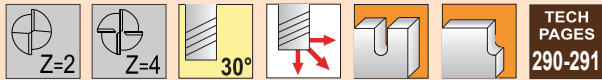


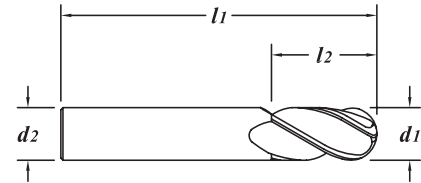
Series 180M, 190M, 980M, 990M



TOLERANCES		
d_1	$\leq .030"$	$+0.000" - .001" (+0.000 - .025mm)$
	$\geq 1/32"$	$+0.000" - .002" (+0.000 - .050mm)$
d_2	h6	
ball radius	$+0.000" - .001" (+0.000 - .025mm)$	

Stub Length - Ball End

- Solid submicron grain carbide end mill - center cutting
- Shorter flute length for rigidity
- Extremely versatile
- TiALN Coating - page 227
- Standard Length - page 240
- Extended length - page 259



(180M/980M) 2 Flute EDP#	(190M/990M) 4 Flute EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	
		Decimal	Metric				
03350	-	.0200	.0200"	0.508	1/8"	1-1/2"	.030"
03400	-	.0250	.0250"	0.635	1/8"	1-1/2"	.038"
03450	-	.0300	.0300"	0.762	1/8"	1-1/2"	.045"
03010	04010	.0312	1/32"	0.792	1/8"	1-1/2"	1/16"
03510	04510	.0394		1.000	3.0	38	2
03020	04020	.0469	3/64"	1.191	1/8"	1-1/2"	3/32"
03520	-	.0591		1.500	3.0	38	3
03030	04030	.0625	1/16"	1.588	1/8"	1-1/2"	1/8"
03530	04530	.0787		2.000	3.0	38	4
03040	04040	.0938	3/32"	2.383	1/8"	1-1/2"	3/16"
03540	04540	.0984		2.500	3.0	38	5
03550	04550	.1181		3.000	3.0	38	6
03050	04050	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"
03560	04560	.1378		3.500	4.0	50	7
03060	04060	.1562	5/32"	3.967	3/16"	2"	5/16"
03570	04570	.1575		4.000	4.0	50	8
03580	04580	.1772		4.500	5.0	50	9.5
03070	04070	.1875	3/16"	4.763	3/16"	2"	3/8"
03590	04590	.1969		5.000	5.0	50	10
03080	04080	.2188	7/32"	5.558	1/4"	2"	7/16"
03600	04600	.2362		6.000	6.0	50	12
03090	04090	.2500	1/4"	6.350	1/4"	2"	1/2"
03610	04610	.2756		7.000	7.0	50	12
03100	04100	.3125	5/16"	7.938	5/16"	2"	1/2"
03620	04620	.3150		8.000	8.0	50	12
03630	04630	.3543		9.000	9.0	50	14
03110	04110	.3750	3/8"	9.525	3/8"	2"	5/8"
03640	04640	.3937		10.000	10.0	50	16
03120	04120	.4375	7/16"	11.113	7/16"	2-1/2"	5/8"
03660	04660	.4724		12.000	12.0	65	19
03130	04130	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"
03150	04150	.7500	3/4"	19.050	3/4"	3"	1"