

HIGH SPEED STEEL & COBALT

Flat Ends



Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1/2 DEG	KK-102	3/32	1/2	3/8	2 1/2	0.10248	3 Flute
	KK-103	3/32	3/4	3/8	2 5/8	0.10684	3 Flute
	KK-105	3/32	1 1/4	3/8	3 1/8	0.11556	3 Flute
	KK-201	1/8	1/4	3/8	2 1/2	0.12936	3 Flute
	KK-202	1/8	1/2	3/8	2 1/2	0.13373	3 Flute
	KK-203	1/8	3/4	3/8	2 1/2	0.13809	3 Flute
	KK-204	1/8	1	3/8	2 7/8	0.14245	3 Flute
	KK-205	1/8	1 1/4	3/8	3 1/8	0.14681	3 Flute
	KK-206	1/8	1 1/2	3/8	3 1/4	0.15118	3 Flute
	KK-303	3/16	3/4	3/8	2 1/2	0.20059	3 Flute
	KK-305	3/16	1 1/4	3/8	3 1/8	0.20931	3 Flute
	KK-307	3/16	1 3/4	3/8	3 7/8	0.21804	3 Flute
	KK-309	3/16	2 1/4	3/8	4 1/2	0.22676	3 Flute
	KK-313	3/16	3 1/4	3/8	5 1/2	0.24421	3 Flute
	KK-403	1/4	3/4	3/8	2 1/2	0.26309	3 Flute
	KK-405	1/4	1 1/4	3/8	3	0.27181	3 Flute
	KK-409	1/4	2 1/4	1/2	4 1/4	0.28926	3 Flute
	KK-409A	1/4	2 1/4	3/8	4 1/4	0.28926	3 Flute
	KK-413	1/4	3 1/4	1/2	5 1/2	0.30671	3 Flute
	KK-605	3/8	1 1/4	1/2	3 1/8	0.39681	3 Flute
	KK-609	3/8	2 1/4	1/2	4 1/4	0.41426	3 Flute
	KK-613	3/8	3 1/4	1/2	5 1/2	0.43171	3 Flute
	KK-805	1/2	1 1/4	1/2	3 1/4	0.52181	3 Flute
	KK-809	1/2	2 1/4	1/2	4 1/4	0.53926	3 Flute
	KK-813	1/2	3 1/4	1/2	5 1/2	0.55671	3 Flute
	KK-1009	5/8	2 1/4	5/8	4 1/2	0.66426	3 Flute
	KK-1013	5/8	3 1/4	5/8	5 1/2	0.68171	3 Flute
	KK-1017	5/8	4 1/4	5/8	6 1/2	0.69916	3 Flute
	KK-1209	3/4	2 1/4	3/4	4 3/4	0.78926	3 Flute
	KK-1213	3/4	3 1/4	3/4	5 3/4	0.80671	3 Flute
	KK-1217	3/4	4 1/4	3/4	6 3/4	0.82416	3 Flute
	KK-1221	3/4	5 1/4	3/4	7 3/4	0.84161	3 Flute
KK-1624	1	6	1	8 1/2	1.10470	4 Flute	

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1 DEG	K-102	3/32	1/2	3/8	2 1/2	0.11120	3 Flute
	K-103	3/32	3/4	3/8	2 1/2	0.11993	3 Flute
	K-105	3/32	1 1/4	3/8	3 1/8	0.13738	3 Flute
	K-201	1/8	1/4	3/8	2 1/2	0.13373	3 Flute
	K-202	1/8	1/2	3/8	2 1/2	0.14245	3 Flute
	K-203	1/8	3/4	3/8	2 1/2	0.15118	3 Flute
	K-204	1/8	1	3/8	2 7/8	0.15990	3 Flute
	K-205	1/8	1 1/4	3/8	3 1/8	0.16863	3 Flute
	K-206	1/8	1 1/2	3/8	3 1/4	0.17735	3 Flute
	K-208	1/8	2	3/8	4	0.19480	3 Flute
	K-303	3/16	3/4	3/8	2 1/2	0.21368	3 Flute
	K-305	3/16	1 1/4	3/8	3 1/8	0.23113	3 Flute
	K-308	3/16	2	3/8	3 7/8	0.25730	3 Flute
	K-309	3/16	2 1/4	3/8	4 1/4	0.26603	3 Flute
	K-310	3/16	2 1/2	3/8	4 1/2	0.27475	3 Flute
	K-313	3/16	3 1/4	3/8	5 1/2	0.30093	3 Flute
	K-403	1/4	3/4	3/8	2 1/2	0.27618	3 Flute
	K-405	1/4	1 1/4	3/8	3	0.29363	3 Flute
	K-406	1/4	1 1/2	3/8	3 1/4	0.30235	3 Flute
	K-409	1/4	2 1/4	1/2	4 1/4	0.32853	3 Flute
	K-413	1/4	3 1/4	1/2	5 1/2	0.36343	3 Flute
	K-605	3/8	1 1/4	1/2	3 1/4	0.41863	3 Flute
	K-609	3/8	2 1/4	1/2	4 1/4	0.45353	3 Flute
	K-613	3/8	3 1/4	1/2	5 1/4	0.48843	3 Flute
	K-805	1/2	1 1/4	1/2	3 1/4	0.54363	3 Flute
	K-809	1/2	2 1/4	1/2	4 1/4	0.57853	3 Flute
	K-813	1/2	3 1/4	5/8	5 3/8	0.61343	3 Flute
	K-813A	1/2	3 1/4	1/2	5 3/8	0.61343	3 Flute
	K-1009	5/8	2 1/4	5/8	4 1/2	0.70353	3 Flute
	K-1013	5/8	3 1/4	5/8	5 1/2	0.73843	3 Flute
	K-1017	5/8	4 1/4	5/8	6 1/2	0.77333	3 Flute
	K-1209	3/4	2 1/4	3/4	4 3/4	0.82853	3 Flute
K-1213	3/4	3 1/4	3/4	5 3/4	0.86343	3 Flute	
K-1217	3/4	4 1/4	3/4	6 3/4	0.89833	3 Flute	
K-1221	3/4	5 1/4	3/4	7 3/4	0.93323	3 Flute	
K-1624	1	6	1	8 1/2	1.20940	4 Flute	

TO ORDER COBALT OR COATINGS,
 Add a suffix to the part number given above.
 for TIN Coated, add the suffix "TIN"
 for Cobalt, add the suffix "CO"
 for Cobalt TIN Coated, add the suffix "CO-TIN"
 If no suffix is given High Speed Steel will ship.

ALL SIZES ARE AVAILABLE
 SOME ARE AVAILABLE WITH EXTENDED SHANKS.
 CALL FOR AVAILABILITY 1-888-531-0430



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HIGH SPEED STEEL & COBALT

Flat Ends

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute	Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute
1 1/2 DEG	KX-102	3/32	1/2	3/8	2 1/2	0.11993	3 Flute	2 DEG	L-002	1/16	1/2	3/8	2 5/8	0.09742	3 Flute
	KX-103	3/32	3/4	3/8	2 1/2	0.13302	3 Flute		L-004	1/16	1	3/8	2 7/8	0.13234	3 Flute
	KX-104	3/32	1	3/8	2 7/8	0.14611	3 Flute		L-102	3/32	1/2	3/8	2 1/2	0.12867	3 Flute
	KX-105	3/32	1 1/4	3/8	3 1/8	0.15920	3 Flute		L-103	3/32	3/4	3/8	2 1/2	0.14613	3 Flute
	KX-106	3/32	1 1/2	3/8	3 1/4	0.17229	3 Flute		L-105	3/32	1 1/4	3/8	3 1/8	0.18105	3 Flute
	KX-110	3/32	2 1/2	3/8	4 1/2	0.22465	3 Flute		L-202	1/8	1/2	3/8	2 1/2	0.15992	3 Flute
	KX-154	7/64	1	3/8	2 7/8	0.16174	3 Flute		L-203	1/8	3/4	3/8	2 1/2	0.17738	3 Flute
	KX-155	7/64	1 1/4	3/8	3 1/8	0.17483	3 Flute		L-204	1/8	1	3/8	2 7/8	0.19484	3 Flute
	KX-156	7/64	1 1/2	3/8	3 1/4	0.18792	3 Flute		L-205	1/8	1 1/4	3/8	3 1/8	0.21230	3 Flute
	KX-202	1/8	1/2	3/8	2 1/2	0.15118	3 Flute		L-206	1/8	1 1/2	3/8	3 1/4	0.22976	3 Flute
	KX-203	1/8	3/4	3/8	2 1/2	0.16427	3 Flute		L-208	1/8	2	3/8	3 7/8	0.26468	3 Flute
	KX-204	1/8	1	3/8	2 7/8	0.17736	3 Flute		L-210	1/8	2 1/2	1/2	4 1/2	0.29960	3 Flute
	KX-205	1/8	1 1/4	3/8	3 1/8	0.19045	3 Flute		L-210A	1/8	2 1/2	3/8	4 1/2	0.29960	3 Flute
	KX-206	1/8	1 1/2	3/8	3 1/4	0.20354	3 Flute		L-303	3/16	3/4	3/8	2 1/2	0.23988	3 Flute
	KX-208	1/8	2	3/8	3 7/8	0.22972	3 Flute		L-305	3/16	1 1/4	3/8	3 1/8	0.27480	3 Flute
	KX-209	1/8	2 1/4	3/8	4 1/4	0.24281	3 Flute		L-309	3/16	2 1/4	1/2	4 1/4	0.34464	3 Flute
	KX-212	1/8	3	3/8	5	0.28208	3 Flute		L-313	3/16	3 1/4	1/2	5 1/2	0.41448	3 Flute
	KX-254	5/32	1	3/8	2 7/8	0.20861	3 Flute		L-403	1/4	3/4	3/8	2 1/2	0.30238	3 Flute
	KX-255	5/32	1 1/4	3/8	3 1/8	0.22170	3 Flute		L-405	1/4	1 1/4	3/8	3 1/8	0.33730	3 Flute
	KX-256	5/32	1 1/2	3/8	3 1/4	0.23479	3 Flute		L-409	1/4	2 1/4	1/2	4 3/8	0.40714	3 Flute
	KX-258	5/32	2	3/8	3 7/8	0.26097	3 Flute		L-413	1/4	3 1/4	1/2	5 1/4	0.47698	3 Flute
	KX-303	3/16	3/4	3/8	2 1/2	0.22677	3 Flute		L-505	5/16	1 1/4	1/2	3 1/4	0.39980	3 Flute
	KX-305	3/16	1 1/4	3/8	3 1/8	0.25295	3 Flute		L-605	3/8	1 1/4	1/2	3 1/4	0.46230	3 Flute
	KX-309	3/16	2 1/4	3/8	4	0.30531	3 Flute		L-609	3/8	2 1/4	1/2	4 1/4	0.53214	3 Flute
	KX-313	3/16	3 1/4	3/8	5 1/2	0.35767	3 Flute		L-613	3/8	3 1/4	1/2	5 1/2	0.60198	3 Flute
	KX-403	1/4	3/4	3/8	2 1/2	0.28927	3 Flute		L-613B	3/8	3 1/4	5/8	5 1/2	0.60198	3 Flute
	KX-405	1/4	1 1/4	3/8	3	0.31545	3 Flute		L-805	1/2	1 1/4	1/2	3 1/4	0.58730	3 Flute
	KX-409	1/4	2 1/4	1/2	4 1/4	0.36781	3 Flute		L-809	1/2	2 1/4	5/8	4 3/8	0.65714	3 Flute
	KX-413	1/4	3 1/4	1/2	5 1/2	0.42017	3 Flute		L-809A	1/2	2 1/4	1/2	4 3/8	0.65714	3 Flute
	KX-605	3/8	1 1/4	1/2	3 1/8	0.44045	3 Flute		L-813	1/2	3 1/4	3/4	5 1/2	0.72698	3 Flute
	KX-609	3/8	2 1/4	1/2	4 1/4	0.49281	3 Flute		L-813B	1/2	3 1/4	5/8	5 1/2	0.72698	3 Flute
	KX-613	3/8	3 1/4	1/2	5 1/2	0.54517	3 Flute		L-1009	5/8	2 1/4	3/4	4 1/2	0.78214	3 Flute
	KX-805	1/2	1 1/4	1/2	3 1/4	0.56545	3 Flute		L-1013	5/8	3 1/4	3/4	5 1/2	0.85198	3 Flute
	KX-809	1/2	2 1/4	5/8	4 1/2	0.61781	3 Flute		L-1017	5/8	4 1/4	3/4	6 1/2	0.92182	3 Flute
	KX-813	1/2	3 1/4	5/8	5 1/2	0.67017	3 Flute		L-1209	3/4	2 1/4	3/4	4 1/2	0.90714	3 Flute
	KX-1009	5/8	2 1/4	3/4	4 1/2	0.74281	3 Flute		L-1213	3/4	3 1/4	3/4	5 3/4	0.97698	3 Flute
KX-1013	5/8	3 1/4	3/4	5 1/2	0.79517	3 Flute	L-1221	3/4	5 1/4	1	7 3/4	1.11666	3 Flute		
KX-1017	5/8	4 1/4	3/4	6 1/2	0.84753	3 Flute	L-1624	1	6	1 1/4	8 1/2	1.41904	4 Flute		
KX-1209	3/4	2 1/4	3/4	4 3/4	0.86781	3 Flute									
KX-1221	3/4	5 1/4	1	7 3/4	1.02489	3 Flute									
KX-1624	1	6	1 1/4	8 1/2	1.31416	4 Flute									

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Flat Ends



Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
3 DEG	M-002	1/16	1/2	3/8	2 5/8	0.11491	3 Flute
	M-003	1/16	3/4	3/8	2 3/4	0.14112	3 Flute
	M-004	1/16	1	3/8	2 7/8	0.16732	3 Flute
	M-005	1/16	1 1/4	3/8	3 1/8	0.19353	3 Flute
	M-006	1/16	1 1/2	3/8	3 1/4	0.21973	3 Flute
	M-103	3/32	3/4	3/8	2 1/2	0.17237	3 Flute
	M-104	3/32	1	3/8	2 7/8	0.19857	3 Flute
	M-105	3/32	1 1/4	3/8	3 1/8	0.22478	3 Flute
	M-106	3/32	1 1/2	3/8	3 1/4	0.25098	3 Flute
	M-108	3/32	2	3/8	3 3/4	0.30339	3 Flute
	M-110	3/32	2 1/2	1/2	4 1/2	0.35580	3 Flute
	M-154	7/64	1	3/8	2 7/8	0.21420	3 Flute
	M-155	7/64	1 1/4	3/8	3 1/8	0.24040	3 Flute
	M-156	7/64	1 1/2	3/8	3 1/4	0.26661	3 Flute
	M-158	7/64	2	3/8	3 3/4	0.31902	3 Flute
	M-203	1/8	3/4	3/8	2 5/8	0.20362	3 Flute
	M-204	1/8	1	3/8	2 7/8	0.22982	3 Flute
	M-205	1/8	1 1/4	3/8	3 1/8	0.25603	3 Flute
	M-206	1/8	1 1/2	3/8	3 1/4	0.28223	3 Flute
	M-208	1/8	2	3/8	3 3/4	0.33464	3 Flute
	M-210	1/8	2 1/2	1/2	4 1/2	0.38705	3 Flute
	M-210A	1/8	2 1/2	3/8	4 1/2	0.38705	3 Flute
	M-212	1/8	3	1/2	5	0.43946	3 Flute
	M-216	1/8	4	1/2	6 1/2	0.54428	3 Flute
	M-2525	5/32	5/8	3/8	2 1/2	0.22176	3 Flute
	M-253	5/32	3/4	3/8	2 1/2	0.23487	3 Flute
	M-254	5/32	1	3/8	2 7/8	0.26107	3 Flute
	M-255	5/32	1 1/4	3/8	3 1/8	0.28728	3 Flute
	M-256	5/32	1 1/2	3/8	3 1/4	0.31348	3 Flute
	M-258	5/32	2	3/8	3 7/8	0.36589	3 Flute
	M-303	3/16	3/4	3/8	2 5/8	0.26612	3 Flute
	M-304	3/16	1	3/8	2 7/8	0.29232	3 Flute
M-305	3/16	1 1/4	3/8	3 1/8	0.31853	3 Flute	
M-306	3/16	1 1/2	3/8	3 1/8	0.34473	3 Flute	
M-308	3/16	2	1/2	4	0.39714	3 Flute	
M-310	3/16	2 1/2	1/2	4 1/2	0.44955	3 Flute	
M-312	3/16	3	1/2	5	0.50196	3 Flute	
M-313	3/16	3 1/4	1/2	5 1/2	0.52817	3 Flute	
M-316	3/16	4	5/8	6 1/8	0.60678	3 Flute	
M-320	3/16	5	3/4	7 1/4	0.71160	3 Flute	
M-322	3/16	5 1/2	3/4	7 3/4	0.76401	3 Flute	

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
3 DEG	M-403	1/4	3/4	3/8	2 1/2	0.32862	3 Flute
	M-404	1/4	1	3/8	2 3/4	0.35482	3 Flute
	M-405	1/4	1 1/4	3/8	3 1/8	0.37500	3 Flute
	M-406	1/4	1 1/2	3/8	3 1/4	0.40723	3 Flute
	M-409	1/4	2 1/4	1/2	4 1/4	0.48585	3 Flute
	M-410	1/4	2 1/2	1/2	4 1/2	0.51205	3 Flute
	M-413	1/4	3 1/4	1/2	5 1/2	0.59067	3 Flute
	M-413A	1/4	3 1/4	5/8	5 1/2	0.59067	3 Flute
	M-416	1/4	4	3/4	6 1/4	0.66928	3 Flute
	M-416A	1/4	4	5/8	6 1/4	0.66928	3 Flute
	M-420	1/4	5	3/4	7 3/8	0.77410	3 Flute
	M-504	5/16	1	1/2	3 1/8	0.41732	3 Flute
	M-507	5/16	1 3/4	1/2	3 7/8	0.49594	3 Flute
	M-605	3/8	1 1/4	1/2	3 1/4	0.50000	3 Flute
	M-609	3/8	2 1/4	5/8	4 3/8	0.61085	3 Flute
	M-609A	3/8	2 1/4	1/2	4 3/8	0.61085	3 Flute
	M-613	3/8	3 1/4	5/8	5 3/8	0.71567	3 Flute
	M-613A	3/8	3 1/4	3/4	5 3/8	0.71567	3 Flute
	M-616	3/8	4	3/4	6 1/2	0.79428	3 Flute
	M-620	3/8	5	3/4	7 1/2	0.89910	3 Flute
	M-624	3/8	6	1	8 1/2	1.00392	3 Flute
	M-805	1/2	1 1/4	1/2	3 1/4	0.63103	3 Flute
	M-809	1/2	2 1/4	3/4	4 1/2	0.73585	3 Flute
	M-809A	1/2	2 1/4	1/2	4 1/8	0.73585	3 Flute
	M-809B	1/2	2 1/4	5/8	4 1/4	0.73585	3 Flute
	M-813	1/2	3 1/4	3/4	5 1/2	0.84067	3 Flute
	M-816	1/2	4	3/4	6 3/8	0.91928	3 Flute
	M-820	1/2	5	1	7 1/2	1.02410	3 Flute
	M-824	1/2	6	1	8 1/2	1.12892	3 Flute
	M-1009	5/8	2 1/4	3/4	4 1/2	0.86085	3 Flute
	M-1013	5/8	3 1/4	3/4	5 1/2	0.96567	3 Flute
	M-1016	5/8	4	1	6 1/2	1.04428	3 Flute
M-1020	5/8	5	1	7 1/2	1.14910	3 Flute	
M-1209	3/4	2 1/4	1	4 3/4	0.98585	3 Flute	
M-1213	3/4	3 1/4	1	5 3/4	1.09067	3 Flute	
M-1216	3/4	4	1	6 1/2	1.16928	4 Flute	
M-1220	3/4	5	1	7 1/2	1.27410	4 Flute	
M-1224	3/4	6	1 1/4	8 1/2	1.37892	4 Flute	
M-1624	1	6	1 1/4	8 1/2	1.62892	4 Flute	

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Flat Ends

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute	Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute
4 DEG	N-004	1/16	1	3/8	2 7/8	0.20236	3 Flute	5 DEG	O-0002	1/32	1/2	3/16	2 5/8	0.11874	2 Flute
	N-006	1/16	1 1/2	3/8	3 1/4	0.27229	3 Flute		O-0003	1/32	3/4	3/16	2 5/8	0.16249	2 Flute
	N-103	3/32	3/4	3/8	2 5/8	0.19865	3 Flute		O-002	1/16	1/2	3/8	2 5/8	0.14999	3 Flute
	N-104	3/32	1	3/8	2 7/8	0.23361	3 Flute		O-003	1/16	3/4	3/8	2 5/8	0.19374	3 Flute
	N-203	1/8	3/4	3/8	2 5/8	0.22990	3 Flute		O-004	1/16	1	3/8	2 7/8	0.23748	3 Flute
	N-204	1/8	1	3/8	2 7/8	0.26486	3 Flute		O-005	1/16	1 1/4	3/8	3 1/8	0.28123	3 Flute
	N-206	1/8	1 1/2	3/8	3 1/4	0.33479	3 Flute		O-006	1/16	1 1/2	3/8	3 1/4	0.32497	3 Flute
	N-208	1/8	2	1/2	3 7/8	0.40472	3 Flute		O-056	.070	1 1/2	3/8	3 1/4	0.33247	3 Flute
	N-210	1/8	2 1/2	1/2	4 1/2	0.47465	3 Flute		O-102	3/32	1/2	3/8	2 5/8	0.18124	3 Flute
	N-303	3/16	3/4	3/8	2 5/8	0.29240	3 Flute		O-103	3/32	3/4	3/8	2 5/8	0.22499	3 Flute
	N-305	3/16	1 1/4	3/8	3 1/8	0.36233	3 Flute		O-104	3/32	1	3/8	2 7/8	0.26873	3 Flute
	N-310	3/16	2 1/2	1/2	4 1/2	0.53715	3 Flute		O-105	3/32	1 1/4	3/8	3 1/8	0.31248	3 Flute
	N-313	3/16	3 1/4	5/8	5 1/2	0.64205	3 Flute		O-106	3/32	1 1/2	3/8	3 1/4	0.35622	3 Flute
	N-316	3/16	4	3/4	6 1/2	0.74694	3 Flute		O-108	3/32	2	1/2	4	0.44371	3 Flute
	N-403	1/4	3/4	3/8	2 1/2	0.35490	3 Flute		O-108A	3/32	2	3/8	3 7/8	0.44371	3 Flute
	N-405	1/4	1 1/4	1/2	3 1/4	0.42483	3 Flute		O-110	3/32	2 1/2	1/2	4 1/2	0.53120	3 Flute
	N-409	1/4	2 1/4	5/8	4 3/8	0.56469	3 Flute		O-114	3/32	3 1/2	3/4	5 7/8	0.66244	3 Flute
	N-413	1/4	3 1/4	3/4	5 1/2	0.70455	3 Flute		O-154	7/64	1	3/8	2 7/8	0.28436	3 Flute
	N-416	1/4	4	3/4	6 1/2	0.80944	3 Flute		O-155	7/64	1 1/4	3/8	3 1/8	0.32810	3 Flute
	N-605	3/8	1 1/4	1/2	3 1/4	0.54983	3 Flute		O-156	7/64	1 1/2	3/8	3 5/16	0.37185	3 Flute
	N-609	3/8	2 1/4	5/8	4 3/8	0.68969	3 Flute		O-158	7/64	2	1/2	4	0.45934	3 Flute
	N-613	3/8	3 1/4	3/4	5 1/2	0.82955	3 Flute		O-203	1/8	3/4	3/8	2 5/8	0.25000	3 Flute
	N-616	3/8	4	3/4	6 1/2	0.93444	3 Flute		O-204	1/8	1	3/8	2 7/8	0.29998	3 Flute
	N-805	1/2	1 1/4	1/2	3 1/4	0.67483	3 Flute		O-205	1/8	1 1/4	3/8	3 1/8	0.34373	3 Flute
N-809	1/2	2 1/4	3/4	4 1/2	0.81469	3 Flute	O-206	1/8	1 1/2	3/8	3 1/4	0.37500	3 Flute		
N-813	1/2	3 1/4	3/4	5 5/8	0.95455	3 Flute	O-208	1/8	2	1/2	4	0.47496	3 Flute		
N-816	1/2	4	1	6 1/2	1.05944	3 Flute	O-208A	1/8	2	3/8	4	0.47496	3 Flute		
N-820	1/2	5	1	7 1/2	1.19930	3 Flute	O-210	1/8	2 1/2	5/8	4 1/2	0.56245	3 Flute		
								O-210A	1/8	2 1/2	1/2	4 1/2	0.56245	3 Flute	
								O-212	1/8	3	3/4	5 1/2	0.64994	3 Flute	
								O-212A	1/8	3	1/2	5 1/2	0.64994	3 Flute	
								O-254	5/32	1	3/8	2 7/8	0.33123	3 Flute	
								O-255	5/32	1 1/4	3/8	3 1/8	0.37498	3 Flute	
								O-256	5/32	1 1/2	1/2	3 5/8	0.41872	3 Flute	
								O-258	5/32	2	1/2	4	0.50000	3 Flute	
								O-303	3/16	3/4	3/8	2 9/16	0.31874	3 Flute	
								O-304	3/16	1	3/8	3	0.36248	3 Flute	
								O-305	3/16	1 1/4	1/2	3 3/8	0.40623	3 Flute	
								O-305S	7/32	1 1/4	1/2	3 3/8	0.43748	3 Flute	
								O-306	3/16	1 1/2	1/2	3 1/2	0.44997	3 Flute	
								O-308	3/16	2	1/2	4 1/8	0.53746	3 Flute	
								O-310	3/16	2 1/2	5/8	4 5/8	0.62495	3 Flute	
								O-310A	3/16	2 1/2	1/2	4 1/2	0.62495	3 Flute	
								O-312	3/16	3	3/4	5 1/4	0.71244	3 Flute	
								O-312A	3/16	3	1/2	5 1/4	0.71244	3 Flute	
								O-313	3/16	3 1/4	3/4	5 1/2	0.75619	3 Flute	

