HIGH SPEED STEEL & COBALT
Ball Ends

A

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 (847) 677-8770



A HIGH SPEED STEEL & COBALT
Ball Ends

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

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HIGH SPEED STEEL & COBALT
Ball Ends

A

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

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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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Ball Ends

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
4 DEG	BN-004	1/16	1	3/8	2 7/8	0.20236	3 Flute
	BN-006	1/16	1 1/2	3/8	3 1/4	0.27229	3 Flute
	BN-103	3/32	3/4	3/8	2 5/8	0.19865	3 Flute
	BN-104	3/32	1	3/8	2 7/8	0.23361	3 Flute
	BN-203	1/8	3/4	3/8	2 5/8	0.22990	3 Flute
	BN-204	1/8	1	3/8	2 7/8	0.26486	3 Flute
	BN-206	1/8	1 1/2	3/8	3 1/4	0.33479	3 Flute
	BN-208	1/8	2	1/2	3 7/8	0.40472	3 Flute
	BN-210	1/8	2 1/2	1/2	4 1/2	0.47465	3 Flute
	BN-303	3/16	3/4	3/8	2 5/8	0.29240	3 Flute
	BN-305	3/16	1 1/4	3/8	3 1/8	0.36233	3 Flute
	BN-310	3/16	2 1/2	1/2	4 1/2	0.53715	3 Flute
	BN-313	3/16	3 1/4	5/8	5 1/2	0.64205	3 Flute
	BN-316	3/16	4	3/4	6 1/2	0.74694	3 Flute
	BN-403	1/4	3/4	3/8	2 1/2	0.35490	3 Flute
	BN-405	1/4	1 1/4	1/2	3 1/4	0.42483	3 Flute
	BN-409	1/4	2 1/4	5/8	4 3/8	0.56469	3 Flute
	BN-413	1/4	3 1/4	3/4	5 1/2	0.70455	3 Flute
	BN-416	1/4	4	3/4	6 1/2	0.80944	3 Flute
	BN-605	3/8	1 1/4	1/2	3 1/4	0.54983	3 Flute
	BN-609	3/8	2 1/4	5/8	4 3/8	0.68969	3 Flute
	BN-613	3/8	3 1/4	3/4	5 1/2	0.82955	3 Flute
	BN-616	3/8	4	3/4	6 1/2	0.93444	3 Flute
	BN-805	1/2	1 1/4	1/2	3 1/4	0.67483	3 Flute
	BN-809	1/2	2 1/4	3/4	4 1/2	0.81469	3 Flute
	BN-813	1/2	3 1/4	3/4	5 5/8	0.95455	3 Flute
	BN-816	1/2	4	1	6 1/2	1.05944	3 Flute
	BN-820	1/2	5	1	7 1/2	1.19930	3 Flute

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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 (847) 677-8770

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
5 DEG	BO-0002	1/32	1/2	3/16	2 5/8	0.11874	2 Flute
	BO-0003	1/32	3/4	3/16	2 5/8	0.16249	2 Flute
	BO-002	1/16	1/2	3/8	2 5/8	0.14999	3 Flute
	BO-003	1/16	3/4	3/8	2 5/8	0.19374	3 Flute
	BO-004	1/16	1	3/8	2 7/8	0.23748	3 Flute
	BO-005	1/16	1 1/4	3/8	3 1/8	0.28123	3 Flute
	BO-006	1/16	1 1/2	3/8	3 1/4	0.32497	3 Flute
	BO-056	.070	1 1/2	3/8	3 1/4	0.33247	3 Flute
	BO-102	3/32	1/2	3/8	2 5/8	0.18124	3 Flute
	BO-103	3/32	3/4	3/8	2 5/8	0.22499	3 Flute
	BO-104	3/32	1	3/8	2 7/8	0.26873	3 Flute
	BO-105	3/32	1 1/4	3/8	3 1/8	0.31248	3 Flute
	BO-106	3/32	1 1/2	3/8	3 1/4	0.35622	3 Flute
	BO-108	3/32	2	1/2	4	0.44371	3 Flute
	BO-108A	3/32	2	3/8	3 7/8	0.44371	3 Flute
	BO-110	3/32	2 1/2	1/2	4 1/2	0.53120	3 Flute
	BO-114	3/32	3 1/2	3/4	5 7/8	0.66244	3 Flute
	BO-154	7/64	1	3/8	2 7/8	0.28436	3 Flute
	BO-155	7/64	1 1/4	3/8	3 1/8	0.32810	3 Flute
	BO-156	7/64	1 1/2	3/8	3 5/16	0.37185	3 Flute
	BO-158	7/64	2	1/2	4	0.45934	3 Flute
	BO-203	1/8	3/4	3/8	2 5/8	0.25000	3 Flute
	BO-204	1/8	1	3/8	2 7/8	0.29998	3 Flute
	BO-205	1/8	1 1/4	3/8	3 1/8	0.34373	3 Flute
	BO-206	1/8	1 1/2	3/8	3 1/4	0.37500	3 Flute
	BO-208	1/8	2	1/2	4	0.47496	3 Flute
	BO-208A	1/8	2	3/8	4	0.47496	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

