



TOLERANCES

d_1	$+0.000'' -0.001'' (+0.000 -0.025\text{mm})$
d_2	$3\text{mm} - 6\text{mm} \quad +0.0000'' -0.0003'' (+0.0000 -0.0075\text{mm})$
	$1/4'' - 1'' \quad -0.0001'' -0.0004'' (-0.0025 -0.0100\text{mm})$

HSAL - ALUMASTAR Coated

Solid submicron grain carbide end mill - center cutting

Specific coating engineered to repel aluminum

Engineered to run at 750-2500 SFM (225-750 M/Min.)

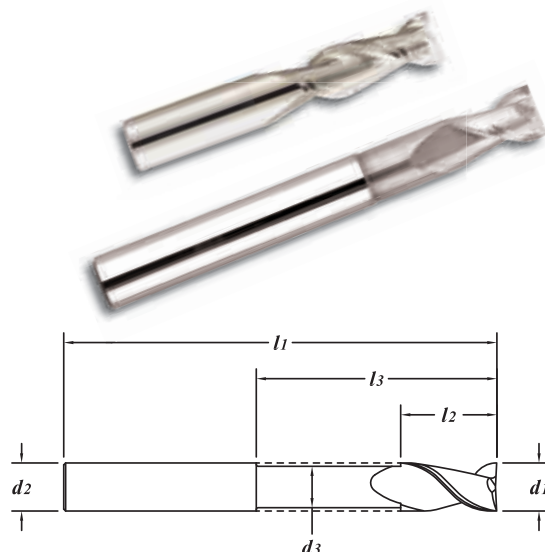
For high speed machining of aluminum

High velocity - high metal removal rate (for spindles 10,000 RPM and above)

Need to use properly balanced holders

Holds perpendicularity

Flats can be added within 48 hours



EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	Decimal	Metric									
41222	.1575	4.00	6.0	50	12	-	-	21.48	20.54	19.60	18.68
NEW 41232	.1575	4.00	6.0	65	6	16	3.7	26.88	25.72	24.54	23.38
41282	.1875 3/16"	4.76	3/16"	2"	9/16"	-	-	16.19	15.49	14.79	14.08
41342	.1969	5.00	6.0	65	16	-	-	22.16	21.20	20.24	19.27
NEW 41352	.1969	5.00	6.0	75	8	20	4.7	37.69	36.05	34.41	32.77
41402	.2362	6.00	6.0	65	19	-	-	21.46	20.52	19.59	18.66
NEW 41412	.2362	6.00	6.0	75	10	25	5.7	36.48	34.89	33.31	31.72
41462	.2500 1/4"	6.35	1/4"	2-1/2"	3/4"	-	-	20.38	19.50	18.62	17.72
41542	.2756	7.00	8.0	65	19	-	-	32.91	31.47	30.05	28.61
41602	.3125 5/16"	7.94	5/16"	2-1/2"	3/4"	-	-	28.31	27.08	25.84	24.62
41662	.3150	8.00	8.0	65	19	-	-	29.81	28.51	27.22	25.92
NEW 41672	.3150	8.00	8.0	75	12	25	7.4	44.98	43.02	41.07	39.11
41722	.3750 3/8"	9.52	3/8"	2-1/2"	7/8"	-	-	33.26	31.81	30.37	28.92
41802	.3937	10.00	10.0	70	24	-	-	50.06	47.88	45.70	43.52
NEW 41812	.3937	10.00	10.0	75	12	30	9.4	55.42	53.01	50.61	48.19
NEW 41822	.3937	10.00	10.0	100	12	35	9.4	66.73	63.82	60.92	58.02
41882	.4724	12.00	12.0	75	32	-	-	55.98	53.55	51.12	48.68
NEW 41892	.4724	12.00	12.0	75	16	30	11.4	60.26	57.64	55.02	52.40
NEW 41902	.4724	12.00	12.0	100	16	35	11.4	82.21	78.63	75.07	71.49
NEW 41912	.4724	12.00	12.0	100	16	40	11.4	82.21	78.63	75.07	71.49
41942	.5000 1/2"	12.70	1/2"	3"	1-1/4"	-	-	53.19	50.88	48.56	46.25
42022	.6250 5/8"	15.87	5/8"	4"	1-5/8"	-	-	106.00	101.39	96.78	92.18
NEW 42072	.6299	16.00	16.0	75	16	30	15.4	105.00	100.43	95.87	91.30
42082	.6299	16.00	16.0	100	40	-	-	111.57	106.72	101.87	97.02
NEW 42092	.6299	16.00	16.0	100	20	40	15.4	115.85	110.81	105.77	100.73
NEW 42102	.6299	16.00	16.0	125	20	60	15.4	148.03	141.60	135.16	128.72
42142	.7500 3/4"	19.05	3/4"	4"	1-5/8"	-	-	135.64	129.74	123.84	117.95
42212	.7874	20.00	20.0	100	32	-	-	182.10	174.19	166.26	158.35
NEW 42222	.7874	20.00	20.0	100	20	40	19	186.37	178.27	170.16	162.06
NEW 42232	.7874	20.00	20.0	125	20	60	19	215.82	206.44	197.05	187.67
42242	.9843	25.00	25.0	100	38	-	-	210.11	200.98	191.84	182.71
42302	1.000 1"	25.40	1"	4"	1-5/8"	-	-	203.86	195.00	186.13	177.27



TOLERANCES

d_1	+.000" - .001" (+.000 - .025mm)	
d_2	3mm - 6mm	+.0000" - .0003" (+.0000 - .0075mm)
	1/4" - 1"	-.0001" - .0004" (-.0025 - .0100mm)
Ball radius	+.0000" - .0005" (+.0000 - .0127mm)	

HSAL - Ball End - ALUMASTAR Coated

Solid submicron grain carbide end mill - center cutting

Specific coating engineered to repel aluminum

Engineered to run at 750-2500 SFM (225-750 M/Min.)

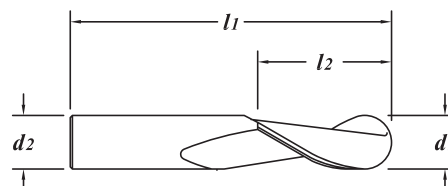
For high speed machining of aluminum

High velocity - high metal removal rate (for spindles 10,000 RPM and above)

Need to use properly balanced holders

Holds perpendicularity

Flats can be added within 48 hours



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							
42522	.1575	4.00	6.0	50	12	25.13	24.03	22.94	21.85
42582	.1875	3/16"	4.76	3/16"	2"	18.65	17.84	17.02	16.21
42642	.1969	5.00	6.0	65	16	25.93	24.80	23.67	22.55
42702	.2362	6.00	6.0	65	19	25.11	24.01	22.92	21.83
42762	.2500	1/4"	6.35	1/4"	2-1/2"	23.85	22.81	21.78	20.74
42842	.2756	7.00	8.0	65	19	36.50	34.91	33.33	31.74
42902	.3125	5/16"	7.94	5/16"	2-1/2"	31.55	30.18	28.81	27.44
42962	.3150	8.00	8.0	65	19	33.22	31.77	30.33	28.88
43022	.3750	3/8"	9.52	3/8"	2-1/2"	36.77	35.17	33.58	31.98
43102	.3937	10.00	10.0	70	24	56.40	53.94	51.49	49.05
43182	.4724	12.00	12.0	75	32	69.77	66.74	63.71	60.67
43242	.5000	1/2"	12.70	1/2"	3"	66.28	63.40	60.52	57.64
43322	.6250	5/8"	15.87	5/8"	4"	114.66	109.68	104.69	99.70
43382	.6299	16.00	16.0	100	40	120.70	115.45	110.21	104.96
43442	.7500	3/4"	19.05	3/4"	4"	148.80	142.33	135.87	129.40
43482	.7874	20.00	20.0	100	32	208.88	199.80	190.72	181.64
43542	.9843	25.00	25.0	100	38	241.70	231.19	220.68	210.17
43602	1.000	1"	25.40	1"	4"	253.78	242.75	231.71	220.68

143M - 3 Flute

Technical information: page 196

TOLERANCES

$d1$	$+0.000" - .001" (+.000 - .025mm)$
$d2$	$3mm - 6mm \quad +.0000" - .0003" (+.0000 - .0075mm)$
	$1/4" - 1" \quad -.0001" - .0004" (-.0025 - .0100mm)$

.1575" - .3937"
(4.00mm - 10.00mm)

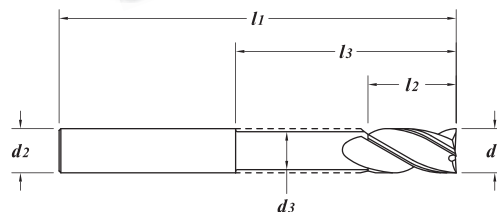


HSAL - ALUMASTAR Coated

Solid submicron grain carbide end mill - center cutting
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Engineered to run at 750-2500 SFM (225-750 M/Min.)

For high speed machining of aluminum

High velocity - high metal removal rate (for 5,000-25,000 RPM spindles)
Need to use properly balanced holders
Holds perpendicularity
Flats can be added within 48 hours



EDP#	$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	$l3$ Reach Length	$d3$ Neck Diameter	1-11	12-24	25-49	50-100
	Decimal	Metric									
41223	.1575	4.00	6.0	50	12	-	-	21.48	20.54	19.60	18.68
41243	.1575	4.00	6.0	65	6	16	3.7	26.88	25.72	24.54	23.38
NEW 41273	.1875	3/16"	4.76	3/16"	2"	5/16"	-	16.19	15.49	14.79	14.08
41283	.1875	3/16"	4.76	3/16"	2"	9/16"	-	16.19	15.49	14.79	14.08
41303	.1875	3/16"	4.76	3/16"	3"	7/32"	3/4"	30.39	29.07	27.75	26.43
41313	.1875	3/16"	4.76	3/16"	3"	1"	-	26.12	24.99	23.86	22.71
41343	.1969	5.00	6.0	65	16	-	-	22.16	21.20	20.24	19.27
41363	.1969	5.00	6.0	75	8	20	4.7	37.69	36.05	34.41	32.77
41403	.2362	6.00	6.0	65	19	-	-	21.46	20.52	19.59	18.66
41423	.2362	6.00	6.0	75	10	25	5.7	36.48	34.89	33.31	31.72
NEW 41453	.2500	1/4"	6.35	1/4"	2-1/2"	3/8"	-	20.38	19.50	18.62	17.72
41463	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	-	20.38	19.50	18.62	17.72
NEW 41473	.2500	1/4"	6.35	1/4"	3"	1"	-	30.91	29.57	28.23	26.87
41493	.2500	1/4"	6.35	1/4"	4"	3/8"	1-1/8"	36.85	35.25	33.64	32.04
41503	.2500	1/4"	6.35	1/4"	4"	3/8"	2-1/8"	41.12	39.33	37.54	35.76
41513	.2500	1/4"	6.35	1/4"	4"	1-5/8"	-	32.58	31.17	29.75	28.33
41543	.2756	7.00	8.0	65	19	-	-	32.91	31.47	30.05	28.61
41563	.2756	7.00	8.0	75	12	25	6.4	49.43	47.28	45.14	42.98
NEW 41593	.3125	5/16"	7.94	5/16"	2-1/2"	7/16"	-	28.31	27.08	25.84	24.62
41603	.3125	5/16"	7.94	5/16"	2-1/2"	3/4"	-	28.31	27.08	25.84	24.62
41623	.3125	5/16"	7.94	5/16"	4"	7/16"	1-1/8"	48.34	46.24	44.14	42.04
41663	.3150	8.00	8.0	65	19	-	-	29.81	28.51	27.22	25.92
41683	.3150	8.00	8.0	75	12	25	7.4	44.98	43.02	41.07	39.11
NEW 41693	.3150	8.00	8.0	100	12	55	7.4	55.16	52.76	50.37	47.96
NEW 41713	.3750	3/8"	9.52	3/8"	2-1/2"	1/2"	-	33.26	31.81	30.37	28.92
41723	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	-	33.26	31.81	30.37	28.92
NEW 41733	.3750	3/8"	9.52	3/8"	3"	1"	-	42.89	41.03	39.16	37.29
41763	.3750	3/8"	9.52	3/8"	4"	1/2"	2-1/8"	56.21	53.77	51.32	48.88
41773	.3750	3/8"	9.52	3/8"	4"	1-5/8"	-	47.67	45.60	43.52	41.45
NEW 42363	.3750	3/8"	9.52	3/8"	4"	2"	-	47.67	45.60	43.52	41.45
41783	.3750	3/8"	9.52	3/8"	6"	1/2"	4"	85.16	81.45	77.75	74.05
41803	.3937	10.00	10.0	70	24	-	-	50.06	47.88	45.70	43.52
41843	.3937	10.00	10.0	100	12	35	9.4	66.73	63.82	60.92	58.02
NEW 41853	.3937	10.00	10.0	100	12	55	9.4	70.99	67.90	64.81	61.73
NEW 41863	.3937	10.00	10.0	150	12	110	9.4	99.48	95.15	90.82	86.50

143M - 3 Flute

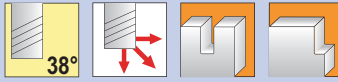
.4724" - 1.000"
(12.00mm - 25.40mm)

HIGH PERFORMANCE
END MILLS

EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	Decimal	Metric									
41883	.4724	12.00	12.0	75	32	-	-	55.98	53.55	51.12	48.68
NEW 41893	.4724	12.00	12.0	100	50	-	-	73.20	70.01	66.83	63.65
41903	.4724	12.00	12.0	100	16	35	11.4	82.21	78.63	75.07	71.49
NEW 41913	.4724	12.00	12.0	100	16	55	11.4	82.21	78.63	75.07	71.49
NEW 41923	.4724	12.00	12.0	150	16	110	11.4	125.67	120.21	114.74	109.28
NEW 41933	.5000	1/2"	12.70	1/2"	3"	5/8"	-	53.19	50.88	48.56	46.25
41943	.5000	1/2"	12.70	1/2"	3"	1-1/4"	-	53.19	50.88	48.56	46.25
NEW 41963	.5000	1/2"	12.70	1/2"	4"	1-5/8"	-	69.53	66.51	63.49	60.47
41973	.5000	1/2"	12.70	1/2"	4"	2"	-	69.53	66.51	63.49	60.47
41983	.5000	1/2"	12.70	1/2"	4"	5/8"	2-1/8"	.475"	78.08	74.69	71.29
41993	.5000	1/2"	12.70	1/2"	6"	5/8"	4-1/8"	.475"	119.39	114.20	109.01
42003	.5000	1/2"	12.70	1/2"	6"	3-1/8"	-	102.30	97.85	93.41	88.96
NEW 42013	.6250	5/8"	15.87	5/8"	3-1/2"	3/4"	-	106.00	101.39	96.78	92.18
42023	.6250	5/8"	15.87	5/8"	4"	1-5/8"	-	106.00	101.39	96.78	92.18
NEW 42373	.6250	5/8"	15.87	5/8"	4"	2-1/8"	-	106.00	101.39	96.78	92.18
42033	.6250	5/8"	15.87	5/8"	6"	3/4"	2-3/8"	.590"	147.96	141.52	135.10
42043	.6250	5/8"	15.87	5/8"	6"	3/4"	4-3/8"	.590"	156.51	149.71	142.90
42053	.6250	5/8"	15.87	5/8"	6"	3-1/4"	-	139.42	133.36	127.30	121.23
42083	.6299	16.00	16.0	100	40	-	-	111.57	106.72	101.87	97.02
42103	.6299	16.00	16.0	100	20	40	15.4	115.85	110.81	105.77	100.73
NEW 42113	.6299	16.00	16.0	125	20	60	15.4	148.03	141.60	135.16	128.72
NEW 42123	.6299	16.00	16.0	150	20	110	15.4	164.75	157.58	150.42	143.26
NEW 42133	.7500	3/4"	19.05	3/4"	4"	1"	-	135.64	129.74	123.84	117.95
42143	.7500	3/4"	19.05	3/4"	4"	1-5/8"	-	135.64	129.74	123.84	117.95
42153	.7500	3/4"	19.05	3/4"	5"	2-1/4"	-	179.10	171.31	163.52	155.74
42163	.7500	3/4"	19.05	3/4"	6"	1"	2-1/2"	.715"	194.83	186.36	177.89
42173	.7500	3/4"	19.05	3/4"	6"	1"	4-3/8"	.715"	200.87	192.13	183.39
NEW 42193	.7500	3/4"	19.05	3/4"	6"	3-1/4"	-	188.86	180.65	172.44	164.23
NEW 42203	.7874	20.00	20.0	100	25	-	-	182.10	174.19	166.26	158.35
42213	.7874	20.00	20.0	100	32	-	-	182.10	174.19	166.26	158.35
42223	.7874	20.00	20.0	100	20	40	19.0	186.37	178.27	170.16	162.06
NEW 42226	.7874	20.00	20.0	125	20	60	19.0	215.82	206.44	197.05	187.67
NEW 42233	.7874	20.00	20.0	150	20	85	19.0	250.10	239.22	228.35	217.47
NEW 42236	.7874	20.00	20.0	150	20	110	19.0	254.36	243.31	232.24	221.19
42243	.9843	25.00	25.0	100	38	-	-	210.11	200.98	191.84	182.71
42283	.9843	25.00	25.0	100	25	50	24.0	214.39	205.07	195.74	186.42
NEW 42286	.9843	25.00	25.0	125	25	65	24.0	267.97	256.32	244.66	233.01
NEW 42291	.9843	25.00	25.0	150	25	90	24.0	336.14	321.53	306.90	292.29
NEW 42293	1.000	1"	25.40	1"	4"	1"	-	203.86	195.00	186.13	177.27
42303	1.000	1"	25.40	1"	4"	1-5/8"	-	203.86	195.00	186.13	177.27
NEW 42313	1.000	1"	25.40	1"	5"	2"	-	251.65	240.71	229.77	218.83
42343	1.000	1"	25.40	1"	6"	1-1/4"	3-3/8"	.960"	326.05	311.88	297.70
42353	1.000	1"	25.40	1"	6"	3-1/4"	-	313.25	299.62	286.01	272.39

d_1	+.000" -.001" (+.000 -.025mm)	
d_2	3mm - 6mm	+.0000" -.0003" (+.0000 -.0075mm)
	1/4" - 1"	-.0001" -.0004" (-.0025 -.0100mm)
r	+.0005" -.0005" (+.0127 -.0127mm)	

.1575" - .4724"
(4.00mm - 12.00mm)



HSAL - Corner Radius - ALUMASTAR Coated

Solid submicron grain carbide end mill - center cutting

Specific coating engineered to repel aluminum

Engineered to run at 750-2500 SFM (225-750 M/Min.)

