
SPT
SUNCOAST INC.
PRECISION TOOLS
ESTABLISHED 1963
New Coating
PROMAX
POWER
LAYER
New Tool Series
Extensive Square & Radius Selection
German Engineered. American Made.
PROMAX
Premium
DESIGN-
RITE XL
Your Trusted End Mill Partner for over 30 years
Specializing in High Performance Solid Carbide End Mills

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PROMAX PREMIUM

Aluminum Alloys & Non-Ferrous Materials

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Steels, High-Temp Alloys, & Titanium

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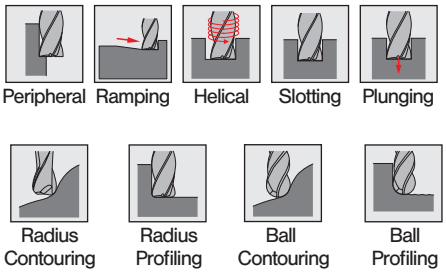
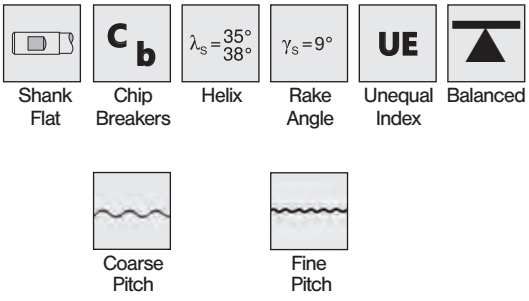
Micro End Mills				
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DESIGN-RITE XL

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D644	4 Flute	Radius		109
D664	4 Flute	Ball		118
D645	5 Flute	Square		120
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PROMAX Premium

Pictogram Glossary

Best Used In Material	UN Universal; TI Titanium; VA Stainless Steel; H Hardened Steel; AL Aluminum; ST Steel
Number Of Flutes	2 FL; 3 FL; 4 FL; 5 FL; 6 FL; 7 FL
End Mill Corner / End Style	S Square; PC Protective Corner; R Radius; R Ball Radius
Application Uses	 Peripheral; Ramping; Helical; Slotting; Plunging; Radius Contouring; Radius Profiling; Ball Contouring; Ball Profiling
Geometry Information	 Shank Flat; Cb Chip Breakers; λS = 35° 38° Helix; γS = 9° Rake Angle; UE Unequal Index; Balanced; Coarse Pitch; Fine Pitch

Policies & Procedures

CUSTOMER SERVICE

At CERATIZIT Sacramento, we will provide the highest quality cutting tools to best suit your application. In addition, our customers receive both an excellent tool and the knowledge and assistance of our Technical Support and other departments. We believe that customer service is just as important as the product being sold. Our customers receive the answers they seek and the information they need in a more than timely manner. You can feel comfortable knowing that quality products and customer satisfaction are at the center of every decision we make.

Call our knowledgeable Service Line at 1-800-878-0502 for all of your cutting tool needs and questions.

LIMITED WARRANTY

CERATIZIT Sacramento warrants each new product manufactured and sold by us or one of our authorized dealers against defects in workmanship and/or materials. Our obligation is limited to the repair or replacement of defective products. At our discretion, we may refund the purchase price of a defective product. This warranty does not cover products that are damaged as a result of negligence or misuse including improper operating conditions and machine set up or any items that have been repaired or altered. This warranty excludes all other warranties, expressed or implied, including any implied warranties of merchant ability or fitness for a particular purpose. In no event will CERATIZIT Sacramento be liable for any incidental, special or consequential damages of any nature.

RETURN POLICY

Returned products must be accompanied by a CERATIZIT Sacramento authorized Returned Goods Authorization number (RGA). Warranty claims should be made through the distributor from whom the product was purchased. Distributors may call us at 1-800-878-0502 to receive an RGA number. Returned goods may be subject to a restocking fee. Special, modified, non-catalog or altered tools are not acceptable for return.

TEST TOOL POLICY

Take the our Challenge: Throw it on the spindle and prove it to yourself. Higher production rates and longer tool life are your goals and ours. CERATIZIT Sacramento will authorize a test tool edit only when the proper procedures of the existing GUARANTEED TEST TOOL ORDER (GTO) are followed. For details on this program, please call our Service Line at 1-800-878-0502.

Safety Precautions

Carbide cutting tools can break or shatter under improper or severe use. Always wear the proper personal protective equipment when performing metal cutting operations. Carbide cutting tools have sharp edges. Use caution while handling cutting tools to avoid injury. ⚠ WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov



“Feel The Edge”

PROMAX Premium EDGE PREP is standard on many of our end mills. This process allows you to forgo the tedious and long break-in periods needed on most tools in order to receive the most production out of your end mill. Combining our edge prep and superior coatings the results are clear – longer running end mills, with fewer tool changes per run, equals significant cost effectiveness.

High Precision In-house Coatings for High Precision Tools

PROMAX POWER LAYER

This coating pushes the PROMAX offering to the edge of technology. Our German Research & Development facility developed a special layer within this coating, that allows it adhere to the carbide better. This results in higher resistance to heat and improves tool life. The PROMAX PowerLayer coating is designed to perform in all Steels, High-Temp Alloys, and Titanium.

AlTiN
(Aluminum Titanium Nitride)

AlTiN is a monoblock and gradient, multilayer coating designed specifically for use on carbide end mills. Use when machining Cast Iron and Steel work pieces as it has excellent oxidation resistance allowing for high speeds in semi-dry or dry machining operations where increased heat is generated.

ZrN
(Zirconium Nitride)

This monolayer coating effectively reduces built-up edges when machining aluminum and titanium alloys. Recommended when machining medical grade materials and in other high heat resistant applications. Also for use in machining steels, alloyed steels, superalloys, Aluminum > 12% Si, Aluminum < 12% Si, copper, bronze, brass and plastics.

nACRo®
(Aluminum-Chromium-Silicon)

PROMAX nACRo® coating has a nanocomposite structure that has increased hardness for scratch and higher heat resistance. This coating excels in “tough” difficult to cut materials including Steels, Hardened Steels, Alloyed Steels, and Superalloys.



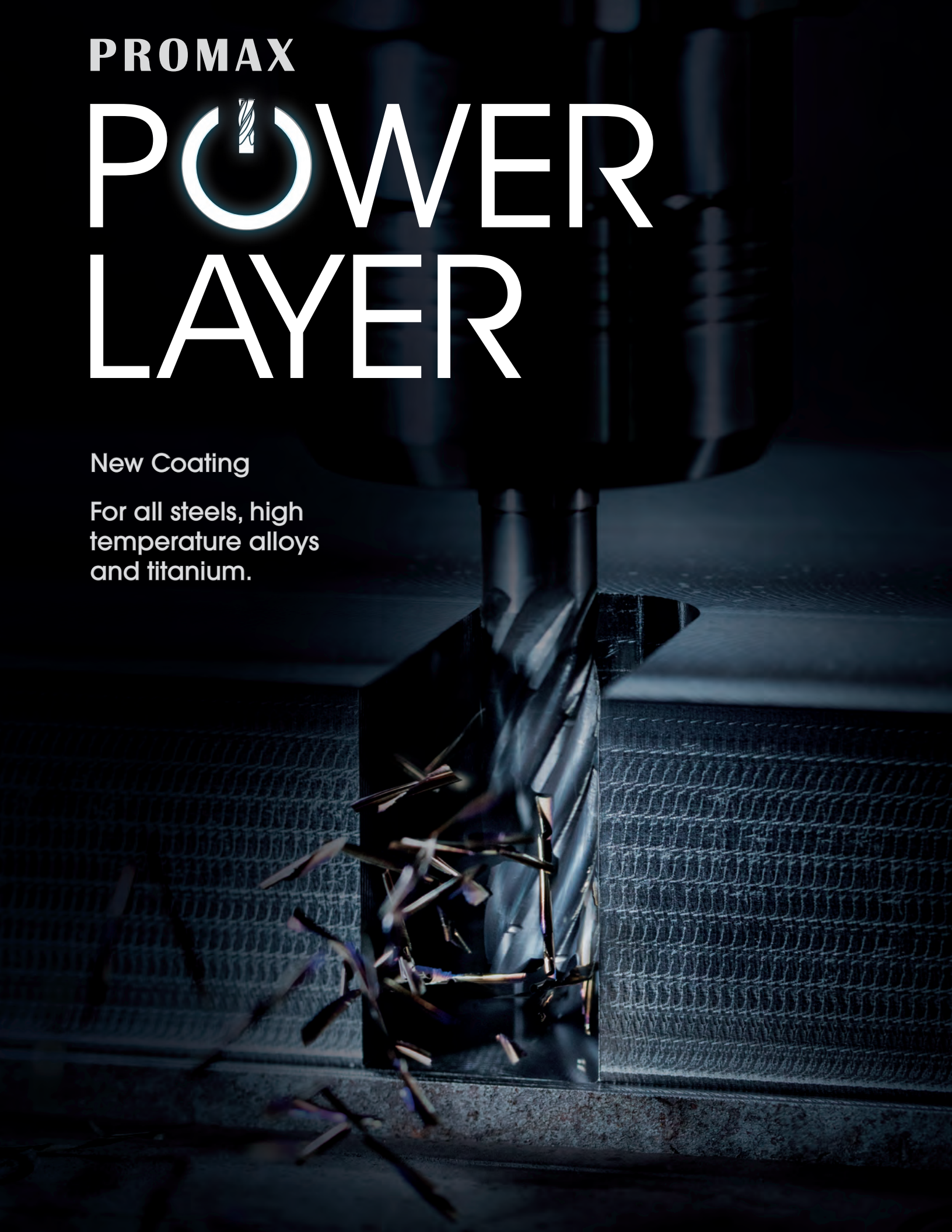



PROMAX

POWER LAYER

New Coating

For all steels, high temperature alloys and titanium.



The CERATIZIT Group

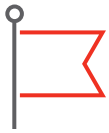
For over **95 years**, CERATIZIT has been a **pioneer** developing exceptional hard material products for cutting tools and wear protection.

The privately owned company, based in Mamer, Luxembourg, develops and manufactures highly specialized carbide cutting tools, inserts and rods made of hard materials as well as wear parts.

The CERATIZIT Group is the **global market leader** in a number of cutting tool application areas. We successfully develop new types of cemented carbide, cermet and ceramic grades, which are used for instance in wheel set and turbine machining, in the aerospace and automotive industries, for heavy machining and bar peeling – always with the goal of ineased stability, process reliability and performance.

In 2014 CERATIZIT purchased a majority holding in PROMAX Tools L.P. and completed the purchase in 2017 adding PROMAX Tools L.P. to the CERATIZIT Group. The evolution of this step was completed with PROMAX Tools L.P. changing their name to CERATIZIT Sacramento in 2018 while keeping the PROMAX name for their branded products on the US market.

Facts and figures



1 headquarters
Mamer, Luxembourg



34
production sites



> 70
sales subsidiaries



> 9,000
employees



> 100,000
different products



> 1,000
patents and
utility models



> 200
employees in R&D



> 10
innovation awards



30%
of products
developed in the last 5 years

PROMAX

POWER LAYER



New
4 Flute
US007

New
5 Flute
US556

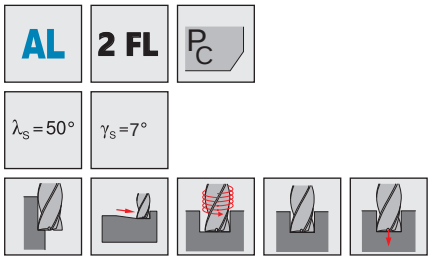


PROMAX Premium

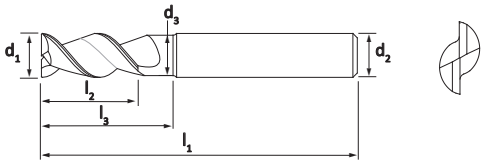
German Engineered. American Made.

Series US220

2 Flute Aluminum







Tolerances

Shank: 1/8" - 3/4" = -.0001/-.0004
Cutting Dia: 1/8" - 3/4" = +.000/-.002
Protective Corner: 1/8" - 3/4" = +/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	Flute	Uncoated
1/8	1/8	3/8	2	3/4	0.120	2	US220001
3/16	3/16	7/16	2	3/4	0.180	2	US220002
1/4	1/4	1/2	2 1/2	13/16	0.240	2	US220003
5/16	5/16	3/4	3	1	0.300	2	US220004
3/8	3/8	7/8	3	1 1/8	0.360	2	US220005
1/2	1/2	1	3	1 3/8	0.480	2	US220009
1/2	1/2	1 1/4	3 1/2	1 5/8	0.480	2	US220006
5/8	5/8	1 1/4	4	1 7/8	0.600	2	US220007
3/4	3/4	1 1/2	5	2 1/4	0.720	2	US220008

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

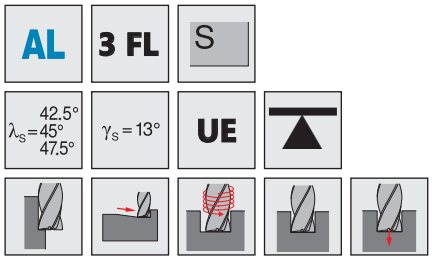
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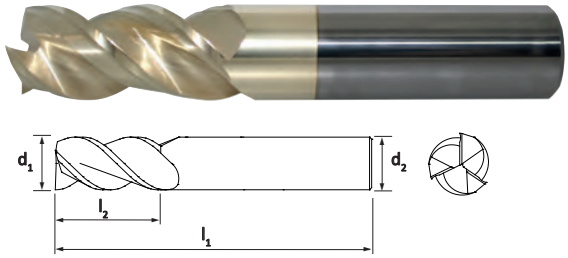
Series US362

3 Flute Aluminum

German Engineered. American Made.

NEW Series





Tolerances

Shank: 3/16" - 1" = -.0001/-.0004
Cutting Dia: 3/16" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	ZrN
3/16	3/16	3/8	2	3	US362002
3/16	3/16	3/4	2 1/2	3	US362008
3/16	3/16	1	3	3	US362014
1/4	1/4	3/8	2	3	US362032
1/4	1/4	3/4	2 1/2	3	US362040
1/4	1/4	1	3	3	US362048
3/8	3/8	1/2	2	3	US362072
3/8	3/8	1	2 1/2	3	US362082
3/8	3/8	1 1/2	3 1/2	3	US362092
1/2	1/2	5/8	2 1/2	3	US362122
1/2	1/2	1	3	3	US362134
1/2	1/2	1 1/4	3	3	US362146
1/2	1/2	1 5/8	4	3	US362182
1/2	1/2	2	4	3	US362194
5/8	5/8	3/4	3	3	US362230
5/8	5/8	1 1/4	3 1/2	3	US362240
5/8	5/8	1 5/8	4	3	US362250
3/4	3/4	1	3	3	US362280
3/4	3/4	1 5/8	4	3	US362308
3/4	3/4	2 1/4	5	3	US362322
1	1	1 1/4	4	3	US362364
1	1	2	5	3	US362378
1	1	3 1/4	6	3	US362392

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

Feeds & Speeds Available on Page 76

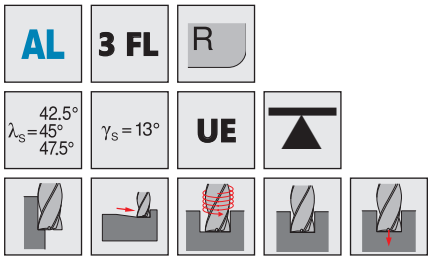
PROMAX Premium

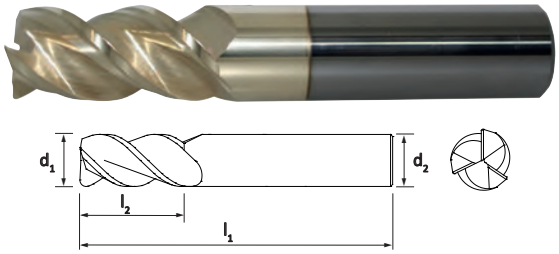
Series US362

3 Flute Radius Aluminum

German Engineered. American Made.

NEW Series





Tolerances

Shank:	3/16" - 1" = -.0001/-.0004
Cutting Dia:	3/16" - 1" = +.000/-.002
Radius:	</= .060" = +/-.001"
	>/= .060" = +/-.0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	ZrN
3/16	3/16	3/8	2	0.015	3	US362004
3/16	3/16	3/8	2	0.030	3	US362006
3/16	3/16	3/4	2 1/2	0.015	3	US362010
3/16	3/16	3/4	2 1/2	0.030	3	US362012
3/16	3/16	1	3	0.015	3	US362016
3/16	3/16	1	3	0.030	3	US362018
1/4	1/4	3/8	2	0.015	3	US362034
1/4	1/4	3/8	2	0.030	3	US362036
1/4	1/4	3/8	2	0.060	3	US362038
1/4	1/4	3/4	2 1/2	0.015	3	US362042
1/4	1/4	3/4	2 1/2	0.030	3	US362044
1/4	1/4	3/4	2 1/2	0.060	3	US362046
1/4	1/4	1	3	0.015	3	US362050
1/4	1/4	1	3	0.030	3	US362052
1/4	1/4	1	3	0.060	3	US362054
3/8	3/8	1/2	2	0.015	3	US362074
3/8	3/8	1/2	2	0.030	3	US362076
3/8	3/8	1/2	2	0.060	3	US362078
3/8	3/8	1/2	2	0.090	3	US362080
3/8	3/8	1	2 1/2	0.015	3	US362084
3/8	3/8	1	2 1/2	0.030	3	US362086
3/8	3/8	1	2 1/2	0.060	3	US362088
3/8	3/8	1	2 1/2	0.090	3	US362090
3/8	3/8	1 1/2	3 1/2	0.015	3	US362094
3/8	3/8	1 1/2	3 1/2	0.030	3	US362096
3/8	3/8	1 1/2	3 1/2	0.060	3	US362098
3/8	3/8	1 1/2	3 1/2	0.090	3	US362100
1/2	1/2	5/8	2 1/2	0.015	3	US362124
1/2	1/2	5/8	2 1/2	0.030	3	US362126
1/2	1/2	5/8	2 1/2	0.060	3	US362128
1/2	1/2	5/8	2 1/2	0.090	3	US362130
1/2	1/2	5/8	2 1/2	0.125	3	US362132
1/2	1/2	1	3	0.015	3	US362136

Additional Sizes On Pages 13 & 14

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

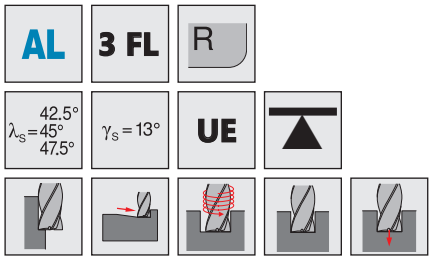
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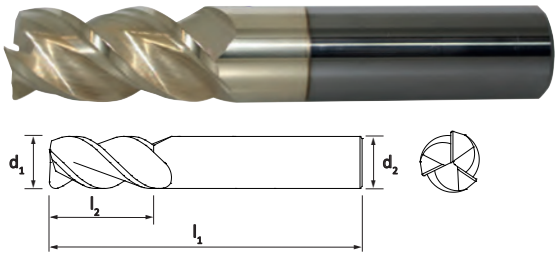
Series US362

3 Flute Radius Aluminum

German Engineered. American Made.

NEW Series





Tolerances

Shank:	3/16" - 1" = -.0001/-.0004
Cutting Dia:	3/16" - 1" = +.000/-.002
Radius:	</= .060" = +/-.001"
	>/= .060" = +/-.0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	ZrN
1/2	1/2	1	3	0.030	3	US362138
1/2	1/2	1	3	0.060	3	US362140
1/2	1/2	1	3	0.090	3	US362142
1/2	1/2	1	3	0.125	3	US362144
1/2	1/2	1 1/4	3	0.015	3	US362148
1/2	1/2	1 1/4	3	0.030	3	US362150
1/2	1/2	1 1/4	3	0.060	3	US362152
1/2	1/2	1 1/4	3	0.090	3	US362154
1/2	1/2	1 1/4	3	0.125	3	US362156
1/2	1/2	1 5/8	4	0.015	3	US362184
1/2	1/2	1 5/8	4	0.030	3	US362186
1/2	1/2	1 5/8	4	0.060	3	US362188
1/2	1/2	1 5/8	4	0.090	3	US362190
1/2	1/2	1 5/8	4	0.125	3	US362192
1/2	1/2	2	4	0.015	3	US362196
1/2	1/2	2	4	0.030	3	US362198
1/2	1/2	2	4	0.060	3	US362200
1/2	1/2	2	4	0.090	3	US362202
1/2	1/2	2	4	0.125	3	US362204
5/8	5/8	3/4	3	0.030	3	US362232
5/8	5/8	3/4	3	0.060	3	US362234
5/8	5/8	3/4	3	0.090	3	US362236
5/8	5/8	3/4	3	0.125	3	US362238
5/8	5/8	1 1/4	3 1/2	0.030	3	US362242
5/8	5/8	1 1/4	3 1/2	0.060	3	US362244
5/8	5/8	1 1/4	3 1/2	0.090	3	US362246
5/8	5/8	1 1/4	3 1/2	0.125	3	US362248
5/8	5/8	1 5/8	4	0.030	3	US362252
5/8	5/8	1 5/8	4	0.060	3	US362254
5/8	5/8	1 5/8	4	0.090	3	US362256
5/8	5/8	1 5/8	4	0.125	3	US362258
3/4	3/4	1	3	0.030	3	US362282
3/4	3/4	1	3	0.060	3	US362284

Additional Sizes On Pages 12 & 14

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

Feeds & Speeds Available on Page 76

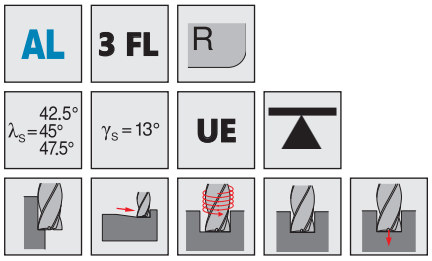
PROMAX Premium

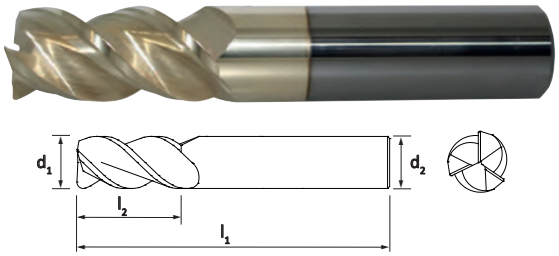
Series US362

3 Flute Radius Aluminum

German Engineered. American Made.

NEW Series





Tolerances

Shank:	3/16" - 1" = -.0001/-.0004
Cutting Dia:	3/16" - 1" = +.000/-.002
Radius:	</= .060" = +/-.001"
	>/= .060" = +/-.0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	ZrN
3/4	3/4	1	3	0.090	3	US362286
3/4	3/4	1	3	0.125	3	US362288
3/4	3/4	1	3	0.190	3	US362290
3/4	3/4	1	3	0.250	3	US362292
3/4	3/4	1 5/8	4	0.030	3	US362310
3/4	3/4	1 5/8	4	0.060	3	US362312
3/4	3/4	1 5/8	4	0.090	3	US362314
3/4	3/4	1 5/8	4	0.125	3	US362316
3/4	3/4	1 5/8	4	0.190	3	US362318
3/4	3/4	1 5/8	4	0.250	3	US362320
3/4	3/4	2 1/4	5	0.030	3	US362324
3/4	3/4	2 1/4	5	0.060	3	US362326
3/4	3/4	2 1/4	5	0.090	3	US362328
3/4	3/4	2 1/4	5	0.125	3	US362330
3/4	3/4	2 1/4	5	0.190	3	US362332
3/4	3/4	2 1/4	5	0.250	3	US362334
1	1	1 1/4	4	0.030	3	US362366
1	1	1 1/4	4	0.060	3	US362368
1	1	1 1/4	4	0.090	3	US362370
1	1	1 1/4	4	0.125	3	US362372
1	1	1 1/4	4	0.190	3	US362374
1	1	1 1/4	4	0.250	3	US362376
1	1	2	5	0.030	3	US362380
1	1	2	5	0.060	3	US362382
1	1	2	5	0.090	3	US362384
1	1	2	5	0.125	3	US362386
1	1	2	5	0.190	3	US362388
1	1	2	5	0.250	3	US362390
1	1	3 1/4	6	0.030	3	US362394
1	1	3 1/4	6	0.060	3	US362396
1	1	3 1/4	6	0.090	3	US362398
1	1	3 1/4	6	0.125	3	US362400
1	1	3 1/4	6	0.190	3	US362402
1	1	3 1/4	6	0.250	3	US362404

Additional Sizes On Pages 12 & 13

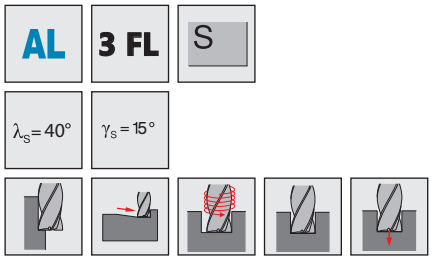
Application Range:

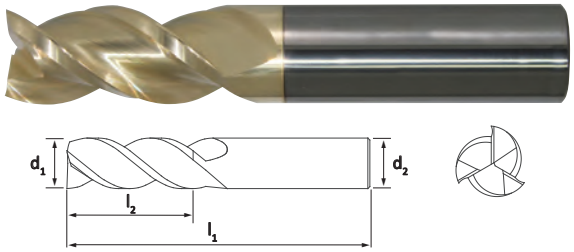
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

Feeds & Speeds Available on Page 76

Series 109

3 Flute Aluminum





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004

Cutting Dia: 1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	Flutes	ZrN
1/8	1/8	1/4	1 1/2			3	109-00826
1/8	1/8	1/2	1 1/2			3	109-00816
5/32	3/16	1/2	2			3	109-01016
5/32	3/16	3/8	2			3	109-01026
3/16	3/16	3/8	2			3	109-01226
3/16	3/16	5/8	2			3	109-01216
7/32	1/4	3/4	2 1/2			3	109-01416
7/32	1/4	3/8	2			3	109-01426
1/4	1/4	3/8	2			3	109-01626
1/4	1/4	3/4	2 1/2			3	109-01616
1/4	1/4	1 1/4	3			3	109-01636
1/4	1/4	1 1/2	3 1/2			3	109-01646
1/4	1/4	3/4	4	2 1/8	0.240	3	109-01666
9/32	5/16	1/2	2 1/2			3	109-01826
9/32	5/16	3/4	2 1/2			3	109-01816
5/16	5/16	1/2	2 1/2			3	109-02026
5/16	5/16	3/4	2 1/2			3	109-02016
3/8	3/8	5/8	2			3	109-02426
3/8	3/8	7/8	2 1/2			3	109-02416
3/8	3/8	1 1/2	3 1/2			3	109-02436
3/8	3/8	2	4			3	109-02446
3/8	3/8	1	6	2 3/8	0.360	3	109-02466
7/16	7/16	1	2 3/4			3	109-02816
1/2	1/2	5/8	2 1/2			3	109-03226
1/2	1/2	1 1/4	3			3	109-03216
1/2	1/2	1 1/2	3 1/2			3	109-03236
1/2	1/2	2	4			3	109-03246
9/16	9/16	1 1/4	3 1/2			3	109-03616
5/8	5/8	7/8	3			3	109-04026
5/8	5/8	1 1/4	3 1/2			3	109-04016
5/8	5/8	1 3/4	4			3	109-04036
5/8	5/8	2 1/2	5			3	109-04046
3/4	3/4	1	3			3	109-04826
3/4	3/4	1 5/8	4			3	109-04816
3/4	3/4	2 1/2	5			3	109-04836
3/4	3/4	3 1/4	6			3	109-04846
1	1	1 3/4	4			3	109-06416
1	1	2 3/4	5			3	109-06436
1	1	3 3/8	6			3	109-06446

Application Range:

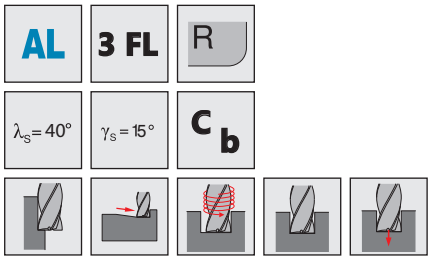
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

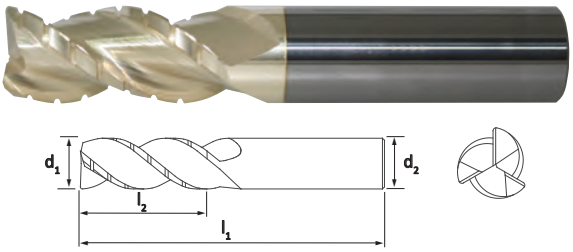
Feeds & Speeds Available on Page 76 & 77

PROMAX Premium

Series 119

3 Flute Radius Aluminum Rougher-Finisher





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +.002/-.0001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	AlTiN	ZrN
1/8	1/8	1/4	1 1/2	0.010	3	119-00824	119-00826
1/8	1/8	1/2	1 1/2	0.010	3	119-00814	119-00816
5/32	3/16	3/8	2	0.010	3	119-01024	119-01026
5/32	3/16	1/2	2	0.010	3	119-01014	119-01016
3/16	3/16	3/8	2	0.010	3	119-01224	119-01226
3/16	3/16	5/8	2	0.010	3	119-01214	119-01216
7/32	1/4	3/8	2	0.020	3	119-01424	119-01426
7/32	1/4	3/4	2 1/2	0.020	3	119-01414	119-01416
1/4	1/4	3/8	2	0.020	3	119-01624	119-01626
1/4	1/4	3/4	2 1/2	0.020	3	119-01614	119-01616
1/4	1/4	1 1/4	3	0.020	3	119-01634	119-01636
1/4	1/4	1 1/2	3 1/2	0.020	3	119-01644	119-01646
9/32	5/16	1/2	2 1/2	0.020	3	119-01824	119-01826
9/32	5/16	3/4	2 1/2	0.020	3	119-01814	119-01816
5/16	5/16	1/2	2 1/2	0.020	3	119-02024	119-02026
5/16	5/16	3/4	2 1/2	0.020	3	119-02014	119-02016
11/32	3/8	5/8	2	0.020	3	119-02224	119-02226
11/32	3/8	7/8	2 1/2	0.020	3	119-02214	119-02216
3/8	3/8	5/8	2	0.020	3	119-02424	119-02426
3/8	3/8	7/8	2 1/2	0.020	3	119-02414	119-02416
3/8	3/8	1 1/2	3 1/2	0.020	3	119-02434	119-02436
3/8	3/8	2	4	0.020	3	119-02444	119-02446
7/16	7/16	1	2 3/4	0.020	3	119-02814	119-02816
1/2	1/2	5/8	2 1/2	0.020	3	119-03224	119-03226
1/2	1/2	1 1/4	3	0.020	3	119-03214	119-03216
1/2	1/2	1 1/2	3 1/2	0.020	3	119-03234	119-03236
1/2	1/2	2	4	0.020	3	119-03244	119-03246
9/16	9/16	1 1/4	3 1/2	0.030	3	119-03614	119-03616
5/8	5/8	7/8	3	0.030	3	119-04024	119-04026
5/8	5/8	1 1/4	3 1/2	0.030	3	119-04014	119-04016
5/8	5/8	1 3/4	4	0.030	3	119-04034	119-04036
5/8	5/8	2 1/2	5	0.030	3	119-04044	119-04046
3/4	3/4	1	3	0.030	3	119-04824	119-04826
3/4	3/4	1 5/8	4	0.030	3	119-04814	119-04816
3/4	3/4	2 1/2	5	0.030	3	119-04834	119-04836
3/4	3/4	3 1/4	6	0.030	3	119-04844	119-04846
1	1	1 3/4	4	0.030	3	119-06414	119-06416
1	1	2 3/4	5	0.030	3	119-06434	119-06436
1	1	3 3/8	6	0.030	3	119-06444	119-06446

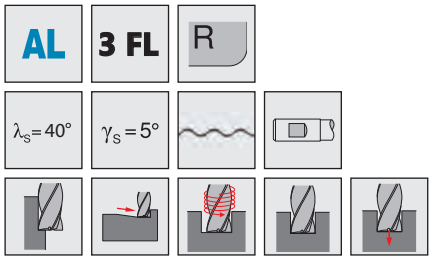
Application Range:

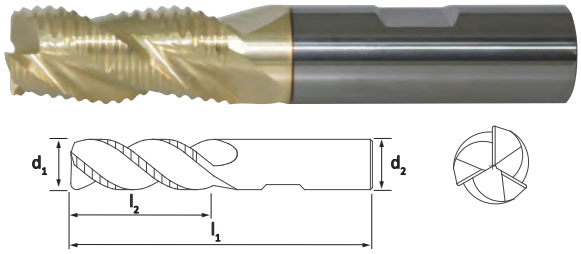
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

Feeds & Speeds Available on Page 77

Series 102

3 Flute Radius Aluminum Rougher





Tolerances

Shank:	3/16” - 1” = -.0001/-.0004
Cutting Dia:	3/16” - 1” = +.000/-.002
Radius:	3/16” - 1” = +/-.005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	ZrN
3/16	3/16	3/8	2	0.030	3	102-01226
3/16	3/16	5/8	2	0.030	3	102-01216
1/4	1/4	3/8	2	0.045	3	102-01626
1/4	1/4	3/4	2 1/2	0.045	3	102-01616
5/16	5/16	1/2	2 1/2	0.045	3	102-02026
5/16	5/16	3/4	2	0.045	3	102-02016
3/8	3/8	5/8	2	0.060	3	102-02426
3/8	3/8	7/8	2 1/2	0.060	3	102-02416
7/16	7/16	1	2 3/4	0.060	3	102-02816
1/2	1/2	5/8	2 1/2	0.060	3	102-03226
1/2	1/2	1 1/4	3	0.060	3	102-03216
1/2	1/2	1 1/2	3 1/2	0.060	3	102-03236
9/16	9/16	1 1/4	3 1/2	0.060	3	102-03616
5/8	5/8	1 1/4	3 1/2	0.060	3	102-04016
3/4	3/4	1 5/8	4	0.060	3	102-04816
3/4	3/4	2 1/4	5	0.060	3	102-04836
1	1	1 3/4	4	0.060	3	102-06416
1	1	2 5/8	5	0.060	3	102-06436

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

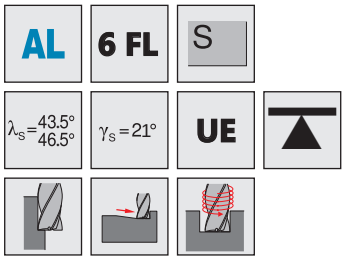
Feeds & Speeds Available on Page 77

PROMAX Premium

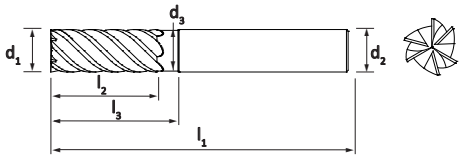
German Engineered. American Made.