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 for Cobalt, add the suffix "CO"
 for Cobalt TIN Coated, add the suffix "CO-TIN"
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HIGH SPEED STEEL & COBALT

Flat Ends



Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	Large Dia.		Large Dia.	
					OAL			
5	O-313A	3/16	3 1/4	1/2	5 1/2	0.75619	3 Flute	
	O-316	3/16	4	3/4	6 1/4	0.88742	3 Flute	
	O-320	3/16	5	1	7 1/2	1.06240	3 Flute	
	O-324	3/16	6	1	8 1/2	1.23738	3 Flute	
	O-403	1/4	3/4	3/8	2 1/2	0.38124	3 Flute	
	O-404	1/4	1	1/2	3	0.42498	3 Flute	
	O-405	1/4	1 1/4	1/2	3 1/4	0.46873	3 Flute	
	O-406	1/4	1 1/2	1/2	3 1/2	0.51247	3 Flute	
	O-409	1/4	2 1/4	5/8	4 3/8	0.64371	3 Flute	
	O-409A	1/4	2 1/4	1/2	4 3/8	0.64371	3 Flute	
	O-410	1/4	2 1/2	5/8	4 1/2	0.68745	3 Flute	
	O-413	1/4	3 1/4	3/4	5 1/2	0.81869	3 Flute	
	O-416	1/4	4	3/4	6 1/4	0.94992	3 Flute	
	O-424	1/4	6	1	8 1/2	1.29988	3 Flute	
	O-509	5/16	2 1/4	5/8	4 1/4	0.70621	3 Flute	
	O-605	3/8	1 1/4	1/2	3 1/4	0.59373	3 Flute	
	O-609	3/8	2 1/4	3/4	4 1/2	0.76871	3 Flute	
	O-613	3/8	3 1/4	3/4	5 1/2	0.94369	3 Flute	
	O-616	3/8	4	1	6 1/2	1.07492	3 Flute	
	O-620	3/8	5	1 1/4	7 1/2	1.24990	3 Flute	
	O-624	3/8	6	1 1/4	8 1/2	1.42488	3 Flute	
	O-805	1/2	1 1/4	1/2	3 1/4	0.71873	3 Flute	
	O-809	1/2	2 1/4	3/4	4 1/2	0.89371	3 Flute	
	O-813	1/2	3 1/4	3/4	5 5/8	1.06869	3 Flute	
	O-816	1/2	4	1	6 1/2	1.19992	3 Flute	
	O-820	1/2	5	1 1/4	7 1/2	1.37490	3 Flute	
	O-824	1/2	6	1 1/4	8 1/2	1.54988	3 Flute	
	O-1009	5/8	2 1/4	3/4	4 1/2	1.01871	3 Flute	
	O-1020	5/8	5	1 1/4	7 1/2	1.49990	4 Flute	
	O-1209	3/4	2 1/4	3/4	4 3/4	1.14371	3 Flute	
	O-1216	3/4	4	1 1/4	6 1/2	1.44992	4 Flute	
	O-1220	3/4	5	1 1/4	7 1/2	1.62490	4 Flute	
O-1224	3/4	6	1 1/4	8 1/2	1.79988	4 Flute		
O-1620	1	5	1 1/4	7 1/2	1.87490	4 Flute		
O-1624	1	6	2	9 1/2	2.04988	4 Flute		
6 DEG	P-004	1/16	1	3/8	2 7/8	0.27271	3 Flute	
	P-104	3/32	1	3/8	2 7/8	0.30396	3 Flute	
	P-204	1/8	1	3/8	2 7/8	0.33521	3 Flute	
	P-206	1/8	1 1/2	3/8	3 1/4	0.44032	3 Flute	
	P-305	3/16	1 1/4	1/2	3 1/4	0.45030	3 Flute	
	P-306	3/16	1 1/2	1/2	3 1/4	0.50282	3 Flute	
	P-406	1/4	1 1/2	5/8	3 1/4	0.56532	3 Flute	
	P-605	3/8	1 1/4	5/8	3 1/4	0.63776	3 Flute	
	P-805	1/2	1 1/4	3/4	3 1/4	0.76276	3 Flute	
	7 DEG	R-0004	1/32	1	3/8	2 3/4	0.27681	2 Flute
		R-003	1/16	3/4	3/8	2 5/8	0.24667	3 Flute
		R-004	1/16	1	3/8	2 7/8	0.30806	3 Flute
		R-006	1/16	1 1/2	1/2	3 1/4	0.43084	3 Flute
		R-0254	.070	1	3/8	2 7/8	0.31556	3 Flute
		R-054	5/64	1	3/8	2 7/8	0.32369	3 Flute
		R-103	3/32	3/4	3/8	2 1/2	0.27792	3 Flute
R-104		3/32	1	3/8	2 3/4	0.33931	3 Flute	
R-105		3/32	1 1/4	1/2	3 1/8	0.40070	3 Flute	
R-106		3/32	1 1/2	1/2	3 1/2	0.46209	3 Flute	
R-203		1/8	3/4	3/8	2 9/16	0.30917	3 Flute	
R-204		1/8	1	3/8	2 3/4	0.37056	3 Flute	
R-206		1/8	1 1/2	1/2	3 1/2	0.49334	3 Flute	
R-208		1/8	2	5/8	3 7/8	0.61612	3 Flute	
R-212		1/8	3	3/4	5 1/4	0.86168	3 Flute	
R-305		3/16	1 1/4	1/2	3 1/4	0.49445	3 Flute	
R-312	3/16	3	3/4	5 3/8	0.92418	3 Flute		
R-403	1/4	3/4	1/2	2 1/2	0.43417	3 Flute		
R-405	1/4	1 1/4	1/2	3 1/4	0.55695	3 Flute		
R-409	1/4	2 1/4	3/4	4 1/2	0.80251	3 Flute		
R-413	1/4	3 1/4	1	5 3/4	1.04807	3 Flute		
R-416	1/4	4	1	6 1/2	1.23224	3 Flute		
R-513	5/16	3 1/4	1	5 3/4	1.11057	3 Flute		
R-605	3/8	1 1/4	5/8	3 1/4	0.68195	3 Flute		
R-609	3/8	2 1/4	3/4	4 1/2	0.92751	3 Flute		
R-613	3/8	3 1/4	1	5 5/8	1.17307	3 Flute		
R-616	3/8	4	1 1/4	6 1/2	1.35724	3 Flute		
R-624	3/8	6	1 1/4	8 1/2	1.84836	4 Flute		
R-805	1/2	1 1/4	3/4	3 1/2	0.80695	3 Flute		
R-805A	1/2	1 1/4	5/8	3 3/8	0.80695	3 Flute		
R-809	1/2	2 1/4	1	4 5/8	1.05251	3 Flute		
R-813	1/2	3 1/4	1 1/4	5 3/4	1.29807	4 Flute		
R-816	1/2	4	1 1/4	6 1/2	1.48224	4 Flute		
R-824	1/2	6	1 1/4	8 1/2	1.97336	4 Flute		
R-1016	5/8	4	1 1/4	6 1/2	1.60724	4 Flute		
R-1020	5/8	5	1 1/4	7 1/2	1.85820	4 Flute		
R-1213	3/4	3 1/4	1 1/4	5 3/4	1.54807	4 Flute		
R-1216	3/4	4	1 1/4	6 1/2	1.73224	4 Flute		
R-1224	3/4	6	2	9 1/2	2.22336	4 Flute		
R-1624	1	6	2	9 1/2	2.47336	4 Flute		



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HIGH SPEED STEEL & COBALT

Flat Ends

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
8 DEG	8-0002	1/32	1/2	3/8	2 5/8	0.17180	2 Flute	
	8-003	1/16	3/4	3/8	2 7/8	0.27330	3 Flute	
	8-004	1/16	1	3/8	2 7/8	0.34360	3 Flute	
	8-005	1/16	1 1/4	3/8	3 1/8	0.41390	3 Flute	
	8-006	1/16	1 1/2	3/8	3 1/2	0.48410	3 Flute	
	8-103	3/32	3/4	3/8	2 5/8	0.30456	3 Flute	
	8-104	3/32	1	3/8	2 7/8	0.37483	3 Flute	
	8-203	1/8	3/4	3/8	3	0.33581	3 Flute	
	8-204	1/8	1	3/8	3	0.40608	3 Flute	
	8-208	1/8	2	5/8	4	0.68716	3 Flute	
	8-403	1/4	3/4	1/2	2 7/8	0.46081	3 Flute	
	8-408	1/4	2	3/4	4 1/8	0.81216	3 Flute	
	8-603	3/8	3/4	1/2	2 3/4	0.58581	3 Flute	
	8-803	1/2	3/4	5/8	2 7/8	0.71081	3 Flute	
	10 DEG	T-0003	1/32	3/4	3/8	2 3/4	0.29575	2 Flute
		T-002	1/16	1/2	3/8	2 3/8	0.23883	3 Flute
		T-003	1/16	3/4	3/8	2 5/8	0.32700	3 Flute
		T-004	1/16	1	1/2	2 7/8	0.41516	3 Flute
T-102		3/32	1/2	3/8	2 3/8	0.27008	3 Flute	
T-103		3/32	3/4	3/8	2 7/8	0.35825	3 Flute	
T-106		3/32	1 1/2	1/2	3 1/2	0.62274	3 Flute	
T-203		1/8	3/4	3/8	2 5/8	0.38950	3 Flute	
T-205		1/8	1 1/4	1/2	3 1/4	0.56583	3 Flute	
T-206		1/8	1 1/2	1/2	3 1/2	0.65399	3 Flute	
T-254		5/32	1	1/2	3	0.50000	3 Flute	
T-258		5/32	2	3/4	4 1/4	0.86157	3 Flute	
T-305		3/16	1 1/4	1/2	3 3/8	0.62500	3 Flute	
T-309		3/16	2 1/4	3/4	4 1/2	0.98099	3 Flute	
T-403		1/4	3/4	1/2	2 3/4	0.51450	3 Flute	
T-405		1/4	1 1/4	1/2	3 1/4	0.69083	3 Flute	
T-409		1/4	2 1/4	3/4	4 1/2	1.04349	3 Flute	
T-409A		1/4	2 1/4	1/2	4 1/2	1.04349	3 Flute	
T-413	1/4	3 1/4	1	5 5/8	1.39615	4 Flute		
T-605	3/8	1 1/4	5/8	3 1/2	0.81583	3 Flute		
T-609	3/8	2 1/4	1	4 5/8	1.16849	3 Flute		
T-613	3/8	3 1/4	1 1/4	5 3/4	1.52115	4 Flute		
T-805	1/2	1 1/4	3/4	3 1/2	0.94083	3 Flute		
T-809	1/2	2 1/4	1	4 3/4	1.29349	3 Flute		
T-813	1/2	3 1/4	1 1/4	5 3/4	1.64615	4 Flute		
T-816	1/2	4	1 1/4	6 3/8	1.91064	4 Flute		
11 DEG	TK-0003	1/32	3/4	3/8	2 7/8	0.32282	2 Flute	
	TK-003	1/16	3/4	3/8	2 7/8	0.35407	3 Flute	
	TK-004	1/16	1	3/8	2 7/8	0.45126	3 Flute	
	TK-103	3/32	3/4	3/8	2 7/8	0.38532	3 Flute	
	TK-203	1/8	3/4	3/8	3	0.41657	3 Flute	
	12 DEG	TL-103	3/32	3/4	3/8	2 7/8	0.41258	3 Flute
		TL-204	1/8	1	1/2	3	0.55011	3 Flute
		TL-205	1/8	1 1/4	1/2	3 1/4	0.65639	3 Flute
		TL-403	1/4	3/4	1/2	2 7/8	0.56880	3 Flute
		TL-406	1/4	1 1/2	5/8	3 5/8	0.88765	3 Flute
		TL-409	1/4	2 1/4	1	4 3/4	1.20650	3 Flute
	15 DEG	V-0003	1/32	3/4	1/2	2 3/4	0.43318	2 Flute
		V-003	1/16	3/4	1/2	2 3/4	0.46443	3 Flute
		V-102	3/32	1/2	3/8	2 3/8	0.36170	3 Flute
		V-103	3/32	3/4	1/2	2 7/8	0.49568	3 Flute
		V-104	3/32	1	1/2	3	0.62965	3 Flute
		V-106	3/32	1 1/2	3/4	3 3/4	0.89760	3 Flute
		V-106A	3/32	1 1/2	1/2	3 3/4	0.89760	3 Flute
V-202		1/8	1/2	1/2	2 5/8	0.39295	3 Flute	
V-202A		1/8	1/2	3/8	2 5/8	0.39295	3 Flute	
V-203		1/8	3/4	1/2	2 7/8	0.52693	3 Flute	
V-204		1/8	1	1/2	3 1/8	0.66090	3 Flute	
V-205		1/8	1 1/4	5/8	3 1/2	0.79488	3 Flute	
V-205A	1/8	1 1/4	1/2	3 1/2	0.79488	3 Flute		
V-206A	1/8	1 1/2	1/2	3 5/8	0.92885	3 Flute		
V-304	3/16	1	1/2	3 1/8	0.72340	3 Flute		
V-305	3/16	1 1/4	3/4	3 1/2	0.85738	3 Flute		
V-305A	3/16	1 1/4	1/2	3 1/2	0.85738	3 Flute		
V-308	3/16	2	1	4 1/2	1.25930	3 Flute		
V-404	1/4	1	1/2	3 1/8	0.78590	3 Flute		
V-405	1/4	1 1/4	3/4	3 1/2	0.91988	3 Flute		
V-405A	1/4	1 1/4	1/2	3 1/2	0.91988	3 Flute		

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HIGH SPEED STEEL & COBALT

Flat Ends



Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
15 DEG	V-406	1/4	1 1/2	3/4	3 3/4	1.05385	3 Flute	25 DEG	X-603	3/8	3/4	5/8	3	1.07447	4 Flute	
	V-408	1/4	2	3/4	4 1/2	1.32180	3 Flute		X-604	3/8	1	3/4	3 1/4	1.30762	4 Flute	
	V-409	1/4	2 1/4	1	4 3/4	1.45578	4 Flute		X-606	3/8	1 1/2	1	4 1/8	1.77393	4 Flute	
	V-413	1/4	3 1/4	1 1/4	5 3/4	1.99168	4 Flute		X-805	1/2	1 1/4	1	3 3/4	1.66578	4 Flute	
	V-504	5/16	1	3/4	3 1/4	0.84840	3 Flute		30 DEG	Z-002	1/16	1/2	1/2	2 1/2	0.63985	3 Flute
	V-506	5/16	1 1/2	3/4	3 7/8	1.11635	3 Flute			Z-103	3/32	3/4	1/2	3	0.95978	3 Flute
	V-509	5/16	2 1/4	1	4 7/8	1.51828	4 Flute			Z-202	1/8	1/2	1/2	2 5/8	0.70235	4 Flute
	V-605	3/8	1 1/4	3/4	3 5/8	1.04488	3 Flute			Z-204	1/8	1	1/2	3 1/8	1.27970	4 Flute
	V-609	3/8	2 1/4	1 1/4	4 3/4	1.58080	4 Flute			Z-404	1/4	1	3/4	3 3/8	1.40470	4 Flute
	V-613	3/8	3 1/4	1 1/4	5 3/4	2.05418	4 Flute			Z-406	1/4	1 1/2	1	4 1/8	1.98205	4 Flute
	V-804	1/2	1	3/4	3 1/4	1.03590	3 Flute		Z-605	3/8	1 1/4	1	3 7/8	1.81838	4 Flute	
	V-805	1/2	1 1/4	3/4	3 5/8	1.16988	3 Flute		Z-606	3/8	1 1/2	1	4 1/4	2.10705	4 Flute	
	V-807	1/2	1 3/4	1	4 1/4	1.43783	4 Flute		Z-805	1/2	1 1/4	1	3 3/4	1.94338	4 Flute	
	V-809	1/2	2 1/4	1 1/4	4 7/8	1.70578	4 Flute		Z-806	1/2	1 1/2	1	4 1/4	2.23205	4 Flute	
	V-812	1/2	3	1 1/4	5 1/2	2.10770	4 Flute		35 DEG	35-203A	1/8	3/4	5/8	3	1.17532	4 Flute
V-813	1/2	3 1/4	1 1/4	6	2.24168	4 Flute	35-203B	1/8		3/4	1/2	3	1.17532	4 Flute		
							35-404	1/4		1	1	3 1/4	1.65042	4 Flute		
20 DEG	W-002	1/16	1/2	3/8	2 1/2	0.42647	3 Flute	40 DEG	40-202	1/8	1/2	1/2	2 5/8	0.96410	4 Flute	
	W-103	3/32	3/4	1/2	2 3/4	0.63971	3 Flute		40-203	1/8	3/4	5/8	3 1/4	1.38370	4 Flute	
	W-202	1/8	1/2	3/8	2 1/2	0.48897	3 Flute		40-204	1/8	1	1	3 5/8	1.80320	4 Flute	
	W-204	1/8	1	1/2	3 1/8	0.85294	4 Flute		40-404	1/4	1	1	3 5/8	1.92820	4 Flute	
	W-204C	1/8	1	3/4	3 3/8	0.85294	3 Flute	41 DEG	41-203	1/8	3/4	5/8	3 1/4	1.42900	4 Flute	
	W-304	3/16	1	1/2	3 1/8	0.91544	4 Flute									
	W-306	3/16	1 1/2	3/4	4	1.27941	4 Flute									
	W-404	1/4	1	1/2	3 1/8	0.97794	4 Flute		45 DEG	45-2015	1/8	5/16	1/2	2 1/2	0.75000	4 Flute
	W-406	1/4	1 1/2	3/4	4	1.34191	4 Flute			45-202	1/8	1/2	1/2	2 5/8	1.12500	4 Flute
	W-504	5/16	1	3/4	3 1/4	1.04044	4 Flute			45-203	1/8	3/4	5/8	3 1/4	1.62500	4 Flute
	W-506	5/16	1 1/2	3/4	3 7/8	1.40441	4 Flute		45-203ST	1/8	3/4	5/8	3 1/4	1.62500	4 Straight	
	W-606	3/8	1 1/2	3/4	3 7/8	1.46691	4 Flute	45-204	1/8	1	1	3 3/4	2.12500	4 Flute		
	W-608	3/8	2	1	4 1/2	1.83088	4 Flute	45-303	3/16	3/4	3/4	3 1/4	1.67850	4 Flute		
	W-809	1/2	2 1/4	1 1/4	4 7/8	2.13787	4 Flute	45-304	3/16	1	1	4	2.17850	4 Flute		
	22.5 DEG	225-204	1/8	1	1/2	3 1/8	0.95350	4 Flute	45-305	3/16	1 1/4	1 1/4	4 1/4	2.68750	4 Flute	
25 DEG	X-103	3/32	3/4	1/2	3	0.79322	3 Flute	45-403	1/4	3/4	3/4	3 1/4	1.75000	4 Flute		
	X-202	1/8	1/2	1/2	2 1/2	0.59131	3 Flute	45-404	1/4	1	1	4	2.25000	4 Flute		
	X-204A	1/8	1	1/2	3 1/8	1.05762	3 Flute	45-405	1/4	1 1/4	1 1/4	4 1/4	2.75000	4 Flute		
	X-204B	1/8	1	5/8	3 1/8	1.05762	3 Flute	45-406	1/4	1 1/2	1 1/4	4 1/2	3.25000	4 Flute		
	X-204C	1/8	1	3/4	3 1/8	1.05762	3 Flute	45-603	3/8	3/4	3/4	3 1/4	1.87500	4 Flute		
	X-404	1/4	1	5/8	3 1/4	1.18262	4 Flute	45-604	3/8	1	1	4	2.37500	4 Flute		
	X-406	1/4	1 1/2	3/4	4 1/8	1.64893	4 Flute	45-605	3/8	1 1/4	1 1/4	4 1/4	2.87500	6 Flute		
	X-503	5/16	3/4	5/8	3	1.01197	4 Flute	45-606	3/8	1 1/2	1 1/4	4 1/2	3.37500	6 Flute		
	X-504	5/16	1	3/4	3 3/8	1.24512	4 Flute	45-803	1/2	3/4	3/4	3 1/4	2.00000	4 Flute		
	X-506	5/16	1 1/2	1	4 1/8	1.71143	4 Flute	45-804	1/2	1	1	4	2.50000	4 Flute		
								45-805	1/2	1 1/4	1 1/4	4 1/4	3.00000	6 Flute		
								45-806	1/2	1 1/2	1 1/4	4 5/8	3.50000	6 Flute		

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MINIATURE HIGH SPEED STEEL & COBALT Flat Ends

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
1/2 DEG	M0-002	1/16	1/2	3/16	1 3/4	0.07123	3 Flute	
	M0-003	1/16	3/4	3/16	2	0.07559	3 Flute	
	M0-004	1/16	1	3/16	2 1/4	0.07995	3 Flute	
	M0-052	5/64	1/2	3/16	1 3/4	0.08685	3 Flute	
	M0-054	5/64	1	3/16	2 1/4	0.09558	3 Flute	
	M0-103	3/32	3/4	3/16	2	0.10684	3 Flute	
	M0-105	3/32	1 1/4	3/16	2 1/2	0.11556	3 Flute	
	M0-106	3/32	1 1/2	3/16	2 11/16	0.11993	3 Flute	
	M0-201	1/8	1/4	3/16	1 1/2	0.12936	3 Flute	
	M0-2015	1/8	3/8	3/16	1 5/8	0.13154	3 Flute	
	M0-203	1/8	3/4	3/16	2	0.13809	3 Flute	
	M0-204	1/8	1	3/16	2 1/4	0.14245	3 Flute	
	1 DEG	M1-002	1/16	1/2	3/16	1 3/4	0.07995	3 Flute
		M1-003	1/16	3/4	3/16	2	0.08868	3 Flute
M1-004		1/16	1	3/16	2 1/4	0.09740	3 Flute	
M1-052		5/64	1/2	3/16	1 3/4	0.09558	3 Flute	
M1-054		5/64	1	3/16	2 1/4	0.11303	3 Flute	
M1-103		3/32	3/4	3/16	2	0.11993	3 Flute	
M1-105		3/32	1 1/4	3/16	2 1/2	0.13738	3 Flute	
M1-106		3/32	1 1/2	3/16	2 11/16	0.14610	3 Flute	
M1-201		1/8	1/4	3/16	1 1/2	0.13373	3 Flute	
M1-2015		1/8	3/8	3/16	1 5/8	0.13809	3 Flute	
M1-203		1/8	3/4	3/16	2	0.15118	3 Flute	
M1-204		1/8	1	3/16	2 1/4	0.15990	3 Flute	
1 1/2 DEG		M15-003	1/16	3/4	3/16	2	0.10177	3 Flute
		M15-104	3/32	1	3/16	2 1/4	0.14611	3 Flute
	M15-105	3/32	1 1/4	3/16	2 1/2	0.15920	3 Flute	
	M15-154	7/64	1	3/16	2 1/4	0.16174	3 Flute	
	M15-203	1/8	3/4	3/16	2	0.16427	3 Flute	
	M15-204	1/8	1	3/16	2 1/4	0.17736	3 Flute	
	2 DEG	M2-002	1/16	1/2	3/16	1 3/4	0.09742	3 Flute
		M2-004	1/16	1	3/16	2 1/4	0.13234	3 Flute
		M2-052	5/64	1/2	3/16	1 3/4	0.11305	3 Flute
		M2-054	5/64	1	3/16	2 1/4	0.14797	3 Flute
		M2-056	5/64	1 1/2	3/16	2 11/16	0.18289	3 Flute
		M2-103	3/32	3/4	3/16	2	0.14613	3 Flute
		M2-105	3/32	1 1/4	3/16	2 1/2	0.18105	3 Flute
	M2-203	1/8	3/4	3/16	2	0.17738	3 Flute	



TO ORDER COBALT OR COATINGS,
Add a suffix to the part number given above.
for TIN Coated, add the suffix "TIN"
for Cobalt, add the suffix "CO"
for Cobalt TIN Coated, add the suffix "CO-TIN"
If no suffix is given High Speed Steel will ship.

