

LAKE SHORE CARBIDE .COM



2010



New For 2010:

- Variable Helix- Stainless
- Hardmill Threadmills
- High Feed Mills
- Double End Spot Drill

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www.lakeshorecarbide.com

NEW TOOLS

2010



Variable Flute - Stainless



Hardmill Threadmill



High Feed Mill



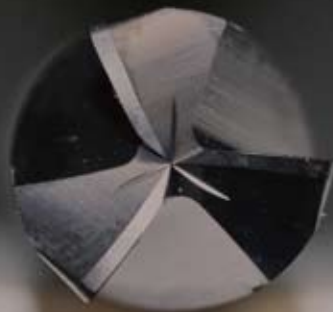
Double End Spot Drill

"Your cutting tools are phenomenal! From the Aluminum variable flute to the 4 flute roughing endmills, I have never experienced such finely tuned, well thought out, superior workmanship anywhere! (and at such a reasonable price!)"

On the Aluminum variable flute endmills, you are right on the mark with geometry, surface finish, coating, and right down to the latest R.003 end prep. You definitely have a passion for doing things right, and I can't believe the performance of your cutters.

You guys keep up the great work!"

(Arizona Manufacturer)



New for 2010



Cutting Tool Videos

VF-Steel Demo

VF-Aluminum Demo

Hardmill Demo

Threadmill Demo

New for 2010 will be the Tooling Demo Center. Watch our high performance cutters in action in our media player at www.lakeshorecarbide.com.

New videos will be released regularly.



High Performance Carbide Tools

6	Variable Flute (Steel) - 4FL - Standard Length	<	
7	Variable Flute (Steel) - 4FL - Ballnose Stand Length	<	
8	Variable Flute (Steel)- 4FL - Stub, Long & Long-reach	<	
9	Variable Flute (Steel) - Square Corner - Speeds Chart	<	
10	Variable Flute (Steel) -5 Flt Stainless	<	NEW
11	Variable Flute (Steel) -5 Flt Stainless - Speed & Feeds	<	
12	6 Flute - Standard Length	<	
13	6 Flute - Speeds and Feeds Chart	<	
14	Hard Mill - 6FL - Square Corner & Radius Corner	<	
15	Variable Flute (Alum) - 2FL, 3FL, Standard - UNCTD/CTD	<	
16	Variable Flute (Alum) - 2FL - Square & Ball - UNCTD/CTD	<	
17	Variable Flute (Alum) - 2FL, 3FL, Long - UNCTD/CTD	<	
18	Variable Flute (Alum) - 2FL & 3FL - Rougher/Finisher	<	
19	Variable Flute (Alum) - 2FL - Sq & Ball - Rougher/Finisher	<	
20	Variable Flute (Alum) - 2FL, 3FL, Long - Rougher/Finisher	<	
21	Variable Flute (Alum) - Speeds and Feeds Chart	<	
22	Carbide Roughers - 4FL - Standard, Long Length	<	
23	Carbide Rougher HD - 4FL - Variable Helix	<	
24	45 & 60 Degree Helix Endmill - 3FL	<	
25	Threadmill - UNC/UNF	<	
26	Threadmill - Metric	<	
27	Threadmill - NPT/NPTF	<	
28	Threadmill - BSTP/BSPP	<	
29	Threadmill - Coolant Thru - Variable Helix	<	
30	Threadmill - Hardmill	<	New
31	Threadmill - Speeds and Feeds Chart	<	
32	High Feed Mill - Standard & Coolant Thru	<	New
33	High Feed Mill - Standard & Coolant Thru	<	New

Standard Carbide* Tools

34	Spot Drills - Carbide - 90° & 120° Included	<	
35	Spot Drills - Carbide - 90° & 120° DBL End	<	New
36	DrillMill - Carbide - 2FL & 4FL - 60° Included	<	
37	DrillMill - Carbide - 2FL & 4FL - 90° & 120° Included	<	
38	RadPac and ThreadPac - Tool Kits	<	
39	Chamfer Cutters - 60°, 82° & 90° - Spiral Flute	<	
40	Stub Endmill - Square - 2FL & 4FL	<	
41	Stub Endmill - Square - 2FL & 4FL - AlTiN	<	
42	Stub Endmill - Ballnose - 2FL & 4FL	<	
43	Stub Endmill - Ballnose - 2FL & 4FL - AlTiN	<	
44	Stub Endmill - Square - DBL End - 2FL & 4FL	<	
45	Stub Endmill - Square - DBL End - 2FL & 4FL - AlTiN	<	
46	Standard Endmill - Square - 2FL, 3FL & 4FL	<	
47	Standard Endmill - Square - 2FL, 3FL & 4FL - AlTiN	<	
48	Standard Endmill - Ballnose - 2FL, 3FL & 4FL	<	
49	Standard Endmill - Ballnose - 2FL, 3FL & 4FL - AlTiN	<	
50	Standard Endmill - Square - DBL End - 2FL & 4FL	<	
51	Standard Endmill - Sq - DBL End - 2FL & 4FL - AlTiN	<	
52	Long Endmill - Square - 2FL & 4FL	<	
53	Long Endmill - Square - 2FL & 4FL - AlTiN	<	
54	Long Endmill - Ballnose - 2FL & 4FL	<	
55	Long Endmill - Ballnose - 2FL & 4FL - AlTiN	<	
56	Metric Endmill - Square - 4FL	<	
57	Metric Endmill - Square - 4FL - AlTiN	<	
58	Slitting Saws	<	New
59	Tool Extensions	<	New
60	Internal Hex Broach - HSS*	<	

Variable Helix (Steel) - Standard Length

Variable Helix (Steel) - Standard Ballnose

AlTiN

Heavy Duty core construction combined with variable helix design creates a rigid tool that runs virtually chatter free. AlTiN Coated

MTMXB - Std. Ballnose

MTMX - Std. Length



Part # 4 FL	Shank Diameter	Length Of Cut	Cutter Diameter	Rad Size	Overall Length	Tool Price
18mtmx	1/8	3/8	1/8	.010-.015	1 1/2	\$12.58
532mtmx	3/16	7/16	5/32	.010-.015	2	\$14.09
316mtmx	3/16	7/16	3/16	.010-.015	2	\$14.09
732mtmx	1/4	7/16	7/32	.015-.020	2 1/2	\$17.00
14mtmx	1/4	5/8	1/4	.015-.020	2 1/2	\$18.53
932mtmx	5/16	5/8	9/32	.015-.020	2 1/2	\$21.83
516mtmx	5/16	3/4	5/16	.015-.020	2 1/2	\$22.77
38mtmx	3/8	7/8	3/8	.015-.020	2 1/2	\$26.97
716mtmx	7/16	1	7/16	.015-.020	2 3/4	\$33.40
12mtmx	1/2	1	1/2	.025-.030	3	\$41.56
58mtmx	5/8	1 1/4	5/8	.030-.035	3 1/2	\$70.60
34mtmx	3/4	1 1/2	3/4	.030-.035	4	\$100.34
1mtmx	1	1 1/2	1	.030-.035	4	\$144.57

Part # 4 FL	Shank Diameter	Length Of Cut	Cut Diam	Overall Length	Tool Price
18mtmxb	1/8	3/8	1/8	1 1/2	\$17.36
532mtmxb	3/16	7/16	5/32	2	\$18.87
316mtmxb	3/16	7/16	3/16	2	\$18.87
732mtmxb	1/4	7/16	7/32	2 1/2	\$23.56
14mtmxb	1/4	5/8	1/4	2 1/2	\$23.56
932mtmxb	5/16	5/8	9/32	2 1/2	\$26.86
516mtmxb	5/16	3/4	5/16	2 1/2	\$26.86
38mtmxb	3/8	7/8	3/8	2 1/2	\$29.91
716mtmxb	7/16	1	7/16	2 3/4	\$37.69
12mtmxb	1/2	1	1/2	3	\$53.36
58mtmxb	5/8	1 1/4	5/8	3 1/2	\$86.22
34mtmxb	3/4	1 1/2	3/4	4	\$121.22
1mtmxb	1	1 1/2	1	4	\$176.93

Now available as a coolant thru cutter!

SEE WEBSITE FOR PRICE DISCOUNTS

Weldon flats available upon request.

Weldon flats available upon request.

Tolerance all sizes: Diameter- +.000/-.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Tolerance all sizes: Diameter- +.000/-.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Variable Helix (Steel) - Stub, Long & Long Reach

AlTiN

MTMXS - Stub Length



Part # 4 FL	Shank Diameter	Length Of Cut	Cut Diam	Rad Size	Overall Length	Tool Price
14mtmxs	1/4	3/8	1/4	.015-.020	2	\$15.91
516mtmxs	5/16	3/8	5/16	.015-.020	2	\$17.89
38mtmxs	3/8	1/2	3/8	.015-.020	2	\$23.29
12mtmxs	1/2	5/8	1/2	.025-.030	2 1/2	\$33.45
58mtmxs	5/8	3/4	5/8	.030-.035	3	\$55.18
34mtmxs	3/4	7/8	3/4	.030-.035	4	\$92.35
1mtmxs	1	1	1	.030-.035	4	\$138.57

MTMXL - Long Length



Part # 4 FL	Shank Diameter	Length Of Cut	Cut Diam	Rad Size	Overall Length	Tool Price
14mtmxl	1/4	1 1/4	1/4	.015-.020	3	\$30.01
38mtmxl	3/8	1 1/4	3/8	.015-.020	3	\$42.30
12mtmxl	1/2	2	1/2	.025-.030	4	\$64.47
58mtmxl	5/8	2 1/4	5/8	.030-.035	5	\$105.29
34mtmxl	3/4	2 1/4	3/4	.030-.035	5	\$139.08

MTMX2L - Long Reach



Part # 4 FL	Shank Diameter	Length Of Cut	Cut Diam	Rad Size	Overall Length	Tool Price
14mtmx2l	1/4	5/8	1/4	.015-.020	4	\$29.80
38mtmx2l	3/8	7/8	3/8	.015-.020	4	\$39.88
12mtmx2l	1/2	1	1/2	.025-.030	6	\$70.84
58mtmx2l	5/8	1 1/4	5/8	.030-.035	6	\$105.03
34mtmx2l	3/4	1 1/2	3/4	.030-.035	6	\$138.70

Weldon flats available upon request.

Variable Helix (Steel) - Square Corner

AlTiN

MTMXSQ - SQ. Corner Stand. Length



Part # 4 FL	Shank Diameter	Length Of Cut	Cut Diam	Overall Length	Tool Price
14mtmxsq	1/4	5/8	1/4	2 1/2	\$18.53
516mtmxsq	5/16	3/4	5/16	2 1/2	\$22.77
38mtmxsq	3/8	7/8	3/8	2 1/2	\$26.97
716mtmxsq	7/16	1	7/16	2 3/4	\$33.40
12mtmxsq	1/2	1	1/2	3	\$41.56
58mtmxsq	5/8	1 1/4	5/8	3 1/2	\$70.60
34mtmxsq	3/4	1 1/2	3/4	4	\$100.34
1mtmxsq	1	1 1/2	1	4	\$144.57

Starting Recommended Speeds and Feeds

Materials	Profile Width = 1/4 x Diameter			Slotting Depth = 1 x Diameter		
	Steel	Cast Iron	Tool Steel	Steel	Cast Iron	Tool Steel
Diameter	600-750 SFM	500-650 SFM	425-525 SFM	475-660 SFM	400-550 SFM	325-425 SFM
1/4	.0014	.0014	.0013	.0012	.0013	.0011
5/16	.0017	.0017	.0016	.0013	.0016	.0013
3/8	.002	.0022	.002	.0016	.0019	.0015
1/2	.0026	.0029	.0025	.0023	.0025	.002
5/8	.0028	.0032	.0028	.0024	.0027	.0022
3/4	.0032	.0036	.0031	.0025	.0031	.0025
1	.0038	.0043	.0038	.0032	.0038	.0032

NOTE:

- These are approximate numbers, a good starting point.
- Coolant application is an important part of using the variable flute geometries
- Tools perform best when balanced.

TECH NOTES - WARNING! – Due to the high metal removal rates of these tools, it is necessary to make all work holding components as rigid as possible!

MTMX5 - 5 Flute - Std. Length

NEW for 2010



This 5 flute variable helix cutter is designed for use in stainless steels and exotic materials. This cutter will reduce work hardening, and impact resistance common to high strength materials. This tool can be used for roughing or finishing with reduced harmonics and longer tool life in stainless and aerospace materials.

