-3/4	1-9/16	C04530
9/32	.2812	7.14	2-11/16	1-1/2	C04531
M	.2950	7.49	2-3/4	1-9/16	C04533
19/64	.2969	7.54	2-3/4	1-9/16	C04535
N	.3020	7.67	2-13/16	1-5/8	C04537
5/16	.3125	7.94	2-13/16	1-5/8	C04542
O	.3160	8.03	2-15/16	1-11/16	C04544
P	.3230	8.20	2-15/16	1-11/16	C04547
21/64	.3281	8.33	2-15/16	1-11/16	C04550
Q	.3320	8.43	3	1-11/16	C04552
R	.3390	8.61	3	1-11/16	C04555
11/32	.3438	8.73	3	1-11/16	C04557
S	.3480	8.84	3-1/16	1-3/4	C04560
T	.3580	9.09	3-1/16	1-3/4	C04563
23/64	.3594	9.13	3-1/16	1-3/4	C04565
U	.3680	9.35	3-1/8	1-13/16	C04569
3/8	.3750	9.53	3-1/8	1-13/16	C04572
V	.3770	9.58	3-1/4	1-7/8	C04573
W	.3860	9.80	3-1/4	1-7/8	C04578
25/64	.3906	9.92	3-1/4	1-7/8	C04580
X	.3970	10.08	3-5/16	1-15/16	C04582
Y	.4040	10.26	3-5/16	1-15/16	C04584
13/32	.4062	10.32	3-5/16	1-15/16	C04585
Z	.4130	10.49	3-3/8	2	C04586
27/64	.4219	10.72	3-3/8	2	C04588
7/16	.4375	11.11	3-7/16	2-1/16	C04591
29/64	.4531	11.51	3-9/16	2-1/8	C04594
15/32	.4688	11.91	3-5/8	2-1/8	C04596
31/64	.4844	12.30	3-11/16	2-3/16	C04599

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Drills • General Purpose

List #2120 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/2	.5000	12.70	3-3/4	2-1/4	C04601
33/64	.5156	13.10	3-7/8	2-3/8	C04604
17/32	.5312	13.49	3-7/8	2-3/8	C04606
35/64	.5469	13.89	4	2-1/2	C04609
9/16	.5625	14.29	4	2-1/2	C04612
37/64	.5781	14.68	4-1/8	2-5/8	C04614
19/32	.5938	15.08	4-1/8	2-5/8	C04617
39/64	.6094	15.48	4-1/4	2-3/4	C04619
5/8	.6250	15.88	4-1/4	2-3/4	C04622
41/64	.6406	16.27	4-1/2	2-7/8	C04625
21/32	.6562	16.67	4-1/2	2-7/8	C04627
43/64	.6719	17.07	4-5/8	2-7/8	C04630
11/16	.6875	17.46	4-5/8	2-7/8	C04632
45/64	.7031	17.86	4-3/4	3	C04634
23/32	.7188	18.26	4-3/4	3	C04636
47/64	.7344	18.65	5	3-1/8	C04638
3/4	.7500	19.05	5	3-1/8	C04640
49/64	.7656	19.45	5-1/8	3-1/4	C04641
25/32	.7812	19.84	5-1/8	3-1/4	C04643
51/64	.7969	20.24	5-1/4	3-3/8	C04645
13/16	.8125	20.64	5-1/4	3-3/8	C04647
53/64	.8281	21.03	5-3/8	3-1/2	C04649
27/32	.8438	21.43	5-3/8	3-1/2	C04650
55/64	.8594	21.83	5-1/2	3-1/2	C04652
7/8	.8750	22.23	5-1/2	3-1/2	C04654

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
57/64	.8906	22.62	5-5/8	3-5/8	C04656
29/32	.9062	23.02	5-5/8	3-5/8	C04658
59/64	.9219	23.42	5-3/4	3-3/4	C04659
15/16	.9375	23.81	5-3/4	3-3/4	C04661
61/64	.9531	24.21	5-7/8	3-7/8	C04663
31/32	.9688	24.61	5-7/8	3-7/8	C04665
63/64	.9844	25.00	6	4	C04667
1	1.0000	25.40	6	4	C04668
1-1/16	1.0625	26.99	6-1/4	4	C04675
1-1/8	1.1250	28.58	6-3/8	4	C04683
1-3/16	1.1875	30.16	6-5/8	4-1/4	C04690
1-1/4	1.2500	31.75	6-3/4	4-3/8	C04697
1-5/16	1.3125	33.34	7	4-3/8	C04704
1-3/8	1.3750	34.93	7-1/8	4-1/2	C04711
1-7/16	1.4375	36.51	7-3/8	4-3/4	C04719
1-1/2	1.5000	38.10	7-1/2	4-7/8	C04726
1-9/16	1.5625	39.69	7-3/4	4-7/8	C04733
1-5/8	1.6250	41.28	7-3/4	4-7/8	C04740
1-11/16	1.6875	42.86	8	5-1/8	C04747
1-3/4	1.7500	44.45	8	5-1/8	C04754
1-13/16	1.8125	46.04	8-1/4	5-3/8	C04762
1-7/8	1.8750	47.63	8-1/4	5-3/8	C04769
1-15/16	1.9375	49.21	8-1/2	5-5/8	C04776
2	2.0000	50.80	8-1/2	5-5/8	C04783

Note: List No. 2120 drills are furnished with reduced shanks for the fractional sizes shown below:

Diameter	Shank Diameter
1" through 1-1/4"	1"
1-5/16" through 1-1/2"	1-1/4"
1-9/16" through 2"	1-1/2"

Drills • General Purpose

List #2125 Left Hand Screw Machine Drill



Substrate - HSS
Length - Screw Machine Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- Left hand helix ideal for screw machine & turret lathe operations
- Bright finish, excellent for non-ferrous applications & low tensile steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-3/8	1/2	C04790
59	.0410	1.04	1-3/8	1/2	C04791
58	.0420	1.07	1-3/8	1/2	C04793
57	.0430	1.09	1-3/8	1/2	C04794
56	.0465	1.18	1-3/8	1/2	C04797
3/64	.0469	1.19	1-3/8	1/2	C04798
55	.0520	1.32	1-5/8	5/8	C04802
54	.0550	1.40	1-5/8	5/8	C04804
53	.0595	1.51	1-5/8	5/8	C04808
1/16	.0625	1.59	1-5/8	5/8	C04810
52	.0635	1.61	1-11/16	11/16	C04812
51	.0670	1.70	1-11/16	11/16	C04815
50	.0700	1.78	1-11/16	11/16	C04817
49	.0730	1.85	1-11/16	11/16	C04820
48	.0760	1.93	1-11/16	11/16	C04822
5/64	.0781	1.98	1-11/16	11/16	C04824
47	.0785	1.99	1-11/16	11/16	C04825
46	.0810	2.06	1-3/4	3/4	C04828
45	.0820	2.08	1-3/4	3/4	C04829
44	.0860	2.18	1-3/4	3/4	C04832
43	.0890	2.26	1-3/4	3/4	C04835
42	.0935	2.37	1-3/4	3/4	C04838
3/32	.0938	2.38	1-3/4	3/4	C04839
41	.0960	2.44	1-13/16	13/16	C04841
40	.0980	2.49	1-13/16	13/16	C04843
39	.0995	2.53	1-13/16	13/16	C04845
38	.1015	2.58	1-13/16	13/16	C04846
37	.1040	2.64	1-13/16	13/16	C04848
36	.1065	2.71	1-13/16	13/16	C04850
7/64	.1094	2.78	1-13/16	13/16	C04852
35	.1100	2.79	1-7/8	7/8	C04853
34	.1110	2.82	1-7/8	7/8	C04855
33	.1130	2.87	1-7/8	7/8	C04856
32	.1160	2.95	1-7/8	7/8	C04858
31	.1200	3.05	1-7/8	7/8	C04860
1/8	.1250	3.18	1-7/8	7/8	C04862
30	.1285	3.26	1-15/16	15/16	C04865
29	.1360	3.45	1-15/16	15/16	C04868
28	.1405	3.57	1-15/16	15/16	C04870
9/64	.1406	3.57	1-15/16	15/16	C04871
27	.1440	3.66	2-1/16	1	C04873
26	.1470	3.73	2-1/16	1	C04875
25	.1495	3.80	2-1/16	1	C04877
24	.1520	3.86	2-1/16	1	C04879
23	.1540	3.91	2-1/16	1	C04881
5/32	.1562	3.97	2-1/16	1	C04882
22	.1570	3.99	2-1/8	1-1/16	C04883
21	.1590	4.04	2-1/8	1-1/16	C04885
20	.1610	4.09	2-1/8	1-1/16	C04886
19	.1660	4.22	2-1/8	1-1/16	C04889
18	.1695	4.31	2-1/8	1-1/16	C04892
11/64	.1719	4.37	2-1/8	1-1/16	C04893
17	.1730	4.39	2-3/16	1-1/8	C04894
16	.1770	4.50	2-3/16	1-1/8	C04896
15	.1800	4.57	2-3/16	1-1/8	C04898
14	.1820	4.62	2-3/16	1-1/8	C04900
13	.1850	4.70	2-3/16	1-1/8	C04901
3/16	.1875	4.76	2-3/16	1-1/8	C04904

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
12	.1890	4.80	2-1/4	1-3/16	C04905
11	.1910	4.85	2-1/4	1-3/16	C04907
10	.1935	4.91	2-1/4	1-3/16	C04909
9	.1960	4.98	2-1/4	1-3/16	C04910
8	.1990	5.05	2-1/4	1-3/16	C04912
7	.2010	5.11	2-1/4	1-3/16	C04914
13/64	.2031	5.16	2-1/4	1-3/16	C04915
6	.2040	5.18	2-3/8	1-1/4	C04916
5	.2055	5.22	2-3/8	1-1/4	C04918
4	.2090	5.31	2-3/8	1-1/4	C04921
3	.2130	5.41	2-3/8	1-1/4	C04923
7/32	.2188	5.56	2-3/8	1-1/4	C04925
2	.2210	5.61	2-7/16	1-5/16	C04927
1	.2280	5.79	2-7/16	1-5/16	C04930
A	.2340	5.94	2-7/16	1-5/16	C04933
15/64	.2344	5.95	2-7/16	1-5/16	C04934
B	.2380	6.05	2-1/2	1-3/8	C04936
C	.2420	6.15	2-1/2	1-3/8	C04938
D	.2460	6.25	2-1/2	1-3/8	C04940
1/4	.2500	6.35	2-1/2	1-3/8	C04943
F	.2570	6.53	2-5/8	1-7/16	C04947
G	.2610	6.63	2-5/8	1-7/16	C04949
17/64	.2656	6.75	2-5/8	1-7/16	C04951
H	.2660	6.76	2-11/16	1-1/2	C04953
I	.2720	6.91	2-11/16	1-1/2	C04956
J	.2770	7.04	2-11/16	1-1/2	C04958
K	.2810	7.14	2-11/16	1-1/2	C04960
L	.2900	7.37	2-3/4	1-9/16	C04964
9/32	.2812	7.14	2-11/16	1-1/2	C04965
M	.2950	7.49	2-3/4	1-9/16	C04967
19/64	.2969	7.54	2-3/4	1-9/16	C04969
N	.3020	7.67	2-13/16	1-5/8	C04971
5/16	.3125	7.94	2-13/16	1-5/8	C04976
O	.3160	8.03	2-15/16	1-11/16	C04978
P	.3230	8.20	2-15/16	1-11/16	C04981
21/64	.3281	8.33	2-15/16	1-11/16	C04984
Q	.3320	8.43	3	1-11/16	C04986
R	.3390	8.61	3	1-11/16	C04989
11/32	.3438	8.73	3	1-11/16	C04991
S	.3480	8.84	3-1/16	1-3/4	C04994
T	.3580	9.09	3-1/16	1-3/4	C04997
23/64	.3594	9.13	3-1/16	1-3/4	C04999
U	.3680	9.35	3-1/8	1-13/16	C05003
3/8	.3750	9.53	3-1/8	1-13/16	C05006
V	.3770	9.58	3-1/4	1-7/8	C05011
W	.3860	9.80	3-1/4	1-7/8	C05012
25/64	.3906	9.92	3-1/4	1-7/8	C05014
X	.3970	10.08	3-5/16	1-15/16	C05016
Y	.4040	10.26	3-5/16	1-15/16	C05018
13/32	.4062	10.32	3-5/16	1-15/16	C05019
Z	.4130	10.49	3-3/8	2	C05020
27/64	.4219	10.72	3-3/8	2	C05022
7/16	.4375	11.11	3-7/16	2-1/16	C05025
29/64	.4531	11.51	3-9/16	2-1/8	C05028
15/32	.4688	11.91	3-5/8	2-1/8	C05030
31/64	.4844	12.30	3-11/16	2-3/16	C05033
1/2	.5000	12.70	3-3/4	2-1/4	C05035

Drills • General Purpose

List #2002 Jobber Length GP Bright Finish Drill



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- Excellent for non-ferrous materials & low tensile steels
- Increased wear resistance

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
80	.0135	0.34	3/4	1/8	C01799
79	.0145	0.37	3/4	1/8	C01801
1/64	.0156	0.40	3/4	3/16	C01803
78	.0160	0.41	7/8	3/16	C01805
77	.0180	0.51	7/8	3/16	C01808
76	.0200	0.51	7/8	3/16	C01811
75	.0210	0.53	1	1/4	C01812
74	.0225	0.57	1	1/4	C01814
73	.0240	0.61	1-1/8	5/16	C01816
72	.0250	0.64	1-1/8	5/16	C01817
71	.0260	0.66	1-1/4	3/8	C01819
70	.0280	0.71	1-1/4	3/8	C01821
69	.0292	0.74	1-3/8	1/2	C01822
68	.0310	0.79	1-3/8	1/2	C01824
1/32	.0312	0.79	1-3/8	1/2	C01825
67	.0320	0.81	1-3/8	1/2	C01827
66	.0330	0.84	1-3/8	1/2	C01828
65	.0350	0.89	1-1/2	5/8	C01830
64	.0360	0.91	1-1/2	5/8	C01832
63	.0370	0.94	1-1/2	5/8	C01833
62	.0380	0.97	1-1/2	5/8	C01835
61	.0390	0.99	1-5/8	11/16	C01836
60	.0400	1.02	1-5/8	11/16	C01838
59	.0410	1.04	1-5/8	11/16	C01839
58	.0420	1.07	1-5/8	11/16	C01841
57	.0430	1.09	1-3/4	3/4	C01842
56	.0465	1.18	1-3/4	3/4	C01845
3/64	.0469	1.19	1-3/4	3/4	C01846
55	.0520	1.32	1-7/8	7/8	C01850
54	.0550	1.40	1-7/8	7/8	C01852
53	.0595	1.51	1-7/8	7/8	C01856
1/16	.0625	1.59	1-7/8	7/8	C01858
52	.0635	1.61	1-7/8	7/8	C01860
51	.0670	1.70	2	1	C01863
50	.0700	1.78	2	1	C01865
49	.0730	1.85	2	1	C01868
48	.0760	1.93	2	1	C01870
5/64	.0781	1.98	2	1	C01872
47	.0785	1.99	2	1	C01873
46	.0810	2.06	2-1/8	1-1/8	C01876
45	.0820	2.08	2-1/8	1-1/8	C01877
44	.0860	2.18	2-1/8	1-1/8	C01880
43	.0890	2.26	2-1/4	1-1/4	C01883
42	.0935	2.37	2-1/4	1-1/4	C01886
3/32	.0938	2.38	2-1/4	1-1/4	C01887
41	.0960	2.44	2-3/8	1-3/8	C01889
40	.0980	2.49	2-3/8	1-3/8	C01891
39	.0995	2.53	2-3/8	1-3/8	C01893
38	.1015	2.58	2-1/2	1-7/16	C01894
37	.1040	2.64	2-1/2	1-7/16	C01896
36	.1065	2.71	2-1/2	1-7/16	C01898
7/64	.1094	2.78	2-5/8	1-1/2	C01900
35	.1100	2.79	2-5/8	1-1/2	C01901
34	.1110	2.82	2-5/8	1-1/2	C01903
33	.1130	2.87	2-5/8	1-1/2	C01904

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
32	.1160	2.95	2-3/4	1-5/8	C01906
31	.1200	3.05	2-3/4	1-5/8	C01908
1/8	.1250	3.18	2-3/4	1-5/8	C01910
30	.1285	3.26	2-3/4	1-5/8	C01913
29	.1360	3.45	2-7/8	1-3/4	C01916
28	.1405	3.57	2-7/8	1-3/4	C01918
9/64	.1406	3.57	2-7/8	1-3/4	C01919
27	.1440	3.66	3	1-7/8	C01921
26	.1470	3.73	3	1-7/8	C01923
25	.1495	3.80	3	1-7/8	C01925
24	.1520	3.86	3-1/8	2	C01927
23	.1540	3.91	3-1/8	2	C01929
5/32	.1562	3.97	3-1/8	2	C01930
22	.1570	3.99	3-1/8	2	C01931
21	.1590	4.04	3-1/4	2-1/8	C01933
20	.1610	4.09	3-1/4	2-1/8	C01934
19	.1660	4.22	3-1/4	2-1/8	C01937
18	.1695	4.31	3-1/4	2-1/8	C01940
11/64	.1719	4.37	3-1/4	2-1/8	C01941
17	.1730	4.39	3-3/8	2-3/16	C01942
16	.1770	4.50	3-3/8	2-3/16	C01944
4.5	.1772	4.50	86mm	56mm	C01945
15	.1800	4.57	3-3/8	2-3/16	C01946
14	.1820	4.62	3-3/8	2-3/16	C01948
13	.1850	4.70	3-1/2	2-5/16	C01949
4.70	.1850	4.70	89mm	59mm	C01950
3/16	.1875	4.76	3-1/2	2-5/16	C01952
12	.1890	4.80	3-1/2	2-5/16	C01953
11	.1910	4.85	3-1/2	2-5/16	C01955
10	.1935	4.91	3-5/8	2-7/16	C01957
9	.1960	4.98	3-5/8	2-7/16	C01958
8	.1990	5.05	3-5/8	2-7/16	C01960
7	.2010	5.11	3-5/8	2-7/16	C01962
13/64	.2031	5.16	3-5/8	2-7/16	C01963
6	.2040	5.18	3-3/4	2-1/2	C01964
5	.2055	5.22	3-3/4	2-1/2	C01966
4	.2090	5.31	3-3/4	2-1/2	C01969
3	.2130	5.41	3-3/4	2-1/2	C01971
7/32	.2188	5.56	3-3/4	2-1/2	C01973
2	.2210	5.61	3-7/8	2-5/8	C01975
1	.2280	5.79	3-7/8	2-5/8	C01978
A	.2340	5.94	3-7/8	2-5/8	C01981
15/64	.2344	5.95	3-7/8	2-5/8	C01982
B	.2380	6.05	4	2-3/4	C01984
C	.2420	6.15	4	2-3/4	C01986
D	.2460	6.25	4	2-3/4	C01988
1/4,E	.2500	6.35	4	2-3/4	C01991
F	.2570	6.53	4-1/8	2-7/8	C01995
G	.2610	6.63	4-1/8	2-7/8	C01997
17/64	.2656	6.75	4-1/8	2-7/8	C01999
H	.2660	6.76	4-1/8	2-7/8	C02001
I	.2720	6.91	4-1/8	2-7/8	C02004
J	.2770	7.04	4-1/8	2-7/8	C02006
K	.2810	7.14	4-1/4	2-15/16	C02008
L	.2900	7.37	4-1/4	2-15/16	C02012

(Continued on next page)

Drills • General Purpose

List #2002 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9/32	.2812	7.14	4-1/4	2-15/16	C02013
M	.2950	7.49	4-3/8	3-1/16	C02015
19/64	.2969	7.54	4-3/8	3-1/16	C02017
N	.3020	7.67	4-3/8	3-1/16	C02019
5/16	.3125	7.94	4-1/2	3-3/16	C02024
O	.3160	8.03	4-1/2	3-3/16	C02026
P	.3230	8.20	4-5/8	3-5/16	C02029
21/64	.3281	8.33	4-5/8	3-5/16	C02032
Q	.3320	8.43	4-3/4	3-7/16	C02034
R	.3390	8.61	4-3/4	3-7/16	C02037
11/32	.3438	8.73	4-3/4	3-7/16	C02039
S	.3480	8.84	4-7/8	3-1/2	C02042
T	.3580	9.09	4-7/8	3-1/2	C02045
U	.3680	9.35	5	3-5/8	C02051

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
3/8	.3750	9.53	5	3-5/8	C02054
V	.3770	9.58	5	3-5/8	C02055
W	.3860	9.80	5-1/8	3-3/4	C02060
25/64	.3906	9.92	5-1/8	3-3/4	C02062
X	.3970	10.08	5-1/8	3-3/4	C02064
Y	.4040	10.26	5-1/4	3-7/8	C02066
13/32	.4062	10.32	5-1/4	3-7/8	C02068
Z	.4130	10.49	5-1/4	3-7/8	C02069
27/64	.4219	10.72	5-3/8	3-15/16	C02071
7/16	.4375	11.11	5-1/2	4-1/16	C02074
29/64	.4531	11.51	5-5/8	4-3/16	C02077
15/32	.4688	11.91	5-3/4	4-5/16	C02079
31/64	.4844	12.30	5-7/8	4-3/8	C02082
1/2	.5000	12.70	6	4-1/2	C02084

List #2001 Jobber Length GP Surface Treated Drill



Substrate - HSS
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 118°



Features:

- General purpose flute construction for use in a wide variety of materials
- Black oxide finish increases wear resistance
- When used with coolant it improves lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
97	.0059	0.15	3/4	1/16	C01771
0.15mm	.0063	0.16	3/4	1/16	C01772
96	.0067	0.17	3/4	1/16	C01773
94	.0071	0.18	3/4	1/16	C01777
93	.0075	0.19	3/4	1/16	C01779
92	.0079	0.20	3/4	1/16	C01781
91	.0083	0.21	3/4	5/64	C01783
90	.0087	0.22	3/4	5/64	C01784
89	.0091	0.23	3/4	5/64	C01786
88	.0095	0.24	3/4	5/64	C01787
87	.0100	0.25	3/4	5/64	C01789
86	.0105	0.27	3/4	3/32	C01790
85	.0110	0.28	3/4	3/32	C01791
84	.0115	0.29	3/4	3/32	C01793
83	.0120	0.30	3/4	3/32	C01795
82	.0125	0.32	3/4	3/32	C01796
81	.0130	0.33	3/4	3/32	C01798
80	.0135	0.34	3/4	1/8	C01012
0.35mm	.0138	0.35	19mm	3.00mm	C01013
79	.0145	0.37	3/4	1/8	C01014
1/64	.0156	0.40	3/4	3/16	C01016
0.40mm	.0157	0.40	22mm	5.00mm	C01017
78	.0160	0.41	7/8	3/16	C01018
0.42mm	.0165	0.42	22mm	5.00mm	C01019
0.45mm	.0177	0.45	22mm	5.00mm	C01020
77	.0180	0.46	7/8	3/16	C01021
0.48mm	.0189	0.48	22mm	5.00mm	C01022
0.50mm	.0197	0.50	22mm	5.00mm	C01023
76	.0200	0.51	7/8	3/16	C01024
75	.0210	0.53	1	1/4	C01025
0.55mm	.0217	0.55	25mm	6.00mm	C01026
74	.0225	0.57	1	1/4	C01027
0.60mm	.0236	0.60	29mm	8.00mm	C01028

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
73	.0240	0.61	1-1/8	5/16	C01029
72	.0250	0.64	1-1/8	5/16	C01030
0.65mm	.0256	0.65	32mm	10mm	C01031
71	.0260	0.66	1-1/4	3/8	C01032
0.70mm	.0276	0.70	32mm	10mm	C01033
70	.0280	0.71	1-1/4	3/8	C01034
69	.0292	0.74	1-3/8	1/2	C01035
0.75mm	.0295	0.75	35mm	13mm	C01036
68	.0310	0.79	1-3/8	1/2	C01037
1/32	.0312	0.79	1-3/8	1/2	C01038
0.80mm	.0315	0.80	35mm	13mm	C01039
67	.0320	0.81	1-3/8	1/2	C01040
66	.0330	0.84	1-3/8	1/2	C01041
0.85mm	.0335	0.85	38mm	16mm	C01042
65	.0350	0.89	1-1/2	5/8	C01043
0.90mm	.0354	0.90	38mm	16mm	C01044
64	.0360	0.91	1-1/2	5/8	C01045
63	.0370	0.94	1-1/2	5/8	C01046
0.95mm	.0374	0.95	38mm	16mm	C01047
62	.0380	0.97	1-1/2	5/8	C01048
61	.0390	0.99	1-5/8	11/16	C01049
1.00mm	.0394	1.00	41mm	18mm	C01050
60	.0400	1.02	1-5/8	11/16	C01051
59	.0410	1.04	1-5/8	11/16	C01052
1.05mm	.0413	1.05	41mm	18mm	C01053
58	.0420	1.07	1-5/8	11/16	C01054
57	.0430	1.09	1-3/4	3/4	C01055
1.10mm	.0433	1.10	44mm	19mm	C01056
1.15mm	.0453	1.15	44mm	19mm	C01057
56	.0465	1.18	1-3/4	3/4	C01058
3/64	.0469	1.19	1-3/4	3/4	C01059
1.20mm	.0472	1.20	48mm	22mm	C01060
1.25mm	.0492	1.25	48mm	22mm	C01061

(Continued on next page)

Drills • General Purpose

List #200I continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1.30mm	.0512	1.30	48mm	22mm	C01062
55	.0520	1.32	1-7/8	7/8	C01063
1.35mm	.0531	1.35	48mm	22mm	C01064
54	.0550	1.40	1-7/8	7/8	C01065
1.40mm	.0551	1.40	48mm	22mm	C01066
1.45mm	.0571	1.45	48mm	22mm	C01067
1.50mm	.0591	1.50	48mm	22mm	C01068
53	.0595	1.51	1-7/8	7/8	C01069
1.55mm	.0610	1.55	48mm	22mm	C01070
1/16	.0625	1.59	1-7/8	7/8	C01071
1.60mm	.0630	1.60	48mm	22mm	C01072
52	.0635	1.61	1-7/8	7/8	C01073
1.65mm	.0650	1.65	51mm	25mm	C01074
1.70mm	.0669	1.70	51mm	25mm	C01075
51	.0670	1.70	2	1	C01076
1.75mm	.0689	1.75	51mm	25mm	C01077
50	.0700	1.78	2	1	C01078
1.80mm	.0709	1.80	51mm	25mm	C01079
1.85mm	.0728	1.85	51mm	25mm	C01080
49	.0730	1.85	2	1	C01081
1.90mm	.0748	1.90	51mm	25mm	C01082
48	.0760	1.93	2	1	C01083
1.95mm	.0768	1.95	51mm	25mm	C01084
5/64	.0781	1.98	2	1	C01085
47	.0785	1.99	2	1	C01086
2.00mm	.0787	2.00	54mm	29mm	C01087
2.05mm	.0807	2.05	54mm	29mm	C01088
46	.0810	2.06	2-1/8	1-1/8	C01089
45	.0820	2.08	2-1/8	1-1/8	C01090
2.10mm	.0827	2.10	54mm	29mm	C01091
2.15mm	.0846	2.15	54mm	29mm	C01092
44	.0860	2.18	2-1/8	1-1/8	C01093
2.20mm	.0866	2.20	57mm	32mm	C01094
2.25mm	.0886	2.25	57mm	32mm	C01095
43	.0890	2.26	2-1/4	1-1/4	C01096
2.30mm	.0906	2.30	57mm	32mm	C01097
2.35mm	.0925	2.35	57mm	32mm	C01098
42	.0935	2.37	2-1/4	1-1/4	C01099
3/32	.0938	2.38	2-1/4	1-1/4	C01100
2.40mm	.0945	2.40	60mm	35mm	C01101
41	.0960	2.44	2-3/8	1-3/8	C01102
2.45mm	.0965	2.45	60mm	35mm	C01103
40	.0980	2.49	2-3/8	1-3/8	C01104
2.50mm	.0984	2.50	60mm	35mm	C01105
39	.0995	2.53	2-3/8	1-3/8	C01106
38	.1015	2.58	2-1/2	1-7/16	C01107
2.60mm	.1024	2.60	64mm	37mm	C01108
37	.1040	2.64	2-1/2	1-7/16	C01109
2.70mm	.1063	2.70	64mm	37mm	C01110
36	.1065	2.71	2-1/2	1-7/16	C01111
7/64	.1094	2.78	2-5/8	1-1/2	C01113
35	.1100	2.79	2-5/8	1-1/2	C01114
2.80mm	.1102	2.80	67mm	38mm	C01115
34	.1110	2.82	2-5/8	1-1/2	C01116
33	.1130	2.87	2-5/8	1-1/2	C01117
2.90mm	.1142	2.90	70mm	41mm	C01118
32	.1160	2.95	2-3/4	1-5/8	C01119
3.00mm	.1181	3.00	70mm	41mm	C01120
31	.1200	3.05	2-3/4	1-5/8	C01121
3.10mm	.1220	3.10	70mm	41mm	C01122
1/8	.1250	3.18	2-3/4	1-5/8	C01123
3.20mm	.1260	3.20	70mm	41mm	C01124
30	.1285	3.26	2-3/4	1-5/8	C01126
3.30mm	.1299	3.30	73mm	45mm	C01127
3.40mm	.1339	3.40	73mm	45mm	C01128
29	.1360	3.45	2-7/8	1-3/4	C01129
3.50mm	.1378	3.50	73mm	45mm	C01130
28	.1405	3.57	2-7/8	1-3/4	C01131

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9/64	.1406	3.57	2-7/8	1-3/4	C01132
3.60mm	.1417	3.60	76mm	48mm	C01133
27	.1440	3.66	3	1-7/8	C01134
3.70mm	.1457	3.70	76mm	48mm	C01135
26	.1470	3.73	3	1-7/8	C01136
25	.1495	3.80	3	1-7/8	C01138
3.80mm	.1496	3.80	79mm	51mm	C01139
24	.1520	3.86	3-1/8	2	C01140
3.90mm	.1535	3.90	79mm	51mm	C01141
23	.1540	3.91	3-1/8	2	C01142
5/32	.1562	3.97	3-1/8	2	C01143
22	.1570	3.99	3-1/8	2	C01144
4.00mm	.1575	4.00	83mm	54mm	C01145
21	.1590	4.04	3-1/4	2-1/8	C01146
20	.1610	4.09	3-1/4	2-1/8	C01147
4.10mm	.1614	4.10	83mm	54mm	C01148
4.20mm	.1654	4.20	83mm	54mm	C01149
19	.1660	4.22	3-1/4	2-1/8	C01150
4.30mm	.1693	4.30	83mm	54mm	C01152
18	.1695	4.31	3-1/4	2-1/8	C01153
11/64	.1719	4.37	3-1/4	2-1/8	C01154
17	.1730	4.39	3-3/8	2-3/16	C01155
4.40mm	.1732	4.40	86mm	56mm	C01156
16	.1770	4.50	3-3/8	2-3/16	C01157
4.5	.1772	4.50	86mm	56mm	C01158
15	.1800	4.57	3-3/8	2-3/16	C01159
4.60mm	.1811	4.60	86mm	56mm	C01160
14	.1820	4.62	3-3/8	2-3/16	C01161
13	.1850	4.70	3-1/2	2-5/16	C01162
4.70	.1850	4.70	89mm	59mm	C01163
3/16	.1875	4.76	3-1/2	2-5/16	C01165
12	.1890	4.80	3-1/2	2-5/16	C01166
4.80mm	.1890	4.80	89mm	59mm	C01167
11	.1910	4.85	3-1/2	2-5/16	C01168
4.90mm	.1929	4.90	92mm	62mm	C01169
10	.1935	4.91	3-5/8	2-7/16	C01170
9	.1960	4.98	3-5/8	2-7/16	C01171
5.00mm	.1969	5.00	92mm	62mm	C01172
8	.1990	5.05	3-5/8	2-7/16	C01173
5.10mm	.2008	5.10	92mm	62mm	C01174
7	.2010	5.11	3-5/8	2-7/16	C01175
13/64	.2031	5.16	3-5/8	2-7/16	C01176
6	.2040	5.18	3-3/4	2-1/2	C01177
5.20mm	.2047	5.20	95mm	64mm	C01178
5	.2055	5.22	3-3/4	2-1/2	C01179
5.30mm	.2087	5.30	95mm	64mm	C01181
4	.2090	5.31	3-3/4	2-1/2	C01182
5.40mm	.2126	5.40	95mm	64mm	C01183
3	.2130	5.41	3-3/4	2-1/2	C01184
5.50mm	.2165	5.50	95mm	64mm	C01185
7/32	.2188	5.56	3-3/4	2-1/2	C01186
5.60mm	.2205	5.60	98mm	67mm	C01187
2	.2210	5.61	3-7/8	2-5/8	C01188
5.70mm	.2244	5.70	98mm	67mm	C01189
1	.2280	5.79	3-7/8	2-5/8	C01191
5.80mm	.2283	5.80	98mm	67mm	C01192
5.90mm	.2323	5.90	98mm	67mm	C01193
A	.2340	5.94	3-7/8	2-5/8	C01194
15/64	.2344	5.95	3-7/8	2-5/8	C01195
6.00mm	.2362	6.00	102mm	70mm	C01196
B	.2380	6.05	4	2-3/4	C01197
6.10mm	.2402	6.10	102mm	70mm	C01198
C	.2420	6.15	4	2-3/4	C01199
6.20mm	.2441	6.20	102mm	70mm	C01200
D	.2460	6.25	4	2-3/4	C01201
6.30mm	.2480	6.30	102mm	70mm	C01203
1/4,E	.2500	6.35	4	2-3/4	C01204
6.40mm	.2520	6.40	105mm	73mm	C01206

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Drills • General Purpose

List #200I continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
6.50mm	.2559	6.50	105mm	73mm	C01207
F	.2570	6.53	4-1/8	2-7/8	C01208
6.60mm	.2598	6.60	105mm	73mm	C01209
G	.2610	6.63	4-1/8	2-7/8	C01210
6.70mm	.2638	6.70	105mm	73mm	C01211
17/64	.2656	6.75	4-1/8	2-7/8	C01212
H	.2660	6.76	4-1/8	2-7/8	C01214
6.80mm	.2677	6.80	105mm	73mm	C01215
6.90mm	.2717	6.90	105mm	73mm	C01216
I	.2720	6.91	4-1/8	2-7/8	C01217
7.00mm	.2756	7.00	105mm	73mm	C01218
J	.2770	7.04	4-1/8	2-7/8	C01219
7.10mm	.2795	7.10	108mm	75mm	C01220
K	.2810	7.14	4-1/4	2-15/16	C01221
7.20mm	.2835	7.20	108mm	75mm	C01222
7.30mm	.2874	7.30	108mm	75mm	C01224
L	.2900	7.37	4-1/4	2-15/16	C01225
9/32	.2812	7.14	4-1/4	2-15/16	C01226
7.40mm	.2913	7.40	111mm	78mm	C01227
M	.2950	7.49	4-3/8	3-1/16	C01228
7.50mm	.2953	7.50	111mm	78mm	C01229
19/64	.2969	7.54	4-3/8	3-1/16	C01230
7.60mm	.2992	7.60	111mm	78mm	C01231
N	.3020	7.67	4-3/8	3-1/16	C01232
7.70mm	.3031	7.70	114mm	81mm	C01233
7.80mm	.3071	7.80	114mm	81mm	C01235
7.90mm	.3110	7.90	114mm	81mm	C01236
5/16	.3125	7.94	4-1/2	3-3/16	C01237
8.00mm	.3150	8.00	114mm	81mm	C01238
O	.3160	8.03	4-1/2	3-3/16	C01239
8.10mm	.3189	8.10	114mm	84mm	C01240
8.20mm	.3228	8.20	117mm	84mm	C01241
P	.3230	8.20	4-5/8	3-5/16	C01242
8.30mm	.3268	8.30	117mm	84mm	C01244
21/64	.3281	8.33	4-5/8	3-5/16	C01245
8.40mm	.3307	8.40	121mm	87mm	C01246
Q	.3320	8.43	4-3/4	3-7/16	C01247
8.50mm	.3346	8.50	121mm	87mm	C01248
8.60mm	.3386	8.60	121mm	87mm	C01249
R	.3390	8.61	4-3/4	3-7/16	C01250
8.70mm	.3425	8.70	121mm	87mm	C01251
11/32	.3438	8.73	4-3/4	3-7/16	C01252
8.80mm	.3465	8.80	124mm	89mm	C01254
S	.3480	8.84	4-7/8	3-1/2	C01255
8.90mm	.3504	8.90	124mm	89mm	C01256
9.00mm	.3543	9.00	124mm	89mm	C01257
T	.3580	9.09	4-7/8	3-1/2	C01258
9.10mm	.3583	9.10	124mm	89mm	C01259
9.20mm	.3622	9.20	127mm	92mm	C01261
9.30mm	.3661	9.30	127mm	92mm	C01263
U	.3680	9.35	5	3-5/8	C01264
9.40mm	.3701	9.40	127mm	92mm	C01265
9.50mm	.3740	9.50	127mm	92mm	C01266
3/8	.3750	9.53	5	3-5/8	C01267
V	.3770	9.58	5	3-5/8	C01268
9.60mm	.3780	9.60	130mm	95mm	C01269
9.70mm	.3819	9.70	130mm	95mm	C01270

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9.80mm	.3858	9.80	130mm	95mm	C01272
W	.3860	9.80	5-1/8	3-3/4	C01273
9.90mm	.3898	9.90	130mm	95mm	C01274
25/64	.3906	9.92	5-1/8	3-3/4	C01275
25/64	.3906	9.92	5-1/8	3-3/4	C05918*
10.00mm	.3937	10.00	130mm	95mm	C01276
X	.3970	10.08	5-1/8	3-3/4	C01277
10.20mm	.4016	10.20	133mm	98mm	C01278
Y	.4040	10.26	5-1/4	3-7/8	C01279
10.30mm	.4055	10.30	133mm	98mm	C01280
13/32	.4062	10.32	5-1/4	3-7/8	C01281
13/32	.4062	10.32	5-1/4	3-7/8	C05919*
Z	.4130	10.49	5-1/4	3-7/8	C01282
10.50mm	.4134	10.50	137mm	100mm	C01283
27/64	.4219	10.72	5-3/8	3-15/16	C01284
27/64	.4219	10.72	5-3/8	3-15/16	C05920*
10.80mm	.4252	10.80	140mm	103mm	C01285
11.00mm	.4331	11.00	140mm	103mm	C01286
7/16	.4375	11.11	5-1/2	4-1/16	C01287
7/16	.4375	11.11	5-1/2	4-1/16	C05921*
11.20mm	.4409	11.20	143mm	106mm	C01288
11.50mm	.4528	11.50	143mm	106mm	C01289
29/64	.4531	11.51	5-5/8	4-3/16	C01290
29/64	.4531	11.51	5-5/8	4-3/16	C05922*
11.80mm	.4646	11.80	146mm	110mm	C01291
15/32	.4688	11.91	5-3/4	4-5/16	C01292
15/32	.4688	11.91	5-3/4	4-5/16	C05923*
12.00mm	.4724	12.00	150mm	111mm	C01293
12.20mm	.4803	12.20	150mm	111mm	C01294
31/64	.4844	12.30	5-7/8	4-3/8	C01295
31/64	.4844	12.30	5-7/8	4-3/8	C01295
12.50mm	.4921	12.50	152mm	114mm	C05924*
1/2	.5000	12.70	6	4-1/2	C01297
1/2	.5000	12.70	6	4-1/2	C05925*
13.00mm	.5118	13.00	152mm	144mm	C01299
33/64	.5156	13.10	6-5/8	4-13/16	C01300
17/32	.5312	13.49	6-5/8	4-13/16	C01302
13.50mm	.5315	13.50	168mm	122mm	C01303
35/64	.5469	13.89	6-5/8	4-13/16	C01305
14.00mm	.5512	14.00	168mm	122mm	C01306
9/16	.5625	14.29	6-5/8	4-13/16	C01308
14.50mm	.5709	14.50	168mm	122mm	C01309
37/64	.5781	14.68	6-5/8	4-13/16	C01310
15.00mm	.5906	15.00	181mm	132mm	C01312
19/32	.5938	15.08	7-1/8	5-3/16	C01313
39/64	.6094	15.48	7-1/8	5-3/16	C01315
15.50mm	.6102	15.50	181mm	132mm	C01316
5/8	.6250	15.88	7-1/8	5-3/16	C01318
16.00mm	.6299	16.00	181mm	132mm	C01319
41/64	.6406	16.27	7-1/8	5-3/16	C01321
16.50mm	.6496	16.50	181mm	132mm	C01322
21/32	.6562	16.67	7-1/8	5-3/16	C01323
17.00mm	.6693	17.00	194mm	143mm	C01325
43/64	.6719	17.07	7-5/8	5-5/8	C01326
11/16	.6875	17.46	7-5/8	5-5/8	C01328
17.50mm	.6890	17.50	194mm	143mm	C01329

* 3/8" Reduced Shank

Drills • General Purpose

List #2004 Jobber Length GP Surface Treated Drill - Tanged



Substrate - HSS
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Straight with Tang
Point - 118°



Features:

- General purpose flute construction for use in a wide variety of materials
- Tanged for use with an ASA split sleeve drill driver
- Black oxide finish that improves lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/8	.1250	3.18	2-3/4	1-5/8	C07216
30	.1285	3.26	2-3/4	1-5/8	C07219
29	.1360	3.45	2-7/8	1-3/4	C07222
9/64	.1406	3.57	2-7/8	1-3/4	C07225
27	.1440	3.66	3	1-7/8	C07227
26	.1470	3.73	3	1-7/8	C07229
25	.1495	3.80	3	1-7/8	C07231
24	.1520	3.86	3-1/8	2	C07233
23	.1540	3.91	3-1/8	2	C07235
5/32	.1562	3.97	3-1/8	2	C07236
21	.1590	4.04	3-1/4	2-1/8	C07239
20	.1610	4.09	3-1/4	2-1/8	C07240
19	.1660	4.22	3-1/4	2-1/8	C07243
18	.1695	4.31	3-1/4	2-1/8	C07246
11/64	.1719	4.37	3-1/4	2-1/8	C07247
17	.1730	4.39	3-3/8	2-3/16	C07248
16	.1770	4.50	3-3/8	2-3/16	C07250
15	.1800	4.57	3-3/8	2-3/16	C07252
13	.1850	4.70	3-1/2	2-5/16	C07255
3/16	.1875	4.76	3-1/2	2-5/16	C07258
12	.1890	4.80	3-1/2	2-5/16	C07259
11	.1910	4.85	3-1/2	2-5/16	C07261
10	.1935	4.91	3-5/8	2-7/16	C07263
9	.1960	4.98	3-5/8	2-7/16	C07264
8	.1990	5.05	3-5/8	2-7/16	C07266
7	.2010	5.11	3-5/8	2-7/16	C07268
13/64	.2031	5.16	3-5/8	2-7/16	C07269
5	.2055	5.22	3-3/4	2-1/2	C07272
4	.2090	5.31	3-3/4	2-1/2	C07275
3	.2130	5.41	3-3/4	2-1/2	C07277
7/32	.2188	5.56	3-3/4	2-1/2	C07279
I	.2280	5.79	3-7/8	2-5/8	C07284
15/64	.2344	5.95	3-7/8	2-5/8	C07288
G	.2610	6.63	4-1/8	2-7/8	C07302
17/64	.2656	6.75	4-1/8	2-7/8	C07304
I	.2720	6.91	4-1/8	2-7/8	C07309
J	.2770	7.04	4-1/8	2-7/8	C07311

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9/32	.2812	7.14	4-1/4	2-15/16	C07318
19/64	.2969	7.54	4-3/8	3-1/16	C07322
N	.3020	7.67	4-3/8	3-1/16	C07324
5/16	.3125	7.94	4-1/2	3-3/16	C07329
O	.3160	8.03	4-1/2	3-3/16	C07331
P	.3230	8.20	4-5/8	3-5/16	C07334
21/64	.3281	8.33	4-5/8	3-5/16	C07337
Q	.3320	8.43	4-3/4	3-7/16	C07339
R	.3390	8.61	4-3/4	3-7/16	C07342
11/32	.3438	8.73	4-3/4	3-7/16	C07344
S	.3480	8.84	4-7/8	3-1/2	C07347
23/64	.3594	9.13	4-7/8	3-1/2	C07352
U	.3680	9.35	5	3-5/8	C07356
3/8	.3750	9.53	5	3-5/8	C07359
V	.3860	9.80	5-1/8	3-3/4	C07365
25/64	.3906	9.92	5-1/8	3-3/4	C07367
X	.3970	10.08	5-1/8	3-3/4	C07369
13/32	.4062	10.32	5-1/4	3-7/8	C07372
27/64	.4219	10.72	5-3/8	3-15/16	C07375
7/16	.4375	11.11	5-1/2	4-1/16	C07378
29/64	.4531	11.51	5-5/8	4-3/16	C07381
15/32	.4688	11.91	5-3/4	4-5/16	C07383
31/64	.4844	12.30	5-7/8	4-3/8	C07386
1/2	.5000	12.70	6	4-1/2	C07388
33/64	.5156	13.10	6-5/8	4-13/16	C07392
17/32	.5312	13.49	6-5/8	4-13/16	C07394
35/64	.5469	13.89	6-5/8	4-13/16	C07397
9/16	.5625	14.29	6-5/8	4-13/16	C07400
37/64	.5781	14.68	6-5/8	4-13/16	C07402
19/32	.5938	15.08	7-1/8	5-3/16	C07405
39/64	.6094	15.48	7-1/8	5-3/16	C07407
5/8	.6250	15.88	7-1/8	5-3/16	C07410
41/64	.6406	16.27	7-1/8	5-3/16	C07413
21/32	.6562	16.67	7-1/8	5-3/16	C07415
43/64	.6719	17.07	7-5/8	5-5/8	C07418
11/16	.6875	17.46	7-5/8	5-5/8	C07420

Drills • General Purpose

List #2006 Left Hand GP Jobber Drill



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- Left hand helix ideal for screw machine & turret lathe operations
- General purpose flute construction for a variety of materials
- Bright finish is excellent for non-ferrous applications & low tensile steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
80	.0135	0.34	3/4	1/8	C01342
79	.0145	0.37	3/4	1/8	C01344
78	.0160	0.41	7/8	3/16	C01348
77	.0180	0.46	7/8	3/16	C01351
76	.0200	0.51	7/8	3/16	C01354
75	.0210	0.53	1	1/4	C01355
74	.0225	0.57	1	1/4	C01357
73	.0240	0.61	1-1/8	5/16	C01359
72	.0250	0.64	1-1/8	5/16	C01360
71	.0260	0.66	1-1/4	3/8	C01362
70	.0280	0.71	1-1/4	3/8	C01364
69	.0292	0.74	1-3/8	1/2	C01365
68	.0310	0.79	1-3/8	1/2	C01367
1/32	.0312	0.79	1-3/8	1/2	C01368
67	.0320	0.81	1-3/8	1/2	C01370
66	.0330	0.84	1-3/8	1/2	C01371
65	.0350	0.89	1-1/2	5/8	C01373
64	.0360	0.91	1-1/2	5/8	C01375
63	.0370	0.94	1-1/2	5/8	C01376
62	.0380	0.97	1-1/2	5/8	C01378
61	.0390	0.99	1-5/8	11/16	C01379
60	.0400	1.02	1-5/8	11/16	C01381
59	.0410	1.04	1-5/8	11/16	C01382
58	.0420	1.07	1-5/8	11/16	C01384
57	.0430	1.09	1-3/4	3/4	C01385
56	.0465	1.18	1-3/4	3/4	C01388
3/64	.0469	1.19	1-3/4	3/4	C01389
55	.0520	1.32	1-7/8	7/8	C01393
54	.0550	1.40	1-7/8	7/8	C01395
53	.0595	1.51	1-7/8	7/8	C01399
1/16	.0625	1.59	1-7/8	7/8	C01401
52	.0635	1.61	1-7/8	7/8	C01403
51	.0670	1.70	2	1	C01406
50	.0700	1.78	2	1	C01408
49	.0730	1.85	2	1	C01411
48	.0760	1.93	2	1	C01413
5/64	.0781	1.98	2	1	C01415
47	.0785	1.99	2	1	C01416
46	.0810	2.06	2-1/8	1-1/8	C01419
45	.0820	2.08	2-1/8	1-1/8	C01420
44	.0860	2.18	2-1/8	1-1/8	C01423
43	.0890	2.26	2-1/4	1-1/4	C01426
42	.0935	2.37	2-1/4	1-1/4	C01429
3/32	.0938	2.38	2-1/4	1-1/4	C01430
41	.0960	2.44	2-3/8	1-3/8	C01432
40	.0980	2.49	2-3/8	1-3/8	C01434
39	.0995	2.53	2-3/8	1-3/8	C01436
38	.1015	2.58	2-1/2	1-7/16	C01437
37	.1040	2.64	2-1/2	1-7/16	C01439
36	.1065	2.71	2-1/2	1-7/16	C01441
7/64	.1094	2.78	2-5/8	1-1/2	C01443
35	.1100	2.79	2-5/8	1-1/2	C01444
34	.1110	2.82	2-5/8	1-1/2	C01446
33	.1130	2.87	2-5/8	1-1/2	C01447
32	.1160	2.95	2-3/4	1-5/8	C01449
31	.1200	3.05	2-3/4	1-5/8	C01451
1/8	.1250	3.18	2-3/4	1-5/8	C01453

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
30	.1285	3.26	2-3/4	1-5/8	C01456
29	.1360	3.45	2-7/8	1-3/4	C01459
28	.1405	3.57	2-7/8	1-3/4	C01461
9/64	.1406	3.57	2-7/8	1-3/4	C01462
27	.1440	3.66	3	1-7/8	C01464
26	.1470	3.73	3	1-7/8	C01466
25	.1495	3.80	3	1-7/8	C01468
24	.1520	3.86	3-1/8	2	C01470
23	.1540	3.91	3-1/8	2	C01472
5/32	.1562	3.97	3-1/8	2	C01473
22	.1570	3.99	3-1/8	2	C01474
21	.1590	4.04	3-1/4	2-1/8	C01476
20	.1610	4.09	3-1/4	2-1/8	C01477
19	.1660	4.22	3-1/4	2-1/8	C01480
18	.1695	4.31	3-1/4	2-1/8	C01483
11/64	.1719	4.37	3-1/4	2-1/8	C01484
17	.1730	4.39	3-3/8	2-3/16	C01485
16	.1770	4.50	3-3/8	2-3/16	C01487
15	.1800	4.57	3-3/8	2-3/16	C01489
14	.1820	4.62	3-3/8	2-3/16	C01491
13	.1850	4.70	3-1/2	2-5/16	C01492
3/16	.1875	4.76	3-1/2	2-5/16	C01495
12	.1890	4.80	3-1/2	2-5/16	C01496
11	.1910	4.85	3-1/2	2-5/16	C01498
10	.1935	4.91	3-5/8	2-7/16	C01500
9	.1960	4.98	3-5/8	2-7/16	C01501
8	.1990	5.05	3-5/8	2-7/16	C01503
7	.2010	5.11	3-5/8	2-7/16	C01505
13/64	.2031	5.16	3-5/8	2-7/16	C01506
6	.2040	5.18	3-3/4	2-1/2	C01507
5	.2055	5.22	3-3/4	2-1/2	C01509
4	.2090	5.31	3-3/4	2-1/2	C01512
3	.2130	5.41	3-3/4	2-1/2	C01514
7/32	.2188	5.56	3-3/4	2-1/2	C01516
2	.2210	5.61	3-7/8	2-5/8	C01518
1	.2280	5.79	3-7/8	2-5/8	C01521
15/64	.2344	5.95	3-7/8	2-5/8	C01525
1/4	.2500	6.35	4	2-3/4	C01532
17/64	.2656	6.75	4-1/8	2-7/8	C01538
9/32	.2812	7.14	4-1/4	2-15/16	C01551
19/64	.2969	7.54	4-3/8	3-1/16	C01555
5/16	.3125	7.94	4-1/2	3-3/16	C01561
21/64	.3281	8.33	4-5/8	3-5/16	C01567
11/32	.3438	8.73	4-3/4	3-7/16	C01574
23/64	.3594	9.13	4-7/8	3-1/2	C01581
3/8	.3750	9.53	5	3-5/8	C01588
25/64	.3906	9.92	5-1/8	3-3/4	C01595
13/32	.4062	10.32	5-1/4	3-7/8	C01600
27/64	.4219	10.72	5-3/8	3-15/16	C01602
7/16	.4375	11.11	5-1/2	4-1/16	C01605
29/64	.4531	11.51	5-5/8	4-3/16	C01608
15/32	.4688	11.91	5-3/4	4-5/16	C01610
31/64	.4844	12.30	5-7/8	4-3/8	C01613
1/2	.5000	12.70	6	4-1/2	C01615

Drills • General Purpose

List #2002T Jobber Length TiN Coated



Features:

- TiN coated for higher feeds & speeds with reduced heat at the cutting edge for added lubricity and added tool life

Substrate - HSS
Length - Jobber Length
Surface Treatment - TiN
Shank - Straight
Point - 118°

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
52	.0635	1.61	1-7/8	7/8	C02460
51	.0670	1.70	2	1	C02461
50	.0700	1.78	2	1	C02462
49	.0730	1.85	2	1	C02463
48	.0760	1.93	2	1	C02464
47	.0785	1.99	2	1	C02465
46	.0810	2.06	2-1/8	1-1/8	C02466
45	.0820	2.08	2-1/8	1-1/8	C02467
44	.0860	2.18	2-1/8	1-1/8	C02468
43	.0890	2.26	2-1/4	1-1/4	C02469
42	.0935	2.37	2-1/4	1-1/4	C02470
41	.0960	2.44	2-3/8	1-3/8	C02471
40	.0980	2.49	2-3/8	1-3/8	C02472
39	.0995	2.53	2-3/8	1-3/8	C02473
38	.1015	2.58	2-1/2	1-7/16	C02474
37	.1040	2.64	2-1/2	1-7/16	C02475
36	.1065	2.71	2-1/2	1-7/16	C02476
35	.1100	2.79	2-5/8	1-1/2	C02477
34	.1110	2.82	2-5/8	1-1/2	C02478
33	.1130	2.87	2-5/8	1-1/2	C02479
32	.1160	2.95	2-3/4	1-5/8	C02480
31	.1200	3.05	2-3/4	1-5/8	C02481
1/8	.1250	3.18	2-3/4	1-5/8	C02482
30	.1285	3.26	2-3/4	1-5/8	C02483
29	.1360	3.45	2-7/8	1-3/4	C02484
28	.1405	3.57	2-7/8	1-3/4	C02485
9/64	.1406	3.57	2-7/8	1-3/4	C02486
27	.1440	3.66	3	1-7/8	C02487
26	.1470	3.73	3	1-7/8	C02488
25	.1495	3.80	3	1-7/8	C02489
24	.1520	3.86	3-1/8	2	C02490
23	.1540	3.91	3-1/8	2	C02491
5/32	.1562	3.97	3-1/8	2	C02492
22	.1570	3.99	3-1/8	2	C02493
21	.1590	4.04	3-1/4	2-1/8	C02494
20	.1610	4.09	3-1/4	2-1/8	C02495
19	.1660	4.22	3-1/4	2-1/8	C02496
18	.1695	4.31	3-1/4	2-1/8	C02497

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
11/64	.1719	4.37	3-1/4	2-1/8	C02498
17	.1730	4.39	3-3/8	2-3/16	C02499
16	.1770	4.50	3-3/8	2-3/16	C02500
15	.1800	4.57	3-3/8	2-3/16	C02501
14	.1820	4.62	3-3/8	2-3/16	C02502
13	.1850	4.70	3-1/2	2-5/16	C02503
3/16	.1875	4.76	3-1/2	2-5/16	C02504
12	.1890	4.80	3-1/2	2-5/16	C02505
11	.1910	4.85	3-1/2	2-5/16	C02506
10	.1935	4.91	3-5/8	2-7/16	C02507
9	.1960	4.98	3-5/8	2-7/16	C02508
8	.1990	5.05	3-5/8	2-7/16	C02509
7	.2010	5.11	3-5/8	2-7/16	C02510
13/64	.2031	5.16	3-5/8	2-7/16	C02511
6	.2040	5.18	3-3/4	2-1/2	C02512
5	.2055	5.22	3-3/4	2-1/2	C02513
4	.2090	5.31	3-3/4	2-1/2	C02514
3	.2130	5.41	3-3/4	2-1/2	C02515
7/32	.2188	5.56	3-3/4	2-1/2	C02516
2	.2210	5.61	3-7/8	2-5/8	C02517
1	.2280	5.79	3-7/8	2-5/8	C02518
15/64	.2344	5.95	3-7/8	2-5/8	C02519
1/4	.2500	6.35	4	2-3/4	C02520
17/64	.2656	6.75	4-1/8	2-7/8	C02521
9/32	.2812	7.14	4-1/4	2-15/16	C02522
19/64	.2969	7.54	4-3/8	3-1/16	C02523
5/16	.3125	7.94	4-1/2	3-3/16	C02524
21/64	.3281	8.33	4-5/8	3-5/16	C02525
11/32	.3438	8.73	4-3/4	3-7/16	C02526
3/8	.3750	9.53	5	3-5/8	C02528
25/64	.3906	9.92	5-1/8	3-3/4	C02529
13/32	.4062	10.32	5-1/4	3-7/8	C02530
27/64	.4219	10.72	5-3/8	3-15/16	C02531
7/16	.4375	11.11	5-1/2	4-1/16	C02532
29/64	.4531	11.51	5-5/8	4-3/16	C02533
15/32	.4688	11.91	5-3/4	4-5/16	C02534
31/64	.4844	12.30	5-7/8	4-3/8	C02535
1/2	.5000	12.70	6	4-1/2	C02536

Drills • General Purpose

List #2510 Straight Shank Taper Length



Substrate - HSS
Length - Taper Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 118°



Features:

- General purpose flute construction for use in a wide variety of materials
- Taper length for extended reach
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1.00mm	.0394	1.00	57mm	29mm	C08592
60	.0400	1.02	2-1/4	1-1/8	C08593
59	.0410	1.04	2-1/4	1-1/8	C08594
58	.0420	1.07	2-1/4	1-1/8	C08596
57	.0430	1.09	2-1/4	1-1/8	C08597
56	.0465	1.18	2-1/4	1-1/8	C08600
3/64	.0469	1.19	2-1/4	1-1/8	C08601
1.25mm	.0492	1.25	76mm	44mm	C08603
55	.0520	1.32	3	1-3/4	C08605
54	.0550	1.40	3	1-3/4	C08607
53	.0595	1.51	3	1-3/4	C08611
1.55mm	.0610	1.55	76mm	44mm	C08612
1/16	.0625	1.59	3	1-3/4	C08613
52	.0635	1.61	3-3/4	2	C08615
51	.0670	1.70	3-3/4	2	C08618
50	.0700	1.78	3-3/4	2	C08620
49	.0730	1.85	3-3/4	2	C08623
48	.0760	1.93	3-3/4	2	C08625
5/64	.0781	1.98	3-3/4	2	C08627
47	.0785	1.99	4-1/4	2-1/4	C08628
2.00mm	.0787	2.00	108mm	57mm	C08629
46	.0810	2.06	4-1/4	2-1/4	C08631
45	.0820	2.08	4-1/4	2-1/4	C08632
44	.0860	2.18	4-1/4	2-1/4	C08635
43	.0890	2.26	4-1/4	2-1/4	C08638
2.30mm	.0906	2.30	108mm	57mm	C08639
2.35mm	.0925	2.35	108mm	57mm	C08640
42	.0935	2.37	4-1/4	2-1/4	C08641
3/32	.0938	2.38	4-1/4	2-1/4	C08642
2.40mm	.0945	2.40	117mm	64mm	C08643
41	.0960	2.44	4-5/8	2-1/2	C08644
40	.0980	2.49	4-5/8	2-1/2	C08646
39	.0995	2.53	4-5/8	2-1/2	C08648
38	.1015	2.58	4-5/8	2-1/2	C08649
37	.1040	2.64	4-5/8	2-1/2	C08651
36	.1065	2.71	4-5/8	2-1/2	C08653
7/64	.1094	2.78	4-5/8	2-1/2	C08655
35	.1100	2.79	5-1/8	2-3/4	C08656
34	.1110	2.82	5-1/8	2-3/4	C08658
33	.1130	2.87	5-1/8	2-3/4	C08659
32	.1160	2.95	5-1/8	2-3/4	C08661
3.00mm	.1181	3.00	130mm	70mm	C08662
31	.1200	3.05	5-1/8	2-3/4	C08663
3.10mm	.1220	3.10	130mm	70mm	C08664
1/8	.1250	3.18	5-1/8	2-3/4	C08665
3.20mm	.1260	3.20	137mm	76mm	C08666
30	.1285	3.26	5-3/8	3	C08668
3.30mm	.1299	3.30	137mm	76mm	C08669
29	.1360	3.45	5-3/8	3	C08671
8	.1405	3.57	5-3/8	3	C08673
9/64	.1406	3.57	5-3/8	3	C08674
27	.1440	3.66	5-3/8	3	C08676
26	.1470	3.73	5-3/8	3	C08678
25	.1495	3.80	5-3/8	3	C08680
24	.1520	3.86	5-3/8	3	C08682
23	.1540	3.91	5-3/8	3	C08684
5/32	.1562	3.97	5-3/8	3	C08685

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
22	.1570	3.99	5-3/4	3-3/8	C08686
4.00mm	.1575	4.00	146mm	86mm	C08687
21	.1590	4.04	5-3/4	3-3/8	C08688
20	.1610	4.09	5-3/4	3-3/8	C08689
19	.1660	4.22	5-3/4	3-3/8	C08692
18	.1695	4.31	5-3/4	3-3/8	C08695
11/64	.1719	4.37	5-3/4	3-3/8	C08696
17	.1730	4.39	5-3/4	3-3/8	C08697
16	.1770	4.50	5-3/4	3-3/8	C08699
4.50mm	.1772	4.50	146mm	86mm	C08700
15	.1800	4.57	5-3/4	3-3/8	C08701
14	.1820	4.62	5-3/4	3-3/8	C08703
13	.1850	4.70	5-3/4	3-3/8	C08704
3/16	.1875	4.76	5-3/4	3-3/8	C08707
12	.1890	4.80	6	3-5/8	C08708
11	.1910	4.85	6	3-5/8	C08710
10	.1935	4.91	6	3-5/8	C08712
9	.1960	4.98	6	3-5/8	C08713
5.00mm	.1969	5.00	152mm	92mm	C08714
8	.1990	5.05	6	3-5/8	C08715
7	.2010	5.11	6	3-5/8	C08717
13/64	.2031	5.16	6	3-5/8	C08718
6	.2040	5.18	6	3-5/8	C08719
5	.2055	5.22	6	3-5/8	C08721
4	.2090	5.31	6	3-5/8	C08724
3	.2130	5.41	6	3-5/8	C08726
7/32	.2188	5.56	6	3-5/8	C08728
2	.2210	5.61	6-1/8	3-3/4	C08730
1	.2280	5.79	6-1/8	3-3/4	C08733
5.90mm	.2323	5.90	156mm	95mm	C08735
A	.2340	5.94	6-1/8	3-3/4	C08736
15/64	.2344	5.95	6-1/8	3-3/4	C08737
6.00mm	.2362	6.00	156mm	95mm	C08738
B	.2380	6.05	6-1/8	3-3/4	C08739
C	.2420	6.15	6-1/8	3-3/4	C08741
D	.2460	6.25	6-1/8	3-3/4	C08743
6.30mm	.2480	6.30	156mm	95mm	C08745
1/4	.2500	6.35	6-1/8	3-3/4	C08746
6.50mm	.2559	6.50	159mm	98mm	C08749
F	.2570	6.53	6-1/4	3-7/8	C08750
G	.2610	6.63	6-1/4	3-7/8	C08751
17/64	.2656	6.75	6-1/4	3-7/8	C08752
H	.2660	6.76	6-1/4	3-7/8	C08754
6.80mm	.2677	6.80	159mm	98mm	C08755
I	.2720	6.91	6-1/4	3-7/8	C08757
7.00mm	.2756	7.00	159mm	98mm	C08758
J	.2770	7.04	6-1/4	3-7/8	C08759
K	.2810	7.14	6-1/4	3-7/8	C08761
L	.2900	7.37	6-3/8	4	C08765
9/32	.2812	7.14	6-1/4	3-7/8	C08766
M	.2950	7.49	6-3/8	4	C08768
19/64	.2969	7.54	6-3/8	4	C08770
N	.3020	7.67	6-3/8	4	C08772
5/16	.3125	7.94	6-3/8	4	C08777
8.00mm	.3150	8.00	165mm	105mm	C08778
O	.3160	8.03	6-1/2	4-1/8	C08779
P	.3230	8.20	6-1/2	4-1/8	C08782

(Continued on next page)

Drills • General Purpose

List #2510 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
21/64	.3281	8.33	6-1/2	4-1/8	C08785
Q	.3320	8.43	6-1/2	4-1/8	C08787
8.50mm	.3346	8.50	165mm	105mm	C08788
R	.3390	8.61	6-1/2	4-1/8	C08790
11/32	.3438	8.73	6-1/2	4-1/8	C08792
S	.3480	8.84	6-3/4	4-1/4	C08795
9.00mm	.3543	9.00	171mm	108mm	C08797
T	.3580	9.09	6-3/4	4-1/4	C08798
23/64	.3594	9.13	6-3/4	4-1/4	C08800
U	.3680	9.35	6-3/4	4-1/4	C08804
3/8	.3750	9.53	6-3/4	4-1/4	C08807
V	.3770	9.58	7	4-3/8	C08808
W	.3860	9.80	7	4-3/8	C08813
25/64	.3906	9.92	7	4-3/8	C08815
10.00mm	.3937	10.00	178mm	111mm	C08816
X	.3970	10.08	7	4-3/8	C08817
10.20mm	.4016	10.20	178mm	111mm	C08818
Y	.4040	10.26	7	4-3/8	C08819
13/32	.4062	10.32	7	4-3/8	C08821
Z	.4130	10.49	7-1/4	4-5/8	C08822
10.50mm	.4134	10.50	184mm	117mm	C08823
27/64	.4219	10.72	7-1/4	4-5/8	C08824
11.00mm	.4331	11.00	184mm	117mm	C08826
7/16	.4375	11.11	7-1/4	4-5/8	C08827
11.20mm	.4409	11.20	190mm	121mm	C08828
29/64	.4531	11.51	7-1/2	4-3/4	C08830
15/32	.4688	11.91	7-1/2	4-3/4	C08832
12.00mm	.4724	12.00	197mm	121mm	C08833
31/64	.4844	12.30	7-3/4	4-3/4	C08835
1/2	.5000	12.70	7-3/4	4-3/4	C08837
13.00mm	.5118	13.00	203mm	121mm	C08839
33/64	.5156	13.10	8	4-3/4	C08840
17/32	.5312	13.49	8	4-3/4	C08842
35/64	.5469	13.89	8-1/4	4-7/8	C08845
14.00mm	.5512	14.00	210mm	124mm	C08846
9/16	.5625	14.29	8-1/4	4-7/8	C08848
37/64	.5781	14.68	8-3/4	4-7/8	C08850
15.00mm	.5906	15.00	222mm	124mm	C08852
19/32	.5938	15.08	8-3/4	4-7/8	C08853
39/64	.6094	15.48	8-3/4	4-7/8	C08855
5/8	.6250	15.88	8-3/4	4-7/8	C08858
16.00mm	.6299	16.00	229mm	130mm	C08859
41/64	.6406	16.27	9	5-1/8	C08861
21/32	.6562	16.67	9	5-1/8	C08863
17.00mm	.6693	17.00	235mm	137mm	C08865
43/64	.6719	17.07	9-1/4	5-3/8	C08866
11/16	.6875	17.46	9-1/4	5-3/8	C08868
45/64	.7031	17.86	9-1/2	5-5/8	C08870
18.00mm	.7087	18.00	241mm	143mm	C08871

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
23/32	.7188	18.26	9-1/2	5-5/8	C08872
47/64	.7344	18.65	9-3/4	5-7/8	C08874
19.00mm	.7480	19.00	248mm	149mm	C08875
3/4	.7500	19.05	9-3/4	5-7/8	C08876
49/64	.7656	19.45	9-7/8	6	C08877
25/32	.7812	19.84	9-7/8	6	C08879
20.00mm	.7874	20.00	254mm	156mm	C08880
51/64	.7969	20.24	10	6-1/8	C08881
13/16	.8125	20.64	10	6-1/8	C08883
53/64	.8281	21.03	10	6-1/8	C08885
27/32	.8438	21.43	10	6-1/8	C08886
55/64	.8594	21.83	10	6-1/8	C08888
7/8	.8750	22.23	10	6-1/8	C08890
57/64	.8906	22.62	10	6-1/8	C08892
29/32	.9062	23.02	10	6-1/8	C08894
59/64	.9219	23.42	10-3/4	6-1/8	C08895
15/16	.9375	23.81	10-3/4	6-1/8	C08897
61/64	.9531	24.21	11	6-3/8	C08899
31/32	.9688	24.61	11	6-3/8	C08901
63/64	.9844	25.00	11	6-3/8	C08903
1	1.0000	25.40	11	6-3/8	C08904
1-1/64	1.0156	25.80	11-1/8	6-1/2	C08906
1-1/32	1.0312	26.19	11-1/8	6-1/2	C08908
1-3/64	1.0469	26.59	11-1/4	6-5/8	C08910
1-1/16	1.0625	26.99	11-1/4	6-5/8	C08911
1-5/64	1.0781	27.38	11-1/2	6-7/8	C08913
1-3/32	1.0938	27.78	11-1/2	6-7/8	C08915
1-7/64	1.1094	28.18	11-3/4	7-1/8	C08917
1-1/8	1.1250	28.58	11-3/4	7-1/8	C08919
1-9/64	1.1406	28.97	11-7/8	7-1/4	C08920
1-5/32	1.1562	29.37	11-7/8	7-1/4	C08922
1-11/64	1.1719	29.77	12	7-3/8	C08924
1-3/16	1.1875	30.16	12	7-3/8	C08926
1-13/64	1.2031	30.56	12-1/8	7-1/2	C08928
1-7/32	1.2188	30.96	12-1/8	7-1/2	C08929
1-15/64	1.2344	31.35	12-1/2	7-7/8	C08931
1-1/4	1.2500	31.75	12-1/2	7-7/8	C08933
19/32	1.2812	32.54	14-1/8	8-1/2	C08937
1-5/16	1.3125	33.34	14-1/4	8-5/8	C08940
1-11/32	1.3438	34.13	14-3/8	8-3/4	C08944
1-3/8	1.3750	34.93	14-1/2	8-7/8	C08947
1-13/32	1.4062	35.72	14-5/8	9	C08951
1-7/16	1.4375	36.51	14-3/4	9-1/8	C08955
1-15/32	1.4688	37.31	14-7/8	9-1/4	C08958
1-1/2	1.5000	38.10	15	9-3/8	C08962
1-9/16	1.5625	39.69	15-1/4	9-5/8	C08969
1-5/8	1.6250	41.28	15-5/8	9-7/8	C08976
1-3/4	1.7500	44.45	16-1/4	10-1/2	C08990

Drills • General Purpose

List #950E Extra Length Straight Shank



Substrate - HSS
Length - Extra Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 118° K Notched



Features:

- 118° K notched for self centering, reduced thrust for ease of penetration
- Heavy duty construction for extra tool strength
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
3/32	.0938	2.38	8	5-1/2	C09655
7/64	.1094	2.78	8	5-1/2	C09656
1/8	.1250	3.18	8	5-1/2	C09657
9/64	.1406	3.57	8	5-1/2	C09658
5/32	.1562	3.97	8	5-1/2	C09659
11/64	.1719	4.37	8	5-1/2	C09660
3/16	.1875	4.76	8	5-1/2	C09661
13/64	.2031	5.16	8	5-1/2	C09662
7/32	.2188	5.56	8	5-1/2	C09663
15/64	.2344	5.95	8	5-1/2	C09664
1/4	.2500	6.35	8	5-1/2	C09665
17/64	.2656	6.75	8	5-1/2	C09666
9/32	.2812	7.14	8	5-1/2	C09667
19/64	.2969	7.54	8	5-1/2	C09668
5/16	.3125	7.94	8	5-1/2	C09669
21/64	.3281	8.33	8	5-1/2	C09670
11/32	.3438	8.73	8	5-1/2	C09671
23/64	.3594	9.13	8	5-1/2	C09672
3/8	.3750	9.53	8	5-1/2	C09673
25/64	.3906	9.92	8	5-1/2	C09674
13/32	.4062	10.32	8	5-1/2	C09675
27/64	.4219	10.72	8	5-1/2	C09676
7/16	.4375	11.11	8	5-1/2	C09677
29/64	.4531	11.51	8	5-1/2	C09678
15/32	.4688	11.91	8	5-1/2	C09679
31/64	.4844	12.30	8	5-1/2	C09680
1/2	.5000	12.70	8	5-1/2	C09681
1/8	.1250	3.18	10	7-1/2	C09707
5/32	.1562	3.97	10	7-1/2	C09709
3/16	.1875	4.76	10	7-1/2	C09711
7/32	.2188	5.56	10	7-1/2	C09713
15/64	.2344	5.95	10	7-1/2	C09714
1/4	.2500	6.35	10	7-1/2	C09715
9/32	.2812	7.14	10	7-1/2	C09717
5/16	.3125	7.94	10	7-1/2	C09719
11/32	.3438	8.73	10	7-1/2	C09721
3/8	.3750	9.53	10	7-1/2	C09723

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
13/32	.4062	10.32	10	7-1/2	C09725
7/16	.4375	11.11	10	7-1/2	C09727
15/32	.4688	11.91	10	7-1/2	C09729
1/2	.5000	12.70	10	7-1/2	C09731
17/32	.5312	13.49	10	7-1/2	C09733
9/16	.5625	14.29	10	7-1/2	C09735
1/8	.1250	3.18	12	9	C09736
5/32	.1562	3.97	12	9	C09738
3/16	.1875	4.76	12	9	C09740
7/32	.2188	5.56	12	9	C09742
1/4	.2500	6.35	12	9	C09744
9/32	.2812	7.14	12	9	C09746
5/16	.3125	7.94	12	9	C09748
11/32	.3438	8.73	12	9	C09750
3/8	.3750	9.53	12	9	C09752
13/32	.4062	10.32	12	9	C09754
7/16	.4375	11.11	12	9	C09756
15/32	.4688	11.91	12	9	C09758
1/2	.5000	12.70	12	9	C09760
17/32	.5312	13.49	12	9	C09762
9/16	.5625	14.29	12	9	C09764
19/32	.5938	15.08	12	9	C09766
5/8	.6250	15.88	12	9	C09768
21/32	.6562	16.67	12	9	C09770
11/16	.6875	17.46	12	9	C09772
23/32	.7188	18.26	12	9	C09774
3/4	.7500	19.05	12	9	C09776
1/4	.2500	6.35	18	14	C09831
9/32	.2812	7.14	18	14	C09833
5/16	.3125	7.94	18	14	C09835
11/32	.3438	8.73	18	14	C09837
3/8	.3750	9.53	18	14	C09839
13/32	.4062	10.32	18	14	C09841
7/16	.4375	11.11	18	14	C09843
15/32	.4688	11.91	18	14	C09845
1/2	.5000	12.70	18	14	C09847

Drills • General Purpose

List #2410 Taper Shank GP Standard Shank Drill



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118°



Features:

- General purpose flute construction for use in a wide variety of materials
- Standard shank sizes
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
1/8	.1250	3.18	5-1/8	1-7/8	1	C12040
9/64	.1250	3.18	5-1/8	1-7/8	1	C12046
5/32	.1562	3.97	5-3/8	2-1/8	1	C12052
11/64	.1719	4.37	5-3/4	2-1/2	1	C12058
3/16	.1875	4.76	5-3/4	2-1/2	1	C12064
13/64	.2031	5.16	6	2-3/4	1	C12069
7/32	.2188	5.56	6	2-3/4	1	C12075
A	.2340	5.94	6-1/8	2-7/8	1	C12081
15/64	.2344	5.95	6-1/8	2-7/8	1	C12082
B	.2380	6.05	6-1/8	2-7/8	1	C12084
C	.2420	6.15	6-1/8	2-7/8	1	C12086
D	.2460	6.25	6-1/8	2-7/8	1	C12088
1/4	.2500	6.35	6-1/8	2-7/8	1	C12091
F	.2570	6.53	6-1/4	3	1	C12095
G	.2610	6.63	6-1/4	3	1	C12097
17/64	.2656	6.75	6-1/4	3	1	C12099
H	.2660	6.76	6-1/4	3	1	C12101
I	.2720	6.91	6-1/4	3	1	C12104
J	.2770	7.04	6-1/4	3	1	C12106
K	.2810	7.14	6-1/4	3	1	C12108
L	.2900	7.37	6-3/8	3-1/8	1	C12112
9/32	.2812	7.14	6-1/4	3	1	C12113
M	.2950	7.49	6-3/8	3-1/8	1	C12115
19/64	.2969	7.54	6-3/8	3-1/8	1	C12117
N	.3020	7.67	6-3/8	3-1/8	1	C12119
5/16	.3125	7.94	6-3/8	3-1/8	1	C12124
O	.3160	8.03	6-1/2	3-1/4	1	C12126
P	.3230	8.20	6-1/2	3-1/4	1	C12129
21/64	.3281	8.33	6-1/2	3-1/4	1	C12132
Q	.3320	8.43	6-1/2	3-1/4	1	C12134
R	.3390	8.61	6-1/2	3-1/4	1	C12137
11/32	.3438	8.73	6-1/2	3-1/4	1	C12139
S	.3480	8.84	6-3/4	3-1/2	1	C12142
T	.3580	9.09	6-3/4	3-1/2	1	C12145
23/64	.3594	9.13	6-3/4	3-1/2	1	C12147
U	.3680	9.35	6-3/4	3-1/2	1	C12151
3/8	.3750	9.53	6-3/4	3-1/2	1	C12154
V	.3770	9.58	7	3-5/8	1	C12155
W	.3860	9.80	7	3-5/8	1	C12160
25/64	.3906	9.92	7	3-5/8	1	C12162
X	.3970	10.08	7	3-5/8	1	C12164
Y	.4040	10.26	7	3-5/8	1	C12166
13/32	.4062	10.32	7	3-5/8	1	C12167
Z	.4130	10.49	7-1/4	3-7/8	1	C12168
27/64	.4219	10.72	7-1/4	3-7/8	1	C12170
7/16	.4375	11.11	7-1/4	3-7/8	1	C12173
29/64	.4531	11.51	7-1/2	4-1/8	1	C12176
15/32	.4688	11.91	7-1/2	4-1/8	1	C12178
31/64	.4844	12.30	8-1/4	4-3/8	2	C12181
1/2	.5000	12.70	8-1/4	4-3/8	2	C12183
33/64	.5156	13.10	8-1/2	4-5/8	2	C12186
17/32	.5312	13.49	8-1/2	4-5/8	2	C12188
35/64	.5469	13.89	8-3/4	4-7/8	2	C12191
9/16	.5625	14.29	8-3/4	4-7/8	2	C12194

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
37/64	.5781	14.68	8-3/4	4-7/8	2	C12196
19/32	.5938	15.08	8-3/4	4-7/8	2	C12199
39/64	.6094	15.48	8-3/4	4-7/8	2	C12201
5/8	.6250	15.88	8-3/4	4-7/8	2	C12204
41/64	.6406	16.27	9	5-1/8	2	C12207
21/32	.6562	16.67	9	5-1/8	2	C12209
43/64	.6719	17.07	9-1/4	5-3/8	2	C12212
11/16	.6875	17.46	9-1/4	5-3/8	2	C12214
45/64	.7031	17.86	9-1/2	5-5/8	2	C12216
23/32	.7188	18.26	9-1/2	5-5/8	2	C12218
47/64	.7344	18.65	9-3/4	5-7/8	2	C12220
3/4	.7500	19.05	9-3/4	5-7/8	2	C12222
49/64	.7656	19.45	9-7/8	6	2	C12223
25/32	.7812	19.84	9-7/8	6	2	C12225
51/64	.7969	20.24	10-3/4	6-1/8	3	C12227
13/16	.8125	20.64	10-3/4	6-1/8	3	C12229
53/64	.8281	21.03	10-3/4	6-1/8	3	C12231
27/32	.8438	21.43	10-3/4	6-1/8	3	C12232
55/64	.8594	21.83	10-3/4	6-1/8	3	C12234
7/8	.8750	22.23	10-3/4	6-1/8	3	C12236
57/64	.8906	22.62	10-3/4	6-1/8	3	C12238
29/32	.9062	23.02	10-3/4	6-1/8	3	C12240
59/64	.9219	23.42	10-3/4	6-1/8	3	C12241
15/16	.9375	23.81	10-3/4	6-1/8	3	C12243
61/64	.9531	24.21	11	6-3/8	3	C12245
31/32	.9688	24.61	11	6-3/8	3	C12247
63/64	.9844	25.00	11	6-3/8	3	C12249
1	1.0000	25.40	11	6-3/8	3	C12250
1-1/64	1.0156	25.80	11-1/8	6-1/2	3	C12252
1-1/32	1.0312	26.19	11-1/8	6-1/2	3	C12254
1-3/64	1.0469	26.59	11-1/4	6-5/8	3	C12256
1-1/16	1.0625	26.99	11-1/4	6-5/8	3	C12257
1-5/64	1.0781	27.38	12-1/2	6-7/8	4	C12259
1-3/32	1.0938	27.78	12-1/2	6-7/8	4	C12261
1-7/64	1.1094	28.18	12-3/4	7-1/8	4	C12263
1-1/8	1.1250	28.58	12-3/4	7-1/8	4	C12265
1-9/64	1.1406	28.97	12-7/8	7-1/4	4	C12266
1-5/32	1.1562	29.37	12-7/8	7-1/4	4	C12268
1-11/64	1.1719	29.77	13	7-3/8	4	C12270
1-3/16	1.1875	30.16	13	7-3/8	4	C12272
1-13/64	1.2031	30.56	13-1/8	7-1/2	4	C12274
1-7/32	1.2188	30.96	13-1/8	7-1/2	4	C12275
1-15/64	1.2344	31.35	13-1/2	7-7/8	4	C12277
1-1/4	1.2500	31.75	13-1/2	7-7/8	4	C12279
1-17/64	1.2656	32.15	14-1/8	8-1/2	4	C12281
1-9/32	1.2812	32.54	14-1/8	8-1/2	4	C12283
1-19/64	1.2969	32.94	14-1/4	8-5/8	4	C12284
1-5/16	1.3125	33.34	14-1/4	8-5/8	4	C12286
1-21/64	1.3281	33.73	14-3/8	8-3/4	4	C12288
1-11/32	1.3438	34.13	14-3/8	8-3/4	4	C12290
1-23/64	1.3594	34.53	14-1/2	8-7/8	4	C12292
1-3/8	1.3750	34.93	14-1/2	8-7/8	4	C12293
1-25/64	1.3906	35.32	14-5/8	9	4	C12295
1-13/32	1.4062	35.72	14-5/8	9	4	C12297

(Continued on next page)

Drills • General Purpose

List #2410 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
1-27/64	1.4219	36.12	14-3/4	9-1/8	4	C12299
1-7/16	1.4375	36.51	14-3/4	9-1/8	4	C12301
1-29/64	1.4531	36.91	14-7/8	9-1/4	4	C12302
1-15/32	1.4688	37.31	14-7/8	9-1/4	4	C12304
1-31/64	1.4844	37.70	15	9-3/8	4	C12306
1-1/2	1.5000	38.10	15	9-3/8	4	C12308
1-17/32	1.5312	38.89	16-3/8	9-3/8	5	C12311
1-9/16	1.5625	39.69	16-5/8	9-5/8	5	C12315
1-19/32	1.5938	40.48	16-7/8	9-7/8	5	C12318
1-5/8	1.6250	41.28	17	10	5	C12322
1-21/32	1.6562	42.07	17-1/8	10-1/8	5	C12326
1-11/16	1.6875	42.86	17-1/8	10-1/8	5	C12329
1-23/32	1.7188	43.66	17-1/8	10-1/8	5	C12333
1-3/4	1.7500	44.45	17-1/8	10-1/8	5	C12336
1-25/32	1.7812	45.24	17-1/8	10-1/8	5	C12340
1-13/16	1.8125	46.04	17-1/8	10-1/8	5	C12344
1-27/32	1.8438	46.83	17-1/8	10-1/8	5	C12347
1-7/8	1.8750	47.63	17-3/8	10-3/8	5	C12351
1-29/32	1.9062	48.42	17-3/8	10-3/8	5	C12354
1-15/16	1.9375	49.21	17-3/8	10-3/8	5	C12358
1-31/32	1.9688	50.01	17-3/8	10-3/8	5	C12362
2	2.0000	50.80	17-3/8	10-3/8	5	C12365

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
2-1/32	2.0312	51.59	17-3/8	10-3/8	5	C12368
2-1/16	2.0625	52.39	17-3/8	10-1/4	5	C12371
2-3/32	2.0938	53.18	17-3/8	10-1/4	5	C12374
2-1/8	2.1250	53.98	17-3/8	10-1/4	5	C12376
2-5/32	2.1562	54.77	17-3/8	10-1/4	5	C12379
2-3/16	2.1875	55.56	17-3/8	10-1/4	5	C12382
2-7/32	2.2188	56.36	17-3/8	10-1/8	5	C12385
2-1/4	2.2500	57.15	17-3/8	10-1/8	5	C12388
2-5/16	2.3125	58.74	17-3/8	10-1/8	5	C12393
2-3/8	2.3750	60.33	17-3/8	10-1/8	5	C12399
2-7/16	2.4375	61.91	18-3/4	11-1/4	5	C12404
2-1/2	2.5000	63.50	18-3/4	11-1/4	5	C12410
2-9/16	2.5625	65.09	19-1/2	11-7/8	5	C12416
2-5/8	2.6250	66.68	19-1/2	11-7/8	5	C12421
2-11/16	2.6875	68.26	20-3/8	12-3/4	5	C12427
2-3/4	2.7500	69.85	20-3/8	12-3/4	5	C12432
2-13/16	2.8125	71.44	21-1/8	13-3/8	5	C12438
2-7/8	2.8750	73.03	21-1/8	13-3/8	5	C12444
2-15/16	2.9375	74.61	21-3/4	14	5	C12449
3	3.0000	76.20	21-3/4	14	5	C12455
3-1/8	3.1250	79.38	24-1/2	14-5/8	6	C12460
3-1/4	3.2500	82.55	25-1/2	15-1/2	6	C12462

List #2412 Taper Shank Drill with Oversized Shank



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118°



Features:

- General purpose flute construction for use in a wide variety of materials
- Shank larger than standard
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
3/8	.3750	9.53	7-3/8	3-1/2	2	C12641
13/32	.4062	10.32	7-1/2	3-5/8	2	C12650
27/64	.4219	10.72	7-3/4	3-7/8	2	C12652
7/16	.4375	11.11	7-3/4	3-7/8	2	C12655
29/64	.4531	11.51	8	4-1/8	2	C12658
15/32	.4688	11.91	8	4-1/8	2	C12660
41/64	.6406	16.27	9-3/4	5-1/8	3	C12663
21/32	.6562	16.67	9-3/4	5-1/8	3	C12665

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
11/16	.6875	17.46	10	5-3/8	3	C12670
23/32	.7188	18.26	10-1/4	5-5/8	3	C12674
3/4	.7500	19.05	10-1/2	5-7/8	3	C12678
49/64	.7656	19.45	10-5/8	6	3	C12679
25/32	.7812	19.84	10-5/8	6	3	C12681
1	1.0000	25.40	12	6-3/8	4	C12684
1-1/32	1.0312	26.19	12-1/8	6-1/2	4	C12688
1-1/16	1.0625	26.99	12-1/4	6-5/8	4	C12691

Drills • General Purpose

List #241 | Taper Shank Drill with Undersized Shank



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118°



Features:

- General purpose flute construction for use in a wide variety of materials
- Shank smaller than standard
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
31/64	.4844	12.30	7-3/4	4-3/8	1	C12481
1/2	.5000	12.70	7-3/4	4-3/8	1	C12483
33/64	.5156	13.10	8	4-5/8	1	C12486
17/32	.5312	13.49	8	4-5/8	1	C12488
35/64	.5469	13.89	8-1/4	4-7/8	1	C12491
9/16	.5625	14.29	8-1/4	4-7/8	1	C12494
51/64	.7969	20.24	10	6-1/8	2	C12496
13/16	.8125	20.64	10	6-1/8	2	C12498
27/32	.8438	21.43	10	6-1/8	2	C12501
55/64	.8594	21.83	10	6-1/8	2	C12503
7/8	.8750	22.23	10	6-1/8	2	C12505
57/64	.8906	22.62	10	6-1/8	2	C12507
29/32	.9062	23.02	10	6-1/8	2	C12509
1-5/64	1.0781	27.38	11-1/2	6-7/8	3	C12512
1-3/32	1.0938	27.78	11-1/2	6-7/8	3	C12514
1-7/64	1.1094	28.18	11-3/4	7-1/8	3	C12516
1-1/8	1.1250	28.58	11-3/4	7-1/8	3	C12518
1-9/64	1.1406	28.97	11-7/8	7-1/4	3	C12519
1-5/32	1.1562	29.37	11-7/8	7-1/4	3	C12521
1-11/64	1.1719	29.77	12	7-3/8	3	C12523
1-3/16	1.1875	30.16	12	7-3/8	3	C12525
1-13/64	1.2031	30.56	12-1/8	7-1/2	3	C12527
1-7/32	1.2188	30.96	12-1/8	7-1/2	3	C12528
1-15/64	1.2344	31.35	12-1/2	7-7/8	3	C12530
1-1/4	1.2500	31.75	12-1/2	7-7/8	3	C12532
1-33/64	1.5156	38.50	15	9-3/8	4	C12539

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
1-17/32	1.5312	38.89	15	9-3/8	4	C12541
1-35/64	1.5469	39.29	15-1/4	9-5/8	4	C12543
1-9/16	1.5625	39.69	15-1/4	9-5/8	4	C12545
1-37/64	1.5781	40.08	15-1/2	9-7/8	4	C12547
1-19/32	1.5938	40.48	15-1/2	9-7/8	4	C12548
1-39/64	1.6094	40.88	15-5/8	10	4	C12550
1-5/8	1.6250	41.28	15-5/8	10	4	C12552
1-41/64	1.6406	41.67	15-3/4	10-1/8	4	C12554
1-21/32	1.6562	42.07	15-3/4	10-1/8	4	C12556
1-43/64	1.6719	42.47	15-3/4	10-1/8	4	C12557
1-11/16	1.6875	42.86	15-3/4	10-1/8	4	C12559
1-45/64	1.7031	43.26	15-3/4	10-1/8	4	C12561
1-23/32	1.7188	43.66	15-3/4	10-1/8	4	C12563
1-47/64	1.7344	44.05	16-1/4	10-3/8	4	C12565
1-3/4	1.7500	44.45	16-1/4	10-3/8	4	C12566
1-25/32	1.7812	45.24	16-1/4	10-3/8	4	C12570
1-13/16	1.8125	46.04	16-1/4	10-3/8	4	C12574
1-27/32	1.8438	46.83	16-1/4	10-3/8	4	C12577
1-7/8	1.8750	47.63	16-1/2	10-1/2	4	C12581
1-29/32	1.9062	48.42	16-1/2	10-1/2	4	C12584
1-15/16	1.9375	49.21	16-5/8	10-5/8	4	C12588
1-31/32	1.9688	50.01	16-5/8	10-5/8	4	C12592
2	2.0000	50.80	16-5/8	10-5/8	4	C12595
3-1/8	3.1250	79.38	22	14-1/4	5	C12604
3-1/4	3.2500	82.55	23	15-1/4	5	C12615
3-1/2	3.5000	88.90	24	16-1/4	5	C12637

Drills • General Purpose

List #940E Extra Length Taper Shank Drill



Substrate - HSS
Length - Extra Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118° K Notched



Features:

- Higher helix angle of 34° for more efficient chip removal, particularly in deep hole applications
- Heavy duty construction for extra tool strength
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling
- 118° K notched for self centering, reducing thrust for ease of penetration

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
1/4	.2500	6.35	9-1/4	6	1	C13795
17/64	.2656	6.75	9-1/4	6	1	C13796
9/32	.2812	7.14	9-1/4	6	1	C13797
19/64	.2812	7.14	9-1/4	6	1	C13798
5/16	.3125	7.94	9-1/4	6	1	C13799
21/64	.3281	8.33	9-1/4	6	1	C13800
11/32	.3438	8.73	9-1/4	6	1	C13801
23/64	.3594	9.13	9-1/4	6	1	C13802
3/8	.3750	9.53	9-1/4	6	1	C13803
25/64	.3906	9.92	9-3/8	6	1	C13804
13/32	.4062	10.32	9-3/8	6	1	C13805
27/64	.4219	10.72	9-3/8	6	1	C13806
7/16	.4375	11.11	9-3/8	6	1	C13807
29/64	.4531	11.51	9-3/8	6	1	C13808
15/32	.4688	11.91	9-3/8	6	1	C13809
31/64	.4844	12.30	11-7/8	8	2	C13830
1/2	.5000	12.70	11-7/8	8	2	C13831
33/64	.5156	13.10	11-7/8	8	2	C13832
17/32	.5312	13.49	11-7/8	8	2	C13833
35/64	.5469	13.89	11-7/8	8	2	C13834
9/16	.5625	14.29	11-7/8	8	2	C13835
37/64	.5781	14.68	11-7/8	8	2	C13836
19/32	.5938	15.08	11-7/8	8	2	C13837
39/64	.6094	15.48	11-7/8	8	2	C13838
5/8	.6250	15.88	11-7/8	8	2	C13839
41/64	.6406	16.27	11-7/8	8	2	C13840
21/32	.6562	16.67	11-7/8	8	2	C13841
43/64	.6719	17.07	11-7/8	8	2	C13842
11/16	.6875	17.46	11-7/8	8	2	C13843
45/64	.7031	17.86	11-7/8	8	2	C13844
23/32	.7188	18.26	11-7/8	8	2	C13845
47/64	.7344	18.65	11-7/8	8	2	C13846
3/4	.7500	19.05	11-7/8	8	2	C13847
49/64	.7656	19.45	11-7/8	8	2	C13848
25/32	.7812	19.84	11-7/8	8	2	C13849
1/4	.2500	6.35	13-1/4	10	1	C13873
9/32	.2812	7.14	13-1/4	10	1	C13875
5/16	.3125	7.94	13-1/4	10	1	C13877
11/32	.3438	8.73	13-1/4	10	1	C13879
3/8	.3750	9.53	13-1/4	10	1	C13881
13/32	.4062	10.32	13-3/8	10	1	C13883
7/16	.4375	11.11	13-3/8	10	1	C13885
15/32	.4688	11.91	13-3/8	10	1	C13887
1/2	.5000	12.70	13-7/8	10	2	C13889
17/32	.5312	13.49	13-7/8	10	2	C13891
9/16	.5625	14.29	13-7/8	10	2	C13893
19/32	.5938	15.08	13-7/8	10	2	C13895
5/8	.6250	15.88	13-7/8	10	2	C13897
21/32	.6562	16.67	13-7/8	10	2	C13899
11/16	.6875	17.46	13-7/8	10	2	C13901
23/32	.7188	18.26	13-7/8	10	2	C13903
3/4	.7500	19.05	13-7/8	10	2	C13905
25/32	.7812	19.84	13-7/8	10	2	C13907
13/16	.8125	20.64	14-1/2	10	3	C13909
27/32	.8438	21.43	14-1/2	10	3	C13911
7/8	.8750	22.23	14-1/2	10	3	C13913
29/32	.9062	23.02	14-1/2	10	3	C13915

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
15/16	.9375	23.81	14-1/2	10	3	C13917
31/32	.9688	24.61	14-1/2	10	3	C13919
1	1.0000	25.40	14-1/2	10	3	C13921
1-1/32	1.0312	26.19	14-1/2	10	3	C13923
1-1/16	1.0625	26.99	14-1/2	10	3	C13925
1/4	.2500	6.35	15-1/4	12	1	C13926
9/32	.2812	7.14	15-1/4	12	1	C13928
5/16	.3125	7.94	15-1/4	12	1	C13930
11/32	.3438	8.73	15-1/4	12	1	C13932
3/8	.3750	9.53	15-1/4	12	1	C13934
13/32	.4062	10.32	15-3/8	12	1	C13936
7/16	.4375	11.11	15-3/8	12	1	C13938
1/2	.5000	12.70	15-7/8	12	2	C13942
17/32	.5312	13.49	15-7/8	12	2	C13944
9/16	.5625	14.29	15-7/8	12	2	C13946
19/32	.5938	15.08	15-7/8	12	2	C13948
5/8	.6250	15.88	15-7/8	12	2	C13950
21/32	.6562	16.67	15-7/8	12	2	C13952
11/16	.6875	17.46	15-7/8	12	2	C13954
23/32	.7188	18.26	15-7/8	12	2	C13956
3/4	.7500	19.05	15-7/8	12	2	C13958
25/32	.7812	19.84	15-7/8	12	2	C13960
13/16	.8125	20.64	16-1/2	12	3	C13962
27/32	.8438	21.43	16-1/2	12	3	C13964
7/8	.8750	22.23	16-1/2	12	3	C13966
29/32	.9062	23.02	16-1/2	12	3	C13968
15/16	.9375	23.81	16-1/2	12	3	C13970
31/32	.9688	24.61	16-1/2	12	3	C13972
1	1.0000	25.40	16-1/2	12	3	C13974
1-1/32	1.0312	26.19	16-1/2	12	3	C13976
1-1/16	1.0625	26.99	16-1/2	12	3	C13978
1-3/32	1.0938	27.78	17-1/2	12	4	C13980
1-1/8	1.1250	28.58	17-1/2	12	4	C13982
1-5/32	1.1562	29.37	17-1/2	12	4	C13984
1-3/16	1.1875	30.16	17-1/2	12	4	C13986
1-1/4	1.2500	31.75	17-1/2	12	4	C13990
1-5/16	1.3125	33.34	17-1/2	12	4	C13994
1-3/8	1.3750	34.93	17-1/2	12	4	C13998
1/2	.5000	12.70	17-7/8	14	2	C14008
17/32	.5312	13.49	17-7/8	14	2	C14010
9/16	.5625	14.29	17-7/8	14	2	C14012
19/32	.5938	15.08	17-7/8	14	2	C14014
5/8	.6250	15.88	17-7/8	14	2	C14016
11/16	.6875	17.46	17-7/8	14	2	C14020
23/32	.7188	18.26	17-7/8	14	2	C14022
3/4	.7500	19.05	17-7/8	14	2	C14024
25/32	.7812	19.84	17-7/8	14	2	C14026
13/16	.8125	20.64	18-1/2	14	3	C14028
7/8	.8750	22.23	18-1/2	14	3	C14032
15/16	.9375	23.81	18-1/2	14	3	C14036
1	1.0000	25.40	18-1/2	14	3	C14040
1-1/16	1.0625	26.99	18-1/2	14	3	C14044
1-1/8	1.1250	28.58	19-1/2	14	4	C14048
1-1/4	1.2500	31.75	19-1/2	14	4	C14056

Drills • Special Purpose

List #2012 High Helix Straight Shank Jobber Drill



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- High helix for more efficient chip removal, particularly in deep hole non-ferrous applications
- Bright finish, excellent for non-ferrous applications & low tensile steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
80	.0135	0.34	3/4	3/16	C02881
79	.0145	0.37	3/4	3/16	C02883
78	.0160	0.41	7/8	3/16	C02887
77	.0180	0.46	7/8	3/16	C02890
76	.0200	0.51	7/8	3/16	C02893
75	.0210	0.53	1	1/4	C02894
74	.0225	0.57	1	1/4	C02896
73	.0240	0.61	1-1/8	5/16	C02898
72	.0250	0.64	1-1/8	5/16	C02899
71	.0260	0.66	1-1/4	3/8	C02901
70	.0280	0.71	1-1/4	3/8	C02903
69	.0292	0.74	1-3/8	1/2	C02904
68	.0310	0.79	1-3/8	1/2	C02906
1/32	.0312	0.79	1-3/8	1/2	C02907
67	.0320	0.81	1-3/8	1/2	C02909
66	.0330	0.84	1-3/8	1/2	C02910
65	.0350	0.89	1-1/2	5/8	C02912
64	.0360	0.91	1-1/2	5/8	C02914
63	.0370	0.94	1-1/2	5/8	C02915
62	.0380	0.97	1-1/2	5/8	C02917
61	.0390	0.99	1-5/8	11/16	C02918
60	.0400	1.02	1-5/8	11/16	C02920
59	.0410	1.04	1-5/8	11/16	C02921
58	.0420	1.07	1-5/8	11/16	C02923
57	.0430	1.09	1-3/4	3/4	C02924
56	.0465	1.18	1-3/4	3/4	C02927
3/64	.0469	1.19	1-3/4	3/4	C02928
55	.0520	1.32	1-7/8	7/8	C02932
54	.0550	1.40	1-7/8	7/8	C02934
53	.0595	1.51	1-7/8	7/8	C02938
1/16	.0625	1.59	1-7/8	7/8	C02940
52	.0635	1.61	1-7/8	7/8	C02942
51	.0670	1.70	2	1	C02945
50	.0700	1.78	2	1	C02947
49	.0730	1.85	2	1	C02950
48	.0760	1.93	2	1	C02952
5/64	.0781	1.98	2	1	C02954
47	.0785	1.99	2	1	C02955
46	.0810	2.06	2-1/8	1-1/8	C02958
45	.0820	2.08	2-1/8	1-1/8	C02959
44	.0860	2.18	2-1/8	1-1/8	C02962
43	.0890	2.26	2-1/4	1-1/4	C02965
42	.0935	2.37	2-1/4	1-1/4	C02968
3/32	.0938	2.38	2-1/4	1-1/4	C02969
41	.0960	2.44	2-3/8	1-3/8	C02971
40	.0980	2.49	2-3/8	1-3/8	C02973
39	.0995	2.53	2-3/8	1-3/8	C02975
38	.1015	2.58	2-1/2	1-7/16	C02976
37	.1040	2.64	2-1/2	1-7/16	C02978
36	.1065	2.71	2-1/2	1-7/16	C02980
7/64	.1094	2.78	2-5/8	1-1/2	C02982
35	.1100	2.79	2-5/8	1-1/2	C02983
34	.1110	2.82	2-5/8	1-1/2	C02985
33	.1130	2.87	2-5/8	1-1/2	C02986
32	.1160	2.95	2-3/4	1-5/8	C02988

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
31	.1200	3.05	2-3/4	1-5/8	C02990
1/8	.1250	3.18	2-3/4	1-5/8	C02992
30	.1285	3.26	2-3/4	1-5/8	C02995
29	.1360	3.45	2-7/8	1-3/4	C02998
28	.1405	3.57	2-7/8	1-3/4	C03000
9/64	.1406	3.57	2-7/8	1-3/4	C03001
27	.1440	3.66	3	1-7/8	C03003
26	.1470	3.73	3	1-7/8	C03005
25	.1495	3.80	3	1-7/8	C03007
24	.1520	3.86	3-1/8	2	C03009
23	.1540	3.91	3-1/8	2	C03011
5/32	.1562	3.97	3-1/8	2	C03012
22	.1570	3.99	3-1/8	2	C03013
21	.1590	4.04	3-1/4	2-1/8	C03015
20	.1610	4.09	3-1/4	2-1/8	C03016
19	.1660	4.22	3-1/4	2-1/8	C03019
18	.1695	4.31	3-1/4	2-1/8	C03022
11/64	.1719	4.37	3-1/4	2-1/8	C03023
17	.1730	4.39	3-3/8	2-3/16	C03024
16	.1770	4.50	3-3/8	2-3/16	C03026
15	.1800	4.57	3-3/8	2-3/16	C03028
14	.1820	4.62	3-3/8	2-3/16	C03030
13	.1850	4.70	3-1/2	2-5/16	C03031
3/16	.1875	4.76	3-1/2	2-5/16	C03034
12	.1890	4.80	3-1/2	2-5/16	C03035
11	.1910	4.85	3-1/2	2-5/16	C03037
10	.1935	4.91	3-5/8	2-7/16	C03039
9	.1960	4.98	3-5/8	2-7/16	C03040
8	.1990	5.05	3-5/8	2-7/16	C03042
7	.2010	5.11	3-5/8	2-7/16	C03044
13/64	.2031	5.16	3-5/8	2-7/16	C03045
6	.2040	5.18	3-3/4	2-1/2	C03046
5	.2055	5.22	3-3/4	2-1/2	C03048
4	.2090	5.31	3-3/4	2-1/2	C03051
3	.2130	5.41	3-3/4	2-1/2	C03053
7/32	.2188	5.56	3-3/4	2-1/2	C03055
2	.2210	5.61	3-7/8	2-5/8	C03057
1	.2280	5.79	3-7/8	2-5/8	C03060
A	.2340	5.94	3-7/8	2-5/8	C03063
15/64	.2344	5.95	3-7/8	2-5/8	C03064
B	.2380	6.05	4	2-3/4	C03066
C	.2420	6.15	4	2-3/4	C03068
D	.2460	6.25	4	2-3/4	C03070
1/4	.2500	6.35	4	2-3/4	C03073
F	.2570	6.53	4-1/8	2-7/8	C03077
G	.2610	6.63	4-1/8	2-7/8	C03079
17/64	.2656	6.75	4-1/8	2-7/8	C03081
H	.2660	6.76	4-1/8	2-7/8	C03083
I	.2720	6.91	4-1/8	2-7/8	C03086
J	.2770	7.04	4-1/8	2-7/8	C03088
K	.2810	7.14	4-1/4	2-15/16	C03090
L	.2900	7.37	4-1/4	2-15/16	C03094
9/32	.2812	7.14	4-1/4	2-15/16	C03095
M	.2950	7.49	4-3/8	3-1/16	C03097
19/64	.2969	7.54	4-3/8	3-1/16	C03099

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Drills • Special Purpose

List #2012 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
N	.3020	7.67	4-3/8	3-1/16	C03101
5/16	.3125	7.94	4-1/2	3-3/16	C03106
O	.3160	8.03	4-1/2	3-3/16	C03108
P	.3230	8.20	4-5/8	3-5/16	C03111
21/64	.3281	8.33	4-5/8	3-5/16	C03114
Q	.3320	8.43	4-3/4	3-7/16	C03116
R	.3390	8.61	4-3/4	3-7/16	C03119
11/32	.3438	8.73	4-3/4	3-7/16	C03121
S	.3480	8.84	4-7/8	3-1/2	C03124
T	.3580	9.09	4-7/8	3-1/2	C03127
23/64	.3594	9.13	4-7/8	3-1/2	C03129
U	.3680	9.35	5	3-5/8	C03133
3/8	.3750	9.53	5	3-5/8	C03136

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
V	.3770	9.58	5	3-5/8	C03137
W	.3860	9.80	5-1/8	3-3/4	C03142
25/64	.3906	9.92	5-1/8	3-3/4	C03144
X	.3970	10.08	5-1/8	3-3/4	C03146
Y	.4040	10.26	5-1/4	3-7/8	C03148
13/32	.4062	10.32	5-1/4	3-7/8	C03149
Z	.4130	10.49	5-1/4	3-7/8	C03150
27/64	.4219	10.72	5-3/8	3-15/16	C03152
7/16	.4375	11.11	5-1/2	4-1/16	C03155
29/64	.4531	11.51	5-5/8	4-3/16	C03158
15/32	.4688	11.91	5-3/4	4-5/16	C03160
31/64	.4844	12.30	5-7/8	4-3/8	C03163
1/2	.5000	12.70	6	4-1/2	C03165

List #2550 High Helix Taper Length Drill



Substrate - HSS
Length - Taper Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- High helix for more efficient chip removal, particularly in non-ferrous deep hole applications
- Taper length for extended reach
- Bright finish for excellent for non-ferrous materials & low tensile steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/32	.0312	0.79	1-5/8	3/4	C09060
60	.0400	1.02	2-1/4	1-1/8	C09062
59	.0410	1.04	2-1/4	1-1/8	C09063
58	.0420	1.07	2-1/4	1-1/8	C09065
57	.0430	1.09	2-1/4	1-1/8	C09066
56	.0465	1.18	2-1/4	1-1/8	C09069
3/64	.0469	1.19	2-1/4	1-1/8	C09070
55	.0520	1.32	3	1-3/4	C09074
54	.0550	1.40	3	1-3/4	C09076
53	.0595	1.51	3	1-3/4	C09080
1/16	.0625	1.59	3	1-3/4	C09082
52	.0635	1.61	3-3/4	2	C09084
51	.0670	1.70	3-3/4	2	C09087
50	.0700	1.78	3-3/4	2	C09089
49	.0730	1.85	3-3/4	2	C09092
48	.0760	1.93	3-3/4	2	C09094
5/64	.0781	1.98	3-3/4	2	C09096
47	.0785	1.99	4-1/4	2-1/4	C09097
46	.0810	2.06	4-1/4	2-1/4	C09100
45	.0820	2.08	4-1/4	2-1/4	C09101
44	.0860	2.18	4-1/4	2-1/4	C09104
43	.0890	2.26	4-1/4	2-1/4	C09107
42	.0935	2.37	4-1/4	2-1/4	C09110
3/32	.0938	2.38	4-1/4	2-1/4	C09111
41	.0960	2.44	4-5/8	2-1/2	C09113
40	.0980	2.49	4-5/8	2-1/2	C09115
39	.0995	2.53	4-5/8	2-1/2	C09117
38	.1015	2.58	4-5/8	2-1/2	C09118
37	.1040	2.64	4-5/8	2-1/2	C09120
36	.1065	2.71	4-5/8	2-1/2	C09122
7/64	.1094	2.78	4-5/8	2-1/2	C09124
35	.1100	2.79	5-1/8	2-3/4	C09125
34	.1110	2.82	5-1/8	2-3/4	C09127
33	.1130	2.87	5-1/8	2-3/4	C09128
32	.1160	2.95	5-1/8	2-3/4	C09130
31	.1200	3.05	5-1/8	2-3/4	C09132

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/8	.1250	3.18	5-1/8	2-3/4	C09134
30	.1285	3.26	5-3/8	3	C09137
29	.1360	3.45	5-3/8	3	C09140
8	.1405	3.57	5-3/8	3	C09142
9/64	.1406	3.57	5-3/8	3	C09143
27	.1440	3.66	5-3/8	3	C09145
26	.1470	3.73	5-3/8	3	C09147
25	.1495	3.80	5-3/8	3	C09149
24	.1520	3.86	5-3/8	3	C09151
23	.1540	3.91	5-3/8	3	C09153
5/32	.1562	3.97	5-3/8	3	C09154
22	.1570	3.99	5-3/4	3-3/8	C09155
21	.1590	4.04	5-3/4	3-3/8	C09157
20	.1610	4.09	5-3/4	3-3/8	C09158
19	.1660	4.22	5-3/4	3-3/8	C09161
18	.1695	4.31	5-3/4	3-3/8	C09164
11/64	.1719	4.37	5-3/4	3-3/8	C09165
17	.1730	4.39	5-3/4	3-3/8	C09166
16	.1770	4.50	5-3/4	3-3/8	C09168
15	.1800	4.57	5-3/4	3-3/8	C09170
14	.1820	4.62	5-3/4	3-3/8	C09172
13	.1850	4.70	5-3/4	3-3/8	C09173
3/16	.1875	4.76	5-3/4	3-3/8	C09176
12	.1890	4.80	6	3-5/8	C09177
11	.1910	4.85	6	3-5/8	C09179
10	.1935	4.91	6	3-5/8	C09181
9	.1960	4.98	6	3-5/8	C09182
8	.1990	5.05	6	3-5/8	C09184
7	.2010	5.11	6	3-5/8	C09186
13/64	.2031	5.16	6	3-5/8	C09187
6	.2040	5.18	6	3-5/8	C09188
5	.2055	5.22	6	3-5/8	C09190
4	.2090	5.31	6	3-5/8	C09193
3	.2130	5.41	6	3-5/8	C09195
7/32	.2188	5.56	6	3-5/8	C09197
2	.2210	5.61	6-1/8	3-3/4	C09199

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Drills • Special Purpose

List #2550 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1	.2280	5.79	6-1/8	3-3/4	C09202
15/64	.2344	5.95	6-1/8	3-3/4	C09205
1/4	.2500	6.35	6-1/8	3-3/4	C09211
17/64	.2656	6.75	6-1/4	3-7/8	C09216
9/32	.2812	7.14	6-1/4	3-7/8	C09225
19/64	.2969	7.54	6-3/8	4	C09228
5/16	.3125	7.94	6-3/8	4	C09234
21/64	.3281	8.33	6-1/2	4-1/8	C09240
11/32	.3438	8.73	6-1/2	4-1/8	C09245
23/64	.3594	9.13	6-3/4	4-1/4	C09251

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
3/8	.3750	9.53	6-3/4	4-1/4	C09257
25/64	.3906	9.92	7	4-3/8	C09263
13/32	.4062	10.32	7	4-3/8	C09266
27/64	.4219	10.72	7-1/4	4-5/8	C09268
7/16	.4375	11.11	7-1/4	4-5/8	C09271
29/64	.4531	11.51	7-1/2	4-3/4	C09274
15/32	.4688	11.91	7-1/2	4-3/4	C09276
31/64	.4844	12.30	7-3/4	4-3/4	C09279
1/2	.5000	12.70	7-3/4	4-3/4	C09281

List #2020 Low Helix Jobber Drill



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- Low helix to carry long stringy chips out of the hole
- Provided with narrow margins to reduce friction & heat
- Bright finish is excellent for non-ferrous applications & low tensile steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-5/8	11/16	C03457
59	.0410	1.04	1-5/8	11/16	C03458
58	.0420	1.07	1-5/8	11/16	C03460
57	.0430	1.09	1-3/4	3/4	C03461
56	.0465	1.18	1-3/4	3/4	C03464
55	.0520	1.32	1-7/8	7/8	C03469
54	.0550	1.40	1-7/8	7/8	C03471
53	.0595	1.51	1-7/8	7/8	C03475
1/16	.0625	1.59	1-7/8	7/8	C03477
52	.0635	1.61	1-7/8	7/8	C03479
51	.0670	1.70	2	1	C03482
50	.0700	1.78	2	1	C03484
49	.0730	1.85	2	1	C03487
48	.0760	1.93	2	1	C03489
5/64	.0781	1.98	2	1	C03491
47	.0785	1.99	2	1	C03492
46	.0810	2.06	2-1/8	1-1/8	C03495
45	.0820	2.08	2-1/8	1-1/8	C03496
44	.0860	2.18	2-1/8	1-1/8	C03499
43	.0890	2.26	2-1/4	1-1/4	C03502
42	.0935	2.37	2-1/4	1-1/4	C03505
3/32	.0938	2.38	2-1/4	1-1/4	C03506
41	.0960	2.44	2-3/8	1-3/8	C03508
40	.0980	2.49	2-3/8	1-3/8	C03510
39	.0995	2.53	2-3/8	1-3/8	C03512
38	.1015	2.58	2-1/2	1-7/16	C03513
37	.1040	2.64	2-1/2	1-7/16	C03515
36	.1065	2.71	2-1/2	1-7/16	C03517
7/64	.1094	2.78	2-5/8	1-1/2	C03519
35	.1100	2.79	2-5/8	1-1/2	C03520
34	.1110	2.82	2-5/8	1-1/2	C03522
33	.1130	2.87	2-5/8	1-1/2	C03523
32	.1160	2.95	2-3/4	1-5/8	C03525
31	.1200	3.05	2-3/4	1-5/8	C03527
1/8	.1250	3.18	2-3/4	1-5/8	C03529
30	.1285	3.26	2-3/4	1-5/8	C03532
29	.1360	3.45	2-7/8	1-3/4	C03535
28	.1405	3.57	2-7/8	1-3/4	C03537
9/64	.1406	3.57	2-7/8	1-3/4	C03538

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
27	.1440	3.66	3	1-7/8	C03540
26	.1470	3.73	3	1-7/8	C03542
25	.1495	3.80	3	1-7/8	C03544
24	.1520	3.86	3-1/8	2	C03546
23	.1540	3.91	3-1/8	2	C03548
5/32	.1562	3.97	3-1/8	2	C03549
22	.1570	3.99	3-1/8	2	C03550
21	.1590	4.04	3-1/4	2-1/8	C03552
20	.1610	4.09	3-1/4	2-1/8	C03553
19	.1660	4.22	3-1/4	2-1/8	C03556
18	.1695	4.31	3-1/4	2-1/8	C03559
11/64	.1719	4.37	3-1/4	2-1/8	C03560
17	.1730	4.39	3-3/8	2-3/16	C03561
16	.1770	4.50	3-3/8	2-3/16	C03563
15	.1800	4.57	3-3/8	2-3/16	C03565
14	.1820	4.62	3-3/8	2-3/16	C03567
13	.1850	4.70	3-1/2	2-5/16	C03568
3/16	.1875	4.76	3-1/2	2-5/16	C03571
12	.1890	4.80	3-1/2	2-5/16	C03572
11	.1910	4.85	3-1/2	2-5/16	C03574
10	.1935	4.91	3-5/8	2-7/16	C03576
9	.1960	4.98	3-5/8	2-7/16	C03577
8	.1990	5.05	3-5/8	2-7/16	C03579
7	.2010	5.11	3-5/8	2-7/16	C03581
13/64	.2031	5.16	3-5/8	2-7/16	C03582
6	.2040	5.18	3-3/4	2-1/2	C03583
5	.2055	5.22	3-3/4	2-1/2	C03585
4	.2090	5.31	3-3/4	2-1/2	C03588
3	.2130	5.41	3-3/4	2-1/2	C03590
7/32	.2188	5.56	3-3/4	2-1/2	C03592
2	.2210	5.61	3-7/8	2-5/8	C03594
1	.2280	5.79	3-7/8	2-5/8	C03597
15/64	.2344	5.95	3-7/8	2-5/8	C03601
1/4	.2500	6.35	4	2-3/4	C03610
17/64	.2656	6.75	4-1/8	2-7/8	C03618
9/32	.2812	7.14	4-1/4	2-15/16	C03632
19/64	.2969	7.54	4-3/8	3-1/16	C03636
5/16	.3125	7.94	4-1/2	3-3/16	C03643
21/64	.3281	8.33	4-5/8	3-5/16	C03651

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Drills • Special Purpose

List #2020 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
11/32	.3438	8.73	4-3/4	3-7/16	C03658
3/8	.3750	9.53	5	3-5/8	C03673
25/64	.3906	9.92	5-1/8	3-3/4	C03681
13/32	.4062	10.32	5-1/4	3-7/8	C03686
27/64	.4219	10.72	5-3/8	3-15/16	C03689

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
7/16	.4375	11.11	5-1/2	4-1/16	C03692
29/64	.4531	11.51	5-5/8	4-3/16	C03695
15/32	.4688	11.91	5-3/4	4-5/16	C03697
1/2	.5000	12.70	6	4-1/2	C03702

List #2130 Aircraft Screw Machine Drill



Substrate - HSS
Length - Screw Machine Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 135° Split



Features:

- AIA NAS 907 (Type C) approved for aircraft applications
- Black oxide finish for increased wear resistance & improved lubricity reducing chip welding & galling
- Short flutes for added rigidity
- Excellent choice for portable applications

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-3/8	1/2	C06961
59	.0410	1.04	1-3/8	1/2	C06962
58	.0420	1.07	1-3/8	1/2	C06964
57	.0430	1.09	1-3/8	1/2	C06965
56	.0465	1.18	1-3/8	1/2	C06968
3/64	.0469	1.19	1-3/8	1/2	C06969
55	.0520	1.32	1-5/8	5/8	C06973
54	.0550	1.40	1-5/8	5/8	C06975
53	.0595	1.51	1-5/8	5/8	C06979
1/16	.0625	1.59	1-5/8	5/8	C06981
52	.0635	1.61	1-11/16	11/16	C06983
51	.0670	1.70	1-11/16	11/16	C06986
50	.0700	1.78	1-11/16	11/16	C06988
49	.0730	1.85	1-11/16	11/16	C06991
48	.0760	1.93	1-11/16	11/16	C06993
5/64	.0781	1.98	1-11/16	11/16	C06995
47	.0785	1.99	1-11/16	11/16	C06996
46	.0810	2.06	1-3/4	3/4	C06999
45	.0820	2.08	1-3/4	3/4	C07000
44	.0860	2.18	1-3/4	3/4	C07003
43	.0890	2.26	1-3/4	3/4	C07006
42	.0935	2.37	1-3/4	3/4	C07009
3/32	.0938	2.38	1-3/4	3/4	C07010
41	.0960	2.44	1-13/16	13/16	C07012
40	.0980	2.49	1-13/16	13/16	C07014
39	.0995	2.53	1-13/16	13/16	C07016
38	.1015	2.58	1-13/16	13/16	C07017
37	.1040	2.64	1-13/16	13/16	C07019
36	.1065	2.71	1-13/16	13/16	C07021
7/64	.1094	2.78	1-13/16	13/16	C07023
35	.1100	2.79	1-7/8	7/8	C07024
34	.1110	2.82	1-7/8	7/8	C07026
33	.1130	2.87	1-7/8	7/8	C07027
32	.1160	2.95	1-7/8	7/8	C07029
31	.1200	3.05	1-7/8	7/8	C07031
1/8	.1250	3.18	1-7/8	7/8	C07033
30	.1285	3.26	1-15/16	15/16	C07036
29	.1360	3.45	1-15/16	15/16	C07039
28	.1405	3.57	1-15/16	15/16	C07041
9/64	.1406	3.57	1-15/16	15/16	C07042
27	.1440	3.66	2-1/16	1	C07044
26	.1470	3.73	2-1/16	1	C07046
25	.1495	3.80	2-1/16	1	C07048
24	.1520	3.86	2-1/16	1	C07050

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
23	.1540	3.91	2-1/16	1	C07052
5/32	.1562	3.97	2-1/16	1	C07053
22	.1570	3.99	2-1/8	1-1/16	C07054
21	.1590	4.04	2-1/8	1-1/16	C07056
20	.1610	4.09	2-1/8	1-1/16	C07057
19	.1660	4.22	2-1/8	1-1/16	C07060
18	.1695	4.31	2-1/8	1-1/16	C07063
11/64	.1719	4.37	2-1/8	1-1/16	C07064
17	.1730	4.39	2-3/16	1-1/8	C07065
16	.1770	4.50	2-3/16	1-1/8	C07067
15	.1800	4.57	2-3/16	1-1/8	C07069
14	.1820	4.62	2-3/16	1-1/8	C07071
13	.1850	4.70	2-3/16	1-1/8	C07072
3/16	.1875	4.76	2-3/16	1-1/8	C07075
12	.1890	4.80	2-1/4	1-3/16	C07076
11	.1910	4.85	2-1/4	1-3/16	C07078
10	.1935	4.91	2-1/4	1-3/16	C07080
9	.1960	4.98	2-1/4	1-3/16	C07081
8	.1990	5.05	2-1/4	1-3/16	C07083
7	.2010	5.11	2-1/4	1-3/16	C07085
13/64	.2031	5.16	2-1/4	1-3/16	C07086
6	.2040	5.18	2-3/8	1-1/4	C07087
5	.2055	5.22	2-3/8	1-1/4	C07089
4	.2090	5.31	2-3/8	1-1/4	C07092
3	.2130	5.41	2-3/8	1-1/4	C07094
7/32	.2188	5.56	2-3/8	1-1/4	C07096
2	.2210	5.61	2-7/16	1-5/16	C07098
1	.2280	5.79	2-7/16	1-5/16	C07101
A	.2340	5.94	2-7/16	1-5/16	C07104
15/64	.2344	5.95	2-7/16	1-5/16	C07105
B	.2380	6.05	2-1/2	1-3/8	C07107
C	.2420	6.15	2-1/2	1-3/8	C07109
D	.2460	6.25	2-1/2	1-3/8	C07111
1/4	.2500	6.35	2-1/2	1-3/8	C07114
F	.2570	6.53	2-5/8	1-7/16	C07118
G	.2610	6.63	2-5/8	1-7/16	C07120
17/64	.2656	6.75	2-5/8	1-7/16	C07122
H	.2660	6.76	2-11/16	1-1/2	C07124
I	.2720	6.91	2-11/16	1-1/2	C07127
J	.2770	7.04	2-11/16	1-1/2	C07129
K	.2810	7.14	2-11/16	1-1/2	C07131
L	.2900	7.37	2-3/4	1-9/16	C07135
9/32	.2812	7.14	2-11/16	1-1/2	C07136
M	.2950	7.49	2-3/4	1-9/16	C07138

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Drills • Special Purpose

List #2130 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
19/64	.2969	7.54	2-3/4	1-9/16	C07140
N	.3020	7.67	2-13/16	1-5/8	C07142
5/16	.3125	7.94	2-13/16	1-5/8	C07147
O	.3160	8.03	2-15/16	1-11/16	C07149
P	.3230	8.20	2-15/16	1-11/16	C07152
21/64	.3281	8.33	2-15/16	1-11/16	C07155
Q	.3320	8.43	3	1-11/16	C07157
R	.3390	8.61	3	1-11/16	C07160
11/32	.3438	8.73	3	1-11/16	C07162
S	.3480	8.84	3-1/16	1-3/4	C07165
T	.3580	9.09	3-1/16	1-3/4	C07168
23/64	.3594	9.13	3-1/16	1-3/4	C07170
U	.3680	9.35	3-1/8	1-13/16	C07174
3/8	.3750	9.53	3-1/8	1-13/16	C07177

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
V	.3770	9.58	3-1/4	1-7/8	C07178
W	.3860	9.80	3-1/4	1-7/8	C07183
25/64	.3906	9.92	3-1/4	1-7/8	C07185
X	.3970	10.08	3-5/16	1-15/16	C07187
Y	.4040	10.26	3-5/16	1-15/16	C07189
13/32	.4062	10.32	3-5/16	1-15/16	C07190
Z	.4130	10.49	3-3/8	2	C07191
27/64	.4219	10.72	3-3/8	2	C07193
7/16	.4375	11.11	3-7/16	2-1/16	C07196
29/64	.4531	11.51	3-9/16	2-1/8	C07199
15/32	.4688	11.91	3-5/8	2-1/8	C07201
31/64	.4844	12.30	3-11/16	2-3/16	C07204
1/2	.5000	12.70	3-3/4	2-1/4	C07206

List #2022 Aircraft Jobber Drill



Substrate - HSS
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 135° Split



Features:

- Heavy duty construction to increase tool strength
- AIA NAS-907 (Type B) for hard materials & approved for aircraft applications
- 135° split point is self centering, reducing thrust for ease of penetration & the preferred point for stainless steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-5/8	11/16	C06710
59	.0410	1.04	1-5/8	11/16	C06711
58	.0420	1.07	1-5/8	11/16	C06713
57	.0430	1.09	1-3/4	3/4	C06714
56	.0465	1.18	1-3/4	3/4	C06717
3/64	.0469	1.19	1-3/4	3/4	C06718
55	.0520	1.32	1-7/8	7/8	C06722
54	.0550	1.40	1-7/8	7/8	C06724
53	.0595	1.51	1-7/8	7/8	C06728
1/16	.0625	1.59	1-7/8	7/8	C06730
52	.0635	1.61	1-7/8	7/8	C06732
51	.0670	1.70	2	1	C06735
50	.0700	1.78	2	1	C06737
49	.0730	1.85	2	1	C06740
48	.0760	1.93	2	1	C06742
5/64	.0781	1.98	2	1	C06744
5/16	.3125	7.94	4-1/2	3-3/16	C06745
46	.0810	2.06	2-1/8	1-1/8	C06748
45	.0820	2.08	2-1/8	1-1/8	C06749
44	.0860	2.18	2-1/8	1-1/8	C06752
43	.0890	2.26	2-1/4	1-1/4	C06755
42	.0935	2.37	2-1/4	1-1/4	C06758
3/32	.0938	2.38	2-1/4	1-1/4	C06759
41	.0960	2.44	2-3/8	1-3/8	C06761
40	.0980	2.49	2-3/8	1-3/8	C06763
39	.0995	2.53	2-3/8	1-3/8	C06765
38	.1015	2.58	2-1/2	1-7/16	C06766
37	.1040	2.64	2-1/2	1-7/16	C06768
36	.1065	2.71	2-1/2	1-7/16	C06770
7/64	.1094	2.78	2-5/8	1-1/2	C06772
35	.1100	2.79	2-5/8	1-1/2	C06773
34	.1110	2.82	2-5/8	1-1/2	C06775
33	.1130	2.87	2-5/8	1-1/2	C06776
32	.1160	2.95	2-3/4	1-5/8	C06778
31	.1200	3.05	2-3/4	1-5/8	C06780

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/8	.1250	3.18	2-3/4	1-5/8	C06782
30	.1285	3.26	2-3/4	1-5/8	C06785
29	.1360	3.45	2-7/8	1-3/4	C06788
28	.1405	3.57	2-7/8	1-3/4	C06790
9/64	.1406	3.57	2-7/8	1-3/4	C06791
27	.1440	3.66	3	1-7/8	C06793
26	.1470	3.73	3	1-7/8	C06795
25	.1495	3.80	3	1-7/8	C06797
24	.1520	3.86	3-1/8	2	C06799
23	.1540	3.91	3-1/8	2	C06801
5/32	.1562	3.97	3-1/8	2	C06802
22	.1570	3.99	3-1/8	2	C06803
21	.1590	4.04	3-1/4	2-1/8	C06805
20	.1610	4.09	3-1/4	2-1/8	C06806
19	.1660	4.22	3-1/4	2-1/8	C06809
18	.1695	4.31	3-1/4	2-1/8	C06812
11/64	.1719	4.37	3-1/4	2-1/8	C06813
17	.1730	4.39	3-3/8	2-3/16	C06814
16	.1770	4.50	3-3/8	2-3/16	C06816
15	.1800	4.57	3-3/8	2-3/16	C06818
14	.1820	4.62	3-3/8	2-3/16	C06820
13	.1850	4.70	3-1/2	2-5/16	C06821
3/16	.1875	4.76	3-1/2	2-5/16	C06824
12	.1890	4.80	3-1/2	2-5/16	C06825
11	.1910	4.85	3-1/2	2-5/16	C06827
10	.1935	4.91	3-5/8	2-7/16	C06829
9	.1960	4.98	3-5/8	2-7/16	C06830
8	.1990	5.05	3-5/8	2-7/16	C06832
7	.2010	5.11	3-5/8	2-7/16	C06834
13/64	.2031	5.16	3-5/8	2-7/16	C06835
6	.2040	5.18	3-3/4	2-1/2	C06836
5	.2055	5.22	3-3/4	2-1/2	C06838
4	.2090	5.31	3-3/4	2-1/2	C06841
3	.2130	5.41	3-3/4	2-1/2	C06843
7/32	.2188	5.56	3-3/4	2-1/2	C06845

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Drills • Special Purpose

List #2022 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
2	.2210	5.61	3-7/8	2-5/8	C06847
I	.2280	5.79	3-7/8	2-5/8	C06850
A	.2340	5.94	3-7/8	2-5/8	C06853
15/64	.2344	5.95	3-7/8	2-5/8	C06854
B	.2380	6.05	4	2-3/4	C06856
C	.2420	6.15	4	2-3/4	C06858
D	.2460	6.25	4	2-3/4	C06860
1/4,E	.2500	6.35	4	2-3/4	C06863
F	.2570	6.53	4-1/8	2-7/8	C06867
G	.2610	6.63	4-1/8	2-7/8	C06869
17/64	.2656	6.75	4-1/8	2-7/8	C06871
H	.2660	6.76	4-1/8	2-7/8	C06873
I	.2720	6.91	4-1/8	2-7/8	C06876
J	.2770	7.04	4-1/8	2-7/8	C06878
K	.2810	7.14	4-1/4	2-15/16	C06880
L	.2900	7.37	4-1/4	2-15/16	C06884
9/32	.2812	7.14	4-1/4	2-15/16	C06885
M	.2950	7.49	4-3/8	3-1/16	C06887
19/64	.2969	7.54	4-3/8	3-1/16	C06889
N	.3020	7.67	4-3/8	3-1/16	C06891
5/16	.3125	7.94	4-1/2	3-3/16	C06896
O	.3160	8.03	4-1/2	3-3/16	C06898
P	.3230	8.20	4-5/8	3-5/16	C06901

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
21/64	.3281	8.33	4-5/8	3-5/16	C06904
Q	.3320	8.43	4-3/4	3-7/16	C06906
R	.3390	8.61	4-3/4	3-7/16	C06909
11/32	.3438	8.73	4-3/4	3-7/16	C06911
S	.3480	8.84	4-7/8	3-1/2	C06914
T	.3580	9.09	4-7/8	3-1/2	C06917
23/64	.3594	9.13	4-7/8	3-1/2	C06919
U	.3680	9.35	5	3-5/8	C06923
3/8	.3750	9.53	5	3-5/8	C06926
V	.3770	9.58	5	3-5/8	C06927
W	.3860	9.80	5-1/8	3-3/4	C06932
25/64	.3906	9.92	5-1/8	3-3/4	C06934
X	.3970	10.08	5-1/8	3-3/4	C06936
Y	.4040	10.26	5-1/4	3-7/8	C06938
13/32	.4062	10.32	5-1/4	3-7/8	C06939
Z	.4130	10.49	5-1/4	3-7/8	C06940
27/64	.4219	10.72	5-3/8	3-15/16	C06942
7/16	.4375	11.11	5-1/2	4-1/16	C06945
29/64	.4531	11.51	5-5/8	4-3/16	C06948
15/32	.4688	11.91	5-3/4	4-5/16	C06950
31/64	.4844	12.30	5-7/8	4-3/8	C06953
1/2	.5000	12.70	6	4-1/2	C06955

List #2011 Cotter Pin Jobber Length Heavy Duty Drill



Substrate - HSS
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 135° Split



- Heavy duty cotter pin construction for increased tool strength
- 135° split point is self centering reducing thrust for ease of penetration & the preferred point for stainless steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
80	.0135	0.34	3/4	1/8	C02593
79	.0145	0.37	3/4	1/8	C02595
1/64	.0156	0.40	3/4	3/16	C02597
78	.0160	0.41	7/8	3/16	C02599
77	.0180	0.46	7/8	3/16	C02602
76	.0200	0.51	7/8	3/16	C02605
75	.0210	0.53	1	1/4	C02606
74	.0225	0.57	1	1/4	C02608
73	.0240	0.61	1-1/8	5/16	C02610
72	.0250	0.64	1-1/8	5/16	C02611
71	.0260	0.66	1-1/4	3/8	C02613
70	.0280	0.71	1-1/4	3/8	C02615
69	.0292	0.74	1-3/8	1/2	C02616
68	.0310	0.79	1-3/8	1/2	C02618
1/32	.0312	0.79	1-3/8	1/2	C02619
67	.0320	0.81	1-3/8	1/2	C02621
66	.0330	0.84	1-3/8	1/2	C02622
65	.0350	0.89	1-1/2	5/8	C02624
64	.0360	0.91	1-1/2	5/8	C02626
63	.0370	0.94	1-1/2	5/8	C02627
62	.0380	0.97	1-1/2	5/8	C02629
61	.0390	0.99	1-5/8	11/16	C02630
60	.0400	1.02	1-5/8	11/16	C02632
59	.0410	1.04	1-5/8	11/16	C02633

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
58	.0420	1.07	1-5/8	11/16	C02635
57	.0430	1.09	1-3/4	3/4	C02636
56	.0465	1.18	1-3/4	3/4	C02639
3/64	.0469	1.19	1-3/4	3/4	C02640
55	.0520	1.32	1-7/8	7/8	C02644
54	.0550	1.40	1-7/8	7/8	C02646
53	.0595	1.51	1-7/8	7/8	C02650
1/16	.0625	1.59	1-7/8	7/8	C02652
52	.0635	1.61	1-7/8	7/8	C02654
51	.0670	1.70	2	1	C02657
50	.0700	1.78	2	1	C02659
49	.0730	1.85	2	1	C02662
48	.0760	1.93	2	1	C02664
5/64	.0781	1.98	2	1	C02666
47	.0785	1.99	2	1	C02667
46	.0810	2.06	2-1/8	1-1/8	C02670
45	.0820	2.08	2-1/8	1-1/8	C02671
44	.0860	2.18	2-1/8	1-1/8	C02674
43	.0890	2.26	2-1/4	1-1/4	C02677
42	.0935	2.37	2-1/4	1-1/4	C02680
3/32	.0938	2.38	2-1/4	1-1/4	C02681
41	.0960	2.44	2-3/8	1-3/8	C02683
40	.0980	2.49	2-3/8	1-3/8	C02685
39	.0995	2.53	2-3/8	1-3/8	C02687

(Continued on next page)

Drills • Special Purpose

List #201 I continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
38	.1015	2.58	2-1/2	1-7/16	C02688
37	.1040	2.64	2-1/2	1-7/16	C02690
36	.1065	2.71	2-1/2	1-7/16	C02692
7/64	.1094	2.78	2-5/8	1-1/2	C02694
35	.1100	2.79	2-5/8	1-1/2	C02695
34	.1110	2.82	2-5/8	1-1/2	C02697
33	.1130	2.87	2-5/8	1-1/2	C02698
32	.1160	2.95	2-3/4	1-5/8	C02700
31	.1200	3.05	2-3/4	1-5/8	C02702
1/8	.1250	3.18	2-3/4	1-5/8	C02704
30	.1285	3.26	2-3/4	1-5/8	C02707
29	.1360	3.45	2-7/8	1-3/4	C02710
28	.1405	3.57	2-7/8	1-3/4	C02712
9/64	.1406	3.57	2-7/8	1-3/4	C02713
27	.1440	3.66	3	1-7/8	C02715
26	.1470	3.73	3	1-7/8	C02717
25	.1495	3.80	3	1-7/8	C02719
24	.1520	3.86	3-1/8	2	C02721
23	.1540	3.91	3-1/8	2	C02723
5/32	.1562	3.97	3-1/8	2	C02724
22	.1570	3.99	3-1/8	2	C02725
21	.1590	4.04	3-1/4	2-1/8	C02727
20	.1610	4.09	3-1/4	2-1/8	C02728
19	.1660	4.22	3-1/4	2-1/8	C02731
18	.1695	4.31	3-1/4	2-1/8	C02734
11/64	.1719	4.37	3-1/4	2-1/8	C02735
17	.1730	4.39	3-3/8	2-3/16	C02736
16	.1770	4.50	3-3/8	2-3/16	C02738
15	.1800	4.57	3-3/8	2-3/16	C02740
14	.1820	4.62	3-3/8	2-3/16	C02742
13	.1850	4.70	3-1/2	2-5/16	C02743
3/16	.1875	4.76	3-1/2	2-5/16	C02746
12	.1890	4.80	3-1/2	2-5/16	C02747
11	.1910	4.85	3-1/2	2-5/16	C02749
10	.1935	4.91	3-5/8	2-7/16	C02751
9	.1960	4.98	3-5/8	2-7/16	C02752
8	.1990	5.05	3-5/8	2-7/16	C02754
7	.2010	5.11	3-5/8	2-7/16	C02756
13/64	.2031	5.16	3-5/8	2-7/16	C02757
6	.2040	5.18	3-3/4	2-1/2	C02758
5	.2055	5.22	3-3/4	2-1/2	C02760
4	.2090	5.31	3-3/4	2-1/2	C02763
3	.2130	5.41	3-3/4	2-1/2	C02765
7/32	.2188	5.56	3-3/4	2-1/2	C02767
2	.2210	5.61	3-7/8	2-5/8	C02769

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
I	.2280	5.79	3-7/8	2-5/8	C02772
A	.2340	5.94	3-7/8	2-5/8	C02775
15/64	.2344	5.95	3-7/8	2-5/8	C02776
B	.2380	6.05	4	2-3/4	C02778
C	.2420	6.15	4	2-3/4	C02780
D	.2460	6.25	4	2-3/4	C02782
1/4	.2500	6.35	4	2-3/4	C02785
F	.2570	6.53	4-1/8	2-7/8	C02789
G	.2610	6.63	4-1/8	2-7/8	C02791
17/64	.2656	6.75	4-1/8	2-7/8	C02793
H	.2660	6.76	4-1/8	2-7/8	C02795
I	.2720	6.91	4-1/8	2-7/8	C02798
J	.2770	7.04	4-1/8	2-7/8	C02800
K	.2810	7.14	4-1/4	2-15/16	C02802
L	.2900	7.37	4-1/4	2-15/16	C02806
9/32	.2812	7.14	4-1/4	2-15/16	C02807
M	.2950	7.49	4-3/8	3-1/16	C02809
19/64	.2969	7.54	4-3/8	3-1/16	C02811
N	.3020	7.67	4-3/8	3-1/16	C02813
5/16	.3125	7.94	4-1/2	3-3/16	C02818
O	.3160	8.03	4-1/2	3-3/16	C02820
P	.3230	8.20	4-5/8	3-5/16	C02823
21/64	.3281	8.33	4-5/8	3-5/16	C02826
Q	.3320	8.43	4-3/4	3-7/16	C02828
R	.3390	8.61	4-3/4	3-7/16	C02831
11/32	.3438	8.73	4-3/4	3-7/16	C02833
S	.3480	8.84	4-7/8	3-1/2	C02836
T	.3580	9.09	4-7/8	3-1/2	C02839
23/64	.3594	9.13	4-7/8	3-1/2	C02841
U	.3680	9.35	5	3-5/8	C02845
3/8	.3750	9.53	5	3-5/8	C02848
V	.3770	9.58	5	3-5/8	C02849
W	.3860	9.80	5-1/8	3-3/4	C02854
25/64	.3906	9.92	5-1/8	3-3/4	C02856
X	.3970	10.08	5-1/8	3-3/4	C02858
Y	.4040	10.26	5-1/4	3-7/8	C02860
13/32	.4062	10.32	5-1/4	3-7/8	C02861
Z	.4130	10.49	5-1/4	3-7/8	C02862
27/64	.4219	10.72	5-3/8	3-15/16	C02864
7/16	.4375	11.11	5-1/2	4-1/16	C02867
29/64	.4531	11.51	5-5/3	4-3/16	C02870
15/32	.4688	11.91	5-3/4	4-5/16	C02872
31/64	.4844	12.30	5-7/8	4-3/8	C02875
1/2	.5000	12.70	6	4-1/2	C02877

Drills • Special Purpose

List #2540 Automotive Heavy Duty Taper Length Drill



Substrate - HSS
Length - Automotive Taper Length
Surface Treatment - Black Oxide
Shank - Straight with Tang
Point - 118° K Notched



Features:

- Heavy duty construction to increase tool strength
- 20% longer flute length than regular taper length for increased regrinds & reach

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/8	.1250	3.18	5-1/8	3-3/8	C09443
9/64	.1406	3.57	5-3/8	3-5/8	C09449
5/32	.1562	3.97	5-3/8	3-3/4	C09455
11/64	.1719	4.37	5-3/4	4-1/8	C09461
3/16	.1875	4.76	5-3/4	4-1/8	C09467
13/64	.2031	5.16	6	4-3/8	C09472
7/32	.2188	5.56	6	4-3/8	C09478
15/64	.2344	5.95	6-1/8	4-13/16	C09484
1/4	.2500	6.35	6-1/8	4-13/16	C09490
17/64	.2656	6.75	6-1/4	5	C09495
9/32	.2812	7.14	6-1/4	5	C09504
19/64	.2969	7.54	6-3/8	5-1/8	C09507
5/16	.3125	7.94	6-3/8	5-1/8	C09513
21/64	.3281	8.33	6-1/2	5-1/4	C09519
11/32	.3438	8.73	6-1/2	5-1/4	C09524
23/64	.3594	9.13	6-3/4	5-3/8	C09530
3/8	.3750	9.53	6-3/4	5-3/8	C09536
25/64	.3906	9.92	7	5-5/8	C09542
13/32	.4062	10.32	7	5-5/8	C09545

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
27/64	.4219	10.72	7-1/4	5-11/16	C09547
7/16	.4375	11.11	7-1/4	5-11/16	C09550
29/64	.4531	11.51	7-1/2	5-3/4	C09553
15/32	.4688	11.91	7-1/2	5-3/4	C09555
31/64	.4844	12.30	7-3/4	5-3/4	C09558
1/2	.5000	12.70	7-3/4	5-3/4	C09560
33/64	.5156	13.10	8	6	C09563
17/32	.5312	13.49	8	6	C09565
35/64	.5469	13.89	8-1/4	6-1/4	C09568
9/16	.5625	14.29	8-1/4	6-1/4	C09571
37/64	.5781	14.68	8-3/4	6-1/2	C09573
19/32	.5938	15.08	8-3/4	6-1/2	C09576
39/64	.6094	15.48	8-3/4	6-1/2	C09578
5/8	.6250	15.88	8-3/4	6-1/2	C09581
21/32	.6562	16.67	9	6-3/4	C09586
11/16	.6875	17.46	9-1/4	6-7/8	C09591
23/32	.7188	18.26	9-1/2	7-1/8	C09595
3/4	.7500	19.05	9-3/4	7-3/8	C09599

List #2520 Automotive Taper Length Drill



Substrate - HSS
Length - Automotive Taper Length
Surface Treatment - Black Oxide
Shank - Straight with Tang
Point - 118°



Features:

- Tanged shank can be used with ASA drill driver
- Heavy duty construction for extra tool strength
- Taper length for extended reach
- Black oxide finish for increased wear resistance and improved lubricity reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/8	.1250	3.18	5-1/8	2-3/4	C08423
9/64	.1406	3.57	5-3/8	3	C08429
5/32	.1562	3.97	5-3/8	3	C08435
11/64	.1719	4.37	5-3/4	3-3/8	C08441
3/16	.1875	4.76	5-3/4	3-3/8	C08447
13/64	.2031	5.16	6	3-5/8	C08452
7/32	.2188	5.56	6	3-5/8	C08458
5/64	.2344	5.95	6-1/8	3-3/4	C08464
1/4	.2500	6.35	6-1/8	3-3/4	C08470
17/64	.2656	6.75	6-1/4	3-7/8	C08475
9/32	.2812	7.14	6-1/4	3-7/8	C08484
19/64	.2969	7.54	6-3/8	4	C08487
5/16	.3125	7.94	6-3/8	4	C08493
21/64	.3281	8.33	6-1/2	4-1/8	C08499
11/32	.3438	8.73	6-1/2	4-1/8	C08504
23/64	.3594	9.13	6-3/4	4-1/4	C08510
3/8	.3750	9.53	6-3/4	4-1/4	C08516
25/64	.3906	9.92	7	4-3/8	C08522
13/32	.4062	10.32	7	4-3/8	C08525

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
27/64	.4219	10.72	7-1/4	4-5/8	C08527
7/16	.4375	11.11	7-1/4	4-5/8	C08530
29/64	.4531	11.51	7-1/2	4-3/4	C08533
15/32	.4688	11.91	7-1/2	4-3/4	C08535
31/64	.4844	12.30	7-3/4	4-3/4	C08538
1/2	.5000	12.70	7-3/4	4-3/4	C08540
33/64	.5156	13.10	8	4-3/4	C08543
17/32	.5312	13.49	8	4-3/4	C08545
35/64	.5469	13.89	8-1/4	4-7/8	C08548
9/16	.5625	14.29	8-1/4	4-7/8	C08551
37/64	.5781	14.68	8-3/4	4-7/8	C08553
19/32	.5938	15.08	8-3/4	4-7/8	C08556
39/64	.6094	15.48	8-3/4	4-7/8	C08558
5/8	.6250	15.88	8-3/4	4-7/8	C08561
41/64	.6406	16.27	9	5-1/8	C08564
21/32	.6562	16.67	9	5-1/8	C08566
43/64	.6719	17.07	9-1/4	5-3/8	C08569
11/16	.6875	17.46	9-1/4	5-3/8	C08571

Drills • Special Purpose

List #3917- Aircraft Extension Drill - 6"



Substrate - HSS
Length - 6"
Surface Treatment - Bright
Shank - Straight
Point - 118° Split



Features:

- General purpose jobber length flute construction
- Bright finish, excellent for nonferrous applications & low tensile steels
- AIA NAS-907 drill specification approved for aircraft applications
- 118° split point for self centering, reducing thrust for ease of penetration & the preferred point for stainless steel
- 6" OAL for extended reach

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	6	11/16	C05510
59	.0410	1.04	6	11/16	C05511
58	.0420	1.07	6	11/16	C05513
57	.0430	1.09	6	3/4	C05514
56	.0465	1.18	6	3/4	C05517
3/64	.0469	1.19	6	3/4	C05518
55	.0520	1.32	6	7/8	C05522
54	.0550	1.40	6	7/8	C05524
53	.0595	1.51	6	7/8	C05528
1/16	.0625	1.59	6	7/8	C05530
52	.0635	1.61	6	7/8	C05532
51	.0670	1.70	6	1	C05535
50	.0700	1.78	6	1	C05537
49	.0730	1.85	6	1	C05540
48	.0760	1.93	6	1	C05542
5/64	.0781	1.98	6	1	C05544
47	.0785	1.99	6	1	C05545
46	.0810	2.06	6	1-1/8	C05548
45	.0820	2.08	6	1-1/8	C05549
44	.0860	2.18	6	1-1/8	C05552
43	.0890	2.26	6	1-1/4	C05555
42	.0935	2.37	6	1-1/4	C05558
3/32	.0938	2.38	6	1-1/4	C05559
41	.0960	2.44	6	1-3/8	C05561
40	.0980	2.49	6	1-3/8	C05563
39	.0995	2.53	6	1-3/8	C05565
38	.1015	2.58	6	1-7/16	C05566
37	.1040	2.64	6	1-7/16	C05568
36	.1065	2.71	6	1-7/16	C05570
7/64	.1094	2.78	6	1-1/2	C05572
35	.1100	2.79	6	1-1/2	C05573
34	.1110	2.82	6	1-1/2	C05575
33	.1130	2.87	6	1-1/2	C05576
32	.1160	2.95	6	1-5/8	C05578
31	.1200	3.05	6	1-5/8	C05580
1/8	.1250	3.18	6	1-5/8	C05582
30	.1285	3.26	6	1-5/8	C05585
29	.1360	3.45	6	1-3/4	C05588

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
28	.1405	3.57	6	1-3/4	C05590
9/64	.1406	3.57	6	1-3/4	C05591
27	.1440	3.66	6	1-7/8	C05593
26	.1470	3.73	6	1-7/8	C05595
25	.1495	3.80	6	1-7/8	C05597
24	.1520	3.86	6	2	C05599
23	.1540	3.91	6	2	C05601
5/32	.1562	3.97	6	2	C05602
22	.1570	3.99	6	2	C05603
21	.1590	4.04	6	2-1/8	C05605
20	.1610	4.09	6	2-1/8	C05606
19	.1660	4.22	6	2-1/8	C05609
18	.1695	4.31	6	2-1/8	C05612
11/64	.1719	4.37	6	2-1/8	C05613
17	.1730	4.39	6	2-3/16	C05614
16	.1770	4.50	6	2-3/16	C05616
15	.1800	4.57	6	2-3/16	C05618
14	.1820	4.62	6	2-3/16	C05620
13	.1850	4.70	6	2-5/16	C05621
3/16	.1875	4.76	6	2-5/16	C05624
12	.1890	4.80	6	2-5/16	C05625
11	.1910	4.85	6	2-5/16	C05627
10	.1935	4.91	6	2-7/16	C05629
9	.1960	4.98	6	2-7/16	C05630
8	.1990	5.05	6	2-7/16	C05632
7	.2010	5.11	6	2-7/16	C05634
13/64	.2031	5.16	6	2-7/16	C05635
6	.2040	5.18	6	2-1/2	C05636
5	.2055	5.22	6	2-1/2	C05638
4	.2090	5.31	6	2-1/2	C05641
3	.2130	5.41	6	2-1/2	C05643
7/32	.2188	5.56	6	2-1/2	C05645
2	.2210	5.61	6	2-5/8	C05647
1	.2280	5.79	6	2-5/8	C05650
15/64	.2344	5.95	6	2-5/8	C05654
1/4	.2500	6.35	6	2-3/4	C05663
5/16	.3125	7.94	6	3-3/16	C05664

Sizes 40 to 60 do not have split point.

