

.1181" - .2362"
(3.000mm - 6.000mm)



TECH PAGES
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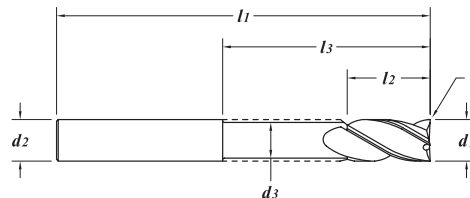
TOLERANCES	
d1	+0.000" -0.001" (+0.000 -0.025mm)
d2	h6
r	+0.0005" -0.0005" (+0.0127 -0.0127mm)

Recommended for aluminum

HSAL End Mill - Corner Radius

ALUMASTAR Coating

- 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 5,000-20,000 RPM spindles)
- Need to use properly balanced holders
- Holds perpendicularity
- Flats can be added within 48 hours



MATERIAL HARDNESS (Rc) 70 35 0

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										
39113	.1181	3.000	3.0	38	6	0.20	-	-	22.48	21.51	20.53	19.55
39123	.1181	3.000	3.0	38	6	0.50	-	-	22.48	21.51	20.53	19.55
39133	.1181	3.000	3.0	38	12	0.20	-	-	22.48	21.51	20.53	19.55
39143	.1181	3.000	3.0	38	12	0.50	-	-	22.48	21.51	20.53	19.55
39153	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.010"	-	21.82	20.87	19.92	18.97
39163	.1250	1/8"	3.175	1/8"	1-1/2"	1/4"	.020"	-	21.82	20.87	19.92	18.97
39173	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.010"	-	21.82	20.87	19.92	18.97
39183	.1250	1/8"	3.175	1/8"	1-1/2"	1/2"	.020"	-	21.82	20.87	19.92	18.97
39193	.1575	4.000	6.0	50	8	0.20	-	-	30.35	29.03	27.71	26.39
39203	.1575	4.000	6.0	50	8	0.50	-	-	30.35	29.03	27.71	26.39
39213	.1575	4.000	6.0	50	12	0.20	-	-	30.35	29.03	27.71	26.39
39223	.1575	4.000	6.0	50	12	0.30	-	-	30.35	29.03	27.71	26.39
39225	.1575	4.000	6.0	50	12	0.50	-	-	30.35	29.03	27.71	26.39
39243	.1575	4.000	6.0	65	6	0.30	20	3.7	37.11	35.50	33.88	32.27
39253	.1575	4.000	6.0	65	6	0.50	20	3.7	37.11	35.50	33.88	32.27
39263	.1575	4.000	6.0	65	6	1.00	20	3.7	37.11	35.50	33.88	32.27
39265	.1875	3/16"	4.763	3/16"	2"	5/16"	.010"	-	22.51	21.53	20.55	19.57
39275	.1875	3/16"	4.763	3/16"	2"	5/16"	.020"	-	22.51	21.53	20.55	19.57
39280	.1875	3/16"	4.763	3/16"	2"	5/16"	.030"	-	22.51	21.53	20.55	19.57
39283	.1875	3/16"	4.763	3/16"	2"	9/16"	.010"	-	22.51	21.53	20.55	19.57
39285	.1875	3/16"	4.763	3/16"	2"	9/16"	.020"	-	22.51	21.53	20.55	19.57
39293	.1875	3/16"	4.763	3/16"	2"	9/16"	.030"	-	22.51	21.53	20.55	19.57
39303	.1875	3/16"	4.763	3/16"	3"	7/32"	.010"	3/4"	41.20	39.41	37.62	35.83
39313	.1875	3/16"	4.763	3/16"	3"	7/32"	.030"	3/4"	41.20	39.41	37.62	35.83
39343	.1969	5.000	6.0	65	16	0.30	-	-	31.31	29.95	28.59	27.23
39363	.1969	5.000	6.0	75	8	0.30	20	4.7	51.16	48.94	46.71	44.49
39373	.1969	5.000	6.0	75	8	0.50	20	4.7	51.16	48.94	46.71	44.49
39383	.1969	5.000	6.0	75	8	1.00	20	4.7	51.16	48.94	46.71	44.49
39403	.2362	6.000	6.0	65	19	0.30	-	-	30.31	29.00	27.68	26.36
39423	.2362	6.000	6.0	75	10	0.30	25	5.7	49.52	47.37	45.21	43.06
39433	.2362	6.000	6.0	75	10	0.50	25	5.7	49.52	47.37	45.21	43.06
39436	.2362	6.000	6.0	75	10	1.00	25	5.7	49.52	47.37	45.21	43.06
39439	.2362	6.000	6.0	75	10	1.50	25	5.7	49.52	47.37	45.21	43.06
39443	.2362	6.000	6.0	75	10	2.00	25	5.7	49.52	47.37	45.21	43.06