ALL SIZES ARE AVAILABLE
SOME ARE AVAILABLE WITH EXTENDED SHANKS.
CALL FOR AVAILABILITY 1-888-531-0430

STANDARD CARBIDE

Flat Ends



Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1/2 DEG	KK-102-CB	3/32	1/2	1/8	2	0.10248	3 Flute
	KK-103-CB	3/32	3/4	1/8	2 1/2	0.10684	3 Flute
	KK-105-CB	3/32	1 1/4	1/8	3	0.11556	3 Flute
	KK-201-CB	1/8	1/4	3/16	2 1/2	0.12936	3 Flute
	KK-2015-CB	1/8	3/8	3/16	2 1/2	0.13154	3 Flute
	KK-202-CB	1/8	1/2	3/16	2 1/2	0.13373	3 Flute
	KK-203-CB	1/8	3/4	3/16	2 1/2	0.13809	3 Flute
	KK-204-CB	1/8	1	3/16	3	0.14245	3 Flute
	KK-205-CB	1/8	1 1/4	3/16	3	0.14681	3 Flute
	KK-206-CB	1/8	1 1/2	3/16	3 1/2	0.15118	3 Flute
	KK-303-CB	3/16	3/4	1/4	2 1/2	0.20059	3 Flute
	KK-305-CB	3/16	1 1/4	1/4	3	0.20931	3 Flute
	KK-307-CB	3/16	1 3/4	1/4	4	0.21804	3 Flute
	KK-313-CB	3/16	3 1/4	3/8	6	0.24421	3 Flute
	KK-403-CB	1/4	3/4	3/8	2 1/2	0.26309	3 Flute
	KK-405-CB	1/4	1 1/4	3/8	3	0.27181	3 Flute
	KK-409-CB	1/4	2 1/4	3/8	4 1/2	0.28926	3 Flute
	KK-413-CB	1/4	3 1/4	3/8	6	0.30671	3 Flute
	KK-605-CB	3/8	1 1/4	1/2	3 1/2	0.39681	3 Flute
	KK-609-CB	3/8	2 1/4	1/2	5	0.41426	3 Flute
	KK-613-CB	3/8	3 1/4	1/2	6	0.43171	3 Flute
	KK-805-CB	1/2	1 1/4	9/16	4	0.52181	3 Flute
	KK-809-CB	1/2	2 1/4	9/16	5	0.53926	3 Flute
	KK-813-CB	1/2	3 1/4	5/8	6	0.55671	3 Flute
KK-1009-CB	5/8	2 1/4	3/4	5	0.66426	3 Flute	
KK-1013-CB	5/8	3 1/4	3/4	6	0.68171	3 Flute	
KK-1017-CB	5/8	4 1/4	3/4	7	0.69916	3 Flute	
KK-1209-CB	3/4	2 1/4	7/8	5	0.78926	3 Flute	
KK-1213-CB	3/4	3 1/4	7/8	6	0.80671	3 Flute	
KK-1217-CB	3/4	4 1/4	1	7	0.82416	3 Flute	
KK-1221-CB	3/4	5 1/4	1	8	0.84161	3 Flute	

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1 DEG	K-102-CB	3/32	1/2	1/8	2	0.11120	3 Flute
	K-103-CB	3/32	3/4	3/16	2 1/2	0.11993	3 Flute
	K-104-CB	3/32	1	3/16	3	0.12865	3 Flute
	K-105-CB	3/32	1 1/4	3/16	3	0.13738	3 Flute
	K-106-CB	3/32	1 1/2	1/4	3 1/2	0.14610	3 Flute
	K-201-CB	1/8	1/4	3/16	2 1/2	0.13373	3 Flute
	K-2015-CB	1/8	3/8	3/16	2 1/2	0.13809	3 Flute
	K-202-CB	1/8	1/2	3/16	2 1/2	0.14245	3 Flute
	K-203-CB	1/8	3/4	1/4	2 1/2	0.15118	3 Flute
	K-204-CB	1/8	1	1/4	3	0.15990	3 Flute
	K-205-CB	1/8	1 1/4	1/4	3	0.16863	3 Flute
	K-206-CB	1/8	1 1/2	1/4	3 1/2	0.17735	3 Flute
	K-208-CB	1/8	2	1/4	4	0.19480	3 Flute
	K-303-CB	3/16	3/4	1/4	2 1/2	0.21368	3 Flute
	K-305-CB	3/16	1 1/4	1/4	3	0.23113	3 Flute
	K-307-CB	3/16	1 3/4	1/4	4	0.24858	3 Flute
	K-308-CB	3/16	2	5/16	4	0.25730	3 Flute
	K-309-CB	3/16	2 1/4	3/8	4 1/2	0.26603	3 Flute
	K-310-CB	3/16	2 1/2	3/8	5	0.27475	3 Flute
	K-313-CB	3/16	3 1/4	3/8	6	0.30093	3 Flute
	K-403-CB	1/4	3/4	3/8	2 1/2	0.27618	3 Flute
	K-405-CB	1/4	1 1/4	3/8	3	0.29363	3 Flute
	K-406-CB	1/4	1 1/2	3/8	3 1/2	0.30235	3 Flute
	K-408-CB	1/4	2	3/8	4	0.31980	3 Flute
K-409-CB	1/4	2 1/4	3/8	4 1/2	0.32853	3 Flute	
K-413-CB	1/4	3 1/4	3/8	6	0.36343	3 Flute	
K-605-CB	3/8	1 1/4	1/2	3 1/2	0.41863	3 Flute	
K-609-CB	3/8	2 1/4	1/2	5	0.45353	3 Flute	
K-613-CB	3/8	3 1/4	1/2	6	0.48843	3 Flute	
K-803-CB	1/2	3/4	5/8	3	0.52618	3 Flute	
K-805-CB	1/2	1 1/4	9/16	4	0.54363	3 Flute	
K-809-CB	1/2	2 1/4	5/8	5	0.57853	3 Flute	
K-813-CB	1/2	3 1/4	5/8	6	0.61343	3 Flute	
K-1009-CB	5/8	2 1/4	3/4	5	0.70353	3 Flute	
K-1013-CB	5/8	3 1/4	3/4	6	0.73843	3 Flute	
K-1017-CB	5/8	4 1/4	1	7	0.77333	3 Flute	
K-1209-CB	3/4	2 1/4	7/8	5	0.82853	3 Flute	
K-1213-CB	3/4	3 1/4	7/8	6	0.86343	3 Flute	
K-1217-CB	3/4	4 1/4	1	7	0.89833	3 Flute	
K-1221-CB	3/4	5 1/4	1	8	0.93323	3 Flute	

CALL FOR AVAILABILITY 1-888-531-0430



TO ORDER COATINGS,
 Add a suffix to the part number given above.
 for TiAlN Coated, add the suffix "TiAlN"
 for TiCN Coated, add the suffix "TiCN"
 If no suffix is given uncoated Carbide will ship.

A**STANDARD CARBIDE****Flat Ends**

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute	Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute
1-1/2	KX-102-CB	3/32	1/2	3/16	2 1/2	0.11993	3 Flute	2 DEG	L-102-CB	3/32	1/2	3/16	2 1/2	0.12867	3 Flute
	KX-103-CB	3/32	3/4	1/4	2 1/2	0.13302	3 Flute		L-103-CB	3/32	3/4	1/4	2 1/2	0.14613	3 Flute
	KX-104-CB	3/32	1	1/4	3	0.14611	3 Flute		L-104-CB	3/32	1	1/4	3	0.16359	3 Flute
	KX-105-CB	3/32	1 1/4	3/16	3	0.15920	3 Flute		L-105-CB	3/32	1 1/4	1/4	3	0.18105	3 Flute
	KX-106-CB	3/32	1 1/2	1/4	3	0.17229	3 Flute		L-202-CB	1/8	1/2	3/16	2 1/2	0.15992	3 Flute
	KX-154-CB	7/64	1	3/16	3	0.16136	3 Flute		L-203-CB	1/8	3/4	1/4	2 1/2	0.17738	3 Flute
	KX-202-CB	1/8	1/2	3/16	2 1/2	0.15118	3 Flute		L-204-CB	1/8	1	1/4	3	0.19484	3 Flute
	KX-203-CB	1/8	3/4	1/4	2 1/2	0.16427	3 Flute		L-205-CB	1/8	1 1/4	1/4	3	0.21230	3 Flute
	KX-204-CB	1/8	1	3/16	3	0.17736	3 Flute		L-206-CB	1/8	1 1/2	1/4	3 1/2	0.22976	3 Flute
	KX-205-CB	1/8	1 1/4	1/4	3	0.19045	3 Flute		L-208-CB	1/8	2	5/16	4	0.26468	3 Flute
	KX-206-CB	1/8	1 1/2	1/4	3 1/2	0.20354	3 Flute		L-210-CB	1/8	2 1/2	5/16	4	0.29960	3 Flute
	KX-208-CB	1/8	2	1/4	4	0.22972	3 Flute		L-303-CB	3/16	3/4	1/4	2 1/2	0.23988	3 Flute
	KX-209-CB	1/8	2 1/4	5/16	4	0.24281	3 Flute		L-305-CB	3/16	1 1/4	3/8	3	0.27480	3 Flute
	KX-212-CB	1/8	3	3/8	5	0.28208	3 Flute		L-307-CB	3/16	1 3/4	3/8	3 1/2	0.30972	3 Flute
	KX-253-CB	5/32	3/4	1/4	2 1/2	0.19552	3 Flute		L-309-CB	3/16	2 1/4	1/2	5	0.34464	3 Flute
	KX-254-CB	5/32	1	1/4	3	0.20861	3 Flute		L-313-CB	3/16	3 1/4	1/2	6	0.41448	3 Flute
	KX-255-CB	5/32	1 1/4	1/4	3	0.22170	3 Flute		L-403-CB	1/4	3/4	3/8	2 1/2	0.30238	3 Flute
	KX-256-CB	5/32	1 1/2	1/4	3 1/2	0.23479	3 Flute		L-405-CB	1/4	1 1/4	3/8	3	0.33730	3 Flute
	KX-258-CB	5/32	2	5/16	4	0.26097	3 Flute		L-408-CB	1/4	2	1/2	4	0.38968	3 Flute
	KX-303-CB	3/16	3/4	3/8	2 1/2	0.22677	3 Flute		L-409-CB	1/4	2 1/4	1/2	5	0.40714	3 Flute
	KX-304-CB	3/16	1	1/4	3	0.23986	3 Flute		L-413-CB	1/4	3 1/4	1/2	6	0.47698	3 Flute
	KX-305-CB	3/16	1 1/4	3/8	3	0.25295	3 Flute		L-605-CB	3/8	1 1/4	1/2	3 1/2	0.46230	3 Flute
	KX-307-CB	3/16	1 3/4	3/8	3 1/2	0.27913	3 Flute		L-609-CB	3/8	2 1/4	1/2	5	0.53214	3 Flute
	KX-309-CB	3/16	2 1/4	3/8	4 1/2	0.30531	3 Flute		L-613-CB	3/8	3 1/4	5/8	6	0.60198	3 Flute
	KX-313-CB	3/16	3 1/4	3/8	6	0.35767	3 Flute		L-805-CB	1/2	1 1/4	5/8	3 1/2	0.58730	3 Flute
	KX-403-CB	1/4	3/4	3/8	2 1/2	0.28927	3 Flute		L-809-CB	1/2	2 1/4	3/4	5	0.65714	3 Flute
	KX-405-CB	1/4	1 1/4	3/8	3	0.31545	3 Flute		L-813-CB	1/2	3 1/4	3/4	6	0.72698	3 Flute
	KX-406-CB	1/4	1 1/2	3/8	3 1/2	0.32854	3 Flute		L-1009-CB	5/8	2 1/4	7/8	5	0.78214	3 Flute
	KX-409-CB	1/4	2 1/4	3/8	4 1/2	0.36781	3 Flute		L-1013-CB	5/8	3 1/4	7/8	6	0.85198	3 Flute
	KX-413-CB	1/4	3 1/4	1/2	6	0.42017	3 Flute		L-1017-CB	5/8	4 1/4	1	7	0.92182	3 Flute
	KX-605-CB	3/8	1 1/4	1/2	3 1/2	0.44045	3 Flute		L-1209-CB	3/4	2 1/4	1	5	0.90714	3 Flute
	KX-609-CB	3/8	2 1/4	1/2	5	0.49281	3 Flute		L-1213-CB	3/4	3 1/4	1	6	0.97698	3 Flute
KX-613-CB	3/8	3 1/4	9/16	6	0.54517	3 Flute									
KX-805-CB	1/2	1 1/4	5/8	3 1/2	0.56545	3 Flute									
KX-806-CB	1/2	1 1/2	5/8	3 1/2	0.57855	3 Flute									
KX-809-CB	1/2	2 1/4	5/8	5	0.61781	3 Flute									
KX-813-CB	1/2	3 1/4	3/4	6	0.67017	3 Flute									
KX-1009-CB	5/8	2 1/4	3/4	5	0.74281	3 Flute									
KX-1013-CB	5/8	3 1/4	7/8	6	0.79517	3 Flute									
KX-1017-CB	5/8	4 1/4	1	7	0.84753	3 Flute									
KX-1209-CB	3/4	2 1/4	7/8	5	0.86781	3 Flute									
KX-1213-CB	3/4	3 1/4	1	6	0.92017	3 Flute									

CALL FOR AVAILABILITY 1-888-531-0430

TO ORDER COATINGS,
 Add a suffix to the part number given above.
 for TiAlN Coated, add the suffix "TiAlN"
 for TiCN Coated, add the suffix "TiCN"
 If no suffix is given uncoated Carbide will ship.



STANDARD CARBIDE

Flat Ends



Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
3 DEG	M-103-CB	3/32	3/4	3/16	2 1/2	0.17237	3 Flute	3 DEG	M-504-CB	5/16	1	1/2	3	0.41782	3 Flute	
	M-104-CB	3/32	1	1/4	3	0.19857	3 Flute		M-507-CB	5/16	1 3/4	1/2	4	0.49644	3 Flute	
	M-105-CB	3/32	1 1/4	1/4	3	0.22478	3 Flute		M-604-CB	3/8	1	1/2	3	0.47982	3 Flute	
	M-106-CB	3/32	1 1/2	1/4	3 1/2	0.25000	3 Flute		M-605-CB	3/8	1 1/4	1/2	3 1/2	0.50000	3 Flute	
	M-107-CB	3/32	1 3/4	3/8	3 1/2	0.27719	3 Flute		M-609-CB	3/8	2 1/4	5/8	5	0.61085	3 Flute	
	M-108-CB	3/32	2	5/16	4	0.30339	3 Flute		M-613-CB	3/8	3 1/4	3/4	6	0.71567	3 Flute	
	M-110-CB	3/32	2 1/2	3/8	4 1/2	0.35580	3 Flute		M-616-CB	3/8	4	7/8	6	0.79428	3 Flute	
	M-154-CB	7/64	1	1/4	3	0.21382	3 Flute		M-620-CB	3/8	5	1	8	0.89910	3 Flute	
	M-155-CB	7/64	1 1/4	1/4	3	0.24003	3 Flute		M-805-CB	1/2	1 1/4	3/4	4	0.63103	3 Flute	
	M-156-CB	7/64	1 1/2	5/16	3	0.26623	3 Flute		M-809-CB	1/2	2 1/4	3/4	5	0.73585	3 Flute	
	M-158-CB	7/64	2	3/8	4	0.31864	3 Flute		M-813-CB	1/2	3 1/4	7/8	6	0.84067	3 Flute	
	M-203-CB	1/8	3/4	1/4	2 1/2	0.20362	3 Flute		M-816-CB	1/2	4	1	7	0.91928	3 Flute	
	M-204-CB	1/8	1	1/4	3	0.22982	3 Flute		M-1009-CB	5/8	2 1/4	7/8	5	0.86085	3 Flute	
	M-205-CB	1/8	1 1/4	3/8	3	0.25603	3 Flute		M-1013-CB	5/8	3 1/4	1	6	0.95567	3 Flute	
	M-206-CB	1/8	1 1/2	3/8	3 1/2	0.28223	3 Flute		M-1209-CB	3/4	2 1/4	1	5	0.98585	3 Flute	
	M-208-CB	1/8	2	3/8	4	0.33464	3 Flute		4 DEG	N-0004-CB	1/32	1	3/16	3	0.17111	2 Flute
	M-209-CB	1/8	2 1/4	3/8	4 1/2	0.36085	3 Flute			N-004-CB	1/16	1	1/4	3	0.20236	3 Flute
	M-210-CB	1/8	2 1/2	7/16	4 1/2	0.38705	3 Flute			N-103-CB	3/32	3/4	1/4	2 1/2	0.19865	3 Flute
	M-212-CB	1/8	3	1/2	5	0.43946	3 Flute			N-104-CB	3/32	1	1/4	3	0.23361	3 Flute
	M-216-CB	1/8	4	9/16	6	0.54428	3 Flute			N-203-CB	1/8	3/4	1/4	2 1/2	0.22990	3 Flute
	M-253-CB	5/32	3/4	1/4	2 1/2	0.23487	3 Flute			N-204-CB	1/8	1	3/8	3	0.26486	3 Flute
	M-254-CB	5/32	1	3/8	3	0.26107	3 Flute			N-206-CB	1/8	1 1/2	3/8	3 1/2	0.33479	3 Flute
	M-255-CB	5/32	1 1/4	3/8	3	0.28728	3 Flute			N-208-CB	1/8	2	1/2	4	0.40472	3 Flute
	M-256-CB	5/32	1 1/2	3/8	3 1/2	0.31348	3 Flute			N-210-CB	1/8	2 1/2	1/2	5	0.47465	3 Flute
	M-257-CB	5/32	1 3/4	3/8	3 1/2	0.33969	3 Flute			N-303-CB	3/16	3/4	3/8	2 1/2	0.29240	3 Flute
	M-258-CB	5/32	2	3/8	4	0.36589	3 Flute			N-305-CB	3/16	1 1/4	3/8	3	0.36233	3 Flute
	M-303-CB	3/16	3/4	3/8	2 1/2	0.26612	3 Flute			N-313-CB	3/16	3 1/4	3/4	6	0.64205	3 Flute
	M-304-CB	3/16	1	3/8	3	0.29232	3 Flute			N-316-CB	3/16	4	3/4	6	0.74694	3 Flute
M-305-CB	3/16	1 1/4	3/8	3	0.31853	3 Flute	N-403-CB	1/4		3/4	3/8	2 1/2	0.35490	3 Flute		
M-306-CB	3/16	1 1/2	3/8	3 1/2	0.34473	3 Flute	N-405-CB	1/4		1 1/4	1/2	3 1/2	0.42483	3 Flute		
M-308-CB	3/16	2	1/2	4	0.39714	3 Flute	N-409-CB	1/4		2 1/4	5/8	5	0.56469	3 Flute		
M-310-CB	3/16	2 1/2	1/2	5	0.44955	3 Flute	N-413-CB	1/4		3 1/4	3/4	6	0.70455	3 Flute		
M-313-CB	3/16	3 1/4	9/16	6	0.52817	3 Flute	N-416-CB	1/4		4	1	7	0.80944	3 Flute		
M-316-CB	3/16	4	5/8	6	0.60678	3 Flute	N-605-CB	3/8		1 1/4	9/16	4	0.54983	3 Flute		
M-320-CB	3/16	5	3/4	7	0.71160	3 Flute	N-609-CB	3/8		2 1/4	3/4	5	0.68969	3 Flute		
M-403-CB	1/4	3/4	3/8	2 1/2	0.32862	3 Flute	N-613-CB	3/8		3 1/4	7/8	6	0.82955	3 Flute		
M-404-CB	1/4	1	3/8	3	0.35482	3 Flute	N-616-CB	3/8		4	1	7	0.93444	3 Flute		
M-405-CB	1/4	1 1/4	3/8	3	0.37500	3 Flute	N-805-CB	1/2		1 1/4	3/4	3 1/2	0.67483	3 Flute		
M-408-CB	1/4	2	1/2	4	0.45964	3 Flute	N-809-CB	1/2		2 1/4	7/8	5	0.81469	3 Flute		
M-409-CB	1/4	2 1/4	1/2	5	0.48585	3 Flute	N-813-CB	1/2		3 1/4	1	6	0.95455	3 Flute		
M-413-CB	1/4	3 1/4	5/8	6	0.59067	3 Flute										
M-416-CB	1/4	4	3/4	6	0.66928	3 Flute										
M-420-CB	1/4	5	1	8	0.77410	3 Flute										