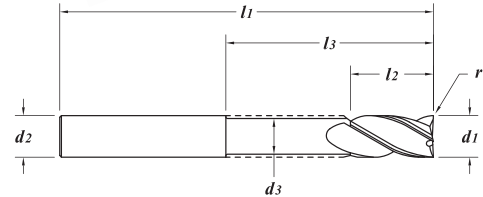
For high speed machining of aluminum

High velocity - high metal removal rate (for 5,000-25,000 RPM spindles)

Need to use properly balanced holders

Holds perpendicularity

Flats can be added within 48 hours



EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
	Decimal	Metric										
39223	.1575	4.00	6.0	50	12	0.3	-	-	25.13	24.03	22.94	21.85
39243	.1575	4.00	6.0	65	6	0.3	16	3.7	30.72	29.39	28.05	26.72
39283	.1875	3/16"	4.76	3/16"	2"	9/16"	.010"	-	18.65	17.84	17.02	16.21
NEW 39293	.1875	3/16"	4.76	3/16"	2"	9/16"	.030"	-	18.65	17.84	17.02	16.21
39303	.1875	3/16"	4.76	3/16"	3"	7/32"	.010"	3/4"	34.12	32.64	31.16	29.67
NEW 39313	.1875	3/16"	4.76	3/16"	3"	7/32"	.030"	3/4"	34.12	32.64	31.16	29.67
39343	.1969	5.00	6.0	65	16	0.3	-	-	25.93	24.80	23.67	22.55
39363	.1969	5.00	6.0	75	8	0.3	20	4.7	42.36	40.52	38.68	36.84
39403	.2362	6.00	6.0	65	19	0.3	-	-	25.11	24.01	22.92	21.83
39423	.2362	6.00	6.0	75	10	0.3	25	5.7	41.01	39.23	37.44	35.66
NEW 39453	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.010"	-	23.85	22.81	21.78	20.74
39463	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.015"	-	23.85	22.81	21.78	20.74
NEW 39473	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.030"	-	23.85	22.81	21.78	20.74
39493	.2500	1/4"	6.35	1/4"	4"	3/8"	.015"	1-1/8"	41.31	39.51	37.72	35.92
NEW 40403	.2500	1/4"	6.35	1/4"	4"	3/8"	.030"	1-1/8"	41.31	39.51	37.72	35.92
39503	.2500	1/4"	6.35	1/4"	4"	3/8"	.015"	2-1/8"	45.58	43.60	41.62	39.63
39543	.2756	7.00	8.0	65	19	0.3	-	-	36.50	34.91	33.33	31.74
39563	.2756	7.00	8.0	75	12	0.3	25	6.4	55.62	53.20	50.78	48.36
NEW 39593	.3125	5/16"	7.94	5/16"	2-1/2"	3/4"	.010"	-	31.55	30.18	28.81	27.44
39603	.3125	5/16"	7.94	5/16"	2-1/2"	3/4"	.015"	-	31.55	30.18	28.81	27.44
NEW 39613	.3125	5/16"	7.94	5/16"	2-1/2"	3/4"	.030"	-	31.55	30.18	28.81	27.44
39623	.3125	5/16"	7.94	5/16"	4"	7/16"	.015"	1-1/8"	54.31	51.95	49.59	47.23
NEW 39633	.3125	5/16"	7.94	5/16"	4"	7/16"	.030"	1-1/8"	54.31	51.95	49.59	47.23
39663	.3150	8.00	8.0	65	19	0.5	-	-	33.22	31.77	30.33	28.88
39683	.3150	8.00	8.0	75	12	0.5	25	7.4	50.61	48.40	46.21	44.00
NEW 39703	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.010"	-	36.77	35.17	33.58	31.98
NEW 39713	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.015"	-	36.77	35.17	33.58	31.98
39723	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.030"	-	36.77	35.17	33.58	31.98
NEW 39733	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.060"	-	36.77	35.17	33.58	31.98
39763	.3750	3/8"	9.52	3/8"	4"	1/2"	.030"	2-1/8"	62.82	60.08	57.36	54.62
NEW 39773	.3750	3/8"	9.52	3/8"	4"	1/2"	.060"	2-1/8"	62.82	60.08	57.36	54.62
39783	.3750	3/8"	9.52	3/8"	6"	1/2"	.030"	4"	91.71	87.72	83.73	79.75
39803	.3937	10.00	10.0	70	24	0.5	-	-	56.40	53.94	51.49	49.05
39843	.3937	10.00	10.0	100	12	0.5	35	9.4	75.83	72.53	69.23	65.94
39883	.4724	12.00	12.0	75	32	0.5	-	-	69.77	66.74	63.71	60.67
39903	.4724	12.00	12.0	100	16	0.5	35	11.4	89.68	85.78	81.88	77.98

143R - 3 Flute (continued)

.5000" - 1.000"
(12.70mm - 25.40mm)

HIGH PERFORMANCE
END MILLS

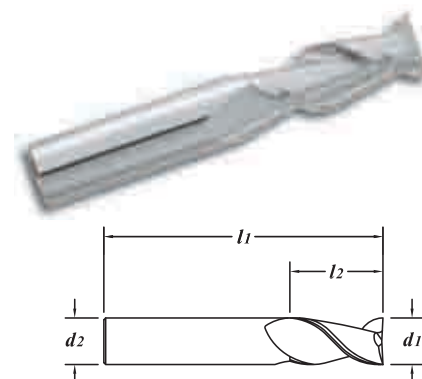
EDP#	d1 † Diameter				d2 Shank Diameter	l1 Overall Length	l2 Flute Length	r Corner Radius	l3 Reach Length	d3 Neck Diameter	1-11	12-24	25-49	50-100
	Decimal			Metric										
NEW	39923	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.010"	-	-	66.28	63.40	60.52	57.64
NEW	39933	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.015"	-	-	66.28	63.40	60.52	57.64
	39943	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.030"	-	-	66.28	63.40	60.52	57.64
NEW	39953	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.060"	-	-	66.28	63.40	60.52	57.64
NEW	39963	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.120"	-	-	66.28	63.40	60.52	57.64
NEW	39973	.5000	1/2"	12.70	1/2"	4"	2"	.010"	-	-	76.65	73.32	69.98	66.65
NEW	40413	.5000	1/2"	12.70	1/2"	4"	2"	.030"	-	-	76.65	73.32	69.98	66.65
NEW	40423	.5000	1/2"	12.70	1/2"	4"	2"	.060"	-	-	76.65	73.32	69.98	66.65
NEW	40433	.5000	1/2"	12.70	1/2"	4"	5/8"	.010"	2-1/8"	.475"	85.19	81.48	77.78	74.08
	39983	.5000	1/2"	12.70	1/2"	4"	5/8"	.030"	2-1/8"	.475"	85.19	81.48	77.78	74.08
NEW	40443	.5000	1/2"	12.70	1/2"	4"	5/8"	.060"	2-1/8"	.475"	85.19	81.48	77.78	74.08
NEW	40453	.5000	1/2"	12.70	1/2"	4"	5/8"	.120"	2-1/8"	.475"	85.19	81.48	77.78	74.08
	39993	.5000	1/2"	12.70	1/2"	6"	5/8"	.030"	4-1/8"	.475"	127.84	122.28	116.72	111.17
NEW	40463	.6250	5/8"	15.87	5/8"	4"	1-5/8"	.015"	-	-	114.66	109.68	104.69	99.70
	40023	.6250	5/8"	15.87	5/8"	4"	1-5/8"	.030"	-	-	114.66	109.68	104.69	99.70
NEW	40473	.6250	5/8"	15.87	5/8"	4"	1-5/8"	.060"	-	-	114.66	109.68	104.69	99.70
NEW	40483	.6250	5/8"	15.87	5/8"	4"	1-5/8"	.120"	-	-	114.66	109.68	104.69	99.70
	40033	.6250	5/8"	15.87	5/8"	6"	3/4"	.030"	2-3/8"	.590"	163.95	156.82	149.69	142.56
	40043	.6250	5/8"	15.87	5/8"	6"	3/4"	.030"	4-3/8"	.590"	172.49	165.00	157.50	150.00
	40083	.6299		16.00	16.0	100	40	1.0	-	-	120.70	115.45	110.21	104.96
	40103	.6299		16.00	16.0	100	20	1.0	40	15.4	124.97	119.54	114.10	108.67
NEW	40133	.7500	3/4"	19.05	3/4"	4"	1-5/8"	.015"	-	-	148.80	142.33	135.87	129.40
	40143	.7500	3/4"	19.05	3/4"	4"	1-5/8"	.030"	-	-	148.80	142.33	135.87	129.40
NEW	40153	.7500	3/4"	19.05	3/4"	4"	1-5/8"	.060"	-	-	148.80	142.33	135.87	129.40
NEW	40493	.7500	3/4"	19.05	3/4"	4"	1-5/8"	.120"	-	-	148.80	142.33	135.87	129.40
NEW	40503	.7500	3/4"	19.05	3/4"	6"	1"	.015"	2-1/2"	.715"	221.76	212.12	202.48	192.84
	40163	.7500	3/4"	19.05	3/4"	6"	1"	.030"	2-1/2"	.715"	221.76	212.12	202.48	192.84
NEW	40513	.7500	3/4"	19.05	3/4"	6"	1"	.060"	2-1/2"	.715"	221.76	212.12	202.48	192.84
NEW	40523	.7500	3/4"	19.05	3/4"	6"	1"	.120"	2-1/2"	.715"	221.76	212.12	202.48	192.84
	40173	.7500	3/4"	19.05	3/4"	6"	1"	.030"	4-3/8"	.715"	227.79	217.89	207.98	198.08
	40183	.7874		20.00	20.0	100	32	1.0	-	-	208.88	199.80	190.72	181.64
	40223	.7874		20.00	20.0	100	20	1.0	40	19.0	213.15	203.88	194.62	185.35
	40243	.9843		25.00	25.0	100	38	1.0	-	-	241.70	231.19	220.68	210.17
	40283	.9843		25.00	25.0	100	25	1.0	50	24.0	245.97	235.28	224.58	213.89
	40293	1.000	1"	25.40	1"	4"	1-5/8"	.030"	-	-	253.78	242.75	231.71	220.68
	40303	1.000	1"	25.40	1"	4"	1-5/8"	.060"	-	-	253.78	242.75	231.71	220.68
NEW	40313	1.000	1"	25.40	1"	4"	1-5/8"	.120"	-	-	253.78	242.75	231.71	220.68
	40343	1.000	1"	25.40	1"	6"	1-1/4"	.030"	3-3/8"	.960"	371.90	355.73	339.56	323.40
NEW	40353	1.000	1"	25.40	1"	6"	1-1/4"	.060"	3-3/8"	.960"	371.90	355.73	339.56	323.40
NEW	40363	1.000	1"	25.40	1"	6"	1-1/4"	.120"	3-3/8"	.960"	371.90	355.73	339.56	323.40



TOLERANCES

$d1$	$+0.000" -0.001" (+0.000 -0.025mm)$
$d2$	$3mm - 6mm \quad +0.0000" -0.0003" (+0.0000 -0.0075mm)$
	$1/4" - 1" \quad -0.0001" -0.0004" (-0.0025 -0.0100mm)$

Solid submicron grain carbide end mill - center cutting
High performance machining
Rigid work holding, machine stability and part integrity are critical!
Excellent choice for slotting
Polished cylindrical O.D. margin reduces chatter
Recommended for aluminum and titanium
Sharp corners (Can be modified with a corner radius)
Designed for spindles between 4,000-8,000 RPM, 1% diameter for chip load

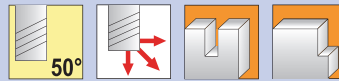


EDP#	$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	1-11	12-24	25-49	50-100
	Decimal	Metric							
NEW 08910	.1181	3.00	3.0	38	8	9.63	9.21	8.79	8.37
NEW 08920	.1181	3.00	3.0	50	12	11.61	11.10	10.60	10.09
NEW 85160	.1250 1/8"	3.17	1/8"	1-1/2"	1/4"	9.04	8.64	8.25	7.86
NEW 85170	.1250 1/8"	3.17	1/8"	2"	1/2"	10.90	10.42	9.95	9.47
NEW 08950	.1575	4.00	6.0	50	8	15.65	14.98	14.29	13.61
NEW 08960	.1575	4.00	6.0	50	12	15.65	14.98	14.29	13.61
NEW 85180	.1875 3/16"	4.76	3/16"	2"	5/16"	11.89	11.37	10.86	10.34
NEW 85190	.1875 3/16"	4.76	3/16"	2"	9/16"	11.89	11.37	10.86	10.34
NEW 08990	.1969	5.00	6.0	50	10	14.74	14.09	13.46	12.81
NEW 09000	.1969	5.00	6.0	65	15	16.37	15.66	14.94	14.24
09010	.2362	6.00	6.0	50	12	12.53	11.99	11.44	10.90
09020	.2362	6.00	6.0	65	25	13.48	12.90	12.30	11.72
09030	.2362	6.00	6.0	100	50	24.42	23.36	22.30	21.24
85200	.2500 1/4"	6.35	1/4"	2"	1/2"	11.89	11.37	10.86	10.34
85220	.2500 1/4"	6.35	1/4"	2-1/2"	1"	12.84	12.28	11.73	11.17
85240	.2500 1/4"	6.35	1/4"	4"	2"	23.20	22.19	21.18	20.18
85300	.3125 5/16"	7.94	5/16"	3"	1-1/8"	27.11	25.94	24.75	23.58
09240	.3150	8.00	8.0	65	20	18.92	18.10	17.27	16.45
09040	.3150	8.00	8.0	75	30	28.57	27.33	26.08	24.85
09050	.3150	8.00	8.0	100	50	31.88	30.49	29.10	27.72
85400	.3750 3/8"	9.52	3/8"	2"	5/8"	20.09	19.22	18.35	17.47
85420	.3750 3/8"	9.52	3/8"	2-1/2"	1"	22.43	21.46	20.48	19.51
85440	.3750 3/8"	9.52	3/8"	4"	2"	33.52	32.06	30.61	29.15
09060	.3937	10.00	10.0	50	16	23.37	22.35	21.34	20.32
09070	.3937	10.00	10.0	70	25	27.32	26.14	24.95	23.75
09080	.3937	10.00	10.0	100	50	42.72	40.86	39.01	37.15
09090	.4724	12.00	12.0	65	20	34.90	33.38	31.87	30.35
09100	.4724	12.00	12.0	75	32	37.74	36.10	34.46	32.82
09110	.4724	12.00	12.0	100	50	52.00	49.74	47.48	45.22
85500	.5000 1/2"	12.70	1/2"	2-1/2"	3/4"	32.98	31.54	30.11	28.67
85520	.5000 1/2"	12.70	1/2"	3"	1-1/4"	35.94	34.38	32.81	31.25
85540	.5000 1/2"	12.70	1/2"	4"	2"	49.06	46.92	44.79	42.66
85600	.6250 5/8"	15.87	5/8"	3-1/2"	1-5/8"	69.31	66.29	63.27	60.27
85620	.6250 5/8"	15.87	5/8"	6"	3"	101.11	96.71	92.32	87.92
09120	.6299	16.00	16.0	88	40	72.78	69.62	66.45	63.28
09130	.6299	16.00	16.0	150	75	101.11	96.71	92.32	87.92
09140	.7087	18.00	18.0	100	45	106.71	102.08	97.44	92.80
85700	.7500 3/4"	19.05	3/4"	4"	1-3/4"	101.63	97.21	92.79	88.37
85720	.7500 3/4"	19.05	3/4"	6"	3"	161.08	154.08	147.07	140.07
09350	.7874	20.00	20.0	100	38	135.68	129.78	123.88	117.98
09150	.7874	20.00	20.0	150	75	169.69	162.31	154.93	147.56
09160	.9843	25.00	25.0	100	45	157.62	150.77	143.92	137.06
09170	.9843	25.00	25.0	150	75	261.48	250.11	238.74	227.38
85800	1.000 1"	25.40	1"	4"	1-3/4"	152.03	145.41	138.81	132.19
85820	1.000 1"	25.40	1"	6"	3"	273.86	261.96	250.05	238.14

253MA (853MA metric) - 3 Flute

.1181" - .6250"
(3.00mm - 15.87mm)

Technical information:
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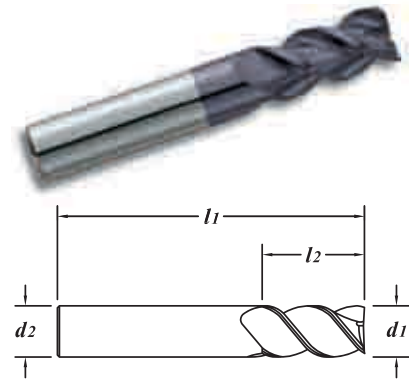
TOLERANCES

d_1	$+0.000" - .002" (+.000 - .050\text{mm})$
d_2	$3\text{mm} - 6\text{mm} \quad +0.0000" - .0003" (+.0000 - .0075\text{mm})$ $1/4" - 1" \quad -.0001" - .0004" (-.0025 - .0100\text{mm})$

Balinit® X.CEED Coated

Uncoated - page 89
TiCN Coated - page 91

Solid submicron grain carbide end mill - center cutting
High performance machining
Rigid work holding, machine stability and part integrity are critical!
Dry or semi-dry machining
Up to 40% faster than uncoated
Slots stainless steel at an axial depth of 25% of diameter
Recommended for stainless steel
Sharp corners (Can be modified with a corner radius)



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							
NEW 10347	.1181	3.00	3.0	38	8	11.79	11.28	10.76	10.25
NEW 10357	.1181	3.00	3.0	50	12	14.21	13.59	12.97	12.36
NEW 86137	.1250 1/8"	3.17	1/8"	1-1/2"	1/4"	11.21	10.72	10.23	9.74
NEW 86147	.1250 1/8"	3.17	1/8"	2"	1/2"	13.50	12.92	12.32	11.74
NEW 10387	.1575	4.00	6.0	50	8	19.05	18.22	17.40	16.57
NEW 10397	.1575	4.00	6.0	50	12	19.05	18.22	17.40	16.57
86157	.1875 3/16"	4.76	3/16"	2"	5/16"	12.80	12.24	11.69	11.13
86167	.1875 3/16"	4.76	3/16"	2"	9/16"	12.80	12.24	11.69	11.13
86187	.1875 3/16"	4.76	3/16"	3"	1"	22.32	21.35	20.37	19.41
10407	.1969	5.00	5.0	50	8	15.16	14.51	13.84	13.19
10417	.1969	5.00	5.0	50	14	15.16	14.51	13.84	13.19
10017	.2362	6.00	6.0	50	12	15.87	15.18	14.49	13.80
10027	.2362	6.00	6.0	65	19	17.89	17.11	16.33	15.56
10037	.2362	6.00	6.0	75	32	27.57	26.37	25.17	23.97
86207	.2500 1/4"	6.35	1/4"	2"	1/2"	15.23	14.56	13.90	13.24
86227	.2500 1/4"	6.35	1/4"	2-1/2"	3/4"	17.27	16.53	15.78	15.02
86247	.2500 1/4"	6.35	1/4"	3"	1-1/4"	26.41	25.26	24.11	22.96
86267	.3125 5/16"	7.94	5/16"	2"	7/16"	21.05	20.13	19.22	18.30
86277	.3125 5/16"	7.94	5/16"	2-1/2"	13/16"	24.64	23.57	22.50	21.42
86287	.3125 5/16"	7.94	5/16"	4"	1-1/4"	38.69	37.00	35.33	33.64
10427	.3150	8.00	8.0	50	11	21.91	20.96	20.01	19.05
10047	.3150	8.00	8.0	65	20	25.52	24.41	23.31	22.19
10057	.3150	8.00	8.0	75	32	35.17	33.64	32.12	30.59
86307	.3750 3/8"	9.52	3/8"	2"	1/2"	24.88	23.80	22.71	21.63
86327	.3750 3/8"	9.52	3/8"	2-1/2"	1"	29.07	27.80	26.54	25.27
86347	.3750 3/8"	9.52	3/8"	3-1/2"	1-1/2"	41.93	40.11	38.28	36.46
10067	.3937	10.00	10.0	50	12	28.79	27.54	26.28	25.03
10077	.3937	10.00	10.0	75	25	40.65	38.89	37.12	35.35
10087	.3937	10.00	10.0	88	38	51.48	49.24	47.01	44.76
86367	.4375 7/16"	11.11	7/16"	2-1/2"	9/16"	34.92	33.40	31.89	30.37
86377	.4375 7/16"	11.11	7/16"	2-3/4"	1"	34.92	33.40	31.89	30.37
86387	.4375 7/16"	11.11	7/16"	4"	2"	55.86	53.42	51.00	48.57
10097	.4724	12.00	12.0	65	16	42.42	40.58	38.73	36.89
10107	.4724	12.00	12.0	75	25	45.27	43.31	41.33	39.36
10117	.4724	12.00	12.0	100	50	61.77	59.08	56.40	53.71
86407	.5000 1/2"	12.70	1/2"	2-1/2"	5/8"	40.67	38.91	37.14	35.37
86427	.5000 1/2"	12.70	1/2"	3"	1"	43.46	41.57	39.69	37.79
86447	.5000 1/2"	12.70	1/2"	4"	2"	58.81	56.25	53.70	51.14
10437	.5512	14.00	14.0	65	16	63.34	60.58	57.82	55.08
10447	.5512	14.00	14.0	75	25	67.82	64.86	61.92	58.97
10457	.5512	14.00	14.0	100	50	82.31	78.73	75.15	71.57
86467	.5625 9/16"	14.29	9/16"	3"	7/8"	68.02	65.06	62.10	59.14
86477	.5625 9/16"	14.29	9/16"	3-1/2"	1-1/4"	72.26	69.12	65.98	62.84
86487	.5625 9/16"	14.29	9/16"	6"	2-1/2"	109.30	104.55	99.80	95.05
86507	.6250 5/8"	15.87	5/8"	3"	7/8"	72.10	68.97	65.83	62.70
86527	.6250 5/8"	15.87	5/8"	3-1/2"	1-1/4"	80.19	76.71	73.22	69.73
86547	.6250 5/8"	15.87	5/8"	6"	2-1/2"	117.28	112.18	107.08	101.98

continued →

253MA (853MA metric) - 3 Flute (continued)

.6299" - 1.000"
(16.00mm - 25.40mm)