Series US376

6 Flute Aluminum







Tolerances

Shank: 1/4" - 1" = -.0001/-.0004

Cutting Dia: 1/4" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	Flute	ZrN
1/4	1/4	5/8	2 1/2	7/8	0.240	6	US376002
1/4	1/4	5/8	3	1 5/8	0.240	6	US376004
5/16	5/16	3/4	2 1/2	1	0.300	6	US376006
5/16	5/16	3/4	4	2 3/8	0.300	6	US376008
3/8	3/8	1	3	1 1/4	0.360	6	US376010
3/8	3/8	1	4	2 1/4	0.360	6	US376012
1/2	1/2	1	3	1 1/4	0.480	6	US376032
1/2	1/2	1 1/4	3 1/2	1 1/2	0.480	6	US376014
1/2	1/2	1 1/4	5	3	0.480	6	US376016
1/2	1/2	1 7/8	5			6	US376018
5/8	5/8	1 1/4	3 1/2	1 1/2	0.600	6	US376020
5/8	5/8	1 1/4	6	3 5/8	0.600	6	US376022
5/8	5/8	2 1/2	6			6	US376024
3/4	3/4	1 5/8	4	2	0.720	6	US376026
3/4	3/4	1 5/8	6	3 5/8	0.720	6	US376028
1	1	2	6	3 7/8	0.960	6	US376030

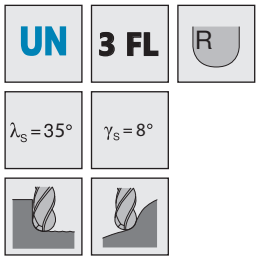
Application Range:

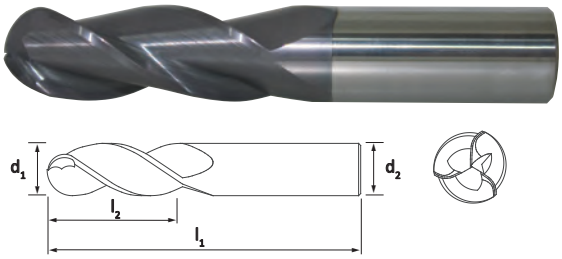
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

Feeds & Speeds Available on Page 76

Series 113

3 Flute Ball Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Ball Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	R Radius	Flutes	AlTiN
1/8	1/8	1/4	1 1/2			0.063	3	113-00824
1/8	1/8	1/2	1 1/2			0.063	3	113-00814
3/16	3/16	5/8	2			0.094	3	113-01214
1/4	1/4	3/4	2 1/2			0.125	3	113-01614
1/4	1/4	3/8	4	2 1/8	0.240	0.125	3	113-01664
5/16	5/16	13/16	2 1/2			0.156	3	113-02014
5/16	5/16	7/16	4	2 1/8	0.300	0.156	3	113-02064
3/8	3/8	1	2 1/2			0.188	3	113-02414
3/8	3/8	1/2	6	2 1/8	0.360	0.188	3	113-02464
3/8	3/8	1/2	6	3 3/8	0.360	0.188	3	113-02474
1/2	1/2	1 1/4	3			0.250	3	113-03214
1/2	1/2	5/8	6	2 3/8	0.480	0.250	3	113-03264
5/8	5/8	1 1/4	3 1/2			0.313	3	113-04014
3/4	3/4	1 5/8	4			0.375	3	113-04814
1	1	1 3/4	4			0.500	3	113-06414

Application Range:

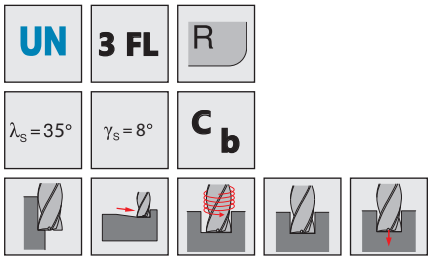
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

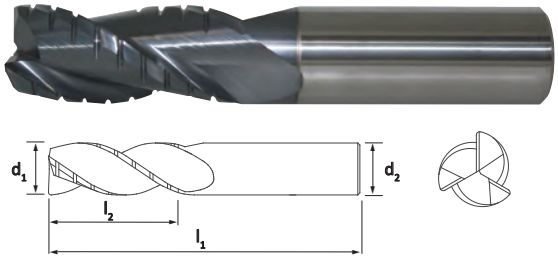
Feeds & Speeds Available on Page 78

PROMAX Premium

Series 117

3 Flute Radius Steels Rougher-Finisher





Tolerances

Shank:	1/8" - 3/4" = -.0001/-.0004
Cutting Dia:	1/8" - 3/4" = +.000/-.002
Radius:	1/8" - 3/4" = +.002/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	AlTiN
1/8	1/8	1/2	1 1/2	0.010	3	117-00814
3/16	3/16	5/16	2	0.010	3	117-01224
3/16	3/16	5/8	2	0.010	3	117-01214
1/4	1/4	3/8	2	0.020	3	117-01624
1/4	1/4	3/4	2 1/2	0.020	3	117-01614
5/16	5/16	13/16	2 1/2	0.020	3	117-02014
3/8	3/8	1	2 1/2	0.020	3	117-02414
7/16	7/16	5/8	2 3/4	0.020	3	117-02824
7/16	7/16	1	2 3/4	0.020	3	117-02814
1/2	1/2	5/8	2 1/2	0.020	3	117-03224
1/2	1/2	1 1/4	3	0.020	3	117-03214
5/8	5/8	1 1/4	3 1/2	0.030	3	117-04014
3/4	3/4	1 5/8	4	0.030	3	117-04814

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●		●				

Feeds & Speeds Available on Page 78

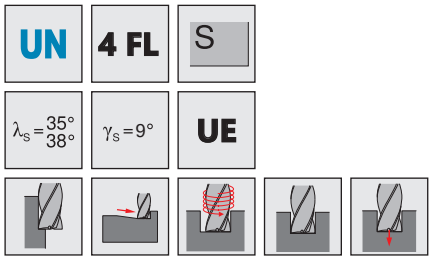
Series US007

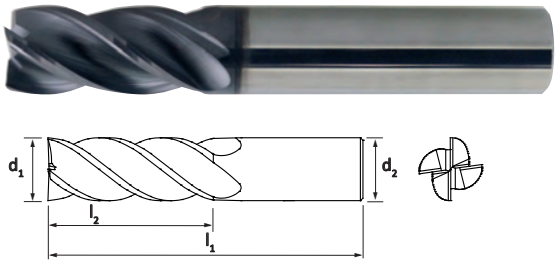
4 Flute Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004

Cutting Dia: 1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	PROMAX POWER LAYER
1/8	1/8	1/4	1 1/2	4	US007001
1/8	1/8	1/2	2 1/2	4	US007004
3/16	3/16	5/16	2	4	US007016
3/16	3/16	5/8	2 1/2	4	US007019
1/4	1/4	3/8	2	4	US007031
1/4	1/4	1/2	2 1/2	4	US007035
1/4	1/4	3/4	2 1/2	4	US007039
1/4	1/4	1	3	4	US007047
5/16	5/16	1/2	2	4	US007059
5/16	5/16	3/4	2 1/2	4	US007063
5/16	5/16	1 1/4	3	4	US007067
3/8	3/8	1/2	2	4	US007071
3/8	3/8	7/8	3	4	US007076
3/8	3/8	1	3	4	US007081
3/8	3/8	1 1/4	3	4	US007086
1/2	1/2	5/8	2 1/2	4	US007111
1/2	1/2	1	3	4	US007117
1/2	1/2	1 1/4	3	4	US007123
1/2	1/2	1 5/8	4	4	US007141
5/8	5/8	3/4	3	4	US007159
5/8	5/8	1 1/4	3 1/2	4	US007164
5/8	5/8	1 5/8	3 1/2	4	US007169
5/8	5/8	2	4	4	US007179
5/8	5/8	3 1/4	6	4	US007199
3/4	3/4	7/8	3	4	US007204
3/4	3/4	1 1/4	4	4	US007218
3/4	3/4	1 5/8	4	4	US007225
3/4	3/4	2 1/4	5	4	US007232
3/4	3/4	3 1/4	6	4	US007260
1	1	1 1/2	4	4	US007274
1	1	2	4 1/2	4	US007281
1	1	2 5/8	5	4	US007288
1	1	3	6	4	US007316
1	1	4 1/4	7	4	US007323

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 79

PROMAX Premium

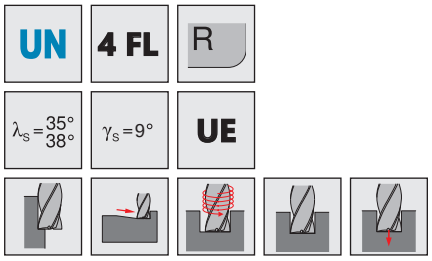
Series US007

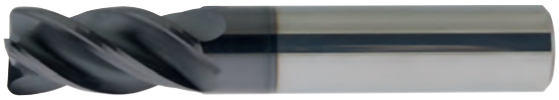
4 Flute Radius Steels

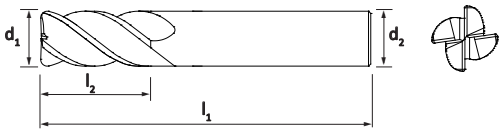
German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series







Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	</= .060" = +/-.001"
	>/= .060" = +/-.0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
1/8	1/8	1/4	1 1/2	0.010	4	US007002
1/8	1/8	1/4	1 1/2	0.030	4	US007003
1/8	1/8	1/2	2 1/2	0.010	4	US007005
1/8	1/8	1/2	2 1/2	0.030	4	US007006
3/16	3/16	5/16	2	0.010	4	US007017
3/16	3/16	5/16	2	0.030	4	US007018
3/16	3/16	5/8	2 1/2	0.010	4	US007020
3/16	3/16	5/8	2 1/2	0.030	4	US007021
1/4	1/4	3/8	2	0.020	4	US007032
1/4	1/4	3/8	2	0.030	4	US007033
1/4	1/4	3/8	2	0.060	4	US007034
1/4	1/4	1/2	2 1/2	0.020	4	US007036
1/4	1/4	1/2	2 1/2	0.030	4	US007037
1/4	1/4	1/2	2 1/2	0.060	4	US007038
1/4	1/4	3/4	2 1/2	0.020	4	US007040
1/4	1/4	3/4	2 1/2	0.030	4	US007041
1/4	1/4	3/4	2 1/2	0.060	4	US007042
1/4	1/4	1	3	0.020	4	US007048
1/4	1/4	1	3	0.030	4	US007049
1/4	1/4	1	3	0.060	4	US007050
5/16	5/16	1/2	2	0.020	4	US007060
5/16	5/16	1/2	2	0.030	4	US007061
5/16	5/16	1/2	2	0.060	4	US007062
5/16	5/16	3/4	2 1/2	0.020	4	US007064
5/16	5/16	3/4	2 1/2	0.030	4	US007065
5/16	5/16	3/4	2 1/2	0.060	4	US007066
5/16	5/16	1 1/4	3	0.020	4	US007068
5/16	5/16	1 1/4	3	0.030	4	US007069
5/16	5/16	1 1/4	3	0.060	4	US007070

Additional Sizes On Pages 23, 24, 25 & 26

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 79

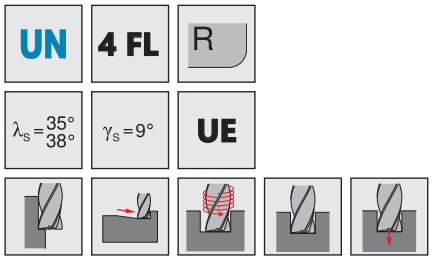
Series US007

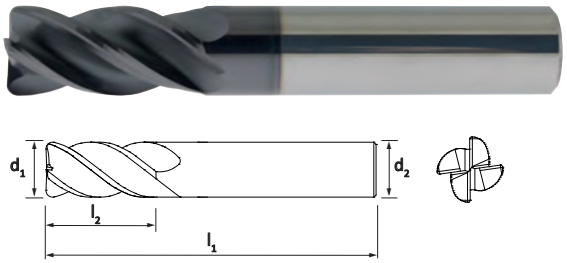
4 Flute Radius Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	</= .060" = +/-.001"
	>/= .060" = +/-.0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
3/8	3/8	1/2	2	0.020	4	US007072
3/8	3/8	1/2	2	0.030	4	US007073
3/8	3/8	1/2	2	0.060	4	US007074
3/8	3/8	1/2	2	0.090	4	US007075
3/8	3/8	7/8	3	0.020	4	US007077
3/8	3/8	7/8	3	0.030	4	US007078
3/8	3/8	7/8	3	0.060	4	US007079
3/8	3/8	7/8	3	0.090	4	US007080
3/8	3/8	1	3	0.020	4	US007082
3/8	3/8	1	3	0.030	4	US007083
3/8	3/8	1	3	0.060	4	US007084
3/8	3/8	1	3	0.090	4	US007085
3/8	3/8	1 1/4	3	0.020	4	US007087
3/8	3/8	1 1/4	3	0.030	4	US007088
3/8	3/8	1 1/4	3	0.060	4	US007089
3/8	3/8	1 1/4	3	0.090	4	US007090
1/2	1/2	5/8	2 1/2	0.020	4	US007112
1/2	1/2	5/8	2 1/2	0.030	4	US007113
1/2	1/2	5/8	2 1/2	0.060	4	US007114
1/2	1/2	5/8	2 1/2	0.090	4	US007115
1/2	1/2	5/8	2 1/2	0.125	4	US007116
1/2	1/2	1	3	0.020	4	US007118
1/2	1/2	1	3	0.030	4	US007119
1/2	1/2	1	3	0.060	4	US007120
1/2	1/2	1	3	0.090	4	US007121
1/2	1/2	1	3	0.125	4	US007122
1/2	1/2	1 1/4	3	0.020	4	US007124
1/2	1/2	1 1/4	3	0.030	4	US007125
1/2	1/2	1 1/4	3	0.060	4	US007126

Additional Sizes On Pages 22, 24, 25 & 26

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 79

PROMAX Premium

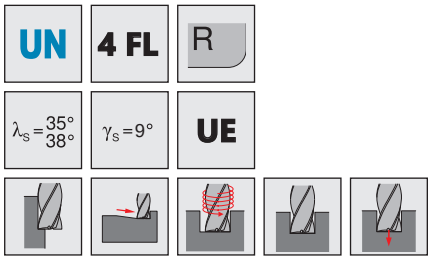
Series US007

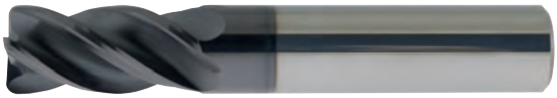
4 Flute Radius Steels

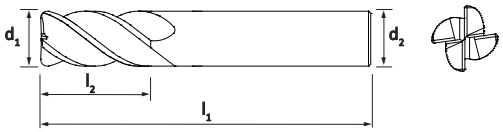
German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series







Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	</= .060" = +/-.001"
	>/= .060" = +/-.0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
1/2	1/2	1 1/4	3	0.090	4	US007127
1/2	1/2	1 1/4	3	0.125	4	US007128
1/2	1/2	1 5/8	4	0.020	4	US007142
1/2	1/2	1 5/8	4	0.030	4	US007143
1/2	1/2	1 5/8	4	0.060	4	US007144
1/2	1/2	1 5/8	4	0.090	4	US007145
1/2	1/2	1 5/8	4	0.125	4	US007146
5/8	5/8	3/4	3	0.030	4	US007160
5/8	5/8	3/4	3	0.060	4	US007161
5/8	5/8	3/4	3	0.090	4	US007162
5/8	5/8	3/4	3	0.125	4	US007163
5/8	5/8	1 1/4	3 1/2	0.030	4	US007165
5/8	5/8	1 1/4	3 1/2	0.060	4	US007166
5/8	5/8	1 1/4	3 1/2	0.090	4	US007167
5/8	5/8	1 1/4	3 1/2	0.125	4	US007168
5/8	5/8	1 5/8	3 1/2	0.030	4	US007170
5/8	5/8	1 5/8	3 1/2	0.060	4	US007171
5/8	5/8	1 5/8	3 1/2	0.090	4	US007172
5/8	5/8	1 5/8	3 1/2	0.125	4	US007173
5/8	5/8	2	4	0.030	4	US007180
5/8	5/8	2	4	0.060	4	US007181
5/8	5/8	2	4	0.090	4	US007182
5/8	5/8	2	4	0.125	4	US007183
5/8	5/8	3 1/4	6	0.030	4	US007200
5/8	5/8	3 1/4	6	0.060	4	US007201
5/8	5/8	3 1/4	6	0.090	4	US007202
5/8	5/8	3 1/4	6	0.125	4	US007203
3/4	3/4	7/8	3	0.030	4	US007205
3/4	3/4	7/8	3	0.060	4	US007206

Additional Sizes On Pages 22, 23, 25 & 26

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 79

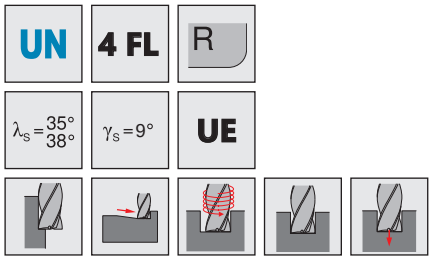
Series US007

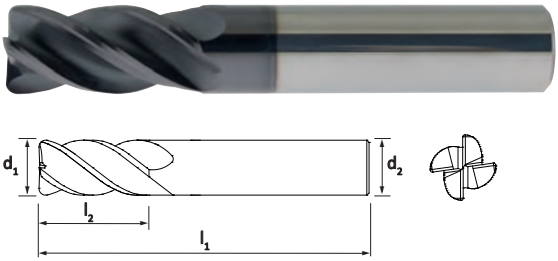
4 Flute Radius Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	</= .060" = +/-.001"
	>/= .060" = +/-.0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
3/4	3/4	7/8	3	0.250	4	US007210
3/4	3/4	1 1/4	4	0.030	4	US007219
3/4	3/4	1 1/4	4	0.060	4	US007220
3/4	3/4	1 1/4	4	0.090	4	US007221
3/4	3/4	1 1/4	4	0.125	4	US007222
3/4	3/4	1 1/4	4	0.190	4	US007223
3/4	3/4	1 1/4	4	0.250	4	US007224
3/4	3/4	1 5/8	4	0.030	4	US007226
3/4	3/4	1 5/8	4	0.060	4	US007227
3/4	3/4	1 5/8	4	0.090	4	US007228
3/4	3/4	1 5/8	4	0.125	4	US007229
3/4	3/4	1 5/8	4	0.190	4	US007230
3/4	3/4	1 5/8	4	0.250	4	US007231
3/4	3/4	2 1/4	5	0.030	4	US007233
3/4	3/4	2 1/4	5	0.060	4	US007234
3/4	3/4	2 1/4	5	0.090	4	US007235
3/4	3/4	2 1/4	5	0.125	4	US007236
3/4	3/4	2 1/4	5	0.190	4	US007237
3/4	3/4	2 1/4	5	0.250	4	US007238
3/4	3/4	3 1/4	6	0.030	4	US007261
3/4	3/4	3 1/4	6	0.060	4	US007262
3/4	3/4	3 1/4	6	0.090	4	US007263
3/4	3/4	3 1/4	6	0.125	4	US007264
3/4	3/4	3 1/4	6	0.190	4	US007265
3/4	3/4	3 1/4	6	0.250	4	US007266
1	1	1 1/2	4	0.030	4	US007275
1	1	1 1/2	4	0.060	4	US007276
1	1	1 1/2	4	0.090	4	US007277
1	1	1 1/2	4	0.125	4	US007278

Additional Sizes On Pages 22, 23, 24, & 26

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 79

PROMAX Premium

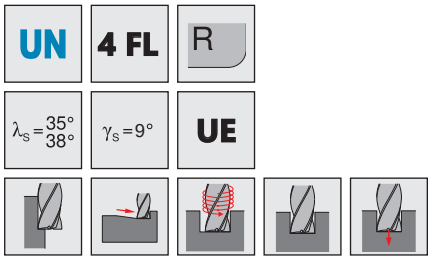
Series US007

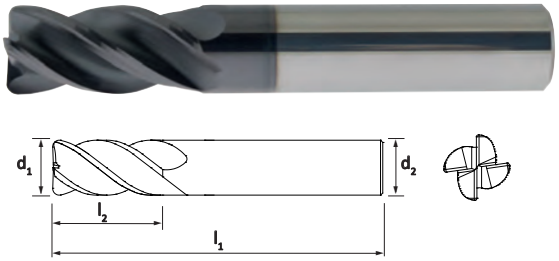
4 Flute Radius Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	</= .060" = +/-.001"
	>/= .060" = +/-.0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
1	1	1 1/2	4	0.190	4	US007279
1	1	1 1/2	4	0.250	4	US007280
1	1	2	4 1/2	0.030	4	US007282
1	1	2	4 1/2	0.060	4	US007283
1	1	2	4 1/2	0.090	4	US007284
1	1	2	4 1/2	0.125	4	US007285
1	1	2	4 1/2	0.190	4	US007286
1	1	2	4 1/2	0.250	4	US007287
1	1	2 5/8	5	0.030	4	US007289
1	1	2 5/8	5	0.060	4	US007290
1	1	2 5/8	5	0.090	4	US007291
1	1	2 5/8	5	0.125	4	US007292
1	1	2 5/8	5	0.190	4	US007293
1	1	2 5/8	5	0.250	4	US007294
1	1	3	6	0.030	4	US007317
1	1	3	6	0.060	4	US007318
1	1	3	6	0.090	4	US007319
1	1	3	6	0.125	4	US007320
1	1	3	6	0.190	4	US007321
1	1	3	6	0.250	4	US007322
1	1	4 1/4	7	0.030	4	US007324
1	1	4 1/4	7	0.060	4	US007325
1	1	4 1/4	7	0.090	4	US007326
1	1	4 1/4	7	0.125	4	US007327
1	1	4 1/4	7	0.190	4	US007328
1	1	4 1/4	7	0.250	4	US007329

Additional Sizes On Pages 22, 23, 24, & 25

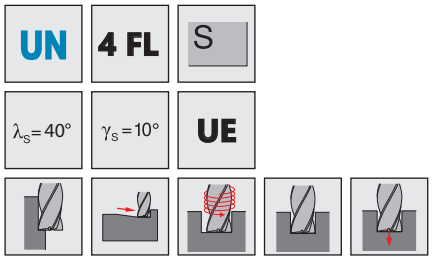
Application Range:

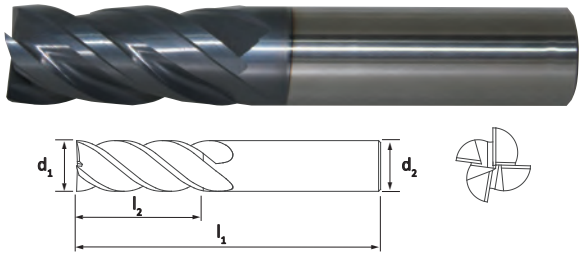
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 79

Series 155

4 Flute Steels





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004
Cutting Dia: 1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	Flutes	AlTiN	nACRo®
1/8	1/8	1/4	1 1/2			4	155-00824	155-00825
1/8	1/8	1/2	1 1/2			4	155-00814	155-00815
5/32	3/16	3/8	2			4	155-01024	155-01025
5/32	3/16	1/2	2			4	155-01014	155-01015
3/16	3/16	3/8	2			4	155-01224	155-01225
3/16	3/16	5/8	2			4	155-01214	155-01215
7/32	1/4	3/8	2			4	155-01424	155-01425
7/32	1/4	3/4	2 1/2			4	155-01414	155-01415
1/4	1/4	3/8	2			4	155-01624	155-01625
1/4	1/4	3/4	2 1/2			4	155-01614	155-01615
1/4	1/4	3/4	4	2 1/8	0.240	4	155-01664	155-01665
1/4	1/4	1 1/4	3			4	155-01634	155-01635
5/16	5/16	1/2	2 1/2			4	155-02024	155-02025
5/16	5/16	3/4	2 1/2			4	155-02014	155-02015
3/8	3/8	5/8	2			4	155-02424	155-02425
3/8	3/8	7/8	2 1/2			4	155-02414	155-02415
3/8	3/8	1 1/2	3 1/2			4	155-02434	155-02435
3/8	3/8	7/8	4	2 3/8	0.360	4	155-02464	155-02465
3/8	3/8	7/8	6	3 3/8	0.360	4	155-02474	155-02475
7/16	7/16	1	2 3/4			4	155-02814	155-02815
1/2	1/2	5/8	2 1/2			4	155-03224	155-03225
1/2	1/2	1 1/4	3			4	155-03214	155-03215
1/2	1/2	2	4			4	155-03244	155-03245
1/2	1/2	1	6	2 3/8	0.480	4	155-03264	155-03265
1/2	1/2	1	6	3 3/8	0.480	4	155-03274	155-03275
9/16	9/16	1 1/4	3 1/2			4	155-03614	155-03615
5/8	5/8	7/8	3			4	155-04024	155-04025
5/8	5/8	1 1/4	3 1/2			4	155-04014	155-04015
5/8	5/8	2 1/2	5			4	155-04044	155-04045
3/4	3/4	1	3			4	155-04824	155-04825
3/4	3/4	1 5/8	4			4	155-04814	155-04815
3/4	3/4	2 1/2	5			4	155-04834	155-04835
1	1	1 3/4	4			4	155-06414	155-06415
1	1	2 3/4	5			4	155-06434	155-06435
1	1	3 3/8	6			4	155-06444	155-06445

Application Range:

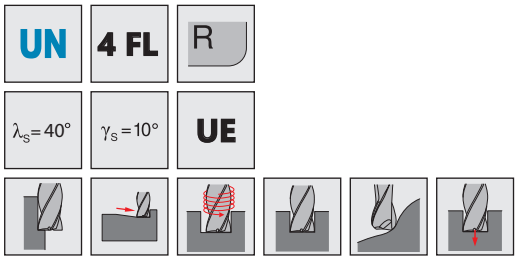
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

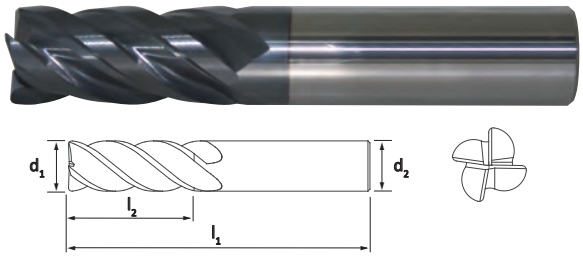
Feeds & Speeds Available on Page 80

PROMAX Premium

Series 156

4 Flute Radius Steels





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004
Cutting Dia: 1/8" - 1" = +.000/-.002
Radius: 1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	R Radius	Flutes	AlTiN	nACRo®
1/8	1/8	1/4	1 1/2			0.010	4	156-10824	156-10825
1/8	1/8	1/4	1 1/2			0.020	4	156-30824	156-30825
1/8	1/8	1/2	1 1/2			0.010	4	156-10814	156-10815
1/8	1/8	1/2	1 1/2			0.015	4	156-20814	156-20815
1/8	1/8	1/2	1 1/2			0.020	4	156-30814	156-30815
5/32	3/16	3/8	2			0.010	4	156-11024	156-11025
5/32	3/16	3/8	2			0.015	4	156-21024	156-21025
5/32	3/16	3/8	2			0.020	4	156-31024	156-31025
5/32	3/16	1/2	2			0.010	4	156-11014	156-11015
5/32	3/16	1/2	2			0.015	4	156-21014	156-21015
5/32	3/16	1/2	2			0.020	4	156-31014	156-31015
3/16	3/16	3/8	2			0.010	4	156-11224	156-11225
3/16	3/16	3/8	2			0.020	4	156-31224	156-31225
3/16	3/16	5/8	2			0.010	4	156-11214	156-11215
3/16	3/16	5/8	2			0.020	4	156-31214	156-31215
7/32	1/4	3/8	2			0.020	4	156-31424	156-31425
7/32	1/4	3/4	2 1/2			0.015	4	156-21414	156-21415
7/32	1/4	3/4	2 1/2			0.020	4	156-31414	156-31415
1/4	1/4	3/8	2			0.010	4	156-11624	156-11625
1/4	1/4	3/8	2			0.015	4	156-21624	156-21625
1/4	1/4	3/8	2			0.020	4	156-31624	156-31625
1/4	1/4	3/8	2			0.030	4	156-41624	156-41625
1/4	1/4	3/4	2 1/2			0.010	4	156-11614	156-11615
1/4	1/4	3/4	2 1/2			0.015	4	156-21614	156-21615
1/4	1/4	3/4	2 1/2			0.020	4	156-31614	156-31615
1/4	1/4	3/4	2 1/2			0.030	4	156-41614	156-41615
1/4	1/4	1 1/4	3			0.010	4	156-11634	156-11635
1/4	1/4	1 1/4	3			0.015	4	156-21634	156-21635
1/4	1/4	1 1/4	3			0.020	4	156-31634	156-31635
1/4	1/4	1 1/4	3			0.030	4	156-41634	156-41635
1/4	1/4	3/4	4	2 1/8	0.240	0.015	4	156-21664	156-21665
1/4	1/4	3/4	4	2 1/8	0.240	0.020	4	156-31664	156-31665
1/4	1/4	3/4	4	2 1/8	0.240	0.030	4	156-41664	156-41665
9/32	5/16	3/4	2 1/2			0.020	4	156-31814	156-31815
5/16	5/16	1/2	2 1/2			0.020	4	156-32024	156-32025
5/16	5/16	3/4	2 1/2			0.030	4	156-42014	156-42015

Additional Sizes On Page 29 & 30

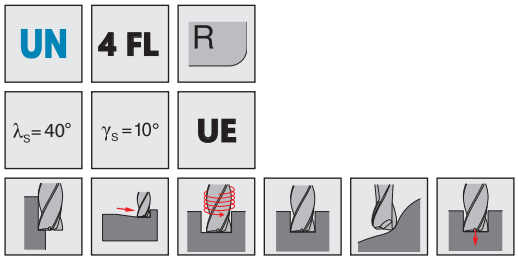
Application Range:

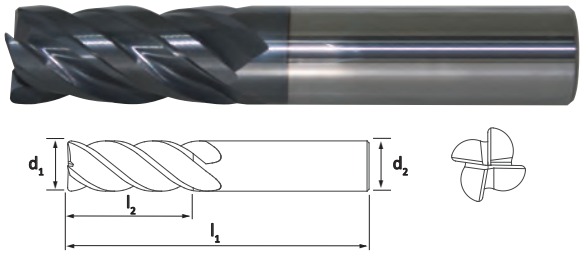
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 80

Series 156

4 Flute Radius Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	R Radius	Flutes	AlTiN	nACRo®
3/8	3/8	5/8	2			0.010	4	156-12424	156-12425
3/8	3/8	5/8	2			0.015	4	156-22424	156-22425
3/8	3/8	5/8	2			0.020	4	156-32424	156-32425
3/8	3/8	5/8	2			0.030	4	156-42424	156-42425
3/8	3/8	7/8	2 1/2			0.010	4	156-12414	156-12415
3/8	3/8	7/8	2 1/2			0.020	4	156-32414	156-32415
3/8	3/8	7/8	2 1/2			0.030	4	156-42414	156-42415
3/8	3/8	1 1/2	3 1/2			0.010	4	156-12434	156-12435
3/8	3/8	1 1/2	3 1/2			0.020	4	156-32434	156-32435
3/8	3/8	1 1/2	3 1/2			0.030	4	156-42434	156-42435
3/8	3/8	7/8	4	2 3/8	0.360	0.030	4	156-42464	156-42465
7/16	7/16	5/8	2 3/4			0.020	4	156-32824	156-32825
7/16	7/16	1	2 3/4			0.020	4	156-32814	156-32815
1/2	1/2	5/8	2 1/2			0.010	4	156-13224	156-13225
1/2	1/2	5/8	2 1/2			0.015	4	156-23224	156-23225
1/2	1/2	5/8	2 1/2			0.020	4	156-33224	156-33225
1/2	1/2	5/8	2 1/2			0.030	4	156-43224	156-43225
1/2	1/2	5/8	2 1/2			0.060	4	156-63224	156-63225
1/2	1/2	1 1/4	3			0.010	4	156-13214	156-13215
1/2	1/2	1 1/4	3			0.015	4	156-23214	156-23215
1/2	1/2	1 1/4	3			0.020	4	156-33214	156-33215
1/2	1/2	1 1/4	3			0.030	4	156-43214	156-43215
1/2	1/2	1 1/4	3			0.060	4	156-63214	156-63215
1/2	1/2	2	4			0.020	4	156-33244	156-33245
1/2	1/2	2	4			0.030	4	156-43244	156-43245
1/2	1/2	2	4			0.060	4	156-63244	156-63245
1/2	1/2	1	6	2 3/8	0.480	0.030	4	156-43264	156-43265
9/16	9/16	1 1/4	3 1/2			0.030	4	156-43614	156-43615
5/8	5/8	7/8	3			0.030	4	156-44024	156-44025
5/8	5/8	1 1/4	3 1/2			0.010	4	156-14014	156-14015
5/8	5/8	1 1/4	3 1/2			0.030	4	156-44014	156-44015
5/8	5/8	1 1/4	3 1/2			0.060	4	156-64014	156-64015
5/8	5/8	2 1/2	5			0.030	4	156-44044	156-44045
5/8	5/8	2 1/2	5			0.060	4	156-64044	156-64045
5/8	5/8	1 1/4	6	2 3/8	0.600	0.030	4	156-44064	156-44065

Additional Sizes On Page 28 & 30

Application Range:

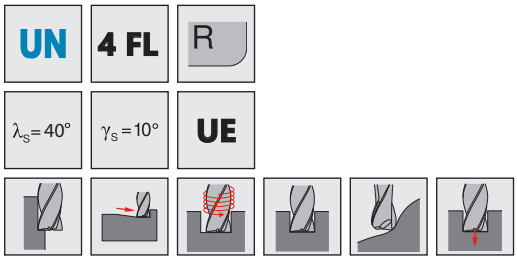
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

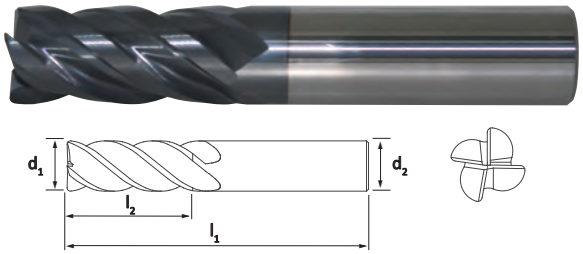
Feeds & Speeds Available on Page 80

PROMAX Premium

Series 156

4 Flute Radius Steels





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004
Cutting Dia: 1/8" - 1" = +.000/-.002
Radius: 1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	R Radius	Flutes	AlTiN	nACRo®
3/4	3/4	1	3			0.010	4	156-14824	156-14825
3/4	3/4	1	3			0.030	4	156-44824	156-44825
3/4	3/4	1	3			0.060	4	156-64824	156-64825
3/4	3/4	1 5/8	4			0.010	4	156-14814	156-14815
3/4	3/4	1 5/8	4			0.020	4	156-34814	156-34815
3/4	3/4	1 5/8	4			0.030	4	156-44814	156-44815
3/4	3/4	1 5/8	4			0.060	4	156-64814	156-64815
3/4	3/4	1 5/8	4			0.125	4	156-84814	156-84815
3/4	3/4	2 1/2	5			0.030	4	156-44834	156-44835
3/4	3/4	2 1/2	5			0.060	4	156-64834	156-64835
3/4	3/4	1 5/8	6	2 1/2	0.720	0.030	4	156-44864	156-44865
1	1	1 3/4	4			0.030	4	156-46414	156-46415
1	1	1 3/4	4			0.060	4	156-66414	156-66415
1	1	2 3/4	5			0.030	4	156-46434	156-46435
1	1	2 3/4	5			0.060	4	156-66434	156-66435
1	1	3 3/8	6			0.030	4	156-46444	156-46445
1	1	3 3/8	6			0.060	4	156-66444	156-66445

Additional Sizes On Page 28 & 29

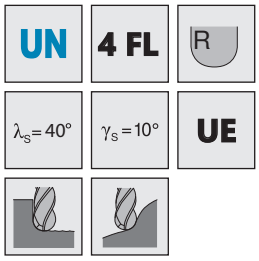
Application Range:

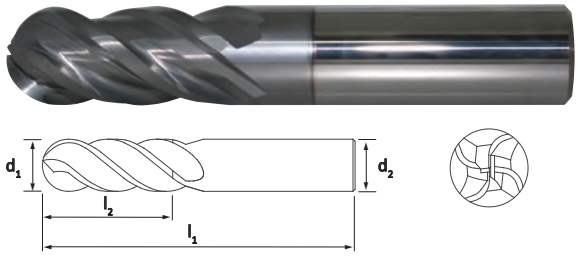
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 80

Series 157

4 Flute Ball Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Ball Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	R Radius	Flutes	AlTiN	nACRo®
1/8	1/8	1/4	1 1/2			0.063	4	157-00824	157-00825
1/8	1/8	1/2	1 1/2			0.063	4	157-00814	157-00815
5/32	3/16	1/2	2			0.078	4	157-01014	157-01015
3/16	3/16	3/8	2			0.094	4	157-01224	157-01225
3/16	3/16	5/8	2			0.094	4	157-01214	157-01215
7/32	1/4	3/8	2			0.109	4	157-01424	157-01425
7/32	1/4	3/4	2 1/2			0.109	4	157-01414	157-01415
1/4	1/4	3/8	2			0.125	4	157-01624	157-01625
1/4	1/4	3/4	2 1/2			0.125	4	157-01614	157-01615
1/4	1/4	3/4	4	2 1/8	0.240	0.125	4	157-01664	157-01665
5/16	5/16	1/2	2 1/2			0.156	4	157-02024	157-02025
5/16	5/16	3/4	2 1/2			0.156	4	157-02014	157-02015
3/8	3/8	5/8	2			0.188	4	157-02424	157-02425
3/8	3/8	7/8	2 1/2			0.188	4	157-02414	157-02415
3/8	3/8	7/8	4	2 3/8	0.360	0.188	4	157-02464	157-02465
1/2	1/2	5/8	2 1/2			0.250	4	157-03224	157-03225
1/2	1/2	1	3			0.250	4	157-03214	157-03215
1/2	1/2	1	6	2 3/8	0.480	0.250	4	157-03264	157-03265
1/2	1/2	1	6	3 3/8	0.480	0.250	4	157-03274	157-03275
9/16	9/16	1 1/4	3 1/2			0.281	4	157-03614	157-03615
5/8	5/8	1 1/4	3 1/2			0.313	4	157-04014	157-04015
5/8	5/8	1 1/4	6	3 3/8	0.600	0.313	4	157-04074	157-04075
3/4	3/4	1 5/8	4			0.375	4	157-04814	157-04815
1	1	1 3/4	4			0.500	4	157-06414	157-06415
1	1	2 3/4	5			0.500	4	157-06434	157-06435
1	1	1 7/8	6	3 3/8	0.960	0.500	4	157-06474	157-06475

Application Range:

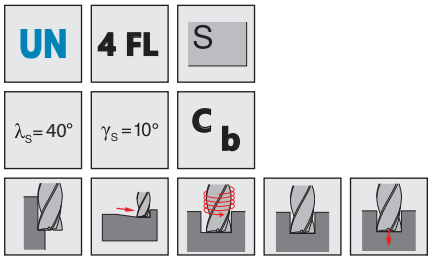
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

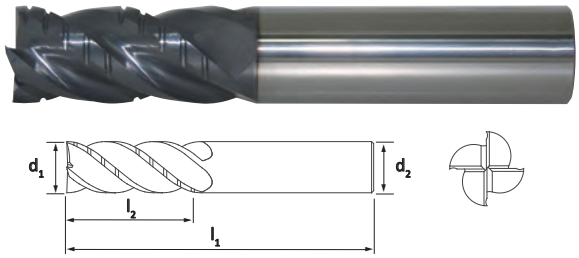
Feeds & Speeds Available on Page 81

PROMAX Premium

Series 190

4 Flute Steels Multi-Geometry





Tolerances

Shank: 3/16" - 1" = -.0001/-.0004
Cutting Dia: 3/16" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	Flutes	AlTiN
3/16	3/16	5/8	2			4	190-01214
1/4	1/4	3/8	2			4	190-01624
1/4	1/4	3/4	2 1/2			4	190-01614
5/16	5/16	3/4	2 1/2			4	190-02014
3/8	3/8	5/8	2			4	190-02424
3/8	3/8	7/8	2 1/2			4	190-02414
3/8	3/8	7/8	4	2-1/8	0.360	4	190-02464
1/2	1/2	5/8	2 1/2			4	190-03224
1/2	1/2	1 1/4	3			4	190-03214
1/2	1/2	2	4			4	190-03234
1/2	1/2	1	6	2-3/8	0.480	4	190-03264
5/8	5/8	7/8	3			4	190-04024
5/8	5/8	1 1/4	3 1/2			4	190-04014
3/4	3/4	1	3			4	190-04824
3/4	3/4	1 5/8	4			4	190-04814
1	1	1 3/4	4			4	190-06414

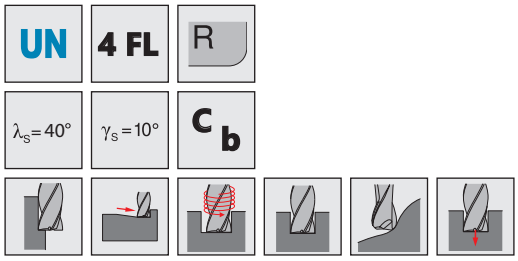
Application Range:

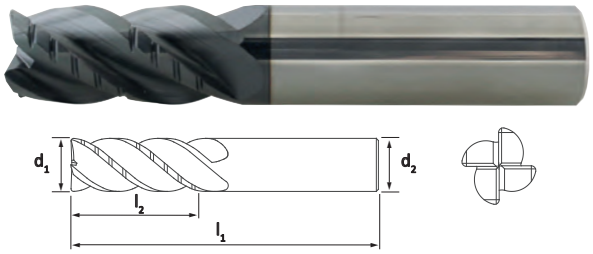
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 82

Series 191

4 Flute Radius Steels Multi-Geometry





Tolerances

Shank:	3/16" - 1" = -.0001/-.0004
Cutting Dia:	3/16" - 1" = +.000/-.002
Radius:	3/16" - 1" = +.002/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	AlTiN
3/16	3/16	5/8	2	0.010	4	191-11214
1/4	1/4	3/4	2 1/2	0.020	4	191-31614
5/16	5/16	3/4	2 1/2	0.020	4	191-32014
3/8	3/8	7/8	2 1/2	0.020	4	191-32414
3/8	3/8	7/8	2 1/2	0.030	4	191-42414
1/2	1/2	5/8	2 1/2	0.020	4	191-33224
1/2	1/2	5/8	2 1/2	0.030	4	191-43224
1/2	1/2	1 1/4	3	0.020	4	191-33214
1/2	1/2	1 1/4	3	0.030	4	191-43214
1/2	1/2	2	4	0.020	4	191-33234
1/2	1/2	2	4	0.030	4	191-43234
5/8	5/8	1 1/4	3 1/2	0.030	4	191-44014
3/4	3/4	1 5/8	4	0.030	4	191-44814
1	1	1 3/4	4	0.030	4	191-46414

