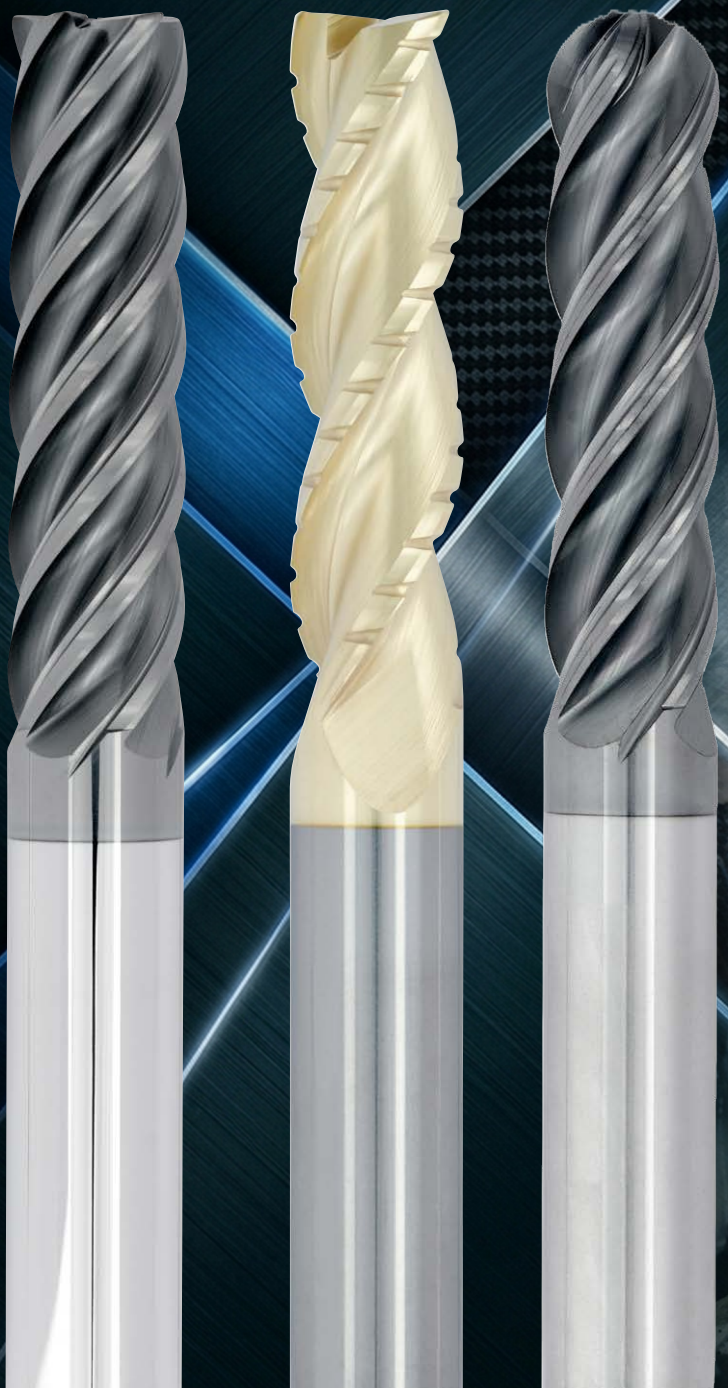
MAJAC MILLS

2026-2027

PREMIUM SOLID CARBIDE CUTTING TOOLS

MADE IN CANADA



GP

General Purpose end mills for standard performance applications. Available in Square, Ball Nose, Chamfers in a large selection of sizes at incredible prices.

HP

High Performance Variable Pitch end mills for high performance applications with premium carbide. Available in Square, Ball Nose, Corner Radius. High Performance at an affordable price.

UHP

Ultra High Performance Variable Pitch end mills for extreme performance applications with ultra high performance carbide. Available in Square, Ball Nose, Corner Radius. Maximum performance & tool life

HEM

Ultra High Performance Variable Pitch end mills for High Efficiency Machining (HEM) applications with ultra high performance carbide. Available in Square, Ball Nose, Corner Radius. With or Without Chipbreakers

HTAS

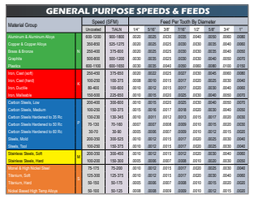
High Temp Alloy & Stainless Variable Pitch end mills for Conventional & High Efficiency Machining (HEM) applications with a special ultra high performance carbide grade. Available in Square, Ball Nose, Corner Radius. With or Without Chipbreakers

AL

Ultra High Performance Balanced Pitch end mills for Aluminum applications with ultra high performance carbide. Available in Square, Ball Nose, Corner Radius. Chip breakers Available. Maximum performance & tool life

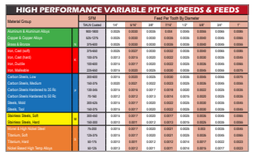
SPEEDS & FEEDS

GP-General Purpose



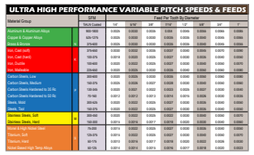
13

HP-High Performance



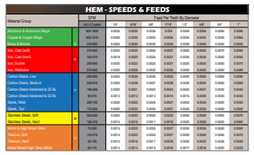
17

UHP-Ultra High Performance



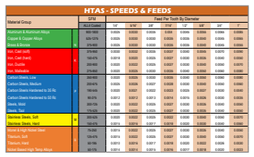
21

HEM-High Efficiency Machining



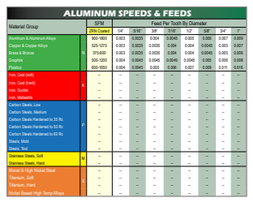
24

HTAS - High Temp Alloy & Stainless



33

UHP-Aluminum



37

GP-General Purpose



2 Flute - Coated & Uncoated, Square End, Large Selection of Sizes



3 Flute - Coated & Uncoated, Square End, Large Selection of Sizes



4 Flute - Coated & Uncoated, Square End, Large Selection of Sizes

P K

4-7

GP-General Purpose



2 Flute - Coated & Uncoated, Ball End, Large Selection of Sizes



3 Flute - Coated & Uncoated, Ball End, Large Selection of Sizes



4 Flute - Coated & Uncoated, Ball End, Large Selection of Sizes

P K

7-10

GP-General Purpose



2 Flute - Double Ended Coated & Uncoated, Square End, Stub & Regular length



4 Flute - Double Ended Coated & Uncoated, Square End, Stub & Regular length

P K

10-11

GP-General Purpose



2 Flute - Double Ended Coated & Uncoated, Ball End, Stub & Regular length



4 Flute - Double Ended Coated & Uncoated, Ball End, Stub & Regular length

P K

11-12

GP-General Purpose



2 Flute - Coated & Uncoated, 90 Degree Drill/Mill



4 Flute - Coated & Uncoated, 90 Degree Drill/Mill

P K M N

13

GP-General Purpose



Engraving Tool Single Flute Coated 30 Degree Tip Angle

P K M N

12

GP-General Purpose



Spot Drill Coated 140 Degree Point Angle

P K M N

12

HP-High Performance



4 Flute - Round Shank, Coated, Square & Corner Radius, Large Selection of Sizes



4 Flute - Weldon Shank, Coated, Square & Corner Radius, Large Selection of Sizes



5 Flute - Round Shank, Coated, Square & Corner Radius, Large Selection of Sizes

P K

14-15

HP-High Performance



4 Flute - Round Shank, Coated, Ball End, Large Selection of Sizes



4 Flute - Weldon Shank, Coated, Ball End, Large Selection of Sizes

P K

15-16

HP-High Performance



4 Flute - Round Shank, Coated, Square & Corner Radius, Long Reach



4 Flute - Round Shank, Coated, Ball End, Long Reach

P K M N

16-17

UHP-Ultra High Performance



4 Flute - Round Shank, Coated, Square & Corner Radius, Large Selection of Sizes



4 Flute - Weldon Shank, Coated, Square & Corner Radius, Large Selection of Sizes



5 Flute - Round Shank, Coated, Square & Corner Radius, Large Selection of Sizes

P K M

18-19

UHP-Ultra High Performance



4 Flute - Round Shank, Coated, Ball End, Large Selection of Sizes



4 Flute - Weldon Shank, Coated, Ball End, Large Selection of Sizes

P K M

20

HEM-High Efficiency Machining



5 Flute - Round Shank, Coated, Square & Corner Radius, Large Selection of Sizes, With or Without Chipbreaker



6 Flute - Round Shank, Coated, Square & Corner Radius, Regular Length

P K M

22-23

HEM-High Efficiency Machining



7 Flute - Round Shank, Coated, Square & Corner Radius, Large Selection of Sizes, With or Without Chipbreaker

P K M

22-23

HTAS - High Temp Alloy & Stainless



4 Flute - Round Shank, Coated, Square & Corner Radius, Massive Selection of Sizes, With or Without Chipbreakers



5 Flute - Round Shank, Coated, Square & Corner Radius, Massive Selection of Sizes, With or Without Chipbreakers



6 Flute - Round Shank, Coated, Square & Corner Radius, Massive Selection of Sizes, With or Without Chipbreakers



7 Flute - Round Shank, Coated, Square & Corner Radius, Massive Selection of Sizes, With or Without Chipbreakers

P K M S

26-31

HTAS - High Temp Alloy & Stainless



4 Flute - Round Shank, Coated, Ball End, Large Selection of Sizes

6 Flute - Round Shank, Coated, Ball End, Large Selection of Sizes

P K M S

32

UHP-Aluminum

3 Flute - Round Shank, Medium/Rougher, Coated & Uncoated, Square & Corner Radius, Regular & Long length

3 Flute - Round Shank, Medium/Rougher, Chipbreaker, Coated & Uncoated, Square & Corner Radius, Regular & Long length

N

34

UHP-Aluminum

2 Flute - Round Shank, Medium/Finisher, Coated & Uncoated, Square & Corner Radius, Regular, Long & Extra Long length

3 Flute - Round Shank, Medium/Finisher, Coated & Uncoated, Square & Corner Radius, Regular, Long & Extra Long length

N

35

UHP-Aluminum

2 Flute - Round Shank, Ball End, Coated & Uncoated, Regular, Long & Extra Long length

3 Flute - Round Shank, Ball End, Coated & Uncoated, Regular, Long & Extra Long length

N

36

COATINGS

TiALN (Titanium Aluminum Nitride) - Violet Color; Provides the benefits of high abrasion & heat resistance to improve tool life

ALL4 (Aluminum Chromium Titanium Nitride) - Grey Color; Ultra High Performance coating with extreme heat, abrasion & wear resistance in ferrous applications

ZrN (Zirconium Nitride) - Pale Gold Color; Provides high lubricity for machining aluminum & non-ferrous materials

DLC (Diamond Like Carbon) - Black Color; Extremely hard with very high wear resistance for finish machining aluminum, non-ferrous & composite materials

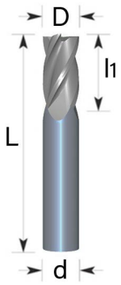
TOOL INDEX

Honed Cutting Edges - 10% Micrograin Carbide
GP-General Purpose









Cutter Diam. D	Shank Diam. d	Length of Cut l1	Overall Length L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
1/32	1/8	1/16	1-1/2	870213	870214	870215	870261	870262	870263
		3/32	1-1/2	870309	870310	870311	870498	870499	870500
3/64	1/8	3/32	1-1/2	870216	870217	870218	870264	870265	870266
		1/8	1-1/2	870312	870313	870314	870501	870502	870503
1/16	1/8	1/8	1-1/2	870219	870220	870221	870267	870268	870269
		3/16	1-1/2	870315	870316	870317	870504	870505	870506
5/64	1/8	1/4	1-1/2	870318	870319	870320	870507	870508	870509
3/32	1/8	3/16	1-1/2	870222	870223	870224	870270	870271	870272
		3/8	1-1/2	870321	870322	870323	870510	870511	870512
7/64	1/8	3/8	1-1/2	870327	870328	870329	870516	870517	870518
1/8	1/8	1/4	1-1/2	870228	870229	870230	870276	870277	870278
		1/2	1-1/2	870330	870331	870332	870519	870520	870521
		3/4	2-1/2	870689	--	870690	870711	--	870712
		1	3	870735	--	870736	870767	--	870768
9/64	3/16	9/16	2	870333	870334	870335	870522	870523	870524
5/32	3/16	5/16	2	870231	870232	870233	870279	870280	870281
		9/16	2	870336	870337	870338	870525	870526	870527
11/64	3/16	9/16	2	870339	870340	870341	870528	870529	870530
3/16	3/16	3/8	2	870234	870235	870236	870282	870283	870284
		5/8	2	870342	870343	870344	870531	870532	870533
		3/4	2-1/2	870691	--	870692	870713	--	870714
		1-1/8	3	870737	--	870738	870769	--	870770
13/64	1/4	5/8	2-1/2	870345	870346	870347	870534	870535	870536
7/32	1/4	7/16	2	870237	870238	870239	870285	870286	870287
		5/8	2-1/2	870348	870349	870350	870537	870538	870539
15/64	1/4	3/4	2-1/2	870351	870352	870353	870540	870541	870542
1/4	1/4	1/2	2	870240	870241	870242	870288	870289	870290
		3/4	2-1/2	870354	870355	870356	870543	870544	870545
		1-1/8	3	870693	--	870694	870715	--	870716
		1-1/2	4	870739	--	870740	870771	--	870772
17/64	5/16	7/8	2-1/2	870357	870358	870359	870546	870547	870548
9/32	5/16	7/8	2-1/2	870360	870361	870362	870549	870550	870551
19/64	5/16	7/8	2-1/2	870363	870364	870365	870552	870553	870554
5/16	5/16	1/2	2	870243	870244	870245	870291	870292	870293
		7/8	2-1/2	870366	870367	870368	870555	870556	870557
		1-1/8	3	870695	--	870696	870717	--	870718
		1-5/8	4	870743	--	870744	870775	--	870776
21/64	3/8	7/8	2-1/2	870369	870370	870371	870558	870559	870560
11/32	3/8	7/8	2-1/2	870372	870373	870374	870561	870562	870563
23/64	3/8	7/8	2-1/2	870375	870376	870377	870564	870565	870566
3/8	3/8	5/8	2	870246	870247	870248	870294	870295	870296
		1	2-1/2	870378	870379	870380	870567	870568	870569
		1-1/8	3	870697	--	870698	870719	--	870720
		1-3/4	4	870749	--	870750	870781	--	870782
25/64	7/16	1	2-3/4	870381	870382	870383	870570	870571	870572
13/32	7/16	1	2-3/4	870384	870385	870386	870573	870574	870575

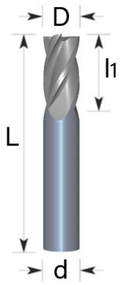
Square
Round Shank
30° Helix
Uncoated
TiALN Coated
P
K
M
N

D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"