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											
39314	.2500	1/4"	6.350	1/4"	2"	1/2"	.010"	-	-	27.32	26.13	24.94	23.76
39316	.2500	1/4"	6.350	1/4"	2"	1/2"	.015"	-	-	27.32	26.13	24.94	23.76
39318	.2500	1/4"	6.350	1/4"	2"	1/2"	.020"	-	-	27.32	26.13	24.94	23.76
39453	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	-	28.80	27.54	26.29	25.04
39463	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	-	28.80	27.54	26.29	25.04
39320	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	-	28.80	27.54	26.29	25.04
39473	.2500	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	-	28.80	27.54	26.29	25.04
NEW 39483	.2500	1/4"	6.350	1/4"	3"	1-1/8"	.030"	-	-	43.67	41.77	39.87	37.97
39493	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	1-1/8"	.235"	49.89	47.72	45.55	43.38
40403	.2500	1/4"	6.350	1/4"	4"	3/8"	.030"	1-1/8"	.235"	49.89	47.72	45.55	43.38
39503	.2500	1/4"	6.350	1/4"	4"	3/8"	.015"	2-1/8"	.235"	55.03	52.64	50.24	47.85
39543	.2756		7.000	8.0	65	19	0.30	-	-	44.08	42.16	40.25	38.33
39563	.2756		7.000	8.0	75	12	0.30	25	6.4	67.15	64.23	61.31	58.39
NEW 39322	.3125	5/16"	7.938	5/16"	2"	1/2"	.010"	-	-	34.87	33.35	31.84	30.32
NEW 39324	.3125	5/16"	7.938	5/16"	2"	1/2"	.020"	-	-	34.87	33.35	31.84	30.32
39593	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.010"	-	-	38.11	36.45	34.80	33.14
39603	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.015"	-	-	38.11	36.45	34.80	33.14
NEW 39326	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.020"	-	-	38.11	36.45	34.80	33.14
39613	.3125	5/16"	7.938	5/16"	2-1/2"	3/4"	.030"	-	-	38.11	36.45	34.80	33.14
39623	.3125	5/16"	7.938	5/16"	4"	7/16"	.015"	1-1/8"	.297"	65.58	62.73	59.88	57.03
39633	.3125	5/16"	7.938	5/16"	4"	7/16"	.030"	1-1/8"	.297"	65.58	62.73	59.88	57.03
39328	.3150		8.000	8.0	50	12	0.50	-	-	36.49	34.90	33.32	31.73
39663	.3150		8.000	8.0	65	19	0.50	-	-	40.10	38.36	36.61	34.87
39683	.3150		8.000	8.0	75	12	0.50	25	7.4	61.10	58.44	55.79	53.13
39688	.3150		8.000	8.0	75	12	1.00	25	7.4	61.10	58.44	55.79	53.13
39693	.3150		8.000	8.0	75	12	2.00	25	7.4	61.10	58.44	55.79	53.13
39698	.3150		8.000	8.0	75	12	3.00	25	7.4	61.10	58.44	55.79	53.13
39330	.3750	3/8"	9.525	3/8"	2"	1/2"	.010"	-	-	41.03	39.25	37.46	35.68
39332	.3750	3/8"	9.525	3/8"	2"	1/2"	.020"	-	-	41.03	39.25	37.46	35.68
39703	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.010"	-	-	44.41	42.48	40.55	38.62
39713	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.015"	-	-	44.41	42.48	40.55	38.62
39334	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.020"	-	-	44.41	42.48	40.55	38.62
39723	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.030"	-	-	44.41	42.48	40.55	38.62
39733	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.060"	-	-	44.41	42.48	40.55	38.62
NEW 39734	.3750	3/8"	9.525	3/8"	2-1/2"	7/8"	.120"	-	-	44.41	42.48	40.55	38.62
NEW 39738	.3750	3/8"	9.525	3/8"	3"	1-1/4"	.030"	-	-	57.26	54.77	52.28	49.79
39763	.3750	3/8"	9.525	3/8"	4"	1/2"	.030"	2-1/8"	.355"	75.84	72.55	69.25	65.95
39773	.3750	3/8"	9.525	3/8"	4"	1/2"	.060"	2-1/8"	.355"	75.84	72.55	69.25	65.95
39783	.3750	3/8"	9.525	3/8"	6"	1/2"	.030"	4"	.355"	110.75	105.93	101.12	96.30
39336	.3937		10.000	10.0	50	14	0.50	-	-	61.70	59.02	56.33	53.65
39803	.3937		10.000	10.0	70	24	0.50	-	-	68.11	65.15	62.19	59.23
39843	.3937		10.000	10.0	100	12	0.50	35	9.4	91.56	87.58	83.60	79.62
39848	.3937		10.000	10.0	100	12	1.00	35	9.4	91.56	87.58	83.60	79.62
39853	.3937		10.000	10.0	100	12	1.50	35	9.4	91.56	87.58	83.60	79.62
39863	.3937		10.000	10.0	100	12	2.00	35	9.4	91.56	87.58	83.60	79.62
39873	.3937		10.000	10.0	100	12	3.00	35	9.4	91.56	87.58	83.60	79.62
39344	.4724		12.000	12.0	65	16	0.50	-	-	73.92	70.71	67.49	64.28
39883	.4724		12.000	12.0	75	32	0.50	-	-	84.25	80.59	76.92	73.26
39346	.4724		12.000	12.0	75	32	0.75	-	-	84.25	80.59	76.92	73.26
39348	.4724		12.000	12.0	75	32	1.00	-	-	84.25	80.59	76.92	73.26
39903	.4724		12.000	12.0	100	16	0.50	40	11.4	108.28	103.58	98.87	94.16
39907	.4724		12.000	12.0	100	16	1.00	40	11.4	108.28	103.58	98.87	94.16
39911	.4724		12.000	12.0	100	16	1.50	40	11.4	108.28	103.58	98.87	94.16
39915	.4724		12.000	12.0	100	16	2.00	40	11.4	108.28	103.58	98.87	94.16
39919	.4724		12.000	12.0	100	16	3.00	40	11.4	108.28	103.58	98.87	94.16