Part # 5 FL	Shank Diameter	Length Of Cut	Cutter Diameter	Rad Size	Overall Length	Tool Price
18mtmx5	1/8	3/8	1/8	.010-.015	1 1/2	\$12.58
532mtmx5	3/16	7/16	5/32	.010-.015	2	\$14.09
316mtmx5	3/16	7/16	3/16	.010-.015	2	\$14.09
732mtmx5	1/4	7/16	7/32	.015-.020	2 1/2	\$17.00
14mtmx5	1/4	5/8	1/4	.015-.020	2 1/2	\$18.53
932mtmx5	5/16	5/8	9/32	.015-.020	2 1/2	\$21.83
516mtmx5	5/16	3/4	5/16	.015-.020	2 1/2	\$22.77
38mtmx5	3/8	7/8	3/8	.015-.020	2 1/2	\$26.97
716mtmx5	7/16	1	7/16	.015-.020	2 3/4	\$33.40
12mtmx5	1/2	1	1/2	.025-.030	3	\$41.56
58mtmx5	5/8	1 1/4	5/8	.030-.035	3 1/2	\$70.60
34mtmx5	3/4	1 1/2	3/4	.030-.035	4	\$100.34
1mtmx5	1	1 1/2	1	.030-.035	4	\$144.57

Starting Recommended Speeds and Feeds

Materials	Profile			Slotting		
	Radial Depth = .5 x Diameter Axial Depth = 1 x Diameter			Axial Depth = .5 x Diameter		
	Stainless 300 Series 304, 310, 316	Stainless 400 Series 409, 430, 436	Stainless 15-5 17-4PH	Stainless 300 Series 304, 310, 316	Stainless 400 Series 409, 430, 436	Stainless 15-5 17-4PH
Diameter	300 SFM	250 SFM	250 SFM	240 SFM	200 SFM	200 SFM
1/4	.001	.001	.001	.0008	.0008	.0008
5/16	.0015	.0015	.0014	.0012	.0012	.0011
3/8	.002	.002	.0019	.0016	.0016	.0015
1/2	.0025	.0025	.0022	.002	.002	.0018
5/8	.003	.003	.0027	.0025	.0025	.0022
3/4	.0035	.0035	.003	.0028	.0028	.0024
1	.0042	.0042	.004	.0034	.0034	.0032

NOTE:

- These are approximate numbers, a good starting point.
- Coolant application is an important part of using the Variable Flute Geometries.
- Tools perform best when balanced.

SEE WEBSITE FOR PRICE DISCOUNTS

Tolerance all sizes: Diameter- +.000/-.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Tolerance all sizes: Diameter- +.000/-.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

This 6 flute tool is specifically designed for high performance profile milling.

Series:

780



Part #	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Tool Price
7800014	1/4	3/4	1/4	2 1/2	\$22.44
7800516	5/16	13/16	5/16	2 1/2	\$27.52
7800038	3/8	1	3/8	2 1/2	\$30.93
7800716	7/16	1	7/16	2 1/2	\$36.38
7800012	1/2	1 1/4	1/2	3	\$41.32
7800058	5/8	1 5/8	5/8	3 1/2	\$67.78
7800034	3/4	1 5/8	3/4	4	\$92.79
7800001	1	2	1	4	\$148.18

TECH NOTES – For best performance, use 5-30% radial depth of cut. 31% OR MORE IS NOT RECOMMENDED.

Now available as a coolant thru cutter!

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Recommended Speeds and Feeds

Materials	Carbon Steel	Stainless Steel	Alloy Steel	Nickel/High Temp	Titanium and Alloys
Diameter	(275-750 SFM)	(90-450 SFM)	(200-600 SFM)	(45-115 SFM)	(250-400 SFM)
1/4	.003	.002	.0008-.001	.0015-.002	.001-.002
3/8	.003	.002	.0008-.001	.0015-.002	.001-.002
1/2	.004	.0025-.003	.001-.002	.002-.0025	.001-.0025
5/8	.005	.003-.004	.0015-.003	.002-.0035	.002-.003
3/4	.006	.004-.005	.002-.004	.002-.004	.0025-.004
1	.007	.005-.006	.003-.005	.003-.005	.004-.006

NOTE:

- These are approximate numbers, a good starting point.
- Coolant application is an important part of using the 6 - Flute Tool
- Tools perform best when balanced.

Due to fluctuating carbide costs, prices subject to change.

Sharp Corner



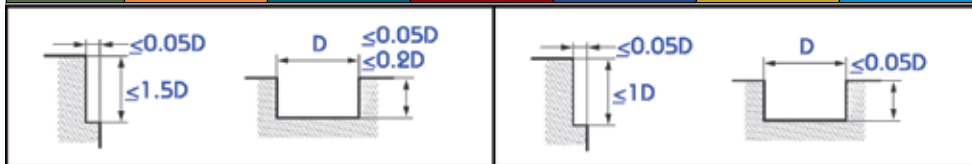
Part #	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Tool Price
14HRDML	1/4	5/8	1/4	2 1/2	\$25.35
516HRDML	5/16	3/4	5/16	2 1/2	\$32.22
38HRDML	3/8	7/8	3/8	2 1/2	\$38.84
12HRDML	1/2	1	1/2	3	\$54.08
58HRDML	5/8	1 1/4	5/8	3 1/2	\$80.15
34HRDML	3/4	1 5/8	3/4	4	\$110.51

Corner Rad



Part #	Tool Diameter	Flute Length	Corner Radius	Shank Diameter	Overall Length	Tool Price
14HRDMLR	1/4	5/8	1/4	.010R	2 1/2	\$28.35
516HRDMLR	5/16	3/4	5/16	.010R	2 1/2	\$37.22
38HRDMLR	3/8	7/8	3/8	.010R	2 1/2	\$42.84
12HRDMLR	1/2	1	1/2	.020R	3	\$59.08
58HRDMLR	5/8	1 1/4	5/8	.020R	3 1/2	\$88.15
34HRDMLR	3/4	1 5/8	3/4	.030R	4	\$121.51

Material	Tool Steel (-55HRC) AISI H13 ETC		Hardened Steel (55-60HRC) AISI D2 ETC		Hardened Steel (60-65HRC) AISI D2 ETC		
	Dia. (Inch)	Revolution (min ⁻¹)	Feed Rate (in/min)	Revolution (min ⁻¹)	Feed Rate (in/min)	Revolution (min ⁻¹)	Feed Rate (in/min)
	1/4	16000	228	8000	114	4000	55
	5/16	12000	228	6000	114	3000	55
	3/8	9500	224	4800	114	2400	55
	1/2	8000	188	4000	95	2000	47
	5/8	6000	141	3000	70	1500	35
	3/4	4800	114	2400	55	1200	28



VARIABLE HELIX

350, 360



Part #	Part #	Tool Diameter	Flute Length	Shank Diameter	Corner Radius	Overall Length	Tool Price
350018	360018	1/8	1/2	1/8	.003-.005	1 1/2	\$12.85
350316	360316	3/16	5/8	3/16	.003-.005	2	\$17.20
350014	360014	1/4	3/4	1/4	.003-.005	2 1/2	\$23.24
350516	360516	5/16	3/4	5/16	.003-.005	2 1/2	\$27.51
350038	360038	3/8	1	3/8	.003-.005	2 1/2	\$32.25
350012	360012	1/2	1 1/4	1/2	.005-.007	3	\$39.93
350058	360058	5/8	1 5/8	5/8	.005-.007	3 1/2	\$66.03
350034	360034	3/4	1 3/4	3/4	.005-.007	4	\$102.41
350001	360001	1	1 3/4	1	.005-.007	4	\$157.27

VARIABLE HELIX 350X, 360X ZrN



2 FL	3 FL	Diameter	Length	Diameter	Radius	Length	Price
350018X	360018X	1/8	1/2	1/8	.003-.005	1 1/2	\$14.51
350316X	360316X	3/16	5/8	3/16	.003-.005	2	\$18.87
350014X	360014X	1/4	3/4	1/4	.003-.005	2 1/2	\$25.87
350516X	360516X	5/16	3/4	5/16	.003-.005	2 1/2	\$31.52
350038X	360038X	3/8	1	3/8	.003-.005	2 1/2	\$36.70
350012X	360012X	1/2	1 1/4	1/2	.005-.007	3	\$45.46
350058X	360058X	5/8	1 5/8	5/8	.005-.007	3 1/2	\$73.54
350034X	360034X	3/4	1 3/4	3/4	.005-.007	4	\$110.72
350001X	360001X	1	1 3/4	1	.005-.007	4	\$169.69

Ballnose

VARIABLE HELIX
340, 340X ZrN



Part #	Coated #	Tool	Flute	Shank	Overall	Uncoated	Coated
2 Flute	2 Flute	Diameter	Length	Diameter	Length	Price	Price
340018	340018X	1/8	1/2	1/8	1 1/2	\$18.56	\$20.22
340316	340316X	3/16	5/8	3/16	2	\$22.91	\$24.58
340014	340014X	1/4	3/4	1/4	2 1/2	\$31.24	\$33.87
340516	340516X	5/16	3/4	5/16	2 1/2	\$36.50	\$40.52
340038	340038X	3/8	1	3/8	2 1/2	\$44.25	\$48.69
340012	340012X	1/2	1 1/4	1/2	3	\$60.92	\$66.45
340058	340058X	5/8	1 5/8	5/8	3 1/2	\$84.02	\$91.53
340034	340034X	3/4	1 3/4	3/4	4	\$117.40	\$125.71
340001	340001X	1	1 3/4	1	4	\$167.26	\$179.69

Square Corner

VARIABLE HELIX
320X, 330X ZrN



Part #	Part #	Tool	Flute	Shank	Overall	Coated
2 FL	3 FL	Diameter	Length	Diameter	Length	Price
320014X	330014X	1/4	3/4	1/4	2 1/2	\$24.64
320516X	330516X	5/16	3/4	5/16	2 1/2	\$30.79
320038X	330038X	3/8	1	3/8	2 1/2	\$35.98
320012X	330012X	1/2	1 1/4	1/2	3	\$44.79
320058X	330058X	5/8	1 5/8	5/8	3 1/2	\$72.65
320034X	330034X	3/4	1 3/4	3/4	4	\$109.80
320001X	330001X	1	1 3/4	1	4	\$168.36

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

VARIABLE HELIX
350L, 360L



Part #	Part #	Tool	Flute	Shank	Corner	Overall	Tool
2 FL	3 FL	Diameter	Length	Diameter	Radius	Length	Price
350014L	360014L	1/4	1 1/4	1/4	.003-.005	3	\$31.96
350516L	360516L	5/16	1 3/8	5/16	.003-.005	3	\$35.43
350038L	360038L	3/8	1 1/2	3/8	.003-.005	3 1/2	\$41.97
350012L	360012L	1/2	2	1/2	.005-.007	4	\$61.76
350058L	360058L	5/8	2 3/8	5/8	.005-.007	5	\$96.36
350034L	360034L	3/4	2 1/2	3/4	.005-.007	5	\$120.68
350001L	360001L	1	3	1	.005-.007	6	\$182.12

VARIABLE HELIX
350LX, 360LX ZrN



Part #	Part #	Tool	Flute	Shank	Corner	Overall	Tool
2 FL	3 FL	Diameter	Length	Diameter	Radius	Length	Price
350014LX	360014LX	1/4	1 1/4	1/4	.003-.005	3	\$34.59
350516LX	360516LX	5/16	1 3/8	5/16	.003-.005	3	\$39.44
350038LX	360038LX	3/8	1 1/2	3/8	.003-.005	3 1/2	\$47.49
350012LX	360012LX	1/2	2	1/2	.005-.007	4	\$68.52
350058LX	360058LX	5/8	2 3/8	5/8	.005-.007	5	\$105.90
350034LX	360034LX	3/4	2 1/2	3/4	.005-.007	5	\$131.24
350001LX	360001LX	1	3	1	.005-.007	6	\$196.38

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Rougher/Finisher

VARIABLE HELIX
350RF, 360RF



Part # 2 FL	Part # 3 FL	Tool Diameter	Flute Length	Shank Diameter	Corner Radius	Overall Length	Tool Price
350018RF	360018RF	1/8	1/2	1/8	.003-.005	1 1/2	\$15.71
350316RF	360316RF	3/16	5/8	3/16	.003-.005	2	\$20.05
350014RF	360014RF	1/4	3/4	1/4	.003-.005	2 1/2	\$26.86
350516RF	360516RF	5/16	3/4	5/16	.003-.005	2 1/2	\$31.92
350038RF	360038RF	3/8	1	3/8	.003-.005	2 1/2	\$37.54
350012RF	360012RF	1/2	1 1/4	1/2	.005-.007	3	\$46.41
350058RF	360058RF	5/8	1 5/8	5/8	.005-.007	3 1/2	\$81.56
350034RF	360034RF	3/4	1 3/4	3/4	.005-.007	4	\$115.77
350001RF	360001RF	1	1 3/4	1	.005-.007	4	\$180.21