Cutter Diam. D	Shank Diam. d	Length of Cut l1	Overall Length L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
27/64	7/16	1	2-3/4	870387	870388	870389	870576	870577	870578
7/16	7/16	5/8	2-3/4	870249	870250	870251	870297	870298	870299
		1	2-3/4	870390	870391	870392	870579	870580	870581
		2	4	870699	--	870700	870721	--	870722
29/64	1/2	1	3	870393	870394	870395	870582	870583	870584
15/32	1/2	1	3	870396	870397	870398	870585	870586	870587
31/64	1/2	1	3	870399	870400	870401	870588	870589	870590
1/2	1/2	5/8	2-1/2	870252	870253	870254	870300	870301	870302
		1	3	870402	870403	870404	870591	870592	870593
		1-1/4	3	--	--	872519	--	--	872518
		2	4	870701	--	870702	870723	--	870724
		3	6	870753	--	870754	870785	--	870786
33/64	9/16	1-1/4	3-1/2	870405	870406	870407	870594	870595	870596
17/32	9/16	1-1/4	3-1/2	870408	870409	870410	870597	870598	870599
35/64	9/16	1-1/4	3-1/2	870411	870412	870413	870600	870601	870602
9/16	9/16	1-1/4	3-1/2	870414	870415	870416	870603	870604	870605
37/64	5/8	1-1/4	3-1/2	870417	870418	870419	870606	870607	870608
19/32	5/8	1-1/4	3-1/2	870420	870421	870422	870609	870610	870611
39/64	5/8	1-1/4	3-1/2	870423	870424	870425	870612	870613	870614
5/8	5/8	3/4	3	870255	870256	870257	870303	870304	870305
		1-1/4	3-1/2	870426	870427	870428	870615	870616	870617
		2-1/4	5	870705	--	870706	870727	--	870728
		3	6	870757	--	870758	870789	--	870790
41/64	3/4	1-1/2	4	870429	870430	870431	870618	870619	870620
21/32	3/4	1-1/2	4	870432	870433	870434	870621	870622	870623
43/64	3/4	1-1/2	4	870435	870436	870437	870624	870625	870626
11/16	3/4	1-1/2	4	870438	870439	870440	870627	870628	870629
45/64	3/4	1-1/2	4	870441	870442	870443	870630	870631	870632
23/32	3/4	1-1/2	4	870444	870445	870446	870633	870634	870635
47/64	3/4	1-1/2	4	870447	870448	870449	870636	870637	870638
3/4	3/4	1	3	870258	870259	870260	870306	870307	870308
		1-1/2	4	870450	870451	870452	870639	870640	870641
		2-1/4	5	870707	--	870708	870729	--	870730
		3	6	870759	--	870760	870791	--	870792
49/64	7/8	1-1/2	4	870453	870454	870455	870642	870643	870644
25/32	7/8	1-1/2	4	870456	870457	870458	870645	870646	870647
51/64	7/8	1-1/2	4	870459	870460	870461	870648	870649	870650
13/16	7/8	1-1/2	4	870462	870463	870464	870651	870652	870653
53/64	7/8	1-1/2	4	870465	870466	870467	870654	870655	870656
27/32	7/8	1-1/2	4	870468	870469	870470	870657	870658	870659
55/64	7/8	1-1/2	4	870471	870472	870473	870660	870661	870662
7/8	7/8	1-1/2	4	870474	870475	870476	870663	870664	870665
57/64	1	1-1/2	4	870477	870478	870479	870666	870667	870668
29/32	1	1-1/2	4	870480	870481	870482	870669	870670	870671
59/64	1	1-1/2	4	870483	870484	870485	870672	870673	870674
15/16	1	1-1/2	4	870486	870487	870488	870675	870676	870677

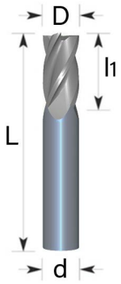
Square
Round Shank
30° Helix
Uncoated
TiALN Coated
P
K
M
N

D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"









Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
61/64	1	1-1/2	4	870489	870490	870491	870678	870679	870680
31/32	1	1-1/2	4	870492	870493	870494	870681	870682	870683
63/64	1	1-1/2	4	870495	870496	870497	870684	870685	870686
1	1	1	3	870225	870226	870227	870273	870274	870275
		1-1/2	4	870324	870325	870326	870513	870514	870515
		2-1/4	5	870687	--	870688	870709	--	870710
		3	6	870731	--	870732	870763	--	870764







Cutter Diam. (mm) D	Shank Diam. (mm) d	Length of Cut l1	O.A.L. L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
1	1	3	38	871617	871618	871619	871683	871684	871685
1.5	2	5	38	871620	871621	871622	871686	871687	871688
2	2	6	38	871623	871624	871625	871689	871690	871691
3	3	12	38	871629	871630	871631	871695	871696	871697
		25	75	871837	--	871838	871861	--	871862
3.5	4	25	100	871885	--	871886	871901	--	871902
		12	50	871632	871633	871634	871698	871699	871700
4	4	14	50	871635	871636	871637	871701	871702	871703
		25	75	871839	--	871840	871863	--	871864
		50	100	871887	--	871888	871903	--	871904
4.5	5	14	50	871638	871639	871640	871704	871705	871706
5	5	16	50	871641	871642	871643	871707	871708	871709
		25	75	871841	--	871842	871865	--	871866
		30	100	871889	--	871890	871905	--	871906
6	6	19	63	871644	871645	871646	871710	871711	871712
		25	75	871843	--	871844	871867	--	871868
		50	100	871891	--	871892	871907	--	871908
7	8	19	63	871647	871648	871649	871713	871714	871715
8	8	19	63	871650	871651	871652	871716	871717	871718
		30	100	871845	--	871846	871869	--	871870
		50	150	871893	--	871894	871909	--	871910
9	10	22	70	871653	871654	871655	871719	871720	871721
10	10	22	70	871656	871657	871658	871722	871723	871724
		38	100	871847	--	871848	871871	--	871872
		75	150	871895	--	871896	871911	--	871912
11	12	25	70	871659	871660	871661	871725	871726	871727

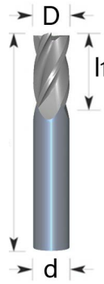
Square
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D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"

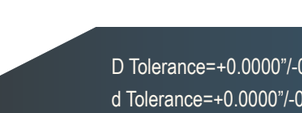






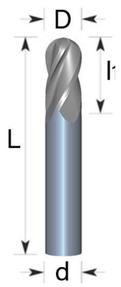


Cutter Diam. (mm) D	Shank Diam. (mm) d	Length of Cut l1	Overall Length L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
12	12	25	75	871662	871663	871664	871728	871729	871730
		50	100	871849	--	871850	871873	--	871874
		75	150	871897	--	871898	871913	--	871914
14	14	30	88	871665	871666	871667	871731	871732	871733
		50	125	871851	--	871852	871875	--	871876
		75	150	871899	--	871900	871915	--	871916
16	16	32	88	871668	871669	871670	871734	871735	871736
		75	150	871853	--	871854	871877	--	871878
18	18	36	100	871671	871672	871673	871737	871738	871739
		75	150	871855	--	871856	871879	--	871880
20	20	38	100	871674	871675	871676	871740	871741	871742
		75	150	871857	--	871858	871881	--	871882
22	25	38	100	871677	871678	871679	871743	871744	871745
25	25	38	100	871680	871681	871682	871746	871747	871748
		75	150	871859	--	871860	871883	--	871884







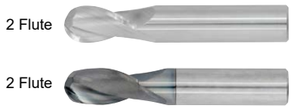


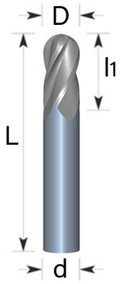
Cutter Diam. D	Shank Diam. d	Length of Cut l1	Overall Length L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
1/32	1/8	1/16	1-1/2	870795	870796	870797	870843	870844	870845
		3/32	1-1/2	870891	870892	870893	871080	871081	871082
3/64	1/8	3/32	1-1/2	870798	870799	870800	870846	870847	870848
		1/8	1-1/2	870894	870895	870896	871083	871084	871085
1/16	1/8	1/8	1-1/2	870801	870802	870803	870849	870850	870851
		3/16	1-1/2	870897	870898	870899	871086	871087	871088
5/64	1/8	1/4	1-1/2	870900	870901	870902	871089	871090	871091
3/32	1/8	3/16	1-1/2	870804	870805	870806	870852	870853	870854
		3/8	1-1/2	870903	870904	870905	871092	871093	871094
7/64	1/8	3/8	1-1/2	870909	870910	870911	871098	871099	871100
1/8	1/8	1/4	1-1/2	870810	870811	870812	870858	870859	870860
		1/2	1-1/2	870912	870913	870914	871101	871102	871103
		3/4	2-1/2	871271	--	871272	871293	--	871294
		1	3	871317	--	871318	871349	--	871350
9/64	3/16	9/16	2	870915	870916	870917	871104	871105	871106
5/32	3/16	5/16	2	870813	870814	870815	870861	870862	870863
		9/16	2	870918	870919	870920	871107	871108	871109
11/64	3/16	9/16	2	870921	870922	870923	871110	871111	871112

Ball
Square
Round Shank
30° Helix
Uncoated
TiALN Coated
P
K
M
N

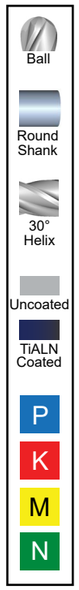
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d Tolerance=+0.0000"/-0.0004"

Honed Cutting Edges - 10% Micrograin Carbide
GP-General Purpose

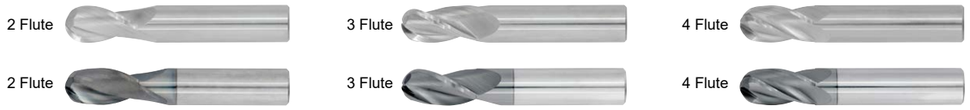


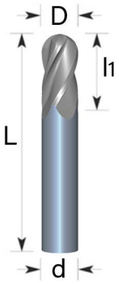


Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
3/16	3/16	3/8	2	870816	870817	870818	870864	870865	870866
		5/8	2	870924	870925	870926	871113	871114	871115
		3/4	2-1/2	871273	--	871274	871295	--	871296
		1-1/8	3	871319	--	871320	871351	--	871352
13/64	1/4	5/8	2-1/2	870927	870928	870929	871116	871117	871118
7/32	1/4	7/16	2	870819	870820	870821	870867	870868	870869
		5/8	2-1/2	870930	870931	870932	871119	871120	871121
15/64	1/4	3/4	2-1/2	870933	870934	870935	871122	871123	871124
1/4	1/4	1/2	2	870822	870823	870824	870870	870871	870872
		3/4	2-1/2	870936	870937	870938	871125	871126	871127
		1-1/8	3	871275	--	871276	871297	--	871298
		1-1/2	4	871321	--	871322	871353	--	871354
17/64	5/16	7/8	2-1/2	870939	870940	870941	871128	871129	871130
9/32	5/16	7/8	2-1/2	870942	870943	870944	871131	871132	871133
19/64	5/16	7/8	2-1/2	870945	870946	870947	871134	871135	871136
5/16	5/16	1/2	2	870825	870826	870827	870873	870874	870875
		7/8	2-1/2	870948	870949	870950	871137	871138	871139
		1-1/8	3	871277	--	871278	871299	--	871300
		1-5/8	4	871325	--	871326	871357	--	871358
21/64	3/8	7/8	2-1/2	870951	870952	870953	871140	871141	871142
11/32	3/8	7/8	2-1/2	870954	870955	870956	871143	871144	871145
23/64	3/8	7/8	2-1/2	870957	870958	870959	871146	871147	871148
3/8	3/8	5/8	2	870828	870829	870830	870876	870877	870878
		1	2-1/2	870960	870961	870962	871149	871150	871151
		1-1/8	3	871279	--	871280	871301	--	871302
		1-3/4	4	871331	--	871332	871363	--	871364
25/64	7/16	1	2-3/4	870963	870964	870965	871152	871153	871154
13/32	7/16	1	2-3/4	870966	870967	870968	871155	871156	871157
27/64	7/16	1	2-3/4	870969	870970	870971	871158	871159	871160
7/16	7/16	5/8	2-3/4	870831	870832	870833	870879	870880	870881
		1	2-3/4	870972	870973	870974	871161	871162	871163
		2	4	871281	--	871282	871303	--	871304
29/64	1/2	1	3	870975	870976	870977	871164	871165	871166
15/32	1/2	1	3	870978	870979	870980	871167	871168	871169
31/64	1/2	1	3	870981	870982	870983	871170	871171	871172
1/2	1/2	5/8	2-1/2	870834	870835	870836	870882	870883	870884
		1	3	870984	870985	870986	871173	871174	871175
		2	4	871283	--	871284	871305	--	871306
		3	6	871335	--	871336	871367	--	871368
33/64	9/16	1-1/4	3-1/2	870987	870988	870989	871176	871177	871178
17/32	9/16	1-1/4	3-1/2	870990	870991	870992	871179	871180	871181
35/64	9/16	1-1/4	3-1/2	870993	870994	870995	871182	871183	871184
9/16	9/16	1-1/4	3-1/2	870996	870997	870998	871185	871186	871187
37/64	5/8	1-1/4	3-1/2	870999	871000	871001	871188	871189	871190
19/32	5/8	1-1/4	3-1/2	871002	871003	871004	871191	871192	871193
39/64	5/8	1-1/4	3-1/2	871005	871006	871007	871194	871195	871196



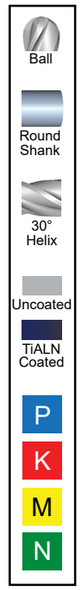
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d Tolerance=+0.0000”/-0.0004”



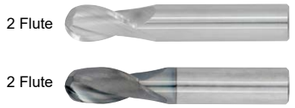


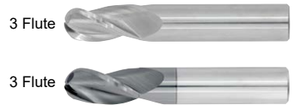
Cutter Diam. D	Shank Diam. d	Length of Cut l1	Overall Length L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
5/8	5/8	3/4	3	870837	870838	870839	870885	870886	870887
		1-1/4	3-1/2	871008	871009	871010	871197	871198	871199
		2-1/4	5	871287	--	871288	871309	--	871310
		3	6	871339	--	871340	871371	--	871372
41/64	3/4	1-1/2	4	871011	871012	871013	871200	871201	871202
21/32	3/4	1-1/2	4	871014	871015	871016	871203	871204	871205
43/64	3/4	1-1/2	4	871017	871018	871019	871206	871207	871208
11/16	3/4	1-1/2	4	871020	871021	871022	871209	871210	871211
45/64	3/4	1-1/2	4	871023	871024	871025	871212	871213	871214
23/32	3/4	1-1/2	4	871026	871027	871028	871215	871216	871217
47/64	3/4	1-1/2	4	871029	871030	871031	871218	871219	871220
3/4	3/4	1	3	870840	870841	870842	870888	870889	870890
		1-1/2	4	871032	871033	871034	871221	871222	871223
		2-1/4	5	871289	--	871290	871311	--	871312
		3	6	871341	--	871342	871373	--	871374
49/64	7/8	1-1/2	4	871035	871036	871037	871224	871225	871226
25/32	7/8	1-1/2	4	871038	871039	871040	871227	871228	871229
51/64	7/8	1-1/2	4	871041	871042	871043	871230	871231	871232
13/16	7/8	1-1/2	4	871044	871045	871046	871233	871234	871235
53/64	7/8	1-1/2	4	871047	871048	871049	871236	871237	871238
27/32	7/8	1-1/2	4	871050	871051	871052	871239	871240	871241
55/64	7/8	1-1/2	4	871053	871054	871055	871242	871243	871244
7/8	7/8	1-1/2	4	871056	871057	871058	871245	871246	871247
57/64	1	1-1/2	4	871059	871060	871061	871248	871249	871250
29/32	1	1-1/2	4	871062	871063	871064	871251	871252	871253
59/64	1	1-1/2	4	871065	871066	871067	871254	871255	871256
15/16	1	1-1/2	4	871068	871069	871070	871257	871258	871259
61/64	1	1-1/2	4	871071	871072	871073	871260	871261	871262
31/32	1	1-1/2	4	871074	871075	871076	871263	871264	871265
63/64	1	1-1/2	4	871077	871078	871079	871266	871267	871268
1	1	1	3	870807	870808	870809	870855	870856	870857
		1-1/2	4	870906	870907	870908	871095	871096	871097
		2-1/4	5	871269	--	871270	871291	--	871292
		3	6	871313	--	871314	871345	--	871346



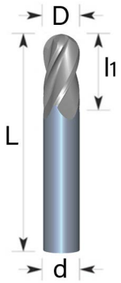


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d Tolerance=+0.0000”/-0.0004”









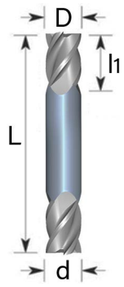
Ball
Square
Round Shank
Weldon Shank
30° Helix
Uncoated
TiALN Coated
P
K
M
N

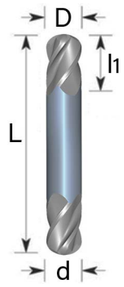
Cutter Diam. (mm) D	Shank Diam. (mm) d	Length of Cut l1	O.A.L. L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
1	1	3	38	871749	--	871750	871793	--	871794
1.5	2	5	38	871751	--	871752	871795	--	871796
2	2	6	38	871753	--	871754	871797	--	871798
3	3	12	38	871757	--	871758	871801	--	871802
3.5	4	12	50	871759	--	871760	871803	--	871804
4	4	14	50	871761	--	871762	871805	--	871806
4.5	5	14	50	871763	--	871764	871807	--	871808
5	5	16	50	871765	--	871766	871809	--	871810
6	6	19	63	871767	--	871768	871811	--	871812
7	8	19	63	871769	--	871770	871813	--	871814
8	8	19	63	871771	--	871772	871815	--	871816
9	10	22	70	871773	--	871774	871817	--	871818
10	10	22	70	871775	--	871776	871819	--	871820
11	12	25	70	871777	--	871778	871821	--	871822
12	12	25	75	871779	--	871780	871823	--	871824
14	14	30	88	871781	--	871782	871825	--	871826
16	16	32	88	871783	--	871784	871827	--	871828
18	18	36	100	871785	--	871786	871829	--	871830
20	20	38	100	871787	--	871788	871831	--	871832
22	25	38	100	871789	--	871790	871833	--	871834
25	25	38	100	871791	--	871792	871835	--	871836





Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
1/32	1/8*	1/16	1-1/2	871377	--	871378	871413	--	871414
3/64	1/8*	3/32	1-1/2	871379	--	871380	871415	--	871416
1/16	1/8*	1/8	1-1/2	871381	--	871382	871417	--	871418
3/32	1/8*	3/16	1-1/2	871383	--	871384	871419	--	871420
7/64	1/8*	7/32	1-1/2	871385	--	871386	871421	--	871422
1/8	1/8*	1/4	1-1/2	871387	--	871388	871423	--	871424
5/32	3/16*	5/16	2	871389	--	871390	871425	--	871426
		7/16	3	871521	--	871522	871545	--	871546
3/16	3/16*	5/16	2	871391	--	871392	871427	--	871428
		1/2	3	871523	--	871524	871547	--	871548
7/32	1/4	3/8	2-1/2	871393	--	871394	871429	--	871430
		9/16	4	871525	--	871526	871549	--	871550



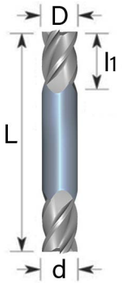


* Double Ended tools under 1/4" Diamater have Round Shanks. 1/4" diameter & larger have Weldon Shanks.