70

MATERIAL HARDNESS (RC)

35

0

continued →

Series 143R (continued)

.5000" - 1.000"
(12.700mm - 25.400mm)

MATERIAL HARDNESS (RC)

70

35

0

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												
39353	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	70.23	67.18	64.12	61.07	
39355	.5000	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	70.23	67.18	64.12	61.07	
39923	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	80.04	76.56	73.08	69.60	
39933	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	80.04	76.56	73.08	69.60	
39356	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	80.04	76.56	73.08	69.60	
39943	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	80.04	76.56	73.08	69.60	
39953	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	80.04	76.56	73.08	69.60	
39963	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.120"	-	-	80.04	76.56	73.08	69.60	
NEW	39965	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.125"	-	-	80.04	76.56	73.08	69.60
NEW	39967	.5000	1/2"	12.700	1/2"	3"	1-1/4"	.190"	-	-	80.04	76.56	73.08	69.60
	39972	.5000	1/2"	12.700	1/2"	4"	1-5/8"	.015"	-	-	92.55	88.53	84.50	80.48
	39973	.5000	1/2"	12.700	1/2"	4"	2"	.010"	-	-	92.55	88.53	84.50	80.48
	40413	.5000	1/2"	12.700	1/2"	4"	2"	.030"	-	-	92.55	88.53	84.50	80.48
	40423	.5000	1/2"	12.700	1/2"	4"	2"	.060"	-	-	92.55	88.53	84.50	80.48
	40433	.5000	1/2"	12.700	1/2"	4"	5/8"	.010"	2-1/8"	.475"	102.87	98.40	93.92	89.45
	39983	.5000	1/2"	12.700	1/2"	4"	5/8"	.030"	2-1/8"	.475"	102.87	98.40	93.92	89.45
	40443	.5000	1/2"	12.700	1/2"	4"	5/8"	.060"	2-1/8"	.475"	102.87	98.40	93.92	89.45
	40453	.5000	1/2"	12.700	1/2"	4"	5/8"	.120"	2-1/8"	.475"	102.87	98.40	93.92	89.45
	39993	.5000	1/2"	12.700	1/2"	6"	5/8"	.030"	4-1/8"	.475"	154.38	147.66	140.95	134.24
	39366	.6250	5/8"	15.875	5/8"	3"	3/4"	.010"	-	-	129.15	123.53	117.92	112.30
NEW	39368	.6250	5/8"	15.875	5/8"	3"	3/4"	.020"	-	-	129.15	123.53	117.92	112.30
	39369	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.015"	-	-	132.87	127.09	121.32	115.54
NEW	39370	.6250	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	-	132.87	127.09	121.32	115.54
	40463	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.015"	-	-	138.45	132.43	126.41	120.39
	39372	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.020"	-	-	138.45	132.43	126.41	120.39
	40023	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.030"	-	-	138.45	132.43	126.41	120.39
	40473	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.060"	-	-	138.45	132.43	126.41	120.39
	40483	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.120"	-	-	138.45	132.43	126.41	120.39
NEW	40485	.6250	5/8"	15.875	5/8"	4"	1-5/8"	.190"	-	-	138.45	132.43	126.41	120.39
	40033	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	2-3/8"	.590"	197.96	189.35	180.75	172.14