Coatings are available including: TiCN and TiAlN

A**STANDARD CARBIDE****Flat Ends**

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
5 DEG	O-102-CB	3/32	1/2	1/4	2 1/2	0.18124	3 Flute	5 DEG	O-509-CB	5/16	2 1/4	3/4	5	0.70671	3 Flute	
	O-103-CB	3/32	3/4	1/4	2 1/2	0.22499	3 Flute		O-604-CB	3/8	1	5/8	3 1/2	0.54998	3 Flute	
	O-104-CB	3/32	1	3/8	3	0.26873	3 Flute		O-605-CB	3/8	1 1/4	5/8	4	0.59373	3 Flute	
	O-105-CB	3/32	1 1/4	3/8	3	0.31248	3 Flute		O-609-CB	3/8	2 1/4	7/8	5	0.76871	3 Flute	
	O-106-CB	3/32	1 1/2	3/8	3 1/2	0.35622	3 Flute		O-613-CB	3/8	3 1/4	1	6	0.94369	3 Flute	
	O-108-CB	3/32	2	1/2	4	0.44371	3 Flute		O-805-CB	1/2	1 1/4	3/4	4	0.71873	3 Flute	
	O-155-CB	7/64	1 1/4	3/8	3	0.32773	3 Flute		O-806-CB	1/2	1 1/2	7/8	4	0.76247	3 Flute	
	O-203-CB	1/8	3/4	1/4	2 1/2	0.25000	3 Flute		O-809-CB	1/2	2 1/4	1	5	0.89371	3 Flute	
	O-204-CB	1/8	1	3/8	3	0.29998	3 Flute		6 DEG	P-004-CB	1/16	1	5/16	3	0.27271	3 Flute
	O-205-CB	1/8	1 1/4	3/8	3	0.34373	3 Flute			P-104-CB	3/32	1	5/16	3	0.30396	3 Flute
	O-206-CB	1/8	1 1/2	3/8	3 1/2	0.37500	3 Flute			P-204-CB	1/8	1	3/8	3	0.33521	3 Flute
	O-207-CB	1/8	1 3/4	1/2	4	0.43122	3 Flute			P-406-CB	1/4	1 1/2	5/8	3 1/2	0.56530	3 Flute
	O-208-CB	1/8	2	1/2	4	0.47496	3 Flute		7 DEG	R-0003-CB	1/32	3/4	1/4	2 1/2	0.21542	2 Flute
	O-210-CB	1/8	2 1/2	5/8	5	0.56245	3 Flute			R-0004-CB	1/32	1	3/8	3	0.27656	2 Flute
	O-212-CB	1/8	3	3/4	5	0.64994	3 Flute			R-001-CB	1/16	1/4	1/4	2	0.12389	3 Flute
	O-253-CB	5/32	3/4	3/8	2 1/2	0.28749	3 Flute			R-002-CB	1/16	1/2	1/4	2 1/2	0.18528	3 Flute
	O-254-CB	5/32	1	3/8	3	0.33123	3 Flute			R-003-CB	1/16	3/4	3/8	3	0.24667	3 Flute
	O-255-CB	5/32	1 1/4	3/8	3	0.37498	3 Flute			R-004-CB	1/16	1	3/8	3	0.30806	3 Flute
	O-256-CB	5/32	1 1/2	1/2	3 1/2	0.41872	3 Flute			R-054-CB	5/64	1	3/8	3	0.32356	3 Flute
	O-257-CB	5/32	1 3/4	1/2	4	0.46247	3 Flute			R-102-CB	3/32	1/2	1/4	2 1/2	0.21653	3 Flute
	O-258-CB	5/32	2	1/2	4	0.50000	3 Flute			R-104-CB	3/32	1	3/8	3	0.33931	3 Flute
	O-303-CB	3/16	3/4	3/8	2 1/2	0.31874	3 Flute			R-106-CB	3/32	1 1/2	1/2	3 1/2	0.46209	3 Flute
	O-304-CB	3/16	1	3/8	3	0.36248	3 Flute		R-202-CB	1/8	1/2	1/4	2 1/2	0.24778	3 Flute	
	O-305-CB	3/16	1 1/4	1/2	3 1/2	0.40623	3 Flute		R-203-CB	1/8	3/4	3/8	2 1/2	0.30917	3 Flute	
	O-306-CB	3/16	1 1/2	1/2	3 1/2	0.44997	3 Flute		R-204-CB	1/8	1	3/8	3	0.37056	3 Flute	
	O-307-CB	3/16	1 3/4	1/2	4	0.49372	3 Flute		R-206-CB	1/8	1 1/2	1/2	3 1/2	0.49334	3 Flute	
	O-308-CB	3/16	2	5/8	4	0.53746	3 Flute		R-208-CB	1/8	2	5/8	4	0.61612	3 Flute	
	O-310-CB	3/16	2 1/2	5/8	5	0.62495	3 Flute		R-212-CB	1/8	3	7/8	5	0.86168	3 Flute	
	O-312-CB	3/16	3	3/4	5	0.71244	3 Flute		R-253-CB	5/32	3/4	3/8	2 1/2	0.34042	3 Flute	
	O-313-CB	3/16	3 1/4	7/8	6	0.75619	3 Flute		R-305-CB	3/16	1 1/4	1/2	3 1/2	0.49445	3 Flute	
O-316-CB	3/16	4	1	7	0.88742	3 Flute	R-403-CB	1/4	3/4	1/2	3	0.43417	3 Flute			
O-403-CB	1/4	3/4	1/2	3	0.38124	3 Flute	R-404-CB	1/4	1	1/2	3	0.49556	3 Flute			
O-404-CB	1/4	1	1/2	3	0.42498	3 Flute	R-405-CB	1/4	1 1/4	5/8	3 1/2	0.55695	3 Flute			
O-405-CB	1/4	1 1/4	1/2	3 1/2	0.46873	3 Flute	R-409-CB	1/4	2 1/4	7/8	5	0.80251	3 Flute			
O-406-CB	1/4	1 1/2	9/16	3 1/2	0.51247	3 Flute	R-605-CB	3/8	1 1/4	3/4	4	0.68195	3 Flute			
O-407-CB	1/4	1 3/4	5/8	4	0.55622	3 Flute	R-609-CB	3/8	2 1/4	1	5	0.92751	3 Flute			
O-408-CB	1/4	2	5/8	4	0.59996	3 Flute	R-805-CB	1/2	1 1/4	7/8	4	0.80695	3 Flute			
O-409-CB	1/4	2 1/4	3/4	5	0.64371	3 Flute	R-808-CB	1/2	2	1	5	0.99112	3 Flute			
O-410-CB	1/4	2 1/2	3/4	5	0.68745	3 Flute	R-809-CB	1/2	2 1/4	1	4 3/4	1.05251	4 Flute			
O-413-CB	1/4	3 1/4	7/8	6	0.81869	3 Flute	8 DEG	8-202-CB	1/8	1/2	3/8	3	0.26550			
O-416-CB	1/4	4	1	7	0.94992	3 Flute		8-203-CB	1/8	3/4	3/8	3	0.33581			
O-504-CB	5/16	1	1/2	3	0.48798	3 Flute										
O-507-CB	5/16	1 3/4	5/8	4	0.61872	3 Flute										

Coatings are available including: TiCN and TiAlN

STANDARD CARBIDE

Flat Ends



Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
10 DEG	T-0002-CB	1/32	1/2	1/4	2 1/2	0.20758	2 Flute
	T-0003-CB	1/32	3/4	3/8	2 1/2	0.29575	2 Flute
	T-002-CB	1/16	1/2	3/8	2 1/2	0.23883	3 Flute
	T-002A-CB	1/16	1/2	1/4	2 1/2	0.23883	3 Flute
	T-003-CB	1/16	3/4	3/8	2 1/2	0.32700	3 Flute
	T-004-CB	1/16	1	1/2	3	0.41516	3 Flute
	T-005-CB	1/16	1 1/4	1/2	3 1/2	0.50000	3 Flute
	T-102-CB	3/32	1/2	3/8	2 1/2	0.27008	3 Flute
	T-102A-CB	3/32	.445	1/4	2 1/2	0.25000	3 Flute
	T-103-CB	3/32	3/4	3/8	2 1/2	0.35825	3 Flute
	T-106-CB	3/32	1 1/2	5/8	3 1/2	0.62274	3 Flute
	T-203-CB	1/8	3/4	3/8	2 1/2	0.37500	3 Flute
	T-204-CB	1/8	1	1/2	3	0.47766	3 Flute
	T-205-CB	1/8	1 1/4	5/8	3 1/2	0.56583	3 Flute
	T-206-CB	1/8	1 1/2	3/4	4	0.65399	3 Flute
	T-254-CB	5/32	1	1/2	3	0.50000	3 Flute
	T-258-CB	5/32	2	7/8	4	0.86132	3 Flute
	T-303-CB	3/16	3/4	1/2	3	0.45199	3 Flute
	T-305-CB	3/16	1 1/4	5/8	3 1/2	0.62500	3 Flute
	T-309-CB	3/16	2 1/4	1	5	0.98099	3 Flute
	T-403-CB	1/4	3/4	5/8	3	0.51450	3 Flute
	T-404-CB	1/4	1	5/8	3	0.60266	3 Flute
	T-405-CB	1/4	1 1/4	3/4	4	0.69083	3 Flute
T-408-CB	1/4	2	1	5	0.95532	4 Flute	
T-605-CB	3/8	1 1/4	7/8	4	0.81583	3 Flute	
T-805-CB	1/2	1 1/4	1	4	0.94083	3 Flute	
T-809-CB	1/2	2 1/4	1	4 3/4	1.29349	4 Flute	

11 DEG	TK-0003-CB	1/32	3/4	3/8	3	0.32282	2 Flute
	TK-003-CB	1/16	3/4	3/8	3	0.35407	3 Flute
	TK-103-CB	3/32	3/4	3/8	3	0.38532	3 Flute
	TK-203-CB	1/8	3/4	3/8	3	0.41657	3 Flute

12 DEG	TL-106-CB	3/32	1 1/2	5/8	4	0.73150	3 Flute
	TL-202-CB	1/8	1/2	3/8	2 1/2	0.33756	3 Flute
	TL-204-CB	1/8	1	9/16	3	0.55011	3 Flute
	TL-404-CB	1/4	1	3/4	3	0.67511	3 Flute

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
15 DEG	V-0001-CB	1/32	1/4	1/4	2	0.16523	2 Flute
	V-0003-CB	1/32	3/4	1/2	2 1/2	0.43318	2 Flute
	V-001-CB	1/16	1/4	1/4	2	0.19648	3 Flute
	V-003-CB	1/16	3/4	1/2	2 1/2	0.46443	3 Flute
	V-101-CB	3/32	1/4	1/4	2	0.22773	3 Flute
	V-102-CB	3/32	1/2	3/8	2 1/2	0.36170	3 Flute
	V-103-CB	3/32	3/4	1/2	3	0.49568	3 Flute
	V-104-CB	3/32	1	3/4	3	0.62965	3 Flute
	V-106-CB	3/32	1 1/2	1	4	0.89760	3 Flute
	V-202-CB	1/8	1/2	1/2	2 1/2	0.39295	3 Flute
	V-203-CB	1/8	1 1/16	1/2	3	0.50000	3 Flute
	V-204-CB	1/8	1	3/4	3	0.66090	3 Flute
	V-206-CB	1/8	1 1/2	1	4	0.92885	3 Flute
	V-206A-CB	1/8	1 1/2	1/2	4	0.92885	3 Flute
	V-304-CB	3/16	1	3/4	3	0.72340	3 Flute
	V-304A-CB	3/16	1	1/2	3	0.72340	3 Flute
	V-305-CB	3/16	1 1/4	7/8	4	0.85738	3 Flute
	V-404-CB	1/4	.933	3/4	3	0.75000	3 Flute
	V-404A-CB	1/4	1	1/2	3	0.78590	3 Flute
	V-405-CB	1/4	1 1/4	1	4	0.91988	3 Flute
	V-405A-CB	1/4	1 1/4	1/2	3 1/2	0.91988	3 Flute
	V-406-CB	1/4	1 1/2	3/4	4	1.05385	3 Flute
	V-504-CB	5/16	1	7/8	4	0.84890	3 Flute
	V-606-CB	3/8	1 1/2	3/4	4	1.17855	4 Flute
	V-805-CB	1/2	1 1/4	3/4	3 1/2	1.16988	4 Flute

CALL FOR AVAILABILITY 1-888-531-0430

TO ORDER COATINGS,
 Add a suffix to the part number given above.
 for TiAIN Coated, add the suffix "TiAIN"
 for TiCN Coated, add the suffix "TiCN"
 If no suffix is given uncoated Carbide will ship.

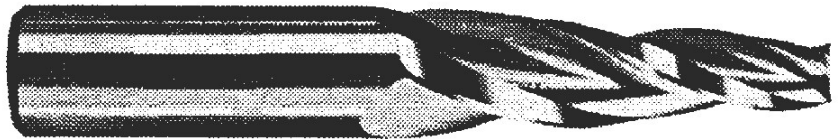


A**STANDARD CARBIDE****Flat Ends**

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
20 DEG	W-0001-CB	1/32	1/4	1/4	2	0.21324	2 Flute	30 DEG	Z-0001-CB	1/32	1/4	3/8	2 1/2	0.31993	2 Flute	
	W-0002-CB	1/32	1/2	1/2	2 1/2	0.39522	2 Flute		Z-001-CB	1/16	1/4	3/8	2 1/2	0.35118	3 Flute	
	W-001-CB	1/16	1/4	1/4	2	0.24449	3 Flute		Z-002-CB	1/16	1/2	3/8	2 1/2	0.63985	3 Flute	
	W-002-CB	1/16	1/2	1/2	2 1/2	0.42647	3 Flute		Z-101-CB	3/32	1/4	3/8	2 1/2	0.37500	3 Flute	
	W-102-CB	3/32	1/2	1/2	2 1/2	0.45772	3 Flute		Z-103-CB	3/32	3/4	1/2	3	0.95978	3 Flute	
	W-103-CB	3/32	3/4	3/4	3	0.63971	3 Flute		Z-201-CB	1/8	1/4	1/2	2 1/2	0.41368	3 Flute	
	W-202-CB	1/8	1/2	1/2	2 1/2	0.48897	3 Flute		Z-202-CB	1/8	1/2	1/2	2 1/2	0.70235	4 Flute	
	W-204-CB	1/8	1	1/2	3	0.85294	4 Flute		Z-204-CB	1/8	1	1/2	3	1.27970	4 Flute	
	W-304-CB	3/16	1	1/2	3	0.91594	4 Flute		Z-404-CB	1/4	1	3/4	3	1.40470	4 Flute	
	W-404-CB	1/4	1	1/2	3	0.97794	4 Flute		40 DEG	40-202-CB	1/8	1/2	1/2	2 5/8	0.96410	4 Flute
	W-406-CB	1/4	1 1/2	3/4	4	1.34191	4 Flute			40-203-CB	1/8	3/4	3/4	3 3/4	1.38370	4 Flute
	W-504-CB	5/16	1	3/4	3 1/4	1.04044	4 Flute		45 DEG	45-2015-CB	1/8	5/16	1/2	2 1/2	0.75000	4 Flute
	22.5 DEG	225-204-CB	1/8	1	1/2	3	0.95350			4 Flute	45-202-CB	1/8	1/2	1/2	2 5/8	1.12500
25 DEG	X-001-CB	1/16	1/4	3/8	2 1/2	0.29566	3 Flute	45-203-CB		1/8	3/4	5/8	3 1/4	1.62500	4 Flute	
	X-002-CB	1/16	1/2	3/8	2 1/2	0.52881	3 Flute									
	X-101-CB	3/32	1/4	3/8	2 1/2	0.32691	3 Flute									
	X-103-CB	3/32	3/4	1/2	3	0.79322	3 Flute									
	X-201-CB	1/8	1/4	1/2	2 1/2	0.35816	3 Flute									
	X-202-CB	1/8	1/2	1/2	2 1/2	0.59131	4 Flute									
	X-204-CB	1/8	1	1/2	3	1.05762	4 Flute									
	X-404-CB	1/4	1	5/8	3	1.18262	4 Flute									

TO ORDER COATINGS,
 Add a suffix to the part number given above.
 for TiAlN Coated, add the suffix "TiAlN"
 for TiCN Coated, add the suffix "TiCN"
 If no suffix is given uncoated Carbide will ship.

CALL FOR AVAILABILITY 1-888-531-0430



A**MINIATURE CARBIDE****Flat Ends**

Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Tip Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1/2 DEG	M0-0001-CB	1/32	1/4	1/8	2	0.03561	2 Flute	2 DEG	M2-0001-CB	1/32	1/4	1/8	2	0.04871	2 Flute
	M0-0002-CB	1/32	1/2	1/8	2	0.03998	2 Flute		M2-0002-CB	1/32	1/2	1/8	2	0.06617	2 Flute
	M0-0501-CB	3/64	1/4	1/8	2	0.05124	3 Flute		M2-0501-CB	3/64	1/4	1/8	2	0.06434	3 Flute
	M0-0502-CB	3/64	1/2	1/8	2	0.05560	3 Flute		M2-0502-CB	3/64	1/2	1/8	2	0.08180	3 Flute
	M0-002-CB	1/16	1/2	1/8	2	0.07123	3 Flute		M2-002-CB	1/16	1/2	1/8	2	0.09742	3 Flute
	M0-003-CB	1/16	3/4	1/8	2 1/2	0.07559	3 Flute		M2-003-CB	1/16	3/4	1/8	2 1/2	0.11488	3 Flute
	M0-004-CB	1/16	1	1/8	3	0.07995	3 Flute		M2-004-CB	1/16	1	3/16	3	0.13234	3 Flute
	M0-052-CB	5/64	1/2	1/8	2	0.08685	3 Flute		M2-052-CB	5/64	1/2	1/8	2	0.11305	3 Flute
	M0-053-CB	5/64	3/4	1/8	2 1/2	0.09121	3 Flute		M2-053-CB	5/64	3/4	3/16	2 1/2	0.13051	3 Flute
	M0-054-CB	5/64	1	1/8	3	0.09558	3 Flute		M2-054-CB	5/64	1	3/16	3	0.14797	3 Flute
1 DEG	M1-0001-CB	1/32	1/4	1/8	2	0.03998	2 Flute	3 DEG	M3-0001-CB	1/32	1/4	1/8	2	0.05746	2 Flute
	M1-0002-CB	1/32	1/2	1/8	2	0.04870	2 Flute		M3-0002-CB	1/32	1/2	1/8	2	0.08366	2 Flute
	M1-0501-CB	3/64	1/4	1/8	2	0.05560	3 Flute		M3-0501-CB	3/64	1/4	1/8	2	0.07308	3 Flute
	M1-0502-CB	3/64	1/2	1/8	2	0.06433	3 Flute		M3-0502-CB	3/64	1/2	1/8	2	0.09929	3 Flute
	M1-002-CB	1/16	1/2	1/8	2	0.07995	3 Flute		M3-002-CB	1/16	1/2	1/8	2	0.11491	3 Flute
	M1-003-CB	1/16	3/4	1/8	2 1/2	0.08868	3 Flute		M3-003-CB	1/16	3/4	3/16	2 1/2	0.14112	3 Flute
	M1-004-CB	1/16	1	1/8	3	0.09740	3 Flute		M3-004-CB	1/16	1	3/16	3	0.16732	3 Flute
	M1-052-CB	5/64	1/2	1/8	2	0.09558	3 Flute		M3-006-CB	1/16	1 1/2	1/4	3	0.21973	3 Flute
M1-053-CB	5/64	3/4	1/8	2 1/2	0.10430	3 Flute	M3-052-CB	5/64	1/2	3/16	2	0.13054	3 Flute		
M1-054-CB	5/64	1	1/8	3	0.11303	3 Flute	M3-053-CB	5/64	3/4	3/16	2 1/2	0.15674	3 Flute		
1-1/2 DEG	M15-0001-CB	1/32	1/4	1/8	2	0.04434	2 Flute	5 DEG	M5-0001-CB	1/32	1/4	1/8	2	0.07500	2 Flute
	M15-0002-CB	1/32	1/2	1/8	2	0.05743	2 Flute		M5-0002-CB	1/32	1/2	3/16	2	0.11874	2 Flute
	M15-0501-CB	3/64	1/4	1/8	2	0.05997	3 Flute		M5-0003-CB	1/32	3/4	3/16	2 1/2	0.16249	3 Flute
	M15-0502-CB	3/64	1/2	1/8	2	0.07306	3 Flute		M5-0501-CB	3/64	1/4	1/8	2	0.09062	3 Flute
	M15-002-CB	1/16	1/2	1/8	2	0.08868	3 Flute		M5-0502-CB	3/64	1/2	3/16	2	0.13437	3 Flute
	M15-003-CB	1/16	3/4	1/8	2 1/2	0.10177	3 Flute		M5-002-CB	1/16	1/2	1/4	2 1/2	0.14999	3 Flute
	M15-004-CB	1/16	1	3/16	3	0.11486	3 Flute		M5-003-CB	1/16	3/4	1/4	2 1/2	0.19374	3 Flute
	M15-052-CB	5/64	1/2	1/8	2	0.10431	3 Flute		M5-004-CB	1/16	1	1/4	3	0.23748	3 Flute
	M15-053-CB	5/64	3/4	1/8	2 1/2	0.11740	3 Flute		M5-006-CB	1/16	1 1/2	3/8	3	0.28123	3 Flute
	M15-054-CB	5/64	1	3/16	3	0.13049	3 Flute		M5-052-CB	5/64	1/2	3/16	2	0.16562	3 Flute
								M5-053-CB	5/64	3/4	1/4	2 1/2	0.20936	3 Flute	
								M5-054-CB	5/64	1	3/8	3	0.25311	3 Flute	

CALL FOR AVAILABILITY 1-888-531-0430

TO ORDER COATINGS,
 Add a suffix to the part number given above.
 for TiAlN Coated, add the suffix "TiAlN"
 for TiCN Coated, add the suffix "TiCN"
 If no suffix is given uncoated Carbide will ship.