Application Range:

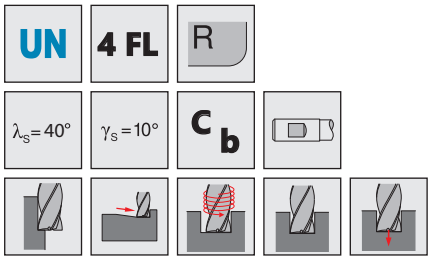
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

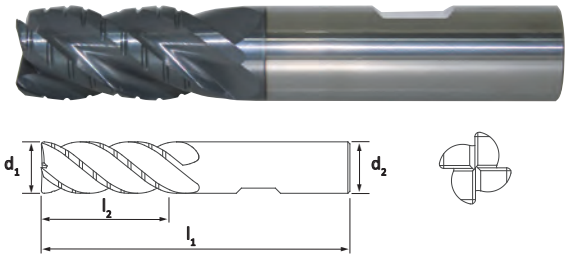
Feeds & Speeds Available on Page 82

PROMAX Premium

Series 120

4 Flute Radius Steels Rougher-Finisher





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.003
Radius:	1/8" - 1" = +.002/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	R Radius	Flutes	AlTiN
1/8	1/8	1/4	1 1/2			0.010	4	120-00824
1/8	1/8	1/2	1 1/2			0.010	4	120-00814
5/32	3/16	3/8	2			0.010	4	120-01024
5/32	3/16	1/2	2			0.010	4	120-01014
3/16	3/16	3/8	2			0.010	4	120-01224
3/16	3/16	5/8	2			0.010	4	120-01214
7/32	1/4	3/8	2			0.020	4	120-01424
7/32	1/4	3/4	2 1/2			0.020	4	120-01414
1/4	1/4	3/8	2			0.020	4	120-01624
1/4	1/4	3/4	2 1/2			0.020	4	120-01614
1/4	1/4	1 1/4	3			0.020	4	120-01634
1/4	1/4	1 1/2	3 1/2			0.020	4	120-01644
1/4	1/4	3/4	4	2 1/8	0.240	0.020	4	120-01664
9/32	5/16	1/2	2 1/2			0.020	4	120-01824
9/32	5/16	3/4	2 1/2			0.020	4	120-01814
5/16	5/16	1/2	2 1/2			0.020	4	120-02024
5/16	5/16	3/4	2 1/2			0.020	4	120-02014
11/32	3/8	5/8	2			0.020	4	120-02224
11/32	3/8	7/8	2 1/2			0.020	4	120-02214
3/8	3/8	5/8	2			0.020	4	120-02424
3/8	3/8	7/8	2 1/2			0.020	4	120-02414
3/8	3/8	1 1/2	3 1/2			0.020	4	120-02434
3/8	3/8	7/8	4	2 1/8	0.360	0.020	4	120-02464
3/8	3/8	2	4			0.020	4	120-02444
3/8	3/8	7/8	6	3 3/8	0.360	0.020	4	120-02474
7/16	7/16	1	2 3/4			0.020	4	120-02814

Additional Sizes On Page 35

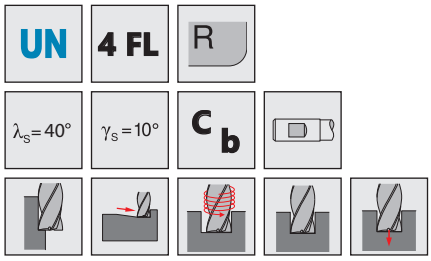
Application Range:

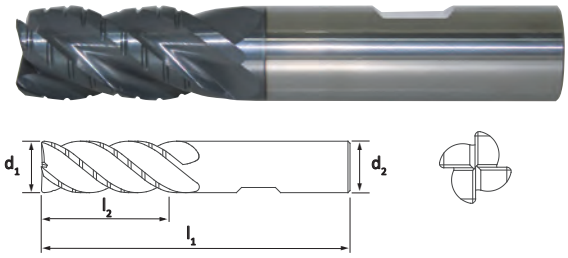
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 82-83

Series 120

4 Flute Steels Radius Rougher-Finisher





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.003
Radius:	1/8" - 1" = +.002/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	R Radius	Flutes	AlTiN
1/2	1/2	5/8	2 1/2			0.020	4	120-03224
1/2	1/2	1 1/4	3			0.020	4	120-03214
1/2	1/2	1 1/2	3 1/2			0.020	4	120-03234
1/2	1/2	2	4			0.020	4	120-03244
1/2	1/2	1	6	2 3/8	0.480	0.020	4	120-03264
1/2	1/2	1	6	3 3/8	0.480	0.020	4	120-03274
9/16	9/16	1 1/4	3 1/2			0.030	4	120-03614
5/8	5/8	7/8	3			0.030	4	120-04024
5/8	5/8	1 1/4	3 1/2			0.030	4	120-04014
5/8	5/8	1 3/4	4			0.030	4	120-04034
5/8	5/8	2 1/2	5			0.030	4	120-04044
3/4	3/4	1	3			0.030	4	120-04824
3/4	3/4	1 5/8	4			0.030	4	120-04814
3/4	3/4	1 5/8	6	2 1/2	0.720	0.030	4	120-04864
1	1	1 3/4	4			0.030	4	120-06414

Additional Sizes On Page 34

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 82-83

PROMAX Premium

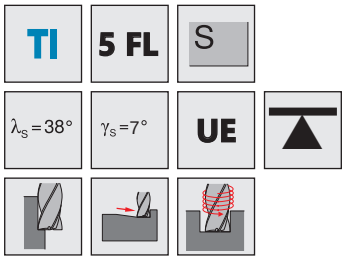
Series US556

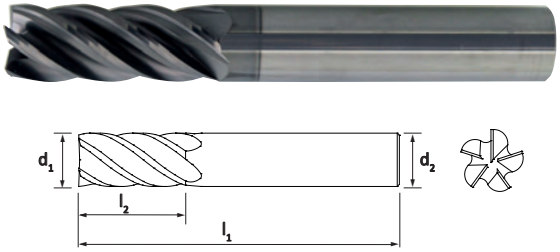
5 Flute Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004

Cutting Dia: 1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	PROMAX POWER LAYER
1/4	1/4	3/8	2	5	US556048
1/4	1/4	1/2	2 1/2	5	US556052
1/4	1/4	3/4	2 1/2	5	US556056
1/4	1/4	1	3	5	US556060
1/4	1/4	1 1/4	3	5	US556064
3/8	3/8	1/2	2	5	US556080
3/8	3/8	1	3	5	US556085
3/8	3/8	1 1/4	3	5	US556090
3/8	3/8	1 1/2	3 1/2	5	US556095
1/2	1/2	5/8	2 1/2	5	US556120
1/2	1/2	1	3	5	US556126
1/2	1/2	1 1/4	3	5	US556132
1/2	1/2	1 5/8	4	5	US556150
1/2	1/2	2	4	5	US556156
5/8	5/8	3/4	3	5	US556174
5/8	5/8	1 1/4	3 1/2	5	US556179
5/8	5/8	1 5/8	3 1/2	5	US556184
5/8	5/8	2 1/8	4	5	US556194
5/8	5/8	2 1/2	5	5	US556199
3/4	3/4	1	3	5	US556219
3/4	3/4	1 5/8	4	5	US556233
3/4	3/4	2 1/4	5	5	US556240
3/4	3/4	2 3/4	5	5	US556247
3/4	3/4	3 1/4	6	5	US556275
1	1	1 1/4	4	5	US556289
1	1	2	4 1/2	5	US556296
1	1	2 5/8	5	5	US556303
1	1	3 1/4	6	5	US556331

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 83

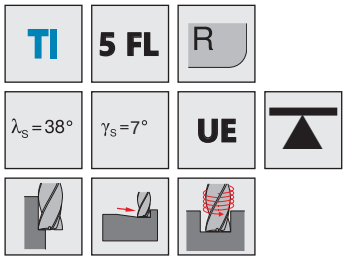
Series US556

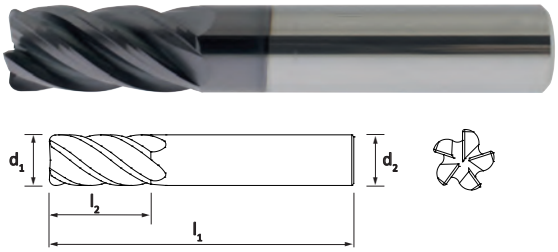
5 Flute Radius Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	<.060" = +/- .001
	>/=.060" = +/- .0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
1/4	1/4	3/8	2	0.015	5	US556049
1/4	1/4	3/8	2	0.030	5	US556050
1/4	1/4	3/8	2	0.060	5	US556051
1/4	1/4	1/2	2 1/2	0.015	5	US556053
1/4	1/4	1/2	2 1/2	0.030	5	US556054
1/4	1/4	1/2	2 1/2	0.060	5	US556055
1/4	1/4	3/4	2 1/2	0.015	5	US556057
1/4	1/4	3/4	2 1/2	0.030	5	US556058
1/4	1/4	3/4	2 1/2	0.060	5	US556059
1/4	1/4	1	3	0.015	5	US556061
1/4	1/4	1	3	0.030	5	US556062
1/4	1/4	1	3	0.060	5	US556063
1/4	1/4	1 1/4	3	0.015	5	US556065
1/4	1/4	1 1/4	3	0.030	5	US556066
1/4	1/4	1 1/4	3	0.060	5	US556067
3/8	3/8	1/2	2	0.015	5	US556081
3/8	3/8	1/2	2	0.030	5	US556082
3/8	3/8	1/2	2	0.060	5	US556083
3/8	3/8	1/2	2	0.090	5	US556084
3/8	3/8	1	3	0.015	5	US556086
3/8	3/8	1	3	0.030	5	US556087
3/8	3/8	1	3	0.060	5	US556088
3/8	3/8	1	3	0.090	5	US556089
3/8	3/8	1 1/4	3	0.015	5	US556091
3/8	3/8	1 1/4	3	0.030	5	US556092
3/8	3/8	1 1/4	3	0.060	5	US556093
3/8	3/8	1 1/4	3	0.090	5	US556094
3/8	3/8	1 1/2	3 1/2	0.015	5	US556096
3/8	3/8	1 1/2	3 1/2	0.030	5	US556097
3/8	3/8	1 1/2	3 1/2	0.060	5	US556098
3/8	3/8	1 1/2	3 1/2	0.090	5	US556099

Additional Sizes On Pages 38, 39, 40 & 41

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 83

PROMAX Premium

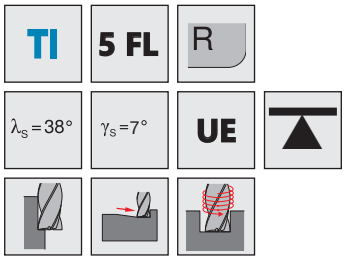
Series US556

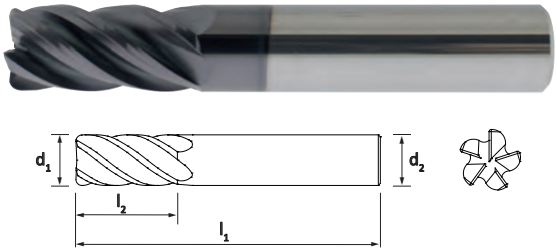
5 Flute Radius Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	<.060" = +/- .001
	>/=.060" = +/- .0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
1/2	1/2	5/8	2 1/2	0.015	5	US556121
1/2	1/2	5/8	2 1/2	0.030	5	US556122
1/2	1/2	5/8	2 1/2	0.060	5	US556123
1/2	1/2	5/8	2 1/2	0.090	5	US556124
1/2	1/2	5/8	2 1/2	0.125	5	US556125
1/2	1/2	1	3	0.015	5	US556127
1/2	1/2	1	3	0.030	5	US556128
1/2	1/2	1	3	0.060	5	US556129
1/2	1/2	1	3	0.090	5	US556130
1/2	1/2	1	3	0.125	5	US556131
1/2	1/2	1 1/4	3	0.015	5	US556133
1/2	1/2	1 1/4	3	0.030	5	US556134
1/2	1/2	1 1/4	3	0.060	5	US556135
1/2	1/2	1 1/4	3	0.090	5	US556136
1/2	1/2	1 1/4	3	0.125	5	US556137
1/2	1/2	1 5/8	4	0.015	5	US556151
1/2	1/2	1 5/8	4	0.030	5	US556152
1/2	1/2	1 5/8	4	0.060	5	US556153
1/2	1/2	1 5/8	4	0.090	5	US556154
1/2	1/2	1 5/8	4	0.125	5	US556155
1/2	1/2	2	4	0.015	5	US556157
1/2	1/2	2	4	0.030	5	US556158
1/2	1/2	2	4	0.060	5	US556159
1/2	1/2	2	4	0.090	5	US556160
1/2	1/2	2	4	0.125	5	US556161
5/8	5/8	3/4	3	0.030	5	US556175
5/8	5/8	3/4	3	0.060	5	US556176
5/8	5/8	3/4	3	0.090	5	US556177
5/8	5/8	3/4	3	0.125	5	US556178
5/8	5/8	1 1/4	3 1/2	0.030	5	US556180
5/8	5/8	1 1/4	3 1/2	0.060	5	US556181

Additional Sizes On Pages 37, 39, 40 & 41

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 83

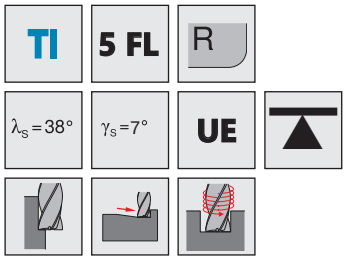
Series US556

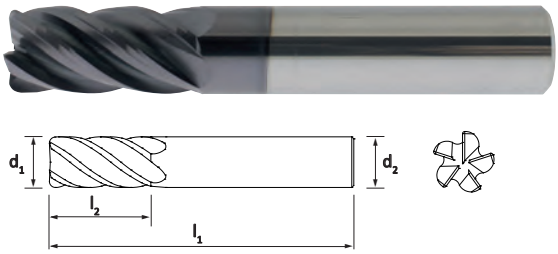
5 Flute Radius Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	<.060" = +/- .001
	>/=.060" = +/- .0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
5/8	5/8	1 1/4	3 1/2	0.090	5	US556182
5/8	5/8	1 1/4	3 1/2	0.125	5	US556183
5/8	5/8	1 5/8	3 1/2	0.030	5	US556185
5/8	5/8	1 5/8	3 1/2	0.060	5	US556186
5/8	5/8	1 5/8	3 1/2	0.090	5	US556187
5/8	5/8	1 5/8	3 1/2	0.125	5	US556188
5/8	5/8	2 1/8	4	0.030	5	US556195
5/8	5/8	2 1/8	4	0.060	5	US556196
5/8	5/8	2 1/8	4	0.090	5	US556197
5/8	5/8	2 1/8	4	0.125	5	US556198
5/8	5/8	2 1/2	5	0.030	5	US556200
5/8	5/8	2 1/2	5	0.060	5	US556201
5/8	5/8	2 1/2	5	0.090	5	US556202
5/8	5/8	2 1/2	5	0.125	5	US556203
3/4	3/4	1	3	0.030	5	US556220
3/4	3/4	1	3	0.060	5	US556221
3/4	3/4	1	3	0.090	5	US556222
3/4	3/4	1	3	0.125	5	US556223
3/4	3/4	1	3	0.190	5	US556224
3/4	3/4	1	3	0.250	5	US556225
3/4	3/4	1 5/8	4	0.030	5	US556234
3/4	3/4	1 5/8	4	0.060	5	US556235
3/4	3/4	1 5/8	4	0.090	5	US556236
3/4	3/4	1 5/8	4	0.125	5	US556237
3/4	3/4	1 5/8	4	0.190	5	US556238
3/4	3/4	1 5/8	4	0.250	5	US556239
3/4	3/4	2 1/4	5	0.030	5	US556241
3/4	3/4	2 1/4	5	0.060	5	US556242
3/4	3/4	2 1/4	5	0.090	5	US556243
3/4	3/4	2 1/4	5	0.125	5	US556244
3/4	3/4	2 1/4	5	0.190	5	US556245

Additional Sizes On Pages 37, 38, 40 & 41

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 83

PROMAX Premium

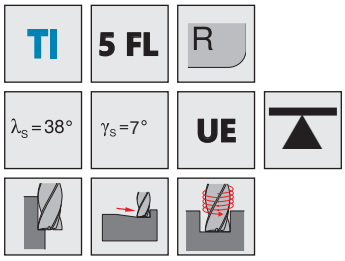
Series US556

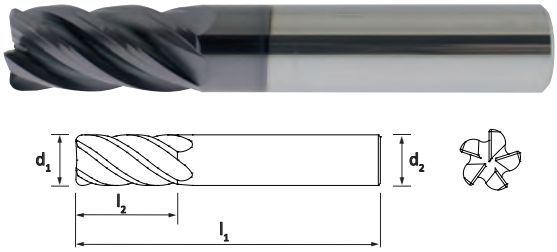
5 Flute Radius Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	<.060" = +/- .001
	>/=.060" = +/- .0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
3/4	3/4	2 1/4	5	0.250	5	US556246
3/4	3/4	2 3/4	5	0.030	5	US556248
3/4	3/4	2 3/4	5	0.060	5	US556249
3/4	3/4	2 3/4	5	0.090	5	US556250
3/4	3/4	2 3/4	5	0.125	5	US556251
3/4	3/4	2 3/4	5	0.190	5	US556252
3/4	3/4	2 3/4	5	0.250	5	US556253
3/4	3/4	3 1/4	6	0.030	5	US556276
3/4	3/4	3 1/4	6	0.060	5	US556277
3/4	3/4	3 1/4	6	0.090	5	US556278
3/4	3/4	3 1/4	6	0.125	5	US556279
3/4	3/4	3 1/4	6	0.190	5	US556280
3/4	3/4	3 1/4	6	0.250	5	US556281
1	1	1 1/4	4	0.030	5	US556290
1	1	1 1/4	4	0.060	5	US556291
1	1	1 1/4	4	0.090	5	US556292
1	1	1 1/4	4	0.125	5	US556293
1	1	1 1/4	4	0.190	5	US556294
1	1	1 1/4	4	0.250	5	US556295
1	1	2	4 1/2	0.030	5	US556297
1	1	2	4 1/2	0.060	5	US556298
1	1	2	4 1/2	0.090	5	US556299
1	1	2	4 1/2	0.125	5	US556300
1	1	2	4 1/2	0.190	5	US556301
1	1	2	4 1/2	0.250	5	US556302
1	1	2 5/8	5	0.030	5	US556304
1	1	2 5/8	5	0.060	5	US556305
1	1	2 5/8	5	0.090	5	US556306
1	1	2 5/8	5	0.125	5	US556307
1	1	2 5/8	5	0.190	5	US556308
1	1	2 5/8	5	0.250	5	US556309

Additional Sizes On Pages 37, 38, 39 & 41

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 83

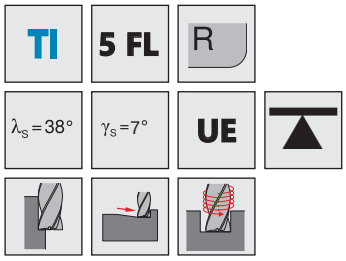
Series US556

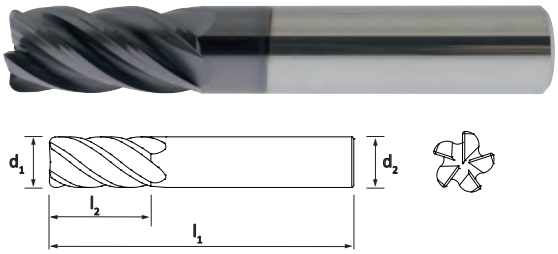
5 Flute Radius Steels

German Engineered. American Made.

PROMAX PowerLayer Coating

NEW Series





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	<.060" = +/- .001
	>/=.060" = +/- .0015

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flute	PROMAX POWER LAYER
1	1	3 1/4	6	0.030	5	US556332
1	1	3 1/4	6	0.060	5	US556333
1	1	3 1/4	6	0.090	5	US556334
1	1	3 1/4	6	0.125	5	US556335
1	1	3 1/4	6	0.190	5	US556336
1	1	3 1/4	6	0.250	5	US556337
1	1	4 1/4	7	0.030	5	US556339
1	1	4 1/4	7	0.060	5	US556340
1	1	4 1/4	7	0.090	5	US556341
1	1	4 1/4	7	0.125	5	US556342
1	1	4 1/4	7	0.190	5	US556343
1	1	4 1/4	7	0.250	5	US556344

Additional Sizes On Pages 37, 38, 39 & 40

Application Range:

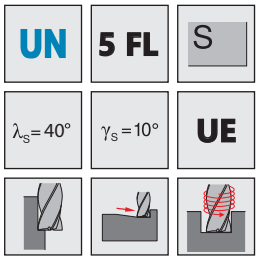
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

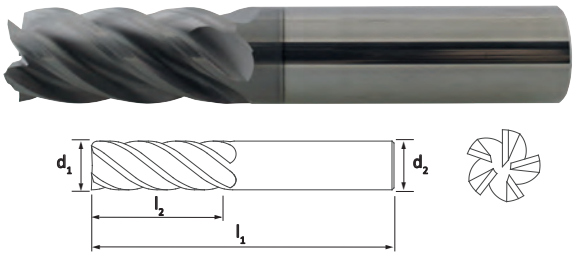
Feeds & Speeds Available on Page 83

PROMAX Premium

Series 158

5 Flute Steels





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004

Cutting Dia: 1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	nACRo®
1/8	1/8	1/2	1 1/2	5	158-00815
5/32	3/16	1/2	2	5	158-01015
3/16	3/16	3/8	2	5	158-01225
3/16	3/16	5/8	2	5	158-01215
7/32	1/4	3/4	2 1/2	5	158-01415
1/4	1/4	3/8	2	5	158-01625
1/4	1/4	3/4	2 1/2	5	158-01615
1/4	1/4	1 1/4	3	5	158-01635
5/16	5/16	3/4	2 1/2	5	158-02015
3/8	3/8	5/8	2	5	158-02425
3/8	3/8	7/8	2 1/2	5	158-02415
3/8	3/8	1 1/2	3 1/2	5	158-02435
7/16	7/16	1	2 3/4	5	158-02815
1/2	1/2	5/8	2 1/2	5	158-03225
1/2	1/2	1 1/4	3	5	158-03215
1/2	1/2	1 1/2	3 1/2	5	158-03235
1/2	1/2	2	4	5	158-03245
9/16	9/16	1 1/4	3 1/2	5	158-03615
5/8	5/8	7/8	3	5	158-04025
5/8	5/8	1 1/4	3 1/2	5	158-04015
5/8	5/8	1 3/4	4	5	158-04035
5/8	5/8	2 1/2	5	5	158-04045
3/4	3/4	1	3	5	158-04825
3/4	3/4	1 5/8	4	5	158-04815
3/4	3/4	2 1/2	5	5	158-04835
3/4	3/4	3 1/4	6	5	158-04845
1	1	1 3/4	4	5	158-06415
1	1	2 3/4	5	5	158-06435
1	1	3 3/8	6	5	158-06445

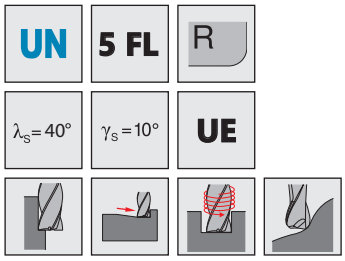
Application Range:

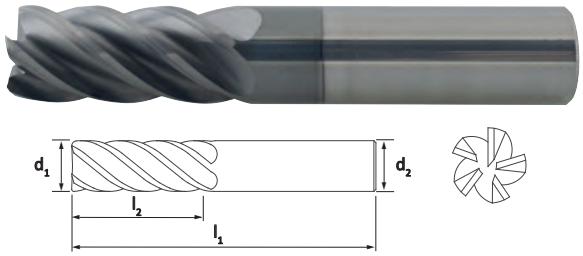
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 84

Series 159

5 Flute Radius Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	nACRo®
1/8	1/8	1/2	1 1/2	0.010	5	159-10815
1/8	1/8	1/2	1 1/2	0.015	5	159-20815
5/32	3/16	1/2	2	0.010	5	159-11015
3/16	3/16	3/8	2	0.010	5	159-11225
3/16	3/16	3/8	2	0.020	5	159-31225
3/16	3/16	5/8	2	0.010	5	159-11215
3/16	3/16	5/8	2	0.020	5	159-31215
7/32	1/4	3/4	2 1/2	0.015	5	159-21415
1/4	1/4	3/8	2	0.010	5	159-11625
1/4	1/4	3/8	2	0.015	5	159-21625
1/4	1/4	3/8	2	0.020	5	159-31625
1/4	1/4	3/8	2	0.030	5	159-41625
1/4	1/4	3/4	2 1/2	0.010	5	159-11615
1/4	1/4	3/4	2 1/2	0.015	5	159-21615
1/4	1/4	3/4	2 1/2	0.020	5	159-31615
1/4	1/4	3/4	2 1/2	0.030	5	159-41615
1/4	1/4	1 1/4	3	0.030	5	159-41635
5/16	5/16	3/4	2 1/2	0.015	5	159-22015
3/8	3/8	5/8	2	0.010	5	159-12425
3/8	3/8	5/8	2	0.015	5	159-22425
3/8	3/8	5/8	2	0.020	5	159-32425
3/8	3/8	5/8	2	0.030	5	159-42425
3/8	3/8	7/8	2 1/2	0.010	5	159-12415
3/8	3/8	7/8	2 1/2	0.015	5	159-22415
3/8	3/8	7/8	2 1/2	0.020	5	159-32415
3/8	3/8	7/8	2 1/2	0.030	5	159-42415
3/8	3/8	1 1/2	3 1/2	0.010	5	159-12435
3/8	3/8	1 1/2	3 1/2	0.015	5	159-22435
3/8	3/8	1 1/2	3 1/2	0.030	5	159-42435

Additional Sizes On Page 44

Application Range:

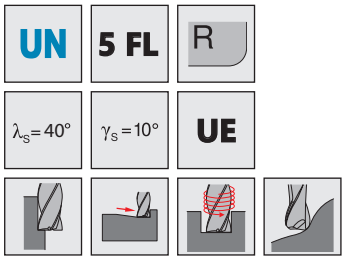
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

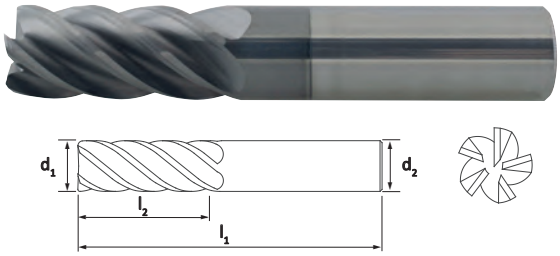
Feeds & Speeds Available on Page 84

PROMAX Premium

Series 159

5 Flute Radius Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	nACRo®
1/2	1/2	5/8	2 1/2	0.010	5	159-13225
1/2	1/2	5/8	2 1/2	0.015	5	159-23225
1/2	1/2	5/8	2 1/2	0.020	5	159-33225
1/2	1/2	5/8	2 1/2	0.030	5	159-43225
1/2	1/2	5/8	2 1/2	0.060	5	159-63225
1/2	1/2	1 1/4	3	0.010	5	159-13215
1/2	1/2	1 1/4	3	0.015	5	159-23215
1/2	1/2	1 1/4	3	0.020	5	159-33215
1/2	1/2	1 1/4	3	0.030	5	159-43215
1/2	1/2	1 1/4	3	0.060	5	159-63215
1/2	1/2	2	4	0.030	5	159-43245
1/2	1/2	2	4	0.060	5	159-63245
5/8	5/8	7/8	3	0.030	5	159-44025
5/8	5/8	7/8	3	0.060	5	159-64025
5/8	5/8	1 1/4	3 1/2	0.030	5	159-44015
5/8	5/8	2 1/2	5	0.030	5	159-44045
5/8	5/8	2 1/2	5	0.060	5	159-64045
3/4	3/4	1	3	0.030	5	159-44825
3/4	3/4	1 5/8	4	0.030	5	159-44815
3/4	3/4	2 1/2	5	0.030	5	159-44835
3/4	3/4	2 1/2	5	0.060	5	159-64835
1	1	1 3/4	4	0.030	5	159-46415
1	1	2 3/4	5	0.030	5	159-46435
1	1	2 3/4	5	0.060	5	159-66435
1	1	3 3/8	6	0.030	5	159-46445

Additional Sizes On Page 43

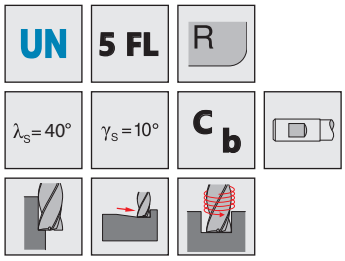
Application Range:

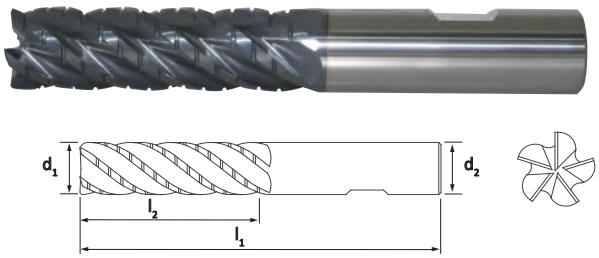
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 84

Series 121

5 Flute Radius Steels Rougher-Finisher





Tolerances

Shank:	3/4" - 1" = -.0001/-.0004
Cutting Dia:	3/4" - 1" = +.000/-.003
Radius:	3/4" - 1" = +.002/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	AlTiN
3/4	3/4	2 1/2	5	0.030	5	121-04834
3/4	3/4	3 1/4	6	0.030	5	121-04844
1	1	2 3/4	5	0.030	5	121-06434
1	1	3 3/8	6	0.030	5	121-06444

Application Range:

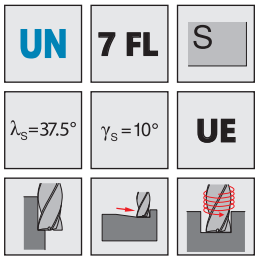
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

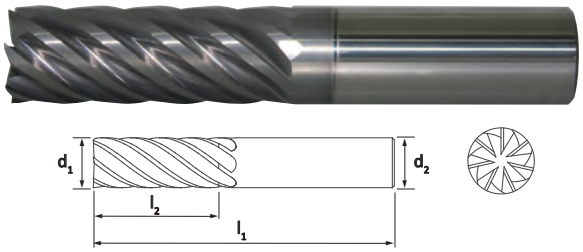
Feeds & Speeds Available on Page 85

PROMAX Premium

Series 160

7 Flute Steels





Tolerances

Shank: 1/4" - 1" = -.0001/-.0004

Cutting Dia: 1/4" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	Flutes	nACRo®
1/4	1/4	3/4	2 1/2			7	160-01615
3/8	3/8	7/8	2 1/2			7	160-02415
3/8	3/8	1 1/4	3			7	160-02445
3/8	3/8	1/2	6	3-1/8	0.360	7	160-02485
1/2	1/2	1 1/4	3			7	160-03215
1/2	1/2	1 5/8	4			7	160-03245
1/2	1/2	5/8	6	3-1/8	0.480	7	160-03275
5/8	5/8	1 5/8	3 1/2			7	160-04015
5/8	5/8	2 1/8	4			7	160-04045
5/8	5/8	3/4	6	3 1/8	0.600	7	160-04075
3/4	3/4	1 5/8	4			7	160-04815
3/4	3/4	2 1/4	5			7	160-04845
3/4	3/4	1	6	3-1/8	0.720	7	160-04875
1	1	2	4			7	160-06415
1	1	2 5/8	5			7	160-06445

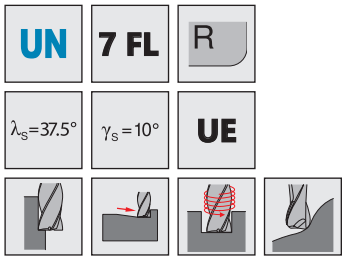
Application Range:

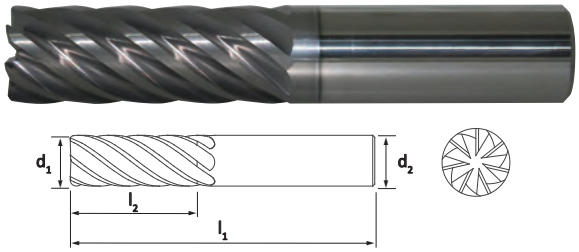
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 86

Series 161

7 Flute Radius Steels





Tolerances

Shank:	1/4" - 1" = -.0001/-.0004
Cutting Dia:	1/4" - 1" = +.000/-.002
Radius:	1/4" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	d_3 Neck Dia	R Radius	Flutes	nACRo®
1/4	1/4	3/4	2 1/2			0.020	7	161-31615
1/4	1/4	3/4	2 1/2			0.030	7	161-41615
1/4	1/4	1 1/8	3			0.020	7	161-31645
1/4	1/4	3/8	4	2 1/2	0.240	0.020	7	161-31675
1/4	1/4	3/8	4	2 1/2	0.240	0.030	7	161-41675
3/8	3/8	7/8	2 1/2			0.020	7	161-32415
3/8	3/8	7/8	2 1/2			0.030	7	161-42415
3/8	3/8	1 1/4	3			0.020	7	161-32445
3/8	3/8	1 1/4	3			0.030	7	161-42445
3/8	3/8	1/2	6	3 1/8	0.360	0.020	7	161-32485
1/2	1/2	1 1/4	3			0.020	7	161-33215
1/2	1/2	1 1/4	3			0.030	7	161-43215
1/2	1/2	1 5/8	4			0.020	7	161-33245
1/2	1/2	1 5/8	4			0.030	7	161-43245
1/2	1/2	5/8	6	3 1/8	0.480	0.020	7	161-33275
1/2	1/2	5/8	6	3 1/8	0.480	0.030	7	161-43275
5/8	5/8	1 5/8	3 1/2			0.030	7	161-44015
5/8	5/8	2 1/8	4			0.030	7	161-44045
5/8	5/8	3/4	6	3 1/8	0.600	0.030	7	161-44075
3/4	3/4	1 5/8	4			0.030	7	161-44815
3/4	3/4	2 1/4	5			0.030	7	161-44845
3/4	3/4	1	6	3 1/8	0.720	0.030	7	161-44875
1	1	2 5/8	5			0.030	7	161-46445

Application Range:

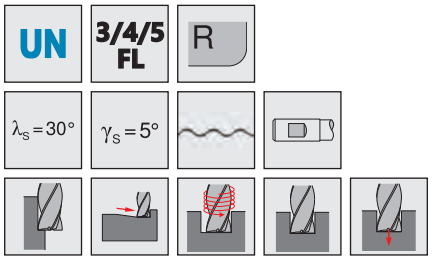
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

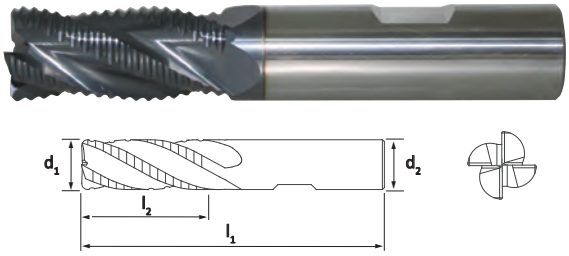
Feeds & Speeds Available on Page 86

PROMAX Premium

Series 100

Multi Flute Radius Steels





Tolerances

Shank:	3/16” - 1” = -.0001/-.0004
Cutting Dia:	3/16” - 1” = +.000/-.005
Radius:	3/16” - 1” = +/-.005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	AlTiN
3/16	3/16	3/8	2	0.030	3	100-01224
3/16	3/16	5/8	2	0.030	3	100-01214
1/4	1/4	3/8	2	0.045	4	100-01624
1/4	1/4	3/4	2 1/2	0.045	4	100-01614
5/16	5/16	1/2	2 1/2	0.045	4	100-02024
5/16	5/16	3/4	2 1/2	0.045	4	100-02014
3/8	3/8	5/8	2	0.060	4	100-02424
3/8	3/8	7/8	2 1/2	0.060	4	100-02414
7/16	7/16	1	2 3/4	0.060	4	100-02814
1/2	1/2	5/8	2 1/2	0.060	4	100-03224
1/2	1/2	1 1/4	3	0.060	4	100-03214
1/2	1/2	1 1/2	3 1/2	0.060	4	100-03234
9/16	9/16	1 1/4	3 1/2	0.060	4	100-03614
5/8	5/8	7/8	3	0.060	4	100-04024
5/8	5/8	1 1/4	3 1/2	0.060	4	100-04014
5/8	5/8	2	4	0.060	4	100-04034
3/4	3/4	1	3	0.060	4	100-04824
3/4	3/4	1 5/8	4	0.060	4	100-04814
3/4	3/4	2 1/4	5	0.060	4	100-04834
1	1	1 3/4	4	0.060	5	100-06414
1	1	2 5/8	5	0.060	5	100-06434

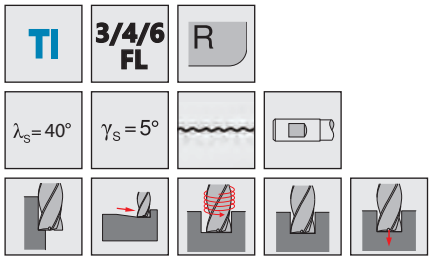
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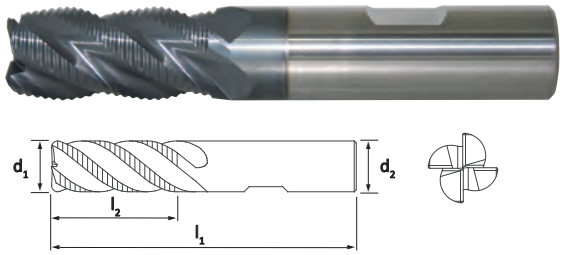
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●			●			●				

Feeds & Speeds Available on Page 86

Series 101

Multi Flute Radius Steels Rougher





Tolerances

Shank:	3/16" - 1" = -.0001/-.0004
Cutting Dia:	3/16" - 1" = +.000/-.005
Radius:	3/16" - 1" = +/-.005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	AlTiN
3/16	3/16	3/8	2	0.030	3	101-01224
3/16	3/16	5/8	2	0.030	3	101-01214
1/4	1/4	3/8	2	0.045	4	101-01624
1/4	1/4	3/4	2 1/2	0.045	4	101-01614
5/16	5/16	1/2	2 1/2	0.045	4	101-02024
5/16	5/16	3/4	2 1/2	0.045	4	101-02014
3/8	3/8	5/8	2	0.060	4	101-02424
3/8	3/8	7/8	2 1/2	0.060	4	101-02414
7/16	7/16	1	2 3/4	0.060	4	101-02814
1/2	1/2	5/8	2 1/2	0.060	4	101-03224
1/2	1/2	1 1/4	3	0.060	4	101-03214
1/2	1/2	1 1/2	3 1/2	0.060	4	101-03234
9/16	9/16	1 1/4	3 1/2	0.060	4	101-03614
5/8	5/8	7/8	3	0.060	4	101-04024
5/8	5/8	1 1/4	3 1/2	0.060	4	101-04014
5/8	5/8	2	4	0.060	4	101-04034
3/4	3/4	1	3	0.060	4	101-04824
3/4	3/4	1 5/8	4	0.060	4	101-04814
3/4	3/4	2 1/4	5	0.060	4	101-04834
1	1	1 3/4	4	0.060	6	101-06414
1	1	2 5/8	5	0.060	6	101-06434