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							
10127	.6299	16.00	16.0	75	20	75.43	72.16	68.87	65.59
10137	.6299	16.00	16.0	88	32	83.66	80.02	76.38	72.75
10147	.6299	16.00	16.0	150	65	117.28	112.18	107.08	101.98
10167	.7087	18.00	18.0	100	38	119.54	114.34	109.14	103.95
10177	.7087	18.00	18.0	150	75	170.74	163.31	155.89	148.47
86607	.7500	3/4"	19.05	3/4"	3-1/2"	1"	114.47	109.49	104.52
86627	.7500	3/4"	19.05	3/4"	4"	1-1/2"	114.47	109.49	104.52
86647	.7500	3/4"	19.05	3/4"	6"	3"	179.81	171.98	164.17
10467	.7874	20.00	20.0	75	22	138.64	132.61	126.59	120.56
10187	.7874	20.00	20.0	100	38	154.66	147.93	141.21	134.48
10197	.7874	20.00	20.0	150	75	193.99	185.56	177.12	168.69
10217	.9843	25.00	25.0	100	28	176.60	168.93	161.24	153.57
10487	.9843	25.00	25.0	100	50	176.60	168.93	161.24	153.57
10497	.9843	25.00	25.0	150	82	285.78	273.35	260.93	248.51
86697	1.000	1"	25.40	1"	4"	1-1/8"	171.01	163.57	156.14
86727	1.000	1"	25.40	1"	4"	2"	171.01	163.57	156.14
86747	1.000	1"	25.40	1"	6"	3-1/4"	298.18	285.21	272.25



253M (853M metric) - 3 Flute

.1181" - .6250"
(3.00mm - 15.87mm)

Technical information:
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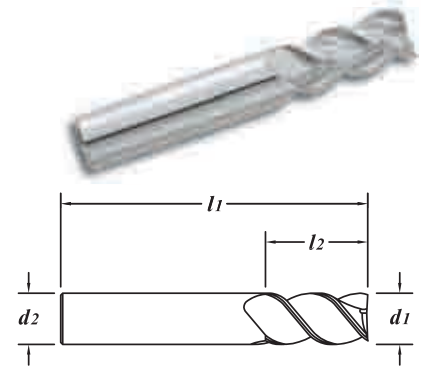
TOLERANCES		
d_1	+.000" -.002" (+.000 -.050mm)	
d_2	3mm - 6mm	+.0000" -.0003" (+.0000 -.0075mm)
	1/4" - 1"	-.0001" -.0004" (-.0025 -.0100mm)

X.CEED Coated - page 87
TiCN Coated - page 91

Solid submicron grain carbide end mill - center cutting
High performance machining
Rigid work holding, machine stability and part integrity are critical!
Slots aluminum at an axial depth of 25% of diameter

Recommended for aluminum and stainless steel

Sharp corners (Can be modified with a corner radius)



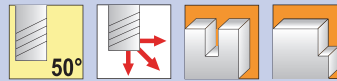
EDP#	d_1 †		d_2	l_1	l_2	1-11	12-24	25-49	50-100
	Decimal	Diameter Metric							
NEW 10340	.1181	3.00	3.0	38	8	9.63	9.21	8.79	8.37
NEW 10350	.1181	3.00	3.0	50	12	11.61	11.10	10.60	10.09
NEW 86130	.1250	1/8"	3.17	1-1/2"	1/4"	9.04	8.64	8.25	7.86
NEW 86140	.1250	1/8"	3.17	2"	1/2"	10.90	10.42	9.95	9.47
NEW 10380	.1575	4.00	6.0	50	8	15.65	14.98	14.29	13.61
NEW 10390	.1575	4.00	6.0	50	12	15.65	14.98	14.29	13.61
86150	.1875	3/16"	4.76	3/16"	2"	10.65	10.18	9.72	9.26
86160	.1875	3/16"	4.76	3/16"	2"	10.65	10.18	9.72	9.26
86180	.1875	3/16"	4.76	3/16"	3"	18.98	18.16	17.33	16.50
10400	.1969	5.00	5.0	50	8	11.82	11.32	10.80	10.29
10410	.1969	5.00	5.0	50	14	11.82	11.32	10.80	10.29
10010	.2362	6.00	6.0	50	12	12.53	11.99	11.44	10.90
10020	.2362	6.00	6.0	65	19	13.48	12.90	12.30	11.72
10030	.2362	6.00	6.0	75	32	23.14	22.13	21.13	20.12
86200	.2500	1/4"	6.35	1/4"	2"	11.89	11.37	10.86	10.34
86220	.2500	1/4"	6.35	1/4"	2-1/2"	12.84	12.28	11.73	11.17
86240	.2500	1/4"	6.35	1/4"	3"	1-1/4"	22.00	21.04	20.08
86260	.3125	5/16"	7.94	5/16"	2"	16.27	15.56	14.85	14.14
86270	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	18.02	17.24	16.45
86280	.3125	5/16"	7.94	5/16"	4"	1-1/4"	30.27	28.95	27.64
10420	.3150	8.00	8.0	50	11	17.14	16.39	15.65	14.90
10040	.3150	8.00	8.0	65	20	18.92	18.10	17.27	16.45
10050	.3150	8.00	8.0	75	32	28.57	27.33	26.08	24.85
86300	.3750	3/8"	9.52	3/8"	2"	1/2"	20.09	19.22	18.35
86320	.3750	3/8"	9.52	3/8"	2-1/2"	1"	22.43	21.46	20.48
86340	.3750	3/8"	9.52	3/8"	3-1/2"	1-1/2"	33.52	32.06	30.61
10060	.3937	10.00	10.0	50	12	23.37	22.35	21.34	20.32
10070	.3937	10.00	10.0	75	25	33.13	31.69	30.25	28.81
10080	.3937	10.00	10.0	88	38	41.72	39.92	38.10	36.29
86360	.4375	7/16"	11.11	7/16"	2-1/2"	9/16"	27.39	26.20	25.01
86370	.4375	7/16"	11.11	7/16"	2-3/4"	1"	27.39	26.20	25.01
86380	.4375	7/16"	11.11	7/16"	4"	2"	46.11	44.11	42.10
10090	.4724	12.00	12.0	65	16	34.90	33.38	31.87	30.35
10100	.4724	12.00	12.0	75	25	37.74	36.10	34.46	32.82
10110	.4724	12.00	12.0	100	50	52.00	49.74	47.48	45.22
86400	.5000	1/2"	12.70	1/2"	2-1/2"	5/8"	33.16	31.71	30.27
86420	.5000	1/2"	12.70	1/2"	3"	1"	35.94	34.38	32.81
86440	.5000	1/2"	12.70	1/2"	4"	2"	49.06	46.92	44.79
10430	.5512	14.00	14.0	65	16	54.61	52.24	49.86	47.49
10440	.5512	14.00	14.0	75	25	59.07	56.50	53.93	51.37
10450	.5512	14.00	14.0	100	50	71.43	68.32	65.22	62.11
86460	.5625	9/16"	14.29	9/16"	3"	7/8"	59.30	56.72	54.14
86470	.5625	9/16"	14.29	9/16"	3-1/2"	1-1/4"	61.38	58.71	56.05
86480	.5625	9/16"	14.29	9/16"	6"	2-1/2"	93.13	89.09	85.03
86500	.6250	5/8"	15.87	5/8"	3"	7/8"	63.39	60.63	57.88
86520	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	69.31	66.29	63.27
86540	.6250	5/8"	15.87	5/8"	6"	2-1/2"	101.11	96.71	92.32

continued →

253M (853M metric) - 3 Flute (continued)

.6299" - 1.000"
(16.00mm - 25.40mm)

EDP#	$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	1-11	12-24	25-49	50-100
	Decimal	Metric							
10120	.6299	16.00	16.0	75	20	66.72	63.81	60.91	58.01
10130	.6299	16.00	16.0	88	32	72.78	69.62	66.45	63.28
10140	.6299	16.00	16.0	150	65	101.11	96.71	92.32	87.92
10160	.7087	18.00	18.0	100	38	106.69	102.06	97.42	92.78
10170	.7087	18.00	18.0	150	75	152.03	145.41	138.81	132.19
86600	.7500	3/4"	19.05	3-1/2"	1"	101.63	97.21	92.79	88.37
86620	.7500	3/4"	19.05	4"	1-1/2"	101.63	97.21	92.79	88.37
86640	.7500	3/4"	19.05	6"	3"	161.08	154.08	147.07	140.07
10460	.7874	20.00	20.0	75	22	123.64	118.26	112.88	107.50
10180	.7874	20.00	20.0	100	38	135.68	129.78	123.88	117.98
10190	.7874	20.00	20.0	150	75	169.69	162.31	154.93	147.56
10210	.9843	25.00	25.0	100	28	157.62	150.77	143.92	137.06
10480	.9843	25.00	25.0	100	50	157.62	150.77	143.92	137.06
10490	.9843	25.00	25.0	150	82	261.48	250.11	238.74	227.38
86690	1.000	1"	25.40	4"	1-1/8"	152.03	145.41	138.81	132.19
86720	1.000	1"	25.40	4"	2"	152.03	145.41	138.81	132.19
86740	1.000	1"	25.40	6"	3-1/4"	273.86	261.96	250.05	238.14



TOLERANCES

d_1	$+0.000'' -0.002'' (+0.000 -0.050\text{mm})$
d_2	$3\text{mm} - 6\text{mm} \quad +0.0000'' -0.0003'' (+0.0000 -0.0075\text{mm})$
	$1/4'' - 1'' \quad -0.0001'' -0.0004'' (-0.0025 -0.0100\text{mm})$

TiCN Coated

X.CEED Coated - page 87
Uncoated - page 89

Solid submicron grain carbide end mill - center cutting

High performance machining

Rigid work holding, machine stability and part integrity are critical!

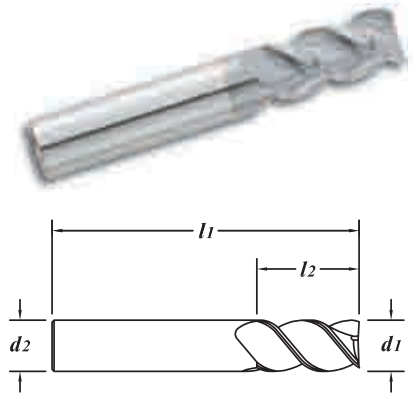
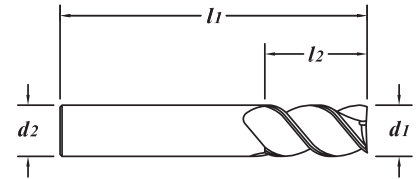
Improved abrasion resistance and lubricity

Up to 25% faster than uncoated

Slots aluminum and stainless steel at an axial depth of 25% of diameter

Recommended for aluminum and 303 stainless steel

Sharp corners (Can be modified with a corner radius)



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							
86154	.1875	3/16"	4.76	3/16"	2"	5/16"	12.53	11.99	11.44	10.90
86164	.1875	3/16"	4.76	3/16"	2"	9/16"	12.53	11.99	11.44	10.90
86184	.1875	3/16"	4.76	3/16"	3"	1"	21.63	20.70	19.75	18.81
86204	.2500	1/4"	6.35	1/4"	2"	1/2"	14.54	13.90	13.27	12.65
86224	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	16.68	15.95	15.24	14.51
86244	.2500	1/4"	6.35	1/4"	3"	1-1/4"	25.82	24.70	23.58	22.45
86264	.3125	5/16"	7.94	5/16"	2"	7/16"	20.42	19.53	18.64	17.75
86274	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	23.14	22.13	21.13	20.12
86284	.3125	5/16"	7.94	5/16"	4"	1-1/4"	36.65	35.06	33.47	31.87
86304	.3750	3/8"	9.52	3/8"	2"	1/2"	24.24	23.19	22.13	21.08
86324	.3750	3/8"	9.52	3/8"	2-1/2"	1"	26.58	25.43	24.27	23.12
86344	.3750	3/8"	9.52	3/8"	3-1/2"	1-1/2"	39.88	38.15	36.42	34.68
86364	.4375	7/16"	11.11	7/16"	2-1/2"	9/16"	33.55	32.09	30.63	29.17
86374	.4375	7/16"	11.11	7/16"	2-3/4"	1"	33.55	32.09	30.63	29.17
86384	.4375	7/16"	11.11	7/16"	4"	2"	53.80	51.46	49.12	46.78
86404	.5000	1/2"	12.70	1/2"	2-1/2"	5/8"	39.30	37.60	35.88	34.17
86424	.5000	1/2"	12.70	1/2"	3"	1"	42.09	40.26	38.43	36.60
86444	.5000	1/2"	12.70	1/2"	4"	2"	56.75	54.29	51.81	49.35
86464	.5625	9/16"	14.29	9/16"	3"	7/8"	67.55	64.62	61.67	58.74
86474	.5625	9/16"	14.29	9/16"	3-1/2"	1-1/4"	70.97	67.88	64.80	61.71
86484	.5625	9/16"	14.29	9/16"	6"	2-1/2"	106.57	101.93	97.30	92.66
86504	.6250	5/8"	15.87	5/8"	3"	7/8"	71.65	68.53	65.42	62.30
86524	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	78.88	75.45	72.02	68.60
86544	.6250	5/8"	15.87	5/8"	6"	2-1/2"	114.56	109.57	104.59	99.61
86604	.7500	3/4"	19.05	3/4"	3-1/2"	1"	112.59	107.69	102.80	97.91
86624	.7500	3/4"	19.05	3/4"	4"	1-1/2"	112.59	107.69	102.80	97.91
86644	.7500	3/4"	19.05	3/4"	6"	3"	176.43	168.75	161.09	153.41
86694	1.000	1"	25.40	1"	4"	1-1/8"	168.50	161.18	153.85	146.53
86724	1.000	1"	25.40	1"	4"	2"	168.50	161.18	153.85	146.53
86744	1.000	1"	25.40	1"	6"	3-1/4"	295.56	282.70	269.86	257.00

255MA (855MA metric) - 5 Flute

Technical information:

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TOLERANCES

d_1	$+0.000'' - 0.002'' (+0.000 - 0.050\text{mm})$
d_2	$3\text{mm} - 6\text{mm} \quad +0.0000'' - 0.003'' (+0.0000 - 0.075\text{mm})$
	$1/4'' - 1'' \quad -0.0001'' - 0.004'' (-0.0025 - 0.100\text{mm})$

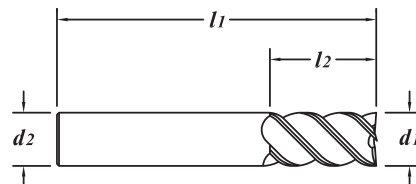
.1181" - .6250"
(3.00mm - 15.87mm)

Balinit® X.CEED Coated

Uncoated - page 94
TiCN Coated - page 96

Solid submicron grain carbide end mill - center cutting
High performance milling
Rigid work holding, machine stability and part integrity are critical!
Dry or semi-dry machining
Up to 40% faster than uncoated
Improved finishes in titanium
Heavy core, Sharp corners

Recommended for steels, stainless steel and exotics



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							
NEW 40047	.1181	3.00	3.0	38	8	11.79	11.28	10.76	10.25
NEW 40057	.1181	3.00	3.0	50	12	14.21	13.59	12.97	12.36
NEW 52087	.1250 1/8"	3.17	1/8"	1-1/2"	1/4"	11.21	10.72	10.23	9.74
NEW 52097	.1250 1/8"	3.17	1/8"	2"	1/2"	13.50	12.92	12.32	11.74
NEW 40087	.1575	4.00	6.0	50	8	19.05	18.22	17.40	16.57
NEW 40097	.1575	4.00	6.0	50	12	19.05	18.22	17.40	16.57
52107	.1875 3/16"	4.76	3/16"	2"	5/16"	12.80	12.24	11.69	11.13
52127	.1875 3/16"	4.76	3/16"	2"	9/16"	12.80	12.24	11.69	11.13
40107	.1969	5.00	5.0	50	8	15.16	14.51	13.84	13.19
40127	.1969	5.00	5.0	50	14	15.16	14.51	13.84	13.19
40207	.2362	6.00	6.0	50	10	15.87	15.18	14.49	13.80
40227	.2362	6.00	6.0	65	20	17.89	17.11	16.33	15.56
40247	.2362	6.00	6.0	100	32	29.61	28.32	27.03	25.75
52207	.2500 1/4"	6.35	1/4"	2"	3/8"	15.23	14.56	13.90	13.24
52227	.2500 1/4"	6.35	1/4"	2-1/2"	3/4"	17.27	16.53	15.78	15.02
52247	.2500 1/4"	6.35	1/4"	4"	1-1/4"	28.39	27.15	25.93	24.69
52307	.3125 5/16"	7.94	5/16"	2"	7/16"	21.05	20.13	19.22	18.30
52327	.3125 5/16"	7.94	5/16"	2-1/2"	13/16"	24.64	23.57	22.50	21.42
52347	.3125 5/16"	7.94	5/16"	4"	1-1/4"	38.69	37.00	35.33	33.64
40307	.3150	8.00	8.0	50	11	21.91	20.96	20.01	19.05
40327	.3150	8.00	8.0	65	21	25.52	24.41	23.31	22.19
40347	.3150	8.00	8.0	100	32	40.28	38.53	36.77	35.03
52407	.3750 3/8"	9.52	3/8"	2"	1/2"	24.88	23.80	22.71	21.63
52427	.3750 3/8"	9.52	3/8"	2-1/2"	7/8"	29.07	27.80	26.54	25.27
52447	.3750 3/8"	9.52	3/8"	3-1/2"	1-1/2"	41.93	40.11	38.28	36.46
40407	.3937	10.00	10.0	50	12	28.79	27.54	26.28	25.03
40427	.3937	10.00	10.0	70	22	34.84	33.32	31.81	30.30
40447	.3937	10.00	10.0	88	38	51.48	49.24	47.01	44.76
52507	.4375 7/16"	11.11	7/16"	2-1/2"	9/16"	34.92	33.40	31.89	30.37
52527	.4375 7/16"	11.11	7/16"	2-3/4"	1"	34.92	33.40	31.89	30.37
52547	.4375 7/16"	11.11	7/16"	4"	2"	55.86	53.42	51.00	48.57
40507	.4724	12.00	12.0	65	16	42.42	40.58	38.73	36.89
40527	.4724	12.00	12.0	75	32	45.27	43.31	41.33	39.36
40547	.4724	12.00	12.0	100	50	61.77	59.08	56.40	53.71
52607	.5000 1/2"	12.70	1/2"	2-1/2"	5/8"	40.67	38.91	37.14	35.37
52627	.5000 1/2"	12.70	1/2"	3"	1-1/4"	43.46	41.57	39.69	37.79
52647	.5000 1/2"	12.70	1/2"	4"	2"	58.81	56.25	53.70	51.14
52707	.6250 5/8"	15.87	5/8"	3"	3/4"	72.10	68.97	65.83	62.70
52727	.6250 5/8"	15.87	5/8"	3-1/2"	1-5/8"	80.19	76.71	73.22	69.73
52747	.6250 5/8"	15.87	5/8"	6"	2-1/2"	117.28	112.18	107.08	101.98

255MA (855MA metric) - 5 Flute (continued)

.6299" - 1.000"
(16.00mm - 25.40mm)

HIGH PERFORMANCE
END MILLS

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							
40607	.6299	16.00	16.0	75	20	75.43	72.16	68.87	65.59
40627	.6299	16.00	16.0	88	41	83.66	80.02	76.38	72.75
40647	.6299	16.00	16.0	150	63	117.28	112.18	107.08	101.98
52807	.7500	3/4"	19.05	3"	7/8"	101.60	97.18	92.76	88.35
52827	.7500	3/4"	19.05	4"	1-5/8"	114.47	109.49	104.52	99.54
52837	.7500	3/4"	19.05	5"	2"	153.64	146.96	140.28	133.60
52847	.7500	3/4"	19.05	6"	3-1/4"	179.81	171.98	164.17	156.35
40707	.7874	20.00	20.0	75	22	138.64	132.61	126.59	120.56
40727	.7874	20.00	20.0	100	41	154.66	147.93	141.21	134.48
40747	.7874	20.00	20.0	150	82	193.99	185.56	177.12	168.69
40787	.9843	25.00	25.0	100	28	176.60	168.93	161.24	153.57
40827	.9843	25.00	25.0	100	50	176.60	168.93	161.24	153.57
40847	.9843	25.00	25.0	150	82	285.78	273.35	260.93	248.51
52897	1.000	1"	25.40	1"	4"	171.01	163.57	156.14	148.70
52927	1.000	1"	25.40	1"	4"	171.01	163.57	156.14	148.70
52947	1.000	1"	25.40	1"	6"	298.18	285.21	272.25	259.28

