SGS
Solid Carbide Tools

VALUE AT THE SPINDLE

Micro Tools Catalog

v26.1

KYOCERA

www.kyocera-sgstool.com

SGS
Solid Carbide Tools

VALUE AT THE SPINDLE

KYOCERA SGS Precision Tools is an ISO 9001:2015 Certified manufacturer of industry leading round solid carbide cutting tools. State of the art manufacturing and warehouse facilities have the capacity and processes to meet the quality and delivery demands of customers in all markets around the world. Complete inspections performed within its metallurgical lab and manufacturing quality departments ensure the use of high quality carbide and reliable manufacturing consistency regardless of when a cutting tool is produced.

SGS is proud to have pioneered some of the world's most advanced cutting technologies due to rigorous testing of tools, coatings, and materials within its Global Innovation Center. It is this commitment to innovation that has launched patented products and technologies like the Z-Carb with its variable geometry and cutting edge preparation, Series 43 APR and APF ultra high performance aluminum cutting tools, and the JetStream coolant technology.

SGS has become an important part of the KYOCERA Precision Tools family, and while the name has changed, one thing has not. Its dedicated people and their relentless commitment to the customer. SGS Technical Sales Engineers, Application Specialists, and Distribution Partners blanket the globe, delivering reliable service and support to all market segments. It is these people and products that drive innovative application strategies and cutting tool technologies into the end user, continually exceeding expectations and providing the most Value at the Spindle.

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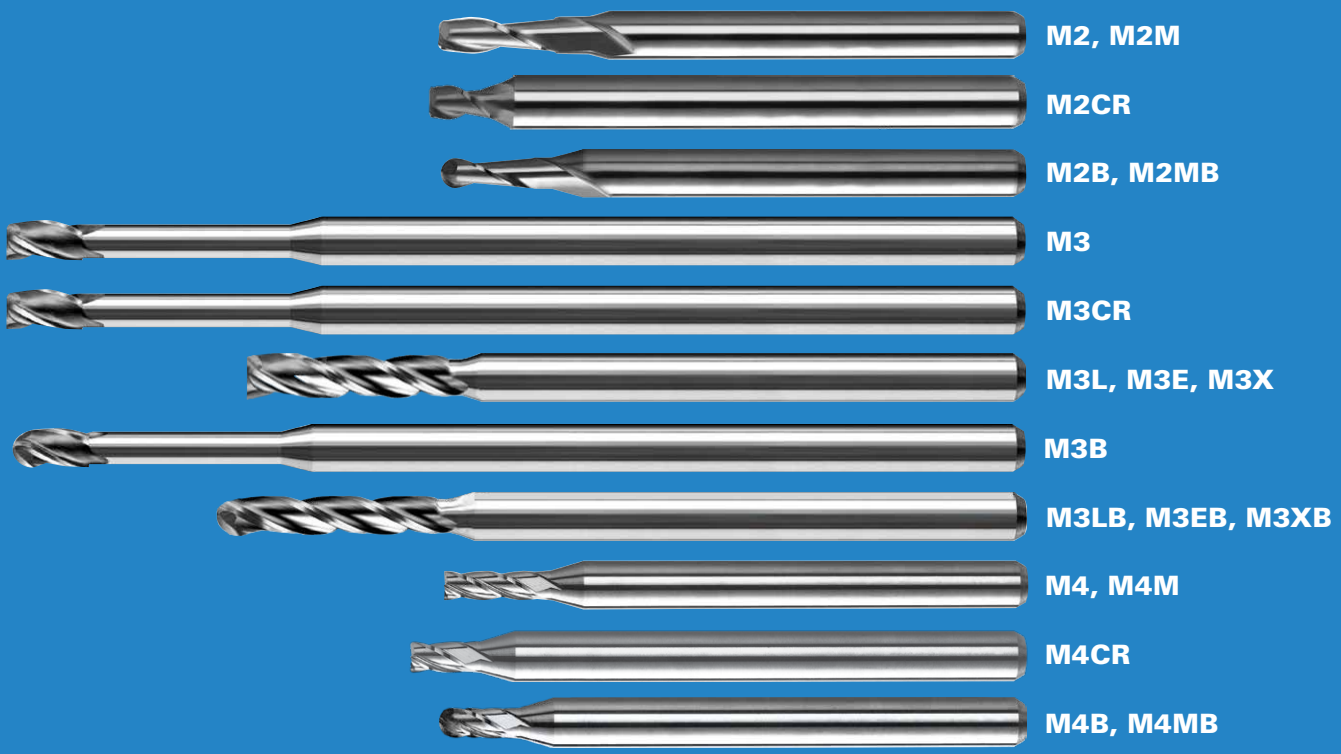
MICRO END MILLS

KYOCERA SGS Precision Tools commitment to providing superior quality round solid carbide cutting tools is unwavering, and these efforts are being taken another step further with an impressive micro tool lineup. Available in various lengths of cut, reach variations, end configurations and coating options, the portfolio can satisfy a variety of machining applications tailored for small diameter milling environments.

END MILL PORTFOLIO HIGHLIGHTS:

- 2, 3, and 4 flutes in square, corner radii, and ball end configurations options standard
- Lengths of cut ranging from 1.5 times diameter through 12 times diameter
- Expansive reach options ranging from 3 times diameter through 25 times diameter overall reach
- Fractional tools on 1/8" common shank and metric tools on 3MM and 4MM shanks to suit global application demands
- Offered uncoated and with Ti-NAMITE-A coating for superior chip flow at low spindle speeds in a variety of applications
- All micro tools are manufactured in accordance with SGS ISO 9001:2015 quality standards



CASE STUDY M4 8XD MICRO END MILL

INDUSTRY
AEROSPACE

MATERIAL
347 Stainless Steel (28 HRc Hardness)

PRODUCT
M4 8XD Micro End Mills

APPLICATION
Plunging

COMPETITOR
3 Flute Extended Reach Micro End Mill

COOLANT
Soluble Flood

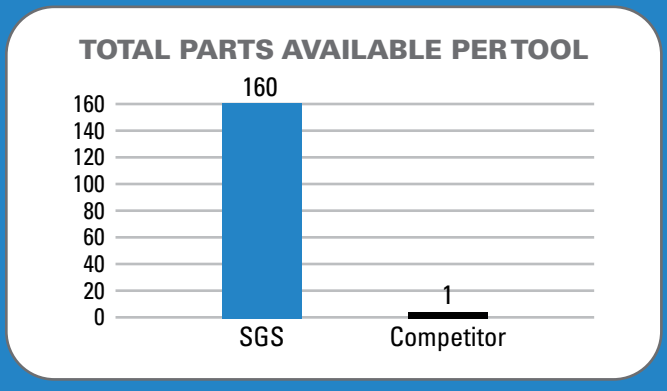
TOOL INFORMATION
0.07" Dia / 0.21" LOC / 2" OAL

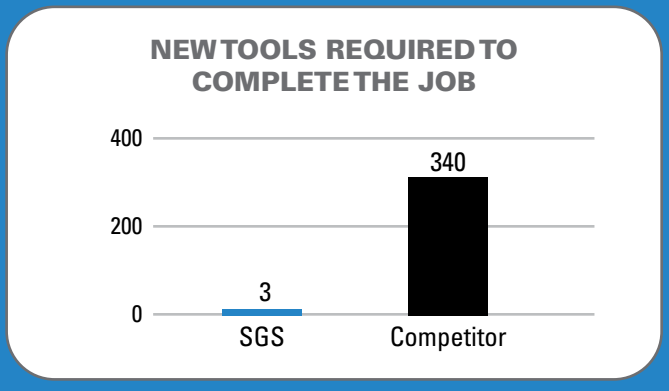
GOALS
The goals of this study were to significantly reduce job cost through the implementation of superior tooling and increased manufacturing efficiencies.

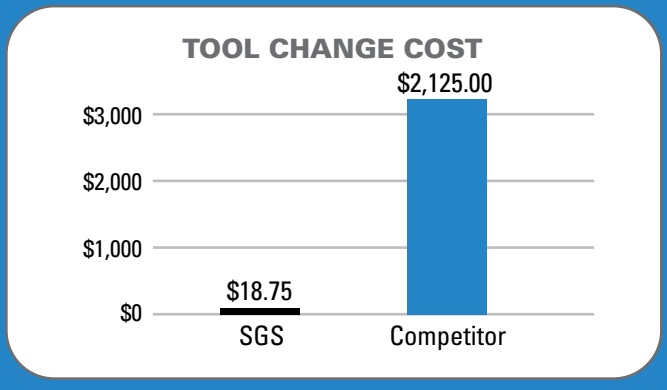
STRATEGY
SGS approached the job with a 4 flute 8XD Micro End Mill. The four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish.

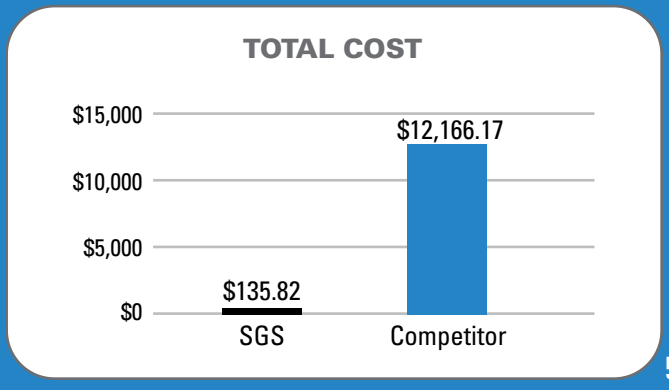
	SGS	COMPETITOR
TOOL DIAMETER	.07"	.07"
SPEED	6600 RPM	3400 RPM
FEED	4 IPM	2 IPM
RADIAL CUT (AE)	N/A	N/A
AXIAL CUT (AP)	0.38	0.38
CYCLE TIME	6 SECONDS	11.4 SECONDS

RESULTS
The overall findings of this study indicate **SGS's 4 flute micro end mill blew away the competitor's 3 flute tool** in efficiency and effectiveness. **SGS's tool was able to capacitate a 94% higher speed and a 100% greater feed rate.** Those combined efficiencies were able to **cut the cycle time in half!** Because of the higher quality tool, the customer was able to **produce 160 parts per SGS tool.** The competitor's 3 flute end mill was only able to produce 1 part per tool. Thus, the **tool change cost was reduced by over 99%!** Additionally, since SGS only used 3 total tools to complete the job, the customer benefited from a **new tool cost reduction by over 99%.** The **M4 8XD 4 flute micro end mill ultimately saved the customer a grand total of $12,030.34, resulting in a 98.88% cost reduction! These tools, albeit small, are an epic step forward for micro machining.**









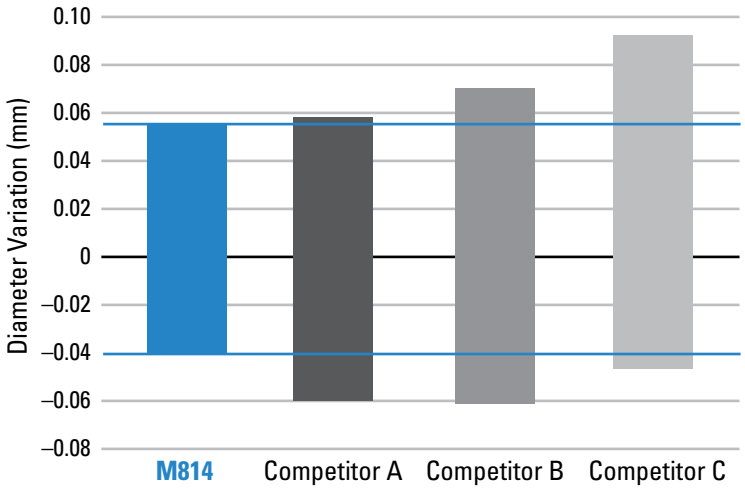
MICRO DRILLS

KYOCERA SGS Precision Tools commitment to providing superior quality round solid carbide cutting tools is unwavering with an extensive micro drill portfolio. SGS micro drills are available in a variety of coolant and length options to meet the demands of global holemaking applications.

DRILL PORTFOLIO HIGHLIGHTS:

- 2 flutes for optimal chip evacuation and cutting edge strength
- Internal coolant options on select series promotes controlled and consistent operating temperatures
- Lengths of cut ranging from 3 times diameter through 15 times diameter
- Fractional tools on 1/8" common shank and metric tools on 3MM and 4MM shanks to suit global market demands
- Uncoated options standard in select series
- Offered with Ti-NAMITE-A coating for superior tool life and all-around value across a variety of applications
- Select series offered with Ti-NAMITE-Cr (AlCrN) coating for exceptional wear resistance in wet and dry drilling of cast iron and steel materials up to 52 HRc
- All micro tools are manufactured in accordance with SGS ISO 9001: 2015 quality standards

HOLE DIAMETER VARIATION SERIES M814



	No. of Holes	Dia. Variation (mm)
M814	600	0.0937
Competitor A	600	0.1141
Competitor B	269 (Broken)	0.1281
Competitor C	600	0.1347

Cutting Conditions:
N = 6468 rpm, Vf = 575 mm/min
Drill Diameter 3,0 mm
Drilling Depth 25,4 mm, 17-4PH-900

M105

- 4-facet point design stabilizes on entry for superior hole size control and tool life
- Mirror surface finishes improve chip flow as hole depth increases
- Ti-NAMITE-A coating and uncoated options for the ultimate performance in a variety of ferrous and non-ferrous workpiece materials
- Available from stock in a selection of popular lengths and diameters
- Application specific sub-micron grain carbide designed specifically for micro-tool applications
- Manufactured in accordance with SGS ISO certified quality procedures

M105

M226

- 4-facet point design stabilizes on entry for superior hole size control and tool life (>.08mm)
- Mirror surface finishes improve chip flow as hole depth increases
- Ti-NAMITE-A coating and uncoated options for the ultimate performance in a variety of ferrous and non-ferrous workpiece materials
- Available from stock in a wide selection of popular lengths and diameters
- Application specific sub-micron grain carbide designed specifically for micro-tool applications
- Manufactured in accordance with SGS ISO certified quality procedures

M226

M814

- Split point and double margin design provide superior hole finish and size control
- Coolant hole feature allows straight through drilling without a peck cycle
- High-performance Ti-NAMITE-Cr coating and mirror polished fluting increase tool life and productivity in moderate-to-difficult workpiece materials
- Available from stock in a selection of popular lengths and diameters
- Application specific sub-micron grain carbide designed specifically for micro-tool applications
- Manufactured in accordance with SGS ISO certified quality procedures

M814 8XD

M814 15XD

M155

- Optimal end geometry ideal for a variety of materials
- 4-faceted point geometry provides centering assistance upon entry
- Mirror surface finish is applied to allow for smooth chip flow
- Wide diameters offer ability to drill larger than average holes than is commonly possible in micro spindles
- Application specific sub-micron grain carbide designed specifically for micro-tool applications
- Manufactured in accordance with SGS ISO certified quality procedures

M155

SGS COATINGS

Ti-NAMITE-A

With excellent thermal and chemical resistance, Ti-NAMITE-A (AlTiN) allows for dry cutting and improvements in performance of carbide. The coating has a high hardness giving ultimate protection against abrasive wear and erosion. Ideal for cast iron, high temperature alloys, steels, and stainless steel applications.

Hardness (HV): 3700
Oxidation Temperature: 1100°C / 2010°F
Coefficient of Friction: 0.30
Thickness: 1 – 3 Microns (based on tool diameter)

KYOCERA SGS PRECISION TOOLS AlTiN COATING PERFORMANCE (LAB RESULTS)

SEM photography shows the SGS proprietary coating method provides a significant reduction in macro particle deposition on the tool surface, which contributes to increased performance due to smoother chip flow. Another benefit of the SGS micro-tool coating is a significant reduction in edge rounding due to excessive thick- ness, typical of most normal coatings.

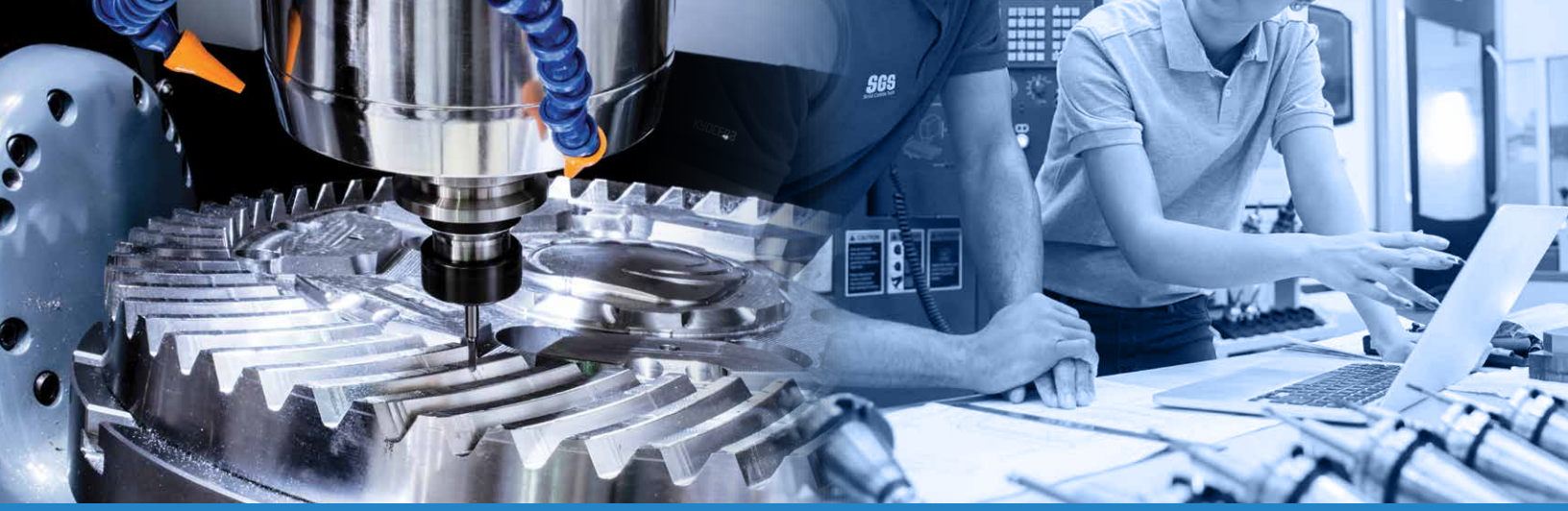
NORMAL AlTiN MICRO-TOOL COATING
@ 1.06KX MAGNFICATION

SGS PROPRIETARY AlTiN MICRO-TOOL COATING
@ 1.06KX MAGNFICATION

Ti-NAMITE-Cr

With very high wear resistance and excellent hot hardness, Ti-NAMITE-Cr (AlCrN) allows for wet and dry machining versatility at the highest of cutting speeds for increased machine utilization and productivity. The coating provides optimal thermal shock stability and is ideal for cast iron and steel applications up to 52 HRc.

Hardness (HV): 3200
Oxidation Temperature: 1100°C / 2010°F
Coefficient of Friction: 0.35
Thickness: 1 – 3 Microns (based on tool diameter)



Custom Engineered Tooling Solutions

Complex Solutions Made Easy

At the heart of our engineered custom tooling capabilities lies our dedication to providing our customers with comprehensive solutions that align seamlessly with their needs. With the ability to integrate patented, industry-leading designs into each uniquely tailored tool, we ensure a perfect fit for your specific application.

Technology-Driven Capabilities

- **Complex** custom tool designs
- **Tailor-made** machining solutions
- **Complete** project management

Start an online quote request with us today!

North America

Europe

- Custom End Mills
- Custom Drills
- Custom Reamers
- Custom Chamfer & Rounding
- Custom Threading
- Combination Tooling
- Bulb Tooling
- Dovetail & T-Slots
- Form Tooling
- Taper Ball Nose Tools
- Micro Tooling

APEX

APPLICATION EXPERT

Say hello to APEX: Application Expert KYOCERA SGS's enhanced web application designed to make your SGS tool selection and parameter setup faster and more effective!

OPTIMIZE TOOL PERFORMANCE

Gain essential application data to optimize tool performance, including cutting parameters and material recommendations.

COMPARE AND CUSTOMIZE

Use powerful tools to tailor results, compare up to five options, and visualize ramping parameters with detailed drawings.

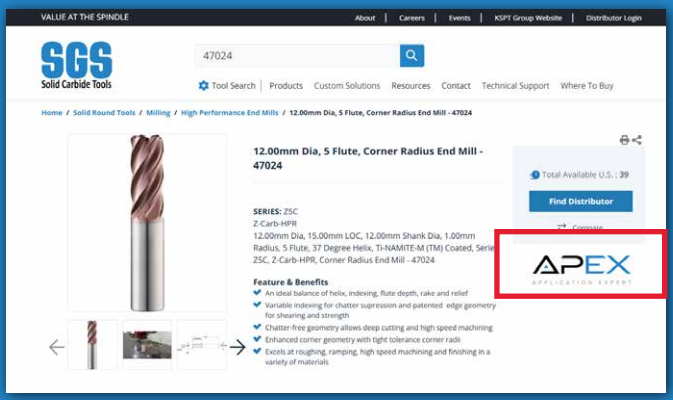
SAVE TIME

Easily select application types, units, and materials with our user-friendly interface and autofill features.

EXPORT AND SHARE

Generate PDFs with application data, add comments, and print precise line drawings with detailed specifications.

Visit: **www.kyocera-sgstool.com/apex**



or Click the APEX Logo on any Product Detail Page.

Common Legend

TO ORDER: Please specify quantity and EDP number.
RETURN POLICY: An RMA number must accompany all product returns. Contact your Customer Service Representative for an RMA number.

REGULATION SAFETY GLASSES SHOULD ALWAYS BE WORN WHEN USING HIGH-SPEED CUTTING EQUIPMENT

WARNING: This product can expose you to chemicals including Cobalt, which is known to the State of California to cause cancer. For more information go to www.p65warnings.ca.gov

MATERIALS

Steels	Stainless Steels	Cast Iron
Non-Ferrous	High Temp Alloys	Hardened Steels

END MILLS

TOOL LENGTH

Stub | Regular | Long | Long Reach | Extra Long

FLUTES

2 Flutes | 3 Flutes | 4 Flutes

END CONFIGURATIONS

Ball | Corner | Square

SHANK TYPE

Common

HELIX ANGLE

Right Spiral

PROFILE ANGLE

Profile Angle

RAKE ANGLE

Positive

All tools are in Right Cut Direction unless noted

DRILLS

SHANK TYPE

Common | Straight

HELIX ANGLES

Right Spiral | Left Spiral

COOLANT OPTIONS

Internal Coolant | External Coolant

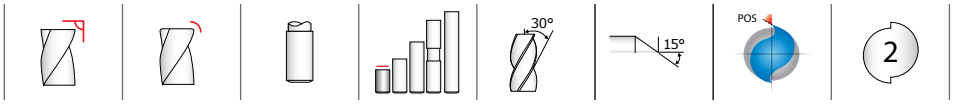
POINT ANGLE

Drill Point

REACH

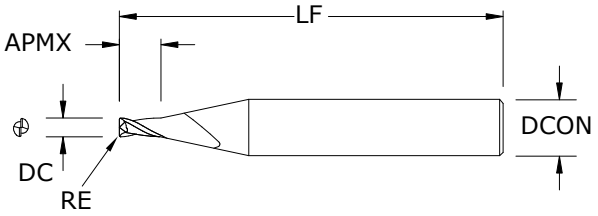
1.5xD	3xD	5xD	8xD	12xD	15xD
1.5xD Reach	3xD Reach	5xD Reach	8xD Reach	12xD Reach	15xD Reach

M2 • M2CR • 1.5xD



M2 • M2CR 1.5xD

FRACTIONAL SERIES



- Two flute design is ideal for softer alloyed, non-ferrous material applications that require slotting or involve heavy chip loads
- Enhanced corner geometry with tight tolerance corner radii
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.004	1/8	0.006	1-1/2	–	04004	04000
0.005	1/8	0.008	1-1/2	–	00301	02201
0.006	1/8	0.009	1-1/2	–	00302	02202
0.007	1/8	0.011	1-1/2	–	00303	02203
0.008	1/8	0.012	1-1/2	–	00304	02204
0.009	1/8	0.014	1-1/2	–	00305	02205
0.010	1/8	0.015	1-1/2	–	00306	02206
0.011	1/8	0.017	1-1/2	–	00307	02207
0.012	1/8	0.018	1-1/2	–	00308	02208
0.013	1/8	0.020	1-1/2	–	00309	02209
0.014	1/8	0.021	1-1/2	–	00310	02210
0.015	1/8	0.023	1-1/2	–	00311	02211
0.015	1/8	0.023	1-1/2	0.003	08500	08641
0.016	1/8	0.024	1-1/2	–	00312	02212
0.017	1/8	0.026	1-1/2	–	00313	02213
0.018	1/8	0.027	1-1/2	–	00314	02214
0.019	1/8	0.029	1-1/2	–	00315	02215
0.020	1/8	0.030	1-1/2	–	00316	02216
0.020	1/8	0.030	1-1/2	0.003	08502	08643
0.020	1/8	0.030	1-1/2	0.005	08504	08645
0.021	1/8	0.032	1-1/2	–	00317	02217
0.022	1/8	0.033	1-1/2	–	00318	02218
0.023	1/8	0.035	1-1/2	–	00319	02219
0.024	1/8	0.036	1-1/2	–	00320	02220
0.025	1/8	0.038	1-1/2	–	00321	02221
0.025	1/8	0.038	1-1/2	0.010	08505	08646
0.026	1/8	0.039	1-1/2	–	00322	02222
0.027	1/8	0.041	1-1/2	–	00323	02223
0.028	1/8	0.042	1-1/2	–	00324	02224
0.029	1/8	0.044	1-1/2	–	00325	02225
0.030	1/8	0.045	1-1/2	–	00326	02226
0.030	1/8	0.045	1-1/2	0.010	08507	08648
0.031	1/8	0.047	1-1/2	–	00327	02227
0.032	1/8	0.048	1-1/2	–	00328	02228
0.033	1/8	0.050	1-1/2	–	00329	02229
0.034	1/8	0.051	1-1/2	–	00330	02230

continued on next page

TOLERANCES (inch)

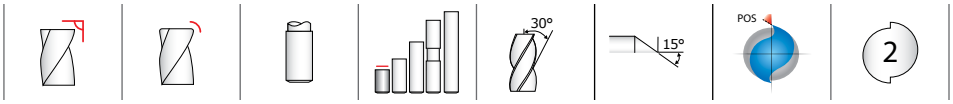
.004–.120 DIAMETER

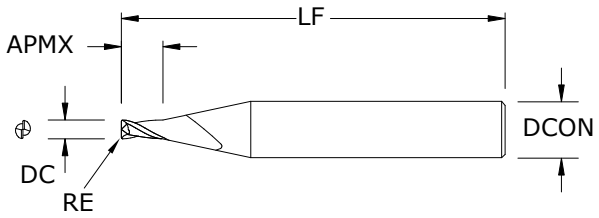
DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS





M2 • M2CR 1.5xD
FRACTIONAL SERIES

TOLERANCES (inch)

.004–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.035	1/8	0.053	1-1/2	–	00331	02231
0.035	1/8	0.053	1-1/2	0.005	08509	08650
0.035	1/8	0.053	1-1/2	0.010	08511	08652
0.036	1/8	0.054	1-1/2	–	00332	02232
0.037	1/8	0.056	1-1/2	–	00333	02233
0.038	1/8	0.057	1-1/2	–	00334	02234
0.039	1/8	0.059	1-1/2	–	00335	02235
0.040	1/8	0.060	1-1/2	–	00336	02236
0.040	1/8	0.060	1-1/2	0.005	08513	08654
0.040	1/8	0.060	1-1/2	0.010	08515	08656
0.041	1/8	0.062	1-1/2	–	00337	02368
0.042	1/8	0.063	1-1/2	–	00338	02369
0.043	1/8	0.065	1-1/2	–	00339	02370
0.044	1/8	0.066	1-1/2	–	00340	02371
0.045	1/8	0.068	1-1/2	–	00341	02372
0.045	1/8	0.068	1-1/2	0.005	08517	08658
0.045	1/8	0.068	1-1/2	0.010	08519	08660
0.046	1/8	0.069	1-1/2	–	00342	02373
0.047	1/8	0.071	1-1/2	–	00343	02374
0.048	1/8	0.072	1-1/2	–	00344	02375
0.049	1/8	0.074	1-1/2	–	00345	02376
0.050	1/8	0.075	1-1/2	–	00346	02377
0.050	1/8	0.075	1-1/2	0.005	08521	08662
0.050	1/8	0.075	1-1/2	0.010	08523	08664
0.050	1/8	0.075	1-1/2	0.015	08525	08666
0.051	1/8	0.077	1-1/2	–	00347	02378
0.052	1/8	0.078	1-1/2	–	00348	02379
0.053	1/8	0.080	1-1/2	–	00349	02380
0.054	1/8	0.081	1-1/2	–	00350	02381
0.055	1/8	0.083	1-1/2	–	00351	02382
0.055	1/8	0.083	1-1/2	0.005	08527	08668
0.055	1/8	0.083	1-1/2	0.010	08529	08670
0.055	1/8	0.083	1-1/2	0.015	08531	08672
0.056	1/8	0.084	1-1/2	–	00352	02383
0.057	1/8	0.086	1-1/2	–	00353	02384
0.058	1/8	0.087	1-1/2	–	00354	02385

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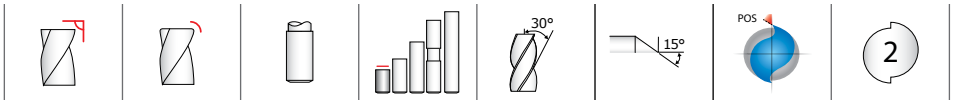
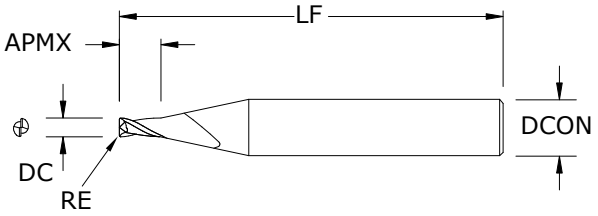
M2 • M2CR • 1.5xD



M2 • M2CR 1.5xD

FRACTIONAL SERIES



continued

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.059	1/8	0.089	1-1/2	–	00355	02386
0.060	1/8	0.090	1-1/2	–	00356	02387
0.060	1/8	0.090	1-1/2	0.005	08533	08674
0.060	1/8	0.090	1-1/2	0.010	08535	08676
0.060	1/8	0.090	1-1/2	0.015	08537	08678
0.062	1/8	0.093	1-1/2	–	00357	02388
0.065	1/8	0.098	1-1/2	–	00358	02389
0.065	1/8	0.098	1-1/2	0.005	08539	08680
0.065	1/8	0.098	1-1/2	0.010	08541	08682
0.065	1/8	0.098	1-1/2	0.015	08543	08684
0.070	1/8	0.105	1-1/2	–	00359	02390
0.070	1/8	0.105	1-1/2	0.005	08545	08686
0.070	1/8	0.105	1-1/2	0.010	08547	08688
0.070	1/8	0.105	1-1/2	0.015	08549	08690
0.075	1/8	0.112	1-1/2	–	04006	04002
0.075	1/8	0.113	1-1/2	0.005	08551	08692
0.075	1/8	0.113	1-1/2	0.010	08553	08694
0.075	1/8	0.113	1-1/2	0.015	08555	08696
0.075	1/8	0.113	1-1/2	0.020	08557	08698
0.078	1/8	0.117	1-1/2	–	00360	02391
0.080	1/8	0.120	1-1/2	–	00361	02392
0.080	1/8	0.120	1-1/2	0.005	08559	08700
0.080	1/8	0.120	1-1/2	0.010	08561	08702
0.080	1/8	0.120	1-1/2	0.015	08563	08704
0.080	1/8	0.120	1-1/2	0.020	08565	08706
0.085	1/8	0.128	1-1/2	–	00362	02393
0.085	1/8	0.128	1-1/2	0.005	08567	08708
0.085	1/8	0.128	1-1/2	0.010	08569	08710
0.085	1/8	0.128	1-1/2	0.015	08571	08712
0.085	1/8	0.128	1-1/2	0.020	08573	08714
0.090	1/8	0.135	1-1/2	–	00363	02394
0.090	1/8	0.135	1-1/2	0.005	08575	08716
0.090	1/8	0.135	1-1/2	0.010	08577	08718
0.090	1/8	0.135	1-1/2	0.015	08579	08720
0.090	1/8	0.135	1-1/2	0.020	08581	08722
0.093	1/8	0.140	1-1/2	–	00364	02395

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TOLERANCES (inch)

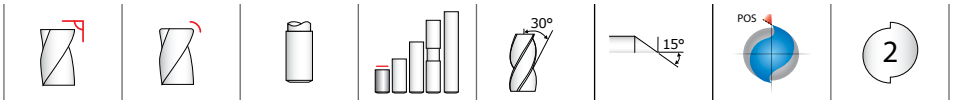
.004–.120 DIAMETER

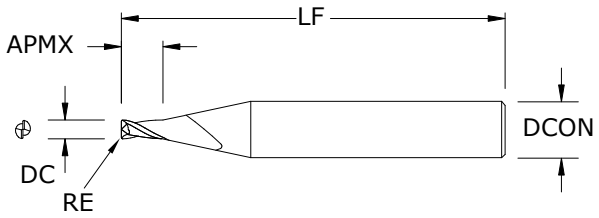
DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS





M2 • M2CR 1.5xD
FRACTIONAL SERIES

TOLERANCES (inch)

.004–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

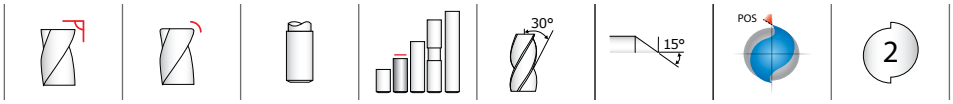
RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.095	1/8	0.143	1-1/2	–	00365	02396
0.095	1/8	0.143	1-1/2	0.005	08583	08724
0.095	1/8	0.143	1-1/2	0.010	08585	08726
0.095	1/8	0.143	1-1/2	0.015	08587	08728
0.095	1/8	0.143	1-1/2	0.020	08589	08730
0.100	1/8	0.150	1-1/2	–	00366	02397
0.100	1/8	0.150	1-1/2	0.005	08591	08732
0.100	1/8	0.150	1-1/2	0.010	08593	08734
0.100	1/8	0.150	1-1/2	0.015	08595	08736
0.100	1/8	0.150	1-1/2	0.020	08597	08738
0.100	1/8	0.150	1-1/2	0.030	08599	08740
0.105	1/8	0.158	1-1/2	–	00367	02398
0.105	1/8	0.158	1-1/2	0.005	08601	08742
0.105	1/8	0.158	1-1/2	0.010	08603	08744
0.105	1/8	0.158	1-1/2	0.015	08605	08746
0.105	1/8	0.158	1-1/2	0.020	08607	08748
0.105	1/8	0.158	1-1/2	0.030	08609	08750
0.110	1/8	0.165	1-1/2	–	00368	02399
0.110	1/8	0.165	1-1/2	0.005	08611	08752
0.110	1/8	0.165	1-1/2	0.010	08613	08754
0.110	1/8	0.165	1-1/2	0.015	08615	08756
0.110	1/8	0.165	1-1/2	0.020	08617	08758
0.110	1/8	0.165	1-1/2	0.030	08619	08760
0.115	1/8	0.173	1-1/2	–	00369	02400
0.115	1/8	0.173	1-1/2	0.005	08621	08762
0.115	1/8	0.173	1-1/2	0.010	08623	08764
0.115	1/8	0.173	1-1/2	0.015	08625	08766
0.115	1/8	0.173	1-1/2	0.020	08627	08768
0.115	1/8	0.173	1-1/2	0.030	08629	08770
0.120	1/8	0.180	1-1/2	–	00370	02401
0.120	1/8	0.180	1-1/2	0.005	08631	08772
0.120	1/8	0.180	1-1/2	0.010	08633	08774
0.120	1/8	0.180	1-1/2	0.015	08635	08776
0.120	1/8	0.180	1-1/2	0.020	08637	08778
0.120	1/8	0.180	1-1/2	0.030	08639	08780

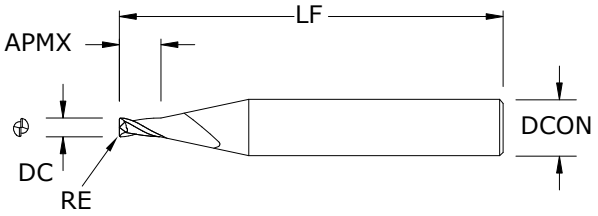
continued

M2 • M2CR • 3xD



M2 • M2CR 3xD

FRACTIONAL SERIES



- Two flute design is ideal for softer alloyed, non-ferrous material applications that require slotting or involve heavy chip loads
- Enhanced corner geometry with tight tolerance corner radii
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.004	1/8	0.012	1-1/2	–	04005	04001
0.005	1/8	0.015	1-1/2	–	00811	02275
0.006	1/8	0.018	1-1/2	–	00812	02276
0.007	1/8	0.021	1-1/2	–	00813	02277
0.008	1/8	0.024	1-1/2	–	00814	02278
0.009	1/8	0.027	1-1/2	–	00815	02279
0.010	1/8	0.030	1-1/2	–	00816	02280
0.011	1/8	0.033	1-1/2	–	00817	02281
0.012	1/8	0.036	1-1/2	–	00818	02282
0.013	1/8	0.039	1-1/2	–	00819	02283
0.014	1/8	0.042	1-1/2	–	00820	02284
0.015	1/8	0.045	1-1/2	–	00821	02285
0.015	1/8	0.045	1-1/2	0.003	08501	08642
0.016	1/8	0.048	1-1/2	–	00822	02286
0.017	1/8	0.051	1-1/2	–	00823	02287
0.018	1/8	0.054	1-1/2	–	00824	02288
0.019	1/8	0.057	1-1/2	–	00825	02289
0.020	1/8	0.060	1-1/2	–	00826	02290
0.020	1/8	0.060	1-1/2	0.003	08503	08644
0.020	1/8	0.060	1-1/2	0.005	04020	04021
0.021	1/8	0.063	1-1/2	–	00827	02291
0.022	1/8	0.066	1-1/2	–	00828	02292
0.023	1/8	0.069	1-1/2	–	00829	02293
0.024	1/8	0.072	1-1/2	–	00830	02294
0.025	1/8	0.075	1-1/2	–	00831	02295
0.025	1/8	0.075	1-1/2	0.005	04022	04023
0.025	1/8	0.075	1-1/2	0.010	08506	08647
0.026	1/8	0.078	1-1/2	–	00832	02296
0.027	1/8	0.081	1-1/2	–	00833	02297
0.028	1/8	0.084	1-1/2	–	00834	02298
0.029	1/8	0.087	1-1/2	–	00835	02299
0.030	1/8	0.090	1-1/2	–	00836	02300
0.030	1/8	0.090	1-1/2	0.010	08508	08649
0.031	1/8	0.093	1-1/2	–	00837	02301
0.032	1/8	0.096	1-1/2	–	00838	02302
0.033	1/8	0.099	1-1/2	–	00839	02303

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TOLERANCES (inch)

.004–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

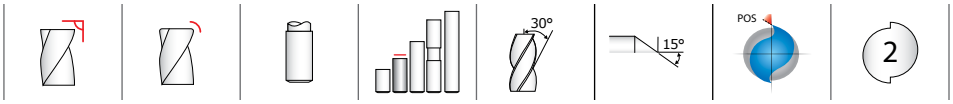
STEELS

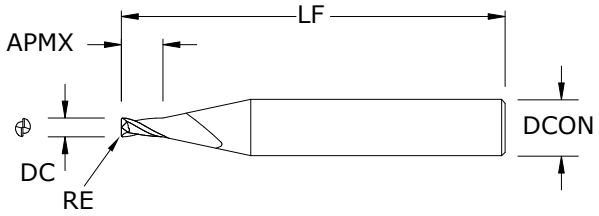
STAINLESS STEELS

CAST IRON

NON-FERROUS

HIGH TEMP ALLOYS





M2 • M2CR 3xD
FRACTIONAL SERIES

TOLERANCES (inch)

.004–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.034	1/8	0.102	1-1/2	–	00840	02304
0.035	1/8	0.105	1-1/2	–	00841	02305
0.035	1/8	0.105	1-1/2	0.005	08510	08651
0.035	1/8	0.105	1-1/2	0.010	08512	08653
0.036	1/8	0.108	1-1/2	–	00842	02306
0.037	1/8	0.111	1-1/2	–	00843	02307
0.038	1/8	0.114	1-1/2	–	00844	02308
0.039	1/8	0.117	1-1/2	–	00845	02309
0.040	1/8	0.120	1-1/2	–	00846	02310
0.040	1/8	0.120	1-1/2	0.005	08514	08655
0.040	1/8	0.120	1-1/2	0.010	08516	08657
0.041	1/8	0.123	1-1/2	–	00479	02436
0.042	1/8	0.126	1-1/2	–	00480	02437
0.043	1/8	0.129	1-1/2	–	00481	02438
0.044	1/8	0.132	1-1/2	–	00482	02439
0.045	1/8	0.135	1-1/2	–	00483	02440
0.045	1/8	0.135	1-1/2	0.005	08518	08659
0.045	1/8	0.135	1-1/2	0.010	08520	08661
0.046	1/8	0.138	1-1/2	–	00484	02441
0.047	1/8	0.141	1-1/2	–	00485	02442
0.048	1/8	0.144	1-1/2	–	00486	02443
0.049	1/8	0.147	1-1/2	–	00487	02444
0.050	1/8	0.150	1-1/2	–	00488	02445
0.050	1/8	0.150	1-1/2	0.005	08522	08663
0.050	1/8	0.150	1-1/2	0.010	08524	08665
0.050	1/8	0.150	1-1/2	0.015	08526	08667
0.051	1/8	0.153	1-1/2	–	00489	02446
0.052	1/8	0.156	1-1/2	–	00490	02447
0.053	1/8	0.159	1-1/2	–	00491	02448
0.054	1/8	0.162	1-1/2	–	00492	02449
0.055	1/8	0.165	1-1/2	–	00493	02450
0.055	1/8	0.165	1-1/2	0.005	08528	08669
0.055	1/8	0.165	1-1/2	0.010	08530	08671
0.055	1/8	0.165	1-1/2	0.015	08532	08673
0.056	1/8	0.168	1-1/2	–	00494	02451
0.057	1/8	0.171	1-1/2	–	00495	02452

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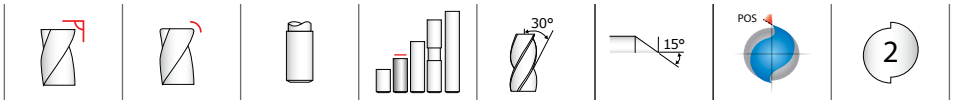
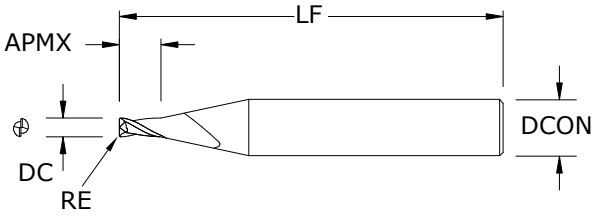
M2 • M2CR • 3xD



M2 • M2CR 3xD

FRACTIONAL SERIES



TOLERANCES (inch)

.004–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

continued

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.058	1/8	0.174	1-1/2	–	00496	02453
0.059	1/8	0.177	1-1/2	–	00865	02454
0.060	1/8	0.180	1-1/2	–	00498	02455
0.060	1/8	0.180	1-1/2	0.005	08534	08675
0.060	1/8	0.180	1-1/2	0.010	08536	08677
0.060	1/8	0.180	1-1/2	0.015	08538	08679
0.062	1/8	0.186	1-1/2	–	00499	02456
0.065	1/8	0.195	1-1/2	–	00500	02457
0.065	1/8	0.195	1-1/2	0.005	08540	08681
0.065	1/8	0.195	1-1/2	0.010	08542	08683
0.065	1/8	0.195	1-1/2	0.015	08544	08685
0.070	1/8	0.210	1-1/2	–	00501	02458
0.070	1/8	0.210	1-1/2	0.005	08546	08687
0.070	1/8	0.210	1-1/2	0.010	08548	08689
0.070	1/8	0.210	1-1/2	0.015	08550	08691
0.075	1/8	0.225	1-1/2	–	04007	04003
0.075	1/8	0.225	1-1/2	0.005	08552	08693
0.075	1/8	0.225	1-1/2	0.010	08554	08695
0.075	1/8	0.225	1-1/2	0.015	08556	08697
0.075	1/8	0.225	1-1/2	0.020	08558	08699
0.078	1/8	0.234	1-1/2	–	00870	02459
0.080	1/8	0.240	1-1/2	–	00503	02460
0.080	1/8	0.240	1-1/2	0.005	08560	08701
0.080	1/8	0.240	1-1/2	0.010	08562	08703
0.080	1/8	0.240	1-1/2	0.015	08564	08705
0.080	1/8	0.240	1-1/2	0.020	08566	08707
0.085	1/8	0.255	1-1/2	–	00504	02461
0.085	1/8	0.255	1-1/2	0.005	08568	08709
0.085	1/8	0.255	1-1/2	0.010	08570	08711
0.085	1/8	0.255	1-1/2	0.015	08572	08713
0.085	1/8	0.255	1-1/2	0.020	08574	08715
0.090	1/8	0.270	1-1/2	–	00505	02462
0.090	1/8	0.270	1-1/2	0.005	08576	08717
0.090	1/8	0.270	1-1/2	0.010	08578	08719
0.090	1/8	0.270	1-1/2	0.015	08580	08721
0.090	1/8	0.270	1-1/2	0.020	08582	08723

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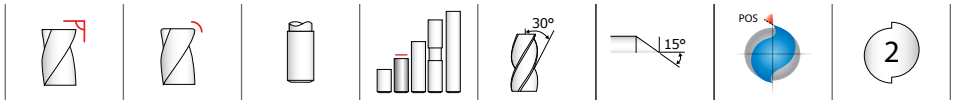
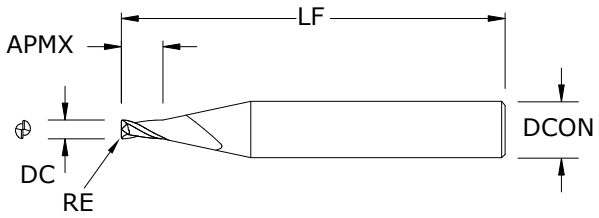




M2 • M2CR 3xD
FRACTIONAL SERIES

TOLERANCES (inch)

