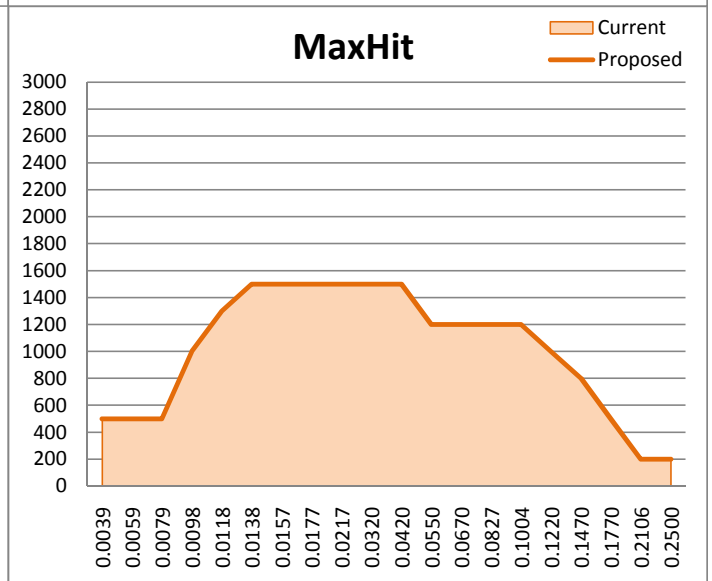
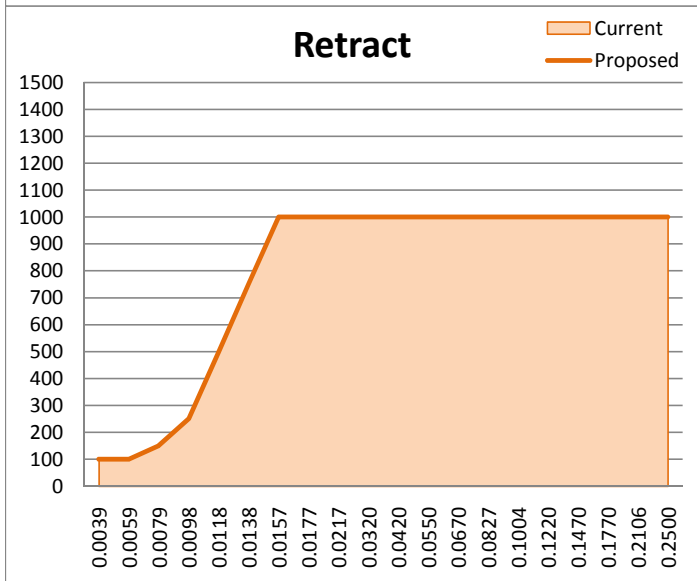
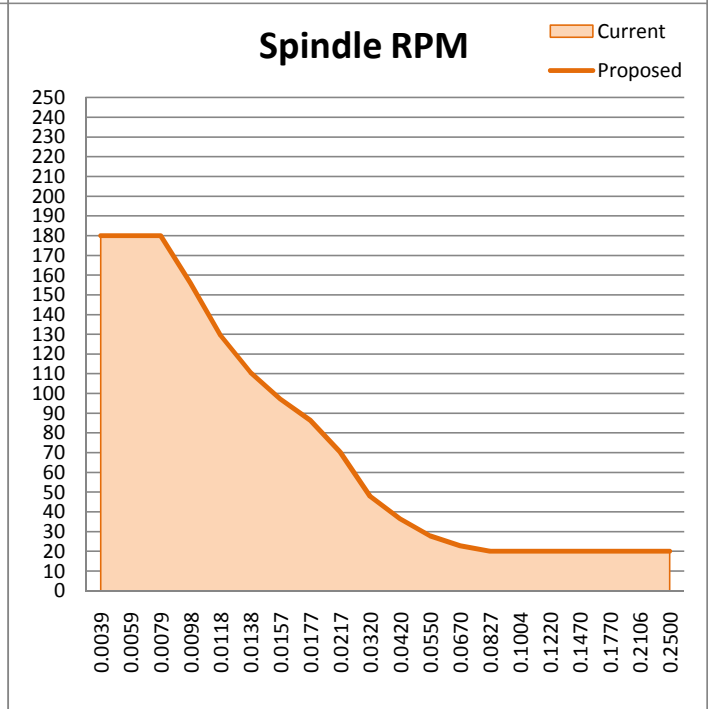
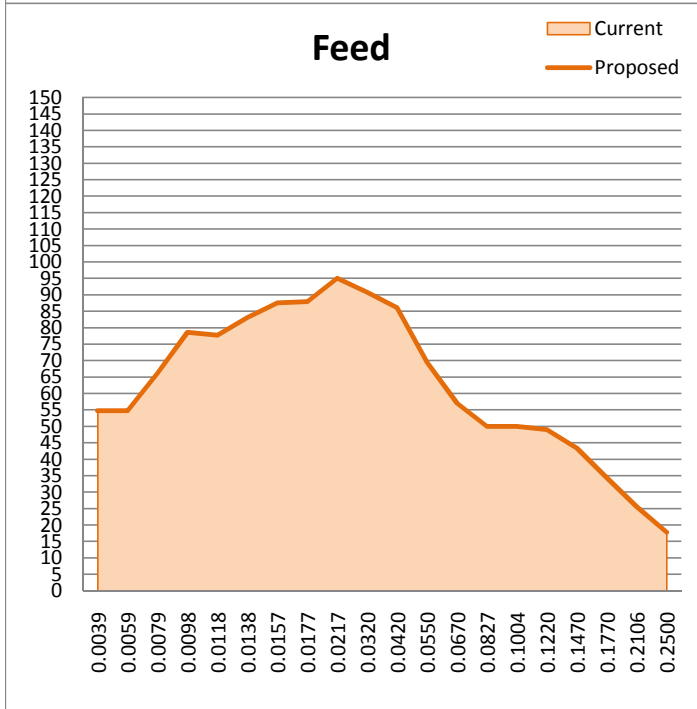
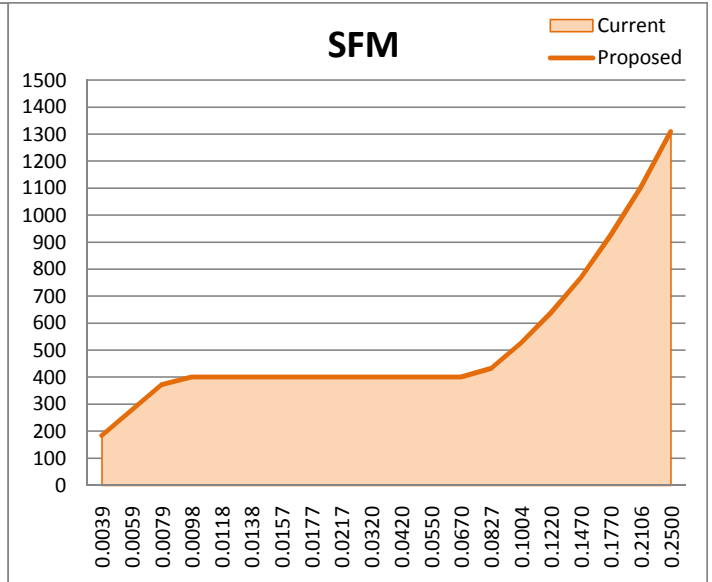
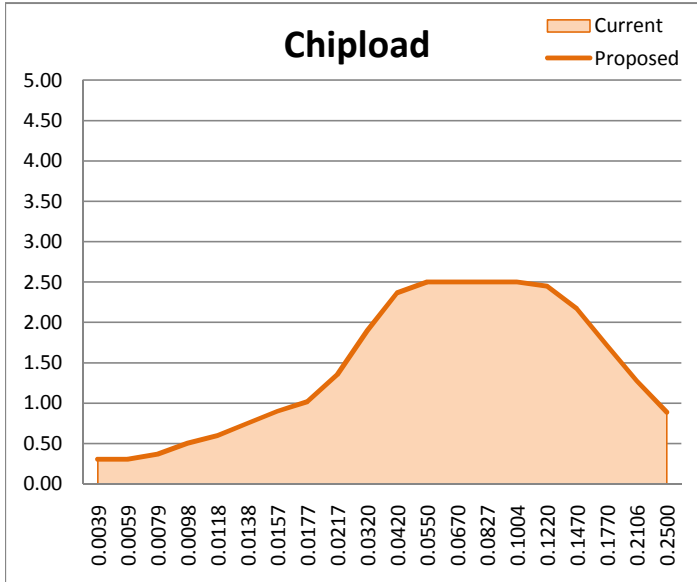




Application:	
Material Type:	170Tg FR4
Drill Designs:	MDBT, UCMT/UCCP, WTCB

Process Parameters:	
Cutting Speed (SFM)	400
Maximum Chipload (0.001"/Revolution)	2.50
Maximum Hit Count	1500
Maximum Spindle RPM	180
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	0.30		100	500
2	0.0059	#97 - 0.15MM	0.30		100	500
3	0.0079	#92 - 0.20MM	0.37		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	1.02		1000	1500
9	0.0217	0.55MM	1.35		1000	1500
10	0.0320	#67	1.90		1000	1500
11	0.0420	#58	2.37		1000	1500
12	0.0550	#54	2.50		1000	1200
13	0.0670	#51	2.50		1000	1200
14	0.0827	2.10MM	2.50		1000	1200
15	0.1004	2.55MM	2.50		1000	1200
16	0.1220	3.10MM	2.45		1000	1000
17	0.1470	#26	2.17		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





## 170Tg 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	0.0039	0.10MM	55	180	100	500	-0.011	184	0.30
	0.0051	0.13MM	55	180	100	500	-0.011	240	0.30
	0.0059	#97 - 0.15MM	55	180	100	500	-0.011	278	0.30
	0.0063	#96	57	180	110	500	-0.011	297	0.32
	0.0067	#95	59	180	120	500	-0.012	316	0.33
	0.0071	#94	62	180	130	500	-0.012	335	0.34
	0.0075	#93	64	180	140	500	-0.012	353	0.36
UCMT / UCCP	0.0079	#92 - 0.20MM	66	180	150	500	-0.012	372	0.37
	0.0083	#91	69	174	171	625	-0.012	378	0.40
	0.0087	#90	72	169	192	725	-0.012	384	0.43
	0.0091	#89	74	164	213	825	-0.012	390	0.45
	0.0095	#88	77	159	234	925	-0.012	396	0.48
