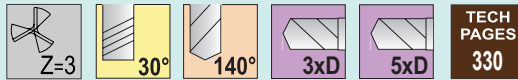


**TOLERANCES**

<i>d</i>	+0.000" - .0005" (+0.000 - .0127mm)
<i>l<sub>1</sub></i>	+0.125" - .125" (+3.175 - 3.175mm)
<i>l<sub>2</sub></i>	+0.125" - .125" (+3.175 - 3.175mm)

**NEW ITEMS**

**Series 1160, 1180**



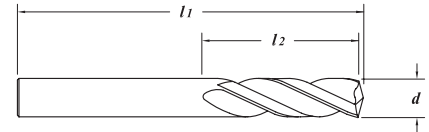
.1562" - .1910"  
(3.967mm - 4.851mm)

**HIGH PERFORMANCE DRILLS**

Recommended for aluminum and other soft materials <40 Rc

**Alumastar Coated**

- High performance solid submicron grain carbide drill
- No spot drilling required
- Unique point geometry and coating for higher speeds and feeds
- High performance drill point
- Live tooling recommended on lathe processes



3xD (1160) EDP#	5xD (1180) EDP#	<i>d</i> † Diameter		<i>l<sub>1</sub></i> Overall Length	<i>l<sub>2</sub></i> Flute Length	1-11	12-24	25-49	50-100	
		Decimal	Metric							
70631		.1562	5/32"	3.967	2-1/16"	9/16"	42.99	41.12	39.25	37.38
	70161	.1562	5/32"	3.967	2-1/2"	1"	44.26	42.34	40.41	38.49
70633		.1570	#22	3.988	2-1/8"	5/8"	43.39	41.50	39.62	37.73
	70163	.1570	#22	3.988	2-1/2"	1"	44.59	42.65	40.71	38.77
70635		.1575		4.000	54	16	43.73	41.83	39.93	38.03
	70166	.1575		4.000	65	24	44.92	42.97	41.01	39.06
70637		.1590	#21	4.039	2-1/8"	5/8"	44.11	42.20	40.28	38.36
	70177	.1590	#21	4.039	2-1/2"	1"	45.23	43.26	41.30	39.33
70639		.1610	#20	4.089	2-1/8"	5/8"	44.49	42.56	40.62	38.69
	70179	.1610	#20	4.089	2-1/2"	1"	45.61	43.63	41.64	39.66
70641		.1660	#19	4.216	2-1/8"	5/8"	44.87	42.92	40.97	39.02
	70181	.1660	#19	4.216	2-3/4"	1-1/8"	45.93	43.93	41.94	39.94
70643		.1695	#18	4.305	2-1/8"	5/8"	45.22	43.25	41.29	39.32
	70183	.1695	#18	4.305	2-3/4"	1-1/8"	46.23	44.22	42.21	40.20
70645		.1719	11/64"	4.366	2-1/8"	5/8"	45.61	43.63	41.64	39.66
	70185	.1719	11/64"	4.366	2-3/4"	1-1/8"	46.56	44.54	42.51	40.49
70647		.1730	#17	4.394	2-3/16"	11/16"	45.98	43.98	41.98	39.98
	70187	.1730	#17	4.394	2-3/4"	1-1/8"	46.89	44.85	42.81	40.77
70649		.1770	#16	4.496	2-3/16"	11/16"	46.30	44.29	42.27	40.26
	70189	.1770	#16	4.496	2-3/4"	1-1/8"	47.24	45.19	43.13	41.08
70651		.1772		4.500	55	18	46.69	44.66	42.63	40.60
	70191	.1772		4.500	65	25	47.46	45.40	43.33	41.27
70653		.1800	#15	4.572	2-3/16"	11/16"	47.00	44.96	42.91	40.87
	70196	.1800	#15	4.572	2-3/4"	1-1/4"	47.86	45.78	43.70	41.62
70655		.1820	#14	4.623	2-3/16"	11/16"	47.44	45.38	43.31	41.25
	70201	.1820	#14	4.623	2-3/4"	1-1/4"	48.19	46.09	44.00	41.90
70657		.1850	#13	4.700	2-3/16"	11/16"	47.78	45.71	43.63	41.55
	70206	.1850	#13	4.700	2-3/4"	1-1/4"	48.54	46.43	44.32	42.21
70659		.1875	3/16"	4.763	2-3/16"	11/16"	48.16	46.07	43.97	41.88
	70211	.1875	3/16"	4.763	2-3/4"	1-1/4"	48.70	46.59	44.47	42.35
70661		.1890	#12	4.801	2-1/4"	3/4"	49.74	47.58	45.41	43.25
	70216	.1890	#12	4.801	2-3/4"	1-1/4"	50.51	48.31	46.12	43.92
70663		.1910	#11	4.851	2-1/4"	3/4"	50.20	48.02	45.83	43.65
	70221	.1910	#11	4.851	2-3/4"	1-1/4"	50.82	48.61	46.40	44.19