D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"







Ball
Square
Round Shank
Weldon Shank
30° Helix
Uncoated
TiALN Coated
P
K
M
N

Cutter Diam. D	Shank Diam. d	Length of Cut l1	Overall Length L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
1/4	1/4	1/2	2-1/2	871395	--	871396	871431	--	871432
		5/8	4	871527	--	871528	871551	--	871552
9/32	5/16	1/2	2-1/2	871397	--	871398	871433	--	871434
5/16	5/16	1/2	2-1/2	871399	--	871400	871435	--	871436
		3/4	4	871529	--	871530	871553	--	871554
3/8	3/8	9/16	2-1/2	871401	--	871402	871437	--	871438
		3/4	4	871533	--	871534	871557	--	871558
7/16	1/2	9/16	2-3/4	871403	--	871404	871439	--	871440
		7/8	4	871535	--	871536	871559	--	871560
1/2	1/2	5/8	3	871405	--	871406	871441	--	871442
		1	4	871537	--	871538	871561	--	871562
9/16	5/8	11/16	3-1/2	871407	--	871408	871443	--	871444
5/8	5/8	11/16	3-1/2	871409	--	871410	871445	--	871446
		1-1/2	6	871541	--	871542	871565	--	871566
3/4	3/4	7/8	4	871411	--	871412	871447	--	871448
		1-1/2	6	871543	--	871544	871567	--	871568

* Double Ended tools under 1/4" Diamater have Round Shanks. 1/4" diameter & larger have Weldon Shanks.

Cutter Diam. D	Shank Diam. d	Length of Cut l1	Overall Length L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
1/32	1/8*	1/16	1-1/2	871449	--	871450	871485	--	871486
3/64	1/8*	3/32	1-1/2	871451	--	871452	871487	--	871488
1/16	1/8*	1/8	1-1/2	871453	--	871454	871489	--	871490
3/32	1/8*	3/16	1-1/2	871455	--	871456	871491	--	871492
7/64	1/8*	7/32	1-1/2	871457	--	871458	871493	--	871494
1/8	1/8*	1/4	1-1/2	871459	--	871460	871495	--	871496
5/32	3/16*	5/16	2	871461	--	871462	871497	--	871498
		7/16	3	871569	--	871570	871593	--	871594
3/16	3/16*	5/16	2	871463	--	871464	871499	--	871500
		1/2	3	871571	--	871572	871595	--	871596
7/32	1/4	3/8	2-1/2	871465	--	871466	871501	--	871502
		9/16	4	871573	--	871574	871597	--	871598
1/4	1/4	1/2	2-1/2	871467	--	871468	871503	--	871504
		5/8	4	871575	--	871576	871599	--	871600
9/32	5/16	1/2	2-1/2	871469	--	871470	871505	--	871506
5/16	5/16	1/2	2-1/2	871471	--	871472	871507	--	871508
		3/4	4	871577	--	871578	871601	--	871602

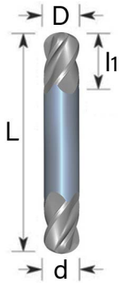
* Double Ended tools under 1/4" Diamater have Round Shanks. 1/4" diameter & larger have Weldon Shanks.

D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"

Honed Cutting Edges - 10% Micrograin Carbide
GP-General Purpose

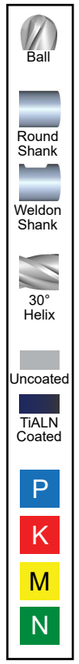






Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
3/8	3/8	9/16	2-1/2	871473	--	871474	871509	--	871510
		3/4	4	871581	--	871582	871605	--	871606
7/16	1/2	9/16	2-3/4	871475	--	871476	871511	--	871512
		7/8	4	871583	--	871584	871607	--	871608
1/2	1/2	5/8	3	871477	--	871478	871513	--	871514
		1	4	871585	--	871586	871609	--	871610
9/16	5/8	11/16	3-1/2	871479	--	871480	871515	--	871516
5/8	5/8	11/16	3-1/2	871481	--	871482	871517	--	871518
		1-1/2	6	871589	--	871590	871613	--	871614
3/4	3/4	7/8	4	871483	--	871484	871519	--	871520
		1-1/2	6	871591	--	871592	871615	--	871616

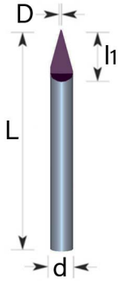
* Double Ended tools under 1/4" Diamater have Round Shanks. 1/4" diameter & larger have Weldon Shanks.



Engraving Tools

- 30 Degree Included Point Angle
- 3 Tip Sizes To Choose From
- 10% Micrograin Carbide



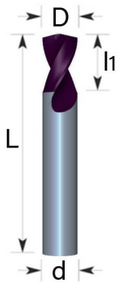


Tip Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	Uncoated 1 Flute	TiALN Coated 1 Flute
.005	1/4	1/2	2-1/2	--	872509
.010	1/4	1/2	2-1/2	--	872510
.020	1/4	1/2	2-1/2	--	872511

Spot Drills

- 140 Degree Point Angle
- Allows High Performance drills to center properly without damaging their outside edge
- Diameter Tolerances: +0.0000"/-0.0004"





Drill Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	Uncoated 2 Flute	TiALN Coated 2 Flute
1/4	1/4	1/2	3	--	872512
3/8	3/8	3/4	3	--	872513
1/2	1/2	1	4	--	872514
5/8	5/8	1	4	--	872515
3/4	3/4	1-1/8	4	--	872516

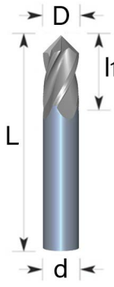
D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"

Drill/Mills

- 90 Degree Included Point Angle
- Multi Purpose Tool
- End Mill, Drill, Chamfer, Countersink





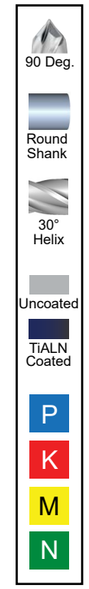


Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	Uncoated 2 Flute	Uncoated 3 Flute	Uncoated 4 Flute	TiALN Coated 2 Flute	TiALN Coated 3 Flute	TiALN Coated 4 Flute
1/8	1/8	1/2	1-1/2	871917	--	871918	871935	--	871936
3/16	3/16	5/8	2	871919	--	871920	871937	--	871938
1/4	1/4	3/4	2-1/2	871921	--	871922	871939	--	871940
5/16	5/16	7/8	2-1/2	871923	--	871924	871941	--	871942
3/8	3/8	1	2-1/2	871925	--	871926	871943	--	871944
7/16	7/16	1	2-3/4	871927	--	871928	871945	--	871946
1/2	1/2	1	3	871929	--	871930	871947	--	871948
5/8	5/8	1-1/4	3-1/2	871931	--	871932	871949	--	871950
3/4	3/4	1-1/2	4	871933	--	871934	871951	--	871952

GENERAL PURPOSE SPEEDS & FEEDS

Material Group		Speed (SFM) Uncoated	Speed (SFM) TiALN	Feed Per Tooth By Diameter 1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
Aluminum & Aluminum Alloys	N	600-1200	900-1800	.0020	.0025	.0030	.0035	.0040	.0050	.0060	.0080
Copper & Copper Alloys	N	350-850	525-1275	.0020	.0025	.0025	.0030	.0030	.0035	.0040	.0060
Brass & Bronze	N	250-400	375-600	.0020	.0025	.0025	.0030	.0030	.0035	.0040	.0050
Graphite	N	500-800	500-1200	.0030	.0035	.0025	.0030	.0030	.0040	.0050	.0070
Plastics	N	600-1100	600-1650	.0030	.0035	.0040	.0050	.0060	.0080	.0100	.0150
Iron, Cast (soft)	K	250-450	375-650	.0020	.0022	.0025	.0027	.0030	.0045	.0060	.0080
Iron, Cast (hard)	K	100-250	100-375	.0008	.0010	.0015	.0017	.0020	.0025	.0030	.0040
Iron, Ductile	K	80-400	100-600	.0010	.0012	.0015	.0017	.0020	.0030	.0040	.0060
Iron, Malleable	K	150-500	225-650	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0070
Carbon Steels, Low	P	200-400	300-600	.0010	.0015	.0020	.0025	.0030	.0040	.0050	.0070
Carbon Steels, Medium	P	100-250	150-375	.0015	.0016	.0017	.0018	.0020	.0030	.0040	.0050
Carbon Steels Hardened to 35 Rc	P	130-230	130-345	.0010	.0011	.0012	.0013	.0015	.0017	.0020	.0030
Carbon Steels Hardened to 50 Rc	P	70-130	70-160	.0007	.0007	.0008	.0009	.0010	.0015	.0020	.0030
Carbon Steels Hardened to 60 Rc	P	30-70	30-90	.0005	.0006	.0007	.0009	.0010	.0012	.0015	.0020
Steels, Mold	P	200-350	300-525	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Steels, Tool	P	100-250	150-375	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Stainless Steels, Soft	M	200-350	300-450	.0010	.0012	.0015	.0012	.0020	.0030	.0040	.0060
Stainless Steels, Hard	M	100-200	150-300	.0005	.0006	.0007	.0008	.0010	.0020	.0030	.0050
Monel & High Nickel Steel	S	75-175	75-200	.0010	.0012	.0015	.0017	.0020	.0025	.0030	.0040
Titanium, Soft	S	125-300	125-375	.0010	.0012	.0015	.0017	.0020	.0030	.0040	.0060
Titanium, Hard	S	50-150	50-175	.0005	.0006	.0007	.0008	.0010	.0015	.0020	.0020
Nickel Based High Temp Alloys	S	50-100	50-125	.0008	.0008	.0009	.0009	.0010	.0012	.0015	.0020

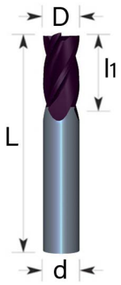
- ***Speeds & Feeds recommendations are for depths of cut not to exceed 1 times the tool diameter for profiling and .5 times the diameter for full slotting.***
- ***Speeds & Feeds are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase the SFM and/or Feed Per Tooth in 5-10% increments.***
- ***Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.***



D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"

Variable Pitch - Honed Cutting Edges - 10% Micrograin Carbide
HP-High Performance

4 Flute Round Shank | 4 Flute Weldon Shank | 5 Flute Round Shank



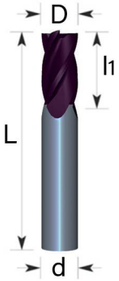
Square
Corner Radius
Round Shank
Weldon Shank
38° Helix
TiALN Coated
P
K

Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk	4 Flute Weldon Shk	5 Flute Round Shk
1/8	1/8	1/2	1-1/2	SQ	872520	--	--
		1/2	1-1/2	.010"R	872521	--	--
3/16	3/16	3/8	2	SQ	872447	--	--
		3/8	2	.015"R	872448	--	--
		5/8	2	SQ	872304	--	--
		5/8	2	.015"R	872305	--	--
		3/4	2-1/2	SQ	872353	--	--
		3/4	2-1/2	.015"R	872354	--	--
		1-1/8	3	SQ	872432	--	--
		1-1/8	3	.015"R	872523	--	--
1/4	1/4	3/8	2	SQ	872449	--	--
		3/8	2	.015"R	872450	--	--
		3/4	2-1/2	SQ	872306	872330	872540
		3/4	2-1/2	.020"R	872307	872331	872541
		1-1/8	3	SQ	872355	872378	872554
		1-1/8	3	.020"R	872356	872379	872555
		1-1/2	4	SQ	872433	--	872568
		1-1/2	4	.020"R	872524	--	872569
5/16	5/16	3/8	2	SQ	872451	--	--
		3/8	2	.020"R	872452	--	--
		13/16	2-1/2	SQ	872308	872332	872542
		13/16	2-1/2	.020"R	872309	872333	872543
		1-1/8	3	SQ	872357	872380	872556
		1-1/8	3	.020"R	872358	872381	872557
		1-5/8	4	SQ	872434	--	872570
		1-5/8	4	.020"R	872525	--	872571
3/8	3/8	1/2	2	SQ	872453	--	--
		1/2	2	.020"R	872454	--	--
		7/8	2-1/2	SQ	872310	872334	872544
		7/8	2-1/2	.020"R	872311	872335	872545
		1-1/8	3	SQ	872359	872382	872558
		1-1/8	3	.020"R	872360	872383	872559
		1-3/4	4	SQ	872435	--	872572
		1-3/4	4	.020"R	872526	--	872573
7/16	7/16	1	2-3/4	SQ	872313	872336	--
		2	4	SQ	872361	872384	--
1/2	1/2	5/8	2-1/2	SQ	872455	872461	--
		5/8	2-1/2	.030"R	872456	872462	--
		1-1/4	3	SQ	872314	872337	872546
		1-1/4	3	.015"R	872315	872338	--
		1-1/4	3	.030"R	872316	872339	872547
		1-1/4	3	.060"R	872317	872340	--
		2	4	SQ	872362	872385	872560
		2	4	.015"R	872363	872386	--
		2	4	.030"R	872364	872387	872561
		2	4	.060"R	872365	872388	--
		3	6	SQ	872436	--	872574
		3	6	.030"R	872527	--	872575
5/8	5/8	3/4	3	SQ	872457	872463	--
		3/4	3	.030"R	872458	872464	--

D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"

