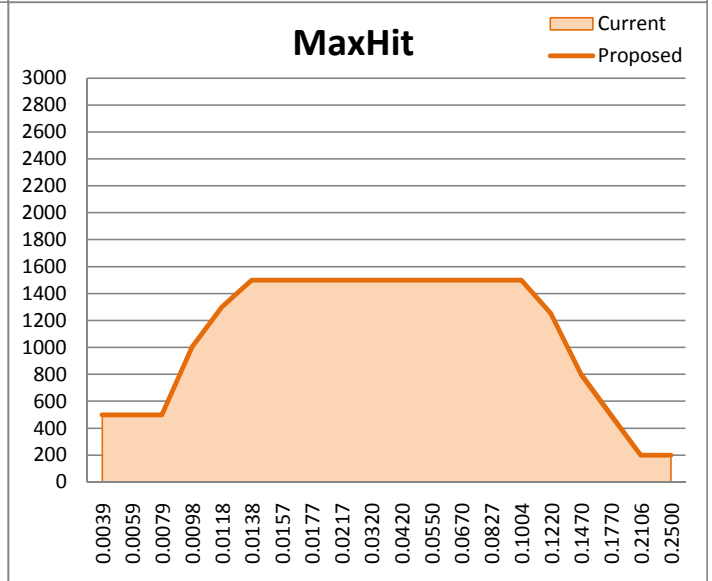
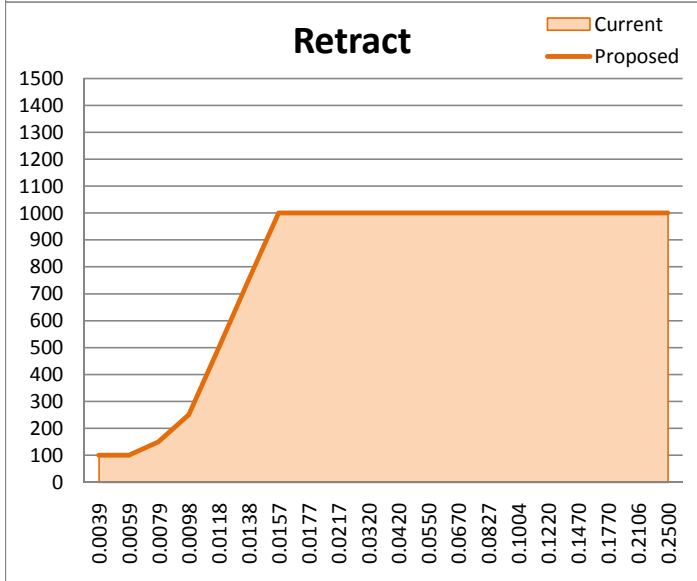
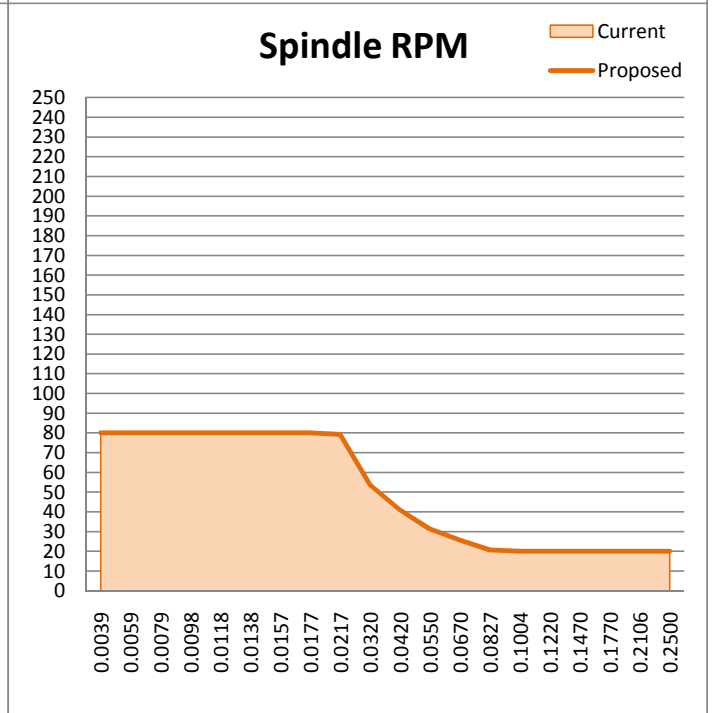