.004–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

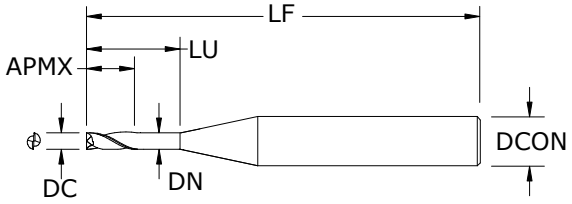
inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.093	1/8	0.279	1-1/2	–	00506	02463
0.095	1/8	0.285	1-1/2	–	00507	02464
0.095	1/8	0.285	1-1/2	0.005	08584	08725
0.095	1/8	0.285	1-1/2	0.010	08586	08727
0.095	1/8	0.285	1-1/2	0.015	08588	08729
0.095	1/8	0.285	1-1/2	0.020	08590	08731
0.100	1/8	0.300	1-1/2	–	00508	02465
0.100	1/8	0.300	1-1/2	0.005	08592	08733
0.100	1/8	0.300	1-1/2	0.010	08594	08735
0.100	1/8	0.300	1-1/2	0.015	08596	08737
0.100	1/8	0.300	1-1/2	0.020	08598	08739
0.100	1/8	0.300	1-1/2	0.030	08600	08741
0.105	1/8	0.315	1-1/2	–	00509	02466
0.105	1/8	0.315	1-1/2	0.005	08602	08743
0.105	1/8	0.315	1-1/2	0.010	08604	08745
0.105	1/8	0.315	1-1/2	0.015	08606	08747
0.105	1/8	0.315	1-1/2	0.020	08608	08749
0.105	1/8	0.315	1-1/2	0.030	08610	08751
0.110	1/8	0.330	1-1/2	–	00878	02467
0.110	1/8	0.330	1-1/2	0.005	08612	08753
0.110	1/8	0.330	1-1/2	0.010	08614	08755
0.110	1/8	0.330	1-1/2	0.015	08616	08757
0.110	1/8	0.330	1-1/2	0.020	08618	08759
0.110	1/8	0.330	1-1/2	0.030	08620	08761
0.115	1/8	0.345	1-1/2	–	00511	02468
0.115	1/8	0.345	1-1/2	0.005	08622	08763
0.115	1/8	0.345	1-1/2	0.010	08624	08765
0.115	1/8	0.345	1-1/2	0.015	08626	08767
0.115	1/8	0.345	1-1/2	0.020	08628	08769
0.115	1/8	0.345	1-1/2	0.030	08630	08771
0.120	1/8	0.360	1-1/2	–	00512	02469
0.120	1/8	0.360	1-1/2	0.005	08632	08773
0.120	1/8	0.360	1-1/2	0.010	08634	08775
0.120	1/8	0.360	1-1/2	0.015	08636	08777
0.120	1/8	0.360	1-1/2	0.020	08638	08779
0.120	1/8	0.360	1-1/2	0.030	08640	08781

continued

M2 • 3xD • 8xD Overall Reach

M2 • 3xD 8xD

FRACTIONAL SERIES



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- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
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inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.080	0.009	1-1/2	09353	03400
0.015	1/8	0.045	0.120	0.014	1-1/2	09355	03401
0.020	1/8	0.060	0.160	0.018	1-1/2	09357	03402
0.025	1/8	0.075	0.200	0.023	1-1/2	09359	03403
0.030	1/8	0.090	0.240	0.028	1-1/2	09361	03404
0.031	1/8	0.093	0.248	0.029	1-1/2	09363	03405
0.035	1/8	0.105	0.280	0.032	1-1/2	09365	03406
0.040	1/8	0.120	0.320	0.037	1-1/2	09367	03407
0.045	1/8	0.135	0.360	0.042	2	09369	03408
0.047	1/8	0.141	0.376	0.044	2	09371	03409
0.050	1/8	0.150	0.400	0.047	2	09373	03410
0.055	1/8	0.165	0.440	0.051	2	09375	03411
0.060	1/8	0.180	0.480	0.056	2	09377	03412
0.062	1/8	0.186	0.496	0.058	2	09379	03413
0.065	1/8	0.195	0.520	0.061	2	09381	03414
0.070	1/8	0.210	0.560	0.065	2	09383	03415
0.075	1/8	0.225	0.600	0.070	2	09385	03416
0.078	1/8	0.234	0.624	0.073	2	09387	03417
0.080	1/8	0.240	0.640	0.075	2	09389	03418
0.085	1/8	0.255	0.680	0.079	2	09391	03419
0.090	1/8	0.270	0.720	0.084	2	09393	03420
0.093	1/8	0.279	0.744	0.087	2	09395	03421
0.095	1/8	0.285	0.760	0.089	2	09397	03422
0.100	1/8	0.300	0.800	0.094	2	09399	03423
0.110	1/8	0.330	0.880	0.103	2	09401	03424
0.115	1/8	0.345	0.920	0.108	2	09403	03425
0.120	1/8	0.360	0.960	0.112	2	09405	03426

TOLERANCES (inch)

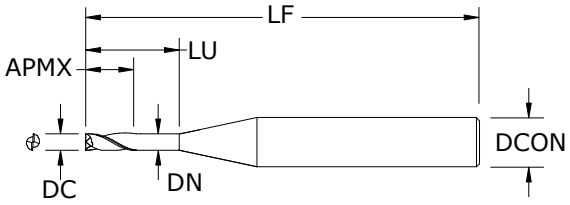
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M2 • 3xD • 12xD Overall Reach



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M2 • 3xD 12xD

FRACTIONAL SERIES

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.120	0.009	1-1/2	09352	03427
0.015	1/8	0.045	0.180	0.014	1-1/2	09354	03428
0.020	1/8	0.060	0.240	0.018	1-1/2	09356	03429
0.025	1/8	0.075	0.300	0.023	1-1/2	09358	03430
0.030	1/8	0.090	0.360	0.028	2	09360	03431
0.031	1/8	0.093	0.372	0.029	2	09362	03432
0.035	1/8	0.105	0.420	0.032	2	09364	03433
0.040	1/8	0.120	0.480	0.037	2	09366	03434
0.045	1/8	0.135	0.540	0.042	2	09368	03435
0.047	1/8	0.141	0.564	0.044	2	09370	03436
0.050	1/8	0.150	0.600	0.047	2	09372	03437
0.055	1/8	0.165	0.660	0.051	2	09374	03438
0.060	1/8	0.180	0.720	0.056	2	09376	03439
0.062	1/8	0.186	0.744	0.058	2	09378	03440
0.065	1/8	0.195	0.780	0.061	2	09380	03441
0.070	1/8	0.210	0.840	0.065	2	09382	03442
0.075	1/8	0.225	0.900	0.070	2	09384	03443
0.078	1/8	0.234	0.936	0.073	2-1/2	09386	03444
0.080	1/8	0.240	0.960	0.075	2-1/2	09388	03445
0.085	1/8	0.255	1.020	0.079	2-1/2	09390	03446
0.090	1/8	0.270	1.080	0.084	2-1/2	09392	03447
0.093	1/8	0.279	1.116	0.087	2-1/2	09394	03448
0.095	1/8	0.285	1.140	0.089	2-1/2	09396	03449
0.100	1/8	0.300	1.200	0.094	2-1/2	09398	03450
0.110	1/8	0.330	1.320	0.103	2-1/2	09400	03451
0.115	1/8	0.345	1.380	0.108	2-1/2	09402	03452
0.120	1/8	0.360	1.440	0.112	2-1/2	09404	03453

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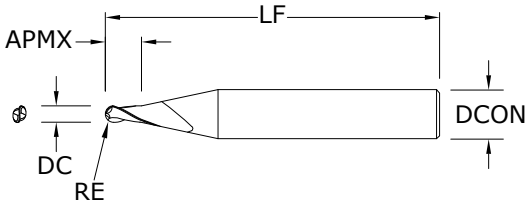
M2B • 1.5xD



M2B • 1.5xD
FRACTIONAL SERIES

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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.005	1/8	0.008	1-1/2	00669	03029
0.006	1/8	0.009	1-1/2	00670	03030
0.007	1/8	0.011	1-1/2	00671	03031
0.008	1/8	0.012	1-1/2	00672	03032
0.009	1/8	0.014	1-1/2	00673	03033
0.010	1/8	0.015	1-1/2	00674	03034
0.011	1/8	0.017	1-1/2	00675	03035
0.012	1/8	0.018	1-1/2	00676	03036
0.013	1/8	0.020	1-1/2	00677	03037
0.014	1/8	0.021	1-1/2	00678	03038
0.015	1/8	0.023	1-1/2	00679	03039
0.016	1/8	0.024	1-1/2	00680	03040
0.017	1/8	0.026	1-1/2	00681	03041
0.018	1/8	0.027	1-1/2	00682	03042
0.019	1/8	0.029	1-1/2	00683	03043
0.020	1/8	0.030	1-1/2	00684	03044
0.021	1/8	0.032	1-1/2	00685	03045
0.022	1/8	0.033	1-1/2	00686	03046
0.023	1/8	0.035	1-1/2	00687	03047
0.024	1/8	0.036	1-1/2	00688	03048
0.025	1/8	0.038	1-1/2	00689	03049
0.026	1/8	0.039	1-1/2	00690	03050
0.027	1/8	0.041	1-1/2	00691	03051
0.028	1/8	0.042	1-1/2	00692	03052
0.029	1/8	0.044	1-1/2	00693	03053
0.030	1/8	0.045	1-1/2	00694	03054
0.031	1/8	0.047	1-1/2	00695	03055
0.032	1/8	0.048	1-1/2	00696	03056
0.033	1/8	0.050	1-1/2	00697	03057
0.034	1/8	0.051	1-1/2	00698	03058
0.035	1/8	0.053	1-1/2	00699	03059
0.036	1/8	0.054	1-1/2	00700	03060
0.037	1/8	0.056	1-1/2	00701	03061
0.038	1/8	0.057	1-1/2	00702	03062
0.039	1/8	0.059	1-1/2	00703	03063
0.040	1/8	0.060	1-1/2	00704	03064

RE = 1/2 Cutting Diameter (DC)

continued on next page

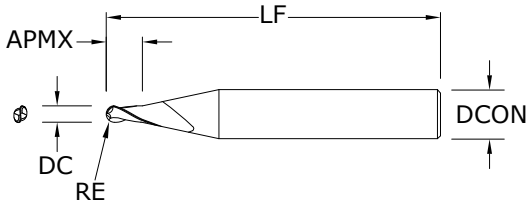
TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

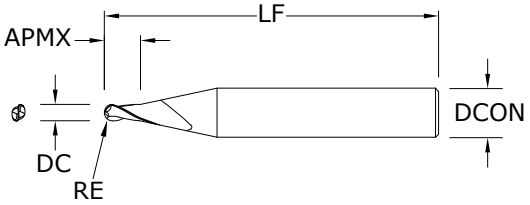
M2B • 1.5xD
FRACTIONAL SERIES

continued

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.041	1/8	0.062	1-1/2	00705	02504
0.042	1/8	0.063	1-1/2	00706	02505
0.043	1/8	0.065	1-1/2	00707	02506
0.044	1/8	0.066	1-1/2	00708	02507
0.045	1/8	0.068	1-1/2	00709	02508
0.046	1/8	0.069	1-1/2	00710	02509
0.047	1/8	0.071	1-1/2	00711	02510
0.048	1/8	0.072	1-1/2	00712	02511
0.049	1/8	0.074	1-1/2	00713	02512
0.050	1/8	0.075	1-1/2	00714	02513
0.051	1/8	0.077	1-1/2	00715	02514
0.052	1/8	0.078	1-1/2	00716	02515
0.053	1/8	0.080	1-1/2	00717	02516
0.054	1/8	0.081	1-1/2	00718	02517
0.055	1/8	0.083	1-1/2	00719	02518
0.056	1/8	0.084	1-1/2	00720	02519
0.057	1/8	0.086	1-1/2	00721	02520
0.058	1/8	0.087	1-1/2	00722	02521
0.059	1/8	0.089	1-1/2	00723	02522
0.060	1/8	0.090	1-1/2	00724	02523
0.062	1/8	0.093	1-1/2	00725	02524
0.065	1/8	0.098	1-1/2	00726	02525
0.070	1/8	0.105	1-1/2	00727	02526
0.075	1/8	0.112	1-1/2	04010	04008
0.078	1/8	0.117	1-1/2	00728	02527
0.080	1/8	0.120	1-1/2	00729	02528
0.085	1/8	0.128	1-1/2	00730	02529
0.090	1/8	0.135	1-1/2	00731	02530
0.093	1/8	0.140	1-1/2	00732	02531
0.095	1/8	0.143	1-1/2	00733	02532
0.100	1/8	0.150	1-1/2	00734	02533
0.105	1/8	0.158	1-1/2	00735	02534
0.110	1/8	0.165	1-1/2	00736	02535
0.115	1/8	0.173	1-1/2	00737	02536
0.120	1/8	0.180	1-1/2	00738	02537

RE = 1/2 Cutting Diameter (DC)

M2B • 3xD



M2B • 3xD
FRACTIONAL SERIES

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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.005	1/8	0.015	1-1/2	00443	03103
0.006	1/8	0.018	1-1/2	00444	03104
0.007	1/8	0.021	1-1/2	00445	03105
0.008	1/8	0.024	1-1/2	00446	03106
0.009	1/8	0.027	1-1/2	00447	03107
0.010	1/8	0.030	1-1/2	00448	03108
0.011	1/8	0.033	1-1/2	00449	03109
0.012	1/8	0.036	1-1/2	00450	03110
0.013	1/8	0.039	1-1/2	00451	03111
0.014	1/8	0.042	1-1/2	00452	03112
0.015	1/8	0.045	1-1/2	00453	03113
0.016	1/8	0.048	1-1/2	00454	03114
0.017	1/8	0.051	1-1/2	00455	03115
0.018	1/8	0.054	1-1/2	00456	03116
0.019	1/8	0.057	1-1/2	00457	03117
0.020	1/8	0.060	1-1/2	00458	03118
0.021	1/8	0.063	1-1/2	00459	03119
0.022	1/8	0.066	1-1/2	00460	03120
0.023	1/8	0.069	1-1/2	00461	03121
0.024	1/8	0.072	1-1/2	00462	03122
0.025	1/8	0.075	1-1/2	00463	03123
0.026	1/8	0.078	1-1/2	00464	03124
0.027	1/8	0.081	1-1/2	00465	03125
0.028	1/8	0.084	1-1/2	00466	03126
0.029	1/8	0.087	1-1/2	00467	03127
0.030	1/8	0.090	1-1/2	00468	03128
0.031	1/8	0.093	1-1/2	00469	03129
0.032	1/8	0.096	1-1/2	00470	03130
0.033	1/8	0.099	1-1/2	00471	03131
0.034	1/8	0.102	1-1/2	00472	03132
0.035	1/8	0.105	1-1/2	00473	03133
0.036	1/8	0.108	1-1/2	00474	03134
0.037	1/8	0.111	1-1/2	00475	03135
0.038	1/8	0.114	1-1/2	00476	03136
0.039	1/8	0.117	1-1/2	00477	03137
0.040	1/8	0.120	1-1/2	00478	03138

RE = 1/2 Cutting Diameter (DC)

continued on next page

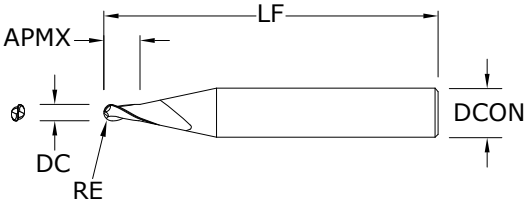
TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

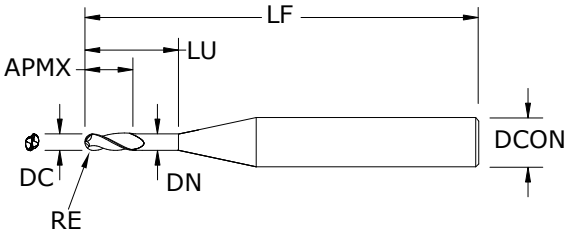
M2B • 3xD
FRACTIONAL SERIES

continued

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.041	1/8	0.123	1-1/2	00847	02572
0.042	1/8	0.126	1-1/2	00848	02573
0.043	1/8	0.129	1-1/2	00849	02574
0.044	1/8	0.132	1-1/2	00850	02575
0.045	1/8	0.135	1-1/2	00851	02576
0.046	1/8	0.138	1-1/2	00852	02577
0.047	1/8	0.141	1-1/2	00853	02578
0.048	1/8	0.144	1-1/2	00854	02579
0.049	1/8	0.147	1-1/2	00855	02580
0.050	1/8	0.150	1-1/2	00856	02581
0.051	1/8	0.153	1-1/2	00857	02582
0.052	1/8	0.156	1-1/2	00858	02583
0.053	1/8	0.159	1-1/2	00859	02584
0.054	1/8	0.162	1-1/2	00860	02585
0.055	1/8	0.165	1-1/2	00861	02586
0.056	1/8	0.168	1-1/2	00862	02587
0.057	1/8	0.171	1-1/2	00863	02588
0.058	1/8	0.174	1-1/2	00864	02589
0.059	1/8	0.177	1-1/2	00497	02590
0.060	1/8	0.180	1-1/2	00866	02591
0.062	1/8	0.186	1-1/2	00867	02592
0.065	1/8	0.195	1-1/2	00868	02593
0.070	1/8	0.210	1-1/2	00869	02594
0.075	1/8	0.225	1-1/2	04011	04009
0.078	1/8	0.234	1-1/2	00502	02595
0.080	1/8	0.240	1-1/2	00871	02596
0.085	1/8	0.255	1-1/2	00872	02597
0.090	1/8	0.270	1-1/2	00873	02598
0.093	1/8	0.279	1-1/2	00874	02599
0.095	1/8	0.285	1-1/2	00875	02600
0.100	1/8	0.300	1-1/2	00876	02601
0.105	1/8	0.315	1-1/2	00877	02602
0.110	1/8	0.330	1-1/2	00510	02603
0.115	1/8	0.345	1-1/2	00879	02604
0.120	1/8	0.360	1-1/2	00880	02605

RE = 1/2 Cutting Diameter (DC)

M2B • 3xD • 8xD Overall Reach



M2B • 3xD 8xD

FRACTIONAL SERIES

- Two flute design is ideal for softer alloyed, non-ferrous material applications that require slotting or involve heavy chip loads
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
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- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
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- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.080	0.009	1-1/2	09299	03697
0.015	1/8	0.045	0.120	0.014	1-1/2	09301	03698
0.020	1/8	0.060	0.160	0.018	1-1/2	09303	03699
0.025	1/8	0.075	0.200	0.023	1-1/2	09305	03700
0.030	1/8	0.090	0.240	0.028	1-1/2	09307	03701
0.031	1/8	0.093	0.248	0.029	1-1/2	09309	03702
0.035	1/8	0.105	0.280	0.032	1-1/2	09311	03703
0.040	1/8	0.120	0.320	0.037	1-1/2	09313	03704
0.045	1/8	0.135	0.360	0.042	2	09315	03705
0.047	1/8	0.141	0.376	0.044	2	09317	03706
0.050	1/8	0.150	0.400	0.047	2	09319	03707
0.055	1/8	0.165	0.440	0.051	2	09321	03708
0.060	1/8	0.180	0.480	0.056	2	09323	03709
0.062	1/8	0.186	0.496	0.058	2	09325	03710
0.065	1/8	0.195	0.520	0.061	2	09327	03711
0.070	1/8	0.210	0.560	0.065	2	09329	03712
0.075	1/8	0.225	0.600	0.070	2	09331	03713
0.078	1/8	0.234	0.624	0.073	2	09333	03714
0.080	1/8	0.240	0.640	0.075	2	09335	03715
0.085	1/8	0.255	0.680	0.079	2	09337	03716
0.090	1/8	0.270	0.720	0.084	2	09339	03717
0.093	1/8	0.279	0.744	0.087	2	09341	03718
0.095	1/8	0.285	0.760	0.089	2	09343	03719
0.100	1/8	0.300	0.800	0.094	2	09345	03720
0.110	1/8	0.330	0.880	0.103	2	09347	03721
0.115	1/8	0.345	0.920	0.108	2	09349	03722
0.120	1/8	0.360	0.960	0.112	2	09351	03723

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

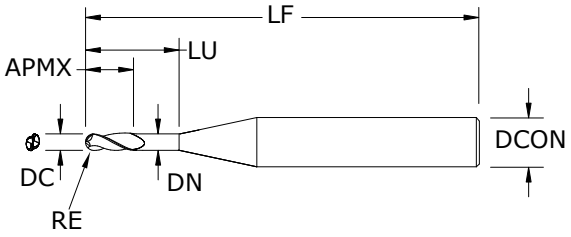
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M2B • 3xD • 12xD Overall Reach



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M2B • 3xD 12xD

FRACTIONAL SERIES

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.120	0.009	1-1/2	09298	03724
0.015	1/8	0.045	0.180	0.014	1-1/2	09300	03725
0.020	1/8	0.060	0.240	0.018	1-1/2	09302	03726
0.025	1/8	0.075	0.300	0.023	1-1/2	09304	03727
0.030	1/8	0.090	0.360	0.028	2	09306	03728
0.031	1/8	0.093	0.372	0.029	2	09308	03729
0.035	1/8	0.105	0.420	0.032	2	09310	03730
0.040	1/8	0.120	0.480	0.037	2	09312	03731
0.045	1/8	0.135	0.540	0.042	2	09314	03732
0.047	1/8	0.141	0.564	0.044	2	09316	03733
0.050	1/8	0.150	0.600	0.047	2	09318	03734
0.055	1/8	0.165	0.660	0.051	2	09320	03735
0.060	1/8	0.180	0.720	0.056	2	09322	03736
0.062	1/8	0.186	0.744	0.058	2	09324	03737
0.065	1/8	0.195	0.780	0.061	2	09326	03738
0.070	1/8	0.210	0.840	0.065	2	09328	03739
0.075	1/8	0.225	0.900	0.070	2	09330	03740
0.078	1/8	0.234	0.936	0.073	2-1/2	09332	03741
0.080	1/8	0.240	0.960	0.075	2-1/2	09334	03742
0.085	1/8	0.255	1.020	0.079	2-1/2	09336	03743
0.090	1/8	0.270	1.080	0.084	2-1/2	09338	03744
0.093	1/8	0.279	1.116	0.087	2-1/2	09340	03745
0.095	1/8	0.285	1.140	0.089	2-1/2	09342	03746
0.100	1/8	0.300	1.200	0.094	2-1/2	09344	03747
0.110	1/8	0.330	1.320	0.103	2-1/2	09346	03748
0.115	1/8	0.345	1.380	0.108	2-1/2	09348	03749
0.120	1/8	0.360	1.440	0.112	2-1/2	09350	03750

RE = 1/2 Cutting Diameter (DC)

- Two flute design is ideal for softer alloyed, non-ferrous material applications that require slotting or involve heavy chip loads
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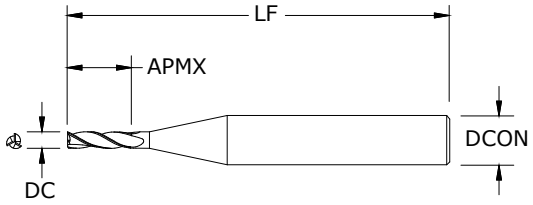
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M3 • 1.5xD



M3 • 1.5xD
FRACTIONAL SERIES

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.005	1/8	0.008	1-1/2	04040	01085
0.006	1/8	0.009	1-1/2	04041	01086
0.007	1/8	0.011	1-1/2	04042	01087
0.008	1/8	0.012	1-1/2	04043	01088
0.009	1/8	0.014	1-1/2	04044	01089
0.010	1/8	0.015	1-1/2	04045	01090
0.011	1/8	0.017	1-1/2	04046	01091
0.012	1/8	0.018	1-1/2	04047	01092
0.013	1/8	0.020	1-1/2	04048	01093
0.014	1/8	0.021	1-1/2	04049	01094
0.015	1/8	0.023	1-1/2	04050	01095
0.016	1/8	0.024	1-1/2	04051	01096
0.017	1/8	0.026	1-1/2	04052	01097
0.018	1/8	0.027	1-1/2	04053	01098
0.019	1/8	0.029	1-1/2	04054	01099
0.020	1/8	0.030	1-1/2	04055	01100
0.021	1/8	0.032	1-1/2	04056	01101
0.022	1/8	0.033	1-1/2	04057	01102
0.023	1/8	0.035	1-1/2	04058	01103
0.024	1/8	0.036	1-1/2	04059	01104
0.025	1/8	0.038	1-1/2	04060	01105
0.026	1/8	0.039	1-1/2	04061	01106
0.027	1/8	0.041	1-1/2	04062	01107
0.028	1/8	0.042	1-1/2	04063	01108
0.029	1/8	0.044	1-1/2	04064	01109
0.030	1/8	0.045	1-1/2	04065	01110
0.031	1/8	0.047	1-1/2	04066	01111
0.032	1/8	0.048	1-1/2	04067	01112
0.033	1/8	0.050	1-1/2	04068	01113
0.034	1/8	0.051	1-1/2	04069	01114
0.035	1/8	0.053	1-1/2	04070	01115
0.036	1/8	0.054	1-1/2	04071	01116
0.037	1/8	0.056	1-1/2	04072	01117
0.038	1/8	0.057	1-1/2	04073	01118
0.039	1/8	0.059	1-1/2	04074	01119
0.040	1/8	0.060	1-1/2	04075	01120

continued on next page

TOLERANCES (inch)

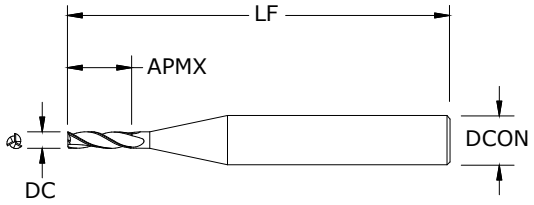
.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3 • 1.5xD



TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3 • 1.5xD
FRACTIONAL SERIES

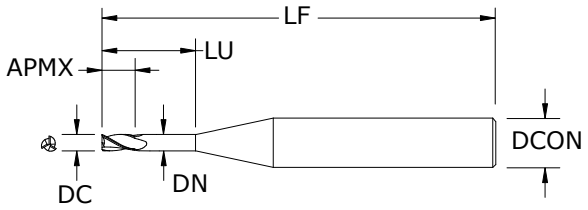
continued

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.041	1/8	0.062	1-1/2	04076	01121
0.042	1/8	0.063	1-1/2	04077	01122
0.043	1/8	0.065	1-1/2	04078	01123
0.044	1/8	0.066	1-1/2	04079	01124
0.045	1/8	0.068	1-1/2	04080	01125
0.046	1/8	0.069	1-1/2	04081	01126
0.047	1/8	0.071	1-1/2	04082	01127
0.048	1/8	0.072	1-1/2	04083	01128
0.049	1/8	0.074	1-1/2	04084	01129
0.050	1/8	0.075	1-1/2	04085	01130
0.051	1/8	0.077	1-1/2	04086	01131
0.052	1/8	0.078	1-1/2	04087	01132
0.053	1/8	0.080	1-1/2	04088	01133
0.054	1/8	0.081	1-1/2	04089	01134
0.055	1/8	0.083	1-1/2	04090	01135
0.056	1/8	0.084	1-1/2	04091	01136
0.057	1/8	0.086	1-1/2	04092	01137
0.058	1/8	0.087	1-1/2	04093	01138
0.059	1/8	0.089	1-1/2	04094	01139
0.060	1/8	0.090	1-1/2	04095	01140
0.062	1/8	0.093	1-1/2	04096	01141
0.065	1/8	0.098	1-1/2	04097	01142
0.070	1/8	0.105	1-1/2	04098	01143
0.075	1/8	0.113	1-1/2	04099	01144
0.078	1/8	0.117	1-1/2	04100	01145
0.080	1/8	0.120	1-1/2	04101	01146
0.085	1/8	0.128	1-1/2	04102	01147
0.090	1/8	0.135	1-1/2	04103	01148
0.093	1/8	0.140	1-1/2	04104	01149
0.095	1/8	0.143	1-1/2	04105	01150
0.100	1/8	0.150	1-1/2	04106	01151
0.105	1/8	0.158	1-1/2	04107	01152
0.110	1/8	0.165	1-1/2	04108	01153
0.115	1/8	0.173	1-1/2	04109	01154
0.120	1/8	0.180	1-1/2	04110	01155

M3 • 1.5xD • 3xD Overall Reach

M3 • 1.5xD 3xD

FRACTIONAL SERIES



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inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.030	0.009	2-1/2	09599	03508
0.015	1/8	0.023	0.045	0.014	2-1/2	09606	03509
0.020	1/8	0.030	0.060	0.018	2-1/2	09613	03510
0.025	1/8	0.038	0.075	0.023	2-1/2	09620	03511
0.030	1/8	0.045	0.090	0.028	2-1/2	09627	03512
0.031	1/8	0.047	0.093	0.029	2-1/2	09634	03513
0.035	1/8	0.053	0.105	0.032	2-1/2	09641	03514
0.040	1/8	0.060	0.120	0.037	2-1/2	09648	03515
0.045	1/8	0.068	0.135	0.042	2-1/2	09655	03516
0.047	1/8	0.071	0.141	0.044	2-1/2	09662	03517
0.050	1/8	0.075	0.150	0.047	2-1/2	09669	03518
0.055	1/8	0.083	0.165	0.051	2-1/2	09676	03519
0.060	1/8	0.090	0.180	0.056	2-1/2	09683	03520
0.062	1/8	0.093	0.186	0.058	2-1/2	09690	03521
0.065	1/8	0.098	0.195	0.061	2-1/2	09697	03522
0.070	1/8	0.105	0.210	0.065	2-1/2	09704	03523
0.075	1/8	0.113	0.225	0.070	2-1/2	09711	03524
0.078	1/8	0.117	0.234	0.073	2-1/2	09718	03525
0.080	1/8	0.120	0.240	0.075	2-1/2	09725	03526
0.085	1/8	0.128	0.255	0.079	2-1/2	09732	03527
0.090	1/8	0.135	0.270	0.084	2-1/2	09739	03528
0.093	1/8	0.140	0.279	0.087	2-1/2	09746	03529
0.095	1/8	0.143	0.285	0.089	2-1/2	09753	03530
0.100	1/8	0.150	0.300	0.094	2-1/2	09760	03531
0.110	1/8	0.165	0.330	0.103	2-1/2	09767	03532
0.115	1/8	0.173	0.345	0.108	2-1/2	09774	03533
0.120	1/8	0.180	0.360	0.112	2-1/2	09781	03534

TOLERANCES (inch)

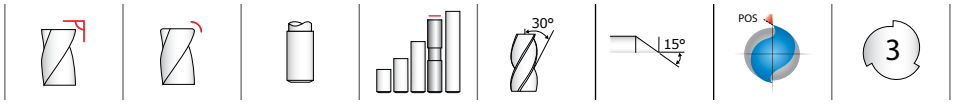
.010–.120 DIAMETER

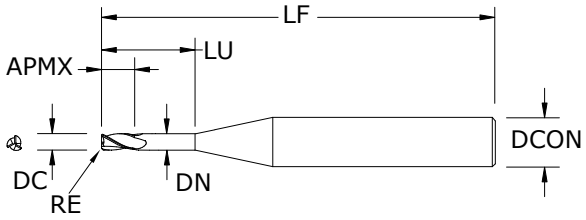
DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3 • M3CR • 1.5xD • 5xD Overall Reach





M3 • M3CR • 1.5xD 5xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch							EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.050	0.009	2-1/2	–	09600	03535
0.015	1/8	0.023	0.075	0.014	2-1/2	–	09607	03536
0.015	1/8	0.023	0.075	0.014	2-1/2	0.003	08782	08884
0.020	1/8	0.030	0.100	0.018	2-1/2	–	09614	03537
0.020	1/8	0.030	0.100	0.018	2-1/2	0.005	08785	08887
0.025	1/8	0.038	0.125	0.023	2-1/2	–	09621	03538
0.025	1/8	0.038	0.125	0.023	2-1/2	0.005	08788	08890
0.030	1/8	0.045	0.150	0.028	2-1/2	–	09628	03539
0.030	1/8	0.045	0.150	0.028	2-1/2	0.005	08791	08893
0.031	1/8	0.047	0.155	0.029	2-1/2	–	09635	03540
0.035	1/8	0.053	0.175	0.032	2-1/2	–	09642	03541
0.035	1/8	0.053	0.175	0.032	2-1/2	0.005	08794	08896
0.035	1/8	0.053	0.175	0.032	2-1/2	0.010	08797	08899
0.040	1/8	0.060	0.200	0.037	2-1/2	–	09649	03542
0.040	1/8	0.060	0.200	0.037	2-1/2	0.005	08800	08902
0.040	1/8	0.060	0.200	0.037	2-1/2	0.010	08803	08905
0.045	1/8	0.068	0.225	0.042	2-1/2	–	09656	03543
0.045	1/8	0.068	0.225	0.042	2-1/2	0.005	08806	08908
0.045	1/8	0.068	0.225	0.042	2-1/2	0.010	08809	08911
0.047	1/8	0.071	0.235	0.044	2-1/2	–	09663	03544
0.050	1/8	0.075	0.250	0.047	2-1/2	–	09670	03545
0.050	1/8	0.075	0.250	0.047	2-1/2	0.005	08812	08914
0.050	1/8	0.075	0.250	0.047	2-1/2	0.010	08815	08917
0.050	1/8	0.075	0.250	0.047	2-1/2	0.015	08818	08920
0.055	1/8	0.083	0.275	0.051	2-1/2	–	09677	03546
0.060	1/8	0.090	0.300	0.056	2-1/2	–	09684	03547
0.060	1/8	0.090	0.300	0.056	2-1/2	0.005	08821	08923
0.060	1/8	0.090	0.300	0.056	2-1/2	0.010	08824	08926
0.060	1/8	0.090	0.300	0.056	2-1/2	0.015	08827	08929
0.062	1/8	0.093	0.310	0.058	2-1/2	–	09691	03548
0.065	1/8	0.098	0.325	0.061	2-1/2	–	09698	03549
0.070	1/8	0.105	0.350	0.065	2-1/2	–	09705	03550
0.070	1/8	0.105	0.350	0.065	2-1/2	0.005	08830	08932
0.070	1/8	0.105	0.350	0.065	2-1/2	0.010	08833	08935

continued on next page

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
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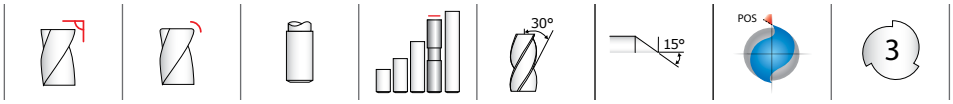
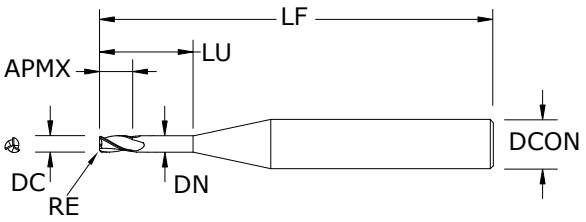
M3 • M3CR • 1.5xD • 5xD Overall Reach



M3 • M3CR • 1.5xD 5xD

FRACTIONAL SERIES



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inch							EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.070	1/8	0.105	0.350	0.065	2-1/2	0.015	08836	08938
0.075	1/8	0.113	0.375	0.070	2-1/2	–	09712	03551
0.078	1/8	0.117	0.390	0.073	2-1/2	–	09719	03552
0.080	1/8	0.120	0.400	0.075	2-1/2	–	09726	03553
0.080	1/8	0.120	0.400	0.075	2-1/2	0.005	08839	08941
0.080	1/8	0.120	0.400	0.075	2-1/2	0.010	08842	08944
0.080	1/8	0.120	0.400	0.075	2-1/2	0.015	08845	08947
0.085	1/8	0.128	0.425	0.079	2-1/2	–	09733	03554
0.090	1/8	0.135	0.450	0.084	2-1/2	–	09740	03555
0.090	1/8	0.135	0.450	0.084	2-1/2	0.005	08848	08950
0.090	1/8	0.135	0.450	0.084	2-1/2	0.010	08851	08953
0.090	1/8	0.135	0.450	0.084	2-1/2	0.015	08854	08956
0.093	1/8	0.140	0.465	0.087	2-1/2	–	09747	03556
0.095	1/8	0.143	0.475	0.089	2-1/2	–	09754	03557
0.100	1/8	0.150	0.500	0.094	2-1/2	–	09761	03558
0.100	1/8	0.150	0.500	0.094	2-1/2	0.005	08857	08959
0.100	1/8	0.150	0.500	0.094	2-1/2	0.010	08860	08962
0.100	1/8	0.150	0.500	0.094	2-1/2	0.015	08863	08965
0.110	1/8	0.165	0.550	0.103	2-1/2	–	09768	03559
0.110	1/8	0.165	0.550	0.103	2-1/2	0.005	08866	08968
0.110	1/8	0.165	0.550	0.103	2-1/2	0.010	08869	08971
0.110	1/8	0.165	0.550	0.103	2-1/2	0.015	08872	08974
0.115	1/8	0.173	0.575	0.108	2-1/2	–	09775	03560
0.120	1/8	0.180	0.600	0.112	2-1/2	–	09782	03561
0.120	1/8	0.180	0.600	0.112	2-1/2	0.005	08875	08977
0.120	1/8	0.180	0.600	0.112	2-1/2	0.010	08878	08980
0.120	1/8	0.180	0.600	0.112	2-1/2	0.015	08881	08983

TOLERANCES (inch)

.010–.120 DIAMETER

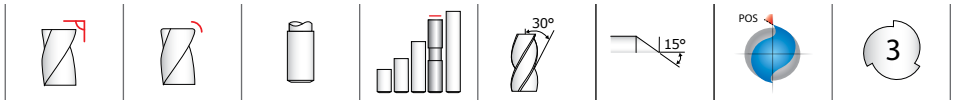
DC = +0.000/–0.001

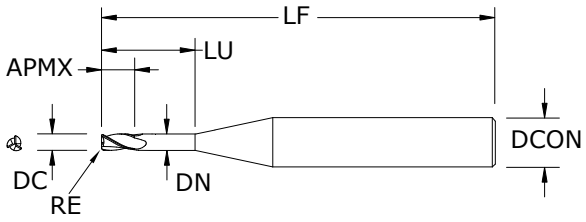
DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3 • M3CR • 1.5xD • 8xD Overall Reach





M3 • M3CR • 1.5xD 8xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

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- STEELS
- STAINLESS STEELS
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inch							EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.080	0.009	2-1/2	–	09601	03562
0.015	1/8	0.023	0.120	0.014	2-1/2	–	09608	03563
0.015	1/8	0.023	0.120	0.014	2-1/2	0.003	08783	08885
0.020	1/8	0.030	0.160	0.018	2-1/2	–	09615	03564
0.020	1/8	0.030	0.160	0.018	2-1/2	0.005	08786	08888
0.025	1/8	0.038	0.200	0.023	2-1/2	–	09622	03565
0.025	1/8	0.038	0.200	0.023	2-1/2	0.005	08789	08891
0.030	1/8	0.045	0.240	0.028	2-1/2	–	09629	03566
0.030	1/8	0.045	0.240	0.028	2-1/2	0.005	08792	08894
0.031	1/8	0.047	0.248	0.029	2-1/2	–	09636	03567
0.035	1/8	0.053	0.280	0.032	2-1/2	–	09643	03568
0.035	1/8	0.053	0.280	0.032	2-1/2	0.005	08795	08897
0.035	1/8	0.053	0.280	0.032	2-1/2	0.010	08798	08900
0.040	1/8	0.060	0.320	0.037	2-1/2	–	09650	03569
0.040	1/8	0.060	0.320	0.037	2-1/2	0.005	08801	08903
0.040	1/8	0.060	0.320	0.037	2-1/2	0.010	08804	08906
0.045	1/8	0.068	0.360	0.042	2-1/2	–	09657	03570
0.045	1/8	0.068	0.360	0.042	2-1/2	0.005	08807	08909
0.045	1/8	0.068	0.360	0.042	2-1/2	0.010	08810	08912
0.047	1/8	0.071	0.376	0.044	2-1/2	–	09664	03571
0.050	1/8	0.075	0.400	0.047	2-1/2	–	09671	03572
0.050	1/8	0.075	0.400	0.047	2-1/2	0.005	08813	08915
0.050	1/8	0.075	0.400	0.047	2-1/2	0.010	08816	08918
0.050	1/8	0.075	0.400	0.047	2-1/2	0.015	08819	08921
0.055	1/8	0.083	0.440	0.051	2-1/2	–	09678	03573
0.060	1/8	0.090	0.480	0.056	2-1/2	–	09685	03574
0.060	1/8	0.090	0.480	0.056	2-1/2	0.005	08822	08924
0.060	1/8	0.090	0.480	0.056	2-1/2	0.010	08825	08927
0.060	1/8	0.090	0.480	0.056	2-1/2	0.015	08828	08930
0.062	1/8	0.093	0.496	0.058	2-1/2	–	09692	03575
0.065	1/8	0.098	0.520	0.061	2-1/2	–	09699	03576
0.070	1/8	0.105	0.560	0.065	2-1/2	–	09706	03577
0.070	1/8	0.105	0.560	0.065	2-1/2	0.005	08831	08933
0.070	1/8	0.105	0.560	0.065	2-1/2	0.010	08834	08936
0.070	1/8	0.105	0.560	0.065	2-1/2	0.015	08837	08939
0.075	1/8	0.113	0.600	0.070	2-1/2	–	09713	03578

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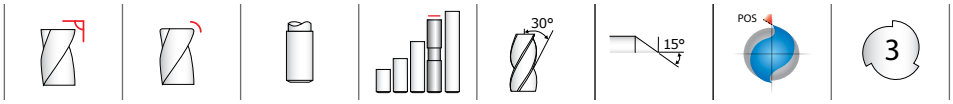
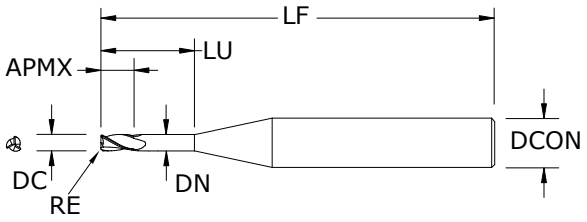
M3 • M3CR • 1.5xD • 8xD Overall Reach



M3 • M3CR • 1.5xD 8xD

FRACTIONAL SERIES



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inch							EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.078	1/8	0.117	0.624	0.073	2-1/2	–	09720	03579
0.080	1/8	0.120	0.640	0.075	2-1/2	–	09727	03580
0.080	1/8	0.120	0.640	0.075	2-1/2	0.005	08840	08942
0.080	1/8	0.120	0.640	0.075	2-1/2	0.010	08843	08945
0.080	1/8	0.120	0.640	0.075	2-1/2	0.015	08846	08948
0.085	1/8	0.128	0.680	0.079	2-1/2	–	09734	03581
0.090	1/8	0.135	0.720	0.084	2-1/2	–	09741	03582
0.090	1/8	0.135	0.720	0.084	2-1/2	0.005	08849	08951
0.090	1/8	0.135	0.720	0.084	2-1/2	0.010	08852	08954
0.090	1/8	0.135	0.720	0.084	2-1/2	0.015	08855	08957
0.093	1/8	0.140	0.744	0.087	2-1/2	–	09748	03583
0.095	1/8	0.143	0.760	0.089	2-1/2	–	09755	03584
0.100	1/8	0.150	0.800	0.094	2-1/2		09762	03585
0.100	1/8	0.150	0.800	0.094	2-1/2	0.005	08858	08960
0.100	1/8	0.150	0.800	0.094	2-1/2	0.010	08861	08963
0.100	1/8	0.150	0.800	0.094	2-1/2	0.015	08864	08966
0.110	1/8	0.165	0.880	0.103	2-1/2		09769	03586
0.110	1/8	0.165	0.880	0.103	2-1/2	0.005	08867	08969
0.110	1/8	0.165	0.880	0.103	2-1/2	0.010	08870	08972
0.110	1/8	0.165	0.880	0.103	2-1/2	0.015	08873	08975
0.115	1/8	0.173	0.920	0.108	2-1/2		09776	03587
0.120	1/8	0.180	0.960	0.112	2-1/2		09783	03588
0.120	1/8	0.180	0.960	0.112	2-1/2	0.005	08876	08978
0.120	1/8	0.180	0.960	0.112	2-1/2	0.010	08879	08981
0.120	1/8	0.180	0.960	0.112	2-1/2	0.015	08882	08984

TOLERANCES (inch)

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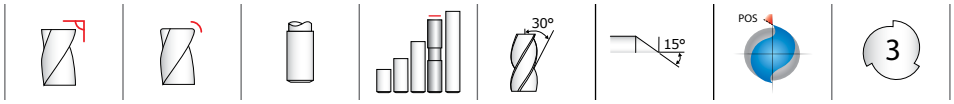
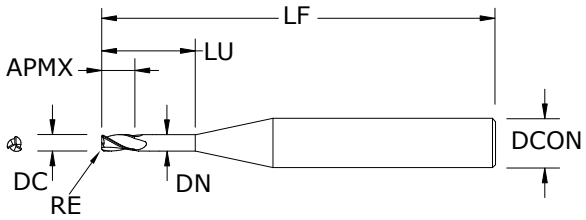
M3 • M3CR • 1.5xD • 12xD Overall Reach





M3 • M3CR • 1.5xD 12xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

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inch							EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.120	0.009	2-1/2	–	09595	03589
0.015	1/8	0.023	0.180	0.014	2-1/2	–	09602	03590
0.015	1/8	0.023	0.180	0.014	2-1/2	0.003	08784	08886
0.020	1/8	0.030	0.240	0.018	2-1/2	–	09609	03591
0.020	1/8	0.030	0.240	0.018	2-1/2	0.005	08787	08889
0.025	1/8	0.038	0.300	0.023	2-1/2	–	09616	03592
0.025	1/8	0.038	0.300	0.023	2-1/2	0.005	08790	08892
0.030	1/8	0.045	0.360	0.028	2-1/2	–	09623	03593
0.030	1/8	0.045	0.360	0.028	2-1/2	0.005	08793	08895
0.031	1/8	0.047	0.372	0.029	2-1/2	–	09630	03594
0.035	1/8	0.053	0.420	0.032	2-1/2	–	09637	03595
0.035	1/8	0.053	0.420	0.032	2-1/2	0.005	08796	08898
0.035	1/8	0.053	0.420	0.032	2-1/2	0.010	08799	08901
0.040	1/8	0.060	0.480	0.037	2-1/2	–	09644	03596
0.040	1/8	0.060	0.480	0.037	2-1/2	0.005	08802	08904
0.040	1/8	0.060	0.480	0.037	2-1/2	0.010	08805	08907
0.045	1/8	0.068	0.540	0.042	2-1/2	–	09651	03597
0.045	1/8	0.068	0.540	0.042	2-1/2	0.005	08808	08910
0.045	1/8	0.068	0.540	0.042	2-1/2	0.010	08811	08913
0.047	1/8	0.071	0.564	0.044	2-1/2	–	09658	03598
0.050	1/8	0.075	0.600	0.047	2-1/2	–	09665	03599
0.050	1/8	0.075	0.600	0.047	2-1/2	0.005	08814	08916
0.050	1/8	0.075	0.600	0.047	2-1/2	0.010	08817	08919
0.050	1/8	0.075	0.600	0.047	2-1/2	0.015	08820	08922
0.055	1/8	0.083	0.660	0.051	2-1/2	–	09672	03600
0.060	1/8	0.090	0.720	0.056	2-1/2	–	09679	03601
0.060	1/8	0.090	0.720	0.056	2-1/2	0.005	08823	08925
0.060	1/8	0.090	0.720	0.056	2-1/2	0.010	08826	08928
0.060	1/8	0.090	0.720	0.056	2-1/2	0.015	08829	08931
0.062	1/8	0.093	0.744	0.058	2-1/2	–	09686	03602
0.065	1/8	0.098	0.780	0.061	2-1/2	–	09693	03603
0.070	1/8	0.105	0.840	0.065	2-1/2	–	09700	03604
0.070	1/8	0.105	0.840	0.065	2-1/2	0.005	08832	08934
0.070	1/8	0.105	0.840	0.065	2-1/2	0.010	08835	08937
0.070	1/8	0.105	0.840	0.065	2-1/2	0.015	08838	08940
0.075	1/8	0.113	0.900	0.070	2-1/2	–	09707	03605