4 Flute Round Shank | 4 Flute Weldon Shank | 5 Flute Round Shank

Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk	4 Flute Weldon Shk	5 Flute Round Shk
5/8	5/8	1-1/4	3-1/2	SQ	872318	872341	872548
		1-1/4	3-1/2	.030"R	872319	872342	872549
		1-1/4	3-1/2	.060"R	872320	872343	--
		1-1/4	3-1/2	.125"R	872321	872344	--
		2-1/4	5	SQ	872366	872389	872562
		2-1/4	5	.030"R	872367	872390	872563
		2-1/4	5	.060"R	872368	872391	--
		2-1/4	5	.125"R	872369	872392	--
		3	6	SQ	872437	--	872576
		3	6	.030"R	872528	--	872577
3/4	3/4	1	3	SQ	872459	872465	--
		1	3	.030"R	872460	872466	--
		1-1/2	4	SQ	872322	872345	872550
		1-1/2	4	.030"R	872323	872346	872551
		1-1/2	4	.060"R	872324	872347	--
		1-1/2	4	.125"R	872325	872348	--
		2-1/4	5	SQ	872370	872393	872564
		2-1/4	5	.030"R	872371	872394	872565
		2-1/4	5	.060"R	872372	872395	--
		2-1/4	5	.125"R	872373	872396	--
		3	6	SQ	872438	--	872578
		3	6	.030"R	872529	--	872579
1	1	1-1/2	4	SQ	872300	872326	872538
		1-1/2	4	.030"R	872301	872327	872539
		1-1/2	4	.060"R	872302	872328	--
		1-1/2	4	.125"R	872303	872329	--
		2-1/4	5	SQ	872349	872374	872552
		2-1/4	5	.030"R	872350	872375	872553
		2-1/4	5	.060"R	872351	872376	--
		2-1/4	5	.125"R	872352	872377	--
		3	6	SQ	872431	--	872566
		3	6	.030"R	872522	--	872567



Ball
Square
Corner Radius
Round Shank
Weldon Shank
38° Helix
TiALN Coated
P
K

4 Flute Round Shank | 4 Flute Weldon Shank



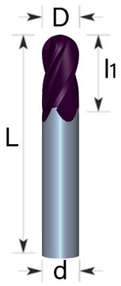
Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk	4 Flute Weldon Shk
3/16	3/16	5/8	2	BN	872398	--
		3/4	2-1/2	BN	872415	--
		1-1/8	3	BN	872440	--
1/4	1/4	3/4	2-1/2	BN	872399	872407
		1-1/8	3	BN	872416	872424
		1-1/2	4	BN	872441	--
5/16	5/16	13/16	2-1/2	BN	872400	872408
		1-1/8	3	BN	872417	872425
		1-5/8	4	BN	872442	--
3/8	3/8	7/8	2-1/2	BN	872401	872409
		1-1/8	3	BN	872418	872426
		1-3/4	4	BN	872443	--

D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"

Variable Pitch - Honed Cutting Edges - 10% Micrograin Carbide
HP-High Performance

4 Flute Round Shank 

4 Flute Weldon Shank 



Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk	TiALN Coated 4 Flute Weldon Shk
7/16	7/16	1	2-3/4	BN	872402	872410
		2	4	BN	872419	872427
1/2	1/2	1	3	BN	872403	872411
		2	4	BN	872420	872428
		3	6	BN	872444	--
5/8	5/8	1-1/4	3-1/2	BN	872404	872412
		2-1/4	5	BN	872421	872429
		3	6	BN	872445	--
3/4	3/4	1-1/2	4	BN	872405	872413
		2-1/4	5	BN	872422	872430
		3	6	BN	872446	--
1	1	1-1/2	4	BN	872397	872406
		2-1/4	5	BN	872414	872423
		3	6	BN	872439	--

Ball
Square
Corner Radius
Round Shank
Weldon Shank
38° Helix
TiALN Coated
P
K
M
N

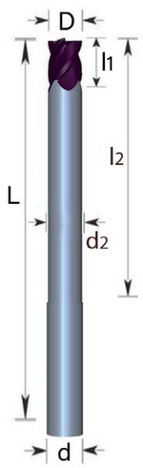
Long Reach Tools

- Neck Relieved to provide clearance against side walls
- Provides long reach with increased rigidity

4 Flute Round Shank 

4 Flute Round Shank 

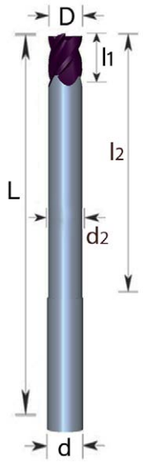
Cutter Diam. D	Shank Diam. d	Neck d2	Length of Cut l1	Length Below Shank (LBS) l2	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk
3/16	3/16	.1775	3/8	2-1/2	4	SQUARE	872473
						.015"R	872474
						BALL NOSE	872498
1/4	1/4	.2400	3/8	2-1/2	4	SQUARE	872475
						.015"R	872476
						BALL NOSE	872499
5/16	5/16	.3025	7/16	2-1/2	4	SQUARE	872477
						.015"R	872478
						BALL NOSE	872500
3/8	3/8	.3650	1/2	2-1/2	4	SQUARE	872479
						.015"R	872480
						BALL NOSE	872501
1/2	1/2	.4800	5/8	3	5	SQUARE	872481
						.020"R	872482
						BALL NOSE	872502
1/2	1/2	.4800	5/8	4	6	SQUARE	872484
						.020"R	872483
						BALL NOSE	872503
5/8	5/8	.6050	3/4	3	5	SQUARE	872485
					5	.020"R	872486
					5	BALL NOSE	872504



D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"

4 Flute Round Shank 

4 Flute Round Shank 



Cutter Diam. D	Shank Diam. d	Neck d2	Length of Cut l1	Length Below Shank (LBS) l2	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk
5/8	5/8	.6050	3/4	4	6	SQUARE	872488
						.020"R	872487
						BALL NOSE	872505
3/4	3/4	.7300	1	3	5	SQUARE	872489
						.020"R	872490
						BALL NOSE	872506
3/4	3/4	.7300	1	4	6	SQUARE	872493
						.020"R	872491
						BALL NOSE	872507
3/4	3/4	.7300	1	5	7	SQUARE	872494
						.020"R	872492
						BALL NOSE	872508
1	1	.9800	1-1/4	3	5	SQUARE	872467
						.020"R	872468
						BALL NOSE	872495
1	1	.9800	1-1/4	4	6	SQUARE	872471
						.020"R	872469
						BALL NOSE	872496
1	1	.9800	1-1/4	5	7	SQUARE	872472
						.020"R	872470
						BALL NOSE	872497

Ball
Square
Corner Radius
Round Shank
Weldon Shank
38° Helix
TiALN Coated
P
K
M
N

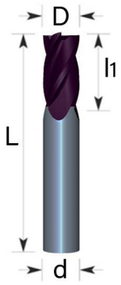
HIGH PERFORMANCE VARIABLE PITCH SPEEDS & FEEDS

Material Group		SFM TiALN Coated	Feed Per Tooth By Diameter 1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
Aluminum & Aluminum Alloys	N	900-1800	0.0025	0.0030	0.0035	0.004	0.0045	0.0055	0.0065	0.0085
Copper & Copper Alloys		525-1275	0.0025	0.0030	0.0030	0.0035	0.0035	0.0040	0.0045	0.0065
Brass & Bronze		375-600	0.0025	0.0030	0.0030	0.0035	0.0035	0.0040	0.0045	0.0055
Iron, Cast (soft)	K	375-650	0.0025	0.0027	0.0030	0.0032	0.0035	0.0040	0.0065	0.0085
Iron, Cast (hard)		100-375	0.0013	0.0015	0.0020	0.0022	0.0025	0.0030	0.0035	0.0045
Iron, Ductile		100-600	0.0015	0.0017	0.0020	0.0022	0.0025	0.0035	0.0045	0.0065
Iron, Malleable		225-650	0.0015	0.0020	0.0025	0.0030	0.0035	0.0045	0.0055	0.0075
Carbon Steels, Low	P	300-600	0.0015	0.0020	0.0025	0.0030	0.0035	0.0045	0.0055	0.0075
Carbon Steels, Medium		150-375	0.0020	0.0021	0.0022	0.0023	0.0025	0.0035	0.0045	0.0055
Carbon Steels Hardened to 35 Rc		130-345	0.0015	0.0016	0.0017	0.0018	0.0020	0.0022	0.0025	0.0035
Carbon Steels Hardened to 50 Rc		70-160	0.0012	0.0012	0.0013	0.0014	0.0015	0.0020	0.0025	0.0035
Steels, Mold		300-525	0.0015	0.0017	0.0020	0.0022	0.0025	0.0030	0.0035	0.0045
Steels, Tool		150-375	0.0015	0.0017	0.0020	0.0022	0.0025	0.0030	0.0035	0.0045
Stainless Steels, Soft	M	300-450	0.0015	0.0017	0.0020	0.0017	0.0025	0.0035	0.0045	0.0065
Stainless Steels, Hard		150-300	0.0010	0.0011	0.0012	0.0013	0.0015	0.0025	0.0035	0.0055
Monel & High Nickel Steel	S	75-200	0.0015	0.0017	0.0020	0.0021	0.0025	0.003	0.0035	0.0045
Titanium, Soft		125-375	0.0015	0.0017	0.0020	0.0021	0.0025	0.0035	0.0045	0.0065
Titanium, Hard		50-175	0.0010	0.0011	0.0012	0.0012	0.0014	0.0017	0.0022	0.0023
Nickel Based High Temp Alloys		50-125	0.0013	0.0012	0.0011	0.0011	0.0014	0.0015	0.0017	0.0023

- ***Speeds & Feeds recommendations are for depths of cut not to exceed 1.25 times the tool diameter for profiling and .75 times the diameter for full slotting.***
- ***Speeds & Feeds are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase the SFM and/or Feed Per Tooth in 5-10% increments.***
- ***Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.***

D Tolerance=+0.0000"/-0.0020"
d Tolerance=+0.0000"/-0.0004"

4 Flute Round Shank 
4 Flute Weldon Shank 
5 Flute Round Shank 



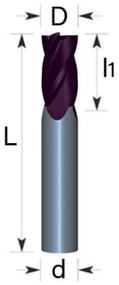
Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk	4 Flute Weldon Shk	5 Flute Round Shk
1/8	1/8	1/2	1-1/2	SQ	870006	--	--
		1/2	1-1/2	.010"R	870007	--	--
3/16	3/16	3/8	2	SQ	870181	--	--
		3/8	2	.015"R	870182	--	--
		5/8	2	SQ	870009	--	--
		5/8	2	.015"R	870010	--	--
		3/4	2-1/2	SQ	870085	--	--
		3/4	2-1/2	.015"R	870086	--	--
		1-1/8	3	SQ	870165	--	--
		1-1/8	3	.015"R	872531	--	--
1/4	1/4	3/8	2	SQ	870183	--	--
		3/8	2	.015"R	870184	--	--
		3/4	2-1/2	SQ	870012	870055	870015
		3/4	2-1/2	.020"R	870014	870057	870016
		1-1/8	3	SQ	870087	870110	872582
		1-1/8	3	.020"R	870088	870111	872583
		1-1/2	4	SQ	870166	--	872596
		1-1/2	4	.020"R	872532	--	872597
5/16	5/16	3/8	2	SQ	870185	--	--
		3/8	2	.020"R	870186	--	--
		13/16	2-1/2	SQ	870017	870058	870019
		13/16	2-1/2	.020"R	870018	870059	870020
		1-1/8	3	SQ	870089	870112	872584
		1-1/8	3	.020"R	870090	870113	872585
		1-5/8	4	SQ	870167	--	872598
		1-5/8	4	.020"R	872533	--	872599
3/8	3/8	1/2	2	SQ	870187	--	--
		1/2	2	.020"R	870188	--	--
		7/8	2-1/2	SQ	870021	870060	870025
		7/8	2-1/2	.020"R	870023	870062	870026
		7/8	2-1/2	.030"R	870024	870063	--
		1-1/8	3	SQ	870091	870114	872586
		1-1/8	3	.020"R	870092	870115	872587
		1-3/4	4	SQ	870168	--	872600
		1-3/4	4	.020"R	872534	--	872601
7/16	7/16	1	2-3/4	SQ	870028	870064	--
		2	4	SQ	870093	870116	--
1/2	1/2	5/8	2-1/2	SQ	870189	870195	--
		5/8	2-1/2	.030"R	870190	870196	--
		1-1/4	3	SQ	870029	870065	870035
		1-1/4	3	.015"R	870030	870066	--
		1-1/4	3	.030"R	870031	870067	870036
		1-1/4	3	.060"R	870033	870069	--
		2	4	SQ	870094	870117	872588
		2	4	.015"R	870095	870118	--
		2	4	.030"R	870096	870119	872589
		2	4	.060"R	870097	870120	--
		3	6	SQ	870169	--	872602
		3	6	.030"R	872535	--	872603

Square
Corner Radius
Round Shank
Weldon Shank
38° Helix
TiALN Coated
P
K
M

D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

Variable Pitch - Honed Cutting Edges - 10% Premium Micrograin Carbide
UHP-Ultra High Performance

4 Flute Round Shank 
4 Flute Weldon Shank 
5 Flute Round Shank 



Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk	4 Flute Weldon Shk	5 Flute Round Shk
5/8	5/8	3/4	3	SQ	870191	870197	--
		3/4	3	.030"R	870192	870198	--
		1-1/4	3-1/2	SQ	870037	870071	870041
		1-1/4	3-1/2	.030"R	870038	870072	870042
		1-1/4	3-1/2	.060"R	870039	870073	--
		1-1/4	3-1/2	.125"R	870040	870074	--
		2-1/4	5	SQ	870098	870121	872590
		2-1/4	5	.030"R	870099	870122	872591
		2-1/4	5	.060"R	870100	870123	--
		2-1/4	5	.125"R	870101	870124	--
		3	6	SQ	870170	--	872604
		3	6	.030"R	872536	--	872605
3/4	3/4	1	3	SQ	870193	870199	--
		1	3	.030"R	870194	870200	--
		1-1/2	4	SQ	870043	870075	870047
		1-1/2	4	.030"R	870044	870077	870048
		1-1/2	4	.060"R	870045	870078	--
		1-1/2	4	.125"R	870046	870079	--
		2-1/4	5	SQ	870102	870125	872592
		2-1/4	5	.030"R	870103	870126	872593
		2-1/4	5	.060"R	870104	870127	--
		2-1/4	5	.125"R	870105	870128	--
		3	6	SQ	870171	--	872606
		3	6	.030"R	872537	--	872607
1	1	1-1/2	4	SQ	870000	870049	870004
		1-1/2	4	.030"R	870001	870050	870005
		1-1/2	4	.060"R	870002	870051	--
		1-1/2	4	.125"R	870003	870052	--
		2-1/4	5	SQ	870080	870106	872580
		2-1/4	5	.030"R	870081	870107	872581
		2-1/4	5	.060"R	870082	870108	--
		2-1/4	5	.125"R	870083	870109	--
		3	6	SQ	870164	--	872594
		3	6	.030”R	872530	--	872595

Square
Corner Radius
Round Shank
Weldon Shank
38° Helix
TiALN Coated
P
K
M



D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

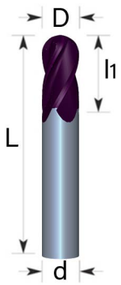
Variable Pitch - Honed Cutting Edges - 10% Premium Micrograin Carbide
UHP-Ultra High Performance

4 Flute Round Shank



4 Flute Weldon Shank





Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	TiALN Coated 4 Flute Round Shk	TiALN Coated 4 Flute Weldon Shk
3/16	3/16	5/8	2	BN	870131	--
		3/4	2-1/2	BN	870148	--
		1-1/8	3	BN	870174	--
1/4	1/4	3/4	2-1/2	BN	870132	870140
		1-1/8	3	BN	870149	870157
		1-1/2	4	BN	870175	--
5/16	5/16	13/16	2-1/2	BN	870133	870141
		1-1/8	3	BN	870150	870158
		1-5/8	4	BN	870176	--
3/8	3/8	7/8	2-1/2	BN	870134	870142
		1-1/8	3	BN	870151	870159
		1-3/4	4	BN	870177	--
7/16	7/16	1	2-3/4	BN	870135	870143
		2	4	BN	870152	870160
1/2	1/2	1	3	BN	870136	870144
		2	4	BN	870153	870161
		3	6	BN	870178	--
5/8	5/8	1-1/4	3-1/2	BN	870137	870145
		2-1/4	5	BN	870154	870162
		3	6	BN	870179	--
3/4	3/4	1-1/2	4	BN	870138	870146
		2-1/4	5	BN	870155	870163
		3	6	BN	870180	--
1	1	1-1/2	4	BN	870129	870139
		2-1/4	5	BN	870147	870156
		3	6	BN	870172	--