continued →

Series 1160, 1180 (continued)

.1935" - .2570"  
(4.914mm - 6.528mm)

3xD (1160) EDP#	5xD (1180) EDP#	$d$ † Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
		Decimal	Metric							
70665	70226	.1935	#10	4.914	2-1/4"	3/4"	50.50	48.30	46.11	43.91
		.1935	#10	4.914	2-3/4"	1-1/4"	51.14	48.92	46.69	44.47
70667	70229	.1960	#9	4.978	2-1/4"	3/4"	50.85	48.64	46.43	44.22
		.1960	#9	4.978	3"	1-5/16"	51.44	49.20	46.97	44.73
70669	70231	.1969		5.000	57	19	51.13	48.91	46.68	44.46
		.1969		5.000	75	32	51.77	49.52	47.27	45.02
70671	70236	.1990	#8	5.055	2-1/4"	3/4"	51.61	49.37	47.12	44.88
		.1990	#8	5.055	3"	1-5/16"	52.03	49.76	47.50	45.24
70673	70241	.2010	#7	5.105	2-1/4"	3/4"	51.76	49.51	47.26	45.01
		.2010	#7	5.105	3"	1-5/16"	52.23	49.96	47.69	45.42
70675	70246	.2031	13/64"	5.159	2-1/4"	3/4"	52.11	49.84	47.58	45.31
		.2031	13/64"	5.159	3"	1-5/16"	52.60	50.31	48.03	45.74
70677	70251	.2040	#6	5.182	2-3/8"	7/8"	52.46	50.18	47.90	45.62
		.2040	#6	5.182	3"	1-3/8"	52.96	50.66	48.35	46.05
70679	70256	.2055	#5	5.220	2-3/8"	7/8"	52.85	50.56	48.26	45.96
		.2055	#5	5.220	3"	1-3/8"	53.30	50.99	48.67	46.35
70681	70261	.2090	#4	5.309	2-3/8"	7/8"	53.16	50.85	48.54	46.23
		.2090	#4	5.309	3"	1-3/8"	53.60	51.27	48.94	46.61
70683	70266	.2130	#3	5.410	2-3/8"	7/8"	53.52	51.19	48.87	46.54
		.2130	#3	5.410	3"	1-3/8"	53.96	51.61	49.27	46.92
70685	70271	.2165		5.500	60	22	53.85	51.51	49.17	46.83
		.2165		5.500	75	35	54.28	51.92	49.56	47.20
70687	70276	.2188	7/32"	5.558	2-3/8"	7/8"	54.30	51.94	49.58	47.22
		.2188	7/32"	5.558	3"	1-3/8"	54.60	52.23	49.85	47.48
70689	70281	.2210	#2	5.613	2-7/16"	15/16"	54.69	52.32	49.94	47.56
		.2210	#2	5.613	3"	1-3/8"	55.69	53.27	50.85	48.43
70691	70286	.2280	#1	5.791	2-7/16"	15/16"	55.11	52.71	50.32	47.92
		.2280	#1	5.791	3"	1-3/8"	55.96	53.53	51.09	48.66
70693	70294	.2340	A	5.944	2-7/16"	15/16"	55.49	53.08	50.66	48.25
		.2340	A	5.944	3-1/4"	1-1/2"	56.52	54.07	51.61	49.15
70695	70296	.2344	15/64"	5.954	2-7/16"	15/16"	55.91	53.48	51.05	48.62
		.2344	15/64"	5.954	3-1/4"	1-1/2"	57.09	54.60	52.12	49.64
70697	70301	.2362		6.000	64	26	56.29	53.85	51.40	48.95
		.2362		6.000	82	38	57.25	54.76	52.27	49.78
70699	70306	.2380	B	6.045	2-1/2"	1"	56.68	54.22	51.75	49.29
		.2380	B	6.045	3-1/4"	1-5/8"	57.41	54.91	52.42	49.92
70701	70311	.2420	C	6.147	2-1/2"	1"	57.14	54.66	52.17	49.69
		.2420	C	6.147	3-1/4"	1-5/8"	57.78	55.26	52.75	50.24
70703	70316	.2460	D	6.248	2-1/2"	1"	57.45	54.96	52.46	49.96
		.2460	D	6.248	3-1/4"	1-5/8"	58.12	55.59	53.07	50.54
70705	70321	.2500	1/4" / E	6.350	2-1/2"	1"	57.95	55.43	52.91	50.39
		.2500	1/4" / E	6.350	3-1/4"	1-5/8"	58.43	55.89	53.35	50.81
70707	70911	.2510		6.375	2-1/2"	1"	58.70	56.14	53.59	51.04
		.2510		6.375	3-1/4"	1-5/8"	59.33	56.75	54.17	51.59
70709	70326	.2559		6.500	66	28	60.97	58.32	55.67	53.02
		.2559		6.500	82	41	61.99	59.29	56.60	53.90
70711	70331	.2570	F	6.528	2-5/8"	1-1/8"	61.94	59.25	56.55	53.86
		.2570	F	6.528	3-1/4"	1-11/16"	62.92	60.18	57.45	54.71