	0.0098	0.25MM	79	156	250	1000	-0.012	400	0.50
	0.0100	#87	78	153	275	1050	-0.012	400	0.51
	0.0105	#86	78	146	338	1125	-0.012	400	0.54
	0.0110	#85	78	139	400	1200	-0.013	400	0.56
	0.0115	#84	78	133	463	1275	-0.013	400	0.59
	0.0118	0.30MM	78	129	500	1300	-0.013	400	0.60
	0.0120	#83	78	127	525	1325	-0.013	400	0.62
	0.0125	#82	80	122	588	1375	-0.013	400	0.65
	0.0130	#81	81	118	650	1425	-0.013	400	0.69
	0.0135	#80	82	113	713	1475	-0.013	400	0.73
	0.0138	0.35MM	83	111	750	1500	-0.013	400	0.75
	0.0145	#79	85	105	842	1500	-0.013	400	0.81
	0.0156	1/64	87	98	987	1500	-0.014	400	0.89
	0.0157	0.40MM	88	97	1000	1500	-0.014	400	0.90
	0.0160	#78	88	95	1000	1500	-0.014	400	0.92
	0.0177	0.45MM	88	86	1000	1500	-0.014	400	1.02
	0.0180	#77	89	85	1000	1500	-0.014	400	1.04
	0.0197	0.50MM	92	78	1000	1500	-0.015	400	1.18
0.0200	#76	92	76	1000	1500	-0.015	400	1.21	
MDBT	0.0210	#75	94	73	1000	1500	-0.015	400	1.29
	0.0217	0.55MM	95	70	1000	1500	-0.015	400	1.35
	0.0225	#74	95	68	1000	1500	-0.015	400	1.39
	0.0236	0.60MM	94	65	1000	1500	-0.016	400	1.45



## 170Tg 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	94	64	1000	1500	-0.016	400	1.47
	0.0250	#72	93	61	1000	1500	-0.016	400	1.53
	0.0256	0.65MM	93	60	1000	1500	-0.016	400	1.56
	0.0260	#71	93	59	1000	1500	-0.016	400	1.58
	0.0276	0.70MM	92	55	1000	1500	-0.016	400	1.67
	0.0280	#70	92	55	1000	1500	-0.017	400	1.69
	0.0292	#69	92	52	1000	1500	-0.017	400	1.75
	0.0295	0.75MM	91	52	1000	1500	-0.017	400	1.77
	0.0310	#68	91	49	1000	1500	-0.017	400	1.85
	0.0312	1/32	91	49	1000	1500	-0.017	400	1.86
	0.0315	0.80MM	91	49	1000	1500	-0.017	400	1.87