HIGH SPEED STEEL & COBALT

Ball Ends



Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1/2 DEG	BKK-102	3/32	1/2	3/8	2 1/2	0.10248	3 Flute
	BKK-103	3/32	3/4	3/8	2 5/8	0.10684	3 Flute
	BKK-105	3/32	1 1/4	3/8	3 1/8	0.11556	3 Flute
	BKK-201	1/8	1/4	3/8	2 1/2	0.12936	3 Flute
	BKK-202	1/8	1/2	3/8	2 1/2	0.13373	3 Flute
	BKK-203	1/8	3/4	3/8	2 1/2	0.13809	3 Flute
	BKK-204	1/8	1	3/8	2 7/8	0.14245	3 Flute
	BKK-205	1/8	1 1/4	3/8	3 1/8	0.14681	3 Flute
	BKK-206	1/8	1 1/2	3/8	3 1/4	0.15118	3 Flute
	BKK-303	3/16	3/4	3/8	2 1/2	0.20059	3 Flute
	BKK-305	3/16	1 1/4	3/8	3 1/8	0.20931	3 Flute
	BKK-307	3/16	1 3/4	3/8	3 7/8	0.21804	3 Flute
	BKK-309	3/16	2 1/4	3/8	4 1/2	0.22676	3 Flute
	BKK-313	3/16	3 1/4	3/8	5 1/2	0.24421	3 Flute
	BKK-403	1/4	3/4	3/8	2 1/2	0.26309	3 Flute
	BKK-405	1/4	1 1/4	3/8	3	0.27181	3 Flute
	BKK-409	1/4	2 1/4	1/2	4 1/4	0.28926	3 Flute
	BKK-409A	1/4	2 1/4	3/8	4 1/4	0.28926	3 Flute
	BKK-413	1/4	3 1/4	1/2	5 1/2	0.30671	3 Flute
	BKK-605	3/8	1 1/4	1/2	3 1/8	0.39681	3 Flute
	BKK-609	3/8	2 1/4	1/2	4 1/4	0.41426	3 Flute
	BKK-613	3/8	3 1/4	1/2	5 1/2	0.43171	3 Flute
	BKK-805	1/2	1 1/4	1/2	3 1/4	0.52181	3 Flute
	BKK-809	1/2	2 1/4	1/2	4 1/4	0.53926	3 Flute
	BKK-813	1/2	3 1/4	1/2	5 1/2	0.55671	3 Flute
	BKK-1009	5/8	2 1/4	5/8	4 1/2	0.66426	3 Flute
	BKK-1013	5/8	3 1/4	5/8	5 1/2	0.68171	3 Flute
	BKK-1017	5/8	4 1/4	5/8	6 1/2	0.69916	3 Flute
	BKK-1209	3/4	2 1/4	3/4	4 3/4	0.78926	3 Flute
	BKK-1213	3/4	3 1/4	3/4	5 3/4	0.80671	3 Flute
	BKK-1217	3/4	4 1/4	3/4	6 3/4	0.82416	3 Flute
	BKK-1221	3/4	5 1/4	3/4	7 3/4	0.84161	3 Flute
BKK-1624	1	6	1	8 1/2	1.10470	4 Flute	

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1 DEG	BK-102	3/32	1/2	3/8	2 1/2	0.11120	3 Flute
	BK-103	3/32	3/4	3/8	2 1/2	0.11993	3 Flute
	BK-105	3/32	1 1/4	3/8	3 1/8	0.13738	3 Flute
	BK-201	1/8	1/4	3/8	2 1/2	0.13373	3 Flute
	BK-202	1/8	1/2	3/8	2 1/2	0.14245	3 Flute
	BK-203	1/8	3/4	3/8	2 1/2	0.15118	3 Flute
	BK-204	1/8	1	3/8	2 7/8	0.15990	3 Flute
	BK-205	1/8	1 1/4	3/8	3 1/8	0.16863	3 Flute
	BK-206	1/8	1 1/2	3/8	3 1/4	0.17735	3 Flute
	BK-208	1/8	2	3/8	4	0.19480	3 Flute
	BK-303	3/16	3/4	3/8	2 1/2	0.21368	3 Flute
	BK-305	3/16	1 1/4	3/8	3 1/8	0.23113	3 Flute
	BK-308	3/16	2	3/8	3 7/8	0.25730	3 Flute
	BK-309	3/16	2 1/4	3/8	4 1/4	0.26603	3 Flute
	BK-310	3/16	2 1/2	3/8	4 1/2	0.27475	3 Flute
	BK-313	3/16	3 1/4	3/8	5 1/2	0.30093	3 Flute
	BK-403	1/4	3/4	3/8	2 1/2	0.27618	3 Flute
	BK-405	1/4	1 1/4	3/8	3	0.29363	3 Flute
	BK-406	1/4	1 1/2	3/8	3 1/4	0.30235	3 Flute
	BK-409	1/4	2 1/4	1/2	4 1/4	0.32853	3 Flute
	BK-413	1/4	3 1/4	1/2	5 1/2	0.36343	3 Flute
	BK-605	3/8	1 1/4	1/2	3 1/4	0.41863	3 Flute
	BK-609	3/8	2 1/4	1/2	4 1/4	0.45353	3 Flute
	BK-613	3/8	3 1/4	1/2	5 1/4	0.48843	3 Flute
	BK-805	1/2	1 1/4	1/2	3 1/4	0.54363	3 Flute
	BK-809	1/2	2 1/4	1/2	4 1/4	0.57853	3 Flute
	BK-813	1/2	3 1/4	5/8	5 3/8	0.61343	3 Flute
	BK-813A	1/2	3 1/4	1/2	5 3/8	0.61343	3 Flute
	BK-1009	5/8	2 1/4	5/8	4 1/2	0.70353	3 Flute
	BK-1013	5/8	3 1/4	5/8	5 1/2	0.73843	3 Flute
	BK-1017	5/8	4 1/4	5/8	6 1/2	0.77333	3 Flute
	BK-1209	3/4	2 1/4	3/4	4 3/4	0.82853	3 Flute
BK-1213	3/4	3 1/4	3/4	5 3/4	0.86343	3 Flute	
BK-1217	3/4	4 1/4	3/4	6 3/4	0.89833	3 Flute	
BK-1221	3/4	5 1/4	3/4	7 3/4	0.93323	3 Flute	
BK-1624	1	6	1	8 1/2	1.20940	4 Flute	

TO ORDER COBALT OR COATINGS,
 Add a suffix to the part number given above.
 for TIN Coated, add the suffix "TIN"
 for Cobalt, add the suffix "CO"
 for Cobalt TIN Coated, add the suffix "CO-TIN"
 If no suffix is given High Speed Steel will ship.

ALL SIZES ARE AVAILABLE
 SOME ARE AVAILABLE WITH EXTENDED SHANKS.
 CALL FOR AVAILABILITY 1-888-531-0430



A

HIGH SPEED STEEL & COBALT

Ball Ends

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1 1/2 DEG	BKX-102	3/32	1/2	3/8	2 1/2	0.11993	3 Flute	2 DEG	BL-002	1/16	1/2	3/8	2 5/8	0.09742	3 Flute
	BKX-103	3/32	3/4	3/8	2 1/2	0.13302	3 Flute		BL-004	1/16	1	3/8	2 7/8	0.13234	3 Flute
	BKX-104	3/32	1	3/8	2 7/8	0.14611	3 Flute		BL-102	3/32	1/2	3/8	2 1/2	0.12867	3 Flute
	BKX-105	3/32	1 1/4	3/8	3 1/8	0.15920	3 Flute		BL-103	3/32	3/4	3/8	2 1/2	0.14613	3 Flute
	BKX-106	3/32	1 1/2	3/8	3 1/4	0.17229	3 Flute		BL-105	3/32	1 1/4	3/8	3 1/8	0.18105	3 Flute
	BKX-110	3/32	2 1/2	3/8	4 1/2	0.22465	3 Flute		BL-202	1/8	1/2	3/8	2 1/2	0.15992	3 Flute
	BKX-154	7/64	1	3/8	2 7/8	0.16174	3 Flute		BL-203	1/8	3/4	3/8	2 1/2	0.17738	3 Flute
	BKX-155	7/64	1 1/4	3/8	3 1/8	0.17483	3 Flute		BL-204	1/8	1	3/8	2 7/8	0.19484	3 Flute
	BKX-156	7/64	1 1/2	3/8	3 1/4	0.18792	3 Flute		BL-205	1/8	1 1/4	3/8	3 1/8	0.21230	3 Flute
	BKX-202	1/8	1/2	3/8	2 1/2	0.15118	3 Flute		BL-206	1/8	1 1/2	3/8	3 1/4	0.22976	3 Flute
	BKX-203	1/8	3/4	3/8	2 1/2	0.16427	3 Flute		BL-208	1/8	2	3/8	3 7/8	0.26468	3 Flute
	BKX-204	1/8	1	3/8	2 7/8	0.17736	3 Flute		BL-210	1/8	2 1/2	1/2	4 1/2	0.29960	3 Flute
	BKX-205	1/8	1 1/4	3/8	3 1/8	0.19045	3 Flute		BL-210A	1/8	2 1/2	3/8	4 1/2	0.29960	3 Flute
	BKX-206	1/8	1 1/2	3/8	3 1/4	0.20354	3 Flute		BL-303	3/16	3/4	3/8	2 1/2	0.23988	3 Flute
	BKX-208	1/8	2	3/8	3 7/8	0.22972	3 Flute		BL-305	3/16	1 1/4	3/8	3 1/8	0.27480	3 Flute
	BKX-209	1/8	2 1/4	3/8	4 1/4	0.24281	3 Flute		BL-309	3/16	2 1/4	1/2	4 1/4	0.34464	3 Flute
	BKX-212	1/8	3	3/8	5	0.28208	3 Flute		BL-313	3/16	3 1/4	1/2	5 1/2	0.41448	3 Flute
	BKX-254	5/32	1	3/8	2 7/8	0.20861	3 Flute		BL-403	1/4	3/4	3/8	2 1/2	0.30238	3 Flute
	BKX-255	5/32	1 1/4	3/8	3 1/8	0.22170	3 Flute		BL-405	1/4	1 1/4	3/8	3 1/8	0.33730	3 Flute
	BKX-256	5/32	1 1/2	3/8	3 1/4	0.23479	3 Flute		BL-409	1/4	2 1/4	1/2	4 3/8	0.40714	3 Flute
	BKX-258	5/32	2	3/8	3 7/8	0.26097	3 Flute		BL-413	1/4	3 1/4	1/2	5 1/4	0.47698	3 Flute
	BKX-303	3/16	3/4	3/8	2 1/2	0.22677	3 Flute		BL-505	5/16	1 1/4	1/2	3 1/4	0.39980	3 Flute
	BKX-305	3/16	1 1/4	3/8	3 1/8	0.25295	3 Flute		BL-605	3/8	1 1/4	1/2	3 1/4	0.46230	3 Flute
	BKX-309	3/16	2 1/4	3/8	4	0.30531	3 Flute		BL-609	3/8	2 1/4	1/2	4 1/4	0.53214	3 Flute
	BKX-313	3/16	3 1/4	3/8	5 1/2	0.35767	3 Flute		BL-613	3/8	3 1/4	1/2	5 1/2	0.60198	3 Flute
	BKX-403	1/4	3/4	3/8	2 1/2	0.28927	3 Flute		BL-613B	3/8	3 1/4	5/8	5 1/2	0.60198	3 Flute
	BKX-405	1/4	1 1/4	3/8	3	0.31545	3 Flute		BL-805	1/2	1 1/4	1/2	3 1/4	0.58730	3 Flute
	BKX-409	1/4	2 1/4	1/2	4 1/4	0.36781	3 Flute		BL-809	1/2	2 1/4	5/8	4 3/8	0.65714	3 Flute
	BKX-413	1/4	3 1/4	1/2	5 1/2	0.42017	3 Flute		BL-809A	1/2	2 1/4	1/2	4 3/8	0.65714	3 Flute
	BKX-605	3/8	1 1/4	1/2	3 1/8	0.44045	3 Flute		BL-813	1/2	3 1/4	3/4	5 1/2	0.72698	3 Flute
	BKX-609	3/8	2 1/4	1/2	4 1/4	0.49281	3 Flute		BL-813B	1/2	3 1/4	5/8	5 1/2	0.72698	3 Flute
	BKX-613	3/8	3 1/4	1/2	5 1/2	0.54517	3 Flute		BL-1009	5/8	2 1/4	3/4	4 1/2	0.78214	3 Flute
	BKX-805	1/2	1 1/4	1/2	3 1/4	0.56545	3 Flute		BL-1013	5/8	3 1/4	3/4	5 1/2	0.85198	3 Flute
	BKX-809	1/2	2 1/4	5/8	4 1/2	0.61781	3 Flute		BL-1017	5/8	4 1/4	3/4	6 1/2	0.92182	3 Flute
BKX-813	1/2	3 1/4	5/8	5 1/2	0.67017	3 Flute	BL-1209	3/4	2 1/4	3/4	4 1/2	0.90714	3 Flute		
BKX-1009	5/8	2 1/4	3/4	4 1/2	0.74281	3 Flute	BL-1213	3/4	3 1/4	3/4	5 3/4	0.97698	3 Flute		
BKX-1013	5/8	3 1/4	3/4	5 1/2	0.79517	3 Flute	BL-1221	3/4	5 1/4	1	7 3/4	1.11666	3 Flute		
BKX-1017	5/8	4 1/4	3/4	6 1/2	0.84753	3 Flute	BL-1624	1	6	1 1/4	8 1/2	1.41904	4 Flute		
BKX-1209	3/4	2 1/4	3/4	4 3/4	0.86781	3 Flute									
BKX-1221	3/4	5 1/4	1	7 3/4	1.02489	3 Flute									
BKX-1624	1	6	1 1/4	8 1/2	1.31416	4 Flute									

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HIGH SPEED STEEL & COBALT

Ball Ends



Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
3 DEG	BM-002	1/16	1/2	3/8	2 5/8	0.11491	3 Flute
	BM-003	1/16	3/4	3/8	2 3/4	0.14112	3 Flute
	BM-004	1/16	1	3/8	2 7/8	0.16732	3 Flute
	BM-005	1/16	1 1/4	3/8	3 1/8	0.19353	3 Flute
	BM-006	1/16	1 1/2	3/8	3 1/4	0.21973	3 Flute
	BM-103	3/32	3/4	3/8	2 1/2	0.17237	3 Flute
	BM-104	3/32	1	3/8	2 7/8	0.19857	3 Flute
	BM-105	3/32	1 1/4	3/8	3 1/8	0.22478	3 Flute
	BM-106	3/32	1 1/2	3/8	3 1/4	0.25098	3 Flute
	BM-108	3/32	2	3/8	3 3/4	0.30339	3 Flute
	BM-110	3/32	2 1/2	1/2	4 1/2	0.35580	3 Flute
	BM-154	7/64	1	3/8	2 7/8	0.21420	3 Flute
	BM-155	7/64	1 1/4	3/8	3 1/8	0.24040	3 Flute
	BM-156	7/64	1 1/2	3/8	3 1/4	0.26661	3 Flute
	BM-158	7/64	2	3/8	3 3/4	0.31902	3 Flute
	BM-203	1/8	3/4	3/8	2 5/8	0.20362	3 Flute
	BM-204	1/8	1	3/8	2 7/8	0.22982	3 Flute
	BM-205	1/8	1 1/4	3/8	3 1/8	0.25603	3 Flute
	BM-206	1/8	1 1/2	3/8	3 1/4	0.28223	3 Flute
	BM-208	1/8	2	3/8	3 3/4	0.33464	3 Flute
	BM-210	1/8	2 1/2	1/2	4 1/2	0.38705	3 Flute
	BM-210A	1/8	2 1/2	3/8	4 1/2	0.38705	3 Flute
	BM-212	1/8	3	1/2	5	0.43946	3 Flute
	BM-216	1/8	4	1/2	6 1/2	0.54428	3 Flute
	BM-2525	5/32	5/8	3/8	2 1/2	0.22176	3 Flute
	BM-253	5/32	3/4	3/8	2 1/2	0.23487	3 Flute
	BM-254	5/32	1	3/8	2 7/8	0.26107	3 Flute
	BM-255	5/32	1 1/4	3/8	3 1/8	0.28728	3 Flute
	BM-256	5/32	1 1/2	3/8	3 1/4	0.31348	3 Flute
	BM-258	5/32	2	3/8	3 7/8	0.36589	3 Flute
	BM-303	3/16	3/4	3/8	2 5/8	0.26612	3 Flute
	BM-304	3/16	1	3/8	2 7/8	0.29232	3 Flute
BM-305	3/16	1 1/4	3/8	3 1/8	0.31853	3 Flute	
BM-306	3/16	1 1/2	3/8	3 1/8	0.34473	3 Flute	
BM-308	3/16	2	1/2	4	0.39714	3 Flute	
BM-310	3/16	2 1/2	1/2	4 1/2	0.44955	3 Flute	
BM-312	3/16	3	1/2	5	0.50196	3 Flute	
BM-313	3/16	3 1/4	1/2	5 1/2	0.52817	3 Flute	
BM-316	3/16	4	5/8	6 1/8	0.60678	3 Flute	
BM-320	3/16	5	3/4	7 1/4	0.71160	3 Flute	
BM-322	3/16	5 1/2	3/4	7 3/4	0.76401	3 Flute	

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
3 DEG	BM-403	1/4	3/4	3/8	2 1/2	0.32862	3 Flute
	BM-404	1/4	1	3/8	2 3/4	0.35482	3 Flute
	BM-405	1/4	1 1/4	3/8	3 1/8	0.37500	3 Flute
	BM-406	1/4	1 1/2	3/8	3 1/4	0.40723	3 Flute
	BM-409	1/4	2 1/4	1/2	4 1/4	0.48585	3 Flute
	BM-410	1/4	2 1/2	1/2	4 1/2	0.51205	3 Flute
	BM-413	1/4	3 1/4	1/2	5 1/2	0.59067	3 Flute
	BM-413A	1/4	3 1/4	5/8	5 1/2	0.59067	3 Flute
	BM-416	1/4	4	3/4	6 1/4	0.66928	3 Flute
	BM-416A	1/4	4	5/8	6 1/4	0.66928	3 Flute
	BM-420	1/4	5	3/4	7 3/8	0.77410	3 Flute
	BM-504	5/16	1	1/2	3 1/8	0.41732	3 Flute
	BM-507	5/16	1 3/4	1/2	3 7/8	0.49594	3 Flute
	BM-605	3/8	1 1/4	1/2	3 1/4	0.50000	3 Flute
	BM-609	3/8	2 1/4	5/8	4 3/8	0.61085	3 Flute
	BM-609A	3/8	2 1/4	1/2	4 3/8	0.61085	3 Flute
	BM-613	3/8	3 1/4	5/8	5 3/8	0.71567	3 Flute
	BM-613A	3/8	3 1/4	3/4	5 3/8	0.71567	3 Flute
	BM-616	3/8	4	3/4	6 1/2	0.79428	3 Flute
	BM-620	3/8	5	3/4	7 1/2	0.89910	3 Flute
	BM-624	3/8	6	1	8 1/2	1.00392	3 Flute
	BM-805	1/2	1 1/4	1/2	3 1/4	0.63103	3 Flute
	BM-809	1/2	2 1/4	3/4	4 1/2	0.73585	3 Flute
	BM-809A	1/2	2 1/4	1/2	4 1/8	0.73585	3 Flute
	BM-809B	1/2	2 1/4	5/8	4 1/4	0.73585	3 Flute
	BM-813	1/2	3 1/4	3/4	5 1/2	0.84067	3 Flute
	BM-816	1/2	4	3/4	6 3/8	0.91928	3 Flute
	BM-820	1/2	5	1	7 1/2	1.02410	3 Flute
	BM-824	1/2	6	1	8 1/2	1.12892	3 Flute
	BM-1009	5/8	2 1/4	3/4	4 1/2	0.86085	3 Flute
	BM-1013	5/8	3 1/4	3/4	5 1/2	0.96567	3 Flute
	BM-1016	5/8	4	1	6 1/2	1.04428	3 Flute
BM-1020	5/8	5	1	7 1/2	1.14910	3 Flute	
BM-1209	3/4	2 1/4	1	4 3/4	0.98585	3 Flute	
BM-1213	3/4	3 1/4	1	5 3/4	1.09067	3 Flute	
BM-1216	3/4	4	1	6 1/2	1.16928	4 Flute	
BM-1220	3/4	5	1	7 1/2	1.27410	4 Flute	
BM-1224	3/4	6	1 1/4	8 1/2	1.37892	4 Flute	
BM-1624	1	6	1 1/4	8 1/2	1.62892	4 Flute	

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A

HIGH SPEED STEEL & COBALT

Ball Ends

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flutes	Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flutes
4 DEG	BN-004	1/16	1	3/8	2 7/8	0.20236	3 Flute	5 DEG	BO-0002	1/32	1/2	3/16	2 5/8	0.11874	2 Flute
	BN-006	1/16	1 1/2	3/8	3 1/4	0.27229	3 Flute		BO-0003	1/32	3/4	3/16	2 5/8	0.16249	2 Flute
	BN-103	3/32	3/4	3/8	2 5/8	0.19865	3 Flute		BO-002	1/16	1/2	3/8	2 5/8	0.14999	3 Flute
	BN-104	3/32	1	3/8	2 7/8	0.23361	3 Flute		BO-003	1/16	3/4	3/8	2 5/8	0.19374	3 Flute
	BN-203	1/8	3/4	3/8	2 5/8	0.22990	3 Flute		BO-004	1/16	1	3/8	2 7/8	0.23748	3 Flute
	BN-204	1/8	1	3/8	2 7/8	0.26486	3 Flute		BO-005	1/16	1 1/4	3/8	3 1/8	0.28123	3 Flute
	BN-206	1/8	1 1/2	3/8	3 1/4	0.33479	3 Flute		BO-006	1/16	1 1/2	3/8	3 1/4	0.32497	3 Flute
	BN-208	1/8	2	1/2	3 7/8	0.40472	3 Flute		BO-056	.070	1 1/2	3/8	3 1/4	0.33247	3 Flute
	BN-210	1/8	2 1/2	1/2	4 1/2	0.47465	3 Flute		BO-102	3/32	1/2	3/8	2 5/8	0.18124	3 Flute
	BN-303	3/16	3/4	3/8	2 5/8	0.29240	3 Flute		BO-103	3/32	3/4	3/8	2 5/8	0.22499	3 Flute
	BN-305	3/16	1 1/4	3/8	3 1/8	0.36233	3 Flute		BO-104	3/32	1	3/8	2 7/8	0.26873	3 Flute
	BN-310	3/16	2 1/2	1/2	4 1/2	0.53715	3 Flute		BO-105	3/32	1 1/4	3/8	3 1/8	0.31248	3 Flute
	BN-313	3/16	3 1/4	5/8	5 1/2	0.64205	3 Flute		BO-106	3/32	1 1/2	3/8	3 1/4	0.35622	3 Flute
	BN-316	3/16	4	3/4	6 1/2	0.74694	3 Flute		BO-108	3/32	2	1/2	4	0.44371	3 Flute
	BN-403	1/4	3/4	3/8	2 1/2	0.35490	3 Flute		BO-108A	3/32	2	3/8	3 7/8	0.44371	3 Flute
	BN-405	1/4	1 1/4	1/2	3 1/4	0.42483	3 Flute		BO-110	3/32	2 1/2	1/2	4 1/2	0.53120	3 Flute
	BN-409	1/4	2 1/4	5/8	4 3/8	0.56469	3 Flute		BO-114	3/32	3 1/2	3/4	5 7/8	0.66244	3 Flute
	BN-413	1/4	3 1/4	3/4	5 1/2	0.70455	3 Flute		BO-154	7/64	1	3/8	2 7/8	0.28436	3 Flute
	BN-416	1/4	4	3/4	6 1/2	0.80944	3 Flute		BO-155	7/64	1 1/4	3/8	3 1/8	0.32810	3 Flute
	BN-605	3/8	1 1/4	1/2	3 1/4	0.54983	3 Flute		BO-156	7/64	1 1/2	3/8	3 5/16	0.37185	3 Flute
	BN-609	3/8	2 1/4	5/8	4 3/8	0.68969	3 Flute		BO-158	7/64	2	1/2	4	0.45934	3 Flute
	BN-613	3/8	3 1/4	3/4	5 1/2	0.82955	3 Flute		BO-203	1/8	3/4	3/8	2 5/8	0.25000	3 Flute
	BN-616	3/8	4	3/4	6 1/2	0.93444	3 Flute		BO-204	1/8	1	3/8	2 7/8	0.29998	3 Flute
	BN-805	1/2	1 1/4	1/2	3 1/4	0.67483	3 Flute		BO-205	1/8	1 1/4	3/8	3 1/8	0.34373	3 Flute
BN-809	1/2	2 1/4	3/4	4 1/2	0.81469	3 Flute	BO-206	1/8	1 1/2	3/8	3 1/4	0.37500	3 Flute		
BN-813	1/2	3 1/4	3/4	5 5/8	0.95455	3 Flute	BO-208	1/8	2	1/2	4	0.47496	3 Flute		
BN-816	1/2	4	1	6 1/2	1.05944	3 Flute	BO-208A	1/8	2	3/8	4	0.47496	3 Flute		
BN-820	1/2	5	1	7 1/2	1.19930	3 Flute	BO-210	1/8	2 1/2	5/8	4 1/2	0.56245	3 Flute		
								BO-210A	1/8	2 1/2	1/2	4 1/2	0.56245	3 Flute	
								BO-212	1/8	3	3/4	5 1/2	0.64994	3 Flute	
								BO-212A	1/8	3	1/2	5 1/2	0.64994	3 Flute	
								BO-254	5/32	1	3/8	2 7/8	0.33123	3 Flute	
								BO-255	5/32	1 1/4	3/8	3 1/8	0.37498	3 Flute	
								BO-256	5/32	1 1/2	1/2	3 5/8	0.41872	3 Flute	
								BO-258	5/32	2	1/2	4	0.50000	3 Flute	
								BO-303	3/16	3/4	3/8	2 9/16	0.31874	3 Flute	
								BO-304	3/16	1	3/8	3	0.36248	3 Flute	
								BO-305	3/16	1 1/4	1/2	3 3/8	0.40623	3 Flute	
								BO-305S	7/32	1 1/4	1/2	3 3/8	0.43748	3 Flute	
								BO-306	3/16	1 1/2	1/2	3 1/2	0.44997	3 Flute	
								BO-308	3/16	2	1/2	4 1/8	0.53746	3 Flute	
								BO-310	3/16	2 1/2	5/8	4 5/8	0.62495	3 Flute	
								BO-310A	3/16	2 1/2	1/2	4 1/2	0.62495	3 Flute	
								BO-312	3/16	3	3/4	5 1/4	0.71244	3 Flute	
								BO-312A	3/16	3	1/2	5 1/4	0.71244	3 Flute	
								BO-313	3/16	3 1/4	3/4	5 1/2	0.75619	3 Flute	

