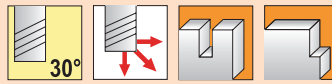


220M (820M metric) / z = 2
 223M (823M metric) / z = 3
 230M (830M metric) / z = 4
 .0050" - .0984"
 (0,13mm - 2,50mm)

Technical information:
 page 200, 202



TOLERANCES

d1	≤ .030"	+0,0100 -0,0100mm (+.0004" -.0004")
	≥ 1/32"	+0,000 -0,050mm (+.000" -.002")
d2	3mm - 6mm	-0,0000 -0,0075mm (-.0000" -.003")
	1/4" - 1-1/4"	-0,0025 -0,0100mm (-.0001" -.0004")

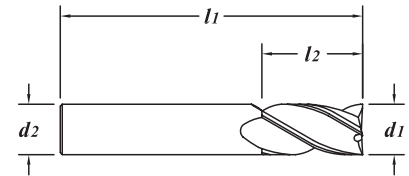
Standard Length
 Standard Länge
 Longitud Estándar
 Longueur Standart
 Lunghezza Standard
 标准长度



END MILLS



Solid submicron grain carbide end mill - center cutting
 Extremely versatile
 TiN Coated - page 133
 TiCN Coated - page 134
 TiALN Coated - page 135



Vollhartmetallfräser aus Feinkornhartmetall - Zentrumschnitt
 Extrem Vielseitig
 TiN-Beschichtet - Seite 133
 TiCN-Beschichtet - Seite 134
 TiALN-Beschichtet - Seite 135



Fresa de submicrograno sólido carburo - corte centrado
 Extremadamente versátil
 Recubrimiento de TiN - Página 133
 Recubrimiento de TiCN - Página 134
 Recubrimiento de TiALN - Página 135



Fraises carbure submicrograin - coupe au centre
 Utilisations variables
 Revêtement TiN - Page 133
 Revêtement TiCN - Page 134
 Revêtement TiALN - Page 135



Super sub-micrograno metallo duro - taglio al centro
 Estremamente versatile
 Rivestimento in TiN - Pagina 133
 Rivestimento in TiCN - Pagina 134
 Rivestimento in TiALN - Pagina 135



超细晶粒整体硬质合金立铣刀 - 中心切削
 功能极多
 TiN 涂层 - 133页
 TiCN 涂层 - 134页
 TiALN 涂层 - 135页

z = 2 EDP#	z = 3 EDP#	z = 4 EDP#	d1 †		d2 Shank Diameter	l1 Overall Length	l2 Flute Length	
			Decimal	Metric				
11500	-	-	.0050	.0050"	0,13	1/8"	1-1/2"	.015"
11510	-	-	.0060	.0060"	0,15	1/8"	1-1/2"	.018"
11520	-	-	.0070	.0070"	0,18	1/8"	1-1/2"	.021"
11530	-	-	.0080	.0080"	0,20	1/8"	1-1/2"	.024"
11540	-	-	.0090	.0090"	0,23	1/8"	1-1/2"	.027"
11550	-	13550	.0100	.0100"	0,25	1/8"	1-1/2"	.030"
11560	-	-	.0110	.0110"	0,28	1/8"	1-1/2"	.033"
11570	-	-	.0120	.0120"	0,30	1/8"	1-1/2"	.036"
11580	-	-	.0130	.0130"	0,33	1/8"	1-1/2"	.039"
11590	-	-	.0140	.0140"	0,36	1/8"	1-1/2"	.042"
11600	-	13600	.0150	.0150"	0,38	1/8"	1-1/2"	.045"
11610	-	-	.0160	.0160"	0,41	1/8"	1-1/2"	.048"
11620	-	-	.0170	.0170"	0,43	1/8"	1-1/2"	.051"
11630	-	-	.0180	.0180"	0,46	1/8"	1-1/2"	.054"
11640	-	-	.0190	.0190"	0,48	1/8"	1-1/2"	.057"
11650	-	13650	.0200	.0200"	0,51	1/8"	1-1/2"	.060"
11660	-	-	.0210	.0210"	0,53	1/8"	1-1/2"	.063"
11670	-	-	.0220	.0220"	0,56	1/8"	1-1/2"	.066"
11680	-	-	.0230	.0230"	0,58	1/8"	1-1/2"	.069"
11690	-	-	.0240	.0240"	0,61	1/8"	1-1/2"	.072"
11700	-	13700	.0250	.0250"	0,64	1/8"	1-1/2"	.075"
11710	-	-	.0260	.0260"	0,66	1/8"	1-1/2"	.078"
11720	-	-	.0270	.0270"	0,69	1/8"	1-1/2"	.081"
11730	-	-	.0280	.0280"	0,71	1/8"	1-1/2"	.084"
11740	-	-	.0290	.0290"	0,74	1/8"	1-1/2"	.087"
11750	-	13750	.0300	.0300"	0,76	1/8"	1-1/2"	.090"
11010	12010	13010	.0312	1/32"	0,79	1/8"	1-1/2"	3/32"
45010	37010	46010	.0394		1,00	3,0	38	4
11020	12020	13020	.0469	3/64"	1,19	1/8"	1-1/2"	1/8"
45020	37020	46020	.0591		1,50	3,0	38	6
11030	12030	13030	.0625	1/16"	1,59	1/8"	1-1/2"	1/4"
11040	12040	13040	.0781	5/64"	1,98	1/8"	1-1/2"	1/4"
45030	37030	46030	.0787		2,00	3,0	38	8
11050	12050	13050	.0938	3/32"	2,38	1/8"	1-1/2"	3/8"
45040	37040	46040	.0984		2,50	3,0	38	12

continued →

220M (820M metric) / z = 2 (continued)