	0.0320	#67	91	48	1000	1500	-0.017	400	1.90
	0.0330	#66	90	46	1000	1500	-0.018	400	1.95
	0.0335	0.85MM	90	46	1000	1500	-0.018	400	1.97
	0.0350	#65	89	44	1000	1500	-0.018	400	2.04
	0.0354	0.90MM	89	43	1000	1500	-0.018	400	2.06
	0.0360	#64	89	42	1000	1500	-0.018	400	2.09
	0.0370	#63	88	41	1000	1500	-0.019	400	2.13
	0.0374	0.95MM	88	41	1000	1500	-0.019	400	2.15
	0.0380	#62	88	40	1000	1500	-0.019	400	2.18
	0.0390	#61	87	39	1000	1500	-0.019	400	2.23
	0.0394	1.00MM	87	39	1000	1500	-0.019	400	2.24
	0.0400	#60	87	38	1000	1500	-0.019	400	2.27
	0.0410	#59	86	37	1000	1500	-0.020	400	2.32
	0.0413	1.05MM	86	37	1000	1500	-0.020	400	2.33
	0.0420	#58	86	36	1000	1500	-0.020	400	2.37
	0.0430	#57	84	36	1000	1500	-0.020	400	2.38
	0.0433	1.10MM	84	35	1000	1475	-0.020	400	2.38
	0.0441	1.12MM	83	35	1000	1475	-0.020	400	2.39
	0.0453	1.15MM	81	34	1000	1425	-0.021	400	2.40
	0.0465	#56	79	33	1000	1400	-0.021	400	2.41
	0.0469	3/64	79	33	1000	1400	-0.021	400	2.42
0.0472	1.20MM	78	32	1000	1400	-0.021	400	2.42	
0.0492	1.25MM	76	31	1000	1350	-0.021	400	2.44	
0.0512	1.30MM	73	30	1000	1300	-0.022	400	2.46	



## 170Tg 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	73	29	1000	1275	-0.022	400	2.47
	0.0531	1.35MM	71	29	1000	1250	-0.022	400	2.48
	0.0550	#54	69	28	1000	1200	-0.023	400	2.50
	0.0551	1.40MM	69	28	1000	1200	-0.023	400	2.50
	0.0571	1.45MM	67	27	1000	1200	-0.023	400	2.50
	0.0591	1.50MM	65	26	1000	1200	-0.024	400	2.50
	0.0595	#53	64	26	1000	1200	-0.024	400	2.50
	0.0610	1.55MM	63	25	1000	1200	-0.024	400	2.50
	0.0625	1/16	61	24	1000	1200	-0.025	400	2.50