	40043	.6250	5/8"	15.875	5/8"	6"	3/4"	.030"	4-3/8"	.590"	208.30	199.24	190.19	181.13
	40083	.6299	16.000	16.0	100	40	1.00	-	-	145.75	139.41	133.08	126.74	
	40103	.6299	16.000	16.0	100	20	1.00	40	15.4	150.90	144.34	137.78	131.22	
	40113	.6299	16.000	16.0	125	20	2.00	60	15.4	198.05	189.44	180.83	172.22	
	40118	.6299	16.000	16.0	125	20	3.00	60	15.4	198.05	189.44	180.83	172.22	
	40123	.6299	16.000	16.0	125	20	4.00	60	15.4	198.05	189.44	180.83	172.22	
NEW	39374	.7500	3/4"	19.050	3/4"	4"	1-1/4"	.020"	-	-	179.69	171.88	164.06	156.25
	40133	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.015"	-	-	179.69	171.88	164.06	156.25
	39376	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.020"	-	-	179.69	171.88	164.06	156.25
	40143	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.030"	-	-	179.69	171.88	164.06	156.25
	40153	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.060"	-	-	179.69	171.88	164.06	156.25
	40493	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.120"	-	-	179.69	171.88	164.06	156.25
NEW	40495	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.190"	-	-	179.69	171.88	164.06	156.25
NEW	40497	.7500	3/4"	19.050	3/4"	4"	1-5/8"	.250"	-	-	179.69	171.88	164.06	156.25
	40503	.7500	3/4"	19.050	3/4"	6"	1"	.015"	2-1/2"	.715"	267.79	256.15	244.50	232.86
	40163	.7500	3/4"	19.050	3/4"	6"	1"	.030"	2-1/2"	.715"	267.79	256.15	244.50	232.86
	40513	.7500	3/4"	19.050	3/4"	6"	1"	.060"	2-1/2"	.715"	267.79	256.15	244.50	232.86
	40523	.7500	3/4"	19.050	3/4"	6"	1"	.120"	2-1/2"	.715"	267.79	256.15	244.50	232.86
	40171	.7500	3/4"	19.050	3/4"	6"	1"	.015"	4"	.715"	275.06	263.10	251.14	239.18
	40173	.7500	3/4"	19.050	3/4"	6"	1"	.030"	4-3/8"	.715"	275.06	263.10	251.14	239.18
	40183	.7874	20.000	20.0	100	32	1.00	-	-	252.23	241.26	230.30	219.33	
	40223	.7874	20.000	20.0	100	20	1.00	40	19.0	257.38	246.19	235.00	223.81	
	40225	.7874	20.000	20.0	150	20	1.00	65	19.0	345.40	330.39	315.37	300.35	
	40226	.7874	20.000	20.0	150	20	2.00	65	19.0	345.40	330.39	315.37	300.35	
	40229	.7874	20.000	20.0	150	20	3.00	65	19.0	345.40	330.39	315.37	300.35	
	40231	.7874	20.000	20.0	150	20	4.00	65	19.0	345.40	330.39	315.37	300.35	
	40243	.9843	25.000	25.0	100	38	1.00	-	-	291.86	279.17	266.48	253.79	
	40293	1.000	1"	25.400	1"	4"	1-5/8"	.030"	-	-	306.44	293.12	279.79	266.47
	40303	1.000	1"	25.400	1"	4"	1-5/8"	.060"	-	-	306.44	293.12	279.79	266.47
	40313	1.000	1"	25.400	1"	4"	1-5/8"	.120"	-	-	306.44	293.12	279.79	266.47
	40343	1.000	1"	25.400	1"	6"	1-1/4"	.030"	3-3/8"	.960"	449.09	429.56	410.04	390.51
	40353	1.000	1"	25.400	1"	6"	1-1/4"	.060"	3-3/8"	.960"	449.09	429.56	410.04	390.51
	40363	1.000	1"	25.400	1"	6"	1-1/4"	.120"	3-3/8"	.960"	449.09	429.56	410.04	390.51
NEW	40366	1.000	1"	25.400	1"	6"	1-1/4"	.030"	4"	.960"	449.09	429.56	410.04	390.51