Drills • Special Purpose

List #3917-12 Aircraft Extension Drill - 12" Features:



Substrate - HSS
Length - 12"
Surface Treatment - Bright
Shank - Straight
Point - 118° Split



- General purpose jobber length flute construction
- Bright finish, excellent for non-ferrous applications & low tensile steels
- AIA NAS-907 drill specification approved for aircraft applications
- 118° split point for self centering, reducing thrust for ease of penetration & the preferred point for stainless steel
- OAL for extended reach

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	12	11/16	C06010
59	.0410	1.04	12	11/16	C06011
58	.0420	1.07	12	11/16	C06013
57	.0430	1.09	12	3/4	C06014
56	.0465	1.18	12	3/4	C06017
3/64	.0469	1.19	12	3/4	C06018
55	.0520	1.32	12	7/8	C06022
54	.0550	1.40	12	7/8	C06024
53	.0595	1.51	12	7/8	C06028
1/16	.0625	1.59	12	7/8	C06030
52	.0635	1.61	12	7/8	C06032
51	.0670	1.70	12	1	C06035
50	.0700	1.78	12	1	C06037
49	.0730	1.85	12	1	C06040
48	.0760	1.93	12	1	C06042
5/64	.0781	1.98	12	1	C06044
47	.0785	1.99	12	1	C06045
46	.0810	2.06	12	1-1/8	C06048
45	.0820	2.08	12	1-1/8	C06049
44	.0860	2.18	12	1-1/8	C06052
43	.0890	2.26	12	1-1/4	C06055
42	.0935	2.37	12	1-1/4	C06058
3/32	.0938	2.38	12	1-1/4	C06059
41	.0960	2.44	12	1-3/8	C06061
40	.0980	2.49	12	1-3/8	C06063
39	.0995	2.53	12	1-3/8	C06065
38	.1015	2.58	12	1-7/16	C06066
37	.1040	2.64	12	1-7/16	C06068
36	.1065	2.71	12	1-7/16	C06070
7/64	.1094	2.78	12	1-1/2	C06072
35	.1100	2.79	12	1-1/2	C06073
34	.1110	2.82	12	1-1/2	C06075
33	.1130	2.87	12	1-1/2	C06076
31	.1200	3.05	12	1-5/8	C06080
1/8	.1250	3.18	12	1-5/8	C06082
30	.1285	3.26	12	1-5/8	C06085
29	.1360	3.45	12	1-3/4	C06088
28	.1405	3.57	12	1-3/4	C06090
9/64	.1406	3.57	12	1-3/4	C06091
27	.1440	3.66	12	1-7/8	C06093
26	.1470	3.73	12	1-7/8	C06095
25	.1495	3.80	12	1-7/8	C06097
24	.1520	3.86	12	2	C06099
23	.1540	3.91	12	2	C06101

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
5/32	.1562	3.97	12	2	C06102
21	.1590	4.04	12	2-1/8	C06105
20	.1610	4.09	12	2-1/8	C06106
19	.1660	4.22	12	2-1/8	C06109
18	.1695	4.31	12	2-1/8	C06112
11/64	.1719	4.37	12	2-1/8	C06113
17	.1730	4.39	12	2-3/16	C06114
16	.1770	4.50	12	2-3/16	C06116
15	.1800	4.57	12	2-3/16	C06118
14	.1820	4.62	12	2-3/16	C06120
13	.1850	4.70	12	2-5/16	C06121
3/16	.1875	4.76	12	2-5/16	C06124
12	.1890	4.80	12	2-5/16	C06125
11	.1910	4.85	12	2-5/16	C06127
10	.1935	4.91	12	2-7/16	C06129
9	.1960	4.98	12	2-7/16	C06130
8	.1990	5.05	12	2-7/16	C06132
7	.2010	5.11	12	2-7/16	C06134
13/64	.2031	5.16	12	2-7/16	C06135
6	.2040	5.18	12	2-1/2	C06136
5	.2055	5.22	12	2-1/2	C06138
4	.2090	5.31	12	2-1/2	C06141
3	.2130	5.41	12	2-1/2	C06143
7/32	.2188	5.56	12	2-1/2	C06145
2	.2210	5.61	12	2-5/8	C06147
1	.2280	5.79	12	2-5/8	C06150
15/64	.2344	5.95	12	2-5/8	C06154
1/4	.2500	6.35	12	2-3/4	C06163
17/64	.2656	6.75	12	2-7/8	C06171
9/32	.2812	7.14	12	2-15/16	C06185
19/64	.2969	7.54	12	3-1/16	C06189
5/16	.3125	7.94	12	3-3/16	C06196
21/64	.3281	8.33	12	3-5/16	C06204
11/32	.3438	8.73	12	3-7/16	C06211
23/64	.3594	9.13	12	3-1/2	C06219
3/8	.3750	9.53	12	3-5/8	C06226
25/64	.3906	9.92	12	3-3/4	C06234
13/32	.4062	10.32	12	3-7/8	C06239
27/64	.4219	10.72	12	3-15/16	C06242
7/16	.4375	11.11	12	4-1/16	C06245
29/64	.4531	11.51	12	4-3/16	C06248
15/32	.4688	11.91	12	4-5/16	C06250
31/64	.4844	12.30	12	4-3/8	C06253
1/2	.5000	12.70	12	4-1/2	C06255

Drills • Special Purpose

List #3947-6 Aircraft Extension Drill - 6" - Surface Treated



Substrate - HSS
Length - 6"
Surface Treatment - Black Oxide
Shank - Straight
Point - 135° Split



Features:

- Heavy duty flute construction for increased tool strength
- Black oxide finish for increased wear resistance & improved lubricity reducing chip welding & galling
- AIA-NAS 907 specifications approved for aircraft applications
- 135° split point for self centering, reducing thrust for ease of penetration & the preferred point for stainless steel

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	6	1 1/16	C05760
59	.0410	1.04	6	1 1/16	C05761
58	.0420	1.07	6	1 1/16	C05763
57	.0430	1.09	6	3/4	C05764
56	.0465	1.18	6	3/4	C05767
3/64	.0469	1.19	6	3/4	C05768
55	.0520	1.32	6	7/8	C05772
54	.0550	1.40	6	7/8	C05774
53	.0595	1.51	6	7/8	C05778
1/16	.0625	1.59	6	7/8	C05780
52	.0635	1.61	6	7/8	C05782
51	.0670	1.70	6	1	C05785
50	.0700	1.78	6	1	C05787
49	.0730	1.85	6	1	C05790
48	.0760	1.93	6	1	C05792
5/64	.0781	1.98	6	1	C05794
47	.0785	1.99	6	1-1/8	C05795
46	.0810	2.06	6	1-1/8	C05798
45	.0820	2.08	6	1-1/8	C05799
44	.0860	2.18	6	1-1/4	C05802
43	.0890	2.26	6	1-1/4	C05805
42	.0935	2.37	6	1-1/4	C05808
3/32	.0938	2.38	6	1-1/4	C05809
41	.0960	2.44	6	1-3/8	C05811
40	.0980	2.49	6	1-3/8	C05813
39	.0995	2.53	6	1-3/8	C05815
38	.1015	2.58	6	1-7/16	C05816
37	.1040	2.64	6	1-7/16	C05818
36	.1065	2.71	6	1-7/16	C05820
7/64	.1094	2.78	6	1-1/2	C05822
35	.1100	2.79	6	1-1/2	C05823
34	.1110	2.82	6	1-1/2	C05825
33	.1130	2.87	6	1-1/2	C05826
32	.1160	2.95	6	1-5/8	C05828
31	.1200	3.05	6	1-5/8	C05830
1/8	.1250	3.18	6	1-5/8	C05832
30	.1285	3.26	6	1-5/8	C05835
29	.1360	3.45	6	1-3/4	C05838

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
28	.1405	3.57	6	1-3/4	C05840
9/64	.1406	3.57	6	1-3/4	C05841
27	.1440	3.66	6	1-7/8	C05843
26	.1470	3.73	6	1-7/8	C05845
25	.1495	3.80	6	1-7/8	C05847
24	.1520	3.86	6	2	C05849
23	.1540	3.91	6	2	C05851
5/32	.1562	3.97	6	2	C05852
22	.1570	3.99	6	2	C05853
21	.1590	4.04	6	2-1/8	C05855
20	.1610	4.09	6	2-1/8	C05856
19	.1660	4.22	6	2-1/8	C05859
18	.1695	4.31	6	2-1/8	C05862
11/64	.1719	4.37	6	2-1/8	C05863
17	.1730	4.39	6	2-3/16	C05864
16	.1770	4.50	6	2-3/16	C05866
15	.1800	4.57	6	2-3/16	C05868
14	.1820	4.62	6	2-3/16	C05870
13	.1850	4.70	6	2-5/16	C05871
3/16	.1875	4.76	6	2-5/16	C05874
2-5/6	.1890	4.80	6		C05875
11	.1910	4.85	6	2-5/6	C05877
10	.1935	4.91	6	2-7/16	C05879
9	.1960	4.98	6	2-7/16	C05880
8	.1990	5.05	6	2-7/16	C05882
7	.2010	5.11	6	2-7/16	C05884
13/64	.2031	5.16	6	2-7/16	C05885
6	.2040	5.18	6	2-1/2	C05886
5	.2055	5.22	6	2-1/2	C05888
4	.2090	5.31	6	2-1/2	C05891
3	.2130	5.41	6	2-1/2	C05893
7/32	.2188	5.56	6	2-1/2	C05895
2	.2210	5.61	6	2-5/8	C05897
1	.2280	5.79	6	2-5/8	C05900
15/64	.2344	5.95	6	2-5/8	C05904
1/4, E	.2500	6.35	6	2-3/4	C05913
F	.2570	6.53	6	2-7/8	C05917
L	.2900	7.37	6	2-15/16	C05934

Drills • Special Purpose

List #3947- Aircraft Extension Drill - 12" - Surface Treated



Substrate - HSS
Length - 12"
Surface Treatment - Black Oxide
Shank - Straight
Point - 135° Split



- Heavy duty flute construction for increased tool strength
- Black oxide finish for increased wear resistance & improved lubricity reducing chip welding & galling
- AIA-NAS 907 specifications approved for aircraft applications
- 135° split point for self centering, reducing thrust for ease of penetration & the preferred point for stainless steel
- 12" OAL for extended reach

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	12	11/16	C06260
59	.0410	1.04	12	11/16	C06261
58	.0420	1.07	12	11/16	C06263
57	.0430	1.09	12	3/4	C06264
56	.0465	1.18	12	3/4	C06267
3/64	.0469	1.19	12	3/4	C06268
55	.0520	1.32	12	7/8	C06272
54	.0550	1.40	12	7/8	C06274
53	.0595	1.51	12	7/8	C06278
1/16	.0625	1.59	12	7/8	C06280
52	.0635	1.61	12	7/8	C06282
51	.0670	1.70	12	1	C06285
50	.0700	1.78	12	1	C06287
49	.0730	1.85	12	1	C06290
5/64	.0781	1.98	12	1	C06294
42	.0935	2.37	12	1-1/4	C06308
3/32	.0938	2.38	12	1-1/4	C06309
41	.0960	2.44	12	1-3/8	C06311
40	.0980	2.49	12	1-3/8	C06313
7/64	.1094	2.78	12	1-1/2	C06322
1/8	.1250	3.18	12	1-5/8	C06332
30	.1285	3.26	12	1-5/8	C06335
29	.1360	3.45	12	1-3/4	C06338
28	.1405	3.57	12	1-3/4	C06340
9/64	.1406	3.57	12	1-3/4	C06341
27	.1440	3.66	12	1-7/8	C06343
26	.1470	3.73	12	1-7/8	C06345
25	.1495	3.80	12	1-7/8	C06347
24	.1520	3.86	12	2	C06349
5/32	.1562	3.97	12	2	C06352
21	.1590	4.04	12	2-1/8	C06355
20	.1610	4.09	12	2-1/8	C06356
19	.1660	4.22	12	2-1/8	C06359
11/64	.1719	4.37	12	2-1/8	C06363
16	.1770	4.50	12	2-3/16	C06366
15	.1800	4.57	12	2-3/16	C06368
13	.1850	4.70	12	2-5/16	C06371
3/16	.1875	4.76	12	2-5/16	C06374
2-5/16	.1890	4.80	12		C06375
11	.1910	4.85	12	2-5/16	C06377
10	.1935	4.91	12	2-7/16	C06379

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9	.1960	4.98	12	2-7/16	C06380
8	.1990	5.05	12	2-7/16	C06382
7	.2010	5.11	12	2-7/16	C06384
13/64	.2031	5.16	12	2-7/16	C06385
6	.2040	5.18	12	2-1/2	C06386
5	.2055	5.22	12	2-1/2	C06388
3	.2130	5.41	12	2-1/2	C06393
7/32	.2188	5.56	12	2-1/2	C06395
2	.2210	5.61	12	2-5/8	C06397
1	.2280	5.79	12	2-5/8	C06400
15/64	.2344	5.95	12	2-5/8	C06404
1/4, E	.2500	6.35	12	2-3/4	C06413
F	.2570	6.53	12	2-7/8	C06417
G	.2610	6.63	12	2-5/8	C06419
17/64	.2656	6.75	12	2-5/8	C06421
H	.2660	6.76	12	2-5/8	C06423
I	.2720	6.91	12	2-5/8	C06426
L	.2900	7.37	12	2-15/16	C06434
9/32	.2812	7.14	12	3-1/16	C06435
19/64	.2969	7.54	12	3-1/16	C06439
N	.3020	7.67	12	3-1/16	C06441
5/16	.3125	7.94	12	3-3/16	C06446
O	.3160	8.03	12	3-3/16	C06448
P	.3230	8.20	12	3-5/16	C06451
21/64	.3281	8.33	12	3-7/16	C06454
O	.3320	8.43	12	3-7/16	C06456
R	.3390	8.61	12	3-7/16	C06459
11/32	.3438	8.73	12	3-7/16	C06461
23/64	.3594	9.13	12	3-1/2	C06469
U	.3680	9.35	12	3-5/8	C06473
3/8	.3750	9.53	12	3-5/8	C06476
V	.3770	9.58	12	3-5/8	C06477
W	.3860	9.80	12	3-3/4	C06482
25/64	.3906	9.92	12	3-3/4	C06484
13/32	.4062	10.32	12	3-3/4	C06489
27/64	.4219	10.72	12	3-15/16	C06492
7/16	.4375	11.11	12	4-1/16	C06495
29/64	.4531	11.51	12	4-3/16	C06498
15/32	.4688	11.91	12	4-5/16	C06500
31/64	.4844	12.30	12	4-3/8	C06503
1/2	.5000	12.70	12	4-1/2	C06505

Drills • Special Purpose

List #2420 Taper Shank Chipbreaker Drill



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118°



Features:

- Chipbreaker type fluting with a unique rolled heel to assist in chip breaking
- Black oxide finish for increased wear resistance & improved lubricity reducing chip welding & galling
- Thinned parallel web to ease regrinding the point without notching or thinning
- 118° point for general purpose applications

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
3/8	.3750	9.53	6-3/4	3-1/2	1	C12894
25/64	.3906	9.92	7	3-5/8	1	C12900
13/32	.4062	10.32	7	3-5/8	1	C12903
27/64	.4219	10.72	7-1/4	3-7/8	1	C12905
7/16	.4375	11.11	7-1/4	3-7/8	1	C12908
29/64	.4531	11.51	7-1/2	4-1/8	1	C12911
15/32	.4688	11.91	7-1/2	4-1/8	1	C12913
31/64	.4844	12.30	8-1/4	4-3/8	2	C12916
1/2	.5000	12.70	8-1/4	4-3/8	2	C12918
33/64	.5156	13.10	8-1/2	4-5/8	2	C12921
17/32	.5312	13.49	8-1/2	4-5/8	2	C12923
35/64	.5469	13.89	8-3/4	4-7/8	2	C12926
9/16	.5625	14.29	8-3/4	4-7/8	2	C12929
37/64	.5781	14.68	8-3/4	4-7/8	2	C12931
19/32	.5938	15.08	8-3/4	4-7/8	2	C12934
39/64	.6094	15.48	8-3/4	4-7/8	2	C12936
5/8	.6250	15.88	8-3/4	4-7/8	2	C12939
41/64	.6406	16.27	9	5-1/8	2	C12942
21/32	.6562	16.67	9	5-1/8	2	C12944
43/64	.6719	17.07	9-1/4	5-3/8	2	C12947
11/16	.6875	17.46	9-1/4	5-3/8	2	C12949
45/64	.7031	17.86	9-1/2	5-5/8	2	C12951
23/32	.7188	18.26	9-1/2	5-5/8	2	C12953
47/64	.7344	18.65	9-3/4	5-7/8	2	C12955
3/4	.7500	19.05	9-3/4	5-7/8	2	C12957
49/64	.7656	19.45	9-7/8	6	2	C12958
25/32	.7812	19.84	9-7/8	6	2	C12960
51/64	.7969	20.24	10-3/4	6-1/8	3	C12962
13/16	.8125	20.64	10-3/4	6-1/8	3	C12964
53/64	.8281	21.03	10-3/4	6-1/8	3	C12966
27/32	.8438	21.43	10-3/4	6-1/8	3	C12967
55/64	.8594	21.83	10-3/4	6-1/8	3	C12969
7/8	.8750	22.23	10-3/4	6-1/8	3	C12971
57/64	.8906	22.62	10-3/4	6-1/8	3	C12973
29/32	.9062	23.02	10-3/4	6-1/8	3	C12975
59/64	.9219	23.42	10-3/4	6-1/8	3	C12976
15/16	.9375	23.81	10-3/4	6-1/8	3	C12978
61/64	.9531	24.21	11	6-3/8	3	C12980
31/32	.9688	24.61	11	6-3/8	3	C12982
63/64	.9844	25.00	11	6-3/8	3	C12984
1	1.0000	25.40	11	6-3/8	3	C12985

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
1-1/64	1.0156	25.80	11-1/8	6-1/2	3	C12987
1-1/32	1.0312	26.19	11-1/8	6-1/2	3	C12989
1-3/64	1.0469	26.59	11-1/4	6-5/8	3	C12991
1-1/16	1.0625	26.99	11-1/4	6-5/8	3	C12992
1-5/64	1.0781	27.38	12-1/2	6-7/8	4	C12994
1-3/32	1.0938	27.78	12-1/2	6-7/8	4	C12996
1-7/64	1.1094	28.18	12-3/4	7-1/8	4	C12998
1-1/8	1.1250	28.58	12-3/4	7-1/8	4	C13000
1-5/32	1.1562	29.37	12-7/8	7-1/4	4	C13003
1-11/64	1.1719	29.77	13	7-3/8	4	C13005
1-3/16	1.1875	30.16	13	7-3/8	4	C13007
1-13/64	1.2031	30.56	13-1/8	7-1/2	4	C13009
1-7/32	1.2188	30.96	13-1/8	7-1/2	4	C13010
1-15/64	1.2344	31.35	13-1/2	7-7/8	4	C13012
1-1/4	1.2500	31.75	13-1/2	7-7/8	4	C13014
1-17/64	1.2656	32.15	14-1/8	8-1/2	4	C13016
1-9/32	1.2812	32.54	14-1/8	8-1/2	4	C13018
1-19/64	1.2969	32.94	14-1/4	8-5/8	4	C13019
1-5/16	1.3125	33.34	14-1/4	8-5/8	4	C13021
1-21/64	1.3281	33.73	14-3/8	8-3/4	4	C13023
1-11/32	1.3438	34.13	14-3/8	8-3/4	4	C13025
1-23/64	1.3594	34.53	14-1/2	8-7/8	4	C13027
1-3/8	1.3750	34.93	14-1/2	8-7/8	4	C13028
1-13/32	1.4062	35.72	14-5/8	9	4	C13032
1-27/64	1.4219	36.12	14-3/4	9-1/8	4	C13034
1-7/16	1.4375	36.51	14-3/4	9-1/8	4	C13036
1-15/32	1.4688	37.31	14-7/8	9-1/4	4	C13039
1-31/64	1.4844	37.70	15	9-3/8	4	C13041
1-1/2	1.5000	38.10	15	9-3/8	4	C13043
1-17/32	1.5312	38.89	16-3/8	9-3/8	5	C13046
1-9/16	1.5625	39.69	16-5/8	9-5/8	5	C13050
1-19/32	1.5938	40.48	16-7/8	9-7/8	5	C13053
1-5/8	1.6250	41.28	17	10	5	C13057
1-11/16	1.6875	42.86	17-1/8	10-1/8	5	C13064
1-23/32	1.7188	43.66	17-1/8	10-1/8	5	C13068
1-3/4	1.7500	44.45	17-1/8	10-1/8	5	C13071
1-13/16	1.8125	46.04	17-1/8	10-1/8	5	C13077
1-7/8	1.8750	47.63	17-3/8	10-3/8	5	C13082
1-15/16	1.9375	49.21	17-3/8	10-3/8	5	C13087
1-31/32	1.9688	50.01	17-3/8	10-3/8	5	C13090
2	2.0000	50.80	17-3/8	10-3/8	5	C13092

Drills • Special Purpose

List #2133 Cobalt Screw Machine Drill



Substrate - Cobalt
Length - Screw Machine Length
Surface Treatment - Straw Color
Shank - Straight
Point - 135° Split



Features:

- Cobalt provides longer tool life and more heat resistance than HSS
- Short flutes for rigid strong tools
- 135° split point is self centering, reducing thrust for ease of penetration, minimizes work hardening & the preferred point for stainless steels

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-3/8	1/2	CI4501
59	.0410	1.04	1-3/8	1/2	CI4502
58	.0420	1.07	1-3/8	1/2	CI4504
57	.0430	1.09	1-3/8	1/2	CI4505
56	.0465	1.18	1-3/8	1/2	CI4508
3/64	.0469	1.19	1-3/8	1/2	CI4509
55	.0520	1.32	1-5/8	5/8	CI4513
54	.0550	1.40	1-5/8	5/8	CI4515
53	.0595	1.51	1-5/8	5/8	CI4519
1/16	.0625	1.59	1-5/8	5/8	CI4521
52	.0635	1.61	1-11/16	11/16	CI4523
51	.0670	1.70	1-11/16	11/16	CI4526
50	.0700	1.78	1-11/16	11/16	CI4528
49	.0730	1.85	1-11/16	11/16	CI4531
48	.0760	1.93	1-11/16	11/16	CI4533
5/64	.0781	1.98	1-11/16	11/16	CI4535
47	.0785	1.99	1-11/16	11/16	CI4536
46	.0810	2.06	1-3/4	3/4	CI4539
45	.0820	2.08	1-3/4	3/4	CI4540
44	.0860	2.18	1-3/4	3/4	CI4543
43	.0890	2.26	1-3/4	3/4	CI4546
42	.0935	2.37	1-3/4	3/4	CI4549
3/32	.0938	2.38	1-3/4	3/4	CI4550
41	.0960	2.44	1-13/16	13/16	CI4552
40	.0980	2.49	1-13/16	13/16	CI4554
39	.0995	2.53	1-13/16	13/16	CI4556
38	.1015	2.58	1-13/16	13/16	CI4557
37	.1040	2.64	1-13/16	13/16	CI4559
36	.1065	2.71	1-13/16	13/16	CI4561
7/64	.1094	2.78	1-13/16	13/16	CI4562
35	.1100	2.79	1-7/8	7/8	CI4563
34	.1110	2.82	1-7/8	7/8	CI4565
33	.1130	2.87	1-7/8	7/8	CI4566
32	.1160	2.95	1-7/8	7/8	CI4568
31	.1200	3.05	1-7/8	7/8	CI4570
1/8	.1250	3.18	1-7/8	7/8	CI4572
30	.1285	3.26	1-15/16	15/16	CI4574
29	.1360	3.45	1-15/16	15/16	CI4577
28	.1405	3.57	1-15/16	15/16	CI4579
9/64	.1406	3.57	1-15/16	15/16	CI4580
27	.1440	3.66	2-1/16	1	CI4582
26	.1470	3.73	2-1/16	1	CI4584
25	.1495	3.80	2-1/16	1	CI4585
24	.1520	3.86	2-1/16	1	CI4587
23	.1540	3.91	2-1/16	1	CI4589
5/32	.1562	3.97	2-1/16	1	CI4590
22	.1570	3.99	2-1/8	1-1/16	CI4591
21	.1590	4.04	2-1/8	1-1/16	CI4593
20	.1610	4.09	2-1/8	1-1/16	CI4594
19	.1660	4.22	2-1/8	1-1/16	CI4597
18	.1695	4.31	2-1/8	1-1/16	CI4599
11/64	.1719	4.37	2-1/8	1-1/16	CI4600
17	.1730	4.39	2-3/16	1-1/8	CI4601
16	.1770	4.50	2-3/16	1-1/8	CI4603
15	.1800	4.57	2-3/16	1-1/8	CI4605
14	.1820	4.62	2-3/16	1-1/8	CI4607
13	.1850	4.70	2-3/16	1-1/8	CI4608
3/16	.1875	4.76	2-3/16	1-1/8	CI4610

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
12	.1890	4.80	2-1/4	1-3/16	CI4611
11	.1910	4.85	2-1/4	1-3/16	CI4613
10	.1935	4.91	2-1/4	1-3/16	CI4615
9	.1960	4.98	2-1/4	1-3/16	CI4616
8	.1990	5.05	2-1/4	1-3/16	CI4618
7	.2010	5.11	2-1/4	1-3/16	CI4620
13/64	.2031	5.16	2-1/4	1-3/16	CI4621
6	.2040	5.18	2-3/8	1-1/4	CI4622
5	.2055	5.22	2-3/8	1-1/4	CI4624
4	.2090	5.31	2-3/8	1-1/4	CI4626
3	.2130	5.41	2-3/8	1-1/4	CI4628
7/32	.2188	5.56	2-3/8	1-1/4	CI4630
2	.2210	5.61	2-7/16	1-5/16	CI4632
1	.2280	5.79	2-7/16	1-5/16	CI4634
A	.2340	5.94	2-7/16	1-5/16	CI4637
15/64	.2344	5.95	2-7/16	1-5/16	CI4638
B	.2380	6.05	2-1/2	1-3/8	CI4640
C	.2420	6.15	2-1/2	1-3/8	CI4642
D	.2460	6.25	2-1/2	1-3/8	CI4644
1/4,E	.2500	6.35	2-1/2	1-3/8	CI4646
F	.2570	6.53	2-5/8	1-7/16	CI4649
G	.2610	6.63	2-5/8	1-7/16	CI4651
17/64	.2656	6.75	2-5/8	1-7/16	CI4653
H	.2660	6.76	2-11/16	1-1/2	CI4654
I	.2720	6.91	2-11/16	1-1/2	CI4657
J	.2770	7.04	2-11/16	1-1/2	CI4659
K	.2810	7.14	2-11/16	1-1/2	CI4661
9/32	.2812	7.14	2-11/16	1-1/2	CI4664
L	.2900	7.37	2-3/4	1-9/16	CI4665
M	.2950	7.49	2-3/4	1-9/16	CI4667
19/64	.2969	7.54	2-3/4	1-9/16	CI4669
N	.3020	7.67	2-13/16	1-5/8	CI4671
5/16	.3125	7.94	2-13/16	1-5/8	CI4675
O	.3160	8.03	2-15/16	1-11/16	CI4677
P	.3230	8.20	2-15/16	1-11/16	CI4680
21/64	.3281	8.33	2-15/16	1-11/16	CI4682
Q	.3320	8.43	3	1-11/16	CI4684
R	.3390	8.61	3	1-11/16	CI4687
11/32	.3438	8.73	3	1-11/16	CI4689
S	.3480	8.84	3-1/16	1-3/4	CI4691
T	.3580	9.09	3-1/16	1-3/4	CI4694
23/64	.3594	9.13	3-1/16	1-3/4	CI4696
U	.3680	9.35	3-1/8	1-13/16	CI4699
3/8	.3750	9.53	3-1/8	1-13/16	CI4702
V	.3770	9.58	3-1/4	1-7/8	CI4703
W	.3860	9.80	3-1/4	1-7/8	CI4707
25/64	.3906	9.92	3-1/4	1-7/8	CI4709
X	.3970	10.08	3-5/16	1-15/16	CI4711
Y	.4040	10.26	3-5/16	1-15/16	CI4713
13/32	.4062	10.32	3-5/16	1-15/16	CI4715
Z	.4130	10.49	3-3/8	2	CI4716
27/64	.4219	10.72	3-3/8	2	CI4718
7/16	.4375	11.11	3-7/16	2-1/16	CI4721
29/64	.4531	11.51	3-9/16	2-1/8	CI4724
15/32	.4688	11.91	3-5/8	2-1/8	CI4726
31/64	.4844	12.30	3-11/16	2-3/16	CI4729
1/2	.5000	12.70	3-3/4	2-1/4	CI4731

Drills • Special Purpose

List #2013 Cobalt Jobber Length Drill



Substrate - Cobalt
Length - Jobber Length
Surface Treatment - Straw Color
Shank - Straight
Point - 135° Split



Features:

- Cobalt provides heavy duty construction to increase tool strength
- 135° split point is self centering reducing thrust for ease of penetration & the preferred point for stainless steels
- AIA NAS-907 (Type J) drill specification approved for aircraft applications

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
80	.0135	0.34	3/4	1/8	C04066
79	.0145	0.37	3/4	1/8	C04068
1/64	.0156	0.40	3/4	3/16	C04070
78	.0160	0.41	7/8	3/16	C04072
77	.0180	0.46	7/8	3/16	C04075
76	.0200	0.51	7/8	3/16	C04078
75	.0210	0.53	1	1/4	C04079
74	.0225	0.57	1	1/4	C04081
73	.0240	0.61	1-1/8	5/16	C04083
72	.0250	0.64	1-1/8	5/16	C04084
71	.0260	0.66	1-1/4	3/8	C04086
70	.0280	0.71	1-1/4	3/8	C04088
69	.0292	0.74	1-3/8	1/2	C04089
68	.0310	0.79	1-3/8	1/2	C04091
1/32	.0312	0.79	1-3/8	1/2	C04092
67	.0320	0.81	1-3/8	1/2	C04094
66	.0330	0.84	1-3/8	1/2	C04095
65	.0350	0.89	1-1/2	5/8	C04097
64	.0360	0.91	1-1/2	5/8	C04099
63	.0370	0.94	1-1/2	5/8	C04100
62	.0380	0.97	1-1/2	5/8	C04102
61	.0390	0.99	1-5/8	11/16	C04103
60	.0400	1.02	1-5/8	11/16	C04105
59	.0410	1.04	1-5/8	11/16	C04106
58	.0420	1.07	1-5/8	11/16	C04108
57	.0430	1.09	1-3/4	3/4	C04109
56	.0465	1.18	1-3/4	3/4	C04112
3/64	.0469	1.19	1-3/4	3/4	C04113
55	.0520	1.32	1-7/8	7/8	C04117
54	.0550	1.40	1-7/8	7/8	C04119
53	.0595	1.51	1-7/8	7/8	C04123
1/16	.0625	1.59	1-7/8	7/8	C04125
52	.0635	1.61	1-7/8	7/8	C04127
51	.0670	1.70	2	1	C04130
50	.0700	1.78	2	1	C04132
49	.0730	1.85	2	1	C04135
48	.0760	1.93	2	1	C04137
5/64	.0781	1.98	2	1	C04139
47	.0785	1.99	2	1	C04140
46	.0810	2.06	2-1/8	1-1/8	C04143
45	.0820	2.08	2-1/8	1-1/8	C04144
44	.0860	2.18	2-1/8	1-1/8	C04147
43	.0890	2.26	2-1/4	1-1/4	C04150
42	.0935	2.37	2-1/4	1-1/4	C04153
3/32	.0938	2.38	2-1/4	1-1/4	C04154
41	.0960	2.44	2-3/8	1-3/8	C04156
40	.0980	2.49	2-3/8	1-3/8	C04158
39	.0995	2.53	2-3/8	1-3/8	C04160
38	.1015	2.58	2-1/2	1-7/16	C04161
37	.1040	2.64	2-1/2	1-7/16	C04163
36	.1065	2.71	2-1/2	1-7/16	C04165
7/64	.1094	2.78	2-5/8	1-1/2	C04167
35	.1100	2.79	2-5/8	1-1/2	C04168
34	.1110	2.82	2-5/8	1-1/2	C04170
33	.1130	2.87	2-5/8	1-1/2	C04171
32	.1160	2.95	2-3/4	1-5/8	C04173
31	.1200	3.05	2-3/4	1-5/8	C04175

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/8	.1250	3.18	2-3/4	1-5/8	C04177
30	.1285	3.26	2-3/4	1-5/8	C04180
29	.1360	3.45	2-7/8	1-3/4	C04183
28	.1405	3.57	2-7/8	1-3/4	C04185
9/64	.1406	3.57	2-7/8	1-3/4	C04186
27	.1440	3.66	3	1-7/8	C04188
26	.1470	3.73	3	1-7/8	C04190
25	.1495	3.80	3	1-7/8	C04192
24	.1520	3.86	3-1/8	2	C04194
23	.1540	3.91	3-1/8	2	C04196
5/32	.1562	3.97	3-1/8	2	C04197
22	.1570	3.99	3-1/8	2	C04198
21	.1590	4.04	3-1/4	2-1/8	C04200
20	.1610	4.09	3-1/4	2-1/8	C04201
19	.1660	4.22	3-1/4	2-1/8	C04204
18	.1695	4.31	3-1/4	2-1/8	C04207
11/64	.1719	4.37	3-1/4	2-1/8	C04208
17	.1730	4.39	3-3/8	2-3/16	C04209
16	.1770	4.50	3-3/8	2-3/16	C04211
15	.1800	4.57	3-3/8	2-3/16	C04213
14	.1820	4.62	3-3/8	2-3/16	C04215
13	.1850	4.70	3-1/2	2-5/16	C04216
3/16	.1875	4.76	3-1/2	2-5/16	C04219
12	.1890	4.80	3-1/2	2-5/16	C04220
11	.1910	4.85	3-1/2	2-5/16	C04222
10	.1935	4.91	3-5/8	2-7/16	C04224
9	.1960	4.98	3-5/8	2-7/16	C04225
8	.1990	5.05	3-5/8	2-7/16	C04227
7	.2010	5.11	3-5/8	2-7/16	C04229
13/64	.2031	5.16	3-5/8	2-7/16	C04230
6	.2040	5.18	3-3/4	2-1/2	C04231
5	.2055	5.22	3-3/4	2-1/2	C04233
4	.2090	5.31	3-3/4	2-1/2	C04236
3	.2130	5.41	3-3/4	2-1/2	C04238
7/32	.2188	5.56	3-3/4	2-1/2	C04240
2	.2210	5.61	3-7/8	2-5/8	C04242
1	.2280	5.79	3-7/8	2-5/8	C04245
A	.2340	5.94	3-7/8	2-5/8	C04248
15/64	.2344	5.95	3-7/8	2-5/8	C04249
B	.2380	6.05	4	2-3/4	C04251
C	.2420	6.15	4	2-3/4	C04253
D	.2460	6.25	4	2-3/4	C04255
1/4,E	.2500	6.35	4	2-3/4	C04258
F	.2570	6.53	4-1/8	2-7/8	C04262
G	.2610	6.63	4-1/8	2-7/8	C04264
17/64	.2656	6.75	4-1/8	2-7/8	C04266
H	.2660	6.76	4-1/8	2-7/8	C04268
I	.2720	6.91	4-1/8	2-7/8	C04271
J	.2770	7.04	4-1/8	2-7/8	C04273
K	.2810	7.14	4-1/4	2-15/16	C04275
L	.2900	7.37	4-1/4	2-15/16	C04279
9/32	.2812	7.14	4-1/4	2-15/16	C04280
M	.2950	7.49	4-3/8	3-1/16	C04282
19/64	.2969	7.54	4-3/8	3-1/16	C04284
N	.3020	7.67	4-3/8	3-1/16	C04286
5/16	.3125	7.94	4-1/2	3-3/16	C04291
O	.3160	8.03	4-1/2	3-3/16	C04293

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Drills • Special Purpose

List #2013 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
P	.3230	8.20	4-5/8	3-5/16	C04296
21/64	.3281	8.33	4-5/8	3-5/16	C04299
Q	.3320	8.43	4-3/4	3-7/16	C04301
R	.3390	8.61	4-3/4	3-7/16	C04304
11/32	.3438	8.73	4-3/4	3-7/16	C04306
S	.3480	8.84	4-7/8	3-1/2	C04309
T	.3580	9.09	4-7/8	3-1/2	C04312
23/64	.3594	9.13	4-7/8	3-1/2	C04314
U	.3680	9.35	5	3-5/8	C04318
3/8	.3750	9.53	5	3-5/8	C04321
V	.3770	9.58	5	3-5/8	C04322
VV	.3860	9.80	5-1/8	3-3/4	C04327

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
25/64	.3906	9.92	5-1/8	3-3/4	C04329
X	.3970	10.08	5-1/8	3-3/4	C04331
Y	.4040	10.26	5-1/4	3-7/8	C04333
13/32	.4062	10.32	5-1/4	3-7/8	C04334
Z	.4130	10.49	5-1/4	3-7/8	C04335
27/64	.4219	10.72	5-3/8	3-15/16	C04337
7/16	.4375	11.11	5-1/2	4-1/16	C04340
29/64	.4531	11.51	5-5/8	4-3/16	C04343
15/32	.4688	11.91	5-3/4	4-5/16	C04345
31/64	.4844	12.30	5-7/8	4-3/8	C04348
1/2	.5000	12.70	6	4-1/2	C04350

1/16" or smaller size do not have split point.

List #2513 Heavy Duty Taper Length Cobalt Drill



Substrate - Cobalt
Length - Taper Length
Surface Treatment - Straw Color
Shank - Straight
Point - 118° K Notched



Features:

- Cobalt provides heavy duty construction to increase tool strength
- 20% longer flute length than regular for increased regrinds & the ability to drill deeper holes
- Tanged shank that can be used with an ASA drill driver.

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/8	.1250	3.18	5-1/8	3-3/8	C14873
9/64	.1406	3.57	5-3/8	3-5/8	C14882
5/32	.1562	3.97	5-3/8	3-3/4	C14893
11/64	.1719	4.37	5-3/4	4-1/8	C14904
3/16	.1875	4.76	5-3/4	4-1/8	C14915
13/64	.2031	5.16	6	4-3/8	C14926
7/32	.2188	5.56	6	4-3/8	C14935
15/64	.2344	5.95	6-1/8	4-13/16	C14945
1/4	.2500	6.35	6-1/8	4-13/16	C14954
17/64	.2656	6.75	6-1/4	5	C14959
9/32	.2812	7.14	6-1/4	5	C14973
19/64	.2969	7.54	6-3/8	5-1/8	C14977
5/16	.3125	7.94	6-3/8	5-1/8	C14984

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
21/64	.3281	8.33	6-1/2	5-1/4	C14992
11/32	.3438	8.73	6-1/2	5-1/4	C14999
23/64	.3594	9.13	6-3/4	5-3/8	C15007
3/8	.3750	9.53	6-3/4	5-3/8	C15014
25/64	.3906	9.92	7	5-5/8	C15022
13/32	.4062	10.32	7	5-5/8	C15028
27/64	.4219	10.72	7-1/4	5-11/16	C15031
7/16	.4375	11.11	7-1/4	5-11/16	C15034
29/64	.4531	11.51	7-1/2	5-3/4	C15037
15/32	.4688	11.91	7-1/2	5-3/4	C15039
31/64	.4844	12.30	7-3/4	5-3/4	C15042
1/2	.5000	12.70	7-3/4	5-3/4	C15044

Drills • Special Purpose

List #2440 Taper Shank Cobalt Drill



Substrate - Cobalt
Length - Taper Shank Length
Surface Treatment - Straw Color
Shank - Taper
Point - 135° K Notched



Features:

- Cobalt provides heavy duty construction to increase tool strength
- 135° K notched point to improve self centering, reduce thrust for ease of penetration & the preferred point for stainless steel
- Heavy duty construction for extra tool strength

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
1/4	.2500	6.35	6-1/8	2-7/8	1	C12705
9/32	.2812	7.14	6-1/4	3	1	C12719
5/16	.3125	7.94	6-3/8	3-1/8	1	C12728
11/32	.3438	8.73	6-1/2	3-1/4	1	C12739
3/8	.3750	9.53	6-3/4	3-1/2	1	C12751
13/32	.4062	10.32	7	3-5/8	1	C12760
7/16	.4375	11.11	7-1/4	3-7/8	1	C12765
15/32	.4688	11.91	7-1/2	4-1/8	1	C12770
1/2	.5000	12.70	8-1/4	4-3/8	2	C12775
17/32	.5312	13.49	8-1/2	4-5/8	2	C12780
9/16	.5625	14.29	8-3/4	4-7/8	2	C12786
19/32	.5938	15.08	8-3/4	4-7/8	2	C12791
5/8	.6250	15.88	8-3/4	4-7/8	2	C12796

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
21/32	.6562	16.67	9	5-1/8	2	C12801
11/16	.6875	17.46	9-1/4	5-3/8	2	C12806
23/32	.7188	18.26	9-1/2	5-5/8	2	C12810
3/4	.7500	19.05	9-3/4	5-7/8	2	C12814
25/32	.7812	19.84	9-7/8	6	2	C12817
13/16	.8125	20.64	10-3/4	6-1/8	3	C12821
7/8	.8750	22.23	10-3/4	6-1/8	3	C12828
15/16	.9375	23.81	10-3/4	6-1/8	3	C12835
1	1.0000	25.40	11	6-3/8	3	C12842
1-1/16	1.0625	26.99	11-1/4	6-5/8	3	C12849
1-1/8	1.1250	28.58	12-3/4	7-1/8	4	C12857
1-3/16	1.1875	30.16	13	7-3/8	4	C12864
1-1/4	1.2500	31.75	13-1/2	7-7/8	4	C12871

List #2727 Carbide-Tipped Jobber Length Drill



Substrate - Carbide-Tipped
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118° Cam Relieved



Features:

- Carbide-tipped for longer tool life & better abrasion resistance
- Bright finish, excellent for nonferrous applications & low tensile steels
- Heavy duty construction for increased tool strength
- Cam relieved 118° point-general purpose angle with radial relief for accurate holes

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
32	.1160	2.95	2-3/4	1-5/8	C48651
31	.1200	3.05	2-3/4	1-5/8	C48653
1/8	.1250	3.18	2-3/4	1-5/8	C48655
30	.1285	3.26	2-3/4	1-5/8	C48658
29	.1360	3.45	2-7/8	1-3/4	C48661
28	.1405	3.57	2-7/8	1-3/4	C48663
9/64	.1406	3.57	2-7/8	1-3/4	C48664
27	.1440	3.66	3	1-7/8	C48666
26	.1470	3.73	3	1-7/8	C48668
25	.1495	3.80	3	1-7/8	C48670
24	.1520	3.86	3-1/8	2	C48672
23	.1540	3.91	3-1/8	2	C48674
5/32	.1562	3.97	3-1/8	2	C48675
22	.1570	3.99	3-1/8	2	C48676
21	.1590	4.04	3-1/4	2-1/8	C48678
20	.1610	4.09	3-1/4	2-1/8	C48679
19	.1660	4.22	3-1/4	2-1/8	C48682
18	.1695	4.31	3-1/4	2-1/8	C48685
11/64	.1719	4.37	3-1/4	2-1/8	C48686
17	.1730	4.39	3-3/8	2-3/16	C48687
16	.1770	4.50	3-3/8	2-3/16	C48689
15	.1800	4.57	3-3/8	2-3/16	C48691
14	.1820	4.62	3-3/8	2-3/16	C48693

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
13	.1850	4.70	3-1/2	2-5/16	C48694
3/16	.1875	4.76	3-1/2	2-5/16	C48697
12	.1890	4.80	3-1/2	2-5/16	C48698
11	.1910	4.85	3-1/2	2-5/16	C48700
10	.1935	4.91	3-5/8	2-7/16	C48702
9	.1960	4.98	3-5/8	2-7/16	C48703
8	.1990	5.05	3-5/8	2-7/16	C48705
7	.2010	5.11	3-5/8	2-7/16	C48707
13/64	.2031	5.16	3-5/8	2-7/16	C48708
6	.2040	5.18	3-3/4	2-1/2	C48709
5	.2055	5.22	3-3/4	2-1/2	C48711
4	.2090	5.31	3-3/4	2-1/2	C48714
3	.2130	5.41	3-3/4	2-1/2	C48716
7/32	.2188	5.56	3-3/4	2-1/2	C48718
2	.2210	5.61	3-7/8	2-5/8	C48720
1	.2280	5.79	3-7/8	2-5/8	C48723
A	.2340	5.94	3-7/8	2-5/8	C48726
15/64	.2344	5.95	3-7/8	2-5/8	C48727
B	.2380	6.05	4	2-3/4	C48729
C	.2420	6.15	4	2-3/4	C48731
D	.2460	6.25	4	2-3/4	C48733
1/4,E	.2500	6.35	4	2-3/4	C48736

(Continued on next page)

Drills • Special Purpose

List #2727 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
F	.2570	6.53	4-1/8	2-7/8	C48740
G	.2610	6.63	4-1/8	2-7/8	C48742
17/64	.2656	6.75	4-1/8	2-7/8	C48744
H	.2660	6.76	4-1/8	2-7/8	C48746
I	.2720	6.91	4-1/8	2-7/8	C48749
J	.2770	7.04	4-1/8	2-7/8	C48751
K	.2810	7.14	4-1/4	2-15/16	C48753
L	.2900	7.37	4-1/4	2-15/16	C48757
9/32	.2812	7.14	4-1/4	2-15/16	C48758
M	.2950	7.49	4-3/8	3-1/16	C48760
19/64	.2969	7.54	4-3/8	3-1/16	C48762
N	.3020	7.67	4-3/8	3-1/16	C48764
5/16	.3125	7.94	4-1/2	3-3/16	C48769
O	.3160	8.03	4-1/2	3-3/16	C48771
P	.3230	8.20	4-5/8	3-5/16	C48774
21/64	.3281	8.33	4-5/8	3-5/16	C48777
Q	.3320	8.43	4-3/4	3-7/16	C48779
R	.3390	8.61	4-3/4	3-7/16	C48782
11/32	.3438	8.73	4-3/4	3-7/16	C48784

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
S	.3480	8.84	4-7/8	3-1/2	C48787
T	.3580	9.09	4-7/8	3-1/2	C48790
23/64	.3594	9.13	4-7/8	3-1/2	C48792
U	.3680	9.35	5	3-5/8	C48796
3/8	.3750	9.53	5	3-5/8	C48799
V	.3770	9.58	5	3-5/8	C48800
W	.3860	9.80	5-1/8	3-3/4	C48805
25/64	.3906	9.92	5-1/8	3-3/4	C48807
X	.3970	10.08	5-1/8	3-3/4	C48809
Y	.4040	10.26	5-1/4	3-7/8	C48811
13/32	.4062	10.32	5-1/4	3-7/8	C48812
Z	.4130	10.49	5-1/4	3-7/8	C48813
27/64	.4219	10.72	5-3/8	3-15/16	C48815
7/16	.4375	11.11	5-1/2	4-1/16	C48818
29/64	.4531	11.51	5-5/8	4-3/16	C48821
15/32	.4688	11.91	5-3/4	4-5/16	C48823
31/64	.4844	12.30	5-7/8	4-3/8	C48826
1/2	.5000	12.70	6	4-1/2	C48828

List #2745 Carbide-Tipped Taper Length Straight Shank Drill



Substrate - Carbide-Tipped
Length - Taper Length
Surface Treatment - Bright
Shank - Straight with Tang
Point - 118°



Features:

- 118° point for general purpose use
- Heavy duty construction for extra tool strength
- Taper length for extended reach
- Tanged shank for use with ASA drill drivers
- Carbide-tipped for longer tool life and abrasion resistance

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/8	.1250	3.18	5-1/8	2-3/4	C49017
9/64	.1406	3.57	5-3/8	3	C49023
5/32	.1562	3.97	5-3/8	3	C49029
11/64	.1719	4.37	5-3/4	3-3/8	C49035
3/16	.1875	4.76	5-3/4	3-3/8	C49041
13/64	.2031	5.16	6	3-5/8	C49046
7/32	.2188	5.56	6	3-5/8	C49052
15/64	.2344	5.95	6-1/8	3-3/4	C49058
1/4	.2500	6.35	6-1/8	3-3/4	C49064
17/64	.2656	6.75	6-1/4	3-7/8	C49069
9/32	.2812	7.14	6-1/4	3-7/8	C49078
19/64	.2969	7.54	6-3/8	4	C49081
5/16	.3125	7.94	6-3/8	4	C49087
21/64	.3281	8.33	6-1/2	4-1/8	C49093
11/32	.3438	8.73	6-1/2	4-1/8	C49098
23/64	.3594	9.13	6-3/4	4-1/4	C49104
3/8	.3750	9.53	6-3/4	4-1/4	C49110
25/64	.3906	9.92	7	4-3/8	C49116
13/32	.4062	10.32	7	4-3/8	C49119
27/64	.4219	10.72	7-1/4	4-5/8	C49121
7/16	.4375	11.11	7-1/4	4-5/8	C49124
29/64	.4531	11.51	7-1/2	4-3/4	C49127
15/32	.4688	11.91	7-1/2	4-3/4	C49129

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
31/64	.4844	12.30	7-3/4	4-3/4	C49132
1/2	.5000	12.70	7-3/4	4-3/4	C49134
33/64	.5156	13.10	8	4-3/4	C49137
17/32	.5312	13.49	8	4-3/4	C49139
35/64	.5469	13.89	8-1/4	4-7/8	C49142
9/16	.5625	14.29	8-1/4	4-7/8	C49145
37/64	.5781	14.68	8-3/4	4-7/8	C49147
19/32	.5938	15.08	8-3/4	4-7/8	C49150
39/64	.6094	15.48	8-3/4	4-7/8	C49152
5/8	.6250	15.88	8-3/4	4-7/8	C49155
41/64	.6406	16.27	9	5-1/8	C49158
21/32	.6562	16.67	9	5-1/8	C49160
43/64	.6719	17.07	9-1/4	5-3/8	C49163
11/16	.6875	17.46	9-1/4	5-3/8	C49165
45/64	.7031	17.86	9-1/2	5-5/8	C49167
23/32	.7188	18.26	9-1/2	5-5/8	C49169
47/64	.7344	18.65	9-3/4	5-7/8	C49171
3/4	.7500	19.05	9-3/4	5-7/8	C49173
13/16	.8125	20.64	10	6-1/8	C49180
7/8	.8750	22.23	10	6-1/8	C49187
15/16	.9375	23.81	10-3/4	6-1/8	C49193
1	1.0000	25.40	11	6-3/8	C49200

Drills • Special Purpose

List #2740 Carbide-Tipped Taper Shank



Substrate - Carbide-Tipped
Length - Taper Shank Length
Surface Treatment - Bright
Shank - Taper
Point - 118°



Features:

- Carbide tipped heavy duty construction to increase tool strength
- 118° point for general purpose use

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
1/4	.2500	6.35	6-1/8	2-7/8	1	C49346
5/16	.3125	7.94	6-3/8	3-1/8	1	C49366
3/8	.3750	9.53	6-3/4	3-1/2	1	C49386
7/16	.4375	11.11	7-1/4	3-7/8	1	C49397
1/2	.5000	12.70	8-1/4	4-3/8	2	C49404
17/32	.5312	13.49	8-1/2	4-5/8	2	C49408
9/16	.5625	14.29	8-3/4	4-7/8	2	C49413
19/32	.5938	15.08	8-3/4	4-7/8	2	C49417
5/8	.6250	15.88	8-3/4	4-7/8	2	C49421
21/32	.6562	16.67	9	5-1/8	2	C49425
11/16	.6875	17.46	9-1/4	5-3/8	2	C49429
23/32	.7188	18.26	9-1/2	5-5/8	2	C49432
3/4	.7500	19.05	9-3/4	5-7/8	2	C49435

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Taper	EDP Number
25/32	.7812	19.84	9-7/8	6	2	C49437
13/16	.8125	20.64	10-3/4	6-1/8	3	C49440
27/32	.8438	21.43	10-3/4	6-1/8	3	C49442
7/8	.8750	22.23	10-3/4	6-1/8	3	C49445
29/32	.9062	23.02	10-3/4	6-1/8	3	C49448
15/16	.9375	23.81	10-3/4	6-1/8	3	C49450
31/32	.9688	24.61	11	6-3/8	3	C49453
1	1.0000	25.40	11	6-3/8	3	C49455
1-1/16	1.0625	26.99	11-1/4	6-5/8	3	C49459
1-1/8	1.1250	28.58	12-3/4	7-1/8	4	C49464
1-3/16	1.1875	30.16	13	7-3/8	4	C49468
1-1/4	1.2500	31.75	13-1/2	7-7/8	4	C49472

List #760 Carbide-Tipped Die Drill



Substrate - Carbide-Tipped
Length - Regular
Surface Treatment - Bright
Shank - Straight
Point - 118° Cam Relieved



Features:

- Carbide-tipped for longer tool life & better abrasion resistance
- 118° cam relieved point for shallow holes in hard materials up to 65 Rc
- Carbide-tipped for longer tool life & abrasion resistance
- Straight flutes enhance hole concentricity

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
1/16	.0625	1.59	2	15/32	1/16	C49301*
3/32	.0938	2.38	2	17/32	3/32	C49302*
1/8	.1250	3.18	2	21/32	1/8	C49303*
5/32	.1562	3.97	2	21/32	5/32	C49304*
3/16	.1875	4.76	3-1/2	1-1/2	11/64	C49305
7/32	.2188	5.56	3-3/4	1-3/4	13/64	C49306
1/4	.2500	6.35	4	2	7/32	C49307
9/32	.2812	7.14	4-1/4	2-1/4	1/4	C49308
5/16	.3125	7.94	4-1/2	2-1/2	9/32	C49309
11/32	.3438	8.73	4-3/4	2-3/4	5/16	C49310
3/8	.3750	9.53	5	3	11/32	C49311
13/32	.4062	10.32	5-1/4	3	3/8	C49312

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
7/16	.4375	11.11	5-1/2	3	13/32	C49313
15/32	.4688	11.91	5-3/4	3-1/4	7/16	C49314
1/2	.5000	12.70	6	3-1/2	15/32	C49315
17/32	.5312	13.49	6	3-1/2	1/2	C49316
9/16	.5625	14.29	6	3-1/2	17/32	C49317
19/32	.5938	15.08	7	4	9/16	C49318
5/8	.6250	15.88	7	4	19/32	C49319
21/32	.6562	16.67	7-1/2	4-1/2	5/8	C49320
11/16	.6875	17.46	7-1/2	4-1/2	21/32	C49321
23/32	.7188	18.26	8	4-3/4	11/16	C49322
3/4	.7500	19.05	8	4-3/4	23/32	C49323

* Solid Carbide

Drills • Special Purpose

List #972 Metalworking Reduced 1/4" Shank Drill



Substrate - HSS
Length - Standard
Surface Treatment - Black Oxide
Shank - 1/4" Reduced
Point - 118° Notched



Features:

- Short flute length for enhanced rigidity tools
- Black oxide finish for increased wear resistance & improved lubricity reducing chip welding & galling
- 1/4" shank for portable hand use
- 118° notched point for self centering, reducing thrust for ease of penetration

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
9/32	.2812	7.14	2-1/2	1-1/4	1/4	C11279
5/16	.3125	7.94	2-13/16	1-3/8	1/4	C11288
11/32	.3437	8.73	3	1-9/16	1/4	C11299
3/8	.3750	9.53	3-1/8	1-11/16	1/4	C11311

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
13/32	.4062	10.32	3-5/16	1-7/8	1/4	C11320
7/16	.4375	11.11	3-7/16	2	1/4	C11325
15/32	.4687	12.30	3-5/8	2-7/8	1/4	C11330
1/2	.5000	12.70	3-3/4	2-1/4	1/4	C11335

List #995 Spotting & Centering Drill



Substrate - HSS
Length - Short Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- 118° point for general purpose use
- No body clearance gives tool the ability to be chucked close to the point for accurate starting or centering

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Point Angle	EDP Number
3/8	.3750	9.53	2	1		C11739
1/2	.5000	12.70	2	1		C11757
5/8	.6250	15.88	2-1/4	1-1/8		C11771

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Point Angle	EDP Number
3/4	.7500	19.05	2-1/4	1-1/8		C11782
1	1.0000	25.40	2-1/2	1-1/4		C11796

List #2560 Three Flute Core Drill



Substrate - HSS
Length - Taper Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 118°



Features:

- 3 flute for improved hole concentricity
- Extremely heavy web for a strong tool that will enlarge holes up to 60% of tool diameter
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling
- Taper length for extended reach

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/4	.2500	6.35	6-1/8	3-3/4	C10189
9/32	.2812	7.14	6-1/4	3-7/8	C10203
5/16	.3125	7.94	6-3/8	4	C10212
11/32	.3438	8.73	6-1/2	4-1/8	C10223
3/8	.3750	9.53	6-3/4	4-1/4	C10235

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
13/32	.4062	10.32	7	4-3/8	C10244
7/16	.4375	11.11	7-1/4	4-5/8	C10249
15/32	.4688	11.91	7-1/2	4-3/4	C10254
1/2	.5000	12.70	7-3/4	4-3/4	C10259

Drills • Special Purpose

List #2570 Four Flute Core Drill



Substrate - HSS
Length - Taper Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 118°



Features:

- 4 flute for better hole finish & hole concentricity
- Extremely heavy web for a strong tool that will enlarge holes up to 60% of tool diameter
- Taper length for extended reach

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/2	.5000	12.70	7-3/4	4-3/4	C10476
17/32	.5312	13.49	8	4-3/4	C10481
9/16	.5625	14.29	8-1/4	4-7/8	C10487
19/32	.5938	15.08	8-3/4	4-7/8	C10492
5/8	.6250	15.88	8-3/4	4-7/8	C10497
21/32	.6562	16.67	9	5-1/8	C10502
11/16	.6875	17.46	9-1/4	5-3/8	C10507
23/32	.7188	18.26	9-1/2	5-5/8	C10511
3/4	.7500	19.05	9-3/4	5-7/8	C10515

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
25/32	.7812	19.84	9-7/8	6	C10518
13/16	.8125	20.64	10	6-1/8	C10522
27/32	.8438	21.43	10	6-1/8	C10525
7/8	.8750	22.23	10	6-1/8	C10529
29/32	.9062	23.02	10	6-1/8	C10533
15/16	.9375	23.81	10-3/4	6-1/8	C10536
31/32	.9688	24.61	11	6-3/8	C10540
1	1.0000	25.40	11	6-3/8	C10543

List #2470 Four Flute Taper Shank Core



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide
Shank - Taper
Point - 118°

Features:

- 4 flute for better finish & greater accuracy
- Extremely heavy web allows tool to enlarge holes up to 60% of tool diameter
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
1/2	.5000	12.70	8-1/4	4-3/8	2	C15680
17/32	.5312	13.49	8-1/2	4-5/8	2	C15685
9/16	.5625	14.29	8-3/4	4-7/8	2	C15691
19/32	.5938	15.08	8-3/4	4-7/8	2	C15696
5/8	.6250	15.88	8-3/4	4-7/8	2	C15701
21/32	.6562	16.67	9	5-1/8	2	C15706
11/16	.6875	17.46	9-1/4	5-3/8	2	C15711
23/32	.7188	18.26	9-1/2	5-5/8	2	C15715
3/4	.7500	19.05	9-3/4	5-7/8	2	C15719
25/32	.7812	19.84	9-7/8	6	2	C15722
13/16	.8125	20.64	10-3/4	6-1/8	3	C15726
27/32	.8438	21.43	10-3/4	6-1/8	3	C15729
7/8	.8750	22.23	10-3/4	6-1/8	3	C15733
29/32	.9062	23.02	10-3/4	6-1/8	3	C15737
15/16	.9375	23.81	10-3/4	6-1/8	3	C15740
31/32	.9688	24.61	11	6-3/8	3	C15744
1	1.0000	25.40	11	6-3/8	3	C15747
1-1/32	1.0312	26.19	11-1/8	6-1/2	3	C15751
1-1/16	1.0625	26.99	11-1/4	6-5/8	4	C15754
1-3/32	1.0938	27.78	12-1/2	6-7/8	4	C15758
1-1/8	1.1250	28.58	12-3/4	7-1/8	4	C15762
1-5/32	1.1562	29.37	12-7/8	7-1/4	4	C15765
1-3/16	1.1875	30.16	13	7-3/8	4	C15769
1-7/32	1.2188	30.96	13-1/8	7-1/2	4	C15772
1-1/4	1.2500	31.75	13-1/2	7-7/8	4	C15776
1-9/32	1.2812	32.54	14-1/8	8-1/2	4	C15780
1-5/16	1.3125	33.34	14-1/4	8-5/8	4	C15783
1-11/32	1.3438	34.13	14-3/8	8-3/4	4	C15787
1-3/8	1.3750	34.93	14-1/2	8-7/8	4	C15790

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
1-13/32	1.4062	35.72	14-5/8	9	4	C15794
1-7/16	1.4375	36.51	14-3/4	9-1/8	4	C15798
1-15/32	1.4688	37.31	14-7/8	9-1/4	4	C15801
1-1/2	1.5000	38.10	15	9-3/8	4	C15805
1-17/32	1.5312	38.89	16-3/8	9-3/8	5	C15808
1-9/16	1.5625	39.69	16-5/8	9-5/8	5	C15812
1-19/32	1.5938	40.48	16-7/8	9-7/8	5	C15815
1-5/8	1.6250	41.28	17	10	5	C15819
1-21/32	1.6562	42.07	17-1/8	10-1/8	5	C15823
1-11/16	1.6875	42.86	17-1/8	10-1/8	5	C15826
1-23/32	1.7188	43.66	17-1/8	10-1/8	5	C15830
1-3/4	1.7500	44.45	17-1/8	10-1/8	5	C15833
1-25/32	1.7812	45.24	17-1/8	10-1/8	5	C15837
1-13/16	1.8125	46.04	17-1/8	10-1/8	5	C15841
1-27/32	1.8438	46.83	17-1/8	10-1/8	5	C15844
1-7/8	1.8750	47.63	17-3/8	10-3/8	5	C15848
1-29/32	1.9062	48.42	17-3/8	10-3/8	5	C15851
1-15/16	1.9375	49.21	17-3/8	10-3/8	5	C15855
1-31/32	1.9688	50.01	17-3/8	10-3/8	5	C15859
2	2.0000	50.80	17-3/8	10-3/8	5	C15862
2-1/8	2.1250	53.98	17-3/8	10-1/4	5	C15866
2-1/4	2.2500	57.15	17-3/8	10-1/8	5	C15871
2-3/8	2.3750	60.33	17-3/8	10-1/8	5	C15875
2-1/2	2.5000	63.50	18-3/4	11-1/4	5	C15879

Drills • MRO

List #936 General Purpose Reduced 1/2" Shank Drill



Substrate - HSS
Length - 6"
Surface Treatment - Black Oxide
Shank - Straight
Point - 118°



Features:

- 1/2" reduced shank for use in hand drilling operations
- 3 driving flats on shank for more rigid holding for positive drilling and for 3-jaw chucks
- General purpose flute construction for a wide variety of applications & materials

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
1/2	.5000	12.70	6	3-1/8	1/2	C11159
33/64	.5156	13.10	6	3-1/8	1/2	C11162
17/32	.5312	13.49	6	3-1/8	1/2	C11164
35/64	.5469	13.89	6	3-1/8	1/2	C11167
9/16	.5625	14.29	6	3-1/8	1/2	C11170
37/64	.5781	14.68	6	3-1/8	1/2	C11172
19/32	.5938	15.08	6	3-1/8	1/2	C11175
39/64	.6094	15.48	6	3-1/8	1/2	C11177
5/8	.6250	15.88	6	3-1/8	1/2	C11180
41/64	.6406	16.27	6	3-1/8	1/2	C11183
21/32	.6562	16.67	6	3-1/8	1/2	C11185
43/64	.6719	17.07	6	3-1/8	1/2	C11188
11/16	.6875	17.46	6	3-1/8	1/2	C11190
45/64	.7031	17.86	6	3-1/8	1/2	C11192
23/32	.7188	18.26	6	3-1/8	1/2	C11194

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
47/64	.7344	18.65	6	3-1/8	1/2	C11196
3/4	.7500	19.05	6	3-1/8	1/2	C11198
49/64	.7656	19.45	6	3	1/2	C11199
25/32	.7812	19.84	6	3	1/2	C11201
13/16	.8125	20.64	6	3	1/2	C11205
27/32	.8438	21.43	6	3	1/2	C11208
7/8	.8750	22.23	6	3	1/2	C11212
29/32	.9062	23.02	6	3	1/2	C11216
15/16	.9375	23.81	6	3	1/2	C11219
31/32	.9688	24.61	6	3	1/2	C11223
1 INCH	1.0000	25.40	6	3	1/2	C11226
1-1/16	1.0625	26.99	6	3	1/2	C11233
1-1/8	1.1250	28.58	6	3	1/2	C11241
1-3/16	1.1875	30.16	6	3	1/2	C11248
1-1/4	1.2500	31.75	6	3	1/2	C11255

List #1890 Cle-Line® Reduced 1/4" Shank Drill



Substrate - HSS
Length - 4"
Surface Treatment - Black Oxide
Shank - 1/4" Reduced
Point - 118°



Features:

- HSS engineered for toughness & ideal for portable drilling & maintenance applications
- Short flute length for greater rigidity
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
9/32	.2182	5.54	4	2-1/2	1/4	C08000
5/16	.3125	7.94	4	2-1/2	1/4	C08003
11/32	.3438	8.73	4	2-1/2	1/4	C08006
3/8	.3750	9.53	4	2-1/2	1/4	C08009

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
13/32	.4062	10.32	4	2-1/2	1/4	C08012
7/16	.4375	11.11	4	2-1/2	1/4	C08015
15/32	.4688	11.91	4	2-1/2	1/4	C08018
1/2	.5000	12.70	4	2-1/2	1/4	C08021

List #1836 Cle-Line® Reduced Shank Drill - 1/2" - Surface Treated



Substrate - HSS
Length - 6"
Surface Treatment - Black Oxide
Shank - 1/2" Reduced
Point - 118°



Features:

- HSS engineered for toughness & ideal for portable drilling & maintenance applications
- Black oxide finish for increased wear resistance & improved lubricity reducing chip welding & galling
- 3 driving flats on shank that make them perfect for use with 3-jaw chucks

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
1/2	.5000	12.70	6	3-1/8	1/2	C09973
33/64	.5156	13.10	6	3-1/8	1/2	C09974
17/32	.5312	13.49	6	3-1/8	1/2	C09975
35/64	.5469	13.89	6	3-1/8	1/2	C09976
9/16	.5625	14.29	6	3-1/8	1/2	C09977
37/64	.5781	14.68	6	3-1/8	1/2	C09978
19/32	.5938	15.08	6	3-1/8	1/2	C09979
39/64	.6094	15.48	6	3-1/8	1/2	C09980
5/8	.6250	15.88	6	3-1/8	1/2	C09981
41/64	.6406	16.27	6	3-1/8	1/2	C09982
21/32	.6562	16.67	6	3-1/8	1/2	C09983
43/64	.6719	17.07	6	3-1/8	1/2	C09984
11/16	.6875	17.46	6	3-1/8	1/2	C09985
45/64	.7031	17.86	6	3-1/8	1/2	C09986
23/32	.7188	18.26	6	3-1/8	1/2	C09987

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diameter	EDP Number
47/64	.7344	18.65	6	3-1/8	1/2	C09988
3/4	.7500	19.05	6	3-1/8	1/2	C09989
49/64	.7656	19.45	6	3	1/2	C09990
25/32	.7812	19.84	6	3	1/2	C09991
13/16	.8125	20.64	6	3	1/2	C09992
27/32	.8438	21.43	6	3	1/2	C09993
7/8	.8750	22.23	6	3	1/2	C09994
29/32	.9062	23.02	6	3	1/2	C09995
15/16	.9375	23.81	6	3	1/2	C09996
31/32	.9688	24.61	6	3	1/2	C09997
1	1.0000	25.40	6	3	1/2	C09998
1-1/16	1.0625	26.99	6	3	1/2	C09999
1-1/8	1.1250	28.58	6	3	1/2	C10000
1-3/16	1.1875	30.16	6	3	1/2	C10001
1-1/4	1.2500	31.75	6	3	1/2	C10002

List #1830 Cle-Line® Jobber Length Drill - Bright Finish



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°



Features:

- 118° point for general purpose use
- Bright finish, excellent for nonferrous applications & low tensile steels
- HSS ideal for portable drilling & maintenance applications

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-5/8	11/16	C08330
59	.0410	1.04	1-5/8	11/16	C08331
58	.0420	1.07	1-5/8	11/16	C08332
57	.0430	1.09	1-3/4	3/4	C08333
56	.0465	1.18	1-3/4	3/4	C08334
55	.0520	1.32	1-7/8	7/8	C08335
54	.0550	1.40	1-7/8	7/8	C08336
53	.0595	1.51	1-7/8	7/8	C08337
1/16	.0625	1.59	1-7/8	7/8	C08301
52	.0635	1.61	1-7/8	7/8	C08338
51	.0670	1.70	2	1	C08339
50	.0700	1.78	2	1	C08340
49	.0730	1.85	2	1	C08341
48	.0760	1.93	2	1	C08342
5/64	.0781	1.98	2	1	C08302
47	.0785	1.99	2	1	C08343
46	.0810	2.06	2-1/8	1-1/8	C08344
45	.0820	2.08	2-1/8	1-1/8	C08345

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
44	.0860	2.18	2-1/8	1-1/8	C08346
43	.0890	2.26	2-1/4	1-1/4	C08347
42	.0935	2.37	2-1/4	1-1/4	C08348
3/32	.0938	2.38	2-1/4	1-1/4	C08303
41	.0960	2.44	2-3/8	1-3/8	C08349
40	.0980	2.49	2-3/8	1-3/8	C08350
39	.0995	2.53	2-3/8	1-3/8	C08351
38	.1015	2.58	2-1/2	1-7/16	C08352
37	.1040	2.64	2-1/2	1-7/16	C08353
36	.1065	2.71	2-1/2	1-7/16	C08354
7/64	.1094	2.78	2-5/8	1-1/2	C08304
35	.1100	2.79	2-5/8	1-1/2	C08355
34	.1110	2.82	2-5/8	1-1/2	C08356
33	.1130	2.87	2-5/8	1-1/2	C08357
32	.1160	2.95	2-3/4	1-5/8	C08358
31	.1200	3.05	2-3/4	1-5/8	C08359
1/8	.1250	3.18	2-3/4	1-5/8	C08305
30	.1285	3.26	2-3/4	1-5/8	C08360

(Continued on next page)

List #1830 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
29	.1360	3.45	2-7/8	1-3/4	C08361
28	.1405	3.57	2-7/8	1-3/4	C08362
9/64	.1406	3.57	2-7/8	1-3/4	C08306
27	.1440	3.66	3	1-7/8	C08363
26	.1470	3.73	3	1-7/8	C08364
25	.1495	3.80	3	1-7/8	C08365
24	.1520	3.86	3-1/8	2	C08366
23	.1540	3.91	3-1/8	2	C08367
5/32	.1562	3.97	3-1/8	2	C08307
22	.1570	3.99	3-1/8	2	C08368
21	.1590	4.04	3-1/4	2-1/8	C08369
20	.1610	4.09	3-1/4	2-1/8	C08370
19	.1660	4.22	3-1/4	2-1/8	C08371
18	.1695	4.31	3-1/4	2-1/8	C08372
11/64	.1719	4.37	3-1/4	2-1/8	C08308
17	.1730	4.39	3-3/8	2-3/16	C08373
16	.1770	4.50	3-3/8	2-3/16	C08374
15	.1800	4.57	3-3/8	2-3/16	C08375
14	.1820	4.62	3-3/8	2-3/16	C08376
13	.1850	4.70	3-1/2	2-5/16	C08377
3/16	.1875	4.76	3-1/2	2-5/16	C08309
12	.1890	4.80	3-1/2	2-5/16	C08378
11	.1910	4.85	3-1/2	2-5/16	C08379
10	.1935	4.91	3-5/8	2-7/16	C08380
9	.1960	4.98	3-5/8	2-7/16	C08381
8	.1990	5.05	3-5/8	2-7/16	C08382
7	.2010	5.11	3-5/8	2-7/16	C08383
13/64	.2031	5.16	3-5/8	2-7/16	C08310
6	.2040	5.18	3-3/4	2-1/2	C08384
5	.2055	5.22	3-3/4	2-1/2	C08385
4	.2090	5.31	3-3/4	2-1/2	C08386
3	.2130	5.41	3-3/4	2-1/2	C08387
7/32	.2188	5.56	3-3/4	2-1/2	C08311
2	.2210	5.61	3-7/8	2-5/8	C08388
1	.2280	5.79	3-7/8	2-5/8	C08389
A	.2340	5.94	3-7/8	2-5/8	C07421
15/64	.2344	5.95	3-7/8	2-5/8	C08312
B	.2380	6.05	4	2-3/4	C07422
C	.2420	6.15	4	2-3/4	C07423

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
D	.2460	6.25	4	2-3/4	C07424
1/4, E	.2500	6.35	4	2-3/4	C08313
F	.2570	6.53	4-1/8	2-7/8	C07425
G	.2610	6.63	4-1/8	2-7/8	C07426
17/64	.2656	6.75	4-1/8	2-7/8	C08314
H	.2660	6.76	4-1/8	2-7/8	C07427
I	.2720	6.91	4-1/8	2-7/8	C07428
J	.2770	7.04	4-1/8	2-7/8	C07429
K	.2810	7.14	4-1/4	2-15/16	C07430
9/32	.2812	7.14	4-1/4	2-15/16	C08315
L	.2900	7.37	4-1/4	2-15/16	C07431
M	.2950	7.49	4-3/8	3-1/16	C07432
19/64	.2969	7.54	4-3/8	3-1/16	C08316
N	.3020	7.67	4-3/8	3-1/16	C07433
5/16	.3125	7.94	4-1/2	3-3/16	C08317
O	.3160	8.03	4-1/2	3-3/16	C07434
P	.3230	8.20	4-5/8	3-5/16	C07435
21/64	.3281	8.33	4-5/8	3-5/16	C08318
Q	.3320	8.43	4-3/4	3-7/16	C07436
R	.3390	8.61	4-3/4	3-7/16	C07437
11/32	.3438	8.73	4-3/4	3-7/16	C08319
S	.3480	8.84	4-7/8	3-1/2	C07438
T	.3580	9.09	4-7/8	3-1/2	C07439
23/64	.3594	9.13	4-7/8	3-1/2	C08320
U	.3680	9.35	5	3-5/8	C07440
3/8	.3750	9.53	5	3-5/8	C08321
V	.3770	9.58	5	3-5/8	C07441
W	.3860	9.80	5-1/8	3-3/4	C07442
25/64	.3906	9.92	5-1/8	3-3/4	C08322
X	.3970	10.08	5-1/8	3-3/4	C07443
Y	.4040	10.26	5-1/4	3-7/8	C07444
13/32	.4062	10.32	5-1/4	3-7/8	C08323
Z	.4130	10.49	5-1/4	3-7/8	C07445
27/64	.4219	10.72	5-3/8	3-15/16	C08324
7/16	.4375	11.11	5-1/2	4-1/16	C08325
29/64	.4531	11.51	5-5/8	4-3/16	C08326
15/32	.4688	11.91	5-3/4	4-5/16	C08327
31/64	.4844	12.30	5-7/8	4-3/8	C08328
1/2	.5000	12.70	6	4-1/2	C08329

List #1810 Cle-Line® Screw Machine Length Features:

Drill - Surface Treated



Substrate - HSS
 Length - Screw Machine length
 Surface Treatment - Black Oxide
 Shank - Straight
 Point - 135° Split



- Short flutes for rigid strong tools
- Black oxide finish for increased wear resistance & improved lubricity reducing chip welding & galling
- 135° split point is self centering, reducing thrust for ease of penetration

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/16	.0625	1.59	1-5/8	5/8	C07750
5/64	.0781	1.98	1-11/16	11/16	C07752
3/32	.0938	2.38	1-3/4	3/4	C07754
7/64	.1094	2.78	1-13/16	13/16	C07756
1/8	.1250	3.18	1-7/8	7/8	C07758
30	.1285	3.26	1-15/16	15/16	C07900
29	.1360	3.45	1-15/16	15/16	C07901
9/64	.1406	3.57	1-15/16	15/16	C07760

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
5/32	.1562	3.97	2-1/16	1	C07762
11/64	.1719	4.37	2-1/8	1-1/16	C07764
3/16	.1875	4.76	2-3/16	1-1/8	C07766
11	.1910	4.85	2-1/4	1-3/16	C07919
13/64	.2031	5.16	2-1/4	1-3/16	C07768
7/32	.2188	5.56	2-3/8	1-1/4	C07770
1	.2280	5.79	2-7/16	1-5/16	C07929
15/64	.2344	5.95	2-7/16	1-5/16	C07772

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List #1810 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/4	.2500	6.35	2-1/2	1-3/8	C07774
17/64	.2656	6.75	2-5/8	1-7/16	C07776
9/32	.2812	7.14	2-11/16	1-1/2	C07778
19/64	.2969	7.54	2-3/4	1-9/16	C07780
5/16	.3125	7.94	2-13/16	1-5/8	C07782
21/64	.3281	8.33	2-15/16	1-11/16	C07784
11/32	.3438	8.73	3	1-11/16	C07786
23/64	.3594	9.13	3-1/16	1-3/4	C07788
3/8	.3750	9.53	3-1/8	1-13/16	C07790

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
25/64	.3906	9.92	3-1/4	1-7/8	C07792
13/32	.4062	10.32	3-5/16	1-15/16	C07794
27/64	.4219	10.72	3-3/8	2	C07796
7/16	.4375	11.11	3-7/16	2-1/16	C07798
29/64	.4531	11.51	3-9/16	2-1/8	C07800
15/32	.4688	11.91	3-5/8	2-1/8	C07802
31/64	.4844	12.30	3-11/16	2-3/16	C07804
1/2	.5000	12.70	3-3/4	2-1/4	C07806

List #1800 Cle-Line® Jobber Length Drill - Surface Treated



Substrate - HSS
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Straight
Point - 118°



Features:

- 118° point for general purpose use
- Black oxide finish for increased wear resistance & improved lubricity reducing chip welding & galling
- HSS ideal for portable drilling & maintenance applications

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
60	.0400	1.02	1-5/8	11/16	C07492
59	.0410	1.04	1-5/8	11/16	C07493
58	.0420	1.07	1-5/8	11/16	C07495
57	.0430	1.09	1-3/4	3/4	C07496
56	.0465	1.18	1-3/4	3/4	C07499
55	.0520	1.32	1-7/8	7/8	C07504
54	.0550	1.40	1-7/8	7/8	C07506
53	.0595	1.51	1-7/8	7/8	C07510
1/16	.0625	1.59	1-7/8	7/8	C07512
52	.0635	1.61	1-7/8	7/8	C07514
51	.0670	1.70	2	1	C07517
50	.0700	1.78	2	1	C07519
49	.0730	1.85	2	1	C07522
48	.0760	1.93	2	1	C07524
5/64	.0781	1.98	2	1	C07526
47	.0785	1.99	2	1	C07527
46	.0810	2.06	2-1/8	1-1/8	C07530
45	.0820	2.08	2-1/8	1-1/8	C07531
44	.0860	2.18	2-1/8	1-1/8	C07534
43	.0890	2.26	2-1/4	1-1/4	C07537
42	.0935	2.37	2-1/4	1-1/4	C07540
3/32	.0938	2.38	2-1/4	1-1/4	C07541
41	.0960	2.44	2-3/8	1-3/8	C07543
40	.0980	2.49	2-3/8	1-3/8	C07545
39	.0995	2.53	2-3/8	1-3/8	C07547
38	.1015	2.58	2-1/2	1-7/16	C07548
37	.1040	2.64	2-1/2	1-7/16	C07550
36	.1065	2.71	2-1/2	1-7/16	C07552
7/64	.1094	2.78	2-5/8	1-1/2	C07554
35	.1100	2.79	2-5/8	1-1/2	C07555
34	.1110	2.82	2-5/8	1-1/2	C07557
33	.1130	2.87	2-5/8	1-1/2	C07558
32	.1160	2.95	2-3/4	1-5/8	C07560
31	.1200	3.05	2-3/4	1-5/8	C07562
1/8	.1250	3.18	2-3/4	1-5/8	C07564
30	.1285	3.26	2-3/4	1-5/8	C07567
29	.1360	3.45	2-7/8	1-3/4	C07570
28	.1405	3.57	2-7/8	1-3/4	C07572

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9/64	.1406	3.57	2-7/8	1-3/4	C07573
27	.1440	3.66	3	1-7/8	C07575
26	.1470	3.73	3	1-7/8	C07577
25	.1495	3.80	3	1-7/8	C07579
24	.1520	3.86	3-1/8	2	C07581
23	.1540	3.91	3-1/8	2	C07583
5/32	.1562	3.97	3-1/8	2	C07584
22	.1570	3.99	3-1/8	2	C07585
21	.1590	4.04	3-1/4	2-1/8	C07587
20	.1610	4.09	3-1/4	2-1/8	C07588
19	.1660	4.22	3-1/4	2-1/8	C07591
18	.1695	4.31	3-1/4	2-1/8	C07594
11/64	.1719	4.37	3-1/4	2-1/8	C07595
17	.1730	4.39	3-3/8	2-3/16	C07596
16	.1770	4.50	3-3/8	2-3/16	C07598
15	.1800	4.57	3-3/8	2-3/16	C07600
14	.1820	4.62	3-3/8	2-3/16	C07602
13	.1850	4.70	3-1/2	2-5/16	C07603
3/16	.1875	4.76	3-1/2	2-5/16	C07606
12	.1890	4.80	3-1/2	2-5/16	C07607
11	.1910	4.85	3-1/2	2-5/16	C07609
10	.1935	4.91	3-5/8	2-7/16	C07611
9	.1960	4.98	3-5/8	2-7/16	C07612
8	.1990	5.05	3-5/8	2-7/16	C07614
7	.2010	5.11	3-5/8	2-7/16	C07616
13/64	.2031	5.16	3-5/8	2-7/16	C07617
6	.2040	5.18	3-3/4	2-1/2	C07618
5	.2055	5.22	3-3/4	2-1/2	C07620
4	.2090	5.31	3-3/4	2-1/2	C07623
3	.2130	5.41	3-3/4	2-1/2	C07625
7/32	.2188	5.56	3-3/4	2-1/2	C07627
2	.2210	5.61	3-7/8	2-5/8	C07629
1	.2280	5.79	3-7/8	2-5/8	C07632
A	.2340	5.94	3-7/8	2-5/8	C07635
15/64	.2344	5.95	3-7/8	2-5/8	C07636
B	.2380	6.05	4	2-3/4	C07638
C	.2420	6.15	4	2-3/4	C07640
D	.2460	6.25	4	2-3/4	C07642

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List #1800 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/4, E	.2500	6.35	4	2-3/4	C07645
F	.2570	6.53	4-1/8	2-7/8	C07648
G	.2610	6.63	4-1/8	2-7/8	C07650
17/64	.2656	6.75	4-1/8	2-7/8	C07652
H	.2660	6.76	4-1/8	2-7/8	C07654
I	.2720	6.91	4-1/8	2-7/8	C07657
J	.2770	7.04	4-1/8	2-7/8	C07659
K	.2810	7.14	4-1/4	2-15/16	C07661
9/32	.2812	7.14	4-1/4	2-15/16	C07662
L	.2900	7.37	4-1/4	2-15/16	C07666
M	.2950	7.49	4-3/8	3-1/16	C07668
19/64	.2969	7.54	4-3/8	3-1/16	C07670
N	.3020	7.67	4-3/8	3-1/16	C07672
5/16	.3125	7.94	4-1/2	3-3/16	C07677
O	.3160	8.03	4-1/2	3-3/16	C07679
P	.3230	8.20	4-5/8	3-5/16	C07682
21/64	.3281	8.33	4-5/8	3-5/16	C07685
Q	.3320	8.43	4-3/4	3-7/16	C07687
R	.3390	8.61	4-3/4	3-7/16	C07690

* 3/8" Reduced Shank

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
11/32	.3438	8.73	4-3/4	3-7/16	C07692
S	.3480	8.84	4-7/8	3-1/2	C07695
T	.3580	9.09	4-7/8	3-1/2	C07698
23/64	.3594	9.13	4-7/8	3-1/2	C07700
U	.3680	9.35	5	3-5/8	C07704
3/8	.3750	9.53	5	3-5/8	C07707
V	.3770	9.58	5	3-5/8	C07708
W	.3860	9.80	5-1/8	3-3/4	C07713
X	.3970	10.08	5-1/8	3-3/4	C07717
Y	.4040	10.26	5-1/4	3-7/8	C07719
Z	.4130	10.49	5-1/4	3-7/8	C07721
7/16	.4375	11.11	5-1/2	4-1/16	C07726
7/16	.4375	11.11	5-1/2	4-1/16	C05929*
15/32	.4688	11.91	5-3/4	4-5/16	C07731
15/32	.4688	11.91	5-3/4	4-5/16	C05931*
31/64	.4844	12.30	5-7/8	4-3/8	C07734
31/64	.4844	12.30	5-7/8	4-3/8	C05932*
1/2	.5000	12.70	6	4-1/2	C07736
1/2	.5000	12.70	6	4-1/2	C05933*

List #1804 Cle-Line® Jobber Length Drill - Surface Treated with Tang



Substrate - HSS
Length - Jobber Length
Surface Treatment - Black Oxide
Shank - Tanged
Point - 135° Split



Features:

- 135° split point for self centering, reduced thrust for ease of penetration, & the preferred point for stainless steels
- Tanged for use in ASA drill driver
- HSS ideal for portable drilling & maintenance applications
- Black oxide finish for added lubricity

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/16	.0625	1.59	1-7/8	7/8	C10292
5/64	.0781	1.98	2	1	C10293
3/32	.0938	2.38	2-1/4	1-1/4	C10294
7/64	.1094	2.78	2-5/8	1-1/2	C10295
1/8	.1250	3.18	2-3/4	1-5/8	C10296
9/64	.1406	3.57	2-7/8	1-3/4	C10297
5/32	.1562	3.97	3-1/8	2	C10298
11/64	.1719	4.37	3-1/4	2-1/8	C10299
3/16	.1875	4.76	3-1/2	2-5/16	C10300
8	.1990	5.05	3-5/8	2-7/16	C10301
13/64	.2031	5.16	3-5/8	2-7/16	C10302
7/32	.2188	5.56	3-3/4	2-1/2	C10303
15/64	.2344	5.95	3-7/8	2-5/8	C10304
1/4	.2500	6.35	4	2-3/4	C10305
17/64	.2656	6.75	4-1/8	2-7/8	C10306
6.80mm	.2677	6.80	105mm	73mm	C10307

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9/32	.2812	7.14	4-1/4	2-15/16	C10308
19/64	.2969	7.54	4-3/8	3-1/16	C10309
5/16	.3125	7.94	4-1/2	3-3/16	C10310
21/64	.3281	8.33	4-5/8	3-5/16	C10311
R	.3390	8.61	4-3/4	3-7/16	C10312
11/32	.3438	8.73	4-3/4	3-7/16	C10313
23/64	.3594	9.13	4-7/8	3-1/2	C10314
3/8	.3750	9.53	5	3-5/8	C10315
25/64	.3906	9.92	5-1/8	3-3/4	C10316
13/32	.4062	10.32	5-1/4	3-7/8	C10317
27/64	.4219	10.72	5-3/8	3-15/16	C10318
7/16	.4375	11.11	5-1/2	4-1/16	C10319
29/64	.4531	11.51	5-5/8	4-3/16	C10320
15/32	.4688	11.91	5-3/4	4-5/16	C10321
31/64	.4844	12.30	5-7/8	4-3/8	C10322
1/2	.5000	12.70	6	4-1/2	C10323

List #1820 Cle-Line® Taper Length Drill - Surface Treated



Substrate - HSS
Length - Taper Length
Surface Treatment - Black Oxide
Shank - Straight with Tang
Point - 118°



Features:

- HSS engineered for toughness & ideal for portable drilling & maintenance applications
- Taper length for extended reach
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling
- Tanged shank for use with ASA drill drivers
- Heavy duty construction for extra tool strength

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
1/16	.0625	1.59	3	1-3/4	C10260
5/64	.0781	1.98	3-3/4	2	C10261
3/32	.0938	2.38	4-1/4	2-1/4	C10262
7/64	.1094	2.78	4-5/8	2-1/2	C10263
1/8	.1250	3.18	5-1/8	2-3/4	C10264
9/64	.1406	3.57	5-3/8	3	C10265
5/32	.1562	3.97	5-3/8	3	C10266
11/64	.1719	4.37	5-3/4	3-3/8	C10267
3/16	.1875	4.76	5-3/4	3-3/8	C10268
8	.1990	5.05	6	3-5/8	C10269
13/64	.2031	5.16	6	3-5/8	C10270
7/32	.2188	5.56	6	3-5/8	C10271
15/64	.2344	5.95	6-1/8	3-3/4	C10272
1/4	.2500	6.35	6-1/8	3-3/4	C10273
17/64	.2656	6.75	6-1/4	3-7/8	C10274
6.80mm	.2677	6.80	159mm	98mm	C10275

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	EDP Number
9/32	.2812	7.14	6-1/4	3-7/8	C10276
19/64	.2969	7.54	6-3/8	4	C10277
5/16	.3125	7.94	6-3/8	4	C10278
21/64	.3281	8.33	6-1/2	4-1/8	C10279
R	.3390	8.61	6-1/2	4-1/8	C10280
11/32	.3438	8.73	6-1/2	4-1/8	C10281
23/64	.3594	9.13	6-3/4	4-1/4	C10282
3/8	.3750	9.53	6-3/4	4-1/4	C10283
25/64	.3906	9.92	7	4-3/8	C10284
13/32	.4062	10.32	7	4-3/8	C10285
27/64	.4219	10.72	7-1/4	4-5/8	C10286
7/16	.4375	11.11	7-1/4	4-5/8	C10287
29/64	.4531	11.51	7-1/2	4-3/4	C10288
15/32	.4688	11.91	7-1/2	4-3/4	C10289
31/64	.4844	12.30	7-3/4	4-3/4	C10290
1/2	.5000	12.70	7-3/4	4-3/4	C10291

List #1840 Cle-Line® Taper Length Drill - Surface Treated - Taper Shank



Substrate - HSS
Length - Taper Shank Length
Surface Treatment - Black Oxide
Shank - Taper with Tang
Point - 118°



Features:

- HSS steel engineered for toughness & ideal for portable drilling & maintenance applications
- 118° point for general purpose use
- Black oxide finish for increased wear resistance & improved lubricity, reducing chip welding & galling

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Pipe Thread Size	EDP Number
3/8	.3750	9.53	6-3/4	3-1/2	1	C09900
25/64	.3906	9.92	7	3-5/8	1	C09901
13/32	.4062	10.32	7	3-5/8	1	C09902
27/64	.4219	10.72	7-1/4	3-7/8	1	C09903
7/16	.4375	11.11	7-1/4	3-7/8	1	C09904
29/64	.4531	11.51	7-1/2	4-1/8	1	C09905
15/32	.4688	11.91	7-1/2	4-1/8	1	C09906
31/64	.4844	12.30	8-1/4	4-3/8	2	C09907
1/2	.5000	12.70	8-1/4	4-3/8	2	C09908
33/64	.5156	13.10	8-1/2	4-5/8	2	C09909
17/32	.5312	13.49	8-1/2	4-5/8	2	C09910
35/64	.5469	13.89	8-3/4	4-7/8	2	C09911
9/16	.5625	14.29	8-3/4	4-7/8	2	C09912
37/64	.5781	14.68	8-3/4	4-7/8	2	C09913
19/32	.5938	15.08	8-3/4	4-7/8	2	C09914
39/64	.6094	15.48	8-3/4	4-7/8	2	C09915
5/8	.6250	15.88	8-3/4	4-7/8	2	C09916

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Pipe Thread Size	EDP Number
41/64	.6406	16.27	9	5-1/8	2	C09917
21/32	.6562	16.67	9	5-1/8	2	C09918
43/64	.6719	17.07	9-1/4	5-3/8	2	C09919
11/16	.6875	17.46	9-1/4	5-3/8	2	C09920
45/64	.7031	17.86	9-1/2	5-5/8	2	C09921
23/32	.7188	18.26	9-1/2	5-5/8	2	C09922
47/64	.7344	18.65	9-3/4	5-7/8	2	C09923
3/4	.7500	19.05	9-3/4	5-7/8	2	C09924
49/64	.7656	19.45	9-7/8	6	2	C09925
25/32	.7812	19.84	9-7/8	6	2	C09926
51/64	.7969	20.24	10-3/4	6-1/8	3	C09927
13/16	.8125	20.64	10-3/4	6-1/8	3	C09928
53/64	.8281	21.03	10-3/4	6-1/8	3	C09929
27/32	.8438	21.43	10-3/4	6-1/8	3	C09930
55/64	.8594	21.83	10-3/4	6-1/8	3	C09931
7/8	.8750	22.23	10-3/4	6-1/8	3	C09932
57/64	.8906	22.62	10-3/4	6-1/8	3	C09933

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List #1840 continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Pipe Thread Size	EDP Number
29/32	.9062	23.02	10-3/4	6-1/8	3	C09934
59/64	.9219	23.42	10-3/4	6-1/8	3	C09935
15/16	.9375	23.81	10-3/4	6-1/8	3	C09936
61/64	.9531	24.21	11	6-3/8	3	C09937
31/32	.9688	24.61	11	6-3/8	3	C09938
63/64	.9844	25.00	11	6-3/8	3	C09939
1	1.0000	25.40	11	6-3/8	3	C09940
1-1/64	1.0156	25.80	11-1/8	6-1/2	3	C09941
1-1/32	1.0312	26.19	11-1/8	6-1/2	3	C09942
1-3/64	1.0469	26.59	11-1/4	6-5/8	3	C09943
1-1/16	1.0625	26.99	11-1/4	6-5/8	3	C09944
1-5/64	1.0781	27.38	12-1/2	6-7/8	4	C09945
1-3/32	1.0938	27.78	12-1/2	6-7/8	4	C09946
1-7/64	1.1094	28.18	12-3/4	7-1/8	4	C09947
1-1/8	1.1250	28.58	12-3/4	7-1/8	4	C09948
1-9/64	1.1406	28.97	12-7/8	7-1/4	4	C09949
1-5/32	1.1562	29.37	12-7/8	7-1/4	4	C09950
1-11/64	1.1719	29.77	13	7-3/8	4	C09951
1-3/16	1.1875	30.16	13	7-3/8	4	C09952
1-13/64	1.2031	30.56	13-1/8	7-1/2	4	C09953

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Pipe Thread Size	EDP Number
1-7/32	1.2188	30.96	13-1/8	7-1/2	4	C09954
1-15/64	1.2344	31.35	13-1/2	7-7/8	4	C09955
1-1/4	1.2500	31.75	13-1/2	7-7/8	4	C09956
1-17/64	1.2656	32.15	14-1/8	8-1/2	4	C09957
1-9/32	1.2812	32.54	14-1/8	8-1/2	4	C09958
1-19/64	1.2969	32.94	14-1/4	8-5/8	4	C09959
1-5/16	1.3125	33.34	14-1/4	8-5/8	4	C09960
1-21/64	1.3281	33.73	14-3/8	8-3/4	4	C09961
1-11/32	1.3438	34.13	14-3/8	8-3/4	4	C09962
1-23/64	1.3594	34.53	14-1/2	8-7/8	4	C09963
1-3/8	1.3750	34.93	14-1/2	8-7/8	4	C09964
1-25/64	1.3906	35.32	14-5/8	9	4	C09965
1-13/32	1.4062	35.72	14-5/8	9	4	C09966
1-27/64	1.4219	36.12	14-3/4	9-1/8	4	C09967
1-7/16	1.4375	36.51	14-3/4	9-1/8	4	C09968
1-29/64	1.4531	36.91	14-7/8	9-1/4	4	C09969
1-15/32	1.4688	37.31	14-7/8	9-1/4	4	C09970
1-31/64	1.4844	37.70	15	9-3/8	4	C09971
1-1/2	1.5000	38.10	15	9-3/8	4	C09972

List #750 TCT Masonry Drill - Regular



Length - Regular
Surface Treatment - Bright
Shank - Reduced



Features:

- Oversize carbide tip provides clearance for toggle bolts, anchor screws & expansion drills
- Regular helix for easy dust removal & more steel support for the tip. Added tool strength & removes a high volume of material.
- TCT Masonry

Nominal Diameter	Actual Minimum	Shank Diameter	Overall Length	Body Length	EDP Number
1/8	.134	.1200	2-1/2	1-7/8	C49901
5/32	.161	.1515	3	1-7/8	C49902
3/16	.198	.1770	3	1-7/8	C49903
7/32	.229	.2065	4	2-5/8	C49904
1/4	.260	.15/64	4	2-5/8	C49905
1/4	.260	.15/64	6	4-5/8	C49906
9/32	.296	1/4	4	2-3/4	C49907
5/16	.327	1/4	4	2-3/4	C49908
5/16	.327	1/4	6	4-3/4	C49909
3/8	.390	1/4	4	2-3/4	C49910
3/8	.390	1/4	6	4-3/4	C49911
7/16	.458	1/4	6	4-3/4	C49912
7/16	.458	3/8	6	4-3/8	C49913

Nominal Diameter	Actual Minimum	Shank Diameter	Overall Length	Body Length	EDP Number
1/2	.520	1/4	6	4-3/8	C49914
1/2	.520	3/8	6	4-3/8	C49915
9/16	.587	7/16	6	4-3/8	C49916
5/8	.650	1/2	6	4-3/8	C49917
11/16	.713	1/2	6	4-3/8	C49918
3/4	.775	1/2	6	4-3/8	C49919
7/8	.905	1/2	6	4-3/8	C49920
1	1.030	1/2	6	4-3/8	C49921
1-1/8	1.160	1/2	6	4-3/8	C49922
1-1/4	1.285	1/2	10	8-3/8	C49923
1-3/8	1.410	1/2	10	8-3/8	C49924
1-1/2	1.535	1/2	10	8-3/8	C49925

Drills • MRO

List #749 TCT Masonry Drill - Fast Helix



Length - 18" OAL
Surface Treatment - Bright
Shank - Reduced



Features:

- Oversize carbide tip provides clearance for toggle bolts, anchor screws & expansion drills
- Fast helix removes a high volume of material
- TCT Masonry

Nominal Diameter	Actual Minimum	Shank Diameter	Overall Length	Body Length	EDP Number
1/4	.260	1/4	18	15-3/4	C49986
5/16	.328	1/4	18	15-3/4	C49987
3/8	.390	1/4	18	15-3/4	C49988
1/2	.525	3/8	18	15-3/4	C49990

Nominal Diameter	Actual Minimum	Shank Diameter	Overall Length	Body Length	EDP Number
5/8	.650	1/2	18	15-3/4	C49992
3/4	.775	1/2	18	15-3/4	C49993
1	1.030	1/2	18	15-3/4	C49995

List #748 TCT Masonry Drill - Fast Helix



Length - 12" OAL
Surface Treatment - Bright
Shank - Reduced



Features:

- Fast helix for higher volume of material removal
- Oversize carbide tip provides clearance for toggle bolts, anchor screws & expansion drills
- TCT Masonry

Nominal Diameter	Actual Minimum	Shank Diameter	Overall Length	Body Length	EDP Number
1/4	.260	1/4	12	9-3/4	C49975
5/16	.328	1/4	12	9-3/4	C49976
3/8	.390	1/4	12	9-3/4	C49977
1/2	.525	3/8	12	9-3/4	C49979

Nominal Diameter	Actual Minimum	Shank Diameter	Overall Length	Body Length	EDP Number
5/8	.650	1/2	12	9-3/4	C49981
3/4	.775	1/2	12	9-3/4	C49982
7/8	.905	1/2	12	9-3/4	C49983
1	1.030	1/2	12	9-3/4	C49984

Drills • Countersinks

List #610 Center Reamers, 4 Flutes



Features:

- Sometimes preferred for countersinking holes for centers, flat head screws and rivets
- Smooth chatter free operations

Diameter	Shank Diameter	Overall Length	Angle	EDP Number
1/4	3/16	1-7/16	60°	C46198
1/4	3/16	1-7/16	82°	C46199
1/4	3/16	1-7/16	90°	C46200
1/4	3/16	1-7/16	100°	C46201
3/8	1/4	1-21/32	60°	C46204
3/8	1/4	1-21/32	82°	C46205
3/8	1/4	1-21/32	90°	C46206
3/8	1/4	1-21/32	100°	C46207
1/2	3/8	1-27/32	60°	C46210
1/2	3/8	1-27/32	82°	C46211

Diameter	Shank Diameter	Overall Length	Angle	EDP Number
1/2	3/8	1-27/32	90°	C46212
1/2	3/8	1-27/32	100°	C46213
5/8	3/8	2-3/32	60°	C46216
5/8	3/8	2-3/32	82°	C46217
5/8	3/8	2-3/32	90°	C46218
5/8	3/8	2-3/32	100°	C46219
3/4	1/2	2-13/32	60°	C46222
3/4	1/2	2-13/32	82°	C46223
3/4	1/2	2-13/32	90°	C46224
3/4	1/2	2-13/32	100°	C46225

List #791 Single-Flute Carbide Tipped Countersinks



Features:

- Countersinking holes for centers, flat head screws and rivets
- Chamfering, deburring countersinking and enlarging holes in sheet metal and abrasive materials
- Should be used when multi-flute countersinks chatter

Diameter	Min. Cutting Diameter	Shank Diameter	Overall Length	Point Angle	EDP Number
1/4	1/16	3/16	1-7/16	60°	C52750
3/8	5/64	1/4	1-21/32	60°	C52751
1/2	3/32	1/4	1-27/32	60°	C52752
3/4	1/8	3/8	2-13/32	60°	C52753
1	1/8	1/2	2-13/16	60°	C52754

Diameter	Min. Cutting Diameter	Shank Diameter	Overall Length	Point Angle	EDP Number
1/4	1/16	3/16	1-7/16	82°	C52755
3/8	5/64	1/4	1-21/32	82°	C52756
1/2	3/32	1/4	1-27/32	82°	C52757
3/4	1/8	3/8	2-13/32	82°	C52758
1	1/8	1/2	2-13/16	82°	C52759

Drills • Countersinks

List #793 Three-Flute Carbide Tipped Countersinks



Features:

- The three flutes tend to center the tool more readily in portable use
- Countersinking holes for flat head screws
- Recommended for abrasive conditions

Diameter	Min. Cutting Diameter	Shank Diameter	Overall Length	Point Angle	EDP Number
1/4	5/64	3/16	1-7/16	60°	C52761
3/8	7/64	1/4	1-21/32	60°	C52762
1/2	9/64	1/4	1-27/32	60°	C52763
3/4	3/16	3/8	2-13/32	60°	C52764
1	1/4	1/2	2-13/16	60°	C52765

Diameter	Min. Cutting Diameter	Shank Diameter	Overall Length	Point Angle	EDP Number
1/4	5/64	3/16	1-7/16	82°	C52766
3/8	7/64	1/4	1-21/32	82°	C52767
1/2	9/64	1/4	1-27/32	82°	C52768
3/4	3/16	3/8	2-13/32	82°	C52769
1	1/4	1/2	2-13/16	82°	C52770

List #991 Three-Flute Carbide Tipped Machine Countersinks



Features:

- The four flutes tend to center the tool more readily in portable use
- Countersinking holes for flat head screws
- Extra shank length for use in turret lathes and screw machine work
- 60° for centers
- 82° for countersinking

Diameter	Shank Diameter	Shank Length	Overall Length	Angle	EDP Number
1/2	1/2	2-1/4	3-23/32	60°	C46243
1/2	1/2	2-1/4	3-23/32	82°	C46244
5/8	1/2	2-1/4	3-27/32	60°	C46245
5/8	1/2	2-1/4	3-27/32	82°	C46246
3/4	1/2	2-1/4	3-29/32	60°	C46247

Diameter	Shank Diameter	Shank Length	Overall Length	Angle	EDP Number
3/4	1/2	2-1/4	3-29/32	82°	C46248
7/8	1/2	2-1/4	4	60°	C46249
7/8	1/2	2-1/4	4	82°	C46250
1	1/2	2-1/4	4-1/16	60°	C46251
1	1/2	2-1/4	4-1/16	82°	C46252

Drills • Countersinks

List #1001 Single-Flute Countersink - HSS

Features:

- Chamfer, debur, countersink and enlarge holes in thin sheet metal
- Pre-drilled hole should not be less than 10% of the countersink diameter
- Will countersink holes much smaller than multi-flutes
- Provides smoother surface finish



Diameter	Shank Diameter	Overall Length	Angle	EDP Number
1/4	3/16	1-7/16	60°	C46101
1/4	3/16	1-7/16	82°	C46102
1/4	3/16	1-7/16	90°	C46103
1/4	3/16	1-7/16	100°	C46104
1/4	3/16	1-7/16	120°	C46106
3/8	1/4	1-21/32	60°	C46107
3/8	1/4	1-21/32	82°	C46108
3/8	1/4	1-21/32	90°	C46109
3/8	1/4	1-21/32	100°	C46110
3/8	1/4	1-21/32	120°	C46112
1/2	1/4	1-27/32	60°	C46113
1/2	1/4	1-27/32	82°	C46114
1/2	1/4	1-27/32	90°	C46115
1/2	1/4	1-27/32	100°	C46116
1/2	1/4	1-27/32	120°	C46118
5/8	3/8	2-3/32	60°	C46119
5/8	3/8	2-3/32	82°	C46120
5/8	3/8	2-3/32	90°	C46121
5/8	3/8	2-3/32	100°	C46122

Diameter	Shank Diameter	Overall Length	Angle	EDP Number
5/8	3/8	2-3/32	120°	C46123
3/4	3/8	2-13/32	60°	C46124
3/4	3/8	2-13/32	82°	C46125
3/4	3/8	2-13/32	90°	C46126
3/4	3/8	2-13/32	100°	C46127
3/4	3/8	2-13/32	120°	C46129
1	1/2	2-13/16	60°	C46130
1	1/2	2-13/16	82°	C46131
1	1/2	2-13/16	90°	C46132
1	1/2	2-13/16	100°	C46133
1	1/2	2-13/16	120°	C46135
1-1/4	1/2	3-19/32	60°	C46136
1-1/4	1/2	3-19/32	82°	C46137
1-1/4	1/2	3-19/32	90°	C46138
1-1/2	1/2	3-7/8	82°	C46139
1-1/2	1/2	3-7/8	60°	C46141
1-1/2	1/2	3-7/8	90°	C46140
2	1/2	4-1/4	82°	C46142
2	1/2	4-1/4	90°	C46143

List #1003 Three-Flute Countersink - HSS

Features:

- Chamfer, debur, countersink and enlarge holes in thin sheet metal
- Pre-drilled hole should not be less than 10% of the countersink diameter



Diameter	Shank Diameter	Overall Length	Angle	EDP Number
1/4	3/16	1-7/16	60°	C46150
1/4	3/16	1-7/16	82°	C46151
1/4	3/16	1-7/16	90°	C46152
1/4	3/16	1-7/16	100°	C46153
1/4	3/16	1-7/16	120°	C46155
3/8	1/4	1-21/32	60°	C46156
3/8	1/4	1-21/32	82°	C46157
3/8	1/4	1-21/32	90°	C46158
3/8	1/4	1-21/32	100°	C46159
3/8	1/4	1-21/32	120°	C46161
1/2	1/4	1-27/32	60°	C46162
1/2	1/4	1-27/32	82°	C46163
1/2	1/4	1-27/32	90°	C46164
1/2	1/4	1-27/32	100°	C46165
1/2	1/4	1-27/32	120°	C46167
5/8	3/8	2-3/32	60°	C46168
5/8	3/8	2-3/32	82°	C46169
5/8	3/8	2-3/32	90°	C46170
5/8	3/8	2-3/32	100°	C46171

Diameter	Shank Diameter	Overall Length	Angle	EDP Number
5/8	3/8	2-3/32	120°	C46173
3/4	3/8	2-13/32	60°	C46174
3/4	3/8	2-13/32	82°	C46175
3/4	3/8	2-13/32	90°	C46176
3/4	3/8	2-13/32	100°	C46177
3/4	3/8	2-13/32	120°	C46179
1	1/2	2-13/16	60°	C46180
1	1/2	2-13/16	82°	C46181
1	1/2	2-13/16	90°	C46182
1	1/2	2-13/16	100°	C46183
1	1/2	2-13/16	120°	C46185
1-1/4	1/2	3-19/32	60°	C46186
1-1/4	1/2	3-19/32	82°	C46187
1-1/4	1/2	3-19/32	90°	C46188
1-1/2	1/2	3-7/8	82°	C46190
1-1/2	1/2	3-7/8	60°	C46189
1-1/2	1/2	3-7/8	90°	C46191
2	1/2	4-1/4	90°	C46192

Drills • Drills & Countersinks

List #996 (Bell Type) Combined Drill and Countersink



Features:

- Accurate centering operations. Bell Type (996) have included angles of 60° and 120°, used to form protected centers.

Size Number	Body Diam.	Drill Diam.	Drill Length	Overall Length	Bell Diam.	EDP Number
11	1/8	3/64	3/64	1-1/4	.100	C46272
12	3/16	1/16	1/16	1-7/8	.150	C46273
13	1/4	3/32	3/32	2	.200	C46274
14	5/16	7/64	7/64	2-1/8	.250	C46275

Size Number	Body Diam.	Drill Diam.	Drill Length	Overall Length	Bell Diam.	EDP Number
15	7/16	5/32	5/32	2-3/4	.350	C46276
16	1/2	3/16	3/16	3	.400	C46277
17	5/8	7/32	7/32	3-1/4	.500	C46278
18	3/4	1/4	1/4	3-1/2	.600	C46279

List #998 (Plain Type) Combined Drill and Countersink



Features:

- Accurate centering operations.

Size Number	Body Diameter	Drill Diameter	Drill Length	Overall Length	EDP Number
00	3/32	.025	.030	1-1/8	C46261
0	3/32	1/32	.038	1-1/8	C46262
1	1/8	3/64	3/64	1-1/4	C46263
2	3/16	5/64	5/64	1-7/8	C46264
3	1/4	7/64	7/64	2	C46265

Size Number	Body Diameter	Drill Diameter	Drill Length	Overall Length	EDP Number
4	5/16	1/8	1/8	2-1/8	C46266
5	7/16	3/16	3/16	2-3/4	C46267
6	1/2	7/32	7/32	3	C46268
7	5/8	1/4	1/4	3-1/4	C46269
8	3/4	5/16	5/16	3-1/2	C46270

List #1798 Solid Carbide Combined Drills and Countersinks



Features:

- Used in brake lining material, cast iron, hardened tool steels Rc 30 to 65, plastics, aluminizing castings, zinc and carbonized or work-hardened steel surfaces.
- Ideal for recentering after the product has been hardened.

Size Number	Body Diameter	Drill Diameter	Drill Length	Overall Length	EDP Number
1	1/8	3/64	3/64	1-1/4	C52772
2	3/16	5/64	5/64	1-7/8	C52773
3	1/4	7/64	7/64	2	C52774

Size Number	Body Diameter	Drill Diameter	Drill Length	Overall Length	EDP Number
4	5/16	1/8	1/8	2-1/8	C52775
5	7/16	3/16	3/16	2-3/4	C52776
6	1/2	7/32	7/32	3	C52777

Drills • Sockets

List #100 Rough Sockets for Taper Shank Tool

Features:

- Unfinished shanks allowing you to customize fit
- Furnished with a centered plug to aid in turning and grinding to size



Size	Shank Diameter	Overall Length	EDP Number
1	1-1/8	7-1/2	C53001
2	1-1/4	8	C53002
3	1-1/2	10	C53003

Size	Shank Diameter	Overall Length	EDP Number
4	2	12-1/2	C53004
5	2-3/4	16	C53005
6	3-3/4	19	C53006

List #102 Fitted Sockets

Features:

- Adapt tools having larger or smaller taper shanks to the machine spindle nose taper hole
- Also used as extension sockets



Size	Shank Diameter	Overall Length	EDP Number
1 to 2	Has #1 Hole & #2 Shank	6-3/16	C53007
1 to 3	Has #1 Hole & #3 Shank	6-15/16	C53008
1 to 4	Has #1 Hole & #4 Shank	7-15/16	C53009
1 to 5	Has #1 Hole & #5 Shank	9-3/16	C53010
2 to 2	Has #2 Hole & #2 Shank	6-13/16	C53012
2 to 3	Has #2 Hole & #3 Shank	7-9/16	C53013
2 to 4	Has #2 Hole & #4 Shank	8-9/16	C53014
2 to 5	Has #2 Hole & #5 Shank	9-13/16	C53015
3 to 2	Has #3 Hole & #2 Shank	7-3/4	C53016
3 to 3	Has #3 Hole & #3 Shank	8-1/2	C53017

Size	Shank Diameter	Overall Length	EDP Number
3 to 4	Has #3 Hole & #4 Shank	9-1/2	C53018
3 to 5	Has #3 Hole & #5 Shank	10-3/4	C53019
4 to 3	Has #4 Hole & #3 Shank	9-7/16	C53020
4 to 4	Has #4 Hole & #4 Shank	10-7/16	C53021
4 to 5	Has #4 Hole & #5 Shank	11-11/16	C53022
4 to 6	Has #4 Hole & #6 Shank	14-1/8	C53023
5 to 4	Has #5 Hole & #4 Shank	11-13/16	C53024
5 to 5	Has #5 Hole & #5 Shank	13-1/6	C53025
5 to 6	Has #5 Hole & #6 Shank	15-1/2	C53026

List #103 Screw Machine Sockets

Features:

- Fits into turrets or tool holding fixtures on automatic screw machines.



Size	Size Hole #	O. D. Inches	Overall Length	EDP Number
A	1	1	3-1/2	C53031
B	1	1-1/4	3-1/2	C53032
C	1	1-1/2	3-1/2	C53033
D	2	1	4	C53034
E	2	1-1/4	4	C53035
F	2	1-1/2	4	C53036
G	2	1-3/4	4	C53037
H	2	2	4	C53038

Size	Size Hole #	O. D. Inches	Overall Length	EDP Number
J	3	1-1/4	4-3/4	C53039
K	3	1-1/2	4-3/4	C53040
L	3	1-3/4	4-3/4	C53041
M	3	2	4-3/4	C53042
N	4	1-1/2	6	C53043
P	4	1-3/4	6	C53044
Q	4	2	6	C53045

Drills • Sockets & Drifts

List #104 Sleeves or Shell Sockets For Taper Shank Tools

Features:

- Reduce hole size of machine spindle where the drill shank is smaller than spindle hole



Size	Description	EDP Number
1 to 2	Has #1 Hole & outside fitting #2 Socket	C53047
1 to 3	Has #1 Hole & outside fitting #3 Socket	C53048
1 to 4	Has #1 Hole & outside fitting #4 Socket	C53049
1 to 5	Has #1 Hole & outside fitting #5 Socket	C53050
2 to 3	Has #2 Hole & outside fitting #3 Socket	C53051
2 to 4	Has #2 Hole & outside fitting #4 Socket	C53052

Size	Description	EDP Number
2 to 5	Has #2 Hole & outside fitting #5 Socket	C53053
3 to 4	Has #2 Hole & outside fitting #4 Socket	C53054
3 to 5	Has #3 Hole & outside fitting #5 Socket	C53055
4 to 5	Has #3 Hole & outside fitting #5 Socket	C53056
4 to 6	Has #3 Hole & outside fitting #6 Socket	C53057
5 to 6	Has #3 Hole & outside fitting #6 Socket	C53058

List #105 Drill Drifts

Features:

- Remove tapered sockets from the spindle



Size	Description	EDP Number
1	Fitting #1 Sockets and Sleeves	C53665
2	Fitting #2 Sockets and Sleeves	C53666

Size	Description	EDP Number
3	Fitting #3 Sockets and Sleeves	C53667
4	Fitting #4 Sockets and Sleeves	C53668

Drills • Sets

List #415-86 Cle-Forge® Set EDP# C0092



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - 3/8" Reduced
Point - 118°

Contents:

- 15-pc, 1 each 1/6" to 1/2" by 32nds, with container



List #102 HSS Drill Set EDP# C08404



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- Jobber length in metal indexed container 1/16" to 1/2" by 64ths



List #413-89 Cle-Forge® Set EDP#



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- 13-pc, 1 each 1/6" to 1/4" by 64ths, with container



List #420-88 Cle-Forge® Set EDP#



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- 20-pc, 1 each #61 to #80, with container



Drills • Sets

List #421-90 Cle-Forge® Set EDP#



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- 21-pc, 1 each 1/16" to 3/8" by 64ths, with container



List #426-55 Cle-Forge® Set EDP#



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- 26-pc, 1 each A to Z, with container



List #276 Cle-Forge® Set EDP# C00980



Substrate - HSS
Length - Screw Machine Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- 29-pc, 1 each 1/6" to 1/2" by 64ths, with container



List #429-54 Cle-Forge® Set EDP# C00921



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- 29-pc, 1 each 1/6" to 1/2" by 64ths, with container



Drills • Sets

List # **104** HSS Drill Set EDP# C08408



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- Wire gauge sizes No. 1 to No. 60



List # **460-84** Cle-Forge® Set EDP# C0093



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- 60-pc, 1 each #1 to #60, with container



List # **415-86** Cle-Forge® Set EDP# C0092



Substrate - HSS
Length - Jobber Length
Surface Treatment - Bright
Shank - Straight
Point - 118°

Contents:

- 15-pc, 1 each 1/16" to 1/2" by 32nds with container



Other Drill Sets Available:

- List # **429-2001** HSS Drill Set EDP # C00888
1/16" to 1/2" by 64ths
- List # **417-937** HSS Drill Set EDP # C00942
3/8" reduced shanks 1/16" to 1/2" by 64ths
- List # **2001** HSS Drill Set EDP # C00943
Metric sizes 1mm to 13 mm
- List # **276** HSS Drill Set EDP # C00980
Screw machine jobber length in metal container, 1/16" to 1/2" by 64ths
- List # **97** Cobalt Drill Set EDP # C00918
Drills with 1/4" shanks in plastic case, 1/4", 5/16", 3/8", 7/16" and 1/2" by 16ths
- List # **460-2013** Cobalt Drill Set EDP # C00985
Drills in indexed metal container, No. 1 to No. 60

Other Drill Sets Available:

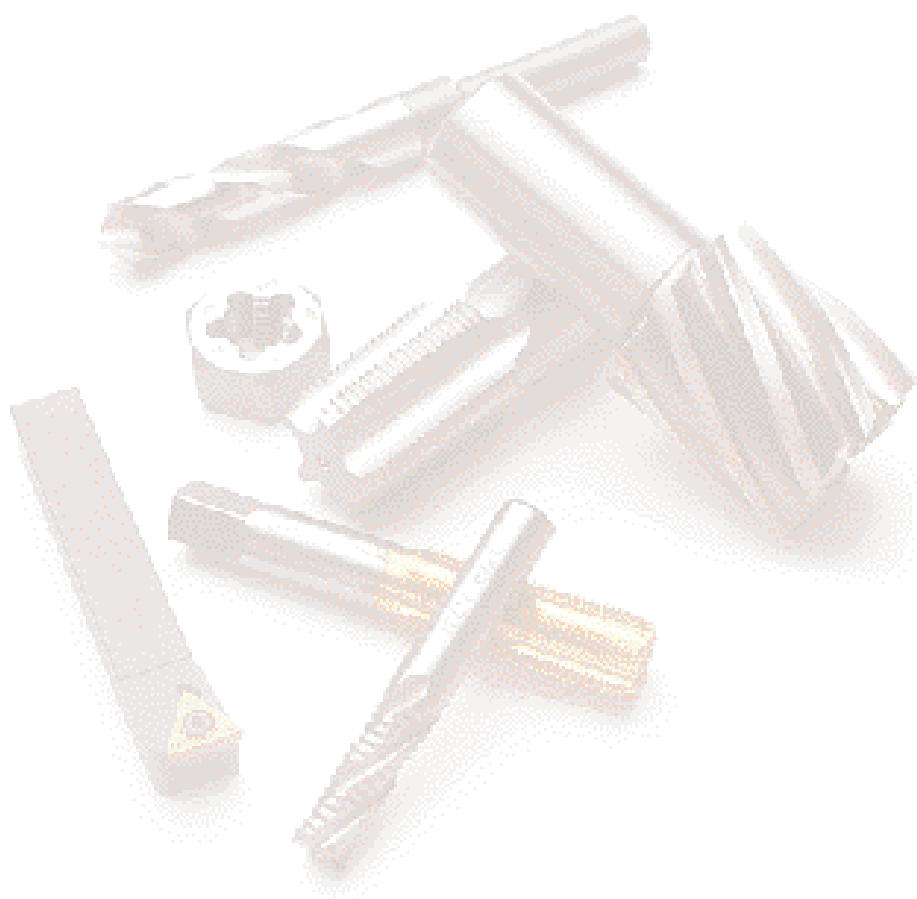
- **List # 462-2013 Cobalt Drill Set EDP # C00986**
Drills in indexed metal container; Letters A to Z
- **List Q-PM Drill Set EDP # C50246**
Two 1/2" drills and One set screw collet TiN coated
- **List Q-Carbide Drill Set EDP # C16423**
Two 1/4" drills and One set screw collet TiN coated
- **List Q-Carbide Drill Set EDP # C16424**
Two 5/16" drills and One set screw collet TiN coated
- **List Q-Carbide Drill Set EDP # C16425**
Two 3/8" drills and One set screw collet TiN coated
- **List Q-Carbide Drill Set EDP # C16426**
Two 1/2" drills and One set screw collet TiN coated
- **List # 15 EZY-OUT Screw Extractor Set EDP # C00906**
1 to 5 size range in plastic case
- **List # 15-A EZY-OUT Screw Extractor Set EDP # C00907**
1 to 6 size range in plastic case
- **List # 16 EZY-OUT Screw Extractor Set EDP # C00908**
6 to 9 size range in plastic case
- **List # 17 EZY-OUT Screw Extractor Set EDP # C00909**
4 to 6 size range in plastic case
- **List # 20 EZY-OUT Screw Extractor Set EDP # C00910**
1 to 6 size range with HSS drills in plastic case

- ### Container Only:
- **List # 413 EDP # C00854**
Matches sizes in #413-89
 - **List # 421 EDP # C00853**
Matches sizes in #421-90
 - **List # 429 EDP # C00851**
Matches sizes in #429-54
 - **List # 415 EDP # C00852**
Matches sizes in #415-86
 - **List # 426 EDP # C00857**
Matches sizes in #426-55
 - **List # 460 EDP # C00855**
Matches sizes in #460-84
 - **List # 420 EDP # C00856**
Matches sizes in #420-88
 - **List # 2001 EDP # C00865**
Matches sizes in #2001m
 - **List # 4115 EDP # C00878**
Matches sizes in #4115-3

Spec Info

Reamers:

Reamers: *page 89*



Reamers • Picture Index

Straight Shank High Speed:

List #4001 Regular Length Chucking Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight
Flutes - Straight



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List #4030 Regular Length Chucking Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight
Flutes - RH Helix



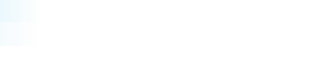
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List #4050 Production Length Chucking Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight
Flutes - Straight



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List #4060 Production Length Chucking Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight
Flutes - RH Helix



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List #4020 Screw Machine Length Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight
Flutes - LH Helix



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List #504 Expansion Style Chucking Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight
Flutes - Straight



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List #516 Q PM Coolant Feeding Drill



Substrate - HSS
Surface Treatment - Bright

Shank - Taper
Flutes - Straight



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List #609 Regular Length Chucking Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight
Flutes - LH Helix



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Reamers • Picture Index

Taper Shank High Speed:

List #4005 Taper Shank Chucking Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Taper
Flutes - Straight



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List #4035 Taper Shank Chucking Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Taper
Flutes - RH Helix



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List #613 Taper Shank Bridge Reamers



Substrate - HSS
Surface Treatment - Black Oxide

Shank - Taper
Flutes - RH Helix



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List #616 Taper Shank Bridge Reamers



Substrate - HSS
Surface Treatment - Black Oxide

Shank - Taper
Flutes - LH Helix



page # 100

List #618 Taper Shank Car Reamers



Substrate - HSS
Surface Treatment - Black Oxide

Shank - Taper
Flutes - LH Helix



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Hand Reamers:

List #624 Hand Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight with Square End
Flutes - Straight



page # 101

List #645 Hand Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight with Square End
Flutes - LH Helix



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List #649 Adjustable Reamers



Substrate - HSS
Surface Treatment - Bright

Shank - Straight
Flutes - Straight



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Reamers • Picture Index

Taper Reamers:

List #642 Taper Pipe Reamers



Substrate -	HSS	Shank -	Straight
Surface Treatment -	Bright	Flutes -	LH Helix



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List #644 Taper Socket Reamers



Substrate -	HSS	Shank -	Straight
Surface Treatment -	Bright	Flutes -	Straight



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List #650 Spirex Taper Pin Reamers



Substrate -	HSS	Shank -	LHS-RHC
Surface Treatment -	Bright	Flutes -	Spiral



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List #657 Taper Pin Reamers



Substrate -	HSS	Shank -	Straight with Square End
Surface Treatment -	Bright	Flutes -	Straight



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List #659 Taper Pin Reamers



Substrate -	HSS	Shank -	Straight with Square End
Surface Treatment -	Bright	Flutes -	Spiral



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Carbide-Tipped Reamers:

List #4701 Carbide Tipped Screw Machine Length Reamers



Substrate -	Carbide Tipped	Shank -	Straight
Surface Treatment -	Bright	Flutes -	Straight



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List #4703 Carbide Tipped Regular Length Reamers



Substrate -	Carbide Tipped	Shank -	Straight
Surface Treatment -	Bright	Flutes -	Straight



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List #4709 Carbide Tipped Regular Length Reamers



Substrate -	Carbide Tipped	Shank -	Straight
Surface Treatment -	Bright	Flutes -	LH Helix



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Reamers • Picture Index

Carbide-Tipped Reamers:

List #4711 Carbide Tipped Regular Length Reamers



Substrate - Carbide Tipped	Shank - Straight
Surface Treatment - Bright	Flutes - RH Helix



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List #704 Carbide Tipped Expansion Chucking Reamers



Substrate - Carbide Tipped	Shank - Straight
Surface Treatment - Bright	Flutes - Straight



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List #716 Carbide Tipped Expansion Chucking Ream



Substrate - Carbide Tipped	Shank - Taper
Surface Treatment - Bright	Flutes - Straight



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Carbide Reamers:

List #1711 Solid Carbide Chucking Reamers



Substrate - Solid Carbide	Shank - Straight
Surface Treatment - Bright	Flutes - Straight



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List #1730 Solid Carbide Chucking Reamers



Substrate - Solid Carbide	Shank - Straight
Surface Treatment - Bright	Flutes - RH Helix



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Router:

List #655 Clearance or Taper Router



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Counterbores:

List #874 (For Fillister Head Screws) Straight Shank Solid



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Counterbores:

List # 875 (For 82° Flat Head Machine Screws) Straight Shank Solid Counterbores



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List # 879 (Straight Shank) Short Series Counterbores & Spot Facers



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List # 878 (Taper Shank) Short Series Counterbores and Spot Facers with Interchangeable Pilots



page # 111

List # 879P Pilots For Counterbores and Spot Facers



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List # 883 (Long Type Maximum 1/2" Shank)



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List # 884 (Short type 1/4" Shank) Aircraft Counterbores



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List # 1655 Double End Back Spot Facers



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List # 1655P Bayonet Lock Driver for Back Spot Facer



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List # 779 Carbide Tipped Counterbores and Spot Facers



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Reamers • Straight Shank High

List #400I Regular Length Chucking Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - Straight



Features:

- General purpose
- Use thru hole applications

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
NO 60	.0400	1.02	2-1/2	1/2	4	C25003
NO 59	.0410	1.04	2-1/2	1/2	4	C25005
NO 58	.0420	1.07	2-1/2	1/2	4	C25008
NO 57	.0430	1.09	2-1/2	1/2	4	C25010
NO 56	.0465	1.18	2-1/2	1/2	4	C25019
3/64	.0469	1.19	2-1/2	1/2	4	C25020
NO 55	.0520	1.32	2-1/2	1/2	4	C25034
NO 54	.0550	1.40	2-1/2	1/2	4	C25041
NO 53	.0595	1.51	2-1/2	1/2	4	C25053
1/16	.0625	1.59	2-1/2	1/2	4	C25060
NO 52	.0635	1.61	2-1/2	1/2	4	C25063
NO 51	.0670	1.70	3	3/4	4	C25072
NO 50	.0700	1.78	3	3/4	4	C25079
NO 49	.0730	1.85	3	3/4	4	C25087
NO 48	.0760	1.93	3	3/4	4	C25094
5/64	.0781	1.98	3	3/4	4	C25100
NO 47	.0785	1.99	3	3/4	4	C25101
NO 46	.0810	2.06	3	3/4	4	C25108
NO 45	.0820	2.08	3	3/4	4	C25110
NO 44	.0860	2.18	3	3/4	4	C25120
NO 43	.0890	2.26	3	3/4	4	C25128
NO 42	.0935	2.37	3	3/4	4	C25139
3/32	.0938	2.38	3	3/4	4	C25140
NO 41	.0960	2.44	3-1/2	7/8	4	C25146
NO 40	.0980	2.49	3-1/2	7/8	4	C25151
NO 39	.0995	2.53	3-1/2	7/8	4	C25155
NO 38	.1015	2.58	3-1/2	7/8	4	C25159
NO 37	.1040	2.64	3-1/2	7/8	4	C25165
NO 36	.1065	2.71	3-1/2	7/8	4	C25171
7/64	.1094	2.78	3-1/2	7/8	4	C25178
NO 35	.1100	2.79	3-1/2	7/8	4	C25180
NO 34	.1110	2.82	3-1/2	7/8	4	C25183
NO 33	.1130	2.87	3-1/2	7/8	4	C25187
NO 32	.1160	2.95	3-1/2	7/8	4	C25194
NO 31	.1200	3.05	3-1/2	7/8	6	C25203
.1230	.1230	3.12	3-1/2	7/8	6	C25210
.1240	.1240	3.15	3-1/2	7/8	6	C25212
.1247	.1247	3.17	3-1/2	7/8	6	C25215
1/8	.1250	3.18	3-1/2	7/8	6	C25216
.1260	.1260	3.20	3-1/2	7/8	6	C25220
NO 30	.1285	3.26	3-1/2	7/8	6	C25226
NO 29	.1360	3.45	4	1	6	C25243
NO 28	.1405	3.57	4	1	6	C25253
9/64	.1406	3.57	4	1	6	C25254
NO 27	.1440	3.66	4	1	6	C25262
NO 26	.1470	3.73	4	1	6	C25269
NO 25	.1495	3.80	4	1	6	C25275
NO 24	.1520	3.86	4	1	6	C25281
NO 23	.1540	3.91	4	1	6	C25285
5/32	.1562	3.97	4	1	6	C25290
NO 22	.1570	3.99	4	1	6	C25292
NO 21	.1590	4.04	4-1/2	1-1/8	6	C25297
NO 20	.1610	4.09	4-1/2	1-1/8	6	C25301
NO 19	.1660	4.22	4-1/2	1-1/8	6	C25313
NO 18	.1695	4.31	4-1/2	1-1/8	6	C25322
11/64	.1719	4.37	4-1/2	1-1/8	6	C25327
NO 17	.1730	4.39	4-1/2	1-1/8	6	C25330

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
NO 16	.1770	4.50	4-1/2	1-1/8	6	C25339
NO 15	.1800	4.57	4-1/2	1-1/8	6	C25346
NO 14	.1820	4.62	4-1/2	1-1/8	6	C25351
NO 13	.1850	4.70	4-1/2	1-1/8	6	C25357
.1855	.1855	4.71	4-1/2	1-1/8	6	C25360
.1865	.1865	4.74	4-1/2	1-1/8	6	C25362
.1870	.1870	4.75	4-1/2	1-1/8	6	C25365
3/16	.1875	4.76	4-1/2	1-1/8	6	C25366
.1885	.1885	4.79	4-1/2	1-1/8	6	C25368
NO 12	.1890	4.80	4-1/2	1-1/8	6	C25369
NO 11	.1910	4.85	5	1-1/4	6	C25374
NO 10	.1935	4.91	5	1-1/4	6	C25380
NO 9	.1960	4.98	5	1-1/4	6	C25385
NO 8	.1990	5.05	5	1-1/4	6	C25392
NO 7	.2010	5.11	5	1-1/4	6	C25397
13/64	.2031	5.16	5	1-1/4	6	C25402
NO 6	.2040	5.18	5	1-1/4	6	C25404
NO 5	.2055	5.22	5	1-1/4	6	C25408
NO 4	.2090	5.31	5	1-1/4	6	C25417
NO 3	.2130	5.41	5	1-1/4	6	C25426
7/32	.2188	5.56	5	1-1/4	6	C25438
NO 2	.2210	5.61	6	1-1/2	6	C25443
NO 1	.2280	5.79	6	1-1/2	6	C25459
LTR A	.2340	5.94	6	1-1/2	6	C25473
15/64	.2344	5.95	6	1-1/2	6	C25474
LTR B	.2380	6.05	6	1-1/2	6	C25483
LTR C	.2420	6.15	6	1-1/2	6	C25492
LTR D	.2460	6.25	6	1-1/2	6	C25501
.2480	.2480	6.30	6	1-1/2	6	C25508
.2490	.2490	6.32	6	1-1/2	6	C25510
.2495	.2495	6.34	6	1-1/2	6	C25512
1/4 E	.2500	6.35	6	1-1/2	6	C25513
.2510	.2510	6.38	6	1-1/2	6	C25516
LTR F	.2570	6.53	6	1-1/2	6	C25530
LTR G	.2610	6.63	6	1-1/2	6	C25539
17/64	.2656	6.75	6	1-1/2	6	C25550
LTR H	.2660	6.76	6	1-1/2	6	C25552
LTR I	.2720	6.91	6	1-1/2	6	C25566
LTR J	.2770	7.04	6	1-1/2	6	C25577
LTR K	.2810	7.14	6	1-1/2	6	C25585
LTR L	.2900	7.37	6	1-1/2	6	C25605
9/32	.2812	7.14	6	1-1/2	6	C25608
LTR M	.2950	7.49	6	1-1/2	6	C25617
19/64	.2969	7.54	6	1-1/2	6	C25622
LTR N	.3020	7.67	6	1-1/2	6	C25634
.3105	.3105	7.89	6	1-1/2	6	C25655
.3115	.3115	7.91	6	1-1/2	6	C25658
.3120	.3120	7.92	6	1-1/2	6	C25660
5/16	.3125	7.94	6	1-1/2	6	C25661
.3135	.3135	7.96	6	1-1/2	6	C25663
LTR O	.3160	8.03	6	1-1/2	6	C25669
LTR P	.3230	8.20	6	1-1/2	6	C25685
21/64	.3281	8.33	6	1-1/2	6	C25698
LTR Q	.3320	8.43	6	1-1/2	6	C25707
LTR R	.3390	8.61	6	1-1/2	6	C25723
11/32	.3438	8.73	6	1-1/2	6	C25733
LTR S	.3480	8.84	7	1-3/4	6	C25742

(Continued on next page)

Reamers • Straight Shank High

List #400I continued

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number	Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
LTR T	.3580	9.09	7	1-3/4	6	C25764	1/2	.5000	12.70	8	2	6	C26083
23/64	.3594	9.13	7	1-3/4	6	C25768	.5010	.5010	12.73	8	2	6*	C26085
LTR U	.3680	9.35	7	1-3/4	6	C25789	17/32	.5312	13.49	8	2	8	C26150
.3730	.3730	9.47	7	1-3/4	6*	C25801	9/16	.5625	14.29	8	2	8	C26217
.3640	.3640	9.25	7	1-3/4	6*	C25804	19/32	.5938	15.08	8	2	8	C26284
.3745	.3745	9.51	7	1-3/4	6*	C25806	5/8	.6250	15.88	9	2-1/4	8	C26351
3/8	.3750	9.53	7	1-3/4	6	C25807	21/32	.6562	16.67	9	2-1/4	8	C26418
.3760	.3760	9.55	7	1-3/4	6	C25809	11/16	.6875	17.46	9	2-1/4	8	C26485
LTR V	.3770	9.58	7	1-3/4	6	C25811	23/32	.7188	18.26	9	2-1/4	8	C26550
LTR W	.3860	9.80	7	1-3/4	6	C25833	3/4	.7500	19.05	9-1/2	2-1/2	8	C26615
25/64	.3906	9.92	7	1-3/4	6	C25844	25/32	.7812	19.84	9-1/2	2-1/2	8	C26680
LTR X	.3970	10.08	7	1-3/4	6	C25858	13/16	.8125	20.64	9-1/2	2-1/2	8	C26746
LTR Y	.4040	10.26	7	1-3/4	6	C25873	27/32	.8438	21.43	9-1/2	2-1/2	8	C26811
13/32	.4062	10.32	7	1-3/4	6	C25878	7/8	.8750	22.23	10	2-5/8	8	C26876
LTR Z	.4130	10.49	7	1-3/4	6	C25892	29/32	.9062	23.02	10	2-5/8	8	C26941
27/64	.4219	10.72	7	1-3/4	6	C25911	15/16	.9375	23.81	10	2-5/8	8	C27006
.4355	.4355	11.06	7	1-3/4	6*	C25942	31/32	.9688	24.61	10	2-5/8	8	C27072
.4365	.4365	11.09	7	1-3/4	6	C25944	1	1.0000	25.40	10-1/2	2-3/4	8	C27137
.4370	.4370	11.10	7	1-3/4	6*	C25946	1-1/16	1.0625	26.99	10-1/2	2-3/4	10	C27144
7/16	.4375	11.11	7	1-3/4	6	C25947	1-1/8	1.1250	28.58	11	2-7/8	10	C27152
.4385	.4385	11.14	7	1-3/4	6	C25949	1-3/16	1.1875	30.16	11	2-7/8	10	C27159
29/64	.4531	11.51	7	1-3/4	6	C25981	1-1/4	1.2500	31.75	11-1/2	3	10	C27166
15/32	.4688	11.91	7	1-3/4	6	C26014	1-3/8	1.3750	34.93	12	3-1/4	10	C27180
31/64	.4844	12.30	8	2	6	C26048	1-1/2	1.5000	38.10	12-1/2	3-1/2	12	C27195
.4990	.4990	12.67	8	2	6*	C26080							

* Made to +.000/- .0002 tolerance for dowel pin work.