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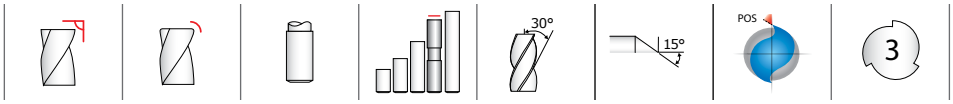
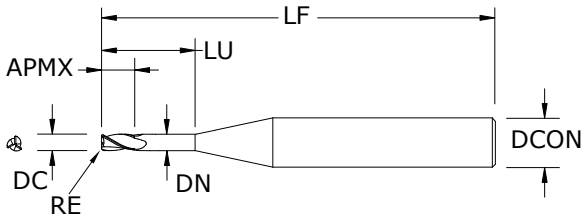


M3 • M3CR • 1.5xD 12xD

FRACTIONAL SERIES



continued

inch							EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.078	1/8	0.117	0.936	0.073	2-1/2	–	09714	03606
0.080	1/8	0.120	0.960	0.075	2-1/2	–	09721	03607
0.080	1/8	0.120	0.960	0.075	2-1/2	0.005	08841	08943
0.080	1/8	0.120	0.960	0.075	2-1/2	0.010	08844	08946
0.080	1/8	0.120	0.960	0.075	2-1/2	0.015	08847	08949
0.085	1/8	0.128	1.020	0.079	2-1/2	–	09728	03608
0.090	1/8	0.135	1.080	0.084	2-1/2	–	09735	03609
0.090	1/8	0.135	1.080	0.084	2-1/2	0.005	08850	08952
0.090	1/8	0.135	1.080	0.084	2-1/2	0.010	08853	08955
0.090	1/8	0.135	1.080	0.084	2-1/2	0.015	08856	08958
0.093	1/8	0.140	1.116	0.087	2-1/2	–	09742	03610
0.095	1/8	0.143	1.140	0.089	2-1/2	–	09749	03611
0.100	1/8	0.150	1.200	0.094	2-1/2	–	09756	03612
0.100	1/8	0.150	1.200	0.094	2-1/2	0.005	08859	08961
0.100	1/8	0.150	1.200	0.094	2-1/2	0.010	08862	08964
0.100	1/8	0.150	1.200	0.094	2-1/2	0.015	08865	08967
0.110	1/8	0.165	1.320	0.103	2-1/2	–	09763	03613
0.110	1/8	0.165	1.320	0.103	2-1/2	0.005	08868	08970
0.110	1/8	0.165	1.320	0.103	2-1/2	0.010	08871	08973
0.110	1/8	0.165	1.320	0.103	2-1/2	0.015	08874	08976
0.115	1/8	0.173	1.380	0.108	2-1/2	–	09770	03614
0.120	1/8	0.180	1.440	0.112	2-1/2	–	09777	03615
0.120	1/8	0.180	1.440	0.112	2-1/2	0.005	08877	08979
0.120	1/8	0.180	1.440	0.112	2-1/2	0.010	08880	08982
0.120	1/8	0.180	1.440	0.112	2-1/2	0.015	08883	08985

TOLERANCES (inch)

.010–.120 DIAMETER

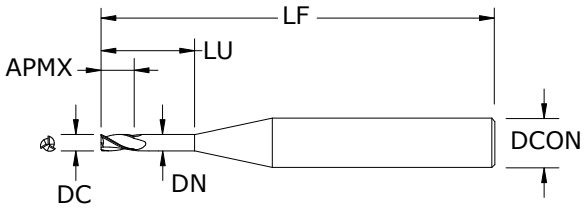
DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3 • 1.5xD • 15xD Overall Reach



M3 • 1.5xD 15xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

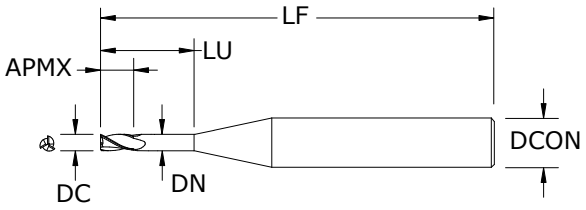
inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.150	0.009	2-1/2	09596	03616
0.015	1/8	0.023	0.225	0.014	2-1/2	09603	03617
0.020	1/8	0.030	0.300	0.018	2-1/2	09610	03618
0.025	1/8	0.038	0.375	0.023	2-1/2	09617	03619
0.030	1/8	0.045	0.450	0.028	2-1/2	09624	03620
0.031	1/8	0.047	0.465	0.029	2-1/2	09631	03621
0.035	1/8	0.053	0.525	0.032	2-1/2	09638	03622
0.040	1/8	0.060	0.600	0.037	2-1/2	09645	03623
0.045	1/8	0.068	0.675	0.042	2-1/2	09652	03624
0.047	1/8	0.071	0.705	0.044	2-1/2	09659	03625
0.050	1/8	0.075	0.750	0.047	2-1/2	09666	03626
0.055	1/8	0.083	0.825	0.051	2-1/2	09673	03627
0.060	1/8	0.090	0.900	0.056	2-1/2	09680	03628
0.062	1/8	0.093	0.930	0.058	2-1/2	09687	03629
0.065	1/8	0.098	0.975	0.061	2-1/2	09694	03630
0.070	1/8	0.105	1.050	0.065	2-1/2	09701	03631
0.075	1/8	0.113	1.125	0.070	2-1/2	09708	03632
0.078	1/8	0.117	1.170	0.073	2-1/2	09715	03633
0.080	1/8	0.120	1.200	0.075	2-1/2	09722	03634
0.085	1/8	0.128	1.275	0.079	2-1/2	09729	03635
0.090	1/8	0.135	1.350	0.084	2-1/2	09736	03636
0.093	1/8	0.140	1.395	0.087	3	09743	03637
0.095	1/8	0.143	1.425	0.089	3	09750	03638
0.100	1/8	0.150	1.500	0.094	3	09757	03639
0.110	1/8	0.165	1.650	0.103	3	09764	03640
0.115	1/8	0.173	1.725	0.108	3	09771	03641
0.120	1/8	0.180	1.800	0.112	3	09778	03642

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M3 • 1.5xD • 20xD Overall Reach

M3 • 1.5xD 20xD

FRACTIONAL SERIES



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inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.200	0.009	2-1/2	09597	03643
0.015	1/8	0.023	0.300	0.014	2-1/2	09604	03644
0.020	1/8	0.030	0.400	0.018	2-1/2	09611	03645
0.025	1/8	0.038	0.500	0.023	2-1/2	09618	03646
0.030	1/8	0.045	0.600	0.028	2-1/2	09625	03647
0.031	1/8	0.047	0.620	0.029	2-1/2	09632	03648
0.035	1/8	0.053	0.700	0.032	2-1/2	09639	03649
0.040	1/8	0.060	0.800	0.037	2-1/2	09646	03650
0.045	1/8	0.068	0.900	0.042	2-1/2	09653	03651
0.047	1/8	0.071	0.940	0.044	2-1/2	09660	03652
0.050	1/8	0.075	1.000	0.047	2-1/2	09667	03653
0.055	1/8	0.083	1.100	0.051	2-1/2	09674	03654
0.060	1/8	0.090	1.200	0.056	2-1/2	09681	03655
0.062	1/8	0.093	1.240	0.058	2-1/2	09688	03656
0.065	1/8	0.098	1.300	0.061	3	09695	03657
0.070	1/8	0.105	1.400	0.065	3	09702	03658
0.075	1/8	0.113	1.500	0.070	3	09709	03659
0.078	1/8	0.117	1.560	0.073	3	09716	03660
0.080	1/8	0.120	1.600	0.075	3	09723	03661
0.085	1/8	0.128	1.700	0.079	3	09730	03662
0.090	1/8	0.135	1.800	0.084	3	09737	03663
0.093	1/8	0.140	1.860	0.087	3	09744	03664
0.095	1/8	0.143	1.900	0.089	3	09751	03665
0.100	1/8	0.150	2.000	0.094	4	09758	03666
0.110	1/8	0.165	2.200	0.103	4	09765	03667
0.115	1/8	0.173	2.300	0.108	4	09772	03668
0.120	1/8	0.180	2.400	0.112	4	09779	03669

TOLERANCES (inch)

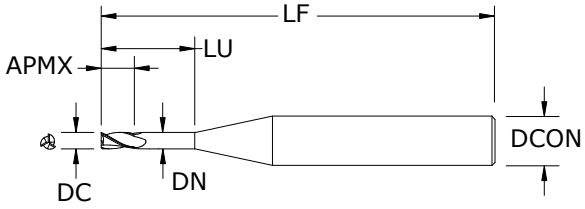
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3 • 1.5xD • 25xD Overall Reach



M3 • 1.5xD 25xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.250	0.009	2-1/2	09598	03670
0.015	1/8	0.023	0.375	0.014	2-1/2	09605	03671
0.020	1/8	0.030	0.500	0.018	2-1/2	09612	03672
0.025	1/8	0.038	0.625	0.023	2-1/2	09619	03673
0.030	1/8	0.045	0.750	0.028	2-1/2	09626	03674
0.031	1/8	0.047	0.775	0.029	2-1/2	09633	03675
0.035	1/8	0.053	0.875	0.032	2-1/2	09640	03676
0.040	1/8	0.060	1.000	0.037	2-1/2	09647	03677
0.045	1/8	0.068	1.125	0.042	2-1/2	09654	03678
0.047	1/8	0.071	1.175	0.044	2-1/2	09661	03679
0.050	1/8	0.075	1.250	0.047	2-1/2	09668	03680
0.055	1/8	0.083	1.375	0.051	3	09675	03681
0.060	1/8	0.090	1.500	0.056	3	09682	03682
0.062	1/8	0.093	1.550	0.058	3	09689	03683
0.065	1/8	0.098	1.625	0.061	3	09696	03684
0.070	1/8	0.105	1.750	0.065	3	09703	03685
0.075	1/8	0.113	1.875	0.070	3	09710	03686
0.078	1/8	0.117	1.950	0.073	4	09717	03687
0.080	1/8	0.120	2.000	0.075	4	09724	03688
0.085	1/8	0.128	2.125	0.079	4	09731	03689
0.090	1/8	0.135	2.250	0.084	4	09738	03690
0.093	1/8	0.140	2.325	0.087	4	09745	03691
0.095	1/8	0.143	2.375	0.089	4	09752	03692
0.100	1/8	0.150	2.500	0.094	4	09759	03693
0.110	1/8	0.165	2.750	0.103	4	09766	03694
0.115	1/8	0.173	2.875	0.108	4	09773	03695
0.120	1/8	0.180	3.000	0.112	4	09780	03696

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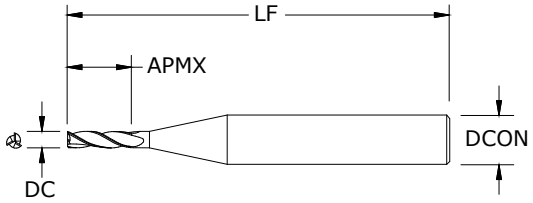
M3 • 3xD



M3 • 3xD
FRACTIONAL SERIES

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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.005	1/8	0.015	1-1/2	04111	01156
0.006	1/8	0.018	1-1/2	04112	01157
0.007	1/8	0.021	1-1/2	04113	01158
0.008	1/8	0.024	1-1/2	04114	01159
0.009	1/8	0.027	1-1/2	04115	01160
0.010	1/8	0.030	1-1/2	04116	01161
0.011	1/8	0.033	1-1/2	04117	01162
0.012	1/8	0.036	1-1/2	04118	01163
0.013	1/8	0.039	1-1/2	04119	01164
0.014	1/8	0.042	1-1/2	04120	01165
0.015	1/8	0.045	1-1/2	04121	01166
0.016	1/8	0.048	1-1/2	04122	01167
0.017	1/8	0.051	1-1/2	04123	01168
0.018	1/8	0.054	1-1/2	04124	01169
0.019	1/8	0.057	1-1/2	04125	01170
0.020	1/8	0.060	1-1/2	04126	01171
0.021	1/8	0.063	1-1/2	04127	01172
0.022	1/8	0.066	1-1/2	04128	01173
0.023	1/8	0.069	1-1/2	04129	01174
0.024	1/8	0.072	1-1/2	04130	01175
0.025	1/8	0.075	1-1/2	04131	01176
0.026	1/8	0.078	1-1/2	04132	01177
0.027	1/8	0.081	1-1/2	04133	01178
0.028	1/8	0.084	1-1/2	04134	01179
0.029	1/8	0.087	1-1/2	04135	01180
0.030	1/8	0.090	1-1/2	04136	01181
0.031	1/8	0.093	1-1/2	04137	01182
0.032	1/8	0.096	1-1/2	04138	01183
0.033	1/8	0.099	1-1/2	04139	01184
0.034	1/8	0.102	1-1/2	04140	01185
0.035	1/8	0.105	1-1/2	04141	01186
0.036	1/8	0.108	1-1/2	04142	01187
0.037	1/8	0.111	1-1/2	04143	01188
0.038	1/8	0.114	1-1/2	04144	01189
0.039	1/8	0.117	1-1/2	04145	01190
0.040	1/8	0.120	1-1/2	04146	01191

continued on next page

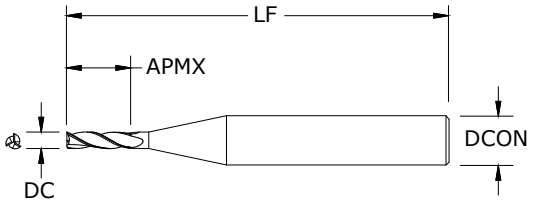
TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3 • 3xD
FRACTIONAL SERIES

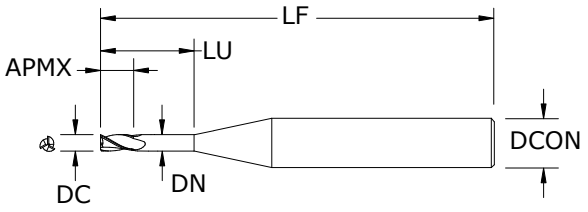
continued

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.041	1/8	0.123	1-1/2	04147	01192
0.042	1/8	0.126	1-1/2	04148	01193
0.043	1/8	0.129	1-1/2	04149	01194
0.044	1/8	0.132	1-1/2	04150	01195
0.045	1/8	0.135	1-1/2	04151	01196
0.046	1/8	0.138	1-1/2	04152	01197
0.047	1/8	0.141	1-1/2	04153	01198
0.048	1/8	0.144	1-1/2	04154	01199
0.049	1/8	0.147	1-1/2	04155	01200
0.050	1/8	0.150	1-1/2	04156	01201
0.051	1/8	0.153	1-1/2	04157	01202
0.052	1/8	0.156	1-1/2	04158	01203
0.053	1/8	0.159	1-1/2	04159	01204
0.054	1/8	0.162	1-1/2	04160	01205
0.055	1/8	0.165	1-1/2	04161	01206
0.056	1/8	0.168	1-1/2	04162	01207
0.057	1/8	0.171	1-1/2	04163	01208
0.058	1/8	0.174	1-1/2	04164	01209
0.059	1/8	0.177	1-1/2	04165	01210
0.060	1/8	0.180	1-1/2	04166	01211
0.062	1/8	0.186	1-1/2	04167	01212
0.065	1/8	0.195	1-1/2	04168	01213
0.070	1/8	0.210	1-1/2	04169	01214
0.075	1/8	0.225	1-1/2	04170	01215
0.078	1/8	0.234	1-1/2	04171	01216
0.080	1/8	0.240	1-1/2	04172	01217
0.085	1/8	0.255	1-1/2	04173	01218
0.090	1/8	0.270	1-1/2	04174	01219
0.093	1/8	0.279	1-1/2	04175	01220
0.095	1/8	0.285	1-1/2	04176	01221
0.100	1/8	0.300	1-1/2	04177	01222
0.105	1/8	0.315	1-1/2	04178	01223
0.110	1/8	0.330	1-1/2	04179	01224
0.115	1/8	0.345	1-1/2	04180	01225
0.120	1/8	0.360	1-1/2	04181	01226

M3 • 3xD • 8xD Overall Reach

M3 • 3xD 8xD

FRACTIONAL SERIES



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inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.080	0.009	1-1/2	01311	04266
0.015	1/8	0.045	0.120	0.014	1-1/2	01312	04267
0.020	1/8	0.060	0.160	0.019	1-1/2	01313	04268
0.025	1/8	0.075	0.200	0.024	1-1/2	01314	04269
0.030	1/8	0.090	0.240	0.028	1-1/2	01315	04270
0.031	1/8	0.093	0.248	0.029	1-1/2	01316	04271
0.035	1/8	0.105	0.280	0.033	1-1/2	01317	04272
0.040	1/8	0.120	0.320	0.038	1-1/2	01318	04273
0.045	1/8	0.135	0.360	0.042	2	01319	04274
0.047	1/8	0.141	0.376	0.044	2	01320	04275
0.050	1/8	0.150	0.400	0.047	2	01321	04276
0.055	1/8	0.165	0.440	0.052	2	01322	04277
0.060	1/8	0.180	0.480	0.056	2	01323	04278
0.062	1/8	0.186	0.496	0.058	2	01324	04279
0.065	1/8	0.195	0.520	0.061	2	01325	04280
0.070	1/8	0.210	0.560	0.066	2	01326	04281
0.075	1/8	0.225	0.600	0.071	2	01327	04282
0.078	1/8	0.234	0.624	0.073	2	01328	04283
0.080	1/8	0.240	0.640	0.075	2	01329	04284
0.085	1/8	0.255	0.680	0.080	2	01330	04285
0.090	1/8	0.270	0.720	0.085	2	01331	04286
0.093	1/8	0.279	0.744	0.087	2	01332	04287
0.095	1/8	0.285	0.760	0.089	2	01333	04288
0.100	1/8	0.300	0.800	0.094	2	01334	04289
0.105	1/8	0.315	0.840	0.099	2	01335	04290
0.110	1/8	0.330	0.880	0.103	2	01336	04291
0.115	1/8	0.345	0.920	0.108	2	01337	04292
0.120	1/8	0.360	0.960	0.113	2	01338	04293

TOLERANCES (inch)

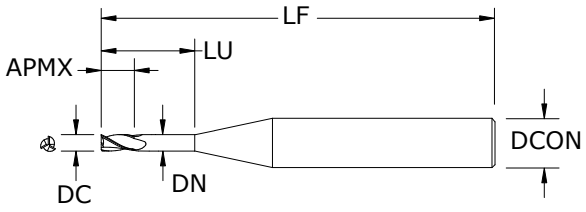
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3 • 3xD • 12xD Overall Reach



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

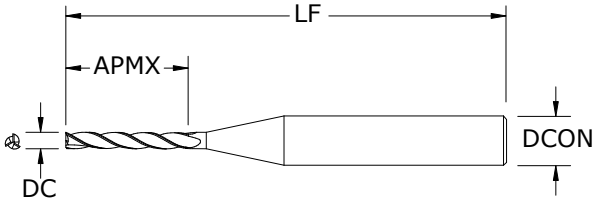
M3 • 3xD 12xD

FRACTIONAL SERIES

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.120	0.009	1-1/2	01339	04294
0.015	1/8	0.045	0.180	0.014	1-1/2	01340	04295
0.020	1/8	0.060	0.240	0.019	1-1/2	01341	04296
0.025	1/8	0.075	0.300	0.024	1-1/2	01342	04297
0.030	1/8	0.090	0.360	0.028	2	01343	04298
0.031	1/8	0.093	0.372	0.029	2	01344	04299
0.035	1/8	0.105	0.420	0.033	2	01345	04300
0.040	1/8	0.120	0.480	0.038	2	01346	04301
0.045	1/8	0.135	0.540	0.042	2	01347	04302
0.047	1/8	0.141	0.564	0.044	2	01348	04303
0.050	1/8	0.150	0.600	0.047	2	01349	04304
0.055	1/8	0.165	0.660	0.052	2	01350	04305
0.060	1/8	0.180	0.720	0.056	2	01351	04306
0.062	1/8	0.186	0.744	0.058	2	01352	04307
0.065	1/8	0.195	0.780	0.061	2	01353	04308
0.070	1/8	0.210	0.840	0.066	2	01354	04309
0.075	1/8	0.225	0.900	0.071	2	01355	04310
0.078	1/8	0.234	0.936	0.073	2-1/2	01356	04311
0.080	1/8	0.240	0.960	0.075	2-1/2	01357	04312
0.085	1/8	0.255	1.020	0.080	2-1/2	01358	04313
0.090	1/8	0.270	1.080	0.085	2-1/2	01359	04314
0.093	1/8	0.279	1.116	0.087	2-1/2	01360	04315
0.095	1/8	0.285	1.140	0.089	2-1/2	01361	04316
0.100	1/8	0.300	1.200	0.094	2-1/2	01362	04317
0.105	1/8	0.315	1.260	0.099	2-1/2	01363	04318
0.110	1/8	0.330	1.320	0.103	2-1/2	01364	04319
0.115	1/8	0.345	1.380	0.108	2-1/2	01365	04320
0.120	1/8	0.360	1.440	0.113	2-1/2	01366	04321

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M3L • 5xD



M3L • 5xD
FRACTIONAL SERIES

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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.050	2-1/2	01227	04182
0.015	1/8	0.075	2-1/2	01228	04183
0.020	1/8	0.100	2-1/2	01229	04184
0.025	1/8	0.125	2-1/2	01230	04185
0.030	1/8	0.150	2-1/2	01231	04186
0.031	1/8	0.155	2-1/2	01232	04187
0.035	1/8	0.175	2-1/2	01233	04188
0.040	1/8	0.200	2-1/2	01234	04189
0.045	1/8	0.225	2-1/2	01235	04190
0.047	1/8	0.235	2-1/2	01236	04191
0.050	1/8	0.250	2-1/2	01237	04192
0.055	1/8	0.275	2-1/2	01238	04193
0.060	1/8	0.300	2-1/2	01239	04194
0.062	1/8	0.310	2-1/2	01240	04195
0.065	1/8	0.325	2-1/2	01241	04196
0.070	1/8	0.350	2-1/2	01242	04197
0.075	1/8	0.375	2-1/2	01243	04198
0.078	1/8	0.390	2-1/2	01244	04199
0.080	1/8	0.400	2-1/2	01245	04200
0.085	1/8	0.425	2-1/2	01246	04201
0.090	1/8	0.450	2-1/2	01247	04202
0.093	1/8	0.465	2-1/2	01248	04203
0.095	1/8	0.475	2-1/2	01249	04204
0.100	1/8	0.500	2-1/2	01250	04205
0.105	1/8	0.525	2-1/2	01251	04206
0.110	1/8	0.550	2-1/2	01252	04207
0.115	1/8	0.575	2-1/2	01253	04208
0.120	1/8	0.600	2-1/2	01254	04209

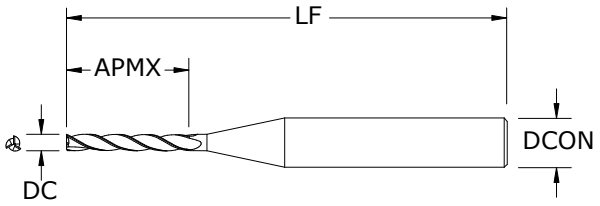
TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3E • 8xD
FRACTIONAL SERIES

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.080	2-1/2	01255	04210
0.015	1/8	0.120	2-1/2	01256	04211
0.020	1/8	0.160	2-1/2	01257	04212
0.025	1/8	0.200	2-1/2	01258	04213
0.030	1/8	0.240	2-1/2	01259	04214
0.031	1/8	0.248	2-1/2	01260	04215
0.035	1/8	0.280	2-1/2	01261	04216
0.040	1/8	0.320	2-1/2	01262	04217
0.045	1/8	0.360	2-1/2	01263	04218
0.047	1/8	0.376	2-1/2	01264	04219
0.050	1/8	0.400	2-1/2	01265	04220
0.055	1/8	0.440	2-1/2	01266	04221
0.060	1/8	0.480	2-1/2	01267	04222
0.062	1/8	0.496	2-1/2	01268	04223
0.065	1/8	0.520	2-1/2	01269	04224
0.070	1/8	0.560	2-1/2	01270	04225
0.075	1/8	0.600	2-1/2	01271	04226
0.078	1/8	0.624	2-1/2	01272	04227
0.080	1/8	0.640	2-1/2	01273	04228
0.085	1/8	0.680	2-1/2	01274	04229
0.090	1/8	0.720	2-1/2	01275	04230
0.093	1/8	0.744	2-1/2	01276	04231
0.095	1/8	0.760	2-1/2	01277	04232
0.100	1/8	0.800	2-1/2	01278	04233
0.105	1/8	0.840	2-1/2	01279	04234
0.110	1/8	0.880	2-1/2	01280	04235
0.115	1/8	0.920	2-1/2	01281	04236
0.120	1/8	0.960	2-1/2	01282	04237

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
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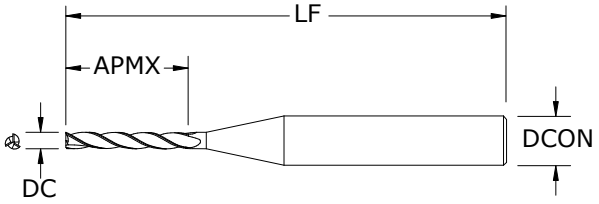
M3X • 12xD

M3X • 12xD

FRACTIONAL SERIES



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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.120	2-1/2	01283	04238
0.015	1/8	0.180	2-1/2	01284	04239
0.020	1/8	0.240	2-1/2	01285	04240
0.025	1/8	0.300	2-1/2	01286	04241
0.030	1/8	0.360	2-1/2	01287	04242
0.031	1/8	0.372	2-1/2	01288	04243
0.035	1/8	0.420	2-1/2	01289	04244
0.040	1/8	0.480	2-1/2	01290	04245
0.045	1/8	0.540	2-1/2	01291	04246
0.047	1/8	0.564	2-1/2	01292	04247
0.050	1/8	0.600	2-1/2	01293	04248
0.055	1/8	0.660	2-1/2	01294	04249
0.060	1/8	0.720	2-1/2	01295	04250
0.062	1/8	0.744	2-1/2	01296	04251
0.065	1/8	0.780	2-1/2	01297	04252
0.070	1/8	0.840	2-1/2	01298	04253
0.075	1/8	0.900	2-1/2	01299	04254
0.078	1/8	0.936	2-1/2	01300	04255
0.080	1/8	0.960	2-1/2	01301	04256
0.085	1/8	1.020	2-1/2	01302	04257
0.090	1/8	1.080	2-1/2	01303	04258
0.093	1/8	1.116	2-1/2	01304	04259
0.095	1/8	1.140	2-1/2	01305	04260
0.100	1/8	1.200	2-1/2	01306	04261
0.105	1/8	1.260	2-1/2	01307	04262
0.110	1/8	1.320	2-1/2	01308	04263
0.115	1/8	1.380	2-1/2	01309	04264
0.120	1/8	1.440	2-1/2	01310	04265

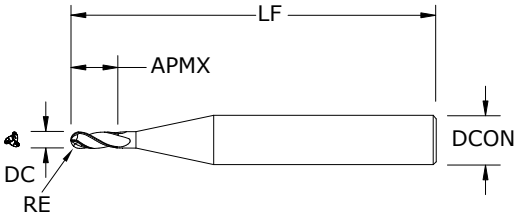
TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3B • 1.5xD

FRACTIONAL SERIES

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	1-1/2	01367	04322
0.011	1/8	0.017	1-1/2	01368	04323
0.012	1/8	0.018	1-1/2	01369	04324
0.013	1/8	0.020	1-1/2	01370	04325
0.014	1/8	0.021	1-1/2	01371	04326
0.015	1/8	0.023	1-1/2	01372	04327
0.016	1/8	0.024	1-1/2	01373	04328
0.017	1/8	0.026	1-1/2	01374	04329
0.018	1/8	0.027	1-1/2	01375	04330
0.019	1/8	0.029	1-1/2	01376	04331
0.020	1/8	0.030	1-1/2	01377	04332
0.021	1/8	0.032	1-1/2	01378	04333
0.022	1/8	0.033	1-1/2	01379	04334
0.023	1/8	0.035	1-1/2	01380	04335
0.024	1/8	0.036	1-1/2	01381	04336
0.025	1/8	0.038	1-1/2	01382	04337
0.026	1/8	0.039	1-1/2	01383	04338
0.027	1/8	0.041	1-1/2	01384	04339
0.028	1/8	0.042	1-1/2	01385	04340
0.029	1/8	0.044	1-1/2	01386	04341
0.030	1/8	0.045	1-1/2	01387	04342
0.031	1/8	0.047	1-1/2	01388	04343
0.032	1/8	0.048	1-1/2	01389	04344
0.033	1/8	0.050	1-1/2	01390	04345
0.034	1/8	0.051	1-1/2	01391	04346
0.035	1/8	0.053	1-1/2	01392	04347
0.036	1/8	0.054	1-1/2	01393	04348
0.037	1/8	0.056	1-1/2	01394	04349
0.038	1/8	0.057	1-1/2	01395	04350
0.039	1/8	0.059	1-1/2	01396	04351
0.040	1/8	0.060	1-1/2	01397	04352
0.041	1/8	0.062	1-1/2	01398	04353
0.042	1/8	0.063	1-1/2	01399	04354
0.043	1/8	0.065	1-1/2	01400	04355

RE = 1/2 Cutting Diameter (DC)

continued on next page

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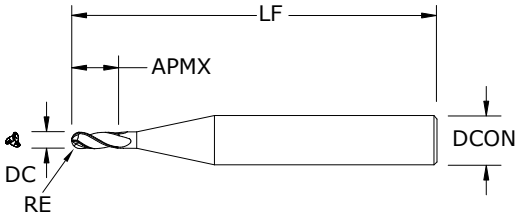
M3B • 1.5xD



M3B • 1.5xD
FRACTIONAL SERIES

continued

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.044	1/8	0.066	1-1/2	01401	04356
0.045	1/8	0.068	1-1/2	01402	04357
0.046	1/8	0.069	1-1/2	01403	04358
0.047	1/8	0.071	1-1/2	01404	04359
0.048	1/8	0.072	1-1/2	01405	04360
0.049	1/8	0.074	1-1/2	01406	04361
0.050	1/8	0.075	1-1/2	01407	04362
0.051	1/8	0.077	1-1/2	01408	04363
0.052	1/8	0.078	1-1/2	01409	04364
0.053	1/8	0.080	1-1/2	01410	04365
0.054	1/8	0.081	1-1/2	01411	04366
0.055	1/8	0.083	1-1/2	01412	04367
0.056	1/8	0.084	1-1/2	01413	04368
0.057	1/8	0.086	1-1/2	01414	04369
0.058	1/8	0.087	1-1/2	01415	04370
0.059	1/8	0.089	1-1/2	01416	04371
0.060	1/8	0.090	1-1/2	01417	04372
0.062	1/8	0.093	1-1/2	01418	04373
0.065	1/8	0.098	1-1/2	01419	04374
0.070	1/8	0.105	1-1/2	01420	04375
0.075	1/8	0.113	1-1/2	01421	04376
0.078	1/8	0.117	1-1/2	01422	04377
0.080	1/8	0.120	1-1/2	01423	04378
0.085	1/8	0.128	1-1/2	01424	04379
0.090	1/8	0.135	1-1/2	01425	04380
0.093	1/8	0.140	1-1/2	01426	04381
0.095	1/8	0.143	1-1/2	01427	04382
0.100	1/8	0.150	1-1/2	01428	04383
0.105	1/8	0.158	1-1/2	01429	04384
0.110	1/8	0.165	1-1/2	01430	04385
0.115	1/8	0.173	1-1/2	01431	04386
0.120	1/8	0.180	1-1/2	01432	04387

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

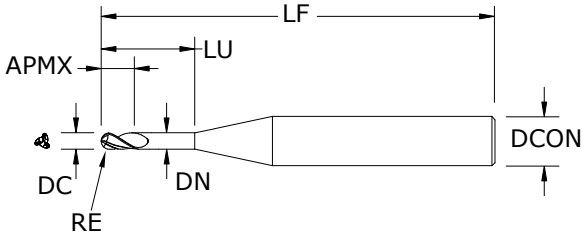
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3B • 1.5xD • 3xD Overall Reach



M3B • 1.5xD 3xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

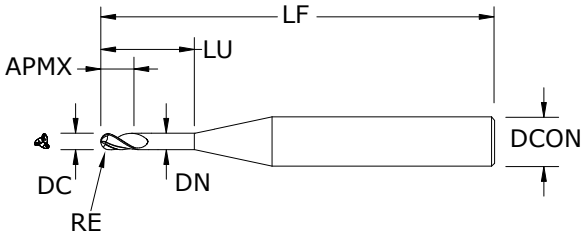
- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.030	0.009	2-1/2	09410	03805
0.015	1/8	0.023	0.045	0.014	2-1/2	09417	03806
0.020	1/8	0.030	0.060	0.018	2-1/2	09424	03807
0.025	1/8	0.038	0.075	0.023	2-1/2	09431	03808
0.030	1/8	0.045	0.090	0.028	2-1/2	09438	03809
0.031	1/8	0.047	0.093	0.029	2-1/2	09445	03810
0.035	1/8	0.053	0.105	0.032	2-1/2	09452	03811
0.040	1/8	0.060	0.120	0.037	2-1/2	09459	03812
0.045	1/8	0.068	0.135	0.042	2-1/2	09466	03813
0.047	1/8	0.071	0.141	0.044	2-1/2	09473	03814
0.050	1/8	0.075	0.150	0.047	2-1/2	09480	03815
0.055	1/8	0.083	0.165	0.051	2-1/2	09487	03816
0.060	1/8	0.090	0.180	0.056	2-1/2	09494	03817
0.062	1/8	0.093	0.186	0.058	2-1/2	09501	03818
0.065	1/8	0.098	0.195	0.061	2-1/2	09508	03819
0.070	1/8	0.105	0.210	0.065	2-1/2	09515	03820
0.075	1/8	0.113	0.225	0.070	2-1/2	09522	03821
0.078	1/8	0.117	0.234	0.073	2-1/2	09529	03822
0.080	1/8	0.120	0.240	0.075	2-1/2	09536	03823
0.085	1/8	0.128	0.255	0.079	2-1/2	09543	03824
0.090	1/8	0.135	0.270	0.084	2-1/2	09550	03825
0.093	1/8	0.140	0.279	0.087	2-1/2	09557	03826
0.095	1/8	0.143	0.285	0.089	2-1/2	09564	03827
0.100	1/8	0.150	0.300	0.094	2-1/2	09571	03828
0.110	1/8	0.165	0.330	0.103	2-1/2	09578	03829
0.115	1/8	0.173	0.345	0.108	2-1/2	09585	03830
0.120	1/8	0.180	0.360	0.112	2-1/2	09592	03831

RE = 1/2 Cutting Diameter (DC)

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M3B • 1.5xD • 5xD Overall Reach



M3B • 1.5xD 5xD

FRACTIONAL SERIES

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
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- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.050	0.009	2-1/2	09411	03832
0.015	1/8	0.023	0.075	0.014	2-1/2	09418	03833
0.020	1/8	0.030	0.100	0.018	2-1/2	09425	03834
0.025	1/8	0.038	0.125	0.023	2-1/2	09432	03835
0.030	1/8	0.045	0.150	0.028	2-1/2	09439	03836
0.031	1/8	0.047	0.155	0.029	2-1/2	09446	03837
0.035	1/8	0.053	0.175	0.032	2-1/2	09453	03838
0.040	1/8	0.060	0.200	0.037	2-1/2	09460	03839
0.045	1/8	0.068	0.225	0.042	2-1/2	09467	03840
0.047	1/8	0.071	0.235	0.044	2-1/2	09474	03841
0.050	1/8	0.075	0.250	0.047	2-1/2	09481	03842
0.055	1/8	0.083	0.275	0.051	2-1/2	09488	03843
0.060	1/8	0.090	0.300	0.056	2-1/2	09495	03844
0.062	1/8	0.093	0.310	0.058	2-1/2	09502	03845
0.065	1/8	0.098	0.325	0.061	2-1/2	09509	03846
0.070	1/8	0.105	0.350	0.065	2-1/2	09516	03847
0.075	1/8	0.113	0.375	0.070	2-1/2	09523	03848
0.078	1/8	0.117	0.390	0.073	2-1/2	09530	03849
0.080	1/8	0.120	0.400	0.075	2-1/2	09537	03850
0.085	1/8	0.128	0.425	0.079	2-1/2	09544	03851
0.090	1/8	0.135	0.450	0.084	2-1/2	09551	03852
0.093	1/8	0.140	0.465	0.087	2-1/2	09558	03853
0.095	1/8	0.143	0.475	0.089	2-1/2	09565	03854
0.100	1/8	0.150	0.500	0.094	2-1/2	09572	03855
0.110	1/8	0.165	0.550	0.103	2-1/2	09579	03856
0.115	1/8	0.173	0.575	0.108	2-1/2	09586	03857
0.120	1/8	0.180	0.600	0.112	2-1/2	09593	03858

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

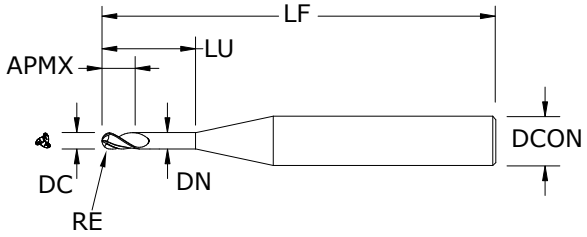
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3B • 1.5xD • 8xD Overall Reach



M3B • 1.5xD 8xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.080	0.009	2-1/2	09412	03859
0.015	1/8	0.023	0.120	0.014	2-1/2	09419	03860
0.020	1/8	0.030	0.160	0.018	2-1/2	09426	03861
0.025	1/8	0.038	0.200	0.023	2-1/2	09433	03862
0.030	1/8	0.045	0.240	0.028	2-1/2	09440	03863
0.031	1/8	0.047	0.248	0.029	2-1/2	09447	03864
0.035	1/8	0.053	0.280	0.032	2-1/2	09454	03865
0.040	1/8	0.060	0.320	0.037	2-1/2	09461	03866
0.045	1/8	0.068	0.360	0.042	2-1/2	09468	03867
0.047	1/8	0.071	0.376	0.044	2-1/2	09475	03868
0.050	1/8	0.075	0.400	0.047	2-1/2	09482	03869
0.055	1/8	0.083	0.440	0.051	2-1/2	09489	03870
0.060	1/8	0.090	0.480	0.056	2-1/2	09496	03871
0.062	1/8	0.093	0.496	0.058	2-1/2	09503	03872
0.065	1/8	0.098	0.520	0.061	2-1/2	09510	03873
0.070	1/8	0.105	0.560	0.065	2-1/2	09517	03874
0.075	1/8	0.113	0.600	0.070	2-1/2	09524	03875
0.078	1/8	0.117	0.624	0.073	2-1/2	09531	03876
0.080	1/8	0.120	0.640	0.075	2-1/2	09538	03877
0.085	1/8	0.128	0.680	0.079	2-1/2	09545	03878
0.090	1/8	0.135	0.720	0.084	2-1/2	09552	03879
0.093	1/8	0.140	0.744	0.087	2-1/2	09559	03880
0.095	1/8	0.143	0.760	0.089	2-1/2	09566	03881
0.100	1/8	0.150	0.800	0.094	2-1/2	09573	03882
0.110	1/8	0.165	0.880	0.103	2-1/2	09580	03883
0.115	1/8	0.173	0.920	0.108	2-1/2	09587	03884
0.120	1/8	0.180	0.960	0.112	2-1/2	09594	03885

RE = 1/2 Cutting Diameter (DC)

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
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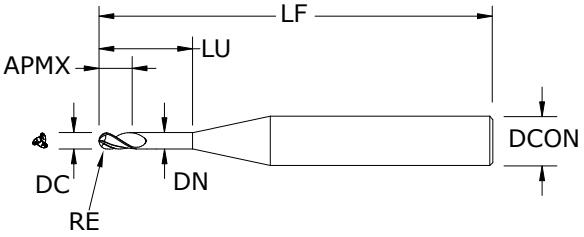
M3B • 1.5xD • 12xD Overall Reach



M3B • 1.5xD 12xD

FRACTIONAL SERIES

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inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.120	0.009	2-1/2	09406	03886
0.015	1/8	0.023	0.180	0.014	2-1/2	09413	03887
0.020	1/8	0.030	0.240	0.018	2-1/2	09420	03888
0.025	1/8	0.038	0.300	0.023	2-1/2	09427	03889
0.030	1/8	0.045	0.360	0.028	2-1/2	09434	03890
0.031	1/8	0.047	0.372	0.029	2-1/2	09441	03891
0.035	1/8	0.053	0.420	0.032	2-1/2	09448	03892
0.040	1/8	0.060	0.480	0.037	2-1/2	09455	03893
0.045	1/8	0.068	0.540	0.042	2-1/2	09462	03894
0.047	1/8	0.071	0.564	0.044	2-1/2	09469	03895
0.050	1/8	0.075	0.600	0.047	2-1/2	09476	03896
0.055	1/8	0.083	0.660	0.051	2-1/2	09483	03897
0.060	1/8	0.090	0.720	0.056	2-1/2	09490	03898
0.062	1/8	0.093	0.744	0.058	2-1/2	09497	03899
0.065	1/8	0.098	0.780	0.061	2-1/2	09504	03900
0.070	1/8	0.105	0.840	0.065	2-1/2	09511	03901
0.075	1/8	0.113	0.900	0.070	2-1/2	09518	03902
0.078	1/8	0.117	0.936	0.073	2-1/2	09525	03903
0.080	1/8	0.120	0.960	0.075	2-1/2	09532	03904
0.085	1/8	0.128	1.020	0.079	2-1/2	09539	03905
0.090	1/8	0.135	1.080	0.084	2-1/2	09546	03906
0.093	1/8	0.140	1.116	0.087	2-1/2	09553	03907
0.095	1/8	0.143	1.140	0.089	2-1/2	09560	03908
0.100	1/8	0.150	1.200	0.094	2-1/2	09567	03909
0.110	1/8	0.165	1.320	0.103	2-1/2	09574	03910
0.115	1/8	0.173	1.380	0.108	2-1/2	09581	03911
0.120	1/8	0.180	1.440	0.112	2-1/2	09588	03912

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

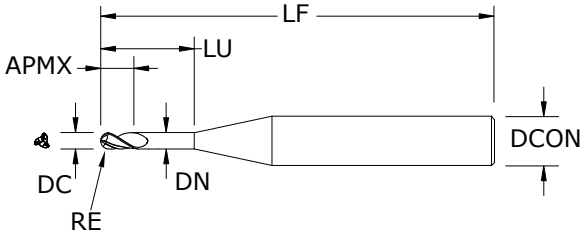
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3B • 1.5xD • 15xD Overall Reach



M3B • 1.5xD 15xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.150	0.009	2-1/2	09407	03913
0.015	1/8	0.023	0.225	0.014	2-1/2	09414	03914
0.020	1/8	0.030	0.300	0.018	2-1/2	09421	03915
0.025	1/8	0.038	0.375	0.023	2-1/2	09428	03916
0.030	1/8	0.045	0.450	0.028	2-1/2	09435	03917
0.031	1/8	0.047	0.465	0.029	2-1/2	09442	03918
0.035	1/8	0.053	0.525	0.032	2-1/2	09449	03919
0.040	1/8	0.060	0.600	0.037	2-1/2	09456	03920
0.045	1/8	0.068	0.675	0.042	2-1/2	09463	03921
0.047	1/8	0.071	0.705	0.044	2-1/2	09470	03922
0.050	1/8	0.075	0.750	0.047	2-1/2	09477	03923
0.055	1/8	0.083	0.825	0.051	2-1/2	09484	03924
0.060	1/8	0.090	0.900	0.056	2-1/2	09491	03925
0.062	1/8	0.093	0.930	0.058	2-1/2	09498	03926
0.065	1/8	0.098	0.975	0.061	2-1/2	09505	03927
0.070	1/8	0.105	1.050	0.065	2-1/2	09512	03928
0.075	1/8	0.113	1.125	0.070	2-1/2	09519	03929
0.078	1/8	0.117	1.170	0.073	2-1/2	09526	03930
0.080	1/8	0.120	1.200	0.075	2-1/2	09533	03931
0.085	1/8	0.128	1.275	0.079	2-1/2	09540	03932
0.090	1/8	0.135	1.350	0.084	2-1/2	09547	03933
0.093	1/8	0.140	1.395	0.087	3	09554	03934
0.095	1/8	0.143	1.425	0.089	3	09561	03935
0.100	1/8	0.150	1.500	0.094	3	09568	03936
0.110	1/8	0.165	1.650	0.103	3	09575	03937
0.115	1/8	0.173	1.725	0.108	3	09582	03938
0.120	1/8	0.180	1.800	0.112	3	09589	03939

RE = 1/2 Cutting Diameter (DC)

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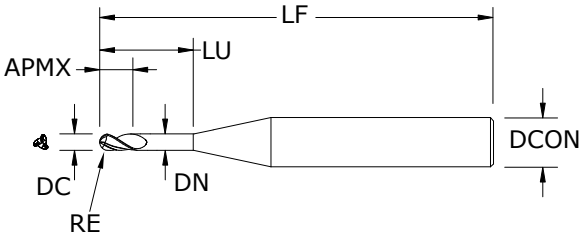
M3B • 1.5xD • 20xD Overall Reach

M3B • 1.5xD 20xD

FRACTIONAL SERIES



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inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.200	0.009	2-1/2	09408	03940
0.015	1/8	0.023	0.300	0.014	2-1/2	09415	03941
0.020	1/8	0.030	0.400	0.018	2-1/2	09422	03942
0.025	1/8	0.038	0.500	0.023	2-1/2	09429	03943
0.030	1/8	0.045	0.600	0.028	2-1/2	09436	03944
0.031	1/8	0.047	0.620	0.029	2-1/2	09443	03945
0.035	1/8	0.053	0.700	0.032	2-1/2	09450	03946
0.040	1/8	0.060	0.800	0.037	2-1/2	09457	03947
0.045	1/8	0.068	0.900	0.042	2-1/2	09464	03948
0.047	1/8	0.071	0.940	0.044	2-1/2	09471	03949
0.050	1/8	0.075	1.000	0.047	2-1/2	09478	03950
0.055	1/8	0.083	1.100	0.051	2-1/2	09485	03951
0.060	1/8	0.090	1.200	0.056	2-1/2	09492	03952
0.062	1/8	0.093	1.240	0.058	2-1/2	09499	03953
0.065	1/8	0.098	1.300	0.061	3	09506	03954
0.070	1/8	0.105	1.400	0.065	3	09513	03955
0.075	1/8	0.113	1.500	0.070	3	09520	03956
0.078	1/8	0.117	1.560	0.073	3	09527	03957
0.080	1/8	0.120	1.600	0.075	3	09534	03958
0.085	1/8	0.128	1.700	0.079	3	09541	03959
0.090	1/8	0.135	1.800	0.084	3	09548	03960
0.093	1/8	0.140	1.860	0.087	3	09555	03961
0.095	1/8	0.143	1.900	0.089	3	09562	03962
0.100	1/8	0.150	2.000	0.094	4	09569	03963
0.110	1/8	0.165	2.200	0.103	4	09576	03964
0.115	1/8	0.173	2.300	0.108	4	09583	03965
0.120	1/8	0.180	2.400	0.112	4	09590	03966