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Ball Ends



Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute	Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute
5 DEG	BO-313A	3/16	5 1/2	1/2	5 1/2	0.75619	3 Flute	7 DEG	BR-0004	1/32	1	3/8	2 3/4	0.27681	2 Flute
	BO-316	3/16	4	3/4	6 1/4	0.88742	3 Flute		BR-003	1/16	3/4	3/8	2 5/8	0.24667	3 Flute
	BO-320	3/16	5	1	7 1/2	1.06240	3 Flute		BR-004	1/16	1	3/8	2 7/8	0.30806	3 Flute
	BO-324	3/16	6	1	8 1/2	1.23738	3 Flute		BR-006	1/16	1 1/2	1/2	3 1/4	0.43084	3 Flute
	BO-403	1/4	3/4	3/8	2 1/2	0.38124	3 Flute		BR-0254	.070	1	3/8	2 7/8	0.31556	3 Flute
	BO-404	1/4	1	1/2	3	0.42498	3 Flute		BR-054	5/64	1	3/8	2 7/8	0.32369	3 Flute
	BO-405	1/4	1 1/4	1/2	3 1/4	0.46873	3 Flute		BR-103	3/32	3/4	3/8	2 1/2	0.27792	3 Flute
	BO-406	1/4	1 1/2	1/2	3 1/2	0.51247	3 Flute		BR-104	3/32	1	3/8	2 3/4	0.33931	3 Flute
	BO-409	1/4	2 1/4	5/8	4 3/8	0.64371	3 Flute		BR-105	3/32	1 1/4	1/2	3 1/8	0.40070	3 Flute
	BO-409A	1/4	2 1/4	1/2	4 3/8	0.64371	3 Flute		BR-106	3/32	1 1/2	1/2	3 1/2	0.46209	3 Flute
	BO-410	1/4	2 1/2	5/8	4 1/2	0.68745	3 Flute		BR-203	1/8	3/4	3/8	2 9/16	0.30917	3 Flute
	BO-413	1/4	3 1/4	3/4	5 1/2	0.81869	3 Flute		BR-204	1/8	1	3/8	2 3/4	0.37056	3 Flute
	BO-416	1/4	4	3/4	6 1/4	0.94992	3 Flute		BR-206	1/8	1 1/2	1/2	3 1/2	0.49334	3 Flute
	BO-424	1/4	6	1	8 1/2	1.29988	3 Flute		BR-208	1/8	2	5/8	3 7/8	0.61612	3 Flute
	BO-509	5/16	2 1/4	5/8	4 1/4	0.70621	3 Flute		BR-212	1/8	3	3/4	5 1/4	0.86168	3 Flute
	BO-605	3/8	1 1/4	1/2	3 1/4	0.59373	3 Flute		BR-305	3/16	1 1/4	1/2	3 1/4	0.49445	3 Flute
	BO-609	3/8	2 1/4	3/4	4 1/2	0.76871	3 Flute		BR-312	3/16	3	3/4	5 3/8	0.92418	3 Flute
	BO-613	3/8	3 1/4	3/4	5 1/2	0.94369	3 Flute		BR-403	1/4	3/4	1/2	2 1/2	0.43417	3 Flute
	BO-616	3/8	4	1	6 1/2	1.07492	3 Flute		BR-405	1/4	1 1/4	1/2	3 1/4	0.55695	3 Flute
	BO-620	3/8	5	1 1/4	7 1/2	1.24990	3 Flute		BR-409	1/4	2 1/4	3/4	4 1/2	0.80251	3 Flute
	BO-624	3/8	6	1 1/4	8 1/2	1.42488	3 Flute		BR-413	1/4	3 1/4	1	5 3/4	1.04807	3 Flute
	BO-805	1/2	1 1/4	1/2	3 1/4	0.71873	3 Flute		BR-416	1/4	4	1	6 1/2	1.23224	3 Flute
	BO-809	1/2	2 1/4	3/4	4 1/2	0.89371	3 Flute		BR-513	5/16	3 1/4	1	5 3/4	1.11057	3 Flute
	BO-813	1/2	3 1/4	3/4	5 5/8	1.06869	3 Flute		BR-605	3/8	1 1/4	5/8	3 1/4	0.68195	3 Flute
	BO-816	1/2	4	1	6 1/2	1.19992	3 Flute		BR-609	3/8	2 1/4	3/4	4 1/2	0.92751	3 Flute
	BO-820	1/2	5	1 1/4	7 1/2	1.37490	3 Flute		BR-613	3/8	3 1/4	1	5 5/8	1.17307	3 Flute
	BO-824	1/2	6	1 1/4	8 1/2	1.54988	3 Flute		BR-616	3/8	4	1 1/4	6 1/2	1.35724	3 Flute
	BO-1009	5/8	2 1/4	3/4	4 1/2	1.01871	3 Flute		BR-624	3/8	6	1 1/4	8 1/2	1.84836	4 Flute
	BO-1020	5/8	5	1 1/4	7 1/2	1.49990	4 Flute		BR-805	1/2	1 1/4	3/4	3 1/2	0.80695	3 Flute
	BO-1209	3/4	2 1/4	3/4	4 3/4	1.14371	3 Flute		BR-805A	1/2	1 1/4	5/8	3 3/8	0.80695	3 Flute
	BO-1216	3/4	4	1 1/4	6 1/2	1.44992	4 Flute		BR-809	1/2	2 1/4	1	4 5/8	1.05251	3 Flute
	BO-1220	3/4	5	1 1/4	7 1/2	1.62490	4 Flute		BR-813	1/2	3 1/4	1 1/4	5 3/4	1.29807	3 Flute
	BO-1224	3/4	6	1 1/4	8 1/2	1.79988	4 Flute		BR-816	1/2	4	1 1/4	6 1/2	1.48224	4 Flute
BO-1620	1	5	1 1/4	7 1/2	1.87490	4 Flute	BR-824	1/2	6	1 1/4	8 1/2	1.97336	4 Flute		
BO-1624	1	6	2	9 1/2	2.04988	4 Flute	BR-1016	5/8	4	1 1/4	6 1/2	1.60724	4 Flute		
6 DEG	BP-004	1/16	1	3/8	2 7/8	0.27271	3 Flute	BR-1020	5/8	5	1 1/4	7 1/2	1.85820	4 Flute	
	BP-104	3/32	1	3/8	2 7/8	0.30396	3 Flute	BR-1213	3/4	3 1/4	1 1/4	5 3/4	1.54807	4 Flute	
	BP-204	1/8	1	3/8	2 7/8	0.33521	3 Flute	BR-1216	3/4	4	1 1/4	6 1/2	1.73224	4 Flute	
	BP-206	1/8	1 1/2	3/8	3 1/4	0.44032	3 Flute	BR-1224	3/4	6	2	9 1/2	2.22336	4 Flute	
	BP-305	3/16	1 1/4	1/2	3 1/4	0.45030	3 Flute	BR-1624	1	6	2	9 1/2	2.47336	4 Flute	
	BP-306	3/16	1 1/2	1/2	3 1/4	0.50282	3 Flute								
	BP-406	1/4	1 1/2	5/8	3 1/4	0.56532	3 Flute								
	BP-605	3/8	1 1/4	5/8	3 1/4	0.63776	3 Flute								
BP-805	1/2	1 1/4	3/4	3 1/4	0.76276	3 Flute									



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HIGH SPEED STEEL & COBALT

Ball Ends

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
8 DEG	B8-0002	1/32	1/2	3/8	2 5/8	0.17180	2 Flute	
	B8-003	1/16	3/4	3/8	2 7/8	0.27330	3 Flute	
	B8-004	1/16	1	3/8	2 7/8	0.34360	3 Flute	
	B8-005	1/16	1 1/4	3/8	3 1/8	0.41390	3 Flute	
	B8-006	1/16	1 1/2	3/8	3 1/2	0.48410	3 Flute	
	B8-103	3/32	3/4	3/8	2 5/8	0.30456	3 Flute	
	B8-104	3/32	1	3/8	2 7/8	0.37483	3 Flute	
	B8-203	1/8	3/4	3/8	3	0.33581	3 Flute	
	B8-204	1/8	1	3/8	3	0.40608	3 Flute	
	B8-208	1/8	2	5/8	4	0.68716	3 Flute	
	B8-403	1/4	3/4	1/2	2 7/8	0.46081	3 Flute	
	B8-408	1/4	2	3/4	4 1/8	0.81216	3 Flute	
	B8-603	3/8	3/4	1/2	2 3/4	0.58581	3 Flute	
	B8-803	1/2	3/4	5/8	2 7/8	0.71081	3 Flute	
	10 DEG	BT-0003	1/32	3/4	3/8	2 3/4	0.33756	2 Flute
		BT-002	1/16	1/2	3/8	2 3/8	0.23883	3 Flute
BT-003		1/16	3/4	3/8	2 5/8	0.32700	3 Flute	
BT-004		1/16	1	1/2	2 7/8	0.41516	3 Flute	
BT-102		3/32	1/2	3/8	2 3/8	0.27008	3 Flute	
BT-103		3/32	3/4	3/8	2 7/8	0.35825	3 Flute	
BT-106		3/32	1 1/2	1/2	3 1/2	0.62274	3 Flute	
BT-203		1/8	3/4	3/8	2 5/8	0.38950	3 Flute	
BT-205		1/8	1 1/4	1/2	3 1/4	0.56583	3 Flute	
BT-206		1/8	1 1/2	1/2	3 1/2	0.65399	3 Flute	
BT-254		5/32	1	1/2	3	0.50000	3 Flute	
BT-258		5/32	2	3/4	4 1/4	0.86157	3 Flute	
BT-305		3/16	1 1/4	1/2	3 3/8	0.62500	3 Flute	
BT-309		3/16	2 1/4	3/4	4 1/2	0.98099	3 Flute	
BT-403		1/4	3/4	1/2	2 3/4	0.51450	3 Flute	
BT-405		1/4	1 1/4	1/2	3 1/4	0.69083	3 Flute	
BT-409	1/4	2 1/4	3/4	4 1/2	1.04349	3 Flute		
BT-409A	1/4	2 1/4	1/2	4 1/2	1.04349	3 Flute		
BT-413	1/4	3 1/4	1	5 5/8	1.39615	4 Flute		
BT-605	3/8	1 1/4	5/8	3 1/2	0.81583	3 Flute		
BT-609	3/8	2 1/4	1	4 5/8	1.16849	3 Flute		
BT-613	3/8	3 1/4	1 1/4	5 3/4	1.52115	4 Flute		
BT-805	1/2	1 1/4	3/4	3 1/2	0.94083	3 Flute		
BT-809	1/2	2 1/4	1	4 3/4	1.29349	3 Flute		
BT-813	1/2	3 1/4	1 1/4	5 3/4	1.64615	4 Flute		
BT-816	1/2	4	1 1/4	6 3/8	1.91064	4 Flute		
11 DEG	BTK-0003	1/32	3/4	3/8	2 7/8	0.32282	2 Flute	
	BTK-003	1/16	3/4	3/8	2 7/8	0.35407	3 Flute	
	BTK-004	1/16	1	3/8	2 7/8	0.45126	3 Flute	
	BTK-103	3/32	3/4	3/8	2 7/8	0.38532	3 Flute	
	BTK-203	1/8	3/4	3/8	3	0.41657	3 Flute	
	12 DEG	BTL-103	3/32	3/4	3/8	2 7/8	0.41258	3 Flute
		BTL-204	1/8	1	1/2	3	0.55011	3 Flute
		BTL-205	1/8	1 1/4	1/2	3 1/4	0.65639	3 Flute
		BTL-403	1/4	3/4	1/2	2 7/8	0.56880	3 Flute
		BTL-406	1/4	1 1/2	5/8	3 5/8	0.88765	3 Flute
		BTL-409	1/4	2 1/4	1	4 3/4	1.20650	3 Flute
	15 DEG	BV-0003	1/32	3/4	1/2	2 3/4	0.43318	2 Flute
		BV-003	1/16	3/4	1/2	2 3/4	0.46443	3 Flute
		BV-102	3/32	1/2	3/8	2 3/8	0.36170	3 Flute
		BV-103	3/32	3/4	1/2	2 7/8	0.49568	3 Flute
		BV-104	3/32	1	1/2	3	0.62965	3 Flute
BV-106		3/32	1 1/2	3/4	3 3/4	0.89760	3 Flute	
BV-106A		3/32	1 1/2	1/2	3 3/4	0.89760	3 Flute	
BV-202		1/8	1/2	1/2	2 5/8	0.39295	3 Flute	
BV-202A		1/8	1/2	3/8	2 5/8	0.39295	3 Flute	
BV-203		1/8	3/4	1/2	2 7/8	0.52693	3 Flute	
BV-204		1/8	1	1/2	3 1/8	0.66090	3 Flute	
BV-205		1/8	1 1/4	5/8	3 1/2	0.79488	3 Flute	
BV-205A		1/8	1 1/4	1/2	3 1/2	0.79488	3 Flute	
BV-206A		1/8	1 1/2	1/2	3 5/8	0.92885	3 Flute	
BV-304	3/16	1	1/2	3 1/8	0.72340	3 Flute		
BV-305	3/16	1 1/4	3/4	3 1/2	0.85738	3 Flute		
BV-305A	3/16	1 1/4	1/2	3 1/2	0.85738	3 Flute		
BV-308	3/16	2	1	4 1/2	1.25930	3 Flute		
BV-404	1/4	1	1/2	3 1/8	0.78590	3 Flute		
BV-405	1/4	1 1/4	3/4	3 1/2	0.91988	3 Flute		
BV-405A	1/4	1 1/4	1/2	3 1/2	0.91988	3 Flute		

TO ORDER COBALT OR COATINGS,
 Add a suffix to the part number given above.
 for TIN Coated, add the suffix "TIN"
 for Cobalt, add the suffix "CO"
 for Cobalt TIN Coated, add the suffix "CO-TIN"
 If no suffix is given High Speed Steel will ship.

ALL SIZES ARE THREE FLUTE

ALL SIZES ARE AVAILABLE
 SOME ARE AVAILABLE WITH EXTENDED SHANKS.
 CALL FOR AVAILABILITY 1-888-531-0430



HIGH SPEED STEEL & COBALT

Ball Ends



Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
15 DEG	BV-406	1/4	1 1/2	3/4	3 3/4	1.05385	3 Flute
	BV-408	1/4	2	3/4	4 1/2	1.32180	3 Flute
	BV-409	1/4	2 1/4	1	4 3/4	1.45578	4 Flute
	BV-413	1/4	3 1/4	1 1/4	5 3/4	1.99168	4 Flute
	BV-504	5/16	1	3/4	3 1/4	0.84840	3 Flute
	BV-506	5/16	1 1/2	3/4	3 7/8	1.11635	3 Flute
	BV-509	5/16	2 1/4	1	4 7/8	1.51828	4 Flute
	BV-605	3/8	1 1/4	3/4	3 5/8	1.04488	3 Flute
	BV-609	3/8	2 1/4	1 1/4	4 3/4	1.51828	4 Flute
	BV-613	3/8	3 1/4	1 1/4	5 3/4	2.05418	4 Flute
	BV-804	1/2	1	3/4	3 1/4	1.03590	3 Flute
	BV-805	1/2	1 1/4	3/4	3 5/8	1.16988	3 Flute
	BV-807	1/2	1 3/4	1	4 1/4	1.43783	4 Flute
	BV-809	1/2	2 1/4	1 1/4	4 7/8	1.70578	4 Flute
	BV-812	1/2	3	1 1/4	5 1/2	2.10770	4 Flute
BV-813	1/2	3 1/4	1 1/4	6	2.24168	4 Flute	
20 DEG	BW-002	1/16	1/2	3/8	2 1/2	0.42647	3 Flute
	BW-103	3/32	3/4	1/2	2 3/4	0.63971	3 Flute
	BW-202	1/8	1/2	3/8	2 1/2	0.48897	3 Flute
	BW-204	1/8	1	1/2	3 1/8	0.85294	4 Flute
	BW-204C	1/8	1	3/4	3 3/8	0.85294	3 Flute
	BW-304	3/16	1	1/2	3 1/8	0.91544	4 Flute
	BW-306	3/16	1 1/2	3/4	4	1.27941	4 Flute
	BW-404	1/4	1	1/2	3 1/8	0.97794	4 Flute
	BW-406	1/4	1 1/2	3/4	4	1.34191	4 Flute
	BW-504	5/16	1	3/4	3 1/4	1.04044	4 Flute
	BW-506	5/16	1 1/2	3/4	3 7/8	1.40441	4 Flute
	BW-606	3/8	1 1/2	3/4	3 7/8	1.46691	4 Flute
	BW-608	3/8	2	1	4 1/2	1.83088	4 Flute
	BW-809	1/2	2 1/4	1 1/4	4 7/8	2.13787	4 Flute

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
25 DEG	BX-103	3/32	3/4	1/2	3	0.79322	3 Flute
	BX-202	1/8	1/2	1/2	2 1/2	0.59131	3 Flute
	BX-204A	1/8	1	1/2	3 1/8	1.05762	3 Flute
	BX-204B	1/8	1	5/8	3 1/8	1.05762	3 Flute
	BX-204C	1/8	1	3/4	3 1/8	1.05762	3 Flute
	BX-404	1/4	1	5/8	3 1/4	1.18262	4 Flute
	BX-406	1/4	1 1/2	3/4	4 1/8	1.64893	4 Flute
	BX-503	5/16	3/4	5/8	3	1.01197	4 Flute
	BX-504	5/16	1	3/4	3 3/8	1.24512	4 Flute
	BX-506	5/16	1 1/2	1	4 1/8	1.71143	4 Flute
	BX-603	3/8	3/4	5/8	3	1.07447	4 Flute
	BX-604	3/8	1	3/4	3 1/4	1.30762	4 Flute
	BX-606	3/8	1 1/2	1	4 1/8	1.77393	4 Flute
	BX-805	1/2	1 1/4	1	3 3/4	1.66578	4 Flute
	30 DEG	BZ-002	1/16	1/2	1/2	2 1/2	0.63985
BZ-103		3/32	3/4	1/2	3	0.95978	3 Flute
BZ-202		1/8	1/2	1/2	2 5/8	0.70235	4 Flute
BZ-204		1/8	1	1/2	3 1/8	1.27970	4 Flute
BZ-404		1/4	1	3/4	3 3/8	1.40470	4 Flute
BZ-406		1/4	1 1/2	1	4 1/8	1.98205	4 Flute
BZ-605		3/8	1 1/4	1	3 7/8	1.81838	4 Flute
BZ-606		3/8	1 1/2	1	4 1/4	2.10705	4 Flute
BZ-805		1/2	1 1/4	1	3 3/4	1.94338	4 Flute
BZ-806		1/2	1 1/2	1	4 1/4	2.23205	4 Flute
45 DEG	B45-2015	1/8	5/16	1/2	2 1/2	0.75000	4 Flute
	B45-202	1/8	1/2	1/2	2 5/8	1.12500	4 Flute
	B45-203	1/8	3/4	5/8	3 1/4	1.62500	4 Flute
	B45-204	1/8	1	1	3 3/4	2.12500	4 Flute
	B45-303	3/16	3/4	3/4	3 1/4	1.67850	4 Flute
	B45-304	3/16	1	1	4	2.17850	4 Flute
	B45-305	3/16	1 1/4	1 1/4	4 1/4	2.68750	4 Flute
	B45-403	1/4	3/4	3/4	3 1/4	1.75000	4 Flute
	B45-404	1/4	1	1	4	2.25000	4 Flute
	B45-405	1/4	1 1/4	1 1/4	4 1/4	2.75000	4 Flute
	B45-406	1/4	1 1/2	1 1/4	4 1/2	3.25000	4 Flute
	B45-603	3/8	3/4	3/4	3 1/4	1.87500	4 Flute
	B45-604	3/8	1	1	4	2.37500	4 Flute
	B45-605	3/8	1 1/4	1 1/4	4 1/4	2.87500	6 Flute
	B45-606	3/8	1 1/2	1 1/4	4 1/2	3.37500	6 Flute
	B45-803	1/2	3/4	3/4	3 1/4	2.00000	4 Flute
B45-804	1/2	1	1	4	2.50000	4 Flute	
B45-805	1/2	1 1/4	1 1/4	4 1/4	3.00000	6 Flute	
B45-806	1/2	1 1/2	1 1/4	4 5/8	3.50000	6 Flute	

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 for Cobalt TIN Coated, add the suffix "CO-TIN"
 If no suffix is given High Speed Steel will ship.