3xD (1160) EDP#	5xD (1180) EDP#	$d$ † Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
		Decimal	Metric							
70713		.2610	G	6.629	2-5/8"	1-1/8"	62.88	60.15	57.41	54.68
	70336	.2610	G	6.629	3-1/2"	1-11/16"	63.88	61.11	58.33	55.55
70715		.2656	17/64"	6.746	2-5/8"	1-1/8"	63.83	61.05	58.28	55.50
	70341	.2656	17/64"	6.746	3-1/2"	1-11/16"	64.83	62.01	59.19	56.37
70717		.2660	H	6.756	2-11/16"	1-3/16"	64.78	61.96	59.15	56.33
	70346	.2660	H	6.756	3-1/2"	1-11/16"	65.81	62.95	60.09	57.23
70719		.2720	I	6.909	2-11/16"	1-3/16"	64.93	62.11	59.28	56.46
	70351	.2720	I	6.909	3-1/2"	1-11/16"	66.76	63.86	60.95	58.05
70721		.2756		7.000	68	30	65.87	63.01	60.14	57.28
	70356	.2756		7.000	88	43	67.70	64.76	61.81	58.87
70723		.2770	J	7.036	2-11/16"	1-3/16"	66.79	63.89	60.98	58.08
	70361	.2770	J	7.036	3-1/2"	1-11/16"	68.67	65.68	62.70	59.71
70725		.2812	9/32"	7.142	2-11/16"	1-3/16"	68.70	65.71	62.73	59.74
	70371	.2812	9/32"	7.142	3-1/2"	1-3/4"	70.60	67.53	64.46	61.39
70727		.2900	L	7.366	2-3/4"	1-1/4"	69.63	66.61	63.58	60.55
	70376	.2900	L	7.366	3-1/2"	1-3/4"	71.48	68.38	65.27	62.16
70728		.2950	M	7.493	2-3/4"	1-1/4"	70.98	67.89	64.81	61.72
	70378	.2950	M	7.493	3-3/4"	1-7/8"	72.42	69.27	66.12	62.97
<b>NEW</b>	70729	.2953		7.500	70	32	70.98	67.89	64.81	61.72
	70381	.2953		7.500	95	44	72.42	69.27	66.12	62.97
70731		.2969	19/64"	7.541	2-3/4"	1-1/4"	71.62	68.51	65.39	62.28
	70386	.2969	19/64"	7.541	3-3/4"	1-7/8"	73.05	69.87	66.70	63.52
70733		.3020	N	7.671	2-15/16"	1-7/16"	73.91	70.70	67.48	64.27
	70391	.3020	N	7.671	3-3/4"	1-7/8"	75.70	72.41	69.12	65.83