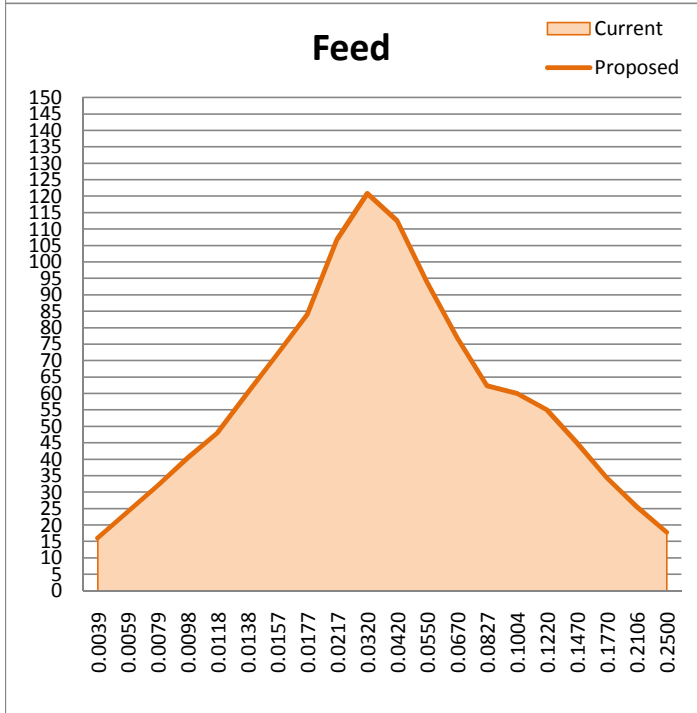
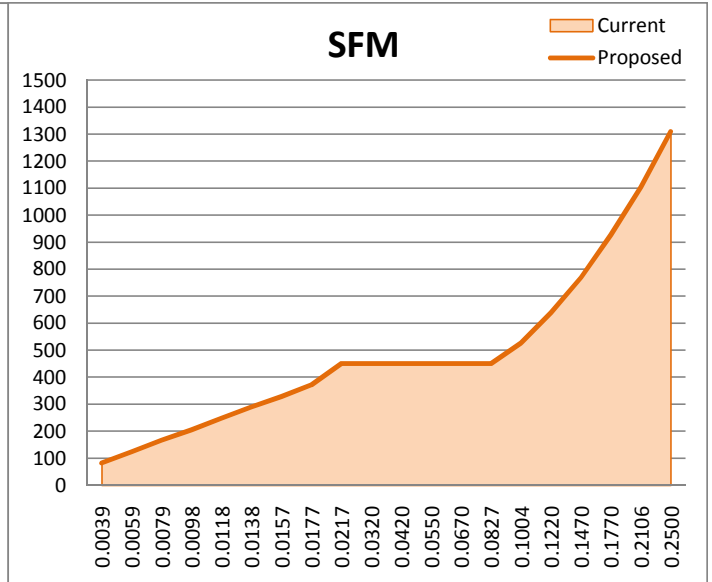
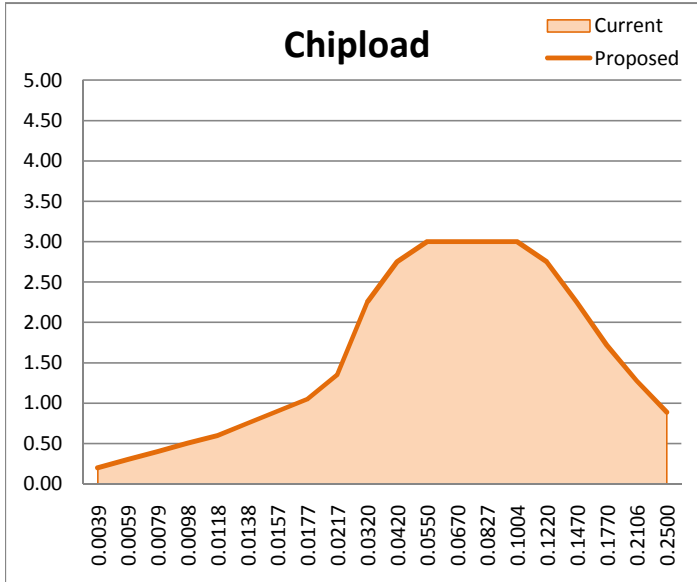