255M (855M metric) - 5 Flute

Technical information:

page 193, 195



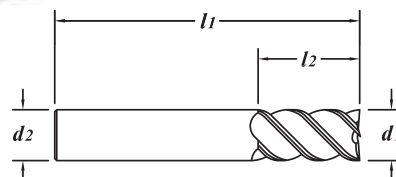
TOLERANCES

d_1	+.000" -.002" (+.000 -.050mm)	
d_2	3mm - 6mm	+.0000" -.0003" (+.0000 -.0075mm)
	1/4" - 1"	-.0001" -.0004" (-.0025 -.0100mm)

.1181" - .6250"
(3.00mm - 15.87mm)

X.CEED Coated - page 92

TiCN Coated - page 96



Solid submicron grain carbide end mill - center cutting
High performance milling
Rigid work holding, machine stability and part integrity are critical!
Improved finishes in titanium
Heavy core
Sharp corners

Recommended for steels, stainless steel and exotics

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							
NEW 40040	.1181	3.00	3.0	38	8	9.63	9.21	8.79	8.37
NEW 40050	.1181	3.00	3.0	50	12	11.61	11.10	10.60	10.09
NEW 52080	.1250 1/8"	3.17	1/8"	1-1/2"	1/4"	9.04	8.64	8.25	7.86
NEW 52090	.1250 1/8"	3.17	1/8"	2"	1/2"	10.90	10.42	9.95	9.47
NEW 40080	.1575	4.00	6.0	50	8	15.65	14.98	14.29	13.61
NEW 40090	.1575	4.00	6.0	50	12	15.65	14.98	14.29	13.61
52100	.1875 3/16"	4.76	3/16"	2"	5/16"	10.65	10.18	9.72	9.26
52120	.1875 3/16"	4.76	3/16"	2"	9/16"	10.65	10.18	9.72	9.26
40100	.1969	5.00	5.0	50	8	11.82	11.32	10.80	10.29
40120	.1969	5.00	5.0	50	14	11.82	11.32	10.80	10.29
40200	.2362	6.00	6.0	50	10	12.53	11.99	11.44	10.90
40220	.2362	6.00	6.0	65	20	13.48	12.90	12.30	11.72
40240	.2362	6.00	6.0	100	32	24.42	23.36	22.30	21.24
52200	.2500 1/4"	6.35	1/4"	2"	3/8"	11.89	11.37	10.86	10.34
52220	.2500 1/4"	6.35	1/4"	2-1/2"	3/4"	12.84	12.28	11.73	11.17
52240	.2500 1/4"	6.35	1/4"	4"	1-1/4"	23.20	22.19	21.18	20.18
52300	.3125 5/16"	7.94	5/16"	2"	7/16"	16.27	15.56	14.85	14.14
52320	.3125 5/16"	7.94	5/16"	2-1/2"	13/16"	18.02	17.24	16.45	15.67
52340	.3125 5/16"	7.94	5/16"	4"	1-1/4"	30.27	28.95	27.64	26.32
40300	.3150	8.00	8.0	50	11	17.14	16.39	15.65	14.90
40320	.3150	8.00	8.0	65	21	18.92	18.10	17.27	16.45
40340	.3150	8.00	8.0	100	32	31.88	30.49	29.10	27.72
52400	.3750 3/8"	9.52	3/8"	2"	1/2"	20.09	19.22	18.35	17.47
52420	.3750 3/8"	9.52	3/8"	2-1/2"	7/8"	22.43	21.46	20.48	19.51
52440	.3750 3/8"	9.52	3/8"	3-1/2"	1-1/2"	33.52	32.06	30.61	29.15
40400	.3937	10.00	10.0	50	12	23.37	22.35	21.34	20.32
40420	.3937	10.00	10.0	70	22	27.32	26.14	24.95	23.75
40440	.3937	10.00	10.0	88	38	41.72	39.92	38.10	36.29
52500	.4375 7/16"	11.11	7/16"	2-1/2"	9/16"	27.39	26.20	25.01	23.82
52520	.4375 7/16"	11.11	7/16"	2-3/4"	1"	27.39	26.20	25.01	23.82
52540	.4375 7/16"	11.11	7/16"	4"	2"	46.11	44.11	42.10	40.10
40500	.4724	12.00	12.0	65	16	34.90	33.38	31.87	30.35
40520	.4724	12.00	12.0	75	32	37.74	36.10	34.46	32.82
40540	.4724	12.00	12.0	100	50	52.00	49.74	47.48	45.22
52600	.5000 1/2"	12.70	1/2"	2-1/2"	5/8"	33.16	31.71	30.27	28.83
52620	.5000 1/2"	12.70	1/2"	3"	1-1/4"	35.94	34.38	32.81	31.25
52640	.5000 1/2"	12.70	1/2"	4"	2"	49.06	46.92	44.79	42.66
52700	.6250 5/8"	15.87	5/8"	3"	3/4"	63.39	60.63	57.88	55.12
52720	.6250 5/8"	15.87	5/8"	3-1/2"	1-5/8"	69.31	66.29	63.27	60.27
52740	.6250 5/8"	15.87	5/8"	6"	2-1/2"	101.11	96.71	92.32	87.92

255M (855M metric) - 5 Flute (continued)

.6299" - 1.000"
(16.00mm - 25.40mm)

HIGH PERFORMANCE
END MILLS

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							
40600	.6299	16.00	16.0	75	20	66.72	63.81	60.91	58.01
40620	.6299	16.00	16.0	88	41	72.78	69.62	66.45	63.28
40640	.6299	16.00	16.0	150	63	101.11	96.71	92.32	87.92
52800	.7500	3/4"	19.05	3/4"	3"	7/8"	91.15	87.18	83.22
52820	.7500	3/4"	19.05	3/4"	4"	1-5/8"	101.63	97.21	92.79
52830	.7500	3/4"	19.05	3/4"	5"	2"	137.57	131.59	125.61
52840	.7500	3/4"	19.05	3/4"	6"	3-1/4"	161.08	154.08	147.07
40700	.7874	20.00	20.0	75	22	123.64	118.26	112.88	107.50
40720	.7874	20.00	20.0	100	41	135.68	129.78	123.88	117.98
40740	.7874	20.00	20.0	150	82	169.69	162.31	154.93	147.56
40780	.9843	25.00	25.0	100	28	157.62	150.77	143.92	137.06
40820	.9843	25.00	25.0	100	50	157.62	150.77	143.92	137.06
40840	.9843	25.00	25.0	150	82	261.48	250.11	238.74	227.38
52890	1.000	1"	25.40	1"	4"	1-1/8"	152.03	145.41	138.81
52920	1.000	1"	25.40	1"	4"	2"	152.03	145.41	138.81
52940	1.000	1"	25.40	1"	6"	3-1/4"	273.86	261.96	250.05



TOLERANCES

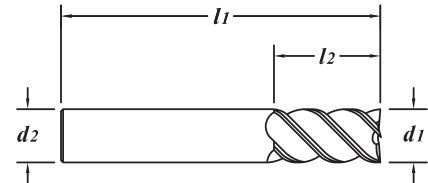
d_1	$+0.000" -0.002" (+0.000 -0.050mm)$
d_2	$+0.0000" -0.0003" (+0.0000 -0.0075mm)$
	$-0.0001" -0.0004" (-0.0025 -0.0100mm)$

TiCN Coated

X.CEED Coated - page 92
Uncoated - page 94

Solid submicron grain carbide end mill - center cutting
High performance milling
Rigid work holding, machine stability and part integrity are critical!
Improved abrasion resistance and lubricity
Up to 25% faster than uncoated
Improved finishes in titanium
Heavy core
Sharp corners

Recommended for steels, stainless steel and exotics



EDP#	d_1 †			d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
	Decimal	Diameter	Metric							
52104	.1875	3/16"	4.76	3/16"	2"	5/16"	12.53	11.99	11.44	10.90
52124	.1875	3/16"	4.76	3/16"	2"	9/16"	12.53	11.99	11.44	10.90
52204	.2500	1/4"	6.35	1/4"	2"	3/8"	14.54	13.90	13.27	12.65
52224	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	16.68	15.95	15.24	14.51
52244	.2500	1/4"	6.35	1/4"	4"	1-1/4"	27.35	26.17	24.97	23.78
52304	.3125	5/16"	7.94	5/16"	2"	7/16"	20.42	19.53	18.64	17.75
52324	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	23.14	22.13	21.13	20.12
52344	.3125	5/16"	7.94	5/16"	4"	1-1/4"	36.65	35.06	33.47	31.87
52404	.3750	3/8"	9.52	3/8"	2"	1/2"	24.24	23.19	22.13	21.08
52424	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	27.57	26.37	25.17	23.97
52444	.3750	3/8"	9.52	3/8"	3-1/2"	1-1/2"	39.88	38.15	36.42	34.68
52504	.4375	7/16"	11.11	7/16"	2-1/2"	9/16"	33.55	32.09	30.63	29.17
52524	.4375	7/16"	11.11	7/16"	2-3/4"	1"	33.55	32.09	30.63	29.17
52544	.4375	7/16"	11.11	7/16"	4"	2"	53.80	51.46	49.12	46.78
52604	.5000	1/2"	12.70	1/2"	2-1/2"	5/8"	39.30	37.60	35.88	34.17
52624	.5000	1/2"	12.70	1/2"	3"	1-1/4"	42.09	40.26	38.43	36.60
52644	.5000	1/2"	12.70	1/2"	4"	2"	56.75	54.29	51.81	49.35
52704	.6250	5/8"	15.87	5/8"	3"	3/4"	71.65	68.53	65.42	62.30
52724	.6250	5/8"	15.87	5/8"	3-1/2"	1-5/8"	78.88	75.45	72.02	68.60
52744	.6250	5/8"	15.87	5/8"	6"	2-1/2"	114.56	109.57	104.59	99.61
52804	.7500	3/4"	19.05	3/4"	3"	7/8"	101.32	96.91	92.51	88.10
52824	.7500	3/4"	19.05	3/4"	4"	1-5/8"	112.59	107.69	102.80	97.91
52844	.7500	3/4"	19.05	3/4"	6"	3-1/4"	176.43	168.75	161.09	153.41
52894	1.000	1"	25.40	1"	4"	1-1/8"	168.50	161.18	153.85	146.53
52924	1.000	1"	25.40	1"	4"	2"	168.50	161.18	153.85	146.53
52944	1.000	1"	25.40	1"	6"	3-1/4"	295.56	282.70	269.86	257.00

255RA (855RA metric) - 5 Flute

Technical information:
page 193, 195



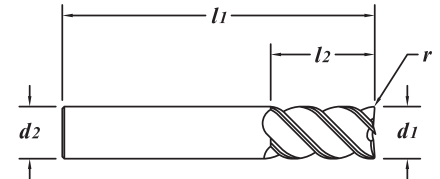
.1181" - .3125"
(3.00mm - 7.94mm)

TOLERANCES		
d_1	+.000" -.002" (+.000 -.050mm)	
d_2	3mm - 6mm	+.0000" -.0003" (+.0000 -.0075mm)
	1/4" - 1"	-.0001" -.0004" (-.0025 -.0100mm)
r	+.001" -.001" (+.025 -.025mm)	

Corner Radius - Balinit® X.CEED Coated

Solid submicron grain carbide end mill - center cutting
High performance milling
Rigid work holding, machine stability and part integrity are critical!
Dry or semi-dry machining
Up to 40% faster than uncoated
Improved finishes in titanium
Heavy core
An ideal tool for finishing applications after using the VRX end mill (see page 103)

Recommended for steels, stainless steel and exotics



EDP#	d_1 †		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100		
	Decimal	Diameter									Metric	
NEW	83527	.1181	3.00	3.0	38	8	0.2	12.89	12.32	11.76	11.20	
	83537	.1181	3.00	3.0	38	8	0.5	12.89	12.32	11.76	11.20	
	83547	.1181	3.00	3.0	50	12	0.2	15.43	14.76	14.09	13.42	
	83550	.1181	3.00	3.0	50	12	0.3	15.43	14.76	14.09	13.42	
	83557	.1181	3.00	3.0	50	12	0.5	15.43	14.76	14.09	13.42	
NEW	83567	.1250	1/8"	3.17	1/8"	1-1/2"	1/4"	.010"	12.23	11.70	11.17	10.64
	83577	.1250	1/8"	3.17	1/8"	1-1/2"	1/4"	.020"	12.23	11.70	11.17	10.64
	83587	.1250	1/8"	3.17	1/8"	2"	1/2"	.010"	15.05	14.39	13.74	13.08
	83597	.1250	1/8"	3.17	1/8"	2"	1/2"	.020"	15.05	14.39	13.74	13.08
	83600	.1250	1/8"	3.17	1/8"	2"	1/2"	.030"	15.05	14.39	13.74	13.08
NEW	83607	.1575	4.00	6.0	50	8	0.3	20.76	19.85	18.95	18.05	
	83617	.1575	4.00	6.0	50	8	0.5	20.76	19.85	18.95	18.05	
	83627	.1575	4.00	6.0	50	12	0.3	20.76	19.85	18.95	18.05	
	83637	.1575	4.00	6.0	50	12	0.5	20.76	19.85	18.95	18.05	
	83647	.1875	3/16"	4.76	3/16"	2"	5/16"	.010"	15.38	14.72	14.04	13.37
NEW	83657	.1875	3/16"	4.76	3/16"	2"	5/16"	.020"	15.38	14.72	14.04	13.37
	83667	.1875	3/16"	4.76	3/16"	2"	9/16"	.010"	15.38	14.72	14.04	13.37
	83677	.1875	3/16"	4.76	3/16"	2"	9/16"	.020"	15.38	14.72	14.04	13.37
	83680	.1875	3/16"	4.76	3/16"	2"	9/16"	.030"	15.38	14.72	14.04	13.37
	83707	.1969	5.00	6.0	65	15	0.3	22.64	21.65	20.68	19.69	
NEW	83717	.1969	5.00	6.0	65	15	0.5	22.64	21.65	20.68	19.69	
	83767	.2362	6.00	6.0	50	12	0.3	19.53	18.68	17.84	16.98	
	83777	.2362	6.00	6.0	50	12	0.5	19.53	18.68	17.84	16.98	
	83780	.2362	6.00	6.0	65	19	0.2	21.93	20.98	20.03	19.07	
	83787	.2362	6.00	6.0	65	19	0.3	21.93	20.98	20.03	19.07	
NEW	83797	.2362	6.00	6.0	65	19	0.5	21.93	20.98	20.03	19.07	
	83807	.2362	6.00	6.0	65	19	1.0	21.93	20.98	20.03	19.07	
	83827	.2500	1/4"	6.35	1/4"	2"	3/8"	.015"	18.80	17.98	17.17	16.35
	83837	.2500	1/4"	6.35	1/4"	2"	3/8"	.030"	18.80	17.98	17.17	16.35
	83845	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.010"	21.12	20.21	19.28	18.37
NEW	83847	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.015"	21.12	20.21	19.28	18.37
	83857	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.030"	21.12	20.21	19.28	18.37
	83877	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.060"	21.12	20.21	19.28	18.37
	83927	.3125	5/16"	7.94	5/16"	2"	7/16"	.020"	25.67	24.55	23.43	22.32
	83937	.3125	5/16"	7.94	5/16"	2"	7/16"	.030"	25.67	24.55	23.43	22.32
NEW	83940	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	.010"	28.61	27.36	26.12	24.88
	83947	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	.020"	28.61	27.36	26.12	24.88
	83957	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	.030"	28.61	27.36	26.12	24.88
	83977	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	.060"	28.61	27.36	26.12	24.88

continued →

255RA (855RA metric) - 5 Flute (continued)

.3150" - 1.000"
(8.00mm - 25.40mm)

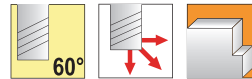
EDP#	d_1 †		d_2	l_1	l_2	r	1-11	12-24	25-49	50-100		
	Decimal	Diameter									Metric	Shank Diameter
NEW	83987	.3150	8.00	8.0	50	12	0.5	26.61	25.46	24.29	23.14	
	83997	.3150	8.00	8.0	50	12	1.0	26.61	25.46	24.29	23.14	
	84000	.3150	8.00	8.0	65	22	0.3	29.68	28.39	27.10	25.81	
	84007	.3150	8.00	8.0	65	22	0.5	29.68	28.39	27.10	25.81	
NEW	84017	.3150	8.00	8.0	65	22	1.0	29.68	28.39	27.10	25.81	
	84027	.3150	8.00	8.0	65	22	1.5	29.68	28.39	27.10	25.81	
	84087	.3750	3/8"	9.52	3/8"	2"	1/2"	.020"	30.26	28.94	27.63	26.31
NEW	84097	.3750	3/8"	9.52	3/8"	2"	1/2"	.030"	30.26	28.94	27.63	26.31
	84100	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.010"	33.28	31.83	30.39	28.94
	84107	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.020"	33.28	31.83	30.39	28.94
NEW	84117	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.030"	33.28	31.83	30.39	28.94
	84137	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.060"	33.28	31.83	30.39	28.94
	84167	.3937	10.00	10.0	70	22	0.5	40.22	38.47	36.72	34.98	
NEW	84177	.3937	10.00	10.0	70	22	1.0	40.22	38.47	36.72	34.98	
	84257	.4724	12.00	12.0	75	32	0.3	58.83	56.27	53.72	51.16	
	84267	.4724	12.00	12.0	75	32	0.5	58.83	56.27	53.72	51.16	
NEW	84277	.4724	12.00	12.0	75	32	1.0	58.83	56.27	53.72	51.16	
	84287	.4724	12.00	12.0	75	32	1.5	58.83	56.27	53.72	51.16	
	84307	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.010"	56.45	54.00	51.54	49.09
NEW	84317	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.020"	56.45	54.00	51.54	49.09
	84327	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.030"	56.45	54.00	51.54	49.09
	84337	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.060"	56.45	54.00	51.54	49.09
	84357	.5000	1/2"	12.70	1/2"	3"	1-1/4"	.120"	56.45	54.00	51.54	49.09
	84367	.5000	1/2"	12.70	1/2"	4"	2"	.030"	66.87	63.96	61.06	58.15
	84377	.5000	1/2"	12.70	1/2"	4"	2"	.060"	66.87	63.96	61.06	58.15
NEW	84397	.5000	1/2"	12.70	1/2"	4"	2"	.120"	66.87	63.96	61.06	58.15
	84467	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	.015"	89.77	85.87	81.96	78.06
NEW	84487	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	.030"	89.77	85.87	81.96	78.06
	84497	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	.060"	89.77	85.87	81.96	78.06
	84507	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	.120"	89.77	85.87	81.96	78.06
	84567	.6299	16.00	16.0	88	32	1.0	93.61	89.54	85.47	81.40	
	84577	.6299	16.00	16.0	88	32	2.0	93.61	89.54	85.47	81.40	
NEW	84587	.6299	16.00	16.0	150	65	1.0	139.79	133.71	127.63	121.56	
	84597	.6299	16.00	16.0	150	65	2.0	139.79	133.71	127.63	121.56	
	84667	.7500	3/4"	19.05	3/4"	4"	1-1/2"	.015"	128.46	122.88	117.29	111.71
	84687	.7500	3/4"	19.05	3/4"	4"	1-1/2"	.030"	128.46	122.88	117.29	111.71
NEW	84697	.7500	3/4"	19.05	3/4"	4"	1-1/2"	.060"	128.46	122.88	117.29	111.71
	84700	.7500	3/4"	19.05	3/4"	4"	1-1/2"	.120"	128.46	122.88	117.29	111.71
	84707	.7500	3/4"	19.05	3/4"	5"	2"	.030"	177.88	170.14	162.42	154.68
NEW	84717	.7500	3/4"	19.05	3/4"	5"	2"	.060"	177.88	170.14	162.42	154.68
	84747	.7500	3/4"	19.05	3/4"	5"	2"	.120"	177.88	170.14	162.42	154.68
	84757	.7500	3/4"	19.05	3/4"	5"	2"	.190"	177.88	170.14	162.42	154.68
NEW	84767	.7874	20.00	20.0	100	38	1.0	181.80	173.90	165.99	158.09	
	84777	.7874	20.00	20.0	100	38	3.0	181.80	173.90	165.99	158.09	
	84887	.9843	25.00	25.0	100	38	1.0	208.04	198.99	189.95	180.91	
	84897	.9843	25.00	25.0	100	38	3.0	208.04	198.99	189.95	180.91	
NEW	84957	1.000	1"	25.40	1"	4"	1-1/2"	.015"	218.85	209.33	199.82	190.30
	84967	1.000	1"	25.40	1"	4"	1-1/2"	.030"	218.85	209.33	199.82	190.30
	84970	1.000	1"	25.40	1"	4"	1-1/2"	.060"	218.85	209.33	199.82	190.30
NEW	84977	1.000	1"	25.40	1"	4"	1-1/2"	.120"	218.85	209.33	199.82	190.30
	84980	1.000	1"	25.40	1"	4"	1-1/2"	.190"	218.85	209.33	199.82	190.30
	84987	1.000	1"	25.40	1"	5"	2"	.030"	269.13	257.43	245.73	234.03
NEW	84997	1.000	1"	25.40	1"	5"	2"	.120"	269.13	257.43	245.73	234.03
	85007	1.000	1"	25.40	1"	5"	2"	.190"	269.13	257.43	245.73	234.03