Application Range:

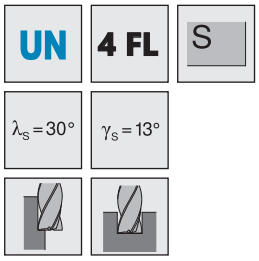
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
	●		●	●	●					

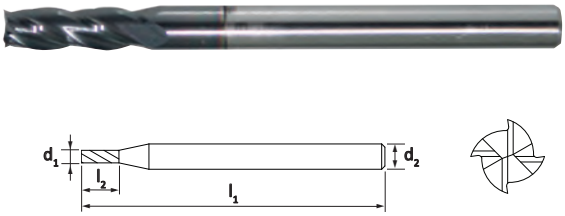
Feeds & Speeds Available on Page 87

PROMAX Premium

Series US501

4 Flute Micro





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.005	1/8	0.015	1 1/2	4	US501001
0.006	1/8	0.018	1 1/2	4	US501002
0.007	1/8	0.021	1 1/2	4	US501003
0.008	1/8	0.024	1 1/2	4	US501004
0.009	1/8	0.027	1 1/2	4	US501005
0.010	1/8	0.030	1 1/2	4	US501006
0.011	1/8	0.033	1 1/2	4	US501007
0.012	1/8	0.036	1 1/2	4	US501008
0.013	1/8	0.039	1 1/2	4	US501009
0.014	1/8	0.042	1 1/2	4	US501010
0.015	1/8	0.045	1 1/2	4	US501011
0.016	1/8	0.048	1 1/2	4	US501012
0.017	1/8	0.051	1 1/2	4	US501013
0.018	1/8	0.054	1 1/2	4	US501014
0.019	1/8	0.057	1 1/2	4	US501015
0.020	1/8	0.060	1 1/2	4	US501016
0.021	1/8	0.063	1 1/2	4	US501017
0.022	1/8	0.066	1 1/2	4	US501018
0.023	1/8	0.069	1 1/2	4	US501019
0.024	1/8	0.072	1 1/2	4	US501020
0.025	1/8	0.075	1 1/2	4	US501021
0.026	1/8	0.078	1 1/2	4	US501022
0.027	1/8	0.081	1 1/2	4	US501023
0.028	1/8	0.084	1 1/2	4	US501024
0.029	1/8	0.087	1 1/2	4	US501025
0.030	1/8	0.090	1 1/2	4	US501026
0.031	1/8	0.093	1 1/2	4	US501027
0.032	1/8	0.096	1 1/2	4	US501028
0.033	1/8	0.099	1 1/2	4	US501029
0.034	1/8	0.102	1 1/2	4	US501030
0.035	1/8	0.105	1 1/2	4	US501031
0.036	1/8	0.108	1 1/2	4	US501032

Additional Sizes On Pages 51, 52 & 53

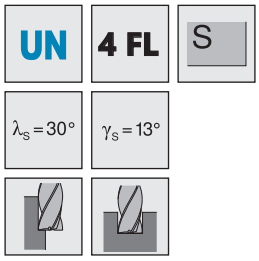
Application Range:

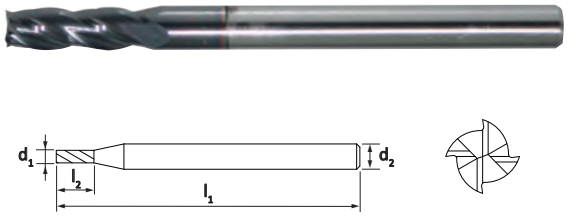
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

Feeds & Speeds Available on Page 89

Series US501

4 Flute Micro





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.037	1/8	0.111	1 1/2	4	US501033
0.038	1/8	0.114	1 1/2	4	US501034
0.039	1/8	0.117	1 1/2	4	US501035
0.040	1/8	0.120	1 1/2	4	US501036
0.041	1/8	0.123	1 1/2	4	US501037
0.042	1/8	0.126	1 1/2	4	US501038
0.043	1/8	0.129	1 1/2	4	US501039
0.044	1/8	0.132	1 1/2	4	US501040
0.045	1/8	0.135	1 1/2	4	US501041
0.046	1/8	0.138	1 1/2	4	US501042
0.047	1/8	0.141	1 1/2	4	US501043
0.048	1/8	0.144	1 1/2	4	US501044
0.049	1/8	0.147	1 1/2	4	US501045
0.050	1/8	0.150	1 1/2	4	US501046
0.051	1/8	0.153	1 1/2	4	US501047
0.052	1/8	0.156	1 1/2	4	US501048
0.053	1/8	0.159	1 1/2	4	US501049
0.054	1/8	0.162	1 1/2	4	US501050
0.055	1/8	0.165	1 1/2	4	US501051
0.056	1/8	0.168	1 1/2	4	US501052
0.057	1/8	0.171	1 1/2	4	US501053
0.058	1/8	0.174	1 1/2	4	US501054
0.059	1/8	0.177	1 1/2	4	US501055
0.060	1/8	0.180	1 1/2	4	US501056
0.061	1/8	0.183	1 1/2	4	US501057
0.062	1/8	0.186	1 1/2	4	US501058
0.063	1/8	0.189	1 1/2	4	US501059
0.064	1/8	0.192	1 1/2	4	US501060
0.065	1/8	0.195	1 1/2	4	US501061
0.066	1/8	0.198	1 1/2	4	US501062
0.067	1/8	0.201	1 1/2	4	US501063
0.068	1/8	0.204	1 1/2	4	US501064

Additional Sizes On Pages 50, 52 & 53

Application Range:

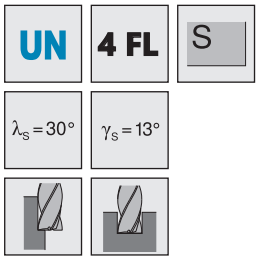
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

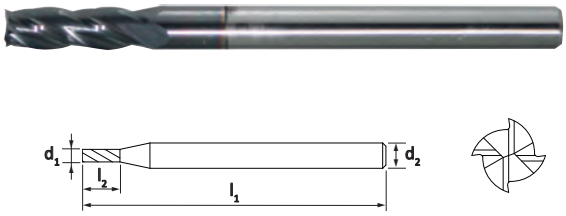
Feeds & Speeds Available on Page 89

PROMAX Premium

Series US501

4 Flute Micro





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.069	1/8	0.207	1 1/2	4	US501065
0.070	1/8	0.210	1 1/2	4	US501066
0.071	1/8	0.213	1 1/2	4	US501067
0.072	1/8	0.216	1 1/2	4	US501068
0.073	1/8	0.219	1 1/2	4	US501069
0.074	1/8	0.222	1 1/2	4	US501070
0.075	1/8	0.225	1 1/2	4	US501071
0.076	1/8	0.228	1 1/2	4	US501072
0.077	1/8	0.231	1 1/2	4	US501073
0.078	1/8	0.234	1 1/2	4	US501074
0.079	1/8	0.237	1 1/2	4	US501075
0.080	1/8	0.240	1 1/2	4	US501076
0.081	1/8	0.243	1 1/2	4	US501077
0.082	1/8	0.246	1 1/2	4	US501078
0.083	1/8	0.249	1 1/2	4	US501079
0.084	1/8	0.252	1 1/2	4	US501080
0.085	1/8	0.255	1 1/2	4	US501081
0.086	1/8	0.258	1 1/2	4	US501082
0.087	1/8	0.261	1 1/2	4	US501083
0.088	1/8	0.264	1 1/2	4	US501084
0.089	1/8	0.267	1 1/2	4	US501085
0.090	1/8	0.270	1 1/2	4	US501086
0.091	1/8	0.273	1 1/2	4	US501087
0.092	1/8	0.276	1 1/2	4	US501088
0.093	1/8	0.279	1 1/2	4	US501089
0.094	1/8	0.282	1 1/2	4	US501090
0.095	1/8	0.285	1 1/2	4	US501091
0.096	1/8	0.288	1 1/2	4	US501092
0.097	1/8	0.291	1 1/2	4	US501093
0.098	1/8	0.294	1 1/2	4	US501094
0.099	1/8	0.297	1 1/2	4	US501095
0.100	1/8	0.300	1 1/2	4	US501096

Additional Sizes On Pages 50, 51 & 53

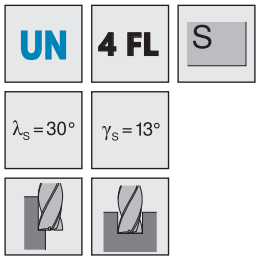
Application Range:

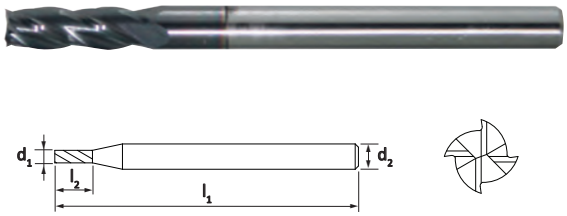
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

Feeds & Speeds Available on Page 89

Series US501

4 Flute Micro





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.101	1/8	0.303	1 1/2	4	US501097
0.102	1/8	0.306	1 1/2	4	US501098
0.103	1/8	0.309	1 1/2	4	US501099
0.104	1/8	0.312	1 1/2	4	US501100
0.105	1/8	0.315	1 1/2	4	US501101
0.106	1/8	0.318	1 1/2	4	US501102
0.107	1/8	0.321	1 1/2	4	US501103
0.108	1/8	0.324	1 1/2	4	US501104
0.109	1/8	0.327	1 1/2	4	US501105
0.110	1/8	0.330	1 1/2	4	US501106
0.111	1/8	0.333	1 1/2	4	US501107
0.112	1/8	0.336	1 1/2	4	US501108
0.113	1/8	0.339	1 1/2	4	US501109
0.114	1/8	0.341	1 1/2	4	US501110
0.115	1/8	0.345	1 1/2	4	US501111
0.116	1/8	0.348	1 1/2	4	US501112
0.117	1/8	0.351	1 1/2	4	US501113
0.118	1/8	0.354	1 1/2	4	US501114
0.119	1/8	0.357	1 1/2	4	US501115
0.120	1/8	0.360	1 1/2	4	US501116

Additional Sizes On Pages 50, 51 & 52

Application Range:

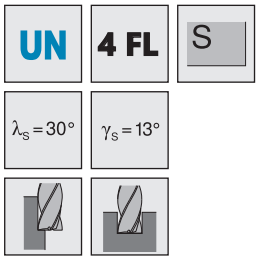
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

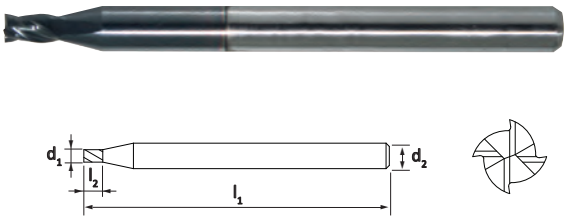
Feeds & Speeds Available on Page 89

PROMAX Premium

Series US504

4 Flute Micro Stub





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.005	1/8	0.008	1 1/2	4	US504001
0.006	1/8	0.009	1 1/2	4	US504002
0.007	1/8	0.011	1 1/2	4	US504003
0.008	1/8	0.012	1 1/2	4	US504004
0.009	1/8	0.014	1 1/2	4	US504005
0.010	1/8	0.015	1 1/2	4	US504006
0.011	1/8	0.017	1 1/2	4	US504007
0.012	1/8	0.018	1 1/2	4	US504008
0.013	1/8	0.020	1 1/2	4	US504009
0.014	1/8	0.021	1 1/2	4	US504010
0.015	1/8	0.023	1 1/2	4	US504011
0.016	1/8	0.024	1 1/2	4	US504012
0.017	1/8	0.026	1 1/2	4	US504013
0.018	1/8	0.027	1 1/2	4	US504014
0.019	1/8	0.029	1 1/2	4	US504015
0.020	1/8	0.030	1 1/2	4	US504016
0.021	1/8	0.032	1 1/2	4	US504017
0.022	1/8	0.033	1 1/2	4	US504018
0.023	1/8	0.035	1 1/2	4	US504019
0.024	1/8	0.036	1 1/2	4	US504020
0.025	1/8	0.038	1 1/2	4	US504021
0.026	1/8	0.039	1 1/2	4	US504022
0.027	1/8	0.041	1 1/2	4	US504023
0.028	1/8	0.042	1 1/2	4	US504024
0.029	1/8	0.044	1 1/2	4	US504025
0.03	1/8	0.045	1 1/2	4	US504026
0.031	1/8	0.047	1 1/2	4	US504027
0.032	1/8	0.048	1 1/2	4	US504028
0.033	1/8	0.050	1 1/2	4	US504029
0.034	1/8	0.051	1 1/2	4	US504030
0.035	1/8	0.053	1 1/2	4	US504031
0.036	1/8	0.054	1 1/2	4	US504032

Additional Sizes On Pages 55, 56 & 57

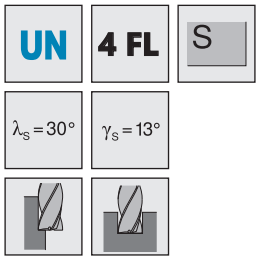
Application Range:

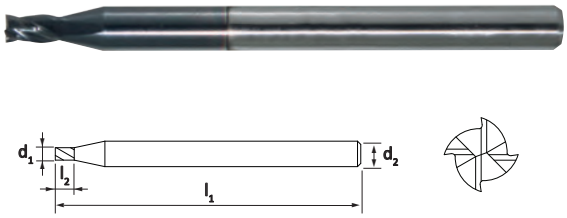
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

Feeds & Speeds Available on Page 90

Series US504

4 Flute Micro Stub





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.037	1/8	0.056	1 1/2	4	US504033
0.038	1/8	0.057	1 1/2	4	US504034
0.039	1/8	0.059	1 1/2	4	US504035
0.040	1/8	0.060	1 1/2	4	US504036
0.041	1/8	0.062	1 1/2	4	US504037
0.042	1/8	0.063	1 1/2	4	US504038
0.043	1/8	0.065	1 1/2	4	US504039
0.044	1/8	0.066	1 1/2	4	US504040
0.045	1/8	0.068	1 1/2	4	US504041
0.046	1/8	0.069	1 1/2	4	US504042
0.047	1/8	0.071	1 1/2	4	US504043
0.048	1/8	0.072	1 1/2	4	US504044
0.049	1/8	0.074	1 1/2	4	US504045
0.050	1/8	0.075	1 1/2	4	US504046
0.051	1/8	0.077	1 1/2	4	US504047
0.052	1/8	0.078	1 1/2	4	US504048
0.053	1/8	0.080	1 1/2	4	US504049
0.054	1/8	0.081	1 1/2	4	US504050
0.055	1/8	0.083	1 1/2	4	US504051
0.056	1/8	0.084	1 1/2	4	US504052
0.057	1/8	0.086	1 1/2	4	US504053
0.058	1/8	0.087	1 1/2	4	US504054
0.059	1/8	0.089	1 1/2	4	US504055
0.060	1/8	0.090	1 1/2	4	US504056
0.061	1/8	0.092	1 1/2	4	US504057
0.062	1/8	0.093	1 1/2	4	US504058
0.063	1/8	0.095	1 1/2	4	US504059
0.064	1/8	0.096	1 1/2	4	US504060
0.065	1/8	0.098	1 1/2	4	US504061
0.066	1/8	0.099	1 1/2	4	US504062
0.067	1/8	0.101	1 1/2	4	US504063
0.068	1/8	0.102	1 1/2	4	US504064

Additional Sizes On Pages 54, 56 & 57

Application Range:

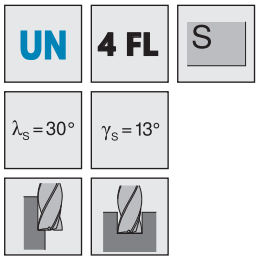
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

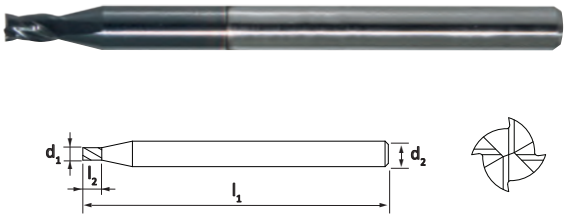
Feeds & Speeds Available on Page 90

PROMAX Premium

Series US504

4 Flute Micro Stub





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.069	1/8	0.104	1 1/2	4	US504065
0.070	1/8	0.105	1 1/2	4	US504066
0.071	1/8	0.107	1 1/2	4	US504067
0.072	1/8	0.108	1 1/2	4	US504068
0.073	1/8	0.110	1 1/2	4	US504069
0.074	1/8	0.111	1 1/2	4	US504070
0.075	1/8	0.113	1 1/2	4	US504071
0.076	1/8	0.114	1 1/2	4	US504072
0.077	1/8	0.116	1 1/2	4	US504073
0.078	1/8	0.117	1 1/2	4	US504074
0.079	1/8	0.119	1 1/2	4	US504075
0.080	1/8	0.120	1 1/2	4	US504076
0.081	1/8	0.122	1 1/2	4	US504077
0.082	1/8	0.123	1 1/2	4	US504078
0.083	1/8	0.125	1 1/2	4	US504079
0.084	1/8	0.126	1 1/2	4	US504080
0.085	1/8	0.128	1 1/2	4	US504081
0.086	1/8	0.129	1 1/2	4	US504082
0.087	1/8	0.131	1 1/2	4	US504083
0.088	1/8	0.132	1 1/2	4	US504084
0.089	1/8	0.134	1 1/2	4	US504085
0.090	1/8	0.135	1 1/2	4	US504086
0.095	1/8	0.143	1 1/2	4	US504091
0.096	1/8	0.144	1 1/2	4	US504092
0.097	1/8	0.146	1 1/2	4	US504093
0.098	1/8	0.147	1 1/2	4	US504094
0.099	1/8	0.149	1 1/2	4	US504095
0.100	1/8	0.150	1 1/2	4	US504096
0.101	1/8	0.152	1 1/2	4	US504097
0.102	1/8	0.153	1 1/2	4	US504098
0.103	1/8	0.155	1 1/2	4	US504099
0.104	1/8	0.156	1 1/2	4	US504100

Additional Sizes On Pages 54, 55 & 57

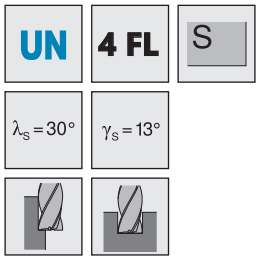
Application Range:

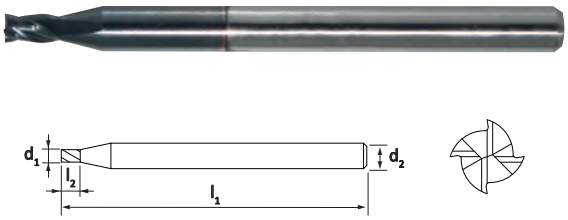
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

Feeds & Speeds Available on Page 90

Series US504

4 Flute Micro Stub





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.105	1/8	0.158	1 1/2	4	US504101
0.106	1/8	0.159	1 1/2	4	US504102
0.107	1/8	0.161	1 1/2	4	US504103
0.108	1/8	0.162	1 1/2	4	US504104
0.109	1/8	0.164	1 1/2	4	US504105
0.110	1/8	0.165	1 1/2	4	US504106
0.111	1/8	0.167	1 1/2	4	US504107
0.112	1/8	0.168	1 1/2	4	US504108
0.113	1/8	0.170	1 1/2	4	US504109
0.114	1/8	0.171	1 1/2	4	US504110
0.115	1/8	0.173	1 1/2	4	US504111
0.116	1/8	0.174	1 1/2	4	US504112
0.117	1/8	0.176	1 1/2	4	US504113
0.118	1/8	0.177	1 1/2	4	US504114
0.119	1/8	0.179	1 1/2	4	US504115
0.120	1/8	0.180	1 1/2	4	US504116

Additional Sizes On Pages 54, 55 & 56

Application Range:

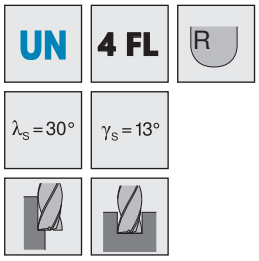
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

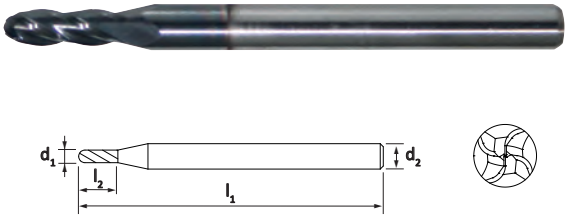
Feeds & Speeds Available on Page 90

PROMAX Premium

Series US503

4 Flute Ball Micro





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.005	1/8	0.015	1 1/2	4	US503001
0.006	1/8	0.018	1 1/2	4	US503002
0.007	1/8	0.021	1 1/2	4	US503003
0.008	1/8	0.024	1 1/2	4	US503004
0.009	1/8	0.027	1 1/2	4	US503005
0.010	1/8	0.030	1 1/2	4	US503006
0.011	1/8	0.033	1 1/2	4	US503007
0.012	1/8	0.036	1 1/2	4	US503008
0.013	1/8	0.039	1 1/2	4	US503009
0.014	1/8	0.042	1 1/2	4	US503010
0.015	1/8	0.045	1 1/2	4	US503011
0.016	1/8	0.048	1 1/2	4	US503012
0.017	1/8	0.051	1 1/2	4	US503013
0.018	1/8	0.054	1 1/2	4	US503014
0.019	1/8	0.057	1 1/2	4	US503015
0.020	1/8	0.060	1 1/2	4	US503016
0.021	1/8	0.063	1 1/2	4	US503017
0.022	1/8	0.066	1 1/2	4	US503018
0.023	1/8	0.069	1 1/2	4	US503019
0.024	1/8	0.072	1 1/2	4	US503020
0.025	1/8	0.075	1 1/2	4	US503021
0.026	1/8	0.078	1 1/2	4	US503022
0.027	1/8	0.081	1 1/2	4	US503023
0.028	1/8	0.084	1 1/2	4	US503024
0.029	1/8	0.087	1 1/2	4	US503025
0.030	1/8	0.090	1 1/2	4	US503026
0.031	1/8	0.093	1 1/2	4	US503027
0.032	1/8	0.096	1 1/2	4	US503028
0.033	1/8	0.099	1 1/2	4	US503029
0.034	1/8	0.102	1 1/2	4	US503030
0.035	1/8	0.105	1 1/2	4	US503031
0.036	1/8	0.108	1 1/2	4	US503032

Additional Sizes On Pages 59, 60 & 61

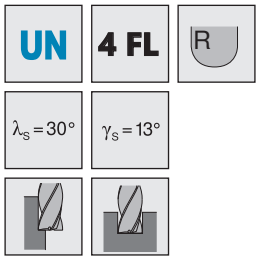
Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

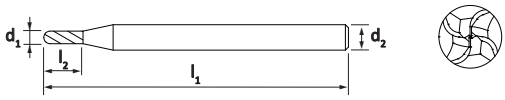
Feeds & Speeds Available on Page 89

Series US503

4 Flute Ball Micro







Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.037	1/8	0.111	1 1/2	4	US503033
0.038	1/8	0.114	1 1/2	4	US503034
0.039	1/8	0.117	1 1/2	4	US503035
0.040	1/8	0.120	1 1/2	4	US503036
0.041	1/8	0.123	1 1/2	4	US503037
0.042	1/8	0.126	1 1/2	4	US503038
0.043	1/8	0.129	1 1/2	4	US503039
0.044	1/8	0.132	1 1/2	4	US503040
0.045	1/8	0.135	1 1/2	4	US503041
0.046	1/8	0.138	1 1/2	4	US503042
0.047	1/8	0.141	1 1/2	4	US503043
0.048	1/8	0.144	1 1/2	4	US503044
0.049	1/8	0.147	1 1/2	4	US503045
0.050	1/8	0.150	1 1/2	4	US503046
0.051	1/8	0.153	1 1/2	4	US503047
0.052	1/8	0.156	1 1/2	4	US503048
0.053	1/8	0.159	1 1/2	4	US503049
0.054	1/8	0.162	1 1/2	4	US503050
0.055	1/8	0.165	1 1/2	4	US503051
0.056	1/8	0.168	1 1/2	4	US503052
0.057	1/8	0.171	1 1/2	4	US503053
0.058	1/8	0.174	1 1/2	4	US503054
0.059	1/8	0.177	1 1/2	4	US503055
0.060	1/8	0.180	1 1/2	4	US503056
0.061	1/8	0.183	1 1/2	4	US503057
0.062	1/8	0.186	1 1/2	4	US503058
0.063	1/8	0.189	1 1/2	4	US503059
0.064	1/8	0.192	1 1/2	4	US503060
0.065	1/8	0.195	1 1/2	4	US503061
0.066	1/8	0.198	1 1/2	4	US503062
0.067	1/8	0.201	1 1/2	4	US503063
0.068	1/8	0.204	1 1/2	4	US503064

Additional Sizes On Pages 58, 60 & 61

Application Range:

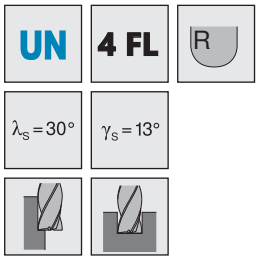
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

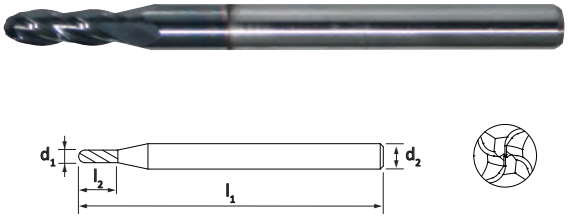
Feeds & Speeds Available on Page 89

PROMAX Premium

Series US503

4 Flute Ball Micro





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.069	1/8	0.207	1 1/2	4	US503065
0.070	1/8	0.210	1 1/2	4	US503066
0.071	1/8	0.213	1 1/2	4	US503067
0.072	1/8	0.216	1 1/2	4	US503068
0.073	1/8	0.219	1 1/2	4	US503069
0.074	1/8	0.222	1 1/2	4	US503070
0.075	1/8	0.225	1 1/2	4	US503071
0.076	1/8	0.228	1 1/2	4	US503072
0.077	1/8	0.231	1 1/2	4	US503073
0.078	1/8	0.234	1 1/2	4	US503074
0.079	1/8	0.237	1 1/2	4	US503075
0.080	1/8	0.240	1 1/2	4	US503076
0.081	1/8	0.243	1 1/2	4	US503077
0.082	1/8	0.246	1 1/2	4	US503078
0.083	1/8	0.249	1 1/2	4	US503079
0.084	1/8	0.252	1 1/2	4	US503080
0.085	1/8	0.255	1 1/2	4	US503081
0.086	1/8	0.258	1 1/2	4	US503082
0.087	1/8	0.261	1 1/2	4	US503083
0.088	1/8	0.264	1 1/2	4	US503084
0.089	1/8	0.267	1 1/2	4	US503085
0.090	1/8	0.270	1 1/2	4	US503086
0.091	1/8	0.273	1 1/2	4	US503087
0.092	1/8	0.276	1 1/2	4	US503088
0.093	1/8	0.279	1 1/2	4	US503089
0.094	1/8	0.282	1 1/2	4	US503090
0.095	1/8	0.285	1 1/2	4	US503091
0.096	1/8	0.288	1 1/2	4	US503092
0.097	1/8	0.291	1 1/2	4	US503093
0.098	1/8	0.294	1 1/2	4	US503094
0.099	1/8	0.297	1 1/2	4	US503095
0.100	1/8	0.300	1 1/2	4	US503096

Additional Sizes On Pages 58, 59 & 61

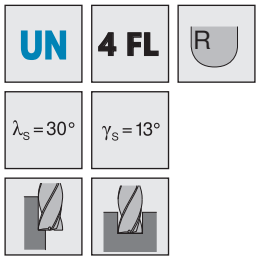
Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

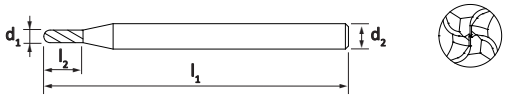
Feeds & Speeds Available on Page 89

Series US503

4 Flute Ball Micro







Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.101	1/8	0.303	1 1/2	4	US503097
0.102	1/8	0.306	1 1/2	4	US503098
0.103	1/8	0.309	1 1/2	4	US503099
0.104	1/8	0.312	1 1/2	4	US503100
0.105	1/8	0.315	1 1/2	4	US503101
0.106	1/8	0.318	1 1/2	4	US503102
0.107	1/8	0.321	1 1/2	4	US503103
0.108	1/8	0.324	1 1/2	4	US503104
0.109	1/8	0.327	1 1/2	4	US503105
0.110	1/8	0.330	1 1/2	4	US503106
0.111	1/8	0.333	1 1/2	4	US503107
0.112	1/8	0.336	1 1/2	4	US503108
0.113	1/8	0.339	1 1/2	4	US503109
0.114	1/8	0.341	1 1/2	4	US503110
0.115	1/8	0.345	1 1/2	4	US503111
0.116	1/8	0.348	1 1/2	4	US503112
0.117	1/8	0.351	1 1/2	4	US503113
0.118	1/8	0.354	1 1/2	4	US503114
0.119	1/8	0.357	1 1/2	4	US503115
0.120	1/8	0.360	1 1/2	4	US503116

Additional Sizes On Pages 58, 59 & 60

Application Range:

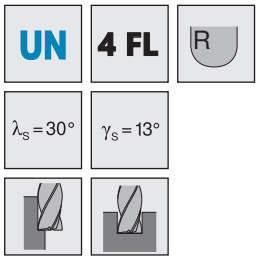
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

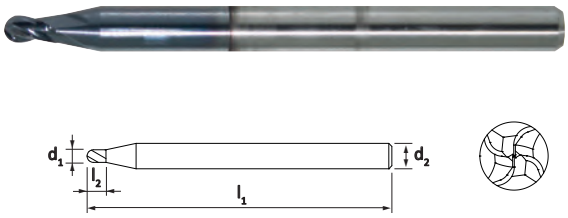
Feeds & Speeds Available on Page 89

PROMAX Premium

Series US506

4 Flute Ball Micro Stub





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.005	1/8	0.008	1 1/2	4	US506001
0.006	1/8	0.009	1 1/2	4	US506002
0.007	1/8	0.011	1 1/2	4	US506003
0.008	1/8	0.012	1 1/2	4	US506004
0.009	1/8	0.014	1 1/2	4	US506005
0.010	1/8	0.015	1 1/2	4	US506006
0.011	1/8	0.017	1 1/2	4	US506007
0.012	1/8	0.018	1 1/2	4	US506008
0.013	1/8	0.020	1 1/2	4	US506009
0.014	1/8	0.021	1 1/2	4	US506010
0.015	1/8	0.023	1 1/2	4	US506011
0.016	1/8	0.024	1 1/2	4	US506012
0.017	1/8	0.026	1 1/2	4	US506013
0.018	1/8	0.027	1 1/2	4	US506014
0.019	1/8	0.029	1 1/2	4	US506015
0.020	1/8	0.030	1 1/2	4	US506016
0.021	1/8	0.032	1 1/2	4	US506017
0.022	1/8	0.033	1 1/2	4	US506018
0.023	1/8	0.035	1 1/2	4	US506019
0.024	1/8	0.036	1 1/2	4	US506020
0.025	1/8	0.038	1 1/2	4	US506021
0.026	1/8	0.039	1 1/2	4	US506022
0.027	1/8	0.041	1 1/2	4	US506023
0.028	1/8	0.042	1 1/2	4	US506024
0.029	1/8	0.044	1 1/2	4	US506025
0.030	1/8	0.045	1 1/2	4	US506026
0.031	1/8	0.047	1 1/2	4	US506027
0.032	1/8	0.048	1 1/2	4	US506028
0.033	1/8	0.050	1 1/2	4	US506029
0.034	1/8	0.051	1 1/2	4	US506030
0.035	1/8	0.053	1 1/2	4	US506031
0.036	1/8	0.054	1 1/2	4	US506032

Additional Sizes On Pages 63, 64 & 65

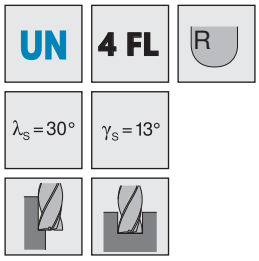
Application Range:

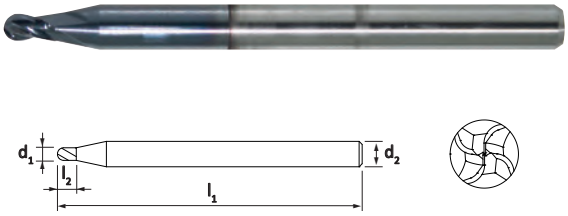
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

Feeds & Speeds Available on Page 90

Series US506

4 Flute Ball Micro Stub





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.037	1/8	0.056	1 1/2	4	US506033
0.038	1/8	0.057	1 1/2	4	US506034
0.039	1/8	0.059	1 1/2	4	US506035
0.040	1/8	0.060	1 1/2	4	US506036
0.041	1/8	0.062	1 1/2	4	US506037
0.042	1/8	0.063	1 1/2	4	US506038
0.043	1/8	0.065	1 1/2	4	US506039
0.044	1/8	0.066	1 1/2	4	US506040
0.045	1/8	0.068	1 1/2	4	US506041
0.046	1/8	0.069	1 1/2	4	US506042
0.047	1/8	0.071	1 1/2	4	US506043
0.048	1/8	0.072	1 1/2	4	US506044
0.049	1/8	0.074	1 1/2	4	US506045
0.050	1/8	0.075	1 1/2	4	US506046
0.051	1/8	0.077	1 1/2	4	US506047
0.052	1/8	0.078	1 1/2	4	US506048
0.053	1/8	0.080	1 1/2	4	US506049
0.054	1/8	0.081	1 1/2	4	US506050
0.055	1/8	0.083	1 1/2	4	US506051
0.056	1/8	0.084	1 1/2	4	US506052
0.057	1/8	0.086	1 1/2	4	US506053
0.058	1/8	0.087	1 1/2	4	US506054
0.059	1/8	0.089	1 1/2	4	US506055
0.060	1/8	0.090	1 1/2	4	US506056
0.061	1/8	0.092	1 1/2	4	US506057
0.062	1/8	0.093	1 1/2	4	US506058
0.063	1/8	0.095	1 1/2	4	US506059
0.064	1/8	0.096	1 1/2	4	US506060
0.065	1/8	0.098	1 1/2	4	US506061
0.066	1/8	0.099	1 1/2	4	US506062
0.067	1/8	0.101	1 1/2	4	US506063
0.068	1/8	0.102	1 1/2	4	US506064

Additional Sizes On Pages 62, 64 & 65

Application Range:

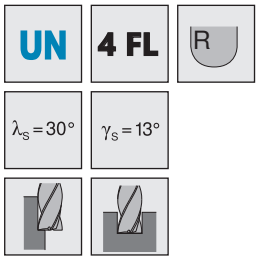
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

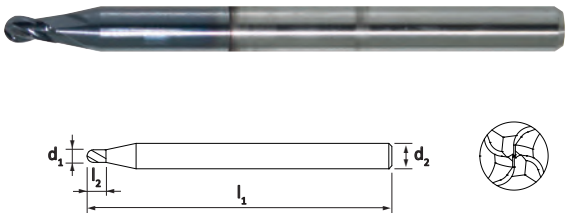
Feeds & Speeds Available on Page 90

PROMAX Premium

Series US506

4 Flute Ball Micro Stub





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.069	1/8	0.104	1 1/2	4	US506065
0.070	1/8	0.105	1 1/2	4	US506066
0.071	1/8	0.107	1 1/2	4	US506067
0.072	1/8	0.108	1 1/2	4	US506068
0.073	1/8	0.110	1 1/2	4	US506069
0.074	1/8	0.111	1 1/2	4	US506070
0.075	1/8	0.113	1 1/2	4	US506071
0.076	1/8	0.114	1 1/2	4	US506072
0.077	1/8	0.116	1 1/2	4	US506073
0.078	1/8	0.117	1 1/2	4	US506074
0.079	1/8	0.119	1 1/2	4	US506075
0.080	1/8	0.120	1 1/2	4	US506076
0.081	1/8	0.122	1 1/2	4	US506077
0.082	1/8	0.123	1 1/2	4	US506078
0.083	1/8	0.125	1 1/2	4	US506079
0.084	1/8	0.126	1 1/2	4	US506080
0.085	1/8	0.128	1 1/2	4	US506081
0.086	1/8	0.129	1 1/2	4	US506082
0.087	1/8	0.131	1 1/2	4	US506083
0.088	1/8	0.132	1 1/2	4	US506084
0.089	1/8	0.134	1 1/2	4	US506085
0.090	1/8	0.135	1 1/2	4	US506086
0.091	1/8	0.137	1 1/2	4	US506087
0.092	1/8	0.138	1 1/2	4	US506088
0.093	1/8	0.140	1 1/2	4	US506089
0.094	1/8	0.141	1 1/2	4	US506090
0.095	1/8	0.143	1 1/2	4	US506091
0.096	1/8	0.144	1 1/2	4	US506092
0.097	1/8	0.146	1 1/2	4	US506093
0.098	1/8	0.147	1 1/2	4	US506094
0.099	1/8	0.149	1 1/2	4	US506095
0.100	1/8	0.150	1 1/2	4	US506096

Additional Sizes On Pages 62, 63 & 65

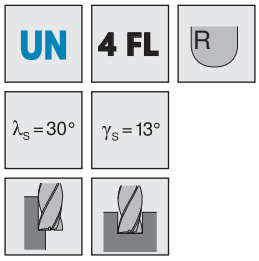
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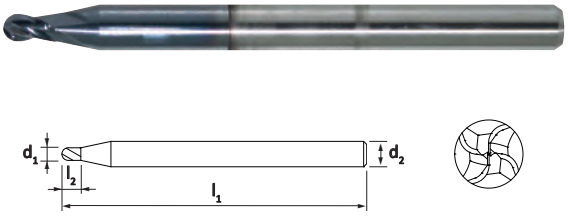
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