Ball

Round Shank

Weldon Shank

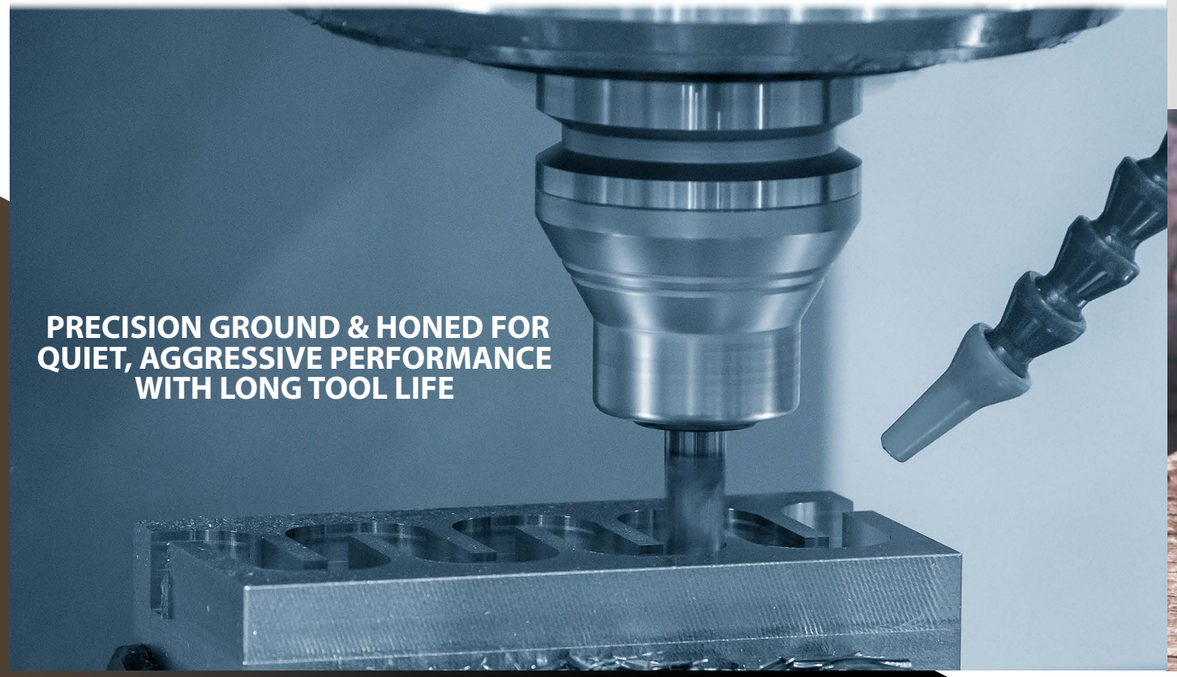
38° Helix

TiALN Coated

P

K

M



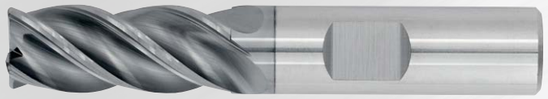
D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

ULTRA HIGH PERFORMANCE VARIABLE PITCH SPEEDS & FEEDS

Material Group		SFM TiALN Coated	Feed Per Tooth By Diameter 1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
Aluminum & Aluminum Alloys	N	900-1800	0.0025	0.0030	0.0035	0.004	0.0045	0.0055	0.0065	0.0085
Copper & Copper Alloys	N	525-1275	0.0025	0.0030	0.0030	0.0035	0.0035	0.0040	0.0045	0.0065
Brass & Bronze	N	375-600	0.0025	0.0030	0.0030	0.0035	0.0035	0.0040	0.0045	0.0055
Iron, Cast (soft)	K	375-650	0.0030	0.0032	0.0035	0.0037	0.0040	0.0045	0.0070	0.0090
Iron, Cast (hard)	K	100-375	0.0018	0.0020	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Iron, Ductile	K	100-600	0.0020	0.0022	0.0025	0.0027	0.0030	0.0040	0.0050	0.0070
Iron, Malleable	K	225-650	0.0020	0.0025	0.0030	0.0035	0.0040	0.0050	0.0060	0.0080
Carbon Steels, Low	P	300-600	0.0020	0.0025	0.0030	0.0035	0.0040	0.0050	0.0060	0.0080
Carbon Steels, Medium	P	150-375	0.0025	0.0026	0.0027	0.0028	0.0030	0.0040	0.0050	0.0060
Carbon Steels Hardened to 35 Rc	P	130-345	0.0020	0.0021	0.0022	0.0023	0.0025	0.0027	0.0030	0.0040
Carbon Steels Hardened to 50 Rc	P	70-160	0.0012	0.0012	0.0013	0.0014	0.0015	0.0026	0.0030	0.0035
Steels, Mold	P	300-525	0.0020	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Steels, Tool	P	150-375	0.0020	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Stainless Steels, Soft	M	300-450	0.0020	0.0022	0.0025	0.0022	0.0030	0.0040	0.0050	0.0070
Stainless Steels, Hard	M	150-300	0.0015	0.0016	0.0017	0.0018	0.0020	0.0030	0.0040	0.0060
Monel & High Nickel Steel	S	75-200	0.0015	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Titanium, Soft	S	125-375	0.0015	0.0022	0.0025	0.0027	0.0030	0.0040	0.0050	0.0070
Titanium, Hard	S	50-175	0.0010	0.0016	0.0017	0.0018	0.0020	0.0022	0.0026	0.0030
Nickel Based High Temp Alloys	S	50-125	0.0014	0.0014	0.0015	0.0016	0.0017	0.0018	0.0020	0.0023

- *Speeds & Feeds recommendations are for depths of cut not to exceed 1.25 times the tool diameter for profiling and .75 times the diameter for full slotting.*
- *Speeds & Feeds are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase the SFM and/or Feed Per Tooth in 5-10% increments.*
- *Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.*

HP-High Performance



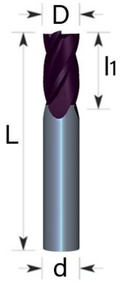
UHP-Ultra High Performance





D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"





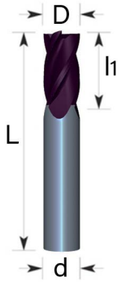
Square
Corner Radius
Round Shank
Chip Breaker
40° Helix
ALL4 Coated
P
K
M

Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 5 Flute	5 Flute Chipbreaker	6 Flute	7 Flute	7 Flute Chipbreaker
1/4	1/4	3/4	2-1/2	SQ	872608	--	870203	--	--
		3/4	2-1/2	.015CR	872609	--	--	--	--
		3/4	2-1/2	.030CR	872610	--	870204	--	--
		1-1/8	3	SQ	872611	--	--	--	--
		1-1/8	3	.015CR	872612	--	--	--	--
		1-1/8	3	.030CR	872613	--	--	--	--
5/16	5/16	13/16	2-1/2	SQ	872614	--	--	--	--
		13/16	2-1/2	.015CR	872615	--	--	--	--
		13/16	2-1/2	.030CR	872616	--	--	--	--
		1-1/4	3	SQ	872617	--	--	--	--
		1-1/4	3	.015CR	872618	--	--	--	--
		1-1/4	3	.030CR	872619	--	--	--	--
		2-1/8	4	SQ	872620	--	--	--	--
		2-1/8	4	.015CR	872621	--	--	--	--
		2-1/8	4	.030CR	872622	--	--	--	--
3/8	3/8	1	2-1/2	SQ	872623	872638	870205	872632	872647
		1	2-1/2	.015CR	872624	872639	--	872633	872648
		1	2-1/2	.030CR	872625	872640	870206	872634	872649
		1-1/4	3	SQ	872626	872641	--	872635	872650
		1-1/4	3	.015CR	872627	872642	--	872636	872651
		1-1/4	3	.030CR	872628	872643	--	872637	872652
		2-1/8	4	SQ	872629	872644	--	--	--
		2-1/8	4	.015CR	872630	872645	--	--	--
		2-1/8	4	.030CR	872631	872646	--	--	--
1/2	1/2	1-1/4	3	SQ	872653	872685	870207	872669	872701
		1-1/4	3	.015CR	872654	872686	--	872670	872702
		1-1/4	3	.030CR	872655	872687	870208	872671	872703
		1-1/4	3	.060CR	872656	872688	--	872672	--
		2-1/8	4	SQ	872657	872689	--	872673	872704
		2-1/8	4	.015CR	872658	872690	--	872674	872705
		2-1/8	4	.030CR	872659	872691	--	872675	872706
		2-1/8	4	.060CR	872660	872692	--	872676	--
		2-5/8	5	SQ	872661	872693	--	872677	872707
		2-5/8	5	.015CR	872662	872694	--	872678	872708
		2-5/8	5	.030CR	872663	872695	--	872679	872709
		2-5/8	5	.060CR	872664	872696	--	872680	--
		3-1/4	6	SQ	872665	872697	--	872681	872710
		3-1/4	6	.015CR	872666	872698	--	872682	872711
		3-1/4	6	.030CR	872667	872699	--	872683	872712
		3-1/4	6	.060CR	872668	872700	--	872684	--

"WE'RE EASY TO DO BUSINESS WITH YOUR WAY"

D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"





Square
Corner Radius
Round Shank
Chip Breaker
40° Helix
ALL4 Coated
P
K
M

Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 5 Flute	5 Flute Chipbreaker	6 Flute	7 Flute	7 Flute Chipbreaker
5/8	5/8	1-1/2	3-1/2	SQ	872713	872731	870209	872722	872740
		1-1/2	3-1/2	.030CR	872714	872732	870210	872723	872741
		1-1/2	3-1/2	.060CR	872715	872733	--	872724	--
		2-1/2	5	SQ	872716	872734	--	872725	872742
		2-1/2	5	.030CR	872717	872735	--	872726	872743
		2-1/2	5	.060CR	872718	872736	--	872727	--
		3-1/4	6	SQ	872719	872737	--	872728	872744
		3-1/4	6	.030CR	872720	872738	--	872729	872745
		3-1/4	6	.060CR	872721	872739	--	872730	--
3/4	3/4	1-1/2	4	SQ	872746	872764	870211	872755	872770
		1-1/2	4	.030CR	872747	872765	870212	872756	872771
		1-1/2	4	.060CR	872748	--	--	872757	--
		2-1/2	5	SQ	872749	872766	--	872758	872772
		2-1/2	5	.030CR	872750	872767	--	872759	872773
		2-1/2	5	.060CR	872751	--	--	872760	--
		3-1/4	6	SQ	872752	872768	--	872761	872774
		3-1/4	6	.030CR	872753	872769	--	872762	872775
		3-1/4	6	.060CR	872754	--	--	872763	--
1	1	1-1/2	4	SQ	872776	872794	870201	872785	872800
		1-1/2	4	.030CR	872777	872795	870202	872786	872801
		1-1/2	4	.060CR	872778	--	--	872787	--
		2-5/8	5	SQ	872779	872796	--	872788	872802
		2-5/8	5	.030CR	872780	872797	--	872789	872803
		2-5/8	5	.060CR	872781	--	--	872790	--
		3-1/4	6	SQ	872782	872798	--	872791	872804
		3-1/4	6	.030CR	872783	872799	--	872792	872805
		3-1/4	6	.060CR	872784	--	--	872793	--



D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

HEM - SPEEDS & FEEDS

Material Group		SFM	Feed Per Tooth By Diameter							
		ALL4 Coated	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
Aluminum & Aluminum Alloys	N	900-1800	0.0025	0.0030	0.0035	0.004	0.0045	0.0055	0.0065	0.0085
Copper & Copper Alloys	N	525-1275	0.0025	0.0030	0.0030	0.0035	0.0035	0.0040	0.0045	0.0065
Brass & Bronze	N	375-900	0.0025	0.0030	0.0030	0.0035	0.0035	0.0040	0.0045	0.0055
Iron, Cast (soft)	K	375-950	0.0030	0.0032	0.0035	0.0037	0.0040	0.0045	0.0070	0.0090
Iron, Cast (hard)	K	150-475	0.0018	0.0020	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Iron, Ductile	K	200-900	0.0020	0.0022	0.0025	0.0027	0.0030	0.0040	0.0050	0.0070
Iron, Malleable	K	275-850	0.0020	0.0025	0.0030	0.0035	0.0040	0.0050	0.0060	0.0080
Carbon Steels, Low	P	350-900	0.0020	0.0025	0.0030	0.0035	0.0040	0.0050	0.0060	0.0080
Carbon Steels, Medium	P	200-675	0.0025	0.0026	0.0027	0.0028	0.0030	0.0040	0.0050	0.0060
Carbon Steels Hardened to 35 Rc	P	190-545	0.0020	0.0021	0.0022	0.0023	0.0025	0.0027	0.0030	0.0040
Carbon Steels Hardened to 50 Rc	P	90-275	0.0012	0.0012	0.0013	0.0014	0.0015	0.0026	0.0030	0.0035
Steels, Mold	P	300-725	0.0020	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Steels, Tool	P	175-525	0.0020	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Stainless Steels, Soft	M	300-525	0.0020	0.0022	0.0025	0.0022	0.0030	0.0040	0.0050	0.0070
Stainless Steels, Hard	M	150-475	0.0015	0.0016	0.0017	0.0018	0.0020	0.0030	0.0040	0.0060
Monel & High Nickel Steel	S	75-250	0.0015	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Titanium, Soft	S	125-475	0.0015	0.0022	0.0025	0.0027	0.0030	0.0040	0.0050	0.0070
Titanium, Hard	S	50-195	0.0010	0.0016	0.0017	0.0018	0.0020	0.0022	0.0026	0.0030
Nickel Based High Temp Alloys	S	50-175	0.0014	0.0014	0.0015	0.0016	0.0017	0.0018	0.0020	0.0023

- ***When using HEM techniques, the above feed per tooth must be used in a Radial Chip Thinning Factor (RCTF), formula to assure the proper progammed feed is calculated. Most machinist apps available online will have this.***
- ***Speeds & Feeds are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase the SFM and/or Feed Per Tooth in 5-10% increments.***
- ***Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.***

HEM-HIGH EFFICIENCY MACHINING TOOL FEATURES:

1. **Special Tapered Core - Increases tool stiffness**
2. **Ultra High Performance Micrograin Carbide - Exceptional tool life**
3. **Variable Pitch - Reduces harmonic vibration & increases tool life & surface finish**
4. **Finishers - When exceptional finishes are required and chip lengths aren't an issue**
5. **Unique Chipbreakers - A must in slotting & pocketing applications to clear chips. Keeps chip augers & conveyors from getting clogged too**
6. **ALL4 Coating - Premium coating provides extremely high tool life**
7. **Proprietary Edge Honing - Provides quiet cutting & long tool life**

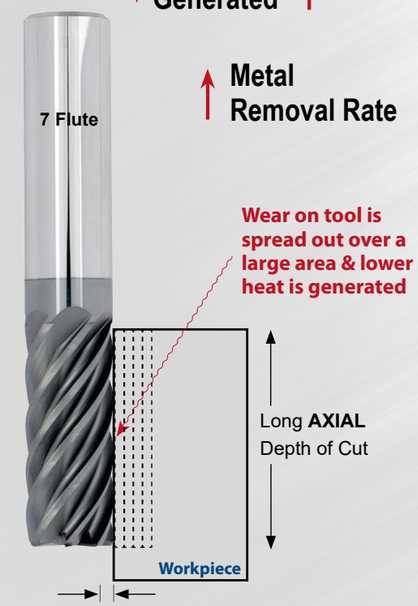


D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

Variable Pitch - Honed Cutting Edges - 10% Premium Micrograin Carbide
HEM-High Effiency Machining

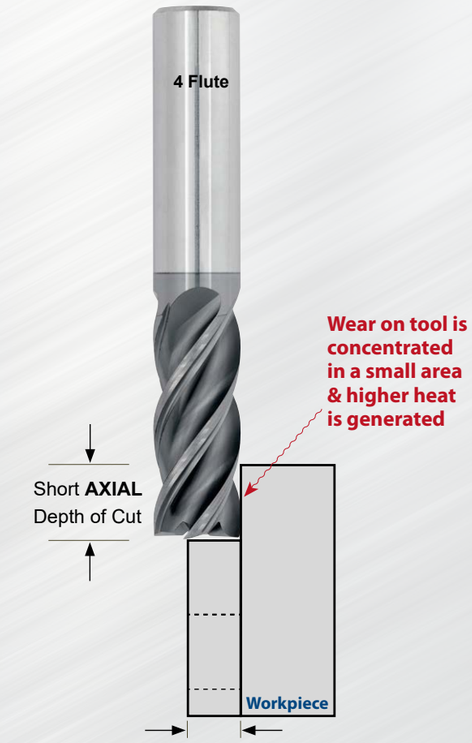
HEM - HIGH EFFICIENCY MACHINING

↑ SFM
↑ Feed Rate
↓ Heat Generated
↑ Tool Life
↑ Metal Removal Rate



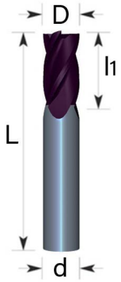
VS.