List # 4030 Regular Length Chucking Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - RH Helix



Features:

- Right hand helix, right hand cut, chips flow up flutes for blind hole applications.
- Smoother finish than straight flute.

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number	Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
21/64	.3281	8.33	6	1-1/2	6	C29890	23/32	.7188	18.26	9	2-1/4	8	C30735
11/32	.3438	8.73	6	1-1/2	6	C29925	3/4	.7500	19.05	9-1/2	2-1/2	8	C30800
23/64	.3594	9.13	7	1-3/4	6	C29960	25/32	.7812	19.84	9-1/2	2-1/2	8	C30865
3/8	.3750	9.53	7	1-3/4	6	C29997	13/16	.8125	20.64	9-1/2	2-1/2	8	C30931
25/64	.3906	9.92	7	1-3/4	6	C30033	27/32	.8438	21.43	9-1/2	2-1/2	8	C30996
13/32	.4062	10.32	7	1-3/4	6	C30067	7/8	.8750	22.23	10	2-5/8	8	C31061
27/64	.4219	10.72	7	1-3/4	6	C30100	29/32	.9062	23.02	10	2-5/8	8	C31126
7/16	.4375	11.11	7	1-3/4	6	C30134	15/16	.9375	23.81	10	2-5/8	8	C31191
29/64	.4531	11.51	7	1-3/4	6	C30168	31/32	.9688	24.61	10	2-5/8	8	C31257
15/32	.4688	11.91	7	1-3/4	6	C30201	1	1.0000	25.40	10-1/2	2-3/4	8	C31322
31/64	.4844	12.30	8	2	6	C30235	1-1/16	1.0625	26.99	10-1/2	2-3/4	10	C31329
1/2	.5000	12.70	8	2	6	C30268	1-1/8	1.1250	28.58	11	2-7/8	10	C31337
17/32	.5312	13.49	8	2	8	C30335	1-3/16	1.1875	30.16	11	2-7/8	10	C31344
9/16	.5625	14.29	8	2	8	C30402	1-1/4	1.2500	31.75	11-1/2	3	10	C31351
19/32	.5938	15.08	8	2	8	C30469	1-5/16	1.3125	33.34	11-1/2	3	10	C31358
5/8	.6250	15.88	9	2-1/4	8	C30536	1-3/8	1.3750	34.93	12	3-1/4	10	C31365
21/32	.6562	16.67	9	2-1/4	8	C30603	1-7/16	1.4375	36.51	12	3-1/4	10	C31373
11/16	.6875	17.46	9	2-1/4	8	C30670	1-1/2	1.5000	38.10	12-1/2	3-1/2	12	C31380

Only available on Quick Ship .0394 - 1.500

Reamers • Straight Shank High

List #4050 Production Length Chucking Reamers

Features:

- General purpose, thru hole applications.



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - Straight

Only available on Quick Ship and at sizes .040 - .533 dia.

List #4060 Production Length Chucking Reamers

Features:

- RH Helix
- RH cut, chips flow up flutes for blind hole applications. Smoother finish than straight flute.



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - RH Helix

Only available on Quick Ship and at sizes .040 - .501 dia.

List #4020 Screw Machine Length Reamers

Features:

- LH Helix
- LH helix RH cut pushes chips forward in thru hole applications.
- Cross hole in shank for pin drive floating holders.



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - LH Helix

Only available on Quick Ship and at sizes .0600 - 1.010 dia.

Reamers • Straight Shank High

List #504 Expansion Style Chucking Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - Straight



Features:

- General purpose, thru hole applications.
- Maintain initial size. Multiple regrinds available.
- Expanded tool life
- When flutes are worn undersize, they may be expanded, reground to size and recleaned
- Expansion (.015-.020)
- Optimum rake angle, flute spacing relief angles and land widths for maximum number of "on-size" holes

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
3/8	.3750	9.53	7	3/4	6	C38701
7/16	.4375	11.11	7	7/8	6	C38703
1/2	.5000	12.70	8	1	6	C38705
9/16	.5625	14.29	8	1-1/8	6	C38707
5/8	.6250	15.88	9	1-1/4	6	C38709
11/16	.6875	17.46	9	1-1/4	6	C38711
3/4	.7500	19.05	9-1/2	1-3/8	6	C38713
13/16	.8125	20.64	9-1/2	1-3/8	6	C38715
7/8	.8750	22.23	10	1-1/2	6	C38717
31/32	.9688	24.61	10	1-1/2	6	C38720

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
1	1.0000	25.40	10-1/2	1-5/8	8	C38721
1-1/32	1.0312	26.19	10-1/2	1-5/8	8	C38722
1-1/16	1.0625	26.99	10-1/2	1-5/8	8	C38723
1-3/32	1.0938	27.78	10-1/2	1-5/8	8	C38724
1-1/8	1.1250	28.58	11	1-3/4	8	C38725
1-5/32	1.1562	29.37	11	1-3/4	8	C38726
1-3/16	1.1875	30.16	11	1-3/4	8	C38727
1-7/32	1.2188	30.96	11	1-3/4	8	C38728
1-1/4	1.2500	31.75	11-1/2	1-7/8	8	C38729
15/16	1.3125	33.34	11-1/2	1-7/8	8	C38730

List #516 Expansion Style Chucking Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Taper
Flutes - Straight



Features:

- General purpose, thru hole applications.
- Maintain initial size. Multiple regrinds available.
- Expanded tool life
- When flutes are worn undersize, they may be expanded, reground to size and recleaned
- Expansion (.015-.020)
- Optimum rake angle, flute spacing relief angles and land widths for maximum number of "on-size" holes

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	Shank Taper	EDP Number
3/8	.3750	9.53	7	3/4	6	1	C38748
13/32	.4062	10.32	7	3/4	6	1	C38749
7/16	.4375	11.11	7	7/8	6	1	C38750
15/32	.4688	11.91	7	7/8	6	1	C38751
1/2	.5000	12.70	8	1	6	1	C38752
17/32	.5312	13.49	8	1	6	1	C38753
9/16	.5625	14.29	8	1-1/8	6	1	C38754
19/32	.5938	15.08	8	1-1/8	6	1	C38755
5/8	.6250	15.88	9	1-1/4	6	2	C38756
21/32	.6562	16.67	9	1-1/4	6	2	C38757
11/16	.6875	17.46	9	1-1/4	6	2	C38758
23/32	.7188	18.26	9	1-1/4	6	2	C38759
3/4	.7500	19.05	9-1/2	1-3/8	6	2	C38760
25/32	.7812	19.84	9-1/2	1-3/8	6	2	C38761
13/16	.8125	20.64	9-1/2	1-3/8	6	2	C38762
27/32	.8438	21.43	9-1/2	1-3/8	6	2	C38763
7/8	.8750	22.23	10	1-1/2	6	2	C38764

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	Shank Taper	EDP Number
29/32	.9062	23.02	10	1-1/2	6	2	C38765
15/16	.9375	23.81	10	1-1/2	6	3	C38766
31/32	.9688	24.61	10	1-1/2	6	3	C38767
1	1.0000	25.40	10-1/2	1-5/8	8	3	C38768
1-1/32	1.0312	26.19	10-1/2	1-5/8	8	3	C38769
1-1/16	1.0625	26.99	10-1/2	1-5/8	8	3	C38770
1-3/32	1.0938	27.78	10-1/2	1-5/8	8	3	C38771
1-1/8	1.1250	28.58	11	1-3/4	8	3	C38772
1-5/32	1.1562	29.37	11	1-3/4	8	3	C38773
1-3/16	1.1875	30.16	11	1-3/4	8	3	C38774
1-7/32	1.2188	30.96	11	1-3/4	8	3	C38775
1-1/4	1.2500	31.75	11-1/2	1-7/8	8	4	C38776
1-5/16	1.3125	33.34	11-1/2	1-7/8	8	4	C38777
1-3/8	1.3750	34.93	12	2	8	4	C38778
1-7/16	1.4375	36.51	12	2	8	4	C38779
1-1/2	1.5000	38.10	12-1/2	2-1/8	10	4	C38780

Reamers • Straight Shank High

List #609 Regular Length Chucking Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - LH Helix



Features:

- LH helix RH cut pushes chips forward in thru hole applications.
- Smoothest finish.
- Ideal for non-rigid set ups.

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
1/8	.1250	3.18	3-1/2	7/8	6	C37497
5/32	.1562	3.97	4	1	6	C37509
3/16	.1875	4.76	4-1/2	1-1/8	6	C37521
7/32	.2188	5.56	5	1-1/4	6	C37532
1/4	.2500	6.35	6	1-1/2	6	C37544
9/32	.2812	7.14	6	1-1/2	6	C37558
5/16	.3125	7.94	6	1-1/2	6	C37567

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
11/32	.3438	8.73	6	1-1/2	6	C37578
3/8	.3750	9.53	7	1-3/4	6	C37590
13/32	.4062	10.32	7	1-3/4	6	C37599
7/16	.4375	11.11	7	1-3/4	6	C37604
15/32	.4688	11.91	7	1-3/4	6	C37609
1/2	.5000	12.70	8	2	6	C37614

Reamers • Taper Shank High Speed

List #4005 Taper Shank Chucking Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Taper
Flutes - Straight



Features:

- General purpose, thru hole applications.
- Fits specific tapered socket
- Morse taper shank
- Optimum rake angle, flute spacing relief angles and land widths for maximum number of "on-size" holes

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
1/4	.2500	6.35	6	1-1/2	6	C33842
5/16	.3125	7.94	6	1-1/2	6	C33986
3/8	.3750	9.53	7	1-3/4	6	C34129
7/16	.4375	11.11	7	1-3/4	6	C34266
1/2	.5000	12.70	8	2	6	C34400
17/32	.5312	13.49	8	2	8	C34467
9/16	.5625	14.29	8	2	8	C34534
19/32	.5938	15.08	8	2	8	C34601
5/8	.6250	15.88	9	2-1/4	8	C34668
21/32	.6562	16.67	9	2-1/4	8	C34735
11/16	.6875	17.46	9	2-1/4	8	C34802
23/32	.7188	18.26	9	2-1/4	8	C34867
3/4	.7500	19.05	9-1/2	2-1/2	8	C34932
25/32	.7812	19.84	9-1/2	2-1/2	8	C34997
13/16	.8125	20.64	9-1/2	2-1/2	8	C35063

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
27/32	.8438	22.23	9-1/2	2-1/2	8	C35128
7/8	.875	22.23	10	2-5/8	8	C35193
29/32	.9062	23.02	10	2-5/8	8	C35258
15/16	.9375	23.81	10	2-5/8	8	C35323
31/32	.9688	24.61	10	2-5/8	8	C35389
1	1.0000	25.40	10-1/2	2-3/4	8	C35454
1-1/16	1.0625	26.99	10-1/2	2-3/4	10	C35461
1-1/8	1.1250	28.58	11	2-7/8	10	C35469
1-3/16	1.1875	30.16	11	2-7/8	10	C35476
1-1/4	1.2500	31.75	11-1/2	3	10	C35483
1-5/16	1.3125	33.34	11-1/2	3	10	C35490
1-3/8	1.3750	34.93	12	3-1/4	10	C35497
1-7/16	1.4375	36.51	12	3-1/4	10	C35505
1-1/2	1.5000	38.10	12-1/2	3-1/2	12	C35512

Reamers • Taper Shank High Speed

List #4035 Taper Shank Chucking Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Taper
Flutes - RH Helix

Features:

- RH cut, chips flow up flutes for blind hole applications. Smoother finish than straight flute.

Only available on Quick Ship and at sizes .175 - 1.500 dia.

List #613 Taper Shank Bridge Reamers



Substrate - HSS
Surface Treatment - Black Oxide
Shank - Taper
Flutes - RH Helix



Features:

- RH cut, heavy duty 3 helical flute Bridge style reamer.
- Chips flow up the flutes, blind hole applications.
- Used to align badly misaligned holes
- 60° cutting chamfer on the point
- Morse taper shank
- Tapered flutes allows insertion into badly misaligned holes

Diam.	Dec. Equiv.	Metric Overall Equiv. Length	Flute Length	# Of Flutes	Shank Taper	Sm. End Diam.	EDP Number
11/16	.6875	17.46	11-3/4	3	3	.375	C23858
13/16	.8125	20.64	12	3	3	.438	C23866

Diam.	Dec. Equiv.	Metric Overall Equiv. Length	Flute Length	# Of Flutes	Shank Taper	Sm. End Diam.	EDP Number
15/16	.9375	23.81	12	3	3	.500	C23874
1-1/16	1.0625	26.99	12	3	3	.531	C23882

List #616 Taper Shank Bridge Reamers



Substrate - HSS
Surface Treatment - Black Oxide
Shank - Taper
Flutes - LH Helix



Features:

- RH cut 4 helical flute Bridge style reamer.
- Eliminates Grabbing when reaming misaligned holes.
- Designed to be used with portable or pneumatic equipment.
- Pushes chip forward in thru hole applications
- Morse taper shank

Diam.	Dec. Equiv.	Metric Overall Equiv. Length	Flute Length	# Of Flutes	Shank Taper	Sm. End Diam.	EDP Number
7/16	.4375	11.11	8-1/4	4	2	17/64	C23812
1/2	.5	12.70	9	4	2	5/16	C23813
9/16	.5625	14.29	9	4	2	3/8	C23814
5/8	.625	15.88	10	4	2	25/64	C23815
11/16	.6875	17.46	11-3/4	4	3	13/32	C23816
3/4	.75	19.05	12	4	3	15/32	C23817
13/16	.8125	20.64	12	4	3	35/64	C23818
7/8	.875	22.23	12	4	3	39/64	C23819

Diam.	Dec. Equiv.	Metric Overall Equiv. Length	Flute Length	# Of Flutes	Shank Taper	Sm. End Diam.	EDP Number
15/16	.9375	23.81	12	4	3	43/64	C23820
1	1	25.40	12	4	3	47/64	C23821
1-1/16	1.0625	26.99	12	4	3	13/16	C23822
1-1/8	1.125	28.58	12	4	3	55/64	C23823
1-3/16	1.1875	30.16	12	4	3	59/64	C23824
1-1/4	1.25	31.75	13	4	4	63/64	C23825
1-5/16	1.3125	33.34	13	4	4	1-1/16	C23826

Reamers • Taper Shank High Speed

List #618 Taper Shank Car Reamers



Substrate - HSS
Surface Treatment - Black Oxide
Shank - Taper
Flutes - LH Helix



Features:

- RH cut 5 helical flute short body, taper car style reamer.
- Eliminates Grabbing when reaming misaligned holes.
- Designed to be used with portable or pneumatic equipment.
- Morse taper shank

Diam.	Dec. Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	Shank Taper	Sm. End Diam.	EDP Number
5/16	.3125	7.94	5-11/16	2-11/16	5	1	11/64	C23953
3/8	.375	9.53	5-11/16	2-11/16	5	1	7/32	C23954
7/16	.4375	11.11	6-15/16	3-3/8	5	2	1/4	C23955
1/2	.5	12.70	7-9/16	3-15/16	5	2	9/32	C23956
9/16	.5625	14.29	7-9/16	3-15/16	5	2	5/16	C23957

Diam.	Dec. Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	Shank Taper	Sm. End Diam.	EDP Number
5/8	.625	15.88	8-1/16	4-7/16	5	2	21/64	C23958
11/16	.6875	17.46	8-13/16	4-7/16	5	3	23/64	C23959
3/4	.75	19.05	9-1/2	5	5	3	27/64	C23960
13/16	.8125	20.64	9-1/2	5	5	3	15/32	C23961
15/16	.9375	23.81	9-1/2	5	5	3	9/16	C23962

Reamers • Hand Reamers

List #624 Hand Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight with Square End
Flutes - Straight



Features:

- Hand maintenance or production reaming, thru hole applications.
- Square on end of shank for use in hand applications

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
1/8	.1250	3.18	3	1-1/2	6	C24394
5/32	.1562	3.97	3-1/4	1-5/8	6	C24406
3/16	.1875	4.76	3-1/2	1-3/4	6	C24418
7/32	.2188	5.56	3-3/4	1-7/8	6	C24429
1/4	.2500	6.35	4	2	6	C24441
9/32	.2812	7.14	4-1/4	2-1/8	6	C24455
5/16	.3125	7.94	4-1/2	2-1/4	6	C24464
11/32	.3438	8.73	4-3/4	2-3/8	6	C24475
3/8	.3750	9.53	5	2-1/2	6	C24487
13/32	.4062	10.32	5-1/4	2-5/8	6	C24496
7/16	.4375	11.11	5-1/2	2-3/4	8	C24501
15/32	.4688	11.91	5-3/4	2-7/8	8	C24506
1/2	.5000	12.70	6	3	8	C24511
17/32	.5312	13.49	6-1/4	3-1/8	8	C24516
9/16	.5625	14.29	6-1/2	3-1/4	8	C24522

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
19/32	.5938	15.08	6-3/4	3-3/8	8	C24527
5/8	.6250	15.88	7	3-1/2	8	C24532
21/32	.6562	16.67	7-3/8	3-11/16	8	C24537
11/16	.6875	17.46	7-3/4	3-7/8	8	C24542
23/32	.7188	18.26	8-1/8	4-1/16	8	C24546
3/4	.7500	19.05	8-3/8	4-3/16	8	C24550
13/16	.8125	20.64	9-1/8	4-9/16	8	C24557
7/8	.8750	22.23	9-3/4	4-7/8	8	C24564
15/16	.9375	23.81	10-1/4	5-1/8	10	C24571
1	1.0000	25.40	10-7/8	5-7/16	10	C24578
1-1/8	1.1250	28.58	11-5/8	5-13/16	10	C24593
1-1/4	1.2500	31.75	12-1/4	6-1/8	12	C24607
1-3/8	1.3750	34.93	12-5/8	6-5/16	12	C24621
1-1/2	1.5000	38.10	13	6-1/2	14	C24636

Reamers • Hand Reamers

List #645 Hand Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight with Square End
Flutes - LH Helix



Features:

- LH helix RH cut pushes chips forward in thru hole applications.
- Made for work where there is an interruption to the cut.
- Smoother finish than straight fluted tools.

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
1/4	.2500	6.35	4	2	6	C24694
5/16	.3125	7.94	4-1/2	2-1/4	6	C24717
3/8	.3750	9.53	5	2-1/2	6	C24740
7/16	.4375	11.11	5-1/2	2-3/4	8	C24754
1/2	.5000	12.70	6	3	8	C24764
9/16	.5625	14.29	6-1/2	3-1/4	8	C24775
5/8	.6250	15.88	7	3-1/2	8	C24785

Diameter	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	EDP Number
11/16	.6875	17.46	7-3/4	3-7/8	8	C24795
3/4	.7500	19.05	8-3/8	4-3/16	8	C24803
13/16	.8125	20.64	9-1/8	4-9/16	8	C24810
7/8	.8750	22.23	9-3/4	4-7/8	8	C24817
15/16	.9375	23.81	10-1/4	5-1/8	10	C24824
1	1.0000	25.40	10-7/8	5-7/16	10	C24831

List #649 Adjustable Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - Straight



Features:

- For hand use
- Adjustable blades to ream various size holes with same tool
- Easily replaceable blades and pilots.
- Applications where alignment between reamed holes is needed.
- When changing blades they must be replaced by a complete set, not by individual blades.

Size	Dimension Inches	Dimension MM	Overall Length	EDP Number
8/A	1/4 to 9/32	6.3 to 7.15	3-1/4	C38545
7/A	9/32 to 5/16	7.15 to 8.	3-5/8	C38546
6/A	5/16 to 11/32	8. to 8.75	4	C38547
5/A	11/32 to 3/8	8.75 to 9.5	4-1/4	C38548
4/A	3/8 to 13/32	9.5 to 10.25	4-1/2	C38549
3/A	13/32 to 7/16	10.25 to 11.	4-3/4	C38550
2/A	7/16 to 15/32	11. to 12.	5-1/8	C38551
A	15/32 to 17/32	12. to 13.5	5-5/8	C38552
B	17/32 to 19/32	13.5 to 15.	5-5/8	C38553
C	19/32 to 21/32	15. to 16.75	6-5/8	C38554
D	21/32 to 23/32	16.75 to 18.25	6-7/8	C38555

Size	Dimension Inches	Dimension MM	Overall Length	EDP Number
E	23/32 to 25/32	18.25 to 19.75	7 1/8	C38556
F	25/32 to 27/32	19.75 to 21.50	7-1/2	C38557
G	27/32 to 15/16	21.50 to 23.75	8-1/8	C38558
H	15/16 to 1-1/16	23.75 to 27	9-1/4	C38559
I	1-1/16 to 1-3/16	27 to 30.25	10-1/4	C38560
J	1-3/16 to 1-11/32	30.25 to 34.25	11-1/4	C38561
K	1-11/32 to 1-1/2	34.25 to 38	12	C38562
L	1-1/2 to 1-13/16	38 to 46	14-1/4	C38563
M	1-13/16 to 2-7/32	46 to 56	16	C38564
N	2-7/32 to 2-3/4	56 to 70	18	C38565
O	2-3/4 to 3-11/32	70 to 85	20	C38566

High Speed Steel • Extra Blades & Nuts

Size	Cutting Edge Length	EDP Number HSS Extra Nuts	EDP Number Extra Blades
8/A	1-1/4	C38590	C38567
7/A	1-1/4	C38591	C38567
6/A	1-1/2	C38592	C38569
5/A	1-1/2	C38593	C38569
4/A	1-1/2	C38594	C38571
3/A	1-5/8	C38595	C38572
2/A	1-5/8	C38596	C38573
A	1-3/4	C38597	C38574
B	2-5/16	C38598	C38575
C	2-5/16	C38599	C38576
D	2-5/16	C38600	C38577

Size	Cutting Edge Length	EDP Number HSS Extra Nuts	EDP Number Extra Blades
E	2-7/16	C38601	C38578
F	2-9/16	C38602	C38579
G	2-3/4	C38603	C38580
H	3-3/8	C38604	C38581
I	3-3/8	C38605	C38582
J	3-3/4	C38606	C38583
K	3-3/4	C38607	C38584
L	4-9/16	C38608	C38585
M	5-1/4	C38609	C38586
N	5-3/4	C38610	C38587
O	6-3/4	C38611	C38588

Reamers • Hand Reamers

List #649 continued

Pilots with Appropriate Guide Sleeve

Size Quick Set	Overall Length	EDP Number
A	4	C38612
B	4	C38613
C	4	C38614
D	5	C38615
E	5	C38616
F	5	C38617
G	5	C38618
H	5	C38619

Size Quick Set	Overall Length	EDP Number
I	6	C38620
J	6	C38621
K	6	C38622
L	7	C38623
M	8	C38624
N	8	C38625
O	10	C38626

Reamers • Taper Reamers

List #642 Taper Pipe Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - LH Helix



Features:

- 3/4 taper per foot, same as American National Standard pipe taps.
- RH cut, pushes chips forward, thru hole applications.
- Square on end of shank for hand maintenance or production reaming.

Diameter	Decimal Equivalent	Metric Equivalent	Overall Length	Flute Length	Number of Flutes	Small End Diameter	Large End Diameter	EDP Number
1/8	.125	3.18	2-1/8	3/4	6	.362	.316	C24982
1/4	.25	6.35	2-7/16	1-1/16	6	.472	.406	C24983
3/8	.375	9.53	2-9/16	1-1/16	6	.606	.540	C24984
1/2	.5	12.70	3-1/8	1-3/8	6	.751	.665	C24985
3/4	.75	19.05	3-3/4	1-3/8	8	.962	.876	C24986
1	1	25.40	3-3/4	1-3/4	8	1.212	1.103	C24987
1-1/4	1.25	31.75	4	1-3/4	10	1.553	1.444	C24988
1-1/2	1.5	38.10	4-1/4	1-3/4	10	1.793	1.684	C24989
2	2	50.80	4-1/2	1-3/4	12	2.268	2.159	C24990

Reamers • Taper Reamers

List #644 Taper Socket Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight
Flutes - Straight



Features:

- Straight shank with a square for hand maintenance or production reaming.
- Used to ream out holes for Morse taper sockets

Overall Length	Flute Length	Shank Diam.	Sm End Diam.	Lg End Diam.	Flute Taper	EDP Number
3-3/4	2-1/4	5/16	.2503	.3674	0	C24946
5	3	7/16	.3674	.5170	1	C24947
6	3-1/2	5/8	.5696	.7444	2	C24948

Overall Length	Flute Length	Shank Diam.	Sm End Diam.	Lg End Diam.	Flute Taper	EDP Number
7-1/4	4-1/4	7/8	.7748	.9881	3	C24949
8-1/2	5-1/4	1-1/8	1.0167	1.2893	4	C24950
9-3/4	6-1/4	1-1/2	1.4717	1.8005	5	C24951

List #650 Spirex Taper Pin Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - LHS-RHC
Flutes - Hand Spiral

Features:

- Wide high helix flutes for producing taper pin holes by machine reaming
- Matches taper pin specifications
- 1/4" taper per foot

Overall Length	Flute Length	Shank Diam.	Sm End Diam.	Lg End Diam.	Pin Size	EDP Number
1-5/8	25/32	1/16	.0351	.0514	8/0	C24228
1-13/16	13/16	5/64	.0497	.0666	7/0	C24229
1-15/16	15/16	3/32	.0611	.0806	6/0	C24230
2-3/16	1-3/16	7/64	.0719	.0966	5/0	C24231
2-5/16	1-5/16	1/8	.0869	.1142	4/0	C24232
2-5/16	1-5/16	9/64	.1029	.1302	3/0	C24233
2-9/16	1-9/16	5/32	.1137	.1462	2/0	C24234
2-15/16	1-11/16	11/64	.1287	.1638	0	C24235
2-15/16	1-11/16	3/16	.1447	.1798	1	C24236

Overall Length	Flute Length	Shank Diam.	Sm End Diam.	Lg End Diam.	Pin Size	EDP Number
3-3/16	1-15/16	13/64	.1605	.2008	2	C24237
3-11/16	2-5/16	15/64	.1813	.2294	3	C24238
4-1/16	2-9/16	17/64	.2071	.2604	4	C24239
4-5/16	2-13/16	5/16	.2409	.2994	5	C24240
5-7/16	3-11/16	23/64	.2773	.3540	6	C24241
6-5/16	4-7/16	13/32	.3297	.4220	7	C24242
7-3/16	5-3/16	7/16	.3971	.5050	8	C24243
8-5/16	6-1/16	9/16	.4805	.6066	9	C24244
9-5/16	6-13/16	5/8	.5799	.7216	10	C24245

Reamers • Taper Reamers

List #657 Taper Pin Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight with Square End
Flutes - Straight



Features:

- Thru hole applications for taper pin reaming.
- Match taper pin specifications
- Square on shank for hand applications
- 1/4" taper per foot

Overall Length	Flute Length	Shank Diam.	Sm End Diam.	Lg End Diam.	Pin Size	EDP Number
1-13/16	13/16	5/64	.0497	.0666	7/0	C24249
1-15/16	15/16	3/32	.0611	.0806	6/0	C24250
2-3/16	1-3/16	7/64	.0719	.0966	5/0	C24251
2-5/16	1-5/16	1/8	.0869	.1142	4/0	C24252
2-5/16	1-5/16	9/64	.1029	.1302	3/0	C24253
2-9/16	1-9/16	5/32	.1137	.1462	2/0	C24254
2-15/16	1-11/16	11/64	.1287	.1638	0	C24255
2-15/16	1-11/16	3/16	.1447	.1798	1	C24256
3-3/16	1-15/16	13/64	.1605	.2008	2	C24257

Overall Length	Flute Length	Shank Diam.	Sm End Diam.	Lg End Diam.	Pin Size	EDP Number
3-11/16	2-5/16	15/64	.1813	.2294	3	C24258
4-1/16	2-9/16	17/64	.2071	.2604	4	C24259
4-5/16	2-13/16	5/16	.2409	.2994	5	C24260
5-7/16	3-11/16	23/64	.2773	.354	6	C24261
6-5/16	4-7/16	13/32	.3297	.422	7	C24262
7-3/16	5-3/16	7/16	.3971	.505	8	C24263
8-5/16	6-1/16	9/16	.4805	.6066	9	C24264
9-5/16	6-13/16	5/8	.5799	.7216	10	C24265

List #659 Taper Pin Reamers



Substrate - HSS
Surface Treatment - Bright
Shank - Straight with Square End
Flutes - Spiral



Features:

- LH helix RH cut pushes chips forward in thru hole applications.
- Smoother finish than straight flute reamers
- Matches taper pin specifications
- Square on shank for hand applications
- Hand maintenance or production reaming

Overall Length	Flute Length	Shank Diam.	Sm End Diam.	Lg End Diam.	Pin Size	EDP Number
1-13/16	13/16	5/64	.0497	.0666	7/0	C24270
1-15/16	15/16	3/32	.0611	.0806	6/0	C24271
2-3/16	1-3/16	7/64	.0719	.0966	5/0	C24272
2-5/16	1-5/16	1/8	.0869	.1142	4/0	C24273
2-5/16	1-5/16	9/64	.1029	.1302	3/0	C24274
2-9/16	1-9/16	5/32	.1137	.1462	2/0	C24275
2-15/16	1-11/16	11/64	.1287	.1638	0	C24276
2-15/16	1-11/16	3/16	.1447	.1798	1	C24277
3-3/16	1-15/16	13/64	.1605	.2008	2	C24278

Overall Length	Flute Length	Shank Diam.	Sm End Diam.	Lg End Diam.	Pin Size	EDP Number
3-11/16	2-5/16	15/64	.1813	.2294	3	C24279
4-1/16	2-9/16	17/64	.2071	.2604	4	C24280
4-5/16	2-13/16	5/16	.2409	.2994	5	C24281
5-7/16	3-11/16	23/64	.2773	.354	6	C24282
6-5/16	4-7/16	13/32	.3297	.422	7	C24283
7-3/16	5-3/16	7/16	.3971	.505	8	C24284
8-5/16	6-1/16	9/16	.4805	.6066	9	C24285
9-5/16	6-13/16	5/8	.5799	.7216	10	C24286

Reamers • Carbide-Tipped Reamers

List #4701 Carbide Tipped Screw Machine Length Reamers

Features:

- General purpose thru hole applications
- Great abrasion resistance.



Substrate - Carbide Tipped
Surface Treatment - Bright
Shank - Straight
Flutes - Straight

Only available on Quick Ship and sizes from .2511 to 1.010.

List #4703 Carbide Tipped Regular Length Reamers

Features:

- General purpose thru hole applications, abrasion resistance.
- Great abrasion resistance.



Substrate - Carbide Tipped
Surface Treatment - Bright
Shank - Straight
Flutes - Straight



Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
1/4	.2500	6.35	6	1-1/2	.2405	4	C50368
9/32	.2812	7.14	6	1-1/2	.2485	4	C50382
5/16	.3125	7.94	6	1-1/2	.2792	4	C50391
11/32	.3438	8.73	6	1-1/2	.2792	4	C50402
3/8	.3750	9.53	7	1-3/4	.3105	4	C50414
13/32	.4062	10.32	7	1-3/4	.3105	4	C50423
7/16	.4375	11.11	7	1-3/4	.3730	6	C50428
15/32	.4688	11.91	7	1-3/4	.3730	6	C50433
1/2	.5000	12.70	8	2	.4355	6	C50438
17/32	.5312	13.49	8	2	.4355	6	C50443
9/16	.5625	14.29	8	2	.4355	6	C50449
19/32	.5938	15.08	8	2	.4355	6	C50454
5/8	.6250	15.88	9	2-1/4	.5620	6	C50459

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
21/32	.6562	16.67	9	2-1/4	.5620	6	C50464
11/16	.6875	17.46	9	2-1/4	.5620	6	C50469
23/32	.7188	18.26	9	2-1/4	.5620	6	C50473
3/4	.7500	19.05	9-1/2	2-1/2	.6245	6	C50477
25/32	.7812	19.84	9-1/2	2-1/2	.6245	6	C50480
13/16	.8125	20.64	9-1/2	2-1/2	.6245	6	C50484
27/32	.8438	21.43	9-1/2	2-1/2	.6245	6	C50487
7/8	.8750	22.23	10	2-5/8	.7495	6	C50491
29/32	.9062	23.02	10	2-5/8	.7495	6	C50495
15/16	.9375	23.81	10	2-5/8	.7495	8	C50498
31/32	.9688	24.61	10	2-5/8	.7495	8	C50502
1	1.0000	25.40	10-1/2	2-3/4	.8745	8	C50505

Reamers • Carbide-Tipped Reamers

List #4709 Carbide Tipped Regular Length Reamers

Features:

- Thru hole applications where there is an interruption to the cut, such as a key way.
- Smoother finish than straight fluted tools
- Pushes chips forward for thru hole applications
- RH cut



Substrate - Carbide Tipped
Surface Treatment - Bright
Shank - Straight
Flutes - LH Helix



Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
3/16	.1875	4.76	4-1/2	1-1/8	.1805	4	C50794
7/32	.2188	5.56	5	1-1/4	.2075	4	C50805
1/4	.2500	6.35	6	1-1/2	.2405	4	C50817
9/32	.2812	7.14	6	1-1/2	.2485	4	C50831
5/16	.3125	7.94	6	1-1/2	.2792	4	C50840
11/32	.3438	8.73	6	1-1/2	.2792	4	C50851
3/8	.3750	9.53	7	1-3/4	.3105	4	C50863
13/32	.4062	10.32	7	1-3/4	.3105	4	C50872
7/16	.4375	11.11	7	1-3/4	.3730	6	C50877
15/32	.4688	11.91	7	1-3/4	.3730	6	C50882
1/2	.5000	12.70	8	2	.4355	6	C50887

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
17/32	.5312	13.49	8	2	.4355	6	C50892
9/16	.5625	14.29	8	2	.4355	6	C50898
19/32	.5938	15.08	8	2	.4355	6	C50903
5/8	.6250	15.88	9	2-1/4	.5620	6	C50908
21/32	.6562	16.67	9	2-1/4	.5620	6	C50913
3/4	.7500	19.05	9-1/2	2-1/2	.6245	6	C50926
13/16	.8125	20.64	9-1/2	2-1/2	.6245	6	C50933
7/8	.8750	22.23	10	2-5/8	.7495	6	C50940
15/16	.9375	23.81	10	2-5/8	.7495	8	C50947
1	1.0000	25.40	10-1/2	2-3/4	.8745	8	C50954

List #4711 Carbide Tipped Regular Length Reamers

Features:

- General purpose use in blind holes where chips need to flow up the flutes.
- Great abrasion resistance.
- RH cut



Substrate - Carbide Tipped
Surface Treatment - Bright
Shank - Straight
Flutes - RH Helix



Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
3/16	.1875	4.76	4-1/2	1-1/8	.1805	4	C50569
7/32	.2188	5.56	5	1-1/4	.2075	4	C50580
1/4	.2500	6.35	6	1-1/2	.2405	4	C50592
9/32	.2812	7.14	6	1-1/2	.2485	4	C50606
5/16	.3125	7.94	6	1-1/2	.2792	4	C50615
11/32	.3438	8.73	6	1-1/2	.2792	4	C50626
3/8	.3750	9.53	7	1-3/4	.3105	4	C50638
13/32	.4062	10.32	7	1-3/4	.3105	4	C50647
7/16	.4375	11.11	7	1-3/4	.3730	6	C50652
15/32	.4688	11.91	7	1-3/4	.3730	6	C50657
1/2	.5000	12.70	8	2	.4355	6	C50662

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
17/32	.5312	13.49	8	2	.4355	6	C50667
9/16	.5625	14.29	8	2	.4355	6	C50673
19/32	.5938	15.08	8	2	.4355	6	C50678
5/8	.6250	15.88	9	2-1/4	.5620	6	C50683
21/32	.6562	16.67	9	2-1/4	.5620	6	C50688
11/16	.6875	17.46	9	2-1/4	.5620	6	C50693
3/4	.7500	19.05	9-1/2	2-1/2	.6245	6	C50701
13/16	.8125	20.64	9-1/2	2-1/2	.6245	6	C50708
7/8	.8750	22.23	10	2-5/8	.7495	6	C50715
15/16	.9375	23.81	10	2-5/8	.7495	8	C50722
1	1.0000	25.40	10-1/2	2-3/4	.8745	8	C50729

Reamers • Carbide-Tipped Reamers

List #704 Carbide Tipped Expansion Chucking Reamers



Substrate - Carbide Tipped
Surface Treatment - Bright
Shank - Straight
Flutes - Straight



Features:

- General purpose thru hole applications
- Multiple regrinds available when flutes are worn.
- Abrasion resistance
- Flutes can be expanded, reground to size and recleaned

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
7/16	.4375	11.11	7	7/8	.3730	6	C51610
15/32	.4688	11.91	7	7/8	.3730	6	C51611
1/2	.5000	12.70	8	1	.4355	6	C51615
17/32	.5312	13.49	8	1	.4355	6	C51619
9/16	.5625	14.29	8	1-1/8	.4355	6	C51624
19/32	.5938	15.08	8	1-1/8	.4355	6	C51628
5/8	.6250	15.88	9	1-1/4	.5620	6	C51632
21/32	.6562	16.67	9	1-1/4	.5620	6	C51636
11/16	.6875	17.46	9	1-1/4	.5620	6	C51640
23/32	.7188	18.26	9	1-1/4	.5620	6	C51643
3/4	.7500	19.05	9-1/2	1-3/8	.6245	6	C51646
25/32	.7812	19.84	9-1/2	1-3/8	.6245	6	C51648
13/16	.8125	20.64	9-1/2	1-3/8	.6245	6	C51651
27/32	.8438	21.43	9-1/2	1-3/8	.6245	6	C51653
7/8	.8750	22.23	10	1-1/2	.7495	6	C51656
29/32	.9062	23.02	10	1-1/2	.7495	6	C51659

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
15/16	.9375	23.81	10	1-1/2	.7495	6	C51661
31/32	.9688	24.61	10	1-1/2	.7495	6	C51664
1	1.0000	25.40	10-1/2	1-5/8	.8745	6	C51666
1-1/32	1.0312	26.19	10-1/2	1-5/8	.8745	6	C51669
1-1/16	1.0625	26.99	10-1/2	1-5/8	.8745	6	C51671
1-3/32	1.0938	27.78	10-1/2	1-5/8	.8745	6	C51674
1-1/8	1.1250	28.58	11	1-3/4	.8745	6	C51677
1-5/32	1.1562	29.37	11	1-3/4	.8745	6	C51679
1-3/16	1.1875	30.16	11	1-3/4	.9995	6	C51682
1-7/32	1.2188	30.96	11	1-3/4	.9995	8	C51684
1-1/4	1.2500	31.75	11-1/2	1-7/8	.9995	8	C51687
1-5/16	1.3125	33.34	11-1/2	1-7/8	.9995	8	C51691
1-3/8	1.3750	34.93	12	2	.9995	8	C51695
1-7/16	1.4375	36.51	12	2	1.2495	8	C51700
1-1/2	1.5000	38.10	12-1/2	2-1/8	1.2495	8	C51704

List #716 Carbide Tipped Expansion Chucking Reamers



Substrate - Carbide Tipped
Surface Treatment - Bright
Shank - Taper
Flutes - Straight



Features:

- General purpose thru hole applications and has Morse Taper Shanks
- Multiple regrinds available when flutes are worn.
- Great abrasion resistance
- Flutes can be expanded, reground to size and recleaned
- Morse Tapered Shank

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	Shank Taper	EDP Number
7/16	.4375	11.11	7	7/8	6	1	C51218
1/2	.5000	12.70	8	1	6	1	C51223
9/16	.5625	14.29	8	1-1/8	6	1	C51232
5/8	.6250	15.88	9	1-1/4	6	2	C51239
11/16	.6875	17.46	9	1-1/4	6	2	C51247
3/4	.7500	19.05	9-1/2	1-3/8	6	2	C51253
13/16	.8125	20.61	9-1/2	1-3/8	6	2	C51258
7/8	.8750	22.23	10	1-1/2	6	2	C51263
1	1.0000	25.40	10-1/2	1-5/8	6	3	C51272

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	# Of Flutes	Shank Taper	EDP Number
1-1/16	1.0625	26.99	10-1/2	1-5/8	6	3	C51277
1-1/8	1.1250	28.58	11	1-3/4	6	3	C51283
1-3/16	1.1875	30.16	11	1-3/4	6	3	C51288
1-1/4	1.2500	31.75	11-1/2	1-7/8	8	4	C51293
1-5/16	1.3125	33.34	11-1/2	1-7/8	8	4	C51297
1-3/8	1.3750	34.93	12	2	8	4	C51301
1-7/16	1.4375	36.51	12	2	8	4	C51306
1-1/2	1.5000	38.10	12-1/2	2-1/8	8	4	C51310

Reamers • Carbide Reamers

List #1711 Solid Carbide Chucking Reamers

Features:

- General purpose use in blind holes where chips need to flow up the flutes.
- Great abrasion resistance
- RH cut



Substrate - Solid Carbide
Surface Treatment - Bright
Shank - Straight
Flutes - Straight



Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
3/32	.0938	2.38	2	1/2	.1880	4	C50249
1/8	.1250	3.18	2-1/4	5/8	.1200	4	C50261
5/32	.1562	3.97	2-1/2	3/4	.1510	4	C50273

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
3/16	.1875	4.76	2-3/4	7/8	.1820	4	C50284
7/32	.2188	5.56	3	1	.2130	4	C50295
1/4	.2500	6.35	3	1	.2440	4	C50307

List #1730 Solid Carbide Chucking Reamers

Features:

- General purpose thru hole applications
- Great abrasion resistance
- RH cut



Substrate - Solid Carbide
Surface Treatment - Bright
Shank - Straight
Flutes - RH Helix



Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
1/16	.0625	1.59	1-1/2	3/8	.0580	4	C50103
5/84	.0781	1.98	1-3/4	1/2	.0730	4	C50112
3/32	.0938	2.38	2	1/2	.0880	4	C50121
7/64	.1094	2.78	2-1/4	5/8	.1040	4	C50128
1/8	.1250	3.18	2-1/4	5/8	.1200	4	C50133
9/64	.1406	3.57	2-1/2	3/4	.1350	4	C50139
5/32	.1562	3.97	2-1/2	3/4	.1510	4	C50145
11/64	.1719	4.37	2-3/4	7/8	.1660	4	C50151
3/16	.1875	4.76	2-3/4	7/8	.1820	4	C50157
13/64	.2031	5.16	3	1	.1980	4	C50162
7/32	.2188	5.56	3	1	.2130	4	C50168

Diam.	Decimal Equiv.	Metric Equiv.	Overall Length	Flute Length	Shank Diam.	# Of Flutes	EDP Number
15/64	.2344	5.95	3	1	.2290	4	C50174
1/4	.2500	6.35	3	1	.2440	4	C50180
17/64	.2656	6.75	3-1/4	1-1/8	.2520	6	C50185
9/32	.2812	7.14	3-1/4	1-1/8	.2700	6	C50194
19/64	.2969	7.54	3-1/4	1-1/8	.2850	6	C50197
5/16	.3125	7.94	3-1/4	1-1/8	.3010	6	C50203
21/64	.3281	8.33	3-1/2	1-1/4	.3170	6	C50209
11/32	.3438	8.73	3-1/2	1-1/4	.3320	6	C50214
23/64	.3594	9.13	3-1/2	1-1/4	.3480	6	C50220
3/8	.3750	9.53	3-1/2	1-1/4	.3630	6	

Reamer Sets Available:

HSS Straight Flute, Straight Shank

- **List # 74 EDP # C00964**
1/16" to 1/2" by 64ths in metal container
- **List # 75 EDP # C00965**
No. 1 to No. 60 in metal container
- **List # 76 EDP # C00966**
Letter A to Z in metal container
- **List # 77 EDP # C00967**
Over and Under Sizes in metal container

Quick-Set Adjustable Reamers

- **List # 42 EDP # C00896**
Letter C to H in plastic case
- **List # 43 EDP # C00897**
No. 8/A, 7/A, 6/A and 5/A in plastic case
- **List # 44 EDP # C00898**
Letter A to K in plastic case
- **List # 45 EDP # C00899**
Letter A to H in plastic case
- **List # 46 EDP # C00900**
No. 4/A, 3/A and 2/A in plastic case

Routers & Counterbores

List #655 Clearance or Taper Router



Features:

- Cutting, trimming and routing around cowlings, door sills, plexiglas elongating door latch holes and cable holes.

Size Number	Shank Diameter (Inches)	NOMINAL DIAMETER Small End (Inches)	AT Large End (Inches)	Flute Length (Inches)	Overall Length (Inches)	EDP Number
1	.098	.081	.098	13/16	2	C24292
2	.128	.110	.128	7/8	2-1/4	C24293
3	.1875	.165	.165	1-1/16	2-1/2	C24294
4	.250	.224	.250	1-1/4	2-3/4	C24295

List #874 (For Fillister Head Screws) Straight Shank Solid Counterbores



Features:

- Designed with solid pilot to produce accurate holes for fillister and flat head screws

Screw Size	Counterbore Diameter	Pilot Diameter	Overall Length	EDP Number
0	.110	.059	2-1/2	C47001
1	.133	.072	2-1/2	C47002
2	.155	.085	2-1/2	C47003
3	.176	.098	2-1/2	C47004
4	.198	.111	2-1/2	C47005

Screw Size	Counterbore Diameter	Pilot Diameter	Overall Length	EDP Number
5	.220	.124	2-1/2	C47006
6	.241	.137	2-1/2	C47007
8	.285	.163	2-1/2	C47008
10	.327	.189	2-3/4	C47009
12	.372	.215	2-3/4	C47010

List #875 (For 82° Flat Head Machine Screws) Straight Shank Solid Counterbores



Features:

- Produces chatter free countersunk holes
- Designed with solid pilot to produce accurate holes

Screw Size	Counterbore Diameter	Pilot Diameter	Overall Length	EDP Number
0	.125	.059	2-1/4	C47014
1	.156	.072	2-1/4	C47015
2	.187	.085	2-1/2	C47016
3	.218	.098	2-1/2	C47017
4	.250	.111	2-3/4	C47018
5	.265	.124	2-3/4	C47019
6	.296	.137	2-3/4	C47020

Screw Size	Counterbore Diameter	Pilot Diameter	Overall Length	EDP Number
8	.343	.163	2-7/8	C47021
10	.406	.189	3	C47022
12	.468	.215	3	C47023
1/4	.515	.249	3	C47024
5/16	.640	.311	3-1/4	C47025
3/8	.765	.374	3-1/2	C47026

Counterbores

List #879 (Straight Shank) Short Series Counterbores & Spot Facers with Interchangeable Pilots

Features:

- General purpose counterboring and spotfacing operations



Diam.	Overall Length	Shank Size & Length	# of Flutes	Size of Hole	Range of Pilot Sizes	EDP
3/16	3	15/64x2-1/8	3	3/32	1/8-3/16	C46421
7/32	3	15/64x2-1/8	3	3/32	1/8-7/32	C46422
1/4	3-13/16	15/64x3-1/16	3	3/32	1/8-3/16	C46423
9/32	3-13/16	17/64x3-1/16	3	3/32	1/8-7/32	C46424
5/16	3-13/16	19/64x3-1/16	3	3/32	1/8-1/4	C46425
11/32	3-13/16	5/16x3-1/16	3	3/32	1/8-9/32	C46426
3/8	4-1/16	5/16x3-1/16	3	5/32	3/16-5/16	C46427
13/32	4-1/16	3/8x3-1/16	3	5/32	3/16-11/32	C46428
7/16	4-1/16	3/8x3-1/16	3	5/32	3/16-3/8	C46429
15/32	4-5/16	7/16x3-1/16	3	3/16	1/4-13/32	C46430
1/2	4-5/16	7/16x3-1/16	3	3/16	1/4-7/16	C46431
17/32	4-5/16	1/2x3-1/16	3	3/16	1/4-15/32	C46432
9/16	4-5/16	1/2x3-1/16	3	3/16	1/4-1/2	C46433
19/32	5-1/8	1/2x3-7/8	3	3/16	1/4-17/32	C46434
5/8	5-1/8	1/2x3-7/8	3	3/16	1/4-9/16	C46435
21/32	5-1/8	1/2x3-7/8	3	3/16	1/4-19/32	C46436
11/16	5-1/8	1/2x3-7/8	3	3/16	1/4-5/8	C46437
23/32	5-3/8	1/2x3-7/8	3	1/4	5/16-21/32	C46438
3/4	5-3/8	1/2x3-7/8	3	1/4	5/16-11/16	C46439

Diam.	Overall Length	Shank Size & Length	# of Flutes	Size of Hole	Range of Pilot Sizes	EDP
25/32	5-3/8	5/8x3-7/8	3	1/4	5/16-23/32	C46440
13/16	5-3/8	5/8x3-7/8	3	1/4	5/16-3/4	C46441
27/32	5-3/8	3/4x3-7/8	3	1/4	5/16-25/32	C46442
7/8	5-3/8	3/4x3-7/8	3	1/4	5/16-13/16	C46443
29/32	6-1/8	3/4x4-5/8	3	1/4	5/16-27/32	C46444
15/16	6-1/8	3/4x4-5/8	3	1/4	5/16-7/8	C46445
31/32	6-3/8	3/4x4-5/8	3	5/16	3/8-29/32	C46446
1	6-3/8	3/4x4-5/8	3	5/16	3/8-15/16	C46447
1-1/16	6-3/8	3/4x4-5/8	3	5/16	3/8-1	C46448
1-1/8	6-3/8	1x4-5/8	3	5/16	3/8-1-1/16	C46449
1-3/16	6-3/8	1x4-5/8	3	5/16	3/8-1-1/8	C46450
1-1/4	6-5/8	1x4-5/8	5	3/8	7/16-1-3/16	C46451
1-3/8	6-5/8	1x4-5/8	5	3/8	7/16-1-5/16	C46452
1-1/2	7-7/8	1-1/4x5-7/8	5	3/8	7/16-1-7/16	C46453
1-5/8	8-1/8	1-1/4x5-7/8	5	7/16	1/2-1-9/16	C46454
1-3/4	8-1/8	1-1/4x5-7/8	5	7/16	1/2-1-11/16	C46455
1-7/8	8-1/8	1-1/2x5-7/8	5	7/16	1/2-1-13/16	C46456
2	8-3/8	1-1/2x5-7/8	5	1/2	9/16-1-15/16	C46457

List #878 (Taper Shank) Short Series Counterbores and Spot Facers with Interchangeable Pilots

Features:

- Many pilots of different diameters available
- General purpose counterboring and spot facing operations



of	Overall EDP	Shank Taper	# of	Size of	Range	
1/4	3-13/16	1	3	3/32	1/8-3/16	C46473
9/32	3-13/16	1	3	3/32	1/8-7/32	C46474
5/16	3-13/16	1	3	3/32	1/8-1/4	C46475
11/32	3-13/16	1	3	3/32	1/8-9/32	C46476
3/8	4-1/16	1	3	5/32	3/16-5/16	C46477
13/32	4-1/16	1	3	5/32	3/16-11/32	C46478
7/16	4-1/16	1	3	5/32	3/16-3/8	C46479
15/32	4-5/16	1	3	3/16	1/4-13/32	C46480
1/2	4-5/16	1	3	3/16	1/4-7/16	C46481
17/32	4-5/16	1	3	3/16	1/4-15/32	C46482
9/16	4-5/16	1	3	3/16	1/4-1/2	C46483
19/32	5-1/8	2	3	3/16	1/4-17/32	C46484
5/8	5-1/8	2	3	3/16	1/4-9/16	C46485

of	Overall EDP	Shank Taper	# of	Size of	Range	
21/32	5-1/8	2	3	3/16	1/4-19/32	C46486
11/16	5-1/8	2	3	3/16	1/4-5/8	C46487
23/32	5-3/8	2	3	1/4	5/16-21/32	C46488
3/4	5-3/8	2	3	1/4	5/16-11/16	C46489
25/32	5-3/8	2	3	1/4	5/16-23/32	C46490
13/16	5-3/8	2	3	1/4	5/16-3/4	C46491
7/8	5-3/8	2	3	1/4	5/16-13/16	C46492
15/16	6-1/8	3	3	1/4	5/16-7/8	C46493
1	6-3/8	3	3	5/16	3/8-15/16	C46494
1-1/16	6-3/8	3	3	5/16	3/8-1	C46495
1-1/8	6-3/8	3	3	5/16	3/8-1-1/16	C46496
1-13/16	6-3/8	3	3	5/16	3/8-1-1/8	C46497
1-1/4	6-5/8	3	5	3/8	7/16-1-3/16	C46498

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Counterbores

List #878 continued

of	Overall EDP	Shank Taper	# of	Size of	Range	
1/4	3-13/16	I	3	3/32	1/8-3/16	C46473
9/32	3-13/16	I	3	3/32	1/8-7/32	C46474
5/16	3-13/16	I	3	3/32	1/8-1/4	C46475
11/32	3-13/16	I	3	3/32	1/8-9/32	C46476
3/8	4-1/16	I	3	5/32	3/16-5/16	C46477
13/32	4-1/16	I	3	5/32	3/16-11/32	C46478

of	Overall EDP	Shank Taper		# of	Size of	Range
7/16	4-1/16	1	3	5/32	3/16-3/8	C46479
15/32	4-5/16	1	3	3/16	1/4-13/32	C46480
1/2	4-5/16	1	3	3/16	1/4-7/16	C46481
17/32	4-5/16	1	3	3/16	1/4-15/32	C46482
9/16	4-5/16	1	3	3/16	1/4-1/2	C46483
19/32	5-1/8	2	3	3/16	1/4-17/32	C46484

List #879 Pilots For Counterbores and Spot Facers

Features:

- Used with counterbores to provide maximum flexibility of operation



Pilot Diameter	Shank Diameter	EDP Number
3/32	3/32	C46520
#40(.096)	3/32	C46521
1/8	3/32	C46523
#30(.127)	3/32	C46525
5/32	3/32	C46528
#21(.157)	3/32	C46531
#20(.159)	3/32	C46533
#19(.164)	3/32	C46535
3/16	3/32	C46538
#10(.191)	3/32	C46545
7/32	3/32	C46549
1/4	3/32	C46554
F(.255)	3/32	C46559
9/32	3/32	C46564
5/16	3/32	C46570
11/32	3/32	C46577
3/8	3/32	C46314
1/8	1/8	C46522
#30(.127)	1/8	C46524
5/32	1/8	C46527
#20(.159)	1/8	C46532
3/16	1/8	C46537
#10(.191)	1/8	C46544
13/64	1/8	C46547
7/32	1/8	C46548
15/64	1/8	C46552
1/4	1/8	C46553
F(.255)	1/8	C46558
9/32	1/8	C46563
5/16	1/8	C46569
11/32	1/8	C46576
3/8	1/8	C46583
13/32	1/8	C46590
7/16	1/8	C46596
1/2	1/8	C46611
17/32	1/8	C46619
5/32	5/32	C46529
3/16	5/32	C46539
7/32	5/32	C46550
1/4	5/32	C46555
9/32	5/32	C46565
5/16	5/32	C46571
11/32	5/32	C46578
3/8	5/32	C46584

Pilot Diameter	Shank Diameter	EDP Number
13/32	5/32	C46591
7/16	5/32	C46597
3/16	3/16	C46540
#10(.191)	3/16	C46546
7/32	3/16	C46551
1/4	3/16	C46556
F(.255)	3/16	C46560
9/32	3/16	C46566
5/16	3/16	C46572
11/32	3/16	C46579
3/8	3/16	C46585
13/32	3/16	C46592
7/16	3/16	C46598
15/32	3/16	C46605
1/2	3/16	C46612
17/32	3/16	C46620
9/16	3/16	C46628
19/32	3/16	C46636
5/8	3/16	C46644
21/32	3/16	C46650
11/16	3/16	C46656
3/4	3/16	C46316
1/4	1/4	C46557
F(.255)	1/4	C46561
9/32	1/4	C46567
5/16	1/4	C46573
11/32	1/4	C46580
3/8	1/4	C46586
13/32	1/4	C46593
7/16	1/4	C46599
15/32	1/4	C46606
1/2	1/4	C46613
17/32	1/4	C46621
9/16	1/4	C46629
19/32	1/4	C46637
5/8	1/4	C46645
21/32	1/4	C46651
11/16	1/4	C46657
23/32	1/4	C46662
3/4	1/4	C46667
25/32	1/4	C46672
13/16	1/4	C46677
7/8	1/4	C46687
29/32	1/4	C46692

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Counterbores

List #879 continued

Pilot Diameter	Shank Diameter	EDP Number	Pilot Diameter	Shank Diameter	EDP Number
3/32	3/32	C46520	3/16	5/32	C46539
#40(.096)	3/32	C46521	7/32	5/32	C46550
1/8	3/32	C46523	1/4	5/32	C46555
#30(.127)	3/32	C46525	9/32	5/32	C46565
5/32	3/32	C46528	5/16	5/32	C46571
#21(.157)	3/32	C46531	11/32	5/32	C46578
#20(.159)	3/32	C46533	3/8	5/32	C46584
#19(.164)	3/32	C46535	13/32	5/32	C46591
3/16	3/32	C46538	7/16	5/32	C46597
#10(.191)	3/32	C46545	3/16	3/16	C46540
7/32	3/32	C46549	#10(.191)	3/16	C46546
1/4	3/32	C46554	7/32	3/16	C46551
F(.255)	3/32	C46559	1/4	3/16	C46556
9/32	3/32	C46564	F (.255)	3/16	C46560
5/16	3/32	C46570	9/32	3/16	C46566
11/32	3/32	C46577	5/16	3/16	C46572
3/8	3/32	C46314	11/32	3/16	C46579
1/8	1/8	C46522	3/8	3/16	C46585
#30(.127)	1/8	C46524	13/32	3/16	C46592
5/32	1/8	C46527	7/16	3/16	C46598
#20(.159)	1/8	C46532	15/32	3/16	C46605
3/16	1/8	C46537	1/2	3/16	C46612
#10(.191)	1/8	C46544	17/32	3/16	C46620
13/64	1/8	C46547	9/16	3/16	C46628
7/32	1/8	C46548	19/32	3/16	C46636
15/64	1/8	C46552	5/8	3/16	C46644
1/4	1/8	C46553	21/32	3/16	C46650
F(.255)	1/8	C46558	11/16	3/16	C46656
9/32	1/8	C46563	3/4	3/16	C46316
5/16	1/8	C46569	1/4	1/4	C46557
11/32	1/8	C46576	F(.255)	1/4	C46561
3/8	1/8	C46583	9/32	1/4	C46567
13/32	1/8	C46590	5/16	1/4	C46573
7/16	1/8	C46596	11/32	1/4	C46580
1/2	1/8	C46611	3/8	1/4	C46586
17/32	1/8	C46619	13/32	1/4	C46593
5/32	5/32	C46529	7/16	1/4	C46599

List #883 (Long Type Maximum 1/2" Shank)



Features:

- Drill presses for facing off bosses, and deep counterboring screw heads and pockets.

Diam.	Overall Length	Shank Diam.	# of Flutes	Size of Hole	Range of Pilot Sizes	EDP	Diam.	Overall Length	Shank Diam.	# of Flutes	Size of Hole	Range of Pilot Sizes	EDP
1/4	3-13/16	15/64	3	3/32	1/8-3/16	C46850	23/32	5-3/8	1/2	3	3/16	5/16-21/32	C46865
9/32	3-13/16	17/64	3	3/32	1/8-7/32	C46851	3/4	5-3/8	1/2	3	3/16	5/16-11/16	C46866
5/16	3-13/16	19/64	3	3/32	1/8-1/4	C46852	25/32	5-3/8	1/2	3	3/16	5/16-23/32	C46867
11/32	3-13/16	5/16	3	3/32	1/8-9/32	C46853	13/16	5-3/8	1/2	3	3/16	5/16-3/4	C46868
3/8	3-13/16	5/16	3	3/32	3/16-5/16	C46854	7/8	5-3/8	1/2	3	3/16	5/16-13/16	C46870
13/32	3-13/16	3/8	3	1/8	3/16-11/32	C46855	15/16	5-3/8	1/2	3	3/16	5/16-7/8	C46872
7/16	3-13/16	3/8	3	1/8	3/16-3/8	C46856	1	5-3/8	1/2	3	3/16	3/8-15/16	C46874
15/32	3-13/16	7/16	3	1/8	1/4-13/32	C46857	1-1/16	5-3/8	1/2	3	3/16	3/8-1	C46875
1/2	3-13/16	7/16	3	1/8	1/4-7/16	C46858	1-1/8	5-3/8	1/2	3	3/16	3/8-1-1/16	C46876
17/32	5-3/8	1/2	3	1/8	1/4-15/32	C46859	1-3/16	5-3/8	1/2	3	3/16	3/8-1-1/8	C46878
9/16	5-3/8	1/2	3	1/8	1/4-1/2	C46860	1-1/4	5-3/8	1/2	5	3/16	7/16-1-3/16	C46879
19/32	5-3/8	1/2	3	1/8	1/4-17/32	C46861	1-5/16	5-3/8	1/2	5	1/4	7/16-1-1/4	C46880
5/8	5-3/8	1/2	3	1/8	1/4-9/16	C46862	1-3/8	5-3/8	1/2	5	1/4	7/16-1-5/16	C46881
21/32	5-3/8	1/2	3	3/16	1/4-19/32	C46863	1-7/16	5-3/8	1/2	5	1/4	7/16-1-3/8	C46882
11/16	5-3/8	1/2	3	3/16	1/4-5/8	C46864	1-1/2	5-3/8	1/2	5	1/4	7/16-1-7/16	C46883

Counterbores

List #884 (Short type 1/4" Shank) Aircraft Counterbores



Features:

- Aircraft fabricating use for facing off bosses, deep counterboring screw heads spring pockets and enlarging holes in thin sheet metal.

Diam.	Overall Length	Shank Length	# of Flutes	Size of Hole	Range of Pilot Sizes	EDP
1/4	2-3/8	1-1/8	4	3/32	1/8-3/16	C46886
9/32	2-3/8	7/8	4	3/32	1/8-7/32	C46887
5/16	2-3/8	7/8	4	3/32	1/8-1/4	C46888
11/32	2-3/8	7/8	4	3/32	1/8-9/32	C46889
3/8	2-3/8	7/8	4	3/32	3/16-5/16	C46890
13/32	2-13/16	7/8	4	1/8	3/16-11/32	C46891
9/16	2-13/16	7/8	4	1/8	1/4-1/2	C46896
5/8	2-13/16	7/8	4	1/8	1/4-9/16	C46898
11/16	2-13/16	7/8	4	3/16	1/4-5/8	C46900
3/4	2-13/16	7/8	4	3/16	5/16-11/16	C46902

Diam.	Overall Length	Shank Length	# of Flutes	Size of Hole	Range of Pilot Sizes	EDP
13/16	2-13/16	7/8	4	3/16	5/16-3/4	C46904
7/8	2-13/16	7/8	4	3/16	5/16-13/16	C46906
15/16	2-13/16	7/8	4	3/16	5/16-7/8	C46908
1	2-13/16	7/8	4	3/16	3/8-15/16	C46910
1-1/8	2-13/16	7/8	4	3/16	3/8-15/16	C46912
1-1/4	2-13/16	7/8	4	3/16	3/8-15/16	C46914
7/16	2-13/16	7/8	4	1/8	3/16-3/8	C46892
15/32	2-13/16	7/8	4	1/8	1/4-13/32	C46893
1/2	2-13/16	7/8	4	1/8	1/4-7/16	C46894
17/32	2-13/16	7/8	4	1/8	1/4-15/32	C46895

List #1655 Double End Back Spot Facers



Features:

- Spot-face inaccessible places where there is no access to the hole from above.
- Portable drilling

Pilot Diameter	Shank Diameter	EDP Number
1/4	1/8	C46923
5/16	1/8	C46924
3/8	1/8	C46925
3/8	3/16	C46926
7/16	1/8	C46927
7/16	3/16	C46928
1/2	1/8	C46929
1/2	3/16	C46930
1/2	1/4	C46931
9/16	3/16	C46932
9/16	1/4	C46933
5/8	3/16	C46934
5/8	1/4	C46935
5/8	5/16	C46936
11/16	3/16	C46937
11/16	1/4	C46938
11/16	5/16	C46939
3/4	3/16	C46940
3/4	1/4	C46941
3/4	5/16	C46942
3/4	3/8	C46943
13/16	1/4	C46944
13/16	5/16	C46945
13/16	3/8	C46946
7/8	1/4	C46947

Pilot Diameter	Shank Diameter	EDP Number
7/8	5/16	C46948
7/8	3/8	C46949
7/8	7/16	C46950
15/16	1/4	C46951
15/16	5/16	C46952
15/16	3/8	C46953
1	1/4	C46955
1	5/16	C46956
1	3/8	C46957
1	7/16	C46958
1	1/2	C46959
1-1/16	3/8	C46960
1-1/16	7/16	C46961
1-1/16	1/2	C46962
1-1/8	3/8	C46963
1-1/8	7/16	C46964
1-1/8	1/2	C46965
1-3/16	1/2	C46968
1-1/4	3/8	C46969
1-1/4	7/16	C46970
1-1/4	1/2	C46971
1-5/16	1/2	C46972
1-3/8	1/2	C46973
1-1/2	1/2	C46975

Counterbores

List #1655P Bayonet Lock Driver for Back Spot Facer



Diameter	Overall Length	EDP Number
1/8	4	C46976
3/16	4	C46977
1/4	4	C46978
5/16	4	C46979
3/8	4	C46980
7/16	4	C46981
1/2	4	C46982

Diameter	Overall Length	EDP Number
1/8	6	C46983
3/16	6	C46984
1/4	6	C46985
5/16	6	C46986
3/8	6	C46987
7/16	6	C46988
1/2	6	C46989

List #779 Carbide Tipped Counterbores and Spot Facers



Features:

- Specifically designed for production machining of steel cast iron, brass, aluminum and a wide variety of low tensile materials.
- Cut to the minimum dead center diameter noted below

Diameter (Inches)	Overall Length (Inches)	Number of Flutes	Hole Diameter (Inches)	Minimum Dead Center (Inches)	Shank Diameter (Inches)	Shank Length (Inches)	EDP Number
1/4	3-13/16	3	.0938	.118	15/64	3-1/16	C52801
5/16	3-13/16	3	.0938	.118	19/64	3-1/16	C52802
3/8	4-1/16	3	.1562	.182	5/16	3-1/16	C52803
7/16	4-1/16	3	.1562	.182	3/8	3-1/16	C52804
1/2	4-5/16	3	.1875	.218	7/16	3-1/16	C52805
9/16	4-5/16	3	.1875	.218	1/2	3-1/16	C52806
5/8	5-1/8	3	.1875	.218	1/2	3-7/8	C52807
11/16	5-1/8	3	.1875	.218	1/2	3-7/8	C52808
3/4	5-3/8	3	.2500	.300	1/2	3-7/8	C52809
13/16	5-3/8	3	.2500	.300	5/8	3-7/8	C52810
7/8	5-3/8	3	.2500	.300	3/4	4-5/8	C52811
15/16	6-1/8	3	.2500	.300	3/4	4-5/8	C52812
1	6-3/8	3	.3125	.360	3/4	4-5/8	C52813
1-1/16	6-3/8	3	.3125	.360	3/4	4-5/8	C52814
1-1/8	6-3/8	3	.3125	.360	1	4-5/8	C52815
1-3/16	6-3/8	3	.3125	.360	1	4-5/8	C52816
1-1/4	6-5/8	3	.3750	.430	1	4-5/8	C52817

Spec Info

Taps & Dies:



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High Performance:

List # SD T101 Spiral Point Tap



Substrate - Powder Metal
(CPM-M4 Vanadium)
Surface Treatment - Black Oxide

Chamfer - Plug (5 pitch)
Cut Type - Spiral Point



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List # SD B-101 Spiral Flute Tap



Substrate - Powder Metal
(CPM-M4 Vanadium)
Surface Treatment - Black Oxide

Chamfer - Modified Bottoming (2-1/2 pitch)
Cut Type - Right Hand Spiral Flute



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List # SD T-202 Spiral Point Tap



Substrate - Powder Metal
(CPM-T-15 Vanadium)
Surface Treatment - Black Oxide

Chamfer - Plug (5 pitch)
Cut Type - Hand-Spiral Point



page # 124

List # SD B-202 Spiral Flute Tap



Substrate - Powder Metal
(CPM-T-15 Vanadium)
Surface Treatment - Black Oxide

Chamfer - Modified Bottoming (2-1/2 pitch)
Cut Type - Right Hand Spiral Flute



page # 126

List # SD T-303 Spiral Point Tap



Substrate - Powder Metal
(CPM-T-15 Vanadium)
Surface Treatment - Black Oxide

Chamfer - Plug (5 pitch)
Cut Type - Hand-Spiral Point



page # 127

List # SD B-303 Spiral Flute Tap



Substrate - Powder Metal
(CPM-T-15 Vanadium)
Surface Treatment - Black Oxide

Chamfer - Modified Bottoming (2-1/2 pitch)
Cut Type - Right Hand Spiral Flute



page # 128

List # SD T-404 Spiral Point Tap



Substrate - Powder Metal
(CPM-T-15 Vanadium)
Surface Treatment - Black Oxide

Chamfer - Plug (5 pitch)
Cut Type - Spiral Point



page # 130

List # SD B-404 Spiral Flute Tap



Substrate - Powder Metal
(CPM-M4 Vanadium)
Surface Treatment - Bright

Chamfer - Modified Bottoming (2-1/2 pitch)
Cut Type - Right Hand Spiral Flute



page # 131

List # SD CI-1000 Straight Flute Tap



Substrate - Powder Metal
(CPM-M4 Vanadium)
Surface Treatment - Black Oxide over Nitrite

Chamfer - Modified Bottoming (2-1/2 pitch)
Cut Type - Spiral Point



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Taps • Picture Index

General Purpose:

List #s **I001, I002, I002TN, I003, I003TN** Right Hand Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN

Chamfer - Taper (8-10 pitch) Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Hand



page # **I35**

List #s **I006, I007, I008** Left Hand Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Taper (8-10 pitch) Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Hand



page # **I39**

List # **I031** Standard Flute Pulley Tap



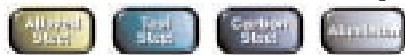
Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Plug (3-5 pitch)
Cut Type - Hand



page # **I39**

List #s **I011, I011TN** Spiral Point Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN

Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



page # **I40**

List # **I053** Spiral Point Low Sheer Plug Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



page # **I43**

List # **I012** Spiral Pointed Bottoming Tap



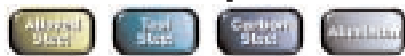
Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Bottoming (1-1/2 - 2 pitch)
Cut Type - Spiral Point



page # **I44**

List # **I020** Spiral Pointed Plug Tap - Assembly Type



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



page # **300**

List # **I040** Long Shank Spiral Point Tap - 6"



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



page # **I45**

List #s **I022, I030** Slow Spiral Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Right Hand Spiral Flute



page # **I45**

List #s **I093, I093TN, I094, I094TN** High Spiral Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN

Chamfer - Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Right Hand Spiral Flute



page # **I46**

List #s **I091, I091TN, I092, I092TN** Thread Forming Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN

Chamfer - Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)



page # **I46**

Taps • Picture Index

Pipe:

List #s **962B NPT, 970B NPT** Low Hook Taper Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - 3-1/2 threads
Cut Type - Pipe



page # **149**

List #s **965B NPT, 975 NPTF, 975TN NPT** Medium Hook Taper Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN

Chamfer - 3-1/2 threads
Cut Type - Pipe



page # **149**

List #s **3830 NPT, 3830TN NPT** High Hook Taper Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN

Chamfer - 3-1/2 threads
Cut Type - Pipe



page # **150**

List #s **964B NPT, 966B NPT** Interrupted Thread Medium Hook Taper Pipe



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - 3-1/2 threads
Cut Type - Pipe



page # **150**

List #s **963B, 967B** Medium Hook Straight Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - 3-1/2 threads
Cut Type - Pipe



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MRO:

List #s **0401, 0402, 0403** HSS Cut Thread Hand Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Taper (8-10 pitch) Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Hand



page # **152**

List # **0411** HSS Cut Thread Spiral Point Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



page # **152**

List # **0462** HSS Cut Thread Taper Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - 3-1/2 threads
Cut Type - Pipe



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MRO:

List # **0464** HSS Cut Thread Interrupted Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - 3-1/2 threads
Cut Type - Pipe



page # **153**

List # **0463** HSS Cut Thread Straight Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright

Chamfer - 3-1/2 threads
Cut Type - Pipe



page # **154**

List #s **0101, 0102, 0103** Carbon Steel Cut Thread Hand Tap



Substrate - Carbon Steel
Surface Treatment - Bright

Chamfer - Taper (8-10 pitch) Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Hand



page # **154**

List # **0162** Carbon Steel Cut Thread Taper Pipe Tap



Substrate - Carbon Steel
Surface Treatment - Bright

Chamfer - 3-1/2 threads
Cut Type - Pipe



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Tap Drivers:

List # **I200** Series



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All Purpose:

List #0550 Quick Set Adjustable Dies



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List #0551 Quick Set Adjustable Caps



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List #0552 Quick Set Adjustable Guides



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List #0553 Quick Set Adjustable Collet



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List #0554 Quick Set Complete Collet with Guides



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List #0650 Hexagon Rethreading Dies - Fractional Sizes



Substrate - Carbon Steel



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List #0660 Hexagon Rethreading Dies - Taper Pipe Size



Substrate - Carbon Steel



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List #0710 HSS Round Adjustable Dies - Machine Screw & Fractional



Substrate - High Speed Steel



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List #0710M HSS Round Adjustable Dies - ISO Metric Sizes



Substrate - High Speed Steel



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List #0610 Carbon Steel Round Adjustable



Substrate - Carbon Steel



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List #0620 Round Adjustable Taper Pipe Dies



Substrate - Carbon Steel



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List #SD T-101 Spiral Point Tap



Substrate - Powder Metal (CPM-M4 Vanadium)
 Surface Treatment - Black Oxide
 Chamfer - Plug (5 pitch)
 Cut Type - Spiral Point



Features:

- Reduced neck design to enhance coolant flow
- Black oxide increases wear resistance, reduces galling & chip welding
- Spiral point pushes chips forward for through hole applications
- Plug chamfer for enhanced tool life
- Special geometries for specific materials

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C27689
6	.1380	32	UNC	2	H2	2	11/16	C27690
6	.1380	32	UNC	2	H3	2	11/16	C27696
6	.1380	32	UNC	2	H5	2	11/16	C27719
8	.1640	32	UNC	3	H2	2-1/8	3/4	C27691
8	.1640	32	UNC	3	H3	2-1/8	3/4	C27697
8	.1640	32	UNC	3	H5	2-1/8	3/4	C27720
10	.1900	24	UNC	3	H2	2-3/8	7/8	C27692
10	.1900	32	UNF	3	H2	2-3/8	7/8	C27693
10	.1900	24	UNC	3	H3	2-3/8	7/8	C27698
10	.1900	32	UNF	3	H3	2-3/8	7/8	C27699
10	.1900	24	UNC	3	H5	2-3/8	7/8	C27721
10	.1900	32	UNF	3	H5	2-3/8	7/8	C27722
1/4	.2500	20	UNC	3	H2	2-1/2	1	C27694
1/4	.2500	28	UNF	3	H2	2-1/2	1	C27695
1/4	.2500	20	UNC	3	H3	2-1/2	1	C27700
1/4	.2500	28	UNF	3	H3	2-1/2	1	C27701
1/4	.2500	28	UNF	3	H4	2-1/2	1	C27716
1/4	.2500	20	UNC	3	H5	2-1/2	1	C27723
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C27702
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C27703
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C27717
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C27724
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C27704
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C27705
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C27718
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C27725
7/16	.4375	14	UNC	3	H3	3-5/32	1-7/16	C27706
7/16	.4375	20	UNF	3	H3	3-5/32	1-7/16	C27707
7/16	.4375	14	UNC	3	H5	3-5/32	1-7/16	C27726
7/16	.4375	20	UNF	3	H5	3-5/32	1-7/16	C27727
1/2	.5000	13	UNC	3	H3	3-3/8	1-21/32	C27708
1/2	.5000	20	UNF	3	H3	3-3/8	1-21/32	C27709
1/2	.5000	13	UNC	3	H5	3-3/8	1-21/32	C27728
1/2	.5000	20	UNF	3	H5	3-3/8	1-21/32	C27729
9/16	.5625	12	UNC	3	H3	3-19/32	1-21/32	C27710
9/16	.5625	18	UNF	3	H3	3-19/32	1-21/32	C27711
5/8	.6250	11	UNC	3	H3	3-13/16	1-13/16	C27712
5/8	.6250	18	UNF	4	H3	3-13/16	1-13/16	C27713
5/8	.6250	11	UNC	4	H5	3-13/16	1-13/16	C27730
3/4	.7500	10	UNC	4	H3	4-1/4	2	C27714
3/4	.7500	16	UNF	4	H3	4-1/4	2	C27715

Taps • High Performance

List #SD T-101 M Spiral Point Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M3	.1181	0.50mm	2	D3	1-15/16	5/8	C27731
M4	.1575	0.70mm	3	D4	2-1/8	3/4	C27732
M5	.1968	0.80mm	3	D4	2-3/8	7/8	C27733
M6	.2362	1.00mm	3	D5	2-1/2	1	C27734
M8	.3150	1.25mm	3	D5	2-23/32	1-1/8	C27735
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C27736
M12	.4724	1.75mm	3	D6	3-3/8	1-21/32	C27737
M14	.5512	1.50mm	3	D6	3-19/32	1-21/32	C27738
M18	.7087	1.50mm	3	D6	4-1/32	1-13/16	C27739

List #SD T-101 QD Custom Spiral Point Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.104"	.117"	4	100	—	—	11	2	C27740
.117"	.130"	5	100	M3, M3.15	.250mm	11	2	C28070
.130"	.145"	6	100	M3.5	.250mm	11	2	C27741
.145"	.171"	8	100	M4	.250mm	11	3	C27742
.171"	.197"	10	100	M4.5	.250mm	11	3	C27743
—	—	—	—	M5	.250mm	11	3	C27744
.197"	.223"	12	100	M5.5	.250mm	11	3	C28136
.223"	.260"	1/4	80	M6	.300mm	11	3	C27745
.260"	.323"	5/16	80	M7, M8	.300mm	11	3	C27746
.323"	.395"	3/8	80	—	—	11	3	C27747
—	—	—	—	M10	.300mm	11	3	C27748
.395"	.448"	7/16	80	M11	.300mm	15	3	C27749
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	3	C27750
.510"	.573"	9/16	64	M14	.400mm	15	3	C27751
.573"	.635"	5/8	64	M16	.400mm	15	3	C27752
.635"	.709"	1 1/16	64	M18	.400mm	15	3	C27753
.709"	.760"	3/4	64	—	—	15	3	C27754

List #SD B-101 Spiral Flute Tap



Substrate - Powder Metal (CPM-M4 Vanadium)

Surface Treatment - Black Oxide

Chamfer - Modified Bottoming (2-1/2 pitch)

Cut Type - Right Hand Spiral Flute



Features:

- Reduced Neck design to enhance coolant flow
- Black oxide increases wear resistance, reduces galling & chip welding
- Spiral flute for better chip evacuation in blind holes & for interrupted conditions
- Modified bottoming style chamfer for threading close to obstructions or blind holes
- Special geometries for specific materials

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C27887
6	.1380	32	UNC	2	H2	2	1 1/16	C27888
6	.1380	32	UNC	2	H3	2	1 1/16	C27894
6	.1380	32	UNC	2	H5	2	1 1/16	C27917
8	.1640	32	UNC	3	H2	2-1/8	3/4	C27889
8	.1640	32	UNC	3	H3	2-1/8	3/4	C27895
8	.1640	32	UNC	3	H5	2-1/8	3/4	C27918
10	.1900	24	UNC	3	H2	2-3/8	7/8	C27890
10	.1900	32	UNF	3	H2	2-3/8	7/8	C27891
10	.1900	24	UNC	3	H3	2-3/8	7/8	C27896
10	.1900	32	UNF	3	H3	2-3/8	7/8	C27897
10	.1900	24	UNC	3	H5	2-3/8	7/8	C27919
10	.1900	32	UNF	3	H5	2-3/8	7/8	C27920
1/4	.2500	20	UNC	3	H2	2-1/2	1	C27892
1/4	.2500	28	UNF	3	H2	2-1/2	1	C27893

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Taps • High Performance

List #SD B-101 continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
1/4	.2500	20	UNC	3	H3	2-1/2	1	C27898
1/4	.2500	28	UNF	3	H3	2-1/2	1	C27899
1/4	.2500	28	UNF	3	H4	2-1/2	1	C27914
1/4	.2500	20	UNC	3	H5	2-1/2	1	C27921
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C27900
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C27901
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C27915
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C27922
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C27902
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C27903
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C27916
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C27923
7/16	.4375	14	UNC	3	H3	3-5/32	1-7/16	C27904
7/16	.4375	20	UNF	3	H3	3-5/32	1-7/16	C27905
7/16	.4375	14	UNC	3	H5	3-5/32	1-7/16	C27924
7/16	.4375	20	UNF	3	H5	3-5/32	1-7/16	C27925
1/2	.5000	13	UNC	3	H3	3-3/8	1-21/32	C27906
1/2	.5000	20	UNF	3	H3	3-3/8	1-21/32	C27907
1/2	.5000	13	UNC	3	H5	3-3/8	1-21/32	C27926
1/2	.5000	20	UNF	3	H5	3-3/8	1-21/32	C27927
9/16	.5625	12	UNC	3	H3	3-19/32	1-21/32	C27908
9/16	.5625	18	UNF	3	H3	3-19/32	1-21/32	C27909
5/8	.6250	11	UNC	3	H3	3-13/16	1-13/16	C27910
5/8	.6250	18	UNF	3	H3	3-13/16	1-13/16	C27911
5/8	.6250	11	UNC	3	H5	3-13/16	1-13/16	C27928
3/4	.7500	10	UNC	3	H3	4-1/4	2	C27912
3/4	.7500	16	UNF	3	H3	4-1/4	2	C27913

List #SD B-101 M Spiral Flute Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M3	.1181	0.50mm	2	D3	1-15/16	5/8	C27929
M4	.1575	0.70mm	3	D4	2-1/8	3/4	C27930
M5	.1968	0.80mm	3	D4	2-3/8	7/8	C27931
M6	.2362	1.00mm	3	D5	2-1/2	1	C27932
M8	.3150	1.25mm	3	D5	2-23/32	1-1/8	C27933
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C27934
M12	.4724	1.75mm	3	D6	3-3/8	1-21/32	C27935
M14	.5512	1.50mm	3	D6	3-19/32	1-21/32	C27936
M18	.7087	1.50mm	3	D6	4-1/32	1-13/16	C27937

List #SD B-101 QD Custom Spiral Flute Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.104"	.117"	4	100	—	—	11	2	C27938
.117"	.130"	5	100	M3, M3.15	.250mm	11	2	C28074
.130"	.145"	6	100	M3.5	.250mm	11	3	C27939
.145"	.171"	8	100	M4	.250mm	11	3	C27940
.171"	.197"	10	100	M4.5	.250mm	11	3	C27941
—	—	—	—	M5	.250mm	11	3	C27942
.197"	.223"	12	100	M5.5	.250mm	11	3	C28140
.223"	.260"	1/4	80	M6	.300mm	11	3	C27943
.260"	.323"	5/16	80	M7, M8	.300mm	11	3	C27944
.323"	.395"	3/8	80	—	—	11	3	C27945
—	—	—	—	M10	.300mm	11	3	C27946
.395"	.448"	7/16	80	M11	.300mm	15	3	C27947
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	3	C27948
.510"	.573"	9/16	64	M14	.400mm	15	3	C27949
.573"	.635"	5/8	64	M16	.400mm	15	4	C27950
.635"	.709"	11/16	64	M18	.400mm	15	4	C27951
.709"	.760"	3/4	64	—	—	15	4	C27952

Taps • High Performance

List #SD T-202Spiral Point Tap



Substrate - Powder Metal (CPM-T-15 Vanadium)
 Surface Treatment - Black Oxide
 Chamfer - Plug (5 pitch)
 Cut Type - Hand-Spiral Point



Features:

- Reduced Neck design to enhance coolant flow
- Black oxide increases wear resistance, reduces galling & chip welding
- Spiral point pushes chips forward for through hole applications
- Plug chamfer for enhanced tool life
- Special geometries for specific materials

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C27755
6	.1380	32	UNC	2	H2	2	11/16	C27756
6	.1380	32	UNC	2	H3	2	11/16	C27762
6	.1380	32	UNC	2	H5	2	11/16	C27785
8	.1640	32	UNC	3	H2	2-1/8	3/4	C27757
8	.1640	32	UNC	3	H3	2-1/8	3/4	C27763
8	.1640	32	UNC	3	H5	2-1/8	3/4	C27786
10	.1900	24	UNC	3	H2	2-3/8	7/8	C27758
10	.1900	32	UNF	3	H2	2-3/8	7/8	C27759
10	.1900	24	UNC	3	H3	2-3/8	7/8	C27764
10	.1900	32	UNF	3	H3	2-3/8	7/8	C27765
10	.1900	24	UNC	3	H5	2-3/8	7/8	C27787
10	.1900	32	UNF	3	H5	2-3/8	7/8	C27788
1/4	.2500	20	UNC	3	H2	2-1/2	1	C27760
1/4	.2500	28	UNF	3	H2	2-1/2	1	C27761
1/4	.2500	20	UNC	3	H3	2-1/2	1	C27766
1/4	.2500	28	UNF	3	H3	2-1/2	1	C27767
1/4	.2500	28	UNF	3	H4	2-1/2	1	C27782
1/4	.2500	20	UNC	3	H5	2-1/2	1	C27789
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C27768
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C27769
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C27783
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C27790
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C27770
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C27771
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C27784
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C27791
7/16	.4375	14	UNC	4	H3	3-5/32	1-7/16	C27772
7/16	.4375	20	UNF	4	H3	3-5/32	1-7/16	C27773
7/16	.4375	14	UNC	4	H5	3-5/32	1-7/16	C27792
7/16	.4375	20	UNF	4	H5	3-5/32	1-7/16	C27793
1/2	.5000	13	UNC	4	H3	3-3/8	1-21/32	C27774
1/2	.5000	20	UNF	4	H3	3-3/8	1-21/32	C27775
1/2	.5000	13	UNC	4	H5	3-3/8	1-21/32	C27794
1/2	.5000	20	UNF	4	H5	3-3/8	1-21/32	C27795
9/16	.5625	12	UNC	4	H3	3-19/32	1-21/32	C27776
9/16	.5625	18	UNF	4	H3	3-19/32	1-21/32	C27777
5/8	.6250	11	UNC	4	H3	3-13/16	1-13/16	C27778
5/8	.6250	18	UNF	4	H3	3-13/16	1-13/16	C27779
5/8	.6250	11	UNC	4	H5	3-13/16	1-13/16	C27796
3/4	.7500	10	UNC	4	H3	4-1/4	2	C27780
3/4	.7500	16	UNF	4	H3	4-1/4	2	C27781

Taps • High Performance

List #SD T-202 M Spiral Point Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M3	.1181	0.50mm	2	D3	1-15/16	5/8	C27797
M4	.1575	0.70mm	3	D4	2-1/8	3/4	C27798
M5	.1968	0.80mm	3	D4	2-3/8	7/8	C27799
M6	.2362	1.00mm	3	D5	2-1/2	1	C27800
M8	.3150	1.25mm	3	D5	2-23/32	1-1/8	C27801
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C27802
M12	.4724	1.75mm	4	D6	3-3/8	1-21/32	C27803
M14	.5512	1.50mm	4	D6	3-19/32	1-21/32	C27804
M18	.7087	1.50mm	4	D6	4-1/32	1-13/16	C27805

List #SD T-202 QD Custom Spiral Point Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.104"	.117"	4	100	—	—	11	2	C27806
.117"	.130"	5	100	M3, M3.15	.250mm	11	2	C28071
.130"	.145"	6	100	M3.5	.250mm	11	2	C27807
.145"	.171"	8	100	M4	.250mm	11	3	C27808
.177"	.197"	10	100	M4.5	.250mm	11	3	C27809
—	—	—	—	M5	.250mm	11	3	C27810
.197"	.223"	12	100	M5.5	.250mm	11	3	C28137
.223"	.260"	1/4	80	M6	.300mm	11	3	C27811
.260"	.323"	5/16	80	M7, M8	.300mm	11	3	C27812
.323"	.395"	3/8	80	—	—	11	3	C27813
—	—	—	—	M10	.300mm	11	3	C27814
.395"	.448"	7/16	80	M11	.300mm	15	4	C27815
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	4	C27816
.510"	.573"	9/16	64	M14	.400mm	15	4	C27817
.573"	.635"	5/8	64	M16	.400mm	15	4	C27818
.635"	.709"	11/16	64	M18	.400mm	15	4	C27819
.709"	.760"	3/4	64	—	—	15	4	C27820

List #SD B-202 Spiral Flute Tap



Substrate - Powder Metal (CPM-T-15 Vanadium)
 Surface Treatment - Black Oxide
 Chamfer - Modified Bottoming (2-1/2 pitch)
 Cut Type - Right Hand Spiral Flute



Features:

- Reduced Neck design to enhance coolant flow
- Black oxide increases wear resistance, reduces galling & chip welding
- Spiral flute for better chip evacuation in blind holes & for interrupted conditions
- Modified bottoming style chamfer for threading close to obstructions or blind holes
- Special geometries for specific materials

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit Length	Overall Length	Thread Number	EDP
4	.1120	40	UNC	2	H2	1-7/8	9/16	C27953
6	.1380	32	UNC	2	H2	2	11/16	C27954
6	.1380	32	UNC	2	H3	2	11/16	C27960
6	.1380	32	UNC	2	H5	2	11/16	C27983
8	.1640	32	UNC	3	H2	2-1/8	3/4	C27955
8	.1640	32	UNC	3	H3	2-1/8	3/4	C27961
8	.1640	32	UNC	3	H5	2-1/8	3/4	C27984
10	.1900	24	UNC	3	H2	2-3/8	7/8	C27956
10	.1900	32	UNF	3	H2	2-3/8	7/8	C27957
10	.1900	24	UNC	3	H3	2-3/8	7/8	C27962
10	.1900	32	UNF	3	H3	2-3/8	7/8	C27963
10	.1900	24	UNC	3	H5	2-3/8	7/8	C27985
10	.1900	32	UNF	3	H5	2-3/8	7/8	C27986
1/4	.2500	20	UNC	3	H2	2-1/2	1	C27958
1/4	.2500	28	UNF	3	H2	2-1/2	1	C27959

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Taps • High Performance

List # SD B-202 continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
1/4	.2500	20	UNC	3	H3	2-1/2	1	C27964
1/4	.2500	28	UNF	3	H3	2-1/2	1	C27965
1/4	.2500	28	UNF	3	H4	2-1/2	1	C27980
1/4	.2500	20	UNC	3	H5	2-1/2	1	C27987
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C27966
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C27967
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C27981
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C27988
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C27968
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C27969
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C27982
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C27989
7/16	.4375	14	UNC	3	H3	3-5/32	1-7/16	C27970
7/16	.4375	20	UNF	3	H3	3-5/32	1-7/16	C27971
7/16	.4375	14	UNC	4	H5	3-5/32	1-7/16	C27990
7/16	.4375	20	UNF	4	H5	3-5/32	1-7/16	C27991
1/2	.5000	13	UNC	4	H3	3-3/8	1-21/32	C27972
1/2	.5000	20	UNF	4	H3	3-3/8	1-21/32	C27973
1/2	.5000	13	UNC	4	H5	3-3/8	1-21/32	C27992
1/2	.5000	20	UNF	4	H5	3-3/8	1-21/32	C27993
9/16	.5625	12	UNC	4	H3	3-19/32	1-21/32	C27974
9/16	.5625	18	UNF	4	H3	3-19/32	1-21/32	C27975
5/8	.6250	11	UNC	4	H3	3-13/16	1-13/16	C27976
5/8	.6250	18	UNF	4	H3	3-13/16	1-13/16	C27977
5/8	.6250	11	UNC	4	H5	3-13/16	1-13/16	C27994
3/4	.7500	10	UNC	4	H3	4-1/4	2	C27978
3/4	.7500	16	UNF	4	H3	4-1/4	2	C27979

List # SD B-202 M Spiral Flute Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M3	.1181	0.50mm	2	D3	1-15/16	5/8	C27995
M4	.1575	0.70mm	3	D4	2-1/8	3/4	C27996
M5	.1968	0.80mm	3	D4	2-3/8	7/8	C27997
M6	.2362	1.00mm	3	D5	2-1/2	1	C27998
M8	.3150	1.25mm	3	D5	2-23/32	1-1/8	C27999
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C28000
M12	.4724	1.75mm	4	D6	3-3/8	1-21/32	C28001
M14	.5512	1.50mm	4	D6	3-19/32	1-21/32	C28002
M18	.7087	1.50mm	4	D6	4-1/32	1-13/16	C28003

List # SD B-202 QD Custom Spiral Flute Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.104"	.117"	4	100	—	—	11	2	C28004
.117"	.130"	5	100	M3, M3.15	.250mm	11	2	C28075
.130"	.145"	6	100	M3.5	.250mm	11	2	C28005
.145"	.171"	8	100	M4	.250mm	11	3	C28006
.171"	.197"	10	100	M4.5	.250mm	11	3	C28007
—	—	—	—	M5	.250mm	11	3	C28008
.197"	.223"	12	100	M5.5	.250mm	11	3	C28141
.223"	.260"	1/4	80	M6	.300mm	11	3	C28009
.260"	.323"	5/16	80	M7, M8	.300mm	11	3	C28010
.323"	.395"	3/8	80	—	—	11	3	C28011
—	—	—	—	M10	.300mm	11	3	C28012
.395"	.448"	7/16	80	M11	.300mm	15	3	C28013
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	4	C28014
.510"	.573"	9/16	64	M14	.400mm	15	4	C28015
.573"	.635"	5/8	64	M16	.400mm	15	4	C28016
.635"	.709"	11/16	64	M18	.400mm	15	4	C28017
.709"	.760"	3/4	64	—	—	15	4	C28018

Taps • High Performance

List #SD T-303 Spiral Point Tap



Substrate - Powder Metal (CPM-T-15 Vanadium)
 Surface Treatment - Black Oxide
 Chamfer - Plug (5 pitch)
 Cut Type - Spiral Point



Features:

- Reduced Neck design to enhance coolant flow
- Black oxide increases wear resistance, reduces galling & chip welding
- Spiral point pushes chips forward for through hole applications
- Plug chamfer for enhanced tool life
- Special geometries for specific materials

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C27821
6	.1380	32	UNC	3	H2	2	11/16	C27822
6	.1380	32	UNC	3	H3	2	11/16	C27828
6	.1380	32	UNC	3	H5	2	11/16	C27851
8	.1640	32	UNC	3	H2	2-1/8	3/4	C27823
8	.1640	32	UNC	3	H3	2-1/8	3/4	C27829
8	.1640	32	UNC	3	H5	2-1/8	3/4	C27852
10	.1900	24	UNC	3	H2	2-3/8	7/8	C27824
10	.1900	32	UNF	3	H2	2-3/8	7/8	C27825
10	.1900	24	UNC	3	H3	2-3/8	7/8	C27830
10	.1900	32	UNF	3	H3	2-3/8	7/8	C27831
10	.1900	24	UNC	3	H5	2-3/8	7/8	C27853
10	.1900	32	UNF	3	H5	2-3/8	7/8	C27854
1/4	.2500	20	UNC	3	H2	2-1/2	1	C27826
1/4	.2500	28	UNF	3	H2	2-1/2	1	C27827
1/4	.2500	20	UNC	3	H3	2-1/2	1	C27832
1/4	.2500	28	UNF	3	H3	2-1/2	1	C27833
1/4	.2500	28	UNF	3	H4	2-1/2	1	C27848
1/4	.2500	20	UNC	3	H5	2-1/2	1	C27855
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C27834
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C27835
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C27849
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C27856
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C27836
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C27837
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C27850
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C27857
7/16	.4375	14	UNC	4	H3	3-5/32	1-7/16	C27838
7/16	.4375	20	UNF	4	H3	3-5/32	1-7/16	C27839
7/16	.4375	14	UNC	4	H5	3-5/32	1-7/16	C27858
7/16	.4375	20	UNF	4	H5	3-5/32	1-7/16	C27859
1/2	.5000	13	UNC	4	H3	3-3/8	1-21/32	C27840
1/2	.5000	20	UNF	4	H3	3-3/8	1-21/32	C27841
1/2	.5000	13	UNC	4	H5	3-3/8	1-21/32	C27860
1/2	.5000	20	UNF	4	H5	3-3/8	1-21/32	C27861
9/16	.5625	12	UNC	4	H3	3-19/32	1-21/32	C27842
9/16	.5625	18	UNF	4	H3	3-19/32	1-21/32	C27843
5/8	.6250	11	UNC	4	H3	3-13/16	1-13/16	C27844
5/8	.6250	18	UNF	4	H3	3-13/16	1-13/16	C27845
5/8	.6250	11	UNC	4	H5	3-13/16	1-13/16	C27862
3/4	.7500	10	UNC	4	H3	4-1/4	2	C27846
3/4	.7500	16	UNF	4	H3	4-1/4	2	C27847

Taps • High Performance

List # SD T-303 M Spiral Point Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M3	.1181	0.50mm	2	D3	1-15/16	5/8	C27863
M4	.1575	0.70mm	3	D4	2-1/8	3/4	C27864
M5	.1968	0.80mm	3	D4	2-3/8	7/8	C27865
M6	.2362	1.00mm	3	D5	2-1/2	1	C27866
M8	.3150	1.25mm	3	D5	2-23/32	1-1/8	C27867
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C27868
M12	.4724	1.75mm	4	D6	3-3/8	1-21/32	C27869
M14	.5512	1.50mm	4	D6	3-19/32	1-21/32	C27870
M18	.7087	1.50mm	4	D6	4-1/32	1-13/16	C27871

List # SD T-303 QD Custom Spiral Point Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.104"	.117"	4	100	—	—	11	2	C27872
.117"	.130"	5	100	M3, M3.15	.250mm	11	2	C28072
.130"	.145"	6	100	M3.5	.250mm	11	3	C27873
.145"	.171"	8	100	M4	.250mm	11	3	C27874
.171"	.197"	10	100	M4.5	.250mm	11	3	C27875
—	—	—	—	M5	.250mm	11	3	C27876
.197"	.223"	12	100	M5.5	.250mm	11	3	C28138
.223"	.260"	1/4	80	M6	.300mm	11	3	C27877
.260"	.323"	5/16	80	M7, M8	.300mm	11	3	C27878
.323"	.395"	3/8	80	—	—	11	3	C27879
—	—	—	—	M10	.300mm	11	3	C27880
.395"	.448"	7/16	80	M11	.300mm	15	4	C27881
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	4	C27882
.510"	.573"	9/16	64	M14	.400mm	15	4	C27883
.573"	.635"	5/8	64	M16	.400mm	15	4	C27884
.635"	.709"	11/16	64	M18	.400mm	15	4	C27885
.709"	.760"	3/4	64	—	—	15	4	C27886

List # SD B-303 Spiral Flute Tap



Substrate - Powder Metal (CPM-T-15 Vanadium)

Surface Treatment - Black Oxide

Chamfer - Modified Bottoming (2-1/2 pitch)

Cut Type - Right Hand Spiral Flute



Features:

- Reduced Neck design to enhance coolant flow
- Black oxide increases wear resistance, reduces galling & chip welding
- Spiral flute for better chip evacuation in blind holes & for interrupted conditions
- Modified bottoming style chamfer for threading close to obstructions or blind holes
- Special geometries for specific materials

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C28217
6	.1380	32	UNC	3	H2	2	11/16	C28218
6	.1380	32	UNC	3	H3	2	11/16	C28224
6	.1380	32	UNC	3	H5	2	11/16	C28247
8	.1640	32	UNC	3	H2	2-1/8	3/4	C28219
8	.1640	32	UNC	3	H3	2-1/8	3/4	C28225
8	.1640	32	UNC	3	H5	2-1/8	3/4	C28248
10	.1900	24	UNC	3	H2	2-3/8	7/8	C28220
10	.1900	32	UNF	3	H2	2-3/8	7/8	C28221
10	.1900	24	UNC	3	H3	2-3/8	7/8	C28226
10	.1900	32	UNF	3	H3	2-3/8	7/8	C28227
10	.1900	24	UNC	3	H5	2-3/8	7/8	C28249
10	.1900	32	UNF	3	H5	2-3/8	7/8	C28250
1/4	.2500	20	UNC	3	H2	2-1/2	1	C28222
1/4	.2500	28	UNF	3	H2	2-1/2	1	C28223

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Taps • High Performance

List #SD B-303 continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C28217
6	.1380	32	UNC	3	H2	2	1 1/16	C28218
6	.1380	32	UNC	3	H3	2	1 1/16	C28224
6	.1380	32	UNC	3	H5	2	1 1/16	C28247
8	.1640	32	UNC	3	H2	2-1/8	3/4	C28219
8	.1640	32	UNC	3	H3	2-1/8	3/4	C28225
8	.1640	32	UNC	3	H5	2-1/8	3/4	C28248
10	.1900	24	UNC	3	H2	2-3/8	7/8	C28220
10	.1900	32	UNF	3	H2	2-3/8	7/8	C28221
10	.1900	24	UNC	3	H3	2-3/8	7/8	C28226
10	.1900	32	UNF	3	H3	2-3/8	7/8	C28227
10	.1900	24	UNC	3	H5	2-3/8	7/8	C28249
10	.1900	32	UNF	3	H5	2-3/8	7/8	C28250
1/4	.2500	20	UNC	3	H2	2-1/2	1	C28222
1/4	.2500	28	UNF	3	H2	2-1/2	1	C28223
1/4	.2500	20	UNC	3	H3	2-1/2	1	C28228
1/4	.2500	28	UNF	3	H3	2-1/2	1	C28229
1/4	.2500	28	UNF	3	H4	2-1/2	1	C28244
1/4	.2500	20	UNC	3	H5	2-1/2	1	C28251
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C28230
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C28231
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C28245
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C28252
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C28232
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C28233
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C28246
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C28253
7/16	.4375	14	UNC	4	H3	3-5/32	1-7/16	C28234

List #SD B-303 M Spiral Flute Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M3	.1181	0.50mm	2	D3	1-15/16	5/8	C28259
M4	.1575	0.70mm	3	D4	2-1/8	3/4	C28260
M5	.1968	0.80mm	3	D4	2-3/8	7/8	C28261
M6	.2362	1.00mm	3	D5	2-1/2	1	C28262
M8	.3150	1.25mm	3	D5	2-23/32	1-1/8	C28263
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C28264
M12	.4724	1.75mm	4	D6	3-3/8	1-21/32	C28265
M14	.5512	1.50mm	4	D6	3-19/32	1-21/32	C28266
M18	.7087	1.50mm	4	D6	4-1/32	1-13/16	C28267

List # SD B-303 QD Custom Spiral Flute Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.104"	.117"	4	100	—	—	11	2	C28268
.117"	.130"	5	100	M3, M3.15	.250mm	11	2	C28076
.130"	.145"	6	100	M3.5	.250mm	11	2	C28269
.145"	.171"	8	100	M4	.250mm	11	2	C28270
.171"	.197"	10	100	M4.5	.250mm	11	3	C28271
—	—	—	—	M5	.250mm	11	3	C28272
.197"	.223"	12	100	M5.5	.250mm	11	3	C28142
.223"	.260"	1/4	80	M6	.300mm	11	3	C28273
.260"	.323"	5/16	80	M7, M8	.300mm	11	3	C28274
.323"	.395"	3/8	80	—	—	11	3	C28275
—	—	—	—	M10	.300mm	11	3	C28276
.395"	.448"	7/16	80	M11	.300mm	15	3	C28277
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	3	C28278
.510"	.573"	9/16	64	M14	.400mm	15	3	C28279
.573"	.635"	5/8	64	M16	.400mm	15	4	C28280
.635"	.709"	1 1/16	64	M18	.400mm	15	4	C28281
.709"	.760"	3/4	64	—	—	15	4	C28282

Taps • High Performance

List # SD T-404 Spiral Point Tap



Substrate - Powder Metal (CPM-T-15 Vanadium)
 Surface Treatment - Bright
 Chamfer - Plug (5 pitch)
 Cut Type - Spiral Point



Features:

- Reduced Neck design to enhance coolant flow
- Spiral point pushes chips forward for through hole applications
- Plug chamfer for enhanced tool life
- Special geometries for specific materials

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C28085
6	.1380	32	UNC	2	H2	2	11/16	C28086
6	.1380	32	UNC	2	H3	2	11/16	C28092
6	.1380	32	UNC	2	H5	2	11/16	C28115
8	.1640	32	UNC	3	H2	2-1/8	3/4	C28087
8	.1640	32	UNC	3	H3	2-1/8	3/4	C28093
8	.1640	32	UNC	3	H5	2-1/8	3/4	C28116
10	.1900	24	UNC	3	H2	2-3/8	7/8	C28088
10	.1900	32	UNF	3	H2	2-3/8	7/8	C28089
10	.1900	24	UNC	3	H3	2-3/8	7/8	C28094
10	.1900	32	UNF	3	H3	2-3/8	7/8	C28095
10	.1900	24	UNC	3	H5	2-3/8	7/8	C28117
10	.1900	32	UNF	3	H5	2-3/8	7/8	C28118
1/4	.2500	20	UNC	3	H2	2-1/2	1	C28090
1/4	.2500	28	UNF	3	H2	2-1/2	1	C28091
1/4	.2500	20	UNC	3	H3	2-1/2	1	C28096
1/4	.2500	28	UNF	3	H3	2-1/2	1	C28097
1/4	.2500	28	UNF	3	H4	2-1/2	1	C28112
1/4	.2500	20	UNC	3	H5	2-1/2	1	C28119
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C28098
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C28099
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C28113
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C28120
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C28100
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C28101
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C28114
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C28121
7/16	.4375	14	UNC	4	H3	3-5/32	1-7/16	C28102
7/16	.4375	20	UNF	4	H3	3-5/32	1-7/16	C28103
7/16	.4375	14	UNC	4	H5	3-5/32	1-7/16	C28122
7/16	.4375	20	UNF	4	H5	3-5/32	1-7/16	C28123
1/2	.5000	13	UNC	4	H3	3-3/8	1-21/32	C28104
1/2	.5000	20	UNF	4	H3	3-3/8	1-21/32	C28105
1/2	.5000	13	UNC	4	H5	3-3/8	1-21/32	C28124
1/2	.5000	20	UNF	4	H5	3-3/8	1-21/32	C28125
9/16	.5625	12	UNC	4	H3	3-19/32	1-21/32	C28106
9/16	.5625	18	UNF	4	H3	3-19/32	1-21/32	C28107
5/8	.6250	11	UNC	4	H3	3-13/16	1-13/16	C28108
5/8	.6250	18	UNF	4	H3	3-13/16	1-13/16	C28109
5/8	.6250	11	UNC	4	H5	3-13/16	1-13/16	C28126
3/4	.7500	10	UNC	4	H3	4-1/4	2	C28110
3/4	.7500	16	UNF	4	H3	4-1/4	2	C28111

Taps • High Performance

List # SD T-404 M Spiral Point Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M3	.1181	0.50mm	2	D3	1-15/16	5/8	C28127
M4	.1575	0.70mm	3	D4	2-1/8	3/4	C28128
M5	.1968	0.80mm	3	D4	2-3/8	7/8	C28129
M6	.2362	1.00mm	3	D5	2-1/2	1	C28130
M8	.3150	1.25mm	3	D5	2-23/32	1-1/8	C28131
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C28132
M12	.4724	1.75mm	4	D6	3-3/8	1-21/32	C28133
M14	.5512	1.50mm	4	D6	3-19/32	1-21/32	C28134
M18	.7087	1.50mm	4	D6	4-1/32	1-13/16	C28135

List # SD T-404 QD Custom Spiral Point Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.104"	.117"	4	100	—	—	11	2	C28144
.117"	.130"	5	100	M3, M3.15	.250mm	11	2	C28073
.130"	.145"	6	100	M3.5	.250mm	11	2	C28145
.145"	.171"	8	100	M4	.250mm	11	3	C28146
.171"	.197"	10	100	M4.5	.250mm	11	3	C28147
—	—	—	—	M5	.250mm	11	3	C28148
.197"	.223"	12	100	M5.5	.250mm	11	3	C28139
.223"	.260"	1/4	80	M6	.300mm	11	3	C28149
.260"	.323"	5/16	80	M7, M8	.300mm	11	3	C28150
.323"	.395"	3/8	80	—	—	11	3	C28078
—	—	—	—	M10	.300mm	11	3	C28079
.395"	.448"	7/16	80	M11	.300mm	15	4	C28080
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	4	C28081
.510"	.573"	9/16	64	M14	.400mm	15	4	C28082
.573"	.635"	5/8	64	M16	.400mm	15	4	C28083
.635"	.709"	11/16	64	M18	.400mm	15	4	C28084
.709"	.760"	3/4	64	—	—	15	4	C28019

List # SD B-404 Spiral Flute Tap



Substrate - Powder Metal (CPM-M4 Vanadium)
 Surface Treatment - Bright
 Chamfer - Modified Bottoming (2-1/2 pitch)
 Cut Type - Right Hand Spiral Flute



Features:

- Reduced Neck design to enhance coolant flow
- Spiral flute for better chip evacuation in blind holes & for interrupted conditions
- Modified bottoming style chamfer for threading close to obstructions or blind holes
- Special geometries for specific materials

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C28151
6	.1380	32	UNC	2	H2	2	11/16	C28152
6	.1380	32	UNC	2	H3	2	11/16	C28158
6	.1380	32	UNC	2	H5	2	11/16	C28181
8	.1640	32	UNC	3	H2	2-1/8	3/4	C28153
8	.1640	32	UNC	3	H3	2-1/8	3/4	C28159
8	.1640	32	UNC	3	H5	2-1/8	3/4	C28182
10	.1900	24	UNC	3	H2	2-3/8	7/8	C28154
10	.1900	32	UNF	3	H2	2-3/8	7/8	C28155
10	.1900	24	UNC	3	H3	2-3/8	7/8	C28160
10	.1900	32	UNF	3	H3	2-3/8	7/8	C28161
10	.1900	24	UNC	3	H5	2-3/8	7/8	C28183
10	.1900	32	UNF	3	H5	2-3/8	7/8	C28184
1/4	.2500	20	UNC	3	H2	2-1/2	1	C28156
1/4	.2500	28	UNF	3	H2	2-1/2	1	C28157

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Taps • High Performance

List # SD B-404 continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
1/4	.2500	20	UNC	3	H3	2-1/2	1	C28162
1/4	.2500	28	UNF	3	H3	2-1/2	1	C28163
1/4	.2500	28	UNF	3	H4	2-1/2	1	C28178
1/4	.2500	20	UNC	3	H5	2-1/2	1	C28185
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C28164
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C28165
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C28179
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C28186
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C28166
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C28167
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C28180
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C28187
7/16	.4375	14	UNC	4	H3	3-5/32	1-7/16	C28168
7/16	.4375	20	UNF	4	H3	3-5/32	1-7/16	C28169
7/16	.4375	14	UNC	4	H5	3-5/32	1-7/16	C28188
7/16	.4375	20	UNF	4	H5	3-5/32	1-7/16	C28189
1/2	.5000	13	UNC	4	H3	3-3/8	1-21/32	C28170
1/2	.5000	20	UNF	4	H3	3-3/8	1-21/32	C28171
1/2	.5000	13	UNC	4	H5	3-3/8	1-21/32	C28190
1/2	.5000	20	UNF	4	H5	3-3/8	1-21/32	C28191
9/16	.5625	12	UNC	4	H3	3-19/32	1-21/32	C28172
9/16	.5625	18	UNF	4	H3	3-19/32	1-21/32	C28173
5/8	.6250	11	UNC	4	H3	3-13/16	1-13/16	C28174
5/8	.6250	18	UNF	4	H3	3-13/16	1-13/16	C28175
5/8	.6250	11	UNC	4	H5	3-13/16	1-13/16	C28192
3/4	.7500	10	UNC	4	H3	4-1/4	2	C28176
3/4	.7500	16	UNF	4	H3	4-1/4	2	C28177

List # SD B-404 M Spiral Flute Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M3	.1181	0.50mm	2	D3	1-15/16	5/8	C28193
M4	.1575	0.70mm	3	D4	2-1/8	3/4	C28194
M5	.1968	0.80mm	3	D4	2-3/8	7/8	C28195
M6	.2362	1.00mm	3	D5	2-1/2	1	C28196
M8	.3150	1.25mm	3	D5	2-23/32	1-1/8	C28197
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C28198
M12	.4724	1.75mm	4	D6	3-3/8	1-21/32	C28199
M14	.5512	1.50mm	4	D6	3-19/32	1-21/32	C28200
M18	.7087	1.50mm	4	D6	4-1/32	1-13/16	C28201

List # SD B-404 QD Custom Spiral Flute Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.1041	.117"	4	100	—	—	11	2	C28202
.117"	.130"	5	100	M3, M3.15	.250mm	11	2	C28077
.130"	.145"	6	100	M3.5	.250mm	11	2	C28203
.145"	.171"	8	100	M4	.250mm	11	2	C28204
.171"	.197"	10	100	M4.5	.250mm	11	3	C28205
—	—	—	—	M5	.250mm	11	3	C28206
.197"	.223"	12	100	M5.5	.250mm	11	3	C28143
.223"	.260"	1/4	80	M6	.300mm	11	3	C28207
.260"	.323"	5/16	80	M7, M8	.300mm	11	3	C28208
.323"	.395"	3/8	80	—	—	11	3	C28209
—	—	—	—	M10	.300mm	11	3	C28210
.395"	.448"	7/16	80	M11	.300mm	15	3	C28211
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	4	C28212
.510"	.573"	9/16	64	M14	.400mm	15	4	C28213
.573"	.635"	5/8	64	M16	.400mm	15	4	C28214
.635"	.709"	11/16	64	M18	.400mm	15	4	C28215
.709"	.760"	3/4	64	—	—	15	4	C28216

Taps • High Performance

List #SD CI-1000 Straight Flute Tap



Substrate - Powder Metal (CPM-M4 Vanadium)
 Surface Treatment - Black Oxide over Nitrite
 Chamfer - Modified Bottoming (2-1/2 pitch)
 Cut Type - Spiral Point



Features:

- Reduced Neck design to enhance coolant flow
- Nitrite & black oxide for added wear resistance & reduced chipping
- Modified bottoming style chamfer for threading close to obstructions or blind holes
- Special geometries for specific materials
- Will run at elevated speeds

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
10	.1900	24	UNC	4	H3	2-3/8	7/8	C27636
10	.1900	32	UNF	4	H3	2-3/8	7/8	C27637
10	.1900	24	UNC	4	H5	2-3/8	7/8	C27654
1/4	.2500	20	UNC	4	H3	2-1/2	1	C27638
1/4	.2500	28	UNF	4	H3	2-1/2	1	C27639
1/4	.2500	20	UNC	4	H5	2-1/2	1	C27655
5/16	.3125	18	UNC	4	H3	2-23/32	1-1/8	C27640
5/16	.3125	24	UNF	4	H3	2-23/32	1-1/8	C27641
5/16	.3125	18	UNC	4	H5	2-23/32	1-1/8	C27656
3/8	.3750	16	UNC	4	H3	2-15/16	1-1/4	C27642
3/8	.3750	24	UNF	4	H3	2-15/16	1-1/4	C27643
3/8	.3750	16	UNC	4	H5	2-15/16	1-1/4	C27657
7/16	.4375	14	UNC	4	H3	3-5/32	1-7/16	C27644
7/16	.4375	20	UNF	4	H3	3-5/32	1-7/16	C27645
7/16	.4375	14	UNC	4	H5	3-5/32	1-7/16	C27658
7/16	.4375	20	UNF	4	H5	3-5/32	1-7/16	C27659
1/2	.5000	13	UNC	4	H3	3-3/8	1-21/32	C27646
1/2	.5000	20	UNF	4	H3	3-3/8	1-21/32	C27647
1/2	.5000	13	UNC	4	H5	3-3/8	1-21/32	C27660
1/2	.5000	20	UNF	4	H5	3-3/8	1-21/32	C27661
9/16	.5625	12	UNC	4	H3	3-19/32	1-21/32	C27648
9/16	.5625	18	UNF	4	H3	3-19/32	1-21/32	C27649
9/16	.5625	12	UNC	4	H5	3-19/32	1-21/32	C27662
9/16	.5625	18	UNF	4	H5	3-19/32	1-21/32	C27663
5/8	.6250	11	UNC	6	H3	3-13/16	1-13/16	C27650
5/8	.6250	18	UNF	6	H3	3-13/16	1-13/16	C27651
5/8	.6250	11	UNC	6	H5	3-13/16	1-13/16	C27664
5/8	.6250	18	UNF	6	H5	3-13/16	1-13/16	C27665
3/4	.7500	10	UNC	6	H3	4-1/4	2	C27652
3/4	.7500	16	UNF	6	H3	4-1/4	2	C27653
3/4	.7500	10	UNC	6	H5	4-1/4	2	C27666
3/4	.7500	16	UNF	6	H5	4-1/4	2	C27667

List #SD CI-1000 M Straight Flute Tap

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M6	.2362	1.00mm	4	D5	2-1/2	1	C27669
M8	.3150	1.25mm	4	D5	2-23/32	1-1/8	C27670
M10	.3937	1.50mm	4	D6	2-15/16	1-1/4	C27671
M12	.4724	1.25mm	4	D6	3-3/8	1-21/32	C27672
M12	.4724	1.75mm	4	D6	3-3/8	1-21/32	C27673
M14	.5512	1.25mm	4	D6	3-19/32	1-21/32	C27674
M14	.5512	1.50mm	4	D6	3-19/32	1-21/32	C27675
M18	.7087	1.50mm	6	D6	4-1/32	1-13/16	C27676

Taps • High Performance

List #SD CI-1000 QD Custom Straight Flute Tap

Diameter Over	Range Through	Tap Size	Maximum TPI	Metric Size	Minimum Pitch	Maximum H or D	Number Of Flutes	EDP Number
.171"	.197"	10	100	M4.5	.250mm	11	4	C27677
—	—	—	—	M5	.250mm	11	4	C27678
.197"	.223"	12	100	M5.5	.250mm	11	4	C28283
.223"	.260"	1/4	80	M6	.300mm	11	4	C27679
.260"	.323"	5/16	80	M7, M8	.300mm	11	4	C27680
.323"	.395"	3/8	80	—	—	11	4	C27681
—	—	—	—	M10	.300mm	11	4	C27682
.395"	.448"	7/16	80	M11	.300mm	15	4	C27683
.448"	.510"	1/2	80	M12, M12.5	.300mm	15	4	C27684
.510"	.573"	9/16	64	M14	.400mm	15	4	C27685
.573"	.635"	5/8	64	M16	.400mm	15	6	C27686
.635"	.709"	11/16	64	M18	.400mm	15	6	C27687
.709"	.760"	3/4	64	—	—	15	6	C27688

Taps • General Purpose

List #s 1001, 1002, 1002TN, 1003, 1003TN Right Hand Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN
Chamfer - Taper (8-10 pitch) Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Hand



Features:

- Taper chamfer generally for starting or hand operations
- Plug chamfer for through holes
- Bottoming chamfer for blind holes
- Ground threads for better surface finish & tighter tolerances
- Optional number of flutes to optimize tapping operation
- Optional "H" limit tolerance to meet individual customer requirements
- TiN coating for higher speeds & wear resistance

Diam.	Decimal	Threads	Thread	Number	Limit	Overall	Thread	1001	1002	1002TN	1003	1003TN
Bottoming	Bottoming	Bottoming	Bottoming	Bottoming	Bottoming	Bottoming	Bottoming	Taper	Plug	Plug	Bottoming	Bottoming
								Bright	Bright	TiN	Bright	TiN
0	.0600	80	UNF	2	H1	1-5/8	5/16	C54025	C54026	EDP Number	C54027	
0	.0600	80	UNF	2	H2	1-5/8	5/16		C54029		C54030	
1	.0730	64	UNC	2	H1	1-11/16	3/8	C54055	C54056		C54057	
1	.0730	64	UNC	2	H2	1-11/16	3/8		C54059			
1	.0730	72	UNF	2	H1	1-11/16	3/8	C54060	C54061		C54062	
1	.0730	72	UNF	2	H2	1-11/16	3/8		C54064		C54065	
2	.0860	56	UNC	3	H1	1-3/4	7/16	C54083	C54084		C54085	
2	.0860	56	UNC	2	H2	1-3/4	7/16		C54087		C54088	
2	.0860	56	UNC	3	H2	1-3/4	7/16	C54089	C54090		C54091	
2	.0860	64	UNF	3	H2	1-3/4	7/16	C54093	C54094		C54095	
3	.0990	48	UNC	3	H1	1-13/16	1/2		C54112			
3	.0990	48	UNC	2	H2	1-13/16	1/2		C54113		C54114	
3	.0990	48	UNC	3	H2	1-13/16	1/2	C54115	C54116		C54117	
3	.0990	56	UNF	3	H2	1-13/16	1/2	C54120	C54121		C54122	
4	.1120	36	UNS	3	H2	1-7/8	9/16	C54139	C54140		C54141	
4	.1120	40	UNC	2	H1	1-7/8	9/16		C54142			
4	.1120	40	UNC	2	H2	1-7/8	9/16		C54147		C54148	
4	.1120	40	UNC	3	H2	1-7/8	9/16	C54149	C54150		C54151	
4	.1120	48	UNF	3	H2	1-7/8	9/16	C54153	C54154		C54155	
5	.1250	40	UNC	3	H1	1-15/16	5/8		C54185			
5	.1250	40	UNC	2	H2	1-15/16	5/8		C54186		C54187	
5	.1250	40	UNC	3	H2	1-15/16	5/8	C54188	C54189		C54190	
5	.1250	44	UNF	3	H2	1-15/16	5/8	C54192	C54193		C54194	
6	.1380	32	UNC	2	H1	2	11/16		C54210			
6	.1380	32	UNC	3	H1	2	11/16	C54211	C54212		C54213	
6	.1380	32	UNC	2	H2	2	11/16		C54215		C54216	
6	.1380	32	UNC	3	H2	2	11/16	C54217	C54218		C54219	
6	.1380	32	UNC	2	H3	2	11/16		C54211		C54222	
6	.1380	32	UNC	3	H3	2	11/16	C54223	C54224	C55100	C54225	C55200
6	.1380	32	UNC	3	H7	2	11/16		C54227		C54228	
6	.1380	32	UNC	3	H11	2	11/16		C60122			
6	.1380	40	UNF	3	H1	2	11/16		C54230			
6	.1380	40	UNF	2	H2	2	11/16		C54231			
6	.1380	40	UNF	3	H2	2	11/16	C54232	C54233	C55102	C54234	C55202
8	.1640	32	UNC	2	H1	2-1/8	3/4		C54256			
8	.1640	32	UNC	4	H1	2-1/8	3/4	C54260	C54261		C54262	
8	.1640	32	UNC	2	H2	2-1/8	3/4		C54264		C54265	
8	.1640	32	UNC	3	H2	2-1/8	3/4		C54267		C54268	
8	.1640	32	UNC	4	H2	2-1/8	3/4	C54269	C54270		C54271	
8	.1640	32	UNC	2	H3	2-1/8	3/4		C54273		C54274	
8	.1640	32	UNC	3	H3	2-1/8	3/4		C54275		C54276	
8	.1640	32	UNC	4	H3	2-1/8	3/4	C54277	C54278	C55104	C54279	C55204
8	.1640	32	UNC	3	H7	2-1/8	3/4		C54281		C54282	
8	.1640	32	UNC	4	H7	2-1/8	3/4		C54283		C54284	
8	.1640	32	UNC	4	H11	2-1/8	3/4		C60130			
8	.1640	36	UNF	4	H2	2-1/8	3/4	C54289	C54290	C55106	C54291	C55206
10	.1900	24	UNC	4	H1	2-3/8	7/8	C54314	C54315		C54316	
10	.1900	24	UNC	2	H2	2-3/8	7/8		C54318		C54319	
10	.1900	24	UNC	3	H2	2-3/8	7/8		C54320			
10	.1900	24	UNC	4	H2	2-3/8	7/8	C54321	C54322		C54323	
10	.1900	24	UNC	2	H3	2-3/8	7/8		C54325		C54326	
10	.1900	24	UNC	3	H3	2-3/8	7/8		C54327		C54328	
10	.1900	24	UNC	4	H3	2-3/8	7/8	C54329	C54330	C55108	C54331	C55208

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Taps • General Purpose

List #s 1001, 1002, 1002TN, 1003, 1003TN continued

Diam.	Decimal	Threads	Thread	Number	Limit	Overall	Thread	1001	1002	1002TN	1003	1003TN
Bottoming	Equiv.	Per Inch	Series	Of Flutes		Length	Length	Taper	Plug	Plug	Bottoming	
								Bright	Bright	TIN	Bright	TIN
10	.1900	24	UNC	3	H7	2-3/8	7/8		C54333	EDP Number	C54334	
10	.1900	24	UNC	4	H11	2-3/8	7/8		C60138			
10	.1900	32	UNF	2	H1	2-3/8	7/8		C54338			
10	.1900	32	UNF	4	H1	2-3/8	7/8	C54339	C54340		C54341	
10	.1900	32	UNF	2	H2	2-3/8	7/8		C54343		C54344	
10	.1900	32	UNF	3	H2	2-3/8	7/8		C54346		C54347	
10	.1900	32	UNF	4	H2	2-3/8	7/8	C54348	C54349		C54350	
10	.1900	32	UNF	2	H3	2-3/8	7/8		C54352		C54353	
10	.1900	32	UNF	3	H3	2-3/8	7/8		C54354		C54355	
10	.1900	32	UNF	4	H3	2-3/8	7/8	C54356	C54357	C55110	C54358	C55210
10	.1900	32	UNF	3	H7	2-3/8	7/8		C54360		C54361	
10	.1900	32	UNF	4	H7	2-3/8	7/8		C54362		C54363	
10	.1900	32	UNF	4	H11	2-3/8	7/8		C60142			
12	.2160	24	UNC	4	H3	2-3/8	15/16	C54385	C54386	C55112	C54387	C55212
12	.2160	28	UNF	4	H3	2-3/8	15/16	C54389	C54390	C55114	C54391	C55214
12	.2160	32	UNEF	4	H3	2-3/8	15/16		C60146			
1/4	.2500	20	UNC	3	H1	2-1/2	1		C54446			
1/4	.2500	20	UNC	4	H1	2-1/2	1	C54443	C54444		C54445	
1/4	.2500	20	UNC	3	H2	2-1/2	1		C54451			
1/4	.2500	20	UNC	4	H2	2-1/2	1	C54448	C54449		C54450	
1/4	.2500	20	UNC	2	H3	2-1/2	1		C54456		C54457	
1/4	.2500	20	UNC	3	H3	2-1/2	1		C54458		C54459	
1/4	.2500	20	UNC	4	H3	2-1/2	1	C54453	C54454	C55116	C54455	C55216
1/4	.2500	20	UNC	3	H5	2-1/2	1		C54463			
1/4	.2500	20	UNC	4	H5	2-1/2	1		C54461		C54462	
1/4	.2500	20	UNC	4	H11	2-1/2	1		C54464			
1/4	.2500	28	UNF	4	H1	2-1/2	1		C54465		C54466	
1/4	.2500	28	UNF	4	H2	2-1/2	1		C54467		C54468	
1/4	.2500	28	UNF	2	H3	2-1/2	1		C54472			
1/4	.2500	28	UNF	2	H3	2-1/2	1		C54473			
1/4	.2500	28	UNF	3	H3	2-1/2	1		C54474		C54475	
1/4	.2500	28	UNF	4	H3	2-1/2	1	C54469	C54470	C55118	C54471	C55218
1/4	.2500	28	UNF	4	H4	2-1/2	1		C54477		C54478	
1/4	.2500	28	UNF	4	H11	2-1/2	1		C60162			
1/4	.2500	32	UNEF	4	H3	2-1/2	1	C60165	C60166		C60167	
5/16	.3125	18	UNC	4	H1	2-23/32	1-1/8		C54499		C54500	
5/16	.3125	18	UNC	4	H2	2-23/32	1-1/8		C54502		C54503	
5/16	.3125	18	UNC	2	H3	2-23/32	1-1/8		C54507			
5/16	.3125	18	UNC	2	H3	2-23/32	1-1/8		C54508			
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8		C54509			
5/16	.3125	18	UNC	4	H3	2-23/32	1-1/8	C54504	C54505	C55120	C54506	C55220
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8		C54512		C54513	
5/16	.3125	18	UNC	4	H11	2-23/32	1-1/8		C54514			
5/16	.3125	24	UNF	4	H1	2-23/32	1-1/8		C54515		C54516	
5/16	.3125	24	UNF	4	H2	2-23/32	1-1/8		C54517			
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8		C54521		C54522	
5/16	.3125	24	UNF	4	H3	2-23/32	1-1/8	C54518	C54519	C55122	C54520	C55222
5/16	.3125	24	UNF	4	H4	2-23/32	1-1/8		C54524		C54525	
5/16	.3125	24	UNF	4	H11	2-23/32	1-1/8		C60194			
5/16	.3125	32	UNEF	4	H3	2-23/32	1-1/8	C60201	C60202		C60203	
3/8	.3750	16	UNC	4	H1	2-15/16	1-1/4		C54577		C54578	
3/8	.3750	16	UNC	4	H2	2-15/16	1-1/4		C54580		C54581	
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4		C54585		C54586	
3/8	.3750	16	UNC	4	H3	2-15/16	1-1/4	C54582	C54583	C55124	C54584	C55224
3/8	.3750	16	UNC	4	H5	2-15/16	1-1/4		C54588		C54589	
3/8	.3750	16	UNC	4	H11	2-15/16	1-1/4		C54590			
3/8	.3750	24	UNF	4	H1	2-15/16	1-1/4		C54591		C54592	
3/8	.3750	24	UNF	4	H2	2-15/16	1-1/4		C54593		C54594	
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4		C54598		C54599	
3/8	.3750	24	UNF	4	H3	2-15/16	1-1/4	C54595	C54596	C55126	C54597	C55226
3/8	.3750	24	UNF	4	H4	2-15/16	1-1/4		C54601		C54602	
3/8	.3750	24	UNF	4	H11	2-15/16	1-1/4		C60226			
3/8	.3750	32	UNEF	4	H3	2-15/16	1-1/4	C60233	C60234		C60235	
7/16	.4375	14	UNC	4	H3	3-5/32	1-7/16	C54652	C54653	C55128	C54654	C55228
7/16	.4375	14	UNC	3	H3	3-5/32	1-7/16		C54655			