Ballnose

VARIABLE HELIX
340RF, 340XRF ZrN



Part # 2 FL	Coated # 2 FL	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Uncoated Price	Coated Price
340018RF	340018XRF	1/8	1/2	1/8	1 1/2	\$24.28	\$25.93
340316RF	340316XRF	3/16	5/8	3/16	2	\$30.05	\$31.72
340014RF	340014XRF	1/4	3/4	1/4	2 1/2	\$36.00	\$38.63
340516RF	340516XRF	5/16	3/4	5/16	2 1/2	\$42.91	\$46.92
340038RF	340038XRF	3/8	1	3/8	2 1/2	\$51.39	\$55.83
340012RF	340012XRF	1/2	1 1/4	1/2	3	\$70.26	\$75.78
340058RF	340058XRF	5/8	1 5/8	5/8	3 1/2	\$96.70	\$104.21
340034RF	340034XRF	3/4	1 3/4	3/4	4	\$134.33	\$142.64
340001RF	340001XRF	1	1 3/4	1	4	\$190.92	\$203.35

Rougher/Finisher

VARIABLE HELIX
350XRF, 360XRF ZrN



2 FL	3 FL	Diameter	Length	Diameter	Radius	Length	Price
350018XRF	360018XRF	1/8	1/2	1/8	.003-.005	1 1/2	\$17.36
350316XRF	360316XRF	3/16	5/8	3/16	.003-.005	2	\$21.73
350014XRF	360014XRF	1/4	3/4	1/4	.003-.005	2 1/2	\$29.49
350516XRF	360516XRF	5/16	3/4	5/16	.003-.005	2 1/2	\$35.93
350038XRF	360038XRF	3/8	1	3/8	.003-.005	2 1/2	\$41.98
350012XRF	360012XRF	1/2	1 1/4	1/2	.005-.007	3	\$51.93
350058XRF	360058XRF	5/8	1 5/8	5/8	.005-.007	3 1/2	\$89.07
350034XRF	360034XRF	3/4	1 3/4	3/4	.005-.007	4	\$124.08
350001XRF	360001XRF	1	1 3/4	1	.005-.007	4	\$192.64

Square Corner

VARIABLE HELIX
320XRF, 330XRF ZrN



Part # 2 FL	Part # 3 FL	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Coated Price
320014XRF	330014XRF	1/4	3/4	1/4	2 1/2	\$28.92
320516XRF	330516XRF	5/16	3/4	5/16	2 1/2	\$35.07
320038XRF	330038XRF	3/8	1	3/8	2 1/2	\$40.98
320012XRF	330012XRF	1/2	1 1/4	1/2	3	\$50.51
320058XRF	330058XRF	5/8	1 5/8	5/8	3 1/2	\$87.64
320034XRF	330034XRF	3/4	1 3/4	3/4	4	\$122.65
320001XRF	330001XRF	1	1 3/4	1	4	\$191.21

Series:

VARIABLE HELIX

350LRF, 360LRF



Part # 2 FL	Part # 3 FL	Tool Diameter	Flute Length	Shank Diameter	Corner Radius	Overall Length	Tool Price
350014LRF	360014LRF	1/4	1 1/4	1/4	.003-.005	3	\$36.95
350516LRF	360516LRF	5/16	1 3/8	5/16	.003-.005	3	\$41.05
350038LRF	360038LRF	3/8	1 1/2	3/8	.003-.005	3 1/2	\$48.47
350012LRF	360012LRF	1/2	2	1/2	.005-.007	4	\$71.41
350058LRF	360058LRF	5/8	2 3/8	5/8	.005-.007	5	\$97.17
350034LRF	360034LRF	3/4	2 1/2	3/4	.005-.007	5	\$139.94
350001LRF	360001LRF	1	3	1	.005-.007	6	\$209.65

VARIABLE HELIX

350LXRF, 360LXRF

ZrN Coated



Part # 2 FL	Part # 3 FL	Tool Diam	Flute Length	Shank Diam	Corner Radius	Overall Length	Tool Price
350014LXRF	360014LXRF	1/4	1 1/4	1/4	.003-.005	3	\$39.58
350516LXRF	360516LXRF	5/16	1 3/8	5/16	.003-.005	3	\$45.06
350038LXRF	360038LXRF	3/8	1 1/2	3/8	.003-.005	3 1/2	\$54.00
350012LXRF	360012LXRF	1/2	2	1/2	.005-.007	4	\$78.18
350058LXRF	360058LXRF	5/8	2 3/8	5/8	.005-.007	5	\$106.71
350034LXRF	360034LXRF	3/4	2 1/2	3/4	.005-.007	5	\$150.51
350001LXRF	360001LXRF	1	3	1	.005-.007	6	\$223.91

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Recommended Speeds and Feeds

Slotting Depth = 1 x Diameter

Profile Width = 1/2 x Diameter

Materials	Brass/Bronze	Copper Alloys	Aluminum	Plastics
Diameter	(800-1500 SFM)	(800-1200 SFM)	(1600-2000 SFM)	(1200-1600 SFM)
1/4	.003	.003	.003	.006
5/16	.004	.004	.004	.008
3/8	.005	.005	.005	.01
1/2	.006	.006	.006	.012
5/8	.007	.007	.007	.014
3/4	.008	.008	.008	.016
1	.010	.010	.010	.020

NOTE:

- These are approximate numbers, a good starting point.
- Coolant application is an important part of using the variable flute geometries.
- Tools perform best when balanced.

SEE WEBSITE FOR PRICE DISCOUNTS

Carbide Roughers

AlTiN

170RF



Part Number	Flute Diameter	Tooth Pitch	Flute Length	Overall Length	Number of Flutes	Tool Price
170RF31	3/16	.040	.625	2.0	4	\$12.46
170RF14	1/4	.040	.750	2.5	4	\$15.16
170RF51	5/16	.040	.875	2.5	4	\$20.12
170RF38	3/8	.040	.875	2.5	4	\$24.53
170RF12	1/2	.060	1.0	3.0	4	\$32.41
170RF58	5/8	.060	1.25	3.5	4	\$62.89
170RF34	3/4	.060	1.5	4.0	4	\$81.24
170RF10	1	.060	1.5	4.0	4	\$145.33

Series:

170RF - LONG



Part Number	Flute Diameter	Tooth Pitch	Flute Length	Overall Length	Number of Flutes	Tool Price
170RF31L	3/16	.040	1.0	2.5	4	\$16.14
170RF14L	1/4	.040	1.5	4	4	\$24.03
170RF51L	5/16	.040	1.5	4	4	\$32.64
170RF38L	3/8	.040	1.75	4	4	\$40.77
170RF12L	1/2	.060	2	4	4	\$49.28
170RF58L	5/8	.060	2.5	5	4	\$100.30
170RF34L	3/4	.060	2.5	5	4	\$139.08
170RF10L	1	.060	2.5	5	4	\$203.20

Weldon flats available upon request.

Carbide Roughers

AlTiN

Series:

Variable Helix

170RFHD - 4 FL



Part Number	Flute Diameter	Tooth Pitch	Flute Length	Overall Length	Number of Flutes	Tool Price
170RF31HD	3/16	.040	.625	2.0	4	\$15.75
170RF14HD	1/4	.040	.750	2.5	4	\$21.00
170RF51HD	5/16	.040	.875	2.5	4	\$26.87
170RF38HD	3/8	.040	.875	2.5	4	\$33.30
170RF12HD	1/2	.060	1.0	3.0	4	\$42.45
170RF58HD	5/8	.060	1.25	3.5	4	\$79.81
170RF34HD	3/4	.060	1.5	4.0	4	\$101.16
170RF10HD	1	.060	1.5	4.0	4	\$179.07

Starting Recommended Speeds and Feeds

Materials	Carbon Steel	Tool Steel	Titanium	Stainless Steel	Nickel Based Alloy	Cobalt Alloy
Diameter	225-550 SFM	210-450 SFM	125-215 SFM	225-475 SFM	55-120 SFM	40-75 SFM
3/16	.0007-.002	.0005-.0015	.0007-.0013	.0008-.0015	.0005-.0012	.0005-.0012
1/4	.0007-.002	.0005-.0015	.0007-.0013	.0008-.0015	.0005-.0012	.0005-.0012
5/16	.001-.0025	.0007-.002	.0009-.0015	.001-.002	.0007-.0014	.0007-.0014
3/8	.0015-.003	.001-.0025	.0009-.0015	.001-.002	.0009-.0016	.0009-.0016
1/2	.0015-.0035	.001-.003	.0010-.0018	.0012-.0025	.0009-.0018	.0009-.0018
5/8	.002-.004	.0015-.0035	.0012-.0022	.002-.0037	.0012-.0023	.0012-.0023
3/4	.002-.004	.0015-.004	.0015-.0025	.002-.0037	.0015-.0025	.0015-.0025
1	.002-.005	.002-.0045	.0018-.0027	.0025-.0042	.0018-.0027	.0018-.0018

NOTE:

- These are approximate numbers, a good starting point.
- Coolant application is an important part of using a rougher.
- Tools perform best when balanced.

45° & 60° Helix Endmills

AlTiN

Series: 380 AlTiN



45° Helix

Part #	Tool Diameter	Flute Length	Shank Diam-	Overall Length	Tool Price
3800018	1/8	1/2	1/8	1 1/2	\$9.20
3800316	3/16	3/4	3/16	2	\$10.96
3800014	1/4	3/4	1/4	2 1/2	\$12.08
3800516	5/16	13/16	5/16	2 1/2	\$15.46
3800038	3/8	7/8	3/8	2 1/2	\$18.51
3800012	1/2	1	1/2	3	\$32.93
3800058	5/8	1 1/4	5/8	3 1/2	\$64.48
3800034	3/4	1 1/2	3/4	4	\$89.96

Series: 390 AlTiN



60° Helix

Part #	Tool Diameter	Flute Length	Shank Diam-	Overall Length	Tool Price
3900018	1/8	1/2	1/8	1 1/2	\$9.20
3900316	3/16	5/8	3/16	2	\$10.96
3900014	1/4	3/4	1/4	2 1/2	\$12.08
3900516	5/16	13/16	5/16	2 1/2	\$15.46
3900038	3/8	7/8	3/8	2 1/2	\$18.51
3900012	1/2	1	1/2	3	\$32.93
3900058	5/8	1 1/4	5/8	3 1/2	\$64.48
3900034	3/4	1 1/2	3/4	4	\$89.96

45 & 60 degree helix end mills are designed for higher speeds and feeds while providing a shearing action that produces improved surface finish.
AlTiN Coated

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Threadmills UNC/UNF

AlTiN

UNC & UNF Threadmills

- Exceptional value in a Solid Carbide AlTiN coated helical flute threadmill.



PART#	Shank	Cutting	LOC	OAL	# FL	Thread	Price
2-56TRML	1/8	.0650	0.125	2	3	2-56	\$58.55
4-40TRML	1/8	.0850	0.180	2	3	4-40	\$58.55
6-32TRML	1/8	0.100	0.218	2	3	6-32	\$57.12
8-32TRML	1/8	0.115	0.250	2	3	8-32	\$57.12
8-36TRML	1/8	0.115	0.250	2	3	8-36	\$57.12
10-24TRML	3/16	0.120	0.312	2	3	10-24	\$57.14
10-32TRML	3/16	0.120	0.312	2	3	10-32	\$57.14
1/4-20TRML	3/16	0.180	0.500	2 1/2	3	1/4-20	\$63.64
1/4-28TRML	3/16	0.180	0.500	2 1/2	3	1/4-28	\$63.64
5/16-18TRML	1/4	0.240	0.625	2 1/2	3	5/16-18	\$74.50
5/16-24TRML	1/4	0.240	0.625	2 1/2	3	5/16-24	\$74.50
3/8-16TRML	5/16	0.290	0.750	3	4	3/8-16	\$96.35
3/8-24TRML	5/16	0.290	0.750	3	4	3/8-24	\$96.35
7/16-14TRML	3/8	0.340	0.875	3	4	7/16-14	\$89.59
7/16-20TRML	3/8	0.340	0.875	3	4	7/16-20	\$89.59
1/2-13TRML	3/8	0.350	0.875	3 1/2	4	1/2-13	\$97.22
1/2-20TRML	3/8	0.350	0.875	3 1/2	4	1/2-20	\$97.22
9/16-12TRML	1/2	0.370	0.875	3 1/2	4	9/16-12	\$112.60
9/16-18TRML	1/2	0.370	0.875	3 1/2	4	9/16-18	\$112.60
5/8-11TRML	1/2	0.470	1.250	3 1/2	5	5/8-11	\$120.64
5/8-18TRML	1/2	0.470	1.250	3 1/2	5	5/8-18	\$120.64
3/4-10TRML	1/2	0.495	1.250	3 1/2	5	3/4-10	\$120.64
3/4-16TRML	1/2	0.495	1.250	3 1/2	5	3/4-16	\$120.64
7/8-9TRML	5/8	0.620	1.250	3 1/2	5	7/8-9	\$125.96
7/8-14TRML	5/8	0.620	1.250	3 1/2	5	7/8-14	\$130.56
1-8TRML	3/4	0.620	1.375	4	5	1-8	\$149.37
1-12TRML	3/4	0.620	1.375	4	5	1-12	\$149.37