Feeds & Speeds Available on Page 90

Series US506

4 Flute Ball Micro Stub





Tolerances

Shank: 1/8" = -.0001/-.0004
Cutting Dia: 1/8" = +/-.0005

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flute	AlTiN
0.101	1/8	0.152	1 1/2	4	US506097
0.102	1/8	0.153	1 1/2	4	US506098
0.103	1/8	0.155	1 1/2	4	US506099
0.104	1/8	0.156	1 1/2	4	US506100
0.105	1/8	0.158	1 1/2	4	US506101
0.106	1/8	0.159	1 1/2	4	US506102
0.107	1/8	0.161	1 1/2	4	US506103
0.108	1/8	0.162	1 1/2	4	US506104
0.109	1/8	0.164	1 1/2	4	US506105
0.110	1/8	0.165	1 1/2	4	US506106
0.111	1/8	0.167	1 1/2	4	US506107
0.112	1/8	0.168	1 1/2	4	US506108
0.113	1/8	0.170	1 1/2	4	US506109
0.114	1/8	0.171	1 1/2	4	US506110
0.115	1/8	0.173	1 1/2	4	US506111
0.116	1/8	0.174	1 1/2	4	US506112
0.117	1/8	0.176	1 1/2	4	US506113
0.118	1/8	0.177	1 1/2	4	US506114
0.119	1/8	0.179	1 1/2	4	US506115
0.120	1/8	0.180	1 1/2	4	US506116

Additional Sizes On Pages 62, 63 & 64

Application Range:

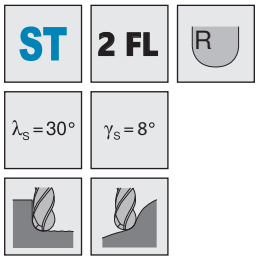
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●		●	●	

Feeds & Speeds Available on Page 90

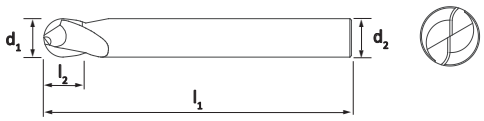
PROMAX Premium

Series 250

2 Flute Ball 0° Die and Mold Tool







Tolerances

Shank:	1/8" - 1/2" = -.0001/-.0004
Cutting Dia:	1/8" - 1/2" = +.000/-.0008
Ball Radius:	1/8" - 1/2" = +.000/-.0004

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	AlTiN
1/8	1/8	1/8	3	0.063	2	250-00814
3/16	3/16	3/16	3	0.094	2	250-01214
1/4	1/4	1/4	4	0.125	2	250-01614
3/8	3/8	3/8	4	0.188	2	250-02414
3/8	3/8	3/8	6	0.188	2	250-02444
1/2	1/2	1/2	4	0.250	2	250-03214
1/2	1/2	1/2	6	0.250	2	250-03244

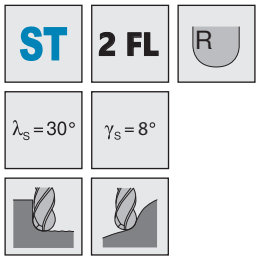
Application Range:

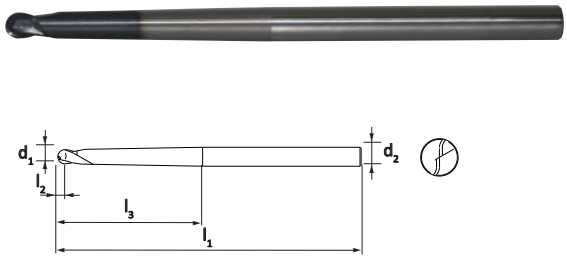
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●							

Feeds & Speeds Available on Page 87

Series 251

2 Flute Ball 1° Die and Mold Tool





Tolerances

Shank:	1/32” - 3/16” = -.0001/-.0004
Cutting Dia:	1/32” - 3/16” = +.000/-.0008
Ball Radius:	1/32” - 3/16” = +.000/-.0004

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	R Radius	Flutes	AlTiN
1/32	1/4	1/32	4	0.625	0.016	2	251-00214
0.06	1/4	.060	4	1.250	0.030	2	251-00414
0.06	1/4	.080	4	1.625	0.040	2	251-00514
3/32	1/4	3/32	4	1.875	0.047	2	251-00614
1/8	1/4	1/8	4	2.500	0.063	2	251-00814
3/16	1/4	3/16	4	2.265	0.094	2	251-01214

Application Range:

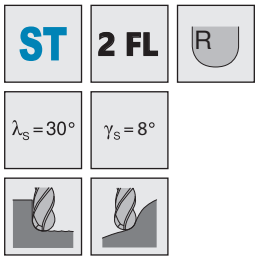
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●							

Feeds & Speeds Available on Page 88

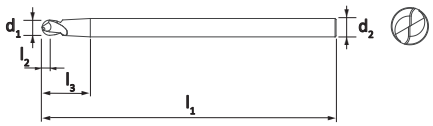
PROMAX Premium

Series 252

2 Flute Ball 3° Die and Mold Tool







Tolerances

Shank:	1/32” - 3/16” = -.0001/-.0004
Cutting Dia:	1/32” - 3/16” = +.000/-.0008
Ball Radius:	1/32” - 3/16” = +.000/-.0004

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	R Radius	Flutes	AlTiN
1/32	1/4	1/32	4	2.112	0.016	2	252-00214
0.06	1/4	.060	4	1.875	0.030	2	252-00414
0.06	1/4	.080	4	1.704	0.040	2	252-00514
3/32	1/4	3/32	4	1.584	0.047	2	252-00614
1/8	1/4	1/8	4	1.324	0.063	2	252-00814
3/16	1/4	3/16	4	0.786	0.094	2	252-01214

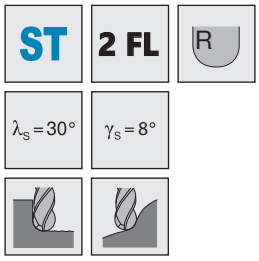
Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●							

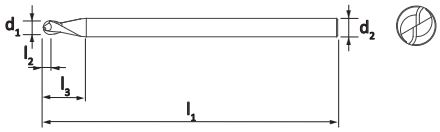
Feeds & Speeds Available on Page 88

Series 253

2 Flute Ball 5° Die and Mold Tool







Tolerances

Shank:	1/32” - 3/16” = -.0001/-.0004
Cutting Dia:	1/32” - 3/16” = +.000/-.0008
Ball Radius:	1/32” - 3/16” = +.000/-.0004

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	R Radius	Flutes	AlTiN
1/32	1/4	1/32	4	1.282	0.016	2	253-00214
0.06	1/4	.060	4	1.175	0.030	2	253-00414
0.06	1/4	.080	4	1.084	0.040	2	253-00514
3/32	1/4	3/32	4	1.018	0.047	2	253-00614
1/8	1/4	1/8	4	0.897	0.063	2	253-00814
3/16	1/4	3/16	4	0.680	0.094	2	253-01214

Application Range:

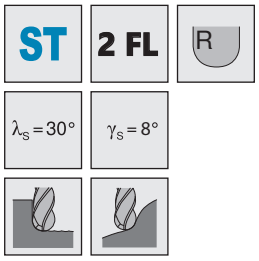
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●							

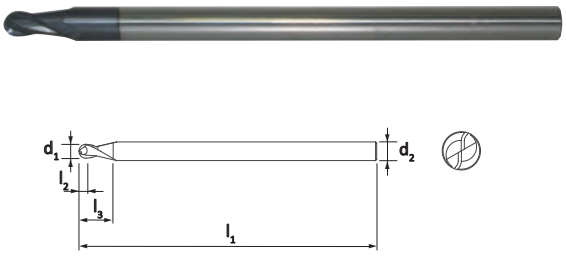
Feeds & Speeds Available on Page 88

PROMAX Premium

Series 254

2 Flute Ball 8° Die and Mold Tool





Tolerances

Shank:	1/32” - 3/16” = -.0001/-.0004
Cutting Dia:	1/32” - 3/16” = +.000/-.0008
Ball Radius:	1/32” - 3/16” = +.000/-.0004

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	l_3 LOR	R Radius	Flutes	AlTiN
1/32	1/4	1/32	4	0.851	0.016	2	254-00214
0.06	1/4	.060	4	0.773	0.030	2	254-00414
0.06	1/4	.080	4	0.726	0.040	2	254-00514
3/32	1/4	3/32	4	0.690	0.047	2	254-00614
1/8	1/4	1/8	4	0.636	0.063	2	254-00814
3/16	1/4	3/16	4	0.454	0.094	2	254-01214

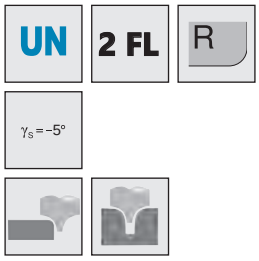
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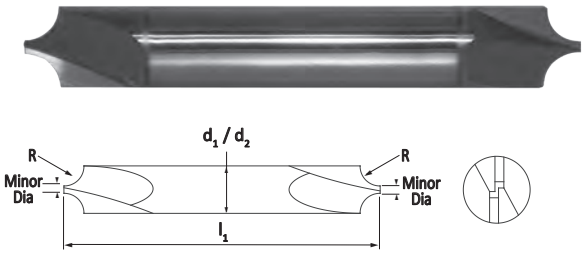
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●							

Feeds & Speeds Available on Page 88

Series 137

2 Flute Corner Rounder





Tolerances

Shank: 1/8" - 3/8" = -.0001/-.0004
Radius: 1/8" - 3/8" = +/-.001

d_1 Dia	d_2 Shank	l_1 OAL	Minor Dia	R Radius	Flutes	Uncoated	AlTiN
1/8	1/8	1 1/2	0.105	0.010	2	137-00810	137-00814
1/8	1/8	1 1/2	0.095	0.015	2	137-00820	137-00824
1/8	1/8	1 1/2	0.085	0.020	2	137-00830	137-00834
1/8	1/8	1 1/2	0.075	0.025	2	137-00840	137-00844
1/8	1/8	1 1/2	0.063	0.031	2	137-00850	137-00854
1/8	1/8	1 1/2	0.055	0.035	2	137-00860	137-00864
1/8	1/8	1 1/2	0.045	0.040	2	137-00870	137-00874
3/16	3/16	2	0.095	0.046	2	137-01210	137-01214
3/16	3/16	2	0.087	0.050	2	137-01220	137-01224
3/16	3/16	2	0.077	0.055	2	137-01230	137-01234
3/16	3/16	2	0.058	0.062	2	137-01240	137-01244
1/4	1/4	2 1/2	0.106	0.072	2	137-01610	137-01614
1/4	1/4	2 1/2	0.094	0.078	2	137-01620	137-01624
1/4	1/4	2 1/2	0.080	0.085	2	137-01630	137-01634
1/4	1/4	2 1/2	0.062	0.094	2	137-01640	137-01644
1/4	1/4	2 1/2	0.050	0.100	2	137-01650	137-01654
5/16	5/16	2 1/2	0.094	0.109	2	137-02010	137-02014
5/16	5/16	2 1/2	0.076	0.118	2	137-02020	137-02024
5/16	5/16	2 1/2	0.063	0.125	2	137-02030	137-02034
3/8	3/8	2 1/2	0.095	0.140	2	137-02410	137-02414
3/8	3/8	2 1/2	0.063	0.156	2	137-02420	137-02424

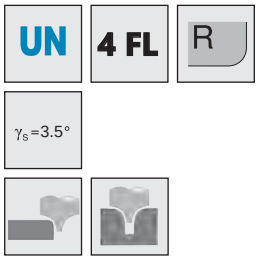
Application Range:

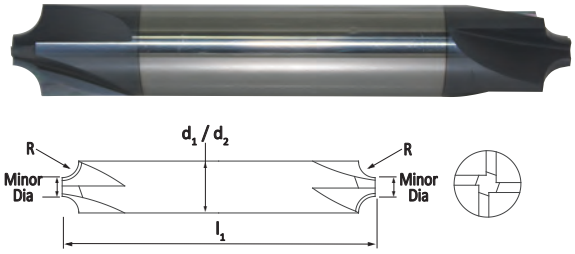
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●							

PROMAX Premium

Series 139

4 Flute Corner Rounder





Tolerances

Shank: 3/16" - 1/2" = -.0001/-.0004
Radius: 3/16" - 1/2" = +/-.001

d_1 Dia	d_2 Shank	l_1 OAL	Minor Dia	R Radius	Flutes	Uncoated	AlTiN
3/16	3/16	2	0.162	0.010	4	139-01200	139-01204
3/16	3/16	2	0.152	0.015	4	139-01210	139-01214
3/16	3/16	2	0.142	0.020	4	139-01220	139-01224
3/16	3/16	2	0.132	0.025	4	139-01230	139-01234
3/16	3/16	2	0.120	0.031	4	139-01240	139-01244
3/16	3/16	2	0.112	0.035	4	139-01250	139-01254
1/4	1/4	2 1/2	0.165	0.040	4	139-01600	139-01604
1/4	1/4	2 1/2	0.153	0.046	4	139-01610	139-01614
1/4	1/4	2 1/2	0.145	0.050	4	139-01620	139-01624
1/4	1/4	2 1/2	0.135	0.055	4	139-01640	139-01644
1/4	1/4	2 1/2	0.121	0.062	4	139-01630	139-01634
3/8	3/8	2 1/2	0.214	0.078	4	139-02400	139-02404
3/8	3/8	2 1/2	0.182	0.094	4	139-02410	139-02414
3/8	3/8	2 1/2	0.170	0.100	4	139-02420	139-02424
3/8	3/8	2 1/2	0.134	0.118	4	139-02430	139-02434
3/8	3/8	2 1/2	0.120	0.125	4	139-02440	139-02444
1/2	1/2	3	0.183	0.156	4	139-03200	139-03204

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●							

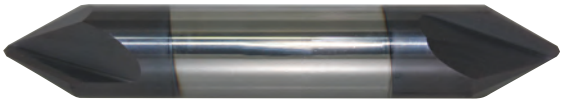
Series 132 & 133

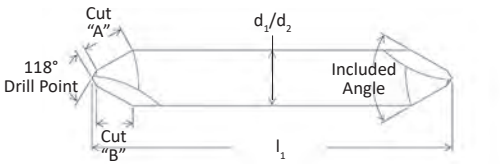
2 & 4 Flute 60° Chamfer-Spot

UN | 2 FL | 4 FL



Standard with 118° Drill Point





Tolerances
Shank: 1/8" - 1/2" = -.0001/-.0004

d_1 Dia	d_2 Shank	l_1 OAL	Included Angle	Cut "A"	Cut "B"	Flutes	Uncoated	AlTiN
* 1/8	1/8	1-1/2	60°	0.098	0.085	2	132-00820	132-00824
* 3/16	3/16	2	60°	0.147	0.127	2	132-01220	132-01224
1/4	1/4	2-1/2	60°	0.200	0.173	2	132-01520	132-01524
3/8	3/8	2-1/2	60°	0.313	0.271	2	132-02420	132-02424
1/2	1/2	3	60°	0.430	0.372	2	132-03220	132-03224

* No Drill Point
Standard with 118° Drill Point



d_1 Dia	d_2 Shank	l_1 OAL	Included Angle	Cut "A"	Cut "B"	Flutes	Uncoated	AlTiN
1/4	1/4	2-1/2	60°	0.200	0.173	4	133-01520	133-01524
3/8	3/8	2-1/2	60°	0.313	0.271	4	133-02420	133-02424
1/2	1/2	3	60°	0.430	0.372	4	133-03220	133-03224

Standard with 118° Drill Point

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●	●	●	●	●

PROMAX Premium

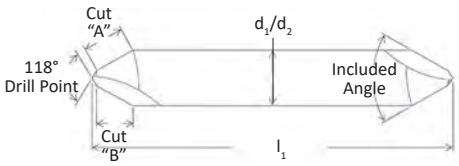
Series 134 & 135

2 & 4 Flute 90° Chamfer-Spot

UN | 2 FL | 4 FL



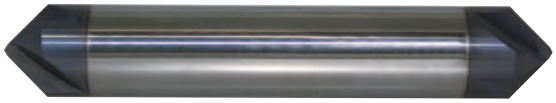




Tolerances
Shank: 1/8" - 1/2" = -.0001/-.0004

d_1 Dia	d_2 Shank	l_1 OAL	Included Angle	Cut "A"	Cut "B"	Flutes	Uncoated	AlTiN
* 1/8	1/8	1-1/2	90°	0.071	0.050	2	134-00830	134-00834
* 3/16	3/16	2	90°	0.107	0.076	2	134-01230	134-01234
1/4	1/4	2-1/2	90°	0.141	0.100	2	134-01530	134-01534
3/8	3/8	2-1/2	90°	0.221	0.157	2	134-02430	134-02434
1/2	1/2	3	90°	0.304	0.215	2	134-03230	134-03234

* No Drill Point
Standard with 118° Drill Point



d_1 Dia	d_2 Shank	l_1 OAL	Included Angle	Cut "A"	Cut "B"	Flutes	Uncoated	AlTiN
1/4	1/4	2-1/2	90°	0.141	0.100	4	135-01530	135-01534
3/8	3/8	2-1/2	90°	0.221	0.157	4	135-02430	135-02434
1/2	1/2	3	90°	0.304	0.215	4	135-03230	135-03234

Standard with 118° Drill Point

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●	●	●	●	●

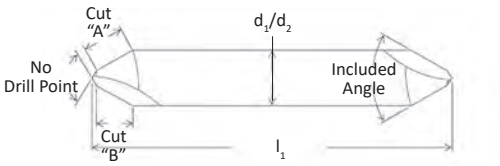
Series 130 & 131

2 & 4 Flute 120° Chamfer-Spot

UN | 2 FL | 4 FL







Tolerances
Shank: 1/4" - 1/2" = -.0001/-.0004

d_1 Dia	d_2 Shank	l_1 OAL	Included Angle	Cut "A"	Cut "B"	Flutes	Uncoated	AlTiN
* 1/4	1/4	2-1/2	120°	0.124	0.062	2	130-01510	130-01514
* 3/8	3/8	2-1/2	120°	0.199	0.100	2	130-02410	130-02414
* 1/2	1/2	3	120°	0.266	0.133	2	130-03210	130-03214

* No Drill Point



d_1 Dia	d_2 Shank	l_1 OAL	Included Angle	Cut "A"	Cut "B"	Flutes	Uncoated	AlTiN
* 1/4	1/4	2-1/2	120°	0.144	0.072	4	131-01510	131-01514
* 3/8	3/8	2-1/2	120°	0.217	0.108	4	131-02410	131-02414
* 1/2	1/2	3	120°	0.289	0.144	4	131-03210	131-03214

* No Drill Point

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●	●	●	●	●	●	●	●	●	●

PROMAX Premium

Series US220 - Aluminum Alloys & Non-Ferrous Materials

Material Designation		SFM [ft/min]	ae max [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Aluminium	Non-Alloy	1968	1xø	1xø	0.0016	0.0024	0.0031	0.0059	0.0079	0.0089
	Wrought Alloy Non-Hardened	1968	1xø	1xø	0.0016	0.0024	0.0031	0.0059	0.0079	0.0089
	Wrought Alloy Hardened	1968	1xø	1xø	0.0016	0.0024	0.0031	0.0059	0.0079	0.0089
	Casting Alloy < 6% Si	1575	1xø	1xø	0.0016	0.0024	0.0031	0.0059	0.0079	0.0089
	Casting Alloy 6-12% Si	1181	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
	Casting Alloy > 6% Si	787	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
Magnesium	Wrought Alloy	722	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
	Casting Alloy	656	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
Copper	Non-Alloy	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Non-Hardened	509	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Hardened	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNi-Alloy	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Long-Chipping	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Short-Chipping	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuZn (Brass)	Long-Chipping	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	787	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuSn (Bronze)	Long-Chipping	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuAlFe (Ampco)	Long-Chipping	180	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	230	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055

Series US362 - Aluminum Alloys & Non-Ferrous Materials

Material Designation		SFM [ft/min]	ae max [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Aluminium	Non-Alloy	1968	1xø	1xø	0.0014	0.0024	0.0028	0.0035	0.0047	0.0055
	Wrought Alloy Non-Hardened	1968	1xø	1xø	0.0014	0.0024	0.0028	0.0035	0.0047	0.0055
	Wrought Alloy Hardened	1968	1xø	1xø	0.0014	0.0024	0.0028	0.0035	0.0047	0.0055
	Casting Alloy < 6% Si	1575	1xø	1xø	0.0014	0.0024	0.0028	0.0035	0.0047	0.0055
	Casting Alloy 6-12% Si	1181	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
	Casting Alloy > 6% Si	787	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
Magnesium	Wrought Alloy	722	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
	Casting Alloy	656	1xø	1xø	0.0012	0.0020	0.0028	0.0047	0.0067	0.0083
Copper	Non-Alloy	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Non-Hardened	509	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Hardened	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNi-Alloy	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Long-Chipping	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Short-Chipping	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuZn (Brass)	Long-Chipping	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	787	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuSn (Bronze)	Long-Chipping	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
CuAlFe (Ampco)	Long-Chipping	180	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	230	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0047	0.0055

Series 109 - Aluminum Alloys & Non-Ferrous Materials

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Aluminium	Non-Alloy	1230	0.05xø	1.4xø	0.0008	0.0016	0.002	0.0041	0.0048	0.0055
	Wrought Alloy Non-Hardened	1230	0.05xø	1.4xø	0.0008	0.0016	0.002	0.0041	0.0048	0.0055
	Wrought Alloy Hardened	1230	0.05xø	1.4xø	0.0008	0.0016	0.002	0.0041	0.0048	0.0055
	Casting Alloy < 6% Si	984	0.05xø	1.4xø	0.0008	0.0016	0.002	0.0041	0.0048	0.0055
	Casting Alloy 6-12% Si	738	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Casting Alloy > 6% Si	517	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
Magnesium	Wrought Alloy	492	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Casting Alloy	418	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

Series 109 - Aluminum Alloys & Non-Ferrous Materials (Continued)

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Copper	Non-Alloy	369	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Wrought Alloy Non-Hardened	344	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Wrought Alloy Hardened	271	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	CuNi-Alloy	320	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	CuNiZn-Alloy Long-Chipping	271	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	CuNiZn-Alloy Short-Chipping	320	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
CuZn (Brass)	Long-Chipping	369	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Short-Chipping	517	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
CuSn (Bronze)	Long-Chipping	320	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Short-Chipping	344	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
CuAlFe (Ampco)	Long-Chipping	148	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048
	Short-Chipping	172	0.05xø	1.4xø	0.0006	0.0008	0.0012	0.0034	0.0041	0.0048

Series 102 / 119 - Aluminum Alloys & Non-Ferrous Materials

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Aluminium	Non-Alloy	1230	1xø	1xø	0.001	0.0017	0.0028	0.0035	0.0047	0.0055
	Wrought Alloy Non-Hardened	1230	1xø	1xø	0.001	0.0017	0.0028	0.0035	0.0047	0.0055
	Wrought Alloy Hardened	1230	1xø	1xø	0.001	0.0017	0.0028	0.0035	0.0047	0.0055
	Casting Alloy < 6% Si	984	1xø	1xø	0.001	0.0017	0.0028	0.0035	0.0047	0.0055
	Casting Alloy 6-12% Si	738	1xø	1xø	0.0008	0.0014	0.0028	0.0047	0.0067	0.0083
	Casting Alloy > 6% Si	517	1xø	1xø	0.0008	0.0014	0.0028	0.0047	0.0067	0.0083
Magnesium	Wrought Alloy	492	1xø	1xø	0.0008	0.0014	0.0028	0.0047	0.0067	0.0083
	Casting Alloy	418	1xø	1xø	0.0008	0.0014	0.0028	0.0047	0.0067	0.0083
Copper	Non-Alloy	369	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Non-Hardened	344	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Wrought Alloy Hardened	271	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	CuNi-Alloy	320	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Long-Chipping	271	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	CuNiZn-Alloy Short-Chipping	320	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
CuZn (Brass)	Long-Chipping	369	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	517	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
CuSn (Bronze)	Long-Chipping	320	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	344	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
CuAlFe (Ampco)	Long-Chipping	148	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055
	Short-Chipping	172	1xø	1xø	0.0006	0.0011	0.0024	0.0031	0.0047	0.0055

Series US376 - Aluminum Alloys & Non-Ferrous Materials

Material Designation		SFM [ft/min]	ae max [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Aluminium	Non-Alloy	1640	0.05xø	2xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0031
	Wrought Alloy Non-Hardened	1640	0.05xø	2xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0031
	Wrought Alloy Hardened	1640	0.05xø	2xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0031
	Casting Alloy < 6% Si	1312	0.05xø	2xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0031
	Casting Alloy 6-12% Si	984	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Casting Alloy > 6% Si	689	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
Magnesium	Wrought Alloy	656	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Casting Alloy	558	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
Copper	Non-Alloy	492	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Wrought Alloy Non-Hardened	459	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Wrought Alloy Hardened	361	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	CuNi-Alloy	427	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	CuNiZn-Alloy Long-Chipping	361	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	CuNiZn-Alloy Short-Chipping	427	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
CuZn (Brass)	Long-Chipping	492	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Short-Chipping	689	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
CuSn (Bronze)	Long-Chipping	427	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Short-Chipping	459	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
CuAlFe (Ampco)	Long-Chipping	197	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028
	Short-Chipping	230	0.05xø	2xø	0.0006	0.0008	0.0012	0.0020	0.0024	0.0028

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

PROMAX Premium

Series 113 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
Construction Steel	Non-Alloy < 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy	640	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Spring Steel	Annealed < 250 HB	853	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Natural Hardened 250-350 HB	755	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Spring Hardened 1200-1600 N/mm²	509	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cementation Steel	< 150 HB	919	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	150-200 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 200 HB	656	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
Nitriding Steel	< 1000 N/mm²	771	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 1000 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy 800-1000 N/mm²	689	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy < 800 N/mm²	574	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy 800-1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy 1000-1300 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Alloy 1300-1600 N/mm²	476	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cast Iron	Non-Alloy	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Low-Alloy	541	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High-Alloy	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 180 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy	755	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Spheroidal Cast Iron	Non-Alloy < 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 180 HB	853	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062

Series 117 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	164	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm²	115	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm²	164	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm²	115	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	98	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Spring Steel	Annealed < 250 HB	98	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cementation Steel	< 150 HB	156	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	150-200 HB	123	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 200 HB	98	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Nitriding Steel	< 1000 N/mm²	115	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	90	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	115	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	115	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	98	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	90	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cast Iron	Non-Alloy	328	0.8xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	262	0.8xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	197	0.8xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	197	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Non-Alloy > 180 HB	164	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Alloy	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy	115	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Spheroidal Cast Iron	Non-Alloy < 180 HB	197	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 180 HB	164	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
White Malleable Cast Iron	< 180 HB	197	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	164	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Black Malleable Cast Iron	< 180 HB	197	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	164	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

Series US007 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	853	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	> 500 N/mm²	787	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Construction Steel	Non-Alloy < 500 N/mm²	820	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Non-Alloy > 500 N/mm²	755	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy	722	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Cementation Steel	< 150 HB	689	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	150-200 HB	656	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	> 200 HB	623	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
Nitriding Steel	< 1000 N/mm²	623	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	> 1000 N/mm²	558	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	656	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Non-Alloy 800-1000 N/mm²	623	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy < 800 N/mm²	623	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy 800-1000 N/mm²	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy 1000-1300 N/mm²	558	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
	Alloy 1300-1600 N/mm²	492	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
Non-Alloy Tool Steel	General	607	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Low Alloy < 1200 N/mm²	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Low Alloy < 1500 N/mm²	492	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
	High Alloy Annealed < 1000 N/mm²	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High Alloy Hardened < 1300 N/mm²	459	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	656	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Low Alloy < 1500 N/mm²	591	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
	High Alloy Annealed < 1000 N/mm²	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High Alloy Hardened < 1300 N/mm²	459	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High Alloy Hardened < 1600 N/mm²	427	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
Stainless Steel	Ferric	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Martensitic	262	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Austenitic A5 < 40%	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Austenitic A5 > 40%	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Sulphured	361	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
High Temperature Alloy	Fe-Alloy	98	1xø	0.5xø	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024
	Ni-Alloy not hardened	98	1xø	0.5xø	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024
	Ni-Alloy hardened	98	1xø	0.5xø	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024
	Co-Alloy	98	1xø	0.5xø	0.0004	0.0008	0.0012	0.0016	0.0020	0.0024
Cast Iron	Non-Alloy	656	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Low-Alloy	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High-Alloy	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Stainless Cast Steel	Ferric/Martensitic	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Austenitic	328	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	656	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Non-Alloy > 180 HB	591	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Alloy	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	High Alloy	394	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Spheroidal Cast Iron	Non-Alloy < 180 HB	623	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Non-Alloy > 180 HB	558	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloy	492	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
White Malleable Cast Iron	< 180 HB	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	> 180 HB	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Black Malleable Cast Iron	< 180 HB	591	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	> 180 HB	525	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
Copper	Non-Alloy	919	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Wrought Alloy Non-Hardened	787	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Wrought Alloy Hardened	656	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	CuNi-Alloy	787	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	CuNiZn-Alloy Long-Chipping	656	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	CuNiZn-Alloy Short-Chipping	787	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
CuZn (Brass)	Long-Chipping	984	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Short-Chipping	1148	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
CuSn (Bronze)	Long-Chipping	787	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Short-Chipping	919	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
CuAlFe (Ampco)	Long-Chipping	459	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
	Short-Chipping	525	1xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0055
Titanium	Non-Alloy	295	1xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0047
	Alloyed-Annealed	262	1xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0039
	Alloyed-Hardened	164	1xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

PROMAX Premium

Series 155 / 156 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch]					
					1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	427	1xø	1.1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	> 500 N/mm²	394	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Construction Steel	Non-Alloy < 500 N/mm²	410	1xø	1.1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 500 N/mm²	377	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	361	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spring Steel	Annealed < 250 HB	213	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Natural Hardened 250-350 HB	197	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Spring Hardened 1200-1600 N/mm²	180	1xø	1.1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cementation Steel	< 150 HB	344	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	150-200 HB	328	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 200 HB	312	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Nitriding Steel	< 1000 N/mm²	312	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 1000 N/mm²	279	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	328	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm²	312	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm²	312	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm²	295	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm²	279	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm²	246	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Non-Alloy Tool Steel	General	303	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	295	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm²	279	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	246	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	328	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	295	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	246	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm²	213	1xø	1.1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Stainless Steel	Ferric	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Martensitic	131	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 < 40%	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 > 40%	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Sulphured	180	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
High Temperature Alloy	Fe-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Cast Iron	Non-Alloy	328	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	197	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Stainless Cast Steel	Ferric/Martensitic	197	1xø	1.1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic	197	1xø	1.1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	328	1xø	1.1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 180 HB	295	1xø	1.1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloy	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy	197	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spheroidal Cast Iron	Non-Alloy < 180 HB	312	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy > 180 HB	279	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	246	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
White Malleable Cast Iron	< 180 HB	295	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Black Malleable Cast Iron	< 180 HB	295	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	1xø	1.1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Titanium	Non-Alloy	197	1xø	0.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloyed-Annealed	164	1xø	0.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Hardened	131	1xø	0.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

Series 157 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch]					
					1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
Construction Steel	Non-Alloy < 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy	640	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Spring Steel	Annealed < 250 HB	853	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Natural Hardened 250-350 HB	755	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Spring Hardened 1200-1600 N/mm²	509	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cementation Steel	< 150 HB	919	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	150-200 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 200 HB	656	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Nitriding Steel	< 1000 N/mm²	771	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 1000 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy 800-1000 N/mm²	689	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy < 800 N/mm²	574	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy 800-1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy 1000-1300 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Alloy 1300-1600 N/mm²	476	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Non-Alloy Tool Steel	General	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Low Alloy < 1200 N/mm²	541	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Low Alloy < 1500 N/mm²	427	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	High Alloy Annealed < 1000 N/mm²	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy Hardened < 1300 N/mm²	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	543	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Low Alloy < 1500 N/mm²	427	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy Annealed < 1000 N/mm²	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy Hardened < 1300 N/mm²	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	High Alloy Hardened < 1600 N/mm²	344	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Stainless Steel	Ferric	82	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Martensitic	66	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 < 40%	82	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 > 40%	66	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Sulphured	98	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
High Temperature Alloy	Fe-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	9 0	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Cast Iron	Non-Alloy	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Low-Alloy	541	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High-Alloy	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 180 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Alloy	755	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	High Alloy	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Spheroidal Cast Iron	Non-Alloy < 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	Non-Alloy > 180 HB	853	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
	Alloy	705	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
White Malleable Cast Iron	< 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 180 HB	853	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Black Malleable Cast Iron	< 180 HB	1001	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055	0.0069	0.0083
	> 180 HB	853	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041	0.0055	0.0062
Copper	Non-Alloy	1394	0.1xø	0.15xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Wrought Alloy Non-Hardened	1181	0.1xø	0.15xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Wrought Alloy Hardened	968	0.1xø	0.15xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

PROMAX Premium

Series 190 / 191 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Nitriding Steel	< 1000 N/mm²	98	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	74	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	115	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	98	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	98	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	82	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	74	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1300-1600 N/mm²	66	0.5xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Stainless Steel	Ferric	82	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Martensitic	66	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 < 40%	57	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 > 40%	82	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Sulphured	98	0.5xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
High Temperature Alloy	Fe-Alloy	49	1xø	0.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Ni-Alloy not hardened	49	1xø	0.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Ni-Alloy hardened	49	1xø	0.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Co-Alloy	49	1xø	0.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron	Non-Alloy	328	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	262	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	197	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Stainless Cast Steel	Ferric/Martensitic	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic	164	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	328	1xø	0.7xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 180 HB	295	1xø	0.7xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloy	262	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy	197	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spheroidal Cast Iron	Non-Alloy < 180 HB	312	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy > 180 HB	279	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	246	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
White Malleable Cast Iron	< 180 HB	295	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Black Malleable Cast Iron	< 180 HB	295	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Titanium	Non-Alloy	148	1xø	0.7xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Annealed	131	1xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloyed-Hardened	82	1xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025

Series 120 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	295	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm²	213	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm²	295	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm²	213	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	180	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Spring Steel	Annealed < 250 HB	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cementation Steel	< 150 HB	279	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	150-200 HB	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 200 HB	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Nitriding Steel	< 1000 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	164	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	148	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Non-Alloy Tool Steel	General	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	164	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Low Alloy < 1200 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy Annealed < 1000 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Warm Processing	High Alloy Annealed < 1000 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

Series 120 - Steels, High-Temp Alloys & Titanium (Continued)

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Stainless Steel	Ferric	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Martensitic	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 < 40%	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 > 40%	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Sulphured	180	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
High Temperature Alloy	Fe-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Cast Iron	Non-Alloy	295	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Low-Alloy	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Stainless Cast Steel	Ferric/Martensitic	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Non-Alloy > 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Alloy	262	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Spheroidal Cast Iron	Non-Alloy < 180 HB	361	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 180 HB	312	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	262	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
White Malleable Cast Iron	< 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Black Malleable Cast Iron	< 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Titanium	Non-Alloy	197	1xø	0.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloyed-Annealed	164	1xø	0.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Hardened	131	1xø	0.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028

Series US556 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm²	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm²	279	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm²	246	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Non-Alloy Tool Steel	General	303	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm²	279	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	246	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	262	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	295	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	246	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm²	213	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Stainless Steel	Ferric	328	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
	Martensitic	262	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
	Austenitic A5 < 40%	328	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
	Austenitic A5 > 40%	328	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
	Sulphured	361	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0045
High Temperature Alloy	Fe-Alloy	180	0.5xø	1xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0035
	Ni-Alloy not hardened	180	0.5xø	1xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0035
	Ni-Alloy hardened	180	0.5xø	1xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0035
	Co-Alloy	180	0.5xø	1xø	0.0008	0.0016	0.0020	0.0024	0.0028	0.0035
Stainless Cast Steel	Ferric/Martensitic	328	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
	Austenitic	328	0.5xø	1xø	0.0005	0.0010	0.0016	0.0020	0.0028	0.0035
Titanium	Non-Alloy	394	0.5xø	1xø	0.0010	0.0018	0.0028	0.0039	0.0047	0.0050
	Alloyed-Annealed	328	0.5xø	1xø	0.0008	0.0016	0.0024	0.0031	0.0039	0.0040
	Alloyed-Hardened	262	0.5xø	1xø	0.0006	0.0012	0.0020	0.0024	0.0031	0.0035

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease e the Feeds and Speeds.