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Taps • General Purpose

List #s 1001, 1002, 1002TN, 1003, 1003TN continued

Diam.	Decimal	Threads	Thread	Number	Limit	Overall	Thread	1001	1002	1002TN	1003	1003TN
Bottoming	Bottoming	Per Inch	Series	Of Flutes		Length	Length	Taper	Plug	Plug	Bottoming	
	Equiv.							Bright	Bright	TIN	Bright	TIN
7/16	.4375	14	UNC	4	H5	3-5/32	1-7/16		C54658	EDP Number	C54659	
7/16	.4375	14	UNC	4	H11	3-5/32	1-7/16		C54660			
7/16	.4375	20	UNF	3	H3	3-5/32	1-7/16		C54664			
7/16	.4375	20	UNF	4	H3	3-5/32	1-7/16	C54661	C54662	C55130	C54663	C55230
7/16	.4375	20	UNF	4	H5	3-5/32	1-7/16		C54666		C54667	
7/16	.4375	20	UNF	4	H11	3-5/32	1-7/16		C60254			
7/16	.4375	28	UNEF	4	H3	3-5/32	1-7/16		C60266		C60267	
1/2	.5000	13	UNC	4	H1	3-3/8	1-21/32		C54724			
1/2	.5000	13	UNC	3	H3	3-3/8	1-21/32		C54729		C54730	
1/2	.5000	13	UNC	4	H3	3-3/8	1-21/32	C54726	C54727	C55132	C54728	C55232
1/2	.5000	13	UNC	4	H5	3-3/8	1-21/32		C54732		C54733	
1/2	.5000	13	UNC	4	H11	3-3/8	1-21/32		C54734			
1/2	.5000	20	UNF	4	H1	3-3/8	1-21/32		C54735		C54736	
1/2	.5000	20	UNF	3	H3	3-3/8	1-21/32		C54740			
1/2	.5000	20	UNF	4	H3	3-3/8	1-21/32	C54737	C54738	C55134	C54739	C55234
1/2	.5000	20	UNF	4	H5	3-3/8	1-21/32		C54742			
1/2	.5000	20	UNF	4	H11	3-3/8	1-21/32		C60294			
1/2	.5000	28	UNEF	4	H3	3-3/8	1-21/32		C60302		C60303	
9/16	.5625	12	UNC	4	H3	3-19/32	1-21/32	C54759	C54760	C55136	C54761	C55236
9/16	.5625	12	UNC	4	H5	3-19/32	1-21/32		C54763			
9/16	.5625	18	UNF	4	H2	3-19/32	1-21/32		C54764			
9/16	.5625	18	UNF	4	H3	3-19/32	1-21/32	C54765	C54766	C55138	C54767	C55238
9/16	.5625	18	UNF	4	H5	3-19/32	1-21/32		C54769			
9/16	.5625	24	UNEF	4	H3	3-19/32	1-21/32		C60326		C60327	
5/8	.6250	11	UNC	4	H2	3-13/16	1-13/16		C54778			
5/8	.6250	11	UNC	4	H3	3-13/16	1-13/16	C54779	C54780	C55140	C54781	C55240
5/8	.6250	11	UNC	4	H5	3-13/16	1-13/16		C54783		C54784	
5/8	.6250	11	UNC	4	H11	3-13/16	1-13/16		C54785			
5/8	.6250	18	UNF	4	H2	3-13/16	1-13/16		C54786			
5/8	.6250	18	UNF	4	H3	3-13/16	1-13/16	C54787	C54788	C55142	C54789	C55242
5/8	.6250	18	UNF	4	H5	3-13/16	1-13/16		C54791		C54792	
5/8	.6250	18	UNF	4	H11	3-13/16	1-13/16		C60354			
5/8	.6250	24	UNEF	4	H3	3-13/16	1-13/16		C60362		C60363	
1 1/16	.6875	11	UNC	4	H3	4-1/32	1-13/16	C54813	C54814		C54815	
1 1/16	.6875	16	UNF	4	H3	4-1/32	1-13/16	C54817	C54818		C54819	
3/4	.7500	10	UNC	4	H2	4-1/4	2		C54837			
3/4	.7500	10	UNC	4	H3	4-1/4	2	C54838	C54839	C55144	C54840	C55244
3/4	.7500	10	UNC	4	H5	4-1/4	2		C54842		C54843	
3/4	.7500	10	UNC	4	H11	4-1/4	2		C60398			
3/4	.7500	16	UNF	4	H1	4-1/4	2		C54844			
3/4	.7500	16	UNF	4	H2	4-1/4	2		C54845			
3/4	.7500	16	UNF	4	H3	4-1/4	2	C54846	C54847	C55146	C54848	C55246
3/4	.7500	16	UNF	4	H5	4-1/4	2		C54850		C54851	
3/4	.7500	16	UNF	4	H11	4-1/4	2		C60406			
3/4	.7500	20	UNEF	4	H3	4-1/4	2	C60413	C60414		C60415	
7/8	.8750	9	UNC	4	H4	4-11/16	2-7/32	C54884	C54885	C55148		C55248
7/8	.8750	9	UNC	4	H6	4-11/16	2-7/32		C54888		C54886	
7/8	.8750	14	UNF	4	H2	4-11/16	2-7/32		C54889			
7/8	.8750	14	UNF	4	H4	4-11/16	2-7/32	C54890	C54891	C55150	C54892	C55250
7/8	.8750	20	UNEF	4	H3	4-11/16	2-7/32		C60474		C60475	
1	1.0000	8	UNC	4	H4	5-1/8	2-1/2	C54923	C54924	C55152	C54925	C55252
1	1.0000	8	UNC	4	H6	5-1/8	2-1/2		C54927			
1	1.0000	12	UNF	4	H4	5-1/8	2-1/2		C54929	C55154	C54930	C55254
1	1.0000	14	UNF	4	H4	5-1/8	2-1/2	C54933	C54934		C54935	
1	1.0000	20	UNEF	4	H3	5-1/8	2-1/2		C60522		C60523	
1-1/8	1.1250	7	UNC	4	H4	5-7/16	2-9/16	C54965	C54966		C54967	
1-1/8	1.1250	12	UNF	4	H4	5-7/16	2-9/16	C54971	C54972		C54973	
1-1/4	1.2500	7	UNC	4	H4	5-3/4	2-9/16	C54994	C54995		C54996	
1-1/4	1.2500	12	UNF	6	H4	5-3/4	2-9/16	C55000	C55001		C55002	
1-3/8	1.3750	6	UNC	4	H4	6-1/16	3	C55027	C55028		C55029	
1-3/8	1.3750	12	UNF	6	H4	6-1/16	3	C55030	C55031		C55032	
1-1/2	1.5000	6	UNC	4	H4	6-3/8	3	C55057				
1-1/2	1.5000	6	UNC	4	H4	6-3/8	3		C55058			
1-1/2	1.5000	6	UNC	4	H4	6-3/8	3	C55059				
1-1/2	1.5000	12	UNF	6	H4	6-3/8	3	C55063	C55064		C55065	

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Taps • General Purpose

List #s 1001 M, 1002 M, 1003 M Right Hand Tap (Metric)

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	1001M Taper	1002M Plug • EDP Number •	1003M Bottoming
M1.6	.0630	.35mm	2	D3	1-5/8	5/16	C54043	C54044	C54045
M1.8	.0709	.35mm	2	D3	1-11/16	3/8	C54051	C54052	C54053
M2	.0787	.40mm	3	D3	1-3/4	7/16	C54073	C54074	C54075
M2.2	.0866	.45mm	3	D3	1-3/4	7/16	C54105	C54106	C54107
M2.5	.0984	.45mm	3	D3	1-13/16	1/2	C54131	C54132	C54133
M3	.1181	.50mm	3	D3	1-15/16	5/8	C54164	C54165	C54166
M3.5	.1378	.60mm	3	D4	2	11/16	C54203	C54204	C54205
M4	.1575	.70mm	4	D4	2-1/8	3/4	C54246	C54247	C54248
M4.5	.1771	.75mm	4	D4	2-3/8	7/8	C54303	C54304	C54305
M5	.1968	.80mm	4	D4	2-3/8	7/8	C54374	C54375	C54376
M6	.2362	1.00mm	4	D5	2-1/2	1	C54413	C54414	C54415
M7	.2756	1.00mm	4	D5	2-23/32	1-1/8	C54489	C54490	C54491
M8	.3150	1.00mm	4	D5	2-23/32	1-1/8	C54536	C54537	C54538
M8	.3150	1.25mm	4	D5	2-23/32	1-1/8	C54546	C54547	C54548
M10	.3937	1.25mm	4	D5	2-15/16	1-1/4	C54617	C54618	C54619
M10	.3937	1.50mm	4	D6	2-15/16	1-1/4	C54624	C54625	C54626
M12	.4724	1.25mm	4	D5	3-3/8	1-21/32	C54675	C54676	C54677
M12	.4724	1.25mm	4	D6	3-3/8	1-21/32	C54689	C54690	C54691
M14	.5512	1.50mm	4	D6	3-19/32	1-21/32	C54751	C54752	C54753
M14	.5512	2.00mm	4	D7	3-19/32	1-21/32	C54755	C54756	C54757
M16	.6299	1.50mm	4	D6	3-13/16	1-13/16	C54797	C54798	C54799
M16	.6299	2.00mm	4	D7	3-13/16	1-13/16	C54801	C54802	C54803
M18	.7087	1.50mm	4	D6	4-1/32	1-13/16	C54825	C54826	C54827
M18	.7087	2.50mm	4	D7	4-1/32	1-13/16	C54833	C54834	C54835
M20	.7874	1.50mm	4	D6	4-15/32	2	C54856	C54857	C54858
M20	.7874	2.50mm	4	D7	4-15/32	2	C54864	C54865	C54866
M22	.8661	1.50mm	4	D6	4-11/16	2-7/32	C54872	C54873	C54874
M22	.8661	2.50mm	4	D7	4-11/16	2-7/32	C54880	C54881	C54882
M24	.9449	2.00mm	4	D7	4-29/32	2-7/32	C54903	C54904	C54905
M24	.9449	3.00mm	4	D8	4-29/32	2-7/32	C54907	C54908	C54909
M27	1.063	2.00mm	4	D7	5-1/8	2-1/2	C54949	C54950	C54951
M27	1.0630	3.00mm	4	D8	5-1/8	2-1/2	C54953	C54954	C54955
M30	1.1811	2.00mm	4	D7	5-7/17	2-9/16	C54982	C54983	C54984
M30	1.1811	3.50mm	4	D9	5-7/16	2-9/16	C54990	C54991	C54992
M33	1.2992	2.00mm	6	D7	5-3/4	2-9/16	C55015	C55016	C55017
M33	1.2992	3.50mm	4	D9	5-3/4	2-9/16	C55023	C55024	C55025
M36	1.4173	3.00mm	4	D8	6-1/16	3	C55045	C55046	C55047
M36	1.4173	4.00mm	4	D9	6-1/16	3	C55049	C55050	C55051
M39	1.5354	3.00mm	6	D8	6-11/16	3-3/16	C55074	C55075	C55076
M39	1.5354	4.00mm	6	D9	6-11/16	3-3/16	C55078	C55079	C55080

Taps • General Purpose

List #s 1006, 1007, 1008 Left Hand Tap



Substrate - High Speed Steel
 Surface Treatment - Bright
 Chamfer - Taper (8-10 pitch) Plug (3-5 pitch)
 & Bottoming (1-1/2 - 2 pitch)
 Cut Type - Hand



Features:

- Taper chamfer generally for starting or hand operations
- Plug for through holes
- Bottoming for blind holes
- Ground threads for better surface finish & tighter tolerances
- Straight flutes for shallow general purpose applications
- Left hand cut for left hand threads

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	1006 Taper	1007 Plug • EDP Number •	1008 Bottoming
6	.1380	32	UNC	3	H3	2	1 1/16	C60705	C60706	C60707
8	.1640	32	UNC	4	H3	2-1/8	3/4	C60716	C60717	C60718
10	.1900	24	UNC	4	H3	2-3/8	7/8	C60727	C60728	C60729
10	.1900	32	UNF	4	H3	2-3/8	7/8	C60731	C60732	C60733
1/4	.2500	20	UNC	4	H3	2-1/2	1	C60747	C60748	C60749
1/4	.2500	28	UNF	4	H3	2-1/2	1	C60751	C60752	C60753
5/16	.3125	18	UNC	4	H3	2-23/32	1-1/8	C60759	C60760	C60761
5/16	.3125	24	UNF	4	H3	2-23/32	1-1/8	C60763	C60764	C60765
3/8	.3750	16	UNC	4	H3	2-15/16	1-1/4	C60775	C60776	C60777
3/8	.3750	24	UNF	4	H3	2-15/16	1-1/4	C60779	C60780	C60781
7/16	.4375	14	UNC	4	H3	3-5/32	1-7/16	C60791	C60792	C60793
7/16	.4375	20	UNF	4	H3	3-5/32	1-7/16	C60795	C60796	C60797
1/2	.5000	13	UNC	4	H3	3-3/8	1-21/32	C60807	C60808	C60809
1/2	.5000	20	UNF	4	H3	3-3/8	1-21/32	C60811	C60812	C60813
9/16	.5625	12	UNC	4	H3	3-19/32	1-21/32	C60823	C60824	C60825
9/16	.5625	18	UNF	4	H3	3-19/32	1-21/32	C60827	C60828	C60829
5/8	.6250	11	UNC	4	H3	3-13/16	1-13/16	C60831	C60832	C60833
5/8	.6250	18	UNF	4	H3	3-13/16	1-13/16	C60835	C60836	C60837
3/4	.7500	10	UNC	4	H3	4-1/4	2	C60861	C60862	C60863
3/4	.7500	16	UNF	4	H3	4-1/4	2	C60865	C60866	C60867
7/8	.8750	9	UNC	4	H4	4-11/16	2-7/32	C60885	C60886	C60887
7/8	.8750	14	UNF	4	H4	4-11/16	2-7/32	C60889	C60890	C60891
1	1.0000	8	UNC	4	H4	5-1/8	2-1/2	C60901	C60902	C60903
1	1.0000	12	UNF	4	H4	5-1/8	2-1/2	C60905	C60906	C60907
1	1.0000	14	UNS	4	H4	5-1/8	2-1/2	C60909	C60910	C60911

List #1031 Straight Flute Pulley Tap



Substrate - High Speed Steel
 Surface Treatment - Bright
 Chamfer - Plug (3-5 pitch)
 Cut Type - Hand



Features:

- Plug chamfer for general purpose applications
- Ground threads for better surface finish & tighter tolerances
- Straight flutes for shallow general purpose applications
- Shank diameter is the same as the major diameter
- Longer overall lengths for extended reach applications

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
1/4	.2500	20	UNC	4	H3	6	1	C58817
1/4	.2500	20	UNC	4	H3	8	1	C58818
1/4	.2500	28	UNF	4	H3	6	1	C59622
1/4	.2500	28	UNF	4	H3	8	1	C61193
5/16	.3125	18	UNC	4	H3	6	1-1/8	C58827
5/16	.3125	18	UNC	4	H3	8	1-1/8	C58828
5/16	.3125	24	UNF	4	H3	8	1-1/8	C61194
3/8	.3750	16	UNC	4	H3	6	1-1/4	C58841
3/8	.3750	16	UNC	4	H3	8	1-1/4	C58842
3/8	.3750	16	UNC	4	H3	10	1-1/4	C58843
3/8	.3750	24	UNF	4	H3	6	1-1/4	C59624

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Taps • General Purpose

List #1031 continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
3/8	.3750	24	UNF	4	H3	8	1-1/4	C61195
7/16	.4375	14	UNC	4	H3	6	1-7/16	C58860
7/16	.4375	14	UNC	4	H3	8	1-7/16	C61196
7/16	.4375	20	UNF	4	H3	6	1-7/16	C59625
7/16	.4375	20	UNF	4	H3	8	1-7/16	C61197
1/2	.5000	13	UNC	4	H3	6	1-21/32	C58895
1/2	.5000	13	UNC	4	H3	8	1-21/32	C58896
1/2	.5000	13	UNC	4	H3	10	1-21/32	C58897
1/2	.5000	13	UNC	4	H3	12	1-21/32	C58898
1/2	.5000	20	UNF	4	H3	6	1-21/32	C59626
1/2	.5000	20	UNF	4	H3	8	1-21/32	C61198
5/8	.6250	11	UNC	4	H3	6	1-13/16	C58917
5/8	.6250	11	UNC	4	H3	8	1-13/16	C58918
5/8	.6250	11	UNC	4	H3	10	1-13/16	C58919
5/8	.6250	18	UNF	4	H3	6	1-13/16	C61199
5/8	.6250	18	UNF	4	H3	10	1-13/16	C61200
3/4	.7500	10	UNC	4	H3	10	2	C58949

List #s1011, 1011TN Spiral Point Tap



Substrate - High Speed Steel
 Surface Treatment - Bright/TiN
 Chamfer - Plug (3-5 pitch)
 Cut Type - Spiral Point



Features:

- Plug chamfer for general purpose applications
- Ground threads for better surface finish & tighter tolerances
- Straight flutes for general purpose
- Spiral point pushes chips forward for through hole applications
- .055 over size for pre-plate threads
- TiN coated for higher speeds & wear resistance

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	1011 Bright • EDP Number •	1011TN TiN • EDP Number •
0	.0600	80	UNF	2	H1	1-5/8	5/16	C57009	
0	.0600	80	UNF	2	H2	1-5/8	5/16	C57011	C55290
1	.0730	64	UNC	2	H1	1-11/16	3/8	C57021	
1	.0730	64	UNC	2	H2	1-11/16	3/8	C57022	
1	.0730	72	UNF	2	H1	1-11/16	3/8	C57023	
1	.0730	72	UNF	2	H2	1-11/16	3/8	C57024	
2	.0860	56	UNC	2	H1	1-3/4	7/16	C57029	
2	.0860	56	UNC	2	H2	1-3/4	7/16	C57031	C55292
2	.0860	64	UNF	2	H2	1-3/4	7/16	C57033	
3	.0990	48	UNC	2	H2	1-13/16	1/2	C57038	C55294
3	.0990	56	UNF	2	H1	1-13/16	1/2	C57040	
3	.0990	56	UNF	2	H2	1-13/16	1/2	C57041	
4	.1120	36	UNS	2	H2	1-7/8	9/16	C57046	
4	.1120	40	UNC	2	H1	1-7/8	9/16	C57047	
4	.1120	40	UNC	2	H2	1-7/8	9/16	C57048	C55296
4	.1120	48	UNF	2	H1	1-7/8	9/16	C57050	
4	.1120	48	UNF	2	H2	1-7/8	9/16	C57051	
5	.1250	40	UNC	2	H1	1-15/16	5/8	C57061	
5	.1250	40	UNC	2	H2	1-15/16	5/8	C57062	C55298
5	.1250	44	UNF	2	H2	1-15/16	5/8	C57064	
6	.1380	32	UNC	2	H1	2	11/16	C57069	
6	.1380	32	UNC	2	H2	2	11/16	C57070	
6	.1380	32	UNC	2	H3	2	11/16	C57072	C55300
6	.1380	32	UNC	2	H7	2	11/16	C57074	
6	.1380	32	UNC	2	H11	2	11/16	C60976	
6	.1380	40	UNF	2	H2	2	11/16	C57076	C55302
8	.1640	32	UNC	2	H1	2-1/8	3/4	C57082	C55304
8	.1640	32	UNC	2	H2	2-1/8	3/4	C57083	
8	.1640	32	UNC	2	H3	2-1/8	3/4	C57085	
8	.1640	32	UNC	2	H7	2-1/8	3/4	C57087	
8	.1640	32	UNC	2	H11	2-1/8	3/4	C60980	

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Taps • General Purpose

List #s 1011, 1011TN continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	1011 Bright • EDP Number •	1011TN TiN
8	.1640	36	UNF	2	H2	2-1/8	3/4	C57089	C55306
10	.1900	24	UNC	2	H1	2-3/8	7/8	C57094	
10	.1900	24	UNC	2	H2	2-3/8	7/8	C57095	
10	.1900	24	UNC	2	H3	2-3/8	7/8	C57097	C55308
10	.1900	24	UNC	2	H7	2-3/8	7/8	C57099	
10	.1900	24	UNC	2	H11	2-3/8	7/8	C60984	
10	.1900	32	UNF	2	H1	2-3/8	7/8	C57100	
10	.1900	32	UNF	2	H2	2-3/8	7/8	C57102	C55310
10	.1900	32	UNF	2	H3	2-3/8	7/8	C57104	
10	.1900	32	UNF	2	H7	2-3/8	7/8	C57106	
10	.1900	32	UNF	2	H11	2-3/8	7/8	C60986	
12	.2160	24	UNC	2	H3	2-3/8	15/16	C57112	C55312
12	.2160	28	UNF	2	H3	2-3/8	15/16	C57114	C55314
1/4	.2500	20	UNC	2	H1	2-1/2	1	C57127	
1/4	.2500	20	UNC	2	H2	2-1/2	1	C57128	C55315
1/4	.2500	20	UNC	2	H3	2-1/2	1	C57129	C55316
1/4	.2500	20	UNC	3	H3	2-1/2	1	C57130	
1/4	.2500	20	UNC	2	H5	2-1/2	1	C57132	C55317
1/4	.2500	20	UNC	3	H5	2-1/2	1	C57133	
1/4	.2500	20	UNC	2	H11	2-1/2	1	C57135	
1/4	.2500	28	UNF	2	H1	2-1/2	1	C57136	
1/4	.2500	28	UNF	2	H2	2-1/2	1	C57137	
1/4	.2500	28	UNF	3	H2	2-1/2	1	C57138	
1/4	.2500	28	UNF	2	H3	2-1/2	1	C57139	C55318
1/4	.2500	28	UNF	2	H4	2-1/2	1	C57141	
1/4	.2500	28	UNF	3	H4	2-1/2	1	C57142	
1/4	.2500	28	UNF	2	H11	2-1/2	1	C60987	
5/16	.3125	18	UNC	2	H1	2-23/32	1-1/8	C57149	
5/16	.3125	18	UNC	2	H2	2-23/32	1-1/8	C57150	
5/16	.3125	18	UNC	2	H3	2-23/32	1-1/8	C57151	C55320
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C57152	
5/16	.3125	18	UNC	2	H5	2-23/32	1-1/8	C57154	
5/16	.3125	18	UNC	3	H5	2-23/32	1-1/8	C57155	
5/16	.3125	18	UNC	2	H11	2-23/32	1-1/8	C57156	
5/16	.3125	24	UNF	2	H1	2-23/32	1-1/8	C57157	
5/16	.3125	24	UNF	2	H2	2-23/32	1-1/8	C57158	
5/16	.3125	24	UNF	3	H2	2-23/32	1-1/8	C57159	
5/16	.3125	24	UNF	2	H3	2-23/32	1-1/8	C57160	C55322
5/16	.3125	24	UNF	2	H4	2-23/32	1-1/8	C57163	
5/16	.3125	24	UNF	3	H4	2-23/32	1-1/8	C57164	
5/16	.3125	24	UNF	2	H11	2-23/32	1-1/8	C60989	
3/8	.3750	16	UNC	3	H1	2-15/16	1-1/4	C57174	
3/8	.3750	16	UNC	3	H2	2-15/16	1-1/4	C57175	
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C57176	C55324
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C57177	
3/8	.3750	16	UNC	3	H11	2-15/16	1-1/4	C57178	
3/8	.3750	24	UNF	3	H1	2-15/16	1-1/4	C57179	
3/8	.3750	24	UNF	3	H2	2-15/16	1-1/4	C57180	
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C57181	C55326
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C57182	
3/8	.3750	24	UNF	3	H11	2-15/16	1-1/4	C60991	
7/16	.4375	14	UNC	3	H2	3-5/32	1-7/16	C57191	
7/16	.4375	14	UNC	3	H3	3-5/32	1-7/16	C57192	C55328
7/16	.4375	14	UNC	3	H5	3-5/32	1-7/16	C57193	
7/16	.4375	14	UNC	3	H11	3-5/32	1-7/16	C57194	
7/16	.4375	20	UNF	3	H3	3-5/32	1-7/16	C57195	C55330
7/16	.4375	20	UNF	3	H5	3-5/32	1-7/16	C57196	
7/16	.4375	20	UNF	3	H11	3-5/32	1-7/16	C60993	
1/2	.5000	13	UNC	3	H1	3-3/8	1-21/32	C57213	
1/2	.5000	13	UNC	3	H2	3-3/8	1-21/32	C57214	
1/2	.5000	13	UNC	3	H3	3-3/8	1-21/32	C57215	C55332
1/2	.5000	13	UNC	3	H5	3-3/8	1-21/32	C57216	
1/2	.5000	13	UNC	3	H11	3-3/8	1-21/32	C57217	
1/2	.5000	20	UNF	3	H1	3-3/8	1-21/32	C57218	
1/2	.5000	20	UNF	3	H2	3-3/8	1-21/32	C57219	
1/2	.5000	20	UNF	3	H3	3-3/8	1-21/32	C57220	C55334
1/2	.5000	20	UNF	3	H5	3-3/8	1-21/32	C57221	

(Continued on next page)

Taps • General Purpose

List #s **I011**, **I011TN** continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	I011 Bright • EDP Number •	I011TN TiN
1/2	.5000	20	UNF	3	H11	3-3/8	1-21/32	C60995	
5/8	.6250	11	UNC	3	H3	3-3/16	1-13/16	C57230	C55336
5/8	.6250	11	UNC	3	H5	3-13/16	1-13/16	C57232	
5/8	.6250	11	UNC	3	H11	3-3/16	1-13/16	C57231	
5/8	.6250	18	UNF	3	H3	3-13/16	1-13/16	C57555	
5/8	.6250	18	UNF	3	H11	3-13/16	1-13/16	C61187	
3/4	.7500	10	UNC	3	H3	4-1/4	2	C57246	C55338
3/4	.7500	10	UNC	3	H5	4-1/4	2	C57247	
3/4	.7500	10	UNC	3	H11	4-1/4	2	C61190	
3/4	.7500	16	UNF	3	H3	4-1/4	2	C60999	
3/4	.7500	16	UNF	3	H11	4-1/4	2	C61191	

List # **I011 M** Spiral Point Tap (Metric)

Diameter	Decimal Equivalent	Pitch	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
M1.6	.0630	.35mm	2	D3	1-5/8	5/16	C57015
M1.8	.0709	.35mm	2	D3	1-11/16	3/8	C57019
M2	.0787	.40mm	2	D3	1-3/4	7/16	C57027
M2.2	.0866	.45mm	2	D3	1-3/4	7/16	C57036
M2.5	.0984	.45mm	2	D3	1-13/16	1/2	C57044
M3	.1181	.50mm	2	D3	1-15/16	5/8	C57055
M3.5	.1378	.60mm	2	D4	2	11/16	C57067
M4	.1575	.70mm	2	D4	2-1/8	3/4	C57080
M4.5	.1771	.75mm	2	D4	2-3/8	7/8	C57092
M5	.1968	.80mm	2	D4	2-3/8	7/8	C57110
M6	.2362	1.00mm	2	D5	2-1/2	1	C57118
M7	.2756	1.00mm	2	D2	2-23/32	1-1/8	C57146
M8	.3150	1.00mm	2	D5	2-23/32	1-1/8	C57168
M8	.3150	1.25mm	2	D5	2-23/32	1-1/8	C57171
M10	.3937	1.25mm	3	D5	2-15/16	1-1/4	C57187
M10	.3937	1.50mm	3	D6	2-15/16	1-1/4	C57189
M12	.4724	1.25mm	3	D5	3-3/8	1-21/32	C57199
M12	.4724	1.75mm	3	D6	3-3/8	1-21/32	C57203
M14	.5512	1.50mm	3	D6	3-19/32	1-21/32	C57226
M14	.5512	2.00mm	3	D7	3-19/32	1-21/32	C57228
M16	.6299	1.50mm	3	D6	3-13/16	1-13/16	C57234
M16	.6299	2.00mm	3	D7	3-13/16	1-13/16	C57236
M18	.7087	2.50mm	3	D7	4-1/32	1-13/16	C57244
M20	.7874	2.50mm	3	D7	4-15/32	2	C57253

Taps • General Purpose

List #1053 Spiral Point Low Sheer Plug Tap Features:



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



- Plug chamfer for general purpose applications
- Ground threads for better surface finish & tighter tolerances
- Straight flutes for shallow general purpose applications
- Low shear spiral point for strong cutting edge to push chip forward for through hole applications

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
0	.0600	80	UNF	2	H1	1-5/8	5/16	C57285
1	.0730	72	UNF	2	H1	1-11/16	3/8	C57299
2	.0860	56	UNC	2	H2	1-3/4	7/16	C57307
2	.0860	64	UNF	2	H2	1-3/4	7/16	C57309
3	.0860	48	UNC	2	H2	1-13/16	1/2	C57314
3	.9860	56	UNF	2	H2	1-13/16	1/2	C57317
4	.1120	36	UNS	2	H2	1-7/8	9/16	C57322
4	.1120	40	UNC	2	H2	1-7/8	9/16	C57324
4	.1120	48	UNF	2	H2	1-7/8	9/16	C57327
5	.1250	40	UNC	2	H2	1-15/16	5/8	C57338
5	.1250	44	UNF	2	H2	1-15/16	5/8	C57340
6	.1380	32	UNC	2	H3	2	11/16	C57348
6	.1380	40	UNF	2	H2	2	11/16	C57352
8	.1640	32	UNC	2	H3	2-1/8	3/4	C57361
8	.1640	36	UNF	2	H2	2-1/8	3/4	C57365
10	.1900	24	UNC	2	H3	2-3/8	7/8	C57373
10	.1900	32	UNF	2	H3	2-3/8	7/8	C57380
12	.2160	24	UNC	2	H3	2-3/8	15/16	C57388
12	.2160	28	UNF	2	H3	2-3/8	15/16	C57390
1/4	.2500	20	UNC	2	H1	2-1/2	1	C57403
1/4	.2500	20	UNC	2	H2	2-1/2	1	C57404
1/4	.2500	20	UNC	2	H3	2-1/2	1	C57406
1/4	.2500	20	UNC	2	H5	2-1/2	1	C57409
1/4	.2500	20	UNC	2	H11	2-1/2	1	C57411
1/4	.2500	28	UNF	2	H1	2-1/2	1	C57412
1/4	.2500	28	UNF	2	H2	2-1/2	1	C57414
1/4	.2500	28	UNF	2	H3	2-1/2	1	C57415
1/4	.2500	28	UNF	2	H4	2-1/2	1	C57418
5/16	.3125	18	UNC	2	H1	2-23/32	1-1/8	C57425
5/16	.3125	18	UNC	2	H2	2-23/32	1-1/8	C57426
5/16	.3125	18	UNC	2	H3	2-23/32	1-1/8	C57428
5/16	.3125	18	UNC	2	H5	2-23/32	1-1/8	C57431
5/16	.3125	18	UNC	2	H11	2-23/32	1-1/8	C57432
5/16	.3125	24	UNF	2	H1	2-23/32	1-1/8	C57433
5/16	.3125	24	UNF	2	H3	2-23/32	1-1/8	C57437
5/16	.3125	24	UNF	2	H4	2-23/32	1-1/8	C57440
3/8	.3750	16	UNC	3	H1	2-15/16	1-1/4	C57450
3/8	.3750	16	UNC	3	H2	2-15/16	1-1/4	C57451
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C57452
3/8	.3750	16	UNC	3	H5	2-15/16	1-1/4	C57454
3/8	.3750	16	UNC	3	H11	2-15/16	1-1/4	C57455
3/8	.3750	24	UNF	3	H1	2-15/16	1-1/4	C57456
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C57458
3/8	.3750	24	UNF	3	H4	2-15/16	1-1/4	C57459
7/16	.4375	14	UNC	3	H3	3-5/32	1-7/16	C57469
7/16	.4375	14	UNC	3	H5	3-5/32	1-7/16	C57470
7/16	.4375	20	UNF	3	H3	3-5/32	1-7/16	C57472
7/16	.4375	20	UNF	3	H5	3-5/32	1-7/16	C57473
1/2	.5000	13	UNC	3	H3	3-3/8	1-21/32	C57492
1/2	.5000	13	UNC	3	H5	3-3/8	1-21/32	C57493
1/2	.5000	13	UNC	3	H11	3-3/8	1-21/32	C57494
1/2	.5000	20	UNF	3	H3	3-3/8	1-21/32	C57497
1/2	.5000	20	UNF	3	H5	3-3/8	1-21/32	C57498
5/8	.6250	11	UNC	3	H3	3-13/16	1-13/16	C57507
3/4	.7500	10	UNC	3	H3	4-1/4	2	C57523
3/4	.7500	10	UNC	3	H5	4-1/4	2	C57524

Taps • General Purpose

List #1012 Spiral Pointed Bottoming Tap



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - Bottoming (1-1/2 - 2 pitch)
Cut Type - Spiral Point



Features:

- Bottoming chamfer to thread close to an obstruction or blind hole
- Ground threads for better surface finish & tighter tolerances
- Spiral point pushes chips forward for through hole applications

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
0	.0600	80	UNF	2	H1	1-5/8	5/16	C57010
0	.0600	80	UNF	2	H2	1-5/8	5/16	C57012
2	.0860	56	UNC	2	H1	1-3/4	7/16	C57030
2	.0860	56	UNC	2	H2	1-3/4	7/16	C57032
3	.0990	48	UNC	2	H2	1-13/16	1/2	C57039
4	.1120	40	UNC	2	H2	1-7/8	9/16	C57049
4	.1120	48	UNF	2	H2	1-7/8	9/16	C57052
5	.1250	40	UNC	2	H2	1-15/16	5/8	C57063
6	.1380	32	UNC	2	H2	2	11/16	C57071
6	.1380	32	UNC	2	H3	2	11/16	C57073
6	.1380	32	UNC	2	H7	2	11/16	C57075
6	.1380	40	UNF	2	H2	2	11/16	C57077
8	.1640	32	UNC	2	H2	2-1/8	3/4	C57084
8	.1640	32	UNC	2	H3	2-1/8	3/4	C57086
8	.1640	32	UNC	2	H7	2-1/8	3/4	C57088
10	.1900	24	UNC	2	H2	2-3/8	7/8	C57096
10	.1900	24	UNC	2	H3	2-3/8	7/8	C57098
10	.1900	32	UNF	2	H1	2-3/8	7/8	C57101
10	.1900	32	UNF	2	H2	2-3/8	7/8	C57103
10	.1900	32	UNF	2	H3	2-3/8	7/8	C57105
12	.2160	24	UNC	2	H3	2-3/8	15/16	C57113
1/4	.2500	20	UNC	3	H3	2-1/2	1	C57131
1/4	.2500	28	UNF	2	H3	2-1/2	1	C57140
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C57153
5/16	.3125	24	UNF	2	H3	2-23/32	1-1/8	C57162

List #1020 Spiral Pointed Plug Tap - Assembly Type



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



Features:

- Ground threads for better surface finish & tighter tolerances
- Fluteless for an exceptionally strong tap
- Spiral point pushes chips forward for through hole applications
- Designed for thread depth maximum of one tap diameter

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	H2	1-7/8	9/16	C58121
5	.1250	40	UNC	2	H2	1-15/16	5/8	C58126
6	.1380	32	UNC	2	H3	2	11/16	C58129
8	.1640	32	UNC	2	H3	2-1/8	3/4	C58132
10	.1900	24	UNC	2	H3	2-3/8	7/8	C58135
10	.1900	32	UNF	2	H3	2-3/8	7/8	C58136
12	.2160	24	UNC	2	H3	2-3/8	15/16	C58139
1/4	.2500	20	UNC	2	H3	2-1/2	1	C58144
5/16	.3125	18	UNC	2	H3	2-23/32	1-1/8	C58148
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C58152
1/2	.5000	13	UNC	3	H3	3-3/8	1-21/32	C58165

Taps • General Purpose

List # **I040** Long Shank Spiral Point Tap - 6"



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



Features:

- Plug chamfer for general purpose applications
- Ground threads for better surface finish & tighter tolerances
- Straight flutes for shallow general purpose applications
- Overall lengths are all 6"

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	EDP Number
6	.1380	32	UNC	2	H3	6	1 1/16	C59103
8	.1640	32	UNC	2	H3	6	3/4	C59106
10	.1900	24	UNC	2	H3	6	7/8	C59109
10	.1900	32	UNF	2	H3	6	7/8	C59110
1/4	.2500	20	UNC	2	H3	6	1	C59117
1/4	.2500	28	UNF	2	H3	6	1	C59118
5/16	.3125	18	UNC	2	H3	6	1-1/8	C59121
5/16	.3125	24	UNF	2	H3	6	1-1/8	C59122
3/8	.3750	16	UNC	3	H3	6	1-1/4	C59126
3/8	.3750	24	UNF	3	H3	6	1-1/4	C59127
7/16	.4375	14	UNC	3	H3	6	1-7/16	C61205
7/16	.4375	20	UNF	3	H3	6	1-7/16	C61206
1/2	.5000	13	UNC	3	H3	6	1-21/32	C59140
1/2	.5000	20	UNF	3	H3	6	1-21/32	C61207

List #s **I022, I030** Slow Spiral Tap



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Right Hand Spiral Flute



Features:

- Plug chamfer for general purpose applications
- Bottoming chamfer to thread close to an obstruction or blind hole
- Ground threads for better surface finish & tighter tolerances
- Slow spiral for maximum chip space & chip evacuation in blind holes

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Thread Length	I022 Plug • EDP Number •	I030 Bottoming • EDP Number •
4	.1120	40	UNC	2	H2	1-7/8	9/16	C58244	C58245
5	.1250	40	UNC	2	H2	1-15/16	5/8	C58254	C58255
6	.1380	32	UNC	2	H3	2	1 1/16	C58260	C58261
8	.1640	32	UNC	2	H3	2-1/8	3/4	C58266	C58267
10	.1900	24	UNC	2	H3	2-3/8	7/8	C58272	C58273
10	.1900	32	UNF	2	H3	2-3/8	7/8	C58274	C58275
1/4	.2500	20	UNC	2	H3	2-1/2	1	C58298	C58299
1/4	.2500	28	UNF	3	H3	2-1/2	1	C58300	C58301
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C58312	C58313
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C58314	C58315
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C58328	C58329
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C58331	C58332
1/2	.5000	13	UNC	3	H3	3-3/8	1-21/32	C58359	C58360

Taps • General Purpose

List #s **I093, I093TN, I094, I094TN** High Spiral Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN
Chamfer - Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Right Hand Spiral Flute



Features:

- Plug chamfer for general purpose applications
- Bottoming chamfer to thread close to an obstruction or blind hole
- Ground threads for better surface finish & tighter tolerances
- High spiral for maximum shearing action
- Spiral flute for better chip evacuation in blind holes & for interrupted conditions
- TiN coated for higher speeds & wear resistance

Diam.	Decimal Equiv.	Threads Per Inch	Thread Series	Number Of Flutes	Limit	Overall Length	Tread Length	I093 Plug Bright	I093TN Plug TiN • EDP Number •	I094 Bottoming Bright	I094TN Bottoming TiN
3	.0990	48	UNC	2	H2	1-13/16	1/2	C58509		C58510	
4	.1120	40	UNC	2	H2	1-7/8	9/16	C58515		C58516	
5	.1120	40	UNC	2	H2	1-15/16	5/8	C58525		C58526	
6	.1380	32	UNC	2	H3	2	11/16	C58532		C58533	
8	.1640	32	UNC	2	H3	2-1/8	3/4	C58538		C58539	
10	.1900	24	UNC	2	H3	2-3/8	7/8	C58544		C58545	
10	.1900	32	UNF	2	H3	2-3/8	7/8	C58546		C58547	
12	.2160	24	UNC	3	H3	2-3/8	15/16	C58552		C58553	
1/4	.2500	20	UNC	3	H3	2-1/2	1	C58562	C55581	C58563	C55580
1/4	.2500	28	UNF	3	H3	2-1/2	1	C58564	C55583	C58565	C55582
5/16	.3125	18	UNC	3	H3	2-23/32	1-1/8	C58570	C55585	C58571	C55584
5/16	.3125	24	UNF	3	H3	2-23/32	1-1/8	C58572	C55587	C58573	C55586
3/8	.3750	16	UNC	3	H3	2-15/16	1-1/4	C58581	C55589	C58582	C55588
3/8	.3750	24	UNF	3	H3	2-15/16	1-1/4	C58583	C55591	C58584	C55590
7/16	.4375	14	UNC	3	H3	3-5/32	1-7/16	C58593	C55593	C58594	C55592
7/16	.4375	20	UNF	3	H3	3-5/32	1-7/16	C58595	C55595	C58596	C55594
1/2	.5000	13	UNC	3	H3	3-3/8	1-21/32	C58613	C55597	C58614	C55596
1/2	.5000	20	UNF	3	H3	3-3/8	1-21/32	C58615	C55599	C58616	C55598

List #s **I091, I091TN, I092, I092TN** Thread Forming Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN
Chamfer - Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)



Features:

- Plug chamfer for general purpose applications
- Bottoming chamfer to thread close to an obstruction or blind hole
- Ground threads for better surface finish & tighter tolerances
- Form tap style eliminates chips, increases thread strength & enables higher tapping speeds
- Lube grooves ensure maximum lubrication during tapping
- TiN coated for higher speeds & wear resistance

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Limit	Overall Length	Tread Length	I091 Plug Bright	I091TN TiN • EDP Number •	I092 Bottoming Bright	I092TN Bottoming TiN
0	.0600	80	UNF	H2	1-5/8	5/16			C59159	
0	.0600	80	UNF	H3	1-5/8	5/16			C59160	
1	.0730	64	UNC	H2	1-11/16	3/8			C59169	
1	.0730	64	UNC	H3	1-11/16	3/8			C59170	
1	.0730	72	UNF	H2	1-11/16	3/8			C59171	
1	.0730	72	UNF	H3	1-11/16	3/8			C59172	
2	.0860	56	UNC	H2	1-3/4	7/16			C59177	
2	.0860	56	UNC	H3	1-3/4	7/16			C59178	
2	.0860	56	UNC	H2	1-3/4	7/16			C59179	
2	.0860	64	UNF	H3	1-3/4	7/16			C59180	
3	.0990	48	UNC	H2	1-13/16	1/2			C59185	
3	.0990	48	UNC	H3	1-13/16	1/2			C59186	
3	.0990	56	UNF	H3	1-13/16	1/2			C59188	

(Continued on next page)

Taps • General Purpose

List #s 1091, 1091TN, 1092, 1092TN continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Limit	Overall Length	Tread Length	1091 Plug Bright	1091TN TiN • EDP Number •	1092 Bottoming Bright	1092TN TiN
4	.1120	40	UNC	H3	1-7/8	9/16	C59193	C55600	C59194	C55601
4	.1120	40	UNC	H5	1-7/8	9/16	C59195	C55602	C59196	C55603
4	.1120	48	UNF	H3	1-7/8	9/16	C59197		C59198	
4	.1120	48	UNF	H5	1-7/8	9/16	C59199		C59200	
5	.1250	40	UNC	H3	1-15/16	5/8	C59209		C59210	
5	.1250	40	UNC	H5	1-15/16	5/8	C59211		C59212	
5	.1250	44	UNF	H3	1-15/16	5/8	C59213		C59214	
5	.1250	44	UNF	H5	1-15/16	5/8			C59216	
6	.1380	32	UNC	H3	2	11/16	C59221	C55604	C59222	C55605
6	.1380	32	UNC	H5	2	11/16	C59223	C55606	C59224	C55606
6	.1380	32	UNC	H10	2	11/16	C59225		C59226	
6	.1380	40	UNF	H3	2	11/16	C59227		C59228	
6	.1380	40	UNF	H5	2	11/16	C59229			
8	.1640	32	UNC	H3	2-1/8	3/4	C59235	C55608	C59236	C55609
8	.1640	32	UNC	H5	2-1/8	3/4	C59237	C55610	C59238	C55611
8	.1640	32	UNC	H10	2-1/8	3/4	C59239		C59240	
8	.1640	36	UNF	H3	2-1/8	3/4			C59242	
8	.1640	36	UNF	H5	2-1/8	3/4			C59244	
10	.1900	24	UNC	H4	2-3/8	7/8	C59249	C55612	C59250	C55613
10	.1900	24	UNC	H6	2-3/8	7/8	C59251	C55614	C59252	C55615
10	.1900	24	UNC	H10	2-3/8	7/8	C59254			
10	.1900	32	UNF	H4	2-3/8	7/8	C59256	C55616	C59257	C55617
10	.1900	32	UNF	H6	2-3/8	7/8	C59258	C55618	C59259	C55619
10	.1900	32	UNF	H10	2-3/8	7/8	C59260		C59261	
12	.2160	24	UNC	H4	2-3/8	15/16	C59266		C59267	
12	.2160	24	UNC	H6	2-3/8	15/16	C59268		C59269	
12	.2160	28	UNF	H4	2-3/8	15/16	C59270		C59271	
12	.2160	28	UNF	H6	2-3/8	15/16	C59272		C59273	
1/4	.2500	20	UNC	H4	2-1/2	1	C59282	C55620	C59283	C55621
1/4	.2500	20	UNC	H6	2-1/2	1	C59284	C55622	C59285	C55623
1/4	.2500	20	UNC	H10	2-1/2	1	C59287		C59288	
1/4	.2500	28	UNF	H4	2-1/2	1	C59289	C55624	C59290	C55625
1/4	.2500	28	UNF	H6	2-1/2	1	C59291	C55626	C59292	C55627
1/4	.2500	28	UNF	H10	2-1/2	1	C59293			
5/16	.3125	18	UNC	H5	2-23/32	1-1/8	C59299	C55628	C59300	C55629
5/16	.3125	18	UNC	H7	2-23/32	1-1/8	C59301		C59302	
5/16	.3125	18	UNC	H10	2-23/32	1-1/8	C59303		C59304	
5/16	.3125	24	UNF	H5	2-23/32	1-1/8	C59305	C55630	C59306	C55631
5/16	.3125	24	UNF	H7	2-23/32	1-1/8	C59307		C59308	
5/16	.3125	24	UNF	H10	2-23/32	1-1/8	C59310		C59309	
3/8	.3750	16	UNC	H5	2-15/16	1-1/4	C59315	C55632	C59316	C55633
3/8	.3750	16	UNC	H7	2-15/16	1-1/4	C59317	C55634	C59318	C55635
3/8	.3750	16	UNC	H10	2-15/16	1-1/4	C59319		C59320	
3/8	.3750	24	UNF	H5	2-15/16	1-1/4	C59321	C55636	C59322	C55637
3/8	.3750	24	UNF	H7	2-15/16	1-1/4	C59323		C59324	
3/8	.3750	24	UNF	H10	2-15/16	1-1/4	C59325		C59326	
7/16	.4375	14	UNC	H5	3-5/32	1-7/16	C59335	C55638	C59336	C55639
7/16	.4375	14	UNC	H8	3-5/32	1-7/16	C59337		C59338	
7/16	.4375	20	UNF	H5	3-5/32	1-7/16	C59339		C59340	
7/16	.4375	20	UNF	H8	3-5/32	1-7/16	C59341		C59342	
1/2	.5000	13	UNC	H5	3-3/8	1-21/32	C59359	C55642	C59360	C55643
1/2	.5000	13	UNC	H8	3-3/8	1-21/32	C59361		C59362	
1/2	.5000	20	UNF	H5	3-3/8	1-21/32	C59363	C55644	C59364	C55645
1/2	.5000	20	UNF	H8	3-3/8	1-21/32	C59365		C59366	
9/16	.5625	12	UNC	H7	3-19/32	1-21/32	C59375		C59376	
9/16	.5625	12	UNC	H10	3-19/32	1-21/32	C59377			
9/16	.5625	18	UNF	H7	3-19/32	1-21/32	C59379		C59380	
9/16	.5626	18	UNF	H10	3-19/32	1-21/32	C59381			
5/8	.6250	11	UNC	H7	3-13/16	1-13/16	C59383		C59384	
5/8	.6250	11	UNC	H10	3-13/16	1-13/16	C59385		C59386	
5/8	.6250	18	UNF	H7	3-13/16	1-13/16	C59388		C59389	
5/8	.6250	18	UNF	H10	3-13/16	1-13/16	C59390		C59391	
3/4	.7500	10	UNC	H7	4-1/4	2	C59406		C59407	
3/4	.7500	10	UNC	H10	4-1/4	2	C59408			
3/4	.7500	16	UNF	H7	4-1/4	2	C59410			
3/4	.7500	16	UNF	H10	4-1/4	2	C59412			

Taps • General Purpose

List #s **1091 M**, **1092 M** Thread Forming Tap (Metric)

Diameter	Decimal Equivalent	Pitch	Limit	Overall Length	Tread Length	1091M Plug • EDP Number •	1092M Bottoming
M3	.1181	.50mm	D5	1-15/16	5/8	C59420	C59421
M4	.1575	.70mm	D6	2-1/8	3/4	C59424	C59425
M5	.1968	.80mm	D7	2-3/8	7/8	C59428	C59429
M6	.2362	1.00mm	D8	2-1/2	1	C59432	C59433
M8	.3150	1.25mm	D9	2-23/32	1-1/8	C59436	C59437
M10	.3937	1.50mm	D10	2-15/16	1-1/4	C59440	C59441
M12	.4724	1.75mm	D11	3-3/8	1-21/32	C59444	C59445

Taps • Pipe

List #s **962B NPT, 970B NPTF** Low Hook Taper Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - 3-1/2 threads
Cut Type - Pipe



Features:

- Low Hook for tool strength
- Ground threads for better surface finish & tighter tolerances
- Small shank available 1/8"
- NPT/NPTF thread design

Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	962B NPT • EDP Number •	970B NPTF
1/6	.0625	27	4	.3125	2-1/8	1 1/16	C64003	C64025
1/8*	.1250	27	4	.3125	2-1/8	3/4	C64004	C64026
1/8	.1250	27	4	.4375	2-1/8	3/4	C64005	C64027
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64006	C64028
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64007	C64029
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64008	C64030
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64009	C64031
1	1.0000	1 1/2	5	1.1250	3-3/4	1-3/4	C64010	C64032
1-1/4	1.2500	1 1/2	5	1.3125	4	1-3/4	C64011	C64033
1-1/2	1.5000	1 1/2	7	1.5000	4-1/4	1-3/4	C64012	C64034
2	2.0000	1 1/2	7	1.8750	4-1/2	1-3/4	C64013	C64035

* Small Shank

List #s **965B NPT, 975 NPTF, 975TN NPTF** Medium Hook Taper Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN
Chamfer - 3-1/2 threads
Cut Type - Pipe



Features:

- Medium hook for general purpose
- Ground threads for better surface finish & tighter tolerances
- Small shank available 1/8"
- NPT/NPTF thread design
- TiN coated for higher speeds & wear resistance

Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	965B NPT Bright	975 NPTF Bright • EDP Number •	975TN NPTF TiN
1/6	.0625	27	4	.3125	2-1/8	1 1/16	C64036	C64058	C55680
1/8*	.1250	27	4	.3125	2-1/8	3/4	C64037	C64059	
1/8	.1250	27	4	.4375	2-1/8	3/4	C64038	C64060	C55682
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64039	C64061	C55683
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64040	C64062	C55684
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64041	C64063	C55685
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64042	C64064	C55686
1	1.0000	1 1/2	5	1.1250	3-3/4	1-3/4	C64043	C64065	C55687
1-1/4	1.2500	1 1/2	5	1.3125	4	1-3/4	C64044	C64066	
1-1/2	1.5000	1 1/2	7	1.5000	4-1/4	1-3/4	C64045	C64067	
2	2.0000	1 1/2	7	1.8750	4-1/2	1-3/4	C64046	C64068	

* Small Shank

Taps • Pipe

List #s **3830 NPT, 3830TN NPT** High Hook Taper Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright/TiN
Chamfer - 3-1/2 threads
Cut Type - Pipe



Features:

- High hook for soft material
- Ground threads for better surface finish & tighter tolerances
- NPT/NTPF thread design
- TiN coated for higher speeds & wear resistance

Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	3830 NPT • EDP Number •	3830TN NPT
1/8	.1250	27	4	.4375	2-1/8	3/4	C64070	C55400
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64071	C55402
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64072	C55404
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64073	C55406
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64074	C55408
1	1.0000	1 1/2	5	1.1250	3-3/4	1-3/4	C64075	C55410

List #s **964B NPT, 966B NPTF** Interrupted Thread Taper Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - 3-1/2 threads
Cut Type - Pipe



Features:

- Medium hook for general purpose applications
- Ground threads for better surface finish & tighter tolerances
- Interrupted thread for better lubrication & chip clearance
- Small shank available 1/8"
- NPT thread design

Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	964B NPT • EDP Number •	966B NPTF
1/8*	.1250	27	4	.3125	2-1/8	3/4	C64097	C64107
1/8	.1250	27	4	.4375	2-1/8	3/4	C64098	C64108
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64099	C64109
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64100	C64110
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64101	C64111
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64102	C64112
1	1.0000	1 1/2	5	1.1250	3-3/4	1-3/4	C64103	C64113
1-1/4	1.2500	1 1/2	5	1.3125	4	1-3/4	C64104	C64114
1-1/2	1.5000	1 1/2	7	1.5000	4-1/4	1-3/4	C64105	
2	2.0000	1 1/2	7	1.8750	4-1/2	1-3/4	C64106	

* Small Shank

Taps • Pipe

List #s 963B, 967B Straight Pipe Tap



Substrate - High Speed Steel
 Surface Treatment - Bright
 Chamfer - 3-1/2 threads
 Cut Type - Pipe



Features:

- Medium hook for general purpose
- Ground threads for better surface finish & tighter tolerances
- Straight flutes for general purpose
- NPSC and NPSF thread design

Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	963B NPS • EDP Number •	967B NPSF
1/8*	.1250	27	4	.3125	2-1/8	3/4	C64115	C64129
1/8	.1250	27	4	.4375	2-1/8	3/4	C64116	C64130
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64117	C64131
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64118	C64132
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64119	C64133
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64120	C64139
1	1.0000	11-1/2	5	1.1250	3-3/4	1-3/4	C64121	

* Small Shank

Taps • MRO

List #s 0401, 0402, 0403 HSS Cut Thread Hand Tap



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - Taper (8-10 pitch) Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Hand



Features:

- Cut threads for economical tapping
- Taper chamfer generally for hand operations
- Plug chamfer for general purpose applications
- Bottoming chamfer to thread close to an obstruction or blind hole

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Overall Length	Thread Length	0401 Taper	0402 Plug • EDP Number •	0403 Bottoming
4	.1120	40	UNC	3	1-7/8	9/16	C62001	C62002	C62003
5	.1250	40	UNC	3	1-15/16	5/8	C62005	C62006	C62007
6	.1380	32	UNC	3	2	11/16	C62009	C62010	C62011
8	.1640	32	UNC	4	2-1/8	3/4	C62013	C62014	C62015
10	.1900	24	UNC	4	2-3/8	7/8	C62017	C62018	C62019
10	.1900	32	UNF	4	2-3/8	7/8	C62021	C62022	C62023
12	.2160	24	UNC	4	2-3/8	15/16	C62025	C62026	C62027
1/4	.2500	20	UNC	4	2-1/2	1	C62029	C62030	C62031
1/4	.2500	28	UNF	4	2-1/2	1	C62033	C62034	C62035
5/16	.3125	18	UNC	4	2-23/32	1-1/8	C62037	C62038	C62039
5/16	.3125	24	UNF	4	2-23/32	1-1/8	C62041	C62042	C62043
3/8	.3750	16	UNC	4	2-15/16	1-1/4	C62045	C62046	C62047
3/8	.3750	24	UNF	4	2-15/16	1-1/4	C62049	C62050	C62051
7/16	.4375	14	UNC	4	3-5/32	1-7/16	C62053	C62054	C62055
7/16	.4375	20	UNF	4	3-5/32	1-7/16	C62057	C62058	C62059
1/2	.5000	13	UNC	4	3-3/8	1-21/32	C62061	C62062	C62063
1/2	.5000	20	UNF	4	3-3/8	1-21/32	C62065	C62066	C62067
9/16	.5625	12	UNC	4	3-19/32	1-21/32	C62069	C62070	C62071
9/16	.5625	18	UNF	4	3-19/32	1-21/32	C62073	C62074	C62075
5/8	.6250	11	UNC	4	3-13/16	1-13/16	C62077	C62078	C62079
5/8	.6250	18	UNF	4	3-13/16	1-13/16	C62081	C62082	C62083
3/4	.7500	10	UNC	4	4-1/4	2	C62085	C62086	C62087
3/4	.7500	16	UNF	4	4-1/4	2	C62089	C62090	C62091
7/8	.8750	9	UNC	4	4-11/16	2-7/32	C62093	C62094	C62095
7/8	.8750	14	UNF	4	4-11/16	2-7/32	C62097	C62098	C62099
1	1.0000	8	UNC	4	5-1/8	2-1/2	C62101	C62102	C62103
1	1.0000	12	UNF	4	5-1/8	2-1/2	C62105	C62106	C62107
1	1.0000	14	UNS	4	5-1/8	2-1/2	C62109	C62110	C62111

List #0411 HSS Cut Thread Spiral Point Tap



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - Plug (3-5 pitch)
Cut Type - Spiral Point



Features:

- Cut threads for economical tapping
- Spiral point pushes chips forward for through hole applications

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Overall Length	Thread Length	EDP Number
4	.1120	40	UNC	2	1-7/8	9/16	C62151
5	.1250	40	UNC	2	1-15/16	5/8	C62152
6	.1380	32	UNC	2	2	11/16	C62153
8	.1640	32	UNC	2	2-1/8	3/4	C62154
10	.1900	24	UNC	2	2-3/8	7/8	C62155

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List #0411 continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Overall Length	Thread Length	EDP Number
10	.1900	32	UNF	2	2-3/8	7/8	C62156
12	.2160	24	UNC	2	2-3/8	15/16	C62157
1/4	.2500	20	UNC	2	2-1/2	1	C62158
1/4	.2500	28	UNF	2	2-1/2	1	C62159
5/16	.3125	18	UNC	2	2-23/32	1-1/8	C62160
5/16	.3125	24	UNF	2	2-23/32	1-1/8	C62161
3/8	.3750	16	UNC	3	2-15/16	1-1/4	C62162
3/8	.3750	24	UNF	3	2-15/16	1-1/4	C62163
1/2	.5000	13	UNC	3	3-3/8	1-21/32	C62164

List #0462 HSS Cut Thread Taper Pipe Tap

- Features:**
- Cut threads for economical tapping
 - NPT thread design



Substrate - High Speed Steel
 Surface Treatment - Bright
 Chamfer - 3-1/2 threads
 Cut Type - Pipe



Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	EDP Number
1/8	.1250	27	4	.3125	2-1/8	3/4	C64213
1/8	.1250	27	4	.4375	2-1/8	3/4	C64214
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64215
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64216
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64217
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64218
1	1.0000	11-1/2	5	1.1250	3-3/4	1-3/8	C64219
1-1/4	1.2500	11-1/2	5	1.3125	4	1-3/4	C64220
1-1/2	1.5000	11-1/2	7	1.5000	4-1/4	1-3/4	C64221
2	2.0000	11-1/2	7	1.8750	4-1/2	1-3/4	C64222

List #0464 HSS Cut Thread Interrupted Pipe Tap

Features:

- Cut threads for economical tapping
- Interrupted thread for better lubrication & chip resistance
- NPT thread design



Substrate - High Speed Steel
 Surface Treatment - Bright
 Chamfer - 3-1/2 threads
 Cut Type - Pipe



Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	EDP Number
1/8	.1250	27	4	.3125	2-1/8	3/4	C64223
1/8	.1250	27	4	.4375	2-1/8	3/4	C64224
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64225
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64226
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64227
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64228
1	1.0000	11-1/2	5	1.1250	3-3/4	1-3/8	C64229
1-1/4	1.2500	11-1/2	5	1.3125	4	1-3/4	C64230

Taps • MRO

List #0463 HSS Cut Thread Straight Pipe Tap



Substrate - High Speed Steel
Surface Treatment - Bright
Chamfer - 3-1/2 threads
Cut Type - Pipe



Features:

- Cut threads for economical tapping
- NPSC, NPSM thread design

Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	EDP Number
1/8	.1250	27	4	.4375	2-1/8	3/4	C64231
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64232
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64233
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64234
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64235
1	1.0000	11-1/2	5	1.1250	3-3/4	1-3/8	C64236

List #s0101, 0102, 0103 Carbon Steel Cut Thread Hand Tap



Substrate - Carbon Steel
Surface Treatment - Bright
Chamfer - Taper (8-10 pitch) Plug (3-5 pitch)
& Bottoming (1-1/2 - 2 pitch)
Cut Type - Hand



Features:

- Cut threads for economical tapping
- Taper chamfer generally for hand operations
- Plug chamfer for general purpose applications
- Bottoming chamfer to thread close to an obstruction or blind hole

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number OF Flutes	Overall Length	Thread Length	0101 Taper	0102 Plug • EDP Number •	0103 Bottoming
0	.0600	80	UNF	2	1-5/8	5/16		C62201	
1	.0730	64	UNC	2	1-11/16	3/8		C62202	
1	.0730	72	UNC	2	1-11/16	3/8		C62203	
2	.0860	56	UNC	3	1-3/4	7/16	C62204	C62205	C62206
2	.0860	64	UNF	3	1-3/4	7/16		C62208	
3	.0990	56	UNF	3	1-13/16	1/2		C62210	
4	.1120	40	UNC	3	1-7/8	9/16	C62212	C62213	C62214
4	.1120	48	UNF	3	1-7/8	9/16		C62216	
5	.1250	40	UNC	3	1-15/16	5/8	C62221	C62222	C62223
6	.1380	32	UNC	3	2	11/16	C62225	C62226	C62227
6	.1380	36	UNF	3	2	11/16		C62229	
6	.1380	40	UNS	3	2	11/16		C62230	
8	.1640	32	UNC	4	2-1/8	3/4	C62235	C62236	C62237
8	.1640	36	UNF	4	2-1/8	3/4		C62239	
8	.1640	40	UNS	4	2-1/8	3/4		C62240	
3/16	.1875	24	UNC	4	2-3/8	7/8	C62241	C62242	C62243
3/16	.1875	32	UNF	4	2-3/8	7/8	C62245	C62246	C62247
10	.1900	24	UNC	4	2-3/8	7/8	C62249	C62250	C62251
10	.1900	32	UNF	4	2-3/8	7/8	C62253	C62254	C62255
12	.2160	24	UNC	4	2-3/8	15/16	C62257	C62258	C62259
12	.2160	28	UNF	4	2-3/8	15/16		C62261	
14	.2500	24	UNC	4	2-1/2	1		C62266	
1/4	.2500	20	UNC	4	2-1/2	1	C62267	C62268	C62269
1/4	.2500	28	UNF	4	2-1/2	1	C62271	C62272	C62273
5/16	.3125	18	UNC	4	2-23/32	1-1/8	C62275	C62276	C62277
5/16	.3125	24	UNF	4	2-23/32	1-1/8	C62279	C62280	C62281
3/8	.3750	16	UNC	4	2-15/16	1-1/4	C62283	C62284	C62285
3/8	.3750	24	UNF	4	2-15/16	1-1/4	C62287	C62288	C62289

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Taps • MRO

List #s 0101, 0102, 0103 continued

Diameter	Decimal Equivalent	Threads Per Inch	Thread Series	Number Of Flutes	Overall Length	Thread Length	0101 Taper	0102 Plug • EDP Number •	0103 Bottoming
7/16	.4375	14	UNC	4	3-5/32	1-7/16	C62291	C62292	C62293
7/16	.4375	20	UNF	4	3-5/32	1-7/16	C62295	C62296	C62297
1/2	.5000	13	UNC	4	3-3/8	1-21/32	C62299	C62300	C62301
1/2	.5000	20	UNF	4	3-3/8	1-21/32	C62303	C62304	C62305
9/16	.5625	12	UNC	4	3-19/32	1-21/32	C62307	C62308	C62309
9/16	.5625	18	UNF	4	3-19/32	1-21/32	C62311	C62312	C62313
5/8	.6250	11	UNC	4	3-13/16	1-13/16	C62315	C62316	C62317
5/8	.6250	18	UNF	4	3-13/16	1-13/16	C62319	C62320	C62321
3/4	.7500	10	UNC	4	4-1/4	2	C62323	C62324	C62325
3/4	.7500	16	UNF	4	4-1/4	2	C62327	C62328	C62329
7/8	.8750	9	UNC	4	4-11/16	2-7/32	C62331	C62332	C62333
7/8	.8750	14	UNF	4	4-11/16	2-7/32	C62335	C62336	C62337
1	1.0000	8	UNC	4	5-1/8	2-1/2	C62339	C62340	C62341
1	1.0000	12	UNF	4	5-1/8	2-1/2		C62343	
1	1.0000	14	UNS	4	5-1/8	2-1/2		C62344	
1-1/8	1.1250	7	UNC	4	5-7/16	2-9/16	C62345	C62346	C62347
1-1/8	1.1250	12	UNF	4	5-7/16	2-9/16	C62348	C62349	C62350
1-1/4	1.2500	7	UNC	4	5-3/4	2-9/16	C62351	C62352	C62353
1-1/4	1.2500	12	UNF	6	5-3/4	2-9/16	C62354	C62355	C62356
1-3/8	1.3750	6	UNC	4	6-1/16	3		C62357	
1-3/8	1.3750	12	UNF	6	6-1/16	3		C62358	
1-1/2	1.5000	6	UNC	4	6-3/8	3	C62359	C62360	C62361
1-1/2	1.5000	12	UNF	6	6-3/8	3		C62362	
1-3/4	1.7500	5	UNC	6	7	3-3/16		C62363	
2	2.0000	4-1/2	UNC	6	7-5/8	3-9/16		C62364	

List #0162 Carbon Steel Cut Thread Taper Pipe Tap

- Cut threads for economical tapping
- NPT thread design



Substrate - Carbon Steel
 Surface Treatment - Bright
 Chamfer - 3-1/2 threads
 Cut Type - Pipe



Diameter	Decimal Equivalent	Threads Per Inch	Number Of Flutes	Shank Diameter	Overall Length	Thread Length	EDP Number
1/8	.1250	27	4	.3125	2-1/8	3/4	C64201
1/8	.1250	27	4	.4375	2-1/8	3/4	C64202
1/4	.2500	18	4	.5625	2-7/16	1-1/16	C64203
3/8	.3750	18	4	.7000	2-9/16	1-1/16	C64204
1/2	.5000	14	4	.6875	3-1/8	1-3/8	C64205
3/4	.7500	14	5	.9063	3-1/4	1-3/8	C64206
1	1.0000	11-1/2	5	1.1250	3-3/4	1-3/8	C64207
1-1/4	1.2500	11-1/2	5	1.3125	4	1-3/4	C64208
1-1/2	1.5000	11-1/2	7	1.5000	4-1/4	1-3/4	C64209
2	2.0000	11-1/2	7	1.8750	4-1/2	1-3/4	C64210
2-1/2	2.5000	8	8	2.2500	5-1/2	2-9/16	C64211
3	3.0000	8	8	2.6250	6	2-5/8	C64212

Dies • Quick Set

List #0550 Quick Set Adjustable Dies



Features:

- For cutting external threads
- Can be used in free machining materials

Diameter	Decimal Equivalent	Threads Per Inch	EDP Number
1/4	.2500	20	C66701
1/4	.2500	28	C66702
5/16	.3125	18	C66703
5/16	.3125	24	C66704
3/8	.3750	16	C66705
3/8	.3750	24	C66706
7/16	.4375	14	C66707
7/16	.4375	20	C66708
1/2	.5000	13*	C66709
1/2	.5000	13*	C66710
1/2	.5000	20*	C66711
1/2	.5000	20*	C66712

Diameter	Decimal Equivalent	Threads Per Inch	EDP Number
1/2	.5000	12	C66713
9/16	.5625	18	C66714
5/8	.6250	11	C66715
5/8	.6250	18	C66716
3/4	.7500	10	C66717
3/4	.7500	6	C66718
7/8	.8750	9	C66719
7/8	.8750	14	C66720
1	1.0000	8	C66721
1	1.0000	12	C66722
1	1.0000	14	C66723

*When ordering, specify whether dies are to be used in 2", 2 3/4" or 4" O.D. collets.

List #0551 Quick Set Adjustable Caps



Features:

- Dies mount into the cap

Cap Size	Slot Size	Die Thread Size Range Inches	EDP Number
2"	A	1/4, 5/16	C66728
2"	B	3/8, 1/2	C66729
2-3/4"	A	1/4, 5/16	C66730

Cap Size	Slot Size	Die Thread Size Range Inches	EDP Number
2-3/4"	B	3/8, 7/16	C66731
2-3/4"	C	1/2, 3/4	C66732
2-3/4"	D	7/8, 1	C66733

List #0552 Quick Set Adjustable Guides



Features:

- Screws into cap to hold the die halves firmly held in place

Diameter	Decimal Equivalent	Cap Size	EDP Number
1/4	.2500	2"	C66737
5/16	.3125	2"	C66738
3/8	.3750	2"	C66739
7/16	.4375	2"	C66740
1/2	.5000	2"	C66741
1/4	.2500	2-3/4"	C66742
5/16	.3125	2-3/4"	C66743
3/8	.3750	2-3/4"	C66744

Diameter	Decimal Equivalent	Cap Size	EDP Number
7/16	.4375	2-3/4"	C66745
1/2	.5000	2-3/4"	C66746
9/16	.5625	2-3/4"	C66747
5/8	.6250	2-3/4"	C66748
3/4	.7500	2-3/4"	C66749
7/8	.8750	2-3/4"	C66750
1	1.0000	2-3/4"	C66751

Dies • Quick Set

List #0553 Quick Set Adjustable Collet

Features:

- Assembled cap and guide



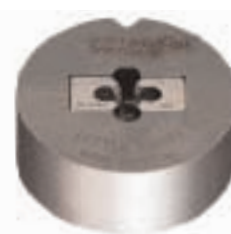
Diameter	Decimal Equivalent	Cap Size	EDP Number
1/4	.2500	2"	C66760
5/16	.3125	2"	C66761
3/8	.3750	2"	C66762
7/16	.4375	2"	C66763
1/2	.5000	2"	C66764
1/4	.2500	2-3/4"	C66765
5/16	.3125	2-3/4"	C66766

Diameter	Decimal Equivalent	Cap Size	EDP Number
3/8	.3750	2-3/4"	C66767
1/2	.5000	2-3/4"	C66769
9/16	.5625	2-3/4"	C66770
5/8	.6250	2-3/4"	C66771
3/4	.7500	2-3/4"	C66772
7/8	.8750	2-3/4"	C66773
1	1.0000	2-3/4"	C66774

List #0554 Quick Set Complete Collet with Guides

Features:

- Complete assembly with dies



Diameter	Decimal Equivalent	Threads Per Inch	Cap Size	EDP Number
1/4	.2500	20	2"	C66783
1/4	.2500	28	2"	C66784
5/16	.3125	18	2"	C66785
5/16	.3125	24	2"	C66786
3/8	.3750	16	2"	C66787
3/8	.3750	24	2"	C66788
7/16	.4375	14	2"	C66789
7/16	.4375	20	2"	C66790
1/2	.5000	13	2"	C66791
1/2	.5000	20	2"	C66792
1/4	.2500	20	2-3/4"	C66793
1/4	.2500	28	2-3/4"	C66794
5/16	.3125	18	2-3/4"	C66795
5/16	.3125	24	2-3/4"	C66796
3/8	.3750	16	2-3/4"	C66797
3/8	.3750	24	2-3/4"	C66798

Diameter	Decimal Equivalent	Threads Per Inch	Cap Size	EDP Number
7/16	.4375	14	2-3/4"	C66799
7/16	.4375	20	2-3/4"	C66800
1/2	.5000	13	2-3/4"	C66801
1/2	.5000	20	2-3/4"	C66802
1/2	.5000	12	2-3/4"	C66803
1/2	.5000	18	2-3/4"	C66804
1/2	.5000	11	2-3/4"	C66805
9/16	.5625	18	2-3/4"	C66806
5/8	.6250	10	2-3/4"	C66807
5/8	.6250	16	2-3/4"	C66808
3/4	.7500	9	2-3/4"	C66809
3/4	.7500	14	2-3/4"	C66810
7/8	.8750	8	2-3/4"	C66811
7/8	.8750	12	2-3/4"	C66812
1	1.0000	14	2-3/4"	C66813

Dies • Hexagon

List #0650 Hexagon Rethreading Dies - Fractional Sizes



Substrate - Carbon Steel



Features:

- Used in repair work for dressing over bruised and rusty threads
- Can be used in free machining materials

Diam.	Decimal Equiv.	Threads per Inch	Thread Series	Across the Flats	Thickness	EDP
1/4	.2500	20	UNC	19/32	1/4	C65601
1/4	.2500	28	UNF	19/32	1/4	C65602
5/16	.3125	18	UNC	11/16	5/16	C65603
5/16	.3125	24	UNF	11/16	5/16	C65605
3/8	.3750	16	UNC	25/32	3/8	C65606
3/8	.3750	24	UNF	25/32	3/8	C65607
7/16	.4375	14	UNC	7/8	7/16	C65608
7/16	.4375	20	UNF	7/8	7/16	C65609
1/2	.5000	13	UNC	1-1/16	1/2	C65610
1/2	.5000	20	UNF	1-1/16	1/2	C65611
9/16	.5625	12	UNC	1-1/16	1/2	C65612
9/16	.5625	18	UNF	1-1/16	1/2	C65613
5/8	.6250	11	UNC	1-1/4	5/8	C65614
5/8	.6250	18	UNF	1-1/4	5/8	C65615
11/16	.6875	11	NS	1-7/16	3/4	C65616
11/16	.6875	16	NS	1-7/16	3/4	C65617

Diam.	Decimal Equiv.	Threads per Inch	Thread Series	Across the Flats	Thickness	EDP
3/4	.7500	10	UNC	1-7/16	3/4	C65618
3/4	.7500	16	UNF	1-7/16	3/4	C65619
7/8	.8750	9	UNC	1-5/8	7/8	C65620
7/8	.8750	14	UNF	1-5/8	7/8	C65621
1	1.0000	8	UNC	1-13/16	1	C65622
1	1.0000	12	UNF	1-13/16	1	C65623
1	1.0000	14	NS	1-13/16	1	C65624
1-1/8	1.1250	7	UNC	2	1	C65625
1-1/8	1.1250	12	UNF	2	1	C65627
1-1/4	1.2500	7	UNC	2-3/16	1	C65628
1-1/4	1.2500	12	UNF	2-3/16	1	C65629
1-3/8	1.4100	6	UNC	2-3/8	1	C65630
1-3/8	1.4100	12	UNF	2-3/8	1	C65631
1-1/2	1.5000	6	UNC	2-9/16	1	C65632
1-1/2	1.5000	12	UNF	2-9/16	1	C65633

List #0660 Hexagon Rethreading Dies - Taper Pipe Size



Substrate - Carbon Steel



Features:

- Used in rethreading NPT threads

Diam.	Threads per Inch	Thread Series	Across the Flats	Thickness	EDP Number
1/8	27	NPT	1-1/16	3/8	C65571
1/4	18	NPT	1-1/4	5/8	C65572
3/8	18	NPT	1-7/16	5/8	C65573

Diam.	Threads per Inch	Thread Series	Across the Flats	Thickness	EDP Number
1/2	14	NPT	1-5/8	3/4	C65574
3/4	14	NPT	2	13/16	C65575
1	11-1/2	NPT	2-3/8	1	C65576

Dies • Round Adjustable

List #0710 HSS Round Adjustable Dies - Machine Screw & Fractional



Substrate - High Speed Steel

Features:

- Will cut external threads when held in a die stock
- Will produce (UN) thread form
- Adjustable for wear & size
- Chamfer on both sides to extend life
- Can be used for close to shoulder work

Diam.	Decimal Equiv.	Threads per Inch	Thread Series	Outside Diameter	Thickness	EDP
5	.1250	40	UNC	13/16	1/4	C65729
5	.1250	44	UNF	13/16	1/4	C65730
6	.1380	32	UNC	13/16	1/4	C65733
6	.1380	40	UNF	13/16	1/4	C65734
8	.1640	32	UNC	13/16	1/4	C65739
8	.1640	36	UNF	13/16	1/4	C65740
10	.1900	24	UNC	13/16	1/4	C65743
10	.1900	32	UNF	13/16	1/4	C65744
12	.2160	24	UNC	13/16	1/4	C65751
12	.2160	28	UNF	13/16	1/4	C65752
1/4	.2500	20	UNC	13/16	1/4	C65760
1/4	.2500	28	UNF	13/16	1/4	C65761
5/16	.3125	18	UNC	13/16	1/4	C65766
5/16	.3125	24	UNF	13/16	1/4	C65767
6	.2040	32	UNC	1	3/8	C65785
8	.1990	32	UNC	1	3/8	C65789
10	.1935	24	UNC	1	3/8	C65792
10	.1935	32	UNF	1	3/8	C65793
12	.1890	24	UNC	1	3/8	C65798
1/4	.2500	20	UNC	1	3/8	C65804
1/4	.2500	28	UNF	1	3/8	C65805
5/16	.3125	18	UNC	1	3/8	C65808
5/16	.3125	24	UNF	1	3/8	C65809
3/8	.3750	16	UNC	1	3/8	C65816

Diam.	Decimal Equiv.	Threads per Inch	Thread Series	Outside Diameter	Thickness	EDP
3/8	.3750	24	UNF	1	3/8	C65817
7/16	.4375	14	UNC	1	3/8	C65828
7/16	.4375	20	UNF	1	3/8	C65829
1/4	.2500	20	UNC	1-1/2	1/2	C65839
1/4	.2500	28	UNF	1-1/2	1/2	C65840
5/16	.3125	18	UNC	1-1/2	1/2	C65844
5/16	.3125	24	UNF	1-1/2	1/2	C65845
3/8	.3750	16	UNC	1-1/2	1/2	C65855
3/8	.3750	24	UNF	1-1/2	1/2	C65856
7/16	.4375	14	UNC	1-1/2	1/2	C65865
7/16	.4375	20	UNF	1-1/2	1/2	C65866
1/2	.5000	13	UNC	1-1/2	1/2	C65875
1/2	.5000	20	UNF	1-1/2	1/2	C65876
9/16	.5625	12	UNC	1-1/2	1/2	C65881
9/16	.5625	18	UNF	1-1/2	1/2	C65882
5/8	.6250	11	UNC	1-1/2	1/2	C65884
5/8	.6250	18	UNF	1-1/2	1/2	C65885
5/8	.6250	11	UNC	2	5/8	C65946
5/8	.6250	18	UNF	2	5/8	C65947
3/4	.7500	10	UNC	2	5/8	C65957
3/4	.7500	16	UNF	2	5/8	C65958
7/8	.8750	9	UNC	2	5/8	C65966
7/8	.8750	14	UNF	2	5/8	C65967

List #0710M HSS Round Adjustable Dies - ISO Metric Sizes



Substrate - High Speed Steel

Features:

- Will cut external threads when held in a die stock
- Will produce ISO metric thread form
- Adjustable for wear & size
- Chamfer on both sides to extend life
- Can be used for close to shoulder work

Diam.	Decimal Equivalent	Pitch	Outside Diameter	Thickness	EDP Number
M2.5	.0984	0.45mm	13/16	1/4	C65721
M3	.1181	0.5mm	13/16	1/4	C65724
M3.5	.1378	0.6mm	13/16	1/4	C65732
M4	.1575	0.7mm	13/16	1/4	C65737
M4.5	.1772	0.75mm	13/16	1/4	C65742
M5	.1969	0.8mm	13/16	1/4	C65747
M6	.2362	1.0mm	13/16	1/4	C65757
M6	.2362	1.0mm	1	3/8	C65801

Diam.	Decimal Equivalent	Pitch	Outside Diameter	Thickness	EDP Number
M7	.2756	1.0mm	1	3/8	C65807
M8	.3150	1.25mm	1	3/8	C65813
M10	.3937	1.5mm	1	3/8	C65824
M12	.4724	1.75mm	1	3/8	C65833
M14	.5512	2.0mm	1-1/2	1/2	C65880
M16	.6300	2.0mm	1-1/2	1/2	C65889

Dies • Carbon Steel

List #0610 Carbon Steel Round Adjustable Dies



Substrate - Carbon Steel

Features:

- Will cut external threads when held in a die stock
- Will produce (UN) thread form
- Adjustable for wear & size
- Chamfer on both sides to extend life

Diam.	Decimal Equiv.	Threads per Inch	Thread Series	Outside Diameter	Thickness	EDP
0	.0600	80	UNF	13/16	1/4	C65022
2	.0860	56	UNC	13/16	1/4	C65036
3	.0990	48	UNC	13/16	1/4	C65045
4	.1120	40	UNC	13/16	1/4	C65048
4	.1120	48	UNF	13/16	1/4	C65049
5	.1250	40	UNC	13/16	1/4	C65057
6	.1380	32	UNC	13/16	1/4	C65061
8	.1640	32	UNC	13/16	1/4	C65069
10	.1900	24	UNC	13/16	1/4	C65075
10	.1900	32	UNF	13/16	1/4	C65076
1/4	.2500	20	UNC	13/16	1/4	C65093
6	.1380	32	UNC	1	3/8	C65114
8	.1640	32	UNC	1	3/8	C65119
10	.1900	24	UNC	1	3/8	C65124
10	.1900	32	UNF	1	3/8	C65125
12	.2160	24	UNC	1	3/8	C65132
1/4	.2500	20	UNC	1	3/8	C65140
1/4	.2500	28	UNF	1	3/8	C65142
5/16	.3125	18	UNC	1	3/8	C65147
5/16	.3125	24	UNF	1	3/8	C65148
3/8	.3750	16	UNC	1	3/8	C65159
3/8	.3750	24	UNF	1	3/8	C65160
7/16	.4375	14	UNC	1	3/8	C65171
7/16	.4375	20	UNF	1	3/8	C65172
1/2	.5000	13	UNC	1	3/8	C65470
1/2	.5000	20	UNF	1	3/8	C65471
1/4	.2500	20	UNC	1-1/2	1/2	C65192
1/4	.2500	28	UNF	1-1/2	1/2	C65193
5/16	.3125	18	UNC	1-1/2	1/2	C65197
5/16	.3125	24	UNF	1-1/2	1/2	C65198
3/8	.3750	16	UNC	1-1/2	1/2	C65208
3/8	.3750	24	UNF	1-1/2	1/2	C65209
7/16	.4375	14	UNC	1-1/2	1/2	C65220
7/16	.4375	20	UNF	1-1/2	1/2	C65221
1/2	.5000	13	UNC	1-1/2	1/2	C65232
1/2	.5000	20	UNF	1-1/2	1/2	C65233
9/16	.5625	12	UNC	1-1/2	1/2	C65239
9/16	.5625	18	UNF	1-1/2	1/2	C65240

Diam.	Decimal Equiv.	Threads per Inch	Thread Series	Outside Diameter	Thickness	EDP
5/8	.6250	11	UNC	1-1/2	1/2	C65243
5/8	.6250	18	UNF	1-1/2	1/2	C65244
1/4	.2500	20	UNC	2	5/8	C65264
1/4	.2500	28	UNF	2	5/8	C65265
5/16	.3125	18	UNC	2	5/8	C65269
5/16	.3125	24	UNF	2	5/8	C65270
3/8	.3750	16	UNC	2	5/8	C65280
3/8	.3750	24	UNF	2	5/8	C65281
7/16	.4375	14	UNC	2	5/8	C65292
7/16	.4375	20	UNF	2	5/8	C65293
1/2	.5000	13	UNC	2	5/8	C65303
1/2	.5000	20	UNC	2	5/8	C65304
9/16	.5625	12	UNC	2	5/8	C65311
9/16	.5625	18	UNF	2	5/8	C65312
5/8	.6250	11	UNC	2	5/8	C65315
5/8	.6250	18	UNF	2	5/8	C65316
3/4	.7500	10	UNC	2	5/8	C65328
3/4	.7500	16	UNF	2	5/8	C65329
7/8	.8750	9	UNC	2	5/8	C65339
7/8	.8750	14	UNF	2	5/8	C65340
1	1.0000	8	UNC	2	5/8	C65349
1	1.0000	12	UNF	2	5/8	C65350
5/8	.6250	11	UNC	2-1/2	3/4	C65374
3/4	.7500	10	UNC	2-1/2	3/4	C65384
3/4	.7500	16	UNF	2-1/2	3/4	C65385
7/8	.8750	9	UNC	2-1/2	3/4	C65395
7/8	.8750	14	UNF	2-1/2	3/4	C65396
1	1.0000	8	UNC	2-1/2	3/4	C65405
1	1.0000	12	UNF	2-1/2	3/4	C65406
1	1.0000	14	UNF	2-1/2	3/4	C65407
1	1.0000	8	UNC	3	1	C65416
1-1/8	1.1250	7	UNC	3	1	C65426
1-1/8	1.1250	12	UNF	3	1	C65427
1-1/4	1.2500	7	UNC	3	1	C65433
1-1/4	1.2500	12	UNF	3	1	C65434
1-1/2	1.5000	6	UNC	3	1	C65449
1/2	1.500	12	UNF	3	1	C65450

List #0620 Round Adjustable Taper Pipe Dies



Substrate - Carbon Steel

Features:

- Will cut external threads when held in a die stock
- Will produce NPT thread form
- Adjustable for wear & size

Diam.	Decimal Equiv.	Threads per Inch	Thread Series	Outside Diameter	Thickness	EDP
1/8	.1250	27	UNS	1-1/2	1/2	C65492
1/4	.2500	18	UNS	1-1/2	1/2	C65493

Diam.	Decimal Equiv.	Threads per Inch	Thread Series	Outside Diameter	Thickness	EDP
3/8	.3750	18	UNS	1-1/2	1/2	C65494
1/2	.5000	14	UNS	2	5/8	C65497

Taps • MRO Sets

List # 1004 High Speed Steel Ground Thread Hand Tap Set



Substrate - High Speed Steel
Surface Treatment - Bright
Cut Type - Hand

Features:

- Ground threads for better surface finish & tighter tolerances
- Right hand cut
- 1 each of List# 1001, 1002 & 1003



Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
0	80	H1	2	C54028
1	64	H1	2	C54058
1	72	H1	2	C54063
2	56	H1	3	C54086
2	56	H2	3	C54092
2	64	H2	3	C54096
3	48	H2	3	C54118
3	56	H2	3	C54123
4	36	H2	3	C54137
4	40	H2	3	C54152
4	48	H2	3	C54156
5	40	H2	3	C54191
5	44	H2	3	C54195
6	32	H2	3	C54220
6	32	H3	3	C54226
6	40	H2	3	C54235
8	32	H1	4	C54263
8	32	H2	4	C54272
8	32	H3	4	C54280
8	36	H2	4	C54292
10	24	H1	4	C54317
10	24	H2	4	C54324
10	24	H3	4	C54332
10	32	H1	4	C54342
10	32	H2	4	C54351
10	32	H3	4	C54359
12	24	H3	4	C54388

Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
12	28	H3	4	C54392
1/4	20	H1	4	C54447
1/4	20	H2	4	C54452
1/4	20	H3	4	C54460
1/4	28	H3	4	C54476
5/16	18	H3	4	C54511
5/16	24	H3	4	C54523
3/8	16	H3	4	C54587
3/8	24	H3	4	C54600
7/16	14	H3	4	C54656
7/16	20	H3	4	C54665
1/2	13	H3	4	C54731
1/2	20	H3	4	C54741
9/16	12	H3	4	C54761
9/16	12	H3	4	C54762
9/16	18	H3	4	C54768
5/8	11	H3	4	C54782
5/8	18	H3	4	C54790
11/16	11	H3	4	C54816
11/16	16	H3	4	C54820
3/4	10	H3	4	C54841
3/4	16	H3	4	C54849
7/8	9	H4	4	C54887
7/8	14	H4	4	C54893
1	8	H4	4	C54926
1	12	H4	4	C54931
1	14	H4	4	C54936

List # 1004TN High Speed Steel Ground Thread Hand Tap Set - TiN Coated



Substrate - High Speed Steel
Surface Treatment - TiN
Cut Type - Hand

Features:

- Ground threads for better surface finish & tighter tolerances
- Right hand cut iTiN coated for higher speeds & wear resistance
- 1 each of List #1001TN, 1002TN & 1003TN



Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
6	32	H2	3	C55500
8	32	H3	4	C55502
10	24	H1	4	C55504
10	32	H1	4	C55506

Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
1/4	20	H3	4	C55508
5/16	18	H3	4	C55510
3/8	16	H3	4	C55512
1/2	13	H3	4	C55514

Taps • MRO Sets

List # 1009 High Speed Steel Ground Thread Hand Tap Set



Substrate - High Speed Steel
Surface Treatment - Bright
Cut Type - Hand

Features:

- Ground threads for better surface finish & tighter tolerances
- Left hand cut for left hand threads
- 1 each of List #1006LH, 1007LH & 1008LH



Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
1/4	20	H3	4	60750
1/4	28	H3	4	60754
5/16	18	H3	4	60762
5/16	24	H3	4	60766
3/8	16	H3	4	60778
3/8	24	H3	4	60782
7/16	14	H3	4	60794

Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
7/16	20	H3	4	60798
1/2	13	H3	4	60810
1/2	20	H3	4	60814
9/16	12	H3	4	60826
5/8	11	H3	4	60834
3/4	10	H3	4	60864
3/4	16	H3	4	60868

List #404 High Speed Steel Cut Thread Hand Tap Set



Substrate - High Speed Steel
Surface Treatment - Bright
Cut Type - Hand

Features:

- Cut threads for economical tapping
- Right hand cut
- 1 each of List #401, 402 & 403



Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
4	40	.112	3	C62004
5	40	.125	3	C62008
6	32	.138	3	C62012
8	32	.164	4	C62016
10	24	.190	4	C62020
10	32	.190	4	C62024
12	24	.216	4	C62028
1/4	20	.250	4	C62032
1/4	28	.250	4	C62036
5/16	18	.3125	4	C62040
5/16	24	.3125	4	C62044
3/8	16	.375	4	C62048
3/8	24	.375	4	C62052
7/16	14	.4375	4	C62056

Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
7/16	20	.4375	4	C62060
1/2	13	.500	4	C62064
1/2	20	.500	4	C62068
9/16	12	.5625	4	C62072
9/16	18	.5625	4	C62076
5/8	11	.625	4	C62080
5/8	18	.625	4	C62084
3/4	10	.750	4	C62088
3/4	16	.750	4	C62092
7/8	9	.875	4	C62096
7/8	14	.875	4	C62100
1	8	1.000	4	C62104
1	12	1.000	4	C62108
1	14	1.000	4	C62112

Taps • MRO Sets

List #104 Carbon Steel Cut Thread Hand Tap Set



Substrate - Carbon Steel
Surface Treatment - Bright
Cut Type - Hand

Features:

- Cut threads for economical tapping
- Right hand cut
- 1 each of List #101, 102 & 103



Diameter	Threads Per Inch	Number of Flutes	EDP Number
2	56	3	C62207
4	40	3	C62215
1/8	40	3	C62220
5	40	3	C62224
6	32	3	C62228
5/32	32	3	C62234
8	32	4	C62238
3/16	24	4	C62244
3/16	32	4	C62248
10	24	4	C62252
10	32	4	C62256
12	24	4	C62260
1/4	20	4	C62270
1/4	28	4	C62274
5/16	18	4	C62278
5/16	24	4	C62282

Nominal Size	Threads Per Inch	Limit	Number of Flutes	EDP Number
3/8	16	4		C62286
3/8	24	4		C62290
7/16	14	4		C62294
7/16	20	4		C62298
1/2	13	4		C62302
1/2	20	4		C62306
9/16	12	4		C62310
9/16	18	4		C62314
5/8	11	4		C62318
5/8	18	4		C62322
3/4	10	4		C62326
3/4	16	4		C62330
7/8	9	4		C62334
7/8	14	4		C62338
1	8	4		C62342

Taps and Dies • Sets

List #813 UNC/NF Tap and Die Set with Die Stock and Tap Wrench

Substrate - High Speed Steel

Features:

- Combination of UNC and NF taps & dies with die stock & tap wrench
- 1 each of 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 1/4-28, 5/16-24, 3/8-24, 7/16-20 & 1/2-20



List #815 UNC/NF Tap and Die Set with Die Stock and Tap Wrench

Substrate - High Speed Steel

Features:

- Combination of UNC and NF taps & dies with die stock & tap wrench
- 1 each of 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 9/16-12, 5/8-11, 3/4-10, 7/8-9, 1-8, 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20, 9/16-18, 5/8-18, 3/4-16, 7/8-14 & 1-12



List #858 High Speed Steel Metric Tap & Die Set

Substrate - High Speed Steel

Features:

- Metric taps & dies
- 1 each of M2.5x0.45, M3x0.5, M3.5x0.6, M4x0.7, M4.4x0.75, M5x0.8 & M6x1



List #859 High Speed Steel Metric Tap & Die Set

Substrate - High Speed Steel

Features:

- Metric taps & dies
- 1 each of M6x1, M7x1, M8x1.25, M10x1.5 & m12x1.75



List #265 Carbon Steel Tap & Die Set - Machine Screw Sizes

Substrate - Carbon Steel

Features:

- Machine screw sizes
- 1 each of 2-56, 3-48, 4-40, 6-32, 8-32, 10-24, 10-32 & 12-24



List #42NC Carbon Steel Hexagon Rethreading Die Set

Substrate - Carbon Steel

Features:

- Fractional hexagon rethreading dies
- 1 each of 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 9/16-12, 5/8-11 & 3/4-10

EDP# C67275

List #42NF Carbon Steel Hexagon Rethreading Die Set

Substrate - Carbon Steel

Features:

- Fractional hexagon rethreading dies
- 1 each of 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20, 9/16-12, 5/8-11 & 3/4-10

EDP# C67276

List #44NC Carbon Steel Hexagon Rethreading Die Set

Substrate - Carbon Steel

Features:

- Fractional Hexagon rethreading dies
- 1 each of 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 9/16-12, 5/8-11, 3/4-10, 7/8-9 & 1-8

EDP# C67279

Taps • Accessories

List #222 Die Stock



Features:

- Die stock
- Holds round adjustable dies & adjusting dies that do not have an adjusting screw

Die Stock Number	Cap Outside Diameter	Overall Length	EDP Number
2	13/16	7	C67223
3	1	10-1/2	C67224
5	1-1/2	14-1/2	C67226

Die Stock Number	Cap Outside Diameter	Overall Length	EDP Number
6	2	23	C67227
7	2-1/2	29	C67228
8	3	40	C67229

List #240 Standard Straight Tap Wrench



Features:

- Standard straight tap wrench
- Used for tapping by hand

Wrench Number	Tap Range Inches	Tap Range Metric	Machine Screw Tap Range	Pipe Tap Range	Overall Length	EDP Number
00	1/16 to 1/4	M1.5 to M6.3	0 to 14		5	C67201
5	5/32 to 1/2	M4 to 12.5	8 to 14	1/8	11	C67202
6	5/32 to 3/4	M4 to M19	8 to 14	1/8 to 1/4	15	C67203
7	1/4 to 1-1/8	M12 to M28		1/8 to 3/4	19	C67204
8	3/4 to 1-5/8	M19 to M40		3/8 to 1-1/4	40	C67205

List #243 Slip T - Handle Tap Wrench



Features:

- Slip "T" handle tap wrench
- Used for tapping by hand & for EZY-OUT® routers
- Used for tapping where difficult spaces require the slip handle

Wrench Number	Tap Range Inches	Tap Range Metric	Machine Screw Tap Range	Overall Length	EDP Number
T11	1/16 to 1/4	M1.5 to M6.3	0 to 14	2-3/4	C67208
T12	7/32 to 1/2	M5.5 to M12.5	12 to 14	3-5/8	C67209

List #244 Combination Ratchet & Slip Handle Tap Wrench



Features:

- Combination ratchet & slip handle tap wrench. Used for tapping by hand & for EZY-OUT® routers
- Used for tapping where difficult spaces require the slip handle
- Used in tight spaces where a ratchet type would be useful

Wrench Number	Tap Range Inches	Tap Range Metric	Machine Screw Tap Range	Overall Length	EDP Number
T13	1/16 to 1/4	M1.5 to M6.3	0 to 14	3-3/4	C67210
T14	7/32 to 1/2	M5.5 to M12.5	12 to 14	5	C67211

List #245 Long Shank T - Handle Tap Wrench



Features:

- Long shank "T" handle
- Used for hand tapping that requires extra reach

Wrench Number	Tap Range Inches	Tap Range Metric	Machine Screw Tap Range	Overall Length	EDP Number
T16	1/16 to 1/4	M1.5 to M6.3	0 to 14	8-3/4	C67212
T17	7/32 to 1/2	M5.5 to M12.5	12 to 14	10-5/8	C67213

Tap Drivers

List # I200 Series

Features:

- A.S.A. Taper shanks



Size of Tap	A.S.A. Taper of Driver	Automotive Number	Tap Shank Diameter	Diameter Across Flats of Square	Projection of Driver (Inches)	Depth Tap Enters Driver (Inches)	EDP Number
For Machine Screw Tap Sizes:							
No. 0 to 6	1	952661	.141	.110	3/16	11/16	67151
No. 8	1	952662	.168	.131	3/16	13/16	67152
No. 10	1	952663	.194	.152	3/16	7/8	67153
No. 12	1	952664	.220	.165	3/16	29/32	67154
For Hand Tap Sizes:							
1/4"	1	952678	.255	.191	3/16	31/32	67155
1/4"	2	952677	.255	.191	1/4	31/32	67157
5/16"	1	952680	.318	.238	3/16	1	67156
5/16"	2	952679	.318	.238	1/4	1	67158
3/8"	2	952683	.381	.286	1/4	1-1/32	67159
7/16"	2	952684	.323	.242	1/4	1-1/16	67160
1/2"	2	952685	.367	.275	1/4	1-3/32	67161
1/2"	3	952686	.367	.275	1/4	1-3/32	67164
9/16"	2	952687	.429	.322	1/4	1-1/4	67162
5/8"	2	952690	.480	.360	1/4	1-7/16	67163
5/8"	3	952689	.480	.360	1/4	1-7/16	67165
3/4"	3	952693	.590	.442	1/4	1-25/32	67166
3/4"	4	952694	.590	.523	1/4	1-25/32	67168
7/8"	3	952696	.697	.523	1/4	1-29/32	67167
7/8"	4	952695	.697	.523	3/8	1-29/32	67169
1"	4	952697	.800	.600	3/8	2	67170
For Pipe Tap Sizes:							
*1/16", 1/8 S.S.	2	952717	.3125	.234	1/4	1	67171
*1/8" L.S.	2	952718	.4375	.328	1/4	1	67172
1/4"	3	952719	.5625	.421	1/4	1-1/8	67173
3/8"	4	952720	.7000	.531	3/8	1-1/2	67174
1/2"	4	952721	.6875	.515	3/8	1-1/2	67175
3/4"	4	952722	.9063	.679	3/8	1-11/16	67176
For Grease Fitting Tap Sizes:							
1/8"	2	952727	.323	.242	1/4	1-1/16	67160
1/4"	2	952728	.429	.322	1/4	1-1/4	67162
3/8"	2	952731	.480	.360	1/4	1-7/16	67163
3/8"	3	952730	.480	.360	1/4	1-7/16	67165
1/2"	4	952732	.697	.523	3/8	1-29/32	67169
For Taper Tap Sizes:							
5/8"	3	957710	.503	.377	1/4	1-3/4	67182
For Standard Pulley Tap Sizes:							
1/4"	1	952667	.255	.191	3/16	31/32	67155
1/4"	2	952666	.255	.191	1/4	31/32	67157
5/16"	1	952669	.318	.238	3/16	1	67156
5/16"	2	952668	.381	.238	1/4	1	67158
3/8"	2	952672	.318	.286	1/4	1-1/32	67159
1/2"	3	952674	.507	.380	1/4	1-3/16	67185
5/8"	4	952675	.633	.475	3/8	1-7/16	67186
3/4"	4	952676	.759	.569	3/8	1-9/16	67187

Note: Drivers listed for Grease Fitting Tap Sizes 1/8, 1/4, 3/8, and 1/2" are same as used for Hand Tap Sizes 7/16, 9/16, 5/8, and 7/8" respectively

Note: Drivers listed for Pulley Tap Sizes 1/4, 5/16, and 3/8" are the same as used for equivalent Hand Tap Sizes.

*S.S. — Small Shank

*L.S. — Large Shank

Spec & Info

End Mills:



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High Performance:

List # 510 PM Plus Two Flute End Mill



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Regular	Rougher/Finisher -	Finisher
Number of Flutes -	2	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 533 PM Plus Three Flute End Mill



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Regular	Rougher/Finisher -	Finisher
Number of Flutes -	3	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 571 PM Plus Three Flute End Mill



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Long	Rougher/Finisher -	Finisher
Number of Flutes -	3	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 575 PM Plus Multi-Flute End Mill



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Stub	Rougher/Finisher -	Finisher
Number of Flutes -	Multi-Flute	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 554 Single End Four Flute End Mill



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Regular	Rougher/Finisher -	Finisher
Number of Flutes -	4	Double or Single End -	Single End
End Work -	Ball Nose		



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List # 553 PM Plus Multi-Flute End Mill



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Regular	Rougher/Finisher -	Finisher
Number of Flutes -	Multi-Flute	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 552 PM Plus Double End Multi-Flute End Mill



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Regular	Rougher/Finisher -	Finisher
Number of Flutes -	4	Double or Single End -	Double End
End Work -	Center Cutting		



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List # 579 PM Plus Multi-Flute End Mill



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Long, X-Long	Rougher/Finisher -	Finisher
Number of Flutes -	Multi-Flute	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 578 PM Plus Cobalt Multi-Flute Rougher



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright, TiN, TiCN
Length -	Various	Rougher/Finisher -	Rougher
Number of Flutes -	Multi-Flute	Double or Single End -	Single End
End Work -	Non Center Cutting		



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High Performance:

List # 503 PM Plus Cobalt Multi-Flute Rougher



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright,TiN,TiCN
Length -	Regular	Rougher/Finisher -	Rougher
Number of Flutes -	Multi-Flute	Double or Single End -	Single End
End Work -	Ball Nose		



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List # 505 PM Plus Cobalt Multi-Flute Rougher



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright,TiN,TiCN
Length -	Regular	Rougher/Finisher -	Rougher
Number of Flutes -	Multi-Flute	Double or Single End -	Single End
End Work -	Ball Nose		



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List # 538 PM Plus Cobalt High Helix Three Flute Rougher



Substrate -	PM/Plus Cobalt	Surface Treatment -	Bright,TiN,TiCN
Length -	Various	Rougher/Finisher -	Rougher
Number of Flutes -	3	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 7212 Microplus Single End Stub Length Two Flute Carbide End Mill



Substrate -	Carbide	Surface Treatment -	Bright
Length -	Stub	Rougher/Finisher -	Finisher
Number of Flutes -	2	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 7222 Microplus Double End Stub Length Two Flute Carbide End Mill



Substrate -	Carbide	Surface Treatment -	Bright
Length -	Stub	Rougher/Finisher -	Finisher
Number of Flutes -	2	Double or Single End -	Double End
End Work -	Center Cutting		



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List # 7211 Microplus Single End Regular Length Two Flute Carbide End Mill



Substrate -	Carbide	Surface Treatment -	Bright,TiN,TiCN
Length -	Regular	Rougher/Finisher -	Finisher
Number of Flutes -	2	Double or Single End -	Single End
End Work -	Center Cutting		



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List # 7216 Microplus Regular Length Two Flute Ball Nose Carbide End Mill



Substrate -	Carbide	Surface Treatment -	Bright,TiN
Length -	Regular	Rougher/Finisher -	Finisher
Number of Flutes -	2	Double or Single End -	Single End
End Work -	Ball Nose		



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List # 7221 Microplus Double End Regular Length Two Flute Carbide End Mill



Substrate -	Carbide	Surface Treatment -	Bright
Length -	Regular	Rougher/Finisher -	Finisher
Number of Flutes -	2	Double or Single End -	Double End
End Work -	Center Cutting		



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List # 7213 Microplus Single End Long Length Two Flute Carbide End Mill



Substrate -	Carbide	Surface Treatment -	Bright
Length -	Long	Rougher/Finisher -	Finisher
Number of Flutes -	2	Double or Single End -	Single End
End Work -	Center Cutting		



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High Performance:

List #7312 Microplus Single End Stub Length Three Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 3	Double or Single End - Single End
End Work - Center Cutting	



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List #7311 Microplus Regular Length Three Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright, TiN, TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 3	Double or Single End - Single End
End Work - Center Cutting	

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List #7313 Microplus Single End Long Length Three Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 3	Double or Single End - Single End
End Work - Center Cutting	



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List #7412 Microplus Single End Stub Length Four Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Center Cutting	



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List #7422 Microplus Double End Stub Length Four Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	



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List #7411 Microplus Single End Regular Length Four Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright, TiN, TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Center Cutting	



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List #7416 Microplus Regular Length Four Flute Ball Nose Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright, TiN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Ball Nose	



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List #7421 Microplus Double End Regular Length Four Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	



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List #7413 Microplus Single End Long Length Four Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - Bright
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Center Cutting	



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High Performance:

List # 7360 Microplus Regular Length 60° High Helix Three Flute Carbide End Mill



Substrate - Carbide	Surface Treatment - TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 3	Double or Single End - Single End
End Work - Non Center Cutting	



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General Purpose:

List # 422 High Speed Steel Double End Two Flute End Mill

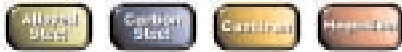


Substrate - HSS	Surface Treatment - Bright, TiN, TiCN
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List # 423 High Speed Steel Double End Two Flute Ball Nose End Mill

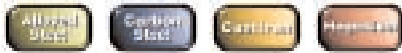


Substrate - HSS	Surface Treatment - Bright, TiN, TiCN
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Ball Nose	



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List # 693 High Speed Steel Double End Two Flute End Mill

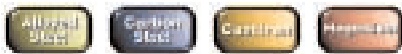


Substrate - HSS	Surface Treatment - Bright, TiN, TiCN
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List # 405 High Speed Steel Single End Two Flute End Mill



Substrate - HSS	Surface Treatment - Bright, TiN, TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	



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List # 426 High Speed Steel Double End Two Flute End Mill

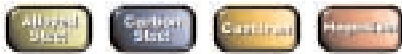


Substrate - HSS	Surface Treatment - Bright, TiN, TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List # 427 High Speed Steel Double End Two Flute Ball Nose End Mill

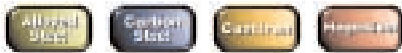


Substrate - HSS	Surface Treatment - Bright, TiN, TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Ball Nose	



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List # 685 High Speed Steel Single End Two Flute End Mill



Substrate - HSS	Surface Treatment - Bright, TiN, TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	



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General Purpose:

List # 690 High Speed Steel Single End Two Flute Ball Nose End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Ball Nose	



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List # 684 High Speed Steel Double End Two Flute End Mill

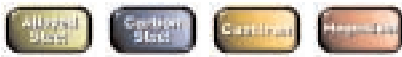


Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List # 697 High Speed Steel Double End Two Flute End Mill

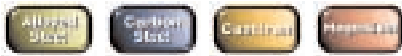


Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Ball Nose	



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List # 686 High Speed Steel Single End Two Flute Keyway Tolerance End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	



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List # 507 High Speed Steel Single End Two Flute Drill Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - 90 Degree Point	



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List # 428 High Speed Steel Double End Two Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List # 696 High Speed Steel Single End Two Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	



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List # 698 High Speed Steel Single End Two Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Ball Nose	



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List # 689 High Speed Steel Single End Two Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	



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End Mills • Picture Index

General Purpose:

List #587 High Speed Steel Double End Three Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 3	Double or Single End - Double End
End Work - Center Cutting	



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List #586 High Speed Steel Single End Three Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 3	Double or Single End - Single End
End Work - Center Cutting	



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List #585 High Speed Steel Single End Three Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 3	Double or Single End - Single End
End Work - Center Cutting	



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List #442 High Speed Steel Double End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	



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List #695 High Speed Steel Double End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Non Center Cutting	



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List #406 High Speed Steel Single End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Center Cutting	



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List #446 High Speed Steel Double End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	

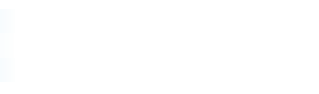


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List #683 High Speed Steel Single End Multi-Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Non Center Cutting	



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List #583 High Speed Steel Single End Multi-Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Center Cutting	



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General Purpose:

List # 570 High Speed Steel Single End Multi-Flute End Mill For Bridgeports



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Non Center Cutting	

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List # 584 High Speed Steel Single End Four Flute Ball Nose End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Ball Nose	



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List # 683-LH High Speed Steel Single End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Non Center Cutting	



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List # 682 High Speed Steel Double End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Non Center Cutting	



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List # 582 High Speed Steel Double End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	



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List # 682-LH High Speed Steel Double End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Non Center Cutting	



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List # 448 High Speed Steel Double End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	



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List # 688 High Speed Steel Single End Multi-Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Non Center Cutting	

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List # 589 High Speed Steel Single End Four Flute Ball Nose End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Ball Nose	



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General Purpose:

List #588 High Speed Steel Single End Four Flute End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Center Cutting	



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List #691 High Speed Steel Single End Extra Long Multi-Flute End



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Extra Long	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Non Center Cutting	



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List #591 High Speed Steel Single End Extra Long Multi-Flute End



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Extra Long	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Center Cutting	



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List #581 High Speed Steel Single End Extra Long Four Flute Ball Nose End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Extra Long	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Single End
End Work - Ball Nose	



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Special Purpose:

List #665 High Speed Steel Single End Two Flute High Helix End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	



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List #668 High Speed Steel Double End Two Flute High Helix End



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List #666 High Speed Steel Two Flute Long Length High Helix End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	



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List #667 High Speed Steel Two Flute Extra Long High Helix End Mill



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Extra Long	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	

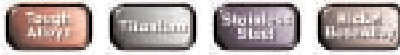


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Special Purpose:

List #407 Cobalt Double End Two Flute End Mill

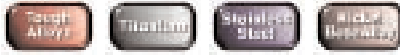


Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List #408 Cobalt Double End Two Flute End Mill

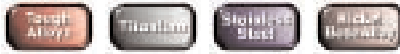


Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List #555 Cobalt Single End Two Flute End Mill

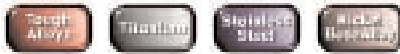


Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Center Cutting	



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List #559 Cobalt Single End Two Flute Ball Nose End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Single End
End Work - Ball Nose	



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List #565 Cobalt Double End Two Flute End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 2	Double or Single End - Double End
End Work - Center Cutting	



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List #409 Cobalt Double End Multi-Flute End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Stub	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	



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List #410 Cobalt Double End Four Flute End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	



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List #556 Cobalt Single End Multi-Flute End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Center Cutting	



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List #560 Cobalt Single End Multi-Flute Ball Nose End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Ball Nose	



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Special Purpose:

List #567 Cobalt Double End Four Flute End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Regular	Rougher/Finisher - Finisher
Number of Flutes - 4	Double or Single End - Double End
End Work - Center Cutting	



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List #557 Cobalt Single End Multi-Flute Long Length End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Long	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Center Cutting	



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List #558 Cobalt Single End Multi-Flute End Mill



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Extra Long	Rougher/Finisher - Finisher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Center Cutting	



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List #576 High Speed Steel Multi-Flute Rougher



Substrate - HSS	Surface Treatment - Bright,TiN,TiCN
Length - Various	Rougher/Finisher - Rougher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Non Center Cutting	



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Rougher:

List #506 Cobalt Three Flute Rougher



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Various	Rougher/Finisher - Rougher
Number of Flutes - 3	Double or Single End - Single End
End Work - Center Cutting	



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List #577 Cobalt Multi-Flute Rougher



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Various	Rougher/Finisher - Rougher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Non Center Cutting	



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List #501 Cobalt Multi-Flute Rougher



Substrate - Cobalt High Speed Steel	Surface Treatment - Bright,TiN,TiCN
Length - Various	Rougher/Finisher - Rougher
Number of Flutes - Multi-Flute	Double or Single End - Single End
End Work - Non Center Cutting	



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List #510 PM Plus Two Flute End Mill



Substrate - PM/Plus Cobalt
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Increased cutting geometry for greater feed rates (+50%)
- Freer cutting to minimize heat build up
- 37° helix for accelerated chip removal
- 2 flutes allows maximum space for chip ejection

For coatings performance and application information, see page 4.

Diam.	Decimal	Metric	Overall	Length	Shank	• EDP Number •		
of Mill	Eqv.	Eqv.	Length	of Cut	Diam.	Bright	TiN	TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C40792	C40809	C40826
3/16	.1875	4.76	2-3/8	1/2	3/8	C40793	C40810	C40827
1/4	.25	6.35	2-7/16	5/8	3/8	C40794	C40811	C40828
5/16	.3125	7.94	2-1/2	3/4	3/8	C40795	C40812	C40829
3/8	.375	9.53	2-1/2	3/4	3/8	C40796	C40813	C40830
7/16	.4219	10.72	2-11/16	1	1/2	C40797	C40814	C40831
1/2	.5	12.70	3-1/4	1-1/4	1/2	C40798	C40815	C40832
9/16	.5625	14.29	3-3/8	1-3/8	1/2	C40799	C40816	C40833
5/8	.625	15.88	3-3/4	1-5/8	5/8	C40800	C40817	C40834

Diam.	Decimal	Metric	Overall	Length	Shank	• EDP Number •		
of Mill	Eqv.	Eqv.	Length	of Cut	Diam.	Bright	TiN	TiCN
1 1/16	.6875	17.46	3-3/4	1-5/8	5/8	C40801	C40818	C40835
3/4	.75	19.05	3-7/8	1-5/8	3/4	C40802	C40819	C40836
7/8	.875	22.23	4-1/8	1-7/8	7/8	C40803	C40820	C40837
1	1	25.40	4-1/2	2	1	C40804	C40821	C40838
1-1/8	1.125	28.58	4-1/2	2	1	C40805	C40822	C40839
1-1/4	1.25	31.75	4-1/2	2	1-1/4	C40806	C40823	C40840
1-1/2	1.5	38.10	4-1/2	2	1-1/4	C40807	C40824	C40841
2	2	50.80	4-1/2	2	1-1/4	C40808	C40825	C40842

List #533 PM Plus Three Flute End Mill



Substrate - PM/Plus Cobalt
Length - Regular
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Increased cutting geometry for greater feed rates (+50%)
- Freer cutting to minimize heat build up
- 42° high helix for accelerated chip removal
- Center cutting allows for plunge cutting

For coatings performance and application information, see page 4.

Diam.	Decimal	Metric	Overall	Length	Shank	• EDP Number •		
of Mill	Eqv.	Eqv.	Length	of Cut	Diam.	Bright	TiN	TiCN
1/2	.5	12.70	3-1/4	1-1/4	1/2	C49272	C39944	C39950
5/8	.625	15.88	3-3/4	1-5/8	5/8	C49275	C39945	C39951
3/4	.75	19.05	3-7/8	1-5/8	3/4	C49277	C39946	C39952

Diam.	Decimal	Metric	Overall	Length	Shank	• EDP Number •		
of Mill	Eqv.	Eqv.	Length	of Cut	Diam.	Bright	TiN	TiCN
1	1	25.40	4-1/2	2	1	C49283	C39947	C39953
1-1/4	1.25	31.75	4-1/2	2	1-1/4	C49289	C39948	C39954
1-1/2	1.5	38.10	4-1/2	2	1-1/4	C49292	C39949	C39955

List #571 PM Plus Three Flute End Mill



Substrate - PM/Plus Cobalt
Length - Long
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Increased cutting geometry for greater feed rates (+50%)
- Freer cutting to minimize heat build up
- 42° high helix for accelerated chip removal
- Long length of cut for greater depth capacity

For coatings performance and application information, see page 4.

Diam.	Decimal	Metric	Overall	Length	Shank	• EDP Number •		
of Mill	Eqv.	Eqv.	Length	of Cut	Diam.	Bright	TiN	TiCN
3/4	.75	19.05	5-1/4	3	3/4	C49278	C39956	C39962
1	1	25.40	5-1/2	3	1	C49284	C39957	C39963
1 1/2	1.5	38.10	6-1/2	4	1 1/2	C49285	C39958	C39964

Diam.	Decimal	Metric	Overall	Length	Shank	• EDP Number •		
of Mill	Eqv.	Eqv.	Length	of Cut	Diam.	Bright	TiN	TiCN
1-1/4	1.25	31.75	6-1/2	4	1-1/4	C49291	C39959	C39965
1-1/2	1.5	38.10	6-1/2	4	1-1/4	C49294	C39960	C39966
2	2	50.80	7-3/4	4	1-1/4	C49298	C39961	C39967

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List #575 PM Plus Multi-Flute End Mill



Substrate - PM/Plus Cobalt
Length - Stub
Number of Flutes - Multi-Flute
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Increased cutting geometry for greater feed rates (+50%)
- Freer cutting to minimize heat build up
- 37° helix for accelerated chip removal
- Stub length for greater rigidity

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number •		
							Bright	TiN	TiCN
1/8	.125	3.18	2-3/16	1/4	3/8	4	C43208	C31924	C31939
3/16	.1875	4.76	2-1/8	1/4	3/8	4	C43209	C31925	C31940
1/4	.25	6.35	2-1/16	1/4	3/8	4	C43210	C31926	C31941
5/16	.3125	7.94	2-1/8	3/8	3/8	4	C43211	C31927	C31942
3/8	.375	9.53	2-1/8	3/8	3/8	4	C43212	C31928	C31943
7/16	.4375	11.11	2-3/16	1/2	1/2	4	C43213	C31929	C31944
1/2	.5	12.70	2-1/2	1/2	1/2	4	C43214	C31930	C31945
5/8	.625	15.88	2-3/4	5/8	5/8	4	C43215	C31931	C31946
5/8	.625	15.88	2-3/4	5/8	5/8	6	C43216	C31932	C31947
3/4	.75	19.05	3	3/4	3/4	4	C43217	C31933	C31948
3/4	.75	19.05	3	3/4	3/4	6	C43218	C31934	C31949
7/8	.875	22.23	3-1/2	1-1/4	7/8	4	C43220	C31935	C31950
7/8	.875	22.23	3-1/8	7/8	7/8	4	C43219	C31936	C31951
1	1	25.40	3-1/2	1	1	4	C43221	C31938	C31953
1	1	25.40	3-1/2	1	1	6	C43222	C31937	C31952

List #554 PM Plus Four Flute End Mill



Substrate - PM/Plus Cobalt
Length - Regular
Number of Flutes - 4
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Increased cutting geometry for greater feed rates (+50%)
- Freer cutting to minimize heat build up
- 37° helix for accelerated chip removal
- Radius for contouring part surfaces

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C42550	C32048	C32057
3/16	.1875	4.76	2-3/8	1/2	3/8	C42552	C32049	C32058
1/4	.25	6.35	2-7/16	5/8	3/8	C42554	C32050	C32059
5/16	.3125	7.94	2-1/2	3/4	3/8	C42556	C32051	C32060
3/8	.375	9.53	2-1/2	3/4	3/8	C42558	C32052	C32061
1/2	.5	12.70	3-1/4	1-1/4	1/2	C42560	C32053	C32062
5/8	.625	15.88	3-3/4	1-5/8	5/8	C42562	C32054	C32063
3/4	.75	19.05	3-7/8	1-5/8	3/4	C42564	C32055	C32064
1	1	25.40	4-1/2	2	1	C42566	C32056	C32065

End Mills • High Performance

List #553 PM Plus Multi-Flute End Mill



Substrate - PM/Plus Cobalt
Length - Regular
Number of Flutes - Multi-Flute
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Increased cutting geometry for greater feed rates (+50)
- Freer cutting to minimize heat build up
- 37° helix for accelerated chip removal
- Excellent finish

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number •		
							Bright	TiN	TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	4	C42500	C31960	C31987
5/32	.1562	3.97	2-3/8	1/2	3/8	4	C43280	C31961	C31988
3/16	.1875	4.76	2-3/8	1/2	3/8	4	C42502	C31962	C31989
7/32	.2188	5.56	2-7/16	5/8	3/8	4	C43281	C31963	C31990
1/4	.25	6.35	2-7/16	5/8	3/8	4	C42504	C31964	C31991
9/32	.2812	7.14	2-1/2	3/4	3/8	4	C43282	C31965	C31992
5/16	.3125	7.94	2-1/2	3/4	3/8	4	C42506	C31966	C31993
11/32	.3438	8.73	2-1/2	3/4	3/8	4	C43283	C31967	C31994
3/8	.375	9.53	2-1/2	3/4	3/8	4	C42508	C31968	C31995
13/32	.4062	10.32	2-11/16	1	1/2	4	C43284	C31969	C31996
7/16	.4375	11.11	2-11/16	1	1/2	4	C43285	C31970	C31997
15/32	.4688	11.91	3-1/4	1-1/4	1/2	4	C31954	C31971	C31998
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C42510	C31972	C31999
9/16	.5625	14.29	3-3/8	1-3/8	1/2	4	C31955	C31973	C32000
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C42512	C31974	C32001
11/16	.6875	17.46	3-3/4	1-5/8	5/8	4	C31956	C31975	C32002
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C42514	C31976	C32003
3/4	.75	19.05	3-7/8	1-5/8	3/4	6	C42516	C31977	C32004
13/16	.8125	20.64	4-1/8	1-7/8	7/8	4	C31957	C31978	C32005
7/8	.875	22.23	4-1/8	1-7/8	7/8	4	C31958	C31979	C32006
15/16	.9375	23.81	4-1/2	1-7/8	1	4	C31959	C31980	C32007
1	1	25.40	4-1/2	2	1	4	C42518	C31981	C32008
1	1	25.40	4-1/2	2	1	6	C42520	C31982	C32009
1-1/8	1.125	28.58	4-1/2	2	1	6	C43223	C31983	C32010
1-1/4	1.25	31.75	4-1/2	2	1-1/4	6	C43224	C31984	C32011
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C43225	C31985	C32012
2	2	50.80	4-1/2	2	1-1/4	6	C43226	C31986	C32013

List #552 PM Plus Double End Four Flute End Mill



Substrate - PM/Plus Cobalt
Length - Regular
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Increased cutting geometry for greater feed rates (+50)
- Freer cutting to minimize heat build up
- 37° helix for accelerated chip removal
- Double end reduces tool cost and down time
- Excellent finish

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C52189	C31882	C31903
5/32	.1562	3.97	3-1/4	7/16	3/8	C39968	C31883	C31904
3/16	.1875	4.76	3-1/4	1/2	3/8	C52190	C31884	C31905
7/32	.2188	5.56	3-1/4	9/16	3/8	C39969	C31885	C31906
1/4	.25	6.35	3-3/8	5/8	3/8	C52191	C31886	C31907
9/32	.2812	7.14	3-3/8	11/16	3/8	C39970	C31887	C31908
5/16	.3125	7.94	3-1/2	3/4	3/8	C52192	C31888	C31909
11/32	.3438	8.73	3-1/2	3/4	3/8	C39971	C31889	C31910
3/8	.375	9.53	3-1/2	3/4	3/8	C52193	C31890	C31911
13/32	.4062	10.32	4-1/8	1	1/2	C39972	C31891	C31912
7/16	.4375	11.11	4-1/8	1	1/2	C52194	C31892	C31913
15/32	.4688	11.91	4-1/8	1	1/2	C39973	C31893	C31914

(Continued on next page)

End Mills • High Performance

List #552 continued

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv. Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/2	.5	12.70 4-1/8	1	1/2	C52195 C31894 C31915
9/16	.5625	14.29 5	1-3/8	5/8	C39974 C31895 C31916
5/8	.625	15.88 5	1-3/8	5/8	C52196 C31896 C31917
1 1/16	.6875	17.46 5-5/8	1-5/8	3/4	C31879 C31897 C31918
3/4	.75	19.05 5-5/8	1-5/8	3/4	C52197 C31898 C31919

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv. Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
13/16	.8125	20.64 6-1/8	1-7/8	7/8	C31880 C31899 C31920
7/8	.875	22.23 6-1/8	1-7/8	7/8	C52198 C31900 C31921
15/16	.9375	23.81 6-3/8	1-7/8	1	C31881 C31901 C31922
1	1	25.40 6-3/8	1-7/8	1	C52199 C31902 C31923

List #579 PM Plus Multi-Flute End Mill



Substrate - PM/Plus Cobalt
Length - Long, X-Long
Number of Flutes - Multi-Flute
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Powdered metal 8% Cobalt
 - High vanadium for high red hardness and greater toughness
 - Increased cutting geometry for greater feed rates (+50+)
 - Freer cutting to minimize heat build up
 - 37° helix for accelerated chip removal
 - Long length of cut for greater depth capacity
 - Excellent finish
- For coatings performance and

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number • TiN TiCN
1/4	.25	6.35	3-1/16	1-1/4	3/8	4	C43290	C32016 C32032
5/16	.3125	7.94	3-1/8	1-3/8	3/8	4	C43291	C32017 C32033
3/8	.375	9.53	3-1/4	1-1/2	3/8	4	C43292	C32018 C32034
7/16	.4375	11.11	3-3/4	1-3/4	3/8	4	C32014	C32019 C32035
1/2	.5	12.70	4	2	1/2	4	C43293	C32020 C32036
5/8	.625	15.88	4-5/8	2-1/2	5/8	4	C43294	C32021 C32037
3/4	.625	15.88	5-1/4	3	3/4	4	C43295	C32022 C32038
7/8	.875	22.23	5-3/4	3-1/2	7/8	4	C32015	C32023 C32039
1	1	25.40	5-1/2	3	1	4	C43286	C32024 C32040
1	1	25.40	6-1/2	4	1	4	C43296	C32025 C32041
1	1	25.40	6-1/2	4	1	6	C43277	C43278 C43279
1-1/4	1.25	31.75	5-1/2	3	1-1/4	6	C43287	C32026 C32042
1-1/4	1.25	31.75	6-1/2	4	1-1/4	6	C43297	C32027 C32043
1-1/4	1.25	31.75	8-1/2	6	1-1/4	6	C43268	C43269 C43270
1-1/4	1.25	31.75	5-1/2	3	1-1/4	6	C43288	C32028 C32044
1-1/2	1.5	38.10	6-1/2	4	1-1/4	6	C43298	C32029 C32045
2	2	50.80	5-3/4	2	2	6	C43227	C32031 C32047
2	2	50.80	7-3/4	4	2	6	C43289	C32030 C32046
2	2	50.80	9-3/4	6	2	6	C43271	C43272 C43273

List #578 PM Plus Cobalt Multi-Flute



Substrate - PM/Plus Cobalt
Length - Various
Number of Flutes - Multi-Flute
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Rougher
Double or Single End - Single End



Features:

- Course pitch for heavier, more manageable chips
- Heavy cross-section for rigidity
- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Side cutting
- Chamfered corners

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number • TiN TiCN
1/4	.25	6.35	2-1/16	1/4	3/8	3	C43228	C32213 C32242
1/4	.25	6.35	2-7/16	5/8	3/8	3	C43229	C32214 C32243
3/8	.375	9.53	2-1/8	3/8	3/8	4	C43230	C32215 C32244
3/8	.375	9.53	2-1/2	3/4	3/8	4	C43299	C32216 C32245

(Continued on next page)

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List #578 continued

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number • TiN	TiCN
3/8	.375	9.53	3-1/4	1-1/2	3/8	4	C32210	C32217	C32246
1/2	.5	12.70	2-1/2	1/2	1/2	4	C43231	C32218	C32247
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C43300	C32219	C32248
1/2	.5	12.70	4	2	1/2	4	C32211	C32220	C32249
5/8	.625	15.88	2-3/4	5/8	5/8	4	C43232	C32221	C32250
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C43301	C32222	C32251
5/8	.625	15.88	4-5/8	2-1/2	5/8	4	C32212	C32223	C32252
3/4	.75	19.05	3	3/4	3/4	4	C43233	C32224	C32253
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C43302	C32225	C32254
3/4	.75	19.05	5-1/4	3	3/4	4	C43303	C32226	C32255
7/8	.875	22.23	3-1/8	7/8	7/8	5	C43234	C32227	C32256
1	1	25.40	3-1/2	1	1	5	C43235	C32228	C32257
1	1	25.40	4-1/2	2	1	5	C43236	C32229	C32258
1	1	25.40	5-1/2	3	1	5	C43304	C32230	C32259
1	1	25.40	6-1/2	4	1	5	C43305	C32231	C32260
1-1/8	1.125	28.58	4-1/2	2	1	5	C43237	C32232	C32261
1-1/4	1.25	31.75	4-1/2	2	1-1/4	5	C43238	C32233	C32262
1-1/4	1.25	31.75	5-1/2	3	1-1/4	5	C43239	C32234	C32263
1-1/4	1.25	31.75	6-1/2	4	1-1/4	5	C43306	C32235	C32264
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C43240	C32236	C32265
1-1/2	1.5	38.10	6-1/2	4	1-1/4	6	C43309	C32237	C32266
2	2	50.80	4-1/2	2	1-1/4	8	C43241	C32238	C32267
2	2	50.80	5-3/4	2	2	8	C43242	C32239	C32268
2	2	50.80	7-3/4	4	2	8	C43243	C32240	C32269
2	2	50.80	9-3/4	6	2	8	C43311	C32241	C32270
2	2	50.80	11-3/4	8	2	8	C43274	C43275	C43276

List #503 PM Plus Cobalt Multi-Flute



Substrate - PM/Plus Cobalt
 Length - Regular
 Number of Flutes - Multi-Flute
 End Work - Ball Nose
 Surface Treatment - Bright, TiN, TiCN
 Rougher/Finisher - Rougher
 Double or Single End - Single End



Features:

- Course pitch for heavier, more manageable chips
- Heavy cross-section for rigidity
- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Radius for contouring part surfaces

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number • TiN	TiCN
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C32334	C32340	C32346
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C32335	C32341	C32347
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C32336	C32342	C32348
1	1	25.40	4-1/2	2	1	5	C32337	C32343	C32349
1-1/4	1.25	31.75	4-1/2	2	1-1/4	5	C32338	C32344	C32350
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C32339	C32345	C32351

End Mills • High Performance

List #505 PM Plus Cobalt Multi-Flute



Substrate - PM/Plus Cobalt
 Length - Regular
 Number of Flutes - Multi-Flute
 End Work - Ball Nose
 Surface Treatment - Bright, TiN, TiCN
 Rougher/Finisher - Rougher
 Double or Single End - Single End



Features:

- Fine pitch for small powdery chips
- Heavy cross-section for rigidity
- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Radius for contouring part surfaces

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv.	Length of Cut	Shank Diam.	• EDP Number •
					Bright TiN TiCN
1/2	.5	12.70	3-1/4	1-1/4	1/2 C32352 C32358 C32364
5/8	.625	15.88	3-3/4	1-5/8	5/8 C32353 C32359 C32365
3/4	.75	19.05	3-7/8	1-5/8	3/4 C32354 C32360 C32366

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv.	Length of Cut	Shank Diam.	• EDP Number •
					Bright TiN TiCN
1	1	25.40	4-1/2	2	1 C32355 C32361 C32367
1-1/4	1.25	31.75	4-1/2	2	1-1/4 C32356 C32362 C32368
1-1/2	1.5	38.10	4-1/2	2	1-1/2 C32357 C32363 C32369

List #538 PM Plus Cobalt High Helix Three Flute Rougher



Substrate - PM/Plus Cobalt
 Length - Various
 Number of Flutes - 3
 End Work - Center Cutting
 Surface Treatment - Bright, TiCN
 Rougher/Finisher - Rougher
 Double or Single End - Single End



Features:

- Special coarse pitch knuckle form design for aluminum
- Special end gash for plunge cuts in aluminum
- 42° high helix for accelerated chip removal
- Powdered metal 8% Cobalt
- High vanadium for high red hardness and greater toughness
- Chamfered corners

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv.	Length of Cut	Shank Diam.	• EDP Number •
					Bright TiN TiCN
1/2	.5	12.70	3-1/4	1-1/4	1/2 C40003 C40015
1/2	.5	12.70	4	2	1/2 C40004 C40016
5/8	.625	15.88	3-3/4	1-5/8	5/8 C40005 C40017
5/8	.625	15.88	4-5/8	2-1/2	5/8 C40006 C40018
3/4	.75	19.05	3-7/8	1-5/8	3/4 C40007 C40019
3/4	.75	19.05	5-1/4	3	3/4 C40008 C40020
1	1	25.40	4-1/2	2	1 C40009 C40021
1	1	25.40	5-1/2	3	1 C40010 C40022
1	1	25.40	6-1/2	4	1 C40011 C40023
1-1/4	1.25	31.75	5-1/2	3	1-1/4 C40012 C40024

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv.	Length of Cut	Shank Diam.	• EDP Number •
					Bright TiN TiCN
1-1/4	1.25	31.75	6-1/2	4	1-1/4 C40013 C40025
1-1/4	1.25	31.75	8-1/2	6	1-1/4 C40014 C40026
1-1/2	1.5	38.10	4-1/2	2	1-1/2 C43244 C43246
1-1/2	1.5	38.10	5-1/2	3	1-1/2 C43247 C43249
1-1/2	1.5	38.10	6-1/2	4	1-1/2 C43250 C43252
1-1/2	1.5	38.10	8-1/2	6	1-1/2 C43253 C43255
2	2	50.80	5-3/4	2	2 C43256 C43258
2	2	50.80	6-3/4	3	2 C43259 C43261
2	2	50.80	7-3/4	4	2 C43262 C43264
2	2	50.80	9-3/4	6	2 C43271 C43273

End Mills • High Performance

List #7212 Microplus Single End Stub Length Two Flute Carbide End



Features:

- Maximum space for chip ejection
- Stub length for greater rigidity
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles

Substrate - Carbide
Length - Stub
Number of Flutes - 2
End Work - Center cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Single End



Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.0625	1.59	1-1/2	1/8	1/8	C53852
3/32	.0938	2.38	1-1/2	3/16	1/8	C53853
1/8	.125	3.18	1-1/2	1/4	1/8	C53854
5/32	.1562	3.97	2	5/16	3/16	C53855
3/16	.1875	4.76	2	3/8	3/16	C53856
7/32	.2188	5.56	2	7/16	1/4	C53857
1/4	.25	6.35	2	1/4	1/4	C53858
9/32	.2812	7.14	2	9/32	5/16	C40622
5/16	.3125	7.94	2	5/16	5/16	C53859
11/32	.3438	8.73	2	1/2	3/8	C40623

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/8	.375	9.53	2	5/8	3/8	C53860
13/32	.4062	10.32	2-1/2	5/8	7/16	C40624
7/16	.4375	11.11	2-1/2	5/8	7/16	C53861
15/32	.4688	11.91	2-1/2	5/8	1/2	C40625
1/2	.5	12.70	2-1/2	5/8	1/2	C53862
9/16	.5625	14.29	3	3/4	9/16	C40626
5/8	.625	15.88	3	3/4	5/8	C53863
11/16	.6875	17.46	3	1	3/4	C40627
3/4	.75	19.05	3	1	3/4	C53864

List #7222 Microplus Double End Stub Length Two Flute Carbide End



Substrate - Carbide
Length - Stub
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Maximum space for chip ejection
- Stub length for greater rigidity
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles
- Heavier feed rates
- Double end reduces tool cost and down time

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	1-1/2	1/4	1/8	C53913
5/32	.1562	3.97	2	5/16	3/16	C53914
3/16	.1875	4.76	2	3/8	3/16	C53915
7/32	.2188	5.56	2-1/2	7/16	1/4	C53916
1/4	.25	6.35	2-1/2	1/2	1/4	C53917
9/32	.2812	7.14	2-1/2	1/2	5/16	C53918

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/16	.3125	7.94	2-1/2	1/2	5/16	C53919
11/32	.3438	8.73	2-1/2	1/2	3/8	C53920
3/8	.375	9.53	2-1/2	1/2	3/8	C53921
7/16	.4375	11.11	2-3/4	9/16	7/16	C53922
1/2	.5	12.70	3	5/8	1/2	C53923

End Mills • High Performance

List #7211 Microplus Single End Regular Length Two Flute Carbide End



Substrate - Carbide
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Maximum space for chip ejection
- Widest variety of sizes
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/16	.0625	1.59	1-1/2	3/16	1/8	C53776	C40548	C40585	
5/64	.0781	1.98	1-1/2	9/32	1/8	C53777	C40549	C40586	
3/32	.0938	2.38	1-1/2	1/4	1/8	C53778	C40550	C40587	
7/64	.1094	2.78	1-1/2	5/16	1/8	C53779	C40551	C40588	
1/8	.125	3.18	1-1/2	3/8	1/8	C53780	C40552	C40589	
9/64	.1406	3.57	2	7/16	3/16	C53781	C40553	C40590	
5/32	.1562	3.97	2	1/2	3/16	C53782	C40554	C40591	
11/64	.1719	4.37	2	9/16	3/16	C53783	C40555	C40592	
3/16	.1875	4.76	2	9/16	3/16	C53784	C40556	C40593	
13/64	.2031	5.16	2-1/2	5/8	1/4	C53785	C40557	C40594	
7/32	.2188	5.56	2-1/2	5/8	1/4	C53786	C40558	C40595	
15/64	.2344	5.95	2-1/2	5/8	1/4	C53787	C40559	C40596	
1/4	.25	6.35	2-1/2	3/4	1/4	C53788	C40560	C40597	
17/64	.2656	6.75	2-1/2	3/4	5/16	C53789	C40561	C40598	
9/32	.2812	7.14	2-1/2	3/4	5/16	C53790	C40562	C40599	
19/64	.2969	7.54	2-1/2	3/4	5/16	C53791	C40563	C40600	
5/16	.3125	7.94	2-1/2	13/16	5/16	C53792	C40564	C40601	
21/64	.3281	8.33	2-1/2	13/16	3/8	C53793	C40565	C40602	
11/32	.3438	8.73	2-1/2	13/16	3/8	C53794	C40566	C40603	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
23/64	.3594	9.13	2-1/2	7/8	3/8	C53795	C40567	C40604	
3/8	.375	9.53	2-1/2	7/8	3/8	C53796	C40568	C40605	
25/64	.2906	7.38	2-3/4	1	7/16	C40542	C40569	C40606	
13/32	.4062	10.32	2-3/4	1	7/16	C53797	C40570	C40607	
27/64	.4219	10.72	2-3/4	1	7/16	C40543	C40571	C40608	
7/16	.4375	11.11	2-3/4	1	7/16	C53798	C40572	C40609	
29/64	.4531	11.51	3	1	1/2	C40544	C40573	C40610	
15/32	.4688	11.91	3	1	1/2	C53799	C40574	C40611	
31/64	.4844	12.30	3	1	1/2	C40545	C40575	C40612	
1/2	.5	12.70	3	1	1/2	C53800	C40576	C40613	
33/64	.5156	13.10	3-1/2	1-1/8	9/16	C40546	C40577	C40614	
17/32	.5312	13.49	3-1/2	1-1/8	9/16	C40547	C40578	C40615	
9/16	.5625	14.29	3-1/2	1-1/8	9/16	C53801	C40579	C40616	
5/8	.625	15.88	3-1/2	1-1/4	5/8	C53802	C40580	C40617	
11/16	.6875	17.46	4	1-3/8	3/4	C53803	C40581	C40618	
3/4	.75	19.05	4	1-1/2	3/4	C53804	C40582	C40619	
7/8	.875	22.23	4	1-1/2	7/8	C53805	C40583	C40620	
1	1	25.40	4	1-1/2	1	C53806	C40584	C40621	

List #7216 Microplus Regular Length Two Flute Ball Nose Carbide End Mill



Substrate - Carbide
Length - Regular
Number of Flutes - 2
End Work - Ball Nose
Surface Treatment - Bright, TiN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Maximum space for chip ejection
- Radius for contouring part surfaces
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles
- Plunge and side cutting

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/16	.0625	1.59	1-1/2	3/16	1/8	C53935	C40634		
3/32	.0932	2.37	1-1/2	9/32	1/8	C53936	C40635		
1/8	.125	3.18	1-1/2	3/8	1/8	C53937	C40636		
5/32	.1562	3.97	2	1/2	3/16	C53938	C40637		
3/16	.1875	4.76	2	9/16	3/16	C53939	C40638		
7/32	.2188	5.56	2-1/2	5/8	1/4	C53940	C40639		
1/4	.25	6.35	2-1/2	3/4	1/4	C53941	C40640		
9/32	.2812	7.14	2-1/2	3/4	5/16	C53942	C40641		
5/16	.3125	7.94	2-1/2	13/16	5/16	C53943	C40642		

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
3/8	.375	9.53	2-1/2	7/8	3/8	C53944	C40643		
7/16	.4375	11.11	2-3/4	1	7/16	C53945	C40644		
1/2	.5	12.70	3	1	1/2	C53946	C40645		
9/16	.5625	14.29	3-1/2	1-1/8	9/16	C40628	C40646		
5/8	.625	15.88	3-1/2	1-1/4	5/8	C40629	C40647		
11/16	.6875	17.46	4	1-3/8	3/4	C40630	C40648		
3/4	.75	19.05	4	1-1/2	3/4	C40631	C40649		
7/8	.875	22.23	4	1-1/2	7/8	C40632	C40650		
1	1	25.40	4	1-1/2	1	C40633	C40651		

End Mills • High Performance

List #722I Microplus Double End Regular Length Two Flute Carbide End



Substrate - Carbide
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Maximum space for chip ejection
- Double end reduces tool cost and down time
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C53891
5/32	.1562	3.97	3-1/8	7/16	3/8	C53892
3/16	.1875	4.76	3-1/4	1/2	3/8	C53893
7/32	.2188	5.56	3-3/8	9/16	3/8	C53894
1/4	.25	6.35	3-3/8	5/8	3/8	C53895

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
9/32	.2812	7.14	3-3/8	11/16	3/8	C53896
5/16	.3125	7.94	3-1/2	3/4	3/8	C53897
11/32	.3438	8.73	3-1/2	3/4	3/8	C53898
3/8	.375	9.53	3-1/2	3/4	3/8	C53899
7/16	.4375	11.11	4	7/8	1/2	C53900
1/2	.5	12.70	4	1	1/2	C53901

List #7213 Microplus Single End Long Length Two Flute Carbide End



Substrate - Carbide
Length - Long
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Single End

Features:

- Maximum space for chip ejection
- Long length of cut for greater depth capacity
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/16	.1875	4.76	2-1/2	3/4	3/4	C54549
1/4	.25	6.35	3	1-1/8	1/4	C54550
5/16	.3125	7.94	3	1-1/8	5/16	C54551
3/8	.375	9.53	3	1-1/8	3/8	C54552
7/16	.4375	11.11	2	2	7/16	C54553

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/2	.5	12.70	4	2	1/2	C54554
5/8	.625	15.88	5	2-1/4	5/8	C54555
3/4	.75	19.05	5	2-1/4	3/4	C54556
1	1	25.40	5	2-1/4	1	C54557

End Mills • High Performance

List #7312 Microplus Single End Stub Length Three Flute Carbide End



Substrate - Carbide
Length - Stub
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- 3 flutes are excellent for slotting
- Stub length for greater rigidity
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles
- Heavier feed rates

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.0625	1.59	1-1/2	1/8	1/8	C53878
3/32	.0938	2.38	1-1/2	3/16	1/8	C53879
1/8	.125	3.18	1-1/2	1/4	1/8	C53880
5/32	.1562	3.97	2	5/16	3/16	C53881
3/16	.1875	4.76	2	3/8	3/16	C53882
7/32	.2188	5.56	2	7/16	1/4	C53883
1/4	.25	6.35	2	1/2	1/4	C53884
9/32	.2812	7.14	2	1/2	5/16	C40694
5/16	.3125	7.94	2	1/2	5/16	C53885
11/32	.3438	8.73	2	5/8	3/8	C40695

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/8	.375	9.53	2	5/8	3/8	C53886
13/32	.4062	10.32	2-1/2	5/8	7/16	C40696
7/16	.4375	11.11	2-1/2	5/8	7/16	C53887
15/32	.4688	11.91	2-1/2	5/8	1/2	C40697
1/2	.5	12.70	2-1/2	5/8	1/2	C53888
9/16	.5625	14.29	3	3/4	9/16	C40698
5/8	.625	15.88	3	3/4	5/8	C53889
11/16	.6875	17.46	3	1	3/4	C40699
3/4	.75	19.05	3	1	3/4	C53890

List #7311 Microplus Regular Length Three Flute Carbide End Mill



Substrate - Carbide
Length - Regular
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End

Features:

- 3 flutes are excellent for slotting
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.0625	1.59	1-1/2	3/16	1/8	C53814 C40652 C40673
3/32	.0938	2.38	1-1/2	9/32	1/8	C53816 C40653 C40674
1/8	.125	3.18	1-1/2	3/8	1/8	C53838 C40654 C40675
5/32	.1562	3.97	2	1/2	3/16	C53839 C40655 C40676
3/16	.1875	4.76	2	9/16	3/16	C53840 C40656 C40677
7/32	.2188	5.56	2-1/2	5/8	1/4	C53841 C40657 C40678
1/4	.25	6.35	2-1/2	3/4	1/4	C53842 C40658 C40679
9/32	.2812	7.14	2-1/2	3/4	5/16	C53843 C40659 C40680
5/16	.3125	7.94	2-1/2	13/16	5/16	C53844 C40660 C40681
11/32	.3438	8.73	2-1/2	13/16	3/8	C53845 C40661 C40682
3/8	.375	9.53	2-1/2	7/8	3/8	C53846 C40662 C40683

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
13/32	.4062	10.32	2-3/4	1	7/16	C53818 C40663 C40684
7/16	.4375	11.11	2-3/4	1	7/16	C53847 C40664 C40685
15/32	.4688	11.91	3	1	1/2	C53820 C40665 C40686
1/2	.5	12.70	3	1	1/2	C53848 C40666 C40687
9/16	.5625	14.29	3-1/2	1-1/8	9/16	C53849 C40667 C40688
5/8	.625	15.88	3-1/2	1-1/4	5/8	C53850 C40668 C40689
11/16	.6875	17.46	4	1-3/8	3/4	C53822 C40669 C40690
3/4	.75	19.05	4	1-1/2	3/4	C53851 C40670 C40691
7/8	.875	22.23	4	1-1/2	7/8	C53824 C40671 C40692
1	1	25.40	4	1-1/2	1	C53826 C40672 C40693

For coatings performance and application information, see page 4.