SEE WEBSITE FOR PRICE DISCOUNTS

AITiN
Threadmills Metric

Metric

- A complete line of high quality Metric Threadmills in stock and available for immediate delivery. Solid Carbide AITiN Coated



PART #	Shank	Cutting	LOC	OAL	# FL	Thread Size	Price
M4-0.70TRML	1/8	0.120	0.250	2	3	M4-0.70	\$57.12
M4.5-0.75TRML	1/8	0.120	0.250	2	3	M4.5-0.75	\$57.12
M5-0.80TRML	3/16	0.120	0.312	2	3	M5-0.80	\$58.29
M6-1.00TRML	3/16	0.170	0.500	2 1/2	3	M6-1.00	\$62.42
M8-0.75TRML	1/4	0.235	0.625	2 1/2	3	M8-0.75	\$74.50
M8-1.00TRML	1/4	0.235	0.625	2 1/2	3	M8-1.00	\$74.50
M8-1.25TRML	1/4	0.235	0.625	2 1/2	3	M8-1.25	\$74.50
M10-1.25TRML	5/16	0.300	0.750	3	4	M10-1.25	\$88.72
M10-1.50TRML	5/16	0.300	0.750	3	4	M10-1.50	\$88.72
M12-1.00TRML	3/8	0.360	0.875	3 1/2	4	M12-1.00	\$99.07
M12-1.25TRML	3/8	0.360	0.875	3 1/2	4	M12-1.25	\$99.07
M12-1.50TRML	3/8	0.360	0.875	3 1/2	4	M12-1.50	\$99.07
M12-1.75TRML	3/8	0.360	0.875	3 1/2	4	M12-1.75	\$99.07
M14-1.50TRML	3/8	0.360	0.875	3 1/2	4	M14-1.50	\$99.07
M16-2.00TRML	1/2	0.470	1.250	3 1/2	5	M16-2.00	\$120.64
M18-2.50TRML	1/2	0.470	1.250	3 1/2	5	M18-2.50	\$120.64
M20-3.00TRML	5/8	0.470	1.250	3 1/2	5	M20-3.00	\$127.38

SEE WEBSITE FOR PRICE DISCOUNTS

If you find Thread Mills confusing, or need help programming your cutter - CALL US!

AITiN
Threadmills NPT/NPTF

NPT/NPTF

- Eliminate the need to Pre-taper ream in tough materials, produce better quality and stronger threads. AITiN Coated



Part #	Shank	Cutting	LOC	OAL	# FL	Thread Size	Price
1/16NPTTRML	1/4	0.245	0.437	2 1/2	3	1/16-27 NPT	\$75.30
1/8NPTTRML	5/16	0.310	0.437	2 1/2	4	1/8-27 NPT	\$78.72
1/4NPTTRML	3/8	0.370	0.625	3	4	1/4-18 NPT	\$89.81
3/8NPTTRML	3/8	0.370	0.625	3	4	3/8-18 NPT	\$89.81
1/2NPTTRML	1/2	0.495	0.875	3 1/2	4	1/2-14 NPT	\$126.97
3/4NPTTRML	1/2	0.495	0.875	3 1/2	4	3/4-14 NPT	\$126.97
1NPTTRML	3/4	0.620	1.125	4	5	1-11 1/2 NPT	\$157.84
2.5NPTTRML	1.0	0.995	1.5	5	5	2.5 - 6"-8 NPT	\$275.77

Part #	Shank	Cutting	LOC	OAL	# FL	Thread Size	Price
1/16NPTFRML	1/4	0.245	0.437	2 1/2	3	1/16-27 NPTF	\$75.30
1/8NPTFRML	5/16	0.310	0.437	2 1/2	4	1/8-27 NPTF	\$78.72
1/4NPTFRML	3/8	0.370	0.625	3	4	1/4-18 NPTF	\$89.81
3/8NPTFRML	3/8	0.370	0.625	3	4	3/8-18 NPTF	\$89.81
1/2NPTFRML	1/2	0.495	0.875	3 1/2	4	1/2-14 NPTF	\$126.97
3/4NPTFRML	1/2	0.495	0.875	3 1/2	4	3/4-14 NPTF	\$126.97
1NPTFRML	3/4	0.620	1.125	4	5	1-11 1/2 NPTF	\$157.84
2.5NPTFRML	1.0	0.995	1.5	5	5	2.5 - 6"-8	\$275.77

If you find Thread Mills confusing, or need help programming your cutter - CALL US!

Threadmills BSPT/BSPP

AlTiN

BSTP / BSPP Threadmills

– British Standard Pipe Tapered / British Standard Pipe Parallel, also known as a “Whitworth Threadform” AlTiN Coated



Part #	Shank	Cutting	LOC	OAL	# FL	Thread Size	Price
1/16-28BSPTRML	1/4	0.240	0.570	2 1/2	3	1/16-28	\$85.90
1/8-28BSPTRML	1/4	0.240	0.570	2 1/2	3	1/8-28	\$98.44
1/4-19BSPTRML	7/16	0.430	0.737	3	4	1/4-19	\$99.83
3/8-19BSPTRML	7/16	0.430	0.737	3	4	3/8-19	\$99.83
1/2-14BSPTRML	5/8	0.620	1.150	3 1/2	5	1/2-14	\$156.84
3/4-14BSPTRML	5/8	0.620	1.150	3 1/2	5	3/4-14	\$156.84
1-11BSPTRML	3/4	0.745	1.365	4	5	1-11	\$198.62
2-11BSPTRML	3/4	0.745	1.365	4	5	2-11	\$198.62

Part #	Shank	Cutting	LOC	OAL	# FL	Thread Size	Price
1/16-28BSPTRML	1/4	0.240	0.393	2 1/2	3	1/16-28	\$85.90
1/8-28BSPTRML	1/4	0.240	0.393	2 1/2	3	1/8-28	\$98.44
1/4-19BSPTRML	7/16	0.430	0.580	3	4	1/4-19	\$99.83
3/8-19BSPTRML	7/16	0.430	0.580	3	4	3/8-19	\$99.83
1/2-14BSPTRML	5/8	0.620	0.787	3 1/2	4	1/2-14	\$156.84
3/4-14BSPTRML	5/8	0.620	0.787	3 1/2	4	3/4-14	\$156.84
1-11BSPTRML	3/4	0.745	1.546	4	5	1-11	\$198.62
2-11BSPTRML	3/4	0.745	1.546	4	5	2-11	\$198.62

SEE WEBSITE FOR PRICE DISCOUNTS

Threadmills Variable Flute

AlTiN

These tools are Variable Helix/Variable Index threadmill.

- Increases productivity, and reduces harmonics in tough materials,

Series: Variable Helix



Part #	Shank	Cutting	LOC	OAL	# FL	Thread Size	Price
10-32TREXTRML	3/16	.120	.312	2	3	10-32	\$69.66
1/4-20TREXTRML	3/16	.180	.500	2	3	1/4-20	\$74.65
1/4-28TREXTRML	3/16	.180	.500	2	3	1/4-28	\$74.65
5/16-18TREXTRML	1/4	.235	.625	2 1/2	3	5/16-18	\$86.01
5/16-24TREXTRML	1/4	.235	.625	2 1/2	3	5/16-24	\$86.01
3/8-16TREXTRML	5/16	.290	.750	3	4	3/8-16	\$100.62
3/8-24TREXTRML	5/16	.290	.750	3	4	3/8-24	\$100.62
7/16-14TREXTRML	3/8	.340	.875	3	4	7/16-14	\$101.05
7/16-20TREXTRML	3/8	.340	.875	3	4	7/16-20	\$112.16
1/2-13TREXTRML	3/8	.350	.875	3	4	1/2-13	\$112.16
3/4-16TREXTRML	1/2	.495	1.25	3 1/2	4	3/4-16	\$130.97

Series: Coolant Thru

- Variable Helix/Variable Index
- Designed for maximum chip evacuation in blind holes.
- Creates better quality and stronger threads. AlTiN Coated



Part #	Shank	Cutting	LOC	OAL	# FL	Thread Size	Price
10-32COOLREX	3/16	.120	.312	2.375	3	10-32	\$70.86
1/4-20COOLREX	3/16	.180	.500	2.375	3	1/4-20	\$75.86
1/4-28COOLREX	3/16	.180	.500	2.375	3	1/4-28	\$75.86
5/16-18COOLREX	1/4	.235	.625	2.375	3	5/16-18	\$88.39
5/16-24COOLREX	1/4	.235	.625	2.375	3	5/16-24	\$88.39
3/8-16COOLREX	5/16	.290	.750	3	4	3/8-16	\$103.45
3/8-24COOLREX	5/16	.290	.750	3	4	3/8-24	\$103.45
7/16-14COOLREX	3/8	.340	.875	3	4	7/16-14	\$103.45
7/16-20COOLREX	3/8	.340	.875	3	4	7/16-20	\$117.68
1/2-13COOLREX	3/8	.350	.875	3	4	1/2-13	\$117.68
3/4-16COOLREX	1/2	.495	1.25	3	4	3/4-16	\$135.67

Hardmill Threadmill ^{AlTiN}

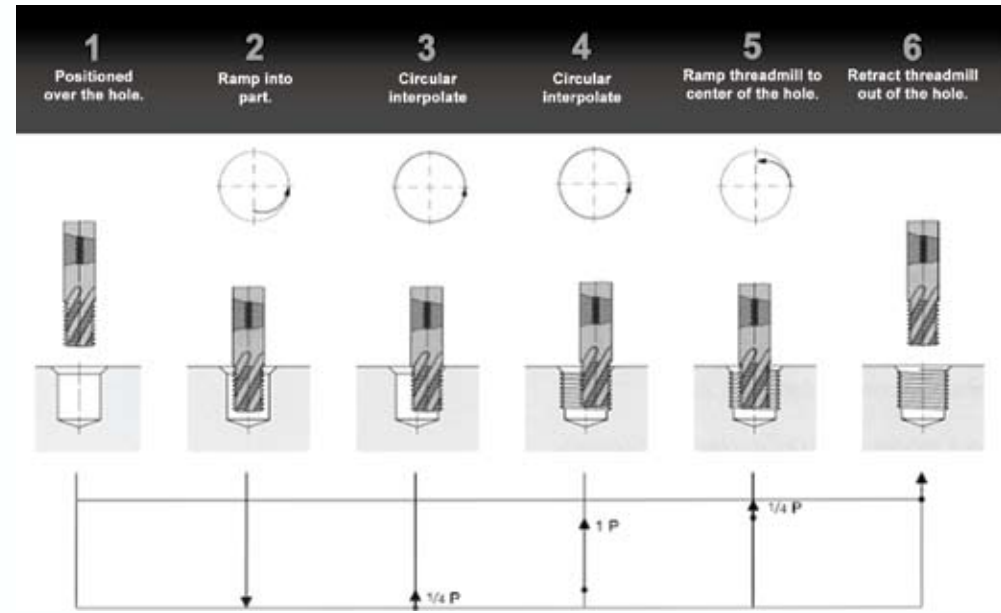
NEW for 2010

Series: HardMill Threadmill

This breakthrough geometry allows threadmilling in materials hardened up to 62 RC. The variable flute geometry, high hardness, and heat resistance will allow you to create threads where taps cannot traditionally cut. nA Co