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

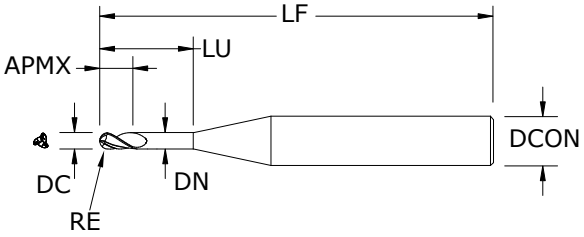
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3B • 1.5xD • 25xD Overall Reach



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
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M3B • 1.5xD 25xD

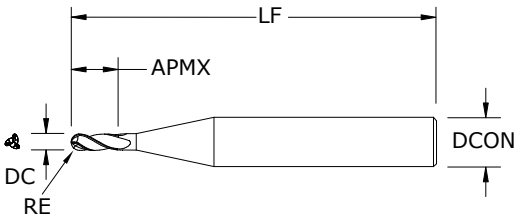
FRACTIONAL SERIES

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	0.250	0.009	2-1/2	09409	03967
0.015	1/8	0.023	0.375	0.014	2-1/2	09416	03968
0.020	1/8	0.030	0.500	0.018	2-1/2	09423	03969
0.025	1/8	0.038	0.625	0.023	2-1/2	09430	03970
0.030	1/8	0.045	0.750	0.028	2-1/2	09437	03971
0.031	1/8	0.047	0.775	0.029	2-1/2	09444	03972
0.035	1/8	0.053	0.875	0.032	2-1/2	09451	03973
0.040	1/8	0.060	1.000	0.037	2-1/2	09458	03974
0.045	1/8	0.068	1.125	0.042	2-1/2	09465	03975
0.047	1/8	0.071	1.175	0.044	2-1/2	09472	03976
0.050	1/8	0.075	1.250	0.047	2-1/2	09479	03977
0.055	1/8	0.083	1.375	0.051	3	09486	03978
0.060	1/8	0.090	1.500	0.056	3	09493	03979
0.062	1/8	0.093	1.550	0.058	3	09500	03980
0.065	1/8	0.098	1.625	0.061	3	09507	03981
0.070	1/8	0.105	1.750	0.065	3	09514	03982
0.075	1/8	0.113	1.875	0.070	3	09521	03983
0.078	1/8	0.117	1.950	0.073	4	09528	03984
0.080	1/8	0.120	2.000	0.075	4	09535	03985
0.085	1/8	0.128	2.125	0.079	4	09542	03986
0.090	1/8	0.135	2.250	0.084	4	09549	03987
0.093	1/8	0.140	2.325	0.087	4	09556	03988
0.095	1/8	0.143	2.375	0.089	4	09563	03989
0.100	1/8	0.150	2.500	0.094	4	09570	03990
0.110	1/8	0.165	2.750	0.103	4	09577	03991
0.115	1/8	0.173	2.875	0.108	4	09584	03992
0.120	1/8	0.180	3.000	0.112	4	09591	03993

RE = 1/2 Cutting Diameter (DC)

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M3B • 3xD



M3B • 3xD
FRACTIONAL SERIES

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	1-1/2	01433	04388
0.011	1/8	0.033	1-1/2	01434	04389
0.012	1/8	0.036	1-1/2	01435	04390
0.013	1/8	0.039	1-1/2	01436	04391
0.014	1/8	0.042	1-1/2	01437	04392
0.015	1/8	0.045	1-1/2	01438	04393
0.016	1/8	0.048	1-1/2	01439	04394
0.017	1/8	0.051	1-1/2	01440	04395
0.018	1/8	0.054	1-1/2	01441	04396
0.019	1/8	0.057	1-1/2	01442	04397
0.020	1/8	0.060	1-1/2	01443	04398
0.021	1/8	0.063	1-1/2	01444	04399
0.022	1/8	0.066	1-1/2	01445	04400
0.023	1/8	0.069	1-1/2	01446	04401
0.024	1/8	0.072	1-1/2	01447	04402
0.025	1/8	0.075	1-1/2	01448	04403
0.026	1/8	0.078	1-1/2	01449	04404
0.027	1/8	0.081	1-1/2	01450	04405
0.028	1/8	0.084	1-1/2	01451	04406
0.029	1/8	0.087	1-1/2	01452	04407
0.030	1/8	0.090	1-1/2	01453	04408
0.031	1/8	0.093	1-1/2	01454	04409
0.032	1/8	0.096	1-1/2	01455	04410
0.033	1/8	0.099	1-1/2	01456	04411
0.034	1/8	0.102	1-1/2	01457	04412
0.035	1/8	0.105	1-1/2	01458	04413
0.036	1/8	0.108	1-1/2	01459	04414
0.037	1/8	0.111	1-1/2	01460	04415
0.038	1/8	0.114	1-1/2	01461	04416
0.039	1/8	0.117	1-1/2	01462	04417
0.040	1/8	0.120	1-1/2	01463	04418
0.041	1/8	0.123	1-1/2	01464	04419
0.042	1/8	0.126	1-1/2	01465	04420
0.043	1/8	0.129	1-1/2	01466	04421

RE = 1/2 Cutting Diameter (DC)

continued on next page

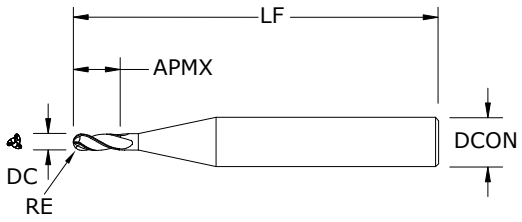
TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
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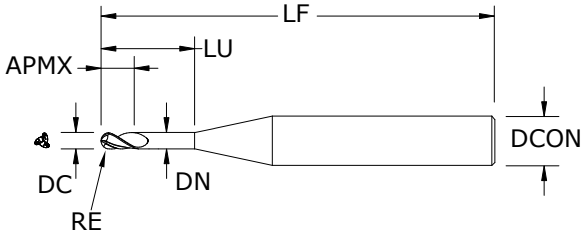
M3B • 3xD
FRACTIONAL SERIES

continued

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.044	1/8	0.132	1-1/2	01467	04422
0.045	1/8	0.135	1-1/2	01468	04423
0.046	1/8	0.138	1-1/2	01469	04424
0.047	1/8	0.141	1-1/2	01470	04425
0.048	1/8	0.144	1-1/2	01471	04426
0.049	1/8	0.147	1-1/2	01472	04427
0.050	1/8	0.150	1-1/2	01473	04428
0.051	1/8	0.153	1-1/2	01474	04429
0.052	1/8	0.156	1-1/2	01475	04430
0.053	1/8	0.159	1-1/2	01476	04431
0.054	1/8	0.162	1-1/2	01477	04432
0.055	1/8	0.165	1-1/2	01478	04433
0.056	1/8	0.168	1-1/2	01479	04434
0.057	1/8	0.171	1-1/2	01480	04435
0.058	1/8	0.174	1-1/2	01481	04436
0.059	1/8	0.177	1-1/2	01482	04437
0.060	1/8	0.180	1-1/2	01483	04438
0.062	1/8	0.186	1-1/2	01484	04439
0.065	1/8	0.195	1-1/2	01485	04440
0.070	1/8	0.210	1-1/2	01486	04441
0.075	1/8	0.225	1-1/2	01487	04442
0.078	1/8	0.234	1-1/2	01488	04443
0.080	1/8	0.240	1-1/2	01489	04444
0.085	1/8	0.255	1-1/2	01490	04445
0.090	1/8	0.270	1-1/2	01491	04446
0.093	1/8	0.279	1-1/2	01492	04447
0.095	1/8	0.285	1-1/2	01493	04448
0.100	1/8	0.300	1-1/2	01494	04449
0.105	1/8	0.315	1-1/2	01495	04450
0.110	1/8	0.330	1-1/2	01496	04451
0.115	1/8	0.345	1-1/2	01497	04452
0.120	1/8	0.360	1-1/2	01498	04453

RE = 1/2 Cutting Diameter (DC)

M3B • 3xD • 8xD Overall Reach



M3B • 3xD 8xD

FRACTIONAL SERIES

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inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.080	0.009	1-1/2	01583	04538
0.015	1/8	0.045	0.120	0.014	1-1/2	01584	04539
0.020	1/8	0.060	0.160	0.019	1-1/2	01585	04540
0.025	1/8	0.075	0.200	0.024	1-1/2	01586	04541
0.030	1/8	0.090	0.240	0.028	1-1/2	01587	04542
0.031	1/8	0.093	0.248	0.029	1-1/2	01588	04543
0.035	1/8	0.105	0.280	0.033	1-1/2	01589	04544
0.040	1/8	0.120	0.320	0.038	1-1/2	01590	04545
0.045	1/8	0.135	0.360	0.042	2	01591	04546
0.047	1/8	0.141	0.376	0.044	2	01592	04547
0.050	1/8	0.150	0.400	0.047	2	01593	04548
0.055	1/8	0.165	0.440	0.052	2	01594	04549
0.060	1/8	0.180	0.480	0.056	2	01595	04550
0.062	1/8	0.186	0.496	0.058	2	01596	04551
0.065	1/8	0.195	0.520	0.061	2	01597	04552
0.070	1/8	0.210	0.560	0.066	2	01598	04553
0.075	1/8	0.225	0.600	0.071	2	01599	04554
0.078	1/8	0.234	0.624	0.073	2	01600	04555
0.080	1/8	0.240	0.640	0.075	2	01601	04556
0.085	1/8	0.255	0.680	0.080	2	01602	04557
0.090	1/8	0.270	0.720	0.085	2	01603	04558
0.093	1/8	0.279	0.744	0.087	2	01604	04559
0.095	1/8	0.285	0.760	0.089	2	01605	04560
0.100	1/8	0.300	0.800	0.094	2	01606	04561
0.105	1/8	0.315	0.840	0.099	2	01607	04562
0.110	1/8	0.330	0.880	0.103	2	01608	04563
0.115	1/8	0.345	0.920	0.108	2	01609	04564
0.120	1/8	0.360	0.960	0.113	2	01610	04565

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

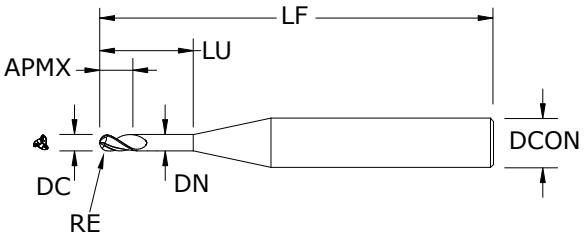
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3B • 3xD • 12xD Overall Reach



M3B • 3xD 12xD

FRACTIONAL SERIES

TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.120	0.009	1-1/2	01611	04566
0.015	1/8	0.045	0.180	0.014	1-1/2	01612	04567
0.020	1/8	0.060	0.240	0.019	1-1/2	01613	04568
0.025	1/8	0.075	0.300	0.024	1-1/2	01614	04569
0.030	1/8	0.090	0.360	0.028	2	01615	04570
0.031	1/8	0.093	0.372	0.029	2	01616	04571
0.035	1/8	0.105	0.420	0.033	2	01617	04572
0.040	1/8	0.120	0.480	0.038	2	01618	04573
0.045	1/8	0.135	0.540	0.042	2	01619	04574
0.047	1/8	0.141	0.564	0.044	2	01620	04575
0.050	1/8	0.150	0.600	0.047	2	01621	04576
0.055	1/8	0.165	0.660	0.052	2	01622	04577
0.060	1/8	0.180	0.720	0.056	2	01623	04578
0.062	1/8	0.186	0.744	0.058	2	01624	04579
0.065	1/8	0.195	0.780	0.061	2	01625	04580
0.070	1/8	0.210	0.840	0.066	2	01626	04581
0.075	1/8	0.225	0.900	0.071	2	01627	04582
0.078	1/8	0.234	0.936	0.073	2-1/2	01628	04583
0.080	1/8	0.240	0.960	0.075	2-1/2	01629	04584
0.085	1/8	0.255	1.020	0.080	2-1/2	01630	04585
0.090	1/8	0.270	1.080	0.085	2-1/2	01631	04586
0.093	1/8	0.279	1.116	0.087	2-1/2	01632	04587
0.095	1/8	0.285	1.140	0.089	2-1/2	01633	04588
0.100	1/8	0.300	1.200	0.094	2-1/2	01634	04589
0.105	1/8	0.315	1.260	0.099	2-1/2	01635	04590
0.110	1/8	0.330	1.320	0.103	2-1/2	01636	04591
0.115	1/8	0.345	1.380	0.108	2-1/2	01637	04592
0.120	1/8	0.360	1.440	0.113	2-1/2	01638	04593

RE = 1/2 Cutting Diameter (DC)

- Three flute design features improved chip space over four flutes and increased strength and feed capability over two flutes
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
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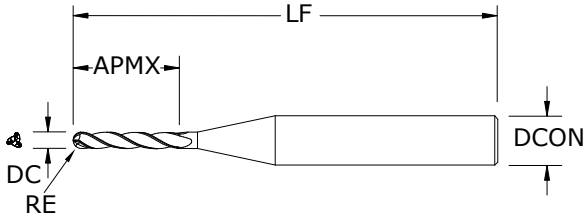
M3LB • 5xD



M3LB • 5xD
FRACTIONAL SERIES

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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.050	2-1/2	01499	04454
0.015	1/8	0.075	2-1/2	01500	04455
0.020	1/8	0.100	2-1/2	01501	04456
0.025	1/8	0.125	2-1/2	01502	04457
0.030	1/8	0.150	2-1/2	01503	04458
0.031	1/8	0.155	2-1/2	01504	04459
0.035	1/8	0.175	2-1/2	01505	04460
0.040	1/8	0.200	2-1/2	01506	04461
0.045	1/8	0.225	2-1/2	01507	04462
0.047	1/8	0.235	2-1/2	01508	04463
0.050	1/8	0.250	2-1/2	01509	04464
0.055	1/8	0.275	2-1/2	01510	04465
0.060	1/8	0.300	2-1/2	01511	04466
0.062	1/8	0.310	2-1/2	01512	04467
0.065	1/8	0.325	2-1/2	01513	04468
0.070	1/8	0.350	2-1/2	01514	04469
0.075	1/8	0.375	2-1/2	01515	04470
0.078	1/8	0.390	2-1/2	01516	04471
0.080	1/8	0.400	2-1/2	01517	04472
0.085	1/8	0.425	2-1/2	01518	04473
0.090	1/8	0.450	2-1/2	01519	04474
0.093	1/8	0.465	2-1/2	01520	04475
0.095	1/8	0.475	2-1/2	01521	04476
0.100	1/8	0.500	2-1/2	01522	04477
0.105	1/8	0.525	2-1/2	01523	04478
0.110	1/8	0.550	2-1/2	01524	04479
0.115	1/8	0.575	2-1/2	01525	04480
0.120	1/8	0.600	2-1/2	01526	04481

RE = 1/2 Cutting Diameter (DC)

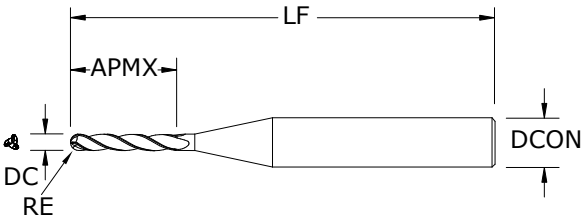
TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M3EB • 8xD

FRACTIONAL SERIES

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.080	2-1/2	01527	04482
0.015	1/8	0.120	2-1/2	01528	04483
0.020	1/8	0.160	2-1/2	01529	04484
0.025	1/8	0.200	2-1/2	01530	04485
0.030	1/8	0.240	2-1/2	01531	04486
0.031	1/8	0.248	2-1/2	01532	04487
0.035	1/8	0.280	2-1/2	01533	04488
0.040	1/8	0.320	2-1/2	01534	04489
0.045	1/8	0.360	2-1/2	01535	04490
0.047	1/8	0.376	2-1/2	01536	04491
0.050	1/8	0.400	2-1/2	01537	04492
0.055	1/8	0.440	2-1/2	01538	04493
0.060	1/8	0.480	2-1/2	01539	04494
0.062	1/8	0.496	2-1/2	01540	04495
0.065	1/8	0.520	2-1/2	01541	04496
0.070	1/8	0.560	2-1/2	01542	04497
0.075	1/8	0.600	2-1/2	01543	04498
0.078	1/8	0.624	2-1/2	01544	04499
0.080	1/8	0.640	2-1/2	01545	04500
0.085	1/8	0.680	2-1/2	01546	04501
0.090	1/8	0.720	2-1/2	01547	04502
0.093	1/8	0.744	2-1/2	01548	04503
0.095	1/8	0.760	2-1/2	01549	04504
0.100	1/8	0.800	2-1/2	01550	04505
0.105	1/8	0.840	2-1/2	01551	04506
0.110	1/8	0.880	2-1/2	01552	04507
0.115	1/8	0.920	2-1/2	01553	04508
0.120	1/8	0.960	2-1/2	01554	04509

RE = 1/2 Cutting Diameter (DC)

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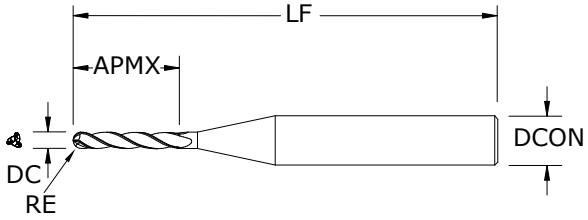
M3XB • 12xD



M3XB • 12xD
FRACTIONAL SERIES

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- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.120	2-1/2	01555	04510
0.015	1/8	0.180	2-1/2	01556	04511
0.020	1/8	0.240	2-1/2	01557	04512
0.025	1/8	0.300	2-1/2	01558	04513
0.030	1/8	0.360	2-1/2	01559	04514
0.031	1/8	0.372	2-1/2	01560	04515
0.035	1/8	0.420	2-1/2	01561	04516
0.040	1/8	0.480	2-1/2	01562	04517
0.045	1/8	0.540	2-1/2	01563	04518
0.047	1/8	0.564	2-1/2	01564	04519
0.050	1/8	0.600	2-1/2	01565	04520
0.055	1/8	0.660	2-1/2	01566	04521
0.060	1/8	0.720	2-1/2	01567	04522
0.062	1/8	0.744	2-1/2	01568	04523
0.065	1/8	0.780	2-1/2	01569	04524
0.070	1/8	0.840	2-1/2	01570	04525
0.075	1/8	0.900	2-1/2	01571	04526
0.078	1/8	0.936	2-1/2	01572	04527
0.080	1/8	0.960	2-1/2	01573	04528
0.085	1/8	1.020	2-1/2	01574	04529
0.090	1/8	1.080	2-1/2	01575	04530
0.093	1/8	1.116	2-1/2	01576	04531
0.095	1/8	1.140	2-1/2	01577	04532
0.100	1/8	1.200	2-1/2	01578	04533
0.105	1/8	1.260	2-1/2	01579	04534
0.110	1/8	1.320	2-1/2	01580	04535
0.115	1/8	1.380	2-1/2	01581	04536
0.120	1/8	1.440	2-1/2	01582	04537

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

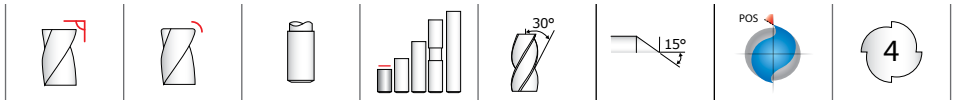
.010–.120 DIAMETER

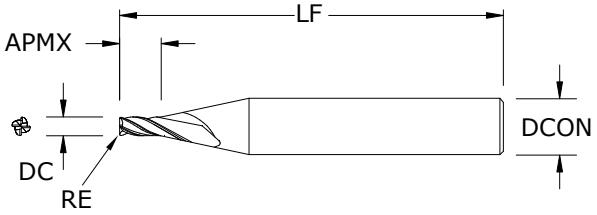
DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4 • M4CR • 1.5xD





M4 • M4CR 1.5xD

FRACTIONAL SERIES

TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000 / –0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.005	1/8	0.008	1-1/2	–	00372	02238
0.006	1/8	0.009	1-1/2	–	00373	02239
0.007	1/8	0.011	1-1/2	–	00374	02240
0.008	1/8	0.012	1-1/2	–	00375	02241
0.009	1/8	0.014	1-1/2	–	00376	02242
0.010	1/8	0.015	1-1/2	–	00377	02243
0.011	1/8	0.017	1-1/2	–	00378	02244
0.012	1/8	0.018	1-1/2	–	00379	02245
0.013	1/8	0.020	1-1/2	–	00380	02246
0.014	1/8	0.021	1-1/2	–	00381	02247
0.015	1/8	0.023	1-1/2	–	00382	02248
0.015	1/8	0.023	1-1/2	0.003	08986	09126
0.016	1/8	0.024	1-1/2	–	00383	02249
0.017	1/8	0.026	1-1/2	–	00384	02250
0.018	1/8	0.027	1-1/2	–	00385	02251
0.019	1/8	0.029	1-1/2	–	00386	02252
0.020	1/8	0.030	1-1/2	–	00387	02253
0.020	1/8	0.030	1-1/2	0.003	08988	09128
0.020	1/8	0.030	1-1/2	0.005	04024	04025
0.021	1/8	0.032	1-1/2	–	00388	02254
0.022	1/8	0.033	1-1/2	–	00389	02255
0.023	1/8	0.035	1-1/2	–	00390	02256
0.024	1/8	0.036	1-1/2	–	00391	02257
0.025	1/8	0.038	1-1/2	–	00392	02258
0.025	1/8	0.038	1-1/2	0.005	04026	04027
0.025	1/8	0.038	1-1/2	0.010	08990	09130
0.026	1/8	0.039	1-1/2	–	00393	02259
0.027	1/8	0.041	1-1/2	–	00394	02260
0.028	1/8	0.042	1-1/2	–	00395	02261
0.029	1/8	0.044	1-1/2	–	00396	02262
0.030	1/8	0.045	1-1/2	–	00397	02263
0.030	1/8	0.045	1-1/2	0.010	08992	09132
0.031	1/8	0.047	1-1/2	–	00398	02264
0.032	1/8	0.048	1-1/2	–	00399	02265
0.033	1/8	0.050	1-1/2	–	00400	02266
0.034	1/8	0.051	1-1/2	–	00401	02267

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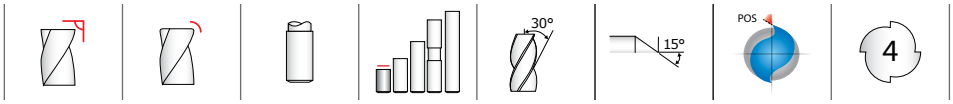
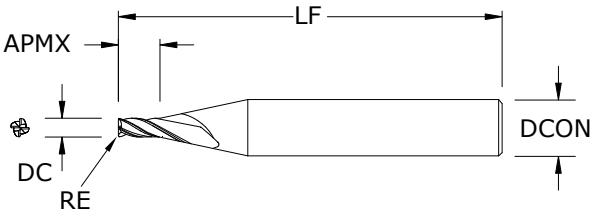
- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Enhanced corner geometry with tight tolerance corner radii
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M4 • M4CR • 1.5xD



M4 • M4CR 1.5xD

FRACTIONAL SERIES



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inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.035	1/8	0.053	1-1/2	–	00402	02268
0.035	1/8	0.053	1-1/2	0.005	08994	09134
0.035	1/8	0.053	1-1/2	0.010	08996	09136
0.036	1/8	0.054	1-1/2	–	00403	02269
0.037	1/8	0.056	1-1/2	–	00404	02270
0.038	1/8	0.057	1-1/2	–	00405	02271
0.039	1/8	0.059	1-1/2	–	00406	02272
0.040	1/8	0.060	1-1/2	–	00407	02273
0.040	1/8	0.060	1-1/2	0.005	08998	09138
0.040	1/8	0.060	1-1/2	0.010	09000	09140
0.041	1/8	0.062	1-1/2	–	00408	02402
0.042	1/8	0.063	1-1/2	–	00409	02403
0.043	1/8	0.065	1-1/2	–	00410	02404
0.044	1/8	0.066	1-1/2	–	00411	02405
0.045	1/8	0.068	1-1/2	–	00412	02406
0.045	1/8	0.068	1-1/2	0.005	09002	09142
0.045	1/8	0.068	1-1/2	0.010	09004	09144
0.046	1/8	0.069	1-1/2	–	00413	02407
0.047	1/8	0.071	1-1/2	–	00414	02408
0.048	1/8	0.072	1-1/2	–	00415	02409
0.049	1/8	0.074	1-1/2	–	00416	02410
0.050	1/8	0.075	1-1/2	–	00417	02411
0.050	1/8	0.075	1-1/2	0.005	09006	09146
0.050	1/8	0.075	1-1/2	0.010	09008	09148
0.050	1/8	0.075	1-1/2	0.015	09010	09150
0.051	1/8	0.077	1-1/2	–	00418	02412
0.052	1/8	0.078	1-1/2	–	00419	02413
0.053	1/8	0.080	1-1/2	–	00420	02414
0.054	1/8	0.081	1-1/2	–	00421	02415
0.055	1/8	0.083	1-1/2	–	00422	02416
0.055	1/8	0.083	1-1/2	0.005	09012	09152
0.055	1/8	0.083	1-1/2	0.010	09014	09154
0.055	1/8	0.083	1-1/2	0.015	09016	09156
0.056	1/8	0.084	1-1/2	–	00423	02417

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TOLERANCES (inch)

.005–.120 DIAMETER

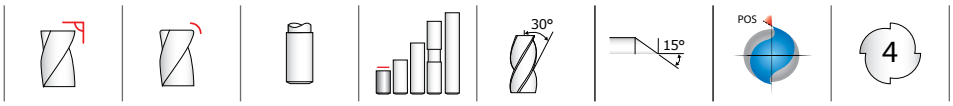
DC = +0.000/–0.001

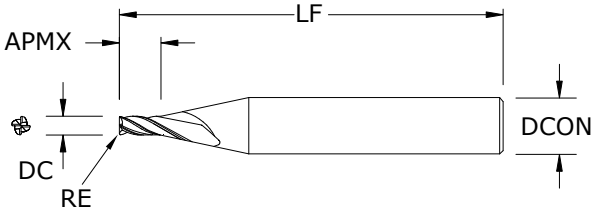
DCON = h_6

RE = +0.0000 / –0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4 • M4CR • 1.5xD





M4 • M4CR 1.5xD

FRACTIONAL SERIES

TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000 / –0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.057	1/8	0.086	1-1/2	–	00424	02418
0.058	1/8	0.087	1-1/2	–	00425	02419
0.059	1/8	0.089	1-1/2	–	00426	02420
0.060	1/8	0.090	1-1/2	–	00427	02421
0.060	1/8	0.090	1-1/2	0.005	09018	09158
0.060	1/8	0.090	1-1/2	0.010	09020	09160
0.060	1/8	0.090	1-1/2	0.015	09022	09162
0.062	1/8	0.093	1-1/2	–	00428	02422
0.065	1/8	0.098	1-1/2	–	00429	02423
0.065	1/8	0.098	1-1/2	0.005	09024	09164
0.065	1/8	0.098	1-1/2	0.010	09026	09166
0.065	1/8	0.098	1-1/2	0.015	09028	09168
0.070	1/8	0.105	1-1/2	–	00430	02424
0.070	1/8	0.105	1-1/2	0.005	09030	09170
0.070	1/8	0.105	1-1/2	0.010	09032	09172
0.070	1/8	0.105	1-1/2	0.015	09034	09174
0.075	1/8	0.113	1-1/2	–	04014	04012
0.075	1/8	0.113	1-1/2	0.005	09036	09176
0.075	1/8	0.113	1-1/2	0.010	09038	09178
0.075	1/8	0.113	1-1/2	0.015	09040	09180
0.075	1/8	0.113	1-1/2	0.020	09042	09182
0.078	1/8	0.117	1-1/2	–	00431	02425
0.080	1/8	0.120	1-1/2	–	00432	02426
0.080	1/8	0.120	1-1/2	0.005	09044	09184
0.080	1/8	0.120	1-1/2	0.010	09046	09186
0.080	1/8	0.120	1-1/2	0.015	09048	09188
0.080	1/8	0.120	1-1/2	0.020	09050	09190
0.085	1/8	0.128	1-1/2	–	00433	02427
0.085	1/8	0.128	1-1/2	0.005	09052	09192
0.085	1/8	0.128	1-1/2	0.010	09054	09194
0.085	1/8	0.128	1-1/2	0.015	09056	09196
0.085	1/8	0.128	1-1/2	0.020	09058	09198
0.090	1/8	0.135	1-1/2	–	00434	02428
0.090	1/8	0.135	1-1/2	0.005	09060	09200

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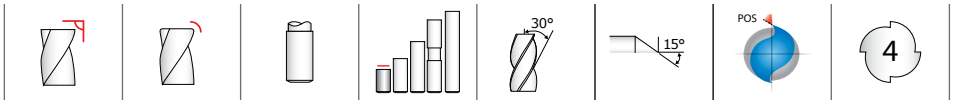
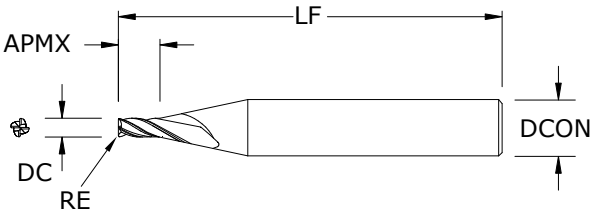
M4 • M4CR • 1.5xD



M4 • M4CR 1.5xD

FRACTIONAL SERIES



TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000 / –0.0005

STEELS

STAINLESS STEELS

CAST IRON

NON-FERROUS

HIGH TEMP ALLOYS

continued

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.090	1/8	0.135	1-1/2	0.010	09062	09202
0.090	1/8	0.135	1-1/2	0.015	09064	09204
0.090	1/8	0.135	1-1/2	0.020	09066	09206
0.093	1/8	0.140	1-1/2	–	00435	02429
0.095	1/8	0.143	1-1/2	–	00436	02430
0.095	1/8	0.143	1-1/2	0.005	09068	09208
0.095	1/8	0.143	1-1/2	0.010	09070	09210
0.095	1/8	0.143	1-1/2	0.015	09072	09212
0.095	1/8	0.143	1-1/2	0.020	09074	09214
0.100	1/8	0.150	1-1/2	–	00437	02431
0.100	1/8	0.150	1-1/2	0.005	09076	09216
0.100	1/8	0.150	1-1/2	0.010	09078	09218
0.100	1/8	0.150	1-1/2	0.015	09080	09220
0.100	1/8	0.150	1-1/2	0.020	09082	09222
0.100	1/8	0.150	1-1/2	0.030	09084	09224
0.105	1/8	0.158	1-1/2	–	00438	02432
0.105	1/8	0.158	1-1/2	0.005	09086	09226
0.105	1/8	0.158	1-1/2	0.010	09088	09228
0.105	1/8	0.158	1-1/2	0.015	09090	09230
0.105	1/8	0.158	1-1/2	0.020	09092	09232
0.105	1/8	0.158	1-1/2	0.030	09094	09234
0.110	1/8	0.165	1-1/2	–	00439	02433
0.110	1/8	0.165	1-1/2	0.005	09096	09236
0.110	1/8	0.165	1-1/2	0.010	09098	09238
0.110	1/8	0.165	1-1/2	0.015	09100	09240
0.110	1/8	0.165	1-1/2	0.020	09102	09242
0.110	1/8	0.165	1-1/2	0.030	09104	09244
0.115	1/8	0.173	1-1/2	–	00440	02434
0.115	1/8	0.173	1-1/2	0.005	09106	09246
0.115	1/8	0.173	1-1/2	0.010	09108	09248
0.115	1/8	0.173	1-1/2	0.015	09110	09250
0.115	1/8	0.173	1-1/2	0.020	09112	09252
0.115	1/8	0.173	1-1/2	0.030	09114	09254
0.120	1/8	0.180	1-1/2	–	00441	02435

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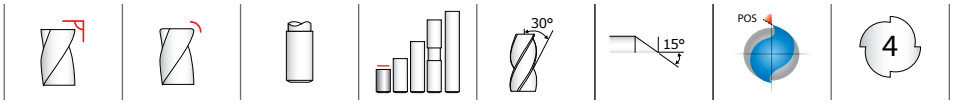
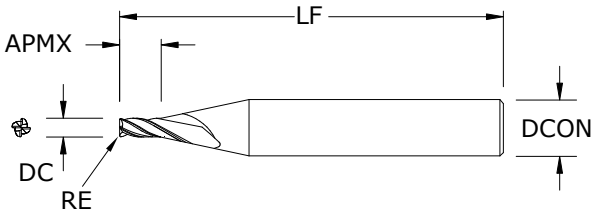




M4 • M4CR 1.5xD
FRACTIONAL SERIES

TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

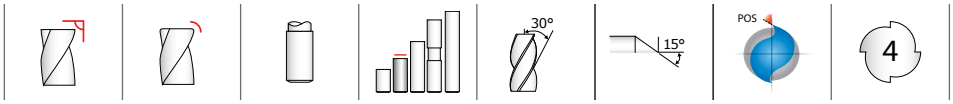
RE = +0.0000 / –0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.120	1/8	0.180	1-1/2	0.005	09116	09256
0.120	1/8	0.180	1-1/2	0.010	09118	09258
0.120	1/8	0.180	1-1/2	0.015	09120	09260
0.120	1/8	0.180	1-1/2	0.020	09122	09262
0.120	1/8	0.180	1-1/2	0.030	09124	09264

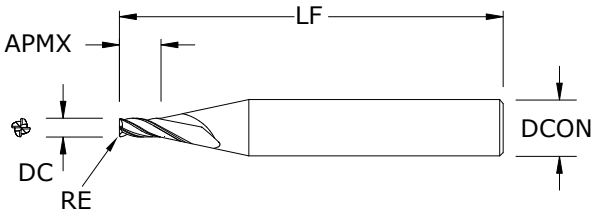
continued

M4 • M4CR • 3xD



M4 • M4CR • 3xD

FRACTIONAL SERIES



- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Enhanced corner geometry with tight tolerance corner radii
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
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- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.005	1/8	0.015	1-1/2	–	00514	02312
0.006	1/8	0.018	1-1/2	–	00515	02313
0.007	1/8	0.021	1-1/2	–	00516	02314
0.008	1/8	0.024	1-1/2	–	00517	02315
0.009	1/8	0.027	1-1/2	–	00518	02316
0.010	1/8	0.030	1-1/2	–	00519	02317
0.011	1/8	0.033	1-1/2	–	00520	02318
0.012	1/8	0.036	1-1/2	–	00521	02319
0.013	1/8	0.039	1-1/2	–	00522	02320
0.014	1/8	0.042	1-1/2	–	00523	02321
0.015	1/8	0.045	1-1/2	–	00524	02322
0.015	1/8	0.045	1-1/2	0.003	08987	09127
0.016	1/8	0.048	1-1/2	–	00525	02323
0.017	1/8	0.051	1-1/2	–	00526	02324
0.018	1/8	0.054	1-1/2	–	00527	02325
0.019	1/8	0.057	1-1/2	–	00528	02326
0.020	1/8	0.060	1-1/2	–	00529	02327
0.020	1/8	0.060	1-1/2	0.003	08989	09129
0.020	1/8	0.060	1-1/2	0.005	04028	04029
0.021	1/8	0.063	1-1/2	–	00530	02328
0.022	1/8	0.066	1-1/2	–	00531	02329
0.023	1/8	0.069	1-1/2	–	00532	02330
0.024	1/8	0.072	1-1/2	–	00533	02331
0.025	1/8	0.075	1-1/2	–	00534	02332
0.025	1/8	0.075	1-1/2	0.005	04030	04031
0.025	1/8	0.075	1-1/2	0.010	08991	09131
0.026	1/8	0.078	1-1/2	–	00535	02333
0.027	1/8	0.081	1-1/2	–	00536	02334
0.028	1/8	0.084	1-1/2	–	00537	02335
0.029	1/8	0.087	1-1/2	–	00538	02336
0.030	1/8	0.090	1-1/2	–	00539	02337
0.030	1/8	0.090	1-1/2	0.010	08993	09133
0.031	1/8	0.093	1-1/2	–	00540	02338
0.032	1/8	0.096	1-1/2	–	00541	02339
0.033	1/8	0.099	1-1/2	–	00542	02340
0.034	1/8	0.102	1-1/2	–	00543	02341

continued on next page

TOLERANCES (inch)

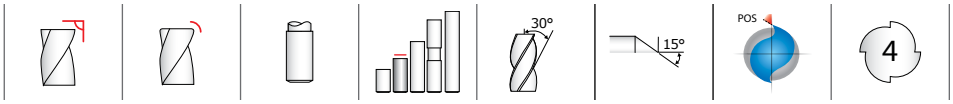
.005–.120 DIAMETER

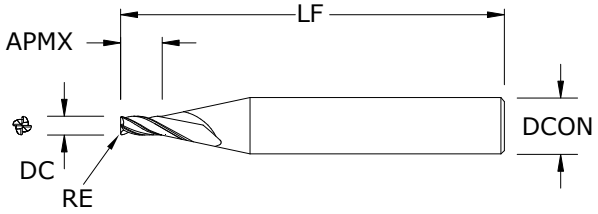
DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS





TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000 / –0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4 • M4CR • 3xD

FRACTIONAL SERIES

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.035	1/8	0.105	1-1/2	–	00544	02342
0.035	1/8	0.105	1-1/2	0.005	08995	09135
0.035	1/8	0.105	1-1/2	0.010	08997	09137
0.036	1/8	0.108	1-1/2	–	00545	02343
0.037	1/8	0.111	1-1/2	–	00546	02344
0.038	1/8	0.114	1-1/2	–	00547	02345
0.039	1/8	0.117	1-1/2	–	00548	02346
0.040	1/8	0.120	1-1/2	–	00549	02347
0.040	1/8	0.120	1-1/2	0.005	08999	09139
0.040	1/8	0.120	1-1/2	0.010	09001	09141
0.041	1/8	0.123	1-1/2	–	00550	02470
0.042	1/8	0.126	1-1/2	–	00551	02471
0.043	1/8	0.129	1-1/2	–	00552	02472
0.044	1/8	0.132	1-1/2	–	00553	02473
0.045	1/8	0.135	1-1/2	–	00554	02474
0.045	1/8	0.135	1-1/2	0.005	09003	09143
0.045	1/8	0.135	1-1/2	0.010	09005	09145
0.046	1/8	0.138	1-1/2	–	00555	02475
0.047	1/8	0.141	1-1/2	–	00556	02476
0.048	1/8	0.144	1-1/2	–	00557	02477
0.049	1/8	0.147	1-1/2	–	00558	02478
0.050	1/8	0.150	1-1/2	–	00559	02479
0.050	1/8	0.150	1-1/2	0.005	09007	09147
0.050	1/8	0.150	1-1/2	0.010	09009	09149
0.050	1/8	0.150	1-1/2	0.015	09011	09151
0.051	1/8	0.153	1-1/2	–	00560	02480
0.052	1/8	0.156	1-1/2	–	00561	02481
0.053	1/8	0.159	1-1/2	–	00562	02482
0.054	1/8	0.162	1-1/2	–	00563	02483
0.055	1/8	0.165	1-1/2	–	00564	02484
0.055	1/8	0.165	1-1/2	0.005	09013	09153
0.055	1/8	0.165	1-1/2	0.010	09015	09155
0.055	1/8	0.165	1-1/2	0.015	09017	09157
0.056	1/8	0.168	1-1/2	–	00565	02485
0.057	1/8	0.171	1-1/2	–	00566	02486
0.058	1/8	0.174	1-1/2	–	00567	02487

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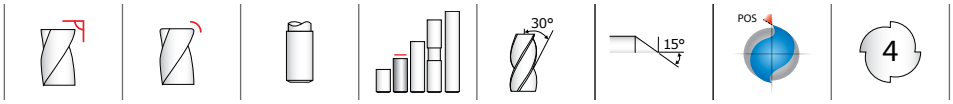
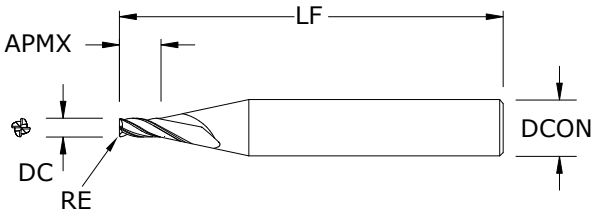
M4 • M4CR • 3xD



M4 • M4CR • 3xD

FRACTIONAL SERIES



continued

inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.059	1/8	0.177	1-1/2	–	00568	02488
0.060	1/8	0.180	1-1/2	–	00569	02489
0.060	1/8	0.180	1-1/2	0.005	09019	09159
0.060	1/8	0.180	1-1/2	0.010	09021	09161
0.060	1/8	0.180	1-1/2	0.015	09023	09163
0.062	1/8	0.186	1-1/2	–	00570	02490
0.065	1/8	0.195	1-1/2	–	00571	02491
0.065	1/8	0.195	1-1/2	0.005	09025	09165
0.065	1/8	0.195	1-1/2	0.010	09027	09167
0.065	1/8	0.195	1-1/2	0.015	09029	09169
0.070	1/8	0.210	1-1/2	–	00572	02492
0.070	1/8	0.210	1-1/2	0.005	09031	09171
0.070	1/8	0.210	1-1/2	0.010	09033	09173
0.070	1/8	0.210	1-1/2	0.015	09035	09175
0.075	1/8	0.225	1-1/2	–	04015	04013
0.075	1/8	0.225	1-1/2	0.005	09037	09177
0.075	1/8	0.225	1-1/2	0.010	09039	09179
0.075	1/8	0.225	1-1/2	0.015	09041	09181
0.075	1/8	0.225	1-1/2	0.020	09043	09183
0.078	1/8	0.234	1-1/2	–	00573	02493
0.080	1/8	0.240	1-1/2	–	00574	02494
0.080	1/8	0.240	1-1/2	0.005	09045	09185
0.080	1/8	0.240	1-1/2	0.010	09047	09187
0.080	1/8	0.240	1-1/2	0.015	09049	09189
0.080	1/8	0.240	1-1/2	0.020	09051	09191
0.085	1/8	0.255	1-1/2	–	00575	02495
0.085	1/8	0.255	1-1/2	0.005	09053	09193
0.085	1/8	0.255	1-1/2	0.010	09055	09195
0.085	1/8	0.255	1-1/2	0.015	09057	09197
0.085	1/8	0.255	1-1/2	0.020	09059	09199
0.090	1/8	0.270	1-1/2	–	00576	02496
0.090	1/8	0.270	1-1/2	0.005	09061	09201
0.090	1/8	0.270	1-1/2	0.010	09063	09203
0.090	1/8	0.270	1-1/2	0.015	09065	09205
0.090	1/8	0.270	1-1/2	0.020	09067	09207
0.093	1/8	0.279	1-1/2	–	00577	02497

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TOLERANCES (inch)

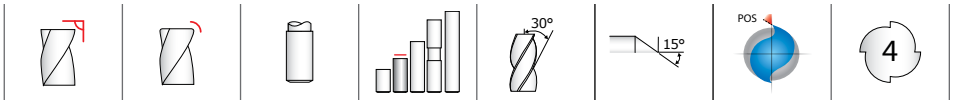
.005–.120 DIAMETER

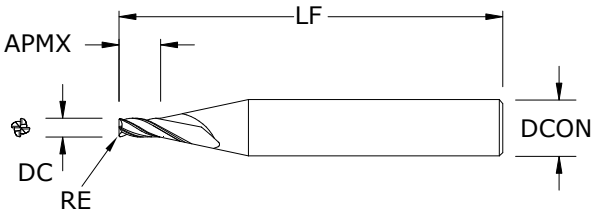
DC = +0.000/–0.001

DCON = h_6

RE = +0.0000/–0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS





TOLERANCES (inch)

.005–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

RE = +0.0000 / –0.0005

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4 • M4CR • 3xD

FRACTIONAL SERIES

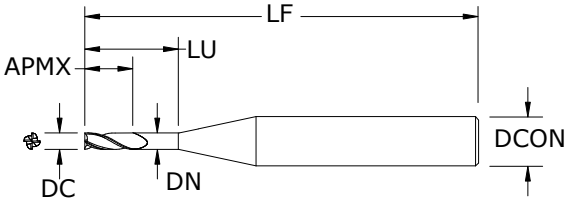
inch					EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	CORNER RADIUS RE	UNCOATED	TI-NAMITE-A (AlTiN)
0.095	1/8	0.285	1-1/2	–	00578	02498
0.095	1/8	0.285	1-1/2	0.005	09069	09209
0.095	1/8	0.285	1-1/2	0.010	09071	09211
0.095	1/8	0.285	1-1/2	0.015	09073	09213
0.095	1/8	0.285	1-1/2	0.020	09075	09215
0.100	1/8	0.300	1-1/2	–	00579	02499
0.100	1/8	0.300	1-1/2	0.005	09077	09217
0.100	1/8	0.300	1-1/2	0.010	09079	09219
0.100	1/8	0.300	1-1/2	0.015	09081	09221
0.100	1/8	0.300	1-1/2	0.020	09083	09223
0.100	1/8	0.300	1-1/2	0.030	09085	09225
0.105	1/8	0.315	1-1/2	–	00580	02500
0.105	1/8	0.315	1-1/2	0.005	09087	09227
0.105	1/8	0.315	1-1/2	0.010	09089	09229
0.105	1/8	0.315	1-1/2	0.015	09091	09231
0.105	1/8	0.315	1-1/2	0.020	09093	09233
0.105	1/8	0.315	1-1/2	0.030	09095	09235
0.110	1/8	0.330	1-1/2	–	00581	02501
0.110	1/8	0.330	1-1/2	0.005	09097	09237
0.110	1/8	0.330	1-1/2	0.010	09099	09239
0.110	1/8	0.330	1-1/2	0.015	09101	09241
0.110	1/8	0.330	1-1/2	0.020	09103	09243
0.110	1/8	0.330	1-1/2	0.030	09105	09245
0.115	1/8	0.345	1-1/2	–	00582	02502
0.115	1/8	0.345	1-1/2	0.005	09107	09247
0.115	1/8	0.345	1-1/2	0.010	09109	09249
0.115	1/8	0.345	1-1/2	0.015	09111	09251
0.115	1/8	0.345	1-1/2	0.020	09113	09253
0.115	1/8	0.345	1-1/2	0.030	09115	09255
0.120	1/8	0.360	1-1/2	–	00583	02503
0.120	1/8	0.360	1-1/2	0.005	09117	09257
0.120	1/8	0.360	1-1/2	0.010	09119	09259
0.120	1/8	0.360	1-1/2	0.015	09121	09261
0.120	1/8	0.360	1-1/2	0.020	09123	09263
0.120	1/8	0.360	1-1/2	0.030	09125	09265

continued

M4 • 3xD • 8xD Overall Reach

M4 • 3xD 8xD

FRACTIONAL SERIES



- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.080	0.009	1-1/2	09839	03454
0.015	1/8	0.045	0.120	0.014	1-1/2	09841	03455
0.020	1/8	0.060	0.160	0.018	1-1/2	09843	03456
0.025	1/8	0.075	0.200	0.023	1-1/2	09845	03457
0.030	1/8	0.090	0.240	0.028	1-1/2	09847	03458
0.031	1/8	0.093	0.248	0.029	1-1/2	09849	03459
0.035	1/8	0.105	0.280	0.032	1-1/2	09851	03460
0.040	1/8	0.120	0.320	0.037	1-1/2	09853	03461
0.045	1/8	0.135	0.360	0.042	2	09855	03462
0.047	1/8	0.141	0.376	0.044	2	09857	03463
0.050	1/8	0.150	0.400	0.047	2	09859	03464
0.055	1/8	0.165	0.440	0.051	2	09861	03465
0.060	1/8	0.180	0.480	0.056	2	09863	03466
0.062	1/8	0.186	0.496	0.058	2	09865	03467
0.065	1/8	0.195	0.520	0.061	2	09867	03468
0.070	1/8	0.210	0.560	0.065	2	09869	03469
0.075	1/8	0.225	0.600	0.070	2	09871	03470
0.078	1/8	0.234	0.624	0.073	2	09873	03471
0.080	1/8	0.240	0.640	0.075	2	09875	03472
0.085	1/8	0.255	0.680	0.079	2	09877	03473
0.090	1/8	0.270	0.720	0.084	2	09879	03474
0.093	1/8	0.279	0.744	0.087	2	09881	03475
0.095	1/8	0.285	0.760	0.089	2	09883	03476
0.100	1/8	0.300	0.800	0.094	2	09885	03477
0.110	1/8	0.330	0.880	0.103	2	09887	03478
0.115	1/8	0.345	0.920	0.108	2	09889	03479
0.120	1/8	0.360	0.960	0.112	2	09891	03480

