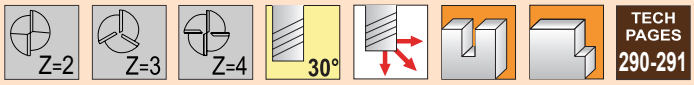
Series 220M, 223M, 230M, 820M, 823M, 830M

.0200" - .2362"
(0.508mm - 6.000mm)



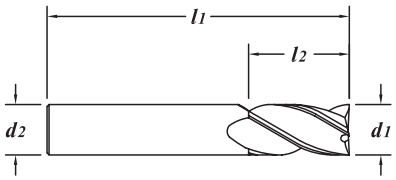
TECH PAGES 290-291

TOLERANCES		
d_1	≤ .030"	+.000" –.001" (+.000 –.025mm)
	≥ 1/32"	+.000" –.002" (+.000 –.050mm)
d_2	h6	

Standard Length - Square End

Solid submicron grain carbide end mill - center cutting
Extremely versatile
TiN Coating - page 230
TiCN Coating - page 231
TiALN Coating - page 232
Stub Length - page 219
Extended length - page 248





MATERIAL HARDNESS (Rc)
70
35
0

(220M/820M) 2 Flute EDP#	(223M/823M) 3 Flute EDP#	(230M/830M) 4 Flute EDP#	d_1 † Diameter Decimal	d_1 † Diameter	Metric	d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length
11650	-	13650	.0200	.0200"	0.508	1/8"	1-1/2"	.060"
11660	-	-	.0210	.0210"	0.533	1/8"	1-1/2"	.063"
11670	-	-	.0220	.0220"	0.559	1/8"	1-1/2"	.066"
11680	-	-	.0230	.0230"	0.584	1/8"	1-1/2"	.069"
11690	-	-	.0240	.0240"	0.610	1/8"	1-1/2"	.072"
11700	-	13700	.0250	.0250"	0.635	1/8"	1-1/2"	.075"
11710	-	-	.0260	.0260"	0.660	1/8"	1-1/2"	.078"
11720	-	-	.0270	.0270"	0.686	1/8"	1-1/2"	.081"
11730	-	-	.0280	.0280"	0.711	1/8"	1-1/2"	.084"
11740	-	-	.0290	.0290"	0.737	1/8"	1-1/2"	.087"
11750	-	13750	.0300	.0300"	0.762	1/8"	1-1/2"	.090"
11010	12010	13010	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"
45010	37010	46010	.0394		1.000	3.0	38	4
11020	12020	13020	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"
45020	37020	46020	.0591		1.500	3.0	38	6
11030	12030	13030	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"
11040	12040	13040	.0781	5/64"	1.984	1/8"	1-1/2"	1/4"
45030	37030	46030	.0787		2.000	3.0	38	8
11050	12050	13050	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"
45040	37040	46040	.0984		2.500	3.0	38	12
11060	12060	13060	.1094	7/64"	2.779	1/8"	1-1/2"	3/8"
45050	37050	46050	.1181		3.000	3.0	38	12
11070	12070	13070	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"
45060	37060	46060	.1378		3.500	4.0	50	12
11080	12080	13080	.1406	9/64"	3.571	3/16"	2"	9/16"
11090	12090	13090	.1562	5/32"	3.967	3/16"	2"	9/16"
45070	37070	46070	.1575		4.000	4.0	50	14
11100	12100	13100	.1719	11/64"	4.366	3/16"	2"	9/16"
45080	37080	46080	.1772		4.500	5.0	50	14
11110	12110	13110	.1875	3/16"	4.763	3/16"	2"	5/8"
92070	93070	94070	.1969		5.000	5.0	50	16
45090	37090	46090	.1969		5.000	5.0	65	16
11120	12120	13120	.2031	13/64"	5.159	1/4"	2-1/2"	5/8"
11130	12130	13130	.2188	7/32"	5.558	1/4"	2-1/2"	5/8"
11140	12140	13140	.2344	15/64"	5.954	1/4"	2-1/2"	3/4"
45100	37100	46100	.2362		6.000	6.0	65	19

† *Metric equivalents are for reference only*

(220M/820M) 2 Flute EDP#	(223M/823M) 3 Flute EDP#	(230M/830M) 4 Flute EDP#	*d1* † Diameter Decimal	*d1* † Diameter	*d1* † Diameter Metric	*d2* Shank Diameter	*l1* Overall Length	*l2* Flute Length
11150	12150	13150	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"
11160	12160	13160	.2656	17/64"	6.746	5/16"	2-1/2"	7/8"
45110	37110	46110	.2756		7.000	7.0	65	22
11170	12170	13170	.2812	9/32"	7.142	5/16"	2-1/2"	7/8"
11180	12180	13180	.2969	19/64"	7.541	5/16"	2-1/2"	7/8"
11190	12190	13190	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"
45120	37120	46120	.3150		8.000	8.0	65	22
11200	12200	13200	.3281	21/64"	8.334	3/8"	2-1/2"	7/8"
11210	12210	13210	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"
45130	37130	46130	.3543		9.000	9.0	65	22
11220	12220	13220	.3594	23/64"	9.129	3/8"	2-1/2"	7/8"
11230	12230	13230	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"
11240	12240	13240	.3906	25/64"	9.921	7/16"	2-3/4"	7/8"
45140	37140	46140	.3937		10.000	10.0	70	25
11250	12250	13250	.4062	13/32"	10.317	7/16"	2-3/4"	7/8"
11260	12260	13260	.4219	27/64"	10.716	7/16"	2-3/4"	7/8"
45150	37150	46150	.4331		11.000	11.0	75	25
11270	12270	13270	.4375	7/16"	11.113	7/16"	2-3/4"	1"
11280	12280	13280	.4531	29/64"	11.509	1/2"	3"	1"
11290	-	13290	.4688	15/32"	11.908	1/2"	3"	1"
45160	37160	46160	.4724		12.000	12.0	75	25
11300	12300	13300	.4844	31/64"	12.304	1/2"	3"	1"
11310	12310	13310	.5000	1/2"	12.700	1/2"	3"	1"
45170	37170	46170	.5512		14.000	14.0	88	32
11320	12320	13320	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"
11330	12330	13330	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"
45180	37180	46180	.6299		16.000	16.0	88	38
11340	12340	13340	.6875	11/16"	17.463	3/4"	4"	1-1/2"
45190	37190	46190	.7087		18.000	18.0	100	38
11350	12350	13350	.7500	3/4"	19.050	3/4"	4"	1-1/2"
45200	37200	46200	.7874		20.000	20.0	100	38
45210	37210	46210	.8661		22.000	22.0	100	38
11360	12360	13360	.8750	7/8"	22.225	7/8"	4"	1-1/2"
45220	37220	46220	.9843		25.000	25.0	100	38
11370	12370	13370	1.000	1"	25.400	1"	4"	1-1/2"
-	-	13390	1.250	1-1/4"	31.750	1-1/4"	4-1/2"	2"