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MINIATURE HIGH SPEED STEEL & COBALT Ball Ends

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute	Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flute		
1/2 DEG	BM0-002	1/16	1/2	3/16	1 3/4	0.07123	3 Flute	1 1/2 DEG	BM15-003	1/16	3/4	3/16	2	0.10177	3 Flute		
	BM0-003	1/16	3/4	3/16	2	0.07559	3 Flute		BM15-104	3/32	1	3/16	2 1/4	0.14611	3 Flute		
	BM0-004	1/16	1	3/16	2 1/4	0.07995	3 Flute		BM15-105	3/32	1 1/4	3/16	2 1/2	0.15920	3 Flute		
	BM0-052	5/64	1/2	3/16	1 3/4	0.08685	3 Flute		BM15-154	7/64	1	3/16	2 1/4	0.16174	3 Flute		
	BM0-054	5/64	1	3/16	2 1/4	0.09558	3 Flute		BM15-203	1/8	3/4	3/16	2	0.16427	3 Flute		
	BM0-103	3/32	3/4	3/16	2	0.10684	3 Flute		BM15-204	1/8	1	3/16	2 1/4	0.17736	3 Flute		
	BM0-105	3/32	1 1/4	3/16	2 1/2	0.11556	3 Flute		2 DEG	BM2-002	1/16	1/2	3/16	1 3/4	0.09742	3 Flute	
	BM0-106	3/32	1 1/2	3/16	2 11/16	0.11993	3 Flute			BM2-004	1/16	1	3/16	2 1/4	0.13234	3 Flute	
	BM0-201	1/8	1/4	3/16	1 1/2	0.12936	3 Flute			BM2-052	5/64	1/2	3/16	1 3/4	0.11305	3 Flute	
	BM0-2015	1/8	3/8	3/16	1 5/8	0.13154	3 Flute			BM2-054	5/64	1	3/16	2 1/4	0.14797	3 Flute	
	BM0-203	1/8	3/4	3/16	2	0.13809	3 Flute			BM2-056	5/64	1 1/2	3/16	2 11/16	0.18289	3 Flute	
	BM0-204	1/8	1	3/16	2 1/4	0.14245	3 Flute			BM2-103	3/32	3/4	3/16	2	0.14613	3 Flute	
	1 DEG	BM1-002	1/16	1/2	3/16	1 3/4	0.07995			3 Flute	BM2-105	3/32	1 1/4	3/16	2 1/2	0.18105	3 Flute
		BM1-003	1/16	3/4	3/16	2	0.08868			3 Flute	BM2-203	1/8	3/4	3/16	2	0.17738	3 Flute
		BM1-004	1/16	1	3/16	2 1/4	0.09740			3 Flute							
		BM1-052	5/64	1/2	3/16	1 3/4	0.09558			3 Flute							
BM1-054		5/64	1	3/16	2 1/4	0.11303	3 Flute										
BM1-103		3/32	3/4	3/16	2	0.11993	3 Flute										
BM1-105		3/32	1 1/4	3/16	2 1/2	0.13738	3 Flute										
BM1-106		3/32	1 1/2	3/16	2 11/16	0.14610	3 Flute										
BM1-201		1/8	1/4	3/16	1 1/2	0.13373	3 Flute										
BM1-2015		1/8	3/8	3/16	1 5/8	0.13809	3 Flute										
BM1-203	1/8	3/4	3/16	2	0.15118	3 Flute											
BM1-204	1/8	1	3/16	2 1/4	0.15990	3 Flute											

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for Cobalt TIN Coated, add the suffix "CO-TIN"
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ALL SIZES ARE AVAILABLE
SOME ARE AVAILABLE WITH EXTENDED SHANKS.
CALL FOR AVAILABILITY 1-888-531-0430



A**STANDARD CARBIDE****Ball Ends**

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1/2 DEG	BKK-102-CB	3/32	1/2	1/8	2	0.10248	3 Flute	1 DEG	BK-102-CB	3/32	1/2	1/8	2	0.11120	3 Flute
	BKK-103-CB	3/32	3/4	1/8	2 1/2	0.10684	3 Flute		BK-103-CB	3/32	3/4	3/16	2 1/2	0.11993	3 Flute
	BKK-105-CB	3/32	1 1/4	1/8	3	0.11556	3 Flute		BK-104-CB	3/32	1	3/16	3	0.12865	3 Flute
	BKK-201-CB	1/8	1/4	3/16	2 1/2	0.12936	3 Flute		BK-105-CB	3/32	1 1/4	3/16	3	0.13738	3 Flute
	BKK-2015-CB	1/8	3/8	3/16	2 1/2	0.13154	3 Flute		BK-106-CB	3/32	1 1/2	1/4	3 1/2	0.14610	3 Flute
	BKK-202-CB	1/8	1/2	3/16	2 1/2	0.13373	3 Flute		BK-201-CB	1/8	1/4	3/16	2 1/2	0.13373	3 Flute
	BKK-203-CB	1/8	3/4	3/16	2 1/2	0.13809	3 Flute		BK-2015-CB	1/8	3/8	3/16	2 1/2	0.13809	3 Flute
	BKK-204-CB	1/8	1	3/16	3	0.14245	3 Flute		BK-202-CB	1/8	1/2	3/16	2 1/2	0.14245	3 Flute
	BKK-205-CB	1/8	1 1/4	3/16	3	0.14681	3 Flute		BK-203-CB	1/8	3/4	1/4	2 1/2	0.15118	3 Flute
	BKK-206-CB	1/8	1 1/2	3/16	3 1/2	0.15118	3 Flute		BK-204-CB	1/8	1	1/4	3	0.15990	3 Flute
	BKK-303-CB	3/16	3/4	1/4	2 1/2	0.20059	3 Flute		BK-205-CB	1/8	1 1/4	1/4	3	0.16863	3 Flute
	BKK-305-CB	3/16	1 1/4	1/4	3	0.20931	3 Flute		BK-206-CB	1/8	1 1/2	1/4	3 1/2	0.17735	3 Flute
	BKK-307-CB	3/16	1 3/4	1/4	4	0.21804	3 Flute		BK-208-CB	1/8	2	1/4	4	0.19480	3 Flute
	BKK-313-CB	3/16	3 1/4	3/8	6	0.24421	3 Flute		BK-303-CB	3/16	3/4	1/4	2 1/2	0.21368	3 Flute
	BKK-403-CB	1/4	3/4	3/8	2 1/2	0.26309	3 Flute		BK-305-CB	3/16	1 1/4	1/4	3	0.23113	3 Flute
	BKK-405-CB	1/4	1 1/4	3/8	3	0.27181	3 Flute		BK-307-CB	3/16	1 3/4	1/4	4	0.24858	3 Flute
	BKK-409-CB	1/4	2 1/4	3/8	4 1/2	0.28926	3 Flute		BK-308-CB	3/16	2	5/16	4	0.25730	3 Flute
	BKK-413-CB	1/4	3 1/4	3/8	6	0.30671	3 Flute		BK-309-CB	3/16	2 1/4	3/8	4 1/2	0.26603	3 Flute
	BKK-605-CB	3/8	1 1/4	1/2	3 1/2	0.39681	3 Flute		BK-310-CB	3/16	2 1/2	3/8	5	0.27475	3 Flute
	BKK-609-CB	3/8	2 1/4	1/2	5	0.41426	3 Flute		BK-313-CB	3/16	3 1/4	3/8	6	0.30093	3 Flute
BKK-613-CB	3/8	3 1/4	1/2	6	0.43171	3 Flute	BK-403-CB	1/4	3/4	3/8	2 1/2	0.27618	3 Flute		
BKK-805-CB	1/2	1 1/4	9/16	4	0.52181	3 Flute	BK-405-CB	1/4	1 1/4	3/8	3	0.29363	3 Flute		
BKK-809-CB	1/2	2 1/4	9/16	5	0.53926	3 Flute	BK-406-CB	1/4	1 1/2	3/8	3 1/2	0.30235	3 Flute		
BKK-813-CB	1/2	3 1/4	5/8	6	0.55671	3 Flute	BK-408-CB	1/4	2	3/8	4	0.31980	3 Flute		
BKK-1009-CB	5/8	2 1/4	3/4	5	0.66426	3 Flute	BK-409-CB	1/4	2 1/4	3/8	4 1/2	0.32853	3 Flute		
BKK-1013-CB	5/8	3 1/4	3/4	6	0.68171	3 Flute	BK-413-CB	1/4	3 1/4	3/8	6	0.36343	3 Flute		
BKK-1017-CB	5/8	4 1/4	3/4	7	0.69916	3 Flute	BK-605-CB	3/8	1 1/4	1/2	3 1/2	0.41863	3 Flute		
BKK-1209-CB	3/4	2 1/4	7/8	5	0.78926	3 Flute	BK-609-CB	3/8	2 1/4	1/2	5	0.45353	3 Flute		
BKK-1213-CB	3/4	3 1/4	7/8	6	0.80671	3 Flute	BK-613-CB	3/8	3 1/4	1/2	6	0.48843	3 Flute		
BKK-1217-CB	3/4	4 1/4	1	7	0.82416	3 Flute	BK-803-CB	1/2	3/4	5/8	3	0.52618	3 Flute		
BKK-1221-CB	3/4	5 1/4	1	8	0.84161	3 Flute	BK-805-CB	1/2	1 1/4	9/16	4	0.54363	3 Flute		
								BK-809-CB	1/2	2 1/4	5/8	5	0.57853	3 Flute	
								BK-813-CB	1/2	3 1/4	5/8	6	0.61343	3 Flute	
								BK-1009-CB	5/8	2 1/4	3/4	5	0.70353	3 Flute	
								BK-1013-CB	5/8	3 1/4	3/4	6	0.73843	3 Flute	
								BK-1017-CB	5/8	4 1/4	1	7	0.77333	3 Flute	
								BK-1209-CB	3/4	2 1/4	7/8	5	0.82853	3 Flute	
								BK-1213-CB	3/4	3 1/4	7/8	6	0.86343	3 Flute	
								BK-1217-CB	3/4	4 1/4	1	7	0.89833	3 Flute	
								BK-1221-CB	3/4	5 1/4	1	8	0.93323	3 Flute	

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TO ORDER COATINGS,
 Add a suffix to the part number given above.
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 If no suffix is given uncoated Carbide will ship.



STANDARD CARBIDE

Ball Ends



Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
1-1/2 DEG	BKX-102-CB	3/32	1/2	3/16	2 1/2	0.11993	3 Flute
	BKX-103-CB	3/32	3/4	1/4	2 1/2	0.13302	3 Flute
	BKX-104-CB	3/32	1	1/4	3	0.14611	3 Flute
	BKX-105-CB	3/32	1 1/4	3/16	3	0.15920	3 Flute
	BKX-106-CB	3/32	1 1/2	1/4	3	0.17229	3 Flute
	BKX-154-CB	7/64	1	3/16	3	0.16136	3 Flute
	BKX-202-CB	1/8	1/2	3/16	2 1/2	0.15118	3 Flute
	BKX-203-CB	1/8	3/4	1/4	2 1/2	0.16427	3 Flute
	BKX-204-CB	1/8	1	3/16	3	0.17736	3 Flute
	BKX-205-CB	1/8	1 1/4	1/4	3	0.19045	3 Flute
	BKX-206-CB	1/8	1 1/2	1/4	3 1/2	0.20354	3 Flute
	BKX-208-CB	1/8	2	1/4	4	0.22972	3 Flute
	BKX-209-CB	1/8	2 1/4	5/16	4	0.24281	3 Flute
	BKX-212-CB	1/8	3	3/8	5	0.28208	3 Flute
	BKX-253-CB	5/32	3/4	1/4	2 1/2	0.19552	3 Flute
	BKX-254-CB	5/32	1	1/4	3	0.20861	3 Flute
	BKX-255-CB	5/32	1 1/4	1/4	3	0.22170	3 Flute
	BKX-256-CB	5/32	1 1/2	1/4	3 1/2	0.23479	3 Flute
	BKX-258-CB	5/32	2	5/16	4	0.26097	3 Flute
	BKX-303-CB	3/16	3/4	3/8	2 1/2	0.22677	3 Flute
	BKX-304-CB	3/16	1	1/4	3	0.23986	3 Flute
	BKX-305-CB	3/16	1 1/4	3/8	3	0.25295	3 Flute
	BKX-307-CB	3/16	1 3/4	3/8	3 1/2	0.27913	3 Flute
	BKX-309-CB	3/16	2 1/4	3/8	4 1/2	0.30531	3 Flute
	BKX-313-CB	3/16	3 1/4	3/8	6	0.35767	3 Flute
	BKX-403-CB	1/4	3/4	3/8	2 1/2	0.28927	3 Flute
	BKX-405-CB	1/4	1 1/4	3/8	3	0.31545	3 Flute
	BKX-406-CB	1/4	1 1/2	3/8	3 1/2	0.32854	3 Flute
	BKX-409-CB	1/4	2 1/4	3/8	4 1/2	0.36781	3 Flute
	BKX-413-CB	1/4	3 1/4	1/2	6	0.42017	3 Flute
	BKX-605-CB	3/8	1 1/4	1/2	3 1/2	0.44045	3 Flute
	BKX-609-CB	3/8	2 1/4	1/2	5	0.49281	3 Flute
BKX-613-CB	3/8	3 1/4	9/16	6	0.54517	3 Flute	
BKX-805-CB	1/2	1 1/4	5/8	3 1/2	0.56545	3 Flute	
BKX-806-CB	1/2	1 1/2	5/8	3 1/2	0.57855	3 Flute	
BKX-809-CB	1/2	2 1/4	5/8	5	0.61781	3 Flute	
BKX-813-CB	1/2	3 1/4	3/4	6	0.67017	3 Flute	
BKX-1009-CB	5/8	2 1/4	3/4	5	0.74281	3 Flute	
BKX-1013-CB	5/8	3 1/4	7/8	6	0.79517	3 Flute	
BKX-1017-CB	5/8	4 1/4	1	7	0.84753	3 Flute	
BKX-1209-CB	3/4	2 1/4	7/8	5	0.86781	3 Flute	
BKX-1213-CB	3/4	3 1/4	1	6	0.92017	3 Flute	

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
2 DEG	BL-102-CB	3/32	1/2	3/16	2 1/2	0.12867	3 Flute
	BL-103-CB	3/32	3/4	1/4	2 1/2	0.14613	3 Flute
	BL-104-CB	3/32	1	1/4	3	0.16359	3 Flute
	BL-105-CB	3/32	1 1/4	1/4	3	0.18105	3 Flute
	BL-202-CB	1/8	1/2	3/16	2 1/2	0.15992	3 Flute
	BL-203-CB	1/8	3/4	1/4	2 1/2	0.17738	3 Flute
	BL-204-CB	1/8	1	1/4	3	0.19484	3 Flute
	BL-205-CB	1/8	1 1/4	1/4	3	0.21230	3 Flute
	BL-206-CB	1/8	1 1/2	1/4	3 1/2	0.22976	3 Flute
	BL-208-CB	1/8	2	5/16	4	0.26468	3 Flute
	BL-210-CB	1/8	2 1/2	5/16	4	0.29960	3 Flute
	BL-303-CB	3/16	3/4	1/4	2 1/2	0.23988	3 Flute
	BL-305-CB	3/16	1 1/4	3/8	3	0.27480	3 Flute
	BL-307-CB	3/16	1 3/4	3/8	3 1/2	0.30972	3 Flute
	BL-309-CB	3/16	2 1/4	1/2	5	0.34464	3 Flute
	BL-313-CB	3/16	3 1/4	1/2	6	0.41448	3 Flute
	BL-403-CB	1/4	3/4	3/8	2 1/2	0.30238	3 Flute
	BL-405-CB	1/4	1 1/4	3/8	3	0.33730	3 Flute
	BL-408-CB	1/4	2	1/2	4	0.38968	3 Flute
	BL-409-CB	1/4	2 1/4	1/2	5	0.40714	3 Flute
	BL-413-CB	1/4	3 1/4	1/2	6	0.47698	3 Flute
	BL-605-CB	3/8	1 1/4	1/2	3 1/2	0.46230	3 Flute
	BL-609-CB	3/8	2 1/4	1/2	5	0.53214	3 Flute
	BL-613-CB	3/8	3 1/4	5/8	6	0.60198	3 Flute
	BL-805-CB	1/2	1 1/4	5/8	3 1/2	0.58730	3 Flute
	BL-809-CB	1/2	2 1/4	3/4	5	0.65714	3 Flute
	BL-813-CB	1/2	3 1/4	3/4	6	0.72698	3 Flute
	BL-1009-CB	5/8	2 1/4	7/8	5	0.78214	3 Flute
	BL-1013-CB	5/8	3 1/4	7/8	6	0.85198	3 Flute
	BL-1017-CB	5/8	4 1/4	1	7	0.92182	3 Flute
	BL-1209-CB	3/4	2 1/4	1	5	0.90714	3 Flute
	BL-1213-CB	3/4	3 1/4	1	6	0.97698	3 Flute

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 for TiCN Coated, add the suffix "TiCN"
 If no suffix is given uncoated Carbide will ship.



A**STANDARD CARBIDE****Ball Ends**

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
3 DEG	BM-103-CB	3/32	3/4	3/16	2 1/2	0.17237	3 Flute	3 DEG	BM-504-CB	5/16	1	1/2	3	0.41782	3 Flute	
	BM-104-CB	3/32	1	1/4	3	0.19857	3 Flute		BM-507-CB	5/16	1 3/4	1/2	4	0.49644	3 Flute	
	BM-105-CB	3/32	1 1/4	1/4	3	0.22478	3 Flute		BM-604-CB	3/8	1	1/2	3	0.47982	3 Flute	
	BM-106-CB	3/32	1 1/2	1/4	3 1/2	0.25000	3 Flute		BM-605-CB	3/8	1 1/4	1/2	3 1/2	0.50000	3 Flute	
	BM-107-CB	3/32	1 3/4	3/8	3 1/2	0.27719	3 Flute		BM-609-CB	3/8	2 1/4	5/8	5	0.61085	3 Flute	
	BM-108-CB	3/32	2	5/16	4	0.30339	3 Flute		BM-613-CB	3/8	3 1/4	3/4	6	0.71567	3 Flute	
	BM-110-CB	3/32	2 1/2	3/8	4 1/2	0.35580	3 Flute		BM-616-CB	3/8	4	7/8	6	0.79428	3 Flute	
	BM-154-CB	7/64	1	1/4	3	0.21382	3 Flute		BM-620-CB	3/8	5	1	8	0.89910	3 Flute	
	BM-155-CB	7/64	1 1/4	1/4	3	0.24003	3 Flute		BM-805-CB	1/2	1 1/4	3/4	4	0.63103	3 Flute	
	BM-156-CB	7/64	1 1/2	5/16	3	0.26623	3 Flute		BM-809-CB	1/2	2 1/4	3/4	5	0.73585	3 Flute	
	BM-158-CB	7/64	2	3/8	4	0.31864	3 Flute		BM-813-CB	1/2	3 1/4	7/8	6	0.84067	3 Flute	
	BM-203-CB	1/8	3/4	1/4	2 1/2	0.20362	3 Flute		BM-816-CB	1/2	4	1	7	0.91928	3 Flute	
	BM-204-CB	1/8	1	1/4	3	0.22982	3 Flute		BM-1009-CB	5/8	2 1/4	7/8	5	0.86085	3 Flute	
	BM-205-CB	1/8	1 1/4	3/8	3	0.25603	3 Flute		BM-1013-CB	5/8	3 1/4	1	6	0.95567	3 Flute	
	BM-206-CB	1/8	1 1/2	3/8	3 1/2	0.28223	3 Flute		BM-1209-CB	3/4	2 1/4	1	5	0.98585	3 Flute	
	BM-208-CB	1/8	2	3/8	4	0.33464	3 Flute		4 DEG	BN-0004-CB	1/32	1	3/16	3	0.17111	2 Flute
	BM-209-CB	1/8	2 1/4	3/8	4 1/2	0.36085	3 Flute			BN-004-CB	1/16	1	1/4	3	0.20236	3 Flute
	BM-210-CB	1/8	2 1/2	7/16	4 1/2	0.38705	3 Flute			BN-103-CB	3/32	3/4	1/4	2 1/2	0.19865	3 Flute
	BM-212-CB	1/8	3	1/2	5	0.43946	3 Flute			BN-104-CB	3/32	1	1/4	3	0.23361	3 Flute
	BM-216-CB	1/8	4	9/16	6	0.54428	3 Flute			BN-203-CB	1/8	3/4	1/4	2 1/2	0.22990	3 Flute
	BM-253-CB	5/32	3/4	1/4	2 1/2	0.23487	3 Flute			BN-204-CB	1/8	1	3/8	3	0.26486	3 Flute
	BM-254-CB	5/32	1	3/8	3	0.26107	3 Flute			BN-206-CB	1/8	1 1/2	3/8	3 1/2	0.33479	3 Flute
	BM-255-CB	5/32	1 1/4	3/8	3	0.28728	3 Flute			BN-208-CB	1/8	2	1/2	4	0.40472	3 Flute
	BM-256-CB	5/32	1 1/2	3/8	3 1/2	0.31348	3 Flute			BN-210-CB	1/8	2 1/2	1/2	5	0.47465	3 Flute
	BM-257-CB	5/32	1 3/4	3/8	3 1/2	0.33969	3 Flute			BN-303-CB	3/16	3/4	3/8	2 1/2	0.29240	3 Flute
	BM-258-CB	5/32	2	3/8	4	0.36589	3 Flute			BN-305-CB	3/16	1 1/4	3/8	3	0.36233	3 Flute
	BM-303-CB	3/16	3/4	3/8	2 1/2	0.26612	3 Flute			BN-313-CB	3/16	3 1/4	3/4	6	0.64205	3 Flute
	BM-304-CB	3/16	1	3/8	3	0.29232	3 Flute			BN-316-CB	3/16	4	3/4	6	0.74694	3 Flute
	BM-305-CB	3/16	1 1/4	3/8	3	0.31853	3 Flute			BN-403-CB	1/4	3/4	3/8	2 1/2	0.35490	3 Flute
	BM-306-CB	3/16	1 1/2	3/8	3 1/2	0.34473	3 Flute			BN-405-CB	1/4	1 1/4	1/2	3 1/2	0.42483	3 Flute
	BM-308-CB	3/16	2	1/2	4	0.39714	3 Flute			BN-409-CB	1/4	2 1/4	5/8	5	0.56469	3 Flute
	BM-310-CB	3/16	2 1/2	1/2	5	0.44955	3 Flute		BN-413-CB	1/4	3 1/4	3/4	6	0.70455	3 Flute	
BM-313-CB	3/16	3 1/4	9/16	6	0.52817	3 Flute	BN-416-CB	1/4	4	1	7	0.80944	3 Flute			
BM-316-CB	3/16	4	5/8	6	0.60678	3 Flute	BN-605-CB	3/8	1 1/4	9/16	4	0.54983	3 Flute			
BM-320-CB	3/16	5	3/4	7	0.71160	3 Flute	BN-609-CB	3/8	2 1/4	3/4	5	0.68969	3 Flute			
BM-403-CB	1/4	3/4	3/8	2 1/2	0.32862	3 Flute	BN-613-CB	3/8	3 1/4	7/8	6	0.82955	3 Flute			
BM-404-CB	1/4	1	3/8	3	0.35482	3 Flute	BN-616-CB	3/8	4	1	7	0.93444	3 Flute			
BM-405-CB	1/4	1 1/4	3/8	3	0.37500	3 Flute	BN-805-CB	1/2	1 1/4	3/4	3 1/2	0.67483	3 Flute			
BM-408-CB	1/4	2	1/2	4	0.45964	3 Flute	BN-809-CB	1/2	2 1/4	7/8	5	0.81469	3 Flute			
BM-409-CB	1/4	2 1/4	1/2	5	0.48585	3 Flute	BN-813-CB	1/2	3 1/4	1	6	0.95455	3 Flute			
BM-413-CB	1/4	3 1/4	5/8	6	0.59067	3 Flute										
BM-416-CB	1/4	4	3/4	6	0.66928	3 Flute										
BM-420-CB	1/4	5	1	8	0.77410	3 Flute										