223M (823M metric) / z = 3 (continued)

230M (830M metric) / z = 4 (continued)

.1094" - 1.250"
(2,78mm - 31,75mm)

z = 2 EDP#	z = 3 EDP#	z = 4 EDP#	<i>d1</i> † Diameter		<i>d2</i> Shank Diameter	<i>l1</i> Overall Length	<i>l2</i> Flute Length	
			Decimal	Metric				
11060	12060	13060	.1094	7/64"	2,78	1/8"	1-1/2"	3/8"
45050	37050	46050	.1181		3,00	3,0	38	12
11070	12070	13070	.1250	1/8"	3,17	1/8"	1-1/2"	1/2"
45060	37060	46060	.1378		3,50	4,0	50	12
11080	12080	13080	.1406	9/64"	3,57	3/16"	2"	9/16"
11090	12090	13090	.1562	5/32"	3,97	3/16"	2"	9/16"
45070	37070	46070	.1575		4,00	4,0	50	14
11100	12100	13100	.1719	11/64"	4,37	3/16"	2"	9/16"
45080	37080	46080	.1772		4,50	5,0	50	14
11110	12110	13110	.1875	3/16"	4,76	3/16"	2"	5/8"
45090	37090	46090	.1969		5,00	5,0	65	16
11120	12120	13120	.2031	13/64"	5,16	1/4"	2-1/2"	5/8"
11130	12130	13130	.2188	7/32"	5,56	1/4"	2-1/2"	5/8"
11140	12140	13140	.2344	15/64"	5,95	1/4"	2-1/2"	3/4"
45100	37100	46100	.2362		6,00	6,0	65	19
11150	12150	13150	.2500	1/4"	6,35	1/4"	2-1/2"	3/4"
11160	12160	13160	.2656	17/64"	6,75	5/16"	2-1/2"	7/8"
45110	37110	46110	.2756		7,00	7,0	65	22
11170	12170	13170	.2812	9/32"	7,14	5/16"	2-1/2"	7/8"
11180	12180	13180	.2969	19/64"	7,54	5/16"	2-1/2"	7/8"
11190	12190	13190	.3125	5/16"	7,94	5/16"	2-1/2"	7/8"
45120	37120	46120	.3150		8,00	8,0	65	22
11200	12200	13200	.3281	21/64"	8,33	3/8"	2-1/2"	7/8"
11210	12210	13210	.3438	11/32"	8,73	3/8"	2-1/2"	7/8"
45130	37130	46130	.3543		9,00	9,0	65	22
11220	12220	13220	.3594	23/64"	9,13	3/8"	2-1/2"	7/8"
11230	12230	13230	.3750	3/8"	9,52	3/8"	2-1/2"	7/8"
11240	12240	13240	.3906	25/64"	9,92	7/16"	2-3/4"	7/8"
45140	37140	46140	.3937		10,00	10,0	70	25
11250	12250	13250	.4062	13/32"	10,32	7/16"	2-3/4"	7/8"
11260	12260	13260	.4219	27/64"	10,72	7/16"	2-3/4"	7/8"
45150	37150	46150	.4331		11,00	11,0	75	25
11270	12270	13270	.4375	7/16"	11,11	7/16"	2-3/4"	1"
11280	12280	13280	.4531	29/64"	11,51	1/2"	3"	1"
11290	12290	13290	.4688	15/32"	11,91	1/2"	3"	1"
45160	37160	46160	.4724		12,00	12,0	75	25
11300	12300	13300	.4844	31/64"	12,30	1/2"	3"	1"
11310	12310	13310	.5000	1/2"	12,70	1/2"	3"	1"
45170	37170	46170	.5512		14,00	14,0	88	32
11320	12320	13320	.5625	9/16"	14,29	9/16"	3-1/2"	1-1/4"
11330	12330	13330	.6250	5/8"	15,87	5/8"	3-1/2"	1-1/4"
45180	37180	46180	.6299		16,00	16,0	88	38
11340	12340	13340	.6875	11/16"	17,46	3/4"	4"	1-1/2"
45190	37190	46190	.7087		18,00	18,0	100	38
11350	12350	13350	.7500	3/4"	19,05	3/4"	4"	1-1/2"
45200	37200	46200	.7874		20,00	20,0	100	38
45210	37210	46210	.8661		22,00	22,0	100	38
11360	12360	13360	.8750	7/8"	22,22	7/8"	4"	1-1/2"
45220	37220	46220	.9843		25,00	25,0	100	38
11370	12370	13370	1.000	1"	25,40	1"	4"	1-1/2"
-	-	13390	1.250	1-1/4"	31,75	1-1/4"	4-1/2"	2"