70735		.3125	5/16"	7.938	2-15/16"	1-7/16"	74.18	70.95	67.73	64.50
	70396	.3125	5/16"	7.938	3-3/4"	1-7/8"	75.90	72.60	69.30	66.00
70737		.3150		8.000	76	36	78.29	74.89	71.48	68.08
	70401	.3150		8.000	95	48	80.10	76.62	73.13	69.65
70739		.3160	O	8.026	2-15/16"	1-7/16"	78.29	74.89	71.48	68.08
	70406	.3160	O	8.026	3-3/4"	1-7/8"	80.10	76.62	73.13	69.65
70741		.3230	P	8.204	2-15/16"	1-7/16"	78.86	75.43	72.00	68.57
	70411	.3230	P	8.204	3-3/4"	2-3/32"	80.36	76.87	73.37	69.88
70743		.3281	21/64"	8.334	2-15/16"	1-7/16"	80.30	76.81	73.32	69.83
	70416	.3281	21/64"	8.334	4"	2-3/32"	81.05	77.53	74.00	70.48
70745		.3320	Q	8.433	3"	1-7/16"	81.74	78.19	74.63	71.08
	70421	.3320	Q	8.433	4"	2-3/32"	82.54	78.95	75.36	71.77
70747		.3346		8.500	76	36	82.10	78.53	74.96	71.39
	70426	.3346		8.500	100	53	83.10	79.49	75.87	72.26
70749		.3390	R	8.611	3"	1-7/16"	84.31	80.64	76.98	73.31
	70431	.3390	R	8.611	4"	2-3/32"	85.17	81.47	77.76	74.06
70751		.3438	11/32"	8.733	3"	1-7/16"	86.15	82.40	78.66	74.91
	70436	.3438	11/32"	8.733	4"	2-3/16"	87.95	84.13	80.30	76.48
70753		.3480	S	8.839	3-1/16"	1-1/2"	90.09	86.17	82.26	78.34
	70441	.3480	S	8.839	4"	2-3/16"	93.01	88.97	84.92	80.88
70755		.3543		9.000	78	38	92.38	88.36	84.35	80.33
	70446	.3543		9.000	100	55	93.52	89.45	85.39	81.32
<b>NEW</b>	70757	.3580	T	9.093	3-1/16"	1-1/2"	97.18	92.95	88.73	84.50
	70451	.3580	T	9.093	4-1/4"	2-9/32"	98.54	94.26	89.97	85.69
70759		.3594	23/64"	9.129	3-1/16"	1-1/2"	97.78	93.53	89.28	85.03
	70456	.3594	23/64"	9.129	4-1/4"	2-9/32"	99.06	94.75	90.45	86.14