Series 158 / 159 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch]					
					1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	427	0.5xø	1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	> 500 N/mm²	394	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Construction Steel	Non-Alloy < 500 N/mm²	410	0.5xø	1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 500 N/mm²	377	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	361	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Cementation Steel	< 150 HB	344	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	150-200 HB	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 200 HB	312	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Nitriding Steel	< 1000 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 1000 N/mm²	279	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm²	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm²	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm²	279	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm²	246	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Non-Alloy Tool Steel	General	303	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm²	279	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	246	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	262	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	295	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	246	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	230	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm²	213	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Stainless Steel	Ferric	164	0.5xø	1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Martensitic	131	0.5xø	1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 < 40%	164	0.5xø	1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 > 40%	164	0.5xø	1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Sulphured	180	0.5xø	1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
High Temperature Alloy	Fe-Alloy	90	0.5xø	1xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	0.5xø	1xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	0.5xø	1xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	90	0.5xø	1xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Cast Iron	Non-Alloy	328	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	262	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	197	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Stainless Cast Steel	Ferric/Martensitic	164	0.5xø	1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic	164	0.5xø	1xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	328	0.5xø	1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 180 HB	295	0.5xø	1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloy	262	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy	197	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spheroidal Cast Iron	Non-Alloy < 180 HB	312	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy > 180 HB	279	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	246	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
White Malleable Cast Iron	< 180 HB	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Black Malleable Cast Iron	< 180 HB	295	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	262	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Titanium	Non-Alloy	197	0.5xø	1xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloyed-Annealed	164	0.5xø	1xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Hardened	131	0.5xø	1xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

Series 121 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	287	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm²	246	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm²	287	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm²	246	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	246	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Spring Steel	Annealed < 250 HB	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cementation Steel	< 150 HB	287	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	150-200 HB	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 200 HB	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Nitriding Steel	< 1000 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Non-Alloy Tool Steel	General	246	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Low Alloy < 1200 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy Annealed < 1000 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Warm Processing	High Alloy Annealed < 1000 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Machining Steel	< 500 N/mm²	533	0.05xø	1.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	> 500 N/mm²	492	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Construction Steel	Non-Alloy < 500 N/mm²	509	0.05xø	1.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 500 N/mm²	476	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	459	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spring Steel	Annealed < 250 HB	262	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Natural Hardened 250-350 HB	246	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Spring Hardened 1200-1600 N/mm²	230	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Cementation Steel	< 150 HB	427	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	150-200 HB	410	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 200 HB	377	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Nitriding Steel	< 1000 N/mm²	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 1000 N/mm²	344	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	410	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy 800-1000 N/mm²	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy < 800 N/mm²	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 800-1000 N/mm²	361	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy 1000-1300 N/mm²	344	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloy 1300-1600 N/mm²	312	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Non-Alloy Tool Steel	General	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	361	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1200 N/mm²	344	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	303	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	287	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	336	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low Alloy < 1500 N/mm²	303	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Annealed < 1000 N/mm²	303	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1300 N/mm²	287	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy Hardened < 1600 N/mm²	262	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Stainless Steel	Ferric	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Martensitic	164	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 < 40%	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic A5 > 40%	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Sulphured	213	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
High Temperature Alloy	Fe-Alloy	66	0.05xø	1.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Ni-Alloy not hardened	66	0.05xø	1.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Ni-Alloy hardened	66	0.05xø	1.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Co-Alloy	66	0.05xø	1.4xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron	Non-Alloy	410	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Low-Alloy	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High-Alloy	246	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Stainless Cast Steel	Ferric/Martensitic	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	Austenitic	197	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

PROMAX Premium

Series 160 / 161 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	410	0.05xø	1.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Non-Alloy > 180 HB	361	0.05xø	1.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloy	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	High Alloy	246	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Spheroidal Cast Iron	Non-Alloy < 180 HB	377	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Non-Alloy > 180 HB	344	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloy	303	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
White Malleable Cast Iron	< 180 HB	361	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Black Malleable Cast Iron	< 180 HB	361	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	> 180 HB	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
Titanium	Non-Alloy	328	0.05xø	1.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Annealed	287	0.05xø	1.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Alloyed-Hardened	205	0.05xø	1.4xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025

Series 100 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Machining Steel	< 500 N/mm²	295	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	> 500 N/mm²	213	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Construction Steel	Non-Alloy < 500 N/mm²	295	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 500 N/mm²	213	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	180	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Spring Steel	Annealed < 250 HB	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Cementation Steel	< 150 HB	279	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	150-200 HB	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 200 HB	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Nitriding Steel	< 1000 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	> 1000 N/mm²	164	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	230	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Non-Alloy 800-1000 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy < 800 N/mm²	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 800-1000 N/mm²	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Alloy 1000-1300 N/mm²	148	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Non-Alloy Tool Steel	General	180	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	164	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	Low Alloy < 1200 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy Annealed < 1000 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Tool Steel for Warm Processing	High Alloy Annealed < 1000 N/mm²	131	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Stainless Steel	Ferric	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Martensitic	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 < 40%	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic A5 > 40%	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Sulphured	180	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron	Non-Alloy	295	1xø	0.7xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Low-Alloy	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Stainless Cast Steel	Ferric/Martensitic	131	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
	Austenitic	164	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
Cast Iron with Lamellar Graphite	Non-Alloy < 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Non-Alloy > 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	Alloy	262	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
	High Alloy	213	1xø	0.7xø	0.0004	0.0008	0.0011	0.0014	0.0017	0.0019
Spheroidal Cast Iron	Non-Alloy < 180 HB	361	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Non-Alloy > 180 HB	312	1xø	0.7xø	0.0008	0.0012	0.0014	0.0019	0.0022	0.0025
	Alloy	262	1xø	0.7xø	0.0003	0.0006	0.0008	0.0011	0.0014	0.0017
White Malleable Cast Iron	< 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
Black Malleable Cast Iron	< 180 HB	361	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039
	> 180 HB	312	1xø	0.7xø	0.0010	0.0017	0.0019	0.0025	0.0033	0.0039

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

Series 101 - Steels, High-Temp Alloys & Titanium

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4" 5/16"	3/8" 7/16"	1/2" 5/8"	3/4"	1"
Non-Alloy Tool Steel	General	303	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	295	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Low Alloy < 1200 N/mm²	279	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Low Alloy < 1500 N/mm²	246	0.8xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	High Alloy Annealed < 1000 N/mm²	262	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Hardened < 1300 N/mm²	230	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	328	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	Low Alloy < 1500 N/mm²	295	0.8xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
	High Alloy Annealed < 1000 N/mm²	246	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Hardened < 1300 N/mm²	230	0.8xø	0.7xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028
	High Alloy Hardened < 1600 N/mm²	213	0.8xø	0.7xø	0.0003	0.0007	0.0011	0.0014	0.0019	0.0025
Stainless Steel	Ferric	164	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
	Martensitic	131	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
	Austenitic A5 < 40%	164	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
	Austenitic A5 > 40%	164	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
	Sulphured	180	0.8xø	0.7xø	0.0004	0.0006	0.0008	0.0014	0.0017	0.0019
High Temperature Alloy	Fe-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy not hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Ni-Alloy hardened	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
	Co-Alloy	90	1xø	0.4xø	0.0006	0.0011	0.0014	0.0017	0.0019	0.0022
Titanium	Non-Alloy	197	1xø	0.4xø	0.0007	0.0012	0.0019	0.0028	0.0033	0.0039
	Alloyed-Annealed	164	1xø	0.4xø	0.0006	0.0011	0.0017	0.0022	0.0028	0.0033
	Alloyed-Hardened	131	1xø	0.4xø	0.0004	0.0008	0.0014	0.0017	0.0022	0.0028

Series 250 - Die & Mold

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/8"	3/16" 1/4"	3/8"	1/2"
Machining Steel	< 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	> 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
Construction Steel	Non-Alloy < 500 N/mm²	968	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Non-Alloy > 500 N/mm²	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Alloy	640	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
Spring Steel	Annealed < 250 HB	853	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055
	Natural Hardened 250-350 HB	755	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041
	Spring Hardened 1200-1600 N/mm²	509	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
Cementation Steel	< 150 HB	919	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	150-200 HB	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	> 200 HB	656	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
Nitriding Steel	< 1000 N/mm²	771	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	> 1000 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	853	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Non-Alloy 800-1000 N/mm²	689	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Alloy < 800 N/mm²	574	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Alloy 800-1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Alloy 1000-1300 N/mm²	574	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
	Alloy 1300-1600 N/mm²	476	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
Non-Alloy Tool Steel	General	755	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	640	0.05xø	0.08xø	0.0011	0.0022	0.0033	0.0055
	Low Alloy < 1200 N/mm²	541	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041
	Low Alloy < 1500 N/mm²	427	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
	High Alloy Annealed < 1000 N/mm²	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
	High Alloy Hardened < 1300 N/mm²	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	541	0.04xø	0.05xø	0.0011	0.0022	0.0033	0.0055
	Low Alloy < 1500 N/mm²	427	0.04xø	0.05xø	0.0011	0.0017	0.0022	0.0041
	High Alloy Annealed < 1000 N/mm²	541	0.05xø	0.08xø	0.0011	0.0017	0.0022	0.0041
	High Alloy Hardened < 1300 N/mm²	377	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
	High Alloy Hardened < 1600 N/mm²	344	0.04xø	0.05xø	0.0010	0.0017	0.0019	0.0025
Stainless Steel	Ferric	82	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011
	Martensitic	66	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011
	Austenitic A5 < 40%	82	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011
	Austenitic A5 > 40%	66	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011
	Sulphured	98	0.05xø	0.08xø	0.0003	0.0006	0.0008	0.0011

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

PROMAX Premium

Series 251 / 252 / 253 / 254 - Die & Mold

Material Designation		SFM [ft/min]	ae max. [inch]	ap max [inch]	Chip Load Per Tooth [inch] 1/32" 3/32" 1/8"	Chip Load Per Tooth [inch] 3/16"
Machining Steel	< 500 N/mm²	213	1xø	0.04xø	0.0011	0.0017
	> 500 N/mm²	189	1xø	0.04xø	0.0011	0.0017
Construction Steel	Non-Alloy < 500 N/mm²	213	1xø	0.04xø	0.0011	0.0017
	Non-Alloy > 500 N/mm²	189	1xø	0.04xø	0.0011	0.0017
	Alloy	148	1xø	0.04xø	0.0011	0.0017
Spring Steel	Annealed < 250 HB	189	1xø	0.04xø	0.0011	0.0017
	Natural Hardened 250-350 HB	148	1xø	0.04xø	0.0011	0.0017
	Spring Hardened 1200-1600 N/mm²	115	1xø	0.03xø	0.0010	0.0017
Cementation Steel	< 150 HB	213	1xø	0.04xø	0.0011	0.0017
	150-200 HB	189	1xø	0.04xø	0.0011	0.0017
	> 200 HB	148	1xø	0.04xø	0.0011	0.0017
Nitriding Steel	< 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	> 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
Quenched & Tempered Steel	Non-Alloy < 800 N/mm²	189	1xø	0.04xø	0.0011	0.0017
	Non-Alloy 800-1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	Alloy < 800 N/mm²	189	1xø	0.04xø	0.0011	0.0017
	Alloy 800-1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	Alloy 1000-1300 N/mm²	115	1xø	0.03xø	0.0010	0.0017
	Alloy 1300-1600 N/mm²	98	1xø	0.03xø	0.0010	0.0017
Non-Alloy Tool Steel	General	148	1xø	0.04xø	0.0011	0.0017
Tool Steel for Cold Processing	Low Alloy < 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	Low Alloy < 1200 N/mm²	115	1xø	0.03xø	0.0010	0.0017
	Low Alloy < 1500 N/mm²	98	1xø	0.03xø	0.0010	0.0017
	High Alloy Annealed < 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	High Alloy Hardened < 1300 N/mm²	115	1xø	0.03xø	0.0010	0.0017
Tool Steel for Warm Processing	Low Alloy < 1200 N/mm²	115	1xø	0.03xø	0.0010	0.0017
	Low Alloy < 1500 N/mm²	98	1xø	0.03xø	0.0010	0.0017
	High Alloy Annealed < 1000 N/mm²	148	1xø	0.04xø	0.0011	0.0017
	High Alloy Hardened < 1300 N/mm²	115	1xø	0.03xø	0.0010	0.0017
	High Alloy Hardened < 1600 N/mm²	98	1xø	0.03xø	0.0010	0.0017
Stainless Steel	Ferric	82	0.05xø	0.08xø	0.0003	0.0006
	Martensitic	66	0.05xø	0.08xø	0.0003	0.0006
	Austenitic A5 < 40%	82	0.05xø	0.08xø	0.0003	0.0006
	Austenitic A5 > 40%	66	0.05xø	0.08xø	0.0003	0.0006
	Sulphured	98	0.05xø	0.08xø	0.0003	0.0006

*** Feeds and Speeds are starting points for Overall Lengths of 4" and shorter.**
For End Mills with Overall Lengths over 4" decrease the Feeds and Speeds.

Series US501 / US503 - Micro

Hardness: ≤ 28 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Aluminum Alloys	Castings	750	0.00015	0.00031	0.00047	.13xDia.	3xDia.	0.00055	0.00069	0.00082	0.00110	.25xDia.	3xDia.
	Wrought	1000	0.00015	0.00031	0.00047	.13xDia.	3xDia.	0.00055	0.00069	0.00082	0.00110	.25xDia.	3xDia.
Copper Alloys	Coppers	225	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Brass	500	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Bronze	225	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Aluminum Bronze	500	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Nickel	225	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
	Copper Alloys	550	0.00012	0.00025	0.00038	.13xDia.	3xDia.	0.00044	0.00055	0.00065	0.00088	.13xDia.	3xDia.
Cast Iron	Ductile	300	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00017	0.00021	0.00025	0.00034	.13xDia.	3xDia.
	Gray	400	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00017	0.00021	0.00025	0.00034	.13xDia.	3xDia.
	Malleable	250	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00017	0.00021	0.00025	0.00034	.13xDia.	3xDia.
Magnesium Alloys	General	1500	0.00015	0.00031	0.00048	.13xDia.	3xDia.	0.00055	0.00069	0.00082	0.00110	.13xDia.	3xDia.
Zinc Alloys	General	800	0.00015	0.00031	0.00048	.13xDia.	3xDia.	0.00055	0.00069	0.00082	0.00110	.13xDia.	3xDia.
Carbon Steel	Low Carbon	600	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00170	0.00021	0.00025	0.00034	.25xDia.	3xDia.
	Medium Carbon	200	0.00004	0.00009	0.00013	.13xDia.	3xDia.	0.00020	0.00025	0.00030	0.00040	.25xDia.	3xDia.
Stainless Steels	Martensitic\ Ferritic	450	0.00005	0.00010	0.00015	.13xDia.	3xDia.	0.00017	0.00021	0.00025	0.00034	.25xDia.	3xDia.
	Austenitic	200	0.00004	0.00009	0.00013	.13xDia.	3xDia.	0.00015	0.00019	0.00023	0.00031	.25xDia.	3xDia.
Tool Steels	Low Alloy	200	0.00004	0.00009	0.00013	.13xDia.	3xDia.	0.00015	0.00019	0.00023	0.00031	.25xDia.	3xDia.
	High Alloy	150	0.00003	0.00006	0.00008	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
Titanium Alloys	General	150	0.00003	0.00006	0.00008	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
High Temp Alloys	Iron Alloy	70	0.00003	0.00006	0.00009	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
	Nickel Alloy	70	0.00003	0.00006	0.00009	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
	Hardened Nickel Alloy	70	0.00003	0.00006	0.00009	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.
	Cobalt Alloy	70	0.00003	0.00006	0.00009	.13xDia.	3xDia.	0.00010	0.00012	0.00014	0.00019	.25xDia.	3xDia.

Hardness: 38- 45 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Stainless Steels	Austenitic	100	0.00002	0.00004	0.00007	.13xDia.	3xDia.	0.00008	0.00100	0.00012	0.00016	.25xDia.	3xDia.
Tool Steels	Low Alloy	100	0.00002	0.00004	0.00007	.13xDia.	3xDia.	0.00008	0.00100	0.00012	0.00016	.25xDia.	3xDia.
	High Alloy	90	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
Titanium Alloys	General	75	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
High Temp Alloys	Iron Alloy	50	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
	Nickel Alloy	50	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
	Hardened Nickel Alloy	50	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.
	Cobalt Alloy	50	0.00001	0.00003	0.00004	.13xDia.	3xDia.	0.00005	0.00006	0.00007	0.00010	.25xDia.	3xDia.

PROMAX Premium

Series US504 / US506 - Micro

Hardness: ≤ 28 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Aluminum Alloys	Castings	750	0.00022	0.00045	0.00068	.30xDia.	1xDia	0.00780	0.00099	0.00118	0.00158	.60xDia.	1xDia.
	Wrought	1000	0.00022	0.00045	0.00068	.30xDia.	1xDia	0.00780	0.00099	0.00118	0.00158	.60xDia.	1xDia.
Copper Alloys	Coppers	225	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Brass	500	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Bronze	225	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Aluminum Bronze	500	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Nickel	225	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
	Copper Alloys	550	0.00017	0.00036	0.00055	.30xDia.	1xDia	0.00063	0.00079	0.00094	0.00127	.60xDia.	1xDia.
Cast Iron	Ductile	300	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
	Gray	400	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
	Malleable	250	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
Magnesium Alloys	General	1500	0.00022	0.00045	0.00068	.30xDia.	1xDia	0.00078	0.00099	0.00118	0.00158	.60xDia.	1xDia.
Zinc Alloys	General	800	0.00022	0.00045	0.00068	.30xDia.	1xDia	0.00078	0.00099	0.00118	0.00158	.60xDia.	1xDia.

Hardness: 29 - 37 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Carbon Steel	Low Carbon	600	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
	Medium Carbon	200	0.00006	0.00013	0.00019	.30xDia.	1xDia	0.00022	0.00028	0.00033	0.00045	.60xDia.	1xDia.
Stainless Steels	Martensitic\ Ferritic	450	0.00007	0.00014	0.00021	.30xDia.	1xDia	0.00024	0.00031	0.00036	0.00049	.60xDia.	1xDia.
	Austenitic	200	0.00006	0.00013	0.00019	.30xDia.	1xDia	0.00022	0.00028	0.00033	0.00045	.60xDia.	1xDia.
Tool Steels	Low Alloy	200	0.00006	0.00013	0.00019	.30xDia.	1xDia	0.00022	0.00028	0.00033	0.00045	.60xDia.	1xDia.
	High Alloy	150	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.
Titanium Alloys	General	150	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia
High Temp Alloys	Iron Alloy	70	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.
	Nickel Alloy	70	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.
	Hardened Nickel Alloy	70	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.
	Cobalt Alloy	70	0.00004	0.00008	0.00012	.30xDia.	1xDia	0.00014	0.00017	0.00021	0.00028	.60xDia.	1xDia.

Hardness: 38- 45 Rc													
Material Designation			Chip Load - IPT			Depth of Cut		Chip Load - IPT				Depth of Cut	
		SFM	0.005 - 0.015	0.015 - 0.031	0.031 - 0.047	Radial	Axial	0.047 - 0.062	0.062 - 0.078	0.078 - 0.093	0.093 - 0.120	Radial	Axial
Stainless Steels	Austenitic	100	0.00003	0.00006	0.00010	.30xDia.	1xDia	0.00011	0.00014	0.00017	0.00022	.60xDia.	1xDia.
Tool Steels	Low Alloy	100	0.00003	0.00006	0.00010	.30xDia.	1xDia	0.00011	0.00014	0.00017	0.00022	.60xDia.	1xDia.
	High Alloy	90	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
Titanium Alloys	General	75	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
High Temp Alloys	Iron Alloy	50	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
	Nickel Alloy	50	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
	Hardened Nickel Alloy	50	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.
	Cobalt Alloy	50	0.00002	0.00004	0.00006	.30xDia.	1xDia	0.00007	0.00009	0.00012	0.00018	.60xDia.	1xDia.

Tooling You Know and Trust



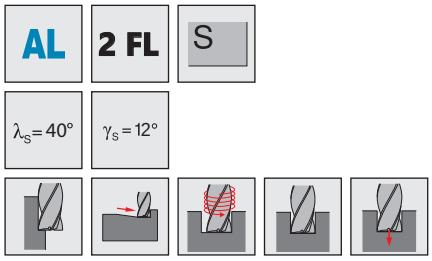
PROMAX
Premium

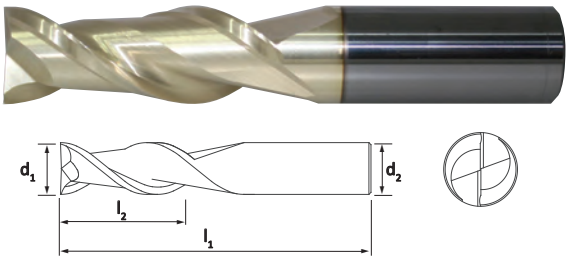
DESIGN-RITE XL

www.promaxtools.com

Series D142

2 Flute Aluminum





Tolerances

Shank: 1/8" - 1" = +.0001/-.0004

Cutting Dia: 1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	ZrN
1/8	1/8	1/4	1 1/2	2	D1422120	D1422126
1/8	1/8	3/8	1 1/2	2	D1421120	D1421126
5/32	3/16	5/16	2	2	D1422150	D1422156
5/32	3/16	9/16	2	2	D1421150	D1421156
3/16	3/16	5/16	2	2	D1422180	D1422186
3/16	3/16	9/16	2	2	D1421180	D1421186
1/4	1/4	3/8	2	2	D1422250	D1422256
1/4	1/4	3/4	2 1/2	2	D1421250	D1421256
1/4	1/4	1 1/4	3 1/2	2	D1423250	D1423256
5/16	5/16	13/16	2 1/2	2	D1421310	D1421316
5/16	5/16	1 1/4	4	2	D1423310	D1423316
5/16	5/16	2 1/8	4	2	D1424310	D1424316
11/32	3/8	1	2 1/2	2	D1421340	D1421346
3/8	3/8	1/2	2 1/2	2	D1422370	D1422376
3/8	3/8	1	2 1/2	2	D1421370	D1421376
3/8	3/8	1 1/2	4	2	D1423370	D1423376
3/8	3/8	2 1/2	6	2	D1424370	D1424376
1/2	1/2	5/8	2 1/2	2	D1422500	D1422506
1/2	1/2	1 1/4	3	2	D1421500	D1421506
1/2	1/2	2	4	2	D1423500	D1423506
1/2	1/2	3	6	2	D1424500	D1424506
5/8	5/8	1 5/8	3 1/2	2	D1421620	D1421626
3/4	3/4	1	4	2	D1422750	D1422756
3/4	3/4	1 5/8	4	2	D1421750	D1421756
3/4	3/4	3	6	2	D1423750	D1423756
3/4	3/4	4	7	2	D1424750	D1424756
1	1	2	5	2	D1421100	D1421106
1	1	3	6	2	D1423100	D1423106

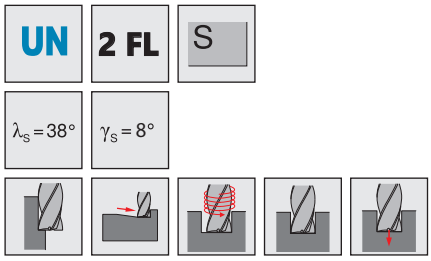
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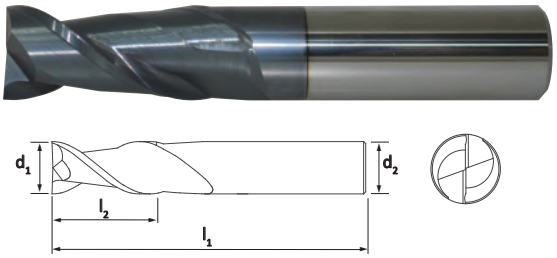
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
							●	●	●	

Feeds & Speeds Available on Page 121

Series D642

2 Flute Steels





Tolerances

Shank:	1/32" - 1" = -.0001/-.0004
Cutting Dia:	1/32" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/16	1/8	1/8	1 1/2	2	D6422060	D6422064
1/16	1/8	3/16	1 1/2	2	D6421060	D6421064
3/32	1/8	3/16	1 1/2	2	D6422090	D6422094
3/32	1/8	9/32	1 1/2	2	D6421090	D6421094
1/8	1/8	1/4	1 1/2	2	D6422120	D6422124
1/8	1/8	1/2	1 1/2	2	D6421120	D6421124
1/8	1/8	3/4	2 1/4	2	D6423120	D6423124
1/8	1/8	3/4	3	2	D6426120	D6426124
1/8	1/8	1	3	2	D6424120	D6424124
5/32	3/16	3/8	2	2	D6422150	D6422154
5/32	3/16	1/2	2	2	D6421150	D6421154
5/32	3/16	3/4	2 1/2	2	D6425150	D6425154
3/16	3/16	3/8	2	2	D6422180	D6422184
3/16	3/16	5/8	2	2	D6421180	D6421184
3/16	3/16	3/4	2 1/2	2	D6423180	D6423184
3/16	3/16	1	2 1/2	2	D6425180	D6425184
3/16	3/16	1	4	2	D6426180	D6426184
3/16	3/16	1 1/8	3	2	D6424180	D6424184
7/32	1/4	3/8	2	2	D6422210	D6422214
7/32	1/4	5/8	2 1/2	2	D6421210	D6421214
7/32	1/4	1	3	2	D6425210	D6425214
1/4	1/4	3/8	2	2	D6422250	D6422254
1/4	1/4	3/4	2 1/2	2	D6421250	D6421254
1/4	1/4	1	4	2	D6426250	D6426254
1/4	1/4	1 1/8	3	2	D6423250	D6423254
1/4	1/4	1 1/4	3	2	D6425250	D6425254
1/4	1/4	1 1/2	4	2	D6424250	D6424254
1/4	1/4	1 1/2	6	2	D6427250	D6427254
9/32	5/16	1/2	2	2	D6422280	D6422284
9/32	5/16	3/4	2 1/2	2	D6421280	D6421284
9/32	5/16	1 1/4	3	2	D6425280	D6425284
5/16	5/16	1/2	2	2	D6422310	D6422314
5/16	5/16	3/4	2 1/2	2	D6421310	D6421314
5/16	5/16	1	4	2	D6426310	D6426314

Additional Sizes On Pages 94

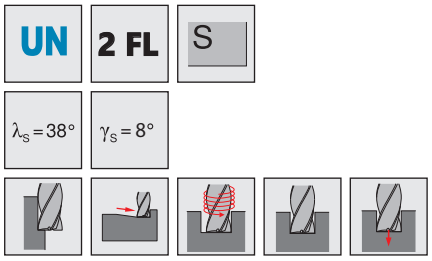
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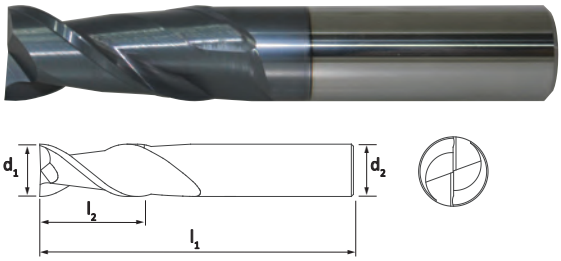
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●			●		●	●	

Feeds & Speeds Available on Page 121

Series D642

2 Flute Steels





Tolerances

Shank:	1/32" - 1" = -.0001/-.0004
Cutting Dia:	1/32" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
5/16	5/16	1 1/8	3	2	D6423310	D6423314
5/16	5/16	1 3/8	3	2	D6425310	D6425314
5/16	5/16	1 1/2	6	2	D6427310	D6427314
5/16	5/16	1 5/8	4	2	D6424310	D6424314
3/8	3/8	5/8	2	2	D6422370	D6422374
3/8	3/8	7/8	2 1/2	2	D6421370	D6421374
3/8	3/8	1	4	2	D6426370	D6426374
3/8	3/8	1 1/8	3	2	D6423370	D6423374
3/8	3/8	1 3/8	3	2	D6425370	D6425374
3/8	3/8	1 1/2	6	2	D6427370	D6427374
3/8	3/8	1 3/4	4	2	D6424370	D6424374
3/8	3/8	3	6	2	D6428370	D6428374
1/2	1/2	5/8	2 1/2	2	D6422500	D6422504
1/2	1/2	1	3	2	D6421500	D6421504
1/2	1/2	1	4	2	D6426500	D6426504
1/2	1/2	1 1/2	3 1/2	2	D6425500	D6425504
1/2	1/2	1 1/2	6	2	D6427500	D6427504
1/2	1/2	2	4	2	D6423500	D6423504
1/2	1/2	3	6	2	D6424500	D6424504
5/8	5/8	7/8	3	2	D6422620	D6422624
5/8	5/8	1 1/4	3 1/2	2	D6421620	D6421624
5/8	5/8	2	6	2	D6426620	D6426624
5/8	5/8	2 1/8	4 5/8	2	D6423620	D6423624
5/8	5/8	3	6	2	D6424620	D6424624
3/4	3/4	1	3	2	D6422750	D6422754
3/4	3/4	1 1/2	4	2	D6421750	D6421754
3/4	3/4	2	6	2	D6426750	D6426754
3/4	3/4	2 1/4	5	2	D6423750	D6423754
3/4	3/4	3	6	2	D6424750	D6424754
1	1	1 3/4	4	2	D6421100	D6421104
1	1	2	6	2	D6426100	D6426104
1	1	2 1/4	5	2	D6423100	D6423104
1	1	3	6	2	D6424100	D6424104

Additional Sizes On Pages 93

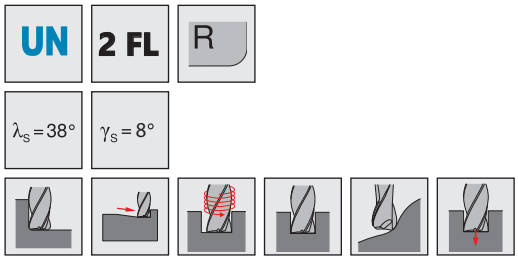
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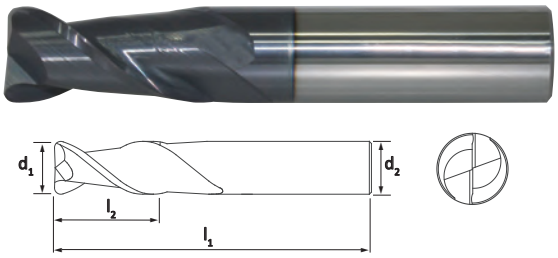
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●			●		●	●	

Feeds & Speeds Available on Page 121

Series D642

2 Flute Radius Steels





Tolerances

Shank:	1/8" - 3/4" = -.0001/-.0004
Cutting Dia:	1/8" - 3/4" = +.000/-.002
Radius:	1/8" - 3/4" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
1/8	1/8	1/2	1 1/2	0.010	2	D6421120/10	D6421124/10
1/8	1/8	1/2	1 1/2	0.015	2	D6421120/15	D6421124/15
1/8	1/8	1/2	1 1/2	0.020	2	D6421120/20	D6421124/20
1/8	1/8	1/2	1 1/2	0.030	2	D6421120/30	D6421124/30
1/8	1/8	1/2	1 1/2	0.045	2	D6421120/45	D6421124/45
3/16	3/16	5/8	2	0.010	2	D6421180/10	D6421184/10
3/16	3/16	5/8	2	0.015	2	D6421180/15	D6421184/15
3/16	3/16	5/8	2	0.020	2	D6421180/20	D6421184/20
3/16	3/16	5/8	2	0.030	2	D6421180/30	D6421184/30
3/16	3/16	5/8	2	0.045	2	D6421180/45	D6421184/45
3/16	3/16	5/8	2	0.060	2	D6421180/60	D6421184/60
1/4	1/4	3/4	2 1/2	0.010	2	D6421250/10	D6421254/10
1/4	1/4	3/4	2 1/2	0.015	2	D6421250/15	D6421254/15
1/4	1/4	3/4	2 1/2	0.020	2	D6421250/20	D6421254/20
1/4	1/4	3/4	2 1/2	0.030	2	D6421250/30	D6421254/30
1/4	1/4	3/4	2 1/2	0.045	2	D6421250/45	D6421254/45
1/4	1/4	3/4	2 1/2	0.060	2	D6421250/60	D6421254/60
1/4	1/4	3/4	2 1/2	0.090	2	D6421250/90	D6421254/90
5/16	5/16	3/4	2 1/2	0.010	2	D6421310/10	D6421314/10
5/16	5/16	3/4	2 1/2	0.015	2	D6421310/15	D6421314/15
5/16	5/16	3/4	2 1/2	0.020	2	D6421310/20	D6421314/20
5/16	5/16	3/4	2 1/2	0.030	2	D6421310/30	D6421314/30
5/16	5/16	3/4	2 1/2	0.045	2	D6421310/45	D6421314/45
5/16	5/16	3/4	2 1/2	0.060	2	D6421310/60	D6421314/60
5/16	5/16	3/4	2 1/2	0.090	2	D6421310/90	D6421314/90
3/8	3/8	7/8	2 1/2	0.010	2	D6421370/10	D6421374/10
3/8	3/8	7/8	2 1/2	0.015	2	D6421370/15	D6421374/15
3/8	3/8	7/8	2 1/2	0.020	2	D6421370/20	D6421374/20
3/8	3/8	7/8	2 1/2	0.030	2	D6421370/30	D6421374/30
3/8	3/8	7/8	2 1/2	0.045	2	D6421370/45	D6421374/45
3/8	3/8	7/8	2 1/2	0.060	2	D6421370/60	D6421374/60
3/8	3/8	7/8	2 1/2	0.090	2	D6421370/90	D6421374/90
3/8	3/8	7/8	2 1/2	0.125	2	D6421370/12	D6421374/12
1/2	1/2	1	3	0.010	2	D6421500/10	D6421504/10

Additional Sizes On Pages 96

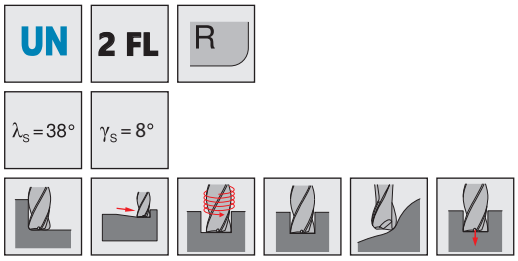
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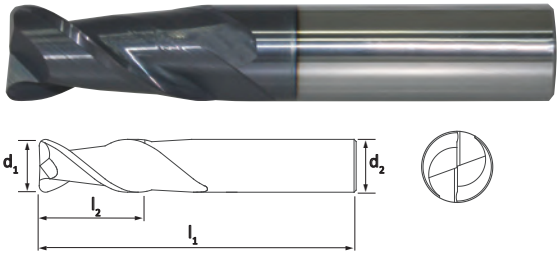
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●			●		●	●	

Feeds & Speeds Available on Page 121

Series D642

2 Flute Radius Steels





Tolerances

Shank:	1/8" - 3/4" = -.0001/-.0004
Cutting Dia:	1/8" - 3/4" = +.000/-.002
Radius:	1/8" - 3/4" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
1/2	1/2	1	3	0.015	2	D6421500/15	D6421504/15
1/2	1/2	1	3	0.020	2	D6421500/20	D6421504/20
1/2	1/2	1	3	0.030	2	D6421500/30	D6421504/30
1/2	1/2	1	3	0.045	2	D6421500/45	D6421504/45
1/2	1/2	1	3	0.060	2	D6421500/60	D6421504/60
1/2	1/2	1	3	0.090	2	D6421500/90	D6421504/90
1/2	1/2	1	3	0.125	2	D6421500/12	D6421504/12
5/8	5/8	1 1/4	3 1/2	0.030	2	D6421620/30	D6421624/30
5/8	5/8	1 1/4	3 1/2	0.045	2	D6421620/45	D6421624/45
5/8	5/8	1 1/4	3 1/2	0.060	2	D6421620/60	D6421624/60
5/8	5/8	1 1/4	3 1/2	0.090	2	D6421620/90	D6421624/90
5/8	5/8	1 1/4	3 1/2	0.125	2	D6421620/12	D6421624/12
3/4	3/4	1 1/2	4	0.030	2	D6421750/30	D6421754/30
3/4	3/4	1 1/2	4	0.045	2	D6421750/45	D6421754/45
3/4	3/4	1 1/2	4	0.060	2	D6421750/60	D6421754/60
3/4	3/4	1 1/2	4	0.090	2	D6421750/90	D6421754/90
3/4	3/4	1 1/2	4	0.125	2	D6421750/12	D6421754/12

Additional Sizes On Pages 95

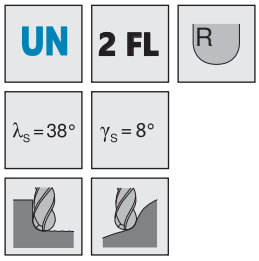
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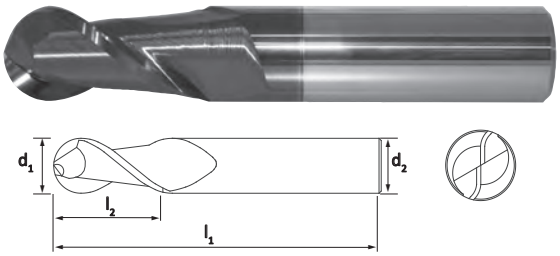
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●			●		●	●	

Feeds & Speeds Available on Page 121

Series D662

2 Flute Ball Steels





Tolerances

Shank:	1/32" - 1" = -.0001/-.0004
Cutting Dia:	1/32" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +/-.002
Ball:	1/32" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/16	1/8	1/8	1 1/2	2	D6622060	D6622064
1/16	1/8	3/16	1 1/2	2	D6621060	D6621064
1/8	1/8	1/4	1 1/2	2	D6622120	D6622124
1/8	1/8	1/2	1 1/2	2	D6621120	D6621124
1/8	1/8	3/4	2 1/4	2	D6623120	D6623124
1/8	1/8	3/4	3	2	D6626120	D6626124
1/8	1/8	1	3	2	D6624120	D6624124
3/16	3/16	3/8	2	2	D6622180	D6622184
3/16	3/16	5/8	2	2	D6621180	D6621184
3/16	3/16	3/4	2 1/2	2	D6623180	D6623184
3/16	3/16	1	4	2	D6626180	D6626184
3/16	3/16	1 1/8	3	2	D6624180	D6624184
13/64	1/4	3/8	2	2	D6622200	D6622204
1/4	1/4	3/8	2	2	D6622250	D6622254
1/4	1/4	3/4	2 1/2	2	D6621250	D6621254
1/4	1/4	1	4	2	D6626250	D6626254
1/4	1/4	1 1/8	3	2	D6623250	D6623254
1/4	1/4	1 1/2	4	2	D6624250	D6624254
1/4	1/4	1 1/2	6	2	D6627250	D6627254
5/16	5/16	1/2	2	2	D6622310	D6622314
5/16	5/16	3/4	2 1/2	2	D6621310	D6621314
5/16	5/16	1	4	2	D6626310	D6626314
5/16	5/16	1 1/8	3	2	D6623310	D6623314
5/16	5/16	1 1/2	6	2	D6627310	D6627314
5/16	5/16	1 5/8	4	2	D6624310	D6624314
3/8	3/8	5/8	2	2	D6622370	D6622374
3/8	3/8	7/8	2 1/2	2	D6621370	D6621374
3/8	3/8	1	4	2	D6626370	D6626374
3/8	3/8	1 1/8	3	2	D6623370	D6623374
3/8	3/8	1 1/2	6	2	D6627370	D6627374
3/8	3/8	1 3/4	4	2	D6624370	D6624374
3/8	3/8	3	6	2	D6628370	D6628374

Additional Sizes On Pages 98

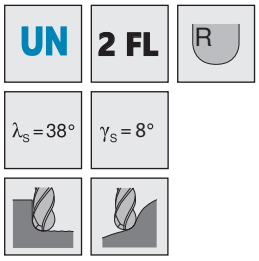
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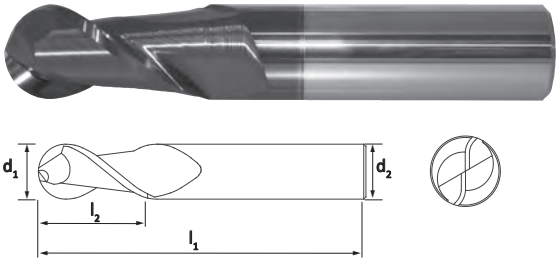
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●						●		●	●	

Feeds & Speeds Available on Page 121

Series D662

2 Flute Ball Steels





Tolerances

Shank:	1/32" - 1" = -.0001/-.0004
Cutting Dia:	1/32" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +/-.002
Ball:	1/32" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/2	1/2	5/8	2 1/2	2	D6622500	D6622504
1/2	1/2	1	3	2	D6621500	D6621504
1/2	1/2	1	4	2	D6626500	D6626504
1/2	1/2	1 1/2	6	2	D6627500	D6627504
1/2	1/2	2	4	2	D6623500	D6623504
1/2	1/2	3	6	2	D6624500	D6624504
5/8	5/8	7/8	3	2	D6622620	D6622624
5/8	5/8	1 1/4	3 1/2	2	D6621620	D6621624
5/8	5/8	2	6	2	D6626620	D6626624
5/8	5/8	2 1/8	4 5/8	2	D6623620	D6623624
5/8	5/8	3	6	2	D6624620	D6624624
3/4	3/4	1	3	2	D6622750	D6622754
3/4	3/4	1 1/2	4	2	D6621750	D6621754
3/4	3/4	2	6	2	D6626750	D6626754
3/4	3/4	2 1/4	5	2	D6623750	D6623754
3/4	3/4	3	6	2	D6624750	D6624754
1	1	1 3/4	4	2	D6621100	D6621104
1	1	2	6	2	D6626100	D6626104
1	1	2 1/4	5	2	D6623100	D6623104
1	1	3	6	2	D6624100	D6624104

Additional Sizes On Pages 97

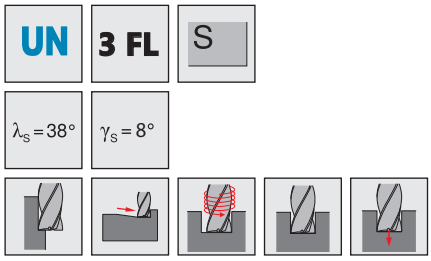
Application Range:

