

Series 320MA, 323MA, 330MA, 920MA, 923MA, 930MA

.0312" - .3150"
(0.792mm - 8.000mm)



TECH
PAGES
282-283

TOLERANCES

d_1	+0.00" -0.002" (+.000 - .050mm)
d_2	h6
ball radius	+0.000" -0.001" (+.000 - .025mm)

Standard Length - Ball End

TiAlN Coating

Solid submicron grain carbide end mill - center cutting

Dry or semi-dry machining

Extremely versatile

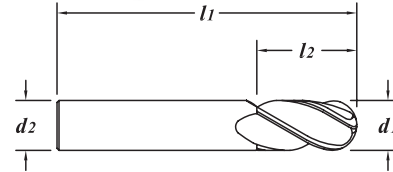
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TiN Coating - page 230

TiCN Coating - page 231

Stub Length - page 215

Extended length - page 250



(320MA/920MA) 2 Flute EDP#	(323MA/923MA) 3 Flute EDP#	(330MA/930MA) 4 Flute EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100	
			Decimal	Metric								
16017	17017	18017	.0312	1/32"	0.792	1/8"	1-1/2"	3/32"	16.87	16.14	15.40	14.67
47017	38017	48017	.0394		1.000	3.0	38	4	17.60	16.83	16.07	15.30
16027	17027	18027	.0469	3/64"	1.191	1/8"	1-1/2"	1/8"	16.87	16.14	15.40	14.67
47027	38027	48027	.0591		1.500	3.0	38	6	17.60	16.83	16.07	15.30
16037	17037	18037	.0625	1/16"	1.588	1/8"	1-1/2"	1/4"	16.09	15.39	14.69	13.99
16047	17047	18047	.0781	5/64"	1.984	1/8"	1-1/2"	1/4"	16.09	15.39	14.69	13.99
47037	38037	48037	.0787		2.000	3.0	38	8	16.76	16.03	15.30	14.57
16057	17057	18057	.0938	3/32"	2.383	1/8"	1-1/2"	3/8"	15.50	14.83	14.15	13.48
47047	38047	48047	.0984		2.500	3.0	38	12	16.15	15.44	14.74	14.04
16067	17067	18067	.1094	7/64"	2.779	1/8"	1-1/2"	3/8"	15.50	14.83	14.15	13.48
47057	38057	48057	.1181		3.000	3.0	38	12	14.90	14.26	13.61	12.96
16077	17077	18077	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	14.32	13.70	13.07	12.45
47067	38067	48067	.1378		3.500	4.0	50	12	20.62	19.72	18.83	17.93
16087	17087	18087	.1406	9/64"	3.571	3/16"	2"	9/16"	19.77	18.91	18.05	17.19
16097	17097	18097	.1562	5/32"	3.967	3/16"	2"	9/16"	19.77	18.91	18.05	17.19
47077	38077	48077	.1575		4.000	4.0	50	14	18.78	17.96	17.15	16.33
16107	17107	18107	.1719	11/64"	4.366	3/16"	2"	9/16"	19.77	18.91	18.05	17.19
47087	38087	48087	.1772		4.500	5.0	50	14	24.45	23.39	22.32	21.26
16117	17117	18117	.1875	3/16"	4.763	3/16"	2"	5/8"	18.01	17.23	16.44	15.66
97077	98077	99077	.1969		5.000	5.0	50	16	22.80	21.81	20.82	19.83
47097	38097	48097	.1969		5.000	5.0	65	16	25.06	23.97	22.88	21.79
16127	17127	18127	.2031	13/64"	5.159	1/4"	2-1/2"	5/8"	25.40	24.30	23.19	22.09
16137	17137	18137	.2188	7/32"	5.558	1/4"	2-1/2"	5/8"	25.40	24.30	23.19	22.09
16147	17147	18147	.2344	15/64"	5.954	1/4"	2-1/2"	3/4"	25.40	24.30	23.19	22.09
47107	38107	48107	.2362		6.000	6.0	65	19	25.54	24.43	23.32	22.21
16157	17157	18157	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	24.56	23.50	22.43	21.36
16167	17167	18167	.2656	17/64"	6.746	5/16"	2-1/2"	7/8"	38.10	36.44	34.79	33.13
47117	38117	48117	.2756		7.000	7.0	65	22	33.96	32.48	31.01	29.53
16177	17177	18177	.2812	9/32"	7.142	5/16"	2-1/2"	7/8"	38.10	36.44	34.79	33.13
16187	17187	18187	.2969	19/64"	7.541	5/16"	2-1/2"	7/8"	38.10	36.44	34.79	33.13
16197	17197	18197	.3125	5/16"	7.938	5/16"	2-1/2"	7/8"	33.29	31.85	30.40	28.95
47127	38127	48127	.3150		8.000	8.0	65	22	34.55	33.04	31.54	30.04