263M (863M metric) - 3 Flute - Uncoated
263MC - 3 Flute - TiCN Coated
263MA (863MA metric) - 3 Flute - Balinit® X.CEED Coated

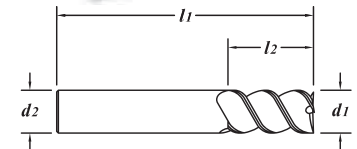
TOLERANCES

d_1	+.000" - .002" (+.000 - .050mm)	
d_2	3mm - 6mm	+.0000" - .0003" (+.0000 - .0075mm)
	1/4" - 1"	-.0001" - .0004" (-.0025 - .0100mm)

Technical information: page 193, 195



Solid submicron grain carbide end mill - center cutting
 High performance profiling
 Rigid work holding, machine stability and part integrity are critical!
 Modified end gash - will not cut square corner
 Recommended for steels, stainless steel and high-temperature alloys
 Can be modified with a corner radius



HIGH PERFORMANCE
END MILLS

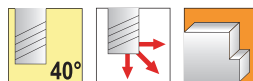
UNCOATED EDP#	TiCN EDP#	X.CEED EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	1-11	12-24	25-49	50-100
			Decimal	Metric							
23510	-	-	.2362	6.00	6.0	65	13	13.48	12.90	12.30	11.72
23010	-	-	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	12.84	12.28	11.73
23020	-	-	.3125	5/16"	7.94	5/16"	2-1/2"	7/8"	18.02	17.24	16.45
23520	-	-	.3150	8.00	8.0	65	19	18.92	18.10	17.27	16.45
23030	-	-	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	22.43	21.46	20.48
23530	-	-	.3937	10.00	10.0	70	22	27.32	26.14	24.95	23.75
23040	-	-	.4375	7/16"	11.11	7/16"	2-3/4"	1"	27.39	26.20	25.01
23540	-	-	.4724	12.00	12.0	75	26	37.74	36.10	34.46	32.82
23050	-	-	.5000	1/2"	12.70	1/2"	3"	35.94	34.38	32.81	31.25
23060	-	-	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	69.31	66.29	63.27
23550	-	-	.6299	16.00	16.0	88	32	72.78	69.62	66.45	63.28
23070	-	-	.7500	3/4"	19.05	3/4"	4"	101.63	97.21	92.79	88.37
23560	-	-	.7874	20.00	20.0	100	38	135.68	129.78	123.88	117.98
23080	-	-	1.000	1"	25.40	1"	4"	152.03	145.41	138.81	132.19
-	23014	-	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	16.68	15.95	15.24
-	23024	-	.3125	5/16"	7.94	5/16"	2-1/2"	7/8"	23.14	22.13	21.13
-	23034	-	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	27.57	26.37	25.17
-	23044	-	.4375	7/16"	11.11	7/16"	2-3/4"	1"	33.55	32.09	30.63
-	23054	-	.5000	1/2"	12.70	1/2"	3"	42.09	40.26	38.43	36.60
-	23064	-	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	78.88	75.45	72.02
-	23074	-	.7500	3/4"	19.05	3/4"	4"	112.59	107.69	102.80	97.91
-	23084	-	1.000	1"	25.40	1"	4"	168.50	161.18	153.85	146.53
-	-	23517	.2362	6.00	6.0	65	13	17.89	17.11	16.33	15.56
-	-	23017	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	17.27	16.53	15.78
-	-	23027	.3125	5/16"	7.94	5/16"	2-1/2"	7/8"	24.64	23.57	22.50
-	-	23527	.3150	8.00	8.0	65	19	25.52	24.41	23.31	22.19
-	-	23037	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	29.07	27.80	26.54
-	-	23537	.3937	10.00	10.0	70	22	34.84	33.32	31.81	30.30
-	-	23047	.4375	7/16"	11.11	7/16"	2-3/4"	1"	34.92	33.40	31.89
-	-	23547	.4724	12.00	12.0	75	26	45.27	43.31	41.33	39.36
-	-	23057	.5000	1/2"	12.70	1/2"	3"	43.46	41.57	39.69	37.79
-	-	23067	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	80.19	76.71	73.22
-	-	23557	.6299	16.00	16.0	88	32	83.66	80.02	76.38	72.75
-	-	23077	.7500	3/4"	19.05	3/4"	4"	114.47	109.49	104.52	99.54
-	-	23567	.7874	20.00	20.0	100	38	154.66	147.93	141.21	134.48
-	-	23087	1.000	1"	25.40	1"	4"	171.01	163.57	156.14	148.70

246M (846M metric) - 6 Flute - Uncoated
246MC - 6 Flute - TiCN Coated
246MA (846MA metric) - 6 Flute - *Balinit*® X.CEED Coated

Technical information: page 193, 195

TOLERANCES

d_1	$+0.000" - .002" (+.000 - .050\text{mm})$
d_2	$3\text{mm} - 6\text{mm} \quad +.0000" - .0003" (+.0000 - .0075\text{mm})$
	$1/4" - 1-1/4" \quad -.0001" - .0004" (-.0025 - .0100\text{mm})$

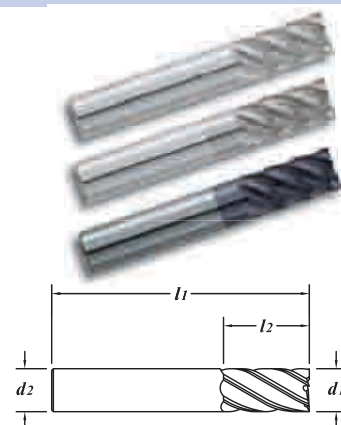


Solid submicron grain carbide end mill - center cutting

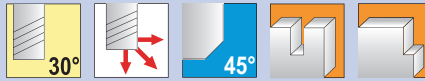
High performance finishing in a variety of steels

Rigid work holding, machine stability and part integrity are critical!

Excellent durability



UNCOATED EDP#	TiCN EDP#	X.CEED 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							
51110	-	-	.1875	3/16"	4.76	3/16"	2"	5/8"	10.65	10.18	9.72	9.26
51510	-	-	.1969		5.00	5.0	50	16	11.82	11.32	10.80	10.29
51520	-	-	.2362		6.00	6.0	65	20	13.48	12.90	12.30	11.72
51150	-	-	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	12.84	12.28	11.73	11.17
51190	-	-	.3125	5/16"	7.94	5/16"	2-1/2"	7/8"	18.02	17.24	16.45	15.67
51530	-	-	.3150		8.00	8.0	65	22	18.92	18.10	17.27	16.45
51230	-	-	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	22.43	21.46	20.48	19.51
51540	-	-	.3937		10.00	10.0	70	25	27.32	26.14	24.95	23.75
51270	-	-	.4375	7/16"	11.11	7/16"	2-3/4"	1"	27.39	26.20	25.01	23.82
51550	-	-	.4724		12.00	12.0	75	25	37.74	36.10	34.46	32.82
51310	-	-	.5000	1/2"	12.70	1/2"	3"	1"	35.94	34.38	32.81	31.25
51330	-	-	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	69.31	66.29	63.27	60.27
51560	-	-	.6299		16.00	16.0	88	32	72.78	69.62	66.45	63.28
51350	-	-	.7500	3/4"	19.05	3/4"	4"	1-1/2"	101.63	97.21	92.79	88.37
51570	-	-	.7874		20.00	20.0	100	38	135.68	129.78	123.88	117.98
51580	-	-	.9843		25.00	25.0	100	38	157.62	150.77	143.92	137.06
51370	-	-	1.000	1"	25.40	1"	4"	1-1/2"	152.03	145.41	138.81	132.19
51400	-	-	1.250	1-1/4"	31.75	1-1/4"	4-1/2"	2"	443.82	424.52	405.23	385.93
51430	-	-	1.250	1-1/4"	31.75	1-1/4"	6"	3"	580.96	555.70	530.44	505.19
-	51114	-	.1875	3/16"	4.76	3/16"	2"	5/8"	12.53	11.99	11.44	10.90
-	51154	-	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	16.68	15.95	15.24	14.51
-	51194	-	.3125	5/16"	7.94	5/16"	2-1/2"	7/8"	23.14	22.13	21.13	20.12
-	51234	-	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	27.57	26.37	25.17	23.97
-	51274	-	.4375	7/16"	11.11	7/16"	2-3/4"	1"	33.55	32.09	30.63	29.17
-	51314	-	.5000	1/2"	12.70	1/2"	3"	1"	42.09	40.26	38.43	36.60
-	51334	-	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	78.88	75.45	72.02	68.60
-	51354	-	.7500	3/4"	19.05	3/4"	4"	1-1/2"	112.59	107.69	102.80	97.91
-	51374	-	1.000	1"	25.40	1"	4"	1-1/2"	168.48	161.16	153.83	146.50
-	51404	-	1.250	1-1/4"	31.75	1-1/4"	4-1/2"	2"	470.42	449.97	429.52	409.06
-	51434	-	1.250	1-1/4"	31.75	1-1/4"	6"	3"	611.05	584.48	557.92	531.36
-	-	51117	.1875	3/16"	4.76	3/16"	2"	5/8"	12.80	12.24	11.69	11.13
-	-	51517	.1969		5.00	5.0	50	16	15.16	14.51	13.84	13.19
-	-	51527	.2362		6.00	6.0	65	20	17.89	17.11	16.33	15.56
-	-	51157	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	17.27	16.53	15.78	15.02
-	-	51197	.3125	5/16"	7.94	5/16"	2-1/2"	7/8"	24.64	23.57	22.50	21.42
-	-	51537	.3150		8.00	8.0	65	22	25.52	24.41	23.31	22.19
-	-	51237	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	29.07	27.80	26.54	25.27
-	-	51547	.3937		10.00	10.0	70	25	34.84	33.32	31.81	30.30
-	-	51277	.4375	7/16"	11.11	7/16"	2-3/4"	1"	34.92	33.40	31.89	30.37
-	-	51557	.4724		12.00	12.0	75	25	45.27	43.31	41.33	39.36
-	-	51317	.5000	1/2"	12.70	1/2"	3"	1"	43.46	41.57	39.69	37.79
-	-	51337	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	80.19	76.71	73.22	69.73
-	-	51567	.6299		16.00	16.0	88	32	83.66	80.02	76.38	72.75
-	-	51357	.7500	3/4"	19.05	3/4"	4"	1-1/2"	114.47	109.49	104.52	99.54
-	-	51577	.7874		20.00	20.0	100	38	154.66	147.93	141.21	134.48
-	-	51587	.9843		25.00	25.0	100	38	176.60	168.93	161.24	153.57
-	-	51377	1.000	1"	25.40	1"	4"	1-1/2"	171.01	163.57	156.14	148.70
-	-	51407	1.250	1-1/4"	31.75	1-1/4"	4-1/2"	2"	474.95	454.29	433.65	413.00
-	-	51437	1.250	1-1/4"	31.75	1-1/4"	6"	3"	612.09	585.48	558.86	532.26



TOLERANCES		
d_1	+.000" - .002" (+.000 - .050mm)	
d_2	3mm - 6mm	+.0000" - .0003" (+.0000 - .0075mm)
	1/4" - 1"	-.0001" - .0004" (-.0025 - .0100mm)

Balinit® X.CEED Coated

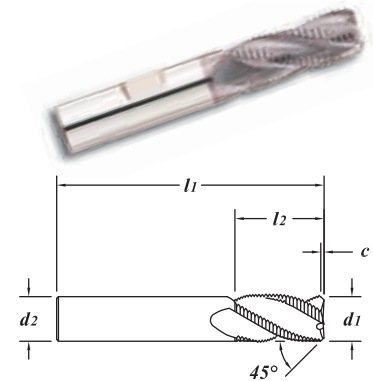
Solid submicron grain carbide end mill - center cutting

State-of-the-art rougher using VRX technology

Reduces tool pressure for more aggressive machining

Recommended for stainless steel, inconel, pH materials, cold rolled steel, titanium, cast iron and tool steels

Variable flute geometry



EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	c Chamfer Length	1-11	12-24	25-49	50-100
	Decimal	Metric								
49490	.2362	6.00	6.0	50	12	0.5	29.90	28.60	27.30	26.00
49500	.2362	6.00	6.0	65	19	0.5	33.10	31.67	30.22	28.79
49520	.2500	6.35	1/4"	2"	3/8"	.020"	28.71	27.47	26.22	24.97
49540	.2500	6.35	1/4"	2-1/2"	3/4"	.020"	32.76	31.34	29.91	28.49
49550	.2756	7.00	8.0	50	12	0.5	40.67	38.91	37.14	35.37
49555	.2756	7.00	8.0	65	22	0.5	43.98	42.07	40.15	38.24
49570	.2812	7.14	5/16"	2"	7/16"	.020"	39.95	38.21	36.47	34.74
49575	.2812	7.14	5/16"	2-1/2"	13/16"	.020"	43.04	41.16	39.29	37.42
49580	.3125	7.94	5/16"	2"	7/16"	.020"	34.90	33.38	31.87	30.35
49600	.3125	7.94	5/16"	2-1/2"	13/16"	.020"	37.62	35.98	34.34	32.71
49610	.3150	8.00	8.0	50	12	0.5	35.64	34.09	32.54	30.99
49620	.3150	8.00	8.0	65	22	0.5	38.42	36.74	35.08	33.40
49625	.3438	8.73	3/8"	2"	1/2"	.025"	45.30	43.34	41.36	39.40
49630	.3438	8.73	3/8"	2-1/2"	7/8"	.025"	51.56	49.32	47.08	44.83
49635	.3543	9.00	10.0	50	14	0.5	55.57	53.15	50.73	48.32
49637	.3543	9.00	10.0	65	22	0.5	60.40	57.77	55.15	52.52
49640	.3750	9.52	3/8"	2"	1/2"	.025"	40.04	38.30	36.56	34.82
49660	.3750	9.52	3/8"	2-1/2"	7/8"	.025"	45.58	43.60	41.62	39.63
49670	.3937	10.00	10.0	50	16	0.5	49.11	46.98	44.83	42.70
49680	.3937	10.00	10.0	70	22	0.5	53.36	51.04	48.72	46.40
49690	.4375	11.11	7/16"	2-1/2"	5/8"	.025"	53.63	51.30	48.97	46.63
49700	.4375	11.11	7/16"	2-3/4"	1"	.025"	53.63	51.30	48.97	46.63
49710	.4724	12.00	12.0	65	19	0.8	57.57	55.07	52.57	50.07
49720	.4724	12.00	12.0	75	32	0.8	64.25	61.45	58.67	55.87
* 49740	.5000	12.70	1/2"	2-1/2"	5/8"	.030"	55.14	52.74	50.35	47.94
* 49760	.5000	12.70	1/2"	3"	1-1/4"	.030"	61.61	58.93	56.25	53.57
* 49765	.5512	14.00	14.0	75	19	0.8	91.14	87.17	83.21	79.25
* 49770	.5512	14.00	14.0	88	32	0.8	93.68	89.61	85.54	81.46
* 49780	.6250	15.87	5/8"	3"	3/4"	.035"	95.63	91.47	87.31	83.16
* 49800	.6250	15.87	5/8"	3-1/2"	1-1/4"	.035"	98.17	93.90	89.63	85.36
* 49820	.6250	15.87	5/8"	4"	1-5/8"	.035"	103.43	98.94	94.43	89.94
* 49830	.6299	16.00	16.0	75	19	1.0	99.85	95.51	91.17	86.83
* 49840	.6299	16.00	16.0	88	32	1.0	102.47	98.02	93.56	89.11
* 49845	.7087	18.00	18.0	75	22	1.0	144.07	137.81	131.54	125.28
* 49850	.7087	18.00	18.0	100	38	1.0	147.32	140.91	134.50	128.10
* 49860	.7500	19.05	3/4"	3"	7/8"	.040"	138.09	132.09	126.08	120.08
* 49880	.7500	19.05	3/4"	4"	1-5/8"	.040"	140.95	134.83	128.69	122.56
* 49890	.7874	20.00	20.0	75	22	1.0	195.19	186.70	178.21	169.73
* 49900	.7874	20.00	20.0	100	38	1.0	199.46	190.79	182.11	173.44
* 49905	.8661	22.00	22.0	100	22	1.0	219.24	209.71	200.18	190.64
* 49910	.8661	22.00	22.0	100	38	1.0	219.24	209.71	200.18	190.64
* 49915	.9843	25.00	25.0	100	25	1.0	228.75	218.81	208.85	198.91
* 49920	.9843	25.00	25.0	100	38	1.0	228.75	218.81	208.85	198.91
* 49925	1.000	25.40	1"	4"	1"	.040"	236.72	226.43	216.14	205.85
* 49930	1.000	25.40	1"	4"	1-1/2"	.040"	236.72	226.43	216.14	205.85
* 49940	1.000	25.40	1"	5"	2"	.040"	291.47	278.79	266.13	253.46

* - Tools with weldon flats

d_1	$+0.000" -0.002" (+0.000 -0.050mm)$
d_2	$3mm - 6mm \quad +0.0000" -0.0003" (+0.0000 -0.0075mm)$
	$1/4" - 1" \quad -0.0001" -0.0004" (-0.0025 -0.0100mm)$

**NEW
SERIES****Square End - Balinit® X.CEED Coated**

Solid submicron grain carbide end mill - center cutting

State-of-the-art rougher/finisher

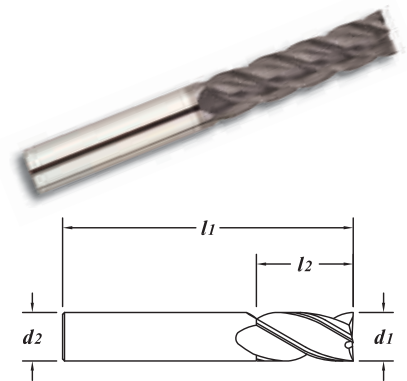
Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity

Recommended for stainless steel, inconel, pH materials, titanium and tool steels

Variable flute geometry

VRX Corner Radius - page 103

VRX Ball End - page 107



EDP# (plain)	EDP# (weldon)	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							
61877	-	.1181	3.00	3.0	38	8	10.15	9.71	9.27	8.83
61887	-	.1181	3.00	3.0	38	12	10.15	9.71	9.27	8.83
61917	-	.1250	1/8"	3.17	1/8"	1-1/2"	10.15	9.71	9.27	8.83
61927	-	.1250	1/8"	3.17	1/8"	1-1/2"	10.15	9.71	9.27	8.83
61977	-	.1575	4.00	6.0	50	12	19.05	18.22	17.40	16.57
62007	-	.1875	3/16"	4.76	3/16"	2"	12.80	12.24	11.69	11.13
62017	-	.1875	3/16"	4.76	3/16"	2"	12.80	12.24	11.69	11.13
62057	-	.1969	5.00	6.0	65	15	20.38	19.50	18.62	17.72
62077	-	.2362	6.00	6.0	50	12	15.87	15.18	14.49	13.80
62087	-	.2362	6.00	6.0	65	19	17.89	17.11	16.33	15.56
62137	-	.2500	1/4"	6.35	1/4"	2"	15.23	14.56	13.90	13.24
62147	-	.2500	1/4"	6.35	1/4"	2-1/2"	17.27	16.53	15.78	15.02
62207	-	.3125	5/16"	7.94	5/16"	2"	21.05	20.13	19.22	18.30
62217	-	.3125	5/16"	7.94	5/16"	2-1/2"	24.64	23.57	22.50	21.42
62257	-	.3150	8.00	8.0	50	12	21.91	20.96	20.01	19.05
62267	-	.3150	8.00	8.0	65	22	25.52	24.41	23.31	22.19
62317	-	.3750	3/8"	9.52	3/8"	2"	24.88	23.80	22.71	21.63
62327	-	.3750	3/8"	9.52	3/8"	2-1/2"	29.07	27.80	26.54	25.27
62397	-	.3937	10.00	10.0	70	22	34.84	33.32	31.81	30.30
62437	-	.4375	7/16"	11.11	7/16"	2-3/4"	34.92	33.40	31.89	30.37
62475	-	.4724	12.00	12.0	65	19	42.42	40.58	38.73	36.89
62485	-	.4724	12.00	12.0	75	32	45.27	43.31	41.33	39.36
62525	* 62527	.5000	1/2"	12.70	1/2"	2-1/2"	40.67	38.91	37.14	35.37
62535	* 62537	.5000	1/2"	12.70	1/2"	3"	43.46	41.57	39.69	37.79
62565	* 62567	.5000	1/2"	12.70	1/2"	4"	58.81	56.25	53.70	51.14
62625	* 62627	.5625	9/16"	14.29	9/16"	3-1/2"	72.26	69.12	65.98	62.84
62655	* 62657	.6250	5/8"	15.87	5/8"	3-1/2"	80.19	76.71	73.22	69.73
62675	* 62677	.6250	5/8"	15.87	5/8"	4"	85.64	81.92	78.20	74.47
62715	* 62717	.6299	16.00	16.0	88	32	83.66	80.02	76.38	72.75
62775	* 62777	.7500	3/4"	19.05	3/4"	4"	114.47	109.49	104.52	99.54
62785	* 62787	.7500	3/4"	19.05	3/4"	4"	114.47	109.49	104.52	99.54
62795	* 62797	.7500	3/4"	19.05	3/4"	5"	153.64	146.96	140.28	133.60
62805	* 62807	.7500	3/4"	19.05	3/4"	6"	179.81	171.98	164.17	156.35
62825	* 62827	.7874	20.00	20.0	100	38	154.66	147.93	141.21	134.48
62855	* 62857	.9843	25.00	25.0	100	38	176.60	168.93	161.24	153.57
62885	* 62887	1.000	1"	25.40	1"	4"	171.01	163.57	156.14	148.70
62895	* 62897	1.000	1"	25.40	1"	4"	171.01	163.57	156.14	148.70
62905	* 62907	1.000	1"	25.40	1"	5"	228.90	218.95	209.00	199.05
62915	* 62917	1.000	1"	25.40	1"	6"	298.18	285.21	272.25	259.28