Coatings are available including: TiCN and TiAlN

STANDARD CARBIDE

Ball Ends



Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
5 DEG	BO-102-CB	3/32	1/2	1/4	2 1/2	0.18124	3 Flute	5 DEG	BO-509-CB	5/16	2 1/4	3/4	5	0.70671	3 Flute	
	BO-103-CB	3/32	3/4	1/4	2 1/2	0.22499	3 Flute		BO-604-CB	3/8	1	5/8	3 1/2	0.54998	3 Flute	
	BO-104-CB	3/32	1	3/8	3	0.26873	3 Flute		BO-605-CB	3/8	1 1/4	5/8	4	0.59373	3 Flute	
	BO-105-CB	3/32	1 1/4	3/8	3	0.31248	3 Flute		BO-609-CB	3/8	2 1/4	7/8	5	0.76871	3 Flute	
	BO-106-CB	3/32	1 1/2	3/8	3 1/2	0.35622	3 Flute		BO-613-CB	3/8	3 1/4	1	6	0.94369	3 Flute	
	BO-108-CB	3/32	2	1/2	4	0.44371	3 Flute		BO-805-CB	1/2	1 1/4	3/4	4	0.71873	3 Flute	
	BO-155-CB	7/64	1 1/4	3/8	3	0.32773	3 Flute		BO-806-CB	1/2	1 1/2	7/8	4	0.76247	3 Flute	
	BO-203-CB	1/8	3/4	1/4	2 1/2	0.25000	3 Flute		BO-809-CB	1/2	2 1/4	1	5	0.89371	3 Flute	
	BO-204-CB	1/8	1	3/8	3	0.29998	3 Flute		6 DEG	BP-004-CB	1/16	1	5/16	3	0.27271	3 Flute
	BO-205-CB	1/8	1 1/4	3/8	3	0.34373	3 Flute			BP-104-CB	3/32	1	5/16	3	0.30396	3 Flute
	BO-206-CB	1/8	1 1/2	3/8	3 1/2	0.37500	3 Flute			BP-204-CB	1/8	1	3/8	3	0.33521	3 Flute
	BO-207-CB	1/8	1 3/4	1/2	4	0.43122	3 Flute		7 DEG	BR-0003-CB	1/32	3/4	1/4	2 1/2	0.21542	2 Flute
	BO-208-CB	1/8	2	1/2	4	0.47496	3 Flute			BR-0004-CB	1/32	1	3/8	3	0.27656	2 Flute
	BO-210-CB	1/8	2 1/2	5/8	5	0.56245	3 Flute			BR-001-CB	1/16	1/4	1/4	2	0.12389	3 Flute
	BO-212-CB	1/8	3	3/4	5	0.64994	3 Flute			BR-002-CB	1/16	1/2	1/4	2 1/2	0.18528	3 Flute
	BO-253-CB	5/32	3/4	3/8	2 1/2	0.28749	3 Flute			BR-003-CB	1/16	3/4	3/8	3	0.24667	3 Flute
	BO-254-CB	5/32	1	3/8	3	0.33123	3 Flute			BR-004-CB	1/16	1	3/8	3	0.30806	3 Flute
	BO-255-CB	5/32	1 1/4	3/8	3	0.37498	3 Flute			BR-054-CB	5/64	1	3/8	3	0.32356	3 Flute
	BO-256-CB	5/32	1 1/2	1/2	3 1/2	0.41872	3 Flute			BR-102-CB	3/32	1/2	1/4	2 1/2	0.21653	3 Flute
	BO-257-CB	5/32	1 3/4	1/2	4	0.46247	3 Flute			BR-104-CB	3/32	1	3/8	3	0.33931	3 Flute
	BO-258-CB	5/32	2	1/2	4	0.50000	3 Flute			BR-106-CB	3/32	1 1/2	1/2	3 1/2	0.46209	3 Flute
	BO-303-CB	3/16	3/4	3/8	2 1/2	0.31874	3 Flute			BR-202-CB	1/8	1/2	1/4	2 1/2	0.24778	3 Flute
	BO-304-CB	3/16	1	3/8	3	0.36248	3 Flute			BR-203-CB	1/8	3/4	3/8	2 1/2	0.30917	3 Flute
	BO-305-CB	3/16	1 1/4	1/2	3 1/2	0.40623	3 Flute			BR-204-CB	1/8	1	3/8	3	0.37056	3 Flute
	BO-306-CB	3/16	1 1/2	1/2	3 1/2	0.44997	3 Flute			BR-206-CB	1/8	1 1/2	1/2	3 1/2	0.49334	3 Flute
	BO-307-CB	3/16	1 3/4	1/2	4	0.49372	3 Flute			BR-208-CB	1/8	2	5/8	4	0.61612	3 Flute
	BO-308-CB	3/16	2	5/8	4	0.53746	3 Flute		BR-212-CB	1/8	3	7/8	5	0.86168	3 Flute	
	BO-310-CB	3/16	2 1/2	5/8	5	0.62495	3 Flute		BR-253-CB	5/32	3/4	3/8	2 1/2	0.34042	3 Flute	
	BO-312-CB	3/16	3	3/4	5	0.71244	3 Flute		BR-305-CB	3/16	1 1/4	1/2	3 1/2	0.49445	3 Flute	
	BO-313-CB	3/16	3 1/4	7/8	6	0.75619	3 Flute		BR-403-CB	1/4	3/4	1/2	3	0.43417	3 Flute	
BO-316-CB	3/16	4	1	7	0.88742	3 Flute	BR-404-CB	1/4	1	1/2	3	0.49556	3 Flute			
BO-403-CB	1/4	3/4	1/2	3	0.38124	3 Flute	BR-405-CB	1/4	1 1/4	5/8	3 1/2	0.55695	3 Flute			
BO-404-CB	1/4	1	1/2	3	0.42498	3 Flute	BR-409-CB	1/4	2 1/4	7/8	5	0.80251	3 Flute			
BO-405-CB	1/4	1 1/4	1/2	3 1/2	0.46873	3 Flute	BR-605-CB	3/8	1 1/4	3/4	4	0.68195	3 Flute			
BO-406-CB	1/4	1 1/2	9/16	3 1/2	0.51247	3 Flute	BR-609-CB	3/8	2 1/4	1	5	0.92751	3 Flute			
BO-407-CB	1/4	1 3/4	5/8	4	0.55622	3 Flute	BR-805-CB	1/2	1 1/4	7/8	4	0.80695	3 Flute			
BO-408-CB	1/4	2	5/8	4	0.59996	3 Flute	BR-808-CB	1/2	2	1	5	0.99112	3 Flute			
BO-409-CB	1/4	2 1/4	3/4	5	0.64371	3 Flute	BR-809-CB	1/2	2 1/4	1	4 3/4	1.05251	4 Flute			
BO-410-CB	1/4	2 1/2	3/4	5	0.68745	3 Flute	8 DEG	B8-202-CB	1/8	1/2	3/8	3	0.26550	3 Flute		
BO-413-CB	1/4	3 1/4	7/8	6	0.81869	3 Flute		B8-203-CB	1/8	3/4	3/8	3	0.33581	3 Flute		
BO-416-CB	1/4	4	1	7	0.94992	3 Flute										
BO-504-CB	5/16	1	1/2	3	0.48798	3 Flute										
BO-507-CB	5/16	1 3/4	5/8	4	0.61872	3 Flute										

A**STANDARD CARBIDE****Ball Ends**

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.		
10 DEG	BT-0002-CB	1/32	1/2	1/4	2 1/2	0.20758	2 Flute	15 DEG	BV-203-CB	1/8	11/16	1/2	3	0.50000	3 Flute	
	BT-0003-CB	1/32	3/4	3/8	2 1/2	0.29575	2 Flute		BV-204-CB	1/8	1	3/4	3	0.66090	3 Flute	
	BT-002-CB	1/16	1/2	3/8	2 1/2	0.23883	3 Flute		BV-206-CB	1/8	1 1/2	1	4	0.92885	3 Flute	
	BT-002A-CB	1/16	1/2	1/4	2 1/2	0.23883	3 Flute		BV-206A-CB	1/8	1 1/2	1/2	4	0.92885	3 Flute	
	BT-003-CB	1/16	3/4	3/8	2 1/2	0.32700	3 Flute		BV-304-CB	3/16	1	3/4	3	0.72340	3 Flute	
	BT-004-CB	1/16	1	1/2	3	0.41516	3 Flute		BV-304A-CB	3/16	1	1/2	3	0.72340	3 Flute	
	BT-005-CB	1/16	1 1/4	1/2	3 1/2	0.50000	3 Flute		BV-305-CB	3/16	1 1/4	7/8	4	0.85738	3 Flute	
	BT-102-CB	3/32	1/2	3/8	2 1/2	0.27008	3 Flute		BV-404-CB	1/4	1	3/4	3	0.75000	3 Flute	
	BT-102A-CB	3/32	.445	1/4	2 1/2	0.25000	3 Flute		BV-404A-CB	1/4	1	1/2	3	0.78590	3 Flute	
	BT-103-CB	3/32	3/4	3/8	2 1/2	0.35825	3 Flute		BV-405-CB	1/4	1 1/4	1	4	0.91988	3 Flute	
	BT-106-CB	3/32	1 1/2	5/8	3 1/2	0.62274	3 Flute		BV-405A-CB	1/4	1 1/4	1/2	3 1/2	0.91988	3 Flute	
	BT-203-CB	1/8	3/4	3/8	2 1/2	0.37500	3 Flute		BV-406-CB	1/4	1 1/2	3/4	4	1.05385	3 Flute	
	BT-204-CB	1/8	1	1/2	3	0.47766	3 Flute		BV-504-CB	5/16	1	7/8	4	0.84890	3 Flute	
	BT-205-CB	1/8	1 1/4	5/8	3 1/2	0.56583	3 Flute		BV-606-CB	3/8	1 1/2	3/4	4	1.17855	4 Flute	
	BT-206-CB	1/8	1 1/2	3/4	4	0.65399	3 Flute		BV-805-CB	1/2	1 1/4	3/4	3 1/2	1.16988	4 Flute	
	BT-254-CB	5/32	1	1/2	3	0.50000	3 Flute		20 DEG	BW-0001-CB	1/32	1/4	1/4	2	0.21324	2 Flute
	BT-258-CB	5/32	2	7/8	4	0.86132	3 Flute			BW-0002-CB	1/32	1/2	1/2	2 1/2	0.39522	2 Flute
	BT-303-CB	3/16	3/4	1/2	3	0.45199	3 Flute			BW-001-CB	1/16	1/4	1/4	2	0.24449	3 Flute
	BT-305-CB	3/16	1 1/4	5/8	3 1/2	0.62500	3 Flute			BW-002-CB	1/16	1/2	1/2	2 1/2	0.42647	3 Flute
	BT-309-CB	3/16	2 1/4	1	5	0.98099	3 Flute			BW-102-CB	3/32	1/2	1/2	2 1/2	0.45772	3 Flute
	BT-403-CB	1/4	3/4	5/8	3	0.51450	3 Flute			BW-103-CB	3/32	3/4	3/4	3	0.63971	3 Flute
	BT-404-CB	1/4	1	5/8	3	0.60266	3 Flute			BW-202-CB	1/8	1/2	1/2	2 1/2	0.48897	3 Flute
	BT-405-CB	1/4	1 1/4	3/4	4	0.69083	3 Flute			BW-204-CB	1/8	1	1/2	3	0.85294	4 Flute
	BT-408-CB	1/4	2	1	5	0.95532	4 Flute			BW-304-CB	3/16	1	1/2	3	0.91594	4 Flute
	BT-605-CB	3/8	1 1/4	7/8	4	0.81583	3 Flute			BW-404-CB	1/4	1	1/2	3	0.97794	4 Flute
	BT-805-CB	1/2	1 1/4	1	4	0.94083	3 Flute		25 DEG	BX-001-CB	1/16	1/4	3/8	2 1/2	0.29566	3 Flute
BT-809-CB	1/2	2 1/4	1	4 3/4	1.29349	4 Flute	BX-002-CB	1/16		1/2	3/8	2 1/2	0.52881	3 Flute		
11 DEG	BTK-0003-CB	1/32	3/4	3/8	3	0.32282	2 Flute	BX-101-CB		3/32	1/4	3/8	2 1/2	0.32691	3 Flute	
	BTK-003-CB	1/16	3/4	3/8	3	0.35407	3 Flute	BX-103-CB		3/32	3/4	1/2	3	0.79322	3 Flute	
	BTK-103-CB	3/32	3/4	3/8	3	0.38532	3 Flute	BX-201-CB		1/8	1/4	1/2	2 1/2	0.35816	3 Flute	
	BTK-203-CB	1/8	3/4	3/8	3	0.41657	3 Flute	BX-202-CB		1/8	1/2	1/2	2 1/2	0.59131	4 Flute	
12 DEG	BTL-106-CB	3/32	1 1/2	5/8	4	0.73150	3 Flute	BX-204-CB	1/8	1	1/2	3	1.05762	4 Flute		
	BTL-202-CB	1/8	1/2	3/8	2 1/2	0.33756	3 Flute	30 DEG	BZ-001-CB	1/16	1/4	3/8	2 1/2	0.35118	3 Flute	
	BTL-204-CB	1/8	1	9/16	3	0.55011	3 Flute		BZ-002-CB	1/16	1/2	3/8	2 1/2	0.63985	3 Flute	
BTL-404-CB	1/4	1	3/4	3	0.67511	3 Flute	BZ-101-CB		3/32	1/4	3/8	2 1/2	0.37500	3 Flute		
15 DEG	BV-0001-CB	1/32	1/4	1/4	2	0.16523	2 Flute		BZ-103-CB	3/32	3/4	1/2	3	0.95978	3 Flute	
	BV-0003-CB	1/32	3/4	1/2	2 1/2	0.43318	2 Flute		BZ-201-CB	1/8	1/4	1/2	2 1/2	0.41368	3 Flute	
	BV-001-CB	1/16	1/4	1/4	2	0.19648	3 Flute		BZ-202-CB	1/8	1/2	1/2	2 1/2	0.70235	4 Flute	
	BV-003-CB	1/16	3/4	1/2	2 1/2	0.46443	3 Flute		BZ-204-CB	1/8	1	1/2	3	1.27970	4 Flute	
	BV-101-CB	3/32	1/4	1/4	2	0.22773	3 Flute		BZ-404-CB	1/4	1	3/4	3	1.40470	4 Flute	
	BV-102-CB	3/32	1/2	3/8	2 1/2	0.36170	3 Flute		45 DEG	B45-2015-CB	1/8	5/16	1/2	2 1/2	0.75000	4 Flute
	BV-103-CB	3/32	3/4	1/2	3	0.49568	3 Flute			B45-202-CB	1/8	1/2	1/2	2 5/8	1.12500	4 Flute
	BV-104-CB	3/32	1	3/4	3	0.62965	3 Flute									
	BV-106-CB	3/32	1 1/2	1	4	0.89760	3 Flute									
	BV-202-CB	1/8	1/2	1/2	2 1/2	0.39295	3 Flute									

CALL FOR AVAILABILITY 1-888-531-0430

MINIATURE CARBIDE

Ball Ends



Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flutes	Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	Flutes
1/2 DEG	BM0-0001-CB	1/32	1/4	1/8	2	0.03561	2 Flute	2 DEG	BM2-0001-CB	1/32	1/4	1/8	2	0.04871	2 Flute
	BM0-0002-CB	1/32	1/2	1/8	2	0.03998	2 Flute		BM2-0002-CB	1/32	1/2	1/8	2	0.06617	2 Flute
	BM0-0501-CB	3/64	1/4	1/8	2	0.05124	3 Flute		BM2-0501-CB	3/64	1/4	1/8	2	0.06434	3 Flute
	BM0-0502-CB	3/64	1/2	1/8	2	0.05560	3 Flute		BM2-0502-CB	3/64	1/2	1/8	2	0.08180	3 Flute
	BM0-002-CB	1/16	1/2	1/8	2	0.07123	3 Flute		BM2-002-CB	1/16	1/2	1/8	2	0.09742	3 Flute
	BM0-003-CB	1/16	3/4	1/8	2 1/2	0.07559	3 Flute		BM2-003-CB	1/16	3/4	1/8	2 1/2	0.11488	3 Flute
	BM0-004-CB	1/16	1	1/8	3	0.07995	3 Flute		BM2-004-CB	1/16	1	3/16	3	0.13234	3 Flute
	BM0-052-CB	5/64	1/2	1/8	2	0.08685	3 Flute		BM2-052-CB	5/64	1/2	1/8	2	0.11305	3 Flute
	BM0-053-CB	5/64	3/4	1/8	2 1/2	0.09121	3 Flute		BM2-053-CB	5/64	3/4	3/16	2 1/2	0.13051	3 Flute
	BM0-054-CB	5/64	1	1/8	3	0.09558	3 Flute		BM2-054-CB	5/64	1	3/16	3	0.14797	3 Flute
1 DEG	BM1-0001-CB	1/32	1/4	1/8	2	0.03998	2 Flute	3 DEG	BM3-0001-CB	1/32	1/4	1/8	2	0.05746	2 Flute
	BM1-0002-CB	1/32	1/2	1/8	2	0.04870	2 Flute		BM3-0002-CB	1/32	1/2	1/8	2	0.08366	2 Flute
	BM1-0501-CB	3/64	1/4	1/8	2	0.05560	3 Flute		BM3-0501-CB	3/64	1/4	1/8	2	0.07308	3 Flute
	BM1-0502-CB	3/64	1/2	1/8	2	0.06433	3 Flute		BM3-0502-CB	3/64	1/2	1/8	2	0.09929	3 Flute
	BM1-002-CB	1/16	1/2	1/8	2	0.07995	3 Flute		BM3-002-CB	1/16	1/2	1/8	2	0.11491	3 Flute
	BM1-003-CB	1/16	3/4	1/8	2 1/2	0.08868	3 Flute		BM3-003-CB	1/16	3/4	3/16	2 1/2	0.14112	3 Flute
	BM1-004-CB	1/16	1	1/8	3	0.09740	3 Flute		BM3-004-CB	1/16	1	3/16	3	0.16732	3 Flute
	BM1-052-CB	5/64	1/2	1/8	2	0.09558	3 Flute		BM3-006-CB	1/16	1 1/2	1/4	3	0.21973	3 Flute
	BM1-053-CB	5/64	3/4	1/8	2 1/2	0.10430	3 Flute		BM3-052-CB	5/64	1/2	3/16	2	0.13054	3 Flute
	BM1-054-CB	5/64	1	1/8	3	0.11303	3 Flute		BM3-053-CB	5/64	3/4	3/16	2 1/2	0.15674	3 Flute
1-1/2 DEG	BM15-0001-CB	1/32	1/4	1/8	2	0.04434	2 Flute	5 DEG	BM5-0001-CB	1/32	1/4	1/8	2	0.07500	2 Flute
	BM15-0002-CB	1/32	1/2	1/8	2	0.05743	2 Flute		BM5-0002-CB	1/32	1/2	3/16	2	0.11874	2 Flute
	BM15-0501-CB	3/64	1/4	1/8	2	0.05997	3 Flute		BM5-0003-CB	1/32	3/4	3/16	2 1/2	0.16249	3 Flute
	BM15-0502-CB	3/64	1/2	1/8	2	0.07306	3 Flute		BM5-0501-CB	3/64	1/4	1/8	2	0.09062	3 Flute
	BM15-002-CB	1/16	1/2	1/8	2	0.08868	3 Flute		BM5-0502-CB	3/64	1/2	3/16	2	0.13437	3 Flute
	BM15-003-CB	1/16	3/4	1/8	2 1/2	0.10177	3 Flute		BM5-002-CB	1/16	1/2	1/4	2 1/2	0.14999	3 Flute
	BM15-004-CB	1/16	1	3/16	3	0.11486	3 Flute		BM5-003-CB	1/16	3/4	1/4	2 1/2	0.19374	3 Flute
	BM15-052-CB	5/64	1/2	1/8	2	0.10431	3 Flute		BM5-004-CB	1/16	1	1/4	3	0.23748	3 Flute
	BM15-053-CB	5/64	3/4	1/8	2 1/2	0.11740	3 Flute		BM5-006-CB	1/16	1 1/2	3/8	3	0.28123	3 Flute
	BM15-054-CB	5/64	1	3/16	3	0.13049	3 Flute		BM5-052-CB	5/64	1/2	3/16	2	0.16562	3 Flute
								BM5-053-CB	5/64	3/4	1/4	2 1/2	0.20936	3 Flute	
								BM5-054-CB	5/64	1	3/8	3	0.25311	3 Flute	

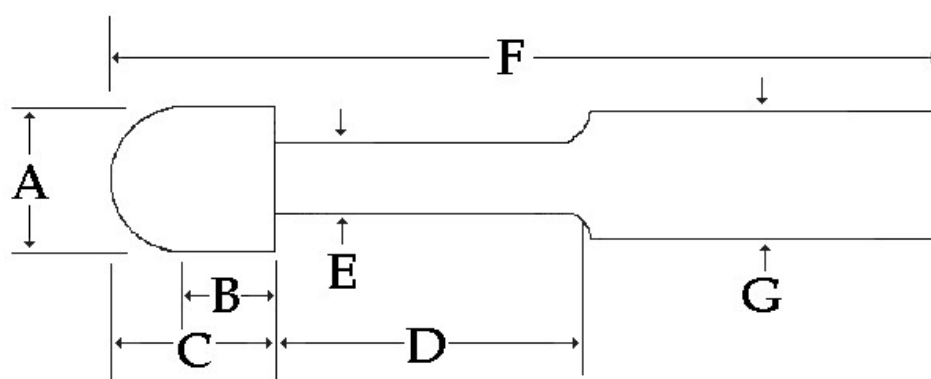
CALL FOR AVAILABILITY 1-888-531-0430

TO ORDER COATINGS,
 Add a suffix to the part number given above.
 for TiAlN Coated, add the suffix "TiAlN"
 for TiCN Coated, add the suffix "TiCN"
 If no suffix is given uncoated Carbide will ship.



A

UNDERCUTTING TOOLS



HIGH SPEED STEEL & COBALT

ORDER NO.	A	B	C	D	E	F	G
SE-61S	3/8	1/4	3/8	1-1/8	0.250	3-1/2	3/8
SE-61L	3/8	1/4	3/8	1-5/8	0.250	4	3/8
SE-81S	1/2	1/4	1/2	1-1/4	0.310	3-5/8	1/2
SE-81L	1/2	1/4	1/2	1-3/4	0.310	4-1/2	1/2
SE-101S	5/8	1/4	1/2	1-1/8	0.400	3-3/4	5/8
SE-101L	5/8	1/4	1/2	2-1/8	0.400	5-1/8	5/8
SE-121S	3/4	1/4	5/8	1-1/4	0.490	4-1/8	3/4
SE-121L	3/4	1/4	5/8	2-1/8	0.490	5-1/2	3/4

TO ORDER COBALT OR COATINGS,
 Add a suffix to the part number given above.
 for TIN Coated, add the suffix "TIN"
 for Cobalt, add the suffix "CO"
 for Cobalt TIN Coated, add the suffix "CO-TIN"
 If no suffix is given High Speed Steel will ship.