Application:	
Material Type:	140Tg FR4
Drill Designs:	MDBT, UCMT/UCCP, WTCB

Process Parameters:	
Cutting Speed (SFM)	450
Maximum Chipload (0.001"/Revolution)	3.00
Maximum Hit Count	1500
Maximum Spindle RPM	80
Minimum Spindle RPM	20
Z-Offset (1-Point Clearance + Additional Depth; 2-Diameter)	1
Additional Depth (inch)	0.010
Maximum Drill Depth (Inch)	0.040

	Diameter		Chipload	SFM	Retract	MaxHit
1	0.0039	0.10MM	0.20		100	500
2	0.0059	#97 - 0.15MM	0.30		100	500
3	0.0079	#92 - 0.20MM	0.40		150	500
4	0.0098	0.25MM	0.50		250	1000
5	0.0118	0.30MM	0.60		500	1300
6	0.0138	0.35MM	0.75		750	1500
7	0.0157	0.40MM	0.90		1000	1500
8	0.0177	0.45MM	1.05		1000	1500
9	0.0217	0.55MM	1.35		1000	1500
10	0.0320	#67	2.25		1000	1500
11	0.0420	#58	2.75		1000	1500
12	0.0550	#54	3.00		1000	1500
13	0.0670	#51	3.00		1000	1500
14	0.0827	2.10MM	3.00		1000	1500
15	0.1004	2.55MM	3.00		1000	1500
16	0.1220	3.10MM	2.75		1000	1250
17	0.1470	#26	2.25		1000	800
18	0.1770	#16	1.72		1000	500
19	0.2106	5.35MM	1.28		1000	200
20	0.2500	1/4 - 6.35MM	0.89		1000	200