* - Tools with weldon flats

VRX - 4 Flute

Technical information: page 197



.1181" - .3125"
(3.00mm - 7.94mm)

TOLERANCES		
d_1	+.000" -.002" (+.000 -.050mm)	
d_2	3mm - 6mm	+.0000" -.0003" (+.0000 -.0075mm)
	1/4" - 1"	-.0001" -.0004" (-.0025 -.0100mm)
r	+.001" -.001" (+.025 -.025mm)	

Corner Radius - Balinit® X.CEED Coated

Solid submicron grain carbide end mill - center cutting

State-of-the-art rougher/finisher

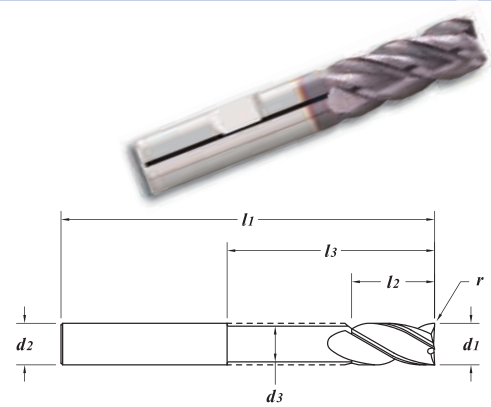
Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity

Recommended for stainless steel, inconel, pH materials, titanium and tool steels

Variable flute geometry

VRX Square End - page 102

VRX Ball End - page 107



HIGH PERFORMANCE
END MILLS

EDP# (plain)	EDP# (weldon)	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
		Decimal	Metric										
27420	-	.1181	3.00	3.0	50	8	0.2	-	-	11.42	10.92	10.43	9.93
27430	-	.1181	3.00	3.0	50	12	0.2	-	-	11.42	10.92	10.43	9.93
27435	-	.1181	3.00	3.0	50	12	0.5	-	-	11.42	10.92	10.43	9.93
27440	-	.1250	1/8"	3.17	1/8"	1-1/2"	1/4"	.010"	-	11.42	10.92	10.43	9.93
27450	-	.1250	1/8"	3.17	1/8"	1-1/2"	1/2"	.010"	-	11.42	10.92	10.43	9.93
27455	-	.1250	1/8"	3.17	1/8"	1-1/2"	1/2"	.020"	-	11.42	10.92	10.43	9.93
27460	-	.1562	5/32"	3.97	3/16"	2"	5/16"	.010"	-	15.74	15.05	14.36	13.69
27470	-	.1562	5/32"	3.97	3/16"	2"	1/2"	.010"	-	15.74	15.05	14.36	13.69
27480	-	.1575	4.00	6.0	50	8	0.3	-	-	19.35	18.51	17.67	16.83
27490	-	.1575	4.00	6.0	50	12	0.3	-	-	19.35	18.51	17.67	16.83
27495	-	.1575	4.00	6.0	50	12	0.5	-	-	19.35	18.51	17.67	16.83
27500	-	.1875	3/16"	4.76	3/16"	2"	5/16"	.010"	-	14.34	13.72	13.09	12.47
27520	-	.1875	3/16"	4.76	3/16"	2"	9/16"	.010"	-	14.34	13.72	13.09	12.47
27521	-	.1875	3/16"	4.76	3/16"	2"	9/16"	.020"	-	14.34	13.72	13.09	12.47
63100	-	.1875	3/16"	4.76	3/16"	4"	5/16"	.010"	-	26.72	25.55	24.40	23.23
27522	-	.1969	5.00	6.0	50	10	0.3	-	-	18.97	18.15	17.32	16.49
27524	-	.1969	5.00	6.0	65	15	0.3	-	-	21.02	20.10	19.19	18.27
27526	-	.1969	5.00	6.0	65	15	0.5	-	-	21.02	20.10	19.19	18.27
63110	-	.1969	5.00	6.0	100	10	0.3	-	-	40.26	38.51	36.75	35.01
27525	-	.2188	7/32"	5.56	1/4"	2"	3/8"	.015"	-	18.24	17.45	16.65	15.86
27530	-	.2188	7/32"	5.56	1/4"	2-1/2"	3/4"	.015"	-	20.23	19.34	18.47	17.59
63120	-	.2188	7/32"	5.56	1/4"	4"	3/8"	.015"	-	38.89	37.19	35.51	33.81
27535	-	.2362	6.00	6.0	50	12	0.3	-	-	18.36	17.56	16.76	15.96
27540	-	.2362	6.00	6.0	65	19	0.3	-	-	20.34	19.46	18.57	17.69
27545	-	.2362	6.00	6.0	65	19	0.5	-	-	20.34	19.46	18.57	17.69
27547	-	.2362	6.00	6.0	65	19	1.0	-	-	20.34	19.46	18.57	17.69
27548	-	.2362	6.00	6.0	65	19	1.5	-	-	20.34	19.46	18.57	17.69
63130	-	.2362	6.00	6.0	100	12	0.3	32	5.70	39.25	37.54	35.84	34.13
27560	-	.2500	1/4"	6.35	1/4"	2"	3/8"	.015"	-	17.67	16.90	16.13	15.36
NEW 27570	-	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.010"	-	19.56	18.71	17.86	17.01
27580	-	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.015"	-	19.56	18.71	17.86	17.01
27581	-	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.030"	-	19.56	18.71	17.86	17.01
27583	-	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.060"	-	19.56	18.71	17.86	17.01
63140	-	.2500	1/4"	6.35	1/4"	4"	3/8"	.015"	1-1/4"	37.90	36.25	34.60	32.96
27585	-	.2756	7.00	8.0	50	12	0.3	-	-	28.63	27.38	26.15	24.90
27590	-	.2756	7.00	8.0	65	22	0.3	-	-	31.48	30.11	28.75	27.37
27595	-	.2812	9/32"	7.14	5/16"	2"	7/16"	.015"	-	27.60	26.41	25.20	24.00
27597	-	.2812	9/32"	7.14	5/16"	2-1/2"	13/16"	.015"	-	30.35	29.03	27.71	26.38
63150	-	.2812	9/32"	7.14	5/16"	4"	7/16"	.015"	-	52.42	50.14	47.86	45.58
27600	-	.3125	5/16"	7.94	5/16"	2"	7/16"	.020"	-	24.11	23.06	22.01	20.97
NEW 27610	-	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	.010"	-	26.50	25.34	24.19	23.05
27620	-	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	.020"	-	26.50	25.34	24.19	23.05
27622	-	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	.030"	-	26.50	25.34	24.19	23.05
27624	-	.3125	5/16"	7.94	5/16"	2-1/2"	13/16"	.060"	-	26.50	25.34	24.19	23.05
63160	-	.3125	5/16"	7.94	5/16"	4"	7/16"	.020"	1-7/8"	51.11	48.88	46.66	44.44

continued →

VRX - 4 Flute (continued)

.3150" - .5512"
(8.00mm - 14.00mm)

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
			Decimal	Metric										
NEW	27630	-	.3150	8.00	8.0	50	12	0.5	-	-	25.01	23.92	22.84	21.75
	27635	-	.3150	8.00	8.0	65	22	0.3	-	-	27.50	26.30	25.11	23.91
	27640	-	.3150	8.00	8.0	65	22	0.5	-	-	27.50	26.30	25.11	23.91
	27642	-	.3150	8.00	8.0	65	22	1.0	-	-	27.50	26.30	25.11	23.91
	27643	-	.3150	8.00	8.0	65	22	1.5	-	-	27.50	26.30	25.11	23.91
	63170	-	.3150	8.00	8.0	100	12	0.5	47	7.60	52.87	50.58	48.28	45.98
	27645	-	.3438 11/32"	8.73	3/8"	2"	1/2"	.020"	-	-	32.21	30.80	29.41	28.01
	27650	-	.3438 11/32"	8.73	3/8"	2-1/2"	7/8"	.020"	-	-	35.02	33.50	31.97	30.45
	63180	-	.3438 11/32"	8.73	3/8"	4"	1/2"	.020"	-	-	56.12	53.67	51.24	48.80
	27655	-	.3543	9.00	10.0	50	14	0.5	-	-	38.90	37.20	35.52	33.82
NEW	27657	-	.3543	9.00	10.0	65	22	0.5	-	-	42.28	40.44	38.60	36.76
	27658	-	.3750 3/8"	9.52	3/8"	2"	1/2"	.010"	-	-	28.48	27.24	26.00	24.76
	27660	-	.3750 3/8"	9.52	3/8"	2"	1/2"	.020"	-	-	28.48	27.24	26.00	24.76
	27662	-	.3750 3/8"	9.52	3/8"	2"	1/2"	.030"	-	-	28.48	27.24	26.00	24.76
	27670	-	.3750 3/8"	9.52	3/8"	2-1/2"	7/8"	.010"	-	-	30.95	29.61	28.26	26.92
	27680	-	.3750 3/8"	9.52	3/8"	2-1/2"	7/8"	.020"	-	-	30.95	29.61	28.26	26.92
	27682	-	.3750 3/8"	9.52	3/8"	2-1/2"	7/8"	.030"	-	-	30.95	29.61	28.26	26.92
	27684	-	.3750 3/8"	9.52	3/8"	2-1/2"	7/8"	.060"	-	-	30.95	29.61	28.26	26.92
	63190	-	.3750 3/8"	9.52	3/8"	4"	1/2"	.020"	1-7/8"	.360"	54.70	52.32	49.95	47.57
	27690	-	.3937	10.00	10.0	50	16	0.5	-	-	34.37	32.87	31.39	29.89
NEW	27698	-	.3937	10.00	10.0	70	22	0.3	-	-	37.38	35.76	34.12	32.50
	27700	-	.3937	10.00	10.0	70	22	0.5	-	-	37.38	35.76	34.12	32.50
	27702	-	.3937	10.00	10.0	70	22	1.0	-	-	37.38	35.76	34.12	32.50
	63200	-	.3937	10.00	10.0	100	14	0.5	47	9.50	66.90	63.99	61.09	58.18
	27705	-	.4375 7/16"	11.11	7/16"	2-1/2"	5/8"	.020"	-	-	37.45	35.82	34.20	32.56
	27708	-	.4375 7/16"	11.11	7/16"	2-3/4"	7/8"	.010"	-	-	37.45	35.82	34.20	32.56
	27710	-	.4375 7/16"	11.11	7/16"	2-3/4"	7/8"	.020"	-	-	37.45	35.82	34.20	32.56
	63210	-	.4375 7/16"	11.11	7/16"	6"	1"	.020"	-	-	80.69	77.19	73.67	70.17
	27712	-	.4724	12.00	12.0	65	19	0.3	-	-	49.34	47.20	45.04	42.90
	27715	-	.4724	12.00	12.0	65	19	0.5	-	-	49.34	47.20	45.04	42.90
NEW	27718	-	.4724	12.00	12.0	75	32	0.3	-	-	55.05	52.66	50.26	47.87
	27720	-	.4724	12.00	12.0	75	32	0.5	-	-	55.05	52.66	50.26	47.87
	27722	-	.4724	12.00	12.0	75	32	1.0	-	-	55.05	52.66	50.26	47.87
	27730	-	.4724	12.00	12.0	75	32	1.5	-	-	55.05	52.66	50.26	47.87
	27735	-	.4724	12.00	12.0	75	32	2.0	-	-	55.05	52.66	50.26	47.87
	63220	-	.4724	12.00	12.0	150	19	0.5	57	11.50	97.10	92.88	88.66	84.44
	27739	* 27738	.5000 1/2"	12.70	1/2"	2-1/2"	5/8"	.010"	-	-	47.31	45.25	43.19	41.14
	27741	* 27740	.5000 1/2"	12.70	1/2"	2-1/2"	5/8"	.020"	-	-	47.31	45.25	43.19	41.14
	27743	* 27742	.5000 1/2"	12.70	1/2"	2-1/2"	5/8"	.030"	-	-	47.31	45.25	43.19	41.14
	27751	* 27750	.5000 1/2"	12.70	1/2"	3"	1-1/4"	.010"	-	-	52.80	50.50	48.21	45.92
NEW	27761	* 27760	.5000 1/2"	12.70	1/2"	3"	1-1/4"	.020"	-	-	52.80	50.50	48.21	45.92
	27763	* 27762	.5000 1/2"	12.70	1/2"	3"	1-1/4"	.030"	-	-	52.80	50.50	48.21	45.92
	27767	* 27764	.5000 1/2"	12.70	1/2"	3"	1-1/4"	.060"	-	-	52.80	50.50	48.21	45.92
	27769	* 27768	.5000 1/2"	12.70	1/2"	3"	1-1/4"	.120"	-	-	52.80	50.50	48.21	45.92
	63231	* 63230	.5000 1/2"	12.70	1/2"	4"	5/8"	.020"	2-1/4"	.480"	71.25	68.15	65.05	61.95
	63401	* 63400	.5000 1/2"	12.70	1/2"	4"	1-1/2"	.010"	-	-	62.41	59.70	56.98	54.27
	63411	* 63410	.5000 1/2"	12.70	1/2"	4"	1-1/2"	.030"	-	-	62.41	59.70	56.98	54.27
	63421	* 63420	.5000 1/2"	12.70	1/2"	4"	1-1/2"	.060"	-	-	62.41	59.70	56.98	54.27
	63431	* 63430	.5000 1/2"	12.70	1/2"	4"	2"	.010"	-	-	62.41	59.70	56.98	54.27
	63441	* 63440	.5000 1/2"	12.70	1/2"	4"	2"	.030"	-	-	62.41	59.70	56.98	54.27
NEW	63451	* 63450	.5000 1/2"	12.70	1/2"	4"	2"	.060"	-	-	62.41	59.70	56.98	54.27
	63241	* 63240	.5000 1/2"	12.70	1/2"	6"	2"	.020"	-	-	88.26	84.43	80.59	76.75
	27766	* 27765	.5512	14.00	14.0	75	19	0.5	-	-	77.92	74.53	71.14	67.76
	27771	* 27770	.5512	14.00	14.0	88	32	0.5	-	-	80.08	76.60	73.11	69.64
	63251	* 63250	.5512	14.00	14.0	150	19	0.5	57	13.50	129.07	123.46	117.85	112.24
	63261	* 63260	.5512	14.00	14.0	150	50	0.5	-	-	120.22	114.99	109.77	104.54

* - Tools with weldon flats

VRX - 4 Flute (continued)

.6250" - .9843"
(15.87mm - 25.00mm)

HIGH PERFORMANCE
END MILLS

	EDP# (plain)	EDP# (weldon)	d_1 † Diameter			d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	l_3 Reach Length	d_3 Neck Diameter	1-11	12-24	25-49	50-100
			Decimal		Metric										
NEW	63461	* 63460	.6250	5/8"	15.87	5/8"	3"	3/4"	.010"	-	-	81.80	78.24	74.68	71.13
	27781	* 27780	.6250	5/8"	15.87	5/8"	3"	3/4"	.025"	-	-	81.80	78.24	74.68	71.13
	27791	* 27790	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	.010"	-	-	84.08	80.42	76.77	73.11
	27801	* 27800	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	.025"	-	-	84.08	80.42	76.77	73.11
	27803	* 27802	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	.060"	-	-	84.08	80.42	76.77	73.11
NEW	27805	* 27804	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	.120"	-	-	84.08	80.42	76.77	73.11
NEW	63501	* 63500	.6250	5/8"	15.87	5/8"	4"	1-1/2"	.010"	-	-	91.38	87.41	83.44	79.47
NEW	63511	* 63510	.6250	5/8"	15.87	5/8"	4"	1-1/2"	.030"	-	-	91.38	87.41	83.44	79.47
NEW	63521	* 63520	.6250	5/8"	15.87	5/8"	4"	1-1/2"	.060"	-	-	91.38	87.41	83.44	79.47
NEW	63531	* 63530	.6250	5/8"	15.87	5/8"	4"	1-3/4"	.010"	-	-	91.38	87.41	83.44	79.47
NEW	63541	* 63540	.6250	5/8"	15.87	5/8"	4"	1-3/4"	.030"	-	-	91.38	87.41	83.44	79.47
NEW	63551	* 63550	.6250	5/8"	15.87	5/8"	4"	1-3/4"	.060"	-	-	91.38	87.41	83.44	79.47
NEW	63271	* 63270	.6250	5/8"	15.87	5/8"	6"	3/4"	.025"	3-1/4"	.600"	134.66	128.80	122.95	117.09
	63281	* 63280	.6250	5/8"	15.87	5/8"	6"	2"	.025"	-	-	125.81	120.34	114.87	109.40
	27809	* 27808	.6299		16.00	16.0	75	19	0.3	-	-	85.38	81.67	77.96	74.25
	27811	* 27810	.6299		16.00	16.0	75	19	0.5	-	-	85.38	81.67	77.96	74.25
	27819	* 27818	.6299		16.00	16.0	88	32	0.3	-	-	87.73	83.92	80.10	76.29
NEW	27821	* 27820	.6299		16.00	16.0	88	32	0.5	-	-	87.73	83.92	80.10	76.29
	27823	* 27822	.6299		16.00	16.0	88	32	1.0	-	-	87.73	83.92	80.10	76.29
	27825	* 27824	.6299		16.00	16.0	88	32	2.0	-	-	87.73	83.92	80.10	76.29
	63581	* 63580	.6299		16.00	16.0	100	38	0.3	-	-	93.29	89.23	85.18	81.12
	63291	* 63290	.6299		16.00	16.0	150	19	0.5	82	15.25	134.66	128.80	122.95	117.09
	27831	* 27830	.7087		18.00	18.0	75	22	0.8	-	-	123.18	117.82	112.47	107.11
	27836	* 27835	.7087		18.00	18.0	100	38	0.8	-	-	125.95	120.47	115.00	109.52
	63301	* 63300	.7087		18.00	18.0	150	25	0.8	82	17.25	196.29	187.75	179.22	170.68
	27841	* 27840	.7500	3/4"	19.05	3/4"	3"	7/8"	.030"	-	-	118.00	112.87	107.73	102.61
	27851	* 27850	.7500	3/4"	19.05	3/4"	4"	1-1/2"	.015"	-	-	120.57	115.33	110.08	104.84
NEW	27861	* 27860	.7500	3/4"	19.05	3/4"	4"	1-1/2"	.030"	-	-	120.57	115.33	110.08	104.84
	27865	* 27864	.7500	3/4"	19.05	3/4"	4"	1-1/2"	.060"	-	-	120.57	115.33	110.08	104.84
	27867	* 27866	.7500	3/4"	19.05	3/4"	4"	1-1/2"	.120"	-	-	120.57	115.33	110.08	104.84
	63601	* 63600	.7500	3/4"	19.05	3/4"	4"	1-3/4"	.015"	-	-	120.57	115.33	110.08	104.84
	27869	* 27868	.7500	3/4"	19.05	3/4"	4"	1-3/4"	.030"	-	-	120.57	115.33	110.08	104.84
	63611	* 63610	.7500	3/4"	19.05	3/4"	4"	1-3/4"	.060"	-	-	120.57	115.33	110.08	104.84
	63621	* 63620	.7500	3/4"	19.05	3/4"	4"	1-3/4"	.120"	-	-	120.57	115.33	110.08	104.84
	63631	* 63630	.7500	3/4"	19.05	3/4"	5"	2"	.015"	-	-	167.25	159.98	152.71	145.43
	63311	* 63310	.7500	3/4"	19.05	3/4"	5"	2"	.030"	-	-	167.25	159.98	152.71	145.43
	63641	* 63640	.7500	3/4"	19.05	3/4"	5"	2"	.060"	-	-	167.25	159.98	152.71	145.43
NEW	63651	* 63650	.7500	3/4"	19.05	3/4"	6"	3"	.015"	-	-	198.67	190.03	181.40	172.75
NEW	63661	* 63660	.7500	3/4"	19.05	3/4"	6"	3"	.030"	-	-	198.67	190.03	181.40	172.75
NEW	63671	* 63670	.7500	3/4"	19.05	3/4"	6"	3"	.060"	-	-	198.67	190.03	181.40	172.75
NEW	63321	* 63320	.7500	3/4"	19.05	3/4"	6"	1"	.030"	3-1/4"	.730"	207.56	198.54	189.51	180.49
	27871	* 27870	.7874		20.00	20.0	75	22	1.0	-	-	166.88	159.62	152.37	145.11
	27879	* 27878	.7874		20.00	20.0	100	38	0.5	-	-	170.63	163.22	155.79	148.38
	27881	* 27880	.7874		20.00	20.0	100	38	1.0	-	-	170.63	163.22	155.79	148.38
	27891	* 27890	.7874		20.00	20.0	100	38	1.5	-	-	170.63	163.22	155.79	148.38
NEW	63331	* 63330	.7874		20.00	20.0	150	25	1.0	82	19.30	218.61	209.10	199.60	190.09
	27911	* 27910	.8661		22.00	22.0	100	38	1.0	-	-	187.45	179.30	171.15	163.00
	63341	* 63340	.8661		22.00	22.0	150	25	1.0	82	21.50	236.66	226.38	216.08	205.80
	27941	* 27940	.9843		25.00	25.0	100	38	1.0	-	-	195.57	187.06	178.57	170.06
	27951	* 27950	.9843		25.00	25.0	100	38	1.5	-	-	195.57	187.06	178.57	170.06
	63351	* 63350	.9843		25.00	25.0	125	50	1.0	-	-	244.15	233.53	222.92	212.31
	63361	* 63360	.9843		25.00	25.0	150	32	1.0	82	24.40	327.41	313.18	298.94	284.71