End Mills • High Performance

List #7313 Microplus Single End Long Length Three Flute Carbide End



Substrate - Carbide
Length - Long
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- 3 flutes are excellent for slotting
- Long length of cut for greater depth capacity
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
3/16	.1875	4.76	2-1/2	3/4	3/16	C54558			
1/4	.25	6.35	3	1-1/8	1/4	C54559			
5/16	.3125	7.94	3	1-1/8	5/16	C54560			
3/8	.375	9.53	3	1-1/8	3/8	C54561			
7/16	.4375	11.11	4	2	7/16	C54562			

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/2	.5	12.70	4	2	1/2	C54563			
5/8	.625	15.88	5	2-1/4	5/8	C54564			
3/4	.75	19.05	5	2-1/4	3/4	C54565			
1	1	25.40	5	2-1/4	1	C54566			

List #7412 Microplus Single End Stub Length Four Flute Carbide End



Substrate - Carbide
Length - Stub
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Stub length for greater rigidity
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles
- Heavier feed rates

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/16	.0625	1.59	1-1/2	1/8	1/8	C53865			
3/32	.0938	2.38	1-1/2	3/16	1/8	C53866			
1/8	.125	3.18	1-1/2	1/4	1/8	C53867			
5/32	.1562	3.97	2	5/16	3/16	C53868			
3/16	.1875	4.76	2	3/8	3/16	C53869			
7/32	.2188	5.56	2	7/16	1/4	C53870			
1/4	.25	6.35	2	1/2	1/4	C53871			
9/32	.2812	7.14	2	1/2	5/16	C40774			
5/16	.3125	7.94	2	1/2	5/16	C53872			
11/32	.3438	8.73	2	1/2	3/8	C40775			

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
3/8	.375	9.53	2	5/8	3/8	C53873			
13/32	.4062	10.32	2-1/2	5/8	7/16	C40776			
7/16	.4375	11.11	2-1/2	5/8	7/16	C53874			
15/32	.4688	11.91	2-1/2	5/8	1/2	C40777			
1/2	.5	12.70	2-1/2	5/8	1/2	C53875			
9/16	.5625	14.29	3	3/4	9/16	C40778			
5/8	.625	15.88	3	3/4	5/8	C53876			
11/16	.6875	17.46	3	1	3/4	C40779			
3/4	.75	19.05	3	1	3/4	C53877			

End Mills • High Performance

List #7422 Microplus Double End Stub Length Four Flute Carbide End



Substrate - Carbide
Length - Stub
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Multi-flutes for smoother finish
- Stub length for greater rigidity
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles
- Double end reduces tool cost and down time
- Heavier feed rates

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	1-1/2	1/4	1/8	C53924
5/32	.1562	3.97	2	5/16	3/16	C53925
3/16	.1875	4.76	2	3/8	3/16	C53926
7/32	.2188	5.56	2-1/2	7/16	1/4	C53927
1/4	.25	6.35	2-1/2	1/2	1/4	C53928
9/32	.2812	7.14	2-1/2	1/2	5/16	C53929

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/16	.3125	7.94	2-1/2	1/2	5/16	C53930
11/32	.3438	8.73	2-1/2	1/2	3/8	C53931
3/8	.375	9.53	2-1/2	1/2	3/8	C53932
7/16	.4375	11.11	2-3/4	9/16	7/16	C53933
1/2	.5	12.70	3	5/8	1/2	C53934

List #7411 Microplus Single End Regular Length Four Flute Carbide End



Substrate - Carbide
Length - Regular
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.0625	1.59	1-1/2	3/16	1/8	C53807 C40700 C40737
5/64	.0781	1.98	1-1/2	1/4	1/8	C53808 C40701 C40738
3/32	.0938	2.38	1-1/2	9/32	1/8	C53809 C40702 C40739
7/64	.1094	2.78	1-1/2	5/16	1/8	C53810 C40703 C40740
1/8	.125	3.18	1-1/2	3/8	1/8	C53811 C40704 C40741
9/64	.1406	3.57	2	7/16	3/16	C53812 C40705 C40742
5/32	.1562	3.97	2	1/2	3/16	C53813 C40706 C40743
11/64	.1719	4.37	2	9/16	3/16	C54066 C40707 C40744
3/16	.1875	4.76	2	9/16	3/16	C53815 C40708 C40745
13/64	.2031	5.16	2-1/2	5/8	1/4	C54067 C40709 C40746
7/32	.2188	5.56	2-1/2	5/8	1/4	C53817 C40710 C40747
15/64	.2344	5.95	2-1/2	5/8	1/4	C54068 C40711 C40748
1/4	.25	6.35	2-1/2	3/4	1/4	C53819 C40712 C40749
17/64	.2656	6.75	2-1/2	3/4	5/16	C54069 C40713 C40750
9/32	.2812	7.14	2-1/2	3/4	5/16	C53821 C40714 C40751
19/64	.2969	7.54	2-1/2	3/4	5/16	C54070 C40715 C40752
5/16	.3125	7.94	2-1/2	13/16	5/16	C53823 C40716 C40753
21/64	.3281	8.33	2-1/2	13/16	3/8	C54071 C40717 C40754
11/32	.3438	8.73	2-1/2	13/16	3/8	C53825 C40718 C40755

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
23/64	.3594	9.13	2-1/2	7/8	3/8	C54072 C40719 C40756
3/8	.375	9.53	2-1/2	7/8	3/8	C53827 C40720 C40757
25/64	.3906	9.92	2-3/4	1	7/16	C54076 C40721 C40758
13/32	.4062	10.32	2-3/4	1	7/16	C53828 C40722 C40759
27/64	.4219	10.72	2-3/4	1	7/16	C54077 C40723 C40760
7/16	.4375	11.11	2-3/4	1	7/16	C53829 C40724 C40761
29/64	.4531	11.51	3	1	1/2	C54078 C40725 C40762
15/32	.4688	11.91	3	1	1/2	C53830 C40726 C40763
31/64	.4844	12.30	3	1	1/2	C54079 C40727 C40764
1/2	.5	12.70	3	1	1/2	C53831 C40728 C40765
33/64	.5156	13.10	3-1/2	1-1/8	9/16	C54080 C40729 C40766
17/32	.5312	13.49	3-1/2	1-1/8	9/16	C54081 C40730 C40767
9/16	.5625	14.29	3-1/2	1-1/8	9/16	C53832 C40731 C40768
5/8	.625	15.88	3-1/2	1-1/4	5/8	C53833 C40732 C40769
11/16	.6875	17.46	4	1-3/8	3/4	C53834 C40733 C40770
3/4	.75	19.05	4	1-1/2	3/4	C53835 C40734 C40771
7/8	.875	22.23	4	1-1/2	7/8	C53836 C40735 C40772
1	1	25.40	4	1-1/2	1	C53837 C40736 C40773

End Mills • High Performance

List #741 Microplus Regular Length Four Flute Ball Nose Carbide End Mill



Substrate - Carbide
Length - Regular
Number of Flutes - 4
End Work - Ball Nose
Surface Treatment - Bright TiN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Radius for contouring part surfaces
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles
- Plunge and side cutting

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/16	.0625	1.59	1-1/2	3/16	1/8	C53947	C40780		
3/32	.0938	2.38	1-1/2	9/32	1/8	C53948	C40781		
1/8	.125	3.18	1-1/2	3/8	1/8	C53949	C40782		
5/32	.1562	3.97	2	1/2	3/16	C53950	C40783		
3/16	.1875	4.76	2	9/16	3/16	C53951	C40784		
7/32	.2188	5.56	2-1/2	5/8	1/4	C53952	C40785		

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/4	.25	6.35	2-1/2	3/4	1/4	C53953	C40786		
9/32	.2812	7.14	2-1/2	3/4	5/16	C53954	C40787		
5/16	.3125	7.94	2-1/2	13/16	5/16	C53955	C40788		
3/8	.375	9.53	2-1/2	7/8	3/8	C53956	C40789		
7/16	.4375	11.11	2-3/4	1	7/16	C53957	C40790		
1/2	.5	12.70	3	1	1/2	C53958	C40791		

List #742 Microplus Double End Regular Length Four Flute Carbide End



Substrate - Carbide
Length - Regular
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flute for smoother finish
- Double end reduces tool cost and down time
- Sub-micron grain carbide for maximum strength
- Higher radial rake angles
- Heavier feed rates

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C53902			
5/32	.1562	3.97	3-1/8	7/16	3/8	C53903			
3/16	.1875	4.76	3-1/4	1/2	3/8	C53904			
7/32	.2188	5.56	3-3/8	9/16	3/8	C53905			
1/4	.25	6.35	3-3/8	5/8	3/8	C53906			
9/32	.2812	7.14	3-3/8	11/16	3/8	C53907			

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
5/16	.3125	7.94	3-1/2	3/4	3/8	C53908			
11/32	.3438	8.73	3-1/2	3/4	3/8	C53909			
3/8	.375	9.53	3-1/2	3/4	3/8	C53910			
7/16	.4375	11.11	4	7/8	1/2	C53911			
1/2	.5	12.70	4	1	1/2	C53912			

End Mills • High Performance

List #7413 Microplus Single End Long Length Four Flute Carbide End Mill

- Features:**
- Four flutes for smoother finish
 - Long length of cut for greater depth capacity
 - Sub-micron grain carbide for maximum strength
 - Higher radial rake angles



Substrate - Carbide
Length - Long
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright
Rougher/Finisher - Finisher
Double or Single End - Single End



Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	1-1/2	1/2	1/8	C53626
3/16	.1875	4.76	2-1/2	3/4	3/16	C54567
1/4	.25	6.35	3	1-1/8	1/4	C54568
5/16	.3125	7.94	3	1-1/8	5/16	C54569
3/8	.375	9.53	3	1-1/8	3/8	C54570

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
7/16	.4375	11.11	4	2	7/16	C54571
1/2	.5	12.70	4	2	1/2	C54572
5/8	.625	15.88	5	2-1/4	5/8	C54573
3/4	.75	19.05	5	2-1/4	3/4	C54574
1	1	25.40	5	2-1/4	1	C54575

List #7360 Microplus Regular Length 60° High Helix Three Flute Carbide End Mill

- Features:**
- 60° high helix for excellent shearing action
 - Right hand helix, right hand cut for smooth clean profile cutting
 - Sub-micron grain carbide for maximum strength
 - 3 flute for greater chip space
 - Strengthened corners for longer life



Substrate - Carbide
Length - Regular
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/16	.1875	4.76	2-1/2	5/8	1/4	C02117
1/4	.25	6.35	2-1/2	3/4	1/4	C02118
5/16	.3125	7.94	2-1/2	13/16	5/16	C02119
3/8	.375	9.53	2-1/2	7/8	3/8	C02120
7/16	.4375	11.11	3	1	7/16	C02121

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/2	.5	12.70	3	1	1/2	C02122
5/8	.625	15.88	3-1/2	1-1/4	5/8	C02123
3/4	.75	19.05	4	1-1/2	3/4	C02124
1	1	25.40	4	1-1/2	1	C02125

End Mills • General Purpose

List #422 High Speed Steel Double End Two Flute End Mill



Substrate - HSS
Length - Stub
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- 2 flutes allow maximum space for chip ejection
- Stub length for greater rigidity
- Double end reduces tool cost and down time
- All have 3/16" shanks for one holder size to use on all sizes

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/32	.0312	0.79	2	3/64	3/16	C41001	C39840	C39851	
3/64	.0469	1.19	2	1/16	3/16	C41003	C39841	C39852	
1/16	.0625	1.59	2	3/32	3/16	C41005	C39842	C39853	
5/64	.0781	1.98	2	1/8	3/16	C41006	C39843	C39854	
3/32	.0932	2.37	2	9/64	3/16	C41008	C39844	C39855	
7/64	.1094	2.78	2	5/32	3/16	C41010	C39845	C39856	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/8	.125	3.18	2	3/16	3/16	C41012	C39846	C39857	
9/64	.1406	3.57	2	7/32	3/16	C41013	C39847	C39858	
5/32	.1562	3.97	2	15/64	3/16	C41014	C39848	C39859	
11/64	.1719	4.37	2	1/4	3/16	C41016	C39849	C39860	
3/16	.1875	4.76	2	9/32	3/16	C41017	C39850	C39861	

List #423 High Speed Steel Double End Two Flute Ball Nose End Mill



Substrate - HSS
Length - Stub
Number of Flutes - 2
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- 2 flutes allow maximum space for chip ejection
- Stub length for greater rigidity
- Radius for contouring part surfaces
- All have 3/16" shanks for one holder size to use on all sizes
- Plunge and side cutting
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/16	.0625	1.59	2	3/32	3/16	C41021	C39862	C39867	
3/32	.0938	2.38	2	9/64	3/16	C41023	C39863	C39868	
1/8	.125	3.18	2	3/16	3/16	C41026	C39864	C39869	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
5/32	.1562	3.97	2	15/64	3/16	C41027	C39865	C39870	
3/16	.1875	4.76	2	9/32	3/16	C41029	C39866	C39871	

End Mills • General Purpose

List #693 High Speed Steel Double End Two Flute End Mill



Substrate - HSS
Length - Stub
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- 2 flutes allow maximum space for chip ejection
- Stub length for greater rigidity
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-3/4	3/16	3/8	C42096 C39044 C39049
5/32	.1562	3.97	2-3/4	15/64	3/8	C42097 C39045 C39050
3/16	.1875	4.76	2-3/4	9/32	3/8	C42099 C39046 C39051

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
7/32	.2188	5.56	2-7/8	21/64	3/8	C42101 C39047 C39052
1/4	.25	6.35	2-7/8	3/8	3/8	C42103 C39048 C39053

List #405 High Speed Steel Single End Two Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- All have 3/16" shanks for one holder size to use on all sizes

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/32	.0312	0.79	1-1/2	3/32	3/16	C40843 C40854 C40865
3/64	.0469	1.19	1-1/2	9/64	3/16	C40844 C40855 C40866
1/16	.0625	1.59	1-1/2	3/16	3/16	C40845 C40856 C40867
5/64	.0781	1.98	1-1/2	15/64	3/16	C40846 C40857 C40868
3/32	.0932	2.37	1-1/2	9/32	3/16	C40847 C40858 C40869
7/64	.1094	2.78	1-1/2	21/64	3/16	C40848 C40859 C40870

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	1-1/2	3/8	3/16	C40849 C40860 C40871
9/64	.1406	3.57	1-1/2	13/32	3/16	C40850 C40861 C40872
5/32	.1562	3.97	1-1/2	7/16	3/16	C40851 C40862 C40873
11/64	.1719	4.37	1-1/2	1/2	3/16	C40852 C40863 C40874
3/16	.1875	4.76	1-1/2	1/2	3/16	C40853 C40864 C40875

End Mills • General Purpose

List #426 High Speed Steel Double End Two Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End

Features:

- 2 flutes allow maximum space for chip ejection
- Double end reduces tool cost
- All have 3/16" shanks for one holder size to use on all sizes

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/32	.0312	0.79	2-1/4	3/32	3/16	C41032	C39872	C39883
3/64	.0469	1.19	2-1/4	9/64	3/16	C41034	C39873	C39884
1/16	.0625	1.59	2-1/4	3/16	3/16	C41036	C39874	C39885
5/64	.0781	1.98	2-1/4	15/64	3/16	C41037	C39875	C39886
3/32	.0932	2.37	2-1/4	9/32	3/16	C41039	C39876	C39887
7/64	.1094	2.78	2-1/4	21/64	3/16	C41041	C39877	C39888

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/8	.125	3.18	2-1/4	3/8	3/16	C41043	C39878	C39889
9/64	.1406	3.57	2-1/4	13/32	3/16	C41044	C39879	C39890
5/32	.1562	3.97	2-1/4	7/16	3/16	C41045	C39880	C39891
11/64	.1719	4.37	2-1/4	1/2	3/16	C41047	C39881	C39892
3/16	.1875	4.76	2-1/4	1/2	3/16	C41048	C39882	C39893

List #427 High Speed Steel Double End Two Flute Ball Nose End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- 2 flutes allow maximum space for chip ejection
- All have 3/16" shanks for one holder size to use on all sizes
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/16	.0625	1.59	2-1/4	3/32	3/16	C41053	C39894	C39899
3/32	.0938	2.38	2-1/4	9/64	3/16	C41056	C39895	C39900
1/8	.125	3.18	2-1/4	3/16	3/16	C41060	C39896	C39901

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
5/32	.2344	5.95	2-1/4	15/64	3/16	C41061	C39897	C39902
3/16	.2812	7.14	2-1/4	9/32	3/16	C41063	C39898	C39903

End Mills • General Purpose

List #685 High Speed Steel Single End Two Flute End Mill

- Features:**
- 2 flutes allow maximum space for chip ejection
 - Widest variety of sizes



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C41602 C41550 C33803
5/32	.1562	3.97	2-3/8	7/16	3/8	C33730 C33754 C33804
11/64	.1719	4.37	2-3/8	7/16	3/8	C33731 C33755 C33805
3/16	.1875	4.76	2-3/8	7/16	3/8	C41604 C41551 C33806
13/64	.2013	5.11	2-7/16	1/2	3/8	C33732 C33756 C33807
7/32	.2188	5.56	2-7/16	1/2	3/8	C33733 C33757 C33808
15/64	.2344	5.95	2-7/16	1/2	3/8	C33734 C33758 C33809
1/4	.25	6.35	2-7/16	1/2	3/8	C41607 C41552 C33810
17/64	.2656	6.75	2-1/2	9/16	3/8	C33735 C33759 C33811
9/32	.2812	7.14	2-1/2	9/16	3/8	C33736 C33760 C33812
19/64	.2969	7.54	2-1/2	9/16	3/8	C33737 C33761 C33813
5/16	.3125	7.94	2-1/2	9/16	3/8	C41609 C41553 C33814
21/64	.3281	8.33	2-1/2	9/16	3/8	C33738 C33762 C33815
11/32	.3438	8.73	2-1/2	9/16	3/8	C33739 C33763 C33816
23/64	.3594	9.13	2-1/2	9/16	3/8	C33740 C33764 C33817
3/8	.375	9.53	2-1/2	9/16	3/8	C41612 C41554 C33818
25/64	.3906	9.92	2-11/16	13/16	3/8	C33741 C33765 C33819
13/32	.4062	10.32	2-11/16	13/16	3/8	C33742 C33766 C33820
27/64	.4219	10.72	2-11/16	13/16	3/8	C33743 C33767 C33821
7/16	.4375	11.11	2-11/16	13/16	3/8	C41615 C33768 C33822
29/64	.4531	11.51	3-1/4	13/16	1/2	C33744 C33769 C33823
15/32	.4688	11.91	3-1/4	13/16	1/2	C33745 C33770 C33824
31/64	.4844	12.30	3-1/4	13/16	1/2	C33746 C33771 C33825
1/2	.5	12.70	2-11/16	13/16	1/2	C41617 C33772 C33826
1/2	.5	12.70	3-1/4	1	1/2	C41618 C41555 C33827
33/64	.5156	13.10	3-3/8	1-1/8	1/2	C33747 C33773 C33828
17/32	.5312	13.49	3-3/8	1-1/8	1/2	C33748 C33774 C33829
35/64	.5469	13.89	3-3/8	1-1/8	1/2	C33749 C33775 C33830
9/16	.5625	14.29	3-3/8	1-1/8	1/2	C41620 C33776 C33831
37/64	.5781	14.68	3-3/8	1-1/8	1/2	C33750 C33777 C33832
19/32	.5938	15.08	3-3/8	1-1/8	1/2	C33751 C33778 C33833
39/64	.6094	15.48	3-3/8	1-1/8	1/2	C33752 C33779 C33834

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/8	.625	15.88	3-3/8	1-1/8	1/2	C41622 C33780 C33835
5/8	.625	15.88	3-3/4	1-5/16	5/8	C41623 C41556 C33836
11/16	.6875	17.46	3-5/8	1-5/16	1/2	C41625 C33781 C33837
11/16	.6875	17.46	3-3/4	1-5/16	5/8	C41626 C33782 C33838
3/4	.75	19.05	3-5/8	1-5/16	1/2	C41628 C33783 C33839
3/4	.75	19.05	3-3/4	1-5/16	5/8	C41629 C33784 C33840
3/4	.75	19.05	3-7/8	1-5/16	3/4	C41630 C41557 C33841
13/16	.8125	20.64	4	1-1/2	5/8	C41632 C33785 C38900
7/8	.875	22.23	4	1-1/2	5/8	C41635 C33786 C38901
7/8	.875	22.23	4-1/8	1-1/2	3/4	C41636 C33787 C38902
7/8	.875	22.23	4-1/8	1-1/2	7/8	C41637 C33788 C38903
15/16	.9375	23.81	4-1/8	1-1/2	7/8	C33753 C33789 C38904
1	1	25.40	4	1-1/2	5/8	C41641 C33790 C38905
1	1	25.40	4-1/8	1-1/2	3/4	C41642 C33791 C38906
1	1	25.40	4-1/8	1-1/2	7/8	C41643 C33792 C38907
1	1	25.40	4-1/2	1-5/8	1	C41644 C41558 C38908
1-1/8	1.125	28.58	4-1/8	1-5/8	7/8	C41647 C33793 C38909
1-1/8	1.125	28.58	4-1/2	1-5/8	1	C41648 C33794 C38910
1-1/4	1.25	31.75	4-1/8	1-5/8	7/8	C41650 C33795 C38911
1-1/4	1.25	31.75	4-1/2	1-5/8	1	C41651 C33796 C38912
1-1/4	1.25	31.75	4-1/2	1-5/8	1-1/4	C41652 C33797 C38913
1-3/8	1.375	34.93	4-1/2	1-5/8	1	C41655 C33798 C38914
1-1/2	1.5	38.10	4-1/2	1-5/8	1	C41659 C33799 C38915
1-1/2	1.5	38.10	4-1/2	1-5/8	1-1/4	C41660 C33800 C38916
1-3/4	1.75	44.45	4-1/2	1-5/8	1-1/4	C41662 C33801 C38917
2	2	50.80	4-1/2	1-5/8	1-1/4	C41665 C33802 C38918
2	2	50.80	5-3/4	2	2	C43478 C32790 C32796
2	2	50.80	6-3/4	3	2	C32789 C32791 C32797
2	2	50.80	7-3/4	4	2	C43479 C32792 C32798
2	2	50.80	9-3/4	6	2	C43480 C32793 C32799
2-1/2	2.5	63.50	7-3/4	4	2	C43487 C32794 C32800
2-1/2	2.5	63.50	9-3/4	6	2	C43488 C32795 C32801

End Mills • General Purpose

List #690 High Speed Steel Single End Two Flute Ball Nose End Mill

- Features:**
- 2 flutes allow maximum space for chip ejection
 - Radius for contouring part surfaces
 - Plunge and side cutting



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C42109 C39010 C39027
3/16	.1875	4.76	2-3/8	1/2	3/8	C42111 C39011 C39028
1/4	.25	6.35	2-7/16	5/8	3/8	C42114 C39012 C39029
5/16	.3125	7.94	2-1/4	3/4	3/8	C42116 C39013 C39030
3/8	.375	9.53	2-1/2	3/4	3/8	C42119 C39014 C39031
7/16	.4375	11.11	3-1/4	1	1/2	C42122 C39015 C39032
1/2	.5	12.70	3-1/4	1	1/2	C42124 C39016 C39033
9/16	.5625	14.29	3-3/8	1-1/8	1/2	C42126 C39017 C39034
5/8	.625	15.88	3-3/8	1-1/8	1/2	C42128 C39018 C39035

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/8	.625	15.88	3-3/4	1-3/8	5/8	C42129 C39019 C39036
3/4	.75	19.05	3-5/8	1-5/16	1/2	C42132 C39020 C39037
3/4	.75	19.05	3-7/8	1-5/8	3/4	C42133 C39021 C39038
7/8	.875	22.23	4-1/4	2	7/8	C42137 C39022 C39039
1	1	25.40	4-3/4	2-1/4	1	C42141 C39023 C39040
1-1/8	1.125	28.58	4-3/4	2-1/4	1	C42144 C39024 C39041
1-1/4	1.25	31.75	5	2-1/2	1-1/4	C42146 C39025 C39042
1-1/2	1.5	38.10	5	2-1/2	1-1/4	C42152 C39026 C39043

List #684 High Speed Steel Double End Two Flute End Mill

- Features:**
- 2 flutes allow maximum space for chip ejection
 - Double end reduces tool cost and down time



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C42051 C33648 C33689
9/64	.1406	3.57	3-1/8	7/16	3/8	C33626 C33649 C33690
5/32	.1562	3.97	3-1/8	7/16	3/8	C42052 C33650 C33691
11/64	.1719	4.37	3-1/4	7/16	3/8	C33627 C33651 C33692
3/16	.1875	4.76	3-1/4	7/16	3/8	C42054 C33652 C33693
13/64	.2031	5.16	3-1/4	1/2	3/8	C42055 C33653 C33694
7/32	.2188	5.56	3-1/4	1/2	3/8	C42056 C33654 C33695
15/64	.2344	5.95	3-3/8	1/2	3/8	C33629 C33655 C33696
1/4	.25	6.35	3-3/8	1/2	3/8	C42058 C33656 C33697
17/64	.2656	6.75	3-3/8	9/16	3/8	C33630 C33657 C33698
9/32	.2812	7.14	3-3/8	9/16	3/8	C42060 C33658 C33699
19/64	.2969	7.54	3-1/2	9/16	3/8	C33631 C33659 C33700
5/16	.3125	7.94	3-1/2	9/16	3/8	C42061 C33660 C33701
21/64	.3281	8.33	3-1/2	9/16	3/8	C33632 C33661 C33702
11/32	.3438	8.73	3-1/2	9/16	3/8	C42063 C33662 C33703
23/64	.3594	9.13	3-1/2	9/16	3/8	C33633 C33663 C33704
3/8	.375	9.53	3-1/2	9/16	3/8	C42065 C33664 C33705
25/64	.3906	9.92	4-1/8	13/16	1/2	C33634 C33665 C33706
13/32	.4062	10.32	4-1/8	13/16	1/2	C42067 C33666 C33707
27/64	.4219	10.72	4-1/8	13/16	1/2	C33635 C33667 C33708
7/16	.4375	11.11	4-1/8	13/16	1/2	C42069 C33668 C33709

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
29/64	.4531	11.51	4-1/8	13/16	1/2	C33636 C33669 C33710
15/32	.4688	11.91	4-1/8	13/16	1/2	C42070 C33670 C33711
31/64	.4844	12.30	4-1/8	13/16	1/2	C33637 C33671 C33712
1/2	.5	12.70	4-1/8	13/16	1/2	C42072 C33672 C33713
17/32	.5312	13.49	5	1-1/8	5/8	C33638 C33673 C33714
9/16	.5625	14.29	5	1-1/8	5/8	C42074 C33674 C33715
19/32	.5938	15.08	5	1-1/8	5/8	C33639 C33675 C33716
5/8	.625	15.88	5	1-1/8	5/8	C42076 C33676 C33717
21/32	.6562	16.67	5-5/8	1-5/16	3/4	C33640 C33677 C33718
11/16	.6875	17.46	5-5/8	1-5/16	3/4	C42078 C33678 C33719
23/32	.7188	18.26	5-5/8	1-5/16	3/4	C33641 C33679 C33720
3/4	.75	19.05	5-5/8	1-5/16	3/4	C42080 C33680 C33721
25/32	.7812	19.84	6-1/8	1-9/16	7/8	C33642 C33681 C33722
13/16	.8125	20.64	6-1/8	1-9/16	7/8	C33643 C33682 C33723
27/32	.8438	21.43	6-1/8	1-9/16	7/8	C33644 C33683 C33724
7/8	.875	22.23	6-1/8	1-9/16	7/8	C42084 C33684 C33725
29/32	.9062	23.02	6-3/8	1-5/8	1	C33645 C33685 C33726
15/16	.9375	23.81	6-3/8	1-5/8	1	C33646 C33686 C33727
31/32	.9688	24.61	6-3/8	1-5/8	1	C33647 C33687 C33728
1	1	25.40	6-3/8	1-5/8	1	C42088 C33688 C33729

End Mills • General Purpose

List #697 High Speed Steel Double End Two Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End

Features:

- 2 flutes allow maximum space for chip ejection
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C42184	C39142	C39158	
5/32	.1562	3.97	3-1/8	7/16	3/8	C39136	C39143	C39159	
3/16	.1875	4.76	3-1/4	7/16	3/8	C42186	C39144	C39160	
7/32	.2188	5.56	3-1/4	1/2	3/8	C39137	C39145	C39161	
1/4	.25	6.35	3-3/8	1/2	3/8	C42189	C39146	C39162	
9/32	.2812	7.14	3-3/8	9/16	3/8	C39138	C39147	C39163	
5/16	.3125	7.94	3-1/2	9/16	3/8	C42191	C39148	C39164	
11/32	.3438	8.73	3-1/2	9/16	3/8	C39139	C39149	C39165	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
3/8	.375	9.53	3-1/2	9/16	3/8	C42194	C39150	C39166	
13/32	.4062	10.32	4-1/8	13/16	1/2	C39140	C39151	C39167	
7/16	.4375	11.11	4-1/8	13/16	1/2	C42197	C39152	C39168	
1/2	.5	12.70	4-1/8	13/16	1/2	C42199	C39153	C39169	
5/8	.625	15.88	5	1-1/8	5/8	C42202	C39154	C39170	
3/4	.75	19.05	5-5/8	1-5/16	3/4	C42205	C39155	C39171	
7/8	.875	22.23	6-1/8	1-9/16	7/8	C39141	C39156	C39172	
1	1	25.40	6-3/8	1-5/8	1	C42212	C39157	C39173	

List #686 High Speed Steel Single End Two Flute Keyway Tolerance End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- 2 flutes allow maximum space for chip ejection
- Tolerances of tools for correct fit of keystock

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C41671	C38932	C38957	
3/16	.1875	4.76	2-3/8	7/16	3/8	C41673	C38933	C38958	
7/32	.2188	5.56	2-7/16	1/2	3/8	C38919	C38934	C38959	
1/4	.25	6.35	2-7/16	1/2	3/8	C41676	C38935	C38960	
9/32	.2812	7.14	2-1/2	9/16	3/8	C38920	C38936	C38961	
5/16	.3125	7.94	2-1/2	9/16	3/8	C41678	C38937	C38962	
11/32	.3438	8.73	2-1/2	9/16	3/8	C38921	C38938	C38963	
3/8	.375	9.53	2-1/2	9/16	3/8	C41681	C38939	C38964	
13/32	.4062	10.32	2-11/16	13/16	3/8	C38922	C38940	C38965	
7/16	.4375	11.11	2-11/16	13/16	3/8	C38923	C38941	C38966	
15/32	.4688	11.91	3-1/4	1	1/2	C38924	C38942	C38967	
1/2	.5	12.70	3-1/4	1	1/2	C41685	C38943	C38968	
17/32	.5312	13.49	3-3/8	1-1/8	1/2	C38925	C38944	C38969	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
9/16	.5625	14.29	3-3/8	1-1/8	1/2	C38926	C38945	C38970	
5/8	.625	15.88	3-3/4	1-5/16	5/8	C41688	C38946	C38971	
11/16	.6875	17.46	3-3/4	1-5/16	5/8	C38927	C38947	C38972	
3/4	.75	19.05	3-7/8	1-5/16	3/4	C41691	C38948	C38973	
13/16	.8125	20.64	4	1-1/2	5/8	C38928	C38949	C38974	
7/8	.875	22.23	4-1/8	1-1/2	7/8	C41695	C38950	C38975	
15/16	.9375	23.81	4-1/8	1-1/2	7/8	C38929	C38951	C38976	
1	1	25.40	4-1/2	1-5/8	1	C41699	C38952	C38977	
1-1/8	1.125	28.58	4-1/2	1-5/8	1	C38930	C38953	C38978	
1-1/4	1.25	31.75	4-1/2	1-5/8	1-1/4	C41703	C38954	C38979	
1-3/8	1.375	34.93	4-1/2	1-5/8	1	C38931	C38955	C38980	
1-1/2	1.5	38.10	4-1/2	1-5/8	1-1/4	C41709	C38956	C38981	

End Mills • General Purpose

List #507 High Speed Steel Single End Two Flute Drill Mill

- Features:**
- 2 flutes allow maximum space for chip ejection
 - 90° drill point for rapid penetration plunge cut



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - 90 Degree Point
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/4	.25	6.35	2-5/16	1/2	3/8	C32430	C40506	C40519
5/16	.3125	7.94	2-5/16	9/16	3/8	C32431	C40507	C40520
3/8	.375	9.53	2-5/16	9/16	3/8	C32432	C40508	C40521
7/16	.4375	11.11	2-1/2	13/16	3/8	C32433	C40509	C40522
1/2	.5	12.70	3	1	1/2	C32434	C40510	C40523
9/16	.5625	14.29	3-1/8	1-1/8	1/2	C32435	C40511	C40524
5/8	.625	15.88	3-7/16	1-5/16	5/8	C32436	C40512	C40525

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
11/16	.6875	17.46	3-7/16	1-5/16	5/8	C32437	C40513	C40526
3/4	.75	19.05	3-9/16	1-5/16	3/4	C32438	C40514	C40527
13/16	.8125	20.64	3-3/4	1-1/2	3/4	C32439	C40515	C40528
7/8	.875	22.23	3-3/4	1-1/2	3/4	C32440	C40516	C40529
15/16	.9375	23.81	3-3/4	1-1/2	3/4	C32441	C40517	C40530
1	1	25.40	3-3/4	1-1/2	3/4	C40505	C40518	C40531

List #428 High Speed Steel Double End Two Flute End Mill

- Features:**
- 2 flutes allow maximum space for chip ejection
 - Long length of cut for greater depth capacity
 - All have 3/16" shanks for one holder size to use on all sizes
 - Double end reduces tool cost and down time



Substrate - HSS
Length - Long
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/16	.0625	1.59	2-1/2	7/32	3/16	C41070	C39904	C39909
3/32	.0938	2.38	2-5/8	9/32	3/16	C41072	C39905	C39910
1/8	.125	3.18	3-1/8	3/4	3/16	C41075	C39906	C39911

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
5/32	.1562	3.97	3-1/4	7/8	3/16	C41076	C39907	C39912
3/16	.1875	4.76	3-3/8	1	3/16	C41078	C39908	C39913

End Mills • General Purpose

List #696 High Speed Steel Single End Two Flute End Mill

- Features:**
- 2 flutes allow maximum space for chip ejection
 - Long length of cut for greater depth capacity



Substrate - HSS
Length - Long
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/16	.1875	4.76	3-1/16	1-1/4	3/8	C39064 C39078 C39107
7/32	.2188	5.56	3-1/16	1-1/4	3/8	C39065 C39079 C39108
1/4	.25	6.35	3-1/16	1-1/4	3/8	C39066 C39080 C39109
9/32	.2812	7.14	3-1/8	1-3/8	3/8	C39067 C39081 C39110
5/16	.3125	7.94	3-1/8	1-3/8	3/8	C39068 C39082 C39111
11/32	.3438	8.73	3-1/4	1-1/2	3/8	C39069 C39083 C39112
3/8	.375	9.53	3-1/4	1-1/2	3/8	C41714 C39084 C39113
13/32	.4062	10.32	3-3/4	1-3/4	1/2	C39070 C39085 C39114
7/16	.4375	11.11	3-3/4	1-3/4	1/2	C39071 C39086 C39115
15/32	.4688	11.91	4	2	1/2	C39072 C39087 C39116
1/2	.5	12.70	4	2	1/2	C41718 C39088 C39117
17/32	.5312	13.49	4-5/8	2	5/8	C39073 C39089 C39118
9/16	.5625	14.29	4-5/8	2	5/8	C39074 C39090 C39119
5/8	.625	15.88	4-5/8	2	5/8	C41721 C39091 C39120
11/16	.6875	17.46	5-1/4	2-1/4	3/4	C39075 C39092 C39121

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/4	.75	19.05	5-1/4	2-1/4	3/4	C41724 C39093 C39122
13/16	.8125	20.64	5-1/4	2-1/2	7/8	C39076 C39094 C39123
7/8	.875	22.23	5-3/4	2-1/2	7/8	C41728 C39095 C39124
15/16	.9375	23.81	6-1/2	3	1	C39077 C39096 C39125
1	1	25.40	6-1/2	3	1	C41732 C39097 C39126
1-1/8	1.125	28.58	6-1/2	3	1	C41735 C39098 C39127
1-1/4	1.25	31.75	6-1/2	3	1	C41737 C39099 C39128
1-1/4	1.25	31.75	6-1/2	3	1-1/4	C41738 C39100 C39129
1-3/8	1.375	34.93	6-1/2	3	1	C41741 C39101 C39130
1-1/2	1.5	38.10	6-1/2	3	1-1/4	C41745 C39102 C39131
1-5/8	1.658	42.11	6-1/2	3	1-1/4	C41747 C39103 C39132
1-3/4	1.75	44.45	6-1/2	3	1-1/4	C41748 C39104 C39133
1-7/8	1.875	47.63	6-1/2	3	1-1/4	C41750 C39105 C39134
2	2	50.80	6-1/2	3	1-1/4	C41752 C39106 C39135

List #698 High Speed Steel Single End Two Flute End Mill

- Features:**
- 2 flutes allow maximum space for chip ejection
 - Radius for contouring part surfaces
 - Long neck length for greater depth capacity



Substrate - HSS
Length - Long
Number of Flutes - 2
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-3/8	3/8	3/8	C42158 C39176 C39188
3/16	.1875	4.76	2-11/16	1/2	3/8	C42160 C39177 C39189
1/4	.25	6.35	3-1/16	5/8	3/8	C42163 C39178 C39190
5/16	.3125	7.94	3-5/16	3/4	3/8	C42165 C39179 C39191
3/8	.375	9.53	3-5/16	3/4	3/8	C42168 C39180 C39192
7/16	.4375	11.11	3-3/4	1	1/2	C42171 C39181 C39193

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/2	.5	12.70	4	1	1/2	C42173 C39182 C39194
5/8	.625	15.88	4-5/8	1-3/8	5/8	C42176 C39183 C39195
3/4	.75	19.05	5-3/8	1-5/8	3/4	C42179 C39184 C39196
7/8	.875	22.23	7-1/4	2-1/2	7/8	C39174 C39185 C39197
1	1	25.40	7-1/4	2-1/2	1	C42181 C39186 C39198
1-1/4	1.25	31.75	7-1/4	3	1-1/4	C39175 C39187 C39199

End Mills • General Purpose

List #689 High Speed Steel Single End Two Flute End Mill

- Features:**
- 2 flutes allow maximum space for chip ejection
 - Long neck length for extra reach



Substrate - HSS
Length - Long
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C38982 C38986 C38998
3/16	.1875	4.76	2-11/16	1/2	3/8	C38983 C38987 C38999
1/4	.25	6.35	3-1/16	5/8	3/8	C41772 C38988 C39000
5/16	.3125	7.94	3-5/16	3/4	3/8	C41774 C38989 C39001
3/8	.375	9.53	3-5/16	3/4	3/8	C41777 C38990 C39002
7/16	.4375	11.11	3-3/4	1	1/2	C38984 C38991 C39003

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/2	.5	12.70	4	1	1/2	C41781 C38992 C39004
5/8	.625	15.88	4-5/8	1-3/8	5/8	C41784 C38993 C39005
3/4	.75	19.05	5-1/4	1-5/8	3/4	C41787 C38994 C39006
7/8	.875	22.23	5-3/4	2-1/2	7/8	C38985 C38995 C39007
1	1	25.40	7-1/4	2-1/2	1	C41795 C38996 C39008
1-1/4	1.25	31.75	7-1/4	3	1-1/4	C41799 C38997 C39009

List #587 High Speed Steel Double End Three Flute End Mill

- Features:**
- 3 flutes are excellent for slotting
 - Center cutting allows for plunge cutting
 - Double end reduces tool cost and down time
 - Smoother finish



Substrate - HSS
Length - Regular
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C39575 C39596 C39617
5/32	.1562	3.97	3-1/4	7/16	3/8	C39576 C39597 C39618
3/16	.1875	4.76	3-1/4	1/2	3/8	C39577 C39598 C39619
7/32	.2188	5.56	3-1/4	9/16	3/8	C39578 C39599 C39620
1/4	.25	6.35	3-3/8	5/8	3/8	C39579 C39600 C39621
9/32	.2812	7.14	3-3/8	11/16	3/8	C39580 C39601 C39622
5/16	.3125	7.94	3-1/2	3/4	3/8	C39581 C39602 C39623
11/32	.3488	8.86	3-1/2	3/4	3/8	C39582 C39603 C39624
3/8	.375	9.53	3-1/2	3/4	3/8	C39583 C39604 C39625
13/32	.4062	10.32	4-1/8	1	1/2	C39584 C39605 C39626
7/16	.4375	11.11	4-1/8	1	1/2	C39585 C39606 C39627

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
15/32	.4688	11.91	4-1/8	1	1/2	C39586 C39607 C39628
1/2	.5	12.70	4-1/8	1	1/2	C39587 C39608 C39629
9/16	.5625	14.29	5	1-3/8	5/8	C39588 C39609 C39630
5/8	.625	15.88	5	1-3/8	5/8	C39589 C39610 C39631
11/16	.6875	17.46	5-5/8	1-5/8	3/4	C39590 C39611 C39632
3/4	.75	19.05	5-5/8	1-5/8	3/4	C39591 C39612 C39633
13/16	.8125	20.64	6-1/8	1-7/8	7/8	C39592 C39613 C39634
7/8	.875	22.23	6-1/8	1-7/8	7/8	C39593 C39614 C39635
15/16	.9375	23.81	6-3/8	1-7/8	1	C39594 C39615 C39636
1	1	25.40	6-3/8	1-7/8	1	C39595 C39616 C39637

End Mills • General Purpose

List #586 High Speed Steel Single End Three Flute End Mill



Substrate - HSS
Length - Long
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- 3 flutes are excellent for slotting
- Center cutting allows for plunge cutting
- Long length of cut for greater depth capacity

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/16	.1875	4.76	3-1/16	1-1/4	3/8	C39731 C39753 C39775
7/32	.2188	5.56	3-1/16	1-1/4	3/8	C39732 C39754 C39776
1/4	.25	6.35	3-1/16	1-1/4	3/8	C39733 C39755 C39777
9/32	.2812	7.14	3-1/8	1-3/8	3/8	C39734 C39756 C39778
5/16	.3125	7.94	3-1/8	1-3/8	3/8	C39735 C39757 C39779
11/32	.3438	8.73	3-1/4	1-1/2	3/8	C39736 C39758 C39780
3/8	.375	9.53	3-1/4	1-1/2	3/8	C39737 C39759 C39781
13/32	.4062	10.32	3-3/4	1-3/4	1/2	C39738 C39760 C39782
7/16	.4375	11.11	3-3/4	1-3/4	1/2	C39739 C39761 C39783
15/32	.4688	11.91	4	2	1/2	C39740 C39762 C39784
1/2	.5	12.70	4	2	1/2	C39741 C39763 C39785

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/8	.625	15.88	4-5/8	2-1/2	5/8	C39742 C39764 C39786
3/4	.75	19.05	5-1/4	3	3/4	C39743 C39765 C39787
7/8	.875	22.23	5-3/4	3-1/2	7/8	C39744 C39766 C39788
1	1	25.40	6-1/2	4	1	C39745 C39767 C39789
1-1/8	1.125	28.58	6-1/2	4	1	C39746 C39768 C39790
1-1/4	1.25	31.75	6-1/2	4	1	C39747 C39769 C39791
1-1/4	1.25	31.75	6-1/2	4	1-1/4	C39748 C39770 C39792
1-1/2	1.5	38.10	6-1/2	4	1	C39749 C39771 C39793
1-1/2	1.5	38.10	6-1/2	4	1-1/4	C39750 C39772 C39794
1-3/4	1.75	44.45	6-1/2	4	1-1/4	C39751 C39773 C39795
2	2	50.80	6-1/2	4	1-1/4	C39752 C39774 C39796

List #585 High Speed Steel Single End Three Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- 3 flutes are excellent for slotting
- Center cutting allows for plunge cutting

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C39638 C39669 C39700
5/32	.1562	3.97	2-3/8	1/2	3/8	C39639 C39670 C39701
3/16	.1875	4.76	2-3/8	1/2	3/8	C39640 C39671 C39702
7/32	.2188	5.56	2-7/16	5/8	3/8	C39641 C39672 C39703
1/4	.25	6.35	2-7/16	5/8	3/8	C39642 C39673 C39704
9/32	.2812	7.14	2-1/2	3/4	3/8	C39643 C39674 C39705
5/16	.3125	7.94	2-1/2	3/4	3/8	C39644 C39675 C39706
11/32	.3438	8.73	2-1/2	3/4	3/8	C39645 C39676 C39707
3/8	.375	9.53	2-1/2	3/4	3/8	C39646 C39677 C39708
13/32	.4062	10.32	2-11/16	1	3/8	C39647 C39678 C39709
7/16	.4375	11.11	2-11/16	1	3/8	C39648 C39679 C39710
15/32	.4688	11.91	3-1/4	1-1/4	1/2	C39649 C39680 C39711
1/2	.5	12.70	2-11/16	1	3/8	C39650 C39681 C39712
1/2	.5	12.70	3-1/4	1-1/4	1/2	C39651 C39682 C39713
9/16	.5625	14.29	3-3/8	1-3/8	1/2	C39652 C39683 C39714
5/8	.625	15.88	3-3/4	1-5/8	5/8	C39653 C39684 C39715
11/16	.6875	17.46	3-3/4	1-5/8	5/8	C39654 C39685 C39716
3/4	.75	19.05	3-7/8	1-5/8	3/4	C39655 C39686 C39717
13/16	.8125	20.64	4	1-7/8	5/8	C39656 C39687 C39718

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
7/8	.875	22.23	4-1/8	1-7/8	7/8	C39657 C39688 C39719
15/16	.9375	23.81	4-1/8	1-7/8	7/8	C39658 C39689 C39720
1	1	25.40	4-1/8	1-7/8	3/4	C39659 C39690 C39721
1	1	25.40	4-1/2	2	1	C39660 C39691 C39722
1-1/8	1.125	28.58	4-1/2	2	1	C39661 C39692 C39723
1-1/4	1.25	31.75	4-1/2	2	1	C39662 C39693 C39724
1-1/4	1.25	31.75	4-1/2	2	1-1/4	C39663 C39694 C39725
1-3/8	1.375	34.93	4-1/2	2	1	C39664 C39695 C39726
1-1/2	1.5	38.10	4-1/2	2	1	C39665 C39696 C39727
1-1/2	1.5	38.10	4-1/2	2	1-1/4	C39666 C39697 C39728
1-3/4	1.75	44.45	4-1/2	2	1-1/4	C39667 C39698 C39729
2	2	50.80	4-1/2	2	1-1/4	C39668 C39699 C39730
2	2	50.80	6-3/4	3	2	C32802 C32805 C32811
2	2	50.80	7-3/4	4	2	C43501 C32806 C32812
2	2	50.80	9-3/4	6	2	C43502 C32807 C32813
2	2	50.80	11-3/4	8	2	C32803 C32808 C32814
2-1/2	2.5	63.50	7-3/4	4	2	C43510 C32809 C32815
2-1/2	2.5	63.50	9-3/4	6	2	C32804 C32810 C32816

End Mills • General Purpose

List #442 High Speed Steel Double End Four Flute End Mill



Substrate - HSS
Length - Stub
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Stub length for greater rigidity
- All have 3/16" shanks for one holder size to use on all sizes
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.0625	1.59	2	3/32	3/16	C41085 C39914 C39919
3/32	.0938	2.38	2	9/64	3/16	C41087 C39915 C39920
1/8	.125	3.18	2	3/16	3/16	C41090 C39916 C39921

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/32	.1562	3.97	2	15/64	3/16	C41091 C39917 C39922
3/16	.1875	4.76	2	9/32	3/16	C41093 C39918 C39923

List #695 High Speed Steel Double End Four Flute End Mill



Substrate - HSS
Length - Stub
Number of Flutes - 4
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Stub length for greater rigidity
- 3/8" shank for strength
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-3/4	3/16	3/8	C43374 C39054 C39059
5/32	.1562	3.97	2-3/4	15/64	3/8	C43375 C39055 C39060
3/16	.1875	4.76	2-3/4	9/32	3/8	C43377 C39056 C39061

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
7/32	.2188	5.56	2-7/8	21/64	3/8	C43379 C39057 C39062
1/4	.25	6.35	2-7/8	3/8	3/8	C43381 C39058 C39063

End Mills • General Purpose

List #406 High Speed Steel Single End Four Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End

Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- All have 3/16" shanks for one holder size to use on all sizes

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.0625	1.59	1-1/2	3/16	3/16	C40876 C40885 C40894
5/64	.0781	1.98	1-1/2	15/64	3/16	C40877 C40886 C40895
3/32	.0938	2.38	1-1/2	9/32	3/16	C40878 C40887 C40896
7/64	.1094	2.78	1-1/2	21/64	3/16	C40879 C40888 C40897
1/8	.125	3.18	1-1/2	3/8	3/16	C40880 C40889 C40898

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
9/64	.1406	3.57	1-1/2	13/32	3/16	C40881 C40890 C40899
5/32	.1562	3.97	1-1/2	7/16	3/16	C40882 C40891 C40900
11/64	.1719	4.37	1-1/2	1/2	3/16	C40883 C40892 C40901
3/16	.1875	4.76	1-1/2	1/2	3/16	C40884 C40893 C40902

List #446 High Speed Steel Double End Four Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- Heavy cross section for rigidity
- Double end reduces tool cost and down time
- All have 3/16" shanks for one holder size to use on all sizes

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.0625	1.59	2-1/4	3/16	3/16	C41099 C39924 C39929
3/32	.0938	2.38	2-1/4	9/32	3/16	C41101 C39925 C39930
1/8	.125	3.18	2-1/4	3/8	3/16	C41104 C39926 C39931

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/32	.1562	3.97	2-1/4	7/16	3/16	C41105 C39927 C39932
3/16	.1875	4.76	2-1/4	1/2	3/16	C41107 C39928 C39933

End Mills • General Purpose

List #683 High Speed Steel Single End Multi-Flute End Mill



Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- Widest variety of sizes

Substrate - HSS
Length - Regular
Number of Flutes - Multi-Flute
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number •		
							Bright	TiN	TiCN
1/8	.125	3.18	2-3/16	1/4	3/8	4	C43208	C31924	C31939
1/8	.125	3.18	2-5/16	3/8	3/8	4	C42220	C39427	C39488
9/64	.1406	3.57	2-3/8	1/2	3/8	4	C39400	C39428	C39489
5/32	.1562	3.97	2-3/8	1/2	3/8	4	C39401	C39429	C39490
11/64	.1719	4.37	2-3/8	1/2	3/8	4	C39402	C39430	C39491
3/16	.1875	4.76	2-3/8	1/2	3/8	4	C42222	C39431	C39492
13/64	.2031	5.16	2-7/16	5/8	3/8	4	C39403	C39432	C39493
7/32	.2188	5.56	2-7/16	5/8	3/8	4	C39404	C39433	C39494
15/64	.2344	5.95	2-7/16	5/8	3/8	4	C39405	C39434	C39495
1/4	.25	6.35	2-7/16	5/8	3/8	4	C42225	C39435	C39496
17/64	.2656	6.75	2-1/2	3/4	3/8	4	C39406	C39436	C39497
9/32	.2812	7.14	2-1/2	3/4	3/8	4	C39407	C39437	C39498
19/64	.2969	7.54	2-1/2	3/4	3/8	4	C39408	C39438	C39499
5/16	.3125	7.94	2-1/2	3/4	3/8	4	C42227	C39439	C39500
21/64	.3281	8.33	2-1/2	3/4	3/8	4	C39409	C39440	C39501
11/32	.3438	8.73	2-1/2	3/4	3/8	4	C39410	C39441	C39502
23/64	.3594	9.13	2-1/2	3/4	3/8	4	C39411	C39442	C39503
3/8	.375	9.53	2-1/2	3/4	3/8	4	C42230	C39443	C39504
25/64	.3906	9.92	2-11/16	1	3/8	4	C39412	C39444	C39505
13/32	.4062	10.32	2-11/16	1	3/8	4	C39413	C39445	C39506
27/64	.4219	10.72	2-11/16	1	3/8	4	C39414	C39446	C39507
7/16	.4375	11.11	2-11/16	1	3/8	4	C42233	C39447	C39508
29/64	.4531	11.51	3-1/4	1-1/4	1/2	4	C39415	C39448	C39509
15/32	.4688	11.91	3-1/4	1-1/4	1/2	4	C39416	C39449	C39510
31/64	.4844	12.30	3-1/4	1-1/4	1/2	4	C39417	C39450	C39511
1/2	.5	12.70	2-11/16	1	3/8	4	C42235	C39451	C39512
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C42236	C39452	C39513
17/32	.5312	13.49	3-3/8	1-3/8	1/2	4	C39418	C39453	C39514
9/16	.5625	14.29	3-3/8	1-3/8	1/2	4	C42238	C39454	C39515
19/32	.5938	15.08	3-3/8	1-3/8	1/2	4	C39419	C39455	C39516
5/8	.625	15.88	3-3/8	1-3/8	1/2	4	C42240	C39456	C39517
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C42241	C39457	C39518
21/32	.6562	16.67	3-3/4	1-5/8	5/8	4	C39420	C39458	C39519
11/16	.6875	17.46	3-5/8	1-5/8	1/2	4	C42243	C39459	C39520
11/16	.6875	17.46	3-3/4	1-5/8	5/8	4	C42244	C39460	C39521
23/32	.7188	18.26	3-7/8	1-5/8	3/4	4	C39421	C39461	C39522
3/4	.75	19.05	3-5/8	1-5/8	1/2	4	C42246	C39462	C39523
3/4	.75	19.05	3-3/4	1-5/8	5/8	4	C42247	C39463	C39524
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C42248	C39464	C39525
25/32	.7812	19.84	4-1/8	1-7/8	3/4	4	C39422	C39465	C39526
13/16	.8125	20.64	4	1-7/8	5/8	6	C42250	C39466	C39527
27/32	.8438	21.43	4-1/8	1-7/8	7/8	4	C39423	C39467	C39528
7/8	.875	22.23	4	1-7/8	5/8	6	C42253	C39468	C39529
7/8	.875	22.23	4-1/8	1-7/8	3/4	4	C42254	C39469	C39530
7/8	.875	22.23	4-1/8	1-7/8	7/8	4	C42255	C39470	C39531
29/32	.9062	23.02	4-1/8	1-7/8	7/8	4	C39424	C39471	C39532
15/16	.9375	23.81	4-1/8	1-7/8	7/8	4	C39425	C39472	C39533
31/32	.9688	24.61	4-1/2	2	1	4	C39426	C39473	C39534
1	1	25.40	4	2	5/8	6	C42259	C39474	C39535
1	1	25.40	4-1/8	2	3/4	4	C42260	C39475	C39536
1	1	25.40	4-1/8	2	7/8	4	C42261	C39476	C39537
1	1	25.40	4-1/2	2	1	4	C42262	C39477	C39538
1-1/8	1.125	28.58	4-1/4	2	7/8	6	C42265	C39478	C39539
1-1/8	1.125	28.58	4-1/2	2	1	6	C42266	C39479	C39540

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End Mills • General Purpose

List #683 continued

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
1-1/4	1.25	31.75	4-1/4	2	7/8	6	C42268	C39480	C39541	
1-1/4	1.25	31.75	4-1/2	2	1	6	C42269	C39481	C39542	
1-1/4	1.25	31.75	4-1/2	2	1-1/4	6	C42270	C39482	C39543	
1-3/8	1.375	34.93	4-1/2	2	1	6	C42273	C39483	C39544	
1-1/2	1.5	38.10	4-1/2	2	1	6	C42277	C39484	C39545	
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C42278	C39485	C39546	
1-3/4	1.75	44.45	4-1/2	2	1-1/4	6	C42280	C39486	C39547	
2	2	50.80	4-1/2	2	1-1/4	8	C42283	C39487	C39548	
2	2	50.80	5-3/4	2	2	4	C43534	C32819	C32826	
2	2	50.80	5-3/4	2	2	4	C43548	C32913	C32920	
2	2	50.80	7-3/4	4	2	6	C43535	C32820	C32827	
2	2	50.80	7-3/4	4	2	4	C43549	C32914	C32921	
2	2	50.80	9-3/4	6	2	6	C43536	C32821	C32828	
2	2	50.80	9-3/4	6	2	4	C43550	C32915	C32922	
2	2	50.80	11-3/4	8	2	6	C32817	C32822	C32829	
2	2	50.80	11-3/4	8	2	4	C43551	C32916	C32923	
2-1/2	2.5	63.50	7-3/4	4	2	6	C43541	C32823	C32830	
2-1/2	2.5	63.50	7-3/4	4	2	6	C43558	C32917	C32924	
2-1/2	2.5	63.50	8	4	2-1/2	6	C43583	C33020	C33024	
2-1/2	2.5	63.50	9-3/4	6	2	4	C43542	C32824	C32831	
2-1/2	2.5	63.50	9-3/4	6	2	6	C43559	C32918	C32925	
2-1/2	2.5	63.50	10	6	2-1/2	6	C43584	C33021	C33025	
2-1/2	2.5	63.50	11-3/4	8	2	4	C32818	C32825	C32832	
2-1/2	2.5	63.50	11-3/4	8	2	6	C43560	C32919	C32926	
2-1/2	2.5	63.50	12	8	2-1/2	6	C43585	C33022	C33026	
2-1/2	2.5	63.50	14	10	2-1/2	6	C43586	C33023	C33027	

List #583 High Speed Steel Single End Multi-Flute End Mill



Substrate - HSS
 Length - Regular
 Number of Flutes - Multi-Flute
 End Work - Center Cutting
 Surface Treatment - Bright, TiN, TiCN
 Rougher/Finisher - Finisher
 Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- Smoother finish

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	4	C41243	C41250	C33240	
9/64	.1406	3.57	2-3/8	1/2	3/8	4	C33141	C33188	C33241	
5/32	.1562	3.97	2-3/8	1/2	3/8	4	C33142	C33189	C33242	
11/64	.1719	4.37	2-3/8	1/2	3/8	4	C33143	C33190	C33243	
3/16	.1875	4.76	2-3/8	1/2	3/8	4	C41245	C41521	C33244	
13/64	.2031	5.16	2-7/16	5/8	3/8	4	C33144	C33191	C33245	
7/32	.2188	5.56	2-7/16	5/8	3/8	4	C33145	C33192	C33246	
15/64	.2344	5.95	2-7/16	5/8	3/8	4	C33146	C33193	C33247	
1/4	.25	6.35	2-7/16	5/8	3/8	4	C41248	C41522	C33248	
17/64	.2656	6.75	2-1/2	3/4	3/8	4	C33147	C33194	C33249	
9/32	.2812	7.14	2-1/2	3/4	3/8	4	C33148	C33195	C33250	
19/64	.2969	7.54	2-1/2	3/4	3/8	4	C33149	C33196	C33251	
5/16	.3125	7.94	2-1/2	3/4	3/8	4	C41250	C41523	C33252	
21/64	.3281	8.33	2-1/2	3/4	3/8	4	C33150	C33197	C33253	
11/32	.3438	8.73	2-1/2	3/4	3/8	4	C33151	C33198	C33254	
23/64	.3594	9.13	2-1/2	3/4	3/8	4	C33152	C33199	C33255	
3/8	.375	9.53	2-1/2	3/4	3/8	4	C41253	C41524	C33256	
25/64	.3906	9.92	2-11/16	1	3/8	4	C33153	C33200	C33257	
13/32	.4062	10.32	2-11/16	1	3/8	4	C33154	C33201	C33258	
27/64	.4219	10.72	2-11/16	1	3/8	4	C33155	C33202	C33259	

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End Mills • General Purpose

List #583 continued

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
7/16	.4375	11.11	2-11/16	1	3/8	4	C41254	C33203	C33260	
29/64	.4531	11.51	3-1/4	1-1/4	1/2	4	C33157	C33204	C33261	
15/32	.4688	11.91	3-1/4	1-1/4	1/2	4	C33158	C33205	C33262	
31/64	.4844	12.30	3-1/4	1-1/4	1/2	4	C33159	C33206	C33263	
1/2	.5	12.70	2-11/16	1	3/8	4	C33160	C33207	C33264	
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C41257	C41525	C33265	
17/32	.5312	13.49	3-3/8	1-3/8	1/2	4	C33161	C33208	C33266	
9/16	.5625	14.29	3-3/8	1-3/8	1/2	4	C33162	C33209	C33267	
19/32	.5938	15.08	3-3/8	1-3/8	1/2	4	C33163	C33210	C33268	
5/8	.625	15.88	3-3/8	1-3/8	1/2	4	C33164	C33211	C33269	
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C41260	C41526	C33270	
21/32	.6562	16.67	3-3/4	1-5/8	5/8	4	C33165	C33212	C33271	
11/16	.6875	17.46	3-5/8	1-5/8	1/2	4	C33166	C33213	C33272	
11/16	.6875	17.46	3-3/4	1-5/8	5/8	4	C41262	C33214	C33273	
23/32	.7188	18.26	3-7/8	1-5/8	3/4	4	C33167	C33215	C33274	
3/4	.75	19.05	3-5/8	1-5/8	1/2	4	C33168	C33216	C33275	
3/4	.75	19.05	3-3/4	1-5/8	5/8	4	C33169	C33217	C33276	
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C41264	C41527	C33277	
25/32	.7812	19.84	4-1/8	1-7/8	3/4	4	C33170	C33218	C33278	
13/16	.8125	20.64	4	1-7/8	5/8	4	C33171	C33219	C33279	
27/32	.8438	21.43	4-1/8	1-7/8	7/8	4	C33172	C33220	C33280	
7/8	.875	22.23	4	1-7/8	5/8	4	C33173	C33221	C33281	
7/8	.875	22.23	4-1/8	1-7/8	3/4	4	C33174	C33222	C33282	
7/8	.875	22.23	4-1/8	1-7/8	7/8	4	C41268	C33223	C33283	
29/32	.9062	23.02	4-1/8	1-7/8	7/8	4	C33175	C33224	C33284	
15/16	.9375	23.81	4-1/8	1-7/8	7/8	4	C33176	C33225	C33285	
31/32	.9688	24.61	4-1/2	2	1	4	C33177	C33226	C33286	
1	1	25.40	4	1-7/8	5/8	4	C33178	C33227	C33287	
1	1	25.40	4-1/8	1-7/8	3/4	4	C33179	C33228	C33288	
1	1	25.40	4-1/8	1-7/8	7/8	4	C33180	C33229	C33289	
1	1	25.40	4-1/2	2	1	4	C41272	C41528	C33290	
1-1/8	1.125	28.58	4-1/2	2	7/8	4	C33181	C33230	C33291	
1-1/8	1.125	28.58	4-1/2	2	1	4	C41275	C33231	C33292	
1-1/4	1.25	31.75	4-1/2	2	7/8	4	C33182	C33232	C33293	
1-1/4	1.25	31.75	4-1/2	2	1	4	C33183	C33233	C33294	
1-1/4	1.25	31.75	4-1/2	2	1-1/4	4	C41277	C33234	C33295	
1-3/8	1.375	34.93	4-1/2	2	1	4	C33184	C33235	C33296	
1-1/2	1.5	38.10	4-1/2	2	1	6	C33185	C33236	C33297	
1-1/2	1.5	38.10	4-1/2	2	1-1/4	4	C41283	C33237	C33298	
1-3/4	1.75	44.45	4-1/2	2	1-1/4	6	C33186	C33238	C33299	
2	2	50.80	4-1/2	2	1-1/4	8	C33187	C33239	C33300	

List #570 High Speed Steel Single End Multi-Flute End Mill For Bridgeports



Substrate - HSS
Length - Regular
Number of Flutes - Multi-Flute
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End

Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- All with shanks 3/4" or smaller for light milling machines
- For Bridgeport applications

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C41243 C41520	C33240		
3/16	.1875	4.76	2-3/8	1/2	3/8	C41245 C41521	C33244		
1/4	.25	6.35	2-7/16	5/8	3/8	C41248 C41522	C33248		
5/16	.3125	7.94	2-1/2	3/4	3/8	C41250 C41523	C33252		
3/8	.375	9.53	2-1/2	3/4	3/8	C41253 C41524	C33256		

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
7/16	.4375	11.11	2-11/16	1	3/8	C41254 C33203	C33260		
1/2	.5	12.70	3-1/4	1-1/4	1/2	C41257 C41525	C33265		
9/16	.5625	14.29	3-3/8	1-3/8	1/2	C33162 C33209	C33267		
5/8	.625	15.88	3-3/8	1-3/8	1/2	C33164 C33211	C33269		
11/16	.6875	17.46	2-7/8	7/8	1/2	C33817 C33818	C33821		

(Continued on next page)

End Mills • General Purpose

List #570 continued

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.6875	17.46	3-5/8	1-5/8	1/2	C33166 C33213 C33272
3/4	.75	19.05	2-7/8	7/8	1/2	C39816 C39819 C39822
3/4	.75	19.05	3-5/8	1-5/8	1/2	C33168 C33216 C33275
3/4	.75	19.05	3	7/8	3/4	C39815 C39820 C39823
3/4	.75	19.05	3-7/8	1-5/8	3/4	C41264 C41527 C33277
7/8	.875	22.23	3-1/4	1	3/4	C39814 C39839 C39824
7/8	.875	22.23	4-1/8	1-7/8	3/4	C33174 C33222 C33282
1	1	25.40	3-1/4	1	3/4	C39813 C39838 C39825

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1	1	25.40	4-1/8	1-7/8	3/4	C33179 C33228 C33288
1-1/8	1.125	28.58	3-5/8	1-3/8	3/4	C39812 C39837 C39826
1-1/4	1.25	31.75	3-5/8	1-3/8	3/4	C39811 C39836 C39827
1-3/8	1.375	34.93	3-5/8	1-3/8	3/4	C39810 C39835 C39828
1-1/2	1.5	38.10	3-5/8	1-3/8	3/4	C39809 C39834 C39829
1-3/4	1.75	44.45	3-5/8	1-3/8	3/4	C39808 C39833 C39830
2	2	50.80	3-5/8	1-3/8	3/4	C39807 C39832 C39831

List #584 High Speed Steel Single End Four Flute Ball Nose End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 4
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Radius for contouring part surfaces

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/4	.25	6.35	2-7/16	5/8	3/8	C33301 C33303 C33313
5/16	.3125	7.94	2-1/2	3/4	3/8	C33302 C33304 C33314
3/8	.375	9.53	2-1/2	3/4	3/8	C41289 C33305 C33315
1/2	.5	12.70	3-1/4	1-1/4	1/2	C41293 C33306 C33316
5/8	.625	15.88	3-3/4	1-5/8	5/8	C41297 C33307 C33317
3/4	.75	19.05	3-7/8	1-5/8	3/4	C41300 C33308 C33318
7/8	.875	22.23	4-1/8	1-7/8	7/8	C41304 C33309 C33319
1	1	25.40	4-1/2	2	1	C41308 C33310 C33320

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1-1/4	1.25	31.75	4-1/2	2	1-1/4	C41312 C33311 C33321
1-1/2	1.5	38.10	4-1/2	2	1-1/4	C41318 C33312 C33322
2	2	50.80	6-3/4	3	2	C33007 C33010 C33015
2	2	50.80	7-3/4	4	2	C33008 C33011 C33016
2	2	50.80	8-3/4	5	2	C43564 C33012 C33017
2	2	50.80	9-3/4	6	2	C33009 C33013 C33018
2-1/2	2.5	63.50	8-3/4	5	2	C43567 C33014 C33019

List #683-LH High Speed Steel Single End Four Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 4
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- 32° Left-hand helix for reverse spindle operation

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/16	.1875	4.76	2-3/8	1/2	3/8	C42294 C33610 C33618
1/4	.25	6.35	2-7/16	5/8	3/8	C42297 C33611 C33619
5/16	.3125	7.94	2-1/2	3/4	3/8	C42299 C33612 C33620
3/8	.375	9.53	2-1/2	3/4	3/8	C42302 C33613 C33621

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
7/16	.4375	11.11	2-11/16	1	3/8	C33609 C33614 C33622
1/2	.5	12.70	3-1/4	1-1/4	1/2	C42306 C33615 C33623
5/8	.625	15.88	3-3/4	1-5/8	5/8	C42309 C33616 C33624
3/4	.75	19.05	3-7/8	1-5/8	3/4	C42312 C33617 C33625

End Mills • General Purpose

List #682 High Speed Steel Double End Four Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 4
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C43307 C39318 C39359
9/64	.1406	3.57	3-1/8	7/16	3/8	C39297 C39319 C39360
5/32	.1562	3.97	3-1/8	7/16	3/8	C43308 C39320 C39361
11/64	.1719	4.37	3-1/4	1/2	3/8	C39298 C39321 C39362
3/16	.1875	4.76	3-1/4	1/2	3/8	C43310 C39322 C39363
13/64	.2031	5.16	3-1/4	9/16	3/8	C39299 C39323 C39364
7/32	.2188	5.56	3-1/4	9/16	3/8	C43312 C39324 C39365
15/64	.2344	5.95	3-3/8	5/8	3/8	C39300 C39325 C39366
1/4	.25	6.35	3-3/8	5/8	3/8	C43314 C39326 C39367
17/64	.2656	6.75	3-3/8	11/16	3/8	C39301 C39327 C39368
9/32	.2812	7.14	3-3/8	11/16	3/8	C43316 C39328 C39369
19/64	.2969	7.54	3-1/2	3/4	3/8	C39302 C39329 C39370
5/16	.3125	7.94	3-1/2	3/4	3/8	C43317 C39330 C39371
21/64	.3281	8.33	3-1/2	3/4	3/8	C39303 C39331 C39372
11/32	.3438	8.73	3-1/2	3/4	3/8	C43319 C39332 C39373
23/64	.3594	9.13	3-1/2	3/4	3/8	C39304 C39333 C39374
3/8	.375	9.53	3-1/2	3/4	3/8	C43321 C39334 C39375
25/64	.3906	9.92	4-1/8	1	1/2	C39305 C39335 C39376
13/32	.4062	10.32	4-1/8	1	1/2	C43323 C39336 C39377
27/64	.4219	10.72	4-1/8	1	1/2	C39306 C39337 C39378
7/16	.4375	11.11	4-1/8	1	1/2	C43325 C39338 C39379

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
29/64	.4531	11.51	4-1/8	1	1/2	C39307 C39339 C39380
15/32	.4688	11.91	4-1/8	1	1/2	C43326 C39340 C39381
31/64	.4844	12.30	4-1/8	1	1/2	C39308 C39341 C39382
1/2	.5	12.70	4-1/8	1	1/2	C43328 C39342 C39383
17/32	.5312	13.49	5	1-3/8	5/8	C39309 C39343 C39384
9/16	.5625	14.29	5	1-3/8	5/8	C43330 C39344 C39385
19/32	.5938	15.08	5	1-3/8	5/8	C39310 C39345 C39386
5/8	.625	15.88	5	1-3/8	5/8	C43332 C39346 C39387
21/32	.6562	16.67	5-5/8	1-5/8	3/4	C39311 C39347 C39388
11/16	.6875	17.46	5-5/8	1-5/8	3/4	C43334 C39348 C39389
23/32	.7188	18.26	5-5/8	1-5/8	3/4	C39312 C39349 C39390
3/4	.75	19.05	5-5/8	1-5/8	3/4	C43336 C39350 C39391
25/32	.7812	19.84	6-1/8	1-7/8	7/8	C39313 C39351 C39392
13/16	.8125	20.64	6-1/8	1-7/8	7/8	C43338 C39352 C39393
27/32	.8438	21.43	6-1/8	1-7/8	7/8	C39314 C39353 C39394
7/8	.875	22.23	6-1/8	1-7/8	7/8	C43341 C39354 C39395
29/32	.9062	23.02	6-3/8	1-7/8	1	C39315 C39355 C39396
15/16	.9375	23.81	6-3/8	1-7/8	1	C39316 C39356 C39397
31/32	.9688	24.61	6-3/8	1-7/8	1	C39317 C39357 C39398
1	1	25.40	6-3/8	1-7/8	1	C43345 C39358 C39399

List #582 High Speed Steel Double End Four Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C41202 C33059 C33100
9/64	.1406	3.57	3-1/8	7/16	3/8	C33028 C33060 C33101
5/32	.1562	3.97	3-1/8	7/16	3/8	C33029 C33061 C33102
11/64	.1719	4.37	3-1/4	1/2	3/8	C33030 C33062 C33103
3/16	.1875	4.76	3-1/4	1/2	3/8	C41204 C33063 C33104
13/64	.2031	5.16	3-1/4	9/16	3/8	C33031 C33064 C33105
7/32	.2188	5.56	3-1/4	9/16	3/8	C33032 C33065 C33106
15/64	.2344	5.95	3-3/8	5/8	3/8	C33033 C33066 C33107
1/4	.25	6.35	3-3/8	5/8	3/8	C41207 C33067 C33108
17/64	.2656	6.75	3-3/8	11/16	3/8	C33034 C33068 C33109

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
9/32	.2812	7.14	3-3/8	11/16	3/8	C33035 C33069 C33110
19/64	.2969	7.54	3-1/2	3/4	3/8	C33036 C33070 C33111
5/16	.3125	7.94	3-1/2	3/4	3/8	C41209 C33071 C33112
21/64	.3281	8.33	3-1/2	3/4	3/8	C33037 C33072 C33113
11/32	.3438	8.73	3-1/2	3/4	3/8	C33038 C33073 C33114
23/64	.3594	9.13	3-1/2	3/4	3/8	C33039 C33074 C33115
3/8	.375	9.53	3-1/2	3/4	3/8	C41212 C33075 C33116
25/64	.3906	9.92	4-1/8	1	1/2	C33040 C33076 C33117
13/32	.4062	10.32	4-1/8	1	1/2	C33041 C33077 C33118
27/64	.4219	10.72	4-1/8	1	1/2	C33042 C33078 C33119

(Continued on next page)

End Mills • General Purpose

List #582 continued

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
7/16	.4375	11.11	4-1/8	1	1/2	C33043	C33079	C33120	
29/64	.4531	11.51	4-1/8	1	1/2	C33044	C33080	C33121	
15/32	.4688	11.91	4-1/8	1	1/2	C33045	C33081	C33122	
31/64	.4844	12.30	4-1/8	1	1/2	C33046	C33082	C33123	
1/2	.5	12.70	4-1/8	1	1/2	C41216	C33083	C33124	
17/32	.5312	13.49	5	1-3/8	5/8	C33047	C33084	C33125	
9/16	.5625	14.29	5	1-3/8	5/8	C33048	C33085	C33126	
19/32	.5938	15.08	5	1-3/8	5/8	C33049	C33086	C33127	
5/8	.625	15.88	5	1-3/8	5/8	C41219	C33087	C33128	
21/32	.6562	16.67	5-5/8	1-5/8	3/4	C33050	C33088	C33129	
11/16	.6875	17.46	5-5/8	1-5/8	3/4	C33051	C33089	C33130	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
23/32	.7188	18.26	5-5/8	1-5/8	3/4	C33052	C33090	C33131	
3/4	.75	19.05	5-5/8	1-5/8	3/4	C41223	C33091	C33132	
25/32	.7812	19.84	6-1/8	1-7/8	7/8	C33053	C33092	C33133	
13/16	.8125	20.64	6-1/8	1-7/8	7/8	C33054	C33093	C33134	
27/32	.8438	21.43	6-1/8	1-7/8	7/8	C33055	C33094	C33135	
7/8	.875	22.23	6-1/8	1-7/8	7/8	C41227	C33095	C33136	
29/32	.9062	23.02	6-3/8	1-7/8	1	C33056	C33096	C33137	
15/16	.9375	23.81	6-3/8	1-7/8	1	C33057	C33097	C33138	
31/32	.9688	24.61	6-3/8	1-7/8	1	C33058	C33098	C33139	
1	1	25.40	6-3/8	1-7/8	1	C41231	C33099	C33140	

List #682-LH High Speed Steel Double End Four Flute End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 4
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Left-hand helix for reverse spindle operation
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C43348	C33581	C33595	
5/32	.1562	3.97	3-1/8	7/16	3/8	C43349	C33582	C33596	
3/16	.1875	4.76	3-1/4	1/2	3/8	C43351	C33583	C33597	
7/32	.2188	5.56	3-1/4	9/16	3/8	C33576	C33584	C33598	
1/4	.25	6.35	3-3/8	5/8	3/8	C43354	C33585	C33599	
5/16	.3125	7.94	3-1/2	3/4	3/8	C43356	C33586	C33600	
3/8	.375	9.53	3-1/2	3/4	3/8	C43359	C33587	C33601	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
7/16	.4375	11.11	4-1/8	1	1/2	C33577	C33588	C33602	
1/2	.5	12.70	4-1/8	1	1/2	C43363	C33589	C33603	
9/16	.5625	14.29	5	1-3/8	5/8	C33578	C33590	C33604	
5/8	.625	15.88	5	1-3/8	5/8	C43366	C33591	C33605	
3/4	.75	19.05	5-5/8	1-5/8	3/4	C43369	C33592	C33606	
7/8	.875	22.23	6-1/8	1-7/8	7/8	C33579	C33593	C33607	
1	1	25.40	7-3/8	1-7/8	1	C33580	C33594	C33608	

List #448 High Speed Steel Double End Four Flute End Mill



Substrate - HSS
Length - Long
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Long length of cut for greater depth capacity
- All have 3/16" shanks for one holder size to use with all sizes
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/16	.0625	1.59	2-1/2	7/32	3/16	C41113	C39934	C39939	
3/32	.0938	2.38	2-5/8	9/32	3/16	C41115	C39935	C39940	
1/8	.125	3.18	3-1/8	3/4	3/16	C41118	C39936	C39941	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
5/32	.1562	3.97	3-1/4	7/8	3/16	C41119	C39937	C39942	
3/16	.1875	4.76	3-3/8	1	3/16	C41121	C39938	C39943	

End Mills • General Purpose

List #688 High Speed Steel Single End Multi-Flute End Mill



Substrate - HSS
Length - Long
Number of Flutes - Multi-Flute
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End

Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- Long length of cut for greater depth capacity

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number •		
							Bright	TiN	TiCN
3/16	.1875	4.76	3-1/16	1-1/4	3/8	4	C39247	C39253	C39275
7/32	.2188	5.56	3-1/16	1-1/4	3/8	4	C39248	C39254	C39276
1/4	.25	6.35	3-1/16	1-1/4	3/8	4	C42316	C39255	C39277
9/32	.2812	7.14	3-1/8	1-3/8	3/8	4	C39249	C39256	C39278
5/16	.3125	7.94	3-1/8	1-3/8	3/8	4	C42318	C39257	C39279
11/32	.3438	8.73	3-1/4	1-1/2	3/8	4	C39250	C39258	C39280
3/8	.375	9.53	3-1/4	1-1/2	3/8	4	C42321	C39259	C39281
13/32	.4062	10.32	3-3/4	1-3/4	1/2	4	C39251	C39260	C39282
7/16	.4375	11.11	3-3/4	1-3/4	1/2	4	C42324	C39261	C39283
15/32	.4688	11.91	4	2	1/2	4	C39252	C39262	C39284
1/2	.5	12.70	4	2	1/2	4	C42326	C39263	C39285
5/8	.625	15.88	4-5/8	2-1/2	5/8	4	C42329	C39264	C39286
3/4	.75	19.05	5-1/4	3	3/4	4	C42332	C39265	C39287
7/8	.875	22.23	5-3/4	3-1/2	7/8	4	C42336	C39266	C39288
1	1	25.40	6-1/2	4	1	4	C42340	C39267	C39289
1-1/8	1.125	28.58	6-1/2	4	1	6	C42343	C39268	C39290
1-1/4	1.25	31.75	6-1/2	4	1	6	C42345	C39269	C39291
1-1/2	1.5	38.10	6-1/2	4	1	6	C42352	C39270	C39292
1-3/4	1.75	44.45	6-1/2	4	1-1/4	6	C42346	C39271	C39293
2	2	50.80	6-1/2	4	1-1/4	6	C42353	C39272	C39294
						8	C42355	C39273	C39295
							C42358	C39274	C39296

List #589 High Speed Steel Long Length Four Flute Ball Nose End Mill



Substrate - HSS
Length - Long
Number of Flutes - 4
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Radius for contouring part surfaces
- Long length of cut for greater depth capacity

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/4	.25	6.35	3-1/16	1-1/4	3/8	C33323	C33326	C33335
5/16	.3125	7.94	3-1/8	1-3/8	3/8	C33324	C33327	C33336
3/8	.375	9.53	3-1/4	1-1/2	3/8	C33325	C33328	C33337
1/2	.5	12.70	4	2	1/2	C41358	C33329	C33338
5/8	.625	15.88	4-5/8	2-1/2	5/8	C41361	C33330	C33339
3/4	.75	19.05	5-1/4	3	3/4	C41364	C33331	C33340
1	1	25.40	6-1/2	4	7/8	C41371	C33332	C33341
1-1/4	1.25	31.75	6-1/2	4	1	C41375	C33333	C33342
1-1/2	1.5	38.10	6-1/2	4	1-1/4	C41377	C33334	C33343

End Mills • General Purpose

List #588 High Speed Steel Single End Long Length Four Flute End Mill

Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Long length of cut for greater depth capacity



Substrate - HSS
Length - Long
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• Bright	EDP Number	• TiN	TiCN
3/16	.1875	4.76	3-1/16	1-1/4	3/8	C33371	C33384	C33406	
7/32	.2188	5.56	3-1/16	1-1/4	3/8	C33372	C33385	C33407	
1/4	.25	6.35	3-1/16	1-1/4	3/8	C41326	C33386	C33408	
9/32	.2812	7.14	3-1/8	1-3/8	3/8	C33373	C33387	C33409	
5/16	.3125	7.94	3-1/8	1-3/8	3/8	C41328	C33388	C33410	
11/32	.3438	8.73	3-1/4	1-1/2	3/8	C33374	C33389	C33411	
3/8	.375	9.53	3-1/4	1-1/2	3/8	C41331	C33390	C33412	
13/32	.4062	10.32	3-3/4	1-3/4	1/2	C33375	C33391	C33413	
7/16	.4375	11.11	3-3/4	1-3/4	1/2	C33376	C33392	C33414	
15/32	.4688	11.91	4	2	1/2	C33377	C33393	C33415	
1/2	.5	12.70	4	2	1/2	C41335	C33394	C33416	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Bright	Number TiN	• TiCN
5/8	.625	15.88	4-5/8	2-1/2	5/8	C41338	C33395	C33417
3/4	.75	19.05	5-1/4	3	3/4	C41341	C33396	C33418
7/8	.875	22.23	5-3/4	3-1/2	7/8	C41345	C33397	C33419
1	1	25.40	6-1/2	4	1	C41349	C33398	C33420
1-1/8	1.125	28.58	6-1/2	4	1	C33378	C33399	C33421
1-1/4	1.25	31.75	6-1/2	4	1	C33379	C33400	C33422
1-1/4	1.25	31.75	6-1/2	4	1-1/4	C41353	C33401	C33423
1-1/2	1.5	38.10	6-1/2	4	1	C33380	C33402	C33424
1-1/2	1.5	38.10	6-1/2	4	1-1/4	C33381	C33403	C33425
1-3/4	1.75	44.45	6-1/2	4	1-1/4	C33382	C33404	C33426
2	2	50.80	6-1/2	4	1-1/4	C33383	C33405	C33427

List #691 High Speed Steel Single End Extra Long Multi-Flute End Mill

Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- Long length of cut for greater depth capacity



Substrate - HSS
Length - Extra Long
Number of Flutes - Multi-Flute
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number • Bright TiN TiCN
3/16	.1875	4.76	3-9/16	1-3/4	3/8	4	C39200 C39209 C39228
7/32	.2188	5.56	3-9/16	1-3/4	3/8	4	C39201 C39210 C39229
1/4	.25	6.35	3-9/16	1-3/4	3/8	4	C42364 C39211 C39230
9/32	.2812	7.14	3-3/4	2	3/8	4	C39202 C39212 C39231
5/16	.3125	7.94	3-3/4	2	3/8	4	C42366 C39213 C39232
11/32	.3438	8.73	4-1/4	2-1/2	3/8	4	C39203 C39214 C39233
3/8	.375	9.53	4-1/4	2-1/2	3/8	4	C42369 C39215 C39234
13/32	.4062	10.32	4-1/2	2-3/4	3/8	4	C39204 C39216 C39235
7/16	.4375	11.11	4-1/2	2-3/4	3/8	4	C39205 C39217 C39236
15/32	.4688	11.91	5	3	1/2	4	C39206 C39218 C39237
1/2	.5	12.70	5	3	1/2	4	C42373 C39219 C39238
5/8	.625	15.88	6-1/8	4	5/8	4	C42376 C39220 C39239
3/4	.75	19.05	6-1/4	4	3/4	4	C42379 C39221 C39240
7/8	.875	22.23	7-1/4	5	7/8	4	C42383 C39222 C39241
1	1	25.40	8-1/2	6	1	4	C42387 C39223 C39242
1-1/4	1.25	31.75	8-1/2	6	1-1/4	4	C39207 C39224 C39243
1-1/4	1.25	31.75	8-1/2	6	1-1/4	6	C42391 C39225 C39244
1-1/2	1.5	38.10	10-1/2	8	1-1/4	4	C39208 C39226 C39245
1-1/2	1.5	38.10	10-1/2	8	1-1/4	6	C42397 C39227 C39246

End Mills • General Purpose

List #591 High Speed Steel Single End Extra Long Multi-Flute End Mill



Substrate - HSS
Length - Extra Long
Number of Flutes - Multi-Flute
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- Long length of cut for greater depth capacity
- Plunge and side cutting

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number •		
							Bright	TiN	TiCN
3/16	.1875	4.76	3-9/16	1-3/4	3/8	4	C33428	C33438	C33457
7/32	.2188	5.56	3-9/16	1-3/4	3/8	4	C33429	C33439	C33458
1/4	.25	6.35	3-9/16	1-3/4	3/8	4	C41381	C33440	C33459
9/32	.2812	7.14	3-3/4	2	3/8	4	C33430	C33441	C33460
5/16	.3125	7.94	3-3/4	2	3/8	4	C41383	C33442	C33461
11/32	.3438	8.73	4-1/4	2-1/2	3/8	4	C33431	C33443	C33462
3/8	.375	9.53	4-1/4	2-1/2	3/8	4	C41386	C33444	C33463
13/32	.4062	10.32	4-1/2	2-3/4	3/8	4	C33432	C33445	C33464
7/16	.4375	11.11	4-1/2	2-3/4	3/8	4	C33433	C33446	C33465
15/32	.4688	11.91	5	3	1/2	4	C33434	C33447	C33466
1/2	.5	12.70	5	3	1/2	4	C41390	C33448	C33467
5/8	.625	15.88	6-1/8	4	5/8	4	C41393	C33449	C33468
3/4	.75	19.05	6-1/4	4	3/4	4	C41396	C33450	C33469
7/8	.875	22.23	7-1/4	5	7/8	4	C41400	C33451	C33470
1	1	25.40	8-1/2	6	1	4	C41404	C33452	C33471
1-1/4	1.25	31.75	8-1/2	6	1-1/4	4	C41408	C33453	C33472
1-1/4	1.25	31.75	8-1/2	6	1-1/4	6	C33435	C33454	C33473
1-1/2	1.5	38.10	10-1/2	8	1-1/4	4	C33436	C33455	C33474
1-1/2	1.5	38.10	10-1/2	8	1-1/4	6	C33437	C33456	C33475

List #581 High Speed Steel Single End Extra Long Four Flute Ball Nose



Substrate - HSS
Length - Extra Long
Number of Flutes - 4
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- Long length of cut for greater depth capacity
- Radius for contouring part surfaces

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •		
						Bright	TiN	TiCN
1/4	0.25	6.35	3-9/16	1-3/4	3/8	C33344	C33353	C33362
5/16	0.3125	7.94	3-3/4	2	3/8	C33345	C33354	C33363
3/8	0.375	9.53	4-1/4	2-1/2	3/8	C33346	C33355	C33364
1/2	0.5	12.70	5	3	1/2	C33347	C33356	C33365
5/8	0.625	15.88	6-1/8	4	5/8	C33348	C33357	C33366
3/4	0.75	19.05	6-1/4	4	3/4	C33349	C33358	C33367
1	1	25.40	8-1/2	6	1	C33350	C33359	C33368
1-1/4	1.25	31.75	8-1/2	6	1-1/4	C33351	C33360	C33369
1-1/2	1.5	38.10	10-1/2	8	1-1/4	C33352	C33361	C33370

End Mills • Special Purpose

List #665 High Speed Steel Single End Two Flute High Helix End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Center cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



- Features:**
- 2 flutes allow maximum space for chip ejection
 - 37° helix for accelerated chip removal
 - Geometries for aluminum

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/4	.25	6.35	2-7/16	5/8	3/8	C41843 C33476 C33488
5/16	.3125	7.94	2-1/2	3/4	3/8	C41845 C33477 C33489
3/8	.375	9.53	2-1/2	3/4	3/8	C41848 C33478 C33490
7/16	.4375	11.11	2-11/16	1	3/8	C41851 C33479 C33491
1/2	.5	12.70	3-1/4	1-1/4	1/2	C41853 C33480 C33492
5/8	.625	15.88	3-3/4	1-5/8	5/8	C41856 C33481 C33493

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/4	.75	19.05	3-7/8	1-5/8	3/4	C41859 C33482 C33494
7/8	.875	22.23	4-1/8	1-7/8	7/8	C41863 C33483 C33495
1	1	25.40	4-1/2	2	1	C41867 C33484 C33496
1-1/4	1.25	31.75	4-1/2	2	1-1/4	C41871 C33485 C33497
1-1/2	1.5	38.10	4-1/2	2	1-1/4	C41877 C33486 C33498
2	2	50.80	4-1/2	2	1-1/4	C41882 C33487 C33499

List #668 High Speed Steel Double End Two Flute High Helix End Mill



Substrate - HSS
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



- Features:**
- 2 flutes allow maximum space for chip ejection
 - 37° helix for accelerated chip removal
 - Geometries for aluminum
 - Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C41965 C33546 C33561
3/16	.1875	4.76	3-1/4	7/16	3/8	C41967 C33547 C33562
1/4	.25	6.35	3-3/8	1/2	3/8	C41970 C33548 C33563
5/16	.3125	7.94	3-1/2	9/16	3/8	C41972 C33549 C33564
3/8	.375	9.53	3-1/2	9/16	3/8	C41975 C33550 C33565
7/16	.4375	11.11	4-1/8	13/16	1/2	C41978 C33551 C33566
1/2	.5	12.70	4-1/8	13/16	1/2	C41980 C33552 C33567
9/16	.5625	14.29	5	1-1/8	5/8	C41982 C33553 C33568

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/8	.625	15.88	5	1-1/8	5/8	C41984 C33554 C33569
11/16	.6875	17.46	5-5/8	1-5/16	3/4	C41986 C33555 C33570
3/4	.75	19.05	5-5/8	1-5/16	3/4	C41988 C33556 C33571
13/16	.8125	20.64	6-1/8	1-9/16	7/8	C41990 C33557 C33572
7/8	.875	22.23	6-1/8	1-9/16	7/8	C41993 C33558 C33573
15/16	.9375	23.81	6-3/8	1-5/8	1	C41995 C33559 C33574
1	1	25.40	6-3/8	1-5/8	1	C41998 C33560 C33575

End Mills • Special Purpose

List #666 High Speed Steel Two Flute Long Length High Helix End Mill



Substrate - HSS
Length - Long
Number of Flutes - 2
End Work - Center cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



- Features:**
- 2 flutes allow maximum space for chip ejection
 - Geometries for aluminum
 - Long length of cut for greater depth capacity
 - 37° helix for accelerated chip removal

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/4	.25	6.35	3-1/16	1-1/4	3/8	C41888	C33500	C33511	
5/16	.3125	7.94	3-1/8	1-3/8	3/8	C41890	C33501	C33512	
3/8	.375	9.53	3-1/4	1-1/2	3/8	C41893	C33502	C33513	
7/16	.4375	11.11	3-3/4	1-3/4	1/2	C41896	C33503	C33514	
1/2	.5	12.70	4	2	1/2	C41898	C33504	C33515	
5/8	.625	15.88	4-5/8	2-1/2	5/8	C41901	C33505	C33516	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
3/4	.75	19.05	5-1/4	3	3/4	C41904	C33506	C33517	
7/8	.875	22.23	5-3/4	3-1/2	7/8	C32066	C33507	C33518	
1	1	25.40	6-1/2	4	1	C41911	C33508	C33519	
1-1/4	1.25	31.75	6-1/2	4	1-1/4	C41915	C33509	C33520	
1-1/2	1.5	38.10	6-1/2	4	1-1/4	C41921	C33510	C33521	
2	2	50.80	6-1/2	4	1-1/4	C41925	C32067	C32068	

List #667 High Speed Steel Two Flute Extra Long High Helix End Mill



Substrate - HSS
Length - Extra Long
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



- Features:**
- 2 flutes allow maximum space for chip ejection
 - 37° helix for accelerated chip removal
 - Geometries for aluminum
 - Long length of cut for greater depth capacity

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
1/4	.25	6.35	3-9/16	1-3/4	3/8	C41930	C33524	C33535	
5/16	.3125	7.94	3-3/4	2	3/8	C41932	C33525	C33536	
3/8	.375	9.53	4-1/4	2-1/2	3/8	C41935	C33526	C33537	
7/16	.4375	11.11	4-1/2	2-3/4	3/8	C33522	C33527	C33538	
1/2	.5	12.70	5	3	1/2	C41939	C33528	C33539	
5/8	.625	15.88	6-1/8	4	5/8	C41942	C33529	C33540	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number •	Bright	TiN	TiCN
3/4	.75	19.05	6-1/4	4	3/4	C41945	C33530	C33541	
7/8	.875	22.23	7-1/4	5	7/8	C33523	C33531	C33542	
1	1	25.40	8-1/2	6	1	C41952	C33532	C33543	
1-1/4	1.25	31.75	8-1/2	6	1-1/4	C41956	C33533	C33544	
1-1/2	1.5	38.10	10-1/2	8	1-1/4	C41962	C33534	C33545	

End Mills • Special Purpose

List #407 Cobalt Double End Two Flute End Mill



Substrate - Cobalt High Speed Steel
Length - Stub
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- 2 flutes allow maximum space for chip ejection
- Stub length for greater rigidity
- 8% Cobalt for high red hardness
- All have 3/16" shanks for one holder size to use on all sizes
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/32	.0312	0.79	2	3/64	3/16	C40936 C40947 C40958
3/64	.0469	1.19	2	1/16	3/16	C40937 C40948 C40959
1/16	.0625	1.59	2	3/32	3/16	C40938 C40949 C40960
5/64	.0781	1.98	2	1/8	3/16	C40939 C40950 C40961
3/32	.0938	2.38	2	9/64	3/16	C40940 C40951 C40962
7/64	.1094	2.78	2	5/32	3/16	C40941 C40952 C40963

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2	3/16	3/16	C40942 C40953 C40964
9/64	.1406	3.57	2	7/32	3/16	C40943 C40954 C40965
5/32	.1562	3.97	2	15/64	3/16	C40944 C40955 C40966
11/64	.1719	4.37	2	1/4	3/16	C40945 C40956 C40967
3/16	.1875	4.76	2	9/32	3/16	C40946 C40957 C40968

List #408 Cobalt Double End Two Flute End Mill



Substrate - Cobalt High Speed Steel
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- 2 flutes allow maximum space for chip ejection
- 8% Cobalt for high red hardness
- All have 3/16" shanks for one holder size to use on all sizes
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/32	.0312	0.79	2-1/4	3/32	3/16	C40903 C40914 C40925
3/64	.0469	1.19	2-1/4	9/64	3/16	C40904 C40915 C40926
1/16	.0625	1.59	2-1/4	3/16	3/16	C40905 C40916 C40927
5/64	.0781	1.98	2-1/4	15/64	3/16	C40906 C40917 C40928
3/32	.0938	2.38	2-1/4	9/32	3/16	C40907 C40918 C40929
7/64	.1094	2.78	2-1/4	21/64	3/16	C40908 C40919 C40930

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-1/4	3/8	3/16	C40909 C40920 C40931
9/64	.1406	3.57	2-1/4	13/32	3/16	C40910 C40921 C40932
5/32	.1562	3.97	2-1/4	7/16	3/16	C40911 C40922 C40933
11/64	.1719	4.37	2-1/4	1/2	3/16	C40912 C40923 C40934
3/16	.1875	4.76	2-1/4	1/2	3/16	C40913 C40924 C40935

End Mills • Special Purpose

List #555 Cobalt Single End Two Flute End Mill



Substrate - Cobalt High Speed Steel
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- 2 flutes allow maximum space for chip ejection
- 8% Cobalt for high red hardness

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C42602 C32498 C32527
5/32	.1562	3.97	2-3/8	7/16	3/8	C32480 C32499 C32528
11/64	.1719	4.37	2-3/8	7/16	3/8	C32481 C32500 C32529
3/16	.1875	4.76	2-3/8	7/16	3/8	C42604 C32501 C32530
13/64	.2031	5.16	2-7/16	1/2	3/8	C32482 C32502 C32531
7/32	.2188	5.56	2-7/16	1/2	3/8	C32483 C32503 C32532
15/64	.2344	5.95	2-7/16	1/2	3/8	C32484 C32504 C32533
1/4	.25	6.35	2-7/16	1/2	3/8	C42607 C32505 C32534
17/64	.2656	6.75	2-1/2	9/16	3/8	C32485 C32506 C32535
9/32	.2812	7.14	2-1/2	9/16	3/8	C32486 C32507 C32536
19/64	.2969	7.54	2-1/2	9/16	3/8	C32487 C32508 C32537
5/16	.3125	7.94	2-1/2	9/16	3/8	C42609 C32509 C32538
21/64	.3281	8.33	2-1/2	9/16	3/8	C32488 C32510 C32539
11/32	.3438	8.73	2-1/2	9/16	3/8	C32489 C32511 C32540
23/64	.3594	9.13	2-1/2	9/16	3/8	C32490 C32512 C32541

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
3/8	.375	9.53	2-1/2	9/16	3/8	C42612 C32513 C32542
25/64	.3594	9.13	2-11/16	13/16	3/8	C32491 C32514 C32543
13/32	.4062	10.32	2-11/16	13/16	3/8	C32492 C32515 C32544
27/64	.4219	10.72	2-11/16	13/16	3/8	C32493 C32516 C32545
7/16	.4375	11.11	2-11/16	13/16	3/8	C32494 C32517 C32546
29/64	.4531	11.51	3-1/4	1	1/2	C32495 C32518 C32547
15/32	.4688	11.91	3-1/4	1	1/2	C32496 C32519 C32548
31/64	.4844	12.30	3-1/4	1	1/2	C32497 C32520 C32549
1/2	.5	12.70	3-1/4	1	1/2	C42616 C32521 C32550
5/8	.625	15.88	3-3/4	5/8	1/2	C42619 C32522 C32551
3/4	.75	19.05	3-7/8	3/4	1/2	C42622 C32523 C32552
1	1	25.40	4-1/2	1	1/2	C42629 C32524 C32553
1-1/4	1.25	31.75	4-1/2	1-1/4	1/2	C42633 C32525 C32554
1-1/2	1.5	38.10	4-1/2	1-1/4	1/2	C42639 C32526 C32555

List #559 Cobalt Single End Two Flute Ball Nose End Mill



Substrate - Cobalt High Speed Steel
Length - Regular
Number of Flutes - 2
End Work - Ball Nose
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- 2 flutes allow maximum space for chip ejection
- Radius for contouring part surfaces
- 8% Cobalt for high red hardness

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	C42643 C32737 C32749
3/16	.1875	4.76	2-3/8	1/2	3/8	C42645 C32738 C32750
1/4	.25	6.35	2-7/16	5/8	3/8	C42648 C32739 C32751
5/16	.3125	7.94	2-1/2	3/4	3/8	C42650 C32740 C32752
3/8	.375	9.53	2-1/2	3/4	3/8	C42653 C32741 C32753
1/2	.5	12.70	3-1/4	1	1/2	C42657 C32742 C32754

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/8	.625	15.88	3-3/4	1-3/8	5/8	C42660 C32743 C32755
3/4	.75	19.05	3-7/8	1-5/8	3/4	C42663 C32744 C32756
7/8	.875	22.23	4-1/8	1-7/8	7/8	C32736 C32745 C32757
1	1	25.40	4-1/2	2-1/4	1	C42670 C32746 C32758
1-1/4	1.25	31.75	4-1/2	2-1/2	1-1/4	C42674 C32747 C32759
1-1/2	1.5	38.10	4-1/2	2-1/2	1-1/4	C42680 C32748 C32760

End Mills • Special Purpose

List #565 Cobalt Double End Two Flute End Mill



Substrate - Cobalt High Speed Steel
Length - Regular
Number of Flutes - 2
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- 2 flutes allow maximum space for chip ejection
- 8% Cobalt for high red hardness
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	3-1/16	3/8	3/8	C52151 C32847 C32880
9/64	.1406	3.57	3-1/8	7/16	3/8	C32833 C32848 C32881
5/32	.1562	3.97	3-1/8	7/16	3/8	C52152 C32849 C32882
11/64	.1719	4.37	3-1/4	7/16	3/8	C32834 C32850 C32883
3/16	.1875	4.76	3-1/4	7/16	3/8	C52153 C32851 C32884
13/64	.2031	5.16	3-1/4	1/2	3/8	C32835 C32852 C32885
7/32	.2188	5.56	3-1/4	1/2	3/8	C52154 C32853 C32886
15/64	.2344	5.95	3-3/8	1/2	3/8	C32836 C32854 C32887
1/4	.25	6.35	3-3/8	1/2	3/8	C52155 C32855 C32888
17/64	.2656	6.75	3-3/8	9/16	3/8	C32837 C32856 C32889
9/32	.2812	7.14	3-3/8	9/16	3/8	C52156 C32857 C32890
19/64	.2969	7.54	3-1/2	9/16	3/8	C32838 C32858 C32891
5/16	.3125	7.94	3-1/2	9/16	3/8	C52157 C32859 C32892
21/64	.3281	8.33	3-1/2	9/16	3/8	C32839 C32860 C32893
11/32	.3438	8.73	3-1/2	9/16	3/8	C52158 C32861 C32894
23/64	.3594	9.13	3-1/2	9/16	3/8	C32840 C32862 C32895
3/8	.375	9.53	3-1/2	9/16	3/8	C52159 C32863 C32896

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
25/64	.3906	9.92	4-1/8	13/16	1/2	C32841 C32864 C32897
13/32	.4062	10.32	4-1/8	13/16	1/2	C52160 C32865 C32898
27/64	.4219	10.72	4-1/8	13/16	1/2	C32842 C32866 C32899
7/16	.4375	11.11	4-1/8	13/16	1/2	C52161 C32867 C32900
29/64	.4531	11.51	4-1/8	13/16	1/2	C32843 C32868 C32901
15/32	.4688	11.91	4-1/8	13/16	1/2	C52162 C32869 C32902
31/64	.4844	12.30	4-1/8	13/16	1/2	C32844 C32870 C32903
1/2	.5	12.70	4-1/8	13/16	1/2	C52163 C32871 C32904
9/16	.5625	14.29	5	1-1/8	5/8	C32845 C32872 C32905
5/8	.625	15.88	5	1-1/8	5/8	C52165 C32873 C32906
11/16	.6875	17.46	5-5/8	1-5/16	3/4	C32846 C32874 C32907
3/4	.75	19.05	5-5/8	1-5/16	3/4	C52167 C32875 C32908
13/16	.8125	20.64	6-1/8	1-9/16	7/8	C32845 C32876 C32909
7/8	.875	22.23	6-1/8	1-9/16	7/8	C52168 C32877 C32910
15/16	.9375	23.81	6-3/8	1-5/8	1	C32846 C32878 C32911
1	1	25.40	6-3/8	1-5/8	1	C52169 C32879 C32912

List #409 Cobalt Double End Four Flute End Mill



Substrate - Cobalt High Speed Steel
Length - Stub
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- Stub length for greater rigidity
- 8% Cobalt for high red hardness
- All have 3/16" shanks for one holder size to use with all sizes
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/16	.0625	1.59	2	3/32	3/16	C40984 C40989 C40994
3/32	.0938	2.38	2	9/64	3/16	C40985 C40990 C40995
1/8	.125	3.18	2	3/16	3/16	C40986 C40991 C40996

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
5/32	.1562	3.97	2	15/64	3/16	C40987 C40992 C40997
3/16	.1875	4.76	2	9/32	3/16	C40988 C40993 C40998

End Mills • Special Purpose

List #410 Cobalt Double End Four Flute End Mill



Substrate - Cobalt High Speed Steel
Length - Regular
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- 8% Cobalt for high red hardness
- All have 3/16" shanks for one holder size to use on all sizes
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	Bright	TiN	TiCN
1/16	.0625	1.59	2-1/4	3/16	3/16	C40969	C40974	C40979
3/32	.0938	2.38	2-1/4	9/32	3/16	C40970	C40975	C40980
1/8	.125	3.18	2-1/4	3/8	3/16	C40971	C40976	C40981

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	Bright	TiN	TiCN
5/32	.1562	3.97	2-1/4	7/16	3/16	C40972	C40977	C40982
3/16	.1875	4.76	2-1/4	1/2	3/16	C40973	C40978	C40983

List #556 Cobalt Single End Multi-Flute End Mill



Substrate - Cobalt High Speed Steel
Length - Regular
Number of Flutes - Multi-Flute
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- 8% Cobalt for high red hardness

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	TiN	TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	4	C42684	C32574	C32610
5/32	.1562	3.97	2-3/8	1/2	3/8	4	C32556	C32575	C32611
11/64	.1719	4.37	2-3/8	1/2	3/8	4	C32557	C32576	C32612
3/16	.1875	4.76	2-3/8	1/2	3/8	4	C42686	C32577	C32613
13/64	.2031	5.16	2-7/16	5/8	3/8	4	C32558	C32578	C32614
7/32	.2188	5.56	2-7/16	5/8	3/8	4	C32559	C32579	C32615
15/64	.2344	5.95	2-7/16	5/8	3/8	4	C32560	C32580	C32616
1/4	.25	6.35	2-7/16	5/8	3/8	4	C42689	C32581	C32617
17/64	.2656	6.75	2-1/2	3/4	3/8	4	C32561	C32582	C32618
9/32	.2812	7.14	2-1/2	3/4	3/8	4	C32562	C32583	C32619
19/64	.2969	7.54	2-1/2	3/4	3/8	4	C32563	C32584	C32620
5/16	.3125	7.94	2-1/2	3/4	3/8	4	C42691	C32585	C32621
21/64	.3281	8.33	2-1/2	3/4	3/8	4	C32564	C32586	C32622
11/32	.3438	8.73	2-1/2	3/4	3/8	4	C32565	C32587	C32623
23/64	.3594	9.13	2-1/2	3/4	3/8	4	C32566	C32588	C32624
3/8	.375	9.53	2-1/2	3/4	3/8	4	C42694	C32589	C32625
25/64	.3906	9.92	2-11/16	1	3/8	4	C32567	C32590	C32626
13/32	.4062	10.32	2-11/16	1	3/8	4	C32568	C32591	C32627
27/64	.4219	10.72	2-11/16	1	3/8	4	C32569	C32592	C32628
7/16	.4375	11.11	2-11/16	1	3/8	4	C32570	C32593	C32629
29/64	.4531	11.51	3-1/4	1-1/4	1/2	4	C32571	C32594	C32630
15/32	.4688	11.91	3-1/4	1-1/4	1/2	4	C32572	C32595	C32631
31/64	.4844	12.30	3-1/4	1-1/4	1/2	4	C32573	C32596	C32632
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C42699	C32597	C32633
1/2	.5	12.70	3-1/4	1-1/4	1/2	6	C42698	C32598	C32634
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C42703	C32599	C32635
5/8	.625	15.88	3-3/4	1-5/8	5/8	6	C42702	C32600	C32636
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C42707	C32601	C32637

(Continued on next page)

End Mills • Special Purpose

List #556 continued

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
3/4	.75	19.05	3-7/8	1-5/8	3/4	6	C42706	C32602	C32638	
1	1	25.40	4-1/2	2	1	4	C42715	C32603	C32639	
1	1	25.40	4-1/2	2	1	6	C42714	C32604	C32640	
1-1/4	1.25	31.75	4-1/2	2	1-1/4	4	C42720	C32605	C32641	
1-1/4	1.25	31.75	4-1/2	2	1-1/4	6	C42719	C32606	C32642	
1-1/2	1.5	38.10	4-1/2	2	1-1/4	4	C42727	C32607	C32643	
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C42726	C32608	C32644	
2	2	50.80	7-3/4	4	2	6	C42731	C32609	C32645	

List #560 Cobalt Single End Multi-Flute Ball Nose End Mill



Substrate - Cobalt High Speed Steel
 Length - Regular
 Number of Flutes - Multi-Flute
 End Work - Ball Nose
 Surface Treatment - Bright, TiN, TiCN
 Rougher/Finisher - Finisher
 Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Heavy cross-section for rigidity
- 8% Cobalt for high red hardness
- Radius for contouring part surfaces

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
1/8	.125	3.18	2-5/16	3/8	3/8	4	C42778	C32763	C32776	
3/16	.1875	4.76	2-3/8	1/2	3/8	4	C42780	C32764	C32777	
1/4	.25	6.35	2-7/16	5/8	3/8	4	C42783	C32765	C32778	
5/16	.3125	7.94	2-1/2	3/4	3/8	4	C42785	C32766	C32779	
3/8	.375	9.53	2-1/2	3/4	3/8	4	C42788	C32767	C32780	
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C42792	C32768	C32781	
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C42795	C32769	C32782	
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C42799	C32770	C32783	
3/4	.75	19.05	3-7/8	1-5/8	3/4	6	C42798	C32771	C32784	
1	1	25.40	4-1/2	2	1	4	C42807	C32772	C32785	
1	1	25.40	4-1/2	2	1	6	C42806	C32773	C32786	
1-1/4	1.25	31.75	4-1/2	2	1-1/4	6	C32761	C32774	C32787	
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C32762	C32775	C32788	

End Mills • Special Purpose

List #567 Cobalt Double End Four Flute End Mill



Substrate - Cobalt High Speed Steel
Length - Regular
Number of Flutes - 4
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Double End



Features:

- Four flutes for smoother finish
- Heavy cross-section for rigidity
- 8% Cobalt for high red hardness
- Double end reduces tool cost and down time

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv. Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
1/8	.125	3.18	3-1/16	3/8	C52170 C32941 C32974
9/64	.1406	3.57	3-1/8	7/16	C32927 C32942 C32975
5/32	.1562	3.97	3-1/8	7/16	C52171 C32943 C32976
11/64	.1719	4.37	3-1/4	1/2	C32928 C32944 C32977
3/16	.1875	4.76	3-1/4	1/2	C52172 C32945 C32978
13/64	.2031	5.16	3-1/4	9/16	C32929 C32946 C32979
7/32	.2188	5.56	3-1/4	9/16	C52173 C32947 C32980
15/64	.2344	5.95	3-3/8	5/8	C32930 C32948 C32981
1/4	.25	6.35	3-3/8	5/8	C52174 C32949 C32982
17/64	.2656	6.75	3-3/8	11/16	C32931 C32950 C32983
9/32	.2812	7.14	3-3/8	11/16	C52175 C32951 C32984
19/64	.2969	7.54	3-1/2	3/4	C32932 C32952 C32985
5/16	.3125	7.94	3-1/2	3/4	C52176 C32953 C32986
21/64	.3281	8.33	3-1/2	3/4	C32933 C32954 C32987
11/32	.3438	8.73	3-1/2	3/4	C52177 C32955 C32988
23/64	.3594	9.13	3-1/2	3/4	C32934 C32956 C32989
3/8	.375	9.53	3-1/2	3/4	C52178 C32957 C32990

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv. Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN
25/64	.3906	9.92	4-1/8	1	C32935 C32958 C32991
13/32	.4062	10.32	4-1/8	1	C52179 C32959 C32992
27/64	.4219	10.72	4-1/8	1	C32936 C32960 C32993
7/16	.4375	11.11	4-1/8	1	C52180 C32961 C32994
29/64	.4531	11.51	4-1/8	1	C32937 C32962 C32995
15/32	.4688	11.91	4-1/8	1	C52181 C32963 C32996
31/64	.4844	12.30	4-1/8	1	C32938 C32964 C32997
1/2	.5	12.70	4-1/8	1	C52182 C32965 C32998
9/16	.5625	14.29	5	1-3/8	C52183 C32966 C32999
5/8	.625	15.88	5	1-3/8	C52184 C32967 C33000
11/16	.6875	17.46	5-5/8	1-5/8	C52185 C32968 C33001
3/4	.75	19.05	5-5/8	1-5/8	C52186 C32969 C33002
13/16	.8125	20.64	6-1/8	1-7/8	C32939 C32970 C33003
7/8	.875	22.23	6-1/8	1-7/8	C52187 C32971 C33004
15/16	.9375	23.81	6-3/8	1-7/8	C32940 C32972 C33005
1	1	25.40	6-3/8	1-7/8	C52188 C32973 C33006

List #557 Cobalt Single End Multi-Flute Long Length End Mill



Substrate - Cobalt High Speed Steel
Length - Long
Number of Flutes - Multi-Flute
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Finisher
Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Long length of cut for greater depth capacity
- 8% Cobalt for high red hardness

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number • Bright TiN TiCN
1/4	.25	6.35	3-1/16	1-1/4	3/8	4	C32646 C32655 C32673
9/32	.2812	7.14	3-1/8	1-3/8	3/8	4	C32647 C32656 C32674
5/16	.3125	7.94	3-1/8	1-3/8	3/8	4	C32648 C32657 C32675
11/32	.3438	8.73	3-1/4	1-1/2	3/8	4	C32649 C32658 C32676
3/8	.375	9.53	3-1/4	1-1/2	3/8	4	C42857 C32659 C32677
13/32	.4062	10.32	3-3/4	1-3/4	3/8	4	C32650 C32660 C32678
7/16	.4375	11.11	3-3/4	1-3/4	3/8	4	C32651 C32661 C32679
15/32	.4688	11.91	4	2	1/2	4	C32652 C32662 C32680
1/2	.5	12.70	4	2	1/2	4	C42861 C32663 C32681
5/8	.625	15.88	4-5/8	2-1/2	5/8	4	C42864 C32664 C32682
3/4	.75	19.05	5-1/4	3	3/4	4	C42868 C32665 C32683
3/4	.75	19.05	5-1/4	3	3/4	6	C42867 C32666 C32684
7/8	.875	22.23	5-3/4	3-1/2	7/8	4	C32653 C32667 C32685
7/8	.875	22.23	5-3/4	3-1/2	7/8	6	C32654 C32668 C32686

(Continued on next page)

End Mills • Special Purpose

List #557 continued

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
1	1	25.40	6-1/2	4	1	4	C42876	C32669	C32687	
1	1	25.40	6-1/2	4	1	6	C42875	C32670	C32688	
1-1/4	1.25	31.75	6-1/2	4	1-1/4	4	C42881	C32671	C32689	
1-1/4	1.25	31.75	6-1/2	4	1-1/4	6	C42880	C32672	C32690	

List #558 Cobalt Single End Multi-Flute Extra Long End Mill



Substrate - Cobalt High Speed Steel
 Length - Extra Long
 Number of Flutes - Multi-Flute
 End Work - Center Cutting
 Surface Treatment - Bright, TiN, TiCN
 Rougher/Finisher - Finisher
 Double or Single End - Single End



Features:

- Multi-flutes for smoother finish
- Extra long flute length for added depth capacity
- 8% Cobalt for high red hardness

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	Bright	• EDP Number •	TiN	TiCN
1/4	.25	6.35	3-9/16	1-3/4	3/8	C32691	C32700	C32718	
9/32	.2812	7.14	3-3/4	2	3/8	C32692	C32701	C32719	
5/16	.3125	7.94	3-3/4	2	3/8	C32693	C32702	C32720	
11/32	.3438	8.73	4-1/4	2-1/2	3/8	C32694	C32703	C32721	
3/8	.375	9.53	4-1/4	2-1/2	3/8	C42913	C32704	C32722	
13/32	.4062	10.32	4-1/2	2-3/4	3/8	C32695	C32705	C32723	
7/16	.4375	11.11	4-1/2	2-3/4	3/8	C32696	C32706	C32724	
15/32	.4688	11.91	5	3	1/2	C32697	C32707	C32725	
1/2	.5	12.70	5	3	1/2	C42917	C32708	C32726	

Diam. of Mill	Decimal Equiv.	Metric Equiv.	Overall Length	Length of Cut	Shank Diam.	Bright	• EDP Number •	TiN	TiCN
5/8	.625	15.88	6-1/8	4	5/8	C42920	C32709	C32727	
3/4	.75	19.05	6-1/4	4	3/4	C42924	C32710	C32728	
3/4	.75	19.05	6-1/4	4	3/4	C42923	C32711	C32729	
1	1	25.40	8-1/2	6	1	C42932	C32712	C32730	
1	1	25.40	8-1/2	6	1	C42931	C32713	C32731	
1-1/4	1.25	31.75	8-1/2	6	1-1/4	C42937	C32714	C32732	
1-1/4	1.25	31.75	8-1/2	6	1-1/4	C42936	C32715	C32733	
1-1/2	1.5	38.10	10-1/2	8	1-1/2	C32698	C32716	C32734	
1-1/2	1.5	38.10	10-1/2	8	1-1/2	C32699	C32717	C32735	

List #576 High Speed Steel Multi-Flute Rougher



Substrate - HSS
 Length - Various
 Number of Flutes - Multi-Flute
 End Work - Non Center Cutting
 Surface Treatment - Bright, TiN, TiCN
 Rougher/Finisher - Rougher
 Double or Single End - Single End



Features:

- Course pitch for heavier, more manageable chips
- Heavy cross-section for rigidity
- Side cutting

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
1/4	.25	6.35	2-7/16	5/8	3/8	3	C44084	C32070	C32096	
5/16	.3125	7.94	2-1/2	3/4	3/8	3	C44085	C32071	C32097	
3/8	.375	9.53	2-1/2	3/4	3/8	4	C44086	C32072	C32098	
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C43385	C32073	C32099	
1/2	.5	12.70	4	2	1/2	4	C44087	C32074	C32100	
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C43386	C32075	C32101	
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C43387	C32076	C32102	
3/4	.75	19.05	5-1/4	3	3/4	4	C43388	C32077	C32103	
1	1	25.40	4-1/4	2	3/4	5	C44088	C32078	C32104	
1	1	25.40	4-1/2	2	1	5	C43389	C32079	C32105	

(Continued on next page)

End Mills • Special Purpose

List #576 continued

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number •		
							Bright	TiN	TiCN
1	1	25.40	5-1/2	3	1	5	C43398	C32080	C32106
1	1	25.40	6-1/2	4	1	5	C43390	C32081	C32107
1-1/4	1.25	31.75	4-1/4	2	3/4	5	C44089	C32082	C32108
1-1/4	1.25	31.75	4-1/2	2	1-1/4	5	C43391	C32083	C32109
1-1/4	1.25	31.75	5-1/2	3	1-1/4	5	C43399	C32084	C32110
1-1/4	1.25	31.75	6-1/2	4	1-1/4	5	C43392	C32085	C32111
1-1/2	1.5	38.10	4-1/4	2	3/4	6	C44090	C32086	C32112
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C43393	C32087	C32113
1-1/2	1.5	38.10	5-1/2	3	1-1/4	6	C43400	C32088	C32114
1-1/2	1.5	38.10	6-1/2	4	1-1/4	6	C43394	C32089	C32115
2	2	50.80	4-1/2	2	1-1/4	8	C44091	C32090	C32116
2	2	50.80	5-3/4	2	2	8	C32069	C32091	C32117
2	2	50.80	6-3/4	3	2	8	C43401	C32092	C32118
2	2	50.80	7-3/4	4	2	8	C43395	C32093	C32119
2	2	50.80	9-3/4	6	2	8	C43396	C32094	C32120
2	2	50.80	11-3/4	8	2	8	C43397	C32095	C32121

End Mills • Rougher

List #506 Cobalt Three Flute Rougher



Substrate - Cobalt High Speed Steel
Length - Various
Number of Flutes - 3
End Work - Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Rougher
Double or Single End - Single End



Features:

- 3 flutes allow for greater chip room
- Heavy cross-section for rigidity
- Center cutting allows for plunge cutting and slotting
- 8% Cobalt for high red hardness
- Chamfered corners
- Coarse pitch for heavier, more manageable chips

For coatings performance and application information, see page 4.

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv. Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN			
3/8	.375	9.53	2-1/2	3/4	3/8	C32370	C32390	C32410
1/2	.5	12.70	3-1/4	1-1/4	1/2	C32371	C32391	C32411
1/2	.5	12.70	4	2	1/2	C32372	C32392	C32412
5/8	.625	15.88	3-3/4	1-5/8	5/8	C32373	C32393	C32413
5/8	.625	15.88	4-5/8	2-1/2	5/8	C32374	C32394	C32414
3/4	.75	19.05	3-7/8	1-5/8	3/4	C32375	C32395	C32415
3/4	.75	19.05	5-1/4	3	3/4	C32376	C32396	C32416
7/8	.875	22.23	4-1/8	1-7/8	7/8	C32377	C32397	C32417
1	1	25.40	4-1/2	2	1	C32378	C32398	C32418
1	1	25.40	5-1/2	3	1	C32379	C32399	C32419

Diam. of Mill	Decimal Equiv.	Metric Overall Equiv. Length	Length of Cut	Shank Diam.	• EDP Number • Bright TiN TiCN	
1	1	25.40	6-1/2	4	1	C32380 C32400 C32420
1-1/4	1.25	31.75	4-1/2	2	1-1/4	C32381 C32401 C32420
1-1/4	1.25	31.75	5-1/4	3	1-1/4	C32382 C32402 C32420
1-1/4	1.25	31.75	6-1/2	4	1-1/4	C32383 C32403 C32420
1-1/2	1.5	38.10	4-1/2	2	1-1/4	C32384 C32404 C32420
1-1/2	1.5	38.10	5-1/2	3	1-1/4	C32385 C32405 C32420
1-1/2	1.5	38.10	6-1/2	4	1-1/4	C32386 C32406 C32420
2	2	50.80	5-3/4	2	2	C32387 C32407 C32420
2	2	50.80	6-3/4	3	2	C32388 C32408 C32420
2	2	50.80	7-3/4	4	2	C32389 C32409 C32420

List #577 Cobalt Multi-Flute Rougher



Substrate - Cobalt High Speed Steel
Length - Various
Number of Flutes - Multi-Flute
End Work - Non Center Cutting
Surface Treatment - Bright, TiN, TiCN
Rougher/Finisher - Rougher
Double or Single End - Single End



Features:

- Course pitch for heavier, more manageable chips
- Heavy cross-section for rigidity
- 8% cobalt for high red hardness
- Side cutting

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	• EDP Number • Bright TiN TiCN
1/4	.25	6.35	2-7/16	5/8	3/8	3	C32122 C32140 C32175
5/16	.3125	7.94	2-1/2	3/4	3/8	3	C32123 C32141 C32176
3/8	.375	9.53	2-1/2	3/4	3/8	4	C32124 C32142 C32177
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C43472 C32143 C32178
1/2	.5	12.70	4	2	1/2	4	C32125 C32144 C32179
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C43473 C32145 C32180
5/8	.625	15.88	4-5/8	2-1/2	5/8	4	C32126 C32146 C32181
3/4	.75	19.05	3	3/4	3/4	4	C32127 C32149 C32184
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C43474 C32147 C32182
3/4	.75	19.05	5-1/4	3	3/4	4	C43416 C32148 C32183
7/8	.875	22.23	4-1/8	1-7/8	7/8	5	C32128 C32150 C32185
7/8	.875	22.23	5-3/4	3-1/2	7/8	5	C32129 C32151 C32186
1	1	25.40	3-3/4	1-1/2	3/4	5	C32130 C32152 C32187
1	1	25.40	4-1/2	2	1	5	C43431 C32153 C32188
1	1	25.40	5-1/2	3	1	5	C43467 C32154 C32189
1	1	25.40	6-1/2	4	1	5	C43462 C32155 C32190
1	1	25.40	8-1/2	6	1	5	C32131 C32156 C32191
1-1/4	1.25	31.75	3-3/4	1-1/2	3/4	5	C32132 C32157 C32192
1-1/4	1.25	31.75	4-1/2	2	1-1/4	5	C43440 C32158 C32193
1-1/4	1.25	31.75	5-1/2	3	1-1/4	5	C43468 C32159 C32194
1-1/4	1.25	31.75	6-1/2	4	1-1/4	5	C43441 C32160 C32195
1-1/4	1.25	31.75	8-1/2	6	1-1/4	5	C32133 C32161 C32196
1-1/2	1.5	38.10	3-3/4	1-1/2	3/4	6	C32134 C32162 C32197
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C43452 C32163 C32198
1-1/2	1.5	38.10	5-1/2	3	1-1/4	6	C43469 C32164 C32199

(Continued on next page)

End Mills • Rougher

List #577 continued

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
1-1/2	1.5	38.10	6-1/2	4	1-1/4	6	C43453	C32165	C32200	
1-1/2	1.5	38.10	8-1/2	6	1-1/4	6	C32135	C32166	C32201	
2	2	50.80	4-1/2	2	1-1/4	8	C32136	C32167	C32202	
2	2	50.80	6-1/2	4	1-1/4	8	C32137	C32168	C32203	
2	2	50.80	5-3/4	2	2	8	C32138	C32169	C32204	
2	2	50.80	6-3/4	3	2	8	C43470	C32170	C32205	
2	2	50.80	7-3/4	4	2	8	C43463	C32171	C32206	
2	2	50.80	9-3/4	6	2	8	C43465	C32172	C32207	
2	2	50.80	11-3/4	8	2	8	C43466	C32173	C32208	
2	2	50.80	13-3/4	10	2	8	C32139	C32174	C32209	

List #501 Cobalt Multi-Flute Rougher



Substrate - Cobalt High Speed Steel
 Length - Various
 Number of Flutes - Multi-Flute
 End Work - Non Center Cutting
 Surface Treatment - Bright, TiN, TiCN
 Rougher/Finisher - Rougher
 Double or Single End - Single End



Features:

- Fine pitch for small manageable chips
- Heavy cross-section for rigidity
- 8% Cobalt for high red hardness
- Side cutting

For coatings performance and application information, see page 4.

Diameter of Mill	Decimal Equivalent	Metric Equivalent	Overall Length	Length of Cut	Shank Diameter	Number of Flutes	Bright	• EDP Number •	TiN	TiCN
3/8	.375	9.53	2-1/2	3/4	3/8	4	C32271	C32292	C32313	
1/2	.5	12.70	3-1/4	1-1/4	1/2	4	C32272	C32293	C32314	
1/2	.5	12.70	4	2	1/2	4	C32273	C32294	C32315	
5/8	.625	15.88	3-3/4	1-5/8	5/8	4	C32274	C32295	C32316	
5/8	.625	15.88	4-5/8	2-1/2	5/8	4	C32275	C32296	C32317	
3/4	.75	19.05	3-7/8	1-5/8	3/4	4	C32276	C32297	C32318	
3/4	.75	19.05	5-1/4	3	3/4	4	C32277	C32298	C32319	
7/8	.875	22.23	4-1/8	1-7/8	7/8	5	C32278	C32299	C32320	
7/8	.875	22.23	5-3/4	3-1/2	7/8	5	C32279	C32300	C32321	
1	1	25.40	3-3/4	1-1/2	3/4	5	C32280	C32301	C32322	
1	1	25.40	4-1/2	2	1	5	C32281	C32302	C32323	
1	1	25.40	5-1/2	3	1	5	C32282	C32303	C32324	
1-1/4	1.25	31.75	3-3/4	1-1/2	3/4	5	C32283	C32304	C32325	
1-1/4	1.25	31.75	4-1/2	2	1-1/4	5	C32284	C32305	C32326	
1-1/4	1.25	31.75	5-1/2	3	1-1/4	5	C32285	C32306	C32327	
1-1/2	1.5	38.10	3-3/4	1-1/2	1-1/4	6	C32286	C32307	C32328	
1-1/2	1.5	38.10	4-1/2	2	1-1/4	6	C32287	C32308	C32329	
1-1/2	1.5	38.10	5-1/2	3	1-1/4	6	C32288	C32309	C32330	
2	2	50.80	5-3/4	2	2	8	C32289	C32310	C32331	
2	2	50.80	6-3/4	3	2	8	C32290	C32311	C32332	
2	2	50.80	7-3/4	4	2	8	C32291	C32312	C32333	

End Mills

Diameter Cross Reference Index

Style & Material Key

Abbreviations and Descriptions:

SE.....Single End	HSS.....High Speed Steel
DE.....Double End	CTCarbide Tipped
BallBall End, Center Cutting	Cobalt.....Cobalt High Speed Steel
CC.....Center Cutting	P/M CobaltPM/Plus Cobalt Material
NCC.....Non Center Cutting	CRCourse Pitch Rougher
CarbideMicroPlus, Sub Micron	FRFine Pitch Rougher
Grain Carbide	

Note: Most tools in this Cross Reference Index have a corresponding EDP number for either TiN or TiCN coating. Locate the specific End Mill and it's Bright EDP number, then turn to the appropriate page to find the coated EDP number.

1/32" Diameter (.0312")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/16	3/64	2	2	DE/CC	Cobalt	155	405	40843
3/16	3/64	2	2	DE/CC	HSS	168	408	40903
3/16	3/32	1-1/2	2	SE/CC	HSS	168	407	40936
3/16	3/32	2-1/4	2	DE/CC	Cobalt	157	426	41032
3/16	3/32	2-1/4	2	DE/CC	HSS	157	422	41001

3/64" Diameter (.0469")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/16	1/16	2	2	DE/CC	Cobalt	168	407	40937
3/16	1/16	2	2	DE/CC	HSS	157	422	41003
3/16	9/64	1-1/2	2	SE/CC	HSS	155	405	40844
3/16	9/64	2-1/4	2	DE/CC	Cobalt	168	408	40904
3/16	9/64	2-1/4	2	DE/CC	HSS	157	426	41034

1/16" Diameter (.0625")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/8	1/8	1-1/2	2	SE/CC	Carbide	149	7212	53852
1/8	1/8	1-1/2	3	SE/CC	Carbide	150	7312	53878
1/8	1/8	1-1/2	4	SE/CC	Carbide	152	7412	53865
1/8	3/16	1-1/2	2	SE/CC	Carbide	149	7211	53776
1/8	3/16	1-1/2	2	SE/Ball	Carbide	150	7216	53935
1/8	3/16	1-1/2	3	SE/CC	Carbide	151	7311	53814
1/8	3/16	1-1/2	4	SE/CC	Carbide	152	7411	53807
1/8	3/16	1-1/2	4	SE/Ball	Carbide	153	7416	53947
3/16	3/32	2	2	DE/CC	Cobalt	168	407	40938
3/16	3/32	2	2	DE/CC	HSS	157	422	41005
3/16	3/32	2	2	DE/Ball	HSS	159	423	41021
3/16	3/32	2	4	DE/CC	Cobalt	171	409	40984
3/16	3/32	2	4	DE/CC	HSS	165	442	41085
3/16	3/16	1-1/2	2	SE/CC	HSS	155	405	40845
3/16	3/16	2-1/4	2	DE/CC	Cobalt	168	408	40905
3/16	3/16	2-1/4	2	DE/CC	HSS	157	426	41036
3/16	3/16	2-1/4	2	DE/Ball	HSS	159	427	41053
3/16	3/16	1-1/2	4	SE/CC	HSS	163	406	40876
3/16	3/16	2-1/4	4	DE/CC	Cobalt	171	410	40969
3/16	3/16	2-1/4	4	DE/CC	HSS	165	446	41099
3/16	7/32	2-1/2	2	DE/CC	HSS	158	428	41070
3/16	7/32	2-1/2	4	DE/CC	HSS	165	448	41113

5/64" Diameter (.0781")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/8	1/4	1-1/2	4	SE/CC	Carbide	152	7411	53808
1/8	9/32	1-1/2	2	SE/CC	Carbide	149	7211	40532
3/16	1/8	2	2	DE/CC	Cobalt	168	407	40939
3/16	1/8	2	2	DE/CC	HSS	157	422	41006
3/16	15/64	1-1/2	2	SE/CC	HSS	155	405	40846
3/16	15/64	2-1/4	2	DE/CC	Cobalt	168	408	40906
3/16	15/64	2-1/4	2	DE/CC	HSS	157	426	41037
3/16	15/64	1-1/2	4	SE/CC	HSS	163	406	40877

3/32" Diameter (.0938")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/16	9/64	2	2	DE/CC	Cobalt	168	407	40940
3/16	9/64	2	2	DE/CC	HSS	157	422	41008
3/16	9/64	2	2	DE/Ball	HSS	159	423	41023
3/16	9/64	2	4	DE/CC	Cobalt	171	409	40985
3/16	9/64	2	4	DE/CC	HSS	165	442	41087
1/8	3/16	1-1/2	2	SE/CC	Carbide	149	7212	53853
1/8	3/16	1-1/2	3	SE/CC	Carbide	150	7312	53879
1/8	3/16	1-1/2	4	SE/CC	Carbide	152	7412	53866
1/8	1/4	1-1/2	2	SE/CC	Carbide	149	7211	53778
1/8	9/32	1-1/2	2	SE/Ball	Carbide	150	7216	53936
3/16	9/32	1-1/2	2	SE/CC	HSS	155	405	40847
3/16	9/32	2-1/4	2	DE/CC	Cobalt	168	408	40907
3/16	9/32	2-1/4	2	DE/CC	HSS	157	426	41039
3/16	9/32	2-1/4	2	DE/Ball	HSS	159	427	41056
3/16	9/32	2-5/8	2	DE/CC	HSS	158	428	41072
1/8	9/32	1-1/2	3	SE/CC	Carbide	151	7311	53816
1/8	9/32	1-1/2	4	SE/CC	Carbide	152	7411	53809
1/8	9/32	1-1/2	4	SE/Ball	Carbide	153	7416	53948
3/16	9/32	1-1/2	4	SE/CC	HSS	163	406	40878
3/16	9/32	2-1/4	4	DE/CC	Cobalt	171	410	40970
3/16	9/32	2-1/4	4	DE/CC	HSS	165	446	41101
3/16	9/32	2-5/8	4	DE/CC	HSS	165	448	41115

7/64" Diameter (.1094")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/8	5/16	1-1/2	2	SE/CC	Carbide	149	7211	40533
1/8	5/16	1-1/2	4	SE/CC	Carbide	152	7411	53810
3/16	5/32	2	2	DE/CC	Cobalt	168	407	40941
3/16	5/32	2	2	DE/CC	HSS	157	422	41010
3/16	21/64	1-1/2	2	SE/CC	HSS	155	405	40848
3/16	21/64	2-1/4	2	DE/CC	Cobalt	168	408	40908
3/16	21/64	2-1/4	2	DE/CC	HSS	157	426	41041
3/16	21/64	1-1/2	4	SE/CC	HSS	163	406	40879

1/8" Diameter (.1250")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/8	1/4	1-1/2	2	SE/CC	Carbide	149	7212	53854
1/8	1/4	1-1/2	2	DE/CC	Carbide	150	7222	53913
1/8	1/4	1-1/2	3	SE/CC	Carbide	150	7312	53880
1/8	1/4	1-1/2	4	SE/CC	Carbide	152	7412	53867
1/8	1/4	1-1/2	4	DE/CC	Carbide	153	7422	53924
1/8	3/8	1-1/2	2	SE/CC	Carbide	149	7211	53780
1/8	3/8	1-1/2	2	SE/Ball	Carbide	150	7216	53937
1/8	3/8	1-1/2	3	SE/CC	Carbide	151	7311	53838
1/8	3/8	1-1/2	4	SE/CC	Carbide	152	7411	53811
1/8	3/8	1-1/2	4	SE/Ball	Carbide	153	7416	53949
3/16	3/16	2	2	DE/CC	HSS	157	422	41012
3/16	3/16	2	2	DE/Ball	HSS	159	423	41026
3/16	3/16	2	2	DE/CC	Cobalt	168	407	40942
3/16	3/16	2	4	DE/CC	HSS	165	442	41090
3/16	3/16	2	4	DE/CC	Cobalt	171	409	40986
3/16	3/8	2-1/4	2	DE/CC	HSS	157	426	41043
3/16	3/8	2-1/4	2	DE/Ball	HSS	159	427	41060
3/16	3/8	1-1/2	2	SE/CC	HSS	155	405	40849
3/16	3/8	2-1/4	2	DE/CC	Cobalt	168	408	40909
3/16	3/8	2-1/4	4	DE/CC	HSS	165	446	41104
3/16	3/8	1-1/2	4	SE/CC	HSS	163	406	40880
3/16	3/8	2-1/4	4	DE/CC	Cobalt	171	410	40971
3/16	3/4	3-1/8	2	DE/CC	HSS	158	428	41075
3/16	3/4	3-1/8	4	DE/CC	HSS	165	448	41118
3/8	3/16	2-3/4	2	DE/CC	HSS	158	693	42096
3/8	3/16	2-3/4	4	DE/NCC	HSS	162	695	43374
3/8	1/4	2-3/16	4	SE/CC	PM/Cobalt	146	575	43208
3/8	3/8	2-5/16	2	SE/CC	Cobalt	168	555	42602
3/8	3/8	2-5/16	2	SE/Ball	Cobalt	169	559	42643
3/8	3/8	3-1/16	2	DE/CC	Cobalt	169	565	52151
3/8	3/8	2-5/16	2	SE/CC	HSS	156	689	38982
3/8	3/8	3-1/16	2	DE/CC	Carbide	150	7221	53891
3/8	3/8	3-1/16	2	DE/CC	HSS	158	668	41965
3/8	3/8	3-1/16	2	DE/CC	HSS	158	684	42051
3/8	3/8	2-5/16	2	SE/CC	HSS	155	685	41602

End Mills

Diameter Cross Reference Index (Continued)

1/8" Diameter (.1250") Continued...