## 140Tg FR4 MDBT, UCMT/UCCP, WTCB

Series	Diameter		Feed	Speed	Retract	MaxHit	Z-offset	SFM	Chipload
	(in.)		(IPM)	(K-RPM)	(IPM)		(in.)		(0.001"/Rev.)
MDBT	0.0039	0.10MM	16	80	100	500	-0.011	82	0.20
	0.0051	0.13MM	21	80	100	500	-0.011	107	0.26
	0.0059	#97 - 0.15MM	24	80	100	500	-0.011	124	0.30
	0.0063	#96	26	80	110	500	-0.011	132	0.32
	0.0067	#95	27	80	120	500	-0.012	140	0.34
	0.0071	#94	29	80	130	500	-0.012	149	0.36
	0.0075	#93	30	80	140	500	-0.012	157	0.38
UCMT / UCCP	0.0079	#92 - 0.20MM	32	80	150	500	-0.012	165	0.40
	0.0083	#91	34	80	171	625	-0.012	174	0.42
	0.0087	#90	36	80	192	725	-0.012	182	0.44
	0.0091	#89	37	80	213	825	-0.012	191	0.47
	0.0095	#88	39	80	234	925	-0.012	199	0.49
	0.0098	0.25MM	40	80	250	1000	-0.012	205	0.50
	0.0100	#87	41	80	275	1050	-0.012	209	0.51
	0.0105	#86	43	80	338	1125	-0.012	220	0.54
	0.0110	#85	45	80	400	1200	-0.013	230	0.56
	0.0115	#84	47	80	463	1275	-0.013	241	0.59
	0.0118	0.30MM	48	80	500	1300	-0.013	247	0.60
	0.0120	#83	49	80	525	1325	-0.013	251	0.62
	0.0125	#82	52	80	588	1375	-0.013	262	0.65
	0.0130	#81	55	80	650	1425	-0.013	272	0.69
	0.0135	#80	58	80	713	1475	-0.013	283	0.73
	0.0138	0.35MM	60	80	750	1500	-0.013	289	0.75
	0.0145	#79	64	80	842	1500	-0.013	304	0.81
	0.0156	1/64	71	80	987	1500	-0.014	327	0.89
	0.0157	0.40MM	72	80	1000	1500	-0.014	329	0.90
	0.0160	#78	74	80	1000	1500	-0.014	335	0.92
	0.0177	0.45MM	84	80	1000	1500	-0.014	371	1.05
	0.0180	#77	86	80	1000	1500	-0.014	377	1.07
	0.0197	0.50MM	95	80	1000	1500	-0.015	410	1.20
0.0200	#76	97	80	1000	1500	-0.015	416	1.22	
MDBT	0.0210	#75	103	79	1000	1500	-0.015	436	1.30
	0.0217	0.55MM	107	79	1000	1500	-0.015	450	1.35
	0.0225	#74	108	76	1000	1500	-0.015	450	1.42
	0.0236	0.60MM	110	73	1000	1500	-0.016	450	1.52



## 140Tg FR4 MDBT, UCMT/UCCP, WTCB

Series	Diameter (in.)		Feed (IPM)	Speed (K-RPM)	Retract (IPM)	MaxHit	Z-offset (in.)	SFM	Chipload (0.001"/Rev.)
MDBT	0.0240	#73	111	72	1000	1500	-0.016	450	1.55
	0.0250	#72	113	69	1000	1500	-0.016	450	1.64
	0.0256	0.65MM	114	67	1000	1500	-0.016	450	1.69
	0.0260	#71	114	66	1000	1500	-0.016	450	1.73
	0.0276	0.70MM	116	62	1000	1500	-0.016	450	1.87
	0.0280	#70	117	61	1000	1500	-0.017	450	1.90
	0.0292	#69	118	59	1000	1500	-0.017	450	2.01
	0.0295	0.75MM	118	58	1000	1500	-0.017	450	2.03
	0.0310	#68	120	55	1000	1500	-0.017	450	2.16
	0.0312	1/32	120	55	1000	1500	-0.017	450	2.18
	0.0315	0.80MM	120	55	1000	1500	-0.017	450	2.21
	0.0320	#67	121	54	1000	1500	-0.017	450	2.25
	0.0330	#66	120	52	1000	1500	-0.018	450	2.30
	0.0335	0.85MM	119	51	1000	1500	-0.018	450	2.33
	0.0350	#65	118	49	1000	1500	-0.018	450	2.40
	0.0354	0.90MM	118	49	1000	1500	-0.018	450	2.42
	0.0360	#64	117	48	1000	1500	-0.018	450	2.45
	0.0370	#63	116	46	1000	1500	-0.019	450	2.50
	0.0374	0.95MM	116	46	1000	1500	-0.019	450	2.52
	0.0380	#62	115	45	1000	1500	-0.019	450	2.55
	0.0390	#61	115	44	1000	1500	-0.019	450	2.60
	0.0394	1.00MM	114	44	1000	1500	-0.019	450	2.62
	0.0400	#60	114	43	1000	1500	-0.019	450	2.65
	0.0410	#59	113	42	1000	1500	-0.020	450	2.70
	0.0413	1.05MM	113	42	1000	1500	-0.020	450	2.72
	0.0420	#58	113	41	1000	1500	-0.020	450	2.75
	0.0430	#57	111	40	1000	1500	-0.020	450	2.77
	0.0433	1.10MM	110	40	1000	1500	-0.020	450	2.78
	0.0441	1.12MM	109	39	1000	1500	-0.020	450	2.79
	0.0453	1.15MM	107	38	1000	1500	-0.021	450	2.81
	0.0465	#56	105	37	1000	1500	-0.021	450	2.84
	0.0469	3/64	104	37	1000	1500	-0.021	450	2.84
0.0472	1.20MM	104	36	1000	1500	-0.021	450	2.85	
0.0492	1.25MM	101	35	1000	1500	-0.021	450	2.89	
0.0512	1.30MM	98	34	1000	1500	-0.022	450	2.93	