Coated

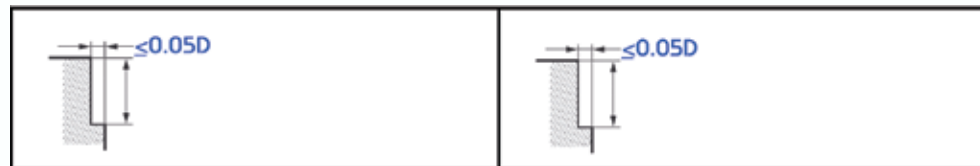
Part #	Shank	Cutting	LOC	OAL	# FL	Thread Size	Price
10-32HRDTRML	3/16	.120	.312	2	3	10-32	\$79.98
1/4-20HRDTRML	3/16	.180	.500	2 1/2	3	1/4-20	\$85.74
1/4-28HRDTRML	3/16	.180	.500	2 1/2	3	1/4-28	\$85.74
5/16-18HRDTRML	1/4	.235	.625	2 1/2	3	5/16-18	\$98.72
5/16-24HRDTRML	1/4	.235	.625	2 1/2	3	5/16-24	\$98.72
3/8-16HRDTRML	5/16	.290	.750	3	4	3/8-16	\$115.53
3/8-24HRDTRML	5/16	.290	.750	3	4	3/8-24	\$115.53
7/16-14HRDTRML	3/8	.340	.875	3	4	7/16-14	\$132.76
7/16-20HRDTRML	3/8	.340	.875	3	4	7/16-20	\$132.76
1/2-13HRDTRML	3/8	.350	.875	3 1/2	4	1/2-13	\$135.08
3/4-16HRDTRML	1/2	.495	1.25	3 1/2	4	3/4-16	\$151.68



Standard Threadmill Feedrate Calculator (inches/tooth)

MATERIAL	SFM	Tool Cutting Diameter Inches P/Tooth						
		1/8	3/16	1/4	5/16	3/8	1/2	5/8
Aluminum	800-1400	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0055	.005-.007
Magnesium	800-1400	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0055	.005-.007
Brass	600-800	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0045	.005-.006
Bronze	500-600	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.003-.0045	.0035-.0045	.005-.006
Hard Bronze	200-300	.0004-.0008	.0007-.0012	.001-.002	.001-.002	.0015-.0025	.002-.003	.003-.004
Low Alloy Steels	350-500	.0005-.001	.001-.0015	.0015-.0025	.002-.003	.0025-.0035	.003-.004	.004-.005
High Alloy	250-400	.0003-.0006	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.002-.003	.003-.004
Stainless	150-250	.0004-.0008	.0006-.001	.001-.0015	.0015-.002	.0015-.0030	.002-.0035	.003-.004
Cast Iron - Soft	250-350	.0004-.0008	.0007-.0013	.0007-.0013	.0015-.002	.002-.003	.002-.004	.003-.005
Cast Iron - Hard	200-300	.0003-.0006	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.002-.003	.003-.004
Titanium	80-150	.0003-.0006	.0005-.001	.0008-.0015	.001-.002	.0015-.0025	.0015-.0025	.0025-.0035

Material	Tool Steel (-55HRC) AISI H13 ETC		Hardened Steel (55-60HRC) AISI D2 ETC		Hardened Steel (60-65HRC) AISI D2 ETC		
	DIA	SFM	CHIP LOAD PER TOOTH	SFM	CHIP LOAD PER TOOTH	SFM	CHIP LOAD PER TOOTH
0.150	600/700		.0006/.002	350/400		175/225	.0005-.001
0.180							
0.235							
0.285							
0.305							
0.335							
0.350							
0.495			.0015-.003				.001/.002



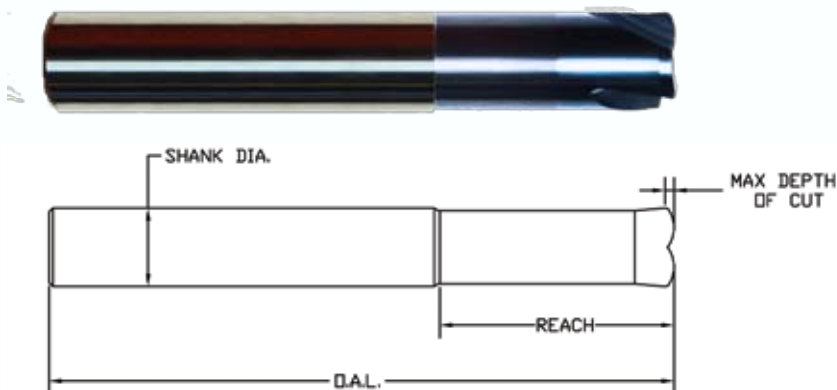
NEW for 2010

High Feed Mill

AlTiN

Series: FMXML

The high performance High Feed Mill achieves high metal removal rates and optimizes milling operations in slotting, pocketing and contouring projects. This tool will increase efficiency as a pre-finish tool in materials ranging from mild to hardened steels, including stainless series.



Part #	Cutting	Shank	Reach	OAL	# FL	Price
FMXML018A	.120	1/8	5/16	1 1/2	2	\$39.99
FMXML018B	.120	1/8	5/8	2	2	\$47.80
FMXML316A	.177	1/4	1/2	2 1/2	3	\$46.06
FMXML316B	.177	1/4	1	2 1/2	3	\$50.34
FMXML014A	.240	1/4	5/8	2 1/2	3	\$58.91
FMXML014B	.240	1/4	1	3	3	\$65.71
FMXML014C	.240	1/4	1 1/2	3	3	\$69.99
FMXML516A	.300	5/16	1	2 1/2	3	\$72.20
FMXML516B	.300	5/16	2	4	3	\$85.10
FMXML038A	.360	3/8	1	2 1/2	3	\$92.39
FMXML038B	.360	3/8	1 1/2	3	3	\$101.21
FMXML038C	.360	3/8	2	4	3	\$121.28
FMXML012A	.485	1/2	1 1/2	4	3	\$150.15
FMXML012B	.485	1/2	2 3/8	4	3	\$161.58
FMXML012C	.485	1/2	3 1/8	5	3	\$179.13

NEW for 2010

High Feed Mill - Coolant Thru

AlTiN

Series: FMXCT

The coolant thru version of the High Feed Mill accelerates chip removal, ensures that the tool remains cool and eliminates recutting of the chip.



Part #	Cutting	Shank	Reach	OAL	# FL	Price
FMXCT316A	.177	1/4	1/2	2 1/2	3	\$48.01
FMXCT316B	.177	1/4	1	2 1/2	3	\$52.29
FMXCT014A	.240	1/4	5/8	2 1/2	3	\$64.20
FMXCT014B	.240	1/4	1	3	3	\$72.46
FMXCT014C	.240	1/4	1 1/2	3	3	\$78.24
FMXCT516A	.300	5/16	1	2 1/2	3	\$76.67
FMXCT516B	.300	5/16	2	4	3	\$91.43
FMXCT038A	.360	3/8	1	2 1/2	3	\$98.69
FMXCT038B	.360	3/8	1 1/2	3	3	\$109.83
FMXCT038C	.360	3/8	2	4	3	\$131.76
FMXCT012A	.485	1/2	1 1/2	4	3	\$168.10
FMXCT012B	.485	1/2	2 3/8	4	3	\$179.53
FMXCT012C	.485	1/2	3 1/8	5	3	\$198.58

High Feed Mill Feedrate Calculator (inches/tooth)

MATERIAL	Steel	Tool Steel	Soft Cast Iron	Hard Cast Iron	Stainless Steel	Super Alloy	Titanium Alloy
SFM	800/1100	450/650	250/450	450/650	300/450	50/175	300/400
Slotting feed per tooth	0.030xD	0.027xD	.024xD	0.024xD	0.018xD	0.018xD	0.021xD
Side milling feed p/tooth	0.055xD	0.045xD	0.040xD	0.040xD	0.024xD	0.024xD	0.035xD
Side milling depth of cut - Z	1 x DOC	1 x DOC	0.8 x DOC	1 x DOC	1 x DOC	0.5 x DOC	0.5 x DOC
Side milling step over	0.5 x D	0.5 x D	0.5 x D	0.5 x D	0.5 x D	0.5 x D	0.5 x D
SFM	400/800	350/400	150/325	350/450	200/350	50/125	200/300
Plunge milling feed p/tooth	0.010xD	0.010xD	0.007xD	0.007xD	0.006xD	0.006xD	0.007xD
Linear Depth of Cut	0.3 x D	0.3 x D	0.3 x D	0.3 x D	0.3 x D	0.3 x D	0.3 x D
DEPTH OF CUT IN "Z"							
D=MAJOR DIAMETER OF TOOL	MAJOR DIA.	DOC	MAJOR DIA.	DOC			
RAMPING ANGLE: 1-1.5°	.120	0.006	.300	0.02			
REDUCE DOC -20% AND FEED PER TOOTH - 15% FOR B-Length	.177	0.01	.360	0.02			
REDUCE DOC -40% AND FEED PER TOOTH - 30% FOR C-Length	.240	0.015	.485	0.025			

Series:

SD139



Part # 2 Flute	Point Angle	Shank Diameter	Length of Cut	Overall Length	Drill Price
SD139018	90°	1/8"	1/4"	2	\$10.17
SD139316	90°	3/16"	3/8"	2	\$12.12
SD139014	90°	1/4"	3/8"	3	\$14.81
SD139038	90°	3/8"	1/2"	4	\$23.74
SD139012	90°	1/2"	3/4"	4	\$39.55
SD139058	90°	5/8"	1"	4	\$70.35
SD139034	90°	3/4"	1"	4	\$94.39

NEW for 2010

SDE139



Part # 2 Flute	Point Angle	Shank Diameter	Length of Cut	Overall Length	Drill Price
SDE139018	90°	1/8"	1/4"	2	\$15.89
SDE139316	90°	3/16"	3/8"	2	\$19.03
SDE139014	90°	1/4"	3/8"	3	\$21.46
SDE139038	90°	3/8"	1/2"	4	\$29.69
SDE139012	90°	1/2"	3/4"	4	\$53.42
SDE139058	90°	5/8"	1"	4	\$93.49
SDE139034	90°	3/4"	1"	4	\$128.62

SD120



Part # 2 Flute	Point Angle	Shank Diameter	Length of Cut	Overall Length	Drill Price
SD120018	120°	1/8"	1/4"	2	\$10.17
SD120316	120°	3/16"	3/8"	2	\$12.12
SD120014	120°	1/4"	3/8"	3	\$14.81
SD120038	120°	3/8"	1/2"	4	\$23.74
SD120012	120°	1/2"	3/4"	4	\$39.55
SD120058	120°	5/8"	1"	4	\$70.35
SD120034	120°	3/4"	1"	4	\$94.39

SDE120



Part # 2 Flute	Point Angle	Shank Diameter	Length of Cut	Overall Length	Drill Price
SDE120018	120°	1/8"	1/4"	2	\$15.89
SDE120316	120°	3/16"	3/8"	2	\$19.03
SDE120014	120°	1/4"	3/8"	3	\$21.46
SDE120038	120°	3/8"	1/2"	4	\$29.69
SDE120012	120°	1/2"	3/4"	4	\$53.42
SDE120058	120°	5/8"	1"	4	\$93.49
SDE120034	120°	3/4"	1"	4	\$128.62

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

60° Carbide Drillmills

90° & 120° Carbide Drillmills

Series:

18DRLML



19DRLML



Part # 2FL	Part # 4FL	Flute Diam.	Point Angle	Flute Length	Overall Length	Tool Price
18DRLML18	19DRLML18	1/8	60°	.500	1.5	\$8.03
18DRLML31	19DRLML31	3/16	60°	.625	2.0	\$10.27
18DRLML14	19DRLML14	1/4	60°	.750	2.5	\$12.76
18DRLML51	19DRLML51	5/16	60°	.875	2.5	\$16.59
18DRLML38	19DRLML38	3/8	60°	1.0	2.5	\$19.76
18DRLML12	19DRLML12	1/2	60°	1.0	3.0	\$31.57
18DRLML58	19DRLML58	5/8	60°	1.25	3.5	\$50.01
18DRLML34	19DRLML34	3/4	60°	1.5	4.0	\$66.08

Multi purpose tool for chamfering parts. Spot, drill, mill and chamfer, four tools in one! Not recommended for drilling steel.

What if I need a special angle on my drillmill?

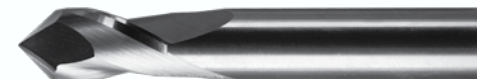
Simply send us a sketch of what you are looking for and we can make it.