TRADITIONAL MACHINING









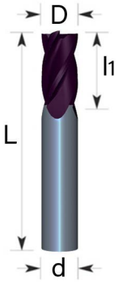
Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 4 Flute	4 Flute Chipbreaker	5 Flute	5 Flute Chipbreaker
1/4	1/4	3/8	2	SQ	872838	873482	872842	873486
		3/8	2	.015CR	872839	873483	872843	873487
		3/8	2	.030CR	872840	873484	872844	873488
		3/8	2	.060CR	872841	873485	872845	873489
		3/4	2-1/2	SQ	873002	873646	873006	873650
		3/4	2-1/2	.015CR	873003	873647	873007	873651
		3/4	2-1/2	.030CR	873004	873648	873008	873652
		3/4	2-1/2	.060CR	873005	873649	873009	873653
		1-1/8	3	SQ	873166	873810	873170	873814
		1-1/8	3	.015CR	873167	873811	873171	873815
		1-1/8	3	.030CR	873168	873812	873172	873816
		1-1/8	3	.060CR	873169	873813	873173	873817
5/16	5/16	7/16	2-1/2	SQ	872854	873498	872858	873502
		7/16	2-1/2	.015CR	872855	873499	872859	873503
		7/16	2-1/2	.030CR	872856	873500	872860	873504
		7/16	2-1/2	.060CR	872857	873501	872861	873505
		13/16	2-1/2	SQ	873018	873662	873022	873666
		13/16	2-1/2	.015CR	873019	873663	873023	873667
		13/16	2-1/2	.030CR	873020	873664	873024	873668
		13/16	2-1/2	.060CR	873021	873665	873025	873669
		1-1/4	3	SQ	873182	873826	873186	873830
		1-1/4	3	.015CR	873183	873827	873187	873831
		1-1/4	3	.030CR	873184	873828	873188	873832
		1-1/4	3	.060CR	873185	873829	873189	873833
3/8	3/8	1/2	2	SQ	872870	873514	872875	873519
		1/2	2	.015CR	872871	873515	872876	873520
		1/2	2	.030CR	872872	873516	872877	873521
		1/2	2	.060CR	872873	873517	872878	873522
		1/2	2	.090CR	872874	873518	872879	873523
		1	2-1/2	SQ	873034	873678	873039	873683
		1	2-1/2	.015CR	873035	873679	873040	873684
		1	2-1/2	.030CR	873036	873680	873041	873685
		1	2-1/2	.060CR	873037	873681	873042	873686
		1	2-1/2	.090CR	873038	873682	873043	873687
		1-1/4	3	SQ	873198	873842	873203	873847
		1-1/4	3	.015CR	873199	873843	873204	873848
		1-1/4	3	.030CR	873200	873844	873205	873849
		1-1/4	3	.060CR	873201	873845	873206	873850
		1-1/4	3	.090CR	873202	873846	873207	873851
		1-5/8	3-1/2	SQ	873298	873942	873304	873948
		1-5/8	3-1/2	.015CR	873299	873943	873305	873949
		1-5/8	3-1/2	.030CR	873300	873944	873306	873950
		1-5/8	3-1/2	.060CR	873301	873945	873307	873951
		1-5/8	3-1/2	.090CR	873302	873946	873308	873952
		1-5/8	3-1/2	.125CR	873303	873947	873309	873953
1/2	1/2	5/8	2-1/2	SQ	872890	873534	872896	873540
		5/8	2-1/2	.015CR	872891	873535	872897	873541
		5/8	2-1/2	.030CR	872892	873536	872898	873542
		5/8	2-1/2	.060CR	872893	873537	872899	873543
		5/8	2-1/2	.090CR	872894	873538	872900	873544
		5/8	2-1/2	.125CR	872895	873539	872901	873545

Square
Corner Radius
Round Shank
Chip Breaker
40° Helix
ALL4 Coated
P
K
M
S

D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

HTAS-High Temp Alloy & Stainless
Variable Pitch - Honed Cutting Edges - 12% Premium Micrograin Carbide



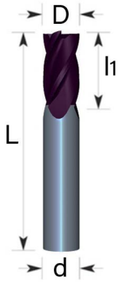


Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 4 Flute	4 Flute Chipbreaker	5 Flute	5 Flute Chipbreaker
1/2	1/2	1	3	SQ	873054	873698	873060	873704
		1	3	.015CR	873055	873699	873061	873705
		1	3	.030CR	873056	873700	873062	873706
		1	3	.060CR	873057	873701	873063	873707
		1	3	.090CR	873058	873702	873064	873708
		1	3	.125CR	873059	873703	873065	873709
		1-1/4	3	SQ	873218	873862	873224	873868
		1-1/4	3	.015CR	873219	873863	873225	873869
		1-1/4	3	.030CR	873220	873864	873226	873870
		1-1/4	3	.060CR	873221	873865	873227	873871
		1-1/4	3	.090CR	873222	873866	873228	873872
		1-1/4	3	.125CR	873223	873867	873229	873873
		1-5/8	4	SQ	873322	873966	873328	873972
		1-5/8	4	.015CR	873323	873967	873329	873973
		1-5/8	4	.030CR	873324	873968	873330	873974
		1-5/8	4	.060CR	873325	873969	873331	873975
		1-5/8	4	.090CR	873326	873970	873332	873976
		1-5/8	4	.125CR	873327	873971	873333	873977
		2-1/8	4	SQ	873402	874046	873408	874052
		2-1/8	4	.015CR	873403	874047	873409	874053
		2-1/8	4	.030CR	873404	874048	873410	874054
		2-1/8	4	.060CR	873405	874049	873411	874055
		2-1/8	4	.090CR	873406	874050	873412	874056
		2-1/8	4	.125CR	873407	874051	873413	874057
5/8	5/8	3/4	3	SQ	872914	873558	872920	873564
		3/4	3	.015CR	872915	873559	872921	873565
		3/4	3	.030CR	872916	873560	872922	873566
		3/4	3	.060CR	872917	873561	872923	873567
		3/4	3	.090CR	872918	873562	872924	873568
		3/4	3	.125CR	872919	873563	872925	873569
		1-1/4	3-1/2	SQ	873078	873722	873084	873728
		1-1/4	3-1/2	.015CR	873079	873723	873085	873729
		1-1/4	3-1/2	.030CR	873080	873724	873086	873730
		1-1/4	3-1/2	.060CR	873081	873725	873087	873731
		1-1/4	3-1/2	.090CR	873082	873726	873088	873732
		1-1/4	3-1/2	.125CR	873083	873727	873089	873733
		1-5/8	4	SQ	873242	873886	873248	873892
		1-5/8	4	.015CR	873243	873887	873249	873893
		1-5/8	4	.030CR	873244	873888	873250	873894
		1-5/8	4	.060CR	873245	873889	873251	873895
		1-5/8	4	.090CR	873246	873890	873252	873896
		1-5/8	4	.125CR	873247	873891	873253	873897
		2-1/8	4	SQ	873346	873990	873352	873996
		2-1/8	4	.015CR	873347	873991	873353	873997
		2-1/8	4	.030CR	873348	873992	873354	873998
		2-1/8	4	.060CR	873349	873993	873355	873999
		2-1/8	4	.090CR	873350	873994	873356	874000
		2-1/8	4	.125CR	873351	873995	873357	874001
		2-5/8	5	SQ	873426	874070	873432	874076
		2-5/8	5	.015CR	873427	874071	873433	874077
		2-5/8	5	.030CR	873428	874072	873434	874078
		2-5/8	5	.060CR	873429	874073	873435	874079
		2-5/8	5	.090CR	873430	874074	873436	874080
		2-5/8	5	.125CR	873431	874075	873437	874081

Square
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40° Helix
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P
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D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

Variable Pitch - Honed Cutting Edges - 12% Premium Micrograin Carbide
HTAS-High Temp Alloy & Stainless





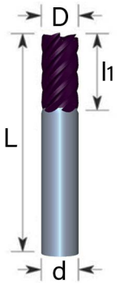
Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 4 Flute	4 Flute Chipbreaker	5 Flute	5 Flute Chipbreaker
3/4	3/4	1	3	SQ	872938	873582	872946	873590
		1	3	.015CR	872939	873583	872947	873591
		1	3	.030CR	872940	873584	872948	873592
		1	3	.060CR	872941	873585	872949	873593
		1	3	.090CR	872942	873586	872950	873594
		1	3	.125CR	872943	873587	872951	873595
		1	3	.190CR	872944	873588	872952	873596
		1	3	.250CR	872945	873589	872953	873597
		1-5/8	4	SQ	873102	873746	873110	873754
		1-5/8	4	.015CR	873103	873747	873111	873755
		1-5/8	4	.030CR	873104	873748	873112	873756
		1-5/8	4	.060CR	873105	873749	873113	873757
		1-5/8	4	.090CR	873106	873750	873114	873758
		1-5/8	4	.125CR	873107	873751	873115	873759
		1-5/8	4	.190CR	873108	873752	873116	873760
		1-5/8	4	.250CR	873109	873753	873117	873761
		2-1/2	5	SQ	873266	873910	873274	873918
		2-1/2	5	.015CR	873267	873911	873275	873919
		2-1/2	5	.030CR	873268	873912	873276	873920
		2-1/2	5	.060CR	873269	873913	873277	873921
		2-1/2	5	.090CR	873270	873914	873278	873922
		2-1/2	5	.125CR	873271	873915	873279	873923
		2-1/2	5	.190CR	873272	873916	873280	873924
		2-1/2	5	.250CR	873273	873917	873281	873925
		3-1/4	6	SQ	873370	874014	873378	874022
		3-1/4	6	.015CR	873371	874015	873379	874023
		3-1/4	6	.030CR	873372	874016	873380	874024
		3-1/4	6	.060CR	873373	874017	873381	874025
		3-1/4	6	.090CR	873374	874018	873382	874026
		3-1/4	6	.125CR	873375	874019	873383	874027
		3-1/4	6	.190CR	873376	874020	873384	874028
		3-1/4	6	.250CR	873377	874021	873385	874029
1	1	1-3/4	4-1/2	SQ	872806	873450	872814	873458
		1-3/4	4-1/2	.015CR	872807	873451	872815	873459
		1-3/4	4-1/2	.030CR	872808	873452	872816	873460
		1-3/4	4-1/2	.060CR	872809	873453	872817	873461
		1-3/4	4-1/2	.090CR	872810	873454	872818	873462
		1-3/4	4-1/2	.125CR	872811	873455	872819	873463
		1-3/4	4-1/2	.190CR	872812	873456	872820	873464
		1-3/4	4-1/2	.250CR	872813	873457	872821	873465
		2-5/8	5	SQ	872970	873614	872978	873622
		2-5/8	5	.015CR	872971	873615	872979	873623
		2-5/8	5	.030CR	872972	873616	872980	873624
		2-5/8	5	.060CR	872973	873617	872981	873625
		2-5/8	5	.090CR	872974	873618	872982	873626
		2-5/8	5	.125CR	872975	873619	872983	873627
		2-5/8	5	.190CR	872976	873620	872984	873628
		2-5/8	5	.250CR	872977	873621	872985	873629
		3-1/4	6	SQ	873134	873778	873142	873786
		3-1/4	6	.015CR	873135	873779	873143	873787
		3-1/4	6	.030CR	873136	873780	873144	873788
		3-1/4	6	.060CR	873137	873781	873145	873789
		3-1/4	6	.090CR	873138	873782	873146	873790
		3-1/4	6	.125CR	873139	873783	873147	873791
		3-1/4	6	.190CR	873140	873784	873148	873792
		3-1/4	6	.250CR	873141	873785	873149	873793



D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"



Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 6 Flute	6 Flute Chipbreaker	7 Flute	7 Flute Chipbreaker
1/4	1/4	3/8	2	SQ	872846	873490	872850	873494
		3/8	2	.015CR	872847	873491	872851	873495
		3/8	2	.030CR	872848	873492	872852	873496
		3/8	2	.060CR	872849	873493	872853	873497
		3/4	2-1/2	SQ	873010	873654	873014	873658
		3/4	2-1/2	.015CR	873011	873655	873015	873659
		3/4	2-1/2	.030CR	873012	873656	873016	873660
		3/4	2-1/2	.060CR	873013	873657	873017	873661
		1-1/8	3	SQ	873174	873818	873178	873822
		1-1/8	3	.015CR	873175	873819	873179	873823
		1-1/8	3	.030CR	873176	873820	873180	873824
		1-1/8	3	.060CR	873177	873821	873181	873825
5/16	5/16	7/16	2-1/2	SQ	872862	873506	872866	873510
		7/16	2-1/2	.015CR	872863	873507	872867	873511
		7/16	2-1/2	.030CR	872864	873508	872868	873512
		7/16	2-1/2	.060CR	872865	873509	872869	873513
		13/16	2-1/2	SQ	873026	873670	873030	873674
		13/16	2-1/2	.015CR	873027	873671	873031	873675
		13/16	2-1/2	.030CR	873028	873672	873032	873676
		13/16	2-1/2	.060CR	873029	873673	873033	873677
		1-1/4	3	SQ	873190	873834	873194	873838
		1-1/4	3	.015CR	873191	873835	873195	873839
		1-1/4	3	.030CR	873192	873836	873196	873840
		1-1/4	3	.060CR	873193	873837	873197	873841
3/8	3/8	1/2	2	SQ	872880	873524	872885	873529
		1/2	2	.015CR	872881	873525	872886	873530
		1/2	2	.030CR	872882	873526	872887	873531
		1/2	2	.060CR	872883	873527	872888	873532
		1/2	2	.090CR	872884	873528	872889	873533
		1	2-1/2	SQ	873044	873688	873049	873693
		1	2-1/2	.015CR	873045	873689	873050	873694
		1	2-1/2	.030CR	873046	873690	873051	873695
		1	2-1/2	.060CR	873047	873691	873052	873696
		1	2-1/2	.090CR	873048	873692	873053	873697
		1-1/4	3	SQ	873210	873852	873213	873857
		1-1/4	3	.015CR	873211	873853	873214	873858
		1-1/4	3	.030CR	873212	873854	873215	873859
		1-1/4	3	.060CR	873208	873855	873216	873860
		1-1/4	3	.090CR	873209	873856	873217	873861
		1-5/8	3-1/2	SQ	873310	873954	873316	873960
		1-5/8	3-1/2	.015CR	873311	873955	873317	873961
		1-5/8	3-1/2	.030CR	873312	873956	873318	873962
		1-5/8	3-1/2	.060CR	873313	873957	873319	873963
		1-5/8	3-1/2	.090CR	873314	873958	873320	873964
		1-5/8	3-1/2	.125CR	873315	873959	873321	873965
1/2	1/2	5/8	2-1/2	SQ	872902	873546	872908	873552
		5/8	2-1/2	.015CR	872903	873547	872909	873553
		5/8	2-1/2	.030CR	872904	873548	872910	873554
		5/8	2-1/2	.060CR	872905	873549	872911	873555
		5/8	2-1/2	.090CR	872906	873550	872912	873556
		5/8	2-1/2	.125CR	872907	873551	872913	873557