## 140Tg FR4 MDBT, UCMT/UCCP, WTCB

Series	Diameter		Feed	Speed	Retract	MaxHit	Z-offset	SFM	Chipload
	(in.)		(IPM)	(K-RPM)	(IPM)		(in.)		(0.001"/Rev.)
MDBT	0.0520	#55	97	33	1000	1500	-0.022	450	2.94
	0.0531	1.35MM	96	32	1000	1500	-0.022	450	2.96
	0.0550	#54	94	31	1000	1500	-0.023	450	3.00
	0.0551	1.40MM	94	31	1000	1500	-0.023	450	3.00
	0.0571	1.45MM	90	30	1000	1500	-0.023	450	3.00
	0.0591	1.50MM	87	29	1000	1500	-0.024	450	3.00
	0.0595	#53	87	29	1000	1500	-0.024	450	3.00
	0.0610	1.55MM	85	28	1000	1500	-0.024	450	3.00
	0.0625	1/16	83	28	1000	1500	-0.025	450	3.00
	0.0630	1.60MM	82	27	1000	1500	-0.025	450	3.00
	0.0635	#52	81	27	1000	1500	-0.025	450	3.00
	0.0650	1.65MM	79	26	1000	1500	-0.025	450	3.00
	0.0669	1.70MM	77	26	1000	1500	-0.026	450	3.00
	0.0670	#51	77	26	1000	1500	-0.026	450	3.00
	0.0689	1.75MM	75	25	1000	1500	-0.026	450	3.00
	0.0700	#50	74	25	1000	1500	-0.026	450	3.00
	0.0709	1.80MM	73	24	1000	1500	-0.027	450	3.00
	0.0728	1.85MM	71	24	1000	1500	-0.027	450	3.00
	0.0730	#49	71	24	1000	1500	-0.027	450	3.00
	0.0748	1.90MM	69	23	1000	1500	-0.027	450	3.00
	0.0760	#48	68	23	1000	1500	-0.028	450	3.00
	0.0768	1.95MM	67	22	1000	1500	-0.028	450	3.00
	0.0781	5/64	66	22	1000	1500	-0.028	450	3.00
	0.0785	#47	66	22	1000	1500	-0.028	450	3.00
	0.0787	2.00MM	66	22	1000	1500	-0.028	450	3.00
	0.0807	2.05MM	64	21	1000	1500	-0.029	450	3.00
	0.0810	#46	64	21	1000	1500	-0.029	450	3.00
	0.0820	#45	63	21	1000	1500	-0.029	450	3.00
	0.0827	2.10MM	62	21	1000	1500	-0.029	450	3.00
	0.0846	2.15MM	62	21	1000	1500	-0.030	458	3.00
	0.0860	#44	62	21	1000	1500	-0.030	464	3.00
	0.0866	2.20MM	62	21	1000	1500	-0.030	467	3.00
	0.0886	2.25MM	61	20	1000	1500	-0.031	475	3.00
0.0890	#43	61	20	1000	1500	-0.031	477	3.00	
0.0906	2.30MM	61	20	1000	1500	-0.031	484	3.00	