	0.0630	1.60MM	61	24	1000	1200	-0.025	400	2.50
	0.0635	#52	60	24	1000	1200	-0.025	400	2.50
	0.0650	1.65MM	59	24	1000	1200	-0.025	400	2.50
	0.0669	1.70MM	57	23	1000	1200	-0.026	400	2.50
	0.0670	#51	57	23	1000	1200	-0.026	400	2.50
	0.0689	1.75MM	56	22	1000	1200	-0.026	404	2.50
	0.0700	#50	55	22	1000	1200	-0.026	406	2.50
	0.0709	1.80MM	55	22	1000	1200	-0.027	408	2.50
	0.0728	1.85MM	54	22	1000	1200	-0.027	412	2.50
	0.0730	#49	54	22	1000	1200	-0.027	413	2.50
	0.0748	1.90MM	53	21	1000	1200	-0.027	416	2.50
	0.0760	#48	53	21	1000	1200	-0.028	419	2.50
	0.0768	1.95MM	52	21	1000	1200	-0.028	421	2.50
	0.0781	5/64	52	21	1000	1200	-0.028	423	2.50
	0.0785	#47	52	21	1000	1200	-0.028	424	2.50
	0.0787	2.00MM	52	21	1000	1200	-0.028	425	2.50
	0.0807	2.05MM	51	20	1000	1200	-0.029	429	2.50
	0.0810	#46	51	20	1000	1200	-0.029	429	2.50
	0.0820	#45	50	20	1000	1200	-0.029	432	2.50
	0.0827	2.10MM	50	20	1000	1200	-0.029	433	2.50
	0.0846	2.15MM	50	20	1000	1200	-0.030	443	2.50
	0.0860	#44	50	20	1000	1200	-0.030	450	2.50
	0.0866	2.20MM	50	20	1000	1200	-0.030	453	2.50
	0.0886	2.25MM	50	20	1000	1200	-0.031	464	2.50
0.0890	#43	50	20	1000	1200	-0.031	466	2.50	
0.0906	2.30MM	50	20	1000	1200	-0.031	474	2.50	



## 170Tg 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	50	20	1000	1200	-0.032	484	2.50
	0.0935	#42	50	20	1000	1200	-0.032	490	2.50
	0.0938	3/32	50	20	1000	1200	-0.032	491	2.50
	0.0945	2.40MM	50	20	1000	1200	-0.032	495	2.50
	0.0960	#41	50	20	1000	1200	-0.032	503	2.50
	0.0965	2.45MM	50	20	1000	1200	-0.032	505	2.50
	0.0980	#40	50	20	1000	1200	-0.033	513	2.50
	0.0984	2.50MM	50	20	1000	1200	-0.033	515	2.50