D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

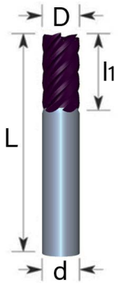
Variable Pitch - Honed Cutting Edges - 12% Premium Micrograin Carbide
HTAS-High Temp Alloy & Stainless











Square
Corner Radius
Round Shank
Chip Breaker
40° Helix
ALL4 Coated
P
K
M
S

Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 6 Flute	6 Flute Chipbreaker	7 Flute	7 Flute Chipbreaker
1/2	1/2	1	3	SQ	873066	873710	873072	873716
		1	3	.015CR	873067	873711	873073	873717
		1	3	.030CR	873068	873712	873074	873718
		1	3	.060CR	873069	873713	873075	873719
		1	3	.090CR	873070	873714	873076	873720
		1	3	.125CR	873071	873715	873077	873721
		1-1/4	3	SQ	873230	873874	873236	873880
		1-1/4	3	.015CR	873231	873875	873237	873881
		1-1/4	3	.030CR	873232	873876	873238	873882
		1-1/4	3	.060CR	873233	873877	873239	873883
		1-1/4	3	.090CR	873234	873878	873240	873884
		1-1/4	3	.125CR	873235	873879	873241	873885
		1-5/8	4	SQ	873334	873978	873340	873984
		1-5/8	4	.015CR	873335	873979	873341	873985
		1-5/8	4	.030CR	873336	873980	873342	873986
		1-5/8	4	.060CR	873337	873981	873343	873987
		1-5/8	4	.090CR	873338	873982	873344	873988
		1-5/8	4	.125CR	873339	873983	873345	873989
		2-1/8	4	SQ	873414	874058	873420	874064
		2-1/8	4	.015CR	873415	874059	873421	874065
		2-1/8	4	.030CR	873416	874060	873422	874066
		2-1/8	4	.060CR	873417	874061	873423	874067
		2-1/8	4	.090CR	873418	874062	873424	874068
		2-1/8	4	.125CR	873419	874063	873425	874069
5/8	5/8	3/4	3	SQ	872926	873570	872932	873576
		3/4	3	.015CR	872927	873571	872933	873577
		3/4	3	.030CR	872928	873572	872934	873578
		3/4	3	.060CR	872929	873573	872935	873579
		3/4	3	.090CR	872930	873574	872936	873580
		3/4	3	.125CR	872931	873575	872937	873581
		1-1/4	3-1/2	SQ	873090	873734	873096	873740
		1-1/4	3-1/2	.015CR	873091	873735	873097	873741
		1-1/4	3-1/2	.030CR	873092	873736	873098	873742
		1-1/4	3-1/2	.060CR	873093	873737	873099	873743
		1-1/4	3-1/2	.090CR	873094	873738	873100	873744
		1-1/4	3-1/2	.125CR	873095	873739	873101	873745
		1-5/8	4	SQ	873254	873898	873260	873904
		1-5/8	4	.015CR	873255	873899	873261	873905
		1-5/8	4	.030CR	873256	873900	873262	873906
		1-5/8	4	.060CR	873257	873901	873263	873907
		1-5/8	4	.090CR	873258	873902	873264	873908
		1-5/8	4	.125CR	873259	873903	873265	873909
		2-1/8	4	SQ	873358	874002	873364	874008
		2-1/8	4	.015CR	873359	874003	873365	874009
		2-1/8	4	.030CR	873360	874004	873366	874010
		2-1/8	4	.060CR	873361	874005	873367	874011
		2-1/8	4	.090CR	873362	874006	873368	874012
		2-1/8	4	.125CR	873363	874007	873369	874013
		2-5/8	5	SQ	873438	874082	873444	874088
		2-5/8	5	.015CR	873439	874083	873445	874089
		2-5/8	5	.030CR	873440	874084	873446	874090
		2-5/8	5	.060CR	873441	874085	873447	874091
		2-5/8	5	.090CR	873442	874086	873448	874092
		2-5/8	5	.125CR	873443	874087	873449	874093

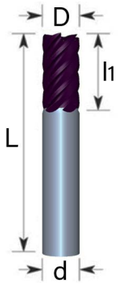
D Tolerance=+0.0000”/-0.0015”
d Tolerance=+0.0000”/-0.0004”











Square
Corner Radius
Round Shank
Chip Breaker
40° Helix
ALL4 Coated
P
K
M
S

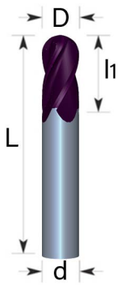
Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 6 Flute	6 Flute Chipbreaker	7 Flute	7 Flute Chipbreaker
3/4	3/4	1	3	SQ	872954	873598	872962	873606
		1	3	.015CR	872955	873599	872963	873607
		1	3	.030CR	872956	873600	872964	873608
		1	3	.060CR	872957	873601	872965	873609
		1	3	.090CR	872958	873602	872966	873610
		1	3	.125CR	872959	873603	872967	873611
		1	3	.190CR	872960	873604	872968	873612
		1	3	.250CR	872961	873605	872969	873613
		1-5/8	4	SQ	873118	873762	873126	873770
		1-5/8	4	.015CR	873119	873763	873127	873771
		1-5/8	4	.030CR	873120	873764	873128	873772
		1-5/8	4	.060CR	873121	873765	873129	873773
		1-5/8	4	.090CR	873122	873766	873130	873774
		1-5/8	4	.125CR	873123	873767	873131	873775
		1-5/8	4	.190CR	873124	873768	873132	873776
		1-5/8	4	.250CR	873125	873769	873133	873777
		2-1/2	5	SQ	873282	873926	873290	873934
		2-1/2	5	.015CR	873283	873927	873291	873935
		2-1/2	5	.030CR	873284	873928	873292	873936
		2-1/2	5	.060CR	873285	873929	873293	873937
		2-1/2	5	.090CR	873286	873930	873294	873938
		2-1/2	5	.125CR	873287	873931	873295	873939
		2-1/2	5	.190CR	873288	873932	873296	873940
		2-1/2	5	.250CR	873289	873933	873297	873941
		3-1/4	6	SQ	873386	874030	873394	874038
		3-1/4	6	.015CR	873387	874031	873395	874039
		3-1/4	6	.030CR	873388	874032	873396	874040
		3-1/4	6	.060CR	873389	874033	873397	874041
		3-1/4	6	.090CR	873390	874034	873398	874042
		3-1/4	6	.125CR	873391	874035	873399	874043
		3-1/4	6	.190CR	873392	874036	873400	874044
		3-1/4	6	.250CR	873393	874037	873401	874045
1	1	1-3/4	4-1/2	SQ	872822	873466	872830	873474
		1-3/4	4-1/2	.015CR	872823	873467	872831	873475
		1-3/4	4-1/2	.030CR	872824	873468	872832	873476
		1-3/4	4-1/2	.060CR	872825	873469	872833	873477
		1-3/4	4-1/2	.090CR	872826	873470	872834	873478
		1-3/4	4-1/2	.125CR	872827	873471	872835	873479
		1-3/4	4-1/2	.190CR	872828	873472	872836	873480
		1-3/4	4-1/2	.250CR	872829	873473	872837	873481
		2-5/8	5	SQ	872986	873630	872994	873638
		2-5/8	5	.015CR	872987	873631	872995	873639
		2-5/8	5	.030CR	872988	873632	872996	873640
		2-5/8	5	.060CR	872989	873633	872997	873641
		2-5/8	5	.090CR	872990	873634	872998	873642
		2-5/8	5	.125CR	872991	873635	872999	873643
		2-5/8	5	.190CR	872992	873636	873000	873644
		2-5/8	5	.250CR	872993	873637	873001	873645
		3-1/4	6	SQ	873150	873794	873158	873802
		3-1/4	6	.015CR	873151	873795	873159	873803
		3-1/4	6	.030CR	873152	873796	873160	873804
		3-1/4	6	.060CR	873153	873797	873161	873805
		3-1/4	6	.090CR	873154	873798	873162	873806
		3-1/4	6	.125CR	873155	873799	873163	873807
		3-1/4	6	.190CR	873156	873800	873164	873808
		3-1/4	6	.250CR	873157	873801	873165	873809

D Tolerance=+0.0000”/-0.0015”
d Tolerance=+0.0000”/-0.0004”

Variable Pitch - Honed Cutting Edges - 12% Premium Micrograin Carbide
HTAS-High Temp Alloy & Stainless

4 Flute 

6 Flute 



Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	ALL4 Coated 4 Flute	ALL4 Coated 6 Flute
1/4	1/4	3/8	2	BN	874097	874098
		3/4	2-1/2	BN	874110	874111
		1-1/8	3	BN	874124	874125
5/16	5/16	7/16	2-1/2	BN	874099	874100
		13/16	2-1/2	BN	874112	874113
		1-1/4	3	BN	874126	874127
3/8	3/8	1/2	2	BN	874101	874102
		1	2-1/2	BN	874114	874115
		1-1/4	3	BN	874128	874129
		1-5/8	3-1/2	BN	874136	874137
1/2	1/2	5/8	2-1/2	BN	874103	874104
		1	3	BN	874116	874117
		1-1/4	3	BN	874130	874131
		1-5/8	4	BN	874138	874139
		2-1/8	4	BN	874144	874145
5/8	5/8	3/4	3	BN	874105	874106
		1-1/4	3-1/2	BN	874118	874119
		1-5/8	4	BN	874132	874133
		2-1/8	4	BN	874140	874141
		2-5/8	5	BN	874146	874147
3/4	3/4	1	3	BN	874107	874108
		1-5/8	4	BN	874120	874121
		2-1/2	5	BN	874134	874135
		3-1/4	6	BN	874142	874143
1	1	1-3/4	4-1/2	BN	874094	874095
		2-5/8	5	BN	874109	874096
		3-1/4	6	BN	874122	874123

Ball

Round Shank

40° Helix

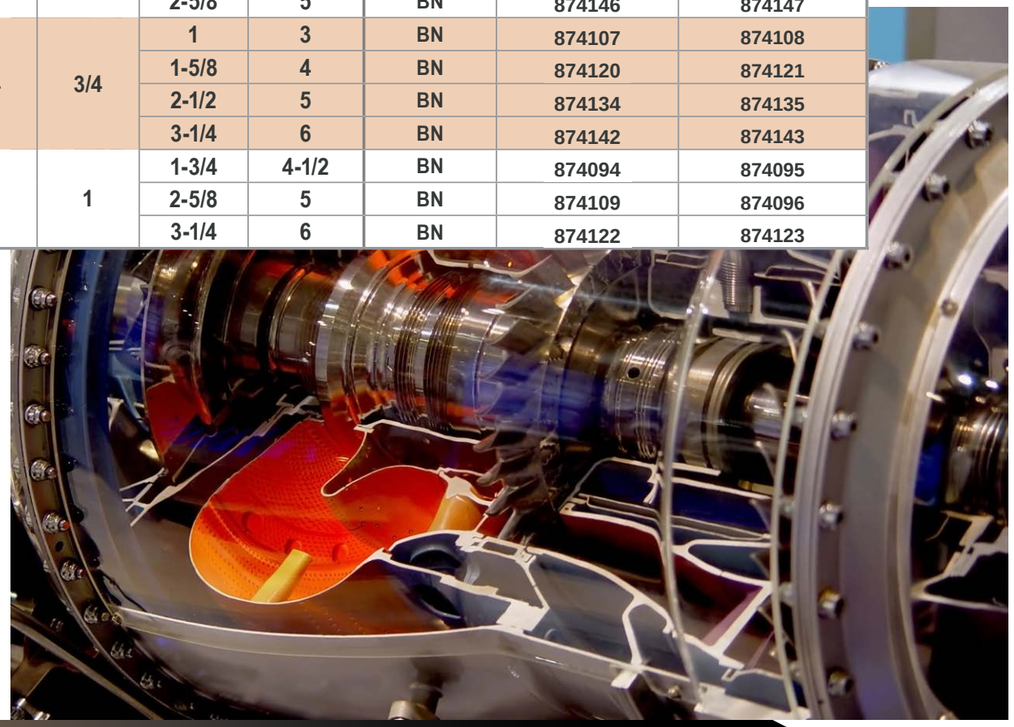
ALL4 Coated

P

K

M

S



D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"



HTAS - SPEEDS & FEEDS

Material Group		SFM ALL4 Coated	Feed Per Tooth By Diameter 1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
Aluminum & Aluminum Alloys	N	900-1800	0.0025	0.0030	0.0035	0.004	0.0045	0.0055	0.0065	0.0085
Copper & Copper Alloys	N	525-1275	0.0025	0.0030	0.0030	0.0035	0.0035	0.0040	0.0045	0.0065
Brass & Bronze	N	375-900	0.0025	0.0030	0.0030	0.0035	0.0035	0.0040	0.0045	0.0055
Iron, Cast (soft)	K	375-950	0.0030	0.0032	0.0035	0.0037	0.0040	0.0045	0.0070	0.0090
Iron, Cast (hard)	K	150-475	0.0018	0.0020	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Iron, Ductile	K	200-900	0.0020	0.0022	0.0025	0.0027	0.0030	0.0040	0.0050	0.0070
Iron, Malleable	K	275-850	0.0020	0.0025	0.0030	0.0035	0.0040	0.0050	0.0060	0.0080
Carbon Steels, Low	P	350-900	0.0020	0.0025	0.0030	0.0035	0.0040	0.0050	0.0060	0.0080
Carbon Steels, Medium	P	200-675	0.0025	0.0026	0.0027	0.0028	0.0030	0.0040	0.0050	0.0060
Carbon Steels Hardened to 35 Rc	P	190-545	0.0020	0.0021	0.0022	0.0023	0.0025	0.0027	0.0030	0.0040
Carbon Steels Hardened to 50 Rc	P	90-275	0.0012	0.0012	0.0013	0.0014	0.0015	0.0026	0.0030	0.0035
Steels, Mold	P	300-725	0.0020	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Steels, Tool	P	175-525	0.0020	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Stainless Steels, Soft	M	300-525	0.0020	0.0022	0.0025	0.0022	0.0030	0.0040	0.0050	0.0070
Stainless Steels, Hard	M	150-475	0.0015	0.0016	0.0017	0.0018	0.0020	0.0030	0.0040	0.0060
Monel & High Nickel Steel	S	75-250	0.0015	0.0022	0.0025	0.0027	0.0030	0.0035	0.0040	0.0050
Titanium, Soft	S	125-475	0.0015	0.0022	0.0025	0.0027	0.0030	0.0040	0.0050	0.0070
Titanium, Hard	S	50-195	0.0010	0.0016	0.0017	0.0018	0.0020	0.0022	0.0026	0.0030
Nickel Based High Temp Alloys	S	50-175	0.0014	0.0014	0.0015	0.0016	0.0017	0.0018	0.0020	0.0023

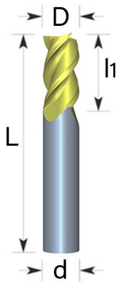
- *When using HEM techniques, the above feed per tooth must be used in a Radial Chip Thinning Factor (RCTF), formula to assure the proper progammed feed is calculated. Most machinist apps available online will have this.*
- *Speeds & Feeds are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase the SFM and/or Feed Per Tooth in 5-10% increments.*
- *Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.*

D Tolerance=+0.0000"/-0.0015"
d Tolerance=+0.0000"/-0.0004"