## 140Tg FR4 MDBT, UCMT/UCCP, WTCB

Series	Diameter		Feed	Speed	Retract	MaxHit	Z-offset	SFM	Chipload
	(in.)		(IPM)	(K-RPM)	(IPM)		(in.)		(0.001"/Rev.)
MDBT	0.0925	2.35MM	61	20	1000	1500	-0.032	492	3.00
	0.0935	#42	61	20	1000	1500	-0.032	496	3.00
	0.0938	3/32	61	20	1000	1500	-0.032	497	3.00
	0.0945	2.40MM	61	20	1000	1500	-0.032	500	3.00
	0.0960	#41	61	20	1000	1500	-0.032	507	3.00
	0.0965	2.45MM	60	20	1000	1500	-0.032	509	3.00
	0.0980	#40	60	20	1000	1500	-0.033	515	3.00
	0.0984	2.50MM	60	20	1000	1500	-0.033	517	3.00
	0.0995	#39	60	20	1000	1500	-0.033	522	3.00
	0.1004	2.55MM	60	20	1000	1500	-0.033	526	3.00
	0.1015	#38	60	20	1000	1500	-0.034	531	2.99
	0.1024	2.60MM	60	20	1000	1500	-0.034	536	2.98
	0.1040	#37	59	20	1000	1475	-0.034	545	2.96
	0.1043	2.65MM	59	20	1000	1475	-0.034	546	2.95
	0.1063	2.70MM	59	20	1000	1450	-0.035	557	2.93
	0.1065	#36	59	20	1000	1450	-0.035	558	2.93
	0.1083	2.75MM	58	20	1000	1425	-0.035	567	2.91
	0.1094	7/64	58	20	1000	1400	-0.036	573	2.90
	0.1100	#35	58	20	1000	1400	-0.036	576	2.89
	0.1102	2.80MM	58	20	1000	1400	-0.036	577	2.89
	0.1110	#34	58	20	1000	1400	-0.036	581	2.88
	0.1122	2.85MM	57	20	1000	1375	-0.036	587	2.86
	0.1130	#33	57	20	1000	1375	-0.036	592	2.85
	0.1142	2.90MM	57	20	1000	1350	-0.037	598	2.84
	0.1160	#32	56	20	1000	1325	-0.037	607	2.82
	0.1161	2.95MM	56	20	1000	1325	-0.037	608	2.82
	0.1181	3.00MM	56	20	1000	1300	-0.038	618	2.80
	0.1200	#31	55	20	1000	1275	-0.038	628	2.77
	0.1201	3.05MM	55	20	1000	1275	-0.038	629	2.77
	0.1220	3.10MM	55	20	1000	1250	-0.038	639	2.75
0.1240	3.15MM	54	20	1000	1225	-0.039	649	2.71	
0.1250	1/8	54	20	1000	1200	-0.039	654	2.69	
WTCB	0.1260	3.20MM	53	20	1000	1200	-0.018	660	2.67
	0.1280	3.25MM	53	20	1000	1150	-0.018	670	2.63
	0.1285	#30	52	20	1000	1150	-0.018	673	2.62