	0.0995	#39	50	20	1000	1200	-0.033	521	2.50
	0.1004	2.55MM	50	20	1000	1200	-0.033	526	2.50
	0.1015	#38	50	20	1000	1200	-0.034	531	2.50
	0.1024	2.60MM	50	20	1000	1200	-0.034	536	2.50
	0.1040	#37	50	20	1000	1175	-0.034	545	2.49
	0.1043	2.65MM	50	20	1000	1175	-0.034	546	2.49
	0.1063	2.70MM	50	20	1000	1150	-0.035	557	2.49
	0.1065	#36	50	20	1000	1150	-0.035	558	2.49
	0.1083	2.75MM	50	20	1000	1150	-0.035	567	2.48
	0.1094	7/64	50	20	1000	1125	-0.036	573	2.48
	0.1100	#35	50	20	1000	1125	-0.036	576	2.48
	0.1102	2.80MM	50	20	1000	1125	-0.036	577	2.48
	0.1110	#34	50	20	1000	1125	-0.036	581	2.48
	0.1122	2.85MM	49	20	1000	1100	-0.036	587	2.47
	0.1130	#33	49	20	1000	1100	-0.036	592	2.47
	0.1142	2.90MM	49	20	1000	1075	-0.037	598	2.47
	0.1160	#32	49	20	1000	1075	-0.037	607	2.46
	0.1161	2.95MM	49	20	1000	1075	-0.037	608	2.46
	0.1181	3.00MM	49	20	1000	1050	-0.038	618	2.46
	0.1200	#31	49	20	1000	1025	-0.038	628	2.45
	0.1201	3.05MM	49	20	1000	1025	-0.038	629	2.45
	0.1220	3.10MM	49	20	1000	1000	-0.038	639	2.45
0.1240	3.15MM	49	20	1000	1000	-0.039	649	2.43	
0.1250	1/8	48	20	1000	1000	-0.039	654	2.42	
WTCB	0.1260	3.20MM	48	20	1000	975	-0.018	660	2.40
	0.1280	3.25MM	48	20	1000	975	-0.018	670	2.38
	0.1285	#30	48	20	1000	950	-0.018	673	2.38



## 170Tg 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	47	20	1000	950	-0.019	680	2.36
	0.1319	3.35MM	47	20	1000	925	-0.019	691	2.34
	0.1339	3.40MM	46	20	1000	925	-0.019	701	2.32
	0.1358	3.45MM	46	20	1000	900	-0.019	711	2.29
	0.1360	#29	46	20	1000	900	-0.019	712	2.29
	0.1378	3.50MM	45	20	1000	875	-0.019	722	2.27
	0.1398	3.55MM	45	20	1000	875	-0.019	732	2.25