SEE WEBSITE FOR PRICE DISCOUNTS

Tolerance all sizes: Diameter- +.000/- .002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Series:

15DRLML



17DRLML



Part # 2FL	Part # 4FL	Flute Diam.	Point Angle	Flute Length	Overall Length	Tool Price
15DRLML18	17DRLML18	1/8	90°	.500	1.5	\$8.03
15DRLML31	17DRLML31	3/16	90°	.625	2.0	\$10.27
15DRLML14	17DRLML14	1/4	90°	.750	2.5	\$12.76
15DRLML51	17DRLML51	5/16	90°	.875	2.5	\$16.59
15DRLML38	17DRLML38	3/8	90°	1.0	2.5	\$19.76
15DRLML12	17DRLML12	1/2	90°	1.0	3.0	\$31.57
15DRLML58	17DRLML58	5/8	90°	1.25	3.5	\$50.01
15DRLML34	17DRLML34	3/4	90°	1.5	4.0	\$66.08

11DRLML



13DRLML



Part # 2FL	Part # 4FL	Flute Diam.	Point Angle	Flute Length	Overall Length	Tool Price
11DRLML18	13DRLML18	1/8	120°	.500	1.5	\$8.03
11DRLML31	13DRLML31	3/16	120°	.625	2.0	\$10.27
11DRLML14	13DRLML14	1/4	120°	.750	2.5	\$12.76
11DRLML51	13DRLML51	5/16	120°	.875	2.5	\$16.59
11DRLML38	13DRLML38	3/8	120°	1.0	2.5	\$19.76
11DRLML12	13DRLML12	1/2	120°	1.0	3.0	\$31.57
11DRLML58	13DRLML58	5/8	120°	1.25	3.5	\$50.01
11DRLML34	13DRLML34	3/4	120°	1.5	4.0	\$66.08

RadPac - External Radius Cutters



RadPAC - A versatile set of solid carbide radius tools, packaged for convenience and affordability.

10% Savings!

\$210.00

PART #	SIZE	SHANK DIAMETER	PILOT DIAMETER	TOOL RADIUS	OVERALL LENGTH	NUMBER OF FLUTES	REORDER PRICE
1-32RPEM	1/32"	1/8	0.046	0.031	1-1/2	2	\$18.56
1-16RPEM	1/16"	3/16	0.046	0.062	2	2	\$24.34
3-32RPEM	3/32"	1/4	0.0625	0.093	2	3	\$30.58
1-8RPEM	1/8"	3/8	0.093	0.125	2 1/2	3	\$39.40
3-16RPEM	3/16"	1/2	0.125	0.187	2 1/2	3	\$50.69
1-4RPEM	1/4"	5/8	0.125	0.250	3 1/2	4	\$70.14



ThreadPAC - Produce 14 threads with 6 threadmills! Same tool produces left and right hand threads, internal and external threads! AITiN Coated

10% Savings!

\$399.00

SIZE	SHANK DIAMETER	CUTTING DIAMETER	THREAD LENGTH	OVERALL LENGTH	NUMBER OF FLUTES	PART #
6-32	1/8	0.115	0.218	2	3	6-32TRML
10-24	3/16	0.120	0.312	2	3	10-24TRML
1/4-20	3/16	0.180	0.500	2 1/2	3	1/4-20TRML
5/16-18	1/4	0.240	0.625	2 1/2	3	5/16-18TRML
3/8-16	5/16	0.290	0.750	3	4	3/8-16TRML
1/2-13	3/8	0.350	0.875	3 1/2	4	1/2-13TRML

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

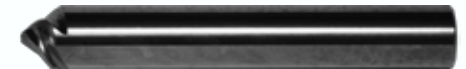
Spiral Fluted - Chamfer Cutters

60° Included Angle



PART #	SHANK DIAMETER	TIP DIAMETER	INCL ANGLE	OVERALL LENGTH	NUMBER OF FLUTES	TOOL PRICE
18CHAM30	1/8	To Point	60°	1-1/2	4-STR*	\$12.85
14CHAM30	1/4	0.046	60°	2	4-HLX	\$22.01
38CHAM30	3/8	0.062	60°	2	4-HLX	\$30.83
12CHAM30	1/2	0.093	60°	2 1/2	4-HLX	\$44.98
58CHAM30	5/8	.125	60°	3 1/2	4-HLX	\$67.28

82° Included Angle



PART #	SHANK DIAMETER	TIP DIAMETER	INCL ANGLE	OVERALL LENGTH	NUMBER OF FLUTES	TOOL PRICE
18CHAM41	1/8	To Point	82°	1-1/2	4-STR*	\$12.85
14CHAM41	1/4	0.046	82°	2	4-HLX	\$22.01
38CHAM41	3/8	0.062	82°	2	4-HLX	\$30.83
12CHAM41	1/2	0.093	82°	2 1/2	4-HLX	\$44.98
58CHAM41	5/8	.125	82°	3 1/2	4-HLX	\$67.28

90° Included Angle



PART #	SHANK DIAMETER	TIP DIAMETER	INCL ANGLE	OVERALL LENGTH	NUMBER OF FLUTES	TOOL PRICE
18CHAM45	1/8	To Point	90°	1-1/2	4-STR*	\$12.85
14CHAM45	1/4	0.046	90°	2	4-HLX	\$22.01
38CHAM45	3/8	0.062	90°	2	4-HLX	\$30.83
12CHAM45	1/2	0.093	90°	2 1/2	4-HLX	\$44.98
58CHAM45	5/8	.125	90°	3 1/2	4-HLX	\$67.28

* Straight Fluted Tool

Stub Endmills

AlTiN

Stub Endmills-Coated

Series:

110



120



Series:

110X AlTiN



120X AlTiN



Part # 2 FL	Part # 4 FL	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Price
1100332	1200332	3/32	3/16	1/8	1 1/2	\$4.74
1100018	1200018	1/8	1/4	1/8	1 1/2	\$4.74
1100532	1200532	5/32	5/16	3/16	2	\$6.02
1100316	1200316	3/16	3/8	3/16	2	\$6.02
1100014	1200014	1/4	1/2	1/4	2	\$7.54
1100516	1200516	5/16	1/2	5/16	2	\$8.96
1100038	1200038	3/8	5/8	3/8	2	\$11.61
1100716	1200716	7/16	5/8	7/16	2 1/2	\$14.57
1100012	1200012	1/2	5/8	1/2	2 1/2	\$18.28
1100058	1200058	5/8	3/4	5/8	3	\$38.52
1100034	1200034	3/4	1	3/4	4	\$65.25

Part # 2 FL	Part # 4 FL	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Coated Price
1100332X	1200332X	3/32	3/16	1/8	1 1/2	\$6.40
1100018X	1200018X	1/8	1/4	1/8	1 1/2	\$6.40
1100532X	1200532X	5/32	5/16	3/16	2	\$7.69
1100316X	1200316X	3/16	3/8	3/16	2	\$7.69
1100014X	1200014X	1/4	1/2	1/4	2	\$9.32
1100516X	1200516X	5/16	1/2	5/16	2	\$11.46
1100038X	1200038X	3/8	5/8	3/8	2	\$14.87
1100716X	1200716X	7/16	5/8	7/16	2 1/2	\$19.68
1100012X	1200012X	1/2	5/8	1/2	2 1/2	\$23.80
1100058X	1200058X	5/8	3/4	5/8	3	\$44.93
1100034X	1200034X	3/4	1	3/4	4	\$71.96

Carbide Single-End Stub Length End Mills with Shorter flute length for increased rigidity, 30 degree helix, center cutting.

SEE WEBSITE FOR PRICE DISCOUNTS

What is the latest that I can order STANDARD TOOLS and have them ship?

Standard orders will ship as late as 3:00pm E.S.T.

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Stub Ballmills

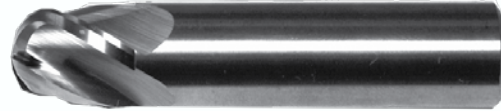
Stub Ballmills-Coated ^{AlTiN}

Series:

130



140



Part # 2 FLT	Part # 4 FLT	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Tool Price
1300332	1400332	3/32	3/16	1/8	1 1/2	\$6.41
1300018	1400018	1/8	1/4	1/8	1 1/2	\$6.41
1300532	1400532	5/32	5/16	3/16	2	\$7.67
1300316	1400316	3/16	3/8	3/16	2	\$7.67
1300014	1400014	1/4	1/2	1/4	2	\$9.82
1300516	1400516	5/16	1/2	5/16	2	\$11.46
1300038	1400038	3/8	5/8	3/8	2	\$14.83
1300716	1400716	7/16	5/8	7/16	2 1/2	\$18.60
1300012	1400012	1/2	5/8	1/2	2 1/2	\$23.36
1300058	1400058	5/8	3/4	5/8	3	\$44.58
1300034	1400034	3/4	1	3/4	4	\$78.98

Series:

130X AlTiN



140X AlTiN



Part # 2 FLT	Part # 4 FLT	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Coated Price
1300332X	1400332X	3/32	3/16	1/8	1 1/2	\$8.06
1300018X	1400018X	1/8	1/4	1/8	1 1/2	\$8.06
1300532X	1400532X	5/32	5/16	3/16	2	\$9.34
1300316X	1400316X	3/16	3/8	3/16	2	\$9.34
1300014X	1400014X	1/4	1/2	1/4	2	\$11.60
1300516X	1400516X	5/16	1/2	5/16	2	\$13.96
1300038X	1400038X	3/8	5/8	3/8	2	\$18.09
1300716X	1400716X	7/16	5/8	7/16	2 1/2	\$23.72
1300012X	1400012X	1/2	5/8	1/2	2 1/2	\$28.89
1300058X	1400058X	5/8	3/4	5/8	3	\$50.99
1300034X	1400034X	3/4	1	3/4	4	\$85.69

Ball-End Carbide Stub Length End Mills with shorter flute length for increased rigidity, 30 degree helix, center cutting.

SEE WEBSITE FOR PRICE DISCOUNTS

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Stub Double End Endmill

Stub Double End - Coated AlTiN

Series:

112



122



Part # 2 FLT	Part # 4 FLT	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Tool Price
1120332	1220332	3/32	3/16	1/8	1 1/2	\$8.23
1120018	1220018	1/8	1/4	1/8	1 1/2	\$8.23
1120532	1220532	5/32	5/16	3/16	2	\$9.49
1120316	1220316	3/16	3/8	3/16	2	\$9.49
1120014	1220014	1/4	1/2	1/4	2 1/2	\$11.13
1120516	1220516	5/16	1/2	5/16	2 1/2	\$14.26
1120038	1220038	3/8	1/2	3/8	2 1/2	\$15.80
1120716	1220716	7/16	9/16	7/16	3	\$22.36
1120012	1220012	1/2	5/8	1/2	3	\$27.32

Series:

112X AlTiN



122X AlTiN



Part # 2 FLT	Part # 4 FLT	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Coated Price
1120332X	1220332X	3/32	3/16	1/8	1 1/2	\$10.71
1120018X	1220018X	1/8	1/4	1/8	1 1/2	\$10.71
1120532X	1220532X	5/32	5/16	3/16	2	\$12.00
1120316X	1220316X	3/16	3/8	3/16	2	\$12.00
1120014X	1220014X	1/4	1/2	1/4	2 1/2	\$15.07
1120516X	1220516X	5/16	1/2	5/16	2 1/2	\$20.28
1120038X	1220038X	3/8	1/2	3/8	2 1/2	\$22.46
1120716X	1220716X	7/16	9/16	7/16	3	\$30.03
1120012X	1220012X	1/2	5/8	1/2	3	\$35.61

Due to fluctuating carbide costs, prices subject to change.

The double end version of our stub length series end mills offer the same tool geometry in an economical offering. These tools are ideal for slotting, keying, and general purpose milling.