HIGH SPEED STEEL & COBALT
Ball Ends

A

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
5 DEG	BO-313A	3/16	5 1/2	1/2	5 1/2	0.75619	3 Flute
	BO-316	3/16	4	3/4	6 1/4	0.88742	3 Flute
	BO-320	3/16	5	1	7 1/2	1.06240	3 Flute
	BO-324	3/16	6	1	8 1/2	1.23738	3 Flute
	BO-403	1/4	3/4	3/8	2 1/2	0.38124	3 Flute
	BO-404	1/4	1	1/2	3	0.42498	3 Flute
	BO-405	1/4	1 1/4	1/2	3 1/4	0.46873	3 Flute
	BO-406	1/4	1 1/2	1/2	3 1/2	0.51247	3 Flute
	BO-409	1/4	2 1/4	5/8	4 3/8	0.64371	3 Flute
	BO-409A	1/4	2 1/4	1/2	4 3/8	0.64371	3 Flute
	BO-410	1/4	2 1/2	5/8	4 1/2	0.68745	3 Flute
	BO-413	1/4	3 1/4	3/4	5 1/2	0.81869	3 Flute
	BO-416	1/4	4	3/4	6 1/4	0.94992	3 Flute
	BO-424	1/4	6	1	8 1/2	1.29988	3 Flute
	BO-509	5/16	2 1/4	5/8	4 1/4	0.70621	3 Flute
	BO-605	3/8	1 1/4	1/2	3 1/4	0.59373	3 Flute
	BO-609	3/8	2 1/4	3/4	4 1/2	0.76871	3 Flute
	BO-613	3/8	3 1/4	3/4	5 1/2	0.94369	3 Flute
	BO-616	3/8	4	1	6 1/2	1.07492	3 Flute
	BO-620	3/8	5	1 1/4	7 1/2	1.24990	3 Flute
	BO-624	3/8	6	1 1/4	8 1/2	1.42488	3 Flute
	BO-805	1/2	1 1/4	1/2	3 1/4	0.71873	3 Flute
	BO-809	1/2	2 1/4	3/4	4 1/2	0.89371	3 Flute
	BO-813	1/2	3 1/4	3/4	5 5/8	1.06869	3 Flute
	BO-816	1/2	4	1	6 1/2	1.19992	3 Flute
	BO-820	1/2	5	1 1/4	7 1/2	1.37490	3 Flute
	BO-824	1/2	6	1 1/4	8 1/2	1.54988	3 Flute
	BO-1009	5/8	2 1/4	3/4	4 1/2	1.01871	3 Flute
	BO-1020	5/8	5	1 1/4	7 1/2	1.49990	4 Flute
	BO-1209	3/4	2 1/4	3/4	4 3/4	1.14371	3 Flute
	BO-1216	3/4	4	1 1/4	6 1/2	1.44992	4 Flute
	BO-1220	3/4	5	1 1/4	7 1/2	1.62490	4 Flute
	BO-1224	3/4	6	1 1/4	8 1/2	1.79988	4 Flute
	BO-1620	1	5	1 1/4	7 1/2	1.87490	4 Flute
	BO-1624	1	6	2	9 1/2	2.04988	4 Flute
6 DEG	BP-004	1/16	1	3/8	2 7/8	0.27271	3 Flute
	BP-104	3/32	1	3/8	2 7/8	0.30396	3 Flute
	BP-204	1/8	1	3/8	2 7/8	0.33521	3 Flute
	BP-206	1/8	1 1/2	3/8	3 1/4	0.44032	3 Flute
	BP-305	3/16	1 1/4	1/2	3 1/4	0.45030	3 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