MATERIAL HARDNESS (Rc)

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Series 320MA, 323MA, 330MA, 920MA, 923MA, 930MA (continued)

.3281" - 1.000"
(8.334mm - 25.400mm)

GENERAL PURPOSE
END MILLS

(320MA/920MA) 2 Flute EDP#	(323MA/923MA) 3 Flute EDP#	(330MA/930MA) 4 Flute EDP#	$d1$ †		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	1-11	12-24	25-49	50-100	
			Decimal	Diameter Metric								
16207	17207	18207	.3281	21/64"	8.334	3/8"	2-1/2"	7/8"	43.98	42.06	40.15	38.24
16217	17217	18217	.3438	11/32"	8.733	3/8"	2-1/2"	7/8"	43.98	42.06	40.15	38.24
47137	38137	48137	.3543		9.000	9.0	65	22	40.38	38.62	36.87	35.11
16227	17227	18227	.3594	23/64"	9.129	3/8"	2-1/2"	7/8"	43.98	42.06	40.15	38.24
16237	17237	18237	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	38.88	37.19	35.50	33.81
16247	17247	18247	.3906	25/64"	9.921	7/16"	2-3/4"	7/8"	53.30	50.99	48.67	46.35
47147	38147	48147	.3937		10.000	10.0	70	25	46.94	44.90	42.86	40.82
16257	17257	18257	.4062	13/32"	10.317	7/16"	2-3/4"	7/8"	53.30	50.99	48.67	46.35
16267	-	18267	.4219	27/64"	10.716	7/16"	2-3/4"	7/8"	53.30	50.99	48.67	46.35
47157	38157	48157	.4331		11.000	11.0	75	25	48.91	46.78	44.66	42.53
16277	17277	18277	.4375	7/16"	11.113	7/16"	2-3/4"	1"	47.01	44.97	42.92	40.88
16287	17287	18287	.4531	29/64"	11.509	1/2"	3"	1"	72.31	69.17	66.02	62.88
16297	17297	18297	.4688	15/32"	11.908	1/2"	3"	1"	72.31	69.17	66.02	62.88
47167	38167	48167	.4724		12.000	12.0	75	25	69.13	66.12	63.12	60.11
16307	17307	18307	.4844	31/64"	12.304	1/2"	3"	1"	72.31	69.17	66.02	62.88
16317	17317	18317	.5000	1/2"	12.700	1/2"	3"	1"	66.32	63.44	60.55	57.67
47177	38177	48177	.5512		14.000	14.0	88	32	100.57	96.20	91.82	87.45
16327	17327	18327	.5625	9/16"	14.288	9/16"	3-1/2"	1-1/4"	96.44	92.25	88.05	83.86
16337	17337	18337	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	105.58	100.99	96.40	91.81
47187	38187	48187	.6299		16.000	16.0	88	38	110.17	105.38	100.59	95.80
16347	17347	18347	.6875	11/16"	17.463	3/4"	4"	1-1/2"	169.14	161.79	154.43	147.08
47197	38197	48197	.7087		18.000	18.0	100	38	158.17	151.29	144.42	137.54
16357	17357	18357	.7500	3/4"	19.050	3/4"	4"	1-1/2"	151.41	144.83	138.24	131.66
47207	38207	48207	.7874		20.000	20.0	100	38	214.29	204.97	195.66	186.34
47217	38217	48217	.8661		22.000	22.0	100	38	235.39	225.16	214.92	204.69
-	17367	18367	.8750	7/8"	22.225	7/8"	4"	1-1/2"	240.57	230.11	219.65	209.19
47227	38227	48227	.9843		25.000	25.0	100	38	245.59	234.92	224.24	213.56
16377	17377	18377	1.000	1"	25.400	1"	4"	1-1/2"	258.50	247.26	236.02	224.78

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MATERIAL HARDNESS (Rc)

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