* - Tools with weldon flats

continued →

VRX - 4 Flute (continued)

1.000"
(25.40mm)

	EDP# (plain)	EDP# (weldon)	$d1$ † Diameter			$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	r Corner Radius	$l3$ Reach Length	$d3$ Neck Diameter	1-11	12-24	25-49	50-100
			Decimal		Metric										
NEW	27959	* 27958	1.000	1"	25.40	1"	4"	1"	.015"	-	-	205.85	196.89	187.95	178.99
	27961	* 27960	1.000	1"	25.40	1"	4"	1"	.035"	-	-	205.85	196.89	187.95	178.99
NEW	27963	* 27962	1.000	1"	25.40	1"	4"	1"	.060"	-	-	205.85	196.89	187.95	178.99
NEW	27965	* 27964	1.000	1"	25.40	1"	4"	1"	.090"	-	-	205.85	196.89	187.95	178.99
NEW	27967	* 27966	1.000	1"	25.40	1"	4"	1-1/2"	.015"	-	-	205.85	196.89	187.95	178.99
	27971	* 27970	1.000	1"	25.40	1"	4"	1-1/2"	.035"	-	-	205.85	196.89	187.95	178.99
NEW	27981	* 27980	1.000	1"	25.40	1"	4"	1-1/2"	.060"	-	-	205.85	196.89	187.95	178.99
NEW	27991	* 27990	1.000	1"	25.40	1"	4"	1-1/2"	.090"	-	-	205.85	196.89	187.95	178.99
NEW	28001	* 28000	1.000	1"	25.40	1"	4"	1-3/4"	.015"	-	-	205.85	196.89	187.95	178.99
NEW	28011	* 28012	1.000	1"	25.40	1"	4"	1-3/4"	.060"	-	-	205.85	196.89	187.95	178.99
NEW	28021	* 28022	1.000	1"	25.40	1"	4"	1-3/4"	.090"	-	-	205.85	196.89	187.95	178.99
NEW	63369	* 63368	1.000	1"	25.40	1"	5"	2"	.015"	-	-	253.26	242.25	231.23	220.23
	63371	* 63370	1.000	1"	25.40	1"	5"	2"	.035"	-	-	253.26	242.25	231.23	220.23
NEW	63373	* 63372	1.000	1"	25.40	1"	5"	2"	.060"	-	-	253.26	242.25	231.23	220.23
NEW	63375	* 63374	1.000	1"	25.40	1"	5"	2"	.090"	-	-	253.26	242.25	231.23	220.23
	63381	* 63380	1.000	1"	25.40	1"	6"	1-1/4"	.035"	3-1/4"	.980"	342.11	327.24	312.35	297.49

* - Tools with weldon flats



TOLERANCES

d_1	+.000" -.002" (+.000 -.050mm)	
d_2	3mm - 6mm	+.0000" -.0003" (+.0000 -.0075mm)
	1/4" - 1"	-.0001" -.0004" (-.0025 -.0100mm)
Ball radius	+.000" -.001" (+.000 -.025mm)	

Ball End - **Balinit® X.CEED Coated**

Solid submicron grain carbide end mill - center cutting

State-of-the-art rougher/finisher

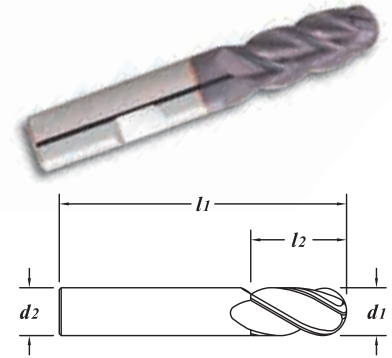
Reduces vibration for more aggressive machining resulting in less cycle times and greater productivity

Recommended for stainless steel, inconel, pH materials, titanium and tool steels

Variable flute geometry

VRX Square End - page 102

VRX Corner Radius - page 103



EDP# (plain)	EDP# (weldon)	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							
28470	-	.1575	4.00	6.0	50	8	19.35	18.51	17.67	16.83
28480	-	.1575	4.00	6.0	50	12	19.35	18.51	17.67	16.83
28490	-	.1875	3/16"	4.76	3/16"	2"	14.34	13.72	13.09	12.47
28500	-	.1875	3/16"	4.76	3/16"	2"	14.34	13.72	13.09	12.47
28510	-	.1969	5.00	6.0	50	10	18.97	18.15	17.32	16.49
28520	-	.1969	5.00	6.0	65	15	21.02	20.10	19.19	18.27
28530	-	.2362	6.00	6.0	50	12	18.36	17.56	16.76	15.96
28540	-	.2362	6.00	6.0	65	19	20.34	19.46	18.57	17.69
28570	-	.2500	1/4"	6.35	1/4"	2"	17.67	16.90	16.13	15.36
28580	-	.2500	1/4"	6.35	1/4"	2-1/2"	19.56	18.71	17.86	17.01
28610	-	.3125	5/16"	7.94	5/16"	2"	24.11	23.06	22.01	20.97
28620	-	.3125	5/16"	7.94	5/16"	2-1/2"	26.50	25.34	24.19	23.05
28630	-	.3150	8.00	8.0	50	12	25.01	23.92	22.84	21.75
28640	-	.3150	8.00	8.0	65	22	27.50	26.30	25.11	23.91
28670	-	.3750	3/8"	9.52	3/8"	2"	28.48	27.24	26.00	24.76
28680	-	.3750	3/8"	9.52	3/8"	2-1/2"	30.95	29.61	28.26	26.92
28690	-	.3937	10.00	10.0	50	16	34.37	32.87	31.39	29.89
28700	-	.3937	10.00	10.0	70	22	37.38	35.76	34.12	32.50
28705	-	.4375	7/16"	11.11	7/16"	2-1/2"	37.45	35.82	34.20	32.56
28710	-	.4375	7/16"	11.11	7/16"	2-3/4"	37.45	35.82	34.20	32.56
28715	-	.4724	12.00	12.0	65	19	49.34	47.20	45.04	42.90
28720	-	.4724	12.00	12.0	75	32	55.05	52.66	50.26	47.87
28751	* 28750	.5000	1/2"	12.70	1/2"	2-1/2"	47.31	45.25	43.19	41.14
28761	* 28760	.5000	1/2"	12.70	1/2"	3"	52.80	50.50	48.21	45.92
28771	* 28770	.5000	1/2"	12.70	1/2"	4"	62.41	59.70	56.98	54.27
28781	* 28780	.5512	14.00	14.0	75	19	77.92	74.53	71.14	67.76
28786	* 28785	.5512	14.00	14.0	88	32	80.08	76.60	73.11	69.64
28796	* 28795	.6250	5/8"	15.87	5/8"	3"	81.80	78.24	74.68	71.13
28801	* 28800	.6250	5/8"	15.87	5/8"	3-1/2"	84.08	80.42	76.77	73.11
28806	* 28805	.6250	5/8"	15.87	5/8"	6"	125.81	120.34	114.87	109.40
28811	* 28810	.6299	16.00	16.0	75	19	85.38	81.67	77.96	74.25
28821	* 28820	.6299	16.00	16.0	88	32	87.73	83.92	80.10	76.29
28831	* 28830	.7087	18.00	18.0	75	22	123.18	117.82	112.47	107.11
28836	* 28835	.7087	18.00	18.0	100	38	125.95	120.47	115.00	109.52
28841	* 28840	.7500	3/4"	19.05	3/4"	3"	118.00	112.87	107.73	102.61
28861	* 28860	.7500	3/4"	19.05	3/4"	4"	120.57	115.33	110.08	104.84
28866	* 28865	.7500	3/4"	19.05	3/4"	5"	167.25	159.98	152.71	145.43
28871	* 28870	.7874	20.00	20.0	75	22	166.88	159.62	152.37	145.11
28881	* 28880	.7874	20.00	20.0	100	38	170.63	163.22	155.79	148.38
28901	* 28900	.9843	25.00	25.0	100	38	195.57	187.06	178.57	170.06
28911	* 28910	1.000	1"	25.40	1"	4"	205.85	196.89	187.95	178.99
28916	* 28915	1.000	1"	25.40	1"	4"	205.85	196.89	187.95	178.99
28931	* 28930	1.000	1"	25.40	1"	5"	253.26	242.25	231.23	220.23

* - Tools with weldon flats

d_1	+.000" -.002" (+.000 -.050mm)	
d_2	3mm - 6mm	+.0000" -.0003" (+.0000 -.0075mm)
	1/4" - 1"	-.0001" -.0004" (-.0025 -.0100mm)



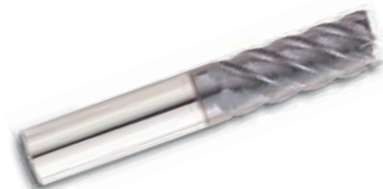
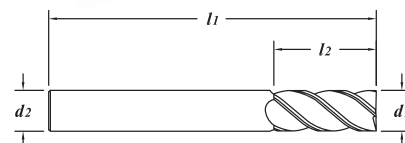
Square End - *Balinit*® X.CEED Coated

Solid submicron grain carbide end mill - center cutting
High performance tool for use in high Rockwell materials

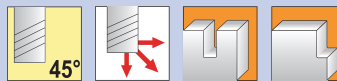
Recommended for hardened die mold, inconel and tool steels above 45 Rc

Corner Radius - page 109

Ball End - page 110



EDP#	d_1 †		d_2	l_1	l_2	Number of Flutes	1-11	12-24	25-49	50-100
	Decimal	Diameter Metric								
21200	.1181	3.00	3.0	38	12	4	12.45	11.91	11.37	10.83
21230	.1250	1/8"	3.17	1/8"	1-1/2"	4	11.82	11.32	10.80	10.29
21260	.1575	4.00	6.0	50	12	4	20.11	19.24	18.37	17.49
21290	.1875	3/16"	4.76	3/16"	2"	4	14.86	14.22	13.57	12.93
21320	.1969	5.00	6.0	65	15	4	22.03	21.07	20.11	19.16
21350	.2362	6.00	6.0	65	19	4	21.36	20.44	19.50	18.57
21380	.2500	1/4"	6.35	1/4"	2-1/2"	4	20.58	19.69	18.79	17.90
21410	.2756	7.00	8.0	65	22	5	32.26	30.86	29.45	28.05
21440	.3125	5/16"	7.94	5/16"	2-1/2"	5	27.96	26.74	25.52	24.30
21470	.3150	8.00	8.0	65	22	5	29.39	28.11	26.83	25.55
21500	.3543	9.00	10.0	65	22	5	43.16	41.29	39.41	37.53
21530	.3750	3/8"	9.52	3/8"	2-1/2"	5	32.40	30.99	29.58	28.17
21560	.3937	10.00	10.0	70	22	5	39.09	37.40	35.69	34.00
21620	.4724	12.00	12.0	75	32	5	57.32	54.83	52.34	49.85
21660	.5000	1/2"	12.70	1/2"	3"	5	54.52	52.15	49.77	47.40
21710	.6250	5/8"	15.87	5/8"	3-1/2"	5	86.56	82.79	79.03	75.26
21740	.6299	16.00	16.0	88	32	5	91.04	87.08	83.13	79.16
21770	.7087	18.00	18.0	100	38	5	129.55	123.92	118.29	112.65
21800	.7500	3/4"	19.05	3/4"	4"	5	123.97	118.58	113.18	107.80
21830	.7874	20.00	20.0	100	38	5	175.26	167.64	160.02	152.40
21890	.9843	25.00	25.0	100	38	5	219.12	209.59	200.06	190.54
21920	1.000	1"	25.40	1"	4"	5	211.86	202.64	193.44	184.23



TOLERANCES

d_1	+.000" - .002" (+.000 - .050mm)	
d_2	3mm - 6mm	+.0000" - .0003" (+.0000 - .0075mm)
	1/4" - 1"	-.0001" - .0004" (-.0025 - .0100mm)
r	+.001" - .001" (+.025 - .025mm)	

Corner Radius - *Balinit*® X.CEED Coated

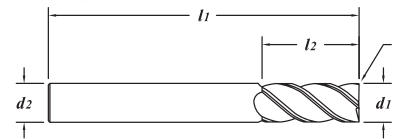
Solid submicron grain carbide end mill - center cutting

High performance tool for use in high Rockwell materials

Recommended for hardened die mold, inconel and tool steels above 45 Rc

Square End - page 108

Ball End - page 110



EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	Number of Flutes	1-11	12-24	25-49	50-100
	Decimal	Metric									
21202	.1181	3.00	3.0	38	12	0.2	4	13.60	13.01	12.42	11.82
NEW 21212	.1181	3.00	3.0	38	12	0.5	4	13.60	13.01	12.42	11.82
21232	.1250	1/8"	3.17	1-1/2"	1/2"	.010"	4	12.92	12.36	11.79	11.23
NEW 21242	.1250	1/8"	3.17	1-1/2"	1/2"	.020"	4	12.92	12.36	11.79	11.23
21262	.1575	4.00	6.0	50	12	0.3	4	21.91	20.96	20.01	19.05
21292	.1875	3/16"	4.76	2"	9/16"	.010"	4	16.23	15.53	14.82	14.11
NEW 21302	.1875	3/16"	4.76	2"	9/16"	.020"	4	16.23	15.53	14.82	14.11
21322	.1969	5.00	6.0	65	15	0.3	4	23.90	22.86	21.82	20.78
NEW 21342	.2362	6.00	6.0	65	19	0.2	4	23.15	22.14	21.13	20.13
21352	.2362	6.00	6.0	65	19	0.5	4	23.15	22.14	21.13	20.13
NEW 21372	.2500	1/4"	6.35	2-1/2"	3/4"	.010"	4	22.30	21.33	20.36	19.39
21382	.2500	1/4"	6.35	2-1/2"	3/4"	.015"	4	22.30	21.33	20.36	19.39
NEW 21392	.2500	1/4"	6.35	2-1/2"	3/4"	.030"	4	22.30	21.33	20.36	19.39
21412	.2756	7.00	8.0	65	22	0.5	5	34.99	33.47	31.94	30.42
NEW 21432	.3125	5/16"	7.94	2-1/2"	13/16"	.010"	5	30.20	28.89	27.57	26.26
21442	.3125	5/16"	7.94	2-1/2"	13/16"	.015"	5	30.20	28.89	27.57	26.26
NEW 21452	.3125	5/16"	7.94	2-1/2"	13/16"	.030"	5	30.20	28.89	27.57	26.26
NEW 21462	.3150	8.00	8.0	65	22	0.2	5	31.79	30.41	29.03	27.64
21472	.3150	8.00	8.0	65	22	0.5	5	31.79	30.41	29.03	27.64
21502	.3543	9.00	10.0	65	22	0.5	5	46.98	44.94	42.89	40.85
NEW 21522	.3750	3/8"	9.52	2-1/2"	7/8"	.010"	5	35.14	33.61	32.08	30.56
21532	.3750	3/8"	9.52	2-1/2"	7/8"	.015"	5	35.14	33.61	32.08	30.56
NEW 21542	.3750	3/8"	9.52	2-1/2"	7/8"	.030"	5	35.14	33.61	32.08	30.56
NEW 21552	.3937	10.00	10.0	70	22	0.2	5	42.46	40.61	38.77	36.92
21562	.3937	10.00	10.0	70	22	0.5	5	42.46	40.61	38.77	36.92
NEW 21602	.4724	12.00	12.0	75	32	0.2	5	62.72	60.00	57.27	54.54
21612	.4724	12.00	12.0	75	32	0.5	5	62.72	60.00	57.27	54.54
21622	.4724	12.00	12.0	75	32	1.0	5	62.72	60.00	57.27	54.54
NEW 21642	.5000	1/2"	12.70	1/2"	3"	.010"	5	59.58	56.99	54.40	51.81
21652	.5000	1/2"	12.70	1/2"	3"	.015"	5	59.58	56.99	54.40	51.81
21662	.5000	1/2"	12.70	1/2"	3"	.030"	5	59.58	56.99	54.40	51.81
NEW 21672	.5000	1/2"	12.70	1/2"	3"	.060"	5	59.58	56.99	54.40	51.81
NEW 21692	.6250	5/8"	15.87	3-1/2"	1-1/4"	.010"	5	94.75	90.64	86.52	82.40
21702	.6250	5/8"	15.87	3-1/2"	1-1/4"	.015"	5	94.75	90.64	86.52	82.40
21712	.6250	5/8"	15.87	3-1/2"	1-1/4"	.030"	5	94.75	90.64	86.52	82.40
NEW 21722	.6250	5/8"	15.87	3-1/2"	1-1/4"	.060"	5	94.75	90.64	86.52	82.40
21732	.6299	16.00	16.0	88	32	0.5	5	99.75	95.41	91.07	86.74
21742	.6299	16.00	16.0	88	32	1.0	5	99.75	95.41	91.07	86.74
21772	.7087	18.00	18.0	100	38	0.5	5	142.36	136.17	129.98	123.79
21802	.7500	3/4"	19.05	3/4"	4"	.015"	5	136.23	130.30	124.38	118.46
NEW 21812	.7500	3/4"	19.05	3/4"	4"	.030"	5	136.23	130.30	124.38	118.46
NEW 21822	.7500	3/4"	19.05	3/4"	4"	.060"	5	136.23	130.30	124.38	118.46
21832	.7874	20.00	20.0	100	38	0.5	5	192.59	184.22	175.84	167.47
21892	.9843	25.00	25.0	100	38	0.5	5	240.79	230.32	219.86	209.38
21922	1.000	1"	25.40	4"	1-1/2"	.015"	5	232.81	222.70	212.57	202.45
NEW 21932	1.000	1"	25.40	4"	1-1/2"	.030"	5	232.81	222.70	212.57	202.45
NEW 21942	1.000	1"	25.40	4"	1-1/2"	.060"	5	232.81	222.70	212.57	202.45