Tolerance all sizes: Diameter- +.000/-.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Tolerance all sizes: Diameter- +.000/-.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

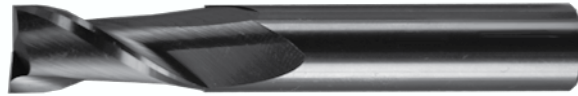
Standard Endmill

AlTiN

Standard Endmill - Coated

Series:

150



160

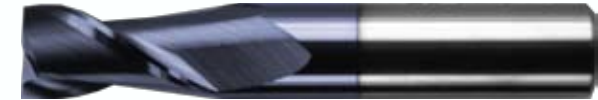


170



Series:

150X AlTiN



160X AlTiN



170X AlTiN



Part # 2 FLT	Part # 3 FLT	Part # 4 FLT	Tool Diam	Flute Length	Shank Diameter	Overall Length	Price
1500332	1600332	1700332	3/32	3/8	1/8	1 1/2	\$4.72
1500018	1600018	1700018	1/8	1/2	1/8	1 1/2	\$4.79
1500532	1600532	1700532	5/32	9/16	3/16	2	\$6.69
1500316	1600316	1700316	3/16	5/8	3/16	2	\$6.19
1500014	1600014	1700014	1/4	3/4	1/4	2 1/2	\$7.69
1500516	1600516	1700516	5/16	7/8	5/16	2 1/2	\$10.02
1500038	1600038	1700038	3/8	1	3/8	2 1/2	\$11.99
1500716	1600716	1700716	7/16	1	7/16	2 1/2	\$18.34
1500012	1600012	1700012	1/2	1	1/2	3	\$22.08
1500916	1600916	1700916	9/16	1 1/4	9/16	3 1/2	\$41.61
1500058	1600058	1700058	5/8	1 1/4	5/8	3 1/2	\$42.21
1500034	1600034	1700034	3/4	1 1/2	3/4	4	\$59.43
1500078	1600078	1700078	7/8	1 1/2	7/8	4	\$102.25
1500001	1600001	1700001	1	1 1/2	1	4	\$111.67

Part # 2 FLT	Part # 3 FLT	Part # 4 FLT	Tool Diam	Flute Length	Shank Diameter	Overall Length	Coated Price
1500332X	1600332X	1700332X	3/32	3/8	1/8	1 1/2	\$6.37
1500018X	1600018X	1700018X	1/8	1/2	1/8	1 1/2	\$6.44
1500532X	1600532X	1700532X	5/32	9/16	3/16	2	\$8.37
1500316X	1600316X	1700316X	3/16	5/8	3/16	2	\$7.87
1500014X	1600014X	1700014X	1/4	3/4	1/4	2 1/2	\$10.32
1500516X	1600516X	1700516X	5/16	7/8	5/16	2 1/2	\$14.03
1500038X	1600038X	1700038X	3/8	1	3/8	2 1/2	\$16.43
1500716X	1600716X	1700716X	7/16	1	7/16	2 1/2	\$23.45
1500012X	1600012X	1700012X	1/2	1	1/2	3	\$27.61
1500916X	1600916X	1700916X	9/16	1 1/4	9/16	3 1/2	\$48.70
1500058X	1600058X	1700058X	5/8	1 1/4	5/8	3 1/2	\$49.72
1500034X	1600034X	1700034X	3/4	1 1/2	3/4	4	\$67.74
1500078X	1600078X	1700078X	7/8	1 1/2	7/8	4	\$112.17
1500001X	1600001X	1700001X	1	1 1/2	1	4	\$124.09

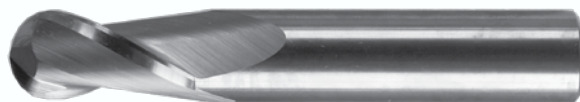
Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from 10% micrograin carbide

Standard Ball Endmill

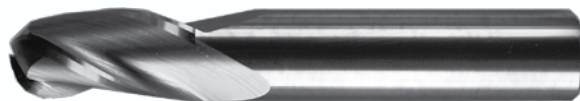
Standard Ball Mill - Coated AlTiN

Series:

180



190



195



Series:

180X AlTiN



190X AlTiN



195X AlTiN



Part # 2 FLT	Part # 3 FLT	Part # 4 FLT	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Tool Price
1800332	1900332	1950332	3/32	3/8	1/8	1 1/2	\$6.41
1800018	1900018	1950018	1/8	1/2	1/8	1 1/2	\$6.41
1800532	1900532	1950532	5/32	9/16	3/16	2	\$8.51
1800316	1900316	1950316	3/16	5/8	3/16	2	\$7.67
1800014	1900014	1950014	1/4	3/4	1/4	2 1/2	\$10.44
1800516	1900516	1950516	5/16	7/8	5/16	2 1/2	\$13.04
1800038	1900038	1950038	3/8	1	3/8	2 1/2	\$14.02
1800716	1900716	1950716	7/16	1	7/16	2 1/2	\$20.70
1800012	1900012	1950012	1/2	1	1/2	3	\$28.38
1800916	1900916	1950916	9/16	1 1/4	9/16	3 1/2	\$43.34
1800058	1900058	1950058	5/8	1 1/4	5/8	3 1/2	\$46.04
1800034	1900034	1950034	3/4	1 1/2	3/4	4	\$67.91
1800078	1900078	1950078	7/8	1 1/2	7/8	4	\$117.64
1800001	1900001	1950001	1	1 1/2	1	4	\$121.28

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Part # 2 FLT	Part # 3 FLT	Part # 4 FLT	Tool Diam	Flute Length	Shank Diam	Overall Length	Coated Price
1800332X	1900332X	1950332X	3/32	3/8	1/8	1 1/2	\$8.06
1800018X	1900018X	1950018X	1/8	1/2	1/8	1 1/2	\$8.06
1800532X	1900532X	1950532X	5/32	9/16	3/16	2	\$10.18
1800316X	1900316X	1950316X	3/16	5/8	3/16	2	\$9.35
1800014X	1900014X	1950014X	1/4	3/4	1/4	2 1/2	\$13.07
1800516X	1900516X	1950516X	5/16	7/8	5/16	2 1/2	\$17.05
1800038X	1900038X	1950038X	3/8	1	3/8	2 1/2	\$18.46
1800716X	1900716X	1950716X	7/16	1	7/16	2 1/2	\$25.81
1800012X	1900012X	1950012X	1/2	1	1/2	3	\$33.90
1800916X	1900916X	1950916X	9/16	1 1/4	9/16	3 1/2	\$50.43
1800058X	1900058X	1950058X	5/8	1 1/4	5/8	3 1/2	\$53.56
1800034X	1900034X	1950034X	3/4	1 1/2	3/4	4	\$76.22
1800078X	1900078X	1950078X	7/8	1 1/2	7/8	4	\$127.57
1800001X	1900001X	1950001X	1	1 1/2	1	4	\$133.70

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from 10% micrograin carbide

Standard Double End

Standard DBL End-Coated AlTiN

Series:



Series:



Part # 2 FLT	Part # 4 FLT	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Tool Price
4120018	4220018	1/8	3/8	1/8	2	\$11.07
4120532	4220532	5/32	7/16	3/16	2 1/2	\$12.14
4120316	4220316	3/16	1/2	3/16	2 1/2	\$12.14
4120014	4220014	1/4	5/8	1/4	2 1/2	\$13.16
4120516	4220516	5/16	3/4	5/16	3 1/2	\$19.37
4120038	4220038	3/8	3/4	3/8	3 1/2	\$21.42
4120716	4220716	7/16	7/8	7/16	4	\$31.61
4120012	4220012	1/2	1	1/2	4	\$33.72

Part # 2 FLT	Part # 4 FLT	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Coated Price
4120018X	4220018X	1/8	3/8	1/8	2	\$13.55
4120532X	4220532X	5/32	7/16	3/16	2 1/2	\$14.75
4120316X	4220316X	3/16	1/2	3/16	2 1/2	\$14.75
4120014X	4220014X	1/4	5/8	1/4	2 1/2	\$17.10
4120516X	4220516X	5/16	3/4	5/16	3 1/2	\$25.56
4120038X	4220038X	3/8	3/4	3/8	3 1/2	\$29.71
4120716X	4220716X	7/16	7/8	7/16	4	\$40.18
4120012X	4220012X	1/2	1	1/2	4	\$43.87

The double end version of the std. length series end mills offer the same tool geometry in an economical offering. These tools are ideal for slotting, keying, and general purpose milling.

SEE WEBSITE FOR PRICE DISCOUNTS

Tolerance all sizes: Diameter- +.000/-.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

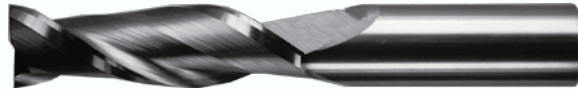
Tolerance all sizes: Diameter- +.000/-.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Long Endmill

Long Endmill-Coated^{AlTiN}

Series:

510



520



Part # 2FL	Part # 4FL	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Tool Price
510018b	520018b	1/8	3/4	1/8	2 1/2	\$7.32
510316c	520316c	3/16	3/4	3/16	2 1/2	\$8.62
510014a	520014a	1/4	1	1/4	4	\$12.39
510014c	520014c	1/4	1 1/8	1/4	3	\$12.98
510516a	520516a	5/16	1 1/8	5/16	3	\$14.01
510038a	520038a	3/8	1 1/8	3/8	3	\$16.08
510038b	520038b	3/8	1	3/8	4	\$18.87
510716a	520716a	7/16	2	7/16	4	\$25.37
510012a	520012a	1/2	1 1/2	1/2	4	\$27.53
510012b	520012b	1/2	2	1/2	4	\$29.13
510058a	520058a	5/8	2 1/4	5/8	5	\$65.12
510034a	520034a	3/4	2 1/4	3/4	5	\$89.79
510001a	520001a	1	2 1/4	1	5	\$123.56

Series:

510X AlTiN



520X AlTiN



Part # 2FL	Part # 4FL	Tool Diameter	Flute Length	Shank Diameter	Overall Length	Coated Price
510018bX	520018bX	1/8	3/4	1/8	2 1/2	\$9.03
510316cX	520316cX	3/16	3/4	3/16	2 1/2	\$10.36
510014aX	520014aX	1/4	1	1/4	4	\$15.37
510014cX	520014cX	1/4	1 1/8	1/4	3	\$15.61
510516aX	520516aX	5/16	1 1/8	5/16	3	\$18.02
510038aX	520038aX	3/8	1 1/8	3/8	3	\$20.52
510038bX	520038bX	3/8	1	3/8	4	\$24.40
510716aX	520716aX	7/16	2	7/16	4	\$31.09
510012aX	520012aX	1/2	1 1/2	1/2	4	\$34.30
510012bX	520012bX	1/2	2	1/2	4	\$35.90
510058aX	520058aX	5/8	2 1/4	5/8	5	\$74.66
510034aX	520034aX	3/4	2 1/4	3/4	5	\$100.35
510001aX	520001aX	1	2 1/4	1	5	\$137.81

Long length end mills provide longer length of cut and greater reach for deep milling applications.

Due to fluctuating carbide costs, prices subject to change.

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

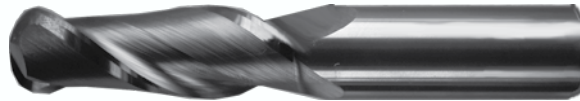
Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Long Ball Endmill

Long Ball Endmill-Coated

Series:

530



540



Part #	Part #	Tool	Flute	Shank	Overall	
2 FLT	4 FLT	Diameter	Length	Diameter	Length	Price
530018b	540018b	1/8	3/4	1/8	2 1/2	\$9.58
530316c	540316c	3/16	3/4	3/16	2 1/2	\$10.71
530014a	540014a	1/4	1	1/4	4	\$14.19
530014c	540014c	1/4	1 1/8	1/4	3	\$15.54
530516a	540516a	5/16	1 1/8	5/16	3	\$16.66
530038a	540038a	3/8	1 1/8	3/8	3	\$19.23
530038b	540038b	3/8	1	3/8	4	\$23.63
530716a	540716a	7/16	2	7/16	4	\$32.22
530012a	540012a	1/2	1 1/2	1/2	4	\$33.09
530012b	540012b	1/2	2	1/2	4	\$33.40
530058a	540058a	5/8	2 1/4	5/8	5	\$76.12
530034a	540034a	3/4	2 1/4	3/4	5	\$105.81
530001a	540001a	1	2 1/4	1	5	\$208.75

Series:

530X AITiN



540X AITiN



Part #	Part #	Tool	Flute	Shank	Overall	Coated
2 FLT	4 FLT	Diameter	Length	Diameter	Length	Price
530018bX	540018bX	1/8	3/4	1/8	2 1/2	\$11.29
530316cX	540316cX	3/16	3/4	3/16	2 1/2	\$12.45
530014aX	540014aX	1/4	1	1/4	4	\$17.17
530014cX	540014cX	1/4	1 1/8	1/4	3	\$18.17
530516aX	540516aX	5/16	1 1/8	5/16	3	\$20.67
530038aX	540038aX	3/8	1 1/8	3/8	3	\$23.67
530038bX	540038bX	3/8	1	3/8	4	\$29.15
530716aX	540716aX	7/16	2	7/16	4	\$37.93
530012aX	540012aX	1/2	1 1/2	1/2	4	\$39.86
530012bX	540012bX	1/2	2	1/2	4	\$40.17
530058aX	540058aX	5/8	2 1/4	5/8	5	\$85.66
530034aX	540034aX	3/4	2 1/4	3/4	5	\$116.38
530001aX	540001aX	1	2 1/4	1	5	\$223.00

SEE WEBSITE FOR PRICE DISCOUNTS

Long length ball end mills have the capability to machine much thicker material, eliminating the interrupted cut that may be present with regular length tools.