continued →

Series 1160, 1180 (continued)

.3680" - .5118"  
(9.347mm - 13.000mm)

3xD (1160) EDP#	5xD (1180) EDP#	$d$ † Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
		Decimal	Metric							
70761		.3680	U	9.347	3-1/8"	1-9/16"	98.61	94.33	90.04	85.75
	70461	.3680	U	9.347	4-1/4"	2-9/32"	103.72	99.21	94.70	90.19
70763		.3740		9.500	79	39	99.43	95.11	90.78	86.46
	70466	.3740		9.500	108	58	104.64	100.09	95.54	90.99
70765		.3750	3/8"	9.525	3-1/8"	1-9/16"	100.03	95.68	91.33	86.98
	70471	.3750	3/8"	9.525	4-1/4"	2-3/8"	105.57	100.98	96.39	91.80
70767		.3760		9.550	3-1/8"	1-9/16"	101.94	97.50	93.07	88.64
	70913	.3760		9.550	4-1/4"	2-3/8"	106.98	102.33	97.68	93.03
70769		.3770	V	9.576	3-1/4"	1-5/8"	103.86	99.34	94.83	90.31
	70476	.3770	V	9.576	4-1/4"	2-3/8"	108.38	103.66	98.95	94.24
70771		.3860	W	9.804	3-1/4"	1-5/8"	105.67	101.08	96.48	91.89
	70481	.3860	W	9.804	4-1/2"	2-3/8"	110.10	105.31	100.53	95.74
70773		.3906	25/64"	9.921	3-1/4"	1-5/8"	107.01	102.36	97.70	93.05
	70486	.3906	25/64"	9.921	4-1/2"	2-3/8"	111.33	106.49	101.65	96.81
<b>NEW</b>	70775	.3937		10.000	84	43	110.25	105.46	100.66	95.87
	70491	.3937		10.000	114	60	114.34	109.37	104.40	99.43
70777		.3970	X	10.084	3-5/16"	1-11/16"	111.76	106.90	102.04	97.18
	70496	.3970	X	10.084	4-1/2"	2-1/2"	115.52	110.50	105.47	100.45
70779		.4040	Y	10.262	3-5/16"	1-11/16"	112.48	107.59	102.70	97.81
	70501	.4040	Y	10.262	4-1/2"	2-9/16"	118.71	113.55	108.39	103.23
70781		.4062	13/32"	10.317	3-5/16"	1-11/16"	115.95	110.91	105.87	100.83
	70506	.4062	13/32"	10.317	4-1/2"	2-9/16"	119.63	114.43	109.23	104.03
70783		.4134		10.500	85	43	117.02	111.94	106.85	101.76
	70511	.4134		10.500	114	67	120.64	115.39	110.15	104.90
70785		.4219	27/64"	10.716	3-3/8"	1-11/16"	118.14	113.00	107.87	102.73
	70516	.4219	27/64"	10.716	4-1/2"	2-11/16"	121.65	116.36	111.07	105.78
<b>NEW</b>	70787	.4331		11.000	87	45	126.45	120.96	115.46	109.96
	70521	.4331		11.000	114	68	129.79	124.15	118.50	112.86
70789		.4375	7/16"	11.113	3-7/16"	1-3/4"	126.80	121.29	115.77	110.26
	70526	.4375	7/16"	11.113	4-3/4"	2-13/16"	130.27	124.61	118.94	113.28
<b>NEW</b>	70791	.4528		11.500	90	47	134.47	128.62	122.78	116.93
	70531	.4528		11.500	120	70	138.53	132.51	126.48	120.46
70793		.4531	29/64"	11.509	3-9/16"	1-13/16"	134.47	128.62	122.78	116.93
	70536	.4531	29/64"	11.509	4-3/4"	2-7/8"	138.53	132.51	126.48	120.46
70795		.4688	15/32"	11.909	3-11/16"	2-1/16"	141.29	135.15	129.00	122.86
	70541	.4688	15/32"	11.909	4-3/4"	2-7/8"	144.99	138.69	132.38	126.08
70797		.4724		12.000	93	53	141.70	135.54	129.38	123.22
	70546	.4724		12.000	120	73	145.37	139.05	132.73	126.41
70799		.4844	31/64"	12.304	3-11/16"	2-1/16"	142.68	136.48	130.27	124.07
	70551	.4844	31/64"	12.304	5-5/16"	3"	147.95	141.52	135.08	128.65
70801		.4921		12.500	95	53	144.10	137.83	131.57	125.30
	70556	.4921		12.500	135	75	149.59	143.09	136.58	130.08
70803		.5000	1/2"	12.700	3-3/4"	2-1/16"	145.02	138.71	132.41	126.10
	70561	.5000	1/2"	12.700	5-3/8"	3-1/16"	149.88	143.36	136.85	130.33
70805		.5010		12.725	3-3/4"	2-1/16"	146.56	140.18	133.81	127.44
	70915	.5010		12.725	5-3/8"	3-1/16"	151.56	144.97	138.38	131.79
<b>NEW</b>	70807	.5118		13.000	107	55	158.95	152.04	145.13	138.22
	70566	.5118		13.000	136	78	164.91	157.74	150.57	143.40