TOLERANCES (inch)

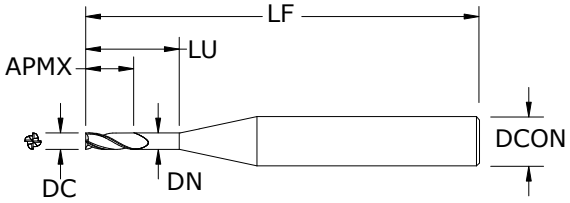
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4 • 3xD • 12xD Overall Reach



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

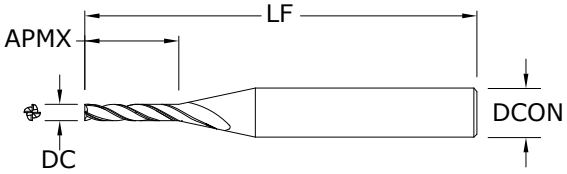
M4 • 3xD 12xD

FRACTIONAL SERIES

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.120	0.009	1-1/2	09838	03481
0.015	1/8	0.045	0.180	0.014	1-1/2	09840	03482
0.020	1/8	0.060	0.240	0.018	1-1/2	09842	03483
0.025	1/8	0.075	0.300	0.023	1-1/2	09844	03484
0.030	1/8	0.090	0.360	0.028	2	09846	03485
0.031	1/8	0.093	0.372	0.029	2	09848	03486
0.035	1/8	0.105	0.420	0.032	2	09850	03487
0.040	1/8	0.120	0.480	0.037	2	09852	03488
0.045	1/8	0.135	0.540	0.042	2	09854	03489
0.047	1/8	0.141	0.564	0.044	2	09856	03490
0.050	1/8	0.150	0.600	0.047	2	09858	03491
0.055	1/8	0.165	0.660	0.051	2	09860	03492
0.060	1/8	0.180	0.720	0.056	2	09862	03493
0.062	1/8	0.186	0.744	0.058	2	09864	03494
0.065	1/8	0.195	0.780	0.061	2	09866	03495
0.070	1/8	0.210	0.840	0.065	2	09868	03496
0.075	1/8	0.225	0.900	0.070	2	09870	03497
0.078	1/8	0.234	0.936	0.073	2-1/2	09872	03498
0.080	1/8	0.240	0.960	0.075	2-1/2	09874	03499
0.085	1/8	0.255	1.020	0.079	2-1/2	09876	03500
0.090	1/8	0.270	1.080	0.084	2-1/2	09878	03501
0.093	1/8	0.279	1.116	0.087	2-1/2	09880	03502
0.095	1/8	0.285	1.140	0.089	2-1/2	09882	03503
0.100	1/8	0.300	1.200	0.094	2-1/2	09884	03504
0.110	1/8	0.330	1.320	0.103	2-1/2	09886	03505
0.115	1/8	0.345	1.380	0.108	2-1/2	09888	03506
0.120	1/8	0.360	1.440	0.112	2-1/2	09890	03507

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M4L • 5xD



M4L • 5xD
FRACTIONAL SERIES

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.050	2-1/2	00584	02640
0.015	1/8	0.075	2-1/2	00585	02641
0.020	1/8	0.100	2-1/2	00586	02642
0.025	1/8	0.125	2-1/2	00587	02643
0.030	1/8	0.150	2-1/2	00588	02644
0.031	1/8	0.155	2-1/2	00589	02645
0.035	1/8	0.175	2-1/2	00590	02646
0.040	1/8	0.200	2-1/2	00591	02647
0.045	1/8	0.225	2-1/2	00592	02648
0.047	1/8	0.235	2-1/2	00593	02649
0.050	1/8	0.250	2-1/2	00594	02650
0.055	1/8	0.275	2-1/2	00595	02651
0.060	1/8	0.300	2-1/2	00596	02652
0.062	1/8	0.310	2-1/2	00597	02653
0.065	1/8	0.325	2-1/2	00598	02654
0.070	1/8	0.350	2-1/2	00599	02655
0.075	1/8	0.375	2-1/2	00600	02656
0.078	1/8	0.390	2-1/2	00601	02657
0.080	1/8	0.400	2-1/2	00602	02658
0.085	1/8	0.425	2-1/2	00603	02659
0.090	1/8	0.450	2-1/2	00604	02660
0.093	1/8	0.465	2-1/2	00605	02661
0.095	1/8	0.475	2-1/2	00606	02662
0.100	1/8	0.500	2-1/2	00607	02663
0.110	1/8	0.550	2-1/2	00608	02664
0.115	1/8	0.575	2-1/2	00609	02665
0.120	1/8	0.600	2-1/2	00610	02666

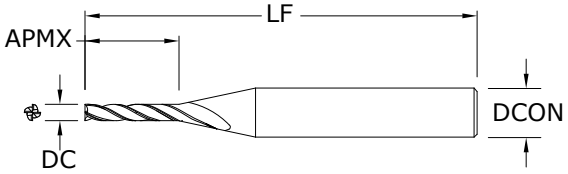
TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

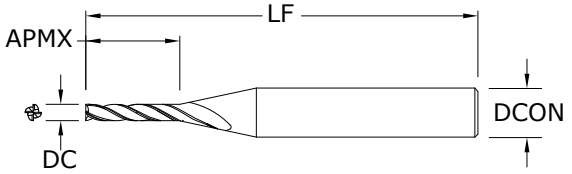
- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4E • 8xD
FRACTIONAL SERIES

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.080	2-1/2	00611	02667
0.015	1/8	0.120	2-1/2	00612	02668
0.020	1/8	0.160	2-1/2	00613	02669
0.025	1/8	0.200	2-1/2	00614	02670
0.030	1/8	0.240	2-1/2	00615	02671
0.031	1/8	0.248	2-1/2	00616	02672
0.035	1/8	0.280	2-1/2	00617	02673
0.040	1/8	0.320	2-1/2	00618	02674
0.045	1/8	0.360	2-1/2	00619	02675
0.047	1/8	0.376	2-1/2	00620	02676
0.050	1/8	0.400	2-1/2	00621	02677
0.055	1/8	0.440	2-1/2	00622	02678
0.060	1/8	0.480	2-1/2	00623	02679
0.062	1/8	0.496	2-1/2	00624	02680
0.065	1/8	0.520	2-1/2	00625	02681
0.070	1/8	0.560	2-1/2	00626	02682
0.075	1/8	0.600	2-1/2	00627	02683
0.078	1/8	0.624	2-1/2	00628	02684
0.080	1/8	0.640	2-1/2	00629	02685
0.085	1/8	0.680	2-1/2	00630	02686
0.090	1/8	0.720	2-1/2	00631	02687
0.093	1/8	0.744	2-1/2	00632	02688
0.095	1/8	0.760	2-1/2	00633	02689
0.100	1/8	0.800	2-1/2	00634	02690
0.110	1/8	0.880	2-1/2	00635	02691
0.115	1/8	0.920	2-1/2	00636	02692
0.120	1/8	0.960	2-1/2	00637	02693

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M4X • 12xD



M4X • 12xD
FRACTIONAL SERIES

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
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- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.015	1/8	0.180	2-1/2	00639	02694
0.020	1/8	0.240	2-1/2	00640	02695
0.025	1/8	0.300	2-1/2	00641	02696
0.030	1/8	0.360	2-1/2	00642	02697
0.031	1/8	0.372	2-1/2	00643	02698
0.035	1/8	0.420	2-1/2	00644	02699
0.040	1/8	0.480	2-1/2	00645	02700
0.045	1/8	0.540	2-1/2	00646	02701
0.047	1/8	0.564	2-1/2	00647	02702
0.050	1/8	0.600	2-1/2	00648	02703
0.055	1/8	0.660	2-1/2	00649	02704
0.060	1/8	0.720	2-1/2	00650	02705
0.062	1/8	0.744	2-1/2	00651	02706
0.065	1/8	0.780	2-1/2	00652	02707
0.070	1/8	0.840	2-1/2	00653	02708
0.075	1/8	0.900	2-1/2	00654	02709
0.078	1/8	0.936	2-1/2	00655	02710
0.080	1/8	0.960	2-1/2	00656	02711
0.085	1/8	1.020	2-1/2	00657	02712
0.090	1/8	1.080	2-1/2	00658	02713
0.093	1/8	1.116	2-1/2	00659	02714
0.095	1/8	1.140	2-1/2	00660	02715
0.100	1/8	1.200	2-1/2	00661	02716
0.110	1/8	1.320	2-1/2	00662	02717
0.115	1/8	1.380	2-1/2	00663	02718
0.120	1/8	1.440	2-1/2	00664	02719

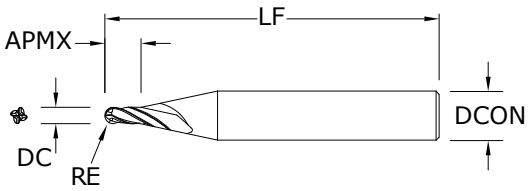
TOLERANCES (inch)

.015–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4B • 1.5xD
FRACTIONAL SERIES

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.015	1-1/2	00745	03071
0.011	1/8	0.017	1-1/2	00746	03072
0.012	1/8	0.018	1-1/2	00747	03073
0.013	1/8	0.020	1-1/2	00748	03074
0.014	1/8	0.021	1-1/2	00749	03075
0.015	1/8	0.023	1-1/2	00750	03076
0.016	1/8	0.024	1-1/2	00751	03077
0.017	1/8	0.026	1-1/2	00752	03078
0.018	1/8	0.027	1-1/2	00753	03079
0.019	1/8	0.029	1-1/2	00754	03080
0.020	1/8	0.030	1-1/2	00755	03081
0.021	1/8	0.032	1-1/2	00756	03082
0.022	1/8	0.033	1-1/2	00757	03083
0.023	1/8	0.035	1-1/2	00758	03084
0.024	1/8	0.036	1-1/2	00759	03085
0.025	1/8	0.038	1-1/2	00760	03086
0.026	1/8	0.039	1-1/2	00761	03087
0.027	1/8	0.041	1-1/2	00762	03088
0.028	1/8	0.042	1-1/2	00763	03089
0.029	1/8	0.044	1-1/2	00764	03090
0.030	1/8	0.045	1-1/2	00765	03091
0.031	1/8	0.047	1-1/2	00766	03092
0.032	1/8	0.048	1-1/2	00767	03093
0.033	1/8	0.050	1-1/2	00768	03094
0.034	1/8	0.051	1-1/2	00769	03095
0.035	1/8	0.053	1-1/2	00770	03096
0.036	1/8	0.054	1-1/2	00771	03097
0.037	1/8	0.056	1-1/2	00772	03098
0.038	1/8	0.057	1-1/2	00773	03099
0.039	1/8	0.059	1-1/2	00774	03100
0.040	1/8	0.060	1-1/2	00775	03101
0.041	1/8	0.062	1-1/2	00776	02538
0.042	1/8	0.063	1-1/2	00777	02539
0.043	1/8	0.065	1-1/2	00778	02540

RE = 1/2 Cutting Diameter (DC)

continued on next page

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
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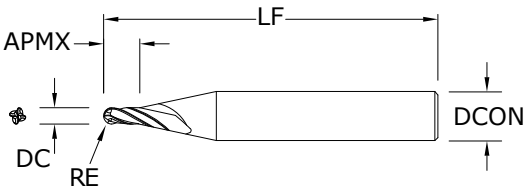
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M4B • 1.5xD



M4B • 1.5xD
FRACTIONAL SERIES

continued

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.044	1/8	0.066	1-1/2	00779	02541
0.045	1/8	0.068	1-1/2	00780	02542
0.046	1/8	0.069	1-1/2	00781	02543
0.047	1/8	0.071	1-1/2	00782	02544
0.048	1/8	0.072	1-1/2	00783	02545
0.049	1/8	0.074	1-1/2	00784	02546
0.050	1/8	0.075	1-1/2	00785	02547
0.051	1/8	0.077	1-1/2	00786	02548
0.052	1/8	0.078	1-1/2	00787	02549
0.053	1/8	0.080	1-1/2	00788	02550
0.054	1/8	0.081	1-1/2	00789	02551
0.055	1/8	0.083	1-1/2	00790	02552
0.056	1/8	0.084	1-1/2	00791	02553
0.057	1/8	0.086	1-1/2	00792	02554
0.058	1/8	0.087	1-1/2	00793	02555
0.059	1/8	0.089	1-1/2	00794	02556
0.060	1/8	0.090	1-1/2	00795	02557
0.062	1/8	0.093	1-1/2	00796	02558
0.065	1/8	0.098	1-1/2	00797	02559
0.070	1/8	0.105	1-1/2	00798	02560
0.075	1/8	0.112	1-1/2	04018	04016
0.078	1/8	0.117	1-1/2	00799	02561
0.080	1/8	0.120	1-1/2	00800	02562
0.085	1/8	0.128	1-1/2	00801	02563
0.090	1/8	0.135	1-1/2	00802	02564
0.093	1/8	0.140	1-1/2	00803	02565
0.095	1/8	0.143	1-1/2	00804	02566
0.100	1/8	0.150	1-1/2	00805	02567
0.105	1/8	0.158	1-1/2	00806	02568
0.110	1/8	0.165	1-1/2	00807	02569
0.115	1/8	0.173	1-1/2	00808	02570
0.120	1/8	0.180	1-1/2	00809	02571

RE = 1/2 Cutting Diameter (DC)

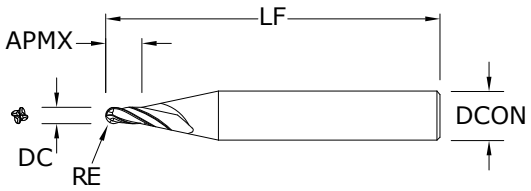
TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4B • 3xD
FRACTIONAL SERIES

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	1-1/2	00887	03145
0.011	1/8	0.033	1-1/2	00888	03146
0.012	1/8	0.036	1-1/2	00889	03147
0.013	1/8	0.039	1-1/2	00890	03148
0.014	1/8	0.042	1-1/2	00891	03149
0.015	1/8	0.045	1-1/2	00892	03150
0.016	1/8	0.048	1-1/2	00893	03151
0.017	1/8	0.051	1-1/2	00894	03152
0.018	1/8	0.054	1-1/2	00895	03153
0.019	1/8	0.057	1-1/2	00896	03154
0.020	1/8	0.060	1-1/2	00897	03155
0.021	1/8	0.063	1-1/2	00898	03156
0.022	1/8	0.066	1-1/2	00899	03157
0.023	1/8	0.069	1-1/2	00900	03158
0.024	1/8	0.072	1-1/2	00901	03159
0.025	1/8	0.075	1-1/2	00902	03160
0.026	1/8	0.078	1-1/2	00903	03161
0.027	1/8	0.081	1-1/2	00904	03162
0.028	1/8	0.084	1-1/2	00905	03163
0.029	1/8	0.087	1-1/2	00906	03164
0.030	1/8	0.090	1-1/2	00907	03165
0.031	1/8	0.093	1-1/2	00908	03166
0.032	1/8	0.096	1-1/2	00909	03167
0.033	1/8	0.099	1-1/2	00910	03168
0.034	1/8	0.102	1-1/2	00911	03169
0.035	1/8	0.105	1-1/2	00912	03170
0.036	1/8	0.108	1-1/2	00913	03171
0.037	1/8	0.111	1-1/2	00914	03172
0.038	1/8	0.114	1-1/2	00915	03173
0.039	1/8	0.117	1-1/2	00916	03174
0.040	1/8	0.120	1-1/2	00917	03175
0.041	1/8	0.123	1-1/2	00918	02606
0.042	1/8	0.126	1-1/2	00919	02607
0.043	1/8	0.129	1-1/2	00920	02608

RE = 1/2 Cutting Diameter (DC)

continued on next page

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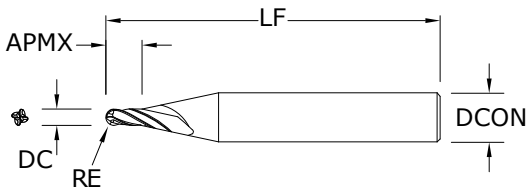
M4B • 3xD



M4B • 3xD
FRACTIONAL SERIES

continued

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.044	1/8	0.132	1-1/2	00921	02609
0.045	1/8	0.135	1-1/2	00922	02610
0.046	1/8	0.138	1-1/2	00923	02611
0.047	1/8	0.141	1-1/2	00924	02612
0.048	1/8	0.144	1-1/2	00925	02613
0.049	1/8	0.147	1-1/2	00926	02614
0.050	1/8	0.150	1-1/2	00927	02615
0.051	1/8	0.153	1-1/2	00928	02616
0.052	1/8	0.156	1-1/2	00929	02617
0.053	1/8	0.159	1-1/2	00930	02618
0.054	1/8	0.162	1-1/2	00931	02619
0.055	1/8	0.165	1-1/2	00932	02620
0.056	1/8	0.168	1-1/2	00933	02621
0.057	1/8	0.171	1-1/2	00934	02622
0.058	1/8	0.174	1-1/2	00935	02623
0.059	1/8	0.177	1-1/2	00936	02624
0.060	1/8	0.180	1-1/2	00937	02625
0.062	1/8	0.186	1-1/2	00938	02626
0.065	1/8	0.195	1-1/2	00939	02627
0.070	1/8	0.210	1-1/2	00940	02628
0.075	1/8	0.225	1-1/2	04019	04017
0.078	1/8	0.234	1-1/2	00941	02629
0.080	1/8	0.240	1-1/2	00942	02630
0.085	1/8	0.255	1-1/2	00943	02631
0.090	1/8	0.270	1-1/2	00944	02632
0.093	1/8	0.279	1-1/2	00945	02633
0.095	1/8	0.285	1-1/2	00946	02634
0.100	1/8	0.300	1-1/2	00947	02635
0.105	1/8	0.315	1-1/2	00948	02636
0.110	1/8	0.330	1-1/2	00949	02637
0.115	1/8	0.345	1-1/2	00950	02638
0.120	1/8	0.360	1-1/2	00951	02639

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

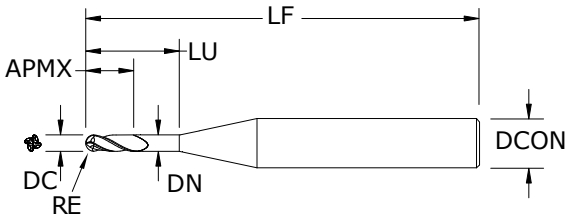
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4B • 3xD • 8xD Overall Reach



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4B • 3xD 8xD

FRACTIONAL SERIES

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.080	0.009	1-1/2	09785	03751
0.015	1/8	0.045	0.120	0.014	1-1/2	09787	03752
0.020	1/8	0.060	0.160	0.018	1-1/2	09789	03753
0.025	1/8	0.075	0.200	0.023	1-1/2	09791	03754
0.030	1/8	0.090	0.240	0.028	1-1/2	09793	03755
0.031	1/8	0.093	0.248	0.029	1-1/2	09795	03756
0.035	1/8	0.105	0.280	0.032	1-1/2	09797	03757
0.040	1/8	0.120	0.320	0.037	1-1/2	09799	03758
0.045	1/8	0.135	0.360	0.042	2	09801	03759
0.047	1/8	0.141	0.376	0.044	2	09803	03760
0.050	1/8	0.150	0.400	0.047	2	09805	03761
0.055	1/8	0.165	0.440	0.051	2	09807	03762
0.060	1/8	0.180	0.480	0.056	2	09809	03763
0.062	1/8	0.186	0.496	0.058	2	09811	03764
0.065	1/8	0.195	0.520	0.061	2	09813	03765
0.070	1/8	0.210	0.560	0.065	2	09815	03766
0.075	1/8	0.225	0.600	0.070	2	09817	03767
0.078	1/8	0.234	0.624	0.073	2	09819	03768
0.080	1/8	0.240	0.640	0.075	2	09821	03769
0.085	1/8	0.255	0.680	0.079	2	09823	03770
0.090	1/8	0.270	0.720	0.084	2	09825	03771
0.093	1/8	0.279	0.744	0.087	2	09827	03772
0.095	1/8	0.285	0.760	0.089	2	09829	03773
0.100	1/8	0.300	0.800	0.094	2	09831	03774
0.110	1/8	0.330	0.880	0.103	2	09833	03775
0.115	1/8	0.345	0.920	0.108	2	09835	03776
0.120	1/8	0.360	0.960	0.112	2	09837	03777

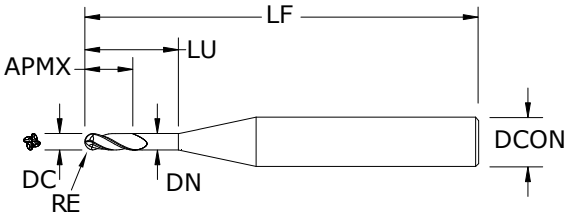
RE = 1/2 Cutting Diameter (DC)

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M4B • 3xD • 12xD Overall Reach

M4B • 3xD 12xD

FRACTIONAL SERIES



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- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

inch						EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	REACH LU	NECK DIAMETER DN	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.030	0.120	0.009	1-1/2	09784	03778
0.015	1/8	0.045	0.180	0.014	1-1/2	09786	03779
0.020	1/8	0.060	0.240	0.018	1-1/2	09788	03780
0.025	1/8	0.075	0.300	0.023	1-1/2	09790	03781
0.030	1/8	0.090	0.360	0.028	2	09792	03782
0.031	1/8	0.093	0.372	0.029	2	09794	03783
0.035	1/8	0.105	0.420	0.032	2	09796	03784
0.040	1/8	0.120	0.480	0.037	2	09798	03785
0.045	1/8	0.135	0.540	0.042	2	09800	03786
0.047	1/8	0.141	0.564	0.044	2	09802	03787
0.050	1/8	0.150	0.600	0.047	2	09804	03788
0.055	1/8	0.165	0.660	0.051	2	09806	03789
0.060	1/8	0.180	0.720	0.056	2	09808	03790
0.062	1/8	0.186	0.744	0.058	2	09810	03791
0.065	1/8	0.195	0.780	0.061	2	09812	03792
0.070	1/8	0.210	0.840	0.065	2	09814	03793
0.075	1/8	0.225	0.900	0.070	2	09816	03794
0.078	1/8	0.234	0.936	0.073	2-1/2	09818	03795
0.080	1/8	0.240	0.960	0.075	2-1/2	09820	03796
0.085	1/8	0.255	1.020	0.079	2-1/2	09822	03797
0.090	1/8	0.270	1.080	0.084	2-1/2	09824	03798
0.093	1/8	0.279	1.116	0.087	2-1/2	09826	03799
0.095	1/8	0.285	1.140	0.089	2-1/2	09828	03800
0.100	1/8	0.300	1.200	0.094	2-1/2	09830	03801
0.110	1/8	0.330	1.320	0.103	2-1/2	09832	03802
0.115	1/8	0.345	1.380	0.108	2-1/2	09834	03803
0.120	1/8	0.360	1.440	0.112	2-1/2	09836	03804

RE = 1/2 Cutting Diameter (DC)

TOLERANCES (inch)

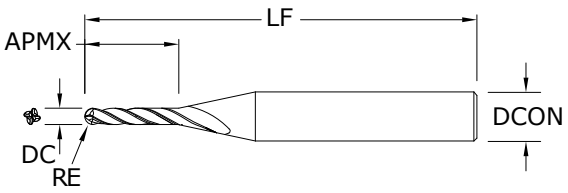
.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4LB • 5xD



TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4LB • 5xD

FRACTIONAL SERIES

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.050	2-1/2	00952	02720
0.015	1/8	0.075	2-1/2	00953	02721
0.020	1/8	0.100	2-1/2	00954	02722
0.025	1/8	0.125	2-1/2	00955	02723
0.030	1/8	0.150	2-1/2	00956	02724
0.031	1/8	0.155	2-1/2	00957	02725
0.035	1/8	0.175	2-1/2	00958	02726
0.040	1/8	0.200	2-1/2	00959	02727
0.045	1/8	0.225	2-1/2	00960	02728
0.047	1/8	0.235	2-1/2	00961	02729
0.050	1/8	0.250	2-1/2	00962	02730
0.055	1/8	0.275	2-1/2	00963	02731
0.060	1/8	0.300	2-1/2	00964	02732
0.062	1/8	0.310	2-1/2	00965	02733
0.065	1/8	0.325	2-1/2	00966	02734
0.070	1/8	0.350	2-1/2	00967	02735
0.075	1/8	0.375	2-1/2	00968	02736
0.078	1/8	0.390	2-1/2	00969	02737
0.080	1/8	0.400	2-1/2	00970	02738
0.085	1/8	0.425	2-1/2	00971	02739
0.090	1/8	0.450	2-1/2	00972	02740
0.093	1/8	0.465	2-1/2	00973	02741
0.095	1/8	0.475	2-1/2	00974	02742
0.100	1/8	0.500	2-1/2	00975	02743
0.110	1/8	0.550	2-1/2	00976	02744
0.115	1/8	0.575	2-1/2	00977	02745
0.120	1/8	0.600	2-1/2	00978	02746

RE = 1/2 Cutting Diameter (DC)

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
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- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
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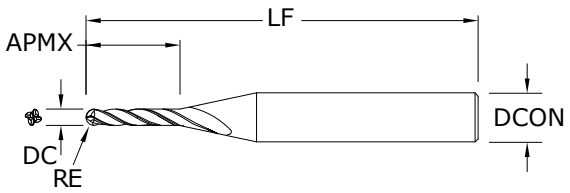
M4EB • 8xD



M4EB • 8xD
FRACTIONAL SERIES

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
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inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.010	1/8	0.080	2-1/2	00979	02747
0.015	1/8	0.120	2-1/2	00980	02748
0.020	1/8	0.160	2-1/2	00981	02749
0.025	1/8	0.200	2-1/2	00982	02750
0.030	1/8	0.240	2-1/2	00983	02751
0.031	1/8	0.248	2-1/2	00984	02752
0.035	1/8	0.280	2-1/2	00985	02753
0.040	1/8	0.320	2-1/2	00986	02754
0.045	1/8	0.360	2-1/2	00987	02755
0.047	1/8	0.376	2-1/2	00988	02756
0.050	1/8	0.400	2-1/2	00989	02757
0.055	1/8	0.440	2-1/2	00990	02758
0.060	1/8	0.480	2-1/2	00991	02759
0.062	1/8	0.496	2-1/2	00992	02760
0.065	1/8	0.520	2-1/2	00993	02761
0.070	1/8	0.560	2-1/2	00994	02762
0.075	1/8	0.600	2-1/2	00995	02763
0.078	1/8	0.624	2-1/2	00996	02764
0.080	1/8	0.640	2-1/2	00997	02765
0.085	1/8	0.680	2-1/2	00998	02766
0.090	1/8	0.720	2-1/2	00999	02767
0.093	1/8	0.744	2-1/2	01000	02768
0.095	1/8	0.760	2-1/2	01001	02769
0.100	1/8	0.800	2-1/2	01002	02770
0.110	1/8	0.880	2-1/2	01003	02771
0.115	1/8	0.920	2-1/2	01004	02772
0.120	1/8	0.960	2-1/2	01005	02773

RE = 1/2 Cutting Diameter (DC)

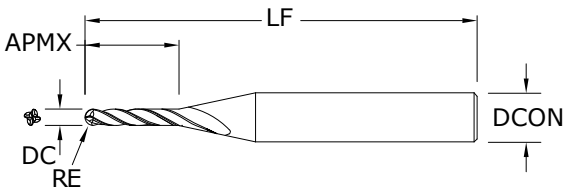
TOLERANCES (inch)

.010–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (inch)

.015–.120 DIAMETER

DC = +0.000/–0.001

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4XB • 12xD
FRACTIONAL SERIES

inch				EDP NO.	
CUTTING DIAMETER DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0.015	1/8	0.180	2-1/2	01007	02774
0.020	1/8	0.240	2-1/2	01008	02775
0.025	1/8	0.300	2-1/2	01009	02776
0.030	1/8	0.360	2-1/2	01010	02777
0.031	1/8	0.372	2-1/2	01011	02778
0.035	1/8	0.420	2-1/2	01012	02779
0.040	1/8	0.480	2-1/2	01013	02780
0.045	1/8	0.540	2-1/2	01014	02781
0.047	1/8	0.564	2-1/2	01015	02782
0.050	1/8	0.600	2-1/2	01016	02783
0.055	1/8	0.660	2-1/2	01017	02784
0.060	1/8	0.720	2-1/2	01018	02785
0.062	1/8	0.744	2-1/2	01019	02786
0.065	1/8	0.780	2-1/2	01020	02787
0.070	1/8	0.840	2-1/2	01021	02788
0.075	1/8	0.900	2-1/2	01022	02789
0.078	1/8	0.936	2-1/2	01023	02790
0.080	1/8	0.960	2-1/2	01024	02791
0.085	1/8	1.020	2-1/2	01025	02792
0.090	1/8	1.080	2-1/2	01026	02793
0.093	1/8	1.116	2-1/2	01027	02794
0.095	1/8	1.140	2-1/2	01028	02795
0.100	1/8	1.200	2-1/2	01029	02796
0.110	1/8	1.320	2-1/2	01030	02797
0.115	1/8	1.380	2-1/2	01031	02798
0.120	1/8	1.440	2-1/2	01032	02799

RE = 1/2 Cutting Diameter (DC)

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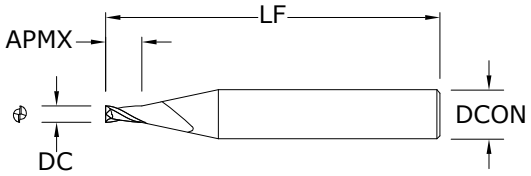
M2M • 1.5xD



M2M • 1.5xD
METRIC SERIES

- Two flute design is ideal for softer alloyed, non-ferrous material applications that require slotting or involve heavy chip loads
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
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mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT DC	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0,1	0.0039	3,0	0,1	38,0	05002	05000
0,2	0.0079	3,0	0,3	38,0	01801	02801
0,3	0.0118	3,0	0,4	38,0	01802	02802
0,4	0.0157	3,0	0,6	38,0	01803	02803
0,5	0.0197	3,0	0,7	38,0	01804	02804
0,6	0.0236	3,0	0,9	38,0	01805	02805
0,7	0.0276	3,0	1,0	38,0	01806	02806
0,8	0.0315	3,0	1,2	38,0	01807	02807
0,9	0.0354	3,0	1,3	38,0	01808	02808
1,0	0.0394	3,0	1,5	38,0	01809	02809
1,0	0.0394	4,0	1,5	50,0	01861	02819
1,1	0.0433	3,0	1,6	38,0	01810	02860
1,1	0.0433	4,0	1,6	50,0	01862	02892
1,2	0.0472	3,0	1,8	38,0	01811	02861
1,2	0.0472	4,0	1,8	50,0	01863	02893
1,3	0.0512	3,0	1,9	38,0	01812	02862
1,3	0.0512	4,0	1,9	50,0	01864	02894
1,4	0.0551	3,0	2,1	38,0	01813	02863
1,4	0.0551	4,0	2,1	50,0	01865	02895
1,5	0.0591	3,0	2,2	38,0	01814	02864
1,5	0.0591	4,0	2,2	50,0	01866	02896
1,6	0.0630	3,0	2,4	38,0	01815	02865
1,6	0.0630	4,0	2,4	50,0	01867	02897
1,7	0.0669	3,0	2,5	38,0	01816	02866
1,7	0.0669	4,0	2,5	50,0	01868	02898
1,8	0.0709	3,0	2,7	38,0	01817	02867
1,8	0.0709	4,0	2,7	50,0	01869	02899
1,9	0.0748	3,0	2,8	38,0	01818	02868
1,9	0.0748	4,0	2,8	50,0	01870	02900
2,0	0.0787	3,0	3,0	38,0	01819	02869
2,0	0.0787	4,0	3,0	50,0	01871	02901
2,5	0.0984	3,0	3,7	38,0	01820	02870
2,5	0.0984	4,0	3,7	50,0	01872	02902
3,0	0.1181	3,0	4,5	38,0	01821	02871
3,0	0.1181	4,0	4,5	50,0	01873	02903

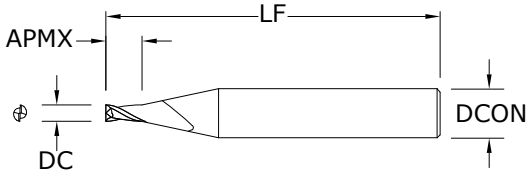
TOLERANCES (mm)

0,1–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (mm)

0,1–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M2M • 3xD
METRIC SERIES

mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0,1	0.0039	3,0	0,3	38,0	05003	05001
0,2	0.0079	3,0	0,6	38,0	01823	02811
0,2	0.0079	4,0	0,6	50,0	01875	02349
0,3	0.0118	3,0	0,9	38,0	01824	02350
0,3	0.0118	4,0	0,9	50,0	01876	02360
0,4	0.0157	3,0	1,2	38,0	01825	02351
0,4	0.0157	4,0	1,2	50,0	01877	02361
0,5	0.0197	3,0	1,5	38,0	01826	02352
0,5	0.0197	4,0	1,5	50,0	01878	02362
0,6	0.0236	3,0	1,8	38,0	01827	02353
0,6	0.0236	4,0	1,8	50,0	01879	02363
0,7	0.0276	3,0	2,1	38,0	01828	02354
0,7	0.0276	4,0	2,1	50,0	01880	02364
0,8	0.0315	3,0	2,4	38,0	01829	02355
0,8	0.0315	4,0	2,4	50,0	01881	02365
0,9	0.0354	3,0	2,7	38,0	01830	02356
0,9	0.0354	4,0	2,7	50,0	01882	02366
1,0	0.0394	3,0	3,0	38,0	01831	02357
1,0	0.0394	4,0	3,0	50,0	01883	02367
1,1	0.0433	3,0	3,3	38,0	01832	02872
1,1	0.0433	4,0	3,3	50,0	01884	02904
1,2	0.0472	3,0	3,6	38,0	01833	02873
1,2	0.0472	4,0	3,6	50,0	01885	02905
1,3	0.0512	3,0	3,9	38,0	01834	02874
1,3	0.0512	4,0	3,9	50,0	01886	02906
1,4	0.0551	3,0	4,2	38,0	01835	02875
1,4	0.0551	4,0	4,2	50,0	01887	02907
1,5	0.0591	3,0	4,5	38,0	01836	02876
1,5	0.0591	4,0	4,5	50,0	01888	02908
1,6	0.0630	3,0	4,8	38,0	01837	02877
1,6	0.0630	4,0	4,8	50,0	01889	02909
1,7	0.0669	3,0	5,1	38,0	01838	02878
1,7	0.0669	4,0	5,1	50,0	01890	02910
1,8	0.0709	3,0	5,4	38,0	01839	02879

continued on next page

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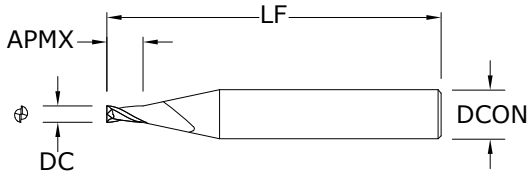
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M2M • 3xD

M2M • 3xD
METRIC SERIES



continued

mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
1,8	0.0709	4,0	5,4	50,0	01891	02911
1,9	0.0748	3,0	5,7	38,0	01840	02880
1,9	0.0748	4,0	5,7	50,0	01892	02912
2,0	0.0787	3,0	6,0	38,0	01841	02881
2,0	0.0787	4,0	6,0	50,0	01893	02913
2,1	0.0827	3,0	6,3	38,0	01842	02882
2,2	0.0866	3,0	6,6	38,0	01843	02883
2,3	0.0906	3,0	6,9	38,0	01844	02884
2,4	0.0945	3,0	7,2	38,0	01845	02885
2,5	0.0984	3,0	7,5	38,0	01846	02886
2,5	0.0984	4,0	7,5	50,0	01894	02914
2,6	0.1024	3,0	7,8	38,0	01847	02887
2,7	0.1063	3,0	8,1	38,0	01848	02888
2,8	0.1102	3,0	8,4	38,0	01849	02889
2,9	0.1142	3,0	8,7	38,0	01850	02890
3,0	0.1181	3,0	9,0	38,0	01851	02891
3,0	0.1181	4,0	9,0	50,0	01895	02915

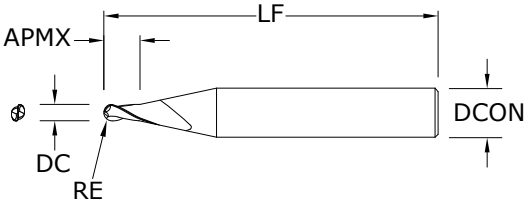
TOLERANCES (mm)

0,1–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (mm)

0,1–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M2MB • 1.5xD

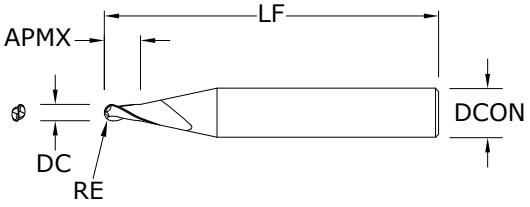
METRIC SERIES

mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0,1	0.0039	3,0	0,1	38,0	05017	05004
0,2	0.0079	3,0	0,3	38,0	05019	05006
0,3	0.0118	3,0	0,3	38,0	05021	05008
0,4	0.0157	3,0	0,6	38,0	05023	05010
0,5	0.0197	3,0	0,7	38,0	01900	03180
0,6	0.0236	3,0	0,9	38,0	01901	03181
0,7	0.0276	3,0	1,0	38,0	01902	03182
0,8	0.0315	3,0	1,2	38,0	01903	03183
0,9	0.0354	3,0	1,3	38,0	01904	03184
1,0	0.0394	3,0	1,5	38,0	01905	03185
1,0	0.0394	4,0	1,5	50,0	02009	02849
1,1	0.0433	3,0	1,6	38,0	01906	02916
1,1	0.0433	4,0	1,6	50,0	02010	02980
1,2	0.0472	3,0	1,8	38,0	01907	02917
1,2	0.0472	4,0	1,8	50,0	02011	02981
1,3	0.0512	3,0	1,9	38,0	01908	02918
1,3	0.0512	4,0	1,9	50,0	02012	02982
1,4	0.0551	3,0	2,1	38,0	01909	02919
1,4	0.0551	4,0	2,1	50,0	02013	02983
1,5	0.0591	3,0	2,2	38,0	01910	02920
1,5	0.0591	4,0	2,2	50,0	02014	02984
1,6	0.0630	3,0	2,4	38,0	01911	02921
1,6	0.0630	4,0	2,4	50,0	02015	02985
1,7	0.0669	3,0	2,5	38,0	01912	02922
1,7	0.0669	4,0	2,5	50,0	02016	02986
1,8	0.0709	3,0	2,7	38,0	01913	02923
1,8	0.0709	4,0	2,7	50,0	02017	02987
1,9	0.0748	3,0	2,8	38,0	01914	02924
1,9	0.0748	4,0	2,8	50,0	02018	02988
2,0	0.0787	3,0	3,0	38,0	01915	02925
2,0	0.0787	4,0	3,0	50,0	02019	02989
2,5	0.0984	3,0	3,7	38,0	01916	02926
2,5	0.0984	4,0	3,7	50,0	02020	02990
3,0	0.1181	3,0	4,5	38,0	01917	02927
3,0	0.1181	4,0	4,5	50,0	02021	02991

RE = 1/2 Cutting Diameter (DC)

- Two flute design is ideal for softer alloyed, non-ferrous material applications that require slotting or involve heavy chip loads
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

M2MB • 3xD



M2MB • 3xD

METRIC SERIES

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- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
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mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0,1	0.0039	3,0	0,3	38,0	05018	05005
0,2	0.0079	3,0	0,6	38,0	05020	05007
0,3	0.0118	3,0	0,9	38,0	05022	05009
0,4	0.0157	3,0	1,2	38,0	05024	05011
0,5	0.0197	3,0	1,5	38,0	05025	05012
0,5	0.0197	4,0	1,5	50,0	02048	03200
0,6	0.0236	3,0	1,8	38,0	05026	05013
0,6	0.0236	4,0	1,8	50,0	02049	03201
0,7	0.0276	3,0	2,1	38,0	05027	05014
0,7	0.0276	4,0	2,1	50,0	02050	03202
0,8	0.0315	3,0	2,4	38,0	05028	05015
0,8	0.0315	4,0	2,4	50,0	02051	03203
0,9	0.0354	3,0	2,7	38,0	05029	05016
0,9	0.0354	4,0	2,7	50,0	02052	03204
1,0	0.0394	3,0	3,0	38,0	01949	02829
1,0	0.0394	4,0	3,0	50,0	02053	03205
1,1	0.0433	3,0	3,3	38,0	01950	02940
1,1	0.0433	4,0	3,3	50,0	02054	03004
1,2	0.0472	3,0	3,6	38,0	01951	02941
1,2	0.0472	4,0	3,6	50,0	02055	03005
1,3	0.0512	3,0	3,9	38,0	01952	02942
1,3	0.0512	4,0	3,9	50,0	02056	03006
1,4	0.0551	3,0	4,2	38,0	01953	02943
1,4	0.0551	4,0	4,2	50,0	02057	03007
1,5	0.0591	3,0	4,5	38,0	01954	02944
1,5	0.0591	4,0	4,5	50,0	02058	03008
1,6	0.0630	3,0	4,8	38,0	01955	02945
1,6	0.0630	4,0	4,8	50,0	02059	03009
1,7	0.0669	3,0	5,1	38,0	01956	02946
1,7	0.0669	4,0	5,1	50,0	02060	03010
1,8	0.0709	3,0	5,4	38,0	01957	02947
1,8	0.0709	4,0	5,4	50,0	02061	03011
1,9	0.0748	3,0	5,7	38,0	01958	02948
1,9	0.0748	4,0	5,7	50,0	02062	03012

RE = 1/2 Cutting Diameter (DC)

continued on next page

TOLERANCES (mm)

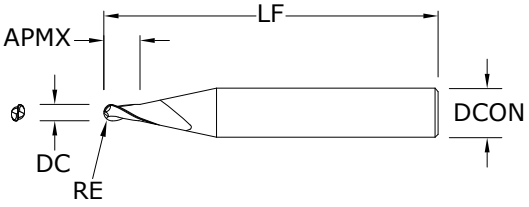
0,1–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M2MB • 3xD



TOLERANCES (mm)

0,1–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M2MB • 3xD

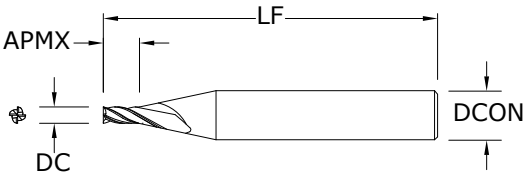
METRIC SERIES

continued

mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
2,0	0.0787	3,0	6,0	38,0	01959	02949
2,0	0.0787	4,0	6,0	50,0	02063	03013
2,1	0.0827	3,0	6,3	38,0	01960	02950
2,2	0.0866	3,0	6,6	38,0	01961	02951
2,3	0.0906	3,0	6,9	38,0	01962	02952
2,4	0.0945	3,0	7,2	38,0	01963	02953
2,5	0.0984	3,0	7,5	38,0	01964	02954
2,5	0.0984	4,0	7,5	50,0	02064	03014
2,6	0.1024	3,0	7,8	38,0	01965	02955
2,7	0.1063	3,0	8,1	38,0	01966	02956
2,8	0.1102	3,0	8,4	38,0	01967	02957
2,9	0.1142	3,0	8,7	38,0	01968	02958
3,0	0.1181	3,0	9,0	38,0	01969	02959
3,0	0.1181	4,0	9,0	50,0	02065	03015

RE = 1/2 Cutting Diameter (DC)

M4M • 1.5xD



M4M • 1.5xD
METRIC SERIES

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
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mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0,1	0.0039	3,0	0,15	38,0	05112	05076
0,2	0.0079	3,0	0,30	38,0	05113	05077
0,3	0.0118	3,0	0,45	38,0	05114	05078
0,4	0.0157	3,0	0,60	38,0	05115	05079
0,5	0.0197	3,0	0,75	38,0	05116	05080
0,6	0.0236	3,0	0,90	38,0	05117	05081
0,7	0.0276	3,0	1,05	38,0	05118	05082
0,8	0.0315	3,0	1,20	38,0	05119	05083
0,9	0.0354	3,0	1,35	38,0	05120	05084
1,0	0.0394	3,0	1,50	38,0	05121	05085
1,1	0.0433	3,0	1,65	38,0	09282	09290
1,2	0.0472	3,0	1,80	38,0	09283	09291
1,3	0.0512	3,0	1,95	38,0	09284	09292
1,4	0.0551	3,0	2,10	38,0	09285	09293
1,5	0.0591	3,0	2,25	38,0	05122	05086
1,6	0.0630	3,0	2,40	38,0	09286	09294
1,7	0.0669	3,0	2,55	38,0	09287	09295
1,8	0.0709	3,0	2,70	38,0	09288	09296
1,9	0.0748	3,0	2,85	38,0	09289	09297
2,0	0.0787	3,0	3,00	38,0	05123	05087
2,1	0.0827	3,0	3,15	38,0	09270	09278
2,2	0.0866	3,0	3,30	38,0	09271	09279
2,3	0.0906	3,0	3,45	38,0	09272	09280
2,4	0.0945	3,0	3,60	38,0	09273	09281
2,5	0.0984	3,0	3,75	38,0	05124	05088
3,0	0.1181	3,0	4,50	38,0	05125	05089