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	3/8	2-5/16	2	SE/CC	HSS	156	686	41671
3/8	3/8	2-5/16	2	SE/Ball	HSS	159	690	42109
3/8	3/8	3-1/16	2	DE/Ball	HSS	159	697	42184
3/8	3/8	2-3/8	2	SE/Ball	HSS	159	698	42158
3/8	3/8	2-5/16	2	SE/CC	PM/Cobalt	145	510	40792
3/8	3/8	3-1/16	3	DE/CC	HSS	160	587	39575
3/8	3/8	2-5/16	3	SE/CC	HSS	160	585	39638
3/8	3/8	2-5/16	4	SE/Ball	Cobalt	171	560	42778
3/8	3/8	3-1/16	4	DE/CC	Cobalt	171	567	52170
3/8	3/8	3-1/16	4	DE/CC	Carbide	153	7421	53902
3/8	3/8	2-5/16	4	SE/CC	Cobalt	170	556	42684
3/8	3/8	3-1/16	4	DE/CC	HSS	166	582	41202
3/8	3/8	2-5/16	4	SE/CC	HSS	164	583	41243
3/8	3/8	3-1/16	4	DE/NCC	HSS	163	682LH	43348
3/8	3/8	3-1/16	4	DE/NCC	HSS	163	682	43307
3/8	3/8	2-5/16	4	SE/NCC	HSS	161	683	42220
3/8	3/8	2-5/16	4	SE/CC	HSS	164	570	41243
3/8	3/8	3-1/16	4	DE/CC	PM/Cobalt	147	552	52189
3/8	3/8	2-5/16	4	SE/CC	PM/Cobalt	146	553	42500
3/8	3/8	2-5/16	4	SE/Ball	PM/Cobalt	147	554	42550

9/64" Diameter (.1406")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/16	7/32	2	2	DE/CC	Cobalt	168	407	40943
3/16	7/32	2	2	DE/CC	HSS	157	422	41013
3/16	13/32	1-1/2	2	SE/CC	HSS	155	405	40850
3/16	13/32	2-1/4	2	DE/CC	HSS	157	426	41044
3/16	13/32	2-1/4	2	DE/CC	Cobalt	168	408	40910
3/16	13/32	1-1/2	4	SE/CC	HSS	163	406	40881
3/16	7/16	2	2	SE/CC	Carbide	149	7211	40534
3/16	7/16	2	4	SE/CC	Carbide	152	7411	53812
3/8	7/16	3-1/8	2	DE/CC	Cobalt	169	565	32833
3/8	7/16	3-1/8	2	DE/CC	HSS	158	684	33626
3/8	7/16	3-1/8	4	DE/CC	Cobalt	171	567	32927
3/8	7/16	3-1/8	4	DE/CC	HSS	166	582	33028
3/8	7/16	3-1/8	4	DE/NCC	HSS	163	682	39297
3/8	1/2	2-3/8	4	SE/CC	HSS	164	583	33141
3/8	1/2	2-3/8	4	SE/NCC	HSS	161	683	39400

5/32" Diameter (.1562")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/16	15/64	2	2	DE/CC	Cobalt	168	407	40944
3/16	15/64	2	2	DE/CC	HSS	157	422	41014
3/16	15/64	2	2	DE/Ball	HSS	159	423	41027
3/16	15/64	2	4	DE/CC	Cobalt	171	409	40987
3/16	15/64	2	4	DE/CC	HSS	165	442	41091
3/16	5/16	2	2	SE/CC	Carbide	149	7212	53855
3/16	5/16	2	2	DE/CC	Carbide	150	7222	53914
3/16	5/16	2	3	SE/CC	Carbide	150	7312	53881
3/16	5/16	2	4	SE/CC	Carbide	152	7412	53868
3/16	5/16	2	4	DE/CC	Carbide	153	7422	53925
3/16	7/16	1-1/2	2	SE/CC	HSS	155	405	40851
3/16	7/16	2-1/4	2	DE/CC	Cobalt	168	408	40911
3/16	7/16	2-1/4	2	DE/CC	HSS	157	426	41045
3/16	7/16	2-1/4	2	DE/Ball	HSS	159	427	41061
3/16	7/16	1-1/2	4	SE/CC	HSS	163	406	40882
3/16	7/16	2-1/4	4	DE/CC	Cobalt	171	410	40972
3/16	7/16	2-1/4	4	DE/CC	HSS	165	446	41105
3/16	1/2	2	2	SE/CC	Carbide	149	7211	53782
3/16	1/2	2	2	SE/Ball	Carbide	150	7216	53938
3/16	1/2	2	3	SE/CC	Carbide	151	7311	53839
3/16	1/2	2	4	SE/CC	Carbide	152	7411	53813
3/16	1/2	2	4	SE/Ball	Carbide	153	7416	53950
3/16	7/8	3-1/4	2	DE/CC	HSS	158	428	41076
3/16	7/8	3-1/4	4	DE/CC	HSS	165	448	41119
3/8	15/64	2-3/4	2	DE/CC	HSS	158	693	42097
3/8	15/64	2-3/4	4	DE/NCC	HSS	162	695	43375
3/8	7/16	2-3/8	2	SE/CC	Cobalt	168	555	32480
3/8	7/16	3-1/8	2	DE/CC	Cobalt	169	565	52152
3/8	7/16	3-1/8	2	DE/CC	HSS	158	684	42052
3/8	7/16	2-3/8	2	SE/CC	HSS	155	685	33730
3/8	7/16	3-1/8	2	DE/Ball	HSS	159	697	39136

3/8	7/16	3-1/8	2	DE/CC	Carbide	150	7221	53892
3/8	7/16	3-1/4	3	DE/CC	HSS	160	587	39576
3/8	7/16	3-1/8	4	DE/CC	Cobalt	171	567	52171
3/8	7/16	3-1/8	4	DE/CC	HSS	166	582	33029
3/8	7/16	3-1/8	4	DE/NCC	HSS	163	682	43308
3/8	7/16	3-1/4	4	DE/CC	PM/Cobalt	147	552	39968
3/8	7/16	3-1/8	4	DE/CC	Carbide	153	7421	53903
3/8	7/16	3-1/8	4	DE/NCC	HSS	163	682LH	43349
3/8	1/2	2-3/8	3	SE/CC	HSS	164	585	39639
3/8	1/2	2-3/8	4	SE/CC	Cobalt	170	556	32556
3/8	1/2	2-3/8	4	SE/CC	HSS	164	583	33142
3/8	1/2	2-3/8	4	SE/NCC	HSS	161	683	39401
3/8	1/2	2-3/8	4	SE/CC	PM/Cobalt	145	553	43280

11/64" Diameter (.1719")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/16	1/4	2	2	DE/CC	HSS	157	422	41016
3/16	1/4	2	2	DE/CC	Cobalt	168	407	40945
3/16	1/2	1-1/2	2	SE/CC	HSS	155	405	40852
3/16	1/2	2-1/4	2	DE/CC	Cobalt	168	408	40912
3/16	1/2	2-1/4	2	DE/CC	HSS	157	426	41047
3/16	1/2	1-1/2	4	SE/CC	HSS	163	406	40883
3/16	9/16	2	2	SE/CC	Carbide	149	7211	40535
3/16	9/16	2	4	SE/CC	Carbide	152	7411	54066
3/8	7/16	2-3/8	2	SE/CC	Cobalt	168	555	32481
3/8	7/16	3-1/4	2	DE/CC	Cobalt	169	565	32834
3/8	7/16	3-1/4	2	DE/CC	HSS	158	684	33627
3/8	7/16	2-3/8	2	SE/CC	HSS	155	685	33731
3/8	1/2	2-3/8	4	SE/CC	Cobalt	170	556	32557
3/8	1/2	3-1/4	4	DE/CC	Cobalt	171	567	32928
3/8	1/2	3-1/4	4	DE/CC	HSS	166	582	33030
3/8	1/2	2-3/8	4	SE/CC	HSS	164	583	33143
3/8	1/2	3-1/4	4	DE/NCC	HSS	163	682	39298
3/8	1/2	2-3/8	4	SE/NCC	HSS	161	683	39402

3/16" Diameter (.1875")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/16	9/32	2	2	DE/CC	Cobalt	168	407	40946
3/16	9/32	2	2	DE/CC	HSS	157	422	41017
3/16	9/32	2	2	DE/Ball	HSS	159	423	41029
3/16	9/32	2	4	DE/CC	Cobalt	171	409	40988
3/16	9/32	2	4	DE/CC	HSS	165	442	41093
3/16	3/8	2	2	SE/CC	Carbide	149	7212	53856
3/16	3/8	2	2	DE/CC	Carbide	150	7222	53915
3/16	3/8	2	3	SE/CC	Carbide	150	7312	53882
3/16	3/8	2	4	SE/CC	Carbide	152	7412	53869
3/16	3/8	2	4	DE/CC	Carbide	153	7422	53926
3/16	1/2	1-1/2	2	SE/CC	HSS	155	405	40853
3/16	1/2	2-1/4	2	DE/CC	Cobalt	168	408	40913
3/16	1/2	2-1/4	2	DE/CC	HSS	157	426	41048
3/16	1/2	2-1/4	2	DE/Ball	HSS	159	427	41063
3/16	1/2	1-1/2	4	SE/CC	HSS	163	406	40884
3/16	1/2	2-1/4	4	DE/CC	Cobalt	171	410	40973
3/16	1/2	2-1/4	4	DE/CC	HSS	165	446	41107
3/16	9/16	2	2	SE/CC	Carbide	149	7211	53784
3/16	9/16	2	2	SE/Ball	Carbide	150	7216	53939
3/16	9/16	2	3	SE/CC	Carbide	151	7311	53840
3/16	9/16	2	4	SE/CC	Carbide	152	7411	53815
3/16	9/16	2	4	SE/Ball	Carbide	153	7416	53951
3/16	3/4	2-1/2	2	SE/CC	Carbide	149	7213	54549
3/16	3/4	2-1/2	3	SE/CC	Carbide	149	7313	54558
3/16	3/4	2-1/2	4	SE/CC	Carbide	152	7413	54567
3/16	1	3-3/8	2	DE/CC	HSS	158	428	41078
3/16	1	3-3/8	4	DE/CC	HSS	165	448	41121
1/4	5/8	2-1/2	3	SE/CC	Carbide	151	7360	02117
3/8	1/4	2-1/8	4	SE/CC	PM/Cobalt	146	575	43209
3/8	9/32	2-3/4	2	DE/CC	HSS	158	693	42099
3/8	9/32	2-3/4	4	DE/NCC	HSS	162	695	43377
3/8	7/16	2-3/8	2	SE/CC	Cobalt	168	555	42604
3/8	7/16	3-1/4	2	DE/CC	Cobalt	169	565	52153
3/8	7/16	3-1/4	2	DE/CC	HSS	158	684	42054
3/8	7/16	2-3/8	2	SE/CC	HSS	155	685	41604
3/8	7/16	2-3/8	2	SE/CC	HSS	156	686	41673
3/8	7/16	3-1/4	2	DE/Ball	HSS	159	697	42186
3/8	1/2	2-3/8	2	SE/Ball	Cobalt	169	559	42645

End Mills

Diameter Cross Reference Index (Continued)

3/16" Diameter (.1875") Continued...

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	1/2	2-11/16	2	SE/CC	HSS	156	689	38983
3/8	1/2	3-1/4	2	DE/CC	Carbide	150	7221	53893
3/8	1/2	2-3/8	2	SE/Ball	HSS	159	690	42111
3/8	1/2	2-11/16	2	SE/Ball	HSS	159	698	42160
3/8	1/2	2-3/8	2	SE/CC	PM/Cobalt	145	510	40793
3/8	1/2	3-1/4	3	DE/CC	HSS	160	587	39577
3/8	1/2	2-3/8	3	SE/CC	HSS	160	585	39640
3/8	1/2	2-3/8	4	SE/CC	Cobalt	170	556	42686
3/8	1/2	2-3/8	4	SE/Ball	Cobalt	171	560	42780
3/8	1/2	3-1/4	4	DE/CC	Carbide	153	7421	53904
3/8	1/2	3-1/4	4	DE/CC	Cobalt	171	567	52172
3/8	1/2	3-1/4	4	DE/CC	HSS	166	582	41204
3/8	1/2	3-1/4	4	DE/NCC	HSS	163	682LH	43351
3/8	1/2	2-3/8	4	SE/NCC	HSS	161	683LH	42294
3/8	1/2	3-1/4	4	DE/NCC	HSS	163	682	43310
3/8	1/2	3-1/4	4	DE/CC	PM/Cobalt	147	552	52190
3/8	1/2	2-3/8	4	SE/CC	PM/Cobalt	146	553	42502
3/8	1/2	2-3/8	4	SE/Ball	PM/Cobalt	147	554	42552
3/8	1/2	2-3/8	4	SE/CC	HSS	164	583	41245
3/8	1/2	2-3/8	4	SE/NCC	HSS	161	683	42222
3/8	1/2	2-3/8	4	SE/CC	HSS	164	570	41245
3/8	1-1/4	3-11/16	2	SE/CC	HSS	156	696	39064
3/8	1-1/4	3-11/16	3	SE/CC	HSS	160	586	39731
3/8	1-1/4	3-11/16	4	SE/CC	HSS	165	588	33371
3/8	1-1/4	3-11/16	4	SE/NCC	HSS	162	688	39247
3/8	1-3/4	3-9/16	4	SE/CC	HSS	165	591	33428
3/8	1-3/4	3-9/16	4	SE/NCC	HSS	162	691	39200

13/64" Diameter (.2031")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/4	5/8	2-1/2	2	SE/CC	Carbide	149	7211	40536
1/4	5/8	2-1/2	4	SE/CC	Carbide	152	7411	54067
3/8	1/2	2-7/16	2	SE/CC	Cobalt	168	555	32482
3/8	1/2	3-1/4	2	DE/CC	Cobalt	169	565	32835
3/8	1/2	3-1/4	2	DE/CC	HSS	158	684	33628
3/8	1/2	2-7/16	2	SE/CC	HSS	155	685	33732
3/8	9/16	3-1/4	4	DE/CC	Cobalt	171	567	32929
3/8	9/16	3-1/4	4	DE/CC	HSS	166	582	33031
3/8	9/16	3-1/4	4	DE/NCC	HSS	163	682	39299
3/8	5/8	2-7/16	4	SE/CC	Cobalt	170	556	32558
3/8	5/8	2-7/16	4	SE/CC	HSS	164	583	33144
3/8	5/8	2-7/16	4	SE/NCC	HSS	161	683	39403

7/32" Diameter (.2188")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/4	7/16	2	2	SE/CC	Carbide	149	7212	53858
1/4	7/16	2-1/2	2	DE/CC	Carbide	150	7222	53916
1/4	7/16	2	3	SE/CC	Carbide	150	7312	53883
1/4	7/16	2	4	SE/CC	Carbide	152	7412	53871
1/4	7/16	2-1/2	4	DE/CC	Carbide	153	7422	53928
1/4	5/8	2-1/2	2	SE/CC	Carbide	149	7211	53788
1/4	5/8	2-1/2	3	SE/CC	Carbide	151	7311	53842
1/4	5/8	2-1/2	4	SE/CC	Carbide	152	7411	53819
1/4	5/8	2-1/2	4	SE/Ball	Carbide	153	7416	53953
1/4	5/8	2-1/2	4	SE/CC	Carbide	149	7213	54550
3/8	21/64	2-7/8	2	DE/CC	HSS	155	693	42101
3/8	21/64	2-7/8	4	DE/NCC	HSS	162	695	43379
3/8	1/2	2-7/16	2	SE/CC	Cobalt	168	555	32483
3/8	1/2	3-1/4	2	DE/CC	Cobalt	169	565	32154
3/8	1/2	3-1/4	2	DE/CC	HSS	158	684	42056
3/8	1/2	2-7/16	2	SE/CC	HSS	155	685	33733
3/8	1/2	2-7/16	2	SE/CC	HSS	156	686	38919
3/8	1/2	3-1/4	2	DE/Ball	HSS	159	697	39137
3/8	9/16	3-3/8	2	DE/CC	Carbide	150	7221	53894
3/8	9/16	3-1/4	3	DE/CC	HSS	160	587	39578
3/8	9/16	3-1/4	4	DE/CC	Cobalt	171	567	52173
3/8	9/16	3-1/4	4	DE/CC	HSS	166	582	33032
3/8	9/16	3-1/4	4	DE/NCC	HSS	163	682LH	43356
3/8	9/16	3-1/4	4	DE/NCC	HSS	163	682	43312
3/8	9/16	3-1/4	4	DE/CC	PM/Cobalt	147	552	39969
3/8	9/16	3-3/8	4	DE/CC	Carbide	153	7421	53905
3/8	5/8	2-7/16	3	SE/CC	HSS	164	585	39641

3/8	5/8	2-7/16	4	SE/CC	Cobalt	170	556	32559
3/8	5/8	2-7/16	4	SE/CC	HSS	164	583	33145
3/8	5/8	2-7/16	4	SE/NCC	HSS	161	683	39404
3/8	5/8	2-7/16	4	SE/CC	PM/Cobalt	145	553	43281
3/8	1-1/4	3-1/16	2	SE/CC	HSS	156	696	39065
3/8	1-1/4	3-1/16	3	SE/CC	HSS	160	586	39732
3/8	1-1/4	3-1/16	4	SE/CC	HSS	165	588	33372
3/8	1-1/4	3-1/16	4	SE/NCC	HSS	162	688	39248
3/8	1-3/4	3-9/16	4	SE/CC	HSS	165	591	33429
3/8	1-3/4	3-9/16	4	SE/NCC	HSS	162	691	39201

15/64" Diameter (.2344")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/4	5/8	2-1/2	2	SE/CC	Carbide	149	7211	40537
1/4	5/8	2-1/2	4	SE/CC	Carbide	152	7411	54068
3/8	1/2	2-7/16	2	SE/CC	Cobalt	168	555	32484
3/8	1/2	3-3/8	2	DE/CC	Cobalt	169	565	32836
3/8	1/2	3-3/8	2	DE/CC	HSS	158	684	33629
3/8	1/2	2-7/16	2	SE/CC	HSS	155	685	33734
3/8	5/8	2-7/16	4	SE/CC	Cobalt	170	556	32560
3/8	5/8	3-3/8	4	DE/CC	Cobalt	171	567	32930
3/8	5/8	3-3/8	4	DE/CC	HSS	166	582	33033
3/8	5/8	2-7/16	4	SE/CC	HSS	164	583	33146
3/8	5/8	3-3/8	4	DE/NCC	HSS	163	682	39300
3/8	5/8	2-7/16	4	SE/NCC	HSS	161	683	39405

1/4" Diameter (.2500")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/4	1/2	2	2	SE/CC	Carbide	149	7212	53858
1/4	1/2	2-1/2	2	DE/CC	Carbide	150	7222	53917
1/4	1/2	2	3	SE/CC	Carbide	150	7312	53884
1/4	1/2	2	4	SE/CC	Carbide	152	7412	53871
1/4	1/2	2-1/2	4	DE/CC	Carbide	153	7422	53928
1/4	3/4	2-1/2	2	SE/CC	Carbide	149	7211	53788
1/4	3/4	2-1/2	2	SE/Ball	Carbide	150	7216	53941
1/4	3/4	2-1/2	3	SE/CC	Carbide	151	7311	53842
1/4	3/4	2-1/2	2	SE/CC	Carbide	151	7360	02118
1/4	3/4	2-1/2	4	SE/CC	Carbide	152	7411	53819
1/4	3/4	2-1/2	4	SE/Ball	Carbide	153	7416	53953
1/4	1-1/8	3	2	SE/CC	Carbide	149	7213	54550
1/4	1-1/8	3	3	SE/CC	Carbide	151	7313	54559
1/4	1-1/8	3	4	SE/CC	Carbide	152	7413	54568
3/8	1/4	2-1/16	3	FR/SE/NCC	PM/Cobalt	175	578	43228
3/8	1/4	2-1/16	4	SE/CC	PM/Cobalt	146	575	43210
3/8	3/8	2-7/8	2	DE/CC	HSS	158	693	42103
3/8	3/8	2-7/8	4	DE/NCC	HSS	162	695	43381
3/8	1/2	2-7/16	2	SE/CC	Cobalt	168	555	42607
3/8	1/2	2-5/16	2	SE/CC	HSS	156	507	32430
3/8	1/2	3-3/8	2	DE/CC	Cobalt	169	565	52155
3/8	1/2	3-3/8	2	DE/CC	HSS	158	668	41970
3/8	1/2	3-3/8	2	DE/CC	HSS	158	684	42058
3/8	1/2	2-7/16	2	SE/CC	HSS	155	685	41607
3/8	1/2	2-7/16	2	SE/CC	HSS	156	686	41676
3/8	1/2	3-3/8	2	DE/Ball	HSS	159	697	42189
3/8	5/8	3-3/8	2	DE/CC	Carbide	150	7221	53895
3/8	5/8	2-7/16	2	SE/Ball	Cobalt	169	559	42648
3/8	5/8	2-7/16	2	SE/CC	HSS	157	665	41843
3/8	5/8	3-1/16	2	SE/CC	HSS	156	689	41772
3/8	5/8	2-7/16	2	SE/Ball	HSS	159	690	42114
3/8	5/8	3-1/16	2	SE/Ball	HSS	159	698	42163
3/8	5/8	2-7/16	2	SE/CC	PM/Cobalt	145	510	40794
3/8	5/8	2-7/16	3	CR/SE/NCC	HSS	173	576	44084
3/8	5/8	2-7/16	3	CR/SE/NCC	Cobalt	174	577	32122
3/8	5/8	2-7/16	3	FR/SE/NCC	PM/Cobalt	175	578	43229
3/8	5/8	3-3/8	3	DE/CC	HSS	160	587	39579
3/8	5/8	2-7/16	3	SE/CC	HSS	160	585	39642
3/8	5/8	2-7/16	4	SE/Ball	HSS	166	584	33301
3/8	5/8	3-3/8	4	DE/CC	Carbide	153	7421	53906
3/8	5/8	2-7/16	4	SE/CC	Cobalt	170	556	42689
3/8	5/8	2-7/16	4	SE/Ball	Cobalt	171	560	42783
3/8	5/8	3-3/8	4	DE/CC	Cobalt	171	567	52174
3/8	5/8	3-3/8	4	DE/CC	HSS	166	582	41207
3/8	5/8	3-3/8	4	DE/NCC	HSS	163	682LH	43354
3/8	5/8	2-7/16	4	SE/NCC	HSS	161	683LH	42297
3/8	5/8	3-3/8	4	DE/NCC	HSS	163	682	43314
3/8	5/8	3-3/8	4	DE/CC	PM/Cobalt	147	552	52191

End Mills

Diameter Cross Reference Index (Continued)

1/4" Diameter (.2500") Continued...

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	5/8	2-7/16	4	SE/CC	PM/Cobalt	146	553	42504
3/8	5/8	2-7/16	4	SE/Ball	PM/Cobalt	147	554	42554
3/8	5/8	2-7/16	4	SE/CC	HSS	164	583	41248
3/8	5/8	2-7/16	4	SE/NCC	HSS	161	683	42225
3/8	5/8	2-7/16	4	SE/CC	HSS	164	570	41248
3/8	1-1/4	3-1/16	2	SE/CC	HSS	156	696	39066
3/8	1-1/4	3-1/16	2	SE/CC	HSS	157	666	41888
3/8	1-1/4	3-1/16	3	SE/CC	HSS	160	586	39733
3/8	1-1/4	3-1/16	4	SE/Ball	HSS	166	589	33323
3/8	1-1/4	3-1/16	4	SE/CC	Cobalt	170	557	32646
3/8	1-1/4	3-1/16	4	SE/CC	HSS	165	588	41326
3/8	1-1/4	3-1/16	4	SE/NCC	HSS	162	688	42316
3/8	1-1/4	3-1/16	4	SE/CC	PM/Cobalt	146	579	43290
3/8	1-3/4	3-9/16	2	SE/CC	HSS	157	667	41930
3/8	1-3/4	3-9/16	4	SE/Ball	HSS	160	581	33344
3/8	1-3/4	3-9/16	4	SE/CC	Cobalt	170	558	32691
3/8	1-3/4	3-9/16	4	SE/CC	HSS	165	591	41381
3/8	1-3/4	3-9/16	4	SE/NCC	HSS	162	691	42364

17/64" Diameter (.2656")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/16	3/4	2-1/2	2	SE/CC	Carbide	149	7211	40538
5/16	3/4	2-1/2	4	SE/CC	Carbide	152	7411	54069
3/8	9/16	3-3/8	2	DE/CC	Cobalt	169	565	32837
3/8	9/16	3-3/8	2	DE/CC	HSS	158	684	33630
3/8	9/16	2-1/2	2	SE/CC	HSS	155	685	33735
3/8	11/16	3-3/8	4	DE/CC	Cobalt	171	567	32931
3/8	11/16	3-3/8	4	DE/CC	HSS	166	582	33034
3/8	11/16	3-3/8	4	DE/NCC	HSS	163	682	39301
3/8	3/4	2-1/2	4	SE/CC	HSS	164	583	33147
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683	39406

9/32" Diameter (.2812")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/16	1/2	2	2	SE/CC	Carbide	149	7212	40622
5/16	1/2	2-1/2	2	DE/CC	Carbide	150	7222	53918
5/16	1/2	2	3	SE/CC	Carbide	150	7312	40694
5/16	1/2	2	4	SE/CC	Carbide	152	7412	40774
5/16	1/2	2-1/2	4	DE/CC	Carbide	153	7422	53929
5/16	3/4	2-1/2	2	SE/CC	Carbide	149	7211	53790
5/16	3/4	2-1/2	2	SE/Ball	Carbide	150	7216	53942
5/16	3/4	2-1/2	3	SE/CC	Carbide	151	7311	53843
5/16	3/4	2-1/2	4	SE/CC	Carbide	152	7411	53821
5/16	3/4	2-1/2	4	SE/Ball	Carbide	153	7416	53954
3/8	9/16	2-1/2	2	SE/CC	Cobalt	168	555	32486
3/8	9/16	3-3/8	2	DE/CC	HSS	158	684	42060
3/8	9/16	2-1/2	2	SE/CC	HSS	155	685	33736
3/8	9/16	2-1/2	2	SE/CC	HSS	156	686	38920
3/8	9/16	3-3/8	2	DE/Ball	HSS	159	697	39138
3/8	9/16	3-3/8	2	DE/CC	Cobalt	169	565	52156
3/8	11/16	3-3/8	2	DE/CC	Carbide	150	7221	53896
3/8	11/16	3-3/8	3	DE/CC	HSS	160	587	39580
3/8	11/16	3-3/8	4	DE/CC	HSS	166	582	33035
3/8	11/16	3-3/8	4	DE/NCC	HSS	163	682	43316
3/8	11/16	3-3/8	4	DE/CC	PM/Cobalt	147	552	39970
3/8	11/16	3-3/8	4	DE/CC	Carbide	153	7421	53907
3/8	11/16	3-3/8	4	DE/CC	Cobalt	171	567	52175
3/8	3/4	2-1/2	3	SE/CC	HSS	160	585	39643
3/8	3/4	2-1/2	4	SE/CC	Cobalt	170	556	32562
3/8	3/4	2-1/2	4	SE/CC	HSS	164	583	33148
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683	39407
3/8	3/4	2-1/2	4	SE/CC	PM/Cobalt	146	553	43282
3/8	1-3/8	3-1/8	2	SE/CC	HSS	156	696	39067
3/8	1-3/8	3-1/8	3	SE/CC	HSS	160	586	39734
3/8	1-3/8	3-1/8	4	SE/CC	Cobalt	170	557	32647
3/8	1-3/8	3-1/8	4	SE/CC	HSS	165	588	33373
3/8	1-3/8	3-1/8	4	SE/NCC	HSS	162	688	39249
3/8	2	3-3/4	4	SE/CC	Cobalt	170	558	32692
3/8	2	3-3/4	4	SE/CC	HSS	165	591	33430
3/8	2	3-3/4	4	SE/NCC	HSS	162	691	39202

19/64" Diameter (.2969")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/16	3/4	2-1/2	2	SE/CC	Carbide	149	7211	40539
5/16	3/4	2-1/2	4	SE/CC	Carbide	152	7411	54070
3/8	9/16	3-1/2	2	DE/CC	Cobalt	169	565	32838
3/8	9/16	2-1/2	2	SE/CC	Cobalt	168	555	32487
3/8	9/16	3-1/2	2	DE/CC	HSS	158	684	33631
3/8	9/16	2-1/2	2	SE/CC	HSS	155	685	33737
3/8	3/4	3-1/2	4	DE/CC	Cobalt	171	567	32932
3/8	3/4	2-1/2	4	SE/CC	Cobalt	170	556	32563
3/8	3/4	3-1/2	4	DE/CC	HSS	166	582	33036
3/8	3/4	2-1/2	4	SE/CC	HSS	164	583	33149
3/8	3/4	3-1/2	4	DE/NCC	HSS	163	682	39302
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683	39408

5/16" Diameter (.3125")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/16	1/2	2	2	SE/CC	Carbide	149	7212	53859
5/16	1/2	2-1/2	2	DE/CC	Carbide	150	7222	53919
5/16	1/2	2	3	SE/CC	Carbide	150	7312	53885
5/16	1/2	2	4	SE/CC	Carbide	152	7412	53872
5/16	1/2	2-1/2	4	DE/CC	Carbide	153	7422	53930
5/16	13/16	2-1/2	2	SE/CC	Carbide	149	7211	53792
5/16	13/16	2-1/2	2	SE/Ball	Carbide	150	7216	53943
5/16	13/16	2-1/2	3	SE/CC	Carbide	151	7311	53844
5/16	13/16	2-1/2	3	SE/CC	Carbide	151	7360	02119
5/16	13/16	2-1/2	4	SE/CC	Carbide	152	7411	53823
5/16	13/16	2-1/2	4	SE/Ball	Carbide	153	7416	53955
5/16	1-1/8	3	2	SE/CC	Carbide	149	7213	54551
5/16	1-1/8	3	3	SE/CC	Carbide	151	7313	54560
5/16	1-1/8	3	4	SE/CC	Carbide	152	7413	54569
3/8	3/8	2-1/8	4	SE/CC	PM/Cobalt	146	575	43211
3/8	9/16	2-1/2	2	SE/CC	Cobalt	168	555	42609
3/8	9/16	3-1/2	2	DE/CC	Cobalt	169	565	52157
3/8	9/16	2-5/16	2	SE/CC	HSS	156	507	32431
3/8	9/16	3-1/2	2	DE/CC	HSS	158	668	41972
3/8	9/16	2-1/2	2	SE/CC	HSS	155	685	41609
3/8	9/16	2-1/2	2	SE/CC	HSS	156	686	41678
3/8	9/16	3-1/2	2	DE/Ball	HSS	159	697	42191
3/8	9/16	3-1/2	2	DE/CC	HSS	158	684	42061
3/8	3/4	2-1/2	2	SE/Ball	Cobalt	169	559	42650
3/8	3/4	3-1/2	2	DE/CC	Carbide	150	7221	53897
3/8	3/4	2-1/2	2	SE/CC	HSS	157	665	41845
3/8	3/4	3-5/16	2	SE/CC	HSS	156	689	41774
3/8	3/4	2-1/2	2	SE/Ball	HSS	159	690	42116
3/8	3/4	3-5/16	2	SE/Ball	HSS	159	698	42165
3/8	3/4	2-1/2	2	SE/CC	PM/Cobalt	145	510	40795
3/8	3/4	2-1/2	3	CR/SE/NCC	HSS	173	576	44085
3/8	3/4	2-1/2	3	CR/SE/NCC	Cobalt	174	577	32123
3/8	3/4	2-1/2	3	SE/CC	HSS	160	585	39644
3/8	3/4	3-1/2	3	DE/CC	HSS	160	587	39581
3/8	3/4	2-1/2	4	SE/Ball	PM/Cobalt	147	554	42556
3/8	3/4	2-1/2	4	SE/Ball	Cobalt	171	560	42785
3/8	3/4	3-1/2	4	DE/CC	Cobalt	171	567	52176
3/8	3/4	2-1/2	4	SE/Ball	HSS	166	584	33302
3/8	3/4	3-1/2	4	DE/CC	Carbide	153	7421	53908
3/8	3/4	2-1/2	4	SE/CC	Cobalt	170	556	42691
3/8	3/4	2-1/2	4	SE/CC	HSS	164	583	41250
3/8	3/4	3-1/2	4	DE/NCC	HSS	163	682LH	43356
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683LH	42299
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683	42227
3/8	3/4	2-1/2	4	SE/CC	HSS	164	570	41250
3/8	3/4	3-1/2	4	DE/CC	PM/Cobalt	147	552	52192
3/8	3/4	2-1/2	4	SE/CC	PM/Cobalt	146	553	42506
3/8	3/4	3-1/2	4	DE/CC	HSS	166	582	41209
3/8	3/4	3-1/2	4	DE/NCC	HSS	163	682	43317
3/8	1-3/8	3-1/8	2	SE/CC	HSS	156	696	39068
3/8	1-3/8	3-1/8	2	SE/CC	HSS	157	666	41890
3/8	1-3/8	3-1/8	3	SE/CC	HSS	160	586	39735
3/8	1-3/8	3-1/8	4	SE/CC	Cobalt	170	557	32648
3/8	1-3/8	3-1/8	4	SE/Ball	HSS	166	589	33324
3/8	1-3/8	3-1/8	4	SE/CC	HSS	165	588	41328
3/8	1-3/8	3-1/8	4	SE/NCC	HSS	162	688	42318
3/8	1-3/8	3-1/8	4	SE/CC	PM/Cobalt	146	579	43291

End Mills

Diameter Cross Reference Index (Continued)

5/16" Diameter (.3125") Continued...

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	2	3-3/4	2	SE/CC	HSS	157	667	41932
3/8	2	3-3/4	4	SE/CC	Cobalt	170	558	32693
3/8	2	3-3/4	4	SE/Ball	HSS	160	581	33345
3/8	2	3-3/4	4	SE/CC	HSS	165	591	41383
3/8	2	3-3/4	4	SE/NCC	HSS	162	691	42366

21/64" Diameter (.3281")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	9/16	2-1/2	2	SE/CC	Cobalt	168	555	32488
3/8	9/16	3-1/2	2	DE/CC	Cobalt	169	565	32839
3/8	9/16	3-1/2	2	DE/CC	HSS	158	684	33632
3/8	9/16	2-1/2	2	SE/CC	HSS	155	685	33738
3/8	3/4	2-1/2	4	SE/CC	Cobalt	170	556	32564
3/8	3/4	3-1/2	4	DE/CC	Cobalt	171	567	32933
3/8	3/4	3-1/2	4	DE/CC	HSS	166	582	33037
3/8	3/4	2-1/2	4	SE/CC	HSS	164	583	33150
3/8	3/4	3-1/2	4	DE/NCC	HSS	163	682	39303
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683	39409
3/8	13/16	2-1/2	2	SE/CC	Carbide	149	7211	40540
3/8	13/16	2-1/2	4	SE/CC	Carbide	152	7411	54071

11/32" Diameter (.3438")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	1/2	2	2	SE/CC	Carbide	149	7212	40623
3/8	1/2	2-1/2	2	DE/CC	Carbide	150	7222	53920
3/8	1/2	2	4	SE/CC	Carbide	152	7412	40775
3/8	1/2	2-1/2	4	DE/CC	Carbide	153	7422	53931
3/8	9/16	2-1/2	2	SE/CC	Cobalt	168	555	32489
3/8	9/16	3-1/2	2	DE/CC	Cobalt	169	565	52158
3/8	9/16	3-1/2	2	DE/CC	HSS	158	684	42063
3/8	9/16	2-1/2	2	SE/CC	HSS	155	685	33739
3/8	9/16	2-1/2	2	SE/CC	HSS	156	686	38921
3/8	9/16	3-1/2	2	DE/Ball	HSS	159	697	39139
3/8	5/8	2	3	SE/CC	Carbide	150	7312	40695
3/8	3/4	3-1/2	2	DE/CC	Carbide	150	7221	53898
3/8	3/4	3-1/2	3	DE/CC	HSS	160	587	39582
3/8	3/4	2-1/2	3	SE/CC	HSS	160	585	39645
3/8	3/4	2-1/2	4	SE/CC	Cobalt	170	556	32565
3/8	3/4	3-1/2	4	DE/CC	Cobalt	171	567	52177
3/8	3/4	3-1/2	4	DE/CC	HSS	166	582	33038
3/8	3/4	2-1/2	4	SE/CC	HSS	164	583	33151
3/8	3/4	3-1/2	4	DE/NCC	HSS	163	682	43319
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683	39410
3/8	3/4	3-1/2	4	DE/CC	PM/Cobalt	147	552	39971
3/8	3/4	3-1/2	4	DE/CC	Carbide	153	7421	53909
3/8	3/4	2-1/2	4	SE/CC	PM/Cobalt	146	553	43283
3/8	13/16	2-1/2	2	SE/CC	Carbide	149	7211	53794
3/8	13/16	2-1/2	3	SE/CC	Carbide	151	7311	53845
3/8	13/16	2-1/2	4	SE/CC	Carbide	152	7411	53825
3/8	1-1/2	3-1/4	2	SE/CC	HSS	156	696	39069
3/8	1-1/2	3-1/4	3	SE/CC	HSS	160	586	39736
3/8	1-1/2	3-1/4	4	SE/CC	Cobalt	170	557	32649
3/8	1-1/2	3-1/4	4	SE/CC	HSS	165	588	33374
3/8	1-1/2	3-1/4	4	SE/NCC	HSS	162	688	39250
3/8	2-1/2	4-1/4	4	SE/CC	Cobalt	170	558	32694
3/8	2-1/2	4-1/4	4	SE/CC	HSS	165	591	33431
3/8	2-1/2	4-1/4	4	SE/NCC	HSS	162	691	39203

23/64" Diameter (.3594")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	9/16	2-1/2	2	SE/CC	Cobalt	168	555	32490
3/8	9/16	3-1/2	2	DE/CC	Cobalt	169	565	32840
3/8	9/16	3-1/2	2	DE/CC	HSS	158	684	33633
3/8	9/16	2-1/2	2	SE/CC	HSS	155	685	33740
3/8	3/4	2-1/2	4	SE/CC	Cobalt	170	556	32566
3/8	3/4	3-1/2	4	DE/CC	Cobalt	171	567	32934
3/8	3/4	3-1/2	4	DE/CC	HSS	166	582	33039
3/8	3/4	2-1/2	4	SE/CC	HSS	164	583	33152

3/8	3/4	3-1/2	4	DE/NCC	HSS	163	682	39304
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683	39411
3/8	7/8	2-1/2	2	SE/CC	Carbide	149	7211	40541
3/8	7/8	2-1/2	4	SE/CC	Carbide	152	7411	54072

3/8" Diameter (.3750")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	3/8	2-1/8	4	FR/SE/NCC	PM/Cobalt	175	578	43230
3/8	3/8	2-1/8	4	SE/CC	PM/Cobalt	146	575	43212
3/8	1/2	2-1/2	2	DE/CC	Carbide	150	7222	53921
3/8	1/2	2-1/2	4	DE/CC	Carbide	153	7422	53932
3/8	9/16	2-1/2	2	SE/CC	Cobalt	168	555	42612
3/8	9/16	2-5/16	2	SE/CC	HSS	156	507	32432
3/8	9/16	3-1/2	2	DE/CC	Cobalt	169	565	52159
3/8	9/16	3-1/2	2	DE/CC	HSS	158	668	41975
3/8	9/16	3-1/2	2	DE/CC	HSS	158	684	42065
3/8	9/16	2-1/2	2	SE/CC	HSS	156	686	41681
3/8	9/16	3-1/2	2	DE/Ball	HSS	159	697	42194
3/8	9/16	2-1/2	2	SE/CC	HSS	155	685	41612
3/8	5/8	2	2	SE/CC	Carbide	149	7212	53860
3/8	5/8	2	3	SE/CC	Carbide	150	7312	53886
3/8	5/8	2	4	SE/CC	Carbide	152	7412	53873
3/8	3/4	2-1/2	2	SE/Ball	Cobalt	169	559	42653
3/8	3/4	3-1/2	2	DE/CC	Carbide	150	7221	53899
3/8	3/4	2-1/2	2	SE/CC	HSS	157	665	41848
3/8	3/4	3-5/16	2	SE/CC	HSS	156	689	41777
3/8	3/4	2-1/2	2	SE/Ball	HSS	159	690	42119
3/8	3/4	3-5/16	2	SE/Ball	HSS	159	698	42168
3/8	3/4	2-1/2	2	SE/CC	PM/Cobalt	145	510	40796
3/8	3/4	2-1/2	3	CR/SE/CC	Cobalt	173	506	32370
3/8	3/4	3-1/2	3	DE/CC	HSS	160	587	39583
3/8	3/4	2-1/2	3	SE/CC	HSS	160	585	39646
3/8	3/4	2-1/2	4	SE/CC	Cobalt	170	556	42694
3/8	3/4	2-1/2	4	SE/Ball	Cobalt	171	560	42788
3/8	3/4	2-1/2	4	SE/Ball	HSS	166	584	41289
3/8	3/4	2-1/2	4	CR/SE/NCC	HSS	173	576	44086
3/8	3/4	2-1/2	4	CR/SE/NCC	Cobalt	174	577	32124
3/8	3/4	2-1/2	4	FR/SE/NCC	PM/Cobalt	175	578	43299
3/8	3/4	2-1/2	4	FR/SE/NCC	Cobalt	174	501	32271
3/8	3/4	3-1/2	4	DE/CC	Carbide	153	7421	53910
3/8	3/4	3-1/2	4	DE/CC	Cobalt	171	567	52178
3/8	3/4	3-1/2	4	DE/CC	HSS	166	582	41212
3/8	3/4	2-1/2	4	SE/CC	HSS	164	583	41253
3/8	3/4	3-1/2	4	DE/NCC	HSS	163	682LH	43359
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683LH	42302
3/8	3/4	3-1/2	4	DE/NCC	HSS	163	682	43321
3/8	3/4	2-1/2	4	SE/NCC	HSS	161	683	42230
3/8	3/4	2-1/2	4	SE/CC	HSS	164	570	41253
3/8	3/4	3-1/2	4	DE/CC	PM/Cobalt	147	552	52193
3/8	3/4	2-1/2	4	SE/CC	PM/Cobalt	146	553	42508
3/8	3/4	2-1/2	4	SE/Ball	PM/Cobalt	147	554	42558
3/8	7/8	2-1/2	2	SE/CC	Carbide	149	7211	53796
3/8	7/8	2-1/2	2	SE/Ball	Carbide	150	7216	53944
3/8	7/8	2-1/2	3	SE/CC	Carbide	151	7311	53846
3/8	7/8	2-1/2	3	SE/CC	Carbide	151	7360	02120
3/8	7/8	2-1/2	4	SE/CC	Carbide	152	7411	53827
3/8	7/8	2-1/2	4	SE/Ball	Carbide	153	7416	53956
3/8	1-1/8	3	2	SE/CC	Carbide	149	7213	54552
3/8	1-1/8	3	3	SE/CC	Carbide	151	7313	54561
3/8	1-1/8	3	4	SE/CC	Carbide	152	7413	54570
3/8	1-1/2	3-1/4	2	SE/CC	HSS	157	666	41893
3/8	1-1/2	3-1/4	2	SE/CC	HSS	156	696	41714
3/8	1-1/2	3-1/4	3	SE/CC	HSS	160	586	39737
3/8	1-1/2	3-1/4	4	FR/SE/NCC	PM/Cobalt	175	578	32210
3/8	1-1/2	3-1/4	4	SE/CC	Cobalt	170	557	42857
3/8	1-1/2	3-1/4	4	SE/CC	HSS	165	588	41331
3/8	1-1/2	3-1/4	4	SE/NCC	HSS	162	688	42321
3/8	1-1/2	3-1/4	4	SE/Ball	HSS	166	589	33325
3/8	1-1/2	3-1/4	4	SE/CC	PM/Cobalt	146	579	43292
3/8	2-1/2	4-1/4	2	SE/CC	HSS	157	667	41935
3/8	2-1/2	4-1/4	4	SE/CC	Cobalt	170	558	42913
3/8	2-1/2	4-1/4	4	SE/CC	HSS	165	591	41386
3/8	2-1/2	4-1/4	4	SE/NCC	HSS	162	691	42369
3/8	2-1/2	4-1/4	4	SE/Ball	HSS	160	581	33346

End Mills

Diameter Cross Reference Index (Continued)

25/64" Diameter (.3906")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	13/16	2-11/16	2	SE/CC	Cobalt	168	555	32491
3/8	13/16	2-11/16	2	SE/CC	HSS	155	685	33741
3/8	I	2-11/16	4	SE/CC	Cobalt	170	556	32567
3/8	I	2-11/16	4	SE/CC	HSS	164	583	33153
3/8	I	2-11/16	4	SE/NCC	HSS	161	683	39412
7/16	I	2-3/4	2	SE/CC	Carbide	150	7211	40542
7/16	I	2-3/4	4	SE/CC	Carbide	152	7411	54076
1/2	13/16	4-1/8	2	DE/CC	Cobalt	169	565	32841
1/2	13/16	4-1/8	2	DE/CC	HSS	158	684	33634
1/2	I	4-1/8	4	DE/CC	Cobalt	171	567	32935
1/2	I	4-1/8	4	DE/CC	HSS	166	582	33040
1/2	I	4-1/8	4	DE/NCC	HSS	163	682	39305

13/32" Diameter (.4062")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	13/16	2-11/16	2	SE/CC	Cobalt	168	555	32492
3/8	13/16	2-11/16	2	SE/CC	HSS	155	685	33742
3/8	13/16	2-11/16	2	SE/CC	HSS	156	686	38922
3/8	I	2-11/16	3	SE/CC	HSS	160	585	39647
3/8	I	2-11/16	4	SE/CC	Cobalt	170	556	32568
3/8	I	2-11/16	4	SE/CC	HSS	164	583	33154
3/8	I	2-11/16	4	SE/NCC	HSS	161	683	39413
3/8	1-3/4	3-3/4	4	SE/CC	Cobalt	170	557	32650
3/8	2-3/4	4-1/2	4	SE/CC	Cobalt	170	558	32695
3/8	2-3/4	4-1/2	4	SE/CC	HSS	165	591	33432
3/8	2-3/4	4-1/2	4	SE/NCC	HSS	162	691	39204
1/2	13/16	4-1/8	2	DE/CC	HSS	158	684	42067
1/2	13/16	4-1/8	2	DE/CC	HSS	159	697	39140
1/2	13/16	4-1/8	2	DE/CC	Cobalt	169	565	52160
1/2	I	4-1/8	3	DE/CC	HSS	160	587	39584
1/2	I	4-1/8	4	DE/CC	HSS	166	582	33041
1/2	I	4-1/8	4	DE/NCC	HSS	163	682	43323
1/2	I	4-1/8	4	DE/CC	PM/Cobalt	147	552	39972
1/2	I	2-11/16	4	SE/CC	PM/Cobalt	146	553	43284
1/2	I	4-1/8	4	DE/CC	Cobalt	171	567	52179
1/2	1-3/4	3-3/4	2	SE/CC	HSS	156	696	39070
1/2	1-3/4	3-3/4	3	SE/CC	HSS	160	586	39738
1/2	1-3/4	3-3/4	4	SE/CC	HSS	165	588	33375
1/2	1-3/4	3-3/4	4	SE/NCC	HSS	162	688	39251
7/16	5/8	2-1/2	2	SE/CC	Carbide	149	7212	40624
7/16	5/8	2-1/2	3	SE/CC	Carbide	150	7312	40696
7/16	5/8	2-1/2	4	SE/CC	Carbide	152	7412	40776
7/16	I	2-3/4	2	SE/CC	Carbide	149	7211	53797
7/16	I	2-3/4	3	SE/CC	Carbide	151	7311	53818
7/16	I	2-3/4	4	SE/CC	Carbide	152	7411	53828

27/64" Diameter (.4219")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	13/16	2-11/16	2	SE/CC	Cobalt	168	555	32493
3/8	13/16	2-11/16	2	SE/CC	HSS	155	685	33743
3/8	I	2-11/16	4	SE/CC	Cobalt	170	556	32569
3/8	I	2-11/16	4	SE/CC	HSS	164	583	33155
3/8	I	2-11/16	4	SE/NCC	HSS	161	683	39414
7/16	I	2-3/4	2	SE/CC	Carbide	149	7211	40543
7/16	I	2-3/4	4	SE/CC	Carbide	152	7411	54077
1/2	13/16	4-1/8	2	DE/CC	Cobalt	169	565	32842
1/2	13/16	4-1/8	2	DE/CC	HSS	158	684	33635
1/2	I	4-1/8	4	DE/CC	Cobalt	171	567	32936
1/2	I	4-1/8	4	DE/CC	HSS	166	582	33042
1/2	I	4-1/8	4	DE/NCC	HSS	163	682	39306

7/16" Diameter (.4375")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	13/16	4-1/8	2	DE/CC	Cobalt	169	565	52161
1/2	13/16	4-1/8	2	DE/CC	HSS	158	684	42069
1/2	7/8	4	2	DE/CC	Carbide	150	7221	53900
1/2	7/8	4	4	DE/CC	Carbide	153	7421	53911
1/2	I	3-3/4	2	SE/CC	HSS	156	689	38984
1/2	I	4-1/8	3	DE/CC	HSS	160	587	39585
1/2	I	4-1/8	4	DE/CC	Cobalt	171	567	52180

1/2	I	4-1/8	4	DE/CC	HSS	166	582	33043
1/2	I	4-1/8	4	DE/NCC	HSS	163	682LH	33577
1/2	I	4-1/8	4	DE/NCC	HSS	163	682	43325
1/2	1-3/4	3-3/4	2	SE/CC	HSS	156	696	39071
1/2	1-3/4	3-3/4	3	SE/CC	HSS	160	586	39739
1/2	1-3/4	3-3/4	4	SE/CC	HSS	165	588	33376
3/8	13/16	2-11/16	2	SE/CC	HSS	155	685	41615
3/8	13/16	2-11/16	2	SE/CC	Cobalt	168	555	32494
3/8	13/16	2-11/16	2	SE/CC	HSS	156	686	38923
3/8	13/16	2-11/16	2	SE/CC	HSS	156	507	32433
3/8	I	2-11/16	2	SE/CC	HSS	157	665	41851
3/8	I	2-11/16	3	SE/CC	HSS	160	585	39648
3/8	I	2-11/16	4	SE/NCC	HSS	161	683LH	33609
3/8	I	2-11/16	4	SE/CC	Cobalt	170	556	32570
3/8	I	2-11/16	4	SE/CC	HSS	164	583	41254
3/8	I	2-11/16	4	SE/NCC	HSS	161	683	42233
3/8	I	2-11/16	4	SE/CC	HSS	164	570	33156
3/8	1-3/4	3-3/4	4	SE/CC	Cobalt	170	557	32651
3/8	1-3/4	3-3/4	4	SE/CC	PM/Cobalt	146	579	32014
3/8	2-3/4	4-1/2	2	SE/CC	HSS	157	667	33522
3/8	2-3/4	4-1/2	4	SE/CC	Cobalt	170	558	32696
3/8	2-3/4	4-1/2	4	SE/CC	HSS	165	591	33433
3/8	2-3/4	4-1/2	4	SE/NCC	HSS	162	691	39205
7/16	9/16	2-3/4	2	DE/CC	Carbide	150	7222	53922
7/16	9/16	2-3/4	4	DE/CC	Carbide	153	7422	53933
7/16	5/8	2-1/2	2	SE/CC	Carbide	149	7212	53861
7/16	5/8	2-1/2	3	SE/CC	Carbide	150	7312	53887
7/16	5/8	2-1/2	4	SE/CC	Carbide	152	7412	53874
7/16	I	2-3/4	2	SE/CC	Carbide	149	7211	53798
7/16	I	2-3/4	2	SE/CC	Carbide	150	7216	53945
7/16	I	2-3/4	3	SE/CC	Carbide	151	7311	53847
7/16	I	2-3/4	4	SE/CC	Carbide	152	7411	53829
7/16	I	2-3/4	4	SE/CC	Carbide	153	7416	53957
7/16	I	3	3	SE/CC	Carbide	151	7360	02121
7/16	2	4	2	SE/CC	Carbide	149	7213	54553
7/16	2	4	3	SE/CC	Carbide	151	7313	54562
7/16	2	4	4	SE/CC	Carbide	152	7413	54571
1/2	1/2	2-3/16	4	SE/CC	PM/Cobalt	149	575	43213
1/2	13/16	4-1/8	2	DE/CC	HSS	158	668	41978
1/2	13/16	4-1/8	2	DE/CC	HSS	159	697	42197
1/2	I	3-1/4	2	SE/CC	HSS	159	690	42122
1/2	I	3-3/4	2	SE/CC	HSS	159	698	42171
1/2	I	2-11/16	2	SE/CC	PM/Cobalt	145	510	40797
1/2	I	4-1/8	4	DE/CC	PM/Cobalt	147	552	52194
1/2	I	2-11/16	4	SE/CC	PM/Cobalt	146	553	43285
1/2	1-3/4	3-3/4	2	SE/CC	HSS	157	666	41896
1/2	1-3/4	3-3/4	4	SE/NCC	HSS	162	688	42324

29/64" Diameter (.4561")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	13/16	4-1/8	2	DE/CC	Cobalt	169	565	32843
1/2	13/16	4-1/8	2	DE/CC	HSS	158	684	33636
1/2	13/16	3-1/4	2	SE/CC	HSS	155	685	33744
1/2	I	3-1/4	2	SE/CC	Cobalt	168	555	32495
1/2	I	3	2	SE/CC	Carbide	149	7211	40544
1/2	I	4-1/8	4	DE/CC	Cobalt	171	567	32937
1/2	I	4-1/8	4	DE/CC	HSS	166	582	33044
1/2	I	4-1/8	4	DE/NCC	HSS	163	682	39307
1/2	I	3	4	SE/CC	Carbide	152	7411	54078
1/2	1-1/4	3-1/4	4	SE/CC	Cobalt	170	556	32571
1/2	1-1/4	3-1/4	4	SE/CC	HSS	164	583	33157
1/2	1-1/4	3-1/4	4	SE/NCC	HSS	161	683	39415

15/32" Diameter (.4688")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	5/8	2-1/2	2	SE/CC	Carbide	149	7212	40625
1/2	5/8	2-1/2	3	SE/CC	Carbide	150	7312	40697
1/2	5/8	2-1/2	4	SE/CC	Carbide	152	7412	40777
1/2	13/16	4-1/8	2	DE/CC	HSS	158	684	42070
1/2	13/16	3-1/4	2	SE/CC	HSS	155	685	33745
1/2	13/16	4-1/8	2	DE/CC	Cobalt	169	565	52162
1/2	I	3-1/4	2	SE/CC	Cobalt	168	555	32496
1/2	I	3-1/4	2	SE/CC	HSS	156	686	38924
1/2	I	3	2	SE/CC	Carbide	149	7211	53799
1/2	I	4-1/8	3	DE/CC	HSS	160	587	39586
1/2	I	3	3	SE/CC	Carbide	151	7311	53820

End Mills

Diameter Cross Reference Index (Continued)

15/32" Diameter (.4688") Continued...

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	1	4-1/8	4	DE/CC	HSS	166	582	33045
1/2	1	4-1/8	4	DE/NCC	HSS	163	682	43326
1/2	1	4-1/8	4	DE/CC	PM/Cobalt	147	552	39973
1/2	1	4-1/8	4	DE/CC	Cobalt	171	567	52181
1/2	1	3	4	SE/CC	Carbide	152	741	53830
1/2	1-1/4	3-1/4	3	SE/CC	HSS	160	585	39649
1/2	1-1/4	3-1/4	4	SE/CC	Cobalt	170	556	32572
1/2	1-1/4	3-1/4	4	SE/CC	HSS	164	583	33158
1/2	1-1/4	3-1/4	4	SE/NCC	HSS	161	683	39416
1/2	1-1/4	3-1/4	4	SE/CC	PM/Cobalt	146	553	31954
1/2	2	4	2	SE/CC	HSS	156	696	39072
1/2	2	4	3	SE/CC	HSS	160	586	39740
1/2	2	4	4	SE/CC	Cobalt	170	557	32652
1/2	2	4	4	SE/CC	HSS	165	588	33377
1/2	2	4	4	SE/NCC	HSS	162	688	39252
1/2	3	5	4	SE/CC	Cobalt	170	558	32697
1/2	3	5	4	SE/CC	HSS	165	591	33434
1/2	3	5	4	SE/NCC	HSS	162	691	39206

31/64" Diameter (.4844")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	13/16	4-1/8	2	DE/CC	Cobalt	169	565	32844
1/2	13/16	4-1/8	2	DE/CC	HSS	158	684	33637
1/2	13/16	3-1/4	2	SE/CC	HSS	155	685	33746
1/2	1	3-1/4	2	SE/CC	Cobalt	168	555	32497
1/2	1	3	2	SE/CC	Carbide	149	721	40545
1/2	1	4-1/8	4	DE/CC	Cobalt	171	567	32938
1/2	1	4-1/8	4	DE/CC	HSS	166	582	33046
1/2	1	4-1/8	4	DE/NCC	HSS	163	682	39308
1/2	1	3	4	SE/CC	Carbide	152	741	54079
1/2	1-1/4	3-1/4	4	SE/CC	Cobalt	170	556	32573
1/2	1-1/4	3-1/4	4	SE/CC	HSS	164	583	33159
1/2	1-1/4	3-1/4	4	SE/NCC	HSS	161	683	39417

1/2" Diameter (.5000")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	13/16	2-11/16	2	SE/CC	HSS	15	685	41617
3/8	1	2-11/16	3	SE/CC	HSS	21	585	39650
3/8	1	2-11/16	4	SE/CC	HSS	26	583	33160
3/8	1	2-11/16	4	SE/NCC	HSS	23	683	42235
1/2	1/2	2-1/2	4	FR/SE/NCC	PM/Cobalt	175	578	43231
1/2	1/2	2-1/2	4	SE/CC	PM/Cobalt	146	575	43214
1/2	5/8	2-1/2	2	SE/CC	Carbide	149	7212	53862
1/2	5/8	3	2	DE/CC	Carbide	150	7222	53923
1/2	5/8	2-1/2	3	SE/CC	Carbide	150	7312	53888
1/2	5/8	2-1/2	4	SE/CC	Carbide	152	7412	53875
1/2	5/8	3	4	DE/CC	Carbide	153	7422	53934
1/2	13/16	4-1/8	2	DE/CC	HSS	158	668	41980
1/2	13/16	4-1/8	2	DE/CC	HSS	158	684	42072
1/2	13/16	4-1/8	2	DE/Ball	HSS	159	697	42199
1/2	13/16	4-1/8	2	DE/CC	Cobalt	169	565	52163
1/2	1	3-1/4	2	SE/CC	Cobalt	168	555	42616
1/2	1	3	2	SE/CC	HSS	156	507	32434
1/2	1	3	2	SE/CC	Carbide	149	7211	53800
1/2	1	3	2	SE/Ball	Carbide	150	7216	53946
1/2	1	4	2	DE/CC	Carbide	150	7221	53901
1/2	1	3	3	SE/CC	Carbide	151	7360	02122
1/2	1	3-1/4	2	SE/Ball	Cobalt	169	559	42657
1/2	1	3-1/4	2	SE/CC	HSS	155	685	41618
1/2	1	3-1/4	2	SE/CC	HSS	156	686	41685
1/2	1	4	2	SE/CC	HSS	156	689	41781
1/2	1	3-1/4	2	SE/Ball	HSS	159	690	42124
1/2	1	4	2	SE/Ball	HSS	159	698	42173
1/2	1	3	3	SE/CC	Carbide	151	7311	53848
1/2	1	4-1/8	3	DE/CC	HSS	160	587	39587
1/2	1	3	4	SE/CC	Carbide	152	7411	53831
1/2	1	3	4	SE/Ball	Carbide	153	7416	53958
1/2	1	4	4	DE/CC	Carbide	153	7421	53912
1/2	1	4-1/8	4	DE/CC	HSS	166	582	41216
1/2	1	4-1/8	4	DE/NCC	HSS	163	682LH	43363

1/2	1	4-1/8	4	DE/NCC	HSS	163	682	43328
1/2	1	4-1/8	4	DE/CC	PM/Cobalt	147	552	52195
1/2	1	4-1/8	4	DE/CC	Cobalt	171	567	52182
1/2	1-1/4	3-1/4	2	SE/CC	HSS	157	665	41853
1/2	1-1/4	3-1/4	2	SE/CC	PM/Cobalt	145	510	40798
1/2	1-1/4	3-1/4	3	CR/SE/CC	Cobalt	173	506	32371
1/2	1-1/4	3-1/4	3	SE/CC	PM/Cobalt	145	533	49272
1/2	1-1/4	3-1/4	3	SE/CC	HSS	160	585	39651
1/2	1-1/4	3-1/4	3	FR/SE/CC	PM/Cobalt	175	538	40003
1/2	1-1/4	3-1/4	4	CR/SE/NCC	HSS	173	576	43385
1/2	1-1/4	3-1/4	4	CR/SE/NCC	Cobalt	174	577	43472
1/2	1-1/4	3-1/4	4	FR/SE/NCC	PM/Cobalt	175	578	43300
1/2	1-1/4	3-1/4	4	FR/SE/NCC	Cobalt	174	501	32272
1/2	1-1/4	3-1/4	4	CR/SE/Ball	PM/Cobalt	175	503	32334
1/2	1-1/4	3-1/4	4	FR/SE/Ball	PM/Cobalt	175	505	32352
1/2	1-1/4	3-1/4	4	SE/Ball	Cobalt	171	560	42792
1/2	1-1/4	3-1/4	4	SE/Ball	HSS	166	584	41293
1/2	1-1/4	3-1/4	4	SE/NCC	HSS	161	683LH	42306
1/2	1-1/4	3-1/4	4	SE/CC	PM/Cobalt	146	553	32510
1/2	1-1/4	3-1/4	4	SE/Ball	PM/Cobalt	147	554	42560
1/2	1-1/4	3-1/4	4	SE/CC	Cobalt	170	556	42699
1/2	1-1/4	3-1/4	4	SE/CC	HSS	164	583	41257
1/2	1-1/4	3-1/4	4	SE/NCC	HSS	161	683	42236
1/2	1-1/4	3-1/4	4	SE/CC	HSS	164	570	41257
1/2	1-1/4	3-1/4	6	SE/CC	Cobalt	170	556	42698
1/2	2	4	2	SE/CC	Carbide	149	7213	54554
1/2	2	4	2	SE/CC	HSS	157	666	41898
1/2	2	4	2	SE/CC	HSS	156	696	41718
1/2	2	4	3	CR/SE/CC	Cobalt	173	506	32372
1/2	2	4	3	SE/CC	Carbide	157	7313	54563
1/2	2	4	3	SE/CC	HSS	160	586	39741
1/2	2	4	3	FR/SE/CC	PM/Cobalt	175	538	40004
1/2	2	4	4	CR/SE/NCC	HSS	173	576	44087
1/2	2	4	4	CR/SE/NCC	Cobalt	174	577	32125
1/2	2	4	4	FR/SE/NCC	PM/Cobalt	175	578	32211
1/2	2	4	4	FR/SE/NCC	Cobalt	174	501	32273
1/2	2	4	4	SE/CC	Carbide	152	7413	54572
1/2	2	4	4	SE/CC	Cobalt	170	557	42861
1/2	2	4	4	SE/Ball	HSS	166	589	41358
1/2	2	4	4	SE/CC	HSS	165	588	41335
1/2	2	4	4	SE/NCC	HSS	162	688	42326
1/2	2	4	4	SE/CC	PM/Cobalt	146	579	43293
1/2	3	5	2	SE/CC	HSS	157	667	41939
1/2	3	5	4	SE/CC	Cobalt	170	558	42917
1/2	3	5	4	SE/Ball	HSS	160	581	33347
1/2	3	5	4	SE/NCC	HSS	162	691	42373
1/2	3	5	4	SE/CC	HSS	165	591	41390

33/64" Diameter (.5156")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	1-1/8	3-3/8	2	SE/CC	HSS	155	685	33747
9/16	1-1/8	3-1/2	2	SE/CC	Carbide	149	7211	40546
9/16	1-1/8	3-1/2	4	SE/CC	Carbide	152	7411	54080

17/32" Diameter (.5312")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/8	9/16	2-1/2	2	SE/CC	Cobalt	168	555	32485
3/8	3/4	2-1/2	4	SE/CC	Cobalt	170	556	32561
1/2	1-1/8	3-3/8	2	SE/CC	HSS	155	685	33748
1/2	1-1/8	3-3/8	2	SE/CC	HSS	156	686	38925
1/2	1-3/8	3-3/8	4	SE/CC	HSS	164	583	33161
1/2	1-3/8	3-3/8	4	SE/NCC	HSS	161	683	39418
9/16	1-1/8	3-1/2	2	SE/CC	Carbide	149	7211	40547
9/16	1-1/8	3-1/2	4	SE/CC	Carbide	152	7411	54081
5/8	1-1/8	5	2	DE/CC	HSS	158	684	33638
5/8	1-3/8	5	4	DE/CC	HSS	166	582	33047
5/8	1-3/8	5	4	DE/NCC	HSS	163	682	39309
5/8	2	4-5/8	2	SE/CC	HSS	156	696	39073

35/64" Diameter (.5469")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	1-1/8	3-3/8	2	SE/CC	HSS	155	685	33749

End Mills

Diameter Cross Reference Index (Continued)

9/16" Diameter (.5625")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	1-1/8	3-3/8	2	SE/CC	HSS	156	686	38926
1/2	1-1/8	3-1/8	2	SE/CC	HSS	156	507	32435
1/2	1-1/8	3-3/8	2	SE/CC	HSS	155	685	41620
1/2	1-1/8	3-3/8	2	SE/Ball	HSS	159	690	42126
1/2	1-3/8	3-3/8	2	SE/CC	PM/Cobalt	145	510	40799
1/2	1-3/8	3-3/8	3	SE/CC	HSS	160	585	39652
1/2	1-3/8	3-3/8	4	SE/CC	PM/Cobalt	146	553	31955
1/2	1-3/8	3-3/8	4	SE/CC	HSS	164	583	33162
1/2	1-3/8	3-3/8	4	SE/NCC	HSS	161	683	42238
1/2	1-3/8	3-3/8	4	SE/CC	HSS	164	570	33162
9/16	3/4	3	2	SE/CC	Carbide	149	7212	40626
9/16	3/4	3	3	SE/CC	Carbide	150	7312	40698
9/16	3/4	3	4	SE/CC	Carbide	152	7412	40778
9/16	1-1/8	3-1/2	2	SE/CC	Carbide	149	7211	53801
9/16	1-1/8	3-1/2	2	SE/Ball	Carbide	150	7216	40628
9/16	1-1/8	3-1/2	3	SE/CC	Carbide	151	7311	53849
9/16	1-1/8	3-1/2	4	SE/CC	Carbide	152	7411	53832
5/8	1-1/8	5	2	DE/CC	HSS	158	684	42074
5/8	1-1/8	5	2	DE/CC	Cobalt	169	565	52164
5/8	1-1/8	5	2	DE/CC	HSS	158	668	41982
5/8	1-3/8	5	3	DE/CC	HSS	160	587	39588
5/8	1-3/8	5	4	DE/CC	HSS	166	582	33048
5/8	1-3/8	5	4	DE/NCC	HSS	163	682LH	33578
5/8	1-3/8	5	4	DE/NCC	HSS	163	682	43330
5/8	1-3/8	5	4	DE/CC	PM/Cobalt	147	552	39974
5/8	1-3/8	5	4	DE/CC	Cobalt	171	567	52183
5/8	2	4-5/8	2	SE/CC	HSS	156	696	39074

37/64" Diameter (.5781")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	1-1/8	3-3/8	2	SE/CC	HSS	155	685	33750

19/32" Diameter (.5938")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	1-1/8	3-3/8	2	SE/CC	HSS	155	685	33751
1/2	1-3/8	3-3/8	4	SE/CC	HSS	164	583	33163
1/2	1-3/8	3-3/8	4	SE/NCC	HSS	161	683	39419
5/8	1-1/8	5	2	DE/CC	HSS	158	684	33639
5/8	1-3/8	5	4	DE/CC	HSS	166	582	33049
5/8	1-3/8	5	4	DE/NCC	HSS	163	682	39310

39/64" Diameter (.6094")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	1-1/8	3-3/8	2	SE/CC	HSS	155	685	33752

5/8" Diameter (.6250")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	1-1/8	3-3/8	2	SE/CC	HSS	155	685	41622
1/2	1-1/8	3-3/8	2	SE/Ball	HSS	159	690	42128
1/2	1-3/8	3-3/8	4	SE/CC	HSS	164	583	33164
1/2	1-3/8	3-3/8	4	SE/NCC	HSS	161	683	42240
1/2	1-3/8	3-3/8	4	SE/CC	HSS	164	570	33164
5/8	5/8	2-3/4	4	FR/SE/NCC	PM/Cobalt	52	578	43232
5/8	5/8	2-3/4	4	SE/CC	PM/Cobalt	175	575	43215
5/8	5/8	2-3/4	6	SE/CC	PM/Cobalt	175	575	43216
5/8	3/4	3	2	SE/CC	Carbide	149	7212	53863
5/8	3/4	3	3	SE/CC	Carbide	150	7312	53889
5/8	3/4	3	4	SE/CC	Carbide	152	7412	53876
5/8	1-1/8	5	2	DE/CC	Cobalt	169	565	52165
5/8	1-1/8	5	2	DE/CC	HSS	158	668	41984
5/8	1-1/8	5	2	DE/CC	HSS	158	684	42076
5/8	1-1/8	5	2	DE/Ball	HSS	159	697	42202
5/8	1-1/4	3-1/2	2	SE/CC	Carbide	149	7211	53802
5/8	1-1/4	3-1/2	2	SE/Ball	Carbide	150	7216	40629
5/8	1-1/4	3-1/2	3	SE/CC	Carbide	151	7311	53850
5/8	1-1/4	3-1/2	4	SE/CC	Carbide	151	7360	02123
5/8	1-1/4	3-1/2	4	SE/CC	Carbide	152	7411	53833
5/8	1-5/16	3-3/4	2	SE/CC	Cobalt	168	555	42619

5/8	1-5/16	3-7/16	2	SE/CC	HSS	156	507	32436
5/8	1-5/16	3-3/4	2	SE/CC	HSS	155	685	41623
5/8	1-5/16	3-3/4	2	SE/CC	HSS	156	686	41688
5/8	1-3/8	3-3/4	2	SE/Ball	Cobalt	169	559	42660
5/8	1-3/8	4-5/8	2	SE/CC	HSS	156	689	41784
5/8	1-3/8	3-3/4	2	SE/Ball	HSS	159	690	42129
5/8	1-3/8	4-5/8	2	SE/Ball	HSS	159	698	42176
5/8	1-3/8	5	3	DE/CC	HSS	160	587	39589
5/8	1-3/8	5	4	DE/CC	Cobalt	171	567	52184
5/8	1-3/8	5	4	DE/CC	HSS	166	582	41219
5/8	1-3/8	5	4	DE/NCC	HSS	163	682LH	43366
5/8	1-3/8	5	4	DE/NCC	HSS	163	682	43332
5/8	1-3/8	5	4	DE/CC	PM/Cobalt	147	552	52196
5/8	1-5/8	3-3/4	2	SE/CC	HSS	157	665	41856
5/8	1-5/8	3-3/4	2	SE/CC	PM/Cobalt	145	510	40800
5/8	1-5/8	3-3/4	3	SE/CC	PM/Cobalt	175	538	40005
5/8	1-5/8	3-3/4	3	CR/SE/CC	Cobalt	173	506	32373
5/8	1-5/8	3-3/4	3	SE/CC	HSS	160	585	39653
5/8	1-5/8	3-3/4	3	FR/SE/CC	PM/Cobalt	146	533	49275
5/8	1-5/8	3-3/4	4	SE/Ball	HSS	166	584	41297
5/8	1-5/8	3-3/4	4	CR/SE/NCC	HSS	173	576	43386
5/8	1-5/8	3-3/4	4	CR/SE/NCC	Cobalt	174	577	43473
5/8	1-5/8	3-3/4	4	FR/SE/NCC	PM/Cobalt	175	578	43301
5/8	1-5/8	3-3/4	4	FR/SE/NCC	Cobalt	174	501	32274
5/8	1-5/8	3-3/4	4	CR/SE/Ball	PM/Cobalt	175	503	32335
5/8	1-5/8	3-3/4	4	FR/SE/Ball	PM/Cobalt	175	505	32353
5/8	1-5/8	3-3/4	4	SE/Ball	Cobalt	171	560	42795
5/8	1-5/8	3-3/4	4	SE/CC	HSS	164	583	41260
5/8	1-5/8	3-3/4	4	SE/NCC	HSS	161	683LH	42309
5/8	1-5/8	3-3/4	4	SE/NCC	HSS	161	683	42241
5/8	1-5/8	3-3/4	4	SE/CC	PM/Cobalt	146	553	42512
5/8	1-5/8	3-3/4	4	SE/Ball	PM/Cobalt	147	554	42562
5/8	1-5/8	3-3/4	4	SE/CC	Cobalt	170	556	42703
5/8	1-5/8	3-3/4	6	SE/CC	Cobalt	170	556	42702
5/8	2	4-5/8	2	SE/CC	HSS	156	696	41721
5/8	2-1/4	5	2	SE/CC	Carbide	149	7213	54555
5/8	2-1/4	5	3	SE/CC	Carbide	151	7313	54564
5/8	2-1/4	5	4	SE/CC	Carbide	152	7413	54573
5/8	2-1/2	4-5/8	2	SE/CC	HSS	157	666	41901
5/8	2-1/2	4-5/8	3	CR/SE/CC	Cobalt	173	506	32374
5/8	2-1/2	4-5/8	3	SE/CC	HSS	160	586	39742
5/8	2-1/2	4-5/8	3	FR/SE/CC	PM/Cobalt	175	538	40006
5/8	2-1/2	4-5/8	4	SE/CC	Cobalt	170	557	42864
5/8	2-1/2	4-5/8	4	CR/SE/NCC	Cobalt	174	577	32126
5/8	2-1/2	4-5/8	4	FR/SE/NCC	PM/Cobalt	175	578	32212
5/8	2-1/2	4-5/8	4	FR/SE/NCC	Cobalt	174	501	32275
5/8	2-1/2	4-5/8	4	SE/Ball	HSS	166	589	41361
5/8	2-1/2	4-5/8	4	SE/CC	HSS	165	588	41338
5/8	2-1/2	4-5/8	4	SE/NCC	HSS	162	688	42329
5/8	2-1/2	4-5/8	4	SE/CC	PM/Cobalt	146	579	43294
5/8	4	6-1/8	2	SE/CC	HSS	157	667	41942
5/8	4	6-1/8	4	SE/CC	Cobalt	170	558	42920
5/8	4	6-1/8	4	SE/Ball	HSS	160	581	33348
5/8	4	6-1/8	4	SE/CC	HSS	165	591	41393
5/8	4	6-1/8	4	SE/NCC	HSS	162	691	42376

21/32" Diameter (.6562")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/8	1-5/8	3-3/4	4	SE/CC	HSS	164	583	33165
5/8	1-5/8	3-3/4	4	SE/NCC	HSS	161	683	39420
3/4	1-5/16	5-5/8	2	DE/CC	HSS	158	684	33640
3/4	1-5/8	5-5/8	4	DE/CC	HSS	166	582	33050
3/4	1-5/8	5-5/8	4	DE/NCC	HSS	163	682	39311

11/16" Diameter (.6875")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	7/8	2-7/8	4	SE/CC	HSS	164	570	39817
1/2	1-5/16	3-5/8	2	SE/CC	HSS	155	685	41625
1/2	1-5/8	3-5/8	4	SE/CC	HSS	164	583	33166
1/2	1-5/8	3-5/8	4	SE/NCC	HSS	161	683	42243
1/2	1-5/8	3-5/8	4	SE/CC	HSS	164	570	33166
5/8	1-5/16	3-3/4	2	SE/CC	HSS	156	686	38927
5/8	1-5/16	3-7/16	2	SE/CC	HSS	156	507	32437
5/8	1-5/16	3-3/4	2	SE/CC	HSS	155	685	41626
5/8	1-5/8	3-3/4	2	SE/CC	PM/Cobalt	145	510	40801
5/8	1-5/8	3-3/4	3	SE/CC	HSS	160	585	39654

End Mills

Diameter Cross Reference Index (Continued)

11/16" Diameter (.6875") Continued...

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/8	1-5/8	3-3/4	4	SE/CC	PM/Cobalt	143	553	31956
5/8	1-5/8	3-3/4	4	SE/CC	HSS	164	583	41262
5/8	1-5/8	3-3/4	4	SE/NCC	HSS	161	683	42244
11/16	1-3/8	4	2	SE/Ball	Carbide	150	7216	40630
3/4	1	3	2	SE/CC	Carbide	149	7212	40627
3/4	1	3	3	SE/CC	Carbide	150	7312	40699
3/4	1	3	4	SE/CC	Carbide	152	7412	40779
3/4	1-5/16	5-5/8	2	DE/CC	HSS	158	684	42078
3/4	1-5/16	5-5/8	2	DE/CC	Cobalt	169	565	52166
3/4	1-5/16	5-5/8	2	DE/CC	HSS	158	668	41986
3/4	1-3/8	4	2	SE/CC	Carbide	149	7211	53803
3/4	1-3/8	4	3	SE/CC	Carbide	151	7311	53822
3/4	1-3/8	4	4	SE/CC	Carbide	152	7411	53834
3/4	1-5/8	5-5/8	3	DE/CC	HSS	160	587	39590
3/4	1-5/8	5-5/8	4	DE/CC	HSS	166	582	33051
3/4	1-5/8	5-5/8	4	DE/NCC	HSS	163	682	43334
3/4	1-5/8	5-5/8	4	DE/CC	PM/Cobalt	147	552	31879
3/4	1-5/8	5-5/8	4	DE/CC	Cobalt	171	567	52185
3/4	2-1/4	5-1/4	2	SE/CC	HSS	156	696	39075

23/32" Diameter (.7188")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-5/16	5-5/8	2	DE/CC	HSS	158	684	33641
3/4	1-5/8	3-7/8	4	SE/CC	HSS	164	583	33167
3/4	1-5/8	3-7/8	4	SE/NCC	HSS	161	683	39421
3/4	1-5/8	5-5/8	4	DE/CC	HSS	166	582	33052
3/4	1-5/8	5-5/8	4	DE/NCC	HSS	163	682	39312

3/4" Diameter (.7500")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1/2	7/8	2-7/8	4	SE/CC	HSS	164	570	39816
1/2	1-5/16	3-5/8	2	SE/CC	HSS	155	685	41628
1/2	1-5/16	3-5/8	2	SE/Ball	HSS	159	690	42132
1/2	1-5/8	3-5/8	4	SE/CC	HSS	164	583	33168
1/2	1-5/8	3-5/8	4	SE/NCC	HSS	161	683	42246
1/2	1-5/8	3-5/8	4	SE/CC	HSS	164	570	33168
5/8	1-5/16	3-3/4	2	SE/CC	HSS	155	685	41629
5/8	1-5/8	3-3/4	4	SE/CC	HSS	164	583	33169
5/8	1-5/8	3-3/4	4	SE/NCC	HSS	161	683	42247
3/4	1-5/8	3-7/8	3	FR/SE/CC	PM/Cobalt	175	538	40007
5/8	1-5/8	3-7/8	4	SE/NCC	HSS	161	683LH	42312
3/4	3/4	3	4	CR/SE/NCC	Cobalt	174	577	32127
3/4	3/4	3	4	FR/SE/NCC	PM/Cobalt	175	578	43233
3/4	3/4	3	4	SE/CC	PM/Cobalt	146	575	43217
3/4	3/4	3	6	SE/CC	PM/Cobalt	146	575	43218
3/4	7/8	3	4	SE/CC	HSS	164	570	39815
3/4	1	3	2	SE/CC	Carbide	149	7212	53864
3/4	1	3	3	SE/CC	Carbide	150	7312	53890
3/4	1	3	4	SE/CC	Carbide	152	7412	53877
3/4	1-5/16	3-7/8	2	SE/CC	Cobalt	168	555	42622
3/4	1-5/16	3-9/16	2	SE/CC	HSS	156	507	32438
3/4	1-5/16	5-5/8	2	DE/CC	Cobalt	169	565	52167
3/4	1-5/16	5-5/8	2	DE/CC	HSS	158	668	41988
3/4	1-5/16	5-5/8	2	DE/CC	HSS	158	684	42080
3/4	1-5/16	3-7/8	2	SE/CC	HSS	155	685	41630
3/4	1-5/16	3-7/8	2	SE/CC	HSS	156	686	41691
3/4	1-5/16	5-5/8	2	DE/Ball	HSS	159	697	42205
3/4	1-1/2	4	2	SE/CC	Carbide	149	7211	53804
3/4	1-1/2	4	2	SE/Ball	Carbide	150	7216	40631
3/4	1-1/2	4	3	SE/CC	Carbide	151	7360	021245
3/4	1-1/2	4	3	SE/CC	Carbide	151	7311	53851
3/4	1-1/2	4	4	SE/CC	Carbide	152	7411	53835
3/4	1-5/8	3-7/8	2	SE/Ball	Cobalt	169	559	42663
3/4	1-5/8	3-7/8	2	SE/CC	HSS	157	665	41859
3/4	1-5/8	5-1/4	2	SE/CC	HSS	156	689	41787
3/4	1-5/8	3-7/8	2	SE/Ball	HSS	159	690	42133
3/4	1-5/8	5-3/8	2	SE/Ball	HSS	159	698	42179
3/4	1-5/8	3-7/8	2	SE/CC	PM/Cobalt	145	510	40802
3/4	1-5/8	3-7/8	3	CR/SE/CC	Cobalt	173	506	32375
3/4	1-5/8	5-5/8	3	DE/CC	HSS	160	587	39591
3/4	1-5/8	3-7/8	3	SE/CC	HSS	160	585	39655

3/4	1-5/8	3-7/8	3	SE/CC	PM/Cobalt	145	533	49277
3/4	1-5/8	3-7/8	4	SE/Ball	Cobalt	171	560	42799
3/4	1-5/8	3-7/8	4	CR/SE/NCC	HSS	173	576	43387
3/4	1-5/8	3-7/8	4	CR/SE/NCC	Cobalt	174	577	43474
3/4	1-5/8	3-7/8	4	FR/SE/NCC	PM/Cobalt	175	578	43302
3/4	1-5/8	3-7/8	4	FR/SE/NCC	Cobalt	174	501	32276
3/4	1-5/8	3-7/8	4	CR/SE/Ball	PM/Cobalt	175	503	32336
3/4	1-5/8	3-7/8	4	FR/SE/Ball	PM/Cobalt	175	505	32354
3/4	1-5/8	3-7/8	4	SE/CC	Cobalt	170	556	42707
3/4	1-5/8	5-5/8	4	DE/CC	Cobalt	171	567	52186
3/4	1-5/8	5-5/8	4	DE/CC	HSS	166	582	41223
3/4	1-5/8	3-7/8	4	SE/CC	HSS	164	583	41264
3/4	1-5/8	3-7/8	4	SE/Ball	HSS	166	584	41300
3/4	1-5/8	5-5/8	4	DE/NCC	HSS	163	682LH	43369
3/4	1-5/8	5-5/8	4	DE/NCC	HSS	163	682	43336
3/4	1-5/8	3-7/8	4	SE/NCC	HSS	161	683	42248
3/4	1-5/8	3-7/8	4	SE/CC	HSS	164	570	41264
3/4	1-5/8	5-5/8	4	DE/CC	PM/Cobalt	147	552	52197
3/4	1-5/8	3-7/8	4	SE/CC	PM/Cobalt	146	553	42514
3/4	1-5/8	3-7/8	4	SE/Ball	PM/Cobalt	147	554	42564
3/4	1-5/8	3-7/8	6	SE/CC	Cobalt	170	556	42706
3/4	1-5/8	3-7/8	6	SE/Ball	Cobalt	171	560	42798
3/4	1-5/8	3-7/8	6	SE/CC	PM/Cobalt	146	553	42516
3/4	2-1/4	5	2	SE/CC	Carbide	149	7213	54556
3/4	2-1/4	5-1/4	2	SE/CC	HSS	156	696	41724
3/4	2-1/4	5	3	SE/CC	Carbide	151	7313	54565
3/4	2-1/4	5	4	SE/CC	Carbide	152	7413	54574
3/4	3	5-1/4	2	SE/CC	HSS	157	666	41904
3/4	3	5-1/4	3	CR/SE/CC	Cobalt	173	506	32376
3/4	3	5-1/4	3	SE/CC	HSS	160	586	39743
3/4	3	5-1/4	3	SE/CC	PM/Cobalt	145	571	49278
3/4	3	5-1/4	3	FR/SE/CC	PM/Cobalt	175	538	40008
3/4	3	5-1/4	4	SE/CC	Cobalt	170	557	42868
3/4	3	5-1/4	4	CR/SE/NCC	HSS	173	576	43388
3/4	3	5-1/4	4	CR/SE/NCC	Cobalt	174	577	43416
3/4	3	5-1/4	4	FR/SE/NCC	PM/Cobalt	175	578	43303
3/4	3	5-1/4	4	FR/SE/NCC	Cobalt	174	501	32277
3/4	3	5-1/4	4	SE/Ball	HSS	166	589	41364
3/4	3	5-1/4	4	SE/CC	HSS	165	588	41341
3/4	3	5-1/4	4	SE/NCC	HSS	162	688	42332
3/4	3	5-1/4	4	SE/CC	PM/Cobalt	146	579	43295
3/4	3	5-1/4	6	SE/CC	Cobalt	170	557	42867
3/4	4	6-1/4	2	SE/CC	HSS	157	667	41945
3/4	4	6-1/4	4	SE/CC	Cobalt	170	558	42924
3/4	4	6-1/4	4	SE/Ball	HSS	166	581	33349
3/4	4	6-1/4	4	SE/CC	HSS	166	591	41396
3/4	4	6-1/4	4	SE/NCC	HSS	162	691	42379
3/4	4	6-1/4	6	SE/CC	Cobalt	170	558	42923

25/32" Diameter (.7812")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-7/8	4-1/8	4	SE/CC	HSS	164	583	33170
3/4	1-7/8	4-1/8	4	SE/NCC	HSS	161	683	39422
7/8	1-9/16	6-1/8	2	DE/CC	HSS	158	684	33642
7/8	1-7/8	6-1/8	4	DE/CC	HSS	166	582	33053
7/8	1-7/8	6-1/8	4	DE/NCC	HSS	163	682	39313

13/16" Diameter (.8125")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/8	1-1/2	4	2	SE/CC	HSS	156	686	38928
5/8	1-1/2	4	2	SE/CC	HSS	155	685	41632
5/8	1-7/8	4	4	SE/CC	HSS	164	583	33171
5/8	1-7/8	4	4	SE/NCC	HSS	161	683	42250
5/8	1-7/8	4	3	SE/CC	HSS	166	585	39656
3/4	1-1/2	3-3/4	2	SE/CC	HSS	156	507	32439
7/8	1-9/16	6-1/8	2	DE/CC	Cobalt	169	565	32845
7/8	1-9/16	6-1/8	2	DE/CC	HSS	158	684	33643
7/8	1-9/16	6-1/8	2	DE/CC	HSS	158	668	41990
7/8	1-7/8	6-1/8	3	DE/CC	HSS	160	587	39592
7/8	1-7/8	6-1/8	4	DE/CC	Cobalt	171	567	32939
7/8	1-7/8	6-1/8	4	DE/CC	HSS	166	582	33054
7/8	1-7/8	6-1/8	4	DE/NCC	HSS	163	682	43338
7/8	1-7/8	6-1/8	4	DE/CC	PM/Cobalt	147	552	31880
7/8	1-7/8	4-1/8	4	SE/CC	PM/Cobalt	146	553	31957
7/8	2-1/2	5-1/4	2	SE/CC	HSS	156	696	39076

End Mills

Diameter Cross Reference Index continued...

27/32" Diameter (.8438")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
7/8	1-9/16	6-1/8	2	DE/CC	HSS	158	684	33644
7/8	1-7/8	4-1/8	4	SE/CC	HSS	164	583	33172
7/8	1-7/8	4-1/8	4	SE/NCC	HSS	161	683	39423
7/8	1-7/8	6-1/8	4	DE/CC	HSS	166	582	33055
7/8	1-7/8	6-1/8	4	DE/NCC	HSS	163	682	39314

7/8" Diameter (.8750")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/8	1-1/2	4	2	SE/CC	HSS	155	685	41635
5/8	1-7/8	4	4	SE/CC	HSS	164	583	33173
5/8	1-7/8	4	4	SE/NCC	HSS	161	683	42253
3/4	1	3-1/4	4	SE/CC	HSS	164	570	39814
3/4	1-1/2	3-3/4	2	SE/CC	HSS	156	507	32440
3/4	1-1/2	4-1/8	2	SE/CC	HSS	155	685	41636
3/4	1-7/8	4-1/8	4	SE/CC	HSS	164	583	33174
3/4	1-7/8	4-1/8	4	SE/NCC	HSS	161	683	42254
3/4	1-7/8	4-1/8	4	SE/CC	HSS	164	570	33174
7/8	7/8	3-1/8	4	SE/CC	PM/Cobalt	146	575	43219
7/8	7/8	3-1/8	5	FR/SE/NCC	PM/Cobalt	175	578	43234
7/8	1-1/4	3-1/2	4	SE/CC	PM/Cobalt	146	575	43220
7/8	1-1/2	4	2	SE/CC	Carbide	149	7211	53805
7/8	1-1/2	4	2	SE/Ball	Carbide	150	7216	40632
7/8	1-1/2	4-1/8	2	SE/CC	HSS	155	685	41637
7/8	1-1/2	4-1/8	2	SE/CC	HSS	156	686	41695
7/8	1-1/2	4	3	SE/CC	Carbide	151	7311	53824
7/8	1-1/2	4	4	SE/CC	Carbide	152	7411	53836
7/8	1-9/16	6-1/8	2	DE/Ball	HSS	159	697	39141
7/8	1-9/16	6-1/8	2	DE/CC	Cobalt	169	565	52168
7/8	1-9/16	6-1/8	2	DE/CC	HSS	158	668	41993
7/8	1-9/16	6-1/8	2	DE/CC	HSS	158	684	42084
7/8	1-7/8	4-1/8	2	SE/Ball	Cobalt	169	559	32736
7/8	1-7/8	4-1/8	2	SE/CC	PM/Cobalt	145	510	40803
7/8	1-7/8	4-1/8	2	SE/CC	HSS	157	665	41863
7/8	1-7/8	4-1/8	3	CR/SE/CC	Cobalt	173	506	32377
7/8	1-7/8	4-1/8	3	SE/CC	HSS	155	585	39657
7/8	1-7/8	6-1/8	3	DE/CC	HSS	160	587	39593
7/8	1-7/8	4-1/8	4	SE/Ball	HSS	166	584	41304
7/8	1-7/8	6-1/8	4	DE/NCC	HSS	163	682LH	33579
7/8	1-7/8	4-1/8	4	SE/CC	PM/Cobalt	146	553	31958
7/8	1-7/8	6-1/8	4	DE/CC	Cobalt	171	567	52187
7/8	1-7/8	6-1/8	4	DE/CC	HSS	166	582	41227
7/8	1-7/8	4-1/8	4	SE/CC	HSS	164	583	41268
7/8	1-7/8	6-1/8	4	DE/NCC	HSS	163	682	43341
7/8	1-7/8	4-1/8	4	SE/NCC	HSS	161	683	42255
7/8	1-7/8	6-1/8	4	DE/CC	PM/Cobalt	147	552	52198
7/8	1-7/8	4-1/8	5	CR/SE/NCC	Cobalt	174	577	32128
7/8	1-7/8	4-1/8	5	FR/SE/NCC	Cobalt	174	501	32278
7/8	2	4-1/8	2	SE/Ball	HSS	159	690	42137
7/8	2-1/2	5-3/4	2	SE/CC	HSS	156	689	38985
7/8	2-1/2	7-1/4	2	SE/Ball	HSS	159	698	39174
7/8	2-1/2	5-3/4	2	SE/CC	HSS	156	696	41728
7/8	3-1/2	5-3/4	2	SE/CC	HSS	157	666	32066
7/8	3-1/2	5-3/4	3	SE/CC	HSS	160	586	39744
7/8	3-1/2	5-3/4	4	SE/CC	Cobalt	170	557	32653
7/8	3-1/2	5-3/4	4	SE/CC	PM/Cobalt	146	579	32015
7/8	3-1/2	5-3/4	4	SE/NCC	HSS	162	688	42336
7/8	3-1/2	5-3/4	4	SE/CC	HSS	165	588	41345
7/8	3-1/2	5-3/4	5	CR/SE/NCC	Cobalt	170	577	32129
7/8	3-1/2	5-3/4	5	FR/SE/NCC	Cobalt	174	501	32279
7/8	3-1/2	5-3/4	6	SE/CC	Cobalt	170	557	32654
7/8	5	7-1/4	2	SE/CC	HSS	157	667	33523
7/8	5	7-1/4	4	SE/CC	HSS	165	591	41400
7/8	5	7-1/4	4	SE/NCC	HSS	162	691	42383

29/32" Diameter (.9062")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
7/8	1-7/8	4-1/8	4	SE/CC	HSS	164	583	33175
7/8	1-7/8	4-1/8	4	SE/NCC	HSS	161	683	39424
1	1-5/8	6-3/8	2	DE/CC	HSS	158	684	33645
1	1-7/8	6-3/8	4	DE/CC	HSS	166	582	33056
1	1-7/8	6-3/8	4	DE/NCC	HSS	163	682	39315

15/16" Diameter (.9375")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-1/2	3-3/4	2	SE/CC	HSS	156	507	32441
7/8	1-1/2	4-1/8	2	SE/CC	HSS	155	685	33753
7/8	1-1/2	4-1/8	2	SE/CC	HSS	156	686	38929
7/8	1-7/8	4-1/8	3	SE/CC	HSS	160	585	39658
7/8	1-7/8	4-1/8	4	SE/CC	HSS	164	583	33176
7/8	1-7/8	4-1/8	4	SE/NCC	HSS	161	683	39425
1	1-5/8	6-3/8	2	DE/CC	Cobalt	169	565	32846
1	1-5/8	6-3/8	2	DE/CC	HSS	158	668	41995
1	1-5/8	6-3/8	2	DE/CC	HSS	158	684	33646
1	1-7/8	6-3/8	3	DE/CC	HSS	160	587	39594
1	1-7/8	6-3/8	4	DE/CC	Cobalt	171	567	32940
1	1-7/8	6-3/8	4	DE/CC	HSS	166	582	33057
1	1-7/8	6-3/8	4	DE/NCC	HSS	163	682	39316
1	1-7/8	6-3/8	4	DE/CC	PM/Cobalt	141	552	31881
1	1-7/8	4-1/2	4	SE/CC	PM/Cobalt	146	553	31959
1	3	6-1/2	2	SE/CC	HSS	156	696	39077

31/32" Diameter (.9688")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1	1-5/8	6-3/8	2	DE/CC	HSS	158	684	33647
1	1-7/8	6-3/8	4	DE/CC	HSS	166	582	33058
1	1-7/8	6-3/8	4	DE/NCC	HSS	163	682	39317
1	2	4-1/2	4	SE/CC	HSS	164	583	33177
1	2	4-1/2	4	SE/NCC	HSS	161	683	39426

1" Diameter (1.0000")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
5/8	1-1/2	4	2	SE/CC	HSS	155	685	41641
5/8	1-7/8	4	4	SE/CC	HSS	164	583	33178
5/8	1-7/8	4	4	SE/NCC	HSS	161	683	42259
3/4	1	3-1/4	6	SE/CC	HSS	164	570	39813
3/4	2	4-1/4	5	CR/SE/NCC	HSS	173	576	44088
3/4	1-1/2	4-1/8	2	SE/CC	HSS	155	685	41642
3/4	1-1/2	3-3/4	2	SE/CC	HSS	156	507	40505
3/4	1-1/2	3-3/4	5	CR/SE/NCC	Cobalt	174	577	32130
3/4	1-1/2	3-3/4	5	FR/SE/NCC	Cobalt	174	501	32280
3/4	1-7/8	4-1/8	3	SE/CC	HSS	160	585	39659
3/4	1-7/8	4-1/8	4	SE/CC	HSS	164	583	33179
3/4	1-7/8	4-1/8	4	SE/NCC	HSS	161	683	42260
3/4	1-7/8	4-1/8	4	SE/CC	HSS	164	570	33179
7/8	1-1/2	4-1/8	2	SE/CC	HSS	155	685	41643
7/8	1-7/8	4-1/8	4	SE/CC	HSS	164	583	33180
7/8	1-7/8	4-1/8	4	SE/NCC	HSS	161	683	42261
1	1	3-1/2	4	SE/CC	PM/Cobalt	146	575	43221
1	1	3-1/2	5	FR/SE/NCC	PM/Cobalt	175	578	43235
1	1	3-1/2	6	SE/CC	PM/Cobalt	146	575	43222
1	1-1/2	4	2	SE/CC	Carbide	149	7211	53806
1	1-1/2	4	2	SE/Ball	Carbide	150	7216	40633
1	1-1/2	4	3	SE/CC	Carbide	151	7311	53826
1	1-1/2	4	3	SE/CC	Carbide	151	7360	02125
1	1-1/2	4	4	SE/CC	Carbide	152	7411	53837
1	1-5/8	4	2	SE/CC	Cobalt	168	555	42629
1	1-5/8	6-3/8	2	DE/CC	Cobalt	169	565	52169
1	1-5/8	6-3/8	2	DE/CC	HSS	158	668	41998
1	1-5/8	6-3/8	2	DE/CC	HSS	158	684	42088
1	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41644
1	1-5/8	4-1/2	2	SE/CC	HSS	156	686	41699
1	1-5/8	6-3/8	2	DE/Ball	HSS	159	697	42212
1	1-7/8	6-3/8	3	DE/CC	HSS	160	587	39595
1	1-7/8	6-3/8	4	DE/CC	Cobalt	171	567	52188
1	1-7/8	6-3/8	4	DE/CC	HSS	166	582	41231
1	1-7/8	6-3/8	4	DE/NCC	HSS	163	682LH	33580
1	1-7/8	6-3/8	4	DE/NCC	HSS	163	682	43345
1	1-7/8	6-3/8	4	DE/CC	PM/Cobalt	147	552	52199
1	2	4-1/2	2	SE/CC	HSS	157	665	41867
1	2	4-1/2	2	SE/CC	PM/Cobalt	145	510	40804
1	2	4-1/2	3	SE/CC	HSS	155	585	39660
1	2	4-1/2	3	SE/CC	PM/Cobalt	146	533	49283
1	2	4-1/2	3	CR/SE/CC	Cobalt	173	506	32378
1	2	4-1/2	3	FR/SE/CC	PM/Cobalt	175	538	40009
1	2	4-1/2	4	SE/CC	Cobalt	170	556	42715

End Mills

Diameter Cross Reference Index (Continued)

1" Diameter (1.0000") Continued...

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1	2	4-1/2	4	SE/Ball	Cobalt	171	560	42807
1	2	4-1/2	4	SE/CC	HSS	164	583	41272
1	2	4-1/2	4	SE/Ball	HSS	166	584	41308
1	2	4-1/2	4	SE/NCC	HSS	161	683	42262
1	2	4-1/2	4	SE/CC	PM/Cobalt	146	553	42518
1	2	4-1/2	4	SE/Ball	PM/Cobalt	147	554	42566
1	2	4-1/2	5	CR/SE/NCC	HSS	173	576	43389
1	2	4-1/2	5	CR/SE/NCC	Cobalt	174	577	43431
1	2	4-1/2	5	FR/SE/NCC	PM/Cobalt	175	578	43236
1	2	4-1/2	5	FR/SE/NCC	Cobalt	174	501	32281
1	2	4-1/2	5	CR/SE/Ball	PM/Cobalt	175	503	32337
1	2	4-1/2	5	FR/SE/Ball	PM/Cobalt	175	505	32355
1	2	4-1/2	6	SE/CC	Cobalt	170	556	42714
1	2	4-1/2	6	SE/Ball	Cobalt	171	560	42806
1	2	4-1/2	6	SE/CC	PM/Cobalt	146	553	42520
1	2-1/4	4-1/2	2	SE/Ball	Cobalt	169	559	42670
1	2-1/4	4-1/2	2	SE/Ball	HSS	159	690	42141
1	2-1/4	5	2	SE/CC	Carbide	149	7213	54557
1	2-1/4	5	3	SE/CC	Carbide	151	7313	54566
1	2-1/4	5	4	SE/CC	Carbide	152	7413	54575
1	2-1/2	7-1/4	2	SE/CC	HSS	156	689	41795
1	2-1/2	7-1/4	2	SE/Ball	HSS	159	698	42181
1	3	6-1/2	2	SE/CC	HSS	156	696	41732
1	3	5-1/2	3	SE/CC	PM/Cobalt	145	571	49284
1	3	5-1/2	3	CR/SE/CC	Cobalt	173	506	32379
1	3	5-1/2	4	SE/CC	PM/Cobalt	146	579	43286
1	3	5-1/2	3	FR/SE/CC	PM/Cobalt	175	538	40010
1	3	5-1/2	5	CR/SE/NCC	HSS	173	576	43398
1	3	5-1/2	5	CR/SE/NCC	Cobalt	174	577	43467
1	3	5-1/2	5	FR/SE/NCC	PM/Cobalt	175	578	43304
1	3	5-1/2	5	FR/SE/NCC	Cobalt	174	501	32282
1	4	6-1/2	2	SE/CC	HSS	157	666	41911
1	4	6-1/2	3	SE/CC	HSS	160	586	39745
1	4	6-1/2	3	SE/CC	PM/Cobalt	145	571	49285
1	4	6-1/2	3	CR/SE/CC	Cobalt	173	506	32380
1	4	6-1/2	4	SE/CC	Cobalt	170	557	42876
1	4	6-1/2	3	FR/SE/CC	PM/Cobalt	175	538	40011
1	4	6-1/2	4	SE/Ball	HSS	166	589	41371
1	4	6-1/2	4	SE/CC	HSS	165	588	41349
1	4	6-1/2	4	SE/NCC	HSS	162	688	42340
1	4	6-1/2	4	SE/CC	PM/Cobalt	146	579	43296
1	4	6-1/2	5	CR/SE/NCC	HSS	173	576	43390
1	4	6-1/2	5	CR/SE/NCC	Cobalt	174	577	43432
1	4	6-1/2	5	FR/SE/NCC	PM/Cobalt	175	578	43305
1	4	6-1/2	6	SE/CC	Cobalt	170	557	42875
1	6	8-1/2	2	SE/CC	HSS	157	667	41952
1	6	8-1/2	4	SE/CC	Cobalt	170	558	42932
1	6	8-1/2	4	SE/Ball	HSS	160	581	33350
1	6	8-1/2	4	SE/CC	HSS	165	591	41404
1	6	8-1/2	4	SE/NCC	HSS	162	691	42387
1	6	8-1/2	5	CR/SE/NCC	Cobalt	174	577	32131
1	6	8-1/2	6	SE/CC	Cobalt	170	558	42931

1-1/8" Diameter (1.1250")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-3/8	3-5/8	6	SE/CC	HSS	164	570	39812
7/8	1-5/8	4-1/8	2	SE/CC	HSS	155	685	41647
7/8	2	4-1/4	4	SE/CC	HSS	164	583	33181
7/8	2	4-1/4	6	SE/NCC	HSS	161	683	42265
1	1-5/8	4-1/2	2	SE/CC	HSS	156	686	38930
1	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41648
1	2	4-1/2	2	SE/CC	PM/Cobalt	145	510	40805
1	2	4-1/2	3	SE/CC	HSS	160	585	39661
1	2	4-1/2	4	SE/CC	HSS	164	583	41275
1	2	4-1/2	6	SE/NCC	HSS	161	683	42266
1	2	4-1/2	6	SE/CC	PM/Cobalt	146	553	43223
1	2-1/4	4-1/2	2	SE/Ball	HSS	159	690	42144
1	3	6-1/2	2	SE/CC	HSS	156	696	41735
1	4	6-1/2	3	SE/CC	HSS	160	586	39746
1	4	6-1/2	4	SE/CC	HSS	165	588	33378
1	4	6-1/2	6	SE/NCC	HSS	162	688	42343
1-1/8	2	4-1/2	5	FR/SE/NCC	PM/Cobalt	175	578	43237

1-1/4" Diameter (1.2500")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-3/8	3-5/8	6	SE/CC	HSS	164	570	39811
3/4	1-1/2	3-3/4	5	CR/SE/NCC	Cobalt	174	577	32132
3/4	1-1/2	3-3/4	5	FR/SE/NCC	Cobalt	174	501	32283
3/4	2	4-1/4	5	CR/SE/NCC	HSS	173	576	44089
7/8	1-5/8	4-1/8	2	SE/CC	HSS	155	685	41650
7/8	2	4-1/4	4	SE/CC	HSS	164	583	33182
7/8	2	4-1/4	6	SE/NCC	HSS	161	683	42268
1	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41651
1	2	4-1/2	3	SE/CC	HSS	160	585	39662
1	2	4-1/2	4	SE/CC	HSS	164	583	33183
1	2	4-1/2	6	SE/NCC	HSS	161	683	42269
1	3	6-1/2	2	SE/CC	HSS	156	696	41737
1	4	6-1/2	3	SE/CC	HSS	160	586	39747
1	4	6-1/2	4	SE/CC	HSS	165	588	33379
1	4	6-1/2	6	SE/NCC	HSS	162	688	42345
1-1/4	1-5/8	4	2	SE/CC	Cobalt	168	555	42633
1-1/4	1-5/8	4-1/2	2	SE/CC	HSS	156	686	41703
1-1/4	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41652
1-1/4	2	4-1/2	2	SE/CC	HSS	157	665	41871
1-1/4	2	4-1/2	2	SE/CC	PM/Cobalt	145	510	40806
1-1/4	2	4-1/2	3	CR/SE/CC	Cobalt	173	506	32381
1-1/4	2	4-1/2	3	SE/CC	HSS	160	585	39663
1-1/4	2	4-1/2	3	SE/CC	PM/Cobalt	145	533	49289
1-1/4	2	4-1/2	4	SE/CC	Cobalt	170	556	42720
1-1/4	2	4-1/2	4	SE/Ball	HSS	166	584	41312
1-1/4	2	4-1/2	4	SE/CC	HSS	164	583	41277
1-1/4	2	4-1/2	5	CR/SE/NCC	HSS	173	576	43391
1-1/4	2	4-1/2	5	CR/SE/NCC	Cobalt	174	577	43440
1-1/4	2	4-1/2	5	FR/SE/NCC	PM/Cobalt	175	578	43238
1-1/4	2	4-1/2	5	FR/SE/NCC	Cobalt	174	501	32284
1-1/4	2	4-1/2	5	CR/SE/Ball	PM/Cobalt	175	503	32338
1-1/4	2	4-1/2	5	FR/SE/Ball	PM/Cobalt	175	505	32356
1-1/4	2	4-1/2	6	SE/Ball	Cobalt	171	560	32761
1-1/4	2	4-1/2	6	SE/CC	Cobalt	170	556	42719
1-1/4	2	4-1/2	6	SE/NCC	HSS	161	683	42270
1-1/4	2	4-1/2	6	SE/CC	PM/Cobalt	146	553	43224
1-1/4	2-1/2	4-1/2	2	SE/Ball	Cobalt	169	559	42674
1-1/4	2-1/2	4-1/2	2	SE/Ball	HSS	159	690	42146
1-1/4	3	7-1/4	2	SE/Ball	HSS	159	698	39175
1-1/4	3	7-1/4	2	SE/CC	HSS	156	689	41799
1-1/4	3	6-1/2	2	SE/CC	HSS	156	696	41738
1-1/4	3	5-1/2	3	CR/SE/CC	Cobalt	173	506	32382
1-1/4	3	5-1/2	3	FR/SE/CC	PM/Cobalt	175	538	40012
1-1/4	3	5-1/2	5	CR/SE/NCC	HSS	173	576	43399
1-1/4	3	5-1/2	5	CR/SE/NCC	Cobalt	174	577	43468
1-1/4	3	5-1/2	5	FR/SE/NCC	PM/Cobalt	175	578	43239
1-1/4	3	5-1/2	5	FR/SE/NCC	Cobalt	174	501	32285
1-1/4	3	5-1/2	6	SE/CC	PM/Cobalt	146	579	43287
1-1/4	4	6-1/2	2	SE/CC	HSS	157	666	41915
1-1/4	4	6-1/2	3	CR/SE/CC	Cobalt	173	506	32383
1-1/4	4	6-1/2	3	SE/CC	PM/Cobalt	175	538	40013
1-1/4	4	6-1/2	3	SE/CC	HSS	160	586	39748
1-1/4	4	6-1/2	3	SE/CC	PM/Cobalt	145	571	49291
1-1/4	4	6-1/2	4	SE/CC	Cobalt	170	557	42881
1-1/4	4	6-1/2	4	SE/Ball	HSS	166	589	41375
1-1/4	4	6-1/2	4	SE/CC	HSS	165	588	41353
1-1/4	4	6-1/2	5	CR/SE/NCC	HSS	173	576	43392
1-1/4	4	6-1/2	5	CR/SE/NCC	Cobalt	174	577	43441
1-1/4	4	6-1/2	5	FR/SE/NCC	PM/Cobalt	175	578	43306
1-1/4	4	6-1/2	6	SE/CC	Cobalt	170	557	42880
1-1/4	4	6-1/2	6	SE/NCC	HSS	162	688	42346
1-1/4	4	6-1/2	6	SE/CC	PM/Cobalt	146	579	43297
1-1/4	6	8-1/2	2	SE/CC	HSS	157	667	41956
1-1/4	6	8-1/2	3	SE/CC	PM/Cobalt	175	538	40014
1-1/4	6	8-1/2	4	SE/CC	Cobalt	170	558	42937
1-1/4	6	8-1/2	4	SE/CC	HSS	165	591	41408
1-1/4	6	8-1/2	4	SE/Ball	HSS	160	581	33351
1-1/4	6	8-1/2	4	SE/NCC	HSS	162	691	39207
1-1/4	6	8-1/2	5	CR/SE/NCC	Cobalt	174	577	32133
1-1/4	6	8-1/2	6	SE/CC	Cobalt	170	558	42936
1-1/4	6	8-1/2	6	SE/CC	HSS	165	591	33435
1-1/4	6	8-1/2	6	SE/NCC	HSS	162	691	42391

End Mills

Diameter Cross Reference Index (Continued)

1-3/8" Diameter (1.3750")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-3/8	3-5/8	6	SE/CC	HSS	164	570	39810
1	1-5/8	4-1/2	2	SE/CC	HSS	156	686	38931
1	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41655
1	2	4-1/2	3	SE/CC	HSS	160	585	39664
1	2	4-1/2	4	SE/CC	HSS	164	583	33184
1	2	4-1/2	6	SE/NCC	HSS	161	683	42273
1	3	6-1/2	2	SE/CC	HSS	156	696	41741

1-1/2" Diameter (1.5000")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-3/8	3-5/8	6	SE/CC	HSS	164	570	39809
3/4	1-1/2	3-3/4	6	CR/SE/NCC	Cobalt	174	577	32134
3/4	1-1/2	3-3/4	6	FR/SE/NCC	Cobalt	174	501	32286
3/4	2	4-1/4	6	CR/SE/NCC	HSS	173	576	44090
1	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41659
1	2	4-1/2	3	SE/CC	HSS	160	585	39665
1	2	4-1/2	6	SE/CC	HSS	164	583	33185
1	2	4-1/2	6	SE/NCC	HSS	161	683	42277
1	4	6-1/2	3	SE/CC	HSS	160	586	39749
1	4	6-1/2	4	SE/CC	HSS	165	588	33380
1	4	6-1/2	6	SE/NCC	HSS	162	688	42352
1-1/4	1-5/8	4	2	SE/CC	Cobalt	168	555	42639
1-1/4	1-5/8	4-1/2	2	SE/CC	HSS	156	686	41709
1-1/4	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41660
1-1/4	2	4-1/2	2	SE/CC	HSS	157	665	41877
1-1/4	2	4-1/2	2	SE/CC	PM/Cobalt	145	510	40807
1-1/4	2	4-1/2	3	CR/SE/CC	Cobalt	173	506	32384
1-1/4	2	4-1/2	3	SE/CC	HSS	160	585	39666
1-1/4	2	4-1/2	3	SE/CC	PM/Cobalt	145	533	49292
1-1/4	2	4-1/2	4	SE/CC	Cobalt	170	556	42727
1-1/4	2	4-1/2	4	SE/Ball	HSS	166	584	41318
1-1/4	2	4-1/2	4	SE/CC	HSS	164	583	41283
1-1/4	2	4-1/2	6	SE/Ball	Cobalt	171	560	32762
1-1/4	2	4-1/2	6	SE/CC	Cobalt	170	556	42726
1-1/4	2	4-1/2	6	SE/CC	PM/Cobalt	146	553	43225
1-1/4	2	4-1/2	6	CR/SE/NCC	HSS	173	576	43393
1-1/4	2	4-1/2	6	CR/SE/NCC	Cobalt	174	577	43452
1-1/4	2	4-1/2	6	FR/SE/NCC	PM/Cobalt	175	578	43240
1-1/4	2	4-1/2	6	FR/SE/NCC	Cobalt	174	501	32287
1-1/4	2	4-1/2	6	CR/SE/Ball	PM/Cobalt	175	503	32339
1-1/4	2	4-1/2	6	FR/SE/Ball	PM/Cobalt	175	505	32357
1-1/4	2	4-1/2	6	SE/NCC	HSS	161	683	42278
1-1/4	2-1/2	4-1/2	2	SE/Ball	Cobalt	169	559	42680
1-1/4	2-1/2	4-1/2	2	SE/Ball	HSS	159	690	42152
1-1/4	3	6-1/2	2	SE/CC	HSS	156	696	41745
1-1/4	3	5-1/2	3	CR/SE/CC	Cobalt	173	506	32385
1-1/4	3	5-1/2	6	CR/SE/NCC	HSS	173	576	43400
1-1/4	3	5-1/2	6	CR/SE/NCC	Cobalt	174	577	43469
1-1/4	3	5-1/2	6	FR/SE/NCC	Cobalt	174	501	32288
1-1/4	3	5-1/2	6	SE/CC	PM/Cobalt	146	579	43288
1-1/4	4	6-1/2	2	SE/CC	HSS	157	666	41921
1-1/4	4	6-1/2	3	SE/CC	HSS	160	586	39750
1-1/4	4	6-1/2	3	CR/SE/CC	Cobalt	173	506	32386
1-1/4	4	6-1/2	3	SE/CC	PM/Cobalt	145	571	49294
1-1/4	4	6-1/2	4	SE/CC	HSS	165	588	33381
1-1/4	4	6-1/2	4	SE/Ball	HSS	166	589	41377
1-1/4	4	6-1/2	6	CR/SE/NCC	HSS	173	576	43394
1-1/4	4	6-1/2	6	CR/SE/NCC	Cobalt	174	577	43453
1-1/4	4	6-1/2	6	FR/SE/NCC	PM/Cobalt	175	578	43309
1-1/4	4	6-1/2	6	SE/NCC	HSS	162	688	42353
1-1/4	4	6-1/2	6	SE/CC	PM/Cobalt	146	579	43298
1-1/4	4	8-1/2	6	CR/SE/NCC	Cobalt	174	577	32135
1-1/4	8	10-1/2	2	SE/CC	HSS	157	667	41962
1-1/4	8	10-1/2	4	SE/CC	Cobalt	170	558	32698
1-1/4	8	10-1/2	4	SE/CC	HSS	165	591	33436
1-1/4	8	10-1/2	4	SE/Ball	HSS	160	581	33352
1-1/4	8	10-1/2	4	SE/NCC	HSS	162	691	39208
1-1/4	8	10-1/2	6	SE/CC	Cobalt	170	558	32699
1-1/4	8	10-1/2	6	SE/CC	HSS	165	591	33437
1-1/4	8	10-1/2	6	SE/NCC	HSS	162	691	42397

1-5/8" Diameter (1.6250")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1-1/4	3	6-1/2	2	SE/CC	HSS	156	696	41747

1-3/4" Diameter (1.7500")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-3/8	3-5/8	6	SE/CC	HSS	164	570	39808
1-1/4	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41662
1-1/4	2	4-1/2	3	SE/CC	HSS	160	585	39667
1-1/4	2	4-1/2	6	SE/CC	HSS	164	583	33186
1-1/4	2	4-1/2	6	SE/NCC	HSS	161	683	42280
1-1/4	3	6-1/2	2	SE/CC	HSS	156	696	41748
1-1/4	4	6-1/2	3	SE/CC	HSS	160	586	39751
1-1/4	4	6-1/2	4	SE/CC	HSS	165	588	33382
1-1/4	4	6-1/2	6	SE/NCC	HSS	162	688	42355

1-7/8" Diameter (1.8750")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
1-1/4	3	6-1/2	2	SE/CC	HSS	156	696	41750

2" Diameter (2.0000")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
3/4	1-3/8	3-5/8	8	SE/CC	HSS	164	570	39807
1-1/4	1-5/8	4-1/2	2	SE/CC	HSS	155	685	41665
1-1/4	2	4-1/2	2	SE/CC	HSS	157	665	41882
1-1/4	2	4-1/2	2	SE/CC	PM/Cobalt	145	510	40808
1-1/4	2	4-1/2	3	SE/CC	HSS	160	585	39668
1-1/4	2	4-1/2	6	SE/CC	PM/Cobalt	146	553	43226
1-1/4	2	4-1/2	8	SE/CC	HSS	164	583	33187
1-1/4	2	4-1/2	8	SE/NCC	HSS	161	683	42283
1-1/4	2	4-1/2	8	CR/SE/NCC	HSS	173	576	44091
1-1/4	2	4-1/2	8	CR/SE/NCC	Cobalt	174	577	32136
1-1/4	2	4-1/2	8	FR/SE/NCC	PM/Cobalt	175	578	43241
1-1/4	3	6-1/2	2	SE/CC	HSS	156	696	41752
1-1/4	4	6-1/2	2	SE/CC	HSS	157	666	41925
1-1/4	4	6-1/2	3	SE/CC	HSS	160	586	39752
1-1/4	4	7-3/4	3	SE/CC	PM/Cobalt	145	571	49298
1-1/4	4	6-1/2	4	SE/CC	HSS	165	588	33383
1-1/4	4	6-1/2	8	SE/NCC	HSS	162	688	42358
1-1/4	4	6-1/2	8	CR/SE/NCC	Cobalt	174	577	32137
2	2	5-3/4	2	SE/CC	HSS	155	685	43478
2	2	5-3/4	3	CR/SE/CC	Cobalt	173	506	32387
2	2	5-3/4	4	SE/NCC	HSS	161	683	43534
2	2	5-3/4	6	SE/NCC	HSS	161	683	43548
2	2	5-3/4	6	SE/CC	PM/Cobalt	146	579	43227
2	2	5-3/4	8	CR/SE/NCC	HSS	173	576	32069
2	2	5-3/4	8	CR/SE/NCC	Cobalt	174	577	32138
2	2	5-3/4	8	FR/SE/NCC	PM/Cobalt	175	578	43242
2	2	5-3/4	8	FR/SE/NCC	Cobalt	174	501	32289
2	3	6-3/4	2	SE/CC	HSS	155	685	32789
2	3	6-3/4	3	SE/CC	HSS	160	585	32802
2	3	6-3/4	3	CR/SE/CC	Cobalt	173	506	32388
2	3	6-3/4	4	SE/Ball	HSS	166	584	33007
2	3	6-3/4	8	CR/SE/NCC	HSS	176	576	43401
2	3	6-3/4	8	CR/SE/NCC	Cobalt	174	577	43470
2	3	6-3/4	8	FR/SE/NCC	Cobalt	174	501	32290
2	4	7-3/4	2	SE/CC	HSS	155	685	43479
2	4	7-3/4	3	SE/CC	HSS	160	585	43501
2	4	7-3/4	3	CR/SE/CC	Cobalt	173	506	32389
2	4	7-3/4	4	SE/Ball	HSS	166	584	33008
2	4	7-3/4	4	SE/NCC	HSS	161	683	43535
2	4	7-3/4	6	SE/CC	Cobalt	170	556	42731
2	4	7-3/4	6	SE/NCC	HSS	161	683	43549
2	4	7-3/4	6	SE/CC	PM/Cobalt	146	579	43289
2	4	7-3/4	8	CR/SE/NCC	HSS	173	576	43395
2	4	7-3/4	8	CR/SE/NCC	Cobalt	174	577	43463
2	4	7-3/4	8	FR/SE/NCC	PM/Cobalt	175	578	43243
2	4	7-3/4	8	FR/SE/NCC	Cobalt	174	501	32291
2	5	8-3/4	4	SE/Ball	HSS	166	584	43564
2	6	9-3/4	2	SE/CC	HSS	155	685	43480
2	6	9-3/4	3	SE/CC	HSS	160	585	43502

End Mills

Diameter Cross Reference Index (Continued)

2" Diameter (2.0000") Continued...

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
2	6	9-3/4	4	SE/Ball	HSS	166	584	33009
2	6	9-3/4	4	SE/NCC	HSS	161	683	43536
2	6	9-3/4	6	SE/NCC	HSS	161	683	43550
2	6	9-3/4	8	CR/SE/NCC	HSS	173	576	43396
2	6	9-3/4	8	CR/SE/NCC	Cobalt	174	577	43465
2	6	9-3/4	8	FR/SE/NCC	PM/Cobalt	175	578	43311
2	8	11-3/4	3	SE/CC	HSS	160	585	32803
2	8	11-3/4	4	SE/NCC	HSS	161	683	32817
2	8	11-3/4	6	SE/NCC	HSS	161	683	43551
2	8	11-3/4	8	CR/SE/NCC	HSS	173	576	43397
2	8	11-3/4	8	CR/SE/NCC	Cobalt	174	577	43466
2	10	13-3/4	8	CR/SE/NCC	Cobalt	174	577	32139

2-1/2" Diameter (2.5000")

Shank Dia.	L.O.C.	O.A.L.	Flutes	# of Style	End Material	Page	List #	Bright EDP #
2	4	7-3/4	2	SE/CC	HSS	155	685	43487
2	4	7-3/4	3	SE/CC	HSS	160	585	43510
2	4	7-3/4	4	SE/NCC	HSS	161	683	43541
2	4	7-3/4	6	SE/NCC	HSS	161	683	43558
2	5	8-3/4	4	SE/Ball	HSS	166	584	43567
2	6	9-3/4	2	SE/CC	HSS	155	685	43488
2	6	9-3/4	3	SE/CC	HSS	160	585	32804
2	6	9-3/4	4	SE/NCC	HSS	161	683	43542
2	6	9-3/4	6	SE/NCC	HSS	161	683	43559
2	8	11-3/4	4	SE/NCC	HSS	161	683	32818
2	8	11-3/4	6	SE/NCC	HSS	161	683	43560
2-1/2	4	8	6	SE/NCC	HSS	161	683	43583
2-1/2	6	10	6	SE/NCC	HSS	161	683	43584
2-1/2	8	12	6	SE/NCC	HSS	161	683	43585
2-1/2	10	14	6	SE/NCC	HSS	161	683	43586

Style & Material Key

Abbreviations and Descriptions:

SE.....Single End	HSS.....High Speed Steel
DE.....Double End	CTCarbide Tipped
BallBall End, Center Cutting	Cobalt.....Cobalt High Speed Steel
CC.....Center Cutting	P/M CobaltPM/Plus Cobalt Material
NCCNon Center Cutting	CRCourse Pitch Rougher
CarbideMicroPlus, Sub Micron	FRFine Pitch Rougher
Grain Carbide	

Note: Most tools in this Cross Reference Index have a corresponding EDP number for either TiN or TiCN coating. Locate the specific End Mill and it's Bright EDP number, then turn to the appropriate page to find the coated EDP number.

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List # **305** Side Milling Cutters, HSS



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List # **307** Staggered Tooth Side Milling Cutters, High Speed Steel



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List # **312** Double Angle Milling Cutters, High Speed Steel

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List # **320** (Arbor Type) Woodruff Key Seat Cutters, High Speed Steel



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Saws:

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List # **I360** (Carbide Tipped for Steel) Slitting Saws



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List # **I361** (Carbide Tipped for Cast Iron and Non-Ferrous) Slitting Saws



page # **300**

Milling Cutters

List #301 Plain Milling Cutter, HSS



Features:

- Medium cuts on plain surfaces on horizontal machines
- Straight tooth can be used for shallow slotting cuts

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
301-3	2-1/2	3/16	1	18	C45001
301-4	2-1/2	1/4	1	18	C45002
301-5	2-1/2	5/16	1	18	C45003
301-6	2-1/2	3/8	1	18	C45004
301-8	2-1/2	1/2	1	16	C45006
301-9	2-1/2	5/8	1	14	C45007
301-10	2-1/2	3/4	1	14	C45008
301-11	2-1/2	1	1	14	C45009
301-12	2-1/2	1-1/2	1	14	C45010
301-13	2-1/2	2	1	14	C45011
301-15	2-1/2	3	1	14	C45013
301-16	3	3/16	1	20	C45014
301-17	3	1/4	1	20	C45015
301-18	3	5/16	1	20	C45016
301-19	3	3/8	1	20	C45017
301-22	3	1/2	1-1/4	18	C45018
301-23	3	5/8	1-1/4	16	C45019
301-24	3	3/4	1-1/4	16	C45020

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
301-26	3	1	1-1/4	16	C45021
301-27	3	1-1/4	1-1/4	16	C45022
301-28	3	1-1/2	1-1/4	16	C45023
301-29	3	2	1-1/4	16	C45024
301-30	3	3	1-1/4	16	C45025
301-31	4	1/4	1	24	C45026
301-33	4	5/16	1	24	C45027
301-35	4	3/8	1	24	C45028
301-36	4	3/8	1-1/4	24	C45029
301-37	4	1/2	1-1/4	22	C45030
301-38	4	5/8	1-1/4	20	C45031
301-39	4	3/4	1-1/4	20	C45032
301-40	4	1	1-1/4	20	C45033
301-41	4	1-1/2	1-1/4	20	C45034
301-42	4	2	1-1/4	20	C45035
301-43	4	3	1-1/4	20	C45036
301-44	4	4	1-1/4	20	C45037

List #305 Side Milling Cutters, HSS



Features:

- Side milling, straddle milling and slotting
- Cutters have ample chip room and well supported cutting edges
- Alternated right and left hand helical teeth provides smooth cutting action and minimizes chip removal problems in Deep Slotting applications

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
305-1	2	3/16	5/8	14	C45740
305-3	2	1/4	5/8	14	C45741
305-5	2	3/8	5/8	16	C45742
305-7	2-1/2	1/4	7/8	14	C45055
305-9	2-1/2	3/8	7/8	14	C45057
305-10	2-1/2	1/2	7/8	12	C45058
305-11	3	1/4	1	20	C45059
305-12	3	5/16	1	20	C45060
305-13	3	3/8	1	20	C45061
305-14	3	7/16	1	18	C45062
305-15	3	1/2	1	18	C45063
305-16	4	1/4	1	24	C45064
305-17	4	3/8	1	24	C45065
305-18	4	1/2	1	22	C45066
305-19	4	1/2	1-1/4	22	C45067
305-20	4	5/8	1	20	C45068
305-21	4	5/8	1-1/4	22	C45069

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
305-22	4	3/4	1	22	C45070
305-23	4	3/4	1-1/4	20	C45071
305-24	4	7/8	1	20	C45072
305-26	5	1/2	1	26	C45073
305-28	5	5/8	1	24	C45075
305-29	5	5/8	1-1/4	24	C45076
305-30	5	3/4	1	24	C45077
305-31	5	3/4	1-1/4	24	C45078
305-32	5	1	1-1/4	24	C45079
305-33	6	1/2	1	30	C45080
305-34	6	1/2	1-1/4	28	C45081
305-35	6	5/8	1-1/4	26	C45082
305-37	6	3/4	1-1/4	26	C45084
305-38	6	1	1-1/4	26	C45085
305-39	7	3/4	1-1/4	28	C45086
305-41	8	3/4	1-1/4	32	C45087
305-42	8	1	1-1/4	32	C45088

Milling Cutters

List #307 Staggered Tooth Side Milling Cutters, High Speed Steel



Features:

- Alternated right and left hand helical teeth provide smooth cutting action and minimizes chip removal problems in Deep Slotting applications

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
307-1	2-1/2	1/4	7/8	16	45109
307-2	2-1/2	5/16	7/8	16	45110
307-3	2-1/2	3/8	7/8	16	45111
307-4	2-1/2	1/2	7/8	16	45112
307-5	3	3/16	1	16	45113
307-6	3	1/4	1	16	45114
307-7	3	5/16	1	16	45115
307-8	3	3/8	1	16	45116
307-9	3	1/2	1-1/4	16	45117
307-10	3	5/8	1-1/4	16	45118
307-11	3	3/4	1-1/4	16	45119
307-12	4	1/4	1-1/4	18	45120
307-13	4	5/16	1-1/4	18	45121
307-14	4	3/8	1-1/4	18	45122
307-15	4	7/16	1-1/4	18	45123
307-16	4	1/2	1-1/4	18	45124
307-17	4	5/8	1-1/4	18	45125
307-18	4	3/4	1-1/4	18	45126

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
307-19	4	7/8	1-1/4	18	45127
307-20	5	1/2	1-1/4	22	45128
307-21	5	5/8	1-1/4	22	45129
307-22	5	3/4	1-1/4	22	45130
307-23	6	3/8	1-1/4	24	45131
307-24	6	1/2	1-1/4	24	45132
307-25	6	5/8	1-1/4	24	45133
307-26	6	3/4	1-1/4	24	45134
307-27	6	7/8	1-1/4	24	45135
307-28	6	1	1-1/4	24	45136
307-29	8	3/8	1-1/2	28	45137
307-30	8	1/2	1-1/2	28	45138
307-31	8	5/8	1-1/2	28	45139
307-32	8	3/4	1-1/2	28	45140
307-34	8	1	1-1/2	28	45142

List #312 Double Angle Milling Cutters, High Speed Steel

Features:

- Milling angular grooves such as notches, serrations and bevels

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
312-45	2-3/4	1/2	1	18	45151
312-60	2-3/4	1/2	1	18	45152

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
312-90	2-3/4	1/2	1	18	45153

Milling Cutters

List #320 (Arbor Type) Woodruff Key Seat Cutters, High Speed Steel

Features:

- Milling Woodruff keys: Furnished 1/32" larger than listed to allow for resharping



Number of Cutter	Nominal Diameter	Width of Face	Size of Hole	# Of Teeth	Key Number	EDP Number
617	2-1/8	3/16	3/4	14	126,617	C45466
817	2-1/8	1/4	3/4	14	127,817	C45467
1017	2-1/8	5/16	3/4	14	128,1017	C45469
1217	2-1/8	3/8	3/4	14	129,1217	C45471
822	2-3/4	1/4	1	16	RX,822	C45468
1022	2-3/4	5/16	1	16	SX,1022	C45470
1222	2-3/4	3/8	1	16	TX,1222	C45472

Number of Cutter	Nominal Diameter	Width of Face	Size of Hole	# Of Teeth	Key Number	EDP Number
1422	2-3/4	7/16	1	16	UX,1422	C45474
1622	2-3/4	1/2	1	16	VX,1622	C45475
1228	3-1/2	3/8	1	20	1228	C45473
1628	3-1/2	1/2	1	20	1628	C45476
1828	3-1/2	9/16	1	20	1828	C45477
2028	3-1/2	5/8	1	20	2028	C45478
2428	3-1/2	3/4	1	20	2428	C45480

List #321 (1/2" Shank Type) Woodruff Key Seat Cutters, High Speed

Features:

- Milling Woodruff keys: Furnished 1/32" larger than listed to allow for resharping



Number of Cutter	Nominal Diameter	Width of Face	Overall Length	# Of Teeth	Key Number	EDP Number
202	1/4	1/16	2-1/16	6	202	C45481
202-1/2	5/16	1/16	2-1/16	8	202-1/2	C45520
302-1/2	5/16	3/32	2-3/32	8	302-1/2	C45521
203	3/8	1/16	2-1/16	8	203	C45482
303	3/8	3/32	2-3/32	8	303	C45484
403	3/8	1/8	2-1/8	8	403	C45487
204	1/2	1/16	2-1/16	10	204	C45483
304	1/2	3/32	2-3/32	10	304	C45485
305	5/8	3/32	2-3/32	10	305	C45486
404	1/2	1/8	2-1/8	10	404	C45488
405	5/8	1/8	2-1/8	10	405	C45489
406	3/4	1/8	2-1/8	10	406	C45490
505	5/8	5/32	2-5/32	10	505	C45491
605	5/8	3/16	2-3/16	10	605	C45494
506	3/4	5/32	2-5/32	10	506	C45492
806	3/4	1/4	2-1/4	10	806	C45504
507	7/8	5/32	2-5/32	12	507	C45493
606	3/4	3/16	2-3/16	10	606	C45495
607	7/8	3/16	2-3/16	12	607	C45496
707	7/8	7/32	2-7/32	12	707	C45500
608	1	3/16	2-3/16	12	608	C45497

Number of Cutter	Nominal Diameter	Width of Face	Overall Length	# Of Teeth	Key Number	EDP Number
708	1	7/32	2-7/32	12	708	C45501
1208	1	3/8	2-3/8	12	1208	C45516
609	1-1/8	3/16	2-3/16	12	609	C45498
807	7/8	1/4	2-1/4	12	121,807	C45505
808	1	1/4	2-1/4	12	141,808	C45506
709	1-1/8	7/32	2-7/32	12	709	C45502
809	1-1/8	1/4	2-1/4	12	809	C45507
610	1-1/4	3/16	2-3/16	14	610	C45499
710	1-1/4	7/32	2-7/32	14	710	C45503
810	1-1/4	1/4	2-1/4	14	810	C45508
811	1-3/8	1/4	2-1/4	14	811	C45509
812	1-1/2	1/4	2-1/4	16	812	C45510
1008	1	5/16	2-5/16	12	131,1008	C45511
1009	1-1/8	5/16	2-5/16	12	161,1009	C45512
1010	1-1/4	5/16	2-5/16	14	1010	C45513
1011	1-3/8	5/16	2-5/16	14	1011	C45514
1012	1-1/2	5/16	2-5/16	16	1012	C45515
1210	1-1/4	3/8	2-3/8	14	1210	C45517
1211	1-3/8	3/8	2-3/8	14	1211	C45518
1212	1-1/2	3/8	2-3/8	16	1212	C45519

Saws

List #318 Screw Slotting Saws High Speed Steel

Features:

- Slotting screw and bolt heads



Size Number	Number of Teeth	Diameter	Width of Face	Size of Hole	Wire Gauge	EDP Number
318-9901	56	2-3/4	.182	I	5	C45300
318-9801	44	2-3/4	.182	I	5	C45281
318-1	72	2-3/4	.182	I	5	C45191
318-2	72	2-3/4	.162	I	6	C45192
318-9803	44	2-3/4	.144	I	7	C45283
318-9903	56	2-3/4	.144	I	7	C45302
318-3	72	2-3/4	.144	I	7	C45193
318-9704	72	2-3/4	.128	3/4	8	C45256
318-9804	44	2-3/4	.128	I	8	C45284
318-9904	56	2-3/4	.128	I	8	C45303
318-4	72	2-3/4	.128	I	8	C45194
318-9705	72	2-3/4	.114	3/4	9	C45257
318-9905	56	2-3/4	.114	I	9	C45304
318-5	72	2-3/4	.114	I	9	C45195
318-9806	44	2-3/4	.102	I	10	C45286
318-9906	56	2-3/4	.102	I	10	C45305
318-6	72	2-3/4	.102	I	10	C45196
318-9707	72	2-3/4	.091	3/4	11	C45259
318-9807	44	2-3/4	.091	I	11	C45287
318-9907	56	2-3/4	.091	I	11	C45306
318-7	72	2-3/4	.091	I	11	C45197
318-9708	72	2-3/4	.081	3/4	12	C45260
318-9808	44	2-3/4	.081	I	12	C45288
318-9908	56	2-3/4	.081	I	12	C45307
318-8	72	2-3/4	.081	I	12	C45198
318-9709	72	2-3/4	.072	3/4	13	C45261
318-9809	44	2-3/4	.072	I	13	C45289
318-9909	56	2-3/4	.072	I	13	C45308
318-9	72	2-3/4	.072	I	13	C45199
318-9710	72	2-3/4	.064	3/4	14	C45262
318-9810	44	2-3/4	.064	I	14	C45290
318-9910	56	2-3/4	.064	I	14	C45309
318-10	72	2-3/4	.064	I	14	C45200
318-9711	72	2-3/4	.057	3/4	15	C45263
318-9811	44	2-3/4	.057	I	15	C45291
318-9911	56	2-3/4	.057	I	15	C45310
318-11	72	2-3/4	.057	I	15	C45201
318-9712	72	2-3/4	.051	3/4	16	C45264
318-9812	44	2-3/4	.051	I	16	C45292
318-9912	56	2-3/4	.051	I	16	C45311
318-12	72	2-3/4	.051	I	16	C45202
318-9713	72	2-3/4	.045	3/4	17	C45265
318-9813	44	2-3/4	.045	I	17	CC45293
318-9913	56	2-3/4	.045	I	17	C45312
318-13	72	2-3/4	.045	I	17	C45203
318-9714	72	2-3/4	.040	3/4	18	C45266
318-9814	44	2-3/4	.040	I	18	C45294
318-9914	56	2-3/4	.040	I	18	C45313
318-14	72	2-3/4	.040	I	18	C45204
318-9715	72	2-3/4	.036	3/4	19	C45267
318-9815	44	2-3/4	.036	I	19	C45295
318-9915	56	2-3/4	.036	I	19	C45314
318-15	72	2-3/4	.036	I	19	C45205
318-9716	72	2-3/4	.032	3/4	20	C45268
318-9816	44	2-3/4	.032	I	20	C45296
318-9916	56	2-3/4	.032	I	20	C45315
318-16	72	2-3/4	.032	I	20	C45206
318-9717	72	2-3/4	.028	3/4	21	C45269

Size Number	Number of Teeth	Diameter	Width of Face	Size of Hole	Wire Gauge	EDP Number
318-9817	44	2-3/4	.028	I	21	C45297
318-9917	56	2-3/4	.028	I	21	C45316
318-17	72	2-3/4	.028	I	21	C45207
318-9718	72	2-3/4	.025	3/4	22	C45270
318-9818	44	2-3/4	.025	I	22	C45298
318-9918	56	2-3/4	.025	I	22	C45317
318-18	72	2-3/4	.025	I	22	C45208
318-9719	72	2-3/4	.023	3/4	23	C45271
318-19	72	2-3/4	.023	I	23	C45209
318-9720	72	2-3/4	.020	3/4	24	C45272
318-20	72	2-3/4	.020	I	24	C45210
318-9721	72	2-3/4	.018	3/4	25	C45273
318-21	72	2-3/4	.018	I	25	C45211
318-9722	72	2-3/4	.016	3/4	26	C45274
318-22	72	2-3/4	.016	3/4	26	C45212
318-9723	72	2-3/4	.014	3/4	27	C45275
318-23	72	2-3/4	.014	I	27	C45213
318-9724	72	2-3/4	.013	3/4	28	C45276
318-24	72	2-3/4	.013	I	28	C45214
318-9725	72	2-3/4	.010	3/4	30	C45277
318-25	72	2-3/4	.010	I	30	C45215
318-9726	72	2-3/4	.008	3/4	32	C45278
318-26	72	2-3/4	.008	I	32	C45216
318-9727	72	2-3/4	.006	3/4	34	C45279
318-27	72	2-3/4	.006	I	34	C45217
318-52	60	2-1/4	.102	5/8	10	C45218
318-53	60	2-1/4	.091	5/8	11	C45219
318-54	60	2-1/4	.081	5/8	12	C45220
318-55	60	2-1/4	.072	5/8	13	C45221
318-56	60	2-1/4	.064	5/8	14	C45222
318-57	60	2-1/4	.057	5/8	15	C45223
318-58	60	2-1/4	.051	5/8	16	C45224
318-59	60	2-1/4	.045	5/8	17	C45225
318-60	60	2-1/4	.040	5/8	18	C45226
318-61	60	2-1/4	.036	5/8	19	C45227
318-62	60	2-1/4	.032	5/8	20	C45228
318-63	60	2-1/4	.028	5/8	21	C45229
318-64	60	2-1/4	.025	5/8	22	C45230
318-65	60	2-1/4	.023	5/8	23	C45231
318-66	60	2-1/4	.020	5/8	24	C45232
318-9266	60	2-1/4	.018	5/8	25	C45251
318-9366	60	2-1/4	.016	5/8	26	C45252
318-9466	60	2-1/4	.014	5/8	27	C45253
318-9566	60	2-1/4	.013	5/8	28	C45254
318-9666	60	2-1/4	.010	5/8	30	C45255
318-9766	60	2-1/4	.008	5/8	32	C45280
318-9866	60	2-1/4	.006	5/8	34	C45299
318-67	90	1-3/4	.064	5/8	14	C45233
318-68	90	1-3/4	.057	5/8	15	C45234
318-69	90	1-3/4	.051	5/8	16	C45235
318-70	90	1-3/4	.045	5/8	17	C45236
318-71	90	1-3/4	.040	5/8	18	C45237
318-72	90	1-3/4	.036	5/8	19	C45238
318-73	90	1-3/4	.032	5/8	20	C45239
318-74	90	1-3/4	.028	5/8	21	C45240
318-75	90	1-3/4	.025	5/8	22	C45241
318-76	90	1-3/4	.023	5/8	23	C45242
318-77	90	1-3/4	.020	5/8	24	C45243

Saws

List #318 continued

Size Number	Number of Teeth	Diameter	Width of Face	Size of Hole	Wire Gauge	EDP Number
318-78	90	1-3/4	.018	5/8	25	C45244
318-79	90	1-3/4	.016	5/8	26	C45245
318-80	90	1-3/4	.014	5/8	27	C45246
318-81	90	1-3/4	.013	5/8	28	C45247

Size Number	Number of Teeth	Diameter	Width of Face	Size of Hole	Wire Gauge	EDP Number
318-82	90	1-3/4	.010	5/8	30	C45248
318-83	90	1-3/4	.008	5/8	32	C45249
318-84	90	1-3/4	.006	5/8	34	C45250

List #326 Plain Metal Slitting Saws High Speed Steel

Features:

- Slotting and cut-off operations



Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
326-9001	1-1/4	1/32	1/2	28	C45522
326-9002	1-1/4	1/16	1/2	28	C45523
326-9003	1-1/2	1/32	1/2	32	C45524
326-9004	1-1/2	1/16	1/2	26	C45525
326-9005	1-1/2	3/32	1/2	26	C45525
326-9006	1-1/2	1/8	1/2	26	C45527
326-9007	1-3/4	1/32	1/2	34	C45528
326-9008	1-3/4	1/16	1/2	30	C45529
326-9009	1-3/4	3/32	1/2	30	C45530
326-9010	1-3/4	1/8	1/2	30	C45531
326-9011	2	1/32	1/2	38	C45532
326-9012	2	1/16	1/2	34	C45533
326-9013	2	3/32	1/2	34	C45534
326-9014	2	1/8	1/2	34	C45535
326-9015	2	5/32	1/2	34	C45536
326-1	2-1/2	1/32	7/8	36	C45537
326-2	2-1/2	3/64	7/8	36	C45538
326-3	2-1/2	1/16	7/8	36	C45539
326-4	2-1/2	3/32	7/8	36	C45540
326-5	2-1/2	1/8	7/8	36	C45541
326-6	3	1/32	1	36	C45542

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
326-7	3	3/64	1	36	C45543
326-8	3	1/16	1	36	C45544
326-9	3	3/32	1	36	C45545
326-10	3	1/8	1	36	C45546
326-11	3	5/32	1	36	C45547
326-12	4	1/32	1	40	C45548
326-13	4	3/64	1	40	C45549
326-14	4	1/16	1	40	C45550
326-15	4	3/32	1	40	C45551
326-16	4	1/8	1	40	C45552
326-17	4	5/32	1	40	C45553
326-18	4	3/16	1	40	C45554
326-19	5	1/16	1	44	C45555
326-20	5	3/32	1	44	C45556
326-21	5	1/8	1	44	C45557
326-22	5	1/8	1-1/4	44	C45558
326-25	6	1/16	1	48	C45559
326-26	6	3/32	1	48	C45560
326-27	6	1/8	1	48	C45561
326-28	6	1/8	1-1/4	48	C45562
326-30	6	3/16	1-1/4	48	C45563

Saws

List #327 (Side Chip Clearance) Metal Slitting Saws High Speed Steel

Features:

- Slotting and cut-off operations
- Concave grinding and sharp back off on the side teeth keep rubbing and material build-up to a minimum, producing a good finish



Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
327-1	2-1/2	1/16	7/8	28	C45570
327-2	2-1/2	3/32	7/8	28	C45571
327-3	2-1/2	1/8	7/8	28	C45572
327-4	3	1/16	1	32	C45573
327-5	3	3/32	1	32	C45574
327-6	3	1/8	1	32	C45575
327-7	3	5/32	1	32	C45576
327-8	4	1/16	1	36	C45577
327-9	4	3/32	1	36	C45578
327-10	4	1/8	1	36	C45579

Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
327-11	4	5/32	1	36	C45580
327-12	4	3/16	1	36	C45581
327-13	5	1/16	1	40	C45582
327-14	5	3/32	1	40	C45583
327-15	5	1/8	1	40	C45584
327-16	5	1/8	1-1/4	40	C45585
327-17	5	5/32	1	40	C45586
327-18	5	3/16	1	40	C45587
327-20	6	3/32	1	42	C45589

List #328 (Staggered Teeth & Side Chip Clearance) Metal Slitting Saws, High Speed Steel

Features:

- Concave grinding and sharp back off on the side teeth keep rubbing and material build-up to a minimum, producing a good finish
- Deep sawing and slotting applications. Staggered teeth helps provide chatter-free cutting



Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
328-1	3	3/16	1	28	C45601
328-2	4	3/16	1	32	C45602
328-3	5	3/16	1	36	C45603
328-4	5	1/4	1	36	C45604

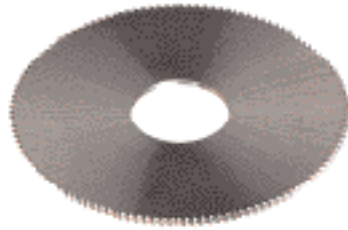
Size Number	Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
328-5	6	3/16	1	40	C45605
328-6	6	3/16	1-1/4	40	C45606
328-9	8	3/16	1-1/4	48	C45609
328-10	8	1/4	1-1/4	48	C45610

Saws

List #1319 Jeweler's Slotting Saws High Speed Steel

Features:

- Slotting very thin material, cutting off wire, thin tubing, extrusions, etc.