## 140Tg FR4 MDBT, UCMT/UCCP, WTCB

Series	Diameter		Feed	Speed	Retract	MaxHit	Z-offset	SFM	Chipload
	(in.)		(IPM)	(K-RPM)	(IPM)		(in.)		(0.001"/Rev.)
WTCB	0.1299	3.30MM	52	20	1000	1125	-0.019	680	2.59
	0.1319	3.35MM	51	20	1000	1075	-0.019	691	2.55
	0.1339	3.40MM	50	20	1000	1050	-0.019	701	2.51
	0.1358	3.45MM	49	20	1000	1025	-0.019	711	2.47
	0.1360	#29	49	20	1000	1000	-0.019	712	2.47
	0.1378	3.50MM	49	20	1000	975	-0.019	722	2.43
	0.1398	3.55MM	48	20	1000	950	-0.019	732	2.39
	0.1405	#28	48	20	1000	925	-0.019	736	2.38
	0.1406	9/64	48	20	1000	925	-0.019	736	2.38
	0.1417	3.60MM	47	20	1000	900	-0.019	742	2.36
	0.1437	3.65MM	46	20	1000	875	-0.019	752	2.32
	0.1440	#27	46	20	1000	875	-0.019	754	2.31
	0.1457	3.70MM	46	20	1000	825	-0.020	763	2.28
	0.1470	#26	45	20	1000	800	-0.020	770	2.25
	0.1476	3.75MM	45	20	1000	800	-0.020	773	2.24
	0.1495	#25	44	20	1000	775	-0.020	783	2.21
	0.1496	3.80MM	44	20	1000	775	-0.020	783	2.20
	0.1516	3.85MM	43	20	1000	775	-0.020	794	2.17
	0.1520	#24	43	20	1000	750	-0.020	796	2.16
	0.1535	3.90MM	43	20	1000	750	-0.020	804	2.14
	0.1540	#23	43	20	1000	750	-0.020	806	2.13
	0.1555	3.95MM	42	20	1000	725	-0.020	814	2.10
	0.1562	5/32	42	20	1000	725	-0.020	818	2.09
	0.1570	#22	41	20	1000	700	-0.020	822	2.07
	0.1575	4.00MM	41	20	1000	700	-0.020	825	2.07
	0.1590	#21	41	20	1000	700	-0.020	833	2.04
	0.1594	4.05MM	41	20	1000	700	-0.020	835	2.03
	0.1610	#20	40	20	1000	675	-0.021	843	2.00
	0.1614	4.10MM	40	20	1000	675	-0.021	845	2.00
	0.1634	4.15MM	39	20	1000	650	-0.021	856	1.96
	0.1654	4.20MM	39	20	1000	625	-0.021	866	1.93
	0.1660	#19	38	20	1000	625	-0.021	869	1.92
0.1673	4.25MM	38	20	1000	600	-0.021	876	1.89	
0.1693	4.30MM	37	20	1000	600	-0.021	886	1.86	
0.1695	#18	37	20	1000	575	-0.021	887	1.85	



## 140Tg FR4 MDBT, UCMT/UCCP, WTCB

Series	Diameter		Feed	Speed	Retract	MaxHit	Z-offset	SFM	Chipload
	(in.)		(IPM)	(K-RPM)	(IPM)		(in.)		(0.001"/Rev.)
WTCB	0.1713	4.35MM	36	20	1000	575	-0.021	897	1.82
	0.1719	11/64	36	20	1000	575	-0.021	900	1.81
	0.1730	#17	36	20	1000	550	-0.021	906	1.79
	0.1732	4.40MM	36	20	1000	550	-0.021	907	1.79
	0.1752	4.45MM	35	20	1000	525	-0.022	917	1.75
	0.1770	#16	34	20	1000	500	-0.022	927	1.72
	0.1772	4.50MM	34	20	1000	500	-0.022	928	1.72
	0.1791	4.55MM	34	20	1000	500	-0.022	938	1.69
	0.1800	#15	34	20	1000	475	-0.022	942	1.68
	0.1811	4.60MM	33	20	1000	475	-0.022	948	1.67
	0.1820	#14	33	20	1000	475	-0.022	953	1.66
	0.1831	4.65MM	33	20	1000	450	-0.022	959	1.64
	0.1850	4.70MM	32	20	1000	450	-0.022	969	1.62
	0.1870	4.75MM	32	20	1000	425	-0.022	979	1.59
	0.1875	3/16	32	20	1000	425	-0.022	982	1.58
	0.1890	#12 - 4.80MM	31	20	1000	400	-0.022	990	1.56
	0.1909	4.85MM	31	20	1000	400	-0.023	1000	1.54
	0.1910	#11	31	20	1000	375	-0.023	1000	1.54
	0.1929	4.90MM	30	20	1000	375	-0.023	1010	1.51
	0.1935	#10	30	20	1000	375	-0.023	1013	1.50
	0.1949	4.95MM	30	20	1000	350	-0.023	1020	1.49
	0.1960	#9	29	20	1000	350	-0.023	1026	1.47
	0.1969	5.00MM	29	20	1000	325	-0.023	1031	1.46
	0.1988	5.05MM	29	20	1000	325	-0.023	1041	1.43
	0.1990	#8	29	20	1000	325	-0.023	1042	1.43
	0.2008	5.10MM	28	20	1000	300	-0.023	1051	1.41
	0.2010	#7	28	20	1000	300	-0.023	1052	1.40
	0.2028	5.15MM	28	20	1000	275	-0.023	1062	1.38
	0.2031	13/64	28	20	1000	275	-0.023	1063	1.38
	0.2040	#6	27	20	1000	275	-0.023	1068	1.37
	0.2047	5.20MM	27	20	1000	275	-0.023	1072	1.36
	0.2055	#5	27	20	1000	250	-0.024	1076	1.35
	0.2067	5.25MM	27	20	1000	250	-0.024	1082	1.33
0.2087	5.30MM	26	20	1000	225	-0.024	1093	1.30	
0.2090	#4	26	20	1000	225	-0.024	1094	1.30	