	0.1405	#28	45	20	1000	875	-0.019	736	2.24
	0.1406	9/64	45	20	1000	875	-0.019	736	2.24
	0.1417	3.60MM	45	20	1000	850	-0.019	742	2.23
	0.1437	3.65MM	44	20	1000	850	-0.019	752	2.20
	0.1440	#27	44	20	1000	825	-0.019	754	2.20
	0.1457	3.70MM	44	20	1000	825	-0.020	763	2.18
	0.1470	#26	43	20	1000	800	-0.020	770	2.17
	0.1476	3.75MM	43	20	1000	800	-0.020	773	2.16
	0.1495	#25	43	20	1000	775	-0.020	783	2.13
	0.1496	3.80MM	43	20	1000	775	-0.020	783	2.13
	0.1516	3.85MM	42	20	1000	775	-0.020	794	2.10
	0.1520	#24	42	20	1000	750	-0.020	796	2.09
	0.1535	3.90MM	41	20	1000	750	-0.020	804	2.07
	0.1540	#23	41	20	1000	750	-0.020	806	2.06
	0.1555	3.95MM	41	20	1000	725	-0.020	814	2.04
	0.1562	5/32	41	20	1000	725	-0.020	818	2.03
	0.1570	#22	40	20	1000	700	-0.020	822	2.02
	0.1575	4.00MM	40	20	1000	700	-0.020	825	2.01
	0.1590	#21	40	20	1000	700	-0.020	833	1.99
	0.1594	4.05MM	40	20	1000	700	-0.020	835	1.98
	0.1610	#20	39	20	1000	675	-0.021	843	1.96
	0.1614	4.10MM	39	20	1000	675	-0.021	845	1.95
	0.1634	4.15MM	38	20	1000	650	-0.021	856	1.92
	0.1654	4.20MM	38	20	1000	625	-0.021	866	1.89
	0.1660	#19	38	20	1000	625	-0.021	869	1.89
0.1673	4.25MM	37	20	1000	600	-0.021	876	1.87	
0.1693	4.30MM	37	20	1000	600	-0.021	886	1.84	
0.1695	#18	37	20	1000	575	-0.021	887	1.83	



## 170Tg 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	1.81
	0.1719	11/64	36	20	1000	575	-0.021	900	1.80
	0.1730	#17	36	20	1000	550	-0.021	906	1.78
	0.1732	4.40MM	36	20	1000	550	-0.021	907	1.78
	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	





## 170Tg 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