THICKNESS (Inches) Diameter	Decimal	Wire Gauge Number	Size of Hole	EDP Number
I	.032	20	3/8	C45320
I	.025	22	3/8	C45321
I	.020	24	3/8	C45322
I	.018	25	3/8	C45323
I	.014	27	3/8	C45324
30 Teeth Per Inch-98 Teeth Per Saw				
I	.012	28	3/8	C45325
I	.010	30	3/8	C45326
I	.008	32	3/8	C45327
I	.006	34	3/8	C45328
24 Teeth Per Inch-98 Teeth Per Saw				
I-1/4	.032	20	3/8	C45329
I-1/4	.025	22	3/8	C45330
I-1/4	.020	24	3/8	C45331
I-1/4	.016	26	3/8	C45332
I-1/4	.014	27	3/8	C45333
30 Teeth Per Inch-120 Teeth Per Saw				
I-1/4	.012	28	3/8	C45334
I-1/4	.010	30	3/8	C45335
I-1/4	.008	32	3/8	C45336
I-1/4	.006	34	3/8	C45337
24 Teeth Per Inch-110 Teeth Per Saw				
I-1/2	.032	20	1/2	C45338
I-1/2	.025	22	1/2	C45339
I-1/2	.023	23	1/2	C45340
I-1/2	.020	24	1/2	C45341
I-1/2	.016	26	1/2	C45342
30 Teeth Per Inch-140 Teeth Per Saw				
I-1/2	.012	28	1/2	C45343
I-1/2	.010	30	1/2	C45344
I-1/2	.008	32	1/2	C45345
I-1/2	.006	34	1/2	C45346
24 Teeth Per Inch-132 Teeth Per Saw				
I-3/4	.032	20	1/2	C45347
I-3/4	.025	22	1/2	C45348
I-3/4	.020	24	1/2	C45349
I-3/4	.016	26	1/2	C45350
I-3/4	.014	27	1/2	C45351
30 Teeth Per Inch-160 Teeth Per Saw				
I-3/4	.012	28	1/2	C45352
I-3/4	.010	30	1/2	C45353
I-3/4	.008	32	1/2	C45354
I-3/4	.006	34	1/2	C45355
18 Teeth Per Inch-110 Teeth Per Saw				
2	.057	15	1/2	C45356
2	.051	16	1/2	C45357
2	.045	17	1/2	C45358
2	.032	20	1/2	C45359
24 Teeth Per Inch-152 Teeth Per Saw				
2	.025	22	1/2	C45360
2	.020	24	1/2	C45361
2	.018	25	1/2	C45362
2	.014	27	1/2	C45363
2	.012	28	1/2	C45364

THICKNESS (Inches) Diameter	Decimal	Wire Gauge Number	Size of Hole	EDP Number
2	.010	30	1/2	C45365
2	.008	32	1/2	C45366
2	.006	34	1/2	C45367
18 Teeth Per Inch-140 Teeth Per Saw				
2-1/2	.051	16	1/2	C45368
2-1/2	.045	17	1/2	C45369
2-1/2	.040	18	1/2	C45370
2-1/2	.032	20	1/2	C45371
24 Teeth Per Inch-190 Teeth Per Saw				
2-1/2	.025	22	1/2	C45372
2-1/2	.020	24	1/2	C45373
2-1/2	.016	26	1/2	C45374
30 Teeth Per Inch-240 Teeth Per Saw				
2-1/2	.012	28	1/2	C45375
2-1/2	.010	30	1/2	C45376
2-1/2	.008	32	1/2	C45377
2-1/2	.006	34	1/2	C45378
18 Teeth Per Inch-168 Teeth Per Saw				
3	.057	15	1/2	C45379
3	.057	15	I	C45422
3	.045	17	1/2	C45380
3	.045	17	I	C45423
3	.040	18	1/2	C45381
3	.040	18	I	C45424
3	.032	20	1/2	C45382
3	.032	20	I	C45425
24 Teeth Per Inch-230 Teeth Per Saw				
3	.025	22	1/2	C45383
3	.025	22	I	C45426
3	.023	23	1/2	C45384
3	.023	23	I	C45427
3	.020	24	1/2	C45385
3	.020	24	I	C45428
3	.018	25	1/2	C45386
3	.018	25	I	C45429
3	.016	26	1/2	C45387
3	.016	26	I	C45430
3	.014	27	1/2	C45388
3	.014	27	I	C45431
30 Teeth Per Inch-280 Teeth Per Saw				
3	.012	28	1/2	C45389
3	.012	28	I	C45432
3	.010	30	1/2	C45390
3	.010	30	I	C45433
3	.008	32	1/2	C45391
3	.008	32	I	C45434
3	.006	34	1/2	C45392
3	.006	34	I	C45435
18 Teeth Per Inch-220 Teeth Per Saw				
4	.064	14	1/2	C45393
4	.064	14	I	C45436
4	.051	16	1/2	C45394
4	.051	16	I	C45437
4	.045	17	1/2	C45395

Saws

List #I319 continued

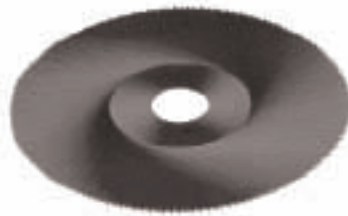
THICKNESS (Inches) Diameter	Decimal	Wire Gauge Number	Size of Hole	EDP Number
4	.045	17	I	C45438
4	.040	18	I/2	C45396
4	.040	18	I	C45439
18 Teeth Per Inch-220 Teeth Per Saw				
4	.032	20	I/2	C45397
4	.032	20	I	C45440
24 Teeth Per Inch-310 Teeth Per Saw				
4	.020	24	I/2	C45398
4	.020	24	I	C45441
4	.018	25	I/2	C45399
4	.018	25	I	C45442
4	.016	26	I/2	C45400
4	.016	26	I	C45443
18 Teeth Per Inch-280 Teeth Per Saw				
5	.064	14	I/2	C45401
5	.064	14	I	C45444
5	.057	15	I/2	C45402
5	.057	15	I	C45445
5	.051	16	I/2	C45403
5	.051	16	I	C45446
5	.045	17	I/2	C45404
5	.045	17	I	C45447
5	.040	18	I/2	C45405
5	.040	18	I	C45448
5	.032	20	I/2	C45406
5	.032	20	I	C45449
24 Teeth Per Inch-380 Teeth Per Saw				
5	.025	22	I/2	C45407
5	.025	22	I	C45450
5	.020	24	I/2	C45408
5	.02024	24	I	C45451

THICKNESS (Inches) Diameter	Decimal	Wire Gauge Number	Size of Hole	EDP Number
12 Teeth Per Inch-232 Teeth Per Saw				
6	.102	10	I/2	C45409
6	.102	10	I	C45452
6	.091	11	I/2	C45410
6	.091	11	I	C45453
6	.081	12	I/2	C45411
6	.081	12	I	C45454
6	.072	13	I/2	C45412
6	.072	13	I	C45455
6	.064	14	I/2	C45413
6	.064	14	I	C45456
6	.057	15	I/2	C45414
6	.057	15	I	C45457
6	.051	16	I/2	C45415
6	.051	16	I	C45458
18 Teeth Per Inch-340 Teeth Per Saw				
6	.045	17	I/2	C45416
6	.045	17	I	C45459
6	.040	18	I/2	C45417
6	.040	18	I	C45460
6	.035	19	I/2	C45418
6	.035	19	I	C45461
6	.032	20	I/2	C45419
6	.032	20	I	C45462
6	.028	21	I/2	C45420
6	.028	21	I	C45463
24 Teeth Per Inch-460 Teeth Per Saw				
6	.025	22	I/2	C45421
6	.025	22	I	C45464

List #I331 (Angular Tooth) Cut-Off Saws High Speed Steel

Features:

- For brass, copper and other soft materials in sheet and tubing form



Diameter	Width of Face	Size of Hole	Number of Teeth	Teeth Per Inch	EDP Number
6	.032	I/2	232	12	C45615
6	.032	5/8	232	12	C45616
6	.032	I	232	12	C45617
6	.032	5/8	152	8	C45619
6	.032	I	152	8	C45620

Diameter	Width of Face	Size of Hole	Number of Teeth	Teeth Per Inch	EDP Number
6	.045	5/8	232	12	C45622
6	.045	I	232	12	C45623
6	.045	5/8	152	8	C45625
6	.045	I	152	8	C45626

Saws

List # I332 (Regular Tooth) Cut-Off Saws High Speed Steel

Features:

- For brass tubing, bakelite, hard rubber; bone, ivory, pearl, plastics and plexiglas



Diameter	Width of Face	Size of Hole	Number of Teeth	Teeth Per Inch	EDP Number
6	.032	5/8	232	12	C45642
6	.032	1	232	12	C45643
6	.032	5/8	152	8	C45645
6	.032	1	152	8	C45646

Diameter	Width of Face	Size of Hole	Number of Teeth	Teeth Per Inch	EDP Number
6	.045	5/8	232	12	C45648
6	.045	1	232	12	C45649
6	.045	1	152	8	C45652

List # I360 (Carbide Tipped for Steel) Slitting Saws

Features:

- Deep slotting and cut-off operations



Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
3	1/16	1	12	C45691
3	3/32	1	12	C45692
3	1/8	1	12	C45693
3	3/16	1	12	C45694
4	1/16	1	14	C45695
4	3/32	1	14	C45696
4	1/8	1	14	C45697
4	3/16	1	14	C45698
5	1/16	1	16	C45699
5	3/32	1	16	C45700

Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
5	1/8	1	16	C45701
5	3/16	1	16	C45702
5	3/16	1-1/4	16	C45703
6	1/16	1	18	C45704
6	3/32	1	18	C45705
6	1/8	1	18	C45706
6	3/16	1	18	C45707
6	3/16	1-1/4	18	C45708
6	1/8	1-1/4	18	C45711

Saws

List #1361 (Carbide Tipped for Cast Iron and Non-Ferrous) Slitting Saws

Features:

- Deep slotting and cut-off operations



Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
3	1/16	1	12	C45715
3	3/32	1	12	C45716
3	1/8	1	12	C45717
3	3/16	1	12	C45718
4	1/16	1	14	C45719
4	3/32	1	14	C45720
4	1/8	1	14	C45721
4	3/16	1	14	C45722
5	1/16	1	16	C45723

Diameter	Width of Face	Size of Hole	Number of Teeth	EDP Number
5	3/32	1	16	C45724
5	1/8	1	16	C45725
5	3/16	1	16	C45726
5	3/16	1-1/4	16	C45727
6	1/16	1	18	C45728
6	1/8	1	18	C45730
6	3/16	1-1/4	18	C45732
6	1/8	1-1/4	18	C45735

Spec & Info

Miscellaneous



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List # 790 Lathe Center (Carbide Tipped)



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List # 890 Lathe Center (High Speed)



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Steel Insets & Ezy-Out®

List # 868 (Triangular) Hardened and Ground Super Cobalt High Speed Steel



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List # 192 Ezy-Out® Screw Extractors



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Mo-Max® Ground Tool Bits:

List # 850 Mo-Max High Speed Ground Tool Bits, Square



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List # 855 Mo-Max Cobalt High Speed Ground Tool Bits, Square



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List # 860 Super Mo-Max Cobalt High Speed Ground Tool Bits,



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List # 3507 Super Cle-Max Cobalt High Speed Ground Tool Bits,



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List # 851 Mo-Max High Speed Steel Ground Tool Bits,



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List # 856 Mo-Max Cobalt High Speed Ground Tool Bits,



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List # 861 Super Mo-Max Cobalt High Speed Ground Tool Bits, Rectangular



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Mo-Max® Ground Tool Bits:

List # 3517 Super Cle-Max Cobalt High Speed Ground Tool Bits, Rectangular



Substrate - Powder Metal
Length - Regular
Surface Treatment - TiN
Shank - Straight w/Flat
Point - 140°
Coolant - Coolant Feed



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Mo-Max® Cut-Off Blades:

List # 852 Mo-Max High Speed Steel Ground Cut-Off Blades



Substrate - Powder Metal
Length - Regular
Surface Treatment - TiN
Shank - Straight w/Flat
Point - 140°
Coolant - Coolant Feed



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List # 857 Mo-Max Cobalt High Speed Ground Cut-Off Blades



Substrate - Powder Metal
Length - Regular
Surface Treatment - TiN
Shank - Straight w/Flat
Point - 140°
Coolant - Coolant Feed



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List # 853 Mo-Max High Speed Steel Ground Cut-Off Blades



Substrate - Powder Metal
Length - Regular
Surface Treatment - TiN
Shank - Straight w/Flat
Point - 140°
Coolant - Coolant Feed



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List # 858 Mo-Max Cobalt High Speed Ground Cut-Off Blades



Substrate - Powder Metal
Length - Regular
Surface Treatment - TiN
Shank - Straight w/Flat
Point - 140°
Coolant - Coolant Feed



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List # 859 Mo-Max HSS Ground T-Shaped Cut-Off Blades



Substrate - Powder Metal
Length - Regular
Surface Treatment - TiN
Shank - Straight w/Flat
Point - 140°
Coolant - Coolant Feed



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Mo-Max® Cut-Off Blades:

List # 864 Mo-Max Cobalt HSS Ground T-Shaped Cut-Off Blades



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HSS Blanks:

List # 902 Blanks HSS



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List # 903 Blanks HSS



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Brazed Tool Bits:

List # BRZT-CT (Pictured) Brazed Tool Bits (Carbide Tipped)



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Lathe Centers

List #790 Lathe Center (Carbide Tipped)



Features:

- Provide a hard, true, conical point for high production work involving diametrical accuracy and concentricity.

Morse Taper Shank	Diameter at Gauge Line	Length to Gauge Line	Overall Length	Carbide Tip Length	Carbide Tip Diameter	EDP Number
1	.475	2-7/16	3-5/8	7/16	.250	C52781
2	.700	2-15/16	4-9/16	9/16	.312	C52782
3	.938	3-11/16	5-3/4	11/16	.375	C52783
4	1.231	4-5/8	7-5/16	7/8	.500	C52784
5	1.748	5-7/8	9-3/16	1-1/16	.625	C52785

List #890 Lathe Center (High Speed)



Features:

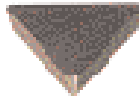
- Operated at high rates of speed without danger of scoring the center holes or burning the centers.
- Included angle of the point is 60°.

Morse Taper Shank	Overall Length	Body Length	Shank Depth	EDP Number
1	3-5/8	1	2-7/16	C53602
2	4-9/16	1-7/16	2-15/16	C53603
3	5-3/4	1-13/16	3-11/16	C53604

Morse Taper Shank	Overall Length	Body Length	Shank Depth	EDP Number
4	7-5/16	2-7/16	4-5/8	C53605
5	9-3/16	3	5-7/8	C53606

Steel Inserts & Ezy-Out®

List #868 (Triangular) Hardened and Ground Super



Features:

- Throw away inserts used in many single point turning applications.
- 11° side relief for positive rake holders
- Capable of taking high shock loads or interrupted cuts
- Works well where surface speed is too slow for carbide

Inscribed Size (Inches)	Thickness (Inches)	Nose Radii	Inserts Per Unit Package	EDP Number
3/8	1/8	P-2(1/32")	10	C44840
3/8	3/16	P-2(1/32")	10	C44841

Inscribed Size (Inches)	Thickness (Inches)	Nose Radii	Inserts Per Unit Package	EDP Number
1/2	3/16	P-2(1/32")	5	C44843

List #869 (Square) Hardened and Ground Super Cobalt High Speed Steel



Features:

- Throw away inserts used in many single point turning applications.
- Sized by Inscribed Circle and Thickness
- 11° side relief for positive rake holders
- Capable of taking high shock loads or interrupted cuts
- Works well where surface speed is too slow for carbide

Inscribed Size (Inches)	Thickness (Inches)	Nose Radii	Inserts Per Unit Package	EDP Number
3/8	1/8	P-2(1/32")	10	C44848
1/2	1/8	P-2(1/32")	10	C44849

Inscribed Size (Inches)	Thickness (Inches)	Nose Radii	Inserts Per Unit Package	EDP Number
5/8	3/16	P-2(1/32")	5	C44850
3/4	3/16	P-2(1/32")	5	C44852

List #192 Ezy-Out® Screw Extractors



Features:

- Used in removing broken screws. You drill a hole in the broken screw, insert the proper size screw extractor and start a left-hand twist.

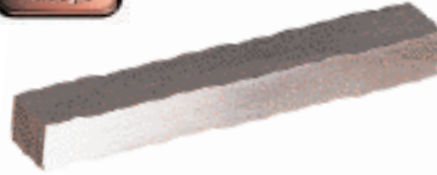
Extractor Number	Nominal Diam. Small End	Nominal Diam. Large End	Overall Length	Screw Size	Pipe Size	Drill Size To Use	EDP Number
1	.054	5/32	2	3/16to1/4	-	5/64	C53651
2	.080	3/16	2-3/8	1/4to5/16	-	7/64	C53652
3	1/8	1/4	2-11/16	5/16to7/16	-	5/32	C53653
4	3/16	21/64	2-7/8	7/16to9/16	-	1/4	C53654
5	1/4	7/16	3-3/8	9/16to3/4	1/8,1/4	9/32	C53655
6	3/8	19/32	3-3/4	3/4 to 1	3/8	13/32	C53656
7	1/2	3/4	4-1/8	1to1-3/8	1/2	17/32	C53657
8	3/4	1	4-3/8	1-3/8to1-3/4	3/4	13/16	C53658
9	1	1-9/32	4-5/8	1-3/4to2-1/8	1	1-1/16	C53659
10	1-1/4	1-9/16	5	2-1/8to2-1/2	1-1/4	1-5/16	C53660
11	1-1/2	1-7/8	5-5/8	2-1/2to3	1-1/2	1-9/16	C53661
12	1-7/8	2-5/16	6-1/4	3to3-1/2	2	1-15/16	C53662

Mo-Max® Ground Tool Bits

List #850 Mo-Max® High Speed Ground Tool Bits, Square

Features:

- General purpose work
- Both Ends Beveled 10°, MO-MAX® High Speed



Inches	Overall Length	EDP Number
1/8	2-1/2	C44505
3/16	2-1/2	C44509
1/4	2-1/2	C44513
5/16	2-1/2	C44514
3/8	3	C44516
7/16	3-1/2	C44518

Inches	Overall Length	EDP Number
1/2	4	C44520
5/8	4-1/2	C44522
3/4	5	C44525
7/8	6	C44527
1	7	C44528
1-1/4	9	C44530

List #855 Mo-Max® Cobalt High Speed Ground Tool Bits, Square

Features:

- Hard and tough materials
- Both Ends Beveled 10°, MO-MAX® Cobalt High Speed



Inches	Overall Length	EDP Number
1/8	2-1/2	C44536
3/16	2-1/2	C44540
1/4	2-1/2	C44544
5/16	2-1/2	C44545
3/8	3	C44547
7/16	3-1/2	C44549

Inches	Overall Length	EDP Number
1/2	4	C44551
5/8	4-1/2	C44553
3/4	5	C44556
7/8	6	C44558
1	7	C44559
1-1/4	9	C44561

Mo-Max® Ground Tool Bits

List #860 Super Mo-Max® Cobalt High Speed Ground Tool Bits, Square



Features:

- Machining of high tensile strength and high heat resistant space age materials
- Both Ends Beveled 10°, Super MO-MAX® Cobalt High Speed

Inches	Overall Length	EDP Number
1/8	2-1/2	C44567
3/16	2-1/2	C44571
1/4	2-1/2	C44575
5/16	2-1/2	C44576
3/8	3	C44578
7/16	3-1/2	C44580

Inches	Overall Length	EDP Number
1/2	4	C44582
5/8	4-1/2	C44584
3/4	5	C44587
7/8	6	C44589
1	7	C44590
1-1/4	9	C44592

List #3507 Super Cle-Max® Cobalt High Speed Ground Tool Bits,



Features:

- Grinding complex forms or more extreme angles, as well as minimizing the danger of general grinding damage
- Both Ends Beveled 10°, Super Cle-Max® Cobalt High Speed

Inches	Overall Length	EDP Number
3/16	2-1/2	C44671
1/4	2-1/2	C44672
5/16	2-1/2	C44673
3/8	3	C44674
7/16	3-1/2	C44675

Inches	Overall Length	EDP Number
1/2	4	C44676
5/8	4-1/2	C44677
3/4	5	C44678
1	7	C44679

Mo-Max® Ground Tool Bits

List #851 Mo-Max® High Speed Steel Ground Tool Bits, Rectangular

Features:

- General purpose work
- Square Ends, MO-MAX® High Speed Steel



Inches	Overall Length	EDP Number
1/4 x 3/8	2-1/2	C44600
1/4 x 1/2	4	C44606
1/4 x 1/2	6	C44609
5/16 x 1/2	3	C44616
3/8 x 1/2	3	C44619
3/8 x 1/2	4	C44622
3/8 x 1/2	6	C44625
3/8 x 5/8	4	C44628
3/8 x 5/8	5	C44631

Inches	Overall Length	EDP Number
3/8 x 5/8	6	C44634
3/8 x 3/4	4	C44637
3/8 x 3/4	6	C44640
1/2 x 3/4	4	C44644
1/2 x 3/4	6	C44647
1/2 x 1	8	C44650
5/8 x 3/4	5	C44653
5/8 x 7/8	6	C44656
3/4 x 1	6	C44659

List #856 Mo-Max® Cobalt High Speed Ground Tool Bits,

Features:

- Hard and tough materials
- Square Ends, MO-MAX® Cobalt High Speed



Inches	Overall Length	EDP Number
1/4 x 3/8	2-1/2	C44601
1/4 x 1/2	4	C44607
1/4 x 1/2	6	C44610
5/16 x 1/2	3	C44617
3/8 x 1/2	3	C44620
3/8 x 1/2	4	C44623
3/8 x 1/2	6	C44626
3/8 x 5/8	4	C44629
3/8 x 5/8	5	C44632

Inches	Overall Length	EDP Number
3/8 x 5/8	6	C44635
3/8 x 3/4	4	C44638
3/8 x 3/4	6	C44641
1/2 x 3/4	4	C44645
1/2 x 3/4	6	C44648
1/2 x 1	8	C44651
5/8 x 3/4	5	C44654
5/8 x 7/8	6	C44657
3/4 x 1	6	C44660

Mo-Max® Ground Tool Bits

List #861 Super Mo-Max® Cobalt High Speed Ground Tool Bits,

Features:

- Machining of high tensile strength and high heat resistant space age materials
- Square Ends, Super MO-MAX® Cobalt High Speed



Inches	Overall Length	EDP Number
1/4 x 3/8	2-1/2	C44602
1/4 x 1/2	4	C44608
1/4 x 1/2	6	C44611
5/16 x 1/2	3	C44618
3/8 x 1/2	3	C44621
3/8 x 1/2	4	C44624
3/8 x 1/2	6	C44627
3/8 x 5/8	4	C44630
3/8 x 5/8	5	C44633

Inches	Overall Length	EDP Number
3/8 x 5/8	6	C44636
3/8 x 3/4	6	C44642
1/2 x 3/4	4	C44646
1/2 x 3/4	6	C44649
1/2 x 1	8	C44652
5/8 x 3/4	5	C44655
5/8 x 7/8	6	C44658
3/4 x 1	6	C44661

List #3517 Super Cle-Max® Cobalt High Speed Ground Tool Bits,

Features:

- Grinding complex forms or more extreme angles, as well as minimizing the danger of general grinding damage
- Square Ends, Super Cle-Max® Cobalt High Speed



Inches	Overall Length	EDP Number
1/4 x 3/8	3	C44685
1/4 x 1/2	4	C44686
1/4 x 3/4	5	C44687
5/16 x 7/16	3-1/2	C44688
3/8 x 1/2	4	C44689
3/8 x 5/8	4-1/2	C44690
3/8 x 3/4	5	C44691

Inches	Overall Length	EDP Number
1/2 x 3/4	5	C44692
1/2 x 1	7	C44693
5/8 x 3/4	5	C44694
5/8 x 7/8	6	C44695
3/4 x 1	7	C44696
1 x 1-1/4	6	C44697

Mo-Max® Cut-Off Blades

List #852 Mo-Max® High Speed Ground Cut-Off Blades

Features:

- General purpose work



Nominal Thickness	Nominal Height	Overall Length	EDP Number
1/16	1/2	4-1/2	C44701
1/16	11/16	5	C44703
1/16	13/16	6	C44705
3/32	1/2	4-1/2	C44707
3/32	11/16	5	C44709
3/32	13/16	6	C44711
1/8	11/16	5	C44715
1/8	13/16	6	C44717

Nominal Thickness	Nominal Height	Overall Length	EDP Number
1/8	1	6-1/2	C44719
5/32	13/16	6	C44721
3/16	13/16	6	C44723
3/16	1	6-1/2	C44725
1/4	13/16	6	C44729
1/4	1	6-1/2	C44731
5/16	1	6-1/2	C44733

List #857 Mo-Max® Cobalt High Speed Ground Cut-Off Blades

Features:

- Hard and tough materials



Nominal Thickness	Nominal Height	Overall Length	EDP Number
1/16	1/2	4-1/2	C44702
1/16	11/16	5	C44704
1/16	13/16	6	C44706
3/32	1/2	4-1/2	C44708
3/32	11/16	5	C44710
3/32	13/16	6	C44712
3/32	1	6-1/2	C44714
1/8	11/16	5	C44716

Nominal Thickness	Nominal Height	Overall Length	EDP Number
1/8	13/16	6	C44718
1/8	1	6-1/2	C44720
5/32	13/16	6	C44722
3/16	13/16	6	C44724
3/16	1	6-1/2	C44726
1/4	13/16	6	C44730
1/4	1	6-1/2	C44732
5/16	1	6-1/2	C44734

Mo-Max® Cut-Off Blades

List #853 Mo-Max® High Speed Steel Ground Cut-Off Blades

Features:

- General purpose work
- For Armstrong Holders & Williams Holders



Nominal Thickness	Nominal Height	Fitting Armstrong Holder Number	Fitting New Williams Holder Number	Overall Length	EDP Number
5/64	1/2		N-020R,N-030R,N-030L	4-1/2	C44738
3/32	1/2	19,29L,29R		4-1/2	C44740
3/32	5/8	20,30L,30R	N-20R,N-30R,N-30L	5	C44742
1/8	3/4	21,31L,31R	N-21R,N-31R,N-31L	5	C44744
1/8	7/8	22,32L,32R	N-22R,N-32R,N-32L	6	C44746
3/16	1	23,33L,33R	N-23R,N-33R,N-33L	6-1/2	C44748
3/16	1-1/8	24,34L,34R	N-24R,N-34R,N-34L	7	C44750
1/4	1-1/8		N-25R,N-35R,N-35L	7	C44752
1/4	1-1/4	25,35L,35R		7	C44754
1/4	1-3/8	26,36L,36R		7	C44756

List #858 Mo-Max® Cobalt High Speed Ground Cut-Off Blades

Features:

- Hard and tough materials
- For Armstrong Holders & Williams Holders



Nominal Thickness	Nominal Height	Fitting Armstrong Holder Number	Fitting New Williams Holder Number	Overall Length	EDP Number
5/64	1/2		N-020R,N-030R,N-030L	4-1/2	C44739
3/32	1/2	19,29L,29R		4-1/2	C44741
3/32	5/8	20,30L,30R	N-20R,N-30R,N-30L	5	C44743
1/8	3/4	21,31L,31R	N-21R,N-31R,N-31L	5	C44745
1/8	7/8	22,32L,32R	N-22R,N-32R,N-32L	6	C44747
3/16	1	23,33L,33R	N-23R,N-33R,N-33L	6-1/2	C44749
3/16	1-1/8	24,34L,34R	N-24R,N-34R,N-34L	7	C44751
1/4	1-1/8		N-25R,N-35R,N-35L	7	C44753
1/4	1-1/4	25,35L,35R		7	C44755
1/4	1-3/8	26,36L,36R		7	C44757

Mo-Max® Cut-Off Blades

List #859 Mo-Max® HSS Ground T-Shaped Cut-Off Blades



Features:

- General purpose
- Harder and tougher materials
- Reduced friction of the blade on the sides of the slots or grooves permits longer tool life in cutting-off, cutting-off to center or grooving and forming
- MO-MAX® High Speed Steel

Blade Number	Nominal Size	Overall Length	EDP Number
P1N	.040x1/2	3-1/2	C44800
P1	1/16x1/2	3-1/2	C44801
P1X	5/64x1/2	4-1/2	C44802
P2	3/32x1/2	4-1/2	C44803
P3N	3/32x1 1/16	5	C44804
P3S	1/8x1/2	4-1/2	C44805
P3	1/8x1 1/16	5	C44806
P3W	1/8x3/4	5	C44807
P5X	1/8x7/8	6	C44808
P8X	1/8x1-1/8	6-1/2	C44809

Blade Number	Nominal Size	Overall Length	EDP Number
P4	5/32 x 1 1/16	5	C44810
P4W	5/32x3/4	5	C44811
P5N	5/32x7/8	6	C44812
P5S	3/16x1 1/16	5	C44813
P5W	3/16x3/4	6	C44814
P5	3/16x7/8	6	C44815
P8	3/16x1-1/8	6-1/2	C44816
P6	1/4x7/8	6	C44817
P9	1/4x1-1/8	6-1/2	C44818

List #864 Mo-Max® Cobalt HSS Ground T-Shaped Cut-Off Blades



Features:

- General purpose
- Harder and tougher materials
- Reduced friction of the blade on the sides of the slots or grooves permits longer tool life in cutting-off, cutting-off to center or grooving and forming
- MO-MAX® Cobalt High Speed

Blade Number	Nominal Size	Overall Length	EDP Number
P1N	.040x1/2	3-1/2	C44819
P1	1/16x1/2	3-1/2	C44820
P1X	5/64x1/2	4-1/2	C44821
P2	3/32x1/2	4-1/2	C44822
P3N	3/32x1 1/16	5	C44823
P3S	1/8x1/2	4-1/2	C44824
P3	1/8x1 1/16	5	C44825
P3W	1/8x3/4	5	C44826
P5X	1/8x7/8	6	C44827
P8X	1/8x1-1/8	6-1/2	C44828

Blade Number	Nominal Size	Overall Length	EDP Number
P4	5/32 x 1 1/16	5	C44829
P4W	5/32x3/4	5	C44830
P5N	5/32x7/8	6	C44831
P5S	3/16x1 1/16	5	C44832
P5W	3/16x3/4	6	C44833
P5	3/16x7/8	6	C44834
P8	3/16x1-1/8	6-1/2	C44835
P6	1/4x7/8	6	C44836
P9	1/4x1-1/8	6-1/2	C44837

HSS Blanks

List #902 Blanks HSS



Features:

- Ground to an oversize reamer tolerance limits plus .0002, minus .0000
- Ideal for use as drifts of dowel pins, gauging purposes and for making punches
- Also used for round tool bits, countersinks, boring or burring tools, etc.
- Ground without back taper

Diameter	Decimal Equivalent	Overall Length	EDP Number
NO 80	.0135	3/4	C19224
NO 79	.0145	7/8	C19226
1/64	.0156	7/8	C19228
NO 78	.0160	7/8	C19230
NO 77	.0180	7/8	C19233
NO 76	.0200	7/8	C19236
NO 75	.0210	1	C19237
NO 74	.0225	1	C19239
NO 73	.0240	1-1/8	C19241
NO 72	.0250	1-1/8	C19242
NO 71	.0260	1-1/4	C19244
NO 70	.0280	1-1/4	C19246
NO 69	.0292	1-3/8	C19247
NO 68	.0310	1-3/8	C19249
1/32	.0312	1-3/8	C19250
NO 67	.0320	1-3/8	C19252
NO 66	.0330	1-3/8	C19253
NO 65	.0350	1-1/2	C19255
NO 64	.0360	1-1/2	C19257
NO 63	.0370	1-1/2	C19258
NO 62	.0380	1-1/2	C19260
NO 61	.0390	1-5/8	C19261
NO 60	.0400	1-5/8	C19263
NO 59	.0410	1-5/8	C19264
NO 58	.0420	1-5/8	C19266
NO 57	.0430	1-3/4	C19267
NO 56	.0465	1-3/4	C19270
3/64	.0469	1-3/4	C19271
NO 55	.0520	1-7/8	C19275
NO 54	.0550	1-7/8	C19277
NO 53	.0595	1-7/8	C19281
1/16	.0625	1-7/8	C19283
NO 52	.0635	1-7/8	C19285
NO 51	.0670	2	C19288
NO 50	.0700	2	C19290
NO 49	.0730	2	C19293
NO 48	.0760	2	C19295
5/64	.0781	2	C19297
NO 47	.0785	2	C19298
NO 46	.0810	2-1/8	C19301
NO 45	.0820	2-1/8	C19302
NO 44	.0860	2-1/8	C19305
NO 43	.0890	2-1/4	C19308
NO 42	.0935	2-1/4	C19311
3/32	.0938	2-1/4	C19312
NO 41	.0960	2-3/8	C19314
NO 40	.0980	2-3/8	C19316
NO 39	.0995	2-3/8	C19318
NO 38	.1015	2-1/2	C19319
NO 37	.1040	2-1/2	C19321
NO 36	.1065	2-1/2	C19323
7/64	.1094	2-5/8	C19325
NO 35	.1100	2-5/8	C19326
NO 34	.1110	2-5/8	C19328
NO 33	.1130	2-5/8	C19329
NO 32	.1160	2-3/4	C19331
NO 31	.1200	2-3/4	C19333

Diameter	Decimal Equivalent	Overall Length	EDP Number
1/8	.1250	2-3/4	C19335
NO 30	.1285	2-3/4	C19338
NO 29	.1360	2-7/8	C19341
NO 28	.1405	2-7/8	C19343
9/64	.1406	2-7/8	C19344
NO 27	.1440	3	C19346
NO 26	.1470	3	C19348
NO 25	.1495	3	C19350
NO 24	.1520	3-1/8	C19352
NO 23	.1540	3-1/8	C19354
5/32	.1562	3-1/8	C19355
NO 22	.1570	3-1/8	C19356
NO 21	.1590	3-1/4	C19358
NO 20	.1610	3-1/4	C19359
NO 19	.1660	3-1/4	C19362
NO 18	.1695	3-1/4	C19365
11/64	.1719	3-1/4	C19366
NO 17	.1730	3-3/8	C19367
NO 16	.1770	3-3/8	C19369
NO 15	.1800	3-3/8	C19371
NO 14	.1820	3-3/8	C19373
NO 13	.1850	3-1/2	C19374
3/16	.1875	3-1/2	C19377
NO 12	.1890	3-1/2	C19378
NO 11	.1910	3-1/2	C19380
NO 10	.1935	3-5/8	C19382
NO 9	.1960	3-5/8	C19383
NO 8	.1990	3-5/8	C19385
NO 7	.2010	3-5/8	C19387
13/64	.2031	3-5/8	C19388
NO 6	.2040	3-3/4	C19389
NO 5	.2055	3-3/4	C19391
NO 4	.2090	3-3/4	C19394
NO 3	.2130	3-3/4	C19396
7/32	.2188	3-3/4	C19398
NO 2	.2210	3-7/8	C19400
NO 1	.2280	3-7/8	C19403
LTR A	.2340	3-7/8	C19406
15/64	.2344	3-7/8	C19407
LTR B	.2380	4	C19409
LTR C	.2420	4	C19411
LTR D	.2460	4	C19413
1/4, LTR E	.2500	4	C19416
LTR F	.2570	4-1/8	C19420
LTR G	.2610	4-1/8	C19422
17/64	.2656	4-1/8	C19424
LTR H	.2660	4-1/8	C19426
LTR I	.2720	4-1/8	C19429
LTR J	.2770	4-1/8	C19431
LTR K	.2810	4-1/4	C19433
LTR L	.2900	4-1/4	C19437
9/32	.2812	4-1/4	C19438
LTR M	.2950	4-3/8	C19440
19/64	.2969	4-3/8	C19442
LTR N	.3020	4-3/8	C19444
5/16	.3125	4-1/2	C19449
LTR O	.3160	4-1/2	C19451

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HSS Blanks

List #902 continued

Diameter	Decimal Equivalent	Overall Length	EDP Number
LTR P	.3230	4-5/8	C19454
21/64	.3281	4-5/8	C19457
LTR Q	.3320	4-3/4	C19459
LTR R	.3390	4-3/4	C19462
11/32	.3438	4-3/4	C19464
LTR S	.3480	4-7/8	C19467
LTR T	.3580	4-7/8	C19470
23/64	.3594	4-7/8	C19472
LTR U	.3680	5	C19476
3/8	.3750	5	C19479
LTR V	.3770	5	C19480
LTR W	.3860	5-1/8	C19485

Diameter	Decimal Equivalent	Overall Length	EDP Number
25/64	.3906	5-1/8	C19487
LTR X	.3970	5-1/8	C19489
LTR Y	.4040	5-1/4	C19491
13/32	.4062	5-1/4	C19492
LTR Z	.4130	5-1/4	C19493
27/64	.4219	5-3/8	C19495
7/16	.4375	5-1/2	C19498
29/64	.4531	5-5/8	C19501
15/32	.4688	5-3/4	C19503
31/64	.4844	5-7/8	C19506
1/2	.5000	6	C19508

List #903 Blanks HSS



Features:

- Ground to an undersize drill tolerance limits plus .0000, minus .0003.
- Ideal for use as drifts of dowel pins, gauging purposes and for making punches
- Also used for round tool bits, countersinks, boring or burring tools, etc.
- Ground without back taper

Diameter	Decimal Equivalent	Overall Length	EDP Number
NO 80	.0135	3/4	C19511
NO 79	.0145	7/8	C19513
1/64	.0156	7/8	C19515
NO 78	.0160	7/8	C19517
NO 77	.0180	7/8	C19520
NO 76	.0200	7/8	C19523
NO 75	.0210	1	C19524
NO 74	.0225	1	C19526
NO 73	.0240	1-1/8	C19528
NO 72	.0250	1-1/8	C19529
NO 71	.0260	1-1/4	C19531
NO 70	.0280	1-1/4	C19533
NO 69	.0292	1-3/8	C19534
NO 68	.0310	1-3/8	C19536
1/32	.0312	1-3/8	C19537
NO 67	.0320	1-3/8	C19539
NO 66	.0330	1-3/8	C19540
NO 65	.0350	1-1/2	C19542
NO 64	.0360	1-1/2	C19544
NO 63	.0370	1-1/2	C19545
NO 62	.0380	1-1/2	C19547
NO 61	.0390	1-5/8	C19548
NO 60	.0400	1-5/8	C19550
NO 59	.0410	1-5/8	C19551
NO 58	.0420	1-5/8	C19553
NO 57	.0430	1-3/4	C19554
NO 56	.0465	1-3/4	C19557
3/64	.0469	1-3/4	C19558
NO 55	.0520	1-7/8	C19562
NO 54	.0550	1-7/8	C19564
NO 53	.0595	1-7/8	C19568
1/16	.0625	1-7/8	C19570
NO 52	.0635	1-7/8	C19572
NO 51	.0670	2	C19575
NO 50	.0700	2	C19577
NO 49	.0730	2	C19580
NO 48	.0760	2	C19582
5/64	.0781	2	C19584

Diameter	Decimal Equivalent	Overall Length	EDP Number
NO 47	.0785	2	C19585
NO 46	.0810	2-1/8	C19588
NO 45	.0820	2-1/8	C19589
NO 44	.0860	2-1/8	C19592
NO 43	.0890	2-1/4	C19595
NO 42	.0935	2-1/4	C19598
3/32	.0938	2-1/4	C19599
NO 41	.0960	2-3/8	C19601
NO 40	.0980	2-3/8	C19603
NO 39	.0995	2-3/8	C19605
NO 38	.1015	2-1/2	C19606
NO 37	.1040	2-1/2	C19608
NO 36	.1065	2-1/2	C19610
7/64	.1094	2-5/8	C19612
NO 35	.1100	2-5/8	C19613
NO 34	.1110	2-5/8	C19615
NO 33	.1130	2-5/8	C19616
NO 32	.1160	2-3/4	C19618
NO 31	.1200	2-3/4	C19620
1/8	.1250	2-3/4	C19622
NO 30	.1285	2-3/4	C19625
NO 29	.1360	2-7/8	C19628
NO 28	.1405	2-7/8	C19630
9/64	.1406	2-7/8	C19631
NO 27	.1440	3	C19633
NO 26	.1470	3	C19635
NO 25	.1495	3	C19637
NO 24	.1520	3-1/8	C19639
NO 23	.1540	3-1/8	C19641
5/32	.1562	3-1/8	C19642
NO 22	.1570	3-1/8	C19643
NO 21	.1590	3-1/4	C19645
NO 20	.1610	3-1/4	C19646
NO 19	.1660	3-1/4	C19649
NO 18	.1695	3-1/4	C19652
11/64	.1719	3-1/4	C19653
NO 17	.1730	3-3/8	C19654
NO 16	.1770	3-3/8	C19656

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List #903 continued

Diameter	Decimal Equivalent	Overall Length	EDP Number
NO 15	.1800	3-3/8	C19658
NO 14	.1820	3-3/8	C19660
NO 13	.1850	3-1/2	C19661
3/16	.1875	3-1/2	C19664
NO 12	.1890	3-1/2	C19665
NO 11	.1910	3-1/2	C19667
NO 10	.1935	3-5/8	C19669
NO 9	.1960	3-5/8	C19670
NO 8	.1990	3-5/8	C19672
NO 7	.2010	3-5/8	C19674
13/64	.2031	3-5/8	C19675
NO 6	.2040	3-3/4	C19676
NO 5	.2055	3-3/4	C19678
NO 4	.2090	3-3/4	C19681
NO 3	.2130	3-3/4	C19683
7/32	.2188	3-3/4	C19685
NO 2	.2210	3-7/8	C19687
NO 1	.2280	3-7/8	C19690
LTR A	.2340	3-7/8	C19693
15/64	.2344	3-7/8	C19694
LTR B	.2380	4	C19696
LTR C	.2420	4	C19698
LTR D	.2460	4	C19700
1/4, LTR E	.2500	4	C19703
LTR F	.2570	4-1/8	C19707
LTR G	.2610	4-1/8	C19709
17/64	.2656	4-1/8	C19711
LTR H	.2660	4-1/8	C19713
LTR I	.2720	4-1/8	C19716
LTR J	.2770	4-1/8	C19718
LTR K	.2810	4-1/4	C19720

Diameter	Decimal Equivalent	Overall Length	EDP Number
LTR L	.2900	4-1/4	C19724
9/32	.2812	4-1/4	C19725
LTR M	.2950	4-3/8	C19727
19/64	.2969	4-3/8	C19729
LTR N	.3020	4-3/8	C19731
5/16	.3125	4-1/2	C19736
LTR O	.3160	4-1/2	C19738
LTR P	.3230	4-5/8	C19741
21/64	.3281	4-5/8	C19744
LTR Q	.3320	4-3/4	C19746
LTR R	.3390	4-3/4	C19749
11/32	.3438	4-3/4	C19751
LTR S	.3480	4-7/8	C19754
LTR T	.3580	4-7/8	C19757
23/64	.3594	4-7/8	C19759
LTR U	.3680	5	C19763
3/8	.3750	5	C19766
LTR V	.3770	5	C19767
LTR W	.3860	5-1/8	C19772
25/64	.3906	5-1/8	C19774
LTR X	.3970	5-1/8	C19776
LTR Y	.4040	5-1/4	C19778
13/32	.4062	5-1/4	C19779
LTR Z	.4130	5-1/4	C19780
27/64	.4219	5-3/8	C19782
7/16	.4375	5-1/2	C19785
29/64	.4531	5-5/3	C19788
15/32	.4688	5-3/4	C19790
31/64	.4844	5-7/8	C19793
1/2	.5000	6	C19795

Brazed Tool Bits

List # **BRZT-CT (Pictured)** Brazed Tool Bits (Carbide

Features:

- Carbide Tip for longer tool life



Right Hand List # **BRZT-AR**

Brazed Tool #	Grade	EDP Number
AR-4	C-2	C49600
	C-5	C49602
	Coated	C49780
AR-5	C-2	C49604
	C-5	C49606
AR-6	C-2	C49608
	C-5	C49610
	Coated	C49782
AR-7	C-2	C49612
	C-5	C49614
AR-8	C-2	C49616
	C-5	C49618
	Coated	C49784
AR-10	C-2	C49620
	C-5	C49622
AR-12	C-2	C49624
	C-5	C49626

Left Hand List # **BRZT-AL**

Brazed Tool #	Grade	EDP Number
AL-4	C-2	C49601
	C-5	C49603
	Coated	C49781
AL-5	C-2	C49605
	C-5	C49607
AL-6	C-2	C49609
	C-5	C49611
	Coated	C49783
AL-7	C-2	C49613
	C-5	C49615
AL-8	C-2	C49617
	C-5	C49619
	Coated	C49785
ARL-10	C-2	C49621
	C-5	C49623
AL-12	C-2	C49625
	C-5	C49627

Right Hand List # **BRZT-BR**

Brazed Tool #	Grade	EDP Number
BR-4	C-2	C49628
	C-5	C49630
BR-5	C-2	C49732
	C-5	C49634
BR-6	C-2	C49636
	C-5	C49638
BR-7	C-2	C49640
	C-5	C49742
BR-8	C-2	C49644
	C-5	C49646
BR-10	C-2	C49648
	C-5	C49650
BR-12	C-2	C49752
	C-5	C49754

Left Hand List # **BRZT-BL**

Brazed Tool #	Grade	EDP Number
BL-4	C-2	C49629
	C-5	C49631
BL-5	C-2	C49733
	C-5	C49635
BL-6	C-2	C49637
	C-5	C49639
BL-7	C-2	C49641
	C-5	C49743
BL-8	C-2	C49645
	C-5	C49647
BL-10	C-2	C49649
	C-5	C49651
BL-12	C-2	C49753
	C-5	C49755

Neutral List # **BRZT-E**

Brazed Tool #	Grade	EDP Number
E-4	C-2	C49684
	C-5	C49685
E-5	C-2	C49786
	C-5	C49687
E-6	C-2	C49688
	C-5	C49689
E-7	C-2	C49690
	C-5	C49791
E-8	C-2	C49692
	C-5	C49693
E-10	C-2	C49694
	C-5	C49695
E-12	C-2	C49796
	C-5	C49797

Neutral List # **BRZT-C**

Brazed Tool #	Grade	EDP Number
C-4	C-2	C49656
	C-5	C49657
C-5	C-2	C49658
	C-5	C49659
C-6	C-2	C49660
	C-5	C49661
C-7	C-2	C49662
	C-5	C49663
C-8	C-2	C49664
	C-5	C49665
C-10	C-2	C49666
	C-5	C49667
C-12	C-2	C49668
	C-5	C49669

Right Hand List # **BRZT-CT**

Brazed Tool #	Grade	EDP Number
CT-111	C-2	C49742
	C-5	C49743
CT-120	C-2	C49748
	C-5	C49749
CT-121	C-2	C49746
	C-5	C49747
CT-122	C-2	C49744
	C-5	C49745

Neutral List # **BRZT-D**

Brazed Tool #	Grade	EDP Number
D-4	C-2	C49670
	C-5	C49671
D-5	C-2	C49672
	C-5	C49673
D-6	C-2	C49674
	C-5	C49675
D-7	C-2	C49676
	C-5	C49677
D-8	C-2	C49678
	C-5	C49679
D-10	C-2	C49680
	C-5	C49681
D-12	C-2	C49682
	C-5	C49683

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Brazed Tool Bits

Brazed Tool Bits (Carbide Tipped) contin-

Left Hand List # BRZT-EL

Brazed Tool #	Grade	EDP Number
EL-5	C-2	C49699
	C-5	C49701
EL-6	C-2	C49703
	C-5	C49705
EL-8	C-2	C49707
	C-5	C49709
EL-10	C-2	C49711
	C-5	C49713
EL-12	C-2	C49715
	C-5	C49717

Right Hand List # BRZT-ER

Brazed Tool #	Grade	EDP Number
ER-5	C-2	C49698
	C-5	C49700
ER-6	C-2	C49702
	C-5	C49704
ER-8	C-2	C49706
	C-5	C49708
ER-10	C-2	C49710
	C-5	C49712
ER-12	C-2	C49714
	C-5	C49716

Left Hand List # BRZT-FL

Brazed Tool #	Grade	EDP Number
FL-8	C-2	C49719
	C-5	C49721
FL-10	C-2	C49723
	C-5	C49725
FL-12	C-2	C49727
	C-5	C49729

Right Hand List # BRZT-FR

Brazed Tool #	Grade	EDP Number
FR-8	C-2	C49718
	C-5	C49720
FR-10	C-2	C49722
	C-5	C49724
FR-12	C-2	C49726
	C-5	C49728

Left Hand List # BRZT-GL

Brazed Tool #	Grade	EDP Number
GL-8	C-2	C49731
	C-5	C49733
GL-10	C-2	C49735
	C-5	C49737
GL-12	C-2	C49739
	C-5	C49741

Right Hand List # BRZT-GR

Brazed Tool #	Grade	EDP Number
GR-8	C-2	C49730
	C-5	C49732
GR-10	C-2	C49734
	C-5	C49736
GR-12	C-2	C49738
	C-5	C49740

Right Hand List # BRZT-TSA

Brazed Tool #	Grade	EDP Number
TSA-5	C-2	C49750
	C-5	C49751
TSA-6	C-2	C49752
	C-5	C49753
TSA-8	C-2	C49754
	C-5	C49755
TSA-10	C-2	C49756
	C-5	C49757
TSA-12	C-2	C49758
	C-5	C49759

Right Hand List # BRZT-TSE

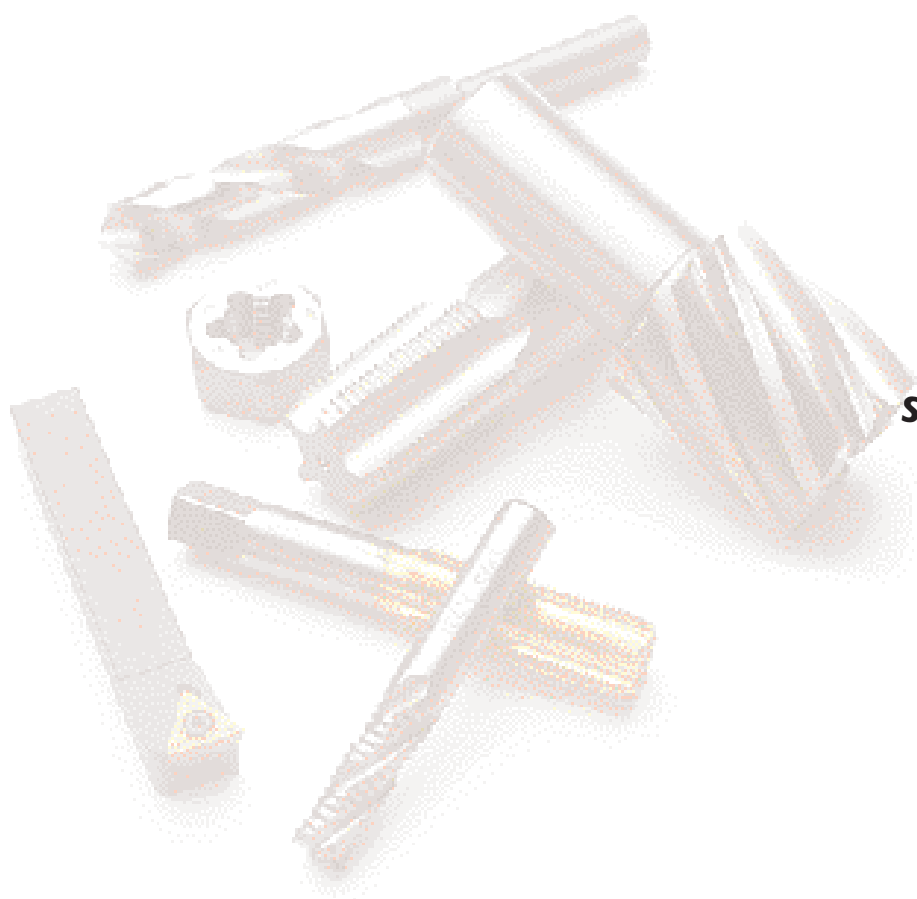
Brazed Tool #	Grade	EDP Number
TSE-5	C-2	C49770
	C-5	C49771
TSE-6	C-2	C49772
	C-5	C49773
TSE-8	C-2	C49774
	C-5	C49775
TSE-10	C-2	C49776
	C-5	C49777
TSE-12	C-2	C49778
	C-5	C49779

Right Hand List # BRZT-TSC

Brazed Tool #	Grade	EDP Number
TSC-5	C-2	C49760
	C-5	C49761
TSC-6	C-2	C49762
	C-5	C49763
TSC-8	C-2	C49764
	C-5	C49765
TSC-10	C-2	C49766
	C-5	C49767
TSC-12	C-2	C49768
	C-5	C49769

Spec Info

& Specials:



Specials: *page 272*

Specials • Ordering Suggestions

Drills • Ordering Suggestions

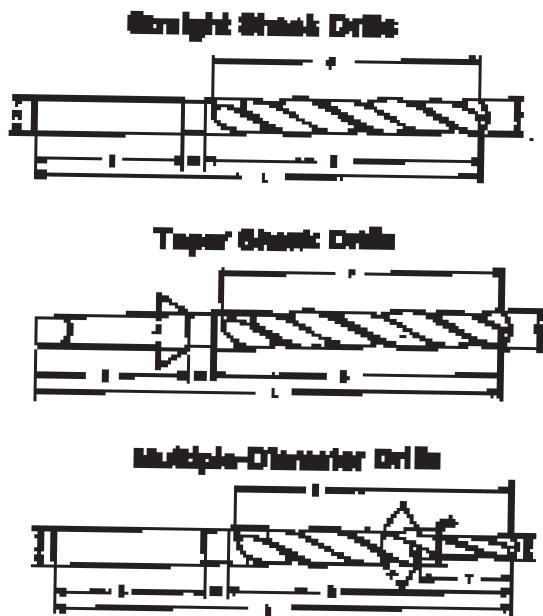
If you know the specs for your special tool, please send a blueprint and/or provide this information:

- Material/hardness to be drilled
- A = Shank Diameter or size-If standard taper shank is ordered, specify as No. 2 American National Standard Taper, No. 3 American National Standard Taper, etc.
- B = Body Length
- D = Diameter of fluted section-On Multiple Diameter Drills, the diameter of the large fluted section
- F = Flute length
- L = Overall length
- N = Neck length
- P = On Multiple-Diameter drills, the diameter of the small, fluted section
- R = On Multiple-Diameter drills, included angle of cutting shoulder. Note that this is measured as an angle between the two cutting edges (included angle) and not as an angle with the center line.
- S = Shank length
- T = On Multiple-Diameter drills, length of small diameter. (Note that this is measured from the outer corner of the point to the bottom or inner corner of the cutting shoulder.)

Note: If taper shank is special, give diameter at small end, length of shank, diameter at large end, taper per foot, and furnish a sample of gauge if possible. If tang is special, give thickness and length.

If special accuracy is required, give tolerances on the important dimensions.

If you need help customizing a tool, please provide this information:



- Material/hardness to be drilled
- Hole diameter
- Depth of hole
- Thru hole or blind hole
- Shank type
- Coolant or non-coolant
- Step length if necessary
- Step angle

Note: When specifying special drills, make sure that suitable allowance has been made for resharpening and also for clearance for the spindle above the drill-brushings.

If a particular style of flute-construction is wanted, it should be specified by reference to the regular drill of the required flute-style.

When ordering extra-length drills, specify: type of material being drilled, depth of hole, whether drilling in a vertical or horizontal position and whether feed is intermittent or with only occasional withdrawals.

To order a special, call our customer service department at:

1 • 888 • 434 • 4311

Specials • Ordering Suggestions

Taps • Ordering Suggestions

If you know the specs for your special tool, please send a blueprint and/or provide this information:

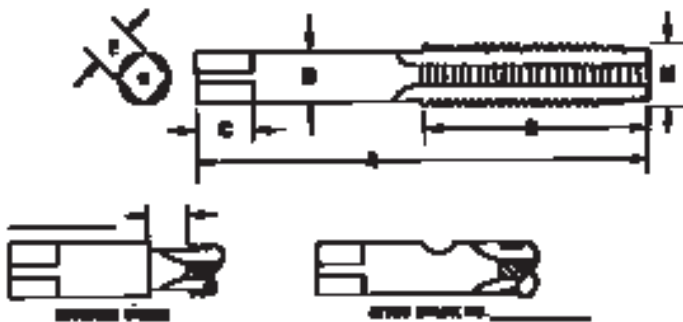
Basic Information:

- Quantity
- Size
- Threads per inch
- Thread designation
- Thread limit or class of fit
- Number of flutes
- Chamfer style
- Material being tapped and hardness
- Required thread depth
- Depth of hole
- Thru hole or blind hole
- Overall length (A)
- Thread length (B)
- Shank length
- Shank Diameter (D)
- Depth of flutes
- Degree of hook or rake

Other Information:

- Surface Treatment
- Special Hook
- Male Centers Removed
- Special Back Taper
- Recessed Neck
- Shank Flats
- Special Shank Diameter
- Special Rake
- Thread Relief
- Interrupted
- Threads
 - Full or Semi
 - Controlled Root
- ETTCO Notch
- Shank Grooves

If you need help customizing a tool, please provide this information:



- Size
- Threads per inch or pitch
- Number of starts
- Thread form
- Thread class
- Chamfer or number of chamfered threads
- Thru or blind hole
- Depth of hole
- Material hardness to be tapped

To order a special, call our customer service department at:

1 • 888 • 434 • 4311

Specials • Ordering Suggestions

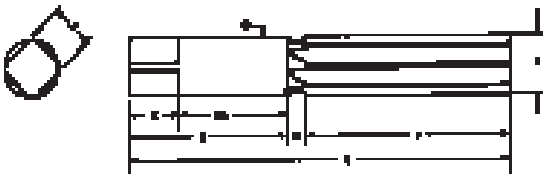
Reamers • Ordering Suggestions

If you know the specs for your special tool, please send a blueprint and/or provide this information:

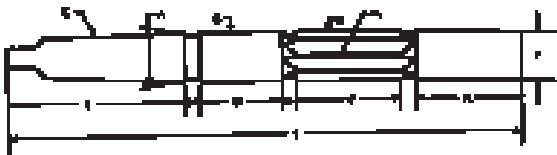
- Material/hardness to be drilled
- A = Shank Diameter
- C = If regular taper shank, give Size Number
- D = Diameter of fluted section
- DL = Diameter of fluted section at large end for Taper Reamer
- DS=Diameter of fluted section at small end for Taper Reamer
- F = Flute length
- G = Guide diameter
- GL = Guide length
- J = Size of square, if any
- K = Length of square, if any
- L = Overall length
- M = Kind of flute. Refer to catalog and give list number of general style of tool
- N = Neck Length
- P = Pilot diameter
- PL = Pilot length
- S = Shank length
- T = Taper per foot or included angle for taper reamers

If you need help customizing a tool, please provide this information:

Square Shank Hand Reamer



Taper Shank Machine Reamer with Pilot and Guide



Straight Shank Taper Reamer



- Material/hardness to be drilled
- Depth of hole
- How much stock to remove
- Thru or blind hole
- Straight or tapered hole
- If square end cut
- Type of shank
- Coolant or non-coolant

Note: If taper shank is special, give diameter at small end, length of shank, diameter at large end, taper per foot, and furnish a sample of gauge if possible. If tang is special, give thickness and length.

If special accuracy is required, give tolerances on the important dimensions.

To order a special, call our customer service department at:

1 • 888 • 434 • 4311

Specials • Ordering Suggestions

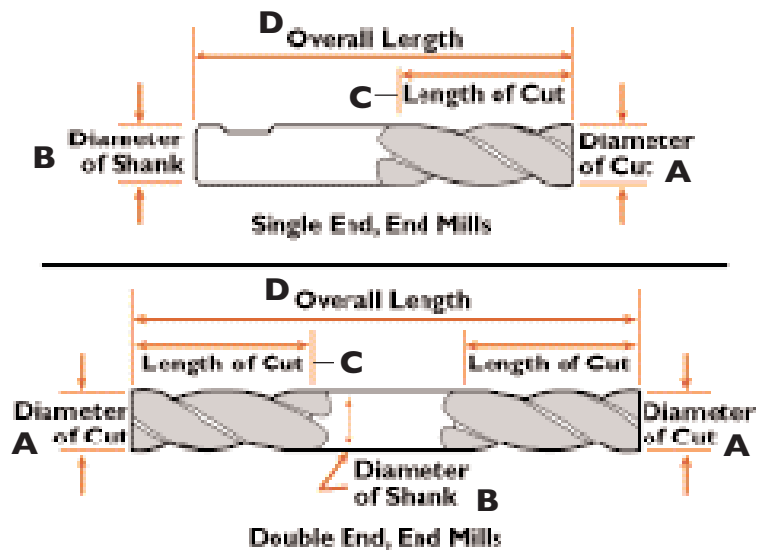
End Mills • Ordering Suggestions

If you know the specs for your special tool, please send a blueprint and/or provide this information:

- Material/hardness to be drilled
- Cutting diameter (A)
- Shank diameter (B)
- Length of cut (C)
- Overall length (D)
- Number of flutes
- Center cut, non-center cut or ball nose
- Whistle flat, radius or coating required
- Double end or single end

If you need help customizing a tool, please provide this information:

- Material/hardness to be drilled
- Plunge cut required
- Length of cut
- Shank Diameter
- Cutting diameter



To order a special, call our customer service department at:

1 • 888 • 434 • 4311

Quick Shipment

Meet Your Specialized Needs With:

Quick Delivery Special Products (24-72 Hours)

Reamers

HSS, Carbide Tipped, Solid Carbide in straight flute or helical flute styles

- Any intermediate decimal diameter (Can be etched as metric)
- Special surface treatments

Taps

HSS In Straight Flute, Spiral Point, Spiral Flute, Form Tap, Extension

Tap Styles

- Special Thread Pitch
- Special Diameters
- Special "H" Limits
- Special Chamfers
- Special Coatings
- Special Markings

Pipe Taps

HSS Straight or Taper Designs

- Special Projections
- Interrupted Threads
- Special Chamfer
- Special Coatings
- Extension Taps
- Special Markings
- Special Rake/Hook

Product Modification

Summary of Regular Product Modification Capabilities

Drills

(Customize Point Geometries)

- Alter Point Angles → HSS
- Split Points → HSS
- Helical Points → HSS
- Flat Bottom (180°) Points → HSS
- Four Facet Points → HSS
- Double Angle Points → HSS

Drills, Reamers

- Tang Shanks (Automotive Style)
- Special Flats
- Whistle Flats
- Shorten (Cut Off) Shanks
- Special Diameters
- Surface Treatments

Core Drills, Reamers

- Special Chamfers
- End Cut to Center
- Customized End Geometry

Taps

- Remove Male Center
- Special Surface Treatments
- Hook or Rake Flute
- Thread End Bevel
- Necks
- Notches
- Chamfer Alterations
- Coolant Holes

End Mills, Counterbores

- Radius Corners
- Surface Treatments
- Whistle Flats
- 45° Chamfer

To order a special, call our customer service department at:

1 • 888 • 434 • 4311

Technical:



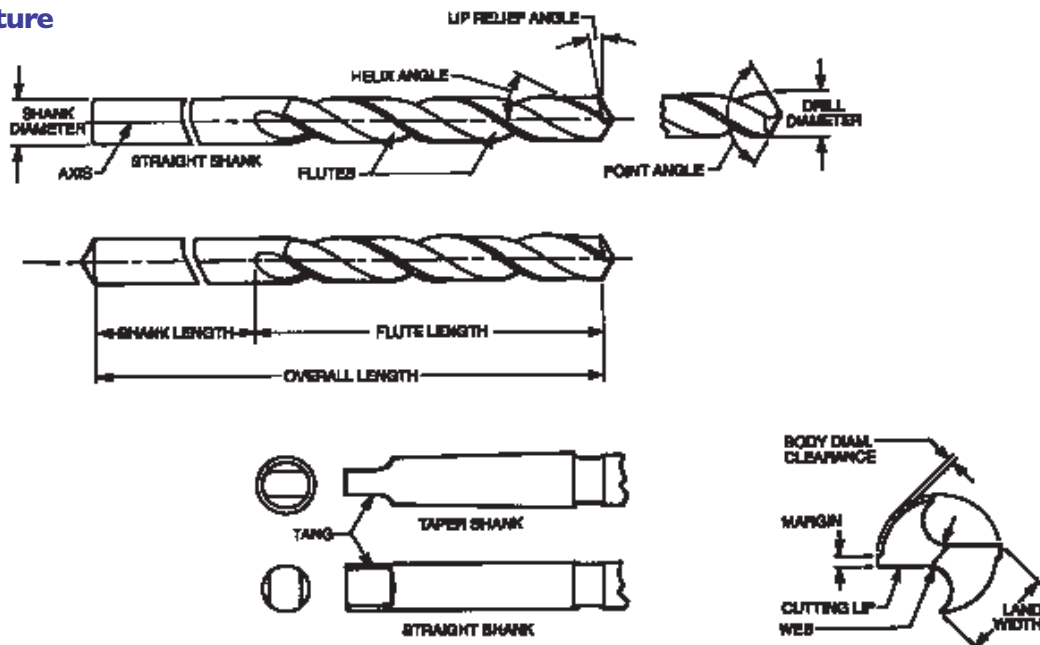
Technical: *page 278*

Nomenclature

Drill • Nomenclature

Axis	The imaginary straight line which forms the longitudinal centerline of the drill.
Back Taper	A slight decrease in diameter, from front to back in the body of the drill.
Body	The portion of the drill extending from the shank or neck to the outer corners of the cutting lips.
Body Diameter Clearance	That portion of the land that has been cut away so it will not rub against the walls of the hole.
Chisel Edge	The edge at the end of the web that connects the cutting lips.
Drill Diameter	The diameter over the margins of the drill measured at the point.
Flutes	Helical or straight grooves cut or formed in the body of the drill to provide cutting lips, to permit removal of chips, and to allow cutting fluid to reach the cutting lips.
Flute Length	The length from the outer corners of the cutting lips to the extreme back end of the flutes.
Land	The peripheral portion of the body between adjacent flutes.
Land Width	The distance between the leading edge and the heel of the land measured at a right angle to the leading edge.
Lip Relief	The axial relief on the drill point.
Margin	The cylindrical portion of the land which is not cut away to provide clearance.
Neck	The section of reduced diameter between the body and the shank of a drill.
Overall Length	The length from the extreme end of the shank to the outer corners of the cutting lips.
Point	The cutting end of a drill, made up of the ends of the lands and the web. In form it resembles a cone, but departs from a true cone to furnish clearance behind the cutting lips.
Point Angle	The angle included between the cutting lips projected upon a plane parallel to the drill axis and parallel to the two cutting lips.
Shank	The part of the drill by which it is held and driven.
Subland Drill	A type of multiple diameter drill which has independent sets of lands in the same body section for each diameter.
Tang	The flattened end of a taper shank, intended to fit into a driving slot in a socket.
Web	The central portion of the body that joins the lands. The extreme end of the web forms the chisel edge on a two-flute drill.

Drill Nomenclature

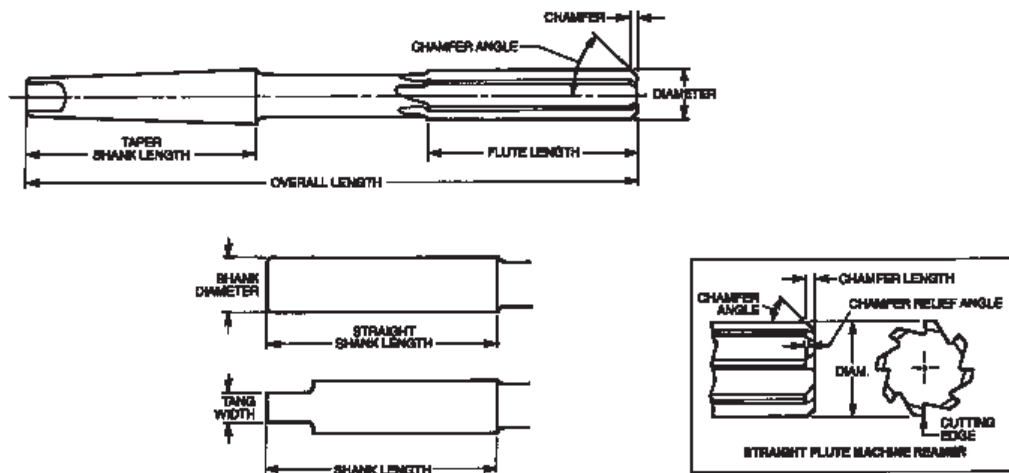


Nomenclature

Reamers • Nomenclature

Angle of Taper	The included angle of taper on a taper tool or taper shank.
Axis	The imaginary straight line which forms the longitudinal centerline of a reamer, usually established by rotating the reamer between centers.
Back Taper	A slight decrease in diameter, from front to back in the flute length of reamers.
Body	1) The fluted full diameter portion of a reamer, inclusive of the chamfer, starting taper & bevel. 2) The principal supporting member for a set of reamer blades, usually including the shank.
Chamfer	The angular cutting portion at the entering end of a reamer.
Chamfer Length	The length of the chamfer measured parallel to the axis at the cutting edge.
Chamfer Relief Angle	The axial relief angle at the outer corner of the chamfer. It is measured by projection into a plane tangent to the periphery at the outer corner of the chamfer.
Clearance	The space created by the relief behind the cutting edge or margin of a reamer.
Cutting Edge	The leading edge of the land in the direction of rotation for cutting.
Flutes	Longitude channels formed in the body of the reamer to provide cutting edges, permit passage of chips and allow cutting fluid to reach the cutting edges.
Flute Length	The length of the flutes not including the cutter sweep.
Land	The section of the reamer between adjacent flutes.
Margin	The unrelieved part of the periphery of the land adjacent to the cutting edge.
Neck	A section of reduced diameter connecting shank to body, or connecting other portions of the reamer.
Overall Length	The extreme length of the complete reamer from end to end, but not including external centers or expansion screws.
Reamer	A rotary cutting tool with one or more cutting elements, used for enlarging to size and contour a previously formed hole. Its principal support during the cutting action is obtained from the workpiece.
Shank	The portion of the reamer by which it is held and driven.
Straight Shank	A cylindrical shank.
Taper Shank	A shank made to fit a specified (conical) taper socket.

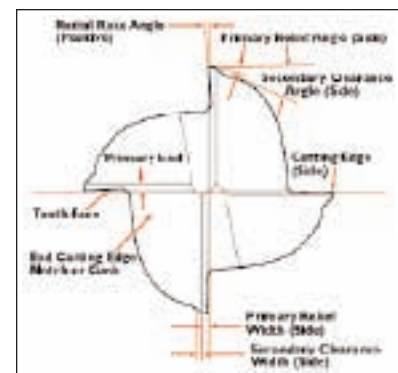
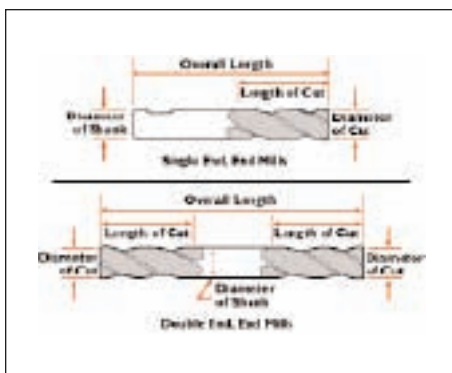
Reamer Nomenclature



End Mills • Nomenclature

An end mill has been defined as a straight or tapered shank milling cutter which extends or projects, unobstructed from the milling machine spindle. It has been termed one of the most versatile of cutting tools, capable of milling, drilling, reaming, planing, shaping contour cutting, etc. Improvements in cutting efficiency with this tool through both design and material changes, have, over time, increased the usage of this style tool.

Clearance (<i>Secondary Relief</i>)	The additional space provided behind the relieved land to eliminate undesirable contact between the mill and work piece.
Cutting Edge	The leading edge of the cutter tooth.
Flute	The chip space between the back of one tooth and the face of the following tooth.
Gash	Secondary cuts on a mill to provide chip room.
Heel	The back edge of the relieved land.
Helix Angle	The cutting edge angle which a helical cutting edge makes with a plane containing the axis of a cylindrical mill. When viewed from the cutter end of the mill, the flute will move clockwise for a right hand helix.
Land	Used to define the width of a specified surface
Length of Cut	The effective axial length of the peripheral cutting edge which has been relieved to cut
Hand of Cut	<u>Right Hand, RH:</u> When viewed from the cutting end of the mill, a counterclockwise rotation of the end mill is required in order to cut. Most end mills are right hand. <u>Left Hand, LH:</u> When viewed from the cutting end of mill, a clockwise rotation of mill is required to cut.
Rake	The angular relationship between the tooth face or a tangent to the tooth face at a given point and a reference plane or line.
Helical Rake	The helical rake at a given point on the flute face is the angle between the tool axis and a tangent plane at the given point.
Hook	A concave condition of a tooth face. The rake of a hooked tooth face must be determined at a given point.
Radial Rake	The angle between the tooth face and a radial line passing through the cutting edge in a plane perpendicular to the cutting axis.
Relief	The result of the removal of tool material behind or adjacent to the cutting edge to provide clearance and prevent rubbing.
Relief Angle	The angle formed between a relieved surface and a given plane tangent to the axis at the cutting edge or to a point on the cutting edge.
Axial Relief	The relief measured in the axial direction between a plane perpendicular to the axis at the cutting edge and the relieved surface.
Primary Relief	The relief measured in the axial direction between a plane perpendicular to the axis at the cutting edge and the relieved surface.
Primary Relief	The relief immediately behind the cutting edge.
Shank	The projecting portion of a cutter which locates and drives the cutter from the machine spindle.
Tooth Face	The surface of the tooth on which the chip impinges.



Nomenclature

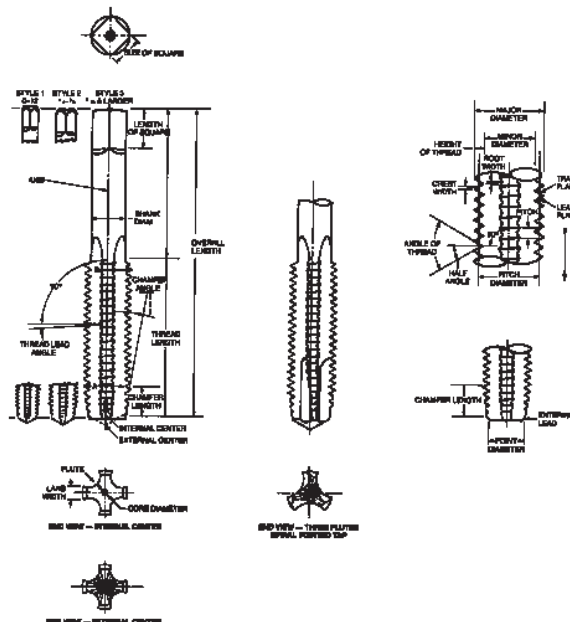
Taps • Nomenclature

Bottoming Tap	A tap having a chamfer length of 1-2 threads.
Chamfer	The tapering of the threads at the front end of each land of a chaser; tap or die by cutting away and relieving the crest of the first few teeth to distribute the cutting action over several teeth.
Chamfer Angle	The angle formed between the chamfer and the axis of the tap or die by cutting away and relieving the crest of the first few teeth to distribute the cutting action over several teeth.
Crest	The surface of the thread which joins the flanks of the thread and is farthest from the cylinder or cone from which the thread projects.
Flank	The part of a helical thread surface which connects the crest and the root and which is theoretically a straight line in an axial plane section.
Flute	The longitudinal channel formed in a tap to create cutting edges on the thread profile and to provide chip spaces and cutting fluid passage.
Hand of Threads	A thread, when viewed axially, winds in a clockwise and receding direction for LEFT HAND THREADS and counterclockwise and receding direction for RIGHT HAND THREADS.
Hook, Chordal	A concave face having an angle of inclination specified between a chord passing through the root and crest of a thread form at the cutting face, and a radial line through the crest at the cutting edge.
Hook, Tangential	A concave face having an angle of inclination specified between a line tangent to the hook surface at the cutting edge and a radial line to the same point.
Hook Angle	The angle of inclination of a concave face, usually specified either as CHORDAL HOOK or TANGENTIAL HOOK.
Interrupted Thread Tap	A tap having an odd number of lands with alternate teeth in the thread helix removed. In some cases alternate teeth are removed only for a portion of the thread length.
Land	One of the threaded sections between the flutes of a tap.
Lead of Thread	The distance a screw thread advances axially in one complete turn. On a single start tap the lead and pitch are identical. On a multiple start tap the lead is the multiple of the pitch.
Major Diameter	The diameter of the major cylinder or cone, at a given position on the axis, that bounds the crests of an external thread or the roots of an internal thread.
Minor Diameter	The diameter of the minor cylinder or cone, at a given position on the axis, that bounds the roots of an external thread or the crests of an internal thread.
Pitch Diameter	The diameter of an imaginary cylinder or cone, at a given point on the axis, of such a diameter and location of its axis that its surface would pass through the thread in such a manner as to make the thread ridge and the thread groove equal and, therefore, is located equidistant between the sharp major and minor cylinders or cones of a given thread form. On a theoretically perfect thread, these widths are equal to one half of the basic pitch (measured parallel to the axis).
Plug Tap	A tap with 3 to 5 chamfered threads.
Spiral Point	The angular fluting in the cutting face of the land at the chamfered end. It is formed at an angle with respect to the tap axis of opposite hand to that of rotation. Its length is usually greater than the chamfer length and its angle with respect to the tap axis is usually made great enough to direct the chips ahead of the tap. The tap may or may not have longitudinal flutes.
Square	Four driving flats parallel to the axis on a tap shank forming a square or square with round corners.
Taper Tap	A tap having a chamfer length of 7 to 10 threads.

Taps Nomenclature

Notes: "A" — Pitch diameter at first full thread. This is the correct point for measuring pitch diameter.

Back Taper — The amount pitch diameter at "A" is greater than pitch diameter at "B".



Decimal Equivalents

WIRE LETTER			WIRE LETTER			WIRE LITTER			WIRE LETTER		
Decimal	Fraction	MM	Decimal	Fraction	MM	Decimal	Fraction	MM	Decimal	Fraction	MM
0.0059	NO 97		0.0413		1.05	0.1065	NO 36		0.1960	NO 9	
0.0063	NO 96		0.0420	NO 58		0.1083		2.75	0.1969		5.00
0.0067	NO 95		0.0430	NO 57		0.1094	7/64		0.1990	NO 8	
0.0071	NO 94		0.0433		1.10	0.1100	NO 35		0.2008		5.10
0.0075	NO 93		0.0453		1.15	0.1102		2.80	0.2010	NO 7	
0.0079	NO 92	.20	0.0465	NO 56		0.1110	NO 34		0.2031	13/64	
0.0083	NO 91		0.0469	3/64		0.1130	NO 33		0.2040	NO 6	
0.0087	NO 90	.22	0.0472		1.20	0.1142		2.90	0.2047		5.20
0.0091	NO 89		0.0492		1.25	0.1160	NO 32		0.2055	NO 5	
0.0095	NO 88		0.0512		1.30	0.1181		3.00	0.2067		5.25
0.0098		.25	0.0520	NO 55		0.1200	NO 31		0.2087		5.30
0.0100	NO 87		0.0531		1.35	0.1220		3.10	0.2090	NO 4	
0.0105	NO 86		0.0550	NO 54		0.1250	1/8		0.2126		5.40
0.0110	NO 85	.28	0.0551		1.40	0.1260		3.20	0.2130	NO 3	
0.0115	NO 84		0.0571		1.45	0.1280		3.25	0.2165		5.50
0.0118		.30	0.0591		1.50	0.1285	NO 30		0.2188	7/32	
0.0120	NO 83		0.0595	NO 53		0.1299		3.30	0.2205		5.60
0.0125	NO 82		0.0610		1.55	0.1339		3.40	0.2210	NO 2	
0.0126		.32	0.0625	1/16		0.1360	NO 29		0.2244		5.70
0.0130	NO 81		0.0630		1.60	0.1378		3.50	0.2264		5.75
0.0135	NO 80		0.0635	NO 52		0.1405	NO 28		0.2280	NO 1	
0.0138		.35	0.0650		1.65	0.1406	9/64		0.2283		5.80
0.0145	NO 79		0.0669		1.70	0.1417		3.60	0.2323		5.90
0.0156	1/64		0.0670	NO 51		0.1440	NO 27		0.2340	LTR A	
0.0157		.40	0.0689		1.75	0.1457		3.70	0.2344	15/64	
0.0160	NO 78		0.0700	NO 50		0.1470	NO 26		0.2362		6.00
0.0177		.45	0.0709		1.80	0.1476		3.75	0.2380	LTR B	
0.0180	NO 77		0.0728		1.85	0.1495	NO 25		0.2402		6.10
0.0197		.50	0.0700	NO 49		0.1496		3.80	0.2420	LTR C	
0.0200	NO 76		0.0748		1.90	0.1520	NO 24		0.2441		6.20
0.0210	NO 75		0.0760	NO 48		0.1535		3.90	0.2460	LTR D	
0.0217		.55	0.0768		1.95	0.1540	NO 23		0.2461		6.25
0.0225	NO 74		0.0781	5/64		0.1562	5/32		0.2480		6.30
0.0236		.60	0.0785	NO 47		0.1570	NO 22		0.2500	1/4, LTR E	
0.0240	NO 73		0.0787		2.00	0.1575		4.00	0.2520		6.40
0.0250	NO 72		0.0807		2.05	0.1590	NO 21		0.2559		6.50
0.0256		.65	0.0810	NO 46		0.1610	NO 20		0.2570	LTR F	
0.0260	NO 71		0.0820	NO 45		0.1614		4.10	0.2598		6.60
0.0276		.70	0.0827		2.10	0.1654		4.20	0.2610	LTR G	
0.0280	NO 70		0.0846		2.15	0.1660	NO 19		0.2638		6.70
0.0292	NO 69		0.0860	NO 44		0.1673		4.25	0.2656	17/64	
0.0295		.75	0.0866		2.20	0.1693		4.3	0.2657		6.75
0.0310	NO 68		0.0886		2.25	0.1695	NO 18		0.2660	LTR H	
0.0312	1/32		0.0890	NO 43		0.1719	11/64		0.2677		6.80
0.0315		.80	0.0906		2.30	0.1730	NO 17		0.2717		6.90
0.0320	NO 67		0.0925		2.35	0.1732		4.40	0.2720	LTR I	
0.0330	NO 66		0.0935	NO 42		0.1770	NO 16		0.2756		7.00
0.0335		.85	0.0938	3/32		0.1772		4.50	0.2770	LTR J	
0.0350	NO 65		0.0945		2.40	0.1800	NO 15		0.2795		7.10
0.0354		.90	0.0960	NO 41		0.1811		4.60	0.2810	LTR K	
0.0360	NO 64		0.0965		2.45	0.1820	NO 14		0.2812	9/32	
0.0370	NO 63		0.0980	NO 40		0.1850	NO 13	4.70	0.2835		7.20
0.0374		.95	0.0984		2.50	0.1870		4.75	0.2854		7.25
0.0380	NO 62		0.0995	NO 39		0.1875	3/16		0.2874		7.30
0.0390	NO 61		0.1015	NO 38		0.1890	NO 12	4.80	0.2900	LTR L	
0.0394		1.00	0.1024		2.60	0.1910	NO 11		0.2913		7.40
0.0400	NO 60		0.1040	NO 37		0.1929		4.90	0.2950	LTR M	
0.0410	NO 59		0.1063		2.70	0.1935	NO 10		0.2953		7.50

(Continued on next page)

Decimal Equivalents

(Continued)

WIRE LETTER			WIRE LETTER			WIRE LETTER			WIRE LETTER		
Decimal	Fraction	MM	Decimal	Fraction	MM	Decimal	Fraction	MM	Decimal	Fraction	MM
0.2969	19/64		0.4844	31/64		1.0000	1 INCH		1.5156	1-33/64	
0.2992		7.60	0.4921		12.50	1.0039		25.50	1.5157		38.50
0.3020	LTR N		0.5000	1/2		1.0156	1-1/64		1.5312	1-17/32	
0.3031		7.70	0.5118		13.00	1.0236		26.00	1.5354		39.00
0.3051		7.75	0.5156	33/64		1.0312	1-1/32		1.5469	1-35/64	
0.3071		7.80	0.5312	17/32		1.0433		26.50	1.5551		39.50
0.3110		7.90	0.5315		13.50	1.0469	1-3/64		1.5625	1-9/16	
0.3125	5/16		0.5469	35/64		1.0625	1-1/16		1.5748		40.00
0.3150		8.00	0.5512		14.00	1.0630		27.00	1.5781	1-37/64	
0.3160	LTR O		0.5625	9/16		1.0781	1-5/64		1.5938	1-19/32	
0.3189		8.10	0.5709		14.50	1.0827		27.50	1.5945		40.50
0.3228		8.20	0.5781	37/64		1.0938	1-3/32		1.6094	1-39/64	
0.3230	LTR P		0.5906		15.00	1.1024		28.00	1.6142		41.00
0.3248		8.25	0.5938	19/32		1.1094	1-7/64		1.6250	1-5/8	
0.3268		8.30	0.6094	39/64		1.1220		28.50	1.6339		41.50
0.3281	21/64		0.6102		15.50	1.1250	1-1/8		1.6406	1-41/64	
0.3307		8.40	0.6250	5/8		1.1406	1-9/64		1.6535		42.00
0.3320	LTR Q		0.6299		16.00	1.1417		29.00	1.6562	1-21/32	
0.3346		8.50	0.6406	41/64		1.1562	1-5/32		1.6719	1-43/64	
0.3386		8.60	0.6496		16.50	1.1614		29.50	1.6732		42.50
0.3390	LTR R		0.6562	21/32		1.1719	1-11/64		1.6875	1-11/16	
0.3425		8.70	0.6693		17.00	1.1811		30.00	1.6929		43.00
0.3438	11/32		0.6719	43/64		1.1875	1-3/16		1.7031	1-45/64	
0.3445		8.75	0.6875	11/16		1.2008		30.50	1.7126		43.50
0.3465		8.80	0.6890		17.50	1.2031	1-13/64		1.7188	1-23/32	
0.3480	LTR S		0.7031	45/64		1.2188	1-7/32		1.7323		44.00
0.3504		8.90	0.7087		18.00	1.2205		31.00	1.7344	1-47/64	
0.3543		9.00	0.7188	23/32		1.2344	1-15/64		1.7500	1-3/4	
0.3580	LTR T		0.7283		18.50	1.2402		31.50	1.7520		44.50
0.3583		9.10	0.7344	47/64		1.2500	1-1/4		1.7656	1-49/64	
0.3594	23/64		0.7480		19.00	1.2598		32.00	1.7717		45.00
0.3622		9.20	0.7500	3/4		1.2656	1-17/64		1.7812	1-25/32	
0.3642		9.25	0.7656	49/64		1.2795		32.50	1.7913		45.50
0.3661		9.30	0.7677		19.50	1.2812	1-9/32		1.7969	1-51/64	
0.3680	LTR U		0.7812	25/32		1.2969	1-19/64		1.8110		46.00
0.3701		9.40	0.7874		20.0	1.2992		33.0	1.8125	1-13/16	
0.3740		9.50	0.7969	51/64		1.3125	1-5/16		1.8281	1-53/64	
0.3750	3/8		0.8071		20.5	1.3189		33.5	1.8307		46.50
0.3770	LTR V		0.8125	13/16		1.3281	1-21/64		1.8438	1-27/32	
0.3780		9.60	0.8268		21.0	1.3386		34.0	1.8504		47.00
0.3819		9.70	0.8281	53/64		1.3438	1-11/32		1.8594	1-55/64	
0.3839		9.75	0.8438	27/32		1.3583		34.5	1.8701		47.50
0.3858		9.80	0.8465		21.5	1.3594	1-23/64		1.8750	1-7/8	
0.3860	LTR W		0.8594	55/64		1.3750	1-3/8		1.8898		48.00
0.3898		9.90	0.8661		22.0	1.3780		35.0	1.8906	1-57/64	
0.3906	25/64		0.8750	7/8		1.3906	1-25/64		1.9062	1-29/32	
0.3937		10.00	0.8858		22.5	1.3976		35.5	1.9094		48.50
0.3970	LTR X		0.8906	57/64		1.4062	1-13/32		1.9219	1-59/64	
0.4040	LTR Y		0.9055		23.0	1.4173		36.0	1.9291		49.00
0.4062	13/32		0.9062	29/32		1.4219	1-27/64		1.9375	1-15/16	
0.4130	LTR Z		0.9219	59/64		1.4370		36.5	1.9488		49.50
0.4134		10.50	0.9252		23.5	1.4375	1-7/16		1.9531	1-61/64	
0.4219	27/64		0.9375	15/16		1.4531	1-29/64		1.9685		50.00
0.4331		11.00	0.9449		24.0	1.4567		37.0	1.9688	1-31/32	
0.4375	7/16		0.9531	61/64		1.4688	1-15/32		1.9844	1-63/64	
0.4528		11.50	0.9646		24.5	1.4764		37.5	1.9882		50.50
0.4531	29/64		0.9688	31/32		1.4844	1-31/64		2.0000	2 INCH	
0.4688	15/32		0.9843		25.0	1.4961		38.0			
0.4724		12.00	0.9844	63/64		1.5000	1-1/2				

Technical Drills

Table • Cutting Speeds

Fractional Sizes

	FEET PER MINUTE														
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
Diameter Inches	REVOLUTIONS PER MINUTE														
1/16	611	1222	1833	2445	3056	3667	4278	4889	5550	6111	6722	7334	7945	8556	9167
1/8	306	611	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
3/16	204	407	611	815	1019	1222	1426	1630	1833	2037	2241	2445	2648	2852	3056
1/4	153	306	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16	122	244	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8	102	204	306	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	87	175	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2	76	153	229	306	382	458	535	611	688	764	840	917	993	1070	1146
5/8	61	122	183	244	306	367	428	489	550	611	672	733	794	856	917
3/4	51	102	153	203	255	306	357	407	458	509	560	611	662	713	764
7/8	44	87	131	175	218	262	306	349	393	436	480	524	568	611	655
1	38	76	115	153	191	229	267	306	344	382	420	458	497	535	573
1 1/8	34	68	102	136	170	204	238	272	306	340	373	407	441	475	509
1 1/4	31	61	92	122	153	183	214	244	275	306	336	367	397	428	458
1 3/8	28	56	83	111	139	167	194	222	250	278	306	333	361	389	417
1 1/2	26	51	76	102	127	153	178	204	229	255	280	306	331	357	382
1 5/8	24	47	70	94	117	141	165	188	212	235	259	282	306	329	353
1 3/4	22	44	65	87	109	131	153	175	196	218	240	262	284	306	327
1 7/8	20	41	61	81	102	122	143	163	183	204	224	244	265	285	306
2	19	38	57	76	95	115	134	153	172	191	210	229	248	267	287
2 1/4	17	34	51	68	85	102	119	136	153	170	187	204	221	238	255
2 1/2	15	31	46	61	76	92	107	122	137	153	168	183	199	214	229
2 3/4	14	28	42	56	69	83	97	111	125	139	153	167	181	194	208
3	13	25	38	51	64	76	89	102	115	127	140	153	166	178	191

For Decimal Equivalents - See pages 280-281

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Technical Drills

Table • Cutting Speeds

Letter Sizes

	FEET PER MINUTE														
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
Size Letter	REVOLUTIONS PER MINUTE														
A	163	326	491	654	818	982	1145	1309	1472	1636	1796	1959	2122	2285	2448
B	161	321	482	642	803	963	1124	1284	1445	1605	1765	1926	2086	2247	2407
C	158	316	473	631	789	947	1105	1262	1420	1578	1736	1894	2052	2210	2368
D	155	311	467	622	778	934	1089	1245	1400	1556	1708	1863	2018	2174	2329
E	153	306	458	611	764	917	1070	1222	1375	1528	1681	1834	1968	2139	2292
F	149	297	446	594	743	892	1040	1189	1337	1486	1635	1784	1932	2081	2229
G	146	293	440	585	732	878	1024	1170	1317	1463	1610	1756	1903	2049	2195
H	144	287	430	574	718	862	1005	1149	1292	1436	1580	1723	1867	2010	2154
I	140	281	421	562	702	842	983	1123	1264	1404	1545	1685	1826	1966	2106
J	138	276	414	552	690	827	965	1103	1241	1379	1517	1655	1793	1930	2068
K	136	272	408	544	680	815	951	1087	1223	1359	1495	1631	1767	1903	2039
L	132	263	395	527	659	790	922	1054	1185	1317	1449	1581	1712	1844	1976
M	129	259	389	518	648	777	907	1036	1166	1295	1424	1554	1683	1813	1942
N	126	253	380	506	633	759	886	1012	1139	1265	1391	1518	1644	1771	1897
O	121	242	363	484	605	725	846	967	1088	1209	1330	1450	1571	1692	1813
P	118	237	355	473	592	710	828	946	1065	1183	1301	1419	1537	1657	1774
Q	115	230	345	460	575	690	805	920	1035	1150	1266	1384	1496	1611	1726
R	113	225	338	451	564	676	789	902	1014	1127	1239	1355	1465	1577	1690
S	110	220	329	439	549	659	769	878	988	1098	1207	1317	1427	1537	1646
T	107	213	320	426	533	640	746	853	959	1066	1173	1280	1387	1494	1600
U	104	208	311	415	519	623	727	830	934	1038	1142	1246	1349	1453	1557
V	101	203	304	405	507	608	709	810	912	1013	1114	1219	1317	1418	1520
W	99	198	297	396	495	594	693	792	891	989	1088	1188	1286	1385	1484
X	96	192	289	385	481	576	672	769	865	962	1058	1155	1251	1347	1443
Y	95	189	284	378	473	567	662	756	851	945	1040	1135	1229	1324	1418
Z	92	185	277	370	462	555	647	740	832	925	1017	1110	1202	1295	1387

For Decimal Equivalents - See pages 280-281

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Technical Drills

Table • Cutting Speeds

Number Sizes

	FEET PER MINUTE														
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
Number Size	REVOLUTIONS PER MINUTE														
1	168	335	503	670	838	1005	1173	1340	1508	1675	1843	2010	2179	2346	2513
2	173	345	518	691	864	1037	1210	1382	1555	1728	1901	2074	2247	2420	2593
3	179	359	538	717	897	1076	1255	1434	1614	1793	1974	2152	2331	2511	2690
4	183	365	548	731	914	1097	1280	1462	1645	1828	2010	2193	2376	2560	2741
5	186	372	558	744	930	1115	1301	1487	1673	1859	2045	2230	2416	2602	2788
6	187	374	562	749	936	1123	1310	1498	1685	1872	2060	2247	2434	2621	2809
7	190	380	570	760	950	1140	1330	1520	1710	1900	2090	2281	2470	2660	2850
8	192	384	576	768	960	1151	1343	1535	1727	1919	2111	2303	2495	2687	2879
9	195	390	585	780	975	1169	1364	1559	1754	1949	2144	2339	2534	2728	2923
10	197	395	592	790	987	1184	1382	1579	1777	1974	2171	2369	2566	2764	2961
11	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3001
12	202	404	606	808	1010	1213	1415	1617	1819	2021	2223	2425	2627	2829	3032
13	206	413	620	826	1032	1239	1450	1652	1859	2065	2271	2479	2684	2891	3097
14	210	420	630	840	1050	1259	1469	1679	1889	2099	2309	2518	2728	2938	3148
15	213	425	638	851	1064	1276	1489	1702	1914	2127	2334	2546	2759	2971	3183
16	216	432	647	863	1079	1295	1511	1726	1942	2158	2374	2590	2806	3021	3237
17	221	442	662	883	1104	1325	1546	1766	1987	2208	2429	2650	2870	3091	3313
18	226	452	678	904	1130	1356	1582	1808	2034	2260	2479	2704	2930	3155	3380
19	230	460	690	920	1151	1381	1611	1841	2071	2301	2531	2761	2991	3222	3453
20	237	475	712	949	1186	1423	1660	1898	2135	2372	2610	2847	3084	3322	3559
21	240	480	721	961	1201	1441	1681	1922	2162	2402	2644	2883	3123	3363	3604
22	243	487	730	973	1217	1460	1703	1946	2190	2433	2676	2920	3164	3406	3649
23	248	496	744	992	1240	1488	1736	1984	2232	2480	2728	2976	3224	3472	3720
24	251	503	754	1005	1257	1508	1759	2010	2262	2513	2764	3016	3267	3518	3769
25	256	511	767	1022	1276	1533	1789	2044	2300	2555	2810	3066	3322	3577	3832
26	260	520	779	1039	1299	1559	1819	2078	2338	2598	2858	3118	3378	3638	3898
27	265	531	796	1061	1327	1592	1857	2122	2388	2653	2919	3183	3448	3714	3979
28	272	544	816	1088	1360	1631	1903	2175	2447	2719	2990	3262	3534	3806	4078
29	281	562	843	1124	1405	1685	1966	2247	2528	2809	3090	33701	3651	3932	4213
30	297	595	892	1189	1487	1784	2081	2378	2676	2973	3270	3567	3864	4162	4459
31	318	637	955	1273	1592	1910	2228	2546	2865	3183	3501	3821	4138	4456	4775
32	329	659	988	1317	1647	1976	2305	2634	2964	3293	3622	3951	4281	4610	4939
33	338	676	1014	1352	1690	2028	2366	2704	3042	3380	3718	4056	4394	4732	5070
34	344	688	1032	1376	1721	2065	2409	2753	3097	3442	3785	4129	4474	4818	5162
35	347	694	1042	1389	1736	2083	2430	2778	3125	3472	3821	4167	4514	4861	5209
36	359	717	1076	1435	1794	2152	2511	2870	3228	3587	3945	4304	4663	5021	5380
37	367	735	1102	1469	1837	2204	2571	2938	3306	3673	4040	4407	4775	5142	5509
38	376	753	1129	1505	1882	2258	2634	3010	3387	3763	4140	4516	4892	5269	5645
39	384	768	1152	1536	1920	2303	2687	3071	3455	3839	4222	4607	4991	5374	5758
40	390	780	1169	1559	1949	2339	2729	3118	3508	3898	4287	4677	5067	5457	5846

For Decimal Equivalents - See pages 280-281

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Technical Drills

Table • Cutting Speeds

Number Sizes (Continued)

	FEET PER MINUTE														
	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
Number Size	REVOLUTIONS PER MINUTE														
41	398	796	1194	1592	1990	2387	2785	3183	3581	3979	4377	4775	5172	5570	5968
42	408	817	1226	1634	2043	2451	2860	3268	3677	4085	4494	4902	5311	5719	6128
43	429	858	1288	1717	2146	2575	3004	3434	3863	4292	4721	5150	5579	6008	6438
44	444	888	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
45	466	932	1397	1863	2329	2795	3261	3726	4192	4658	5124	5590	6056	6522	6987
46	472	943	1415	1886	2358	2830	3301	3773	4244	4716	5187	5659	6130	6602	7074
47	487	973	1460	1946	2433	2920	3406	3893	4379	4866	5352	5839	6326	6812	7299
48	503	1005	1508	2010	2513	3016	3518	4021	4523	5026	5528	6031	6534	7036	7539
49	523	1047	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6808	7326	7849
50	546	1091	1637	2183	2729	3274	3820	4366	4911	5457	6002	6548	7094	7640	8185
51	570	1140	1710	2280	2851	3421	3991	4561	5131	5701	6271	6841	7413	798	8552
52	602	1203	1805	2406	3008	3609	4211	4812	5414	6015	6619	7218	7820	8421	9023
53	641	1283	1924	2566	3207	3848	4490	5131	5773	6414	7062	7704	8346	8988	9630
54	694	1389	2084	2778	3473	4167	4862	5556	6251	6945	7639	8334	9028	9723	10417
55	735	1469	2204	2938	3673	4408	5142	5877	6611	7346	8080	8815	9549	10284	11028
56	821	1643	2465	3286	4108	4929	5751	6572	7394	8215	9036	9857	10678	11500	12322
57	888	1777	2671	3561	4452	5342	6232	7122	8013	8903	9791	10680	11568	12456	13344
58	910	1819	2729	3637	4547	5456	6367	7275	8186	9095	10004	10913	11823	12732	13642
59	932	1863	2795	3726	4658	5590	6521	7453	8388	9316	10248	11180	12111	13043	13975
60	955	1910	2865	3820	4775	5729	6684	7639	8594	9549	10504	11459	12414	13369	14324
61	979	1959	2938	3918	4897	5876	6856	7835	8815	9794	10774	11753	12732	13712	14691
62	1005	2010	3015	4020	5025	6030	7035	8040	9045	10050	11057	12060	13068	14073	15078
63	1032	2064	3096	4128	5160	6192	7224	8256	9288	10320	11366	12398	13421	14453	15485
64	1061	2122	3183	4244	5305	6366	7427	8488	9549	10610	11671	12732	13793	14854	15915
65	1091	2182	3273	4364	5455	6546	7637	8728	9819	10910	12005	13096	14187	15279	16370
66	1158	2316	3474	4632	5790	6948	8106	9264	10422	11580	12732	13890	15047	16205	17362
67	1194	2388	3582	4776	5970	7164	8358	9552	10746	11940	13130	14324	15517	16712	17905
68	1232	2465	3696	4928	6160	7392	8624	9856	11088	12320	13554	14786	16018	17250	18482
69	1308	2616	3918	5224	6530	7836	9142	10448	11754	13060	14389	15697	17006	18314	19622
70	1364	2729	4091	5456	6820	8184	9548	10912	12276	13640	15006	16370	17734	19099	20463
71	1469	2938	4419	5892	7365	8838	10311	11784	13257	14730	16160	17629	19099	20568	22037
72	1528	3056	4584	6112	7640	9168	10696	12224	13752	15280	16807	18335	19863	21390	22918
73	1592	3183	4776	6368	7960	9552	11144	12736	14328	15920	17507	19099	20690	22282	23873
74	1698	3396	5106	6808	8510	10212	11914	13616	15318	17020	18674	20372	22069	23767	25465
75	1819	3638	5457	7276	9095	10914	12733	14552	16371	18190	20008	21827	23646	25465	27284
76	1910	3820	5730	7640	9550	11460	13370	15280	17190	19100	21008	22918	24828	26738	28648
77	2122	4244	6366	8488	10610	12732	14854	16976	19098	21220	23343	25465	27587	29709	31831
78	2388	4775	7161	9548	11935	14322	16709	19096	21483	23870	26260	28648	31035	33422	35810
79	2634	5269	7902	10536	13170	15804	18438	21072	23706	26340	28988	31611	34246	36880	39514
80	2830	5659	8490	11320	14150	16980	19810	22640	25470	28300	31123	33953	36782	39612	42441

For Decimal Equivalents - See pages 280-281

Technical Drills

Recommended Surface Feet Per Minute & Coolant by Material Application

Ferrous Materials

MATERIALS	BRINELL	SURFACE FEET PER MINUTE	COOLANT
Low Carbon Steel	85-125	80-95	Soluble Oil
Medium Carbon Steel	125-175	70-85	Soluble Oil
High Carbon Steel	175-225	45-65	Soluble Oil
Steels Alloyed	Under 200	60-90	Soluble Oil
	200-300	40-70	Soluble Oil
	Over 300	20-30	Soluble Oil
Steel Drop Forgings Heat Treated	330-370	30-40	Cutting Oil
	370-420	20-30	Cutting Oil
	Over 420	10-20	Cutting Oil
Grey Cast Iron Soft	125	140-150	Dry
Grey Cast Iron Medium	120-200	50-80	Soluble Oil
Grey Cast Iron Hard	Up to 350	25-40	Soluble Oil
Titanium Alloys (Ti)-75A	300-440	50-60	Cutting Oil
Ti-150A, RS-120	300-440	40-50	Cutting Oil
Ti-140A, RC 130B	300-440	30-40	Cutting Oil
Ti-6AL -4V	300-440	20-30	Cutting Oil
300 Series Stainless	120-200	20-40	Cutting Oil
400 Series Stainless	200-300	40-70	Cutting Oil
Martensitic 416, 420, F416 Plus K, 400F, 416SE, 440F	135-185	40-50	Cutting Oil
Precipitation Hardening	325-375	30	Cutting Oil
Stainless Steel, Cast	400-450	20	Cutting Oil
Heat Resisting Steels	175-225	10-25	Cutting Oil
Nimonic Alloys	200-300	10-20	Cutting Oil
Manganese 12-14% min	125-220	10-12	Cutting Oil
Spring Steels	402	15-30	Soluble Oil
Armor Plate	200-250	40	Soluble Oil
	250-300	35	Soluble Oil
	300-350	30	Cutting Oil

Non-Ferrous Materials

MATERIALS	BRINELL	SURFACE FEET PER MINUTE	COOLANT
Aluminum Pure	140-350	130-200	Soluble Oil
Aluminum Alloys	140-330	150-300	Soluble Oil
Aluminum Leaded	40-100	200-325	Soluble Oil
Aluminum Silicon Alloy Die Cast	40-100	25-50	Soluble Oil
Brass	190-210	200-250	Cutting or Soluble Oil
Bronze	150-200	200-250	Soluble Oil
Copper, Nickel & Copper Tin Alloy	65-100	140-200	Cutting Oil or Soluble Oil
Copper Aluminum Alloys	30-100	120-200	Cutting or Soluble Oil
Magnesium Alloys-Wrought	50-90	140-330	Cutting or Soluble Oil
Magnesium Alloys-Cast	50-90	140-365	Cutting or Soluble Oil
Nickel Alloys-Wrought and Cast Monel	80-170	70	Cutting Oil
	115-240	55	or Soluble Oil
Beryllium Nickel	200-250	12	Soluble Oil
Zinc Alloy	112-126	200-250	Soluble Oil

Drill Feeds

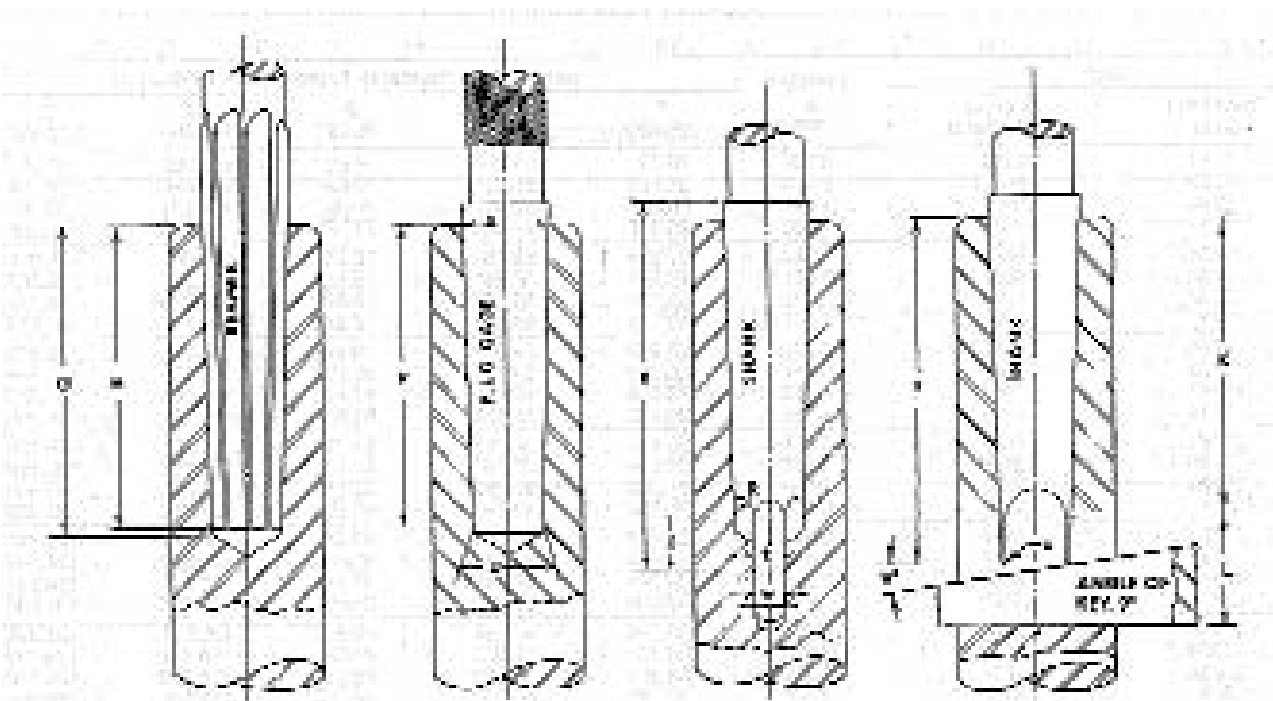
DIAMETER RANGE (INCHES)	NORMAL FEEDS (IPR)	HEAVY FEED (IPR)
from 1/16 thru 1/8	.001-.002	.002-.004
over 1/8 thru 1/4	.002-.004	.004-.008
over 1/4 thru 1/2	.004-.008	.008-.016
over 1/2 thru 1	.008-.016	.016-.024
over 1	.016-.024	.024-.032

Technical Drills

Table • American National Standard Tapers

American National Standard Taper Number	SHANK						TANG					TANG SLOT				
	Diameter of Plug at Small End	Diameter at End of Socket	Whole Length	Depth	Depth of Drilled Hole	Depth of Reamed Hole	Standard Plug Depth	Thickness	Length	Radius	Radius	Width	Length	End of Socket to Tang Slot	Taper Per Inch	Taper Per Foot
	D	A	B	S	G	H	P	t	T	R	a	W	L	K		
0*	.2520	.3561	2-11/31	2-7/32	2-1/16	2-1/32	2	5/32	1/4	5/32	3/64	11/64	9/16	1-15/16	.052050	.62460
1	.3690	.4750	2-9/16	2-7/16	2-3/16	2-5/32	2-1/8	13/64	3/8	3/16	3/64	7/32	3/4	2-1/16	.049882	.59858
2	.5720	.7000	3-1/8	2-15/16	2-21/32	2-39/64	2-9/16	1/4	7/16	1/4	1/16	17/64	7/8	2-1/2	.049951	.59941
3	.7780	.9380	3-7/8	3-11/16	3-5/16	3-1/4	3-3/16	5/16	9/16	9/32	5/64	21/64	1-3/16	3-1/16	.050196	.60235
4	1.0200	1.2310	4-7/8	4-5/8	4-3/16	4-1/8	4-1/16	15/32	5/8	5/16	3/32	31/64	1-1/4	3-7/8	.051938	.62326
4-1/2	1.2660	1.5000	5-3/8	5-1/8	4-5/8	4-9/16	4-1/2	9/16	11/16	3/8	1/8	37/64	1-3/8	4-5/16	.052000	.62400
5	1.4750	1.7480	6-1/8	5-7/8	5-5/16	5-1/4	5-3/16	5/8	3/4	3/8	1/8	21/32	1-1/2	4-15/16	.052626	.63151
6	2.1160	2.4940	8-9/16	8-1/4	7-13/32	7-21/64	7-1/4	3/4	1-1/8	1/2	5/32	25/32	1-3/4	7	.052138	.62565
7	2.7500	3.2700	11-5/8	11-1/4	10-5/32	10-5/64	10	1-1/8	1-3/8	3/4	3/16	1-5/32	2-5/8	9-1/2	.052000	.62400

* Size 0 taper shank not listed in American National Standards.



Reaming Hints

Technical • Reaming Hints

Reaming Speeds

Speeds for machine reaming may vary considerably depending in part on the material to be reamed, type of machine, and required finish and accuracy. In general most machine reaming is done at about 2/3 the speed used for drilling the same material. Speeds for drilling are shown on page 282-285.

Reaming Feeds

Feeds for reaming are usually much higher than those used for drilling, often running 200 to 300% of drill feeds. Too low a feed may result in excessive reamer wear. At all times it is necessary that the feed be high enough to permit the reamer to cut rather than to rub or burnish. Too high a feed may tend to reduce the accuracy of the hole and may also lower the quality of the finish. The basic idea is to use as high a feed as possible and still produce the required finish and accuracy.

Stock to be Removed

For the same reason, insufficient stock for reaming may result in a burnishing rather than a cutting action. It is difficult to generalize on this phase as it is tied in closely with type of material, feed, finish required, depth of hole, and chip capacity of the reamer. For machine reaming, .010" on a 1/4" hole, .015" on a 1/2" hole, up to .025" on a 1-1/2" hole, seems a good starting point. For hand reaming, stock allowances are much smaller, partly because of the difficulty in forcing the reamer through greater stock. A common allowance is .001" to .003".

Alignment

In the ideal reaming job, the spindle, reamer, bushing, and hole to be machined are all in perfect alignment. Any variation from this tends to increase reamer wear and detracts from the accuracy of the hole. Tapered, oversize, or bell-mouthed holes should call for a check of alignment. Sometimes the bad effects of misalignment can be reduced through the use of floating or adjustable holders. Quite often if the user will grind a slight back taper on the reamer it will also be of help in overcoming the effects of misalignment.

Chatter

The presence of chatter while reaming has a very bad effect on reamer life and on the finish in the hole. Chatter may be the result of one of several causes, some of which are listed:

1. Excessive speed.
2. Too much clearance on reamer.
3. Lack of rigidity in jig or machine.
4. Insecure holding of work.
5. Excessive overhang of reamer or spindle.
6. Excessive looseness in floating holder.
7. Too light a feed.

Correcting the cause can materially increase both reamer life and the quality of the reamed holes.

Coolant

In reaming, the emphasis is usually on finish and a coolant is normally chosen for this purpose rather than for cooling. Quite often this means a change from that recommended for drilling as shown on page 286 but in general this list will be found satisfactory.

Reamer Regrinding

In obtaining maximum economy from reamers the same principles apply as in the case of most other cutting tools. One of these principles is not to allow a tool to become too dull. It is best to regrind the chamfer on a reamer long before it exhibits excessive wear or refuses to cut. This sharpening is usually restricted to the entering taper or chamfer. It can be done on almost any tool and cutter grinder. Care must be taken so that each flute is ground exactly even or the tool is apt to cut oversize.

Sharpening the chamfer on a reamer by hand is not recommended as it is practically impossible to keep the cutting edges even.

The following figures show three common types of grinds used on reamers:

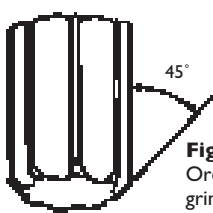


Figure A
Ordinary reamer
grind for most jobs.

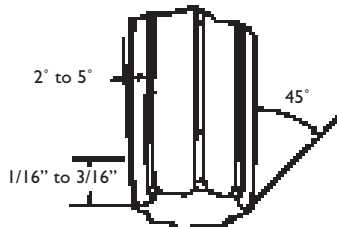


Figure B
Hand reamer grind also
used on some machine
reamer applications to
obtain required finish
or tolerance.

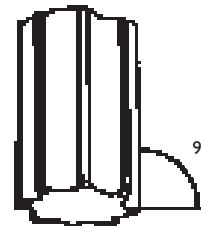


Figure C
Semi-finish reamer
grind to straighten
out bent or mis-
aligned holes.
Corners must be
kept sharp.

In grinding down a reamer to special size it is usually necessary to relieve or clear the lands. No hard or fast rule may be given as to the amount of this clearance but the following table may be of help:

Size of Reamer	Circular Land Width	Primary Clearance
1/4"	.007	14°
1/2"	.009	11°
1"	.013	9°
1-1/2"	.016	7°

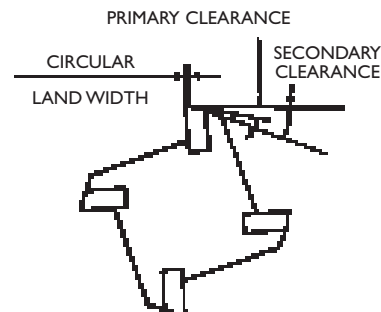


Figure D
A secondary clearance is
often ground on reamers
as shown in Fig. D. This
clearance is only to insure
the back of the land being
well away from the wall of
the reamed hole in order to
prevent rubbing.

Selection of Proper End Mill & Machine

Tool Material

Cleveland end mills are available in a variety of tool materials; regular high speed steel, two varieties of high speed steel with cobalt, (premium cobalt and PM/Plus for higher production rates), carbide-tipped and sub micron grain solid carbide. The choice of tool material will depend on the following factors:

1. Machinability of the workpiece
2. Hardness and structure of the workpiece
3. Shape and conditions of the workpiece
4. Number of workpieces to be processed

Several of the chief characteristics of high speed steel end mills as compared to carbide tipped or solid carbide mills are their low initial cost and general purpose versatility. End mills of high speed steel with cobalt have proven most effective in titanium alloys, alloy steels, Rc-40-50, high strength stainless steels, and thermal and heat resistant materials such as nickel or cobalt base alloys.

The PM/Plus end mills utilizing a special cobalt high speed steel coupled with a heat treatment and special mechanical designs, are capable of greater than normal feed rates and longer tool life in these same material groups.

For high production jobs in non-ferrous, non-metallic or highly abrasive substances it is more economical to use solid carbide MicroPlus end mills or carbide tipped mills. The carbide used in each type of mill has been specifically selected to match the application of the mill. The bodies of the carbide tipped mills have been heat treated to withstand both the bending and torsional loads encountered in milling.

Number of Flutes

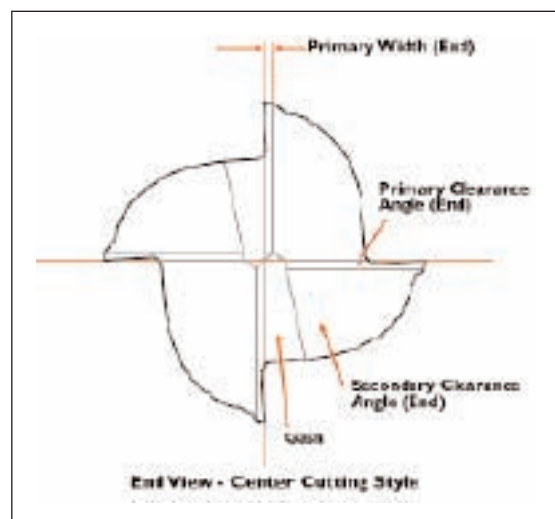
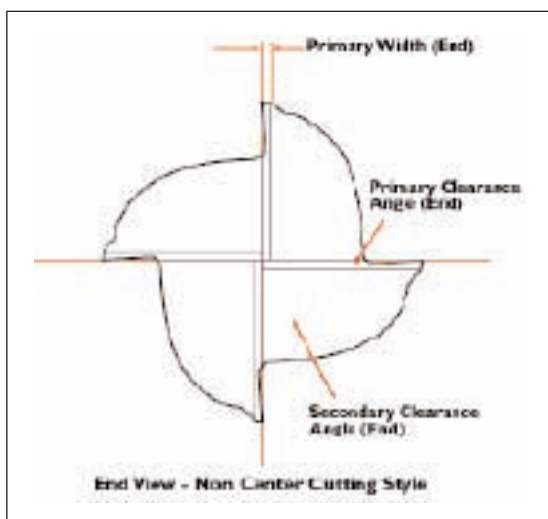
To determine selection of either a two-flute or a multiple-flute end mill, several basics need to be considered.

1. Type of cut
2. Chip space required
3. Production rate desired
4. Surface finish required

Two-fluted end mills have greater chip handling capacity than multiple-fluted end mills. In order for an end mill to axially plunge-cut (drill), it must be manufactured as a center cutting tool. All two-flute end mills are center cutting. Multiple-flute end mills are available with center cutting or non-center cutting features.

When two-flute end mills and multiple-flute end mills are run at the same feed rate (inches per minute), multiple-flute end mills may produce finer finishes and longer tool life than two-flute end mills, owing to a lighter chip load per tooth. Some caution must be exercised to insure that the chip load does not become so light as to cause excessive wear. Generally for production runs where either a two-flute or multiple-flute end mill would be applicable, it is more economical to use the multiple-flute end mill.

Roughing end mills are designed to be used in a variety of materials and to remove more cubic inches of material in the same period of time than conventional end mills. In order to achieve these rates of material removal, as well as to obtain full tool life, the feed rates employed must be heavier than with conventional end mills.



Ferrous Materials • Machine & Job Set-Up

The milling machine being used for an application should never be underpowered. The power being expended on the milling operation must be below that of the rated capacity of the machine. Inconsistencies in material or line voltage will actually decrease the spindle speed, resulting in increased chip load per tooth and premature cutting edge failure. Scored or battered end mill shanks, adapter holes, or adapter shanks all contribute to lack of concentricity between the milling machine spindle and the cutting portion of the end mill.

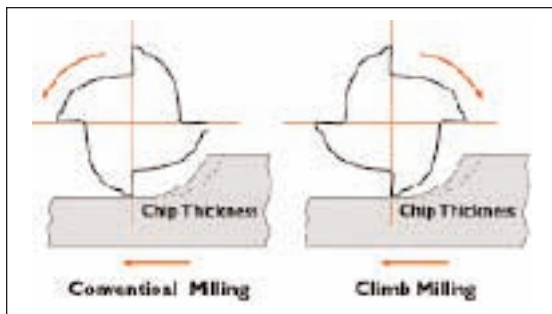
In most milling operations, the end mill is subjected to side forces acting normal to mill axis. The projection of the tool from the holder results in beam loading with the fulcrum point being the end of the holder or the holder screw. Continued use leads to a bell mouth condition of the holder as evidenced by brown ring(s) being formed on the end mill shank during use. Maintenance and use of good quality holders are important elements in achieving consistent end mill performance.

General Considerations

An end mill of proper design must be used whenever possible, with the shortest necessary flute length projecting from the milling machine spindle. In addition, the end mill being used must be sharp, with correct relief and rake angles for the material being milled, and must be as concentric with the milling machine spindle as possible. Worn or misaligned machine spindles can also contribute to a lack of concentricity. Non-concentric set-ups lead to premature wear, rough surface finish and excessive oversize cutting action. Rigidity of the set-up is extremely critical to obtaining satisfactory end mill performance. The best aligned spindle-holder-end mill combination is ineffective if the set-up is too light, workpiece insecurely clamped or improperly supported.

Mode of Milling

In peripheral milling operations where the radial width of cut is less than half the end mill diameter, two options are available relative to the direction of rotation of the end mill and direction of movement of the workpiece as noted below.



Originally the “conventional” milling procedure of feeding the workpiece material into the counter rotating end mill was the standard practice. To some degree this was dictated by the

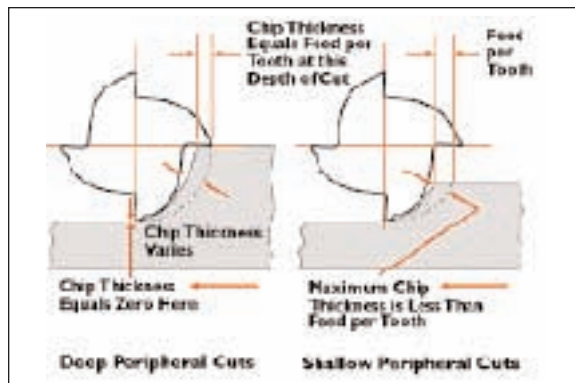
quality of the milling machines available and their lack of backlash eliminators. In this system of cutting the thickness of the chip constantly increases as the tooth of the end mill moves through the cut. Before actually engaging into the cut, the tooth has a tendency to slide along until enough pressure is built up to cause the cutting edge to penetrate into the material. This sliding action both dulls the cutting edge as well as generates heat. It also has an undesirable effect on those materials which have a tendency to work harden.

“Conventional” milling is still applicable for those applications involving workpieces with hard, scaly surfaces or machines with poor backlash characteristics.

With the general quality of milling machines in use today, the preferred method of milling in most instances is to have both the direction of rotation and direction of the feed of the workpiece to be in the same direction. Known as the “Climb Milling” this procedure allows the mill tooth to take a full cut as it penetrates into the workpiece, without any substantial rubbing or dragging on the surface. The thickness of the chip decreases as the face moves through its cut. This results in lower cutting temperatures, finer workpiece finish and generally longer tool life. One additional advantage is that “climb milling” forces the workpiece into the table, providing for a more rigid situation during cutting, whereas, the “conventional milling” mode tends to lift the workpiece away from the table. Such action results in an unstable condition for cutting, where the workpieces are thin or poorly clamped.

Chip Thickness

Chip thickness is one of the more important factors affecting tool life in milling operations. Very thin or feather-edge chips dull cutting edges more rapidly than thick chips. Chip thickness is governed by the size and shape of the end mill and workpiece. Chip thickness is also affected by the position of cutter axis to resultant milled surface as illustrated below for several conditions. Careful thought must be given to feed per tooth, to mill size and design, and location relative to the work.



End Mills

Selection of Cutting Fluids

Coolants control the temperatures of the end mill and the work, and provide a lubricant between the end mill, the chip and the workpiece. The proper type and application of coolant will protect the end mill cutting edges from damage, prevent deformation of the work piece through overheating, and will improve finish by allowing cool, clean chip formation and efficient chip disposal.

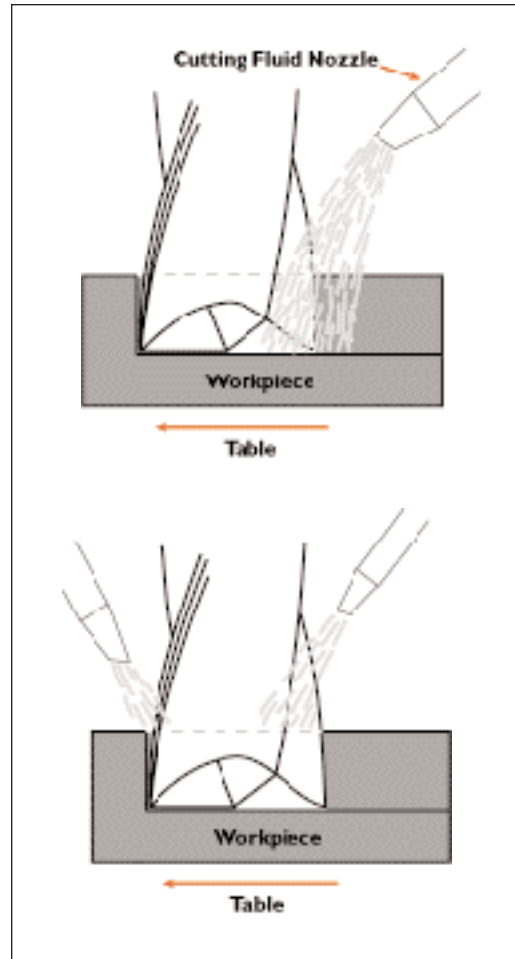
The theory that a copious flow of coolant (or even total immersion of the workpiece in the coolant) is the surest way to provide proper cooling and lubrication, is not necessarily true. Recent tests have shown that multiple streams or jets of coolant, directed at strategic locations of the end mill rotating in or against the work, have greater cooling effects than a slow-moving copious flow.

The optimum application of coolant is achieved by the use of coolant feeding end mills. These end mills are designed and manufactured to meet your specific need.

When using coolant, care should always be taken to insure that coolant lines are clean and free of obstructions, and that the coolant is both clean and free of fines.

No matter how well the cutting fluid is directed between the end mill and the work, a dull end mill will generate more heat than can be dissipated by adequate cooling. Proper cutting fluid application will protect a sharp cutting edge to insure maximum tool life per grind. An interrupted flow of cutting fluid can cause rapid damage to the cutting edges in a few revolutions of the end mill.

It is always wise to consult a cutting fluid supplier when experiencing problems of an unusual nature.



High Speed Steel End Mills

A cutting fluid or coolant is required when using high speed steel end mills for milling steel. For milling with high speed end mills, water emulsified cutting oil generally is considered the least expensive and most applicable coolant for nearly all materials except those that are milled dry. Some of the harder steel forgings and die steels may be milled with somewhat better results when mineral or lard oils, or sulfurized oils are used. Plastics and cast iron should be milled dry or with a jet of air, while aluminum and aluminum alloys are best milled with water emulsified cutting oil, either in a properly directed jet stream, or in a mist.

Carbide Tipped & Solid Carbide End Mills

Most carbide milling applications may be run dry. Often a jet of air is used which also serves to remove chips from the cutting area.

If a coolant is used, it should be applied carefully so that the direction of flow is not partially blocked by the workpiece or fixtures. Intermittent heating and quenching of carbide, such as caused by an interrupted flow of coolant, will result in cracked carbide and tool failure. In cases where coolant is used, it generally is a soluble oil or light cutting oil.

End Mills

Operating Conditions for End Milling

Speeds & Feeds

Speeds and feeds are the most important factors to consider for best results in milling. Improper feeds and speeds often cause low production, poor work quality and unnecessary damage to the cutter. Too high a speed or too light a feed leads to rapid wear and dulling of the cutter, thus reducing tool life.

In milling, SPEED is measured in peripheral feet per minute. Often times, SPEED is referred to as “cutting speed”, “surface speed”, or “peripheral speed”. The relationship of this peripheral speed to the diameter of the end mill and the rotational speed of the machine spindle are indicated in the following table.

FEED is normally measured and stated in inches per minute (IPM). It is, as shown below, the product of the number of cutting teeth in the end mill times the feed per tooth times the revolutions per minute. In establishing operating condi-

tions, all feed rates should be calculated from the chip load or feed per tooth. The individual cutting tooth must be able to sustain the load or feed applied to it without fracturing regardless of the number of teeth in the mill. Because feed per tooth affects thickness, it is a very important factor in tool life.