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
7 DEG	BR-0004	1/32	1	3/8	2 3/4	0.27681	2 Flute
	BR-003	1/16	3/4	3/8	2 5/8	0.24667	3 Flute
	BR-004	1/16	1	3/8	2 7/8	0.30806	3 Flute
	BR-006	1/16	1 1/2	1/2	3 1/4	0.43084	3 Flute
	BR-0254	.070	1	3/8	2 7/8	0.31556	3 Flute
	BR-054	5/64	1	3/8	2 7/8	0.32369	3 Flute
	BR-103	3/32	3/4	3/8	2 1/2	0.27792	3 Flute
	BR-104	3/32	1	3/8	2 3/4	0.33931	3 Flute
	BR-105	3/32	1 1/4	1/2	3 1/8	0.40070	3 Flute
	BR-106	3/32	1 1/2	1/2	3 1/2	0.46209	3 Flute
	BR-203	1/8	3/4	3/8	2 9/16	0.30917	3 Flute
	BR-204	1/8	1	3/8	2 3/4	0.37056	3 Flute
	BR-206	1/8	1 1/2	1/2	3 1/2	0.49334	3 Flute
	BR-208	1/8	2	5/8	3 7/8	0.61612	3 Flute
	BR-212	1/8	3	3/4	5 1/4	0.86168	3 Flute
	BR-305	3/16	1 1/4	1/2	3 1/4	0.49445	3 Flute
	BR-312	3/16	3	3/4	5 3/8	0.92418	3 Flute
	BR-403	1/4	3/4	1/2	2 1/2	0.43417	3 Flute
	BR-405	1/4	1 1/4	1/2	3 1/4	0.55695	3 Flute
	BR-409	1/4	2 1/4	3/4	4 1/2	0.80251	3 Flute
	BR-413	1/4	3 1/4	1	5 3/4	1.04807	3 Flute
	BR-416	1/4	4	1	6 1/2	1.23224	3 Flute
	BR-513	5/16	3 1/4	1	5 3/4	1.11057	3 Flute
	BR-605	3/8	1 1/4	5/8	3 1/4	0.68195	3 Flute
	BR-609	3/8	2 1/4	3/4	4 1/2	0.92751	3 Flute
	BR-613	3/8	3 1/4	1	5 5/8	1.17307	3 Flute
	BR-616	3/8	4	1 1/4	6 1/2	1.35724	3 Flute
	BR-624	3/8	6	1 1/4	8 1/2	1.84836	4 Flute
	BR-805	1/2	1 1/4	3/4	3 1/2	0.80695	3 Flute
	BR-805A	1/2	1 1/4	5/8	3 3/8	0.80695	3 Flute
	BR-809	1/2	2 1/4	1	4 5/8	1.05251	3 Flute
	BR-813	1/2	3 1/4	1 1/4	5 3/4	1.29807	3 Flute
	BR-816	1/2	4	1 1/4	6 1/2	1.48224	4 Flute
	BR-824	1/2	6	1 1/4	8 1/2	1.97336	4 Flute
	BR-1016	5/8	4	1 1/4	6 1/2	1.60724	4 Flute
	BR-1020	5/8	5	1 1/4	7 1/2	1.85820	4 Flute
	BR-1213	3/4	3 1/4	1 1/4	5 3/4	1.54807	4 Flute
	BR-1216	3/4	4	1 1/4	6 1/2	1.73224	4 Flute
	BR-1224	3/4	6	2	9 1/2	2.22336	4 Flute
	BR-1624	1	6	2	9 1/2	2.47336	4 Flute



A 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

Taper Per Side	Tool No.	Ball Dia.	Flt. Lgth	Shk Dia.	OAL	Large Dia.	
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

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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

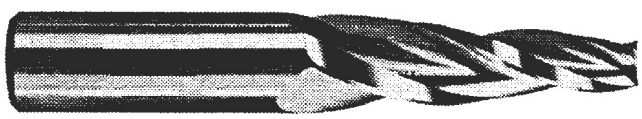
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HIGH SPEED STEEL & COBALT
Ball Ends

A

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

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.



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	3 Flute
	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