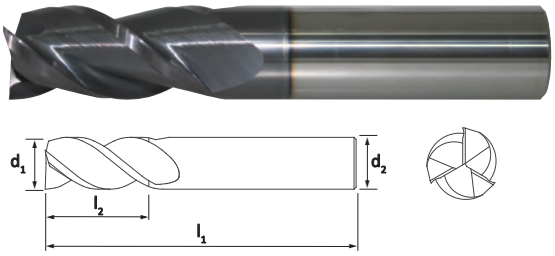
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●						●		●	●	

Feeds & Speeds Available on Page 121

Series D643

3 Flute Steels





Tolerances

Shank:	1/16" - 1" = -.0001/-.0004
Cutting Dia:	1/16" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/16	1/8	1/8	1 1/2	3	D6432060	D6432064
1/16	1/8	3/16	1 1/2	3	D6431060	D6431064
5/64	1/8	1/4	1 1/2	3	D6431070	D6431074
3/32	1/8	3/16	1 1/2	3	D6432090	D6432094
3/32	1/8	9/32	1 1/2	3	D6431090	D6431094
1/8	1/8	1/4	1 1/2	3	D6432120	D6432124
1/8	1/8	1/2	1 1/2	3	D6431120	D6431124
1/8	1/8	3/4	2 1/4	3	D6433120	D6433124
1/8	1/8	3/4	3	3	D6436120	D6436124
1/8	1/8	1	3	3	D6434120	D6434124
5/32	3/16	3/8	2	3	D6432150	D6432154
5/32	3/16	1/2	2	3	D6431150	D6431154
3/16	3/16	3/8	2	3	D6432180	D6432184
3/16	3/16	5/8	2	3	D6431180	D6431184
3/16	3/16	3/4	2 1/2	3	D6433180	D6433184
3/16	3/16	1	2 1/2	3	D6435180	D6435184
3/16	3/16	1	4	3	D6436180	D6436184
3/16	3/16	1 1/8	3	3	D6434180	D6434184
7/32	1/4	3/8	2	3	D6432210	D6432214
7/32	1/4	5/8	2 1/2	3	D6431210	D6431214
1/4	1/4	3/8	2	3	D6432250	D6432254
1/4	1/4	3/4	2 1/2	3	D6431250	D6431254
1/4	1/4	1	4	3	D6436250	D6436254
1/4	1/4	1 1/8	3	3	D6433250	D6433254
1/4	1/4	1 1/2	4	3	D6434250	D6434254
1/4	1/4	1 1/2	6	3	D6437250	D6437254
9/32	5/16	1/2	2	3	D6432280	D6432284
9/32	5/16	3/4	2 1/2	3	D6431280	D6431284
5/16	5/16	1/2	2	3	D6432310	D6432314
5/16	5/16	3/4	2 1/2	3	D6431310	D6431314
5/16	5/16	1	4	3	D6436310	D6436314
5/16	5/16	1 1/8	3	3	D6433310	D6433314
5/16	5/16	1 1/2	6	3	D6437310	D6437314
5/16	5/16	1 5/8	4	3	D6434310	D6434314

Additional Sizes On Pages 100

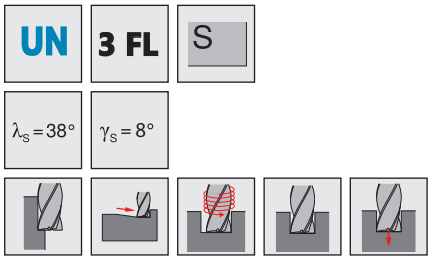
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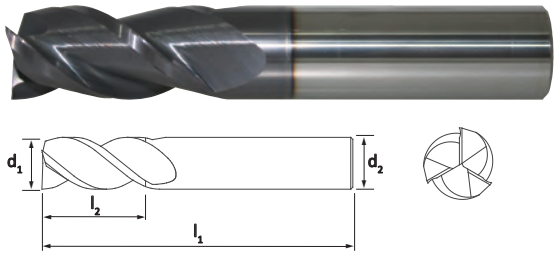
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●					●	●	

Feeds & Speeds Available on Page 121

Series D643

3 Flute Steels





Tolerances

Shank:	1/16" - 1" = -.0001/-.0004
Cutting Dia:	1/16" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
3/8	3/8	5/8	2	3	D6432370	D6432374
3/8	3/8	7/8	2 1/2	3	D6431370	D6431374
3/8	3/8	1	4	3	D6436370	D6436374
3/8	3/8	1 1/8	3	3	D6433370	D6433374
3/8	3/8	1 1/2	6	3	D6437370	D6437374
3/8	3/8	1 3/4	4	3	D6434370	D6434374
3/8	3/8	3	6	3	D6438370	D6438374
1/2	1/2	5/8	2 1/2	3	D6432500	D6432504
1/2	1/2	1	3	3	D6431500	D6431504
1/2	1/2	1	4	3	D6436500	D6436504
1/2	1/2	1 1/2	6	3	D6437500	D6437504
1/2	1/2	2	4	3	D6433500	D6433504
1/2	1/2	3	6	3	D6434500	D6434504
5/8	5/8	7/8	3	3	D6432620	D6432624
5/8	5/8	1 1/4	3 1/2	3	D6431620	D6431624
5/8	5/8	2	6	3	D6436620	D6436624
5/8	5/8	2 1/8	4 5/8	3	D6433620	D6433624
5/8	5/8	3	6	3	D6434620	D6434624
3/4	3/4	1	3	3	D6432750	D6432754
3/4	3/4	1 1/2	4	3	D6431750	D6431754
3/4	3/4	2	6	3	D6436750	D6436754
3/4	3/4	2 1/4	5	3	D6433750	D6433754
3/4	3/4	3	6	3	D6434750	D6434754
1	1	1 3/4	4	3	D6431100	D6431104
1	1	2	6	3	D6436100	D6436104
1	1	2 1/4	5	3	D6433100	D6433104
1	1	3	6	3	D6434100	D6434104

Additional Sizes On Pages 99

Application Range:

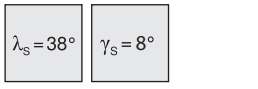
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●					●	●	

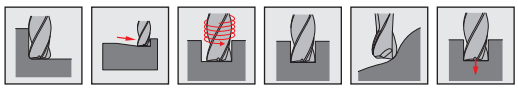
Feeds & Speeds Available on Page 121

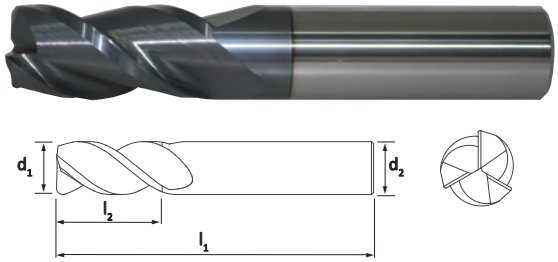
Series D643

3 Flute Radius Steels









Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
1/8	1/8	1/2	1 1/2	0.010	3	D6431120/10	D6431124/10
1/8	1/8	1/2	1 1/2	0.015	3	D6431120/15	D6431124/15
1/8	1/8	1/2	1 1/2	0.020	3	D6431120/20	D6431124/20
1/8	1/8	1/2	1 1/2	0.030	3	D6431120/30	D6431124/30
1/8	1/8	1/2	1 1/2	0.045	3	D6431120/45	D6431124/45
3/16	3/16	5/8	2	0.010	3	D6431180/10	D6431184/10
3/16	3/16	5/8	2	0.015	3	D6431180/15	D6431184/15
3/16	3/16	5/8	2	0.020	3	D6431180/20	D6431184/20
3/16	3/16	5/8	2	0.030	3	D6431180/30	D6431184/30
3/16	3/16	5/8	2	0.045	3	D6431180/45	D6431184/45
3/16	3/16	5/8	2	0.060	3	D6431180/60	D6431184/60
1/4	1/4	3/4	2 1/2	0.010	3	D6431250/10	D6431254/10
1/4	1/4	3/4	2 1/2	0.015	3	D6431250/15	D6431254/15
1/4	1/4	3/4	2 1/2	0.020	3	D6431250/20	D6431254/20
1/4	1/4	3/4	2 1/2	0.030	3	D6431250/30	D6431254/30
1/4	1/4	3/4	2 1/2	0.045	3	D6431250/45	D6431254/45
1/4	1/4	3/4	2 1/2	0.060	3	D6431250/60	D6431254/60
1/4	1/4	3/4	2 1/2	0.090	3	D6431250/90	D6431254/90
5/16	5/16	3/4	2 1/2	0.010	3	D6431310/10	D6431314/10
5/16	5/16	3/4	2 1/2	0.015	3	D6431310/15	D6431314/15
5/16	5/16	3/4	2 1/2	0.020	3	D6431310/20	D6431314/20
5/16	5/16	3/4	2 1/2	0.030	3	D6431310/30	D6431314/30
5/16	5/16	3/4	2 1/2	0.045	3	D6431310/45	D6431314/45
5/16	5/16	3/4	2 1/2	0.060	3	D6431310/60	D6431314/60
5/16	5/16	3/4	2 1/2	0.090	3	D6431310/90	D6431314/90
3/8	3/8	7/8	2 1/2	0.010	3	D6431370/10	D6431374/10
3/8	3/8	7/8	2 1/2	0.015	3	D6431370/15	D6431374/15
3/8	3/8	7/8	2 1/2	0.020	3	D6431370/20	D6431374/20
3/8	3/8	7/8	2 1/2	0.030	3	D6431370/30	D6431374/30
3/8	3/8	7/8	2 1/2	0.045	3	D6431370/45	D6431374/45
3/8	3/8	7/8	2 1/2	0.060	3	D6431370/60	D6431374/60
3/8	3/8	7/8	2 1/2	0.090	3	D6431370/90	D6431374/90
3/8	3/8	7/8	2 1/2	0.125	3	D6431370/12	D6431374/12
1/2	1/2	1	3	0.010	3	D6431500/10	D6431504/10

Additional Sizes On Pages 102

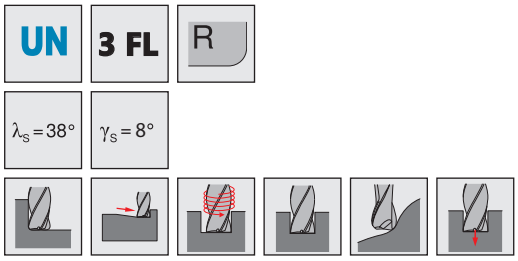
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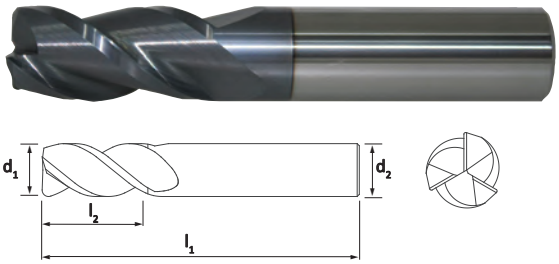
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●					●	●	

Feeds & Speeds Available on Page 121

Series D643

3 Flute Radius Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
1/2	1/2	1	3	0.015	3	D6431500/15	D6431504/15
1/2	1/2	1	3	0.020	3	D6431500/20	D6431504/20
1/2	1/2	1	3	0.030	3	D6431500/30	D6431504/30
1/2	1/2	1	3	0.045	3	D6431500/45	D6431504/45
1/2	1/2	1	3	0.060	3	D6431500/60	D6431504/60
1/2	1/2	1	3	0.090	3	D6431500/90	D6431504/90
1/2	1/2	1	3	0.125	3	D6431500/12	D6431504/12
5/8	5/8	1 1/4	3 1/2	0.015	3	D6431620/15	D6431624/15
5/8	5/8	1 1/4	3 1/2	0.020	3	D6431620/20	D6431624/20
5/8	5/8	1 1/4	3 1/2	0.030	3	D6431620/30	D6431624/30
5/8	5/8	1 1/4	3 1/2	0.045	3	D6431620/45	D6431624/45
5/8	5/8	1 1/4	3 1/2	0.060	3	D6431620/60	D6431624/60
5/8	5/8	1 1/4	3 1/2	0.090	3	D6431620/90	D6431624/90
5/8	5/8	1 1/4	3 1/2	0.125	3	D6431620/12	D6431624/12
3/4	3/4	1 1/2	4	0.020	3	D6431750/20	D6431754/20
3/4	3/4	1 1/2	4	0.030	3	D6431750/30	D6431754/30
3/4	3/4	1 1/2	4	0.045	3	D6431750/45	D6431754/45
3/4	3/4	1 1/2	4	0.060	3	D6431750/60	D6431754/60
3/4	3/4	1 1/2	4	0.090	3	D6431750/90	D6431754/90
3/4	3/4	1 1/2	4	0.125	3	D6431750/12	D6431754/12
1	1	1 3/4	4	0.030	3	D6431100/30	D6431104/30
1	1	1 3/4	4	0.045	3	D6431100/45	D6431104/45
1	1	1 3/4	4	0.060	3	D6431100/60	D6431104/60
1	1	1 3/4	4	0.090	3	D6431100/90	D6431104/90
1	1	1 3/4	4	0.125	3	D6431100/12	D6431104/12

Additional Sizes On Pages 101

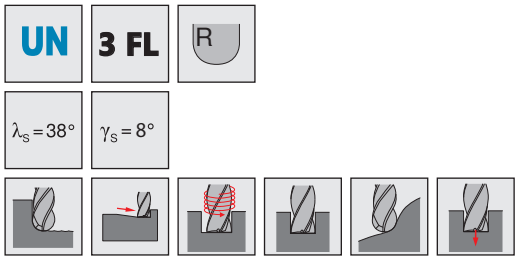
Application Range:

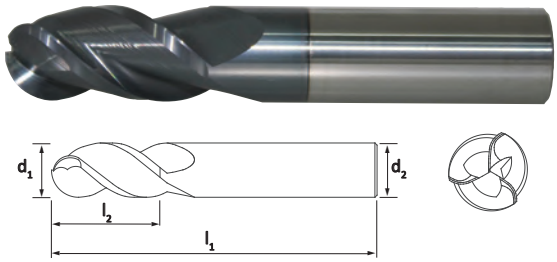
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●					●	●	

Feeds & Speeds Available on Page 121

Series D663

3 Flute Ball Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/8	1/8	1/4	1 1/2	3	D6632120	D6632124
1/8	1/8	1/2	1 1/2	3	D6631120	D6631124
1/8	1/8	3/4	2 1/4	3	D6633120	D6633124
1/8	1/8	3/4	3	3	D6636120	D6636124
1/8	1/8	1	3	3	D6634120	D6634124
3/16	3/16	3/8	2	3	D6632180	D6632184
3/16	3/16	5/8	2	3	D6631180	D6631184
3/16	3/16	3/4	2 1/2	3	D6633180	D6633184
3/16	3/16	1	2 1/2	3	D6635180	D6635184
3/16	3/16	1	4	3	D6636180	D6636184
3/16	3/16	1 1/8	3	3	D6634180	D6634184
1/4	1/4	3/8	2	3	D6632250	D6632254
1/4	1/4	3/4	2 1/2	3	D6631250	D6631254
1/4	1/4	1	4	3	D6636250	D6636254
1/4	1/4	1 1/8	3	3	D6633250	D6633254
1/4	1/4	1 1/2	4	3	D6634250	D6634254
1/4	1/4	1 1/2	6	3	D6637250	D6637254
5/16	5/16	3/4	2 1/2	3	D6631310	D6631314
5/16	5/16	1	4	3	D6636310	D6636314
5/16	5/16	1 1/2	6	3	D6637310	D6637314
3/8	3/8	5/8	2	3	D6632370	D6632374
3/8	3/8	7/8	2 1/2	3	D6631370	D6631374
3/8	3/8	1	4	3	D6636370	D6636374
3/8	3/8	1 1/8	3	3	D6633370	D6633374
3/8	3/8	1 1/2	6	3	D6637370	D6637374
3/8	3/8	1 3/4	4	3	D6634370	D6634374
3/8	3/8	3	6	3	D6638370	D6638374
1/2	1/2	5/8	2 1/2	3	D6632500	D6632504
1/2	1/2	1	3	3	D6631500	D6631504
1/2	1/2	1	4	3	D6636500	D6636504
1/2	1/2	1 1/2	6	3	D6637500	D6637504
1/2	1/2	2	4	3	D6633500	D6633504

Additional Sizes On Pages 104

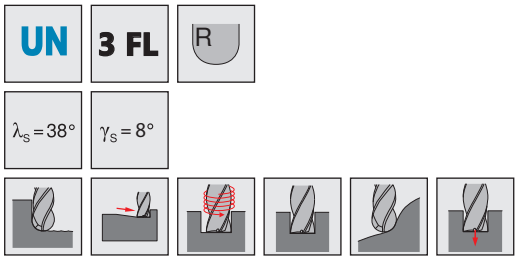
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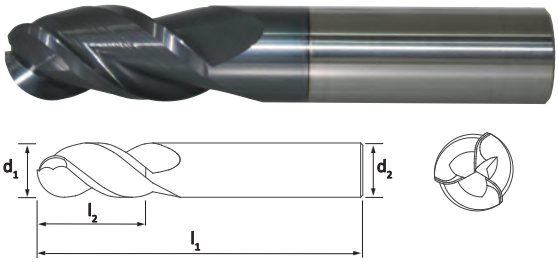
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D663

3 Flute Ball Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/2	1/2	3	6	3	D6634500	D6634504
5/8	5/8	1 1/4	3 1/2	3	D6631620	D6631624
5/8	5/8	2	6	3	D6636620	D6636624
5/8	5/8	2 1/8	4 5/8	3	D6633620	D6633624
5/8	5/8	3	6	3	D6634620	D6634624
3/4	3/4	1 1/2	4	3	D6631750	D6631754
3/4	3/4	2	6	3	D6636750	D6636754
3/4	3/4	2 1/4	5	3	D6633750	D6633754
3/4	3/4	3	6	3	D6634750	D6634754
1	1	1 3/4	4	3	D6631100	D6631104
1	1	2	6	3	D6636100	D6636104
1	1	2 1/4	5	3	D6633100	D6633104
1	1	3	6	3	D6634100	D6634104

Additional Sizes On Pages 103

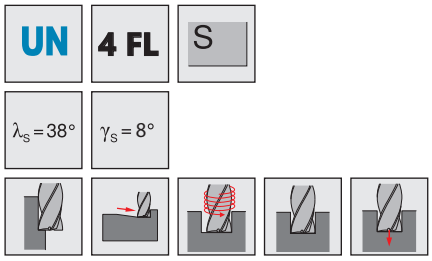
Application Range:

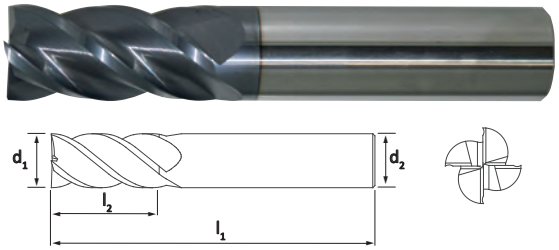
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Steels





Tolerances

Shank:	1/32" - 1" = -.0001/-.0004
Cutting Dia:	1/32" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/32	1/8	1/16	1 1/2	4	D6442030	D6442034
1/32	1/8	3/32	1 1/2	4	D6441030	D6441034
3/64	1/8	3/32	1 1/2	4	D6442040	D6442044
3/64	1/8	9/64	1 1/2	4	D6441040	D6441044
1/16	1/8	1/8	1 1/2	4	D6442060	D6442064
1/16	1/8	3/16	1 1/2	4	D6441060	D6441064
5/64	1/8	1/4	1 1/2	4	D6441070	D6441074
3/32	1/8	3/16	1 1/2	4	D6442090	D6442094
3/32	1/8	9/32	1 1/2	4	D6441090	D6441094
7/64	1/8	3/16	1 1/2	4	D6442190	D6442194
7/64	1/8	3/8	1 1/2	4	D6441190	D6441194
1/8	1/8	1/4	1 1/2	4	D6442120	D6442124
1/8	1/8	1/2	1 1/2	4	D6441120	D6441124
1/8	1/8	3/4	2 1/4	4	D6445120	D6445124
1/8	1/8	3/4	3	4	D6446120	D6446124
1/8	1/8	1	3	4	D6444120	D6444124
5/32	3/16	3/8	2	4	D6442150	D6442154
5/32	3/16	1/2	2	4	D6441150	D6441154
5/32	3/16	3/4	2 1/2	4	D6445150	D6445154
3/16	3/16	3/8	2	4	D6442180	D6442184
3/16	3/16	5/8	2	4	D6441180	D6441184
3/16	3/16	3/4	2 1/2	4	D6443180	D6443184
3/16	3/16	1	2 1/2	4	D6445180	D6445184
3/16	3/16	1	4	4	D6446180	D6446184
3/16	3/16	1 1/8	3	4	D6444180	D6444184
7/32	1/4	3/8	2	4	D6442210	D6442214
7/32	1/4	5/8	2 1/2	4	D6441210	D6441214
7/32	1/4	1	3	4	D6445210	D6445214
1/4	1/4	3/8	2	4	D6442250	D6442254
1/4	1/4	3/4	2 1/2	4	D6441250	D6441254
1/4	1/4	1	4	4	D6446250	D6446254
1/4	1/4	1 1/8	3	4	D6443250	D6443254
1/4	1/4	1 1/4	3	4	D6445250	D6445254
1/4	1/4	1 1/2	4	4	D6444250	D6444254

Additional Sizes On Pages 106 & 107

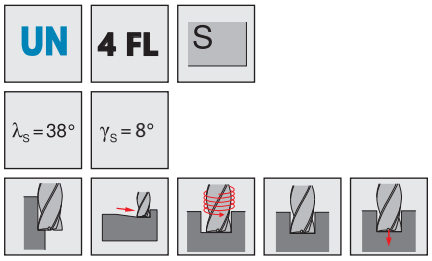
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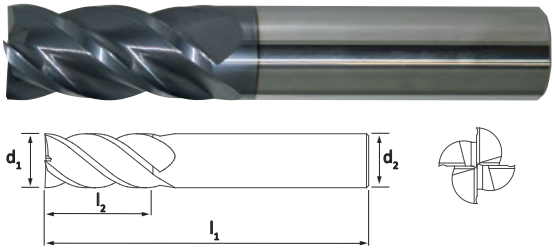
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Steels





Tolerances

Shank:	1/32" - 1" = -.0001/-.0004
Cutting Dia:	1/32" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/4	1/4	1 1/2	6	4	D6447250	D6447254
9/32	5/16	1/2	2	4	D6442280	D6442284
9/32	5/16	3/4	2 1/2	4	D6441280	D6441284
9/32	5/16	1 1/4	3	4	D6445280	D6445284
5/16	5/16	1/2	2	4	D6442310	D6442314
5/16	5/16	3/4	2 1/2	4	D6441310	D6441314
5/16	5/16	1	4	4	D6446310	D6446314
5/16	5/16	1 1/8	3	4	D6443310	D6443314
5/16	5/16	1 3/8	3	4	D6445310	D6445314
5/16	5/16	1 1/2	6	4	D6447310	D6447314
5/16	5/16	1 5/8	4	4	D6444310	D6444314
3/8	3/8	5/8	2	4	D6442370	D6442374
3/8	3/8	7/8	2 1/2	4	D6441370	D6441374
3/8	3/8	1	4	4	D6446370	D6446374
3/8	3/8	1 1/8	3	4	D6443370	D6443374
3/8	3/8	1 3/8	3	4	D6445370	D6445374
3/8	3/8	1 1/2	6	4	D6447370	D6447374
3/8	3/8	1 3/4	4	4	D6444370	D6444374
3/8	3/8	3	6	4	D6448370	D6448374
1/2	1/2	5/8	2 1/2	4	D6442500	D6442504
1/2	1/2	1	3	4	D6441500	D6441504
1/2	1/2	1	4	4	D6446500	D6446504
1/2	1/2	1 1/2	3 1/2	4	D6445500	D6445504
1/2	1/2	1 1/2	6	4	D6447500	D6447504
1/2	1/2	2	4	4	D6443500	D6443504
1/2	1/2	3	6	4	D6444500	D6444504
5/8	5/8	7/8	3	4	D6442620	D6442624
5/8	5/8	1 1/4	3 1/2	4	D6441620	D6441624
5/8	5/8	2	6	4	D6446620	D6446624
5/8	5/8	2 1/8	4 5/8	4	D6443620	D6443624
5/8	5/8	3	6	4	D6444620	D6444624
3/4	3/4	1	3	4	D6442750	D6442754
3/4	3/4	1 1/2	4	4	D6441750	D6441754
3/4	3/4	2	6	4	D6446750	D6446754

Additional Sizes On Pages 105 & 107

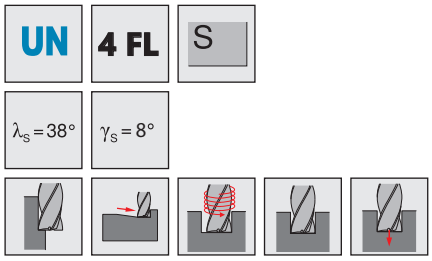
Application Range:

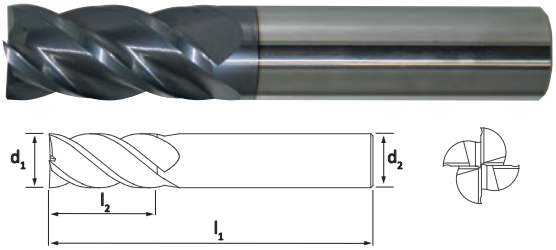
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Steels





Tolerances

Shank:	1/32” - 1” = -.0001/-.0004
Cutting Dia:	1/32” - 7/64” = +/-.0005
Cutting Dia:	1/8” - 1” = +.000/-.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
3/4	3/4	2 1/4	5	4	D6443750	D6443754
3/4	3/4	3	6	4	D6444750	D6444754
1	1	1 3/4	4	4	D6441100	D6441104
1	1	2	6	4	D6446100	D6446104
1	1	2 1/4	5	4	D6443100	D6443104
1	1	3	6	4	D6444100	D6444104

Additional Sizes On Pages 105 & 106

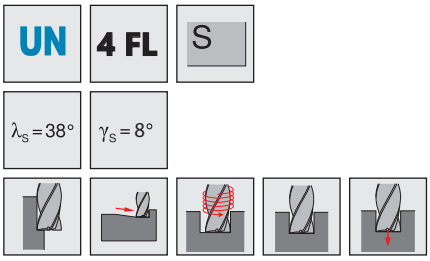
Application Range:

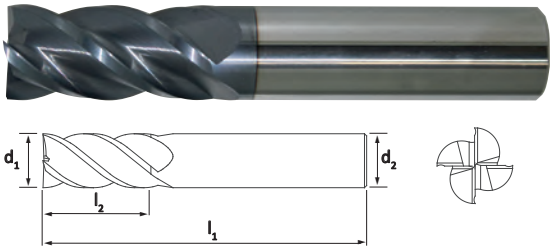
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Metric Steels





Tolerances

Shank:	1mm - 25mm = -.0025/-.0102
Cutting Dia:	1mm - 25mm = +/-.0127
Chamfer:	3mm - 25mm = +.000/-.0508

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1.0mm	3.0mm	2.0mm	38.0mm	4	D64420390	D64420394
1.0mm	3.0mm	4.0mm	38.0mm	4	D64410390	D64410394
1.5mm	3.0mm	3.0mm	38.0mm	4	D64420590	D64420594
1.5mm	3.0mm	5.0mm	38.0mm	4	D64410590	D64410594
2.0mm	3.0mm	4.0mm	38.0mm	4	D64420780	D64420784
2.0mm	3.0mm	8.0mm	38.0mm	4	D64410780	D64410784
2.5mm	3.0mm	5.0mm	38.0mm	4	D64420980	D64420984
2.5mm	3.0mm	10.0mm	38.0mm	4	D64410980	D64410984
3.0mm	3.0mm	6.0mm	38.0mm	4	D64421180	D64421184
3.0mm	3.0mm	12.0mm	38.0mm	4	D64411180	D64411184
3.5mm	4.0mm	7.0mm	50.0mm	4	D64421370	D64421374
3.5mm	4.0mm	12.0mm	50.0mm	4	D64411370	D64411374
4.0mm	4.0mm	8.0mm	50.0mm	4	D64421570	D64421574
4.0mm	4.0mm	14.0mm	50.0mm	4	D64411570	D64411574
4.5mm	6.0mm	9.5mm	63.0mm	4	D64421770	D64421774
4.5mm	6.0mm	16.0mm	63.0mm	4	D64411770	D64411774
5.0mm	6.0mm	10.0mm	63.0mm	4	D64421960	D64421964
5.0mm	6.0mm	16.0mm	63.0mm	4	D64411960	D64411964
6.0mm	6.0mm	12.0mm	63.0mm	4	D64422360	D64422364
6.0mm	6.0mm	16.0mm	63.0mm	4	D64412360	D64412364

Application Range:

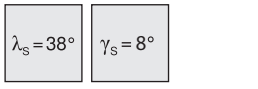
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

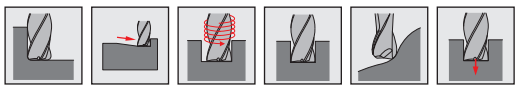
Feeds & Speeds Available on Page 121

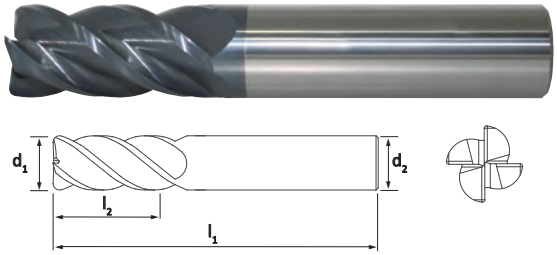
Series D644

4 Flute Radius Steels









Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
1/8	1/8	1/4	1 1/2	0.010	4	D6442120/10	D6442124/10
1/8	1/8	1/4	1 1/2	0.015	4	D6442120/15	D6442124/15
1/8	1/8	1/4	1 1/2	0.020	4	D6442120/20	D6442124/20
1/8	1/8	1/4	1 1/2	0.030	4	D6442120/30	D6442124/30
1/8	1/8	1/4	1 1/2	0.045	4	D6442120/45	D6442124/45
1/8	1/8	1/2	1 1/2	0.010	4	D6441120/10	D6441124/10
1/8	1/8	1/2	1 1/2	0.015	4	D6441120/15	D6441124/15
1/8	1/8	1/2	1 1/2	0.020	4	D6441120/20	D6441124/20
1/8	1/8	1/2	1 1/2	0.030	4	D6441120/30	D6441124/30
1/8	1/8	1/2	1 1/2	0.045	4	D6441120/45	D6441124/45
1/8	1/8	1	3	0.010	4	D6444120/10	D6444124/10
1/8	1/8	1	3	0.015	4	D6444120/15	D6444124/15
1/8	1/8	1	3	0.020	4	D6444120/20	D6444124/20
1/8	1/8	1	3	0.030	4	D6444120/30	D6444124/30
1/8	1/8	1	3	0.045	4	D6444120/45	D6444124/45
3/16	3/16	3/8	2	0.010	4	D6442180/10	D6442184/10
3/16	3/16	3/8	2	0.015	4	D6442180/15	D6442184/15
3/16	3/16	3/8	2	0.020	4	D6442180/20	D6442184/20
3/16	3/16	3/8	2	0.030	4	D6442180/30	D6442184/30
3/16	3/16	3/8	2	0.045	4	D6442180/45	D6442184/45
3/16	3/16	3/8	2	0.060	4	D6442180/60	D6442184/60
3/16	3/16	5/8	2	0.010	4	D6441180/10	D6441184/10
3/16	3/16	5/8	2	0.015	4	D6441180/15	D6441184/15
3/16	3/16	5/8	2	0.020	4	D6441180/20	D6441184/20
3/16	3/16	5/8	2	0.030	4	D6441180/30	D6441184/30
3/16	3/16	5/8	2	0.045	4	D6441180/45	D6441184/45
3/16	3/16	5/8	2	0.060	4	D6441180/60	D6441184/60
3/16	3/16	1	4	0.010	4	D6446180/10	D6446184/10
3/16	3/16	1	4	0.015	4	D6446180/15	D6446184/15
3/16	3/16	1	4	0.020	4	D6446180/20	D6446184/20
3/16	3/16	1	4	0.030	4	D6446180/30	D6446184/30
3/16	3/16	1	4	0.045	4	D6446180/45	D6446184/45
3/16	3/16	1	4	0.060	4	D6446180/60	D6446184/60
3/16	3/16	1 1/8	3	0.010	4	D6444180/10	D6444184/10

Additional Sizes On Pages 110 - 117

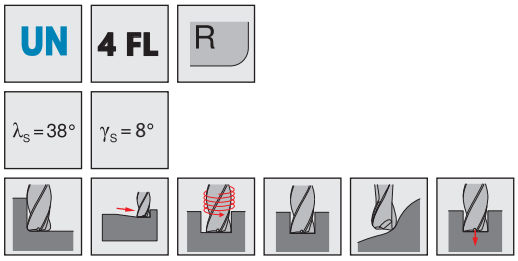
Application Range:

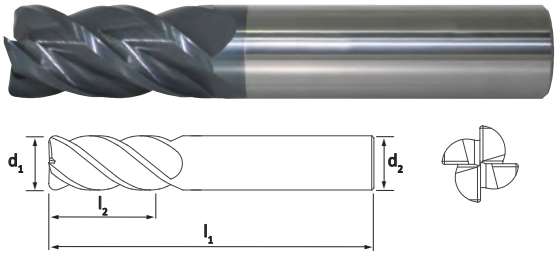
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Radius Steels





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004
Cutting Dia: 1/8" - 1" = +.000/-.002
Radius: 1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
3/16	3/16	1 1/8	3	0.015	4	D6444180/15	D6444184/15
3/16	3/16	1 1/8	3	0.020	4	D6444180/20	D6444184/20
3/16	3/16	1 1/8	3	0.030	4	D6444180/30	D6444184/30
3/16	3/16	1 1/8	3	0.045	4	D6444180/45	D6444184/45
3/16	3/16	1 1/8	3	0.060	4	D6444180/60	D6444184/60
1/4	1/4	3/8	2	0.010	4	D6442250/10	D6442254/10
1/4	1/4	3/8	2	0.015	4	D6442250/15	D6442254/15
1/4	1/4	3/8	2	0.020	4	D6442250/20	D6442254/20
1/4	1/4	3/8	2	0.030	4	D6442250/30	D6442254/30
1/4	1/4	3/8	2	0.045	4	D6442250/45	D6442254/45
1/4	1/4	3/8	2	0.060	4	D6442250/60	D6442254/60
1/4	1/4	3/8	2	0.090	4	D6442250/90	D6442254/90
1/4	1/4	3/4	2 1/2	0.010	4	D6441250/10	D6441254/10
1/4	1/4	3/4	2 1/2	0.015	4	D6441250/15	D6441254/15
1/4	1/4	3/4	2 1/2	0.020	4	D6441250/20	D6441254/20
1/4	1/4	3/4	2 1/2	0.030	4	D6441250/30	D6441254/30
1/4	1/4	3/4	2 1/2	0.045	4	D6441250/45	D6441254/45
1/4	1/4	3/4	2 1/2	0.060	4	D6441250/60	D6441254/60
1/4	1/4	3/4	2 1/2	0.090	4	D6441250/90	D6441254/90
1/4	1/4	1	4	0.010	4	D6446250/10	D6446254/10
1/4	1/4	1	4	0.015	4	D6446250/15	D6446254/15
1/4	1/4	1	4	0.020	4	D6446250/20	D6446254/20
1/4	1/4	1	4	0.030	4	D6446250/30	D6446254/30
1/4	1/4	1	4	0.045	4	D6446250/45	D6446254/45
1/4	1/4	1	4	0.060	4	D6446250/60	D6446254/60
1/4	1/4	1	4	0.090	4	D6446250/90	D6446254/90
1/4	1/4	1 1/8	3	0.010	4	D6443250/10	D6443254/10
1/4	1/4	1 1/8	3	0.015	4	D6443250/15	D6443254/15
1/4	1/4	1 1/8	3	0.020	4	D6443250/20	D6443254/20
1/4	1/4	1 1/8	3	0.030	4	D6443250/30	D6443254/30
1/4	1/4	1 1/8	3	0.045	4	D6443250/45	D6443254/45
1/4	1/4	1 1/8	3	0.060	4	D6443250/60	D6443254/60
1/4	1/4	1 1/8	3	0.090	4	D6443250/90	D6443254/90
1/4	1/4	1 1/2	4	0.010	4	D6444250/10	D6444254/10

Additional Sizes On Pages 109 & 111 - 117

Application Range:

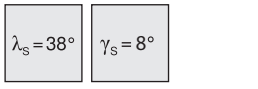
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

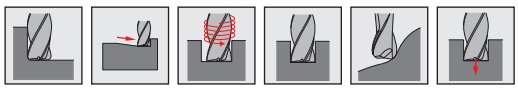
Feeds & Speeds Available on Page 121

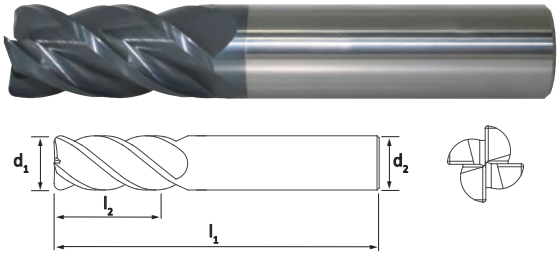
Series D644

4 Flute Radius Steels









Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
1/4	1/4	1 1/2	6	0.010	4	D6447250/10	D6447254/10
1/4	1/4	1 1/2	4	0.015	4	D6444250/15	D6444254/15
1/4	1/4	1 1/2	6	0.015	4	D6447250/15	D6447254/15
1/4	1/4	1 1/2	4	0.020	4	D6444250/20	D6444254/20
1/4	1/4	1 1/2	6	0.020	4	D6447250/20	D6447254/20
1/4	1/4	1 1/2	4	0.030	4	D6444250/30	D6444254/30
1/4	1/4	1 1/2	6	0.030	4	D6447250/30	D6447254/30
1/4	1/4	1 1/2	4	0.045	4	D6444250/45	D6444254/45
1/4	1/4	1 1/2	6	0.045	4	D6447250/45	D6447254/45
1/4	1/4	1 1/2	4	0.060	4	D6444250/60	D6444254/60
1/4	1/4	1 1/2	6	0.060	4	D6447250/60	D6447254/60
1/4	1/4	1 1/2	4	0.090	4	D6444250/90	D6444254/90
1/4	1/4	1 1/2	6	0.090	4	D6447250/90	D6447254/90
5/16	5/16	1/2	2	0.010	4	D6442310/10	D6442314/10
5/16	5/16	1/2	2	0.015	4	D6442310/15	D6442314/15
5/16	5/16	1/2	2	0.020	4	D6442310/20	D6442314/20
5/16	5/16	1/2	2	0.030	4	D6442310/30	D6442314/30
5/16	5/16	1/2	2	0.045	4	D6442310/45	D6442314/45
5/16	5/16	1/2	2	0.060	4	D6442310/60	D6442314/60
5/16	5/16	1/2	2	0.090	4	D6442310/90	D6442314/90
5/16	5/16	1/2	2	0.125	4	D6442310/12	D6442314/12
5/16	5/16	3/4	2 1/2	0.010	4	D6441310/10	D6441314/10
5/16	5/16	3/4	2 1/2	0.015	4	D6441310/15	D6441314/15
5/16	5/16	3/4	2 1/2	0.020	4	D6441310/20	D6441314/20
5/16	5/16	3/4	2 1/2	0.030	4	D6441310/30	D6441314/30
5/16	5/16	3/4	2 1/2	0.045	4	D6441310/45	D6441314/45
5/16	5/16	3/4	2 1/2	0.060	4	D6441310/60	D6441314/60
5/16	5/16	3/4	2 1/2	0.090	4	D6441310/90	D6441314/90
5/16	5/16	3/4	2 1/2	0.125	4	D6441310/12	D6441314/12
5/16	5/16	1	4	0.010	4	D6446310/10	D6446314/10
5/16	5/16	1	4	0.015	4	D6446310/15	D6446314/15
5/16	5/16	1	4	0.020	4	D6446310/20	D6446314/20
5/16	5/16	1	4	0.030	4	D6446310/30	D6446314/30
5/16	5/16	1	4	0.045	4	D6446310/45	D6446314/45