Highest possible feed per tooth will usually give longer tool life between grinds and greater production per grind. Excessive feeds may overload the mill teeth and cause breakage or chipping of the cutting edge. Reasonable safe starting feeds for end mills under 1/2” diameter range from .0002 - .002 inch per tooth and .002 - .003 for end mills 1/2” diameter and greater.

The following are some important relationships for the end milling operation.

Definition of Symbols & Measurement Units

Quantity	Symbol	Measurement Unit
Cutting Speed	SFM	Surface feet per minute
Rotational Speed	RPM	Revolutions per minute
End Mill Diameter	D	Inches
Feed Per Tooth	IPT	Inches per tooth
Machine Feed Rate	IPM	Inches per minute
Feed Per Revolution	IPR	Inches per revolution
Cutting Power Input	HP	Horsepower
Power Constant	K	Horsepower/Cubic Inch/Minute
Width of Cut	WOC	Inches
Depth of Cut	DOC	Inches
Number of Teeth	T	

Speed, Feed & Power Calculations

To Find	Known Values	Formulae
Peripheral Cutting Speed - SFM	Mill Diameter, D Rotational Speed RPM	$SFM = .262 \times RPM \times D$ $SFM(est) = \frac{RPM \times D}{4}$
Rotational Speed - RPM	Peripheral Cutting Speed, SFM Mill Diameter, D	$RPM = \frac{SFM}{.262 \times D}$ $RPM(est) = \frac{4 \times SFM}{D}$
Machine Feed Rate - IPM	Rotational Speed, RPM Number of Flutes (Teeth), T Feed per Tooth, IPT	$IPM = T \times IPT \times RPM$
Feed per Tooth - IPT	Machine Feed Rate, IPM Rotational Speed, RPM Number of Teeth, T	$IPT = \frac{IPM}{RPM \times T}$
Feed per Revolution - IPR	Machine Feed Rate, IPM	$IPR = \frac{IPM}{RPM}$
Cutting Power Input - HP	Width of Cut, WOC Depth of Cut, DOC Machine Feed Rate, IPM Work Piece Material Power Constant, K	$HP = WOC \times DOC \times IPM \times K$

End Mills

Power Constants* For Use in Power Calculations

Work Material (Constant)	K (Constant)	Work Material	K (Constant)	Work Material	K
Aluminum	0.3	High Temp. Alloys		High Tensile Alloys	
Magnesium	0.3	Ferritic	1.7	180,000 - 220,000 psi	2.0
Copper	0.5	Austenitic	2.0	220,000 - 260,000 psi	2.5
Brass	0.4	Nickel Base	2.5	260,000 - 300,000 psi	3.3
Bronze	0.5	Cobalt Base	2.5	Titanium	
Cast Irons		Steel		under 100,000 psi	1.3
Ferritic	0.7	up to 150 Brinell	1.4	100,000 - 135,000 psi	1.7
Pearlitic	1.0	up to 300 Brinell	1.7	135,000 psi & over	2.5
Chilled	1.7	up to 400 Brinell	2.0	Stainless Steel	
Malleable Iron	1.0	up to 500 Brinell	2.5	Free Machining	1.0
				Others	1.7

*Horsepower required to remove one cubic inch of material per minute assuming a 60% power efficiency at the spindle nose and a 25% allowance

Starting Points

All of the speeds and feeds presented in the following tables by tool material, work-piece material and diameter and types of end mill are suggested starting points. These may be increased or decreased dependent upon variables such as finish desired, condition of the milling machine, magnitude of the cut, rigidity of the part, use of coolant, power available, etc. Some points to consider in selecting speeds and feeds from within the ranges stated are:

Speed

Use Lower Speeds for:	Use Higher Speeds for:
Hard Materials	Softer materials
Tough Materials	Better finishes
Abrasive Materials	Small diameter mills
Heavy Cuts	Light cuts
Minimum Tool Wear	Frail work piece or set-ups
Maximum Mill Life	Maximum production rates
	Non metallics

Feed

Use Higher Feeds for:	Use Lighter Feeds for:
Heavy roughing cuts	Light and finishing cuts
Rigid set-ups	Frail set-ups
Easy to machine work materials	Hard to machine work materials
Rugged heavy duty mills	Deep slots
High tensile strength materials	Frail and small diameter mills
Coarse tooth mills	Low tensile strength materials
Abrasive materials	

Troubles & Corrective Actions

The following is a listing of some of the more common troubles experienced during end milling and corrective actions involving variations in speeds and feeds which may be taken to offset them:

- Lack of rigidity:** Increase speed, decrease feed.
- Excessive abrasion of the tool:** Decrease speed, increase feed.
- Chipping of the cutting edge:** Decrease feed per tooth.
- Burning of the cutting edge:** Decrease speed.
- Cratering of carbide:** Decrease speed and feed.
- Chatter:** Use other combinations of speed and feed.

End Mills

Regular High Speed Steel & Premium Cobalt High Speed Steel Conventional Style End Mills

Materials	Heat-Resistant Cobalt Base Alloys, High Tensile Steels (50-55C)			Heat-Resistant Austenitic Alloys, High Tensile Steels (46-50C)			Heat-Resistant Nickel Base Alloys, High Strength Stainless Steels, High Strength Titanium Alloys			High Strength Stainless Steels, High Tensile Steels (40-46C) Medium Strength Titanium Alloys			Heat-Resistant Ferritic Base Alloys, Medium Strength Stainless Steels, Unalloyed Titanium Tool Steels (30-40C)		
	Premium Cobalt, High Speed Steel, 2 or More Flute			Premium Cobalt, High Speed Steel, 2 or More Flute			Premium Cobalt, High Speed Steel, 2 or More Flute			High Speed Steel End Mills or Premium Cobalt, High Speed Steel Types, 2 or More Flute			High Speed Steel End Mills, 2 or More Flute		
Types & Styles of End Mills	SPEED 5-10 SFM FEED			SPEED 10-15 SFM FEED			SPEED 15-20 SFM FEED			SPEED 20-40 SFM FEED			SPEED 40-60 SFM FEED		
Dia. of End Mill	RPM	Chip Load per Tooth	RPM	Chip Load per Tooth	RPM	Chip Load per Tooth	RPM	Chip Load per Tooth	RPM	Chip Load per Tooth	RPM	Chip Load per Tooth	RPM	Chip Load per Tooth	RPM
1/16	*	*	*	*	*	*	611-815	.0002-.0005	815-1629	"	1222-2444	.0002-.0005	2444-3667	.0002-.0005	3667-4889
3/32	*	*	*	*	*	*	456-611	"	611-1222	"	1222-1833	"	1833-2444	"	2444-3667
1/8	*	*	*	*	*	*	306-407	"	407-815	"	815-1222	"	1222-1833	"	1833-2444
3/16	*	*	204-306	.0002-.0005	306-407	.0002-.0005	407-815	"	815-1222	"	1222-1833	"	1833-2444	"	2444-3667
1/4	76-153	.0002-.001	153-230	.0002-.001	230-306	.0002-.001	306-407	.0002-.001	407-815	.0002-.001	815-1222	.0002-.001	1222-1833	.0002-.001	1833-2444
5/16	61-122	"	122-183	"	183-244	"	244-489	"	489-733	"	733-1066	"	1066-1399	"	1399-1732
3/8	51-102	"	102-153	"	153-203	"	203-407	.0005-.002	407-611	.0005-.002	611-917	.0005-.002	917-1222	.0005-.002	1222-1833
7/16	44-88	.0005-.001	88-132	.0005-.001	132-175	.0005-.001	175-349	"	349-524	"	524-699	"	699-873	"	873-1047
1/2	38-76	"	76-115	"	115-153	"	153-306	.0005-.003	306-458	.0005-.003	458-611	.0005-.003	611-917	.0005-.003	917-1222
9/16	34-68	.0005-.002	68-104	.0005-.002	104-136	"	136-272	"	272-412	"	412-548	"	548-684	"	684-820
3/8	31-61	"	61-92	"	92-122	"	122-244	.001-.004	244-367	.001-.004	367-489	.001-.004	489-611	.001-.004	611-917
11/16	28-56	"	56-84	"	84-111	"	111-222	"	222-337	"	337-451	"	451-565	"	565-679
3/4	26-51	"	51-76	"	76-102	.001-.004	102-203	"	203-306	"	306-407	"	407-509	"	509-611
13/16	24-47	.001-.003	47-71	.001-.003	71-94	"	94-189	"	189-284	"	284-379	"	379-473	"	473-567
7/8	22-44	"	44-65	"	65-87	"	87-175	"	175-262	.002-.006	262-349	.002-.006	349-436	.002-.006	436-523
15/16	20-40	"	40-62	"	62-81	"	81-163	"	163-246	"	246-329	"	329-412	"	412-495
1	19-38	"	38-58	"	58-76	"	76-153	.002-.006	153-229	"	229-306	"	306-383	"	383-460
1-1/8	34	.0015-.004	34-51	.0015-.004	51-68	.0015-.005	68-136	"	136-204	"	204-272	"	272-340	"	340-408
1-1/4	31	"	31-46	"	46-61	"	61-122	"	122-183	"	183-244	"	244-305	"	305-366
1-3/8	28	"	28-42	"	42-55	"	55-111	"	111-167	.003 Up	167-223	.003 Up	223-279	.003 Up	279-335
1-1/2	26	"	26-38	"	38-51	.002 Up	51-102	.003 Up	102-153	"	153-203	"	203-254	"	254-305
1-5/8	24	.002 Up	35	.002 Up	35-47	"	47-94	"	94-141	"	141-188	"	188-235	"	235-282
1-3/4	22	"	32	"	32-43	"	43-87	"	87-131	"	131-175	"	175-219	"	219-263
1-7/8	20	"	30	"	30-40	.003 Up	40-81	"	81-122	"	122-163	"	163-204	"	204-245
2	19	"	29	.003 Up	29-38	"	38-76	"	76-115	"	115-153	"	153-192	"	192-231
2-1/8	18	.003 Up	28	"	36	"	36-72	"	72-108	"	108-144	"	144-180	"	180-216
2-1/4	17	"	26	"	34	"	34-68	"	68-102	"	102-136	"	136-170	"	170-204
2-3/8	16	"	25	"	32	"	32-64	"	64-97	"	97-128	"	128-159	"	159-190
2-1/2	15	"	23	"	30	"	30-61	"	61-92	"	92-122	"	122-152	"	152-182
2-5/8	15	"	22	"	29	"	29-58	"	58-88	"	88-117	"	117-146	"	146-175
2-3/4	14	"	21	"	28	"	28-56	"	56-83	"	83-110	"	110-137	"	137-164
2-7/8	14	"	20	"	27	"	27-53	"	53-80	"	80-106	"	106-132	"	132-158
3	13	"	19	"	26	"	26-51	"	51-76	"	76-101	"	101-126	"	126-151

(Continued on next page)

End Mills

Regular High Speed Steel & Premium Cobalt High Speed Steel Conventional Style End Mills

Materials	Machine Steel, Hard Brass & Bronze Electrolytic Copper, Mild Steel Forgings			Cast Iron, Mild Steel, Half-Hard Brass & Bronze			Brass, Bronze, Alloyed Aluminium, Abrasive Plastics			Aluminium, Plastics, Wood		
	High Speed Steel End Mills, 2 or More Flute			High Speed Steel 2 or More Flute. Surface Treatment Helpful in C.I. Applications			1 to 6 Flute, High Speed Steel End Mills of High Helix Type			End Mills, 1 to 6 Flute, High Speed Steel End Mills of High Helix Type		
Types & Styles of End Mills	SPEED 60-80 SFM FEED			SPEED 80-100 SFM FEED			SPEED 100-200 SFM FEED			SPEED 200-600 SFM FEED		
	Dia. of End Mill	RPM	Chip Load per Tooth	Dia. of End Mill	RPM	Chip Load per Tooth	Dia. of End Mill	RPM	Chip Load per Tooth	Dia. of End Mill	RPM	Chip Load per Tooth
	1/16	3667-4888	.0002-.0005	1/16	4888-6111	.0002-.0005	1/16	6111-12222	.0002-.0005	1/16	12222 Up	.0002-.0005
	3/32	2750-3259	"	3/32	3259-4073	"	3/32	4073-8146	"	3/32	8146 Up	"
	1/8	1833-2440	.0002-.001	1/8	2440-3056	.0002-.001	1/8	3056-6112	.0002-.001	1/8	6112 Up	.0002-.001
	3/16	1222-1625	"	3/16	1625-2037	"	3/16	2037-4074	"	3/16	4074-12222	"
	1/4	917-1222	.0005-.002	1/4	1222-1528	.0005-.002	1/4	1528-3056	.0005-.002	1/4	3056-9168	.0005-.002
	5/16	733-978	"	5/16	978-1222	"	5/16	1222-2444	"	5/16	2444-7332	"
	3/8	611-815	.001-.003	3/8	815-1019	.001-.003	3/8	1019-2038	.0005-.003	3/8	2038-6114	"
	7/16	524-698	"	7/16	698-873	"	7/16	873-1746	"	7/16	1746-5238	"
	1/2	458-611	"	1/2	611-764	"	1/2	764-1528	"	1/2	1528-4584	"
	9/16	412-543	.001-.004	9/16	543-678	.001-.004	9/16	678-1356	.0005-.004	9/16	1356-4071	.0005-.003
	3/8	367-489	"	3/8	489-611	"	3/8	611-1222	"	3/8	1222-3666	"
	11/16	337-444	"	11/16	444-555	"	11/16	555-1110	"	11/16	1110-3330	"
	3/4	306-407	"	3/4	407-509	.002-.006	3/4	509-1018	.001-.006	3/4	1018-3054	.001-.004
	13/16	284-379	.002-.006	13/16	379-469	"	13/16	469-938	"	13/16	938-2814	"
	7/8	262-349	"	7/8	349-436	"	7/8	436-872	"	7/8	872-2616	"
	15/16	246-326	"	15/16	326-407	"	15/16	407-814	"	15/16	814-2442	"
	1	229-306	"	1	306-382	"	1	382-764	.002 Up	1	764-2292	.002 Up
	1-1/8	204-272	"	1-1/8	272-340	.003 Up	1-1/8	340-680	"	1-1/8	680-2040	"
	1-1/4	183-244	.003 Up	1-1/4	244-306	"	1-1/4	306-612	"	1-1/4	612-1836	"
	1-3/8	167-222	"	1-3/8	222-278	"	1-3/8	278-556	"	1-3/8	556-1668	"
	1-1/2	153-204	"	1-1/2	204-255	"	1-1/2	255-510	.003 Up	1-1/2	510-1530	"
	1-5/8	141-188	"	1-5/8	188-235	"	1-5/8	235-470	"	1-5/8	470-1410	"
	1-3/4	131-175	"	1-3/4	175-218	"	1-3/4	218-436	"	1-3/4	436-1308	"
	1-7/8	122-163	"	1-7/8	163-204	"	1-7/8	201-408	"	1-7/8	408-1224	.003 Up
	2	115-153	"	2	153-191	"	2	191-382	"	2	382-1146	"
	2-1/8	108-144	"	2-1/8	144-179	"	2-1/8	179-358	"	2-1/8	358-1074	"
	2-1/4	102-136	"	2-1/4	136-170	"	2-1/4	170-340	"	2-1/4	340-1020	"
	2-3/8	97-128	"	2-3/8	128-161	"	2-3/8	161-322	"	2-3/8	322-966	"
	2-1/2	92-122	"	2-1/2	122-153	"	2-1/2	153-306	"	2-1/2	306-918	"
	2-5/8	88-116	"	2-5/8	116-145	"	2-5/8	145-290	"	2-5/8	290-870	"
	2-3/4	83-111	"	2-3/4	111-139	"	2-3/4	139-278	"	2-3/4	278-834	"
	2-7/8	80-106	"	2-7/8	106-132	"	2-7/8	132-264	"	2-7/8	264-792	"
	3	76-102	"	3	102-127	"	3	127-254	"	3	254-762	"

Note: All the speeds and feeds shown are suggested starting points. They may be increased or decreased, dependent upon such variables as finish desired, condition of milling machine, magnitude of cut, coolant, etc. In many cases they may be increased slightly. The above speeds and feeds are applicable for slotting cuts, one (1) diameter deep. For deeper slotting cuts or cavity applications, feeds should be decreased. * Solid Carbide End Mills should be used in small diameter applications, in materials harder than 46C.

End Mills

Regular High Speed Steel & Cobalt High Speed Steel Roughing Style End Mills

Speed & Feed Data - Applications in Various Materials

MATERIAL	SFM	*FEED INCREASE
Aluminum Alloys	125-250	50%
Magnesium	125-250	50
Copper	75-100	40
Brass	85-110	40
Bronze	75-100	40
Cast Iron	100-125	30
Cast Steel	75-100	20
Malleable Iron	80-120	30
Stainless Steel		
Free Machining	75-90	20
Other	50-75	20

MATERIAL	SFM	*FEED INCREASE
Steel		
Annealed	100-125	30%
Rc 18-24	75-100	25
Rc 32-37	40-90	20
Titanium		
to Rc 30	38-75	25
Rc 30+	19-25	20
High Temp. Alloys		
Austenitic	13-19	20
Ferritic	50-75	20
Nickel Base	18-25	15
Cobalt Base	8-13	10

* Feed Increase over chip load per tooth currently in use with conventional style end mills.

PM/Plus Cobalt Conventional Finishing & Roughing Style End Mills

Speed & Feed Data - Applications in Various Materials

Material	Hardness BHN	Surface Feet Per Minute SFM†	Chip Load Per Tooth by Cutting Diameter			
			1/8"	1/4"	1/2"	1"
Titanium	300	60-75	.0015	.0025	.0050	.0070
Annealed Alloys	340	30-45	.0010	.0020	.0040	.0060
Sol. Trtd. & Aged	400	15-30	.0007	.0015	.0020	.0040
High Temp. Alloys	300	30-45	.0020	.0025	.0040	.0060
Inconel, Monel, Hastelloy	400	10-24	.0015	.0020	.0030	.0050
Tool Steels	370	40-55	.0005	.0007	.0012	.0020
	450	20-30	.0003	.0005	.0007	.0010
Free Machining Steel	200	90-120	.0010	.0020	.0040	.0060
Alloyed & UnAlloyed	275	75-90	.0007	.0012	.0030	.0050
Alloy Steels - Med. to Hard	400	40-50	.0010	.0015	.0020	.0040
Stainless Steel						
Work Hardening	Various	55-75	.0005	.0007	.0012	.0020
Precipitation Hardening	Various	35-50	.0005	.0007	.0012	.0020
Copper Alloys						
Long Chip*	Various	250-500	.0050	.0025	.0050	.0080
Short Chip	250	180-240	.0010	.0020	.0040	.0060
Aluminum*	Soft Gummy	750	.0020	.0030	.0060	.0100
Aluminum Alloys*						
Heat Treated Aircraft Alloys	Various	1000	.0020	.0030	.0060	.0100

† Increased speeds 25% for TiN, 50% for TiCN and 100% for TiAlN

* List 510, 533, 571 & 538 styles specially designed for these materials.

MicroPlus Carbide End Mills

Speed & Feed Data - Applications in Various Materials

Material		Speed SFM	Chip Load Per Tooth by Cutting Diameter			
			1/4"	1/2"	3/4"	1"-2"
Aluminum & Aluminum Alloy		800-1300	.0015	.0040	.0050	.0060
Aluminum - High Silicon		300-800	.0020	.0040	.0050	.0060
Brass/Bronze		250-400	.0020	.0030	.0040	.0050
Cast Iron:	Gray to Br 220	235-500	.0015	.0020	.0040	.0055
	Over Br 220	100-240	.0008	.0013	.0020	.0035
	Ductile to Br 220	225-325	.0014	.0020	.0040	.0050
	Over Br 220	70-175	.0005	.0015	.0030	.0040
	Malleable to Br 220	250-375	.0013	.0020	.0030	.0040
	Over Br 220	100-225	.0007	.0012	.0020	.0030
Copper		200-500	.0012	.0020	.0040	.0050
Magnesium		1000-1300	.0015	.0040	.0060	.0080
Monels & Nickel		100-150	.0007	.0015	.0020	.0030
Stainless Steel:	to Br 275	150-320	.0004	.0010	.0020	.0030
	Over Br 275	65-275	.0004	.0010	.0020	.0030
Steel:	to Br 250	275-360	.0013	.0020	.0040	.0050
	to Br 325	190-320	.0007	.0015	.0035	.0045
	to Br 425	115-200	-	.0010	.0025	.0035
	to Rc 52	45-60	-	.0007	.0015	.0020
	to Br 250	50-280	.0009	.0015	.0040	.0060
Titanium & Ti Alloys:		Over Br 250	.0005	.0010	.0040	.0060
High Temperature Alloys:	Cobalt Base	35-60	-	-	.0010	.0015
	Nickel Base	20-60	-	.0007	.0015	.0020
	Iron Base	60-90	-	.0007	.0015	.0020

Note: For slotting cuts - reduce lowest speed by approximately 20%.

Regrinding of End Mills

In any manufacturing plant today, both large and small, an effective, organized end mill regrinding program is essential. No matter how large or small the end mill usage may be, an organized regrinding system will pay dividends in greater production per end mill.

End mills should be removed from the machine at the end of a predetermined production run, or when dull.

If possible, a predetermined amount of stock should be removed on dull end mills (normal stock removal is .005 or .010 for each regrind) and color coding or size etching might be marked on the end mill to indicate its size. After several regrinds (this, too, can be predetermined) the end mill will tend to lose its effective rake angle and flute depth, and, at this point, the end mill must be scrapped.

Charts and data for the correct relief angles, relief widths, and rake angles for regrinding end mills are shown on page 297 and 298.

After regrinding and inspection, all end mills should be dipped in rust-preventative oil, and, if suitable cartons are not available, they should be dipped in plastic coating for the full flute length. They should be stored in their original container, in separate bins or wooden containers. Small wooden containers that can be carried about are usually better than ordinary bin storage, as rough handling, in some cases, ruins more cutting edges than the actual milling operation.

The basic requirements for efficient end mill regrinding are:

- Tool grinding equipment in good condition.
- Adequate information for particular applications with reference to correct reliefs and rake angles.
- A workable tool conservation program.
- Adequate storage facilities and efficient handling techniques.

Nothing decreases the usable tool life of an end mill more than continued use of a dull end mill. The cutting action of a dull end mill is such that all the shearing qualities are gone

and the material being milled is actually pushed on ahead of the individual cutting edges. This results in drawing the temper of the individual high-speed steel cutting edges, poorer finishes and accelerated wear. Continued use of a dull end mill makes it necessary to remove much more stock at regrinding to make the end mill usable once again. In the case of carbide end mills excessive dullness will chip and crater the cutting edges and will often cause breakage.

The point in the milling operation at which an end mill begins to dull can be determined in several ways. A dull end mill begins to spring or chatter; causes finishes to become poorer, and glazes or smears some materials. In addition, a wear land begins to form on the top of each individual cutting edge. Many milling machine operators can determine the first signs of end mill dulling by the sound of the cutting action, or by slight variations in machine vibrations.

Generally, an end mill is ready for resharpening when a wear land is visible on the top of the cutting edge. For smaller diameter end mills, and when milling some of the harder, ferrous materials, a wear land of approximately .005 may be used as an indication of the maximum allowable wear prior to resharpening. When using larger diameter end mills, and when milling in other classes of materials, a wider wear land may be used as an end point prior to regrinding.

In the final analysis, the many variables of each individual end mill application will determine the amount of cutting edge wear or degree of end mill dullness allowable before regrinding.

Regrinding Equipment

The tool cutter grinders on the market today are extremely versatile, and are capable of end mill regrinding between centers or off-the-shank. Tool and cutter grinders specifically designed for this type of work are easy to set up, operate and maintain, and versatile enough to regrind many types of cutting tools other than end mills. For a large volume of regrinding work some facilities utilize NC or CNC grinding equipment which maintains uniformity of reground mills at each regrinding.

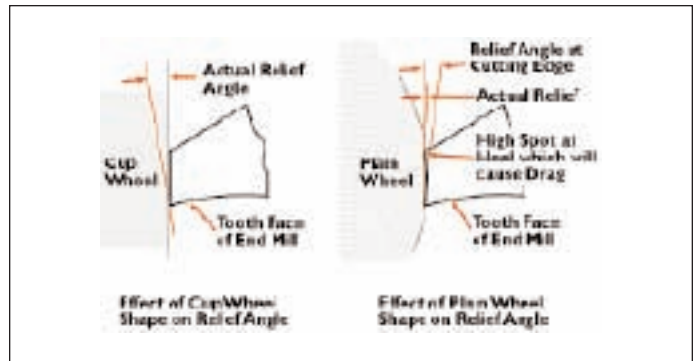
End Mills

Regrinding of End Mills Wheel Selection for Regrinding

High Speed Steel End Mills

Efficient end mill regrinding is possible without the necessity of stocking a large inventory of various wheel types. For general purpose regrinding, aluminum oxide wheels of 46 to 80 grit are usually satisfactory, although, for finer finishes, finer grit wheels may be used. When using wheels with a grit finer than 80, and particularly when resharpener thin cutting edges, approximately .002 should be the maximum amount of stock removal. Heavier cuts than .002 with fine grit wheels usually cause wheel loading and cutting edge burning. CBN wheels are recommended for minimum heat generation and may allow greater stock removal on roughing operations.

Two basic types of wheels may be used: plain or cupped. The cutting edge sections shown at the right are those which will be produced on the end mill cutting edges by each of these wheels. For a conventional type of regrinding, cup-shaped wheels are often preferred. This preference is no doubt caused by the fact that regrinding with a plain wheel tends to leave a high heel portion on the cutting edge, which might cause drag. If the heel portion is too high, it must be cleared also, requiring an additional regrinding setup and operation. Then too, the relief ground on an end mill cutting edge with a



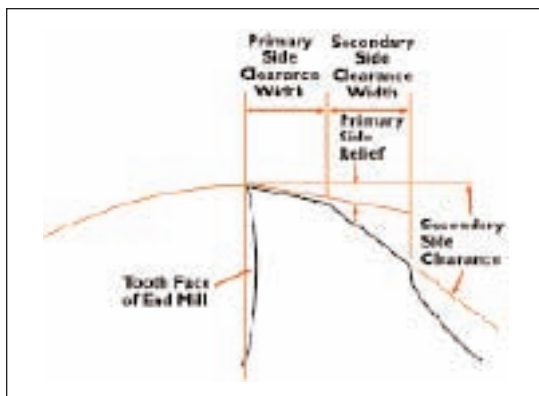
cupped wheel is easier to measure, as this type of regrinding leaves a flat, angular relief.

Solid or Tipped Carbide End Mills

Resinoid bond diamond wheel of 200 grit to 300 grit should be used for resharpener solid carbide or carbide tipped end mills. The wheel should be rotated so that it cuts from the lip face to the back of the land to minimize any tendency of the carbide to flake. The same consideration on use of plain wheels versus cup wheel shape stated above applies.

Regrinding of End Mills Sides

Producing the correct relief angle on an end mill is accomplished by establishing the proper location of the wheel and the end mill. On NC or CNC equipment, this relationship is established through use of a probe or other locating type device. On tool and cutter grinding equipment, a finger or flute rest is used as the locating device. The location of the flute finger should be such that it is mounted in proximity to the wheel. It must be adjustable but not attached to the table. The flute finger may be mounted on the table only when regrinding straight fluted end mills, and then its use is confined to that of an indexing finger.



In actual regrinding, after the flute finger and wheel-to-flute location have been set, each flute is traversed past the wheel, taking a light cut and maintaining a steady motion. After the first light cut, the end mill should be measured to make certain that no taper is being "resharpener" into the end mill. After the proper amounts of stock have been removed, to resharpen the end mill completely, a very light cut should be taken on all flutes, to make certain that roundness and concentricity is maintained.

In choosing the correct relief for the milling job at hand, it is best to regrind end mills to produce just enough primary relief to eliminate drag. Drag will cause friction and overheating of the cutting edges, and usually some buildup of the material on the heel of the primary relief. On the other hand, too much relief will cause the end mill to chatter and the cutting edges will tend to deteriorate rapidly. Too much relief is the least objectionable of the two choices, but the ideal situation is to have just enough relief. The amount of secondary clearance necessary is usually dependent on the size of the end mill, the width of the primary relief, and the feeds being used. For example, if the feed per tooth per revolution is

(Continued on next page)

Regrinding of End Mills Sides *(Continued)*

.004, the heel of the secondary clearance must be at least .005 below the cutting edge.

The tables below list the approximate side relief for various end mills.

The best resharpener procedure is to regrind the primary relief first until all of the wear has been removed, taking care

to avoid excessive diameter loss. The secondary clearance is ground next to bring the primary relief land to the desired widths. After grinding the secondary clearance, it is often desirable that the primary relief surfaces be given a light finish grind to refine the cutting edges. To minimize runout, this light finishing cut should be made at one machine sitting, going completely around the end mill.

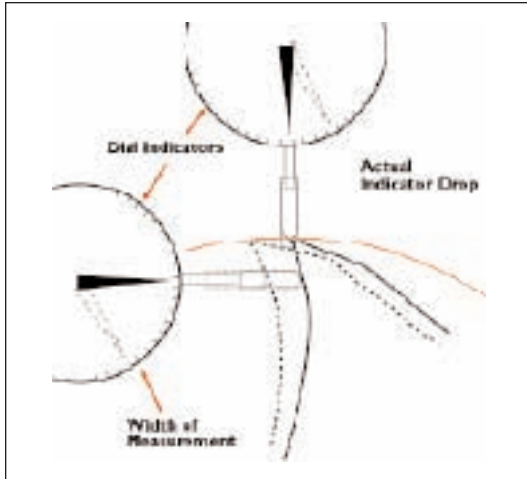
Side Relief Angles for:

End Mill Diameter	Primary Clearance	Primary Width	Secondary Clearance Angle
High Speed Steel & Cobalt End Mills:			
1/8" - 1/4"	13° - 10°	.005" - .011"	26°
1/2" - 3/4"	10° - 9°	.012" - .024"	17°
1" - 2"	9° - 7°	.020" - .035"	15°
High Speed Steel, High Helix End Mills:			
1/8" - 1/4"	14°	.017" - .013"	27°
1/2" - 3/4"	13° - 12°	.015" - .027"	21°
1" - 2"	11° - 10°	.022" - .040"	18°
PM/Plus Cobalt End Mills:			
1/8" - 1/4"	22° - 18°	.004" - .013"	29°
1/2" - 3/4"	16° - 12°	.010" - .018"	22°
1" - 2"	11° - 10°	.015" - .030"	19°
Micro Plus Carbide End Mills:			
1/8" - 1/4"	13°	.010" - .016"	26°
1/2" - 3/4"	9°	.020" - .045"	20°
1" - 2"	8°	.040" - .050"	20°

End Mills

Regrinding of End Mills Checking Relief Angles

The universally accepted method of checking relief angles on the sides of end mills is to mount the end mill to rotate



about its axis. Position a dial indicator above or to the side of the end mill, (with the dial indicator finger at right angles to the axis of the end mill being checked) and measure the indicator drop in thousandths of an inch on the primary relief.

This method is shown at the left, and may be used for any type of side relief, be it dish shaped, flat, or radial.

The measurable width of primary relief may be any predetermined amount - the table on page 71 shows the necessary amount of indicator drop for relief angles measured in widths from 1/64" to 1/16".

The table below shows the amount of indicator drop for various primary relief angles when the cutting edge of the end mill is moved or rotated the tabulated measured primary width.

Off-hand side relief regrinding of end mills for any milling application should never be done under any circumstances.

Primary Relief Angle for Side Teeth of End Mills

End Mill Diameter	Measured Primary Relief Width	Indicator Drop in Measured Primary Relief Width					
		4°	6°	8°	10°	12°	15°
1/8	1/64	.0000	.0000	.0002	.0008	.0015	.0021
3/16	1/64	.0000	.0003	.0009	.0014	.0020	.0028
1/4	1/64	.0001	.0007	.0012	.0018	.0023	.0031
5/16	1/64	.0003	.0009	.0014	.0019	.0025	.0033
3/8	1/64	.0004	.0010	.0015	.0021	.0026	.0034
7/16	1/64	.0005	.0011	.0016	.0022	.0027	.0035
1/2	1/64	.0006	.0012	.0017	.0022	.0028	.0036
5/8	1/32	.0006	.0017	.0028	.0039	.0050	.0066
3/4	1/32	.0009	.0020	.0029	.0042	.0052	.0069
7/8	1/32	.0011	.0022	.0032	.0043	.0054	.0070
1	1/32	.0012	.0023	.0034	.0045	.0056	.0072
1-1/8	1/32	.0013	.0024	.0035	.0046	.0057	.0073
1-1/4	3/64	.0015	.0032	.0048	.0064	.0080	.0105
1-3/8	3/64	.0017	.0033	.0050	.0066	.0082	.0106
1-1/2	3/64	.0018	.0034	.0051	.0067	.0083	.0107
1-3/4	3/64	.0020	.0037	.0053	.0069	.0085	.0109
2	3/64	.0022	.0038	.0054	.0071	.0087	.0111
2-1/4	1/16	.0027	.0048	.0070	.0092	.0113	.0145
2-1/2	1/16	.0028	.0050	.0072	.0093	.0115	.0147
2-3/4	1/16	.0029	.0051	.0073	.0095	.0116	.0148
3	1/16	.0031	.0052	.0074	.0096	.0117	.0150

Regrinding of End Mills Ends

Regrinding of the ends of end mills does not differ too much from regrinding of the sides, in that the basic principles still apply. However the method of grinding varies in that nearly all regrinding is done off of the shank. The task at hand is to reproduce an end that may be non-center cutting, center cutting, square end, ball nose or square end with corner radius. Almost any of the tool or cutter grinders may be used to produce accurate regrinding and renotching of the square end style and some are built to also permit accurate reproduction of ball and radius ends. NC or CNC equipment can be programmed to achieve all of the required end configurations during regrinding.

Whenever possible, end notching or gashing cuts should be produced with grinding wheels which have corner radii so as to reduce stress concentration at the bottom of the gash. End tooth notch angles should produce about 0 to 5° positive axial rake.

In resharpener of end teeth the first step is always the removal of the wear on the end teeth and at the corner intersection of the end and peripheral teeth. Particular care must be taken so that all of the corner wear is removed.

Once the wear has been removed, it then is a matter of using the proper set-up and wheel shapes to produce the desired

end configuration, be it with a center or non-center cutting capability. On center cutting end mills one or more teeth must be cleared to cut to or past center. A gash is normally provided on the center cutting teeth to aid chip removal and prevent chip packing in the center of the end mill.

Ball end mills present resharpener problems due to their relieved radius form and roughly spherical form of the secondary clearance. Most users will end up using a machine to generate the cleared form and then hand clear the secondary and trailing heel. Care must always be exercised in regrinding the ends regardless of its shape to avoid generating any chip pockets.

Primary relief land widths of end teeth will be approximately 1-1/2 to 3 times that recommended for peripheral teeth. The following table is a listing of typical details for clearing the ends of end mills

Primary end relief is usually increased for softer materials and decreased as the hardness of the work material increases or the machinability of the work material decreases. Primary end relief angles should also be increased on small diameter mills used for plunge-cutting.

End Relief Angles for:

End Mill Diameter	Primary Clearance	Primary Width	Secondary Clearance
High Speed Steel, Regular Helix End Mills; Cobalt End Mills & PM/Plus Cobalt End Mills:			
1/8" - 1/4"	6° - 8°	.025" - .035"	25° - 30°
1/2" - 3/4"	6° - 8°	.035" - .050"	25° - 30°
1" - 2"	6° - 8°	.045" - .075"	25° - 30°
High Speed Steel, High Helix End Mills:			
1/8" - 1/4"	8° - 10°	.025" - .045"	30°
1/2" - 3/4"	8° - 10°	.035" - .060"	30°
1" - 2"	8° - 10°	.050" - .100"	30°
MicroPlus Carbide End Mills:			
1/8" - 1/4"	8° - 9°	.018" - .025"	30°
1/2" - 3/4"	6° - 7°	.045" - .070"	23°

Secondary End Clearance

Secondary end clearance depends on the material being milled and the type of operation. Some tracer milling operations, requiring comparatively heavy in-feeds, will necessitate additional secondary clearance, whereas shallow traversing cuts would require less secondary end clearance.

In addition, milling of the higher density steels require less secondary end clearance, but aluminum and other non-ferrous milling applications require increased secondary end

clearances. In most cases, off hand grinding of secondary end clearances on end mills is the quickest and most economical method, as no absolute degree of accuracy is required. For combination notching and secondary end clearing of end mills, however, where the side of the wheel makes contact with the cutting face of one of the end teeth, care must be exercised, and some users prefer to notch and clear end teeth in one grinding operation, by machine.

Regrinding of End Mills End Mill Tooth Rake Angles

While correct relief angles on end mill teeth are essential for economical milling, too often little attention is given to maintaining the correct rake angles. Rake angles or hook angles are shown below.

As can be seen, the term “rake” is commonly used when referring to a comparatively straight cutting face. The rake or hook angle formed by the side cutting faces of an end mill is often referred to as radial rake.

Most end mills are manufactured with a hook rather than a rake because the curved cutting face aids in curling and ejecting the chips. The proper rake angle is governed by the material

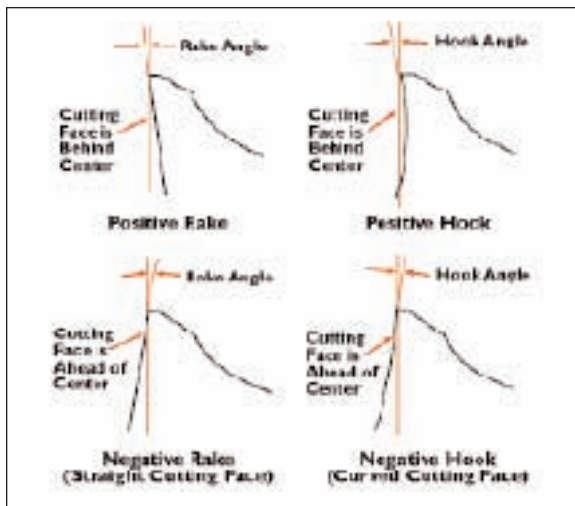
being cut and the material from which the end mill is made. Most high-speed steel end mills usually have generous positive rake angles on the side cutting teeth, whereas the tungsten carbide types of end mills are usually manufactured with lower positive or even negative rake angles.

Softer materials usually will allow higher rake angles to be used, whereas the harder, tougher materials require lower rake angles.

Radial rake is not to be confused with axial or helical rake. Axial rake is that angle formed about the axis of the mill by a straight cutting edge at one given point, whereas helical rake is that helical angle formed around the axis of the mill by the cutting edge.

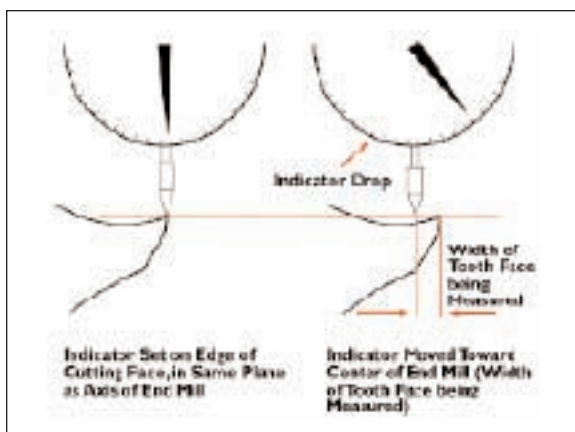
Axial rake is formed by a straight angular cutting edge, and is not constant, whereas helical rake is formed by a helical cutting edge and is constant. Helix angles or helical rake angles for end mills may range, from 0° up to 60° . For general purpose milling, helix angles of 25° to 35° are the most popular.

During manufacturing a specific radial rake is built into each end mill type based upon its intended area of work material application. As an end mill is reground on outside diameter, there is a continual reduction in the radial rake present in the tool, resulting in higher cutting forces and generally shorter tool life. An end mill generally can only be reduced in cutting diameter by about 10 to 15% of the original diameter before the mill must be discarded or the correct radial rake reground into face of the flute.



Regrinding Radial Rake Angles

The practice of regrinding radial rake or hook angles on end mills of diameters below 1/2" is usually not too economical unless large quantities of the same size are involved. Thus the regrinding of radial rake is usually confined to end mills of the larger sizes.



There are three accurate methods of regrinding the rake angles in the helical flutes of an end mill. These are as follows:

1. Use of a tool room grinder with a spiral lead attachment.
2. Use of a fixture, mounted on a tool room grinder having a former (a bar grooved with the same lead as the end mill) which rotates the end mill at the correct helix angle as it moves forward into the grinding wheel.
3. Use of a properly programmed CNC grinder.

Inspecting Radial Rake Angles

Shown at the left is one method of inspecting the radial hook or rake in the side tooth of an end mill, when the end mill is located in inspection centers or in an accurate horizontal spindle. This method measures the amount of rake of the tooth being measured in indicator drop. Conversion of this amount of indicator drop to the angular equivalent of the actual rake angle is made by reference to the table on the next page.

End Mills

Regrinding of End Mill Rake Angles (Continued)

Width of Tooth Face being Measured

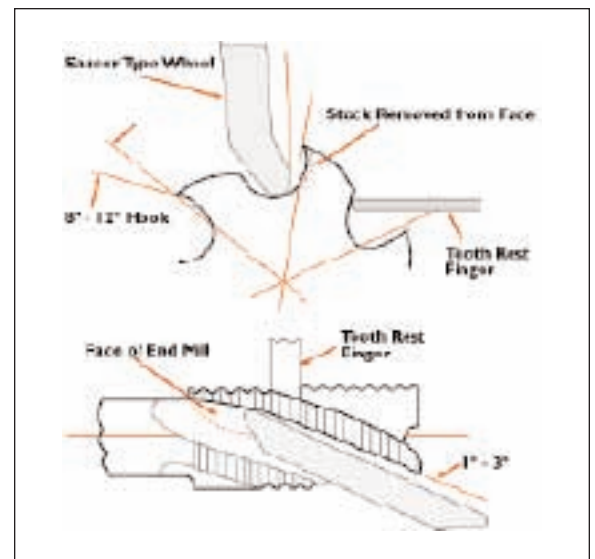
RAKE ANGLE	INDICATOR DROP IN THOUSANDTHS OF AN INCH			
	1/32"	1/16"	3/32"	1/8"
1°	.0005	.0011	.0016	.0022
2°	.0011	.0022	.0034	.0044
3°	.0016	.0033	.0049	.0065
4°	.0022	.0044	.0066	.0087
5°	.0027	.0054	.0082	.0108
6°	.0033	.0065	.0099	.0131
7°	.0038	.0076	.0115	.0152
8°	.0044	.0087	.0132	.0174
9°	.0049	.0098	.0148	.0195
10°	.0055	.0109	.0165	.0217
11°	.0061	.0119	.0182	.0238
12°	.0066	.0130	.0200	.0260
15°	.0084	.0162	.0251	.0323
20°	.0114	.0227	.0341	.0455

Sharpening of Roughing End Mills

Roughing end mills are designed as form relieved cutters and as such, the O.D. wear is removed by grinding the radial rake face of the teeth and fillet of the flute. Generally this is accomplished on a tool and cutter grinding machine. If a roughing end mill is center or end cutting, the end teeth are resharpened the same way as end teeth on standard end mills.

A saucer-shaped grinding wheel dressed to match the form of the flute face from OD. to the fillet is used. The grinding head is turned to an angle 1 to 3° greater than the helix angle of the mill. This will allow the leading edge of the wheel to hollow grind the rake face. (Typically the finished hook is 8° to 12°).

A tooth support finger or lead-generating device may be used to ensure that the proper lead is maintained. The support finger rides on the back of the tooth being sharpened, located below the form. Unless equal stock is removed from each rake face, the resharpened mill will have more radial runout during use. Normally this should not prove to be a problem, provided enough stock is left on the roughed out part for finishing.



Taps • Standards & Dimensions

Standard System of Marking

Taps, dies, and other threading tools will be marked with the nominal size, number of threads per inch, and the proper symbol to identify the thread form. These symbols are in agreement with the ASME B1.7 1965 (R 1972). Standard on Nomenclature, Definitions and Letter Symbols for Screw Threads and other National standards. Symbols used are:

SYMBOL	REFERENCE	SYMBOL	REFERENCE
ACME-C	Acme Thread-Centralizing	NPTF	Dryseal American National Standard Taper Pipe Thread
ACME-G	Acme Thread-General Purpose	NPTR	American National Standard Taper Pipe Thread for Railing Joints (Tap Marked NPT)
AMO	American Standard Microscope Objective Thread	NR	American National Thread with a 0.108p to 0.144p Controlled Root Radius
ANPT	Aeronautical National Form Taper Pipe Thread (Ground Thread Tap marked NPT)	NS	American National Thread-Special
BA	British Association Standard Thread	PTF-SAE	Short Dryseal SAE Short Taper Pipe Thread
BSF	British Standard Fine Thread Series	SGT	Special Gas Taper Thread
BSP	British Standard Pipe (Parallel) Thread	SPL-PTF	Dryseal Special Taper Pipe Thread
BSPT	British Standard Taper Pipe Thread	STI	Special Thread for Helical Coil Wire Screw Thread Inserts
BSW	British Standard Whitworth Coarse Thread Series	Stub Acme	Stub Acme Thread
M	Metric Standard Threads	*UN	Unified Constant-Pitch Thread Series
N	American National 8, 12 and 16 Thread Series (8N, 12N, 16N)	*UNC	Unified Coarse Thread Series
N BUTT	American Buttress Thread	*UNEF	Unified Extra-Fine Thread Series
NC	American National Coarse Thread Series	*UNF	Unified Fine Thread Series
NEF	American National Extra-Fine Thread Series	UNJ	Unified Thread Series with a 0.150lp to 0.18042p Controlled Root Radius on External Thread only.
NF	American National Fine Thread Series	UNJC	Unified Coarse Thread Series with a 0.150lp to 0.18042p Controlled Root Radius on External Thread only.
NGO	National Gas Outlet Thread (specify right or left hand)	UNJF	Unified Fine Thread Series with a 0.150lp to 0.18042p Controlled Root Radius on External Thread only.
NGS	National Gas Straight Thread	UNM	Unified Miniature Thread Series
NGT	National Gas Taper Thread (See also "SGT")	UNR	Unified Constant-pitch Thread Series with a 0.108p to 0.144p Controlled Root Radius
NH	American National Hose Coupling & Firehose Coupling Threads	UNRC	Unified Coarse Thread Series with a 0.108p to 0.144p Controlled Root Radius
NPS	For Tap marking Only (See NPSC, NPSM)	UNRF	Unified Fine Thread Series with a 0.108p to 0.144p Controlled Root Radius
NPSC	American National Standard Straight Pipe Thread in Pipe Couplings (Tap Marked NPS)	*UNS	Unified Thread-Special
NPSF	Dryseal American National Standard Fuel Internal Straight Pipe Thread	V	A 60° "V" thread with Truncated Crest and Root. The theoretical "V" Form is usually flattened to the user's specifications.
NPSH	American National Standard Straight Pipe Thread for Hose Couplings		
NPSI	Dryseal American National Standard Intermediate Internal Straight Pipe Thread		
NPSL	American National Standard Straight Pipe Thread for Loose-Fitting Mechanical Joints with locknuts.		
NPSM	American National Standard Straight Pipe Threads for Free-Fitting Mechanical Joints for Fixtures (Tap Marked NPS)		
NPT	American National Standard Taper Pipe Thread (see ANPT, NPTR)		

*Taps are not marked with "U" but with the symbol for the corresponding American Standard thread form with which it is compatible.

Ground Thread Taps • Limit Numbers

All standard Ground Thread Taps made to USCTI Tables 327 and 329 will be marked with the letter G to designate Ground Thread. The letter G will be followed by the letter H to designate above basic (L below basic) and a numeral to designate the Pitch Diameter limits.

Example: G H3 indicates a Ground Thread Tap with Pitch Diameter limits .0010 to .0015 over basic.

Pitch Diameter limits for Taps to 1" diameter inclusive.

L1 = Basic to Basic minus .0005

H3 = Basic plus .0010 to Basic plus .0015

H5 = Basic plus .0020 to Basic plus .0025

H1 = Basic to Basic plus .0005

H4 = Basic plus .0015 to Basic plus .0020

H6 = Basic plus .0025 to Basic plus .0030

H2 = Basic plus .0005 to Basic plus .0010

Pitch Diameter limits for Taps over 1" diameter to 1-1/2" diameter inclusive.

H4 = Basic plus .0010 to Basic plus .0020

Pitch Diameter Limit Numbers for Taps not shown above or those over 1-1/2" diameter:

For taps with H or L limit numbers not shown above or over 1-1/2" diameter for example H12 or L10, the H or L limit number divided by 2 indicates in thousandths of an inch the amount the maximum tap pitch diameter is over basic in the H series or the amount the minimum tap pitch diameter is under basic in the L series. In the H series taps the tolerance shown in USCTI Table 331, Column D, subtracted from the maximum pitch diameter will give the minimum pitch diameter. In the L series taps the tolerance shown in Table 331, Column D, added to the minimum pitch diameter will give the maximum pitch diameter. These taps will be marked with the appropriate H or L limit number.

Taps • Standards & Dimensions

Special Taps

Special taps are to be marked with the nominal diameter and number of threads per inch and form of thread as specified by the purchaser on his order or blue print provided such specifications are reasonably correct.

Special Ground Thread taps made to the Pitch Diameter limits shown will also be marked with the corresponding limit number.

Special Thread taps not made to H or L limits, or to USCTI Tables 330 and 331, standard rules for undersize and oversize taps, may be marked with the letter S enclosed in a circles or other identification.

Where special taps are ordered without a pitch diameter or limit number given, the pitch diameter will normally be determined from Tables 330 or 331. When determined from Table 331 the

taps will be marked with the appropriate H or L limit number.

When taps are specified to be a certain amount oversize or undersize, it is standard practice to add or subtract this amount from the basic pitch diameter of the nominal size tap. This dimension then becomes the new minimum pitch diameter for the special tap to which Standard Tolerance for the nominal size is added.

Undersize or oversize taps will be marked with the nominal size and pitch, followed by the amount the minimum pitch diameter is over or under basic. For example, 1/2-13+.010".

Whenever possible, in the case of oversize, undersize, or other special taps, orders should specify the minimum and maximum tap pitch diameter desired.

Left hand taps will be marked “Left Hand” or “LH”.

Multiple Thread Taps & Dies

Taps and dies having multiple threads will be marked with diameter, number of threads per inch, form of thread and lead designated in fractions, also double, triple, etc.

For example: A 1"-8 double thread special tap with Unified form of thread will be marked as follows: 1"-8 N.S. Double
1/4" Lead

Ground Thread Taps-Limit Numbers Metric Threads

Where the tap pitch diameter is over or under basic thread pitch diameter by even multiples of .0005", the tap will be marked with the letter "D" or "DU" respectively, followed by a limit number. The limit number is determined as follows:

D **Limit No. = Amt. Tap PD High Limit is Over Basic PD**

.0005"

DU **Limit No. = Amt. Tap PD Low Limit Is Under Basic PD**

For tap P. D. tolerances - see Table 34I, Column "Z"

Examples:

Example:
 $M1.6 \times 0.35$ -for D3 limit, max. tap PD = basic plus .0015"
 Tap PD tolerance=minus .0006"

M12 x 1.75-for D6 limit, max. tap PD = basic plus .0030"
Tap PD tolerance= minus .0012"

M39 x 4-for D10 limit, max. tap PD = basic plus .0050"
Tap PD tolerance = minus .0020"

$M6 \times 1$ -for DU 4 limit, min. tap PD = basic minus .0020"
Tap PD tolerance = plus .0010"

Amount tap PD high limit is over basic or PD low limit is under basic should be greater than, or equal to, column Z of USCTI Table 34I. If this amount is less than column Z, customer must specify maximum and minimum tap PD limits instead of a “D” or “DU” limit number.

When ground thread taps are ordered without a pitch diameter or limit number given, the tap pitch diameter will normally be determined from Table 34I, and will be marked with the appropriate D limit number.

Metric taps will be marked with a capital M followed by the nominal size in millimeters and the pitch in millimeters separated by the sign “x”. For example: M1.6x0.35; M6x1; M10x1.5.

Taps • Standards & Dimensions

Tap Recommendations

“For Classes of Thread 2,3, †1B, †2B & 3B” • Unified & American National Screw

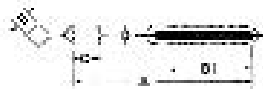
Nominal Size	THREADS PER INCH		RECOMMENDED TAP FOR CLASS OF THREAD				PITCH DIAMETER LIMITS FOR CLASS OF THREAD				
	NC UNC	NF UNF	Class 2	Class 3	Class 2B	Class 3B	Min. All Classes (Basic)	Max. Class 2	Max. Class 3	Max. Class 2B	Max. Class 3B
0	-	80	GH1	GH1	GH2	GH1	.0519	.0536	.0532	.0542	.0536
1	64	-	GH1	GH1	GH2	GH1	.0629	.0648	.0643	.0655	.0648
1	-	72	GH1	GH1	GH2	GH1	.0640	.0658	.0653	.0665	.0659
2	56	-	GH1	GH1	GH2	GH1	.0744	.0764	.0759	.0772	.0765
2	-	64	GH1	GH1	GH2	GH1	.0759	.0778	.0773	.0786	.0779
3	48	-	GH1	GH1	GH2	GH1	.0855	.0877	.0871	.0885	.0877
3	-	56	GH1	GH1	GH2	GH1	.0874	.0894	.0889	.0902	.0895
4	40	-	GH2	GH1	GH2	GH2	.0958	.0982	.0975	.0991	.0982
4	-	48	GH1	GH1	GH2	GH1	.0985	.1007	.1001	.1016	.1008
5	40	-	GH2	GH1	GH2	GH2	.1088	.1112	.1105	.1121	.1113
5	-	44	GH1	GH1	GH2	GH1	.1102	.1125	.1118	.1134	.1126
6	32	-	GH2	GH1	GH3	GH2	.1177	.1204	.1196	.1214	.1204
6	-	40	GH2	GH1	GH2	GH2	.1218	.1242	.1235	.1252	.1243
8	32	-	GH2	GH1	GH3	GH2	.1437	.1464	.1456	.1475	.1465
8	-	36	GH2	GH1	GH2	GH2	.1460	.1485	.1478	.1496	.1487
10	24	-	GH3	GH1	GH3	GH3	.1629	.1662	.1653	.1672	.1661
10	-	32	GH2	GH1	GH3	GH2	.1697	.1724	.1716	.1736	.1726
12	24	-	GH3	GH1	GH3	GH3	.1889	.1922	.1913	.1933	.1922
12	-	28	GH3	GH1	GH3	GH3	.1928	.1959	.1950	.1970	.1959
1/4	20	-	GH3	GH2	GH5	GH3	.2175	.2211	.2201	.2223	.2211
1/4	-	28	GH3	GH1	GH4	GH3	.2268	.2299	.2290	.2311	.2300
5/16	18	-	GH3	GH2	GH5	GH3	.2764	.2805	.2794	.2817	.2803
5/16	-	24	GH3	GH1	GH4	GH3	.2854	.2887	.2878	.2902	.2890
3/8	16	-	GH3	GH2	GH5	GH3	.3344	.3389	.3376	.3401	.3387
3/8	-	24	GH3	GH1	GH4	GH3	.3479	.3512	.3503	.3528	.3516
7/16	14	-	GH5	GH3	GH5	GH3	.3911	.3960	.3947	.3972	.3957
7/16	-	20	GH3	GH1	GH5	GH3	.4050	.4086	.4076	.4104	.4091
1/2	13	-	GH5	GH3	GH5	GH3	.4500	.4552	.4537	.4565	.4548
1/2	-	20	GH3	GH1	GH5	GH3	.4675	.4711	.4701	.4731	.4717
9/16	12	-	GH5	GH3	GH5	GH3	.5084	.5140	.5124	.5152	.5135
9/16	-	18	GH3	GH2	GH5	GH3	.5264	.5305	.5294	.5323	.5308
5/8	11	-	GH5	GH3	GH5	GH3	.5660	.5719	.5702	.5732	.5714
5/8	-	18	GH3	GH2	GH5	GH3	.5889	.5930	.5919	.5949	.5934
3/4	10	-	GH5	GH3	GH5	GH5	.6850	.6914	.6895	.6927	.6907
3/4	-	16	GH3	GH2	GH5	GH3	.7094	.7139	.7126	.7159	.7143
7/8	9	-	GH6	GH4	GH6	GH4	.8028	.8098	.8077	.8110	.8089
7/8	-	14	GH4	GH2	GH6	GH4	.8286	.8335	.8322	.8356	.8339
1	8	-	GH6	GH4	GH6	GH4	.9188	.9264	.9242	.9276	.9254
1	-	12	GH4	GH2	GH6	GH4	.9459	.9515	.9499	.9535	.9516
1	-	14*	GH4	GH2	GH6	GH4	.9536	.9585	.9572	.9609	.9590
1-1/8	7	-	GH8	GH4	GH8	GH4	1.0322	1.0407	1.0381	1.0416	1.0393
1-1/8	-	12	GH4	GH4	GH6	GH4	1.0709	1.0765	1.0749	1.0787	1.0768
1-1/4	7	-	GH8	GH4	GH8	GH4	1.1572	1.1657	1.1631	1.1668	1.1644
1-1/4	-	12	GH4	GH4	GH6	GH4	1.1959	1.2015	1.1999	1.2039	1.2019
1-3/8	6	-	GH8	GH4	GH8	GH4	1.2667	1.2768	1.2738	1.2771	1.2745
1-3/8	-	12	GH4	GH4	GH6	GH4	1.3209	1.3265	1.3249	1.3291	1.3270
1-1/2	6	-	GH8	GH4	GH8	GH4	1.3917	1.4018	1.3988	1.4022	1.3996
1-1/2	-	12	GH4	GH4	GH6	GH4	1.4459	1.4515	1.4499	1.4542	1.4522

* UN

† Cut thread taps in sizes 3 to 1-1/2" UNC and UNF inclusive may be used under normal conditions and in average materials for producing tapped holes to this classification. These are general recommendations to provide good tap life with little possibility of cutting oversize. It will usually be found, however, that off-the-shelf stock taps with reglar limit numbers will produce very satisfactory gage fits for any of the Classes of Thread shown above and also yield very good tap life. It should be noted that many of the limit numbers recommended are special. The user must determine if the special tap with a special limit is either necessary or economically advantageous on his particular job.

Taps • Standards & Dimensions

USCTI Table 302 •



STYLE 1



STYLE 2



STYLE 3

General Dimensions

NOMINAL DIAMETER RANGE-INCHES:		Mach. Screw Size No.	Nominal Fractional Diameter Inches	Nominal Metric Diameter Millimeters	STYLE*	TAP DIMENSIONS-INCHES:				
Over	To (incl.)					Overall Length A	Thread Length B†	Square Length C	Shank Diameter D	Size of Square E
.052	.065	0	1/16	M1.6	1	1-5/8	5/16	3/16	.141	.110
.065	.078	1	—	M1.8	1	1-11/16	3/8	3/16	.141	.110
.078	.091	2	—	M2. M2.2	1	1-3/4	7/16	3/16	.141	.110
.091	.104	3	3/32	M2.5	1	1-13/16	1/2	3/16	.141	.110
.104	.117	4	—	—	1	1-7/8	9/16	3/16	.141	.110
.117	.130	5	1/8	M3, M3.15	1	1-15/16	5/8	3/16	.141	.110
.130	.145	6	—	M3.5	1	2	11/16	3/16	.141	.110
.145	.171	8	5/32	M4	1	2-1/8	3/4	1/4	.168	.131
.171	.197	10	3/16	M4.5, M5	1	2-3/8	7/8	1/4	.194	.152
.197	.223	12	7/32	—	1	2-3/8	15/16	9/32	.220	.165
.223	.260	14	1/4	M6, M6.3	2	2-1/2	1	5/16	.255	.191
.260	.323	—	5/16	M7, MB	2	2-23/32	1-1/8	3/8	.318	.238
.323	.395	—	3/8	M10	2	2-15/16	1-1/4	7/16	.381	.286
.395	.448	—	7/16	—	3	3-5/32	1-7/16	13/32	.323	.242
.448	.510	—	1/2	M12, M12.5	3	3-3/8	1-21/32	7/16	.367	.275
.510	.573	—	9/16	M14	3	3-19/32	1-21/32	1/2	.429	.322
.573	.635	—	5/8	M16	3	3-13/16	1-13/16	9/16	.480	.360
.635	.709	—	11/16	M18	3	4-1/32	1-13/16	5/8	.542	.406
.709	.760	—	3/4	—	3	4-1/4	2	11/16	.590	.442
.760	.823	—	13/16	M20	3	4-15/32	2	11/16	.652	.489
.823	.885	—	7/8	M22	3	4-11/16	2-7/32	3/4	.697	.523
.885	.948	—	1-5/16	M24	3	4-29/32	2-7/32	3/4	.760	.570
.948	1.010	—	1	M25	3	5-1/8	2-1/2	13/16	.800	.600
1.010	1.073	—	1-1/16	M27	3	5-1/8	2-1/2	7/8	.896	.672
1.073	1.135	—	1-1/8	—	3	5-7/16	2-9/16	7/8	.896	.672
1.135	1.198	—	1-3/16	M30	3	5-7/16	2-9/16	1	1.021	.766
1.198	1.260	—	1-1/4	—	3	5-3/4	2-9/16	1	1.021	.766
1.260	1.323	—	1-5/16	M33	3	5-3/4	2-9/16	1-1/16	1.108	.831
1.323	1.385	—	1-3/8	—	3	6-1/16	3	1-1/16	1.108	.831
1.385	1.448	—	1-7/16	M36	3	6-1/16	3	1-1/8	1.233	.925
1.448	1.510	—	1-1/2	—	3	6-3/8	3	1-1/8	1.233	.925
1.510	1.635	—	1-5/8	M39	3	6-11/16	3 3/16	1-1/8	1.305	.979
1.635	1.760	—	1-3/4	M42	3	7	3-3/16	1-1/4	1.430	1.072
1.760	1.885	—	1-7/8	—	3	7-5/16	3-9/16	1-1/4	1.519	1.139
1.885	2.010	—	2	M48	3	7-5/8	3-9/16	1-3/8	1.644	1.233
2.010	2.135	—	2-1/8	—	3	8	3-9/16	1-3/8	1.769	1.327
2.135	2.260	—	2-1/4	M56	3	8-1/4	3.563	1-7/16	1.894	1.420
2.260	2.385	—	2-3/8	—	3	8-1/2	4	1-7/16	2.019	1.514
2.385	2.510	—	2-1/2	—	3	8-3/4	4	1-1/2	2.100	1.575
2.510	2.635	—	2-5/8	M64	3	8-3/4	4	1-1/2	2.225	1.669
2.635	2.760	—	2-3/4	—	3	9-1/4	4	1-9/16	2.350	1.762
2.760	2.885	—	2-7/8	M72	3	9-1/4	4	1-9/16	2.475	1.856
2.885	3.010	—	3	—	3	9-3/4	4-9/16	5-5/8	2.543	1.907
3.010	3.135	—	3-1/8	—	3	9-3/4	4-9/16	1-5/8	2.668	2.001
3.135	3.260	—	3-1/4	M80	3	10	4-9/16	1-3/4	2.793	2.095
3.260	3.385	—	3-3/8	—	3	10	4-9/16	1-3/4	2.883	2.162
3.385	3.510	—	3-1/2	—	3	10-1/4	4-15/16	2	3.008	2.256
3.510	3.635	—	3-5/8	M90	3	10-1/4	4-15/16	2	3.133	2.350
3.635	3.760	—	3-3/4	—	3	10-1/2	5-5/16	2-1/8	3.217	2.413
3.760	3.885	—	3-7/8	—	3	10-1/2	5-5/16	2-1/8	3.342	2.506
3.885	4.010	—	4	M100	3	10-3/4	5-5/16	2-1/4	3.467	2.600

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* Styles shown are for ground thread taps. See notes for cut thread tap centers.

† Thread length including chamfer

Special Taps (Unless Otherwise specified):

Special taps over 1.010" to 1.510" diameter inclusive, having 14 or more threads per inch or 1.75 millimeter pitch and finer, and sizes over 1.510" diameter with 10 or more threads per inch or 2.5 millimeter pitch and finer, will be made to general dimensions shown in Table 303. Special cut and ground thread taps for Unified and American National form threads will be made to limits shown in Tables 330 and 331.

Notes:

Cut thread taps, sizes .385" and smaller, have optional style center on thread and shank ends. Ground thread taps, sizes .385" and smaller, have external center on thread end (may be removed on bottoming taps). Sizes .223" and smaller, have external center on shank end; sizes .224" thru .385" have truncated partial cone centers on shank end (length of cone approximately 1/4 of diameter of shank). Sizes over .385" have internal center in thread and shank ends.

For standard thread limits and tolerances for Unified and American National form threads see Tables 325 and 327.

For eccentricity tolerances of tap elements see table 317.



Taps • Standards & Dimensions

Table 302 • Taps (Continued)

Taps Tolerances

ELEMENT	NOMINAL DIAMETER RANGE-INCHES		DIRECTION	TOLERANCE-INCHES	
	Over	To (incl.)		Cut Thread	Ground Thread
Length Overall - A	.0520	1.010	Plus or Minus	1/32	1/32
	1.010	4.010	Plus or Minus	1/16	1/16
Length of Thread - B	.0520	.2230	Plus or Minus	3/64	3/64
	.2230	.5100	Plus or Minus	1/16	1/16
	.5100	1.510	Plus or Minus	3/32	3/32
	1.510	4.010	Plus or Minus	1/8	1/8
Length of Square - C	.0520	1.010	Plus or Minus	1/32	1/32
	1.010	4.010	Plus or Minus	1/16	1/16
Diameter of Shank - D	.0520	.2230	Minus	0.004	.0015
	.2230	.6350	Minus	0.005	.0015
	.6350	1.010	Minus	0.005	.0020
	1.010	1.510	Minus	0.007	.0020
	1.510	2.010	Minus	0.007	.0030
	2.010	4.010	Minus	0.009	.0030
Size of Square - E	.0520	.5100	Minus	0.004	.0040
	.5100	1.010	Minus	0.006	.0060
	1.010	2.010	Minus	0.008	.0080
	2.010	4.010	Minus	0.010	.0100

USCTI Table 302A • General Tap Dimensions and Tolerances

NOMINAL DIAMETER RANGE-INCHES:		Machine Screw Size	Nominal Fractional Diameter	Nominal Metric Diameter	Style	TAP DIMENSIONS-INCHES:					
Over	To (incl.)	Number	Inches	Millimeters		Overall Length A	Thread Length B*	Square Length C	Shank Diameter D	Size of Square E	Thread Length F†
.104	.117	4	—	—	1	1-7/8	9/16	3/16	.141	.110	5/16
.117	.130	5	1/8	M3, M3.15	1	1-15/16	5/8	3/16	.141	.110	5/16
.130	.145	6	—	M3.5	1	2	1 1/16	3/16	.141	.110	3/5
.145	.171	8	5/32	M4	1	2-1/8	3/4	1/4	.168	.131	3/8
.171	.197	10	3/16	M4.5, M5	1	2-3/8	7/8	1/4	.194	.152	1/2
.197	.223	12	7/32	—	1	2-3/8	15/16	9/32	.220	.165	1/2
.223	.260	14	1/4	M6, M6.3	2	2-1/2	1	5/16	.255	.191	5/8
.260	.323	—	5/16	M7, M8	2	2-23/32	1-1/8	3/8	.318	.238	1 1/16
.323	.395	—	3/8	M10	2	2-15/16	1-1/4	7/16	.381	.286	3/4
.395	.448	—	7/16	—	3	3-5/32	—	13/32	.323	.242	7/8
.448	.510	—	1/2	M12, M12.5	3	3-3/8	—	7/16	.367	.275	15/16
.510	.573	—	9/16	M14	3	3-19/32	—	1/2	.429	.322	1
.573	.635	—	5/8	M16	3	3-13/16	—	9/16	.480	.360	1-3/32
.635	.709	—	1 1/16	M18	3	4-1/32	—	5/8	.542	.406	1-3/32
.709	.760	—	3/4	—	3	4-1/4	—	1 1/16	.590	.442	1-7/32
.760	.823	—	13/16	M20	3	4-15/32	—	1 1/16	.652	.489	1-7/32
.823	.885	—	7/8	M22	3	4-1 1/16	—	3/4	.697	.523	1-1 1/32
.885	.948	—	15/16	M24	3	4-29/32	—	3/4	.760	.570	1-1 1/32
.948	1.010	—	1	M25	3	5-1/8	—	13/16	.800	.600	1-1/2

* "B" based on Table 302, Column B and shall be no less than minimum Table 302 thread length.

† "F" based on the length of 12 pitches of the UNC series.

Notes:

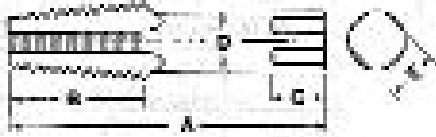
"F" is minimum value and has no tolerance.

Unless otherwise specified, all tolerances are in accordance with Table 302.

For eccentricity tolerances, see Table 317.

Taps • Standards & Dimensions

Table 3II • Pipe Taps • Straight & Taper



General Dimensions

Nominal Size Inches	DIMENSIONS-INCHES				
	Length Overall A	Length of Thread B	Length of Square C	Diameter of Shank D	Size of Square E
1/16	2-1/8	11/16	3/8	.3125	.2340
1/8	2-1/8	3/4	3/8	.3125	.2340
1/8	2-1/8	3/4	3/8	.4375	.3280
1/4	2-7/16	1-1/16	7/16	.5625	.4210
3/8	2-9/16	1-1/16	1/2	.7000	.5310
1/2	3-1/8	1-3/8	5/8	.6875	.5150
3/4	3-1/4	1-3/8	11/16	.9063	.6790
1	3-3/4	1-3/4	13/16	1.1250	.8430
1-1/4	4	1-3/4	15/16	1.3125	.9840
1-1/2	4-1/4	1-3/4	1	1.5000	1.1250
2	4-1/2	1-3/4	1-1/8	1.8750	1.4060
2-1/2	5-1/2	2-9/16	1-1/4	2.2500	1.6870
3	6	2-5/8	1-3/8	2.6250	1.9680
3-1/2	6-1/2	2-11/16	1-1/2	2.8125	2.1080
4	6-3/4	2-3/4	1-5/8	3.0000	2.2500

Tolerances

ELEMENT	RANGE - INCHES	DIRECTION	TOLERANCE-INCHES	
			Cut Thread	Ground Thread
Length Overall-A	1/16 to 3/4 incl.	Plus or Minus	1/32	1/32
	1 to 4 incl.	Plus or Minus	1/16	1/16
Length of Thread-B	1/16 to 3/4 incl.	Plus or Minus	1/16	1/16
	1 to 1 1/4 incl.	Plus or Minus	3/32	3/32
	1-1/2 to 4 incl.	Plus or Minus	1/8	1/8
Length of Square-C	1/16 to 3/4 incl.	Plus or Minus	1/32	1/32
	1 to 4 incl.	Plus or Minus	1/16	1/16
Diameter of Shank-D	1/16 to 1/8 incl.	Minus	.0070	.0015
	1/4 to 1/2 incl.	Minus	.0070	.0020
	3/4 to 1 incl.	Minus	.0090	.0020
	1-1/4 to 4 incl.	Minus	.0090	.0030
Size of Square-E	1/16 to 1/8 incl.	Minus	.0040	.0040
	1/4 to 3/4 incl.	Minus	.0060	.0060
	1 to 4 incl.	Minus	.0080	.0080

Note: Additional Standards and Dimensions on thread limits and tolerances as well as eccentricity tolerances of tap elements are available on request.

Taps • Standards & Dimensions

ISO Metric Taps • Ground Thread Tap Limits

In all cases the tap major and pitch diameter conversions have been rounded upward.

Basic values agree with BI Report - ISO Metric Screw Threads, Table 9B.

Angle Tolerance

Pitch (mm)	Deviation in Half Angle
Over 1.25 to 2.5 incl.	30' plus or minus
Over 2.5 to 4 incl.	25' plus or minus
Over 4 to 6 incl.	20' plus or minus

A maximum lead deviation of $\pm 0.013\text{mm}$ within any two threads not farther apart than 25mm is permitted.

Formulae

Min. Major Diameter = Basic Plus W

Max. Major Diameter = Min. Plus X

Max. Pitch Diameter = Basic Plus Y

Min. Pitch Diameter = Max. Minus Z

		MAJOR DIAMETER			PITCH DIAMETER LIMITS (Inches)											
Nom. Dia.	Pitch	(Inches)														
		Basic	Min.	Max.	Basic	• D2 •		• D3 •		• D4 •		• D5 •		• D5 •		
	mm					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
M1.5	0.35	0.059055	.0602	.0612	0.050105	.0500	.0511	.0510	.0516	.0515	.0521	—	—	—	—	
M1.6	0.35	0.062992	.0641	.0651	0.054042	.0545	.0551	.0550	.0556	.0555	.0561	—	—	—	—	
M1.8	0.35	0.070866	.0720	.0730	0.061916	.0624	.0630	.0629	.0635	.0634	.0640	—	—	—	—	
M2	0.40	0.078740	.0801	.0811	0.068511	.0690	.0696	.0695	.0701	.0700	.0706	—	—	—	—	
M2	0.45	0.078740	.0802	.0812	0.067233	.0677	.0683	.0682	.0688	.0687	.0693	—	—	—	—	
M2.2	0.45	0.086614	.0881	.0891	0.075107	.0756	.0762	.0761	.0767	.0766	.0772	—	—	—	—	
M2.3	0.40	0.090322	.0919	.0929	0.080322	.0808	.0814	.0813	.0819	.0818	.0824	—	—	—	—	
M2.5	0.35	0.098425	.0996	.1006	0.089475	.0899	.0905	.0904	.0910	.0909	.0915	—	—	—	—	
M2.5	0.45	0.098425	.0999	.1009	0.086918	.0874	.0880	.0879	.0885	.0884	.0890	—	—	—	—	
M2.6	0.45	0.102362	.1038	.1048	0.090855	.0913	.0919	.0918	.0924	.0923	.0929	—	—	—	—	
M3	0.35	0.118110	.1193	.1203	0.109160	.1096	.1102	.1101	.1107	.1106	.1112	.1111	.1117	—	—	
M3	0.50	0.118110	.1198	.1208	0.105324	.1058	.1064	.1063	.1069	.1068	.1074	.1073	.1079	—	—	
M3	0.60	0.118110	.1201	.1211	0.102767	.1030	.1038	.1035	.1043	.1040	.1048	.1045	.1053	—	—	
M3.5	0.35	0.137795	.1389	.1399	0.128845	.1293	.1299	.1298	.1304	.1303	.1309	.1308	.1314	—	—	
M3.5	0.60	0.137795	.1397	.1407	0.122452	.1227	.1235	.1232	.1240	.1237	.1245	.1242	.1250	—	—	
M4	0.50	0.157480	.1591	.1601	0.144694	.1451	.1457	.1456	.1462	.1461	.1467	.1466	.1472	—	—	
M4	0.70	0.157480	.1597	.1613	0.139580	.1398	.1406	.1403	.1411	.1408	.1416	.1413	.1421	—	—	
M4	0.75	0.157480	.1599	.1615	0.138302	.1386	.1394	.1391	.1399	.1396	.1404	.1401	.1409	—	—	
M4.5	0.50	0.177165	.1788	.1798	0.164379	.1648	.1654	.1653	.1659	.1658	.1664	.1663	.1669	—	—	
M4.5	0.75	0.177165	.1796	.1812	0.157986	.1582	.1590	.1587	.1595	.1592	.1600	.1597	.1605	—	—	
M5	0.50	0.196850	.1985	.1995	0.184064	.1845	.1851	.1850	.1856	.1855	.1861	.1861	.1866	—	—	
M5	0.80	0.196850	.1994	.2010	0.176393	.1766	.1774	.1771	.1779	.1776	.1784	.1781	.1789	—	—	
M5	0.90	0.196850	.1997	.2013	0.173836	.1741	.1749	.1746	.1754	.1751	.1759	.1756	.1764	.1761	.1769	
M5	1.00	0.196850	.2001	.2017	0.171278	.1713	.1723	.1718	.1723	.1723	.1733	.1728	.1738	.1733	.1743	
M5.5	0.50	0.216535	.2182	.2192	0.203749	.2042	.2048	.2047	.2053	.2052	.2058	.2057	.2063	.2062	.2068	
M5.5	0.90	0.216535	.2194	.2210	0.193521	.1938	.1946	.1943	.1951	.1948	.1956	.1953	.1961	.1958	.1966	
M6	0.75	0.236220	.2387	.2403	0.217041	.2173	.2181	.2178	.2186	.2183	.2191	.2188	.2196	.2193	.2201	
M6	1.00	0.236220	.2395	.2411	0.210648	.2107	.2117	.2112	.2122	.2117	.2127	.2122	.2132	.2127	.2137	
M6.3	1.00	0.248031	.2513	.2529	0.222458	.2225	.2235	.2230	.2240	.2235	.2245	.2240	.2250	.2245	.2255	
M7	0.75	0.275590	.2780	.2796	0.256411	.2562	.2575	.2570	.2580	.2575	.2585	.2580	.2590	.2585	.2595	
M7	1.00	0.275590	.2788	.2804	0.250018	.2501	.2511	.2506	.2516	.2511	.2521	.2516	.2526	.2521	.2531	
M8	0.75	0.314960	.3174	.3190	0.295781	.2958	.2968	.2963	.2973	.2968	.2978	.2973	.2983	.2978	.2988	
M8	1.00	0.314960	.3182	.3198	0.289388	.2894	.2904	.2899	.2909	.2904	.2914	.2909	.2919	.2914	.2924	
M8	1.25	0.314960	.3189	.3214	0.282995	.2828	.2840	.2833	.2845	.2838	.2850	.2843	.2855	.2848	.2860	
M9	0.75	0.354330	.3568	.3584	0.335151	.3352	.3362	.3357	.3367	.3362	.3372	.3367	.3377	.3372	.3382	
M9	1.00	0.354330	.3576	.3592	0.328758	.3288	.3298	.3293	.3303	.3298	.3308	.3303	.3313	.3308	.3318	
M9	1.25	0.354330	.3583	.3608	0.322365	.3222	.3234	.3227	.3239	.3232	.3244	.3237	.3249	.3242	.3254	
M10	0.75	0.393700	.3961	.3977	0.374521	.3746	.3756	.3751	.3761	.3756	.3766	.3761	.3771	.3766	.3776	
M10	1.00	0.393700	.3969	.3985	0.368128	.3682	.3692	.3687	.3697	.3692	.3702	.3697	.3707	.3702	.3712	
M10	1.25	0.393700	.3976	.4001	0.361735	.3616	.3628	.3621	.3633	.3626	.3638	.3631	.3643	.3636	.3648	
M10	1.50	0.393700	.3985	.4010	0.355343	.3552	.3564	.3557	.3569	.3562	.3574	.3567	.3579	.3572	.3584	
M11	0.75	0.433070	.4355	.4371	0.413891	.4139	.4149	.4144	.4154	.4149	.4159	.4154	.4164	.4159	.4169	
M11	1.00	0.433070	.4363	.4379	0.407498	.4075	.4085	.4080	.4090	.4085	.4095	.4090	.4100	.4095	.4105	
M11	1.50	0.433070	.4378	.4403	0.394713	.3946	.3958	.3951	.3963	.3956	.3968	.3961	.3973	.3966	.3978	
M12	1.00	0.472440	.4757	.4773	0.446868	.4469	.4479	.4474	.4484	.4479	.4489	.4484	.4494	.4489	.4499	
M12	1.25	0.472440	.4764	.4789	0.440475	.4403	.4415	.4408	.4420	.4413	.4425	.4418	.4430	.4423	.4435	
M12	1.50	0.472440	.4772	.4797	0.434083	.4339	.4351	.4344	.4356	.4349	.4361	.4354	.4366	.4359	.4371	

Taps • Standards & Dimensions

ISO Metric Taps • Ground Thread Tap Limits continued

Nom. Dia. mm	Pitch mm	MAJOR DIAMETER (Inches)			PITCH DIAMETER LIMITS (Inches)								
		Basic	Min.	Max.	Basic	• D6 • Min.	Max.	• D7 • Min.	Max.	• D8 • Min.	Max.	• D9 • Min.	Max.
M14	1.00	0.551180	.5544	.5560	0.525608	.5277	.5287	.5282	.5292	.5287	.5297	—	—
M14	1.25	0.551180	.5551	.5576	0.519215	.5211	.5223	.5216	.5228	.5221	.5233	—	—
M14	1.50	0.551180	.5559	.5584	0.512823	.5147	.5159	.5152	.5164	.5157	.5169	—	—
M14	2.00	0.551180	.5575	.5600	0.500037	.5015	.5031	.5020	.5036	.5025	.5041	—	—
M15	1.00	0.590550	.5938	.5954	0.564978	.5670	.5680	.5675	.5685	.5680	.5690	—	—
M15	1.50	0.590550	.5953	.5978	0.552193	.5540	.5552	.5545	.5557	.5550	.5562	—	—
M16	1.00	0.629920	.6332	.6348	0.604348	.6064	.6074	.6069	.6079	.6074	.6084	—	—
M16	1.50	0.629920	.6347	.6372	0.591563	.5934	.5946	.5939	.5951	.5944	.5956	—	—
M16	2.00	0.629920	.6363	.6388	0.578777	.5802	.5818	.5807	.5823	.5812	.5828	—	—
M17	1.00	0.669290	.6725	.6741	0.643718	.6458	.6468	.6463	.6473	.6468	.6478	—	—
M17	1.50	0.669290	.6740	.6765	0.630933	.6328	.6340	.6333	.6345	.6338	.6350	—	—
M18	1.00	0.708660	.7119	.7135	0.683088	.6851	.6861	.6856	.6866	.6861	.6871	—	—
M18	1.50	0.708660	.7134	.7159	0.670303	.6722	.6734	.6727	.6739	.6732	.6744	—	—
M18	2.00	0.708660	.7150	.7175	0.657517	.6590	.6606	.6595	.6611	.6600	.6616	—	—
M18	2.50	0.708660	.7166	.7191	0.644731	.6462	.6478	.6467	.6483	.6472	.6488	—	—
M20	1.00	0.787400	.7906	.7922	0.761828	.7639	.7649	.7644	.7654	.7649	.7659	—	—
M20	1.50	0.787400	.7921	.7946	0.749043	.7509	.7521	.7514	.7526	.7519	.7531	—	—
M20	2.00	0.787400	.7937	.7962	0.736257	.7377	.7393	.7382	.7398	.7387	.7403	—	—
M20	2.50	0.787400	.7954	.7979	0.723471	.7249	.7265	.7254	.7270	.7259	.7275	—	—
M22	1.00	0.866140	.8694	.8710	0.840568	.8426	.8436	.8431	.8441	.8436	.8446	—	—
M22	1.50	0.866140	.8709	.8734	0.827783	.8296	.8308	.8301	.8313	.8306	.8318	—	—
M22	2.00	0.866140	.8725	.8750	0.814997	.8164	.8180	.8169	.8185	.8174	.8190	—	—
M22	2.50	0.866140	.8741	.8766	0.802211	.8037	.8053	.8042	.8058	.8047	.8063	—	—
M24	1.00	0.944880	.9481	.9497	0.919308	.9214	.9224	.9219	.9229	.9224	.9234	—	—
M24	1.50	0.944880	.9496	.9521	0.906523	.9084	.9096	.9089	.9101	.9094	.9106	—	—
M24	2.00	0.944880	.9512	.9537	0.893737	.8952	.8968	.8957	.8973	.8962	.8978	—	—
M24	3.00	0.944880	.9544	.9583	0.868165	.8696	.8712	.8701	.8717	.8706	.8722	.8711	.8727
M25	1.00	0.984250	.9875	.9891	0.958678	.9607	.9617	.9612	.9622	.9617	.9627	—	—
M25	1.50	0.984250	.9890	.9915	0.945893	.9477	.9489	.9482	.9494	.9487	.9499	—	—
M25	2.00	0.984250	.9906	.9931	0.933107	.9346	.9362	.9351	.9367	.9356	.9372	—	—
M26	1.50	1.023620	1.0284	1.0309	0.985263	.9871	.9883	.9876	.9888	.9881	.9893	—	—
M27	1.00	1.062990	1.0662	1.0678	1.037418	1.0393	1.0405	1.0398	1.0410	1.0403	1.0415	—	—
M27	1.50	1.062990	1.0677	1.0702	1.024633	1.0265	1.0277	1.0270	1.0282	1.0275	1.0287	—	—
M27	2.00	1.062990	1.0693	1.0718	1.011847	1.0133	1.0149	1.0138	1.0154	1.0143	1.0159	—	—
M27	3.00	1.062990	1.0725	1.0764	0.986274	.9873	.9893	.9878	.9898	.9883	.9903	.9888	.9908
M28	1.00	1.102360	1.1056	1.1072	1.076788	1.0786	1.0798	1.0791	1.0803	1.0796	1.0808	—	—
M28	1.50	1.102360	1.1071	1.1096	1.064003	1.0659	1.0671	1.0664	1.0676	1.0669	1.0681	—	—
M28	2.00	1.102360	1.1087	1.1112	1.051217	1.0527	1.0543	1.0532	1.0548	1.0537	1.0553	—	—
M30	1.00	1.181100	1.1843	1.1859	1.155528	1.1574	1.1586	1.1579	1.1591	1.1584	1.1596	—	—
M30	1.50	1.181100	1.1858	1.1883	1.142743	1.1446	1.1458	1.1451	1.1463	1.1456	1.1468	—	—
M30	2.00	1.181100	1.1874	1.1899	1.129957	1.1314	1.1330	1.1319	1.1335	1.1324	1.1340	—	—
M30	3.00	1.181100	1.1906	1.1945	1.104385	1.1054	1.1074	1.1059	1.1079	1.1064	1.1084	1.1069	1.1089
M30	3.50	1.181100	1.1921	1.1961	1.091599	1.0926	1.0946	1.0931	1.0951	1.0936	1.0956	1.0941	1.0961
M32	1.50	1.259840	1.2646	1.2671	1.221483	1.2233	1.2245	1.2224	1.2250	1.2243	1.2255	—	—
M32	2.00	1.259840	1.2662	1.2687	1.208697	1.2101	1.2117	1.2106	1.2122	1.2111	1.2127	—	—
M33	1.50	1.299210	1.3040	1.3065	1.260852	1.2627	1.2639	1.2632	1.2644	1.2637	1.2649	—	—
M33	2.00	1.299210	1.3056	1.3081	1.248067	1.2495	1.2511	1.2500	1.2516	1.2505	1.2521	—	—
M33	3.00	1.299210	1.3088	1.3127	1.222495	1.2235	1.2255	1.2240	1.2260	1.2245	1.2265	1.2250	1.2270
M33	3.50	1.299210	1.3103	1.3142	1.209709	1.2108	1.2128	1.2113	1.2133	1.2118	1.2138	1.2123	1.2143
M35	1.50	1.377950	1.3827	1.3862	1.339593	1.3414	1.3426	1.3419	1.3431	1.3424	1.3436	—	—
M36	1.50	1.417320	1.4221	1.4246	1.378963	1.3808	1.3820	1.3813	1.3825	1.3818	1.3830	—	—
M36	2.00	1.417320	1.4237	1.4262	1.366177	1.3676	1.3692	1.3681	1.3697	1.3686	1.3702	—	—
M36	3.00	1.417320	1.4269	1.4308	1.340605	1.3417	1.3437	1.3422	1.3442	1.3427	1.3447	1.3432	1.3452
M36	4.00	1.417320	1.4300	1.4339	1.315034	1.3161	1.3181	1.3166	1.3186	1.3171	1.3191	1.3176	1.3796
M38	1.50	1.496060	1.5008	1.5033	1.457703	1.4696	1.4608	1.4601	1.4613	1.4606	1.4618	—	—
M38	4.00	1.496060	1.5087	1.5126	1.393774	1.3948	1.3968	1.3953	1.3973	1.3958	1.3978	1.3963	1.3983
M39	1.50	1.535430	1.5402	1.5427	1.497073	1.4989	1.5001	1.4994	1.5006	1.4999	1.5011	—	—
M39	2.00	1.535430	1.5418	1.5443	1.484287	1.4857	1.4873	1.4862	1.4878	1.4867	1.4883	—	—
M39	3.00	1.535430	1.5450	1.5489	1.458715	1.4598	1.4618	1.4603	1.4823	1.4608	1.4628	1.4613	1.4633
M39	4.00	1.535430	1.5481	1.5489	1.433144	1.4342	1.4362	1.4347	1.4367	1.4352	1.4372	1.4357	1.4377

Taps • Standards & Dimensions

ISO Metric Screw Threads

Limiting Dimensions of Standard Series Threads for Commercial Screws, Bolts and Nuts (mm)

Nom. Size Major Dia.	Pitch	Basic Thread Designation	EXTERNAL THREAD (BOLT)								INTERNAL THREAD (NUT)							
			Tol. Class	Allow-ance	Major Diameter		Pitch			Minor Diameter		Tol. Class	Minor Diameter		Pitch			
					Max.	Min.	Max.	Min.	Tol.	Max. ^a	Min. ^b		Min.	Max.	Min.	Max.		
1.6	0.35	M1.6	6g	0.019	1.581	1.496	1.354	1.291	0.063	1.151	1.063	6H	1.221	1.321	1.373	1.458	0.085	1.600
1.8	0.35	M1.8	6g	0.019	1.781	1.696	1.554	1.491	0.063	1.351	1.263	6H	1.421	1.521	1.573	1.658	0.085	1.800
2	0.4	M2	6g	0.019	1.981	1.886	1.721	1.654	0.067	1.490	1.394	6H	1.567	1.679	1.740	1.830	0.090	2.000
2.2	0.45	M2.2	6g	0.020	2.180	2.080	1.888	1.817	0.071	1.628	1.525	6H	1.713	1.838	1.908	2.003	0.095	2.200
2.5	0.45	M2.5	6g	0.020	2.480	2.380	2.188	2.117	0.071	1.928	1.825	6H	2.013	2.138	2.208	2.303	0.095	2.500
3	0.5	M3	6g	0.020	2.980	2.874	2.655	2.580	0.075	2.367	2.256	6H	2.459	2.599	2.675	2.775	0.100	3.000
3.5	0.6	M3.5	6g	0.021	3.479	3.354	3.089	3.004	0.085	2.742	2.614	6H	2.850	3.010	3.110	3.222	0.112	3.500
4	0.7	M4	6g	0.022	3.978	3.838	3.523	3.433	0.090	3.119	2.979	6H	3.242	3.422	3.545	3.663	0.118	4.000
4.5	0.75	M4.5	6g	0.022	4.478	4.338	3.991	3.901	0.090	3.558	3.414	6H	3.688	3.878	4.013	4.131	0.118	4.500
5	0.8	M5	6g	0.024	4.976	4.826	4.456	4.361	0.095	3.994	3.841	6H	4.134	4.334	4.480	4.605	0.125	5.000
6	1	M6	6g	0.026	5.974	5.794	5.324	5.212	0.112	4.747	4.563	6H	4.917	5.153	5.350	5.500	0.150	6.000
7	1	M7	6g	0.026	6.974	6.794	6.324	6.212	0.112	5.747	5.563	6H	5.917	6.153	6.350	6.500	0.150	7.000
8	1.25	M8	6g	0.028	7.972	7.760	7.160	7.042	0.118	6.439	6.231	6H	6.647	6.912	7.188	7.348	0.160	8.000
8	1	M8 x 1	6g	0.026	7.794	7.794	7.324	7.212	0.112	6.747	6.563	6H	6.917	7.153	7.350	7.500	0.150	8.000
10	1.5	M10	6g	0.032	9.968	9.732	8.994	8.862	0.132	8.127	7.879	6H	8.376	8.676	9.026	9.206	0.180	10.000
10	1.25	M10 x 1.25	6g	0.028	9.972	9.760	9.160	9.042	0.118	8.439	8.231	6H	8.647	8.912	9.188	9.348	0.160	10.000
12	1.75	M12	6g	0.034	11.966	11.701	10.829	10.679	0.150	9.819	9.543	6H	10.106	10.441	10.863	11.063	0.200	12.000
12	1.25	M12 x 1.25	6g	0.028	11.972	11.760	11.160	11.028	0.118	10.439	10.217	6H	10.647	10.912	11.188	11.368	0.180	12.000
14	2	M14	6g	0.038	13.962	13.682	12.663	12.503	0.160	11.508	11.204	6H	11.835	12.210	12.701	12.913	0.212	14.000
14	1.5	M14 x 1.5	6g	0.032	13.968	13.732	12.994	12.854	0.140	12.127	11.879	6H	12.376	12.676	13.026	13.216	0.190	14.000
16	2	M16	6g	0.038	15.962	15.682	14.663	14.503	0.160	13.508	13.204	6H	13.835	14.210	14.701	14.913	0.212	16.000
16	1.5	M16 x 1.5	6g	0.032	15.968	15.732	14.994	14.854	0.140	14.127	13.879	6H	14.376	14.676	15.026	15.216	0.190	16.000
18	2.5	M18	6g	0.042	17.958	17.623	16.334	16.164	0.170	14.891	14.541	6H	15.294	15.744	16.376	16.600	0.224	18.000
18	1.5	M18 x 1.5	6g	0.032	17.968	17.732	16.994	16.854	0.140	16.127	15.879	6H	16.376	16.676	17.026	17.216	0.190	18.000
20	2.5	M20	6g	0.042	19.958	19.623	18.334	18.164	0.170	16.891	16.541	6H	17.294	17.744	18.376	18.600	0.224	20.000
20	1.5	M20 x 1.5	6g	0.032	19.968	19.732	18.994	18.854	0.140	18.127	17.879	6H	18.376	18.676	19.026	19.216	0.190	20.000
22	2.5	M22	6g	0.042	21.958	21.623	20.334	20.164	0.170	18.891	18.541	6H	19.294	19.744	20.376	20.600	0.224	22.000
22	1.5	M22 x 1.5	6g	0.032	21.968	21.732	20.994	20.854	0.140	20.127	19.879	6H	20.376	20.676	21.026	21.216	0.190	22.000
24	3	M24	6g	0.048	23.952	23.577	22.003	21.803	0.200	20.271	19.855	6H	20.752	21.252	22.051	22.316	0.265	24.000
24	2	M24 x 2	6g	0.038	23.962	23.682	22.663	22.493	0.170	21.508	21.194	6H	21.835	22.210	22.701	22.925	0.224	24.000
27	3	M27	6g	0.048	26.952	26.577	25.003	24.803	0.200	23.271	22.855	6H	23.752	24.252	25.051	25.316	0.265	27.000
27	2	M27 x 2	6g	0.038	26.962	26.682	25.663	25.493	0.170	24.508	24.194	6H	24.835	25.210	25.701	25.925	0.224	27.000
30	3.5	M30	6g	0.053	29.947	29.522	27.674	27.462	0.212	25.653	25.189	6H	26.211	26.771	27.727	28.007	0.280	30.000
30	2	M30 x 2	6g	0.038	29.962	29.682	28.663	28.493	0.170	27.508	27.194	6H	27.835	28.210	28.701	28.925	0.224	30.000
33	3.5	M33	6g	0.053	32.947	32.522	30.674	30.462	0.212	28.653	28.189	6H	29.211	29.771	30.727	31.007	0.280	33.000
33	2	M33 x 2	6g	0.038	32.962	32.682	31.663	31.493	0.170	30.508	30.194	6H	30.835	31.210	31.701	31.925	0.224	33.000
36	4	M36	6g	0.060	35.940	35.465	33.342	33.118	0.224	31.033	30.521	6H	31.670	32.270	33.402	33.702	0.300	36.000
36	3	M36 x 3	6g	0.048	35.952	35.577	34.003	33.803	0.200	32.271	31.855	6H	32.752	33.252	34.051	34.316	0.265	36.000
39	4	M39	6g	0.060	38.940	38.465	36.342	36.118	0.224	34.033	33.521	6H	34.670	35.270	36.402	36.702	0.300	39.000

Taps • Standards & Dimensions

USCTI Table 325 • Fractional Size Taps Cut Thread-Unified & American National Form

Lead Tolerance

A maximum lead error of plus or minus .003" in one inch of thread is permitted.

Angle Tolerance

THREADS PER INCH ANGLE	ERROR IN HALF ANGLE	ERROR IN FULL
4 and coarser	30' Plus or Minus	45'
4-1/2 to 5-1/2 incl.	35' Plus or Minus	53'
6 to 9 incl.	40' Plus or Minus	60'
10 to 28 incl.	45' Plus or Minus	68'

Formulae

Min. Major Diameter = Basic Major Diameter plus (B+C)

Max. Major Diameter = Min. Major Diameter plus A

Min. Pitch Diameter = Basic Pitch Diameter plus B

Max. Pitch Diameter = Min. Pitch Diameter plus D

In the above formulae:

A=Major diameter tolerance.

B=Amount minimum pitch diameter is over basic.

C=Constant to add:

20% of the theoretical truncation for 2 to 5-1/2

threads per inch. 25% for 6 to 64 threads per inch.

"D=Pitch diameter tolerance, for values of A, B, C and"

"D see Table 331, on page 107"

Note:

Additional Standards and Dimensions for pitches coarser than UNF and pitches finer than UNF are available on request.

Thread Limits

NOM. DIAMETER SIZE	THREADS PER INCH				MAJOR DIAMETER			PITCH		
	NC	NF	NEF	NS	BASIC	MIN.	MAX.	BASIC	MIN.	MAX.
1/16	-	-	-	64	.0625	.0635	.0650	.0524	.0526	.0536
1/8	-	-	-	40	.1250	.1266	.1286	.1088	.1090	.1105
5/32	-	-	-	32	.1563	.1585	.1605	.1360	.1365	.1380
8/16	-	-	-	24	.1875	.1903	.1923	.1604	.1609	.1624
3/16	-	-	-	32	.1875	.1897	.1917	.1672	.1677	.1692
1/4	20	-	-	-	.2500	.2532	.2557	.2175	.2180	.2200
1/4	-	28	-	-	.2500	.2524	.2549	.2268	.2273	.2288
5/16	18	-	-	-	.3125	.3160	.3185	.2764	.2769	.2789
5/16	-	24	-	-	.3125	.3153	.3178	.2854	.2859	.2874
3/8	16	-	-	-	.3750	.3789	.3814	.3344	.3349	.3369
3/8	-	24	-	-	.3750	.3778	.3803	.3479	.3484	.3499
7/16	14	-	-	-	.4375	.4419	.4449	.3911	.3916	.3941
7/16	-	20	-	-	.4375	.4407	.4437	.4050	.4055	.4075
1/2	13	-	-	-	.5000	.5047	.5077	.4500	.4505	.4530
1/2	-	20	-	-	.5000	.5032	.5062	.4675	.4680	.4700
9/16	12	-	-	-	.5625	.5675	.5705	.5084	.5089	.5114
9/16	-	18	-	-	.5625	.5660	.5690	.5264	.5269	.5289
5/8	11	-	-	-	.6250	.6304	.6334	.5660	.5665	.5690
5/8	-	18	-	-	.6250	.6285	.6315	.5889	.5894	.5914

NOM. SIZE INCH	THREADS PER INCH			MAJOR DIAMETER			PITCH DIAMETER		
	NC	NF	NS	BASIC	MIN.	MAX.	BASIC	MIN.	MAX.
3/4	10	-	-	.7500	.7559	.7599	.6850	.6855	.6885
3/4	-	16	-	.7500	.7539	.7579	.7094	.7099	.7124
7/8	9	-	-	.8750	.8820	.8860	.8028	.8038	.8068
7/8	-	14	-	.8750	.8799	.8839	.8286	.8296	.8321
7/8	-	-	18	.8750	.8790	.8830	.8389	.8399	.8424
1	8	-	-	1.0000	1.0078	1.0118	.9188	.9198	.9228
1	-	-	14	1.0000	1.0049	1.0089	.9536	.9546	.9571
1-1/8	7	-	-	1.1250	1.1337	1.1382	1.0322	1.0332	1.0367
1-1/8	-	12	-	1.1250	1.1305	1.1350	1.0709	1.0719	1.0749
1-1/4	7	-	-	1.2500	1.2587	1.2632	1.1572	1.1582	1.1617
1-1/4	-	12	-	1.2500	1.2555	1.2600	1.1959	1.1969	1.1999
1-3/8	6	-	-	1.3750	1.3850	1.3895	1.2667	1.2677	1.2712
1-3/8	-	12	-	1.3750	1.3805	1.3850	1.3209	1.3219	1.3249
1-1/2	6	-	-	1.5000	1.5100	1.5145	1.3917	1.3927	1.3962
1-1/2	-	12	-	1.5000	1.5055	1.5100	1.4459	1.4469	1.4499
1-5/8	-	-	6	1.6250	1.6355	1.6410	1.5167	1.5182	1.5222
1	-	12	-	1.0000	1.0055	1.0095	.9459	.9469	.9494
1-3/4	5	-	-	1.7500	1.7602	1.7657	1.6201	1.6216	1.6256
1-7/8	-	-	5	1.8750	1.8852	1.8907	1.7451	1.7466	1.7506
2	4-1/2	-	-	2.0000	2.0111	2.0166	1.8557	1.8572	1.8612
2-1/4	4-1/2	-	-	2.2500	2.2611	2.2671	2.1057	2.1072	2.1117
2-1/2	4	-	-	2.5000	2.5128	2.5188	2.3376	2.3396	2.3441

Taps • Standards & Dimensions

USCTI Table 327 • Fractional Size Taps Ground Thread-Unified & American National Form

Lead Tolerance

A maximum lead error of plus or minus .0005" in one inch of thread is permitted.

Pitch Diameter Limits for Taps Thru 1" Diameter:

- H1 = Basic to basic plus .0005"
- H2 = Basic plus .0005" to basic plus .001"
- H3 = Basic plus .001" to basic plus .0015"
- H4 = Basic plus .0015" to basic plus .002"
- H5 = Basic plus .002" to basic plus .0025"
- H6 = Basic plus .0025" to basic plus .003"

Pitch Diameter Limits for Taps over 1" Diameter Thru 1-1/2" Diameter:

- H4 = Basic plus .001" to basic plus .002"

Angle Tolerance

THREADS PER INCH ANGLE	ERROR IN HALF
6 to 9 incl.	25' plus or minus

Formulae (Approximate)

Max. Major Diameter = Basic Major Diameter plus A

Min. Major Diameter = Max. Major Diameter minus B

For values of A and B see Table 331.

Thread Limits

Nom. Size	Threads per Inch				MAJOR DIAMETER			PITCH DIAMETER LIMITS											
	NC	NF	NS	Basic	Min.	Max.	Pitch Diam.	H1 Limit	H2 Limit		H3 Limit		H4 Limit		H5 Limit		H6 Limit		
	UNC	UNF	UNS					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	20	-	-	.2500	.2540	.2550	.2175	.2175	.2180	.2180	.2185	.2185	.2190	-	-	.2195	.2200	-	-
1/4	-	28	-	.2500	.2525	.2535	.2268	.2268	.2273	.2273	.2278	.2278	.2283	.2283	.2288	-	-	-	-
5/16	18	-	-	.3125	.3170	.3180	.2764	.2764	.2769	.2769	.2774	.2774	.2779	-	-	.2784	.2789	-	-
5/16	-	24	-	.3125	.3155	.3165	.2854	.2854	.2859	.2859	.2864	.2864	.2869	.2869	.2874	-	-	-	-
3/8	16	-	-	.3750	.3800	.3810	.3344	.3344	.3349	.3349	.3354	.3354	.3359	-	-	.3364	.3369	-	-
3/8	-	24	-	.3750	.3780	.3790	.3479	.3479	.3484	.3484	.3489	.3489	.3494	.3494	.3499	-	-	-	-
7/16	14	-	-	.4375	.4435	.4445	.3911	-	-	.3916	.3921	.3921	.3926	-	-	.3931	.3936	-	-
7/16	-	20	-	.4375	.4415	.4425	.4050	-	-	-	-	.4060	.4065	-	-	.4070	.4075	-	-
1/2	13	-	-	.5000	.5065	.5075	.4500	.4500	.4505	.4505	.4510	.4510	.4515	-	-	.4520	.4525	-	-
1/2	-	20	-	.5000	.5040	.5050	.4675	.4675	.4680	.4680	.4685	.4685	.4690	-	-	.4695	.4700	-	-
9/16	12	-	-	.5625	.5690	.5700	.5084	-	-	.5089	-	-	.5099	-	-	.5104	.5109	-	-
9/16	-	18	-	.5625	.5670	.5680	.5264	-	-	.5269	.5274	.5274	.5279	-	-	.5284	.5289	-	-
5/8	11	-	-	.6250	.6320	.6330	.5660	-	-	.5665	.5670	.5670	.5675	-	-	.5680	.5685	-	-
5/8	-	18	-	.6250	.6295	.6305	.5889	-	-	.5894	.5899	.5899	.5904	-	-	.5909	.5914	-	-
1 1/16	-	-	11	.6875	.6945	.6955	.6285	-	-	-	-	.6295	.6300	-	-	-	-	-	-
1 1/16	-	-	16	.6875	.6925	.6935	.6469	-	-	-	-	.6479	.6484	-	-	-	-	-	-
3/4	10	-	-	.7500	.7575	.7590	-	-	.6855	.6855	.6860	.6860	.6865	-	-	.6870	.6875	-	-
3/4	-	16	-	.7500	.7550	.7560	.7094	.7094	.7099	.7099	.7104	.7104	.7109	-	-	.7114	.7119	-	-
7/8	9	-	-	.8750	.8835	.8850	.8028	-	-	-	-	-	-	.8043	.8048	-	-	.8053	.8058
7/8	-	14	-	.8750	.8810	.8820	.8286	-	-	.8291	.8296	-	-	.8301	.8306	-	-	.8311	.8316
1	8	-	-	1.0000	1.0095	1.0110	.9188	-	-	.9193	.9198	-	-	.9203	.9208	-	-	.9213	.9218
1	-	12	-	1.0000	1.0065	1.0075	.9459	-	-	-	-	-	-	.9474	.9479	-	-	-	-
1	-	-	14	1.0000	1.0060	1.0070	.9536	-	-	-	-	-	-	.9551	.9556	-	-	-	-
1-1/8	7	-	-	1.1250	1.1350	1.1370	1.0322	-	-	-	-	-	-	1.0332	1.0342	-	-	-	-
1-1/8	-	12	-	1.1250	1.132	1.1325	1.0709	-	-	-	-	-	-	1.0719	1.0729	-	-	-	-
1-1/4	7	-	-	1.2500	1.2600	1.2620	1.1572	-	-	-	-	-	-	1.1582	1.1592	-	-	-	-
1-1/4	-	12	-	1.2500	1.2565	1.2575	1.1959	-	-	-	-	-	-	1.1969	1.1979	-	-	-	-
1-3/8	6	-	-	1.3750	1.3870	1.3890	1.2667	-	-	-	-	-	-	1.2677	1.2687	-	-	-	-
1-3/8	-	12	-	1.3750	1.3815	1.3825	1.3209	-	-	-	-	-	-	1.3219	1.3229	-	-	-	-
1-1/2	6	-	-	1.5000	1.5120	1.5140	1.3917	-	-	-	-	-	-	1.3927	1.3937	-	-	-	-
1-1/2	-	12	-	1.5000	1.507	1.5075	1.4459	-	-	-	-	-	-	1.4469	1.4479	-	-	-	-

Taps • Standards & Dimensions

USCTI Table 328 • Hand Taps Machine Screw Sizes Cut Thread-Unified & American National Form

Lead Tolerance

A maximum lead error of plus or minus .003" in one inch of thread is permitted.

Angle Tolerance

THREADS PER INCH ANGLE	ERROR IN HALF ANGLE	ERROR IN FULL
16 to 28 incl.	45' Plus or Minus	68'

Formulae

Min. Major Diameter = Basic Major Diameter plus (B + C)

Max. Major Diameter = Min. Major Diameter plus A

Min. Pitch Diameter = Basic Pitch Diameter plus B

Max. Pitch Diameter = Min. Pitch Diameter plus D

In the above formulae:

A=Major diameter tolerance

B= Amount minimum pitch diameter is over basic

C=Constant to add:

25% if theoretical truncation for 16 to 80 threads per inch

D=Pitch diameter tolerance

Additional Standards and Dimensions for values of A, B, C and D are available on request.

Thread Limits

Nom. Size	THREADS PER INCH				MAJOR DIAMETER			PITCH DIAMETER LIMITS		
	NC UNC	NF UNF	NEF UNEF	NS UNS	Basic	Min.	Max.	Basic	Min.	Max.
0	-	80	-	-	.0600	.0609	.0624	.0519	.0521	.0531
1	64	-	-	-	.0730	.0740	.0755	.0629	.0631	.0641
1	-	72	-	-	.0730	.0740	.0755	.0640	.0642	.0652
2	56	-	-	-	.0860	.0872	.0887	.0744	.0746	.0756
2	-	64	-	-	.0860	.0870	.0885	.0759	.0761	.0771
3	48	-	-	-	.0990	.1003	.1018	.0855	.0857	.0867
3	-	56	-	-	.0990	.1002	.1017	.0874	.0876	.0886
4	-	-	-	32	.1120	.1142	.1162	.0917	.0922	.0937
4	-	-	-	36	.1120	.1137	.1157	.0940	.0942	.0957
4	40	-	-	-	.1120	.1136	.1156	.0958	.0960	.0975
4	-	48	-	-	.1120	.1133	.1153	.0985	.0987	.1002
5	40	-	-	-	.1250	.1266	.1286	.1088	.1090	.1105
5	-	44	-	-	.1250	.1264	.1284	.1102	.1104	.1119
6	32	-	-	-	.1380	.1402	.1422	.1177	.1182	.1197
6	-	-	-	36	.1380	.1397	.1417	.1200	.1202	.1217
6	-	40	-	-	.1380	.1396	.1416	.1218	.1220	.1235
8	32	-	-	-	.1640	.1662	.1682	.1437	.1442	.1457
8	-	36	-	-	.1640	.1657	.1677	.1460	.1462	.1477
8	-	-	-	40	.1640	.1656	.1676	.1478	.1480	.1495
10	24	-	-	-	.1900	.1928	.1948	.1629	.1634	.1649
10	-	-	-	28	.1900	.1924	.1944	.1668	.1673	.1688
10	-	-	-	30	.1900	.1923	.1943	.1684	.1689	.1704
10	-	32	-	-	.1900	.1922	.1942	.1697	.1702	.1717
12	24	-	-	-	.2160	.2188	.2208	.1889	.1894	.1909
12	-	28	-	-	.2160	.2184	.2204	.1928	.1933	.1948
12	-	-	32	-	.2160	.2182	.2202	.1957	.1962	.1977
14	-	-	-	20	.2420	.2452	.2477	.2095	.2100	.2120
14	-	-	-	24	.2420	.2448	.2473	.2149	.2154	.2174

Taps • Standards & Dimensions

USCTI Table 329 • Hand Taps Machine Screw Sizes Ground Thread-Unified & American Form

Angle Tolerance

20 to 80 threads per ubcg ubcl. = 30° plus or minus in 1/2 angle.

Formulae

Max. Major Diameter = Basic Major Diameter plus A

Min. Major Diameter = Max. Major Diameter minus B

A= Constant to add:

45% of the theoretical truncation to nearest '0005"

B= Major diameter tolerance

For values of A and B see Table 331

Pitch Diameter Limits

H1 Limit = Basic to basic plus .0005" to basic plus .001"

H2 Limit = Basic plus .0005" to basic plus .001"

H3 Limit + Basic plus .001" to basic plus .0015"

H7 Limit = Basic plus .003" to basic plus .0035"

Lead Tolerance

A maximum lead error of plus or minus .0005" in one inch of thread is permitted.

Thread Limits

Nom. Size	THREADS PER INCH			MAJOR DIAMETER				PITCH DIAMETER LIMITS							
	NC	NF	NS	Basic	Min.	Max.	Basic Pitch Diam.	H1 LIMIT	H2 LIMIT	H3 LIMIT	H7 LIMIT				
	UNC	UNF	UNS					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
0	-	80	-	.0600	.0605	.0615	.0519	.0519	.0524	.0524	.0529	-	-	-	-
1	64	-	-	.0730	.0735	.0745	.0629	.0629	.0634	.0634	.0639	-	-	-	-
1	-	72	-	.0730	.0735	.0745	.0640	.0640	.0645	.0645	.0650	-	-	-	-
2	56	-	-	.0860	.0865	.0875	.0744	.0744	.0749	.0749	.0754	-	-	-	-
2	-	64	-	.0860	.0865	.0875	.0759	-	-	.0764	.0769	-	-	-	-
3	48	-	-	.0990	.1000	.1010	.0855	.0855	.0860	.0860	.0865	-	-	-	-
3	-	56	-	.0990	.0995	.1005	.0874	.0874	.0879	.0879	.0884	-	-	-	-
4	-	-	36	.1120	.1135	.1145	.0940	-	-	.0945	.0950	-	-	-	-
4	40	-	-	.1120	.1135	.1145	.0958	.0958	.0963	.0963	.0968	-	-	-	-
4	-	48	-	.1120	.1130	.1140	.0985	.0985	.0990	.0990	.0995	-	-	-	-
5	40	-	-	.1250	.1265	.1275	.1088	.1088	.1093	.1093	.1098	-	-	-	-
5	-	44	-	.1250	.1260	.1270	.1102	-	-	.1107	.1112	-	-	-	-
6	32	-	-	.1380	.1400	.1410	.1177	.1177	.1182	.1182	.1187	.1187	.1192	.1207	.1212
6	-	40	-	.1380	.1395	.1405	.1218	.1218	.1223	.1223	.1228	-	-	-	-
8	32	-	-	.1640	.1660	.1670	.1437	.1437	.1442	.1442	.1447	.1447	.1452	.1467	.1472
8	-	36	-	.1640	.1655	.1665	.1460	-	-	.1465	.1470	-	-	-	-
10	24	-	-	.1900	.1930	.1940	.1629	.1629	.1634	.1634	.1639	.1639	.1644	.1659	.1664
10	-	32	-	.1900	.1920	.1930	.1697	.1697	.1702	.1702	.1707	.1707	.1712	.1727	.1732
12	24	-	-	.2160	.2190	.2200	.1889	-	-	-	-	.1899	.1904	-	-

Taps • Standards & Dimensions

USCTI Table 33I • Special Taps Ground Thread-Unified & American Form

General

The following tables and formulae are used in determining the limits and tolerances for ground thread taps having special diameter or special pitch or both and having a thread lead angle not in excess of 5%, unless otherwise specified. This table does not apply to the diameter and pitch combinations shown in Tables 327 and 329.

Additional Standards and Dimensions for tap sizes 1-5/8" to 4" incl. computed from this table are available upon request.

Lead Tolerance

A maximum lead error of plus or minus .0005" in one inch of thread is permitted.

Angle Tolerance

THREADS PER INCH ANGLE	ERROR IN HALF ANGLE
4 to 5-1/2 incl.	20' plus or minus
6 to 9 incl.	25' plus or minus

Formulae

Max. Major Dia. = Basic Major Dia. plus A

Min. Major Dia. = Max. Major Dia. minus B

Max. Pitch Dia. = Min. Pitch Dia. plus D

Min. Pitch Dia. = Basic Pitch Dia. plus C

In the above formulae:

A = Constant to add:

35% of the theoretical truncation for 4 to 5 threads per inch

40% for 5-1/2 to 12 threads per inch

45% for 13 to 80 threads per inch

To nearest .005" for 8 or more threads per inch

and to nearest .001" for less than 8 threads per inch

B = Major diameter tolerance

C = Amount over basic for minimum pitch diameter

D = Pitch diameter tolerance

Note:

When the tap major diameter must be determined from a specific tap pitch diameter, the maximum major diameter equals the minimum specified pitch diameter minus constant C, plus constant A.

Values for A, B, C and D

Threads Per Inch	A	B	C TO 5/8" incl.	OVER 5/8" to 2-1/2" incl."	OVER 2-1/2"	D TO 1" incl.	OVER 1" to 1-1/2" incl.	OVER 1-1/2" to 2-1/2" incl.	Over 2-1/2"
80	.0015	.0010	.0005	.0010	.0015	.0005	.0010	.0010	.0015
56	.0015	.0010	.0005	.0010	.0015	.0005	.0010	.0010	.0015
48	.0020	.0010	.0005	.0010	.0015	.0005	.0010	.0010	.0015
44	.0020	.0010	.0005	.0010	.0015	.0005	.0010	.0010	.0015
40	.0025	.0010	.0005	.0010	.0015	.0005	.0010	.0010	.0015
36	.0025	.0010	.0005	.0010	.0015	.0005	.0010	.0010	.0015
32	.0030	.0010	.0010	.0010	.0015	.0005	.0010	.0010	.0015
28	.0035	.0010	.0010	.0010	.0015	.0005	.0010	.0010	.0015
24	.0040	.0010	.0010	.0010	.0015	.0005	.0010	.0015	.0015
20	.0050	.0010	.0010	.0010	.0015	.0005	.0010	.0015	.0015
18	.0055	.0010	.0010	.0010	.0015	.0005	.0010	.0015	.0015
16	.0060	.0010	.0010	.0010	.0015	.0005	.0010	.0015	.0020
14	.0070	.0010	.0010	.0015	.0015	.0005	.0010	.0015	.0020
13	.0075	.0010	.0010	.0015	.0015	.0005	.0010	.0015	.0020
12	.0075	.0010	.0010	.0015	.0015	.0005	.0010	.0015	.0020
11	.0080	.0010	.0010	.0015	.0020	.0005	.0010	.0015	.0020
10	.0090	.0015	-	.0015	.0020	.0005	.0010	.0015	.0020
9	.0100	.0015	-	.0015	.0020	.0005	.0010	.0015	.0020
8	.0110	.0015	-	.0015	.0020	.0005	.0010	.0015	.0020
7	.0120	.0020	-	.0015	.0020	.0010	.0010	.0020	.0025
6	.0140	.0020	-	.0015	.0020	.0010	.0010	.0020	.0025
5-1/2	.0160	.0025	-	.0015	.0020	.0010	.0015	.0020	.0025
5	.0160	.0025	-	.0015	.0020	.0010	.0015	.0020	.0025
4-1/2	.0170	.0025	-	.0015	.0020	.0010	.0015	.0020	.0025
4	.0190	.0025	-	.0015	.0020	.0010	.0015	.0020	.0025

For intermediate pitches use value for next coarser pitch.

Taps • Standards & Dimensions

USCTI Table 338 • Taper Pipe Taps Cut and Ground Thread American Standard Pipe Form (NPT) (NPTF)

Lead Tolerance

Cut Thread = A maximum lead deviation of plus or minus .003" in one inch of thread is permitted.

Ground Thread = A maximum lead deviation of plus or minus .0005" in one inch of thread is permitted.

Note:

Cut and Ground Thread Unified and American Standard Pipe Form Taps made to this table are to be marked NPT. Ground Thread Dryseal American Standard Pipe Taps made to this table are to be marked NPTF. Additional Standards and Dimensions for essential dimensions of American Standard Pipe Threads are available upon request.

Angle Tolerance

THREADS PER INCH	TOLERANCE: HALF ANGLE Cut Thread	Ground Thread	FULL ANGLE Cut Thread
8	40' Plus or Minus	25' Plus or Minus	60'
11-1/2 to 27 1 inclusive	45' Plus or Minus	30' Plus or Minus	68'

Angle Tolerance

THREAD Nominal Size Inches	Threads Per Inch	*GAGE MEASUREMENT-INCHES TOLERANCE PLUS OR MINUS			TAPER PER FOOT-INCHES CUT THREAD		TAPER PER FOOT-INCHES GROUND	
		Projection	Cut Thread	Ground Thread	Min.	Max.	Min.	Max.
1/16	27	.3120	1/16	1/16	23/32	27/32	23/32	25/32
1/8	27	.3120	1/16	1/16	23/32	27/32	23/32	25/32
1/4	18	.4590	1/16	1/16	23/32	27/32	23/32	25/32
3/8	18	.4540	1/16	1/16	23/32	27/32	23/32	25/32
1/2	14	.5790	1/16	1/16	23/32	13/16	23/32	25/32
3/4	14	.5650	1/16	1/16	23/32	13/16	23/32	25/32
1	11-1/2	.6780	3/32	3/32	23/32	13/16	23/32	25/32
1-1/4	11-1/2	.6860	3/32	3/32	23/32	13/16	23/32	25/32
1-1/2	11-1/2	.6990	3/32	3/32	23/32	13/16	23/32	25/32
2	11-1/2	.6670	3/32	3/32	23/32	13/16	23/32	25/32
2-1/2	8	.9250	3/32	3/32	47/64	51/64	47/64	25/32
3	8	.9250	3/32	3/32	47/64	51/64	47/64	25/32
3-1/2	8	.9380	1/8	1/8	47/64	51/64	47/64	25/32
4	8	.9500	1/8	1/8	47/64	51/64	47/64	25/32

*Distance small end of tap projects through (L-I) Taper Thread Ring Gage.

Taps • Standards & Dimensions

USCTI Table 34I • Formulae & Tolerances for Ground Thread

Tap Limits for Metric Threads

The following tables and formulae are used in determining the limits and tolerances for ground thread metric taps unless otherwise specified. They apply only to metric threads having a 60° form with a P/8 flat at the major diameter of the basic thread form. They apply to both standard and special metric taps.

Lead Tolerance

A maximum lead deviation of plus or minus .013 mm within any two threads not farther apart than 25 mm is permitted.

Angle Tolerance

PITCH mm ANGLE	DEVIATION IN HALF
over 0.25 to 2.5 Incl.	30° Plus or Minus
over 2.5 to 4 Incl.	25° Plus or Minus

Formulae

Min. Major Dia. = Basic plus W

Max. Major Dia. = Min. plus X

Max. Pitch Dia. = Basic plus Y

Min. Pitch Dia. = Max. minus Z

W = Constant to add to Basic Major Diameter*

X = Major Diameter Tolerance

Y = Amount over Basic for Maximum Pitch Diameter

Z = Pitch Diameter Tolerance

*W = .080P converted to inches

Note:

When the tap major diameter must be determined from a specified tap pitch diameter, the minimum major diameter equals the maximum specified tap pitch diameter minus constant Y, plus the basic size height of thread (.64952P), plus constant W.

Values for W, X, Y and Z (in inches)

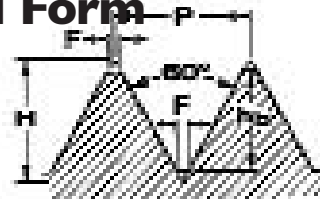
Pitch	W	X	Y	Z
Inch	Inches	Inches	M1.6 to	M1.6 to
mm	Equiv.	Inches	M6.3 Incl.	M6.3 Incl.
0.3	.01181	.0009	.0010	.0015
0.35	.01378	.0011	.0010	.0015
0.4	.01575	.0013	.0010	.0015
0.45	.01772	.0014	.0010	.0015
0.5	.01968	.0016	.0010	.0015
0.6	.02362	.0019	.0010	.0020
0.7	.02756	.0022	.0016	.0020
0.75	.02953	.0024	.0016	.0020
0.8	.03150	.0025	.0016	.0020
0.9	.03543	.0028	.0016	.0020
1	.03937	.0032	.0016	.0025
1.25	.04921	.0039	.0025	.0025
1.5	.05906	.0047	.0025	.0025
1.75	.06890	.0055	.0025	.0030
2	.07874	.0063	.0025	.0030
2.5	.09843	.0079	.0025	.0030
3	.11811	.0095	.0039	.0040
3.5	.13780	.0110	.0039	.0040
4	.15748	.0126	.0039	.0040
4.5	.17717	.0142	.0039	.0040
5	.19685	.0158	.0039	.0050
5.5	.21654	.0158	.0039	.0050
6	.23622	.0189	.0039	.0055

Taps • Standards & Dimensions

Basic Thread Dimensions & Tap Drill Information Fractional Sizes-Unified & American National Form

Formula

p = Pitch = no. threads per inch
 h_b = Height = $p \times .649519$
 F = Flat = $p/8$
 H = Thread V' Height = $p \times .866025$



Nom. Equiv-Size Inches of Drill	Basic* Major Diam. Inches	Basic* Pitch Diam. Inches	Basic* Minor Diam. Inches	Max.* Minor Diam. Class 3B	TAP DRILL Size Drill to Produce Approx. 75% Basic Thd.	Dec.†
				Internal Thread	Engage-ment	alant of Drill
	2	3	4	5	6	7
1/16 64	.0625	.0524	.0422	.0518	3/64	.0469
3/32 48	.0938	.0803	.0667	.0793	49	.0730
1/8 40	.1250	.1088	.0925	.1062	38	.1015
5/32 32	.1563	.1360	.1157	.1311	1/8	.1250
" 36	.1563	.1382	.1202	.1339	30	.1285
3/16 24	.1875	.1604	.1334	.1530	26	.1470
" 32	.1875	.1672	.1469	.1616	22	.1570
7/32 24	.2188	.1917	.1646	.1834	16	.1770
" 32	.2188	.1985	.1782	.1922	12	.1890
1/4 20	.2500	.2175	.1850	.2067	7	.2010
" 24	.2500	.2229	.1959	.2139	4	.2090
" 28	.2500	.2268	.2036	.2190	3	.2130
" 32	.2500	.2297	.2094	.2229	7/32	.2188
5/16 18	.3125	.2764	.2403	.2630	F	.2570
" 20	.3125	.2800	.2476	.2680	17/64	.2656
" 24	.3125	.2854	.2584	.2754	I	.2720
" 32	.3125	.2922	.2719	.2847	3/32	.2812
3/8 16	.3750	.3344	.2938	.3182	5/16	.3125
" 20	.3750	.3425	.3100	.3297	21/64	.3281
" 24	.3750	.3479	.3209	.3372	Q	.3320
" 32	.3750	.3547	.3344	.3469	11/32	.3437
7/16 14	.4375	.3911	.3447	.3717	U	.3680
" 20	.4375	.4050	.3726	.3916	25/64	.3906
" 24	.4375	.4104	.3834	.3994	X	.3970
" 28	.4375	.4143	.3911	.4051	Y	.4040
1/2 12	.5000	.4459	.3918	.4223	27/64	.4219
" 13	.5000	.4500	.4001	.4284	27/64	.4219
" 20	.5000	.4675	.4351	.4537	29/64	.4531
" 24	.5000	.4729	.4459	.4619	29/64	.4531
" 28	.5000	.4768	.4536	.4676	15/32	.4687
9/16 12	.5625	.5084	.4542	.4843	31/64	.4844
" 18	.5625	.5264	.4903	.5106	33/64	.5156
" 24	.5625	.5354	.5084	.5244	33/64	.5156
5/8 11	.6250	.5660	.5069	.5391	17/32	.5312
" 12	.6250	.5709	.5168	.5463	35/64	.5469
" 18	.6250	.5889	.5528	.5730	37/64	.5781
" 24	.6250	.5979	.5709	.5869	37/64	.5781
11/16 11	.6875	.6285	.5694	.6012	19/32	.5937
" 12	.6875	.6334	.5793	.6085	39/64	.6094
" 16	.6875	.6469	.6063	.6284	5/8	.6250
" 24	.6875	.6604	.6334	.6494	41/64	.6406
3/4 10	.7500	.6850	.6201	.6545	21/32	.6562
" 12	.7500	.6959	.6418	.6707	43/64	.6719
" 16	.7500	.7094	.6688	.6908	11/16	.6875
" 20	.7500	.7175	.6850	.7037	45/64	.7031
13/16 12	.8125	.7584	.7042	.7329	47/64	.7344
" 16	.8125	.7719	.7313	.7533	3/4	.7500
" 20	.8125	.7800	.7475	.7662	49/64	.7656
1.6250						
7/8 9	.8750	.8028	.7307	.7681	49/64	.7656
" 12	.8750	.8209	.7668	.7952	51/64	.7969
" 14	.8750	.8286	.7822	.8068	13/16	.8125

Nom. Size Inches	Basic* Major Diam. Inches	Basic* Pitch Diam. Inches	Basic* Minor Diam. Inches	Max.* Minor Diam. Class 3B	TAP DRILL Size Drill to Produce Approx. 75% Basic Thd.	Dec.†
				Internal Thread	Engage-ment	alant
	2	3	4	5	6	7
15/16 12	.9375	.8834	.8293	.8575	55/64	.8594
" 16	.9375	.8969	.8563	.8783	7/8	.8750
" 20	.9375	.9050	.8725	.8912	57/64	.8906
1 8	1.0000	.9188	.8376	.8797	7/8	.8750
" 12	1.0000	.9459	.8918	.9198	59/64	.9219
" 14	1.0000	.9536	.9072	.9315	16/16	.9375
" 16	1.0000	.9594	.9188	.9408	15/16	.9375
" 20	1.0000	.9675	.9350	.9537	61/64	.9531
1-1/16 12	1.0625	1.0084	.9543	.9823	63/64	.9844
" 16	1.0625	1.0219	.9813	1.0033	I	1.0000
" 18	1.0625	1.0264	.9903	1.0105	I	1.0000
1-1/8 7	1.1250	1.0322	.9394	.9875	63/64	.9844
" 8	1.1250	1.0438	.9626	1.0047	I	1.0000
" 12	1.1250	1.0709	1.0168	1.0448	1-3/64	1.0469
" 16	1.1250	1.0844	1.0438	1.0658	1-1/16	1.0625
" 18	1.1250	1.0889	1.0528	1.0730	1-1/16	1.0625
1-3/16 12	1.1875	1.1334	1.0793	1.1073	1-7/64	1.1094
" 16	1.1875	1.1469	1.1063	1.1283	1-1/8	1.1250
" 18	1.1875	1.1514	1.1153	1.1355	1-1/8	1.1250
1-1/4 7	1.2500	1.1572	1.0644	1.1125	1-7/64	1.1094
" 8	1.2500	1.1688	1.0876	1.1297	1-1/8	1.1250
" 12	1.2500	1.1959	1.1418	1.1698	1-11/64	1.1719
" 16	1.2500	1.2094	1.1688	1.1908	1-3/16	1.1875
" 18	1.2500	1.2139	1.1778	1.1980	1-3/16	1.1875
1-5/16 12	1.3125	1.2584	1.2043	1.2323	1-15/64	1.2344
" 16	1.3125	1.2719	1.2313	1.2533	1-1/4	1.2500
" 18	1.3125	1.2764	1.2403	1.2605	1-1/4	1.2500
1-3/8 6	1.3750	1.2667	1.1585	1.2146	1-7/32	1.2187
" 8	1.3750	1.2938	1.2126	1.2547	1-1/4	1.2500
" 12	1.3750	1.3209	1.2668	1.2948	1-19/64	1.2969
" 16	1.3750	1.3344	1.2938	1.3158	1-5/16	1.3125
" 18	1.3750	1.3389	1.3028	1.3230	1-5/16	1.3125
1-7/16 12	1.4375	1.3834	1.3293	1.3573	1-23/64	1.3594
" 16	1.4375	1.3969	1.3563	1.3783	1-3/8	1.3750
" 18	1.4375	1.4014	1.3653	1.3855	1-3/8	1.3750
1-1/2 6	1.5000	1.3917	1.2835	1.3396	1-11/32	1.3437
" 8	1.5000	1.4188	1.3376	1.3797	1-3/8	1.3750
" 12	1.5000	1.4459	1.3918	1.4198	1-27/64	1.4219
" 16	1.5000	1.4594	1.4188	1.4408	1-7/16	1.4375
" 18	1.5000	1.4639	1.4278	1.4480	1-7/16	1.4375
" 16	1.5625	1.5219	1.4813	1.5033	1-1/2	1.5000
" 18	1.5625	1.5264	1.4903	1.5105	1-1/2	1.5000
1-5/8 6	1.6250	1.5167	1.4085	1.4646	1-15/32	1.4688
" 8	1.6250	1.5438	1.4626	1.5047	1-1/2	1.5000
" 12	1.6250	1.5709	1.5168	1.5448	1-35/64	1.5469
.7344 " 16	1.6250	1.5844	1.5438	1.5658	1-9/16	
" 18	1.6250	1.5889	1.5528	1.5730	1-9/16	1.5625
1-11/16 16	1.6875	1.6469	1.6063	1.6283	1-5/8	
" 18	1.6875	1.6514	1.6153	1.6355	1-5/8	1.6250
1-3/4 5	1.7500	1.6201	1.4902	1.5575	1-9/16	1.5625
" 8	1.7500	1.6688	1.5876	1.6297	1-5/8	1.6250

(Continued on next page)

Taps • Standards & Dimensions

Basic Thread Dimensions & Tap Drill Information (Continued) Fractional Sizes-Unified & American National Form

Nom.	Basic* Major	Basic* Pitch	Basic Minor	Max.* Minor Diam. Class 3B	TAP DRILL Size Drill to Produce Approx. 75% Basic Thd.	Dec.†
Diam. Inches	Diam. Inches	Diam. Inches	Diam. Inches	Internal Thread	Engage-ment	alant of Drill
2	3	4	5	6	7	
1-7/8	8	1.8750	1.7938	1.7126	1.7547	1-3/4
1-7/8	8	1.8750	1.8209	1.7668	1.7948	1-7/8
1-15/16	16	1.9375	1.8969	1.8563	1.8783	1-7/8
2	4-1/2	2.0000	1.8557	1.7113	1.7861	1-25/32
2	8	2.0000	1.9188	1.8376	1.8797	1-7/8
2	12	2.0000	1.9459	1.8918	1.9198	1-7/8
2	16	2.0000	1.9594	1.9188	1.9408	1-15/16
2-1/16	16	2.0625	2.0219	1.9813	2.0033	2
2-1/8	8	2.1250	2.0438	1.9626	2.0047	2
2-1/8	12	2.1250	2.0709	2.0168	2.0448	2-1/8
2-1/8	16	2.1250	2.0844	2.0438	2.0658	2-1/8
2-3/16	16	2.1875	2.1469	2.1063	2.1283	2-1/8
2-1/4	4-1/2	2.2500	2.1057	1.9613	2.0361	2-1/32
2-1/4	8	2.2500	2.1688	2.0876	2.1297	2-1/8
2-1/4	12	2.2500	2.1959	2.1418	2.1698	2-1/8
2-1/4	16	2.2500	2.2094	2.1688	2.1908	2-3/16
2-5/16	16	2.3125	2.2719	2.2313	2.2533	2-1/4
2-3/8	12	2.3750	2.3209	2.2668	2.2948	-
12	1.7500	1.6959	1.6418	1.6698	1-43/64	1.6719
16	1.7500	1.7094	1.6688	1.6908	1-11/16	1.6875
1-13/16	16	1.8125	1.7719	1.7313	1.7533	1-3/4
12	2.8750	2.8344	2.7938	2.8158	2-13/16	2.8125
3	4	3.0000	2.8376	2.6752	2.7594	2-3/4
3	8	3.0000	2.9188	2.8376	2.8797	2-7/8
12	3.0000	2.9459	2.8918	2.9198	-	2.9188
16	3.0000	2.9594	2.9188	2.9408	2-16/16	2.9375
3-1/8	12	3.1250	3.0709	3.0168	3.0448	-
3-1/8	16	3.1250	3.0844	3.0438	3.0658	3-1/16
3-1/4	4	3.2500	3.0876	2.9252	3.0094	
3-1/4	8	3.2500	3.1688	3.0876	3.1297	3-1/8
12	3.2500	3.1959	3.1418	3.1698	-	3.1688
16	3.2500	3.2094	3.1688	3.1908	3-3/16	3.1875
3-3/8	12	3.3750	3.3209	3.2668	3.2948	
16	3.3750	3.3344	3.2938	3.3158	3-5/16	
4	3.5000	3.3376	3.1752	3.2594	3-1/4	3.2500
8	3.5000	3.4188	3.3376	3.3797	3-3/8	3.3750
12	3.5000	3.4459	3.3918	3.4198	-	3.4188
16	3.5000	3.4594	3.4188	3.4408	3-7/16	
3-5/8	12	3.6250	3.5709	3.5168	3.5448	

Figures shown in columns 2, 3 and 5 are correct for Unified Thread Form as computed in ANSI B1.1-1974.

† 75% thread is rarely needed in small diameters. Use of a larger drill will reduce tap breakage.

†† Theoretical Minor Diameter of Nut equivalent to 75% Basic thread engagement. Drill sizes are omitted in all thread sizes where a standard drill is not available.

Additional Standards and Dimensions for optional tap drill sizes are available upon request.

Nomenclature

Drill • Nomenclature

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	0243 230		0582 166		0860 259		2002 32		7422 153
	0244 230		0583 164		0861 260		2004 35		BRZT 265
	0245 230		0584 166		0864 262		2006 36		879P 256
	0265 228		0585 160		0868 249		2011 38		927E 18
	0301 238		0586 160		0869 249		2012 40		940E 69
	0305 238		0587 160		0874 253		2013 42		950E 71
	0307 238		0588 165		0875 253		2020 44		962B 211
	0312 238		0589 166		0878 254		2022 45		963B 212
	0318 241		0591 165		0879 254		2065 22		964B 213
	0320 238		0609 109		0883 257		2120 48		965B 214
	0321 238	Die	0610 231		0884 257		2125 48		966B 213
	0326 241	Reamer	0610 246		0890 249		2130 50		967B 212
	0327 241		0613 111		0902 263		2133 52		970B 211
	0328 241		0616 111		0903 263		2165 24		975T 214
	0401 216		0618 111		0932 14		2410 62	SD Taps	B101 182
	0402 216		0620 232		0936 47		2411 62		B202 184
	0403 216		0624 113		0972 84		2412 62		B303 186
	0404 226		0642 115		0975 214		2420 65		B404 188
	0405 155		0644 116		0975T 214		2440 67		CI1000 190
	0406 163		0645 113		0991 246		2470 68		TI01 182
	0407 168		0649B 114		0995 85		2480 12		T202 184
	0408 168		0649R 114		0996 248		2490 12		T303 186
	0409 171	Reamer	0650 117		0998 248		2510 54		T404 188
	0410 171	Die	0650 223	Tap	1001 191		2513 56	Sets	42NC 229
	0411 216		0655 253	Countersink	1001 247		2520 57		42NF 229
	0422 157		0657 118	Tap	1002 191		2540 58		44 NC 229
	0423 159		0659 118	Tap	1003 191		2550 59		102 180 97
	0426 157		0660 223	Countersink	1003 247		2560 61		104 180 97
	0427 159		0665 157		1004 226		2565 25		42NC 229
	0428 157		0666 157		1006 191		2570 61		42NF 229
	0442 165		0667 157		1007 191		2580 15		44NC 229
	0446 165		0668 158		1008 191		2590 15		0276 97
	0448 165		0682 163		1009 226		2635 30		0413 97
	0462 220		0683 161		1011 199		2645 30		0415 97
	0463 220		0684 158		1012 199		2727 76		0420 97
	0464 220		0685 155		1020 202		2738 80		0421 97
	0474 14		0686 156		1022 197		2740 78		0429 97
	0481 14		0688 162		1030 197		2745 79		0460 97
	0482 14		0689 156		1031 210		2758 17		
	0501 174		0690 159		1040 209		3507 259		
	0503 175		0691 162		1053 203		3517 260		
	0504 107		0693 158		1091 205		3780 20		
	0505 175		0695 162		1092 205		3830 215		
	0506 173		0696 156		1093 197		3850 215		
	0507 156		0697 159		1094 197		3917-6/12 72		
	0510 145		0698 159		1201 252		3947-6/12 74		
	0516 145		0704 122		1202 252		4001 102		
	0533 221		0710 224		1203 252		4005 110		
	0538 175		0716 122		1204 252		4020 106		
	0550 221		0747 94		1319 243		4030 102		
	0551 221		0748 94		1331 243		4035 110		
End Mill	0552 147		0749 94		1332 243		4050 105		
Die Guide	0552 221		0750 94		1360 245		4060 105		
End Mill	0553 146		0751 94		1361 245		4703 119		
Die-C.C.+G*	0553 221		0752 94		1655 258		4709 120		
End Mill	0554 147		0760 83		1711 123		4711 120		
Die-C.C.+G*	0554 221		0779 258		1727 81		5061 224		
	0555 168		0790 249		1730 123		7045 31		
	0556 170		0791 246		1760 28		7211 149		

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