TOLERANCES (mm)

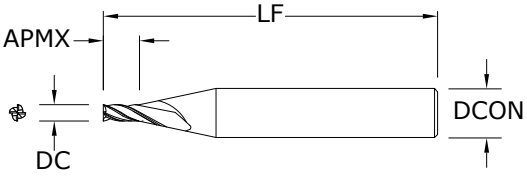
0,1–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4M • 3xD



TOLERANCES (mm)

0,1–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4M • 3xD
METRIC SERIES

mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0,1	0.0039	3,0	0,3	38,0	05090	05054
0,2	0.0079	3,0	0,6	38,0	05091	05055
0,3	0.0118	3,0	0,9	38,0	05092	05056
0,4	0.0157	3,0	1,2	38,0	05093	05057
0,5	0.0197	3,0	1,5	38,0	05094	05058
0,6	0.0236	3,0	1,8	38,0	05095	05059
0,7	0.0276	3,0	2,1	38,0	05096	05060
0,8	0.0315	3,0	2,4	38,0	05097	05061
0,9	0.0354	3,0	2,7	38,0	05098	05062
1,0	0.0394	3,0	3,0	38,0	05099	05063
1,1	0.0433	3,0	3,3	38,0	05100	05064
1,2	0.0472	3,0	3,6	38,0	05101	05065
1,3	0.0512	3,0	3,9	38,0	05102	05066
1,4	0.0551	3,0	4,2	38,0	05103	05067
1,5	0.0591	3,0	4,5	38,0	05104	05068
1,6	0.0630	3,0	4,8	38,0	05105	05069
1,7	0.0669	3,0	5,1	38,0	05106	05070
1,8	0.0709	3,0	5,4	38,0	05107	05071
1,9	0.0748	3,0	5,7	38,0	05108	05072
2,0	0.0787	3,0	6,0	38,0	05109	05073
2,1	0.0827	3,0	6,3	38,0	09266	09274
2,2	0.0866	3,0	6,6	38,0	09267	09275
2,3	0.0906	3,0	6,9	38,0	09268	09276
2,4	0.0945	3,0	7,2	38,0	09269	09277
2,5	0.0984	3,0	7,5	38,0	05110	05074
3,0	0.1181	3,0	9,0	38,0	05111	05075

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
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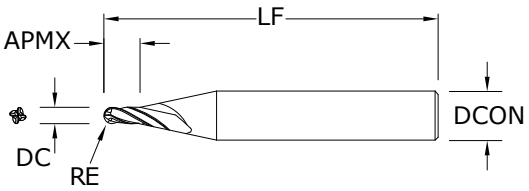
M4MB • 1.5xD



M4MB • 1.5xD

METRIC SERIES

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
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mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0,4	0.0157	3,0	0,6	38,0	05042	05030
0,5	0.0197	3,0	0,7	38,0	05044	05032
0,6	0.0236	3,0	0,9	38,0	05046	05034
0,7	0.0276	3,0	1,0	38,0	05048	05036
0,8	0.0315	3,0	1,2	38,0	05050	05038
0,9	0.0354	3,0	1,3	38,0	05052	05040
1,0	0.0394	3,0	1,5	38,0	01927	03195
1,0	0.0394	4,0	1,5	50,0	02031	02859
1,1	0.0433	3,0	1,6	38,0	01928	02928
1,1	0.0433	4,0	1,6	50,0	02032	02992
1,2	0.0472	3,0	1,8	38,0	01929	02929
1,2	0.0472	4,0	1,8	50,0	02033	02993
1,3	0.0512	3,0	1,9	38,0	01930	02930
1,3	0.0512	4,0	1,9	50,0	02034	02994
1,4	0.0551	3,0	2,1	38,0	01931	02931
1,4	0.0551	4,0	2,1	50,0	02035	02995
1,5	0.0591	3,0	2,2	38,0	01932	02932
1,5	0.0591	4,0	2,2	50,0	02036	02996
1,6	0.0630	3,0	2,4	38,0	01933	02933
1,6	0.0630	4,0	2,4	50,0	02037	02997
1,7	0.0669	3,0	2,5	38,0	01934	02934
1,7	0.0669	4,0	2,5	50,0	02038	02998
1,8	0.0709	3,0	2,7	38,0	01935	02935
1,8	0.0709	4,0	2,7	50,0	02039	02999
1,9	0.0748	3,0	2,8	38,0	01936	02936
1,9	0.0748	4,0	2,8	50,0	02040	03000
2,0	0.0787	3,0	3,0	38,0	01937	02937
2,0	0.0787	4,0	3,0	50,0	02041	03001
2,5	0.0984	3,0	3,7	38,0	01938	02938
2,5	0.0984	4,0	3,7	50,0	02042	03002
3,0	0.1181	3,0	4,5	38,0	01939	02939
3,0	0.1181	4,0	4,5	50,0	02043	03003

RE = 1/2 Cutting Diameter (DC)

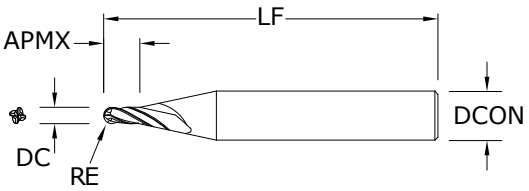
TOLERANCES (mm)

0,4–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS



TOLERANCES (mm)

0,4–3,0 DIAMETER

DC = +0,0000/–0,025

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS

M4MB • 3xD

METRIC SERIES

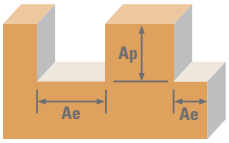
mm					EDP NO.	
CUTTING DIAMETER DC	DECIMAL EQUIVALENT	SHANK DIAMETER DCON	LENGTH OF CUT APMX	OVERALL LENGTH LF	UNCOATED	TI-NAMITE-A (AlTiN)
0,4	0.0157	3,0	1,2	38,0	05043	05031
0,5	0.0197	3,0	1,5	38,0	05045	05033
0,6	0.0236	3,0	1,8	38,0	05047	05035
0,7	0.0276	3,0	2,1	38,0	05049	05037
0,8	0.0315	3,0	2,4	38,0	05051	05039
0,9	0.0354	3,0	2,7	38,0	05053	05041
1,0	0.0394	3,0	3,0	38,0	01979	02839
1,0	0.0394	4,0	3,0	50,0	02075	03215
1,1	0.0433	3,0	3,3	38,0	01980	02960
1,1	0.0433	4,0	3,3	50,0	02076	03016
1,2	0.0472	3,0	3,6	38,0	01981	02961
1,2	0.0472	4,0	3,6	50,0	02077	03017
1,3	0.0512	3,0	3,9	38,0	01982	02962
1,3	0.0512	4,0	3,9	50,0	02078	03018
1,4	0.0551	3,0	4,2	38,0	01983	02963
1,4	0.0551	4,0	4,2	50,0	02079	03019
1,5	0.0591	3,0	4,5	38,0	01984	02964
1,5	0.0591	4,0	4,5	50,0	02080	03020
1,6	0.0630	3,0	4,8	38,0	01985	02965
1,6	0.0630	4,0	4,8	50,0	02081	03021
1,7	0.0669	3,0	5,1	38,0	01986	02966
1,7	0.0669	4,0	5,1	50,0	02082	03022
1,8	0.0709	3,0	5,4	38,0	01987	02967
1,8	0.0709	4,0	5,4	50,0	02083	03023
1,9	0.0748	3,0	5,7	38,0	01988	02968
1,9	0.0748	4,0	5,7	50,0	02084	03024
2,0	0.0787	3,0	6,0	38,0	01989	02969
2,0	0.0787	4,0	6,0	50,0	02085	03025
2,1	0.0827	3,0	6,3	38,0	01990	02970
2,2	0.0866	3,0	6,6	38,0	01991	02971
2,3	0.0906	3,0	6,9	38,0	01992	02972
2,4	0.0945	3,0	7,2	38,0	01993	02973
2,5	0.0984	3,0	7,5	38,0	01994	02974
2,5	0.0984	4,0	7,5	50,0	02086	03026
2,6	0.1024	3,0	7,8	38,0	01995	02975
2,7	0.1063	3,0	8,1	38,0	01996	02976
2,8	0.1102	3,0	8,4	38,0	01997	02977
2,9	0.1142	3,0	8,7	38,0	01998	02978
3,0	0.1181	3,0	9,0	38,0	01999	02979
3,0	0.1181	4,0	9,0	50,0	02087	03027

RE = 1/2 Cutting Diameter (DC)

- Four flute design allows for higher feed rates and decreased deflection, improving productivity and surface finish
- Proprietary coating allows for superior chip flow, driving industry leading productivity and value, even at low spindle speeds
- High performance carbide substrate designed specifically for Micro Tool applications
- Broad portfolio, offering consistent lengths of cut, to ensure application demands are met
- Advanced geometries that extend tool life, reduce chatter, cut cycle times, and improve part quality
- All tools in stock to meet customer order requirements
- All micro tools are manufactured in accordance with the SGS ISO certified quality procedures

Speeds and Feeds

Instructions:
- rpm = use speed from INCH or METRIC Baseline chart
- ipm = INCH Baseline Feed (ipm) x Feed Multiplier [from selected chart below]
- mm/min = METRIC Baseline Feed (mm/min) x Feed Multiplier [from selected chart below]
- Find Width of Cut (Ae) and Depth of Cut (Ap) recommendations on chart below
- refer to the KYOCERA SGS Tool Wizard for detailed technical charts by series (www.kyocera-sgstool.com)



INCH 2-Flute, Square, Corner Radius & Ball Without Reach	Flute Length	1.5 x DC			3 x DC		
	Feed Multiplier	1			0.9		
	Width/Depth	Ae x DC	Ap x DC		Ae x DC	Ap x DC	
	Diameter (DC)	≤0.0312	>0.0312		≤0.0312	>0.0312	
P M K ALL N S	Profile	≤.30	≤.50	≤1	≤.10	≤.25	≤2
	Slot	1	≤.20	≤.50	1	≤.15	≤.35

INCH 3-Flute, Square, Corner Radius & Ball Without Reach	Flute Length	1.5 x DC			3 x DC			5 x DC			8 x DC			12 x DC		
	Feed Multiplier	1.35			1.22			0.65			0.33			0.2		
	Width/Depth	Ae x DC	Ap x DC		Ae x DC	Ap x DC		Ae x DC	Ap x DC		Ae x DC	Ap x DC		Ae x DC	Ap x DC	
	Diameter (DC)	≤0.0312	>0.0312		≤0.0312	>0.0312		≤0.0312	>0.0312		≤0.0312	>0.0312		≤0.0312	>0.0312	
P M K ALL N S	Profile	≤.30	≤.50	≤1	≤.10	≤ .25	≤2	≤.10	≤.25	≤3	≤.05	≤.10	≤4	≤.03	≤.06	≤6
	Slot	1	≤.20	≤.50	1	≤.15	≤.35	1	≤.10	≤.20						

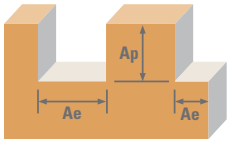
INCH 4-Flute, Square, Corner Radius & Ball Without Reach	Flute Length	1.5 x DC			3 x DC			5 x DC			8 x DC			12 x DC		
	Feed Multiplier	1.57			1.41			0.59			0.59			0.36		
	Width/Depth	Ae x DC	Ap x DC		Ae x DC	Ap x DC		Ae x DC	Ap x DC		Ae x DC	Ap x DC		Ae x DC	Ap x DC	
	Diameter (DC)	≤0.0312	>0.0312		≤0.0312	>0.0312		≤0.0312	>0.0312		≤0.0312	>0.0312		≤0.0312	>0.0312	
P M K ALL N S	Profile	≤.30	≤.50	≤1	≤.10	≤ .25	≤2	≤.05	≤.10	≤3	≤.05	≤.10	≤4	≤.03	≤.06	≤6
	Slot	1	≤.20	≤.50	1	≤.15	≤.35									

METRIC 2-Flute Square & Ball Without Reach	Flute Length	1.5 x DC			3 x DC		
	Feed Multiplier	1			0.9		
	Width/Depth	Ae x DC	Ap x DC		Ae x DC	Ap x DC	
	Diameter (DC)	≤0.0312	>0.0312		≤0.0312	>0.0312	
P M K ALL N S	Profile	≤.30	≤.50	≤1	≤.10	≤.25	≤2
	Slot	1	≤.20	≤.50	1	≤.15	≤.35

METRIC 4-Flute Square & Ball Without Reach	Flute Length	1.5 x DC			3 x DC		
	Feed Multiplier	1.57			1.41		
	Width/Depth	Ae x DC	Ap x DC		Ae x DC	Ap x DC	
	Diameter (DC)	≤0.0312	>0.0312		≤0.0312	>0.0312	
P M K ALL N S	Profile	≤.30	≤.50	≤1	≤.10	≤.25	≤2
	Slot	1	≤.20	≤.50	1	≤.15	≤.35

Speeds and Feeds

Instructions:
- rpm = use speed from INCH or METRIC Baseline chart
- ipm = INCH Baseline Feed (ipm) x Feed Multiplier [from selected chart below]
- mm/min = METRIC Baseline Feed (mm/min) x Feed Multiplier [from selected chart below]
- Find Width of Cut (Ae) and Depth of Cut (Ap) recommendations on chart below
- refer to the KYOCERA SGS Tool Wizard for detailed technical charts by series (www.kyocera-sgstool.com)



INCH 2-Flute Square & Ball With Reach	Flute Length	8 x DC				12 x DC			
	Feed Multiplier	0.6				0.5			
	Width/Depth	Ae x DC		Ap x DC		Ae x DC		Ap x DC	
	Diameter (DC)	≤0.0312		>0.0312		≤0.0312		>0.0312	
P M K ALL N S	Profile	≤.25	≤.50	≤.30		≤.22	≤.45	≤.25	
	Slot	1		≤.07	≤.17	1		≤.06	≤.15

INCH 3-Flute Square, Corner Radius & Ball With Reach	Flute Length	3 x DC			5 x DC			8 x DC			12 x DC			15 x DC			20 x DC			25 x DC		
	Feed Multiplier	1.4			1.15			0.9			0.7			0.6			0.45			0.35		
	Width/Depth	Ae x DC		Ap x DC	Ae x DC		Ap x DC	Ae x DC		Ap x DC	Ae x DC		Ap x DC	Ae x DC		Ap x DC	Ae x DC		Ap x DC	Ap x DC		
	Diameter (DC)	≤0.0312		>0.0312	≤0.0312		>0.0312	≤0.0312		>0.0312	≤0.0312		>0.0312	≤0.0312		>0.0312	≤0.0312		>0.0312	≤0.0312		>0.0312
P M K ALL N S	Profile	≤.30	≤.60	≤.5	≤.30	≤.60	≤.35	≤.25	≤.50	≤.30	≤.22	≤.45	≤.25	≤.15	≤.30	≤.25	≤.12	≤.25	≤.20	≤.12	≤.25	≤.20
	Slot	1	≤.15	≤.30	1	≤.08	≤.20	1	≤.07	≤.17	1	≤.06	≤.15	1	≤.06	≤.15	1	≤.04	≤.10	1	≤.04	≤.10

INCH 4-Flute Square & Ball With Reach	Flute Length	8 x DC				12 x DC			
	Feed Multiplier	0.95				0.75			
	Width/Depth	Ae x DC		Ap x DC		Ae x DC		Ap x DC	
	Diameter (DC)	≤0.0312		>0.0312		≤0.0312		>0.0312	
P M K ALL N S	Profile	≤.25	≤.50	≤.30		≤.22	≤.45	≤.25	
	Slot	1		≤.07	≤.17	1		≤.06	≤.15

Note:
- Bhn (Brinell) HRc (Rockwell C)
- when recommended speed exceeds your capability, use maximum available and recalculate feed
- helical ramp at 1 degrees or less, using slotting speed and feed rates (plunging is not recommended)
- reduce speed and feed for materials harder than listed
- reduce feed and Ae when finish milling (.02 x DC maximum)
- refer to the KYOCERA SGS Tool Wizard for detailed technical charts by series (www.kyocera-sgstool.com)

Baseline

	INCH Baseline Speed and Feed Square, Corner Radius & Ball End With and Without Reach	Hardness		Vc (sfm)		DC • in 0.0050	0.0156	0.0312	0.0625	0.0938	0.1200
P	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	Profile	365	RPM	278860	89378	44689	22309	14865	11619
				(292-438)	Fz	0.000022	0.00007	0.00013	0.00027	0.00041	0.00052
					Feed (ipm)	12.05	12.05	12.05	12.05	12.05	12.05
			Slot	290	RPM	221560	71013	35506	17725	11810	9232
				(232-348)	Fz	0.000022	0.00007	0.00013	0.00027	0.00041	0.00052
					Feed (ipm)	9.57	9.57	9.57	9.57	9.57	9.57
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRc	Profile	210	RPM	160440	51423	25712	12835	8552	6685
				(168-252)	Fz	0.000019	0.00006	0.00012	0.00024	0.00036	0.00046
					Feed (ipm)	6.16	6.16	6.16	6.16	6.16	6.16
			Slot	165	RPM	126060	40404	20202	10085	6720	5253
				(132-198)	Fz	0.000019	0.00006	0.00012	0.00024	0.00036	0.00046
					Feed (ipm)	4.84	4.84	4.84	4.84	4.84	4.84
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRc	Profile	175	RPM	133700	42853	21426	10696	7127	5571
				(140-210)	Fz	0.000016	0.00005	0.00010	0.00020	0.00030	0.00038
					Feed (ipm)	4.28	4.28	4.28	4.28	4.28	4.28
			Slot	140	RPM	106960	34282	17141	8557	5701	4457
				(112-168)	Fz	0.000016	0.00005	0.00010	0.00020	0.00030	0.00038
					Feed (ipm)	3.42	3.42	3.42	3.42	3.42	3.42
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRc	Profile	340	RPM	259760	83256	41628	20781	13846	10823
				(272-408)	Fz	0.000022	0.00007	0.00013	0.00027	0.00041	0.00052
					Feed (ipm)	11.22	11.22	11.22	11.22	11.22	11.22
			Slot	270	RPM	206280	66115	33058	16502	10996	8595
				(216-324)	Fz	0.000022	0.00007	0.00013	0.00027	0.00041	0.00052
					Feed (ipm)	8.91	8.91	8.91	8.91	8.91	8.91
	STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	Profile	235	RPM	179540	57545	28772	14363	9570	7481
				(188-282)	Fz	0.000019	0.00006	0.00012	0.00024	0.00036	0.00046
					Feed (ipm)	6.90	6.90	6.90	6.90	6.90	6.90
			Slot	185	RPM	141340	45301	22651	11307	7534	5889
				(148-222)	Fz	0.000019	0.00006	0.00012	0.00024	0.00036	0.00046
					Feed (ipm)	5.43	5.43	5.43	5.43	5.43	5.43
	STAINLESS STEELS (PH) 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRc	Profile	215	RPM	164260	52647	26324	13141	8756	6844
				(172-258)	Fz	0.000014	0.00004	0.00008	0.00017	0.00025	0.00033
					Feed (ipm)	4.46	4.46	4.46	4.46	4.46	4.46
			Slot	170	RPM	129880	41628	20814	10390	6923	5412
				(136-204)	Fz	0.000014	0.00004	0.00008	0.00017	0.00025	0.00033
					Feed (ipm)	3.53	3.53	3.53	3.53	3.53	3.53
K	CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	Profile	305	RPM	233020	74686	37343	18642	12421	9709
				(244-366)	Fz	0.000022	0.00007	0.00014	0.00027	0.00041	0.00052
					Feed (ipm)	10.08	10.08	10.08	10.08	10.08	10.08
			Slot	245	RPM	187180	59994	29997	14974	9978	7799
				(196-294)	Fz	0.000022	0.00007	0.00014	0.00027	0.00041	0.00052
					Feed (ipm)	8.10	8.10	8.10	8.10	8.10	8.10

continued on next page

Baseline

	INCH Baseline Speed and Feed Square, Corner Radius & Ball End With and Without Reach	Hardness		Vc (sfm)		DC • in 0.0050	0.0156	0.0312	0.0625	0.0938	0.1200
N	ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	Profile	1000	RPM	764000	244872	122436	61120	40725	31833
				(800-1200)	Fz	0.000064	0.00020	0.00040	0.00080	0.00120	0.00153
					Feed (ipm)	97.50	97.50	97.50	97.50	97.50	97.50
			Slot	800	RPM	611200	195897	97949	48896	32580	25467
				(640-960)	Fz	0.000064	0.00020	0.00040	0.00080	0.00120	0.00153
					Feed (ipm)	78.00	78.00	78.00	78.00	78.00	78.00
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	Profile	515	RPM	393460	126109	63054	31477	20973	16394
				(412-618)	Fz	0.000048	0.00015	0.00030	0.00060	0.00090	0.00115
					Feed (ipm)	37.68	37.68	37.68	37.68	37.68	37.68
			Slot	410	RPM	313240	100397	50199	25059	16697	13052
				(328-492)	Fz	0.000048	0.00015	0.00030	0.00060	0.00090	0.00115
					Feed (ipm)	30.00	30.00	30.00	30.00	30.00	30.00
	PLASTICS Polycarbonate, PVC, Polypropylene		Profile	1000	RPM	764000	244872	122436	61120	40725	31833
				(800-1200)	Fz	0.000064	0.00020	0.00040	0.00080	0.00120	0.00153
					Feed (ipm)	97.50	97.50	97.50	97.50	97.50	97.50
			Slot	800	RPM	611200	195897	97949	48896	32580	25467
				(640-960)	Fz	0.000064	0.00020	0.00040	0.00080	0.00120	0.00153
					Feed (ipm)	78.00	78.00	78.00	78.00	78.00	78.00
S	HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400	≤ 300 Bhn or ≤ 32 HRc	Profile	60	RPM	45840	14692	7346	3667	2443	1910
				(48-72)	Fz	0.000012	0.00004	0.00008	0.00015	0.00023	0.00029
					Feed (ipm)	1.11	1.11	1.11	1.11	1.11	1.11
			Slot	45	RPM	34380	11019	5510	2750	1833	1433
				(36-54)	Fz	0.000012	0.00004	0.00008	0.00015	0.00023	0.00029
					Feed (ipm)	0.83	0.83	0.83	0.83	0.83	0.83
	HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRc	Profile	45	RPM	34380	11019	5510	2750	1833	1433
				(36-54)	Fz	0.000008	0.00003	0.00005	0.00010	0.00015	0.00019
					Feed (ipm)	0.55	0.55	0.55	0.55	0.55	0.55
			Slot	35	RPM	26740	8571	4285	2139	1425	1114
				(28-42)	Fz	0.000008	0.00003	0.00005	0.00010	0.00015	0.00019
					Feed (ipm)	0.43	0.43	0.43	0.43	0.43	0.43
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	Profile	160	RPM	122240	39179	19590	9779	6516	5093
				(128-192)	Fz	0.000014	0.00004	0.00008	0.00017	0.00025	0.00033
					Feed (ipm)	3.32	3.32	3.32	3.32	3.32	3.32
			Slot	130	RPM	99320	31833	15917	7946	5294	4138
				(104-156)	Fz	0.000014	0.00004	0.00008	0.00017	0.00025	0.00033
					Feed (ipm)	2.70	2.70	2.70	2.70	2.70	2.70
	TITANIUM ALLOYS (DIFFICULT) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	≤ 440 Bhn or ≤ 47 HRc	Profile	60	RPM	45840	14692	7346	3667	2443	1910
				(48-72)	Fz	0.000010	0.00003	0.00006	0.00012	0.00018	0.00023
					Feed (ipm)	0.88	0.88	0.88	0.88	0.88	0.88
			Slot	45	RPM	34380	11019	5510	2750	1833	1433
				(36-54)	Fz	0.000010	0.00003	0.00006	0.00012	0.00018	0.00023
					Feed (ipm)	0.66	0.66	0.66	0.66	0.66	0.66

Note:
- Bhn (Brinell) HRc (Rockwell C)
- when recommended speed exceeds your capability, use maximum available and recalculate ipm
- rpm = Vc x 3.82 / DC
- ipm = Fz x No. of flutes x rpm
- reduce speed and feed for materials harder than listed
- reduce feed and Ae when finish milling (.02 x DC maximum)
- refer to the KYOCERA SGS Tool Wizard for detailed technical charts by series (www.kyocera-sgstool.com)

Baseline

	METRIC Baseline Speed and Feed Square & Ball End With and Without Reach	Hardness		Vc (m/min)		DC • (mm) 0.1	0.5	1	1.5	2	2.5	3
P	CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	Profile	111	RPM	353837	70767	35384	23589	17692	14153	11795
				(89-134)	Fz	0.00043	0.00216	0.00432	0.00648	0.00865	0.01081	0.01297
					Feed (mm/min)	306	306	306	306	306	306	306
			Slot	88	RPM	281131	56226	28113	18742	14057	11245	9371
				(71-106)	Fz	0.00043	0.00216	0.00432	0.00648	0.00865	0.01081	0.01297
					Feed (mm/min)	243	243	243	243	243	243	243
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRc	Profile	64	RPM	203577	40715	20358	13572	10179	8143	6786
				(51-77)	Fz	0.00038	0.00192	0.00384	0.00576	0.00769	0.00961	0.01153
					Feed (mm/min)	156	156	156	156	156	156	156
			Slot	50	RPM	159954	31991	15995	10664	7998	6398	5332
				(40-60)	Fz	0.00038	0.00192	0.00384	0.00576	0.00769	0.00961	0.01153
					Feed (mm/min)	123	123	123	123	123	123	123
	TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRc	Profile	53	RPM	169648	33930	16965	11310	8482	6786	5655
				(43-64)	Fz	0.00032	0.00160	0.00320	0.00480	0.00640	0.00800	0.00962
					Feed (mm/min)	109	109	109	109	109	109	109
			Slot	43	RPM	135718	27144	13572	9048	6786	5429	4524
				(34-51)	Fz	0.00032	0.00160	0.00320	0.00480	0.00640	0.00800	0.00962
					Feed (mm/min)	87	87	87	87	87	87	87
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRc	Profile	104	RPM	329602	65920	32960	21973	16480	13184	10987
				(83-124)	Fz	0.00043	0.00216	0.00432	0.00648	0.00865	0.01081	0.01295
					Feed (mm/min)	285	285	285	285	285	285	285
			Slot	82	RPM	261742	52348	26174	17449	13087	10470	8725
				(66-99)	Fz	0.00043	0.00216	0.00432	0.00648	0.00865	0.01081	0.01295
					Feed (mm/min)	226	226	226	226	226	226	226
	STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	Profile	72	RPM	227813	45563	22781	15188	11391	9113	7594
				(57-86)	Fz	0.00038	0.00192	0.00385	0.00577	0.00769	0.00961	0.01154
					Feed (mm/min)	175	175	175	175	175	175	175
			Slot	56	RPM	179342	35868	17934	11956	8967	7174	5978
				(45-68)	Fz	0.00038	0.00192	0.00385	0.00577	0.00769	0.00961	0.01154
					Feed (mm/min)	138	138	138	138	138	138	138
	STAINLESS STEELS (PH) 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRc	Profile	66	RPM	208425	41685	20842	13895	10421	8337	6947
				(52-79)	Fz	0.00027	0.00136	0.00272	0.00408	0.00544	0.00680	0.00819
					Feed (mm/min)	113	113	113	113	113	113	113
			Slot	52	RPM	164801	32960	16480	10987	8240	6592	5493
				(41-62)	Fz	0.00027	0.00136	0.00272	0.00408	0.00544	0.00680	0.00819
					Feed (mm/min)	90	90	90	90	90	90	90
K	CAST IRONS (LOW & MEDIUM ALLOY) Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	Profile	93	RPM	295672	59134	29567	19711	14784	11827	9856
				(74-112)	Fz	0.00043	0.00217	0.00433	0.00650	0.00866	0.01083	0.01301
					Feed (mm/min)	256	256	256	256	256	256	256
			Slot	75	RPM	237507	47501	23751	15834	11875	9500	7917
				(60-90)	Fz	0.00043	0.00217	0.00433	0.00650	0.00866	0.01083	0.01301
					Feed (mm/min)	206	206	206	206	206	206	206

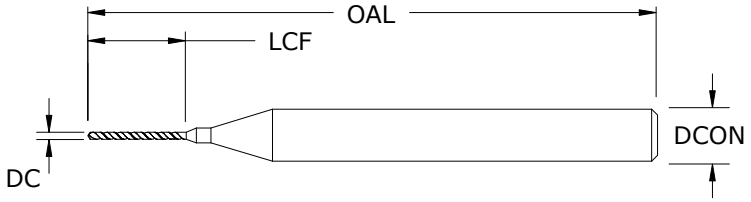
continued on next page

Baseline

	METRIC Baseline Speed and Feed Square & Ball End With and Without Reach	Hardness		Vc (m/min)		DC • (mm) 0.1	0.5	1	1.5	2	2.5	3
N	ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	Profile	305	RPM	969416	193883	96942	64628	48471	38777	32314
				(244-366)	Fz	0.00128	0.00639	0.01277	0.01916	0.02555	0.03193	0.03832
					Feed (mm/min)	2477	2477	2477	2477	2477	2477	2477
			Slot	244	RPM	775533	155107	77553	51702	38777	31021	25851
				(195-293)	Fz	0.00128	0.00639	0.01277	0.01916	0.02555	0.03193	0.03832
					Feed (mm/min)	1981	1981	1981	1981	1981	1981	1981
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	Profile	157	RPM	499249	99850	49925	33283	24962	19970	16642
				(126-188)	Fz	0.00096	0.00479	0.00959	0.01438	0.01917	0.02396	0.02876
					Feed (mm/min)	957	957	957	957	957	957	957
			Slot	125	RPM	397461	79492	39746	26497	19873	15898	13249
				(100-150)	Fz	0.00096	0.00479	0.00959	0.01438	0.01917	0.02396	0.02876
					Feed (mm/min)	762	762	762	762	762	762	762
	PLASTICS Polycarbonate, PVC, Polypropylene		Profile	305	RPM	969416	193883	96942	64628	48471	38777	32314
				(244-366)	Fz	0.00128	0.00639	0.01277	0.01916	0.02555	0.03193	0.03832
					Feed (mm/min)	2477	2477	2477	2477	2477	2477	2477
			Slot	244	RPM	775533	155107	77553	51702	38777	31021	25851
				(195-293)	Fz	0.00128	0.00639	0.01277	0.01916	0.02555	0.03193	0.03832
					Feed (mm/min)	1981	1981	1981	1981	1981	1981	1981
S	HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400	≤ 300 Bhn or ≤ 32 HRc	Profile	18	RPM	58165	11633	5816	3878	2908	2327	1939
				(15-22)	Fz	0.00024	0.00121	0.00242	0.00362	0.00483	0.00604	0.00722
					Feed (mm/min)	28	28	28	28	28	28	28
			Slot	14	RPM	43624	8725	4362	2908	2181	1745	1454
				(11-16)	Fz	0.00024	0.00121	0.00242	0.00362	0.00483	0.00604	0.00722
					Feed (mm/min)	21	21	21	21	21	21	21
	HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRc	Profile	14	RPM	43624	8725	4362	2908	2181	1745	1454
				(11-16)	Fz	0.00016	0.00080	0.00161	0.00241	0.00322	0.00402	0.00486
					Feed (mm/min)	14	14	14	14	14	14	14
			Slot	11	RPM	33930	6786	3393	2262	1696	1357	1131
				(9-13)	Fz	0.00016	0.00080	0.00161	0.00241	0.00322	0.00402	0.00486
					Feed (mm/min)	11	11	11	11	11	11	11
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	Profile	49	RPM	155107	31021	15511	10340	7755	6204	5170
				(39-59)	Fz	0.00027	0.00136	0.00272	0.00408	0.00544	0.00680	0.00821
					Feed (mm/min)	84	84	84	84	84	84	84
			Slot	40	RPM	126024	25205	12602	8402	6301	5041	4201
				(32-48)	Fz	0.00027	0.00136	0.00272	0.00408	0.00544	0.00680	0.00821
					Feed (mm/min)	69	69	69	69	69	69	69
	TITANIUM ALLOYS (DIFFICULT) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	≤ 440 Bhn or ≤ 47 HRc	Profile	18	RPM	58165	11633	5816	3878	2908	2327	1939
				(15-22)	Fz	0.00019	0.00096	0.00192	0.00288	0.00384	0.00480	0.00585
					Feed (mm/min)	22	22	22	22	22	22	22
			Slot	14	RPM	43624	8725	4362	2908	2181	1745	1454
				(11-16)	Fz	0.00019	0.00096	0.00192	0.00288	0.00384	0.00480	0.00585
					Feed (mm/min)	17	17	17	17	17	17	17

Note:
- Bhn (Brinell) HRc (Rockwell C)
- when recommended speed exceeds your capability, use maximum available and recalculate mm/min
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fz x No. of flutes x rpm
- reduce speed and feed for materials harder than listed
- reduce feed and Ae when finish milling (.02 x DC maximum)
- refer to the KYOCERA SGS Tool Wizard for detailed technical charts by series (www.kyocera-sgstool.com)

2 Flute External Coolant • Standard & Extended Length



M105
FRACTIONAL & METRIC SERIES

continued

inch & mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0040	0,102 mm		1/8	1-1/2	0.040	0.034	118	07088	07098
0.0040	0,102 mm		1/8	1-1/2	0.070	0.064	118	07089	07099
0.0050	0,127 mm		1/8	1-1/2	0.040	0.033	118	07064	07066
0.0050	0,127 mm		1/8	1-1/2	0.070	0.063	118	07065	07067
0.0059	0,150 mm	#97	1/8	1-1/2	0.080	0.071	118	07236	07068
0.0059	0,150 mm	#97	1/8	1-1/2	0.120	0.111	118	07237	07069
0.0063	0,160 mm	#96	1/8	1-1/2	0.080	0.071	118	07238	07070
0.0063	0,160 mm	#96	1/8	1-1/2	0.120	0.111	118	07239	07071
0.0067	0,170 mm	#95	1/8	1-1/2	0.080	0.070	118	07240	07072
0.0067	0,170 mm	#95	1/8	1-1/2	0.120	0.110	118	07241	07073
0.0071	0,180 mm	#94	1/8	1-1/2	0.100	0.089	118	07242	07074
0.0071	0,180 mm	#94	1/8	1-1/2	0.150	0.139	118	07243	07075
0.0075	0,191 mm	#93	1/8	1-1/2	0.100	0.089	118	07244	07076
0.0075	0,191 mm	#93	1/8	1-1/2	0.150	0.139	118	07245	07077
0.0079	0,200 mm	#92	1/8	1-1/2	0.100	0.088	118	07246	07078
0.0079	0,200 mm	#92	1/8	1-1/2	0.150	0.138	118	07247	07079
0.0083	0,211 mm	#91	1/8	1-1/2	0.100	0.088	118	07248	07080
0.0083	0,211 mm	#91	1/8	1-1/2	0.150	0.138	118	07249	07081
0.0087	0,220 mm	#90	1/8	1-1/2	0.100	0.087	118	07250	07082
0.0087	0,220 mm	#90	1/8	1-1/2	0.150	0.137	118	07251	07083
0.0091	0,231 mm	#89	1/8	1-1/2	0.150	0.136	118	07252	07084
0.0091	0,231 mm	#89	1/8	1-1/2	0.220	0.206	118	07253	07085
0.0095	0,241 mm	#88	1/8	1-1/2	0.150	0.136	118	07254	07086
0.0095	0,241 mm	#88	1/8	1-1/2	0.220	0.206	118	07255	07087
0.0098	0,250 mm		1/8	1-1/2	0.150	0.135	118	07108	07114
0.0098	0,250 mm		1/8	1-1/2	0.220	0.205	118	07109	07115
0.0100	0,254 mm	#87	1/8	1-1/2	0.150	0.135	118	07258	07090
0.0100	0,254 mm	#87	1/8	1-1/2	0.220	0.205	118	07259	07091
0.0105	0,267 mm	#86	1/8	1-1/2	0.150	0.134	118	07260	07092
0.0105	0,267 mm	#86	1/8	1-1/2	0.220	0.204	118	07261	07093
0.0110	0,280 mm	#85	1/8	1-1/2	0.150	0.134	118	07262	07094
0.0110	0,280 mm	#85	1/8	1-1/2	0.220	0.204	118	07263	07095
0.0115	0,292 mm	#84	1/8	1-1/2	0.150	0.133	118	07264	07096
0.0115	0,292 mm	#84	1/8	1-1/2	0.220	0.203	118	07265	07097
0.0118	0,300 mm		1/8	1-1/2	0.225	0.207	118	07127	07132
0.0118	0,300 mm		1/8	1-1/2	0.280	0.262	118	07129	07134
0.0120	0,305 mm	#83	1/8	1-1/2	0.225	0.207	118	07268	07100
0.0120	0,305 mm	#83	1/8	1-1/2	0.280	0.262	118	07269	07101
0.0125	0,318 mm	#82	1/8	1-1/2	0.225	0.206	118	07270	07102
0.0125	0,318 mm	#82	1/8	1-1/2	0.280	0.261	118	07271	07103
0.0130	0,330 mm	#81	1/8	1-1/2	0.225	0.206	118	07272	07104
0.0130	0,330 mm	#81	1/8	1-1/2	0.280	0.261	118	07273	07105

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TOLERANCES (inch)

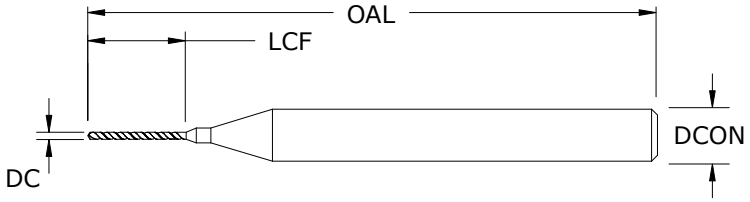
≤.125 DIAMETER
DC = +.0000/–.0003
DCON = h_6

TOLERANCES (mm)

0,1–3,0 DIAMETER
DC = +0,000/–0,008
DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

2 Flute External Coolant • Standard & Extended Length



M105
FRACTIONAL & METRIC SERIES

TOLERANCES (inch)

≤.125 DIAMETER
DC = +.0000/–.0003
DCON = h_6

TOLERANCES (mm)

0,1–3,0 DIAMETER
DC = +0,000/–0,008
DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

inch & mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0135	0,343 mm	#80	1/8	1-1/2	0.225	0.205	130	07274	07106
0.0135	0,343 mm	#80	1/8	1-1/2	0.280	0.260	130	07275	07107
0.0138	0,350 mm		1/8	1-1/2	0.225	0.204	130	07118	07122
0.0138	0,350 mm		1/8	1-1/2	0.280	0.259	130	07119	07123
0.0145	0,368 mm	#79	1/8	1-1/2	0.225	0.203	130	07278	07110
0.0145	0,368 mm	#79	1/8	1-1/2	0.280	0.258	130	07279	07111
0.0156	0,396 mm	1/16	1/8	1-1/2	0.250	0.227	130	07280	07112
0.0156	0,396 mm	1/16	1/8	1-1/2	0.295	0.272	130	07281	07113
0.0157	0,400 mm		1/8	1-1/2	0.250	0.226	130	07148	07233
0.0157	0,400 mm		1/8	1-1/2	0.295	0.271	130	07232	07234
0.0160	0,406 mm	#78	1/8	1-1/2	0.250	0.226	130	07284	07116
0.0160	0,406 mm	#78	1/8	1-1/2	0.295	0.271	130	07285	07117
0.0177	0,450 mm		1/8	1-1/2	0.250	0.223	130	07137	07143
0.0177	0,450 mm		1/8	1-1/2	0.295	0.268	130	07140	07145
0.0180	0,457 mm	#77	1/8	1-1/2	0.250	0.223	130	07288	07120
0.0180	0,457 mm	#77	1/8	1-1/2	0.295	0.268	130	07289	07121
0.0197	0,500 mm		1/8	1-1/2	0.260	0.230	130	07257	07267
0.0197	0,500 mm		1/8	1-1/2	0.310	0.280	130	07266	07276
0.0200	0,508 mm	#76	1/8	1-1/2	0.260	0.230	130	07292	07124
0.0200	0,508 mm	#76	1/8	1-1/2	0.310	0.280	130	07293	07125
0.0210	0,533 mm	#75	1/8	1-1/2	0.310	0.279	130	07294	07126
0.0217	0,550 mm		1/8	1-1/2	0.340	0.307	130	07235	07256
0.0225	0,572 mm	#74	1/8	1-1/2	0.340	0.306	130	07296	07128
0.0236	0,600 mm		1/8	1-1/2	0.340	0.305	130	07283	07286
0.0240	0,610 mm	#73	1/8	1-1/2	0.340	0.304	130	07298	07130
0.0250	0,635 mm	#72	1/8	1-1/2	0.340	0.303	130	07299	07131
0.0256	0,650 mm		1/8	1-1/2	0.340	0.302	130	07277	07282
0.0260	0,660 mm	#71	1/8	1-1/2	0.340	0.301	130	07301	07133
0.0276	0,700 mm		1/8	1-1/2	0.400	0.359	130	07291	07295
0.0280	0,711 mm	#70	1/8	1-1/2	0.400	0.358	130	07303	07135
0.0292	0,742 mm	#69	1/8	1-1/2	0.400	0.356	130	07304	07136
0.0295	0,750 mm		1/8	1-1/2	0.400	0.356	130	07287	07290
0.0310	0,787 mm	#68	1/8	1-1/2	0.400	0.354	130	07306	07138
0.0312	0,792 mm	1/32	1/8	1-1/2	0.400	0.353	130	07307	07139
0.0315	0,800 mm		1/8	1-1/2	0.400	0.353	130	07302	07305
0.0320	0,813 mm	#67	1/8	1-1/2	0.400	0.352	130	07309	07141
0.0330	0,838 mm	#66	1/8	1-1/2	0.400	0.351	130	07310	07142
0.0335	0,850 mm		1/8	1-1/2	0.400	0.350	130	07297	07300
0.0350	0,889 mm	#65	1/8	1-1/2	0.400	0.348	130	07312	07144
0.0354	0,900 mm		1/8	1-1/2	0.400	0.347	130	07313	07316
0.0360	0,914 mm	#64	1/8	1-1/2	0.400	0.346	130	07314	07146
0.0370	0,940 mm	#63	1/8	1-1/2	0.400	0.345	130	07315	07147

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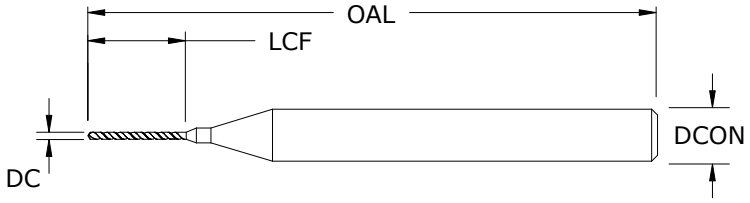
2 Flute External Coolant • Standard & Extended Length



M105
FRACTIONAL & METRIC SERIES

continued

inch & mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0374	0,950 mm		1/8	1-1/2	0.400	0.344	130	07308	07311
0.0380	0,965 mm	#62	1/8	1-1/2	0.400	0.343	130	07317	07149
0.0390	0,991 mm	#61	1/8	1-1/2	0.400	0.342	130	07318	07150
0.0394	1,000 mm		1/8	1-1/2	0.400	0.341	130	07319	07151
0.0400	1,016 mm	#60	1/8	1-1/2	0.400	0.340	130	07320	07152
0.0410	1,041 mm	#59	1/8	1-1/2	0.400	0.339	130	07321	07153
0.0413	1,050 mm		1/8	1-1/2	0.400	0.338	130	07322	07154
0.0420	1,067 mm	#58	1/8	1-1/2	0.400	0.337	130	07323	07155
0.0430	1,092 mm	#57	1/8	1-1/2	0.400	0.336	130	07324	07156
0.0433	1,100 mm		1/8	1-1/2	0.400	0.335	130	07325	07157
0.0440	1,118 mm		1/8	1-1/2	0.400	0.334	130	07326	07158
0.0453	1,150 mm		1/8	1-1/2	0.400	0.332	130	07327	07159
0.0465	1,181 mm	#56	1/8	1-1/2	0.400	0.330	130	07328	07160
0.0469	1,191 mm	3/64	1/8	1-1/2	0.400	0.330	130	07329	07161
0.0472	1,200 mm		1/8	1-1/2	0.400	0.329	130	07330	07162
0.0492	1,250 mm		1/8	1-1/2	0.400	0.326	130	07331	07163
0.0512	1,300 mm		1/8	1-1/2	0.400	0.323	130	07332	07164
0.0520	1,321 mm	#55	1/8	1-1/2	0.400	0.322	130	07333	07165
0.0531	1,350 mm		1/8	1-1/2	0.400	0.320	130	07334	07166
0.0550	1,397 mm	#54	1/8	1-1/2	0.400	0.318	130	07335	07167
0.0551	1,400 mm		1/8	1-1/2	0.400	0.317	130	07336	07168
0.0571	1,450 mm		1/8	1-1/2	0.400	0.314	130	07337	07169
0.0591	1,500 mm		1/8	1-1/2	0.400	0.311	130	07338	07170
0.0595	1,511 mm	#53	1/8	1-1/2	0.400	0.311	130	07339	07171
0.0610	1,550 mm		1/8	1-1/2	0.400	0.309	130	07340	07172
0.0625	1,588 mm	1/16	1/8	1-1/2	0.400	0.306	130	07341	07173
0.0630	1,600 mm		1/8	1-1/2	0.400	0.306	130	07342	07174
0.0635	1,613 mm	#52	1/8	1-1/2	0.400	0.305	130	07343	07175
0.0650	1,650 mm		1/8	1-1/2	0.400	0.303	130	07344	07176
0.0669	1,700 mm		1/8	1-1/2	0.400	0.300	130	07345	07177
0.0670	1,702 mm	#51	1/8	1-1/2	0.400	0.300	130	07346	07178
0.0689	1,750 mm		1/8	1-1/2	0.400	0.297	130	07347	07179
0.0700	1,778 mm	#50	1/8	1-1/2	0.400	0.295	130	07348	07180
0.0709	1,800 mm		1/8	1-1/2	0.400	0.294	130	07349	07181
0.0728	1,850 mm		1/8	1-1/2	0.400	0.291	130	07350	07182
0.0730	1,854 mm	#49	1/8	1-1/2	0.400	0.291	130	07351	07183
0.0748	1,900 mm		1/8	1-1/2	0.400	0.288	130	07352	07184
0.0760	1,930 mm	#48	1/8	1-1/2	0.400	0.286	130	07353	07185
0.0768	1,950 mm		1/8	1-1/2	0.400	0.285	130	07354	07186
0.0781	1,984 mm	5/64	1/8	1-1/2	0.400	0.283	130	07355	07187
0.0785	1,994 mm	#47	1/8	1-1/2	0.400	0.282	130	07356	07188
0.0787	2,000 mm		1/8	1-1/2	0.400	0.282	130	07357	07189

continued on next page

TOLERANCES (inch)