TOLERANCES

d_1	+0.000" -0.002" (+0.000 -0.050mm)	
d_2	3mm - 6mm	+0.0000" -0.0003" (+0.0000 -0.0075mm)
	1/4" - 1"	-0.0001" -0.0004" (-0.0025 -0.0100mm)
Ball radius	+0.000" -0.001" (+0.000 -0.025mm)	

Ball End - *Balinit*® X.CEED Coated

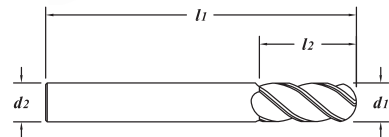
Solid submicron grain carbide end mill - center cutting

High performance tool for use in high Rockwell materials

Recommended for hardened die mold, inconel and tool steels above 45 Rc

Square End - page 108

Corner Radius - page 109



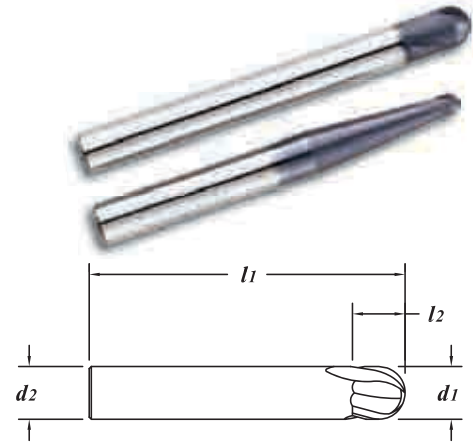
EDP#	d_1 †		d_2	l_1	l_2	Number of Flutes	1-11	12-24	25-49	50-100
	Decimal	Metric								
21204	.1181	3.00	3.0	38	12	4	13.60	13.01	12.42	11.82
21234	.1250	1/8"	3.17	1/8"	1-1/2"	4	12.92	12.36	11.79	11.23
21264	.1575	4.00	6.0	50	12	4	21.91	20.96	20.01	19.05
21294	.1875	3/16"	4.76	3/16"	2"	4	16.23	15.53	14.82	14.11
21324	.1969	5.00	6.0	65	15	4	23.90	22.86	21.82	20.78
21354	.2362	6.00	6.0	65	19	4	23.15	22.14	21.13	20.13
21384	.2500	1/4"	6.35	1/4"	2-1/2"	4	22.30	21.33	20.36	19.39
21414	.2756	7.00	8.0	65	22	5	34.99	33.47	31.94	30.42
21444	.3125	5/16"	7.94	5/16"	2-1/2"	5	30.20	28.89	27.57	26.26
21474	.3150	8.00	8.0	65	22	5	31.79	30.41	29.03	27.64
21504	.3543	9.00	10.0	65	22	5	46.98	44.94	42.89	40.85
21534	.3750	3/8"	9.52	3/8"	2-1/2"	5	35.14	33.61	32.08	30.56
21564	.3937	10.00	10.0	70	22	5	42.46	40.61	38.77	36.92
21624	.4724	12.00	12.0	75	32	5	62.72	60.00	57.27	54.54
21664	.5000	1/2"	12.70	1/2"	3"	5	59.58	56.99	54.40	51.81
21714	.6250	5/8"	15.87	5/8"	3-1/2"	5	94.75	90.64	86.52	82.40
21744	.6299	16.00	16.0	88	32	5	99.75	95.41	91.07	86.74
21774	.7087	18.00	18.0	100	38	5	142.36	136.17	129.98	123.79
21804	.7500	3/4"	19.05	3/4"	4"	5	136.23	130.30	124.38	118.46
21834	.7874	20.00	20.0	100	38	5	192.59	184.22	175.84	167.47
21894	.9843	25.00	25.0	100	38	5	240.79	230.32	219.86	209.38
21924	1.000	1"	25.40	1"	4"	5	232.81	222.70	212.57	202.45



TOLERANCES	
d_1	+0.000" -0.001" (+0.000 -0.025mm)
d_2	-0.0001" -0.0003" (-0.0025 -0.0075mm)
Ball radius	+0.0000" -0.0005" (+0.0000 -0.0127mm)

Die Mold Cutters - *Balinit*® X.CEED Coated

Solid submicron grain carbide end mill - center cutting
High performance machining in the die mold industry
Rigid work holding, machine stability and part integrity are critical!
Carbide tested and selected for specific application
≤5mm (.1969") diameter have 5° taper to shank
Recommended for high Rockwell materials
Can be modified with a neck in 48 hours



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							
14210	.0312	1/32"	0.79	1/4"	3"	1/32"	48.07	45.98	43.89	41.80
15210	.0394		1.00	6.0	75	1	48.07	45.98	43.89	41.80
15220	.0591		1.50	6.0	75	1.5	48.07	45.98	43.89	41.80
14220	.0625	1/16"	1.59	1/4"	3"	1/16"	48.07	45.98	43.89	41.80
15230	.0787		2.00	6.0	75	2	48.07	45.98	43.89	41.80
14230	.0938	3/32"	2.38	1/4"	3"	3/32"	48.07	45.98	43.89	41.80
15240	.1181		3.00	6.0	75	3	46.97	44.93	42.88	40.84
14240	.1250	1/8"	3.17	1/4"	3"	1/8"	46.97	44.93	42.88	40.84
15250	.1575		4.00	6.0	75	4	46.29	44.27	42.27	40.25
14250	.1875	3/16"	4.76	1/4"	3"	3/16"	46.29	44.27	42.27	40.25
15260	.1969		5.00	6.0	75	5	46.29	44.27	42.27	40.25
15270	.2362		6.00	6.0	75	6	45.31	43.35	41.37	39.41
14260	.2500	1/4"	6.35	1/4"	3"	1/4"	45.31	43.35	41.37	39.41
14270	.3125	5/16"	7.94	5/16"	4"	5/16"	55.49	53.08	50.67	48.26
15280	.3150		8.00	8.0	100	8	55.49	53.08	50.67	48.26
14280	.3750	3/8"	9.52	3/8"	4"	3/8"	61.41	58.74	56.08	53.40
15290	.3937		10.00	10.0	100	10	66.44	63.54	60.65	57.77
15300	.4724		12.00	12.0	100	12	80.46	76.97	73.47	69.97
14290	.5000	1/2"	12.70	1/2"	4"	1/2"	89.61	85.71	81.82	77.92

d_1	$+0.000" -0.002" (+.000 -0.050\text{mm})$
d_2	$-0.0001" -0.0002" (-0.0025 -0.0050\text{mm})$



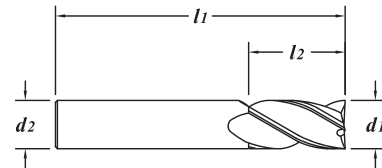
Square End - Diamond Coated

Solid grade C-2 carbide end mill - center cutting

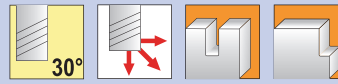
Crystalline diamond coating

Up to 17x tool life than uncoated

Recommended for graphite, fiber-reinforced plastics, carbon fiber and high silicon aluminum



EDP#	$d1$ † Diameter			$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	1-11	12-24	25-49	50-100
	Decimal		Metric							
10018	.0312	1/32"	0.79	1/8"	1-1/2"	3/32"	58.33	55.80	53.26	50.72
46018	.0394		1.00	3.0	38	4	61.40	58.73	56.07	53.39
10028	.0469	3/64"	1.19	1/8"	1-1/2"	1/8"	58.33	55.80	53.26	50.72
46028	.0591		1.50	3.0	38	6	61.40	58.73	56.07	53.39
10038	.0625	1/16"	1.59	1/8"	1-1/2"	1/4"	56.47	54.02	51.56	49.11
46038	.0787		2.00	3.0	38	8	59.46	56.87	54.29	51.70
10058	.0938	3/32"	2.38	1/8"	1-1/2"	3/8"	55.47	53.06	50.65	48.24
46058	.1181		3.00	3.0	38	12	55.17	52.77	50.38	47.98
10078	.1250	1/8"	3.17	1/8"	1-1/2"	1/2"	52.41	50.13	47.85	45.57
46078	.1575		4.00	4.0	50	14	88.18	84.34	80.52	76.68
10118	.1875	3/16"	4.76	3/16"	2"	5/8"	83.77	80.13	76.49	72.84
46098	.1969		5.00	5.0	50	16	101.64	97.22	92.80	88.38
46108	.2362		6.00	6.0	65	20	103.66	99.15	94.64	90.14
10158	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	98.48	94.19	89.92	85.63
10198	.3125	5/16"	7.94	5/16"	2-1/2"	7/8"	117.81	112.68	107.57	102.44
46128	.3150		8.00	8.0	65	20	139.07	133.03	126.97	120.93
10238	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	132.02	126.28	120.54	114.80
46148	.3937		10.00	10.0	70	25	154.02	147.33	140.63	133.93
46168	.4724		12.00	12.0	75	25	168.85	161.51	154.17	146.83
10318	.5000	1/2"	12.70	1/2"	3"	1"	160.41	153.43	146.46	139.48
13338	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	231.82	221.74	211.66	201.58
46188	.6299		16.00	16.0	88	32	282.27	269.99	257.72	245.45
13358	.7500	3/4"	19.05	3/4"	4"	1-1/2"	438.59	419.52	400.45	381.39
46208	.7874		20.00	20.0	100	38	549.22	525.35	501.47	477.59
46228	.9843		25.00	25.0	100	38	694.40	664.21	634.02	603.82
13378	1.000	1"	25.40	1"	4"	1-1/2"	689.08	659.12	629.16	599.21



TOLERANCES

d_1	$+0.000^{\circ} - .002^{\circ}$ (+.000 -.050mm)
d_2	$-.0001^{\circ} - .0002^{\circ}$ (-.0025 -.0050mm)
r	$+0.001^{\circ} - .001^{\circ}$ (+.025 -.025mm)

Corner Radius - Diamond Coated

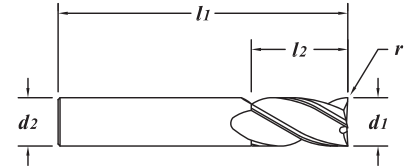
Solid grade C-2 carbide end mill - center cutting

Crystalline diamond coating

Up to 17x tool life than uncoated

For stronger corners and part radius

Recommended for graphite, fiber-reinforced plastics, carbon fiber and high silicon aluminum



EDP#	d_1 † Diameter		d_2 Shank Diameter	l_1 Overall Length	l_2 Flute Length	r Corner Radius	1-11	12-24	25-49	50-100	
	Decimal	Metric									
24108	.1181	3.00	3.0	38	12	0.3	76.45	73.12	69.80	66.48	
24118	.1181	3.00	3.0	38	12	0.5	76.45	73.12	69.80	66.48	
80018	.1250	1/8"	3.17	1/8"	1-1/2"	1/2"	.015"	72.62	69.46	66.31	63.15
80028	.1250	1/8"	3.17	1/8"	1-1/2"	1/2"	.020"	72.62	69.46	66.31	63.15
24148	.1575	4.00	4.0	50	14	0.3	110.48	105.67	100.87	96.06	
24158	.1575	4.00	4.0	50	14	0.5	110.48	105.67	100.87	96.06	
80058	.1875	3/16"	4.76	3/16"	2"	5/8"	.015"	104.95	100.38	95.82	91.26
80068	.1875	3/16"	4.76	3/16"	2"	5/8"	.020"	104.95	100.38	95.82	91.26
24178	.2362	6.00	6.0	65	20	0.5	117.87	112.75	107.62	102.50	
24208	.2362	6.00	6.0	65	20	1.5	117.87	112.75	107.62	102.50	
80108	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.015"	111.98	107.11	102.24	97.38
80118	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.020"	111.98	107.11	102.24	97.38
80128	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	.030"	111.98	107.11	102.24	97.38
24228	.3150	8.00	8.0	65	20	0.5	147.84	141.41	134.98	128.55	
24248	.3150	8.00	8.0	65	20	1.0	147.84	141.41	134.98	128.55	
80248	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.020"	140.86	134.73	128.61	122.48
80258	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	.030"	140.86	134.73	128.61	122.48
24298	.3937	10.00	10.0	70	25	0.5	164.20	157.06	149.92	142.78	
24318	.3937	10.00	10.0	70	25	1.0	164.20	157.06	149.92	142.78	
24378	.4724	12.00	12.0	75	25	0.5	180.56	172.71	164.86	157.01	
24398	.4724	12.00	12.0	75	25	1.0	180.56	172.71	164.86	157.01	
80328	.5000	1/2"	12.70	1/2"	3"	1"	.030"	171.53	164.07	156.61	149.16
80348	.5000	1/2"	12.70	1/2"	3"	1"	.060"	171.53	164.07	156.61	149.16

TOLERANCES

d_1	$+0.000" - .002" (+.000 - .050\text{mm})$
d_2	$-.0001" - .0002" (-.0025 - .0050\text{mm})$
Ball radius	$+0.000" - .001" (+.000 - .025\text{mm})$



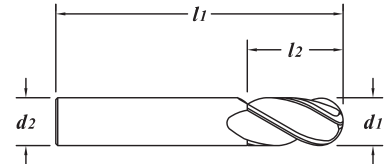
Ball End - Diamond Coated

Solid grade C-2 carbide end mill - center cutting

Crystalline diamond coating

Up to 17x tool life than uncoated

Recommended for graphite, fiber-reinforced plastics, carbon fiber and high silicon aluminum



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							
15018	.0312	1/32"	0.79	1/8"	1-1/2"	3/32"	78.86	75.43	68.58
48018	.0394		1.00	3.0	38	4	83.01	79.40	72.19
15028	.0469	3/64"	1.19	1/8"	1-1/2"	1/8"	78.86	75.43	68.58
48028	.0591		1.50	3.0	38	6	83.01	79.40	72.19
15038	.0625	1/16"	1.59	1/8"	1-1/2"	1/4"	77.01	73.66	66.97
48038	.0787		2.00	3.0	38	8	81.07	77.54	70.49
15058	.0938	3/32"	2.38	1/8"	1-1/2"	3/8"	75.68	72.39	65.81
48058	.1181		3.00	3.0	38	12	76.45	73.12	66.48
15078	.1250	1/8"	3.17	1/8"	1-1/2"	1/2"	72.62	69.46	63.15
48078	.1575		4.00	4.0	50	14	110.48	105.67	96.06
15118	.1875	3/16"	4.76	3/16"	2"	5/8"	104.95	100.38	91.26
48098	.1969		5.00	5.0	50	16	115.43	110.41	100.37
48108	.2362		6.00	6.0	65	20	117.87	112.75	102.50
15158	.2500	1/4"	6.35	1/4"	2-1/2"	3/4"	111.98	107.11	97.38
15198	.3125	5/16"	7.94	5/16"	2-1/2"	7/8"	126.13	120.65	109.68
48128	.3150		8.00	8.0	65	20	147.84	141.41	128.55
15238	.3750	3/8"	9.52	3/8"	2-1/2"	7/8"	140.86	134.73	122.48
48148	.3937		10.00	10.0	70	25	164.20	157.06	142.78
48168	.4724		12.00	12.0	75	25	180.56	172.71	157.01
15318	.5000	1/2"	12.70	1/2"	3"	1"	171.53	164.07	149.16
18338	.6250	5/8"	15.87	5/8"	3-1/2"	1-1/4"	239.17	228.77	207.98
48188	.6299		16.00	16.0	88	32	289.98	277.38	264.76
18358	.7500	3/4"	19.05	3/4"	4"	1-1/2"	449.78	430.23	391.11
48208	.7874		20.00	20.0	100	38	571.99	547.12	522.25
48228	.9843		25.00	25.0	100	38	738.40	706.30	674.19
18378	1.000	1"	25.40	1"	4"	1-1/2"	731.50	699.70	667.89
									636.10

d_1	$+0.000" -0.002" (+0.000 -0.050\text{mm})$
d_2	$-0.0001" -0.0002" (-0.0025 -0.0050\text{mm})$



Extra Length - Square End - Diamond Coated

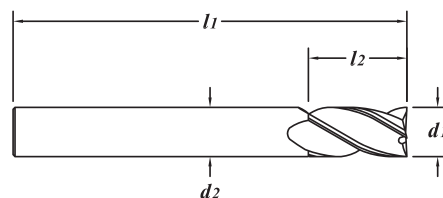
Solid grade C-2 carbide end mill - center cutting

Crystalline diamond coating

Up to 17x tool life than uncoated

Recommended for graphite, fiber-reinforced plastics, carbon fiber and high silicon aluminum

Can be modified with a neck in 48 hours



EDP#	d_1 †		d_2	l_1	l_2	1-11	12-24	25-49	50-100
	Decimal	Metric							
94028	.1181	3.00	3.0	75	20	84.54	80.87	77.19	73.52
38038	.1250	1/8"	3.17	1/8"	3"	80.32	76.82	73.33	69.85
94068	.1575	4.00	4.0	75	25	113.13	108.21	103.29	98.37
38048	.1875	3/16"	4.76	3/16"	4"	107.47	102.80	98.12	93.45
94108	.2362	6.00	6.0	100	25	125.87	120.40	114.93	109.45
94128	.2362	6.00	6.0	150	38	144.06	137.80	131.53	125.27
38058	.2500	1/4"	6.35	1/4"	3"	115.14	110.14	105.12	100.12
38068	.2500	1/4"	6.35	1/4"	4"	119.58	114.38	109.18	103.98
38078	.2500	1/4"	6.35	1/4"	6"	136.85	130.90	124.96	119.01
38098	.3125	5/16"	7.94	5/16"	4"	140.18	134.09	127.99	121.90
94168	.3150	8.00	8.0	100	25	167.69	160.40	153.11	145.82
38128	.3750	3/8"	9.52	3/8"	4"	156.11	149.32	142.54	135.75
38138	.3750	3/8"	9.52	3/8"	6"	172.54	165.04	157.53	150.03
94208	.3937	10.00	10.0	100	25	187.21	179.07	170.93	162.79
94248	.4724	12.00	12.0	100	25	206.73	197.75	188.75	179.76
38168	.5000	1/2"	12.70	1/2"	4"	196.39	187.86	179.32	170.78
38178	.5000	1/2"	12.70	1/2"	2"	196.39	187.86	179.32	170.78

TOLERANCES

d_1	$+0.000" -0.002" (+0.000 -0.050\text{mm})$
d_2	$-0.0001" -0.0002" (-0.0025 -0.0050\text{mm})$
Ball radius	$+0.000" -0.001" (+0.000 -0.025\text{mm})$



Extra Length - Ball End - Diamond Coated

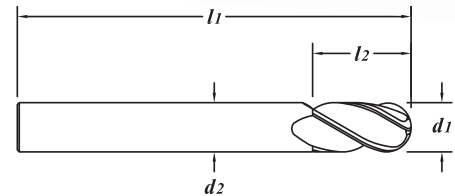
Solid grade C-2 carbide end mill - center cutting

Crystalline diamond coating

Up to 17x tool life than uncoated

Recommended for graphite, fiber-reinforced plastics, carbon fiber and high silicon aluminum

Can be modified with a neck in 48 hours



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							
99028	.1181	3.00	3.0	75	20	103.27	98.78	94.29	89.80
40038	.1250	1/8"	3.17	1/8"	3"	98.10	93.84	89.58	85.31
99068	.1575	4.00	4.0	75	25	128.48	122.90	117.31	111.73
40048	.1875	3/16"	4.76	3/16"	4"	122.06	116.76	111.45	106.14
99108	.2362	6.00	6.0	100	25	141.22	135.09	128.94	122.80
99128	.2362	6.00	6.0	150	38	156.81	149.99	143.18	136.35
40058	.2500	1/4"	6.35	1/4"	3"	129.73	124.09	118.45	112.81
40068	.2500	1/4"	6.35	1/4"	4"	134.17	128.34	122.50	116.67
40078	.2500	1/4"	6.35	1/4"	6"	148.96	142.48	136.00	129.53
40098	.3125	5/16"	7.94	5/16"	4"	154.77	148.04	141.32	134.59
99168	.3150	8.00	8.0	100	25	180.41	172.57	164.73	156.87
40128	.3750	3/8"	9.52	3/8"	4"	170.71	163.28	155.86	148.44
40138	.3750	3/8"	9.52	3/8"	6"	180.62	172.76	164.91	157.06
99208	.3937	10.00	10.0	100	25	199.92	191.22	182.53	173.85
99248	.4724	12.00	12.0	100	25	219.48	209.93	200.40	190.85
40168	.5000	1/2"	12.70	1/2"	4"	208.50	199.43	190.37	181.30
40178	.5000	1/2"	12.70	1/2"	2"	208.50	199.43	190.37	181.30