Medium/Roughing







Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	Uncoated 3 Flute	Uncoated 3 Flute Rougher	ZrN Coated 3 Flute	ZrN Coated 3 Flute Rougher
1/4	1/4	3/4	2-1/2	SQ	872213	--	872264	--
		3/4		.015CR	872214	--	872265	--
		3/4		.030CR	872216	--	--	--
		3/4		.060CR	872217	--	--	--
5/16	5/16	13/16	2-1/2	SQ	872219	--	872268	--
		13/16		.030CR	872220	--	872269	--
		13/16		.060CR	872221	--	--	--
3/8	3/8	1	2-1/2	SQ	872222	--	872270	--
		1	2-1/2	.030CR	872223	872225	872271	872272
		1	2-1/2	.060CR	872224	--	--	--
		1-1/8	3	SQ	872226	--	872273	--
		1-1/8	3	.030CR	872227	872228	872274	872275
1/2	1/2	1-1/4	3	SQ	872229	--	872276	--
		1-1/4	3	.030CR	872230	872234	872277	872278
		1-1/4	3	.060CR	872231	--	--	--
		1-1/4	3	.090CR	872232	--	--	--
		1-1/4	3	.120CR	872233	--	--	--
		2	4	SQ	872235	--	872279	--
		2	4	.030CR	872236	872237	872280	872281
5/8	5/8	1-1/4	3-1/2	SQ	872238	--	872282	--
		1-1/4	3-1/2	.030CR	872239	872243	872283	872284
		1-1/4	3-1/2	.060CR	872240	--	--	--
		1-1/4	3-1/2	.090CR	872241	--	--	--
		1-1/4	3-1/2	.120CR	872242	--	--	--
		2-1/4	5	SQ	872244	--	872285	--
		2-1/4	5	.030CR	872245	872246	872286	872287
3/4	3/4	1-5/8	4	SQ	872247	--	872288	--
		1-5/8	4	.030CR	872248	872252	872289	872290
		1-5/8	4	.060CR	872249	--	--	--
		1-5/8	4	.090CR	872250	--	--	--
		1-5/8	4	.120CR	872251	--	--	--
		2-1/4	5	SQ	872253	--	872291	--
		2-1/4	5	.030CR	872254	872255	872292	872293
1	1	1-1/2	4	SQ	872256	--	872294	--
		1-1/2	4	.030CR	872257	872260	872295	872296
		1-1/2	4	.060CR	872258	--	--	--
		1-1/2	4	.120CR	872259	--	--	--
		2-1/4	5	SQ	872261	--	872297	--
		2-1/4	5	.030CR	872262	872263	872298	872299

Square
Corner Radius
Round Shank
36° Helix
Chip Breaker
Uncoated
ZrN Coated
N

Rougher Design has chip breakers on the periphery of the tool for chip management

- Reduce chip conveyor or auger clogging
- Reduce heat & built-up edge on tools
- Reduce re-cutting of chips thanks to the smaller chip sizes being flushed away from the cutting area



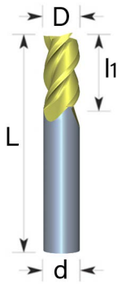
D Tolerance=+0.0000”/-0.0004”
d Tolerance=+0.0000”/-0.0004”

Medium/Finishing









Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	Uncoated 2 Flute	Uncoated 3 Flute	ZrN Coated 2 Flute	ZrN Coated 3 Flute	DLC Coated 2 Flute	DLC Coated 3 Flute
1/8	1/8	1/2	1-1/2	SQ	872071	872072	--	--	--	--
3/16	3/16	5/8	2	SQ	872073	872075	871957	871959	872187	872188
		3/4	2-1/2	SQ	872105	872106	871989	871990	--	--
		1-1/8	3	SQ	872153	872154	872037	872038	--	--
1/4	1/4	3/4	2-1/2	SQ	872076	872078	871960	871962	872189	872191
		3/4	2-1/2	.020"R	872077	872079	871961	871963	872190	872192
		1-1/8	3	SQ	872107	872108	871991	871992	--	--
		1-1/2	4	SQ	872155	872156	872039	872040	--	--
5/16	5/16	13/16	2-1/2	SQ	872081	872083	871965	871967	872193	872195
		13/16	2-1/2	.020"R	872082	872085	871966	871969	872194	872196
		1-1/8	3	SQ	872109	872110	871993	871994	--	--
		1-5/8	4	SQ	872157	872158	872041	872042	--	--
3/8	3/8	1	2-1/2	SQ	872087	872089	871971	871973	872197	872199
		1	2-1/2	.020"R	872088	872090	871972	871974	872198	872200
		1-1/8	3	SQ	872111	872112	871995	871996	--	--
		1-3/4	4	SQ	872159	872160	872043	872044	--	--
1/2	1/2	1-1/4	3	SQ	872091	872093	871975	871977	872201	872203
		1-1/4	3	.030"R	872092	872094	871976	871978	872202	872204
		2	4	SQ	872113	872114	871997	871998	--	--
		3	6	SQ	872161	872162	872045	872046	--	--
5/8	5/8	1-1/4	3-1/2	SQ	872095	872097	871979	871981	872205	872207
		1-1/4	3-1/2	.030"R	872096	872098	871980	871982	872206	872208
		2-1/4	5	SQ	872115	872116	871999	872000	--	--
		3	6	SQ	872163	872164	872047	872048	--	--
3/4	3/4	1-1/2	4	SQ	872099	872101	871983	871985	872209	872211
		1-1/2	4	.030"R	872100	872102	871984	871986	872210	872212
		2-1/4	5	SQ	872117	872118	872001	872002	--	--
		3	6	SQ	872165	872166	872049	872050	--	--
1	1	1-1/2	4	SQ	872067	872069	871953	871955	872183	872185
		1-1/2	4	.030"R	872068	872070	871954	871956	872184	872186
		2-1/4	5	SQ	872103	872104	871987	871988	--	--
		3	6	SQ	872151	872152	872035	872036	--	--

Square
Corner Radius
Round Shank
45° Helix
Uncoated
ZrN Coated
DLC Coated
N

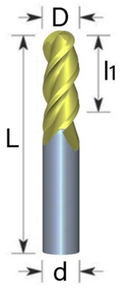


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d Tolerance=+0.0000”/-0.0004”

Balanced Pitch - Cylindrical Margin - Premium Micrograin Carbide - Polished Flutes
UHP-Aluminum







Cutter Diam. D	Shank Diam. d	Length of Cut l1	O.A.L. L	End Face	Uncoated 2 Flute	Uncoated 3 Flute	ZrN Coated 2 Flute	ZrN Coated 3 Flute
3/16	3/16	5/8	2	BN	872121	872122	872005	872006
		3/4	2-1/2	BN	872137	872138	872021	872022
		1-1/8	3	BN	872169	872170	872053	872054
1/4	1/4	3/4	2-1/2	BN	872123	872124	872007	872008
		1-1/8	3	BN	872139	872140	872023	872024
		1-1/2	4	BN	872171	872172	872055	872056
5/16	5/16	13/16	2-1/2	BN	872125	872126	872009	872010
		1-1/8	3	BN	872141	872142	872025	872026
		1-5/8	4	BN	872173	872174	872057	872058
3/8	3/8	1	2-1/2	BN	872127	872128	872011	872012
		1-1/8	3	BN	872143	872144	872027	872028
		1-3/4	4	BN	872175	872176	872059	872060
1/2	1/2	1-1/4	3	BN	872129	872130	872013	872014
		2	4	BN	872145	872146	872029	872030
		3	6	BN	872177	872178	872061	872062
5/8	5/8	1-1/4	3-1/2	BN	872131	872132	872015	872016
		2-1/4	5	BN	872147	872148	872031	872032
		3	6	BN	872179	872180	872063	872064
3/4	3/4	1-1/2	4	BN	872133	872134	872017	872018
		2-1/4	5	BN	872149	872150	872033	872034
		3	6	BN	872181	872182	872065	872066
1	1	1-1/2	4	BN	872119	872120	872003	872004
		2-1/4	5	BN	872135	872136	872019	872020
		3	6	BN	872167	872168	872051	872052



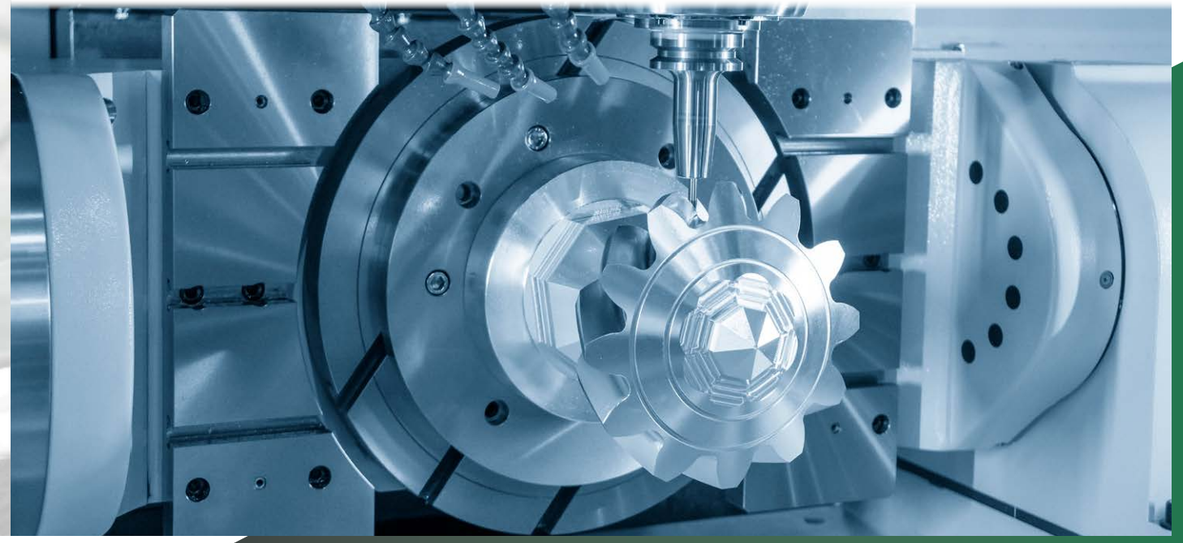


D Tolerance=+0.0000”/-0.0004”
d Tolerance=+0.0000”/-0.0004”

ALUMINUM SPEEDS & FEEDS

Material Group		SFM ZRN Coated	Feed Per Tooth By Diameter 1/4”	5/16”	3/8”	7/16”	1/2”	5/8”	3/4”	1”
Aluminum & Aluminum Alloys	N	900-1800	0.003	0.0035	0.004	0.0045	0.005	0.006	0.007	0.009
Copper & Copper Alloys	N	525-1275	0.003	0.0035	0.0035	0.004	0.004	0.0045	0.005	0.007
Brass & Bronze	N	375-600	0.003	0.0035	0.0035	0.004	0.004	0.0045	0.005	0.006
Graphite	N	500-1200	0.004	0.0045	0.0045	0.0045	0.0045	0.005	0.006	0.008
Plastics	N	600-1650	0.004	0.0045	0.005	0.006	0.007	0.009	0.011	0.016
Iron, Cast (soft)	K	--	--	--	--	--	--	--	--	--
Iron, Cast (hard)	K	--	--	--	--	--	--	--	--	--
Iron, Ductile	K	--	--	--	--	--	--	--	--	--
Iron, Malleable	K	--	--	--	--	--	--	--	--	--
Carbon Steels, Low	P	--	--	--	--	--	--	--	--	--
Carbon Steels, Medium	P	--	--	--	--	--	--	--	--	--
Carbon Steels Hardened to 35 Rc	P	--	--	--	--	--	--	--	--	--
Carbon Steels Hardened to 50 Rc	P	--	--	--	--	--	--	--	--	--
Carbon Steels Hardened to 60 Rc	P	--	--	--	--	--	--	--	--	--
Steels, Mold	P	--	--	--	--	--	--	--	--	--
Steels, Tool	P	--	--	--	--	--	--	--	--	--
Stainless Steels, Soft	M	--	--	--	--	--	--	--	--	--
Stainless Steels, Hard	M	--	--	--	--	--	--	--	--	--
Monel & High Nickel Steel	S	--	--	--	--	--	--	--	--	--
Titanium, Soft	S	--	--	--	--	--	--	--	--	--
Titanium, Hard	S	--	--	--	--	--	--	--	--	--
Nickel Based High Temp Alloys	S	--	--	--	--	--	--	--	--	--

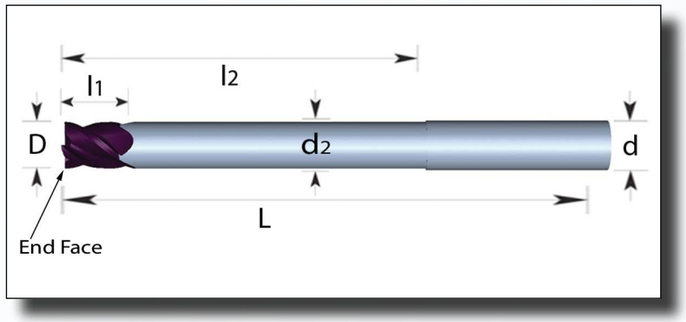
- ***Speeds & Feeds recommendations are for depths of cut not to exceed 1.5 times the tool diameter for profiling and 1 times the diameter for full slotting.***
- ***Speeds & Feeds are recommended starting points only. If the tool is working well, without vibrations or significant noise, increase the SFM and/or Feed Per Tooth in 5-10% increments.***
- ***Optimum speeds & feeds will depend upon material, setup, machine conditions & tool deflection. Higher or lower parameters may be required to achieve optimum machining conditions.***



D Tolerance=+0.0000”/-0.0004”
d Tolerance=+0.0000”/-0.0004”

MAJAC MILLS

CUSTOM END MILL FORM



Dimensions:

L (Overall Length) _____
d (Shank Diameter) _____
l_1 (Length of Cut) _____
l_2 (Length Below Shank) _____
d_2 (Undercut Diameter) _____
D (Tool Diameter) _____
Flutes _____

End Face:

- ☐ **Square**
- ☐ **Ball Nose**
- ☐ **Corner Radius** _____
- ☐ **Chamfer** _____

Shank Style:

- ☐ **Round**
- ☐ **Weldon Flat**

Tool Series:

- ☐ **GENERAL PURPOSE**
- ☐ **HIGH PERFORMANCE**
- ☐ **ULTRA HIGH PERFORMANCE**
- ☐ **HTAS**
- ☐ **ALUMINUM**

Tapered:

- ☐ **No**
- ☐ **Yes**
  - **Taper Angle Per Side** _____
  - **D (Tip Diameter)** _____

Coating:

- ☐ **Uncoated**
- ☐ **TiALN**
- ☐ **ALL4**
- ☐ **ZrN**
- ☐ **DLC**

TiALN (Titanium Aluminum Nitride) - Violet Color; Provides the benefits of high abrasion & heat resistance to improve tool life

ALL4 (Aluminum Chromium Titanium Nitride) - Grey Color; Ultra High Performance coating with extreme heat, abrasion & wear resistance in ferrous applications

ZrN (Zirconium Nitride) - Pale Gold Color; Provides high lubricity for machining aluminum & non-ferrous materials

DLC (Diamond Like Carbon) - Black Color; Extremely hard with very high wear resistance for finish machining aluminum, non-ferrous & composite materials

Special Minimum Order Quantities

Tool Diameter Range	*Minimum Order Quantity*
1/8”& Smaller (3mm)	Not Available
3/16”-1/4” (4mm-6mm)	20
5/16”-3/8” (7mm-10mm)	15
7/16”-1/2” (11mm-12mm)	10
9/16”-3/4” (13mm-20mm)	5
7/8”-1” (25mm)	3

WALTER CNC TOOL & CUTTER GRINDERS

Several 5, 7 & 8 axis Walter Helitronic CNC Tool & Cutter Grinders running 24/7. Lights out manufacturing producing 1,000’s of precision tools daily.



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MAJAC MILLS

Premium Solid Carbide Cutting Tools

MADE IN CANADA

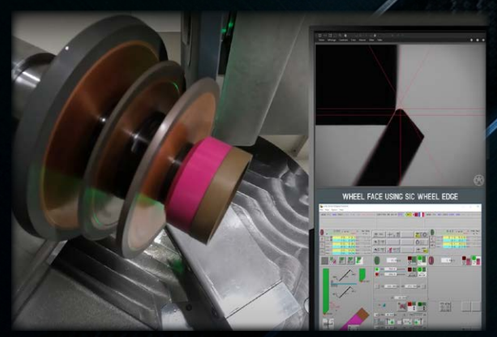
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Printed 2026