## 140Tg FR4 MDBT, UCMT/UCCP, WTCB

Series	Diameter (in.)		Feed (IPM)	Speed (K-RPM)	Retract (IPM)	MaxHit	Z-offset (in.)	SFM	Chipload (0.001"/Rev.)
WTCB	0.2106	5.35MM	26	20	1000	200	-0.024	1103	1.28
	0.2126	5.40MM	25	20	1000	200	-0.024	1113	1.26
	0.2130	#3	25	20	1000	200	-0.024	1115	1.25
	0.2146	5.45MM	25	20	1000	200	-0.024	1124	1.24
	0.2165	5.50MM	24	20	1000	200	-0.024	1134	1.22
	0.2185	5.55MM	24	20	1000	200	-0.024	1144	1.20
	0.2188	7/32	24	20	1000	200	-0.024	1146	1.20
	0.2205	5.60MM	24	20	1000	200	-0.025	1155	1.18
	0.2210	#2	24	20	1000	200	-0.025	1157	1.18
	0.2224	5.65MM	23	20	1000	200	-0.025	1164	1.16
	0.2244	5.70MM	23	20	1000	200	-0.025	1175	1.14
	0.2264	5.75MM	22	20	1000	200	-0.025	1185	1.12
	0.2280	#1	22	20	1000	200	-0.025	1194	1.11
	0.2283	5.80MM	22	20	1000	200	-0.025	1195	1.10
	0.2303	5.85MM	22	20	1000	200	-0.025	1206	1.08
	0.2323	5.90MM	21	20	1000	200	-0.025	1216	1.06
	0.2340	#A	21	20	1000	200	-0.025	1225	1.05
	0.2343	5.95MM	21	20	1000	200	-0.025	1227	1.04
	0.2344	15/64	21	20	1000	200	-0.025	1227	1.04
	0.2362	6.00MM	21	20	1000	200	-0.026	1237	1.03
	0.2380	#B	20	20	1000	200	-0.026	1246	1.01
	0.2382	6.05MM	20	20	1000	200	-0.026	1247	1.01
	0.2402	6.10MM	20	20	1000	200	-0.026	1258	0.99
	0.2420	#C	19	20	1000	200	-0.026	1267	0.97
	0.2421	6.15MM	19	20	1000	200	-0.026	1268	0.97
	0.2441	6.20MM	19	20	1000	200	-0.026	1278	0.95
	0.2460	#D	19	20	1000	200	-0.026	1288	0.93
	0.2461	6.25MM	19	20	1000	200	-0.026	1289	0.93
	0.2480	6.30MM	18	20	1000	200	-0.026	1299	0.91
	0.2500	1/4 - 6.35MM	18	20	1000	200	-0.026	1309	0.89