3xD (1160) EDP#	5xD (1180) EDP#	$d$ † Diameter		$l_1$ Overall Length	$l_2$ Flute Length	1-11	12-24	25-49	50-100	
		Decimal	Metric							
70809		.5156	33/64"	13.096	4-1/4"	2-3/16"	162.71	155.64	148.56	141.49
	70571	.5156	33/64"	13.096	5-3/8"	3-1/8"	168.43	161.11	153.78	146.46
70811		.5312	17/32"	13.492	4-1/4"	2-1/4"	166.46	159.23	151.99	144.75
	70576	.5312	17/32"	13.492	5-11/16"	3-5/16"	172.06	164.58	157.10	149.62
<b>NEW</b> 70813		.5469	35/64"	13.891	4-1/4"	2-1/4"	173.95	166.39	158.82	151.26
	70581	.5469	35/64"	13.891	5-13/16"	3-3/8"	179.07	171.28	163.50	155.71
70815		.5512		14.000	107	59	177.71	169.98	162.26	154.53
	70586	.5512		14.000	148	86	182.62	174.68	166.74	158.80
<b>NEW</b> 70817		.5625	9/16"	14.287	4-1/2"	2-3/8"	189.03	180.81	172.59	164.37
	70591	.5625	9/16"	14.287	5-15/16"	3-1/2"	195.16	186.67	178.19	169.70
70819		.5781	37/64"	14.683	4-1/2"	2-1/2"	196.03	187.51	178.98	170.46
	70596	.5781	37/64"	14.683	6"	3-1/2"	201.78	193.01	184.23	175.46
70821		.5906		15.000	115	64	199.64	190.96	182.28	173.60
	70601	.5906		15.000	152	90	205.30	196.37	187.45	178.52
<b>NEW</b> 70823		.5938	19/32"	15.082	4-1/2"	2-1/2"	200.71	191.98	183.26	174.53
	70606	.5938	19/32"	15.082	6"	3-9/16"	206.28	197.31	188.34	179.37
<b>NEW</b> 70825		.6094	39/64"	15.478	4-1/2"	2-9/16"	201.74	192.97	184.20	175.43
	70611	.6094	39/64"	15.478	6-3/16"	3-11/16"	223.62	213.90	204.17	194.45
70827		.6250	5/8"	15.875	4-1/2"	2-5/8"	203.81	194.95	186.09	177.23
	70616	.6250	5/8"	15.875	6-5/16"	3-3/4"	225.56	215.75	205.95	196.14
70829		.6299		16.000	115	66	208.73	199.65	190.58	181.50
	70621	.6299		16.000	160	95	230.29	220.28	210.26	200.25



*1180 Series  
High Performance Drill in aluminum*