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Metric Endmills

AlTiN

Metric Endmills - Coated

Series:

170MET



Part #	Tool 4 FLT Diameter	Flute Length	Shank Diameter	Overall Length	Price
170MET035	3.5mm	12mm	4mm	50mm	\$7.77
170MET040	4.0mm	14mm	4mm	50mm	\$8.13
170MET045	4.5mm	16mm	6mm	50mm	\$9.98
170MET050	5.0mm	16mm	6mm	50mm	\$10.70
170MET060	6.0mm	19mm	6mm	50mm	\$11.41
170MET070	7.0mm	19mm	8mm	63mm	\$15.29
170MET080	8.0mm	20mm	8mm	63mm	\$16.72
170MET090	9.0mm	22mm	10mm	75mm	\$22.08
170MET100	10.0mm	22mm	10mm	75mm	\$22.79
170MET110	11.0mm	25mm	12mm	75mm	\$27.80
170MET120	12.0mm	25mm	12mm	75mm	\$28.16
170MET140	14.0mm	32mm	14mm	89mm	\$39.11
170MET160	16.0mm	32mm	16mm	89mm	\$49.98
170MET180	18.0mm	38mm	18mm	100mm	\$88.36
170MET200	20.0mm	38mm	20mm	100mm	\$88.71
170MET250	25.0mm	38mm	25mm	100mm	\$120.69

Series:

170MET - AlTiN



Part #	Tool 4 FLT Diameter	Flute Length	Shank Diameter	Overall Length	Price
170MET035X	3.5mm	12mm	4mm	50mm	\$9.44
170MET040X	4.0mm	14mm	4mm	50mm	\$9.80
170MET045X	4.5mm	16mm	6mm	50mm	\$11.65
170MET050X	5.0mm	16mm	6mm	50mm	\$12.37
170MET060X	6.0mm	19mm	6mm	50mm	\$13.08
170MET070X	7.0mm	19mm	8mm	63mm	\$19.31
170MET080X	8.0mm	20mm	8mm	63mm	\$20.73
170MET090X	9.0mm	22mm	10mm	75mm	\$27.19
170MET100X	10.0mm	22mm	10mm	75mm	\$27.90
170MET110X	11.0mm	25mm	12mm	75mm	\$33.33
170MET120X	12.0mm	25mm	12mm	75mm	\$33.69
170MET140X	14.0mm	32mm	14mm	89mm	\$46.20
170MET160X	16.0mm	32mm	16mm	89mm	\$57.49
170MET180X	18.0mm	38mm	18mm	100mm	\$96.68
170MET200X	20.0mm	38mm	20mm	100mm	\$98.63
170MET250X	25.0mm	38mm	25mm	100mm	\$133.12

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from Sub-micrograin carbide

Tolerance all sizes: Diameter- +.000/-0.002 Shank- -.0001, -.0003 Made from 10% micrograin carbide

Carbide Tipped Slitting Saws



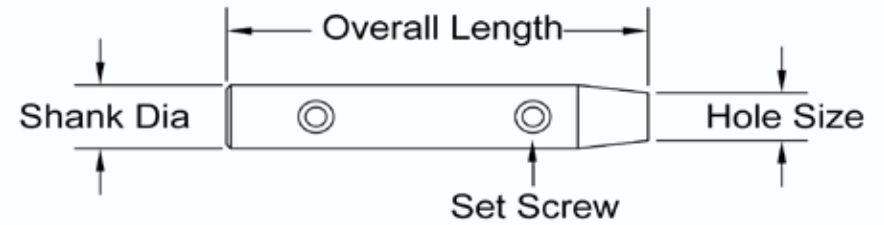
Carbide tipped slitting saws have a carbide grade and tool geometry best suited for the material to be cut. All saws are precision ground with side clearance and concavity on the carbide tips for free cutting action.

For extended tool life, saws can be ordered with a variety of special coatings.

Cat No. Non Ferrous	Cat No. Cast Iron	Cat No. Steel	Saw Dia	Saw Width	Arbor Hole	No. of Teeth	List Price
NFS 321	CIS 321	STS 321	3	1/16	1	12	\$153.00
NFS 331	CIS 331	STS 331	3	3/32	1	12	\$158.00
NFS 341	CIS 341	STS 341	3	1/8	1	12	\$135.10
NFS 361	CIS 361	STS 361	3	3/16	1	12	\$169.18
NFS 421	CIS 421	STS 421	4	1/16	1	14	\$198.12
NFS 431	CIS 431	STS 431	4	3/32	1	14	\$199.48
NFS 441	CIS 441	STS 441	4	1/8	1	14	\$189.20
NFS 461	CIS 461	STS 461	4	3/16	1	14	\$204.00
NFS 521	CIS 521	STS 521	5	1/16	1 or 1-1/4	16	\$248.00
NFS 531	CIS 531	STS 531	5	3/32	1 or 1-1/4	16	\$249.29
NFS 541	CIS 541	STS 541	5	1/8	1 or 1-1/4	16	\$241.10
NFS 561	CIS 561	STS 561	5	3/16	1 or 1-1/4	16	\$259.16
NFS 621	CIS 621	STS 621	6	1/16	1 or 1-1/4	18	\$302.23
NFS 631	CIS 631	STS 631	6	3/32	1 or 1-1/4	18	\$304.00
NFS 641	CIS 641	STS 641	6	1/8	1 or 1-1/4	18	\$282.21
NFS 661	CIS 661	STS 661	6	3/16	1 or 1-1/4	18	\$314.80

To order 5" or 6" diameter saws with 1-1/4" arbor hole, add -2 to catalog number. Saws with dimensions other than shown can be manufactured as specials. Send in your drawings or specifications for a prompt quotation.

Tool Extensions



Part #	Hole Dia.	Dec.	Shank	Overall	Screw	PRICE
12501	1/8	0.125	0.375	3.00	8-32	\$52.50
18701	3/16	0.187	0.500	3.00	8-32	\$52.50
25001	1/4	0.250	0.500	3.00	10-32	\$52.50
31201	5/16	0.312	0.750	4.00	1/4-20	\$57.50
37501	3/8	0.375	0.750	4.00	1/4-20	\$57.50

- Two opposed set screws for secure holding and a third for possible use with positive stop.
- A-2 Steel, hardened to 60-62 R.C.
- Black Oxide Finish



We can meet all of your needs for special milling cutters. Whether shank type or arbor type, solid carbide, carbide tipped or high speed steel, the in house experts can manufacture cutters to suit your requirements.

Internal Hex Broach

Series:

RPBH



Part Number	Hex Size	Shank Diameter	Depth of cut	Overall Length	Tool Price
RPBH116	1/16"	8mm	3/32"	1-1/4"	\$37.00
RPBH332	3/32"	8mm	9/64"	1-1/4"	\$37.00
RPBH018	1/8"	8mm	3/16"	1-1/4"	\$37.00
RPBH532	5/32"	8mm	1/4"	1-1/4"	\$37.00
RPBH316	3/16"	8mm	9/32"	1-1/4"	\$37.00
RPBH732	7/32"	8mm	11/32"	1-1/4"	\$37.00
RPBH014	1/4"	8mm	3/8"	1-1/4"	\$37.00
RPBH932	9/32"	8mm	3/8"	1-1/2"	\$48.80
RPBH516	5/16"	8mm	3/8"	1-1/2"	\$48.80

Additional sizes available upon request!

H.S.S. Rotary broaches – used in a variety of machines to cut hex shapes in blind holes. The practical forming length being 1-1/2 times the size of the broach (measured across flats)

SEE WEBSITE FOR PRICE DISCOUNTS



*Place the coolant right where it should be...
in the cut!
Coolant can be either be sent through the tool,
opening into the flute, or in coolant grooves
running down the OD of the tool.*

*Enhance tool life by ejecting the
chips out of the cut.*



Make any cutter in this catalog coolant thru by using either versions of Superflo Technology!*

*These tools are not stocked with Superflo Technology. Please allow time for manufacturing.

LAKE SHORE CARBIDE

LakeShore Carbide is devoted to distributing only high quality USA made tooling at the lowest possible price. Our tools offer high quality American micro grain carbide, state of the art grinding and high quality coatings.

The end result is a high performance tool that delivers solid reliability at a fair price.

LakeShore Carbide is working hard to offer our customers the best value for their dollar. We run a cost conscious facility which utilizes the internet and secure, encrypted credit card transactions. We have no salesmen or a credit department which allows us to pass these savings on to you.

We will continue to expand our tooling lines and we are proud to be the supplier of choice for our present customers. We hope you will allow us the chance to compete for your business and lower your company's tooling costs.



Specials

We make custom tools to print!

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Coolant Thru Drills

Step Drills

Special Thread tools

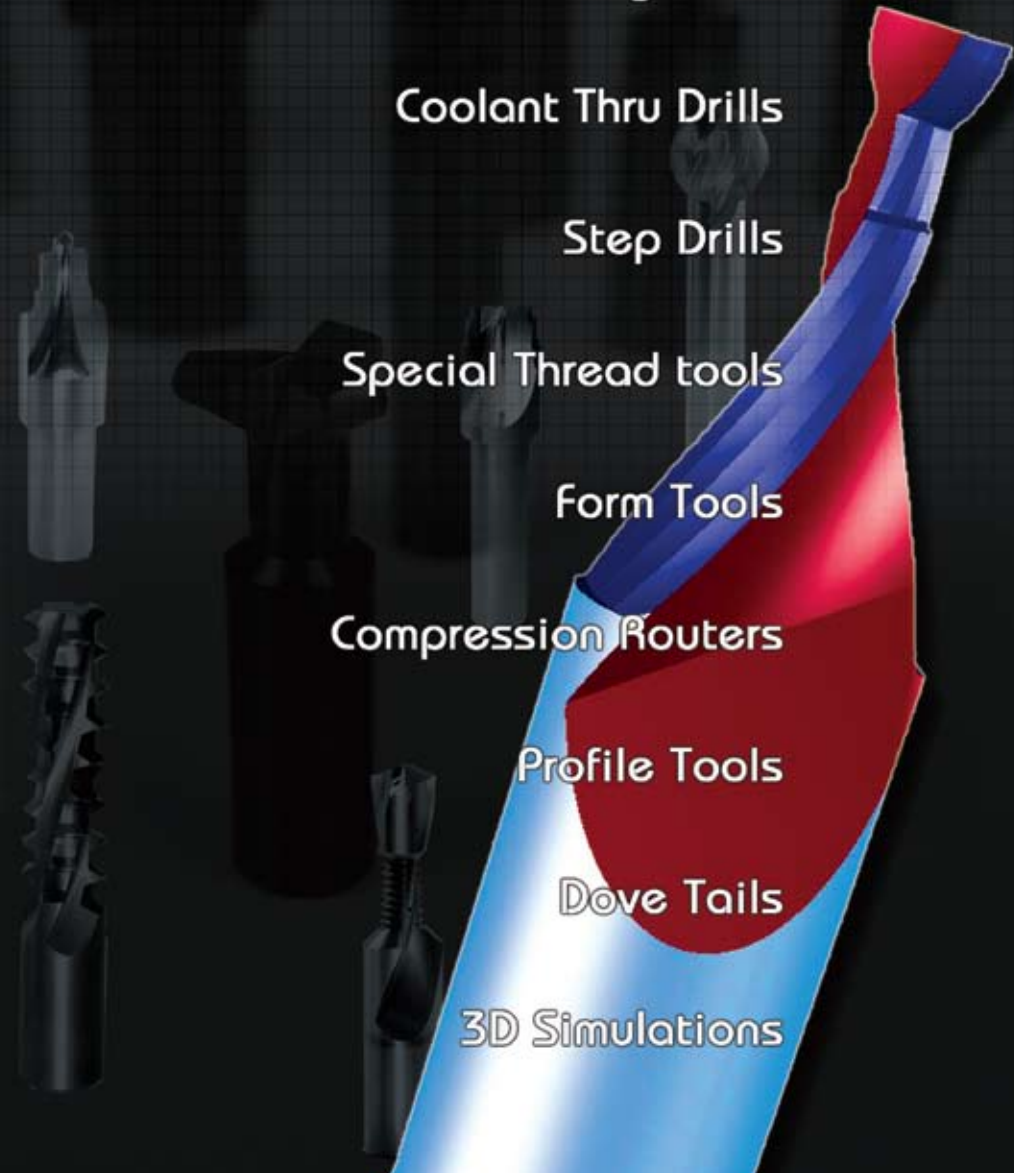
Form Tools

Compression Routers

Profile Tools

Dove Tails

3D Simulations





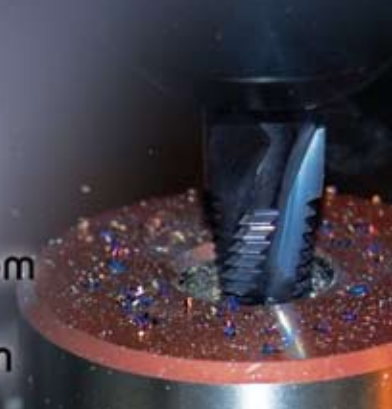
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This image was an action shot of the 7/16-20 threadmill actually cutting D2 material with a hardness of 62 RC. The tool was running at 3000RPM with a feedrate of 25 inches per minute at the time the photo was taken.

The tool and part were cool to the touch immediately after the threads were machined because all the heat was transferred into the multi colored chips seen exiting the part.