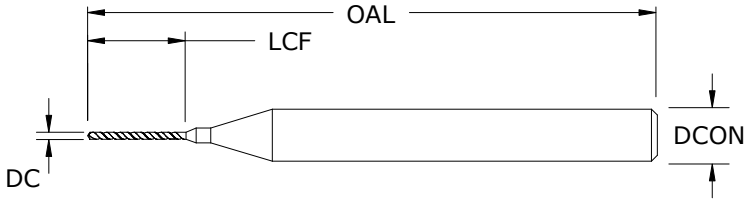
≤.125 DIAMETER
DC = +.0000/–.0003
DCON = h_6

TOLERANCES (mm)

0,1–3,0 DIAMETER
DC = +0,000/–0,008
DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

2 Flute External Coolant • Standard & Extended Length



TOLERANCES (inch)

≤.125 DIAMETER

DC = +.0000/–.0003

DCON = h_6

TOLERANCES (mm)

0,1–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

M105

FRACTIONAL & METRIC SERIES

continued

inch & mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0807	2,050 mm		1/8	1-1/2	0.400	0.279	130	07358	07190
0.0810	2,057 mm	#46	1/8	1-1/2	0.400	0.279	130	07359	07191
0.0820	2,083 mm	#45	1/8	1-1/2	0.400	0.277	130	07360	07192
0.0827	2,100 mm		1/8	1-1/2	0.400	0.276	130	07361	07193
0.0846	2,150 mm		1/8	1-1/2	0.400	0.273	130	07362	07194
0.0860	2,184 mm	#44	1/8	1-1/2	0.400	0.271	130	07363	07195
0.0866	2,200 mm		1/8	1-1/2	0.400	0.270	130	07364	07196
0.0886	2,250 mm		1/8	1-1/2	0.400	0.267	130	07365	07197
0.0890	2,261 mm	#43	1/8	1-1/2	0.400	0.267	130	07366	07198
0.0906	2,300 mm		1/8	1-1/2	0.400	0.264	130	07367	07199
0.0925	2,350 mm		1/8	1-1/2	0.400	0.261	130	07368	07200
0.0935	2,375 mm	#42	1/8	1-1/2	0.400	0.260	130	07369	07201
0.0938	2,383 mm	3/32	1/8	1-1/2	0.400	0.259	130	07370	07202
0.0945	2,400 mm		1/8	1-1/2	0.400	0.258	130	07371	07203
0.0960	2,438 mm	#41	1/8	1-1/2	0.400	0.256	130	07372	07204
0.0965	2,450 mm		1/8	1-1/2	0.400	0.255	130	07373	07205
0.0980	2,489 mm	#40	1/8	1-1/2	0.400	0.253	130	07374	07206
0.0984	2,500 mm		1/8	1-1/2	0.400	0.252	130	07375	07207
0.0995	2,527 mm	#39	1/8	1-1/2	0.400	0.251	130	07376	07208
0.1004	2,550 mm		1/8	1-1/2	0.400	0.249	130	07377	07209
0.1015	2,578 mm	#38	1/8	1-1/2	0.400	0.248	130	07378	07210
0.1024	2,600 mm		1/8	1-1/2	0.400	0.246	130	07379	07211
0.1040	2,642 mm	#37	1/8	1-1/2	0.400	0.244	130	07380	07212
0.1043	2,649 mm		1/8	1-1/2	0.400	0.244	130	07381	07213
0.1063	2,700 mm		1/8	1-1/2	0.400	0.241	130	07382	07214
0.1065	2,705 mm	#36	1/8	1-1/2	0.400	0.240	130	07383	07215
0.1083	2,751 mm		1/8	1-1/2	0.400	0.238	130	07384	07216
0.1094	2,779 mm	7/64	1/8	1-1/2	0.400	0.236	130	07385	07217
0.1100	2,794 mm	#35	1/8	1-1/2	0.400	0.235	130	07386	07218
0.1102	2,800 mm		1/8	1-1/2	0.400	0.235	130	07387	07219
0.1110	2,819 mm	#34	1/8	1-1/2	0.400	0.234	130	07388	07220
0.1122	2,850 mm		1/8	1-1/2	0.400	0.232	130	07389	07221
0.1130	2,870 mm	#33	1/8	1-1/2	0.400	0.231	130	07390	07222
0.1142	2,900 mm		1/8	1-1/2	0.400	0.229	130	07391	07223
0.1160	2,946 mm	#32	1/8	1-1/2	0.400	0.226	130	07392	07224
0.1161	2,949 mm		1/8	1-1/2	0.400	0.226	130	07393	07225
0.1181	3,000 mm		1/8	1-1/2	0.400	0.223	130	07394	07226
0.1200	3,048 mm	#31	1/8	1-1/2	0.400	0.220	130	07395	07227
0.1201	3,051 mm		1/8	1-1/2	0.400	0.220	130	07396	07228
0.1220	3,100 mm		1/8	1-1/2	0.400	0.217	130	07397	07229
0.1240	3,150 mm		1/8	1-1/2	0.400	0.214	130	07398	07230
0.1250	3,175 mm	1/8	1/8	1-1/2	0.400	0.213	130	07399	07231

Series M105

	Series M105	Hardness	Vc (sfm)		DC • in 0.004	0.010	0.020	0.040	0.080	0.125
P	**CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536**	≤ 175 Bhn or ≤ 7 HRc	130 (104-156)	RPM	124150	49660	24830	12415	6208	3973
				Fr	0.00012	0.00029	0.00058	0.00115	0.00230	0.00360
				Feed (ipm)	14.3	14.3	14.3	14.3	14.3	14.3
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	195 (156-234)	RPM	186225	74490	37245	18623	9311	5959
				Fr	0.00010	0.00026	0.00052	0.00104	0.00208	0.00326
				Feed (ipm)	19.4	19.4	19.4	19.4	19.4	19.4
M	**STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L**	≤ 275 Bhn or ≤ 28 HRc	65 (52-78)	RPM	62075	24830	12415	6208	3104	1986
				Fr	0.00009	0.00022	0.00043	0.00087	0.00174	0.00272
				Feed (ipm)	5.4	5.4	5.4	5.4	5.4	5.4
	STAINLESS STEELS (PH) 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRc	40 (32-48)	RPM	38200	15280	7640	3820	1910	1222
				Fr	0.0001	0.0002	0.00035	0.00071	0.00141	0.00221
				Feed (ipm)	2.7	2.7	2.7	2.7	2.7	2.7
K	**CAST IRONS Gray, Malleable, Ductile**	≤ 220 Bhn or ≤ 19 HRc	280 (224-336)	RPM	267400	106960	53480	26740	13370	8557
				Fr	0.00007	0.00016	0.00033	0.00065	0.00131	0.00205
				Feed (ipm)	17.5	17.5	17.5	17.5	17.5	17.5
N	**ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075**	≤ 150 Bhn or ≤ 7 HRc	245 (196-294)	RPM	233975	93590	46795	23398	11699	7487
				Fr	0.00020	0.00049	0.00099	0.00197	0.00394	0.00616
				Feed (ipm)	46.1	46.1	46.1	46.1	46.1	46.1
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	180 (144-216)	RPM	171900	68760	34380	17190	8595	5501
				Fr	0.00020	0.00049	0.00099	0.00197	0.00394	0.00616
				Feed (ipm)	33.9	33.9	33.9	33.9	33.9	33.9
	PLASTICS Polycarbonate, PVC		245 (196-294)	RPM	233975	93590	46795	23398	11699	7487
				Fr	0.00020	0.00049	0.00099	0.00197	0.00394	0.00616
				Feed (ipm)	46.1	46.1	46.1	46.1	46.1	46.1
S	**HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy**	≤ 320 Bhn or ≤ 34 HRc	50 (40-60)	RPM	47750	19100	9550	4775	2388	1528
				Fr	0.00004	0.00011	0.00022	0.00044	0.00088	0.00137
				Feed (ipm)	2.1	2.1	2.1	2.1	2.1	2.1
	TITANIUM ALLOYS Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	50 (40-60)	RPM	47750	19100	9550	4775	2388	1528
				Fr	0.00005	0.00013	0.00026	0.00052	0.00105	0.00164
				Feed (ipm)	2.5	2.5	2.5	2.5	2.5	2.5
H	**TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2**	≤ 475 Bhn or ≤ 50 HRc	80 (64-96)	RPM	76400	30560	15280	7640	3820	2445
				Fr	0.00005	0.00013	0.00026	0.00052	0.00105	0.00164
				Feed (ipm)	4.0	4.0	4.0	4.0	4.0	4.0

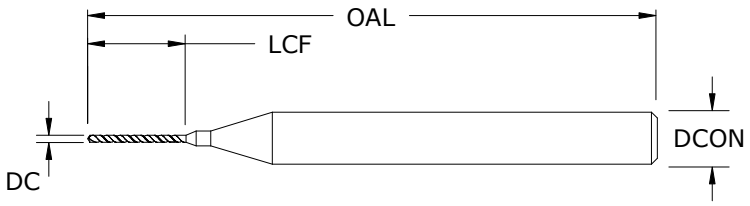
Note:
- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = Vc x 3.82 / DC
- ipm = Fr x rpm (Fr x maximum available rpm when recommendation exceeds machine limit)
- reduce speed and feed 30% when using uncoated drills
- reduce speed and feed for materials harder than listed
- refer to the KYOCERA SGS APEX for complete technical information (www.kyocera-sgstool.com)

Series M105

	Series M105	Hardness	Vc (m/min)		DC • mm 0.04	0.25	0.5	1	2	3
P	**CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536**	≤ 175 Bhn or ≤ 7 HRc	40 (32-48)	RPM	315060	50410	25205	12602	6301	4201
				Fr	0.0012	0.0072	0.0144	0.0288	0.0576	0.0865
				Feed (mm/min)	363	363	363	363	363	363
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	59 (48-71)	RPM	472590	75614	37807	18904	9452	6301
				Fr	0.0010	0.0065	0.0130	0.0261	0.0521	0.0782
				Feed (mm/min)	493	493	493	493	493	493
M	**STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L**	≤ 275 Bhn or ≤ 28 HRc	20 (16-24)	RPM	157530	25205	12602	6301	3151	2100
				Fr	0.0009	0.0054	0.0109	0.0218	0.0435	0.0653
				Feed (mm/min)	137	137	137	137	137	137
	STAINLESS STEELS (PH) 13-8 PH, 15-5 PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRc	12 (10-15)	RPM	96942	15511	7755	3878	1939	1293
				Fr	0.0007	0.0044	0.0088	0.0177	0.0354	0.0531
				Feed (mm/min)	69	69	69	69	69	69
K	**CAST IRONS Gray, Malleable, Ductile**	≤ 220 Bhn or ≤ 19 HRc	85 (68-102)	RPM	678591	108575	54287	27144	13572	9048
				Fr	0.0007	0.0041	0.0082	0.0164	0.0328	0.0491
				Feed (mm/min)	445	445	445	445	445	445
N	**ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075**	≤ 150 Bhn or ≤ 7 HRc	75 (60-90)	RPM	593768	95003	47501	23751	11875	7917
				Fr	0.0020	0.0123	0.0247	0.0493	0.0986	0.1479
				Feed (mm/min)	1171	1171	1171	1171	1171	1171
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	55 (44-66)	RPM	436237	69798	34899	17449	8725	5816
				Fr	0.0020	0.0123	0.0247	0.0493	0.0987	0.1480
				Feed (mm/min)	861	861	861	861	861	861
	PLASTICS Polycarbonate, PVC		75 (60-90)	RPM	593768	95003	47501	23751	11875	7917
				Fr	0.0020	0.0123	0.0247	0.0493	0.0986	0.1479
				Feed (mm/min)	1171	1171	1171	1171	1171	1171
S	**HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy**	≤ 320 Bhn or ≤ 34 HRc	15 (12-18)	RPM	121177	19388	9694	4847	2424	1616
				Fr	0.0004	0.0028	0.0055	0.0110	0.0220	0.0330
				Feed (mm/min)	53	53	53	53	53	53
	TITANIUM ALLOYS Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	15 (12-18)	RPM	121177	19388	9694	4847	2424	1616
				Fr	0.0007	0.0042	0.0085	0.0170	0.0339	0.0509
				Feed (mm/min)	82	82	82	82	82	82
H	**TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2**	≤ 475 Bhn or ≤ 50 HRc	24 (20-29)	RPM	193883	31021	15511	7755	3878	2585
				Fr	0.0005	0.0033	0.0066	0.0131	0.0262	0.0393
				Feed (mm/min)	102	102	102	102	102	102

Note:
- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x rpm (Fr x maximum available rpm when recommendation exceeds machine limit)
- reduce speed and feed 30% when using uncoated drills
- reduce speed and feed for materials harder than listed
- refer to the KYOCERA SGS APEX for complete technical information (www.kyocera-sgstool.com)

2 Flute External Coolant



M226
METRIC SERIES

- 4-facet point design stabilizes on entry for superior hole size control and tool life (>.08mm). 2-facet point on 0,08 and smaller
- Mirror surface finishes improve chip flow as hole depth increases
- Ti-Namite A coating and uncoated options for the ultimate performance in a variety of ferrous and non-ferrous workpiece materials
- Available from stock in a selection of popular lengths and diameters
- Application specific sub-micron grain carbide designed specifically for micro-tool applications
- Manufactured in accordance with SGS ISO certified quality procedures

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0016	0,040 mm		3,0	38,0	0,5	0,4	118	07722	–
0.0018	0,050 mm		3,0	38,0	0,6	0,5	118	07723	–
0.0020	0,050 mm		3,0	38,0	0,8	0,7	118	07724	–
0.0024	0,060 mm		3,0	38,0	0,8	0,7	118	07725	–
0.0028	0,070 mm		3,0	38,0	1,3	1,2	118	07726	–
0.0031	0,080 mm		3,0	38,0	1,3	1,2	118	07727	–
0.0035	0,090 mm		3,0	38,0	1,3	1,2	118	07728	–
0.0039	0,100 mm		3,0	38,0	1,0	0,9	118	07729	–
0.0043	0,110 mm		3,0	38,0	1,0	0,8	118	07730	–
0.0047	0,120 mm		3,0	38,0	1,0	0,8	118	07731	–
0.0051	0,130 mm		3,0	38,0	1,0	0,8	118	07732	–
0.0055	0,140 mm		3,0	38,0	1,0	0,8	118	07733	–
0.0059	0,150 mm	#97	3,0	38,0	2,0	1,8	118	07734	–
0.0063	0,160 mm	#96	3,0	38,0	2,0	1,8	118	07735	–
0.0067	0,170 mm	#95	3,0	38,0	2,0	1,7	118	07736	–
0.0071	0,180 mm	#94	3,0	38,0	2,5	2,2	118	07737	–
0.0075	0,190 mm	#93	3,0	38,0	2,5	2,2	118	07738	–
0.0079	0,200 mm	#92	3,0	38,0	2,5	2,2	118	07739	–
0.0083	0,210 mm	#91	3,0	38,0	2,5	2,2	118	07740	–
0.0087	0,220 mm	#90	3,0	38,0	2,5	2,2	118	07741	–
0.0091	0,230 mm	#89	3,0	38,0	3,8	3,5	118	07742	–
0.0094	0,240 mm		3,0	38,0	3,8	3,4	118	07743	–
0.0098	0,250 mm		3,0	38,0	3,8	3,4	118	07744	07400
0.0102	0,260 mm		3,0	38,0	3,8	3,4	118	07745	07401
0.0106	0,270 mm		3,0	38,0	3,8	3,4	118	07746	07402
0.0110	0,280 mm	#85	3,0	38,0	3,8	3,4	118	07747	07403
0.0114	0,290 mm		3,0	38,0	3,8	3,4	118	07748	07404
0.0118	0,300 mm		3,0	38,0	5,7	5,3	118	07749	07405
0.0122	0,310 mm		3,0	38,0	5,7	5,2	118	07750	07406
0.0126	0,320 mm		3,0	38,0	5,7	5,2	118	07751	07407
0.0130	0,330 mm	#81	3,0	38,0	5,7	5,2	118	07752	07408
0.0134	0,340 mm		3,0	38,0	5,7	5,2	118	07753	07409
0.0138	0,350 mm		3,0	38,0	5,7	5,2	130	07754	07410
0.0142	0,360 mm		3,0	38,0	5,7	5,2	130	07755	07411
0.0146	0,370 mm		3,0	38,0	5,7	5,1	130	07756	07412
0.0150	0,380 mm		3,0	38,0	6,4	5,8	130	07757	07413

continued on next page

TOLERANCES (mm)

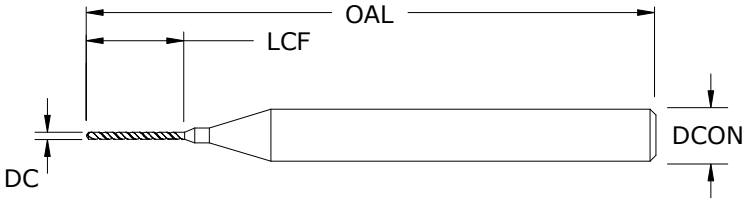
0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

2 Flute External Coolant



TOLERANCES (mm)

0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

M226
METRIC SERIES

continued

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0154	0,390 mm		3,0	38,0	6,4	5,8	130	07758	07414
0.0157	0,400 mm		3,0	38,0	6,4	5,8	130	07759	07415
0.0161	0,410 mm		3,0	38,0	6,4	5,8	130	07760	07416
0.0165	0,420 mm		3,0	38,0	6,4	5,8	130	07761	07417
0.0169	0,430 mm		3,0	38,0	6,4	5,8	130	07762	07418
0.0173	0,440 mm		3,0	38,0	6,4	5,7	130	07763	07419
0.0177	0,450 mm		3,0	38,0	6,4	5,7	130	07764	07420
0.0181	0,460 mm		3,0	38,0	6,4	5,7	130	07765	07421
0.0185	0,470 mm		3,0	38,0	6,4	5,7	130	07766	07422
0.0189	0,480 mm		3,0	38,0	6,6	5,9	130	07767	07423
0.0193	0,490 mm		3,0	38,0	6,6	5,9	130	07768	07424
0.0197	0,500 mm		3,0	38,0	6,6	5,9	130	07769	07425
0.0201	0,510 mm		3,0	38,0	6,6	5,8	130	07770	07426
0.0205	0,520 mm		3,0	38,0	6,6	5,8	130	07771	07427
0.0209	0,530 mm		3,0	38,0	6,6	5,8	130	07772	07428
0.0213	0,540 mm		3,0	38,0	6,6	5,8	130	07773	07429
0.0217	0,550 mm		3,0	38,0	8,6	7,8	130	07774	07430
0.0220	0,560 mm		3,0	38,0	8,6	7,8	130	07775	07431
0.0224	0,570 mm		3,0	38,0	8,6	7,7	130	07776	07432
0.0228	0,580 mm		3,0	38,0	8,6	7,7	130	07777	07433
0.0232	0,590 mm		3,0	38,0	8,6	7,7	130	07778	07434
0.0236	0,600 mm		3,0	38,0	8,6	7,7	130	07779	07435
0.0240	0,610 mm	#73	3,0	38,0	8,6	7,7	130	07780	07436
0.0244	0,620 mm		3,0	38,0	8,6	7,7	130	07781	07437
0.0248	0,630 mm		3,0	38,0	8,6	7,7	130	07782	07438
0.0252	0,640 mm		3,0	38,0	8,6	7,6	130	07783	07439
0.0256	0,650 mm		3,0	38,0	8,6	7,6	130	07784	07440
0.0260	0,660 mm	#71	3,0	38,0	8,6	7,6	130	07785	07441
0.0264	0,670 mm		3,0	38,0	8,6	7,6	130	07786	07442
0.0268	0,680 mm		3,0	38,0	8,6	7,6	130	07787	07443
0.0272	0,690 mm		3,0	38,0	8,6	7,6	130	07788	07444
0.0276	0,700 mm		3,0	38,0	10,2	9,2	130	07789	07445
0.0280	0,710 mm	#70	3,0	38,0	10,2	9,1	130	07790	07446
0.0283	0,720 mm		3,0	38,0	10,2	9,1	130	07791	07447
0.0287	0,730 mm		3,0	38,0	10,2	9,1	130	07792	07448
0.0291	0,740 mm		3,0	38,0	10,2	9,1	130	07793	07449

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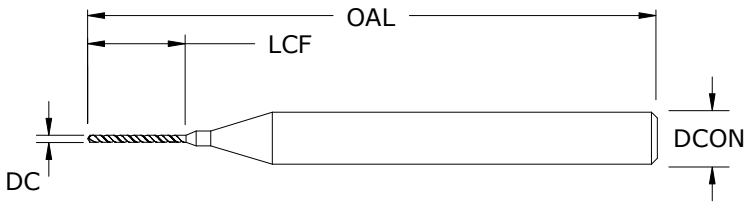
2 Flute External Coolant



M226
METRIC SERIES

continued

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0295	0,750 mm		3,0	38,0	10,2	9,1	130	07794	07450
0.0295	0,750 mm		3,0	50,0	11,0	9,9	130	07795	07451
0.0299	0,760 mm		3,0	38,0	10,2	9,1	130	07796	07452
0.0303	0,770 mm		3,0	38,0	10,2	9,0	130	07797	07453
0.0307	0,780 mm		3,0	38,0	10,2	9,0	130	07798	07454
0.0311	0,790 mm		3,0	38,0	10,2	9,0	130	07799	07455
0.0315	0,800 mm		3,0	38,0	10,2	9,0	130	07800	07456
0.0315	0,800 mm		3,0	50,0	11,0	9,8	130	07801	07457
0.0319	0,810 mm		3,0	38,0	10,2	9,0	130	07802	07458
0.0323	0,820 mm		3,0	38,0	10,2	9,0	130	07803	07459
0.0327	0,830 mm		3,0	38,0	10,2	9,0	130	07804	07460
0.0331	0,840 mm		3,0	38,0	10,2	8,9	130	07805	07461
0.0335	0,850 mm		3,0	38,0	10,2	8,9	130	07806	07462
0.0335	0,850 mm		3,0	50,0	13,0	11,7	130	07807	07463
0.0339	0,860 mm		3,0	38,0	10,2	8,9	130	07808	07464
0.0343	0,870 mm		3,0	38,0	10,2	8,9	130	07809	07465
0.0346	0,880 mm		3,0	38,0	10,2	8,9	130	07810	07466
0.0350	0,890 mm	#65	3,0	38,0	10,2	8,9	130	07811	07467
0.0354	0,900 mm		3,0	38,0	10,2	8,9	130	07812	07468
0.0354	0,900 mm		3,0	50,0	13,0	11,7	130	07813	07469
0.0358	0,910 mm		3,0	38,0	10,2	8,8	130	07814	07470
0.0362	0,920 mm		3,0	38,0	10,2	8,8	130	07815	07471
0.0366	0,930 mm		3,0	38,0	10,2	8,8	130	07816	07472
0.0370	0,940 mm	#63	3,0	38,0	10,2	8,8	130	07817	07473
0.0374	0,950 mm		3,0	38,0	10,2	8,8	130	07818	07474
0.0374	0,950 mm		3,0	50,0	15,0	13,6	130	07819	07475
0.0378	0,960 mm		3,0	38,0	10,2	8,8	130	07820	07476
0.0382	0,970 mm		3,0	38,0	10,2	8,7	130	07821	07477
0.0386	0,980 mm		3,0	38,0	10,2	8,7	130	07822	07478
0.0390	0,990 mm	#61	3,0	38,0	10,2	8,7	130	07823	07479
0.0394	1,000 mm		3,0	38,0	10,2	8,7	130	07824	07480
0.0394	1,000 mm		3,0	50,0	15,0	13,5	130	07825	07481
0.0398	1,010 mm		3,0	38,0	10,2	8,7	130	07826	07482
0.0402	1,020 mm		3,0	38,0	10,2	8,7	130	07827	07483
0.0406	1,030 mm		3,0	38,0	10,2	8,7	130	07828	07484
0.0409	1,040 mm		3,0	38,0	10,2	8,6	130	07829	07485

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TOLERANCES (mm)

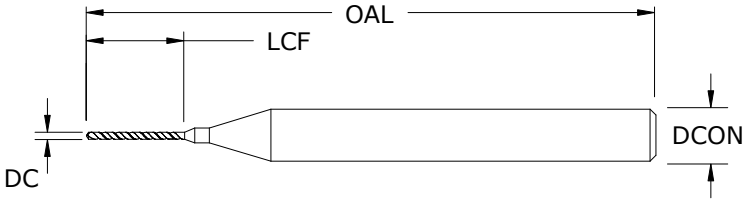
0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

2 Flute External Coolant



TOLERANCES (mm)

0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

M226
METRIC SERIES

continued

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0413	1,050 mm		3,0	38,0	10,2	8,6	130	07830	07486
0.0413	1,050 mm		3,0	50,0	17,0	15,4	130	07831	07487
0.0417	1,060 mm		3,0	38,0	10,2	8,6	130	07832	07488
0.0421	1,070 mm		3,0	38,0	10,2	8,6	130	07833	07489
0.0425	1,080 mm		3,0	38,0	10,2	8,6	130	07834	07490
0.0429	1,090 mm		3,0	38,0	10,2	8,6	130	07835	07491
0.0433	1,100 mm		3,0	38,0	10,2	8,6	130	07836	07492
0.0433	1,100 mm		3,0	50,0	17,0	15,4	130	07837	07493
0.0437	1,110 mm		3,0	38,0	10,2	8,5	130	07838	07494
0.0441	1,120 mm		3,0	38,0	10,2	8,5	130	07839	07495
0.0445	1,130 mm		3,0	38,0	10,2	8,5	130	07840	07496
0.0449	1,140 mm		3,0	38,0	10,2	8,5	130	07841	07497
0.0453	1,150 mm		3,0	38,0	10,2	8,5	130	07842	07498
0.0453	1,150 mm		3,0	50,0	17,0	15,3	130	07843	07499
0.0457	1,160 mm		3,0	38,0	10,2	8,5	130	07844	07500
0.0461	1,170 mm		3,0	38,0	10,2	8,4	130	07845	07501
0.0465	1,180 mm	#56	3,0	38,0	10,2	8,4	130	07846	07502
0.0469	1,190 mm	3/64	3,0	38,0	10,2	8,4	130	07847	07503
0.0472	1,200 mm		3,0	38,0	10,2	8,4	130	07848	07504
0.0472	1,200 mm		3,0	50,0	17,0	15,2	130	07849	07505
0.0476	1,210 mm		3,0	38,0	10,2	8,4	130	07850	07506
0.0480	1,220 mm		3,0	38,0	10,2	8,4	130	07851	07507
0.0484	1,230 mm		3,0	38,0	10,2	8,4	130	07852	07508
0.0488	1,240 mm		3,0	38,0	10,2	8,3	130	07853	07509
0.0492	1,250 mm		3,0	38,0	10,2	8,3	130	07854	07510
0.0492	1,250 mm		3,0	50,0	19,0	17,1	130	07855	07511
0.0496	1,260 mm		3,0	38,0	10,2	8,3	130	07856	07512
0.0500	1,270 mm		3,0	38,0	10,2	8,3	130	07857	07513
0.0504	1,280 mm		3,0	38,0	10,2	8,3	130	07858	07514
0.0508	1,290 mm		3,0	38,0	10,2	8,3	130	07859	07515
0.0512	1,300 mm		3,0	38,0	10,2	8,3	130	07860	07516
0.0512	1,300 mm		3,0	50,0	19,0	17,1	130	07861	07517
0.0516	1,310 mm		3,0	38,0	10,2	8,2	130	07862	07518
0.0520	1,320 mm		3,0	38,0	10,2	8,2	130	07863	07519
0.0524	1,330 mm		3,0	38,0	10,2	8,2	130	07864	07520
0.0528	1,340 mm		3,0	38,0	10,2	8,2	130	07865	07521

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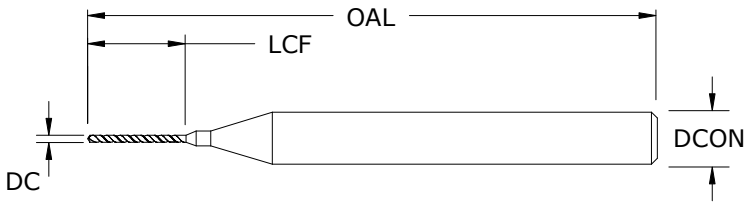
2 Flute External Coolant



M226
METRIC SERIES

continued

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0531	1,350 mm		3,0	38,0	10,2	8,2	130	07866	07522
0.0531	1,350 mm		3,0	50,0	19,0	17,0	130	07867	07523
0.0535	1,360 mm		3,0	38,0	10,2	8,2	130	07868	07524
0.0539	1,370 mm		3,0	38,0	10,2	8,1	130	07869	07525
0.0543	1,380 mm		3,0	38,0	10,2	8,1	130	07870	07526
0.0547	1,390 mm		3,0	38,0	10,2	8,1	130	07871	07527
0.0551	1,400 mm		3,0	38,0	10,2	8,1	130	07872	07528
0.0551	1,400 mm		3,0	50,0	19,0	16,9	130	07873	07529
0.0555	1,410 mm		3,0	38,0	10,2	8,1	130	07874	07530
0.0559	1,420 mm		3,0	38,0	10,2	8,1	130	07875	07531
0.0563	1,430 mm		3,0	38,0	10,2	8,1	130	07876	07532
0.0567	1,440 mm		3,0	38,0	10,2	8,0	130	07877	07533
0.0571	1,450 mm		3,0	38,0	10,2	8,0	130	07878	07534
0.0571	1,450 mm		3,0	50,0	20,0	17,8	130	07879	07535
0.0575	1,460 mm		3,0	38,0	10,2	8,0	130	07880	07536
0.0579	1,470 mm		3,0	38,0	10,2	8,0	130	07881	07537
0.0583	1,480 mm		3,0	38,0	10,2	8,0	130	07882	07538
0.0587	1,490 mm		3,0	38,0	10,2	8,0	130	07883	07539
0.0591	1,500 mm		3,0	38,0	10,2	8,0	130	07884	07540
0.0591	1,500 mm		3,0	50,0	20,0	17,8	130	07885	07541
0.0594	1,510 mm		3,0	38,0	10,2	7,9	130	07886	07542
0.0598	1,520 mm		3,0	38,0	10,2	7,9	130	07887	07543
0.0602	1,530 mm		3,0	38,0	10,2	7,9	130	07888	07544
0.0606	1,540 mm		3,0	38,0	10,2	7,9	130	07889	07545
0.0610	1,550 mm		3,0	38,0	10,2	7,9	130	07890	07546
0.0610	1,550 mm		3,0	50,0	20,0	17,7	130	07891	07547
0.0614	1,560 mm		3,0	38,0	10,2	7,9	130	07892	07548
0.0618	1,570 mm		3,0	38,0	10,2	7,8	130	07893	07549
0.0622	1,580 mm		3,0	38,0	10,2	7,8	130	07894	07550
0.0626	1,590 mm		3,0	38,0	10,2	7,8	130	07895	07551
0.0630	1,600 mm		3,0	38,0	10,2	7,8	130	07896	07552
0.0630	1,600 mm		3,0	50,0	20,0	17,6	130	07897	07553
0.0634	1,610 mm		3,0	38,0	10,2	7,8	130	07898	07554
0.0638	1,620 mm		3,0	38,0	10,2	7,8	130	07899	07555
0.0642	1,630 mm		3,0	38,0	10,2	7,8	130	07900	07556
0.0646	1,640 mm		3,0	38,0	10,2	7,7	130	07901	07557

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TOLERANCES (mm)

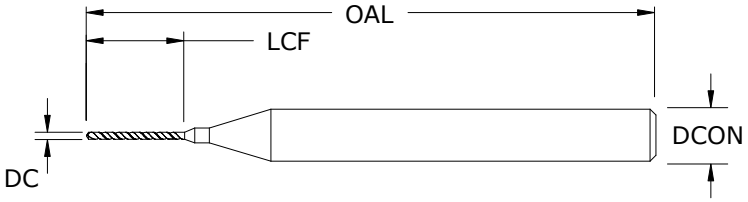
0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

2 Flute External Coolant



TOLERANCES (mm)

0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

M226
METRIC SERIES

continued

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0650	1,650 mm		3,0	38,0	10,2	7,7	130	07902	07558
0.0650	1,650 mm		3,0	50,0	20,0	17,5	130	07903	07559
0.0654	1,660 mm		3,0	38,0	10,2	7,7	130	07904	07560
0.0657	1,670 mm		3,0	38,0	10,2	7,7	130	07905	07561
0.0661	1,680 mm		3,0	38,0	10,2	7,7	130	07906	07562
0.0665	1,690 mm		3,0	38,0	10,2	7,7	130	07907	07563
0.0669	1,700 mm		3,0	38,0	10,2	7,7	130	07908	07564
0.0669	1,700 mm		3,0	50,0	20,0	17,5	130	07909	07565
0.0673	1,710 mm		3,0	38,0	10,2	7,6	130	07910	07566
0.0677	1,720 mm		3,0	38,0	10,2	7,6	130	07911	07567
0.0681	1,730 mm		3,0	38,0	10,2	7,6	130	07912	07568
0.0685	1,740 mm		3,0	38,0	10,2	7,6	130	07913	07569
0.0689	1,750 mm		3,0	38,0	10,2	7,6	130	07914	07570
0.0689	1,750 mm		3,0	50,0	20,0	17,4	130	07915	07571
0.0693	1,760 mm		3,0	38,0	10,2	7,6	130	07916	07572
0.0697	1,770 mm		3,0	38,0	10,2	7,5	130	07917	07573
0.0701	1,780 mm		3,0	38,0	10,2	7,5	130	07918	07574
0.0705	1,790 mm		3,0	38,0	10,2	7,5	130	07919	07575
0.0709	1,800 mm		3,0	38,0	10,2	7,5	130	07920	07576
0.0709	1,800 mm		3,0	50,0	20,0	17,3	130	07921	07577
0.0713	1,810 mm		3,0	38,0	10,2	7,5	130	07922	07578
0.0717	1,820 mm		3,0	38,0	10,2	7,5	130	07923	07579
0.0720	1,830 mm		3,0	38,0	10,2	7,5	130	07924	07580
0.0724	1,840 mm		3,0	38,0	10,2	7,4	130	07925	07581
0.0728	1,850 mm		3,0	38,0	10,2	7,4	130	07926	07582
0.0728	1,850 mm		3,0	60,0	22,8	20,0	130	07927	07583
0.0732	1,860 mm		3,0	38,0	10,2	7,4	130	07928	07584
0.0736	1,870 mm		3,0	38,0	10,2	7,4	130	07929	07585
0.0740	1,880 mm		3,0	38,0	10,2	7,4	130	07930	07586
0.0744	1,890 mm		3,0	38,0	10,2	7,4	130	07931	07587
0.0748	1,900 mm		3,0	38,0	10,2	7,4	130	07932	07588
0.0748	1,900 mm		3,0	60,0	22,8	20,0	130	07933	07589
0.0752	1,910 mm		3,0	38,0	10,2	7,3	130	07934	07590
0.0756	1,920 mm		3,0	38,0	10,2	7,3	130	07935	07591
0.0760	1,930 mm	#48	3,0	38,0	10,2	7,3	130	07936	07592
0.0764	1,940 mm		3,0	38,0	10,2	7,3	130	07937	07593

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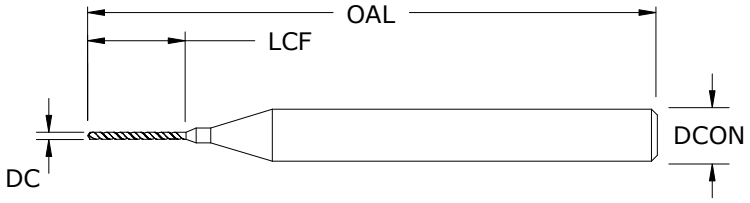
2 Flute External Coolant



M226
METRIC SERIES

continued

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0768	1,950 mm		3,0	38,0	10,2	7,3	130	07938	07594
0.0768	1,950 mm		3,0	60,0	24,0	21,1	130	07939	07595
0.0772	1,960 mm		3,0	38,0	10,2	7,3	130	07940	07596
0.0776	1,970 mm		3,0	38,0	10,2	7,2	130	07941	07597
0.0780	1,980 mm		3,0	38,0	10,2	7,2	130	07942	07598
0.0783	1,990 mm		3,0	38,0	10,2	7,2	130	07943	07599
0.0787	2,000 mm		3,0	38,0	10,2	7,2	130	07944	07600
0.0787	2,000 mm		3,0	60,0	24,0	21,0	130	07945	07601
0.0791	2,010 mm		3,0	38,0	10,2	7,2	130	07946	07602
0.0795	2,020 mm		3,0	38,0	10,2	7,2	130	07947	07603
0.0799	2,030 mm		3,0	38,0	10,2	7,2	130	07948	07604
0.0803	2,040 mm		3,0	38,0	10,2	7,1	130	07949	07605
0.0807	2,050 mm		3,0	38,0	10,2	7,1	130	07950	07606
0.0807	2,050 mm		3,0	60,0	25,2	22,1	130	07951	07607
0.0811	2,060 mm		3,0	38,0	10,2	7,1	130	07952	07608
0.0815	2,070 mm		3,0	38,0	10,2	7,1	130	07953	07609
0.0819	2,080 mm		3,0	38,0	10,2	7,1	130	07954	07610
0.0823	2,090 mm		3,0	38,0	10,2	7,1	130	07955	07611
0.0827	2,100 mm		3,0	38,0	10,2	7,1	130	07956	07612
0.0827	2,100 mm		3,0	60,0	25,2	22,1	130	07957	07613
0.0831	2,110 mm		3,0	38,0	10,2	7,0	130	07958	07614
0.0835	2,120 mm		3,0	38,0	10,2	7,0	130	07959	07615
0.0839	2,130 mm		3,0	38,0	10,2	7,0	130	07960	07616
0.0843	2,140 mm		3,0	38,0	10,2	7,0	130	07961	07617
0.0846	2,150 mm		3,0	38,0	10,2	7,0	130	07962	07618
0.0846	2,150 mm		3,0	60,0	26,4	23,2	130	07963	07619
0.0850	2,160 mm		3,0	38,0	10,2	7,0	130	07964	07620
0.0854	2,170 mm		3,0	38,0	10,2	6,9	130	07965	07621
0.0858	2,180 mm		3,0	38,0	10,2	6,9	130	07966	07622
0.0862	2,190 mm		3,0	38,0	10,2	6,9	130	07967	07623
0.0866	2,200 mm		3,0	38,0	10,2	6,9	130	07968	07624
0.0866	2,200 mm		3,0	60,0	26,4	23,1	130	07969	07625
0.0870	2,210 mm		3,0	38,0	10,2	6,9	130	07970	07626
0.0874	2,220 mm		3,0	38,0	10,2	6,9	130	07971	07627
0.0878	2,230 mm		3,0	38,0	10,2	6,9	130	07972	07628
0.0882	2,240 mm		3,0	38,0	10,2	6,8	130	07973	07629

continued on next page

TOLERANCES (mm)

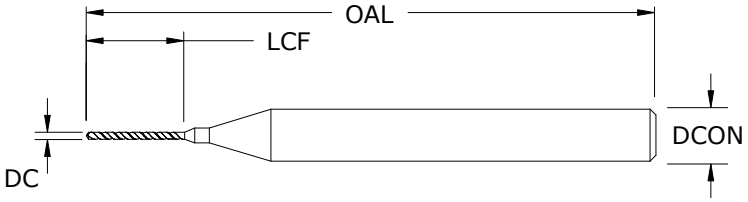
0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

2 Flute External Coolant



TOLERANCES (mm)

0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

M226
METRIC SERIES

continued

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.0886	2,250 mm		3,0	38,0	10,2	6,8	130	07974	07630
0.0886	2,250 mm		3,0	60,0	27,6	24,2	130	07975	07631
0.0890	2,260 mm	#43	3,0	38,0	10,2	6,8	130	07976	07632
0.0894	2,270 mm		3,0	38,0	10,2	6,8	130	07977	07633
0.0898	2,280 mm		3,0	38,0	10,2	6,8	130	07978	07634
0.0902	2,290 mm		3,0	38,0	10,2	6,8	130	07979	07635
0.0906	2,300 mm		3,0	38,0	10,2	6,8	130	07980	07636
0.0906	2,300 mm		3,0	60,0	27,6	24,2	130	07981	07637
0.0909	2,310 mm		3,0	38,0	10,2	6,7	130	07982	07638
0.0913	2,320 mm		3,0	38,0	10,2	6,7	130	07983	07639
0.0917	2,330 mm		3,0	38,0	10,2	6,7	130	07984	07640
0.0921	2,340 mm		3,0	38,0	10,2	6,7	130	07985	07641
0.0925	2,350 mm		3,0	38,0	10,2	6,7	130	07986	07642
0.0925	2,350 mm		3,0	60,0	28,8	25,3	130	07987	07643
0.0929	2,360 mm		3,0	38,0	10,2	6,7	130	07988	07644
0.0933	2,370 mm		3,0	38,0	10,2	6,6	130	07989	07645
0.0937	2,380 mm		3,0	38,0	10,2	6,6	130	07990	07646
0.0941	2,390 mm		3,0	38,0	10,2	6,6	130	07991	07647
0.0945	2,400 mm		3,0	38,0	10,2	6,6	130	07992	07648
0.0945	2,400 mm		3,0	60,0	28,8	25,2	130	07993	07649
0.0949	2,410 mm		3,0	38,0	10,2	6,6	130	07994	07650
0.0953	2,420 mm		3,0	38,0	10,2	6,6	130	07995	07651
0.0957	2,430 mm		3,0	38,0	10,2	6,6	130	07996	07652
0.0961	2,440 mm		3,0	38,0	10,2	6,5	130	07997	07653
0.0965	2,450 mm		3,0	38,0	10,2	6,5	130	07998	07654
0.0965	2,450 mm		3,0	60,0	30,0	26,3	130	07999	07655
0.0969	2,460 mm		3,0	38,0	10,2	6,5	130	08000	07656
0.0972	2,470 mm		3,0	38,0	10,2	6,5	130	08001	07657
0.0976	2,480 mm		3,0	38,0	10,2	6,5	130	08002	07658
0.0980	2,490 mm	#40	3,0	38,0	10,2	6,5	130	08003	07659
0.0984	2,500 mm		3,0	38,0	10,2	6,5	130	08004	07660
0.0984	2,500 mm		3,0	60,0	30,0	26,3	130	08005	07661
0.0988	2,510 mm		3,0	38,0	10,2	6,4	130	08006	07662
0.0992	2,520 mm		3,0	38,0	10,2	6,4	130	08007	07663
0.0996	2,530 mm		3,0	38,0	10,2	6,4	130	08008	07664
0.1000	2,540 mm		3,0	38,0	10,2	6,4	130	08009	07665
0.1004	2,550 mm		3,0	38,0	10,2	6,4	130	08010	07666

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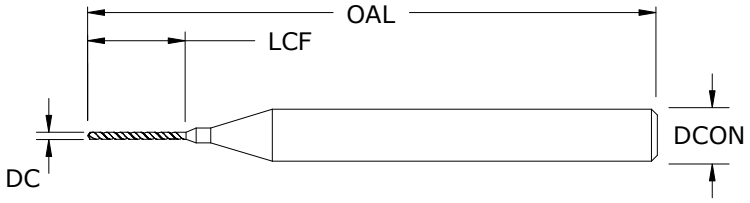
2 Flute External Coolant

M226
METRIC SERIES



continued

mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.1004	2,550 mm		3,0	60,0	31,2	27,4	130	08011	07667
0.1008	2,560 mm		3,0	38,0	10,2	6,4	130	08012	07668
0.1012	2,570 mm		3,0	38,0	10,2	6,3	130	08013	07669
0.1016	2,580 mm		3,0	38,0	10,2	6,3	130	08014	07670
0.1020	2,590 mm		3,0	38,0	10,2	6,3	130	08015	07671
0.1024	2,600 mm		3,0	38,0	10,2	6,3	130	08016	07672
0.1024	2,600 mm		3,0	60,0	31,2	27,3	130	08017	07673
0.1028	2,610 mm		3,0	38,0	10,2	6,3	130	08018	07674
0.1031	2,620 mm		3,0	38,0	10,2	6,3	130	08019	07675
0.1035	2,630 mm		3,0	38,0	10,2	6,3	130	08020	07676
0.1039	2,640 mm		3,0	38,0	10,2	6,2	130	08021	07677
0.1043	2,650 mm		3,0	38,0	10,2	6,2	130	08022	07678
0.1043	2,650 mm		3,0	60,0	32,4	28,4	130	08023	07679
0.1047	2,660 mm		3,0	38,0	10,2	6,2	130	08024	07680
0.1051	2,670 mm		3,0	38,0	10,2	6,2	130	08025	07681
0.1055	2,680 mm		3,0	38,0	10,2	6,2	130	08026	07682
0.1059	2,690 mm		3,0	38,0	10,2	6,2	130	08027	07683
0.1063	2,700 mm		3,0	38,0	10,2	6,2	130	08028	07684
0.1063	2,700 mm		3,0	60,0	32,4	28,4	130	08029	07685
0.1067	2,710 mm		3,0	38,0	10,2	6,1	130	08030	07686
0.1071	2,720 mm		3,0	38,0	10,2	6,1	130	08031	07687
0.1075	2,730 mm		3,0	38,0	10,2	6,1	130	08032	07688
0.1079	2,740 mm		3,0	38,0	10,2	6,1	130	08033	07689
0.1083	2,750 mm		3,0	38,0	10,2	6,1	130	08034	07690
0.1083	2,750 mm		3,0	60,0	33,6	29,5	130	08035	07691
0.1087	2,760 mm		3,0	38,0	10,2	6,1	130	08036	07692
0.1091	2,770 mm		3,0	38,0	10,2	6,0	130	08037	07693
0.1094	2,780 mm	7/64	3,0	38,0	10,2	6,0	130	08038	07694
0.1098	2,790 mm		3,0	38,0	10,2	6,0	130	08039	07695
0.1102	2,800 mm		3,0	38,0	10,2	6,0	130	08040	07696
0.1102	2,800 mm		3,0	60,0	33,6	29,4	130	08041	07697
0.1106	2,810 mm		3,0	38,0	10,2	6,0	130	08042	07698
0.1110	2,820 mm	#34	3,0	38,0	10,2	6,0	130	08043	07699
0.1114	2,830 mm		3,0	38,0	10,2	6,0	130	08044	07700
0.1118	2,840 mm		3,0	38,0	10,2	5,9	130	08045	07701
0.1122	2,850 mm		3,0	38,0	10,2	5,9	130	08046	07702

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TOLERANCES (mm)

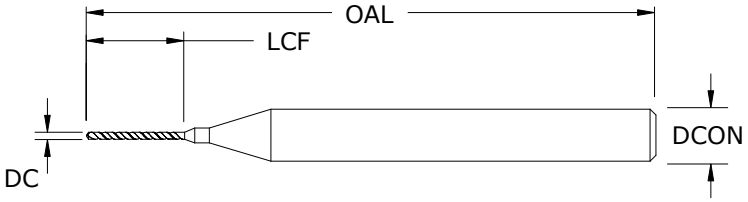
0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

2 Flute External Coolant



TOLERANCES (mm)