Additional Sizes On Pages 109 - 110 & 112 - 117

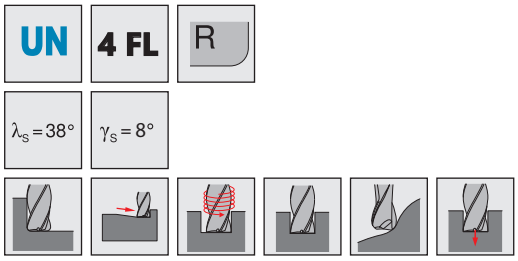
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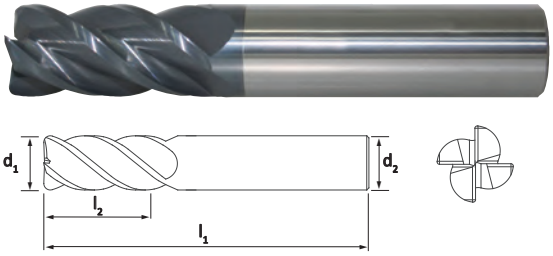
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Radius Steels





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004
Cutting Dia: 1/8" - 1" = +.000/-.002
Radius: 1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
5/16	5/16	1	4	0.060	4	D6446310/60	D6446314/60
5/16	5/16	1	4	0.090	4	D6446310/90	D6446314/90
5/16	5/16	1	4	0.125	4	D6446310/12	D6446314/12
5/16	5/16	1 1/8	3	0.010	4	D6443310/10	D6443314/10
5/16	5/16	1 1/8	3	0.015	4	D6443310/15	D6443314/15
5/16	5/16	1 1/8	3	0.020	4	D6443310/20	D6443314/20
5/16	5/16	1 1/8	3	0.030	4	D6443310/30	D6443314/30
5/16	5/16	1 1/8	3	0.045	4	D6443310/45	D6443314/45
5/16	5/16	1 1/8	3	0.060	4	D6443310/60	D6443314/60
5/16	5/16	1 1/8	3	0.090	4	D6443310/90	D6443314/90
5/16	5/16	1 1/8	3	0.125	4	D6443310/12	D6443314/12
5/16	5/16	1 1/2	6	0.010	4	D6447310/10	D6447314/10
5/16	5/16	1 1/2	6	0.015	4	D6447310/15	D6447314/15
5/16	5/16	1 1/2	6	0.020	4	D6447310/20	D6447314/20
5/16	5/16	1 1/2	6	0.030	4	D6447310/30	D6447314/30
5/16	5/16	1 1/2	6	0.045	4	D6447310/45	D6447314/45
5/16	5/16	1 1/2	6	0.060	4	D6447310/60	D6447314/60
5/16	5/16	1 1/2	6	0.090	4	D6447310/90	D6447314/90
5/16	5/16	1 1/2	6	0.125	4	D6447310/12	D6447314/12
5/16	5/16	1 5/8	4	0.010	4	D6444310/10	D6444314/10
5/16	5/16	1 5/8	4	0.015	4	D6444310/15	D6444314/15
5/16	5/16	1 5/8	4	0.020	4	D6444310/20	D6444314/20
5/16	5/16	1 5/8	4	0.030	4	D6444310/30	D6444314/30
5/16	5/16	1 5/8	4	0.045	4	D6444310/45	D6444314/45
5/16	5/16	1 5/8	4	0.060	4	D6444310/60	D6444314/60
5/16	5/16	1 5/8	4	0.090	4	D6444310/90	D6444314/90
5/16	5/16	1 5/8	4	0.125	4	D6444310/12	D6444314/12
3/8	3/8	5/8	2	0.010	4	D6442370/10	D6442374/10
3/8	3/8	5/8	2	0.015	4	D6442370/15	D6442374/15
3/8	3/8	5/8	2	0.020	4	D6442370/20	D6442374/20
3/8	3/8	5/8	2	0.030	4	D6442370/30	D6442374/30
3/8	3/8	5/8	2	0.045	4	D6442370/45	D6442374/45
3/8	3/8	5/8	2	0.060	4	D6442370/60	D6442374/60
3/8	3/8	5/8	2	0.090	4	D6442370/90	D6442374/90

Additional Sizes On Pages 109 - 111 & 113 - 117

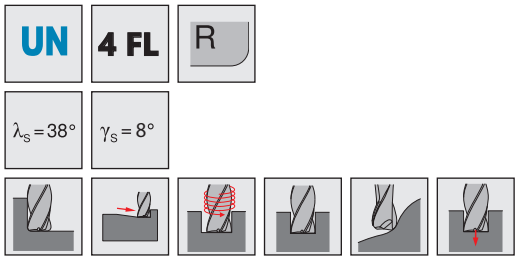
Application Range:

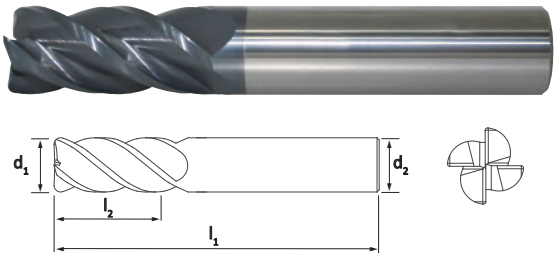
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Radius Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
3/8	3/8	5/8	2	0.125	4	D6442370/12	D6442374/12
3/8	3/8	7/8	2 1/2	0.010	4	D6441370/10	D6441374/10
3/8	3/8	7/8	2 1/2	0.015	4	D6441370/15	D6441374/15
3/8	3/8	7/8	2 1/2	0.020	4	D6441370/20	D6441374/20
3/8	3/8	7/8	2 1/2	0.030	4	D6441370/30	D6441374/30
3/8	3/8	7/8	2 1/2	0.045	4	D6441370/45	D6441374/45
3/8	3/8	7/8	2 1/2	0.060	4	D6441370/60	D6441374/60
3/8	3/8	7/8	2 1/2	0.090	4	D6441370/90	D6441374/90
3/8	3/8	7/8	2 1/2	0.125	4	D6441370/12	D6441374/12
3/8	3/8	1	4	0.010	4	D6446370/10	D6446374/10
3/8	3/8	1	4	0.015	4	D6446370/15	D6446374/15
3/8	3/8	1	4	0.020	4	D6446370/20	D6446374/20
3/8	3/8	1	4	0.030	4	D6446370/30	D6446374/30
3/8	3/8	1	4	0.045	4	D6446370/45	D6446374/45
3/8	3/8	1	4	0.060	4	D6446370/60	D6446374/60
3/8	3/8	1	4	0.090	4	D6446370/90	D6446374/90
3/8	3/8	1	4	0.125	4	D6446370/12	D6446374/12
3/8	3/8	1 1/8	3	0.010	4	D6443370/10	D6443374/10
3/8	3/8	1 1/8	3	0.015	4	D6443370/15	D6443374/15
3/8	3/8	1 1/8	3	0.020	4	D6443370/20	D6443374/20
3/8	3/8	1 1/8	3	0.030	4	D6443370/30	D6443374/30
3/8	3/8	1 1/8	3	0.045	4	D6443370/45	D6443374/45
3/8	3/8	1 1/8	3	0.060	4	D6443370/60	D6443374/60
3/8	3/8	1 1/8	3	0.090	4	D6443370/90	D6443374/90
3/8	3/8	1 1/8	3	0.125	4	D6443370/12	D6443374/12
3/8	3/8	1 1/2	6	0.010	4	D6447370/10	D6447374/10
3/8	3/8	1 1/2	6	0.015	4	D6447370/15	D6447374/15
3/8	3/8	1 1/2	6	0.020	4	D6447370/20	D6447374/20
3/8	3/8	1 1/2	6	0.030	4	D6447370/30	D6447374/30
3/8	3/8	1 1/2	6	0.045	4	D6447370/45	D6447374/45
3/8	3/8	1 1/2	6	0.060	4	D6447370/60	D6447374/60
3/8	3/8	1 1/2	6	0.090	4	D6447370/90	D6447374/90
3/8	3/8	1 1/2	6	0.125	4	D6447370/12	D6447374/12
3/8	3/8	1 3/4	4	0.010	4	D6444370/10	D6444374/10

Additional Sizes On Pages 109 - 112 & 114 - 117

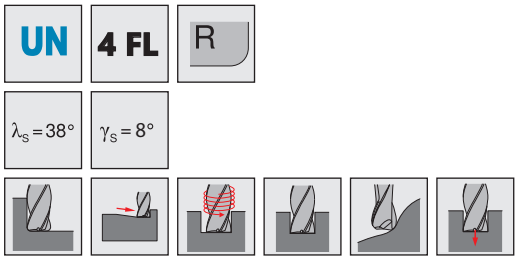
Application Range:

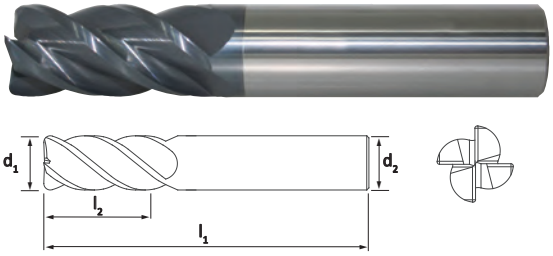
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Radius Steels





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004
Cutting Dia: 1/8" - 1" = +.000/-.002
Radius: 1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
3/8	3/8	1 3/4	4	0.015	4	D6444370/15	D6444374/15
3/8	3/8	1 3/4	4	0.020	4	D6444370/20	D6444374/20
3/8	3/8	1 3/4	4	0.030	4	D6444370/30	D6444374/30
3/8	3/8	1 3/4	4	0.045	4	D6444370/45	D6444374/45
3/8	3/8	1 3/4	4	0.060	4	D6444370/60	D6444374/60
3/8	3/8	1 3/4	4	0.090	4	D6444370/90	D6444374/90
3/8	3/8	1 3/4	4	0.125	4	D6444370/12	D6444374/12
3/8	3/8	3	6	0.010	4	D6448370/10	D6448374/10
3/8	3/8	3	6	0.015	4	D6448370/15	D6448374/15
3/8	3/8	3	6	0.020	4	D6448370/20	D6448374/20
3/8	3/8	3	6	0.030	4	D6448370/30	D6448374/30
3/8	3/8	3	6	0.045	4	D6448370/45	D6448374/45
3/8	3/8	3	6	0.060	4	D6448370/60	D6448374/60
3/8	3/8	3	6	0.090	4	D6448370/90	D6448374/90
3/8	3/8	3	6	0.125	4	D6448370/12	D6448374/12
1/2	1/2	5/8	2 1/2	0.010	4	D6442500/10	D6442504/10
1/2	1/2	5/8	2 1/2	0.015	4	D6442500/15	D6442504/15
1/2	1/2	5/8	2 1/2	0.020	4	D6442500/20	D6442504/20
1/2	1/2	5/8	2 1/2	0.030	4	D6442500/30	D6442504/30
1/2	1/2	5/8	2 1/2	0.045	4	D6442500/45	D6442504/45
1/2	1/2	5/8	2 1/2	0.060	4	D6442500/60	D6442504/60
1/2	1/2	5/8	2 1/2	0.090	4	D6442500/90	D6442504/90
1/2	1/2	5/8	2 1/2	0.125	4	D6442500/12	D6442504/12
1/2	1/2	1	3	0.010	4	D6441500/10	D6441504/10
1/2	1/2	1	4	0.010	4	D6446500/10	D6446504/10
1/2	1/2	1	3	0.015	4	D6441500/15	D6441504/15
1/2	1/2	1	4	0.015	4	D6446500/15	D6446504/15
1/2	1/2	1	3	0.020	4	D6441500/20	D6441504/20
1/2	1/2	1	4	0.020	4	D6446500/20	D6446504/20
1/2	1/2	1	3	0.030	4	D6441500/30	D6441504/30
1/2	1/2	1	4	0.030	4	D6446500/30	D6446504/30
1/2	1/2	1	3	0.045	4	D6441500/45	D6441504/45
1/2	1/2	1	4	0.045	4	D6446500/45	D6446504/45
1/2	1/2	1	3	0.060	4	D6441500/60	D6441504/60

Additional Sizes On Pages 109 - 113 & 115 - 117

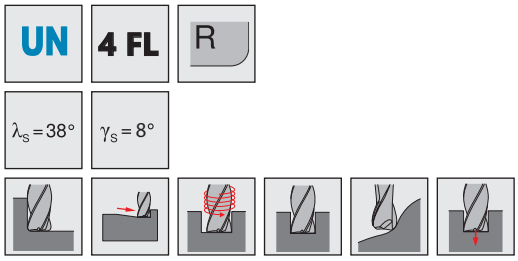
Application Range:

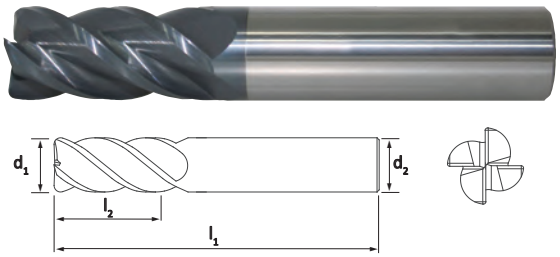
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Radius Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
1/2	1/2	1	4	0.060	4	D6446500/60	D6446504/60
1/2	1/2	1	3	0.090	4	D6441500/90	D6441504/90
1/2	1/2	1	4	0.090	4	D6446500/90	D6446504/90
1/2	1/2	1	3	0.125	4	D6441500/12	D6441504/12
1/2	1/2	1	4	0.125	4	D6446500/12	D6446504/12
1/2	1/2	1 1/2	6	0.010	4	D6447500/10	D6447504/10
1/2	1/2	1 1/2	6	0.015	4	D6447500/15	D6447504/15
1/2	1/2	1 1/2	6	0.020	4	D6447500/20	D6447504/20
1/2	1/2	1 1/2	6	0.030	4	D6447500/30	D6447504/30
1/2	1/2	1 1/2	6	0.045	4	D6447500/45	D6447504/45
1/2	1/2	1 1/2	6	0.060	4	D6447500/60	D6447504/60
1/2	1/2	1 1/2	6	0.090	4	D6447500/90	D6447504/90
1/2	1/2	1 1/2	6	0.125	4	D6447500/12	D6447504/12
1/2	1/2	2	4	0.010	4	D6443500/10	D6443504/10
1/2	1/2	2	4	0.015	4	D6443500/15	D6443504/15
1/2	1/2	2	4	0.020	4	D6443500/20	D6443504/20
1/2	1/2	2	4	0.030	4	D6443500/30	D6443504/30
1/2	1/2	2	4	0.045	4	D6443500/45	D6443504/45
1/2	1/2	2	4	0.060	4	D6443500/60	D6443504/60
1/2	1/2	2	4	0.090	4	D6443500/90	D6443504/90
1/2	1/2	2	4	0.125	4	D6443500/12	D6443504/12
1/2	1/2	3	6	0.010	4	D6444500/10	D6444504/10
1/2	1/2	3	6	0.015	4	D6444500/15	D6444504/15
1/2	1/2	3	6	0.020	4	D6444500/20	D6444504/20
1/2	1/2	3	6	0.030	4	D6444500/30	D6444504/30
1/2	1/2	3	6	0.045	4	D6444500/45	D6444504/45
1/2	1/2	3	6	0.060	4	D6444500/60	D6444504/60
1/2	1/2	3	6	0.090	4	D6444500/90	D6444504/90
1/2	1/2	3	6	0.125	4	D6444500/12	D6444504/12
5/8	5/8	1 1/4	3 1/2	0.015	4	D6441620/15	D6441624/15
5/8	5/8	1 1/4	3 1/2	0.020	4	D6441620/20	D6441624/20
5/8	5/8	1 1/4	3 1/2	0.030	4	D6441620/30	D6441624/30
5/8	5/8	1 1/4	3 1/2	0.045	4	D6441620/45	D6441624/45
5/8	5/8	1 1/4	3 1/2	0.060	4	D6441620/60	D6441624/60

Additional Sizes On Pages 109 - 114 & 116 - 117

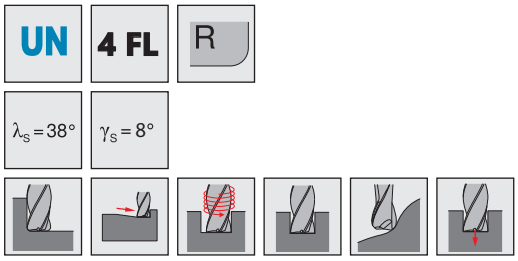
Application Range:

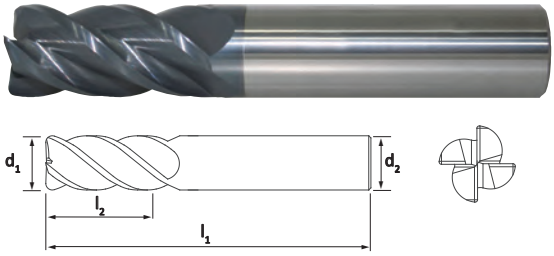
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D644

4 Flute Radius Steels





Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
5/8	5/8	1 1/4	3 1/2	0.090	4	D6441620/90	D6441624/90
5/8	5/8	1 1/4	3 1/2	0.125	4	D6441620/12	D6441624/12
5/8	5/8	2	6	0.015	4	D6446620/15	D6446624/15
5/8	5/8	2	6	0.020	4	D6446620/20	D6446624/20
5/8	5/8	2	6	0.030	4	D6446620/30	D6446624/30
5/8	5/8	2	6	0.045	4	D6446620/45	D6446624/45
5/8	5/8	2	6	0.060	4	D6446620/60	D6446624/60
5/8	5/8	2	6	0.090	4	D6446620/90	D6446624/90
5/8	5/8	2	6	0.125	4	D6446620/12	D6446624/12
5/8	5/8	2 1/8	4 5/8	0.015	4	D6443620/15	D6443624/15
5/8	5/8	2 1/8	4 5/8	0.020	4	D6443620/20	D6443624/20
5/8	5/8	2 1/8	4 5/8	0.030	4	D6443620/30	D6443624/30
5/8	5/8	2 1/8	4 5/8	0.045	4	D6443620/45	D6443624/45
5/8	5/8	2 1/8	4 5/8	0.060	4	D6443620/60	D6443624/60
5/8	5/8	2 1/8	4 5/8	0.090	4	D6443620/90	D6443624/90
5/8	5/8	2 1/8	4 5/8	0.125	4	D6443620/12	D6443624/12
5/8	5/8	3	6	0.015	4	D6444620/15	D6444624/15
5/8	5/8	3	6	0.020	4	D6444620/20	D6444624/20
5/8	5/8	3	6	0.030	4	D6444620/30	D6444624/30
5/8	5/8	3	6	0.045	4	D6444620/45	D6444624/45
5/8	5/8	3	6	0.060	4	D6444620/60	D6444624/60
5/8	5/8	3	6	0.090	4	D6444620/90	D6444624/90
5/8	5/8	3	6	0.125	4	D6444620/12	D6444624/12
3/4	3/4	1 1/2	4	0.020	4	D6441750/20	D6441754/20
3/4	3/4	1 1/2	4	0.030	4	D6441750/30	D6441754/30
3/4	3/4	1 1/2	4	0.045	4	D6441750/45	D6441754/45
3/4	3/4	1 1/2	4	0.060	4	D6441750/60	D6441754/60
3/4	3/4	1 1/2	4	0.090	4	D6441750/90	D6441754/90
3/4	3/4	1 1/2	4	0.125	4	D6441750/12	D6441754/12
3/4	3/4	2	6	0.020	4	D6446750/20	D6446754/20
3/4	3/4	2	6	0.030	4	D6446750/30	D6446754/30
3/4	3/4	2	6	0.045	4	D6446750/45	D6446754/45
3/4	3/4	2	6	0.060	4	D6446750/60	D6446754/60
3/4	3/4	2	6	0.090	4	D6446750/90	D6446754/90

Additional Sizes On Pages 109 - 115 & 117

Application Range:

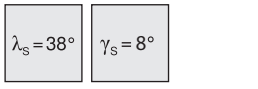
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

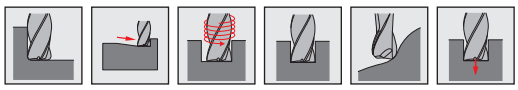
Feeds & Speeds Available on Page 121

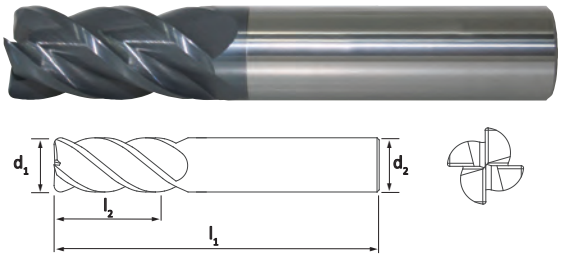
Series D644

4 Flute Radius Steels









Tolerances

Shank:	1/8" - 1" = -.0001/-.0004
Cutting Dia:	1/8" - 1" = +.000/-.002
Radius:	1/8" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	R Radius	Flutes	Uncoated	AlTiN
3/4	3/4	2	6	0.125	4	D6446750/12	D6446754/12
3/4	3/4	2 1/4	5	0.020	4	D6443750/20	D6443754/20
3/4	3/4	2 1/4	5	0.030	4	D6443750/30	D6443754/30
3/4	3/4	2 1/4	5	0.045	4	D6443750/45	D6443754/45
3/4	3/4	2 1/4	5	0.060	4	D6443750/60	D6443754/60
3/4	3/4	2 1/4	5	0.090	4	D6443750/90	D6443754/90
3/4	3/4	2 1/4	5	0.125	4	D6443750/12	D6443754/12
3/4	3/4	3	6	0.020	4	D6444750/20	D6444754/20
3/4	3/4	3	6	0.030	4	D6444750/30	D6444754/30
3/4	3/4	3	6	0.045	4	D6444750/45	D6444754/45
3/4	3/4	3	6	0.060	4	D6444750/60	D6444754/60
3/4	3/4	3	6	0.090	4	D6444750/90	D6444754/90
3/4	3/4	3	6	0.125	4	D6444750/12	D6444754/12
1	1	1 3/4	4	0.030	4	D6441100/30	D6441104/30
1	1	1 3/4	4	0.045	4	D6441100/45	D6441104/45
1	1	1 3/4	4	0.060	4	D6441100/60	D6441104/60
1	1	1 3/4	4	0.090	4	D6441100/90	D6441104/90
1	1	1 3/4	4	0.125	4	D6441100/12	D6441104/12
1	1	2	6	0.030	4	D6446100/30	D6446104/30
1	1	2	6	0.045	4	D6446100/45	D6446104/45
1	1	2	6	0.060	4	D6446100/60	D6446104/60
1	1	2	6	0.090	4	D6446100/90	D6446104/90
1	1	2	6	0.125	4	D6446100/12	D6446104/12
1	1	2 1/4	5	0.030	4	D6443100/30	D6443104/30
1	1	2 1/4	5	0.045	4	D6443100/45	D6443104/45
1	1	2 1/4	5	0.060	4	D6443100/60	D6443104/60
1	1	2 1/4	5	0.090	4	D6443100/90	D6443104/90
1	1	2 1/4	5	0.125	4	D6443100/12	D6443104/12
1	1	3	6	0.030	4	D6444100/30	D6444104/30
1	1	3	6	0.045	4	D6444100/45	D6444104/45
1	1	3	6	0.060	4	D6444100/60	D6444104/60
1	1	3	6	0.090	4	D6444100/90	D6444104/90
1	1	3	6	0.125	4	D6444100/12	D6444104/12

Additional Sizes On Pages 109 - 116

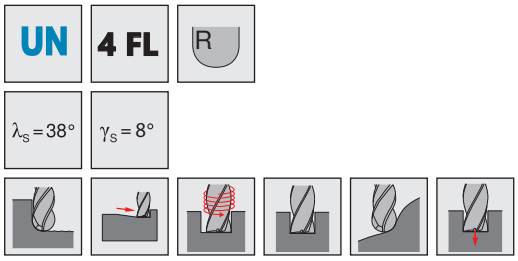
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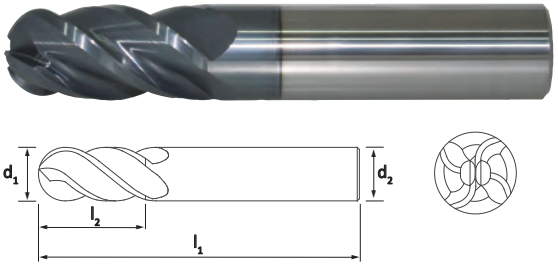
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D664

4 Flute Ball Steels





Tolerances

Shank:	1/32" - 1" = -.0001/-.0004
Cutting Dia:	1/32" - 7/64" = +/-.0005
Cutting Dia:	1/8" - 1" = +.000/-.002
Ball:	1/32" - 1" = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/32	1/8	3/32	1 1/2	4	D6641030	D6641034
3/64	1/8	9/64	1 1/2	4	D6641040	D6641044
1/16	1/8	1/8	1 1/2	4	D6642060	D6642064
1/16	1/8	3/16	1 1/2	4	D6641060	D6641064
3/32	1/8	3/16	1 1/2	4	D6642090	D6642094
3/32	1/8	9/32	1 1/2	4	D6641090	D6641094
1/8	1/8	1/4	1 1/2	4	D6642120	D6642124
1/8	1/8	1/2	1 1/2	4	D6641120	D6641124
1/8	1/8	3/4	2 1/4	4	D6643120	D6643124
1/8	1/8	3/4	3	4	D6646120	D6646124
1/8	1/8	1	3	4	D6644120	D6644124
5/32	3/16	3/8	2	4	D6642150	D6642154
5/32	3/16	1/2	2	4	D6641150	D6641154
3/16	3/16	3/8	2	4	D6642180	D6642184
3/16	3/16	5/8	2	4	D6641180	D6641184
3/16	3/16	3/4	2 1/2	4	D6643180	D6643184
3/16	3/16	1	4	4	D6646180	D6646184
3/16	3/16	1 1/8	3	4	D6644180	D6644184
1/4	1/4	3/8	2	4	D6642250	D6642254
1/4	1/4	3/4	2 1/2	4	D6641250	D6641254
1/4	1/4	1	4	4	D6646250	D6646254
1/4	1/4	1 1/8	3	4	D6643250	D6643254
1/4	1/4	1 1/2	4	4	D6644250	D6644254
1/4	1/4	1 1/2	6	4	D6647250	D6647254
5/16	5/16	1/2	2	4	D6642310	D6642314
5/16	5/16	3/4	2 1/2	4	D6641310	D6641314
5/16	5/16	1	4	4	D6646310	D6646314
5/16	5/16	1 1/8	3	4	D6643310	D6643314
5/16	5/16	1 1/2	6	4	D6647310	D6647314
5/16	5/16	1 5/8	4	4	D6644310	D6644314

Additional Sizes On Pages 119

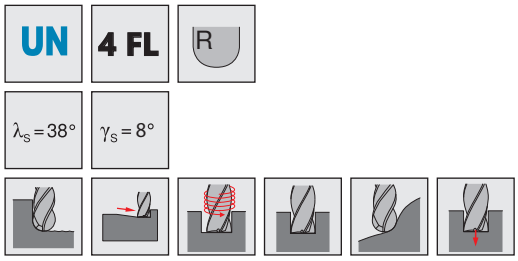
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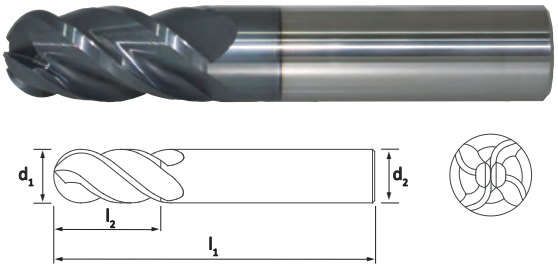
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D664

4 Flute Ball Steels





Tolerances

Shank:	1/32” - 1” = -.0001/-.0004
Cutting Dia:	1/32” - 7/64” = +/-.0005
Cutting Dia:	1/8” - 1” = +.000/-.002
Ball:	1/32” - 1” = +/-.001

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
3/8	3/8	5/8	2	4	D6642370	D6642374
3/8	3/8	7/8	2 1/2	4	D6641370	D6641374
3/8	3/8	1	4	4	D6646370	D6646374
3/8	3/8	1 1/8	3	4	D6643370	D6643374
3/8	3/8	1 1/2	6	4	D6647370	D6647374
3/8	3/8	1 3/4	4	4	D6644370	D6644374
3/8	3/8	3	6	4	D6648370	D6648374
1/2	1/2	5/8	2 1/2	4	D6642500	D6642504
1/2	1/2	1	3	4	D6641500	D6641504
1/2	1/2	1	4	4	D6646500	D6646504
1/2	1/2	1 1/2	6	4	D6647500	D6647504
1/2	1/2	2	4	4	D6643500	D6643504
1/2	1/2	3	6	4	D6644500	D6644504
5/8	5/8	7/8	3	4	D6642620	D6642624
5/8	5/8	1 1/4	3 1/2	4	D6641620	D6641624
5/8	5/8	2	6	4	D6646620	D6646624
5/8	5/8	2 1/8	4 5/8	4	D6643620	D6643624
5/8	5/8	3	6	4	D6644620	D6644624
3/4	3/4	1	3	4	D6642750	D6642754
3/4	3/4	1 1/2	4	4	D6641750	D6641754
3/4	3/4	2	6	4	D6646750	D6646754
3/4	3/4	2 1/4	5	4	D6643750	D6643754
3/4	3/4	3	6	4	D6644750	D6644754
1	1	1 3/4	4	4	D6641100	D6641104
1	1	2	6	4	D6646100	D6646104
1	1	2 1/4	5	4	D6643100	D6643104
1	1	3	6	4	D6644100	D6644104

Additional Sizes On Pages 118

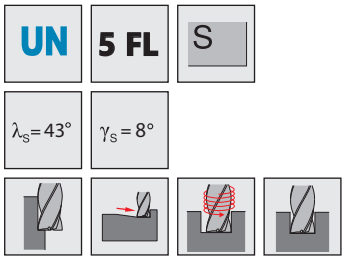
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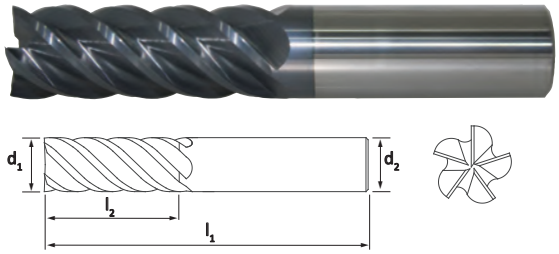
Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●		●	●	

Feeds & Speeds Available on Page 121

Series D645

5 Flute Steels





Tolerances

Shank: 1/8" - 1" = -.0001/-.0004

Cutting Dia: 1/8" - 1" = +.000/.002

d_1 Dia	d_2 Shank	l_2 LOC	l_1 OAL	Flutes	Uncoated	AlTiN
1/8	1/8	1/4	1 1/2	5	D6452120	D6452124
1/8	1/8	1/2	1 1/2	5	D6451120	D6451124
5/32	3/16	5/16	2	5	D6452150	D6452154
5/32	3/16	9/16	2	5	D6451150	D6451154
3/16	3/16	5/16	2	5	D6452180	D6452184
3/16	3/16	9/16	2	5	D6451180	D6451184
7/32	1/4	3/8	2	5	D6452210	D6452214
7/32	1/4	3/4	2 1/2	5	D6451210	D6451214
1/4	1/4	3/8	2	5	D6452250	D6452254
1/4	1/4	3/4	2 1/2	5	D6451250	D6451254
1/4	1/4	1 1/4	4	5	D6454250	D6454254
5/16	5/16	7/16	2	5	D6452310	D6452314
5/16	5/16	13/16	2 1/2	5	D6451310	D6451314
3/8	3/8	1/2	2	5	D6452370	D6452374
3/8	3/8	1	2 1/2	5	D6451370	D6451374
3/8	3/8	1 1/2	4	5	D6454370	D6454374
1/2	1/2	5/8	2 1/2	5	D6452500	D6452504
1/2	1/2	1 1/4	3	5	D6451500	D6451504
1/2	1/2	2	4	5	D6453500	D6453504
5/8	5/8	3/4	3	5	D6452620	D6452624
5/8	5/8	1 5/8	3 1/2	5	D6451620	D6451624
5/8	5/8	2 1/2	5	5	D6453620	D6453624
3/4	3/4	1	3	5	D6452750	D6452754
3/4	3/4	1 5/8	4	5	D6451750	D6451754
3/4	3/4	3 1/4	6	5	D6454750	D6454754
1	1	1 1/4	3	5	D6452100	D6452104
1	1	2	4	5	D6451100	D6451104
1	1	3 1/4	6	5	D6454100	D6454104

Application Range:

Steel	Tool Steel	Hardened Steel	Stainless Steel	Titanium	High Temp Alloys	Cast Iron	Aluminum	Aluminum High Silicone	Copper, Brass	Plastic, Composites
●	●		●	●	●	●				

Feeds & Speeds Available on Page 121

MATERIAL	SPEED (S.F.M.)	END MILL DIAMETER		
		UP TO 1/4"	UP TO 1/2"	UP TO 1"
		FEED PER TOOTH (INCHES)		
Aluminum/Aluminum Alloys	600-1200	.0002-.0020	.0020-.0040	.0060-.0100
Brass/Bronze	200-350	.0005-.0020	.0020-.0030	.0040-.0080
Copper/Copper Alloys	350-900	.0005-.0020	.0020	.0020-.0060
Iron-Cast (soft)	200-500	.0005-.0020	.0020-.0030	.0030-.0080
Iron-Cast (hard)	80-350	.0003-.0008	.0008-.0020	.0020-.0040
Iron-Ductile	80-400	.0002-.0010	.0010-.0020	.0020-.0060
Iron-Malleable	200-600	.0002-.0010	.0010-.0030	.0030-.0070
Magnesium/Magnesium Alloys	800-1400	.0005-.0020	.0020-.0060	.0040-.0100
Monel/High Nickel Steel	150-300	.0002-.0010	.0010-.0020	.0020-.0040
Plastics	600-1200	.0006-.0030	.0030-.0060	.0060-.0150
Plastic-Glass Filled	300-800	.0006-.0030	.0030-.0040	.0040-.0120
Refractory Alloys	80-400	.0002-.0010	.0010	.0010-.0020
Steel-Low Carbon	200-500	.0002-.0010	.0010-.0030	.0030-.0070
Steel-Medium Carbon	100-250	.0004-.0015	.0015-.0020	.0020-.0050
Steel-Hardened	25-120	.0002-.0005	.0005-.0010	.0010-.0030
Steel-Mold	200-350	.0002-.0010	.0010-.0020	.0020-.0060
Steel-Tool	100-300	.0002-.0010	.0010-.0020	.0020-.0060

ALL DESIGN-RITE END MILLS ARE CENTER CUTTING

- Lower Radial Width of Cut – Higher range of recommended surface speeds should be used
- Greater Radial Width of Cut – Lower range of recommended surface speeds should be used
- For Slotting Applications – Speeds should be reduced by approximately 20% of lowest range value
- For Peripheral Applications – Axial depth of cut not to exceed 1-1/2 times the cutter diameter
- Long & X-Long End Mills – Reduce feed per tooth by 50%
- ZrN & AlTiN Coating – Inease S.F.M. by 25% to 40%

S.F.M./R.P.M. CONVERSION CHART

	DIAMETER														
S.F.M.	1/16	3/32	1/8	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
50	3,050	2,040	1,530	1,220	1,020	875	765	610	510	440	380	310	250	220	190
75	4,580	3,060	2,290	1,830	1,530	1,310	1,150	920	760	660	570	460	380	330	285
100	6,100	4,080	3,050	2,450	2,040	1,750	1,530	1,220	1,020	870	760	610	510	440	385
125	7,630	5,100	3,820	3,050	2,550	2,180	1,920	1,530	1,270	1,100	950	770	630	550	475
150	9,150	6,120	4,570	3,670	3,060	2,620	2,290	1,830	1,530	1,310	1,140	920	760	660	575
175	10,680	7,140	5,350	4,270	3,570	3,060	2,680	2,140	1,780	1,540	1,330	1,080	880	770	665
200	12,200	8,150	6,100	4,900	4,070	3,500	3,100	2,450	2,000	1,750	1,500	1,200	1,000	875	750
300	18,500	12,200	9,200	7,300	6,100	5,250	4,600	3,700	3,100	2,600	2,300	1,800	1,500	1,300	1,100
400	24,500	16,300	12,200	9,800	8,150	7,000	6,100	4,900	4,100	3,500	3,050	2,450	2,050	1,750	1,525
500	30,500	20,400	15,300	12,200	10,200	8,700	7,600	6,100	5,100	4,400	3,800	3,100	2,500	2,200	1,900
750	45,800	36,700	22,900	18,300	15,300	13,100	11,500	9,200	7,600	6,550	5,700	4,600	3,800	3,770	2,850
1,000	–	40,800	30,600	24,500	20,400	17,500	15,300	12,200	10,200	8,750	7,650	6,100	5,100	4,400	3,800
1,500	–	–	45,900	36,700	30,600	26,200	22,900	18,300	15,300	13,150	11,300	9,200	7,600	6,500	5,700
2,000	–	–	–	49,000	40,800	35,000	30,600	24,400	20,400	17,500	15,300	12,200	10,200	8,700	7,600
3,000	–	–	–	–	–	52,500	45,900	36,600	30,600	26,250	22,900	18,300	15,300	13,100	11,400
4,000	–	–	–	–	–	–	–	48,800	40,800	35,000	30,600	24,400	20,400	17,500	15,200
5,000	–	–	–	–	–	–	–	–	–	43,700	38,200	30,600	25,500	21,800	19,000

Notes

Notes



New Coating

PROMAX

POWER LAYER

PROMAX Premium

DESIGN-RITE XL

SPT SUNCOAST INC. PRECISION TOOLS
ESTABLISHED 1963

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