0,04–3,0 DIAMETER

DC = +0,000/–0,008

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

M226
METRIC SERIES

continued

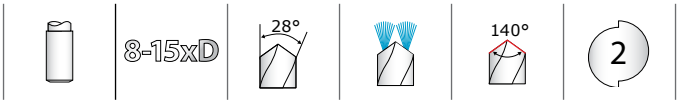
mm								EDP NO.	
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	POINT ANGLE	UNCOATED	TI-NAMITE-A (AlTiN)
0.1122	2,850 mm		3,0	60,0	34,8	30,5	130	08047	07703
0.1126	2,860 mm		3,0	38,0	10,2	5,9	130	08048	07704
0.1130	2,870 mm		3,0	38,0	10,2	5,9	130	08049	07705
0.1134	2,880 mm		3,0	38,0	10,2	5,9	130	08050	07706
0.1138	2,890 mm		3,0	38,0	10,2	5,9	130	08051	07707
0.1142	2,900 mm		3,0	38,0	10,2	5,9	130	08052	07708
0.1142	2,900 mm		3,0	60,0	34,8	30,5	130	08053	07709
0.1146	2,910 mm		3,0	38,0	10,2	5,8	130	08054	07710
0.1150	2,920 mm		3,0	38,0	10,2	5,8	130	08055	07711
0.1154	2,930 mm		3,0	38,0	10,2	5,8	130	08056	07712
0.1157	2,940 mm		3,0	38,0	10,2	5,8	130	08057	07713
0.1161	2,950 mm		3,0	38,0	10,2	5,8	130	08058	07714
0.1161	2,950 mm		3,0	60,0	36,0	31,6	130	08059	07715
0.1165	2,960 mm		3,0	38,0	10,2	5,8	130	08060	07716
0.1169	2,970 mm		3,0	38,0	10,2	5,7	130	08061	07717
0.1173	2,980 mm		3,0	38,0	10,2	5,7	130	08062	07718
0.1177	2,990 mm		3,0	38,0	10,2	5,7	130	08063	07719
0.1181	3,000 mm		3,0	38,0	10,2	5,7	130	08064	07720
0.1181	3,000 mm		3,0	60,0	36,0	31,5	130	08065	07721

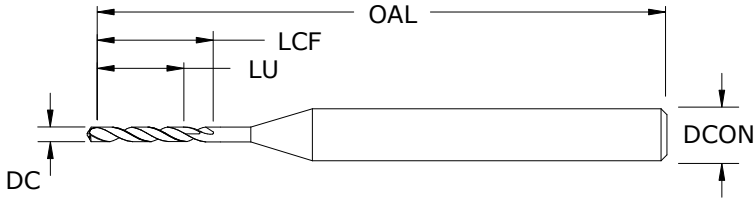
Series M226

	Series M226	Hardness	Vc (m/min)		DC • mm 0.04	0.25	0.5	1	2	3
P	**CARBON STEELS** 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	40 (32-48)	RPM	315060	50410	25205	12602	6301	4201
				Fr	0.0012	0.0072	0.0144	0.0288	0.0576	0.0865
				Feed (mm/min)	363	363	363	363	363	363
	ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	59 (48-71)	RPM	472590	75614	37807	18904	9452	6301
				Fr	0.0010	0.0065	0.0130	0.0261	0.0521	0.0782
				Feed (mm/min)	493	493	493	493	493	493
M	**STAINLESS STEELS (DIFFICULT)** 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	20 (16-24)	RPM	157530	25205	12602	6301	3151	2100
				Fr	0.0009	0.0054	0.0109	0.0218	0.0435	0.0653
				Feed (mm/min)	137	137	137	137	137	137
	STAINLESS STEELS (PH) 13-8 PH, 15-5 PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRc	12 (10-15)	RPM	96942	15511	7755	3878	1939	1293
				Fr	0.0007	0.0044	0.0088	0.0177	0.0354	0.0531
				Feed (mm/min)	69	69	69	69	69	69
K	**CAST IRONS** Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	85 (68-102)	RPM	678591	108575	54287	27144	13572	9048
				Fr	0.0007	0.0041	0.0082	0.0164	0.0328	0.0491
				Feed (mm/min)	445	445	445	445	445	445
N	**ALUMINUM ALLOYS** 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	75 (60-90)	RPM	593768	95003	47501	23751	11875	7917
				Fr	0.0020	0.0123	0.0247	0.0493	0.0986	0.1479
				Feed (mm/min)	1171	1171	1171	1171	1171	1171
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	55 (44-66)	RPM	436237	69798	34899	17449	8725	5816
				Fr	0.0020	0.0123	0.0247	0.0493	0.0987	0.1480
				Feed (mm/min)	861	861	861	861	861	861
	PLASTICS Polycarbonate, PVC		75 (60-90)	RPM	593768	95003	47501	23751	11875	7917
				Fr	0.0020	0.0123	0.0247	0.0493	0.0986	0.1479
				Feed (mm/min)	1171	1171	1171	1171	1171	1171
S	**HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE)** Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 320 Bhn or ≤ 34 HRc	15 (12-18)	RPM	121177	19388	9694	4847	2424	1616
				Fr	0.0004	0.0028	0.0055	0.0110	0.0220	0.0330
				Feed (mm/min)	53	53	53	53	53	53
	TITANIUM ALLOYS Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	15 (12-18)	RPM	121177	19388	9694	4847	2424	1616
				Fr	0.0007	0.0042	0.0085	0.0170	0.0339	0.0509
				Feed (mm/min)	82	82	82	82	82	82
H	**TOOL STEELS** A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc	24 (20-29)	RPM	193883	31021	15511	7755	3878	2585
				Fr	0.0005	0.0033	0.0066	0.0131	0.0262	0.0393
				Feed (mm/min)	102	102	102	102	102	102

Note:
- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x rpm (Fr x maximum available rpm when recommendation exceeds machine limit)
- reduce speed and feed 30% when using uncoated drills
- reduce speed and feed for materials harder than listed
- refer to the KYOCERA SGS APEX for complete technical information (www.kyocera-sgstool.com)

2 Flute Internal Coolant





TOLERANCES (mm)

1,0–4,0 DIAMETER

DC = +0,000/+0,008 (k6)

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

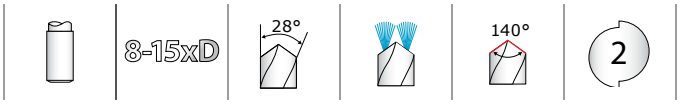
M814
METRIC SERIES

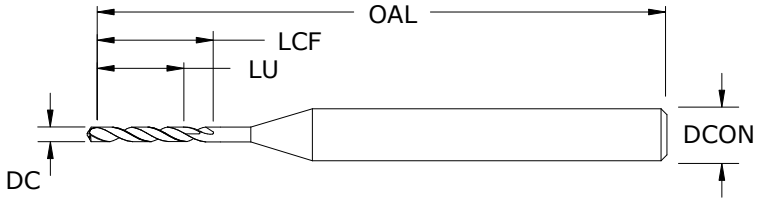
mm						EDP NO.
DECIMAL DC	METRIC DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	CLEARED LENGTH LU	TI-NAMITE-CR (AlCrN)
0.0394	1,000 mm	4,0	53,0	13,3	11,8	06000
0.0394	1,000 mm	4,0	53,0	20,3	18,8	06031
0.0433	1,100 mm	4,0	53,0	14,1	12,5	06001
0.0433	1,100 mm	4,0	53,0	21,8	20,2	06032
0.0472	1,200 mm	4,0	53,0	14,9	13,1	06002
0.0472	1,200 mm	4,0	53,0	23,3	21,5	06033
0.0512	1,300 mm	4,0	64,0	15,7	13,8	06003
0.0512	1,300 mm	4,0	64,0	24,8	22,9	06034
0.0551	1,400 mm	4,0	64,0	16,5	14,4	06004
0.0551	1,400 mm	4,0	64,0	26,3	24,2	06035
0.0591	1,500 mm	4,0	64,0	17,3	15,1	06005
0.0591	1,500 mm	4,0	64,0	27,8	25,6	06036
0.0630	1,600 mm	4,0	64,0	18,1	15,7	06006
0.0630	1,600 mm	4,0	64,0	29,3	26,9	06037
0.0669	1,700 mm	4,0	64,0	18,9	16,4	06007
0.0669	1,700 mm	4,0	64,0	30,8	28,3	06038
0.0709	1,800 mm	4,0	76,0	20,4	17,7	06008
0.0709	1,800 mm	4,0	76,0	33,0	30,3	06039
0.0748	1,900 mm	4,0	76,0	21,2	18,4	06009
0.0748	1,900 mm	4,0	76,0	34,5	31,7	06040
0.0787	2,000 mm	4,0	76,0	22,0	19,0	06010
0.0787	2,000 mm	4,0	76,0	36,0	33,0	06041
0.0827	2,100 mm	4,0	76,0	22,8	19,7	06011
0.0827	2,100 mm	4,0	76,0	37,5	34,4	06042
0.0866	2,200 mm	4,0	76,0	25,7	22,4	06012
0.0866	2,200 mm	4,0	76,0	41,1	37,8	06043
0.0906	2,300 mm	4,0	76,0	26,5	23,1	06013
0.0906	2,300 mm	4,0	76,0	42,6	39,2	06044
0.0945	2,400 mm	4,0	76,0	27,3	23,7	06014
0.0945	2,400 mm	4,0	76,0	44,1	40,5	06045
0.0984	2,500 mm	4,0	76,0	28,1	24,4	06015
0.0984	2,500 mm	4,0	64,0	45,6	41,9	06046

continued on next page

- Split point and double margin design provide superior hole finish and size control
- Coolant hole feature allows straight through drilling without a peck cycle
- Proprietary high-performance coating and mirror polished fluting increase tool life and productivity in moderate-to-difficult workpiece materials
- Available from stock in a selection of popular lengths and diameters
- Application specific sub-micron grain carbide designed specifically for micro-tool applications
- Manufactured in accordance with SGS ISO certified quality procedures

2 Flute Internal Coolant





M814
METRIC SERIES

continued

mm						EDP NO.
DECIMAL DC	METRIC DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	CLEARED LENGTH LU	TI-NAMITE-CR (AlCrN)
0.1024	2,600 mm	4,0	64,0	28,9	25,0	06016
0.1024	2,600 mm	4,0	64,0	47,1	43,2	06047
0.1063	2,700 mm	4,0	64,0	29,7	25,7	06017
0.1063	2,700 mm	4,0	64,0	48,6	44,6	06048
0.1102	2,800 mm	4,0	64,0	30,5	26,3	06018
0.1102	2,800 mm	4,0	81,0	50,1	45,9	06049
0.1142	2,900 mm	4,0	81,0	32,2	27,9	06019
0.1142	2,900 mm	4,0	81,0	52,5	48,2	06050
0.1181	3,000 mm	4,0	81,0	33,0	28,5	06020
0.1181	3,000 mm	4,0	81,0	54,0	49,5	06051
0.1220	3,100 mm	4,0	81,0	33,8	29,2	06021
0.1220	3,100 mm	4,0	81,0	55,5	50,9	06052
0.1260	3,200 mm	4,0	81,0	34,6	29,8	06022
0.1260	3,200 mm	4,0	81,0	57,0	52,2	06053
0.1299	3,300 mm	4,0	90,0	35,4	30,5	06023
0.1299	3,300 mm	4,0	90,0	58,5	53,6	06054
0.1339	3,400 mm	4,0	90,0	38,1	33,0	06024
0.1339	3,400 mm	4,0	90,0	61,9	56,8	06055
0.1378	3,500 mm	4,0	90,0	38,9	33,7	06025
0.1378	3,500 mm	4,0	90,0	63,4	58,2	06056
0.1417	3,600 mm	4,0	106,0	39,7	34,3	06026
0.1417	3,600 mm	4,0	106,0	64,9	59,5	06057
0.1457	3,700 mm	4,0	106,0	40,5	35,0	06027
0.1457	3,700 mm	4,0	106,0	66,4	60,9	06058
0.1496	3,800 mm	4,0	106,0	41,3	35,6	06028
0.1496	3,800 mm	4,0	106,0	67,9	62,2	06059
0.1535	3,900 mm	4,0	106,0	42,1	36,3	06029
0.1535	3,900 mm	4,0	106,0	69,4	63,6	06060
0.1575	4,000 mm	4,0	106,0	42,9	36,9	06030
0.1575	4,000 mm	4,0	106,0	70,9	64,9	06061

TOLERANCES (mm)

1,0–4,0 DIAMETER

DC = +0,000/+0,008 (k6)

DCON = h_6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

Series M814 8xD

	Series M814 8xD	Hardness	Vc (m/min)		DC • mm 1	2	3	4
P	**CARBON STEELS** 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	125 (100-150)	RPM	39746	19873	13249	9937
				Fr	0.023	0.046	0.069	0.092
				Feed (mm/min)	909	909	909	909
P	**ALLOY STEELS** 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	94 (76-113)	RPM	30052	15026	10017	7513
				Fr	0.022	0.043	0.065	0.086
				Feed (mm/min)	648	648	648	648
M	**STAINLESS STEELS (FREE MACHINING)** 303, 416, 420F, 430F, 440F	≤ 250 Bhn or ≤ 24 HRc	64 (51-77)	RPM	20358	10179	6786	5089
				Fr	0.018	0.036	0.054	0.071
				Feed (mm/min)	363	363	363	363
M	**STAINLESS STEELS (DIFFICULT)** 304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 275 Bhn or ≤ 28 HRc	38 (30-46)	RPM	12118	6059	4039	3029
				Fr	0.014	0.028	0.042	0.056
				Feed (mm/min)	170	170	170	170
K	**CAST IRONS** Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	130 (104-155)	RPM	41200	20600	13733	10300
				Fr	0.032	0.063	0.095	0.127
				Feed (mm/min)	1308	1308	1308	1308
N	**ALUMINUM ALLOYS** 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	130 (104-155)	RPM	41200	20600	13733	10300
				Fr	0.039	0.079	0.118	0.158
				Feed (mm/min)	1626	1626	1626	1626
N	**COPPER ALLOYS** Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	99 (79-119)	RPM	31506	15753	10502	7877
				Fr	0.011	0.023	0.034	0.045
				Feed (mm/min)	356	356	356	356
N	**PLASTICS** Polycarbonate, PVC		152 (122-183)	RPM	48471	24235	16157	12118
				Fr	0.024	0.047	0.071	0.094
				Feed (mm/min)	1143	1143	1143	1143
S	**HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE)** Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 320 Bhn or ≤ 34 HRc	27 (22-33)	RPM	8725	4362	2908	2181
				Fr	0.010	0.019	0.029	0.038
				Feed (mm/min)	84	84	84	84
S	**TITANIUM ALLOYS** Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	46 (37-55)	RPM	14541	7271	4847	3635
				Fr	0.010	0.020	0.030	0.041
				Feed (mm/min)	147	147	147	147
H	**TOOL STEELS** A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc	46 (37-55)	RPM	14541	7271	4847	3635
				Fr	0.010	0.020	0.030	0.041
				Feed (mm/min)	147	147	147	147

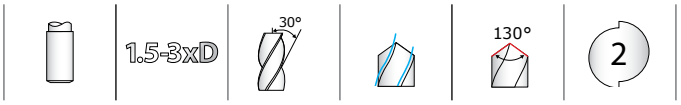
Note:
- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x rpm (Fr x maximum available rpm when recommendation exceeds machine limit)
- reduce speed and feed 30% when using uncoated drills
- reduce speed and feed for materials harder than listed
- refer to the KYOCERA SGS APEX for complete technical information (www.kyocera-sgstool.com)

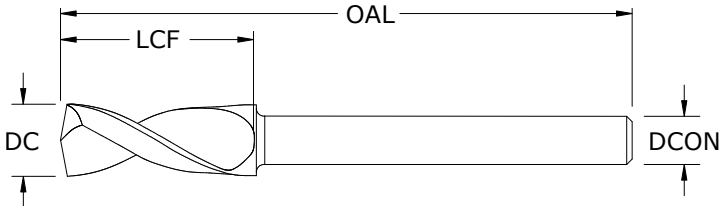
Series M814 15xD

	Series M815 15xD	Hardness	Vc (m/min)		DC • mm 1	2	3	4
P	**CARBON STEELS** **1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536**	≤ 175 Bhn or ≤ 7 HRc	125 (100-150)	RPM	39746	19873	13249	9937
				Fr	0.016	0.032	0.048	0.064
				Feed (mm/min)	635	635	635	635
	ALLOY STEELS **4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100**	≤ 275 Bhn or ≤ 28 HRc	94 (76-113)	RPM	30052	15026	10017	7513
				Fr	0.014	0.028	0.042	0.056
				Feed (mm/min)	419	419	419	419
M	**STAINLESS STEELS (FREE MACHINING)** **303, 416, 420F, 430F, 440F**	≤ 275 Bhn or ≤ 28 HRc	65 (51-77)	RPM	20358	10179	6786	5089
				Fr	0.012	0.024	0.036	0.047
				Feed (mm/min)	241	241	241	241
	STAINLESS STEELS (DIFFICULT) **304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450**	≤ 325 Bhn or ≤ 35 HRc	38 (30-46)	RPM	12118	6059	4039	3029
				Fr	0.009	0.019	0.028	0.038
				Feed (mm/min)	114	114	114	114
K	**CAST IRONS** **Gray, Malleable, Ductile**	≤ 220 Bhn or ≤ 19 HRc	130 (104-155)	RPM	41200	20600	13733	10300
				Fr	0.022	0.043	0.065	0.086
				Feed (mm/min)	889	889	889	889
N	**ALUMINUM ALLOYS** **2017, 2024, 356, 6061, 7075**	≤ 150 Bhn or ≤ 7 HRc	130 (104-155)	RPM	41200	20600	13733	10300
				Fr	0.029	0.057	0.086	0.115
				Feed (mm/min)	1181	1181	1181	1181
	COPPER ALLOYS **Alum Bronze, C110, Muntz Brass**	≤ 140 Bhn or ≤ 3 HRc	99 (79-119)	RPM	31506	15753	10502	7877
				Fr	0.029	0.057	0.086	0.114
				Feed (mm/min)	902	902	902	902
	PLASTICS **Polycarbonate, PVC**		152 (122-183)	RPM	48471	24235	16157	12118
				Fr	0.017	0.033	0.050	0.066
				Feed (mm/min)	800	800	800	800
S	**HIGH TEMP ALLOYS (NICKEL, COBALT, IRON BASE)** **Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy**	≤ 320 Bhn or ≤ 34 HRc	27 (22-33)	RPM	8725	4362	2908	2181
				Fr	0.006	0.012	0.017	0.023
				Feed (mm/min)	51	51	51	51
	TITANIUM ALLOYS **Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si**	≤ 350 Bhn or ≤ 38 HRc	46 (37-55)	RPM	14541	7271	4847	3635
				Fr	0.007	0.014	0.021	0.028
				Feed (mm/min)	102	102	102	102
H	**TOOL STEELS** **A2, D2, H13, L2, M2, P20, S7, T15, W2**	≤ 475 Bhn or ≤ 50 HRc	46 (37-55)	RPM	14541	7271	4847	3635
				Fr	0.007	0.014	0.021	0.028
				Feed (mm/min)	102	102	102	102

Note:
- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x rpm (Fr x maximum available rpm when recommendation exceeds machine limit)
- reduce speed and feed 30% when using uncoated drills
- reduce speed and feed for materials harder than listed
- refer to the KYOCERA SGS APEX for complete technical information (www.kyocera-sgstool.com)

2 Flute Inverse Shank Drill External Coolant





TOLERANCES (inch)

0.1260–0.2638 DIAMETER

DC = +.0000/–.0004

DCON = +0.00016/–0.00016

TOLERANCES (mm)

3,2–6,7 DIAMETER

DC = +0,000/–0,010

DCON = +0,004/–0,004

NON-FERROUS

HIGH TEMP ALLOYS

M155

FRACTIONAL & METRIC SERIES

inch & mm							EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	UNCOATED
0.1260	3,200 mm		1/8	1-1/2	0.500	0.500	06069
0.1280	3,250 mm		1/8	1-1/2	0.500	0.500	06070
0.1285	3,264 mm	#30	1/8	1-1/2	0.500	0.500	06071
0.1299	3,300 mm		1/8	1-1/2	0.500	0.500	06072
0.1319	3,350 mm		1/8	1-1/2	0.500	0.500	06073
0.1339	3,400 mm		1/8	1-1/2	0.500	0.500	06074
0.1358	3,450 mm		1/8	1-1/2	0.500	0.500	06075
0.1360	3,454 mm	#29	1/8	1-1/2	0.500	0.500	06076
0.1378	3,500 mm		1/8	1-1/2	0.500	0.500	06077
0.1398	3,550 mm		1/8	1-1/2	0.500	0.500	06078
0.1405	3,569 mm	#28	1/8	1-1/2	0.500	0.500	06079
0.1406	3,571 mm	9/64	1/8	1-1/2	0.500	0.500	06080
0.1417	3,600 mm		1/8	1-1/2	0.500	0.500	06081
0.1437	3,650 mm		1/8	1-1/2	0.500	0.500	06082
0.1440	3,658 mm	#27	1/8	1-1/2	0.500	0.500	06083
0.1457	3,700 mm		1/8	1-1/2	0.500	0.500	06084
0.1470	3,734 mm	#26	1/8	1-1/2	0.500	0.500	06085
0.1476	3,750 mm		1/8	1-1/2	0.500	0.500	06086
0.1495	3,797 mm	#25	1/8	1-1/2	0.500	0.500	06087
0.1496	3,800 mm		1/8	1-1/2	0.500	0.500	06088
0.1516	3,850 mm		1/8	1-1/2	0.500	0.500	06089
0.1520	3,861 mm	#24	1/8	1-1/2	0.500	0.500	06090
0.1535	3,900 mm		1/8	1-1/2	0.500	0.500	06091
0.1540	3,912 mm	#23	1/8	1-1/2	0.500	0.500	06092
0.1555	3,950 mm		1/8	1-1/2	0.500	0.500	06093
0.1562	3,967 mm	5/32	1/8	1-1/2	0.500	0.500	06094
0.1570	3,988 mm	#22	1/8	1-1/2	0.500	0.500	06095
0.1575	4,000 mm		1/8	1-1/2	0.500	0.500	06096
0.1590	4,039 mm	#21	1/8	1-1/2	0.500	0.500	06097
0.1594	4,050 mm		1/8	1-1/2	0.500	0.500	06098
0.1610	4,089 mm	#20	1/8	1-1/2	0.500	0.500	06099
0.1614	4,100 mm		1/8	1-1/2	0.500	0.500	06100
0.1634	4,150 mm		1/8	1-1/2	0.500	0.500	06101
0.1654	4,200 mm		1/8	1-1/2	0.500	0.500	06102
0.1660	4,216 mm	#19	1/8	1-1/2	0.500	0.500	06103
0.1673	4,250 mm		1/8	1-1/2	0.500	0.500	06104
0.1693	4,300 mm		1/8	1-1/2	0.500	0.500	06105
0.1695	4,305 mm	#18	1/8	1-1/2	0.500	0.500	06106
0.1713	4,350 mm		1/8	1-1/2	0.500	0.500	06107
0.1719	4,366 mm	11/64	1/8	1-1/2	0.500	0.500	06108

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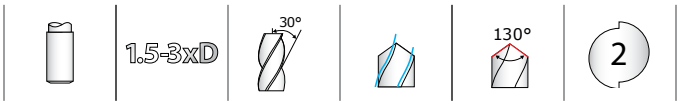
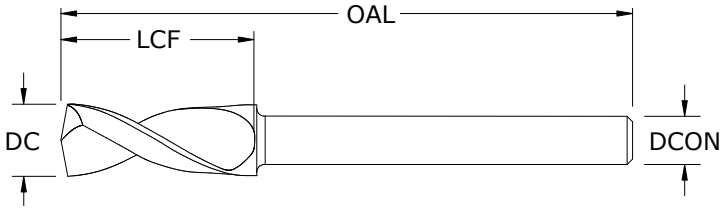
- Optimal end geometry ideal for a variety of materials
- 4-faceted point geometry provides centering assistance upon entry
- Mirror surface finish is applied to allow for smooth chip flow
- Wide diameters offer ability to drill larger than average holes than is commonly possible in micro spindles
- Application specific sub-micron grain carbide designed specifically for micro-tool applications
- Manufactured in accordance with SGS ISO certified quality procedures

2 Flute Inverse Shank Drill External Coolant





M155
FRACTIONAL & METRIC SERIES

continued

inch & mm							EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	UNCOATED
0.1730	4,394 mm	#17	1/8	1-1/2	0.500	0.500	06109
0.1732	4,400 mm		1/8	1-1/2	0.500	0.500	06110
0.1752	4,450 mm		1/8	1-1/2	0.500	0.500	06111
0.1770	4,496 mm	#16	1/8	1-1/2	0.500	0.500	06112
0.1772	4,500 mm		1/8	1-1/2	0.500	0.500	06113
0.1791	4,550 mm		1/8	1-1/2	0.500	0.500	06114
0.1800	4,572 mm	#15	1/8	1-1/2	0.500	0.500	06115
0.1811	4,600 mm		1/8	1-1/2	0.500	0.500	06116
0.1820	4,623 mm	#14	1/8	1-1/2	0.500	0.500	06117
0.1831	4,650 mm		1/8	1-1/2	0.500	0.500	06118
0.1850	4,700 mm	#13	1/8	1-1/2	0.500	0.500	06120
0.1870	4,750 mm		1/8	1-1/2	0.500	0.500	06121
0.1875	4,763 mm	3/16	1/8	1-1/2	0.500	0.500	06122
0.1890	4,800 mm	#12	1/8	1-1/2	0.500	0.500	06124
0.1909	4,850 mm		1/8	1-1/2	0.500	0.500	06125
0.1910	4,851 mm	#11	1/8	1-1/2	0.500	0.500	06126
0.1929	4,900 mm		1/8	1-1/2	0.500	0.500	06127
0.1935	4,915 mm	#10	1/8	1-1/2	0.500	0.500	06128
0.1949	4,950 mm		1/8	1-1/2	0.500	0.500	06129
0.1960	4,978 mm	#9	1/8	1-1/2	0.500	0.500	06130
0.1968	5,000 mm		1/8	1-1/2	0.500	0.500	06131
0.1988	5,050 mm		1/8	1-1/2	0.500	0.500	06132
0.1990	5,055 mm	#8	1/8	1-1/2	0.500	0.500	06133
0.2008	5,100 mm		1/8	1-1/2	0.500	0.500	06134
0.2010	5,105 mm	#7	1/8	1-1/2	0.500	0.500	06135
0.2028	5,150 mm		1/8	1-1/2	0.500	0.500	06136
0.2031	5,159 mm	13/64	1/8	1-1/2	0.500	0.500	06137
0.2040	5,182 mm	#6	1/8	1-1/2	0.500	0.500	06138
0.2047	5,200 mm		1/8	1-1/2	0.500	0.500	06139
0.2055	5,220 mm	#5	1/8	1-1/2	0.500	0.500	06140
0.2067	5,250 mm		1/8	1-1/2	0.500	0.500	06141
0.2087	5,300 mm		1/8	1-1/2	0.500	0.500	06142
0.2090	5,309 mm	#4	1/8	1-1/2	0.500	0.500	06143
0.2106	5,350 mm		1/8	1-1/2	0.500	0.500	06144
0.2126	5,400 mm		1/8	1-1/2	0.500	0.500	06145
0.2130	5,410 mm	#3	1/8	1-1/2	0.500	0.500	06146
0.2146	5,450 mm		1/8	1-1/2	0.500	0.500	06147
0.2165	5,500 mm		1/8	1-1/2	0.500	0.500	06148
0.2185	5,550 mm		1/8	1-1/2	0.500	0.500	06149
0.2188	5,558 mm	7/32	1/8	1-1/2	0.500	0.500	06150

continued on next page

TOLERANCES (inch)

0.1260–0.2638 DIAMETER
DC = +.0000/–.0004
DCON = +0.00016/–0.00016

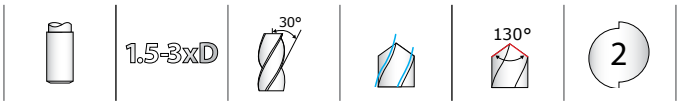
TOLERANCES (mm)

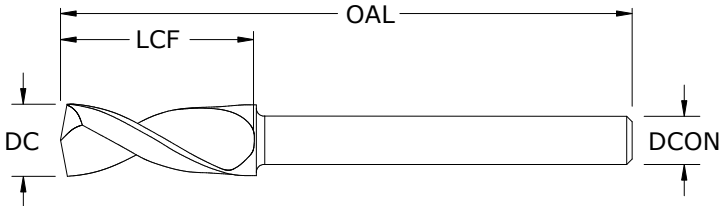
3,2–6,7 DIAMETER
DC = +0,000/–0,010
DCON = +0,004/–0,004

NON-FERROUS

HIGH TEMP ALLOYS

2 Flute Inverse Shank Drill External Coolant





TOLERANCES (inch)

0.1260–0.2638 DIAMETER

DC = +.0000/–.0004

DCON = +0.00016/–0.00016

TOLERANCES (mm)

3,2–6,7 DIAMETER

DC = +0,000/–0,010

DCON = +0,004/–0,004

NON-FERROUS

HIGH TEMP ALLOYS

M155

FRACTIONAL & METRIC SERIES

continued

inch & mm							EDP NO.
DECIMAL DC	METRIC DC	FRACTIONAL/ LETTER/WIRE DC	SHANK DIAMETER DCON	OVERALL LENGTH OAL	FLUTE LENGTH LCF	USABLE LENGTH LU	UNCOATED
0.2205	5,600 mm		1/8	1-1/2	0.500	0.500	06151
0.2210	5,613 mm	#2	1/8	1-1/2	0.500	0.500	06152
0.2224	5,650 mm		1/8	1-1/2	0.500	0.500	06153
0.2244	5,700 mm		1/8	1-1/2	0.500	0.500	06154
0.2264	5,750 mm		1/8	1-1/2	0.500	0.500	06155
0.2280	5,791 mm	#1	1/8	1-1/2	0.500	0.500	06156
0.2283	5,800 mm		1/8	1-1/2	0.500	0.500	06157
0.2302	5,850 mm		1/8	1-1/2	0.500	0.500	06158
0.2323	5,900 mm		1/8	1-1/2	0.500	0.500	06159
0.2340	5,944 mm	A	1/8	1-1/2	0.500	0.500	06160
0.2343	5,950 mm		1/8	1-1/2	0.500	0.500	06161
0.2344	5,954 mm	15/64	1/8	1-1/2	0.500	0.500	06162
0.2362	6,000 mm		1/8	1-1/2	0.500	0.500	06163
0.2380	6,045 mm	B	1/8	1-1/2	0.500	0.500	06164
0.2382	6,050 mm		1/8	1-1/2	0.500	0.500	06165
0.2402	6,100 mm		1/8	1-1/2	0.500	0.500	06166
0.2420	6,147 mm	C	1/8	1-1/2	0.500	0.500	06167
0.2421	6,150 mm		1/8	1-1/2	0.500	0.500	06168
0.2441	6,200 mm		1/8	1-1/2	0.500	0.500	06169
0.2460	6,248 mm	D	1/8	1-1/2	0.500	0.500	06170
0.2461	6,250 mm		1/8	1-1/2	0.500	0.500	06171
0.2480	6,300 mm		1/8	1-1/2	0.500	0.500	06172
0.2500	6,350 mm	1/4 E	1/8	1-1/2	0.500	0.500	06173
0.2520	6,400 mm		1/8	1-1/2	0.500	0.500	06176
0.2559	6,500 mm		1/8	1-1/2	0.500	0.500	06177
0.2570	6,528 mm	F	1/8	1-1/2	0.500	0.500	06178
0.2598	6,600 mm		1/8	1-1/2	0.500	0.500	06179
0.2610	6,629 mm	G	1/8	1-1/2	0.500	0.500	06180
0.2638	6,700 mm		1/8	1-1/2	0.500	0.500	06181

FRACTIONAL

Series M155

	Series M155	Hardness	Vc (sfm)		DC • in 0.126	0.158	0.197	0.236	0.264
N	**ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075**	≤ 150 Bhn or ≤ 7 HRc	450 (360-540)	RPM	13643	10914	8730	7278	6516
				Fr	0.00550	0.00687	0.0086	0.0103	0.0115
				Feed (ipm)	75.0	75.0	75.0	75.0	75.0
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	350 (280-420)	RPM	10611	8489	6790	5660	5068
				Fr	0.00547	0.00683	0.0085	0.0102	0.0114
				Feed (ipm)	58.0	58.0	58.0	58.0	58.0
	PLASTICS Polycarbonate, PVC		575 (460-690)	RPM	17433	13946	11155	9299	8326
				Fr	0.00631	0.00789	0.0099	0.0118	0.0132
				Feed (ipm)	110.0	110.0	110.0	110.0	110.0
S	**TITANIUM ALLOYS Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si**	≤ 350 Bhn or ≤ 38 HRc	100 (80-120)	RPM	3032	2425	1940	1617	1448
				Fr	0.00185	0.00231	0.0029	0.0035	0.0039
				Feed (ipm)	5.6	5.6	5.6	5.6	5.6

Note:
- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = Vc x 3.82 / DC
- ipm = Fr x rpm (Fr x maximum available rpm when recommendation exceeds machine limit)
- reduce speed and feed for materials harder than listed
- refer to the KYOCERA SGS APEX for complete technical information (www.kyocera-sgstool.com)

METRIC

Series M155

	Series M155	Hardness	Vc (m/min)		DC • mm 3	4	5	6	7
N	**ALUMINUM ALLOYS 2017, 2024, 356, 6061, 7075**	≤ 150 Bhn or ≤ 7 HRc	137 (110-165)	RPM	14541	10906	8725	7271	6232
				Fr	0.1310	0.1747	0.2183	0.2620	0.3057
				Feed (mm/min)	1905	1905	1905	1905	1905
	COPPER ALLOYS Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	107 (85-128)	RPM	11310	8482	6786	5655	4847
				Fr	0.1303	0.1737	0.2171	0.2605	0.3039
				Feed (mm/min)	1473	1473	1473	1473	1473
	PLASTICS Polycarbonate, PVC		175 (140-210)	RPM	18580	13935	11148	9290	7963
				Fr	0.1504	0.2005	0.2506	0.3007	0.3509
				Feed (mm/min)	2794	2794	2794	2794	2794
S	**TITANIUM ALLOYS Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si**	≤ 350 Bhn or ≤ 38 HRc	30 (24-37)	RPM	3231	2424	1939	1616	1385
				Fr	0.0440	0.0587	0.0734	0.0880	0.1027
				Feed (mm/min)	142	142	142	142	142

Note:
- Bhn (Brinell) HRc (Rockwell C) HRb (Rockwell B)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x rpm (Fr x maximum available rpm when recommendation exceeds machine limit)
- reduce speed and feed for materials harder than listed
- refer to the KYOCERA SGS APEX for complete technical information (www.kyocera-sgstool.com)

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09815	81
09816	82
09817	81
09818	82
09819	81
09820	82
09821	81
09822	82
09823	81
09824	82
09825	81
09826	82
09827	81
09828	82
09829	81
09830	82
09831	81
09832	82
09833	81
09834	82
09835	81
09836	82
09837	81
09838	73
09839	72
09840	73
09841	72
09842	73
09843	72
09844	73
09845	72
09846	73
09847	72
09848	73
09849	72
09850	73
09851	72
09852	73
09853	72
09854	73
09855	72
09856	73
09857	72
09858	73
09859	72
09860	73
09861	72
09862	73
09863	72
09864	73
09865	72
09866	73
09867	72
09868	73
09869	72
09870	73
09871	72
09872	73
09873	72
09874	73
09875	72
09876	73
09877	72
09878	73
09879	72
09880	73
09881	72
09882	73
09883	72
09884	73
09885	72
09886	73
09887	72
09888	73
09889	72
09890	73
09891	72

Decimal Equivalents

Fraction • Number • Letter • Metric Sizes

INCH	METRIC	DECIMAL EQUIVALENT
–	0,10	0.0039
–	0,20	0.0079
–	0,25	0.0098
–	0,30	0.0118
#80	0,34	0.0135
–	0,35	0.0138
#79	0,37	0.0145
1/64	0,40	0.0156
#78	0,41	0.0160
–	0,45	0.0177
#77	0,46	0.0180
–	0,50	0.0197
#76	0,51	0.0200
#75	0,53	0.0210
–	0,55	0.0217
#74	0,57	0.0225
–	0,60	0.0236
#73	0,61	0.0240
#72	0,64	0.0250
–	0,65	0.0256
#71	0,66	0.0260
–	0,70	0.0276
#70	0,71	0.0280
#69	0,74	0.0292
–	0,75	0.0295
#68	0,79	0.0310
1/32	0,79	0.0313
–	0,80	0.0315
#67	0,81	0.0320
#66	0,84	0.0330
–	0,85	0.0335
#65	0,89	0.0350
–	0,90	0.0354
#64	0,91	0.0360
#63	0,94	0.0370
–	0,95	0.0374
#62	0,97	0.0380
#61	0,99	0.0390
–	1,00	0.0394
#60	1,02	0.0400
#59	1,04	0.0410
–	1,05	0.0413
#58	1,07	0.0420
#57	1,09	0.0430
–	1,10	0.0433
–	1,15	0.0453
#56	1,18	0.0465
3/64	1,19	0.0469
–	1,20	0.0472
–	1,25	0.0492
–	1,30	0.0512
#55	1,32	0.0520
–	1,35	0.0531
#54	1,40	0.0550
#53	1,51	0.0595
–	1,55	0.0610
1/16	1,59	0.0625

INCH	METRIC	DECIMAL EQUIVALENT
–	1,60	0.0630
#52	1,61	0.0635
–	1,65	0.0650
#51	1,70	0.0669
–	1,75	0.0689
#50	1,78	0.0700
–	1,80	0.0709
#49	1,85	0.0728
–	1,90	0.0748
#48	1,93	0.0760
–	1,95	0.0768
5/64	1,98	0.0781
#47	1,99	0.0785
–	2,00	0.0787
–	2,05	0.0807
#46	2,06	0.0810
#45	2,08	0.0820
–	2,10	0.0827
–	2,15	0.0846
#44	2,18	0.0860
–	2,20	0.0866
–	2,25	0.0886
#43	2,26	0.0890
–	2,30	0.0906
–	2,35	0.0925
#42	2,37	0.0935
3/32	2,38	0.0938
–	2,40	0.0945
#41	2,44	0.0960
–	2,45	0.0965
#40	2,50	0.0984
#39	2,53	0.0995
#38	2,58	0.1015
–	2,60	0.1024
#37	2,64	0.1040
–	2,70	0.1063
#36	2,71	0.1065
–	2,75	0.1083
7/64	2,78	0.1094
#35	2,79	0.1100
–	2,80	0.1102
#34	2,82	0.1110
#33	2,87	0.1130
–	2,90	0.1142
#32	2,95	0.1160
–	3,00	0.1181
#31	3,05	0.1200
–	3,10	0.1220
1/8	3,18	0.1250
–	3,20	0.1260
–	3,25	0.1280
#30	3,26	0.1285
–	3,30	0.1299
–	3,40	0.1339
#29	3,45	0.1360
–	3,50	0.1378
#28	3,57	0.1405

INCH	METRIC	DECIMAL EQUIVALENT
9/64	3,57	0.1406
–	3,60	0.1417
#27	3,66	0.1440
–	3,70	0.1457
#26	3,73	0.1470
–	3,75	0.1476
#25	3,80	0.1495
–	3,80	0.1496
#24	3,86	0.1520
–	3,90	0.1535
#23	3,91	0.1540
5/32	3,97	0.1562
#22	3,99	0.1570
–	4,00	0.1575
#21	4,04	0.1590
#20	4,09	0.1610
–	4,10	0.1614
–	4,20	0.1654
#19	4,22	0.1660
–	4,25	0.1673
–	4,30	0.1693
#18	4,31	0.1695
11/64	4,37	0.1719
#17	4,39	0.1730
–	4,40	0.1732
#16	4,50	0.1770
–	4,50	0.1772
#15	4,57	0.1800
–	4,60	0.1811
#14	4,62	0.1820
#13	4,70	0.1850
–	4,75	0.1870
3/16	4,76	0.1875
#12	4,80	0.1890
#11	4,85	0.1910
–	4,90	0.1929
#10	4,91	0.1935
#9	4,98	0.1960
–	5,00	0.1969
#8	5,05	0.1990
–	5,10	0.2008
#7	5,11	0.2010
13/64	5,16	0.2031
#6	5,18	0.2040
–	5,20	0.2047
#5	5,22	0.2055
–	5,25	0.2067
–	5,3	0.2087
#4	5,31	0.2090
–	5,40	0.2126
#3	5,41	0.2130
–	5,50	0.2165
7/32	5,56	0.2188
–	5,60	0.2205
#2	5,61	0.2210
–	5,70	0.2244
–	5,75	0.2264

INCH	METRIC	DECIMAL EQUIVALENT
#1	5,79	0.2280
–	5,80	0.2283
–	5,90	0.2323
A	5,94	0.2340
15/64	5,95	0.2344
–	6,00	0.2362
B	6,05	0.2380
–	6,10	0.2402
C	6,15	0.2420
–	6,20	0.2441
D	6,25	0.2461
–	6,30	0.2480
E	6,35	0.2500
1/4	6,35	0.2500
–	6,40	0.2520
–	6,50	0.2559
F	6,53	0.2570
–	6,60	0.2598
G	6,63	0.2610
–	6,70	0.2638
17/64	6,75	0.2656
H	6,76	0.2660
–	6,80	0.2677
–	6,90	0.2717
I	6,91	0.2720
–	7,00	0.2756
J	7,04	0.2770
–	7,10	0.2795
K	7,14	0.2810
9/32	7,14	0.2812
–	7,20	0.2835
–	7,25	0.2854
–	7,30	0.2874
L	7,37	0.2900
–	7,40	0.2913
M	7,49	0.2950
–	7,50	0.2953
19/64	7,54	0.2969
–	7,60	0.2992
N	7,67	0.3020
–	7,70	0.3031
–	7,75	0.3051
–	7,80	0.3071
–	7,90	0.3110
5/16	7,94	0.3125
–	8,00	0.3150
O	8,03	0.3160
–	8,10	0.3189
–	8,20	0.3228
P	8,20	0.3230
–	8,25	0.3248
–	8,30	0.3268
21/64	8,33	0.3281
–	8,40	0.3307
Q	8,43	0.3320
–	8,50	0.3346
–	8,60	0.3386

INCH	METRIC	DECIMAL EQUIVALENT
R	8,61	0.3390
–	8,70	0.3425
11/32	8,73	0.3438
–	8,75	0.3445
–	8,80	0.3465
S	8,84	0.3480
–	8,90	0.3504
–	9,00	0.3543
T	9,09	0.3580
–	9,10	0.3583
23/64	9,13	0.3594
–	9,20	0.3622
–	9,25	0.3642
–	9,30	0.3661
U	9,35	0.3680
–	9,40	0.3701
–	9,50	0.3740
3/8	9,53	0.3750
V	9,56	0.3770
–	9,60	0.3780
–	9,70	0.3819
–	9,75	0.3839
W	9,80	0.3858
–	9,90	0.3898
25/64	9,92	0.3906
–	10,00	0.3937
X	10,08	0.3970
–	10,10	0.3976
–	10,20	0.4016
Y	10,26	0.4040
–	10,30	0.4055
13/32	10,32	0.4062
–	10,40	0.4094
Z	10,49	0.4130
–	10,50	0.4134
–	10,60	0.4173
–	10,70	0.4213
27/64	10,72	0.4219
–	10,80	0.4252
–	10,90	0.4291
–	11,00	0.4331
–	11,10	0.4370
7/16	11,11	0.4375
–	11,20	0.4409
–	11,30	0.4449
–	11,40	0.4488
–	11,50	0.4528
29/64	11,51	0.4531
–	11,60	0.4567
–	11,70	0.4606
–	11,80	0.4646
–	11,90	0.4685
15/32	11,91	0.4688
–	12,00	0.4724
31/64	12,30	0.4844
–	12,50	0.4921
1/2	12,70	0.5000

INCH	METRIC	DECIMAL EQUIVALENT
–	13,00	0.5118
33/64	13,10	0.5156
17/32	13,49	0.5312
–	13,50	0.5315
35/64	13,89	0.5469
–	14,00	0.5512
9/16	14,29	0.5625
–	14,50	0.5709
37/64	14,68	0.5781
–	15,00	0.5906
19/32	15,08	0.5938
39/64	15,48	0.6094
–	15,50	0.6102
5/8	15,88	0.6250
–	16,00	0.6299
41/64	16,27	0.6406
–	16,50	0.6496
21/32	16,67	0.6562
–	17,00	0.6693
43/64	17,07	0.6719
11/16	17,46	0.6875
–	17,50	0.6890
45/64	17,86	0.7031
–	18,00	0.7087
23/32	18,26	0.7188
–	18,50	0.7283
47/64	18,65	0.7344
–	19,00	0.7480
3/4	19,05	0.7500
49/64	19,45	0.7656
–	19,50	0.7677
25/32	19,84	0.7812
–	20,00	0.7874
51/64	20,24	0.7969
–	20,50	0.8071
13/16	20,64	0.8125
–	21,00	0.8268
53/64	21,03	0.8281
27/32	21,43	0.8438
–	21,50	0.8465
55/64	21,84	0.8594
–	22,00	0.8661
7/8	22,23	0.8750
–	22,50	0.8858
57/64	22,62	0.8906
–	23,00	0.9055
29/32	23,02	0.9062
59/64	23,42	0.9219
–	23,50	0.9252
15/16	23,81	0.9375
–	24,00	0.9449
61/64	24,21	0.9531
–	24,50	0.9646
31/32	24,61	0.9688
–	25,00	0.9843
63/64	25,00	0.9844
1	25,40	1.0000

Hardness Conversion Chart

ROCKWELL HARDNESS (HRb)	ROCKWELL HARDNESS (HRc)	BRINELL HARDNESS (HB)	VICKERS HARDNESS (HV)	TENSILE STRENGTH (N/mm2)	PSI (1000lb/in2)
67	–	121	122	401	58
70	–	126	127	432	63
73	–	132	132	448	65
75	–	136	137	455	66
77	–	140	143	463	67
80	–	147	150	479	69
82	–	153	156	494	72
84	–	159	163	525	76
86	–	165	171	540	78
89	–	177	178	556	81
91	–	186	188	602	88
93	–	197	196	632	92
96	–	216	212	664	97
97	–	223	218	695	101
98	21	230	234	756	110
–	22	236	241	772	112
–	23	242	247	787	114
–	24	248	255	818	118
–	25	254	261	849	123
–	27	266	269	865	125
–	28	272	275	895	130
–	29	278	284	911	132
–	30	284	292	942	136
–	31	293	300	973	141
–	32	302	308	988	143
–	33	310	318	1019	147
–	34	319	327	1050	152
–	35	328	337	1096	159
–	37	345	349	1127	163
–	38	353	359	1158	168
–	39	362	370	1189	172
–	40	370	381	1235	179
–	41	381	395	1266	183
–	42	391	408	1312	190
–	44	411	422	1359	197
–	45	422	437	1420	206
–	46	433	452	1467	212
–	48	455	470	1513	219
–	50	479	497	1559	226
–	51	485	517	1621	235
–	52	497	532	1668	241
–	54	–	573	1729	250
–	56	–	609	1807	262
–	57	–	630	1884	273
–	59	–	670	1961	284
–	60	–	698	2039	295
–	61	–	725	–	–
–	62	–	740	–	–
–	63	–	780	–	–
–	64	–	812	–	–
–	65	–	847	–	–
–	66	–	885	–	–
–	67	–	926	–	–
–	68	–	971	–	–

Conversions from each scale are approximate

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