

**High Performance End Mills****X3 BALIQ® ALCRONOS Coating (AlCrN)****G3 BALIQ® TISINOS PRO Coating (AlTiSiN)****X3 Target Materials:**

Stainless Steel (Inox, Austenitic/Martensitic)

Carbon Tools Steels (Up to 50 HRC)

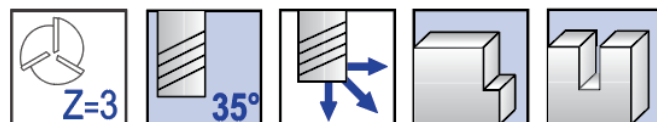
Cast Iron

G3 Target Materials:

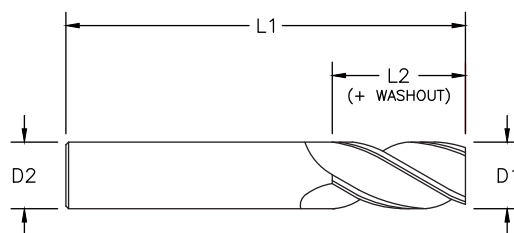
Heat Resistant Super Alloys

PH Stainless Steels (Inox, 13-8, 15-5, 17-4, Martensitic)

Conditioned Tool Steels (50-70 HRC)



**CALCULATE IDEAL PARAMETERS
FOR THE X3 AND G3 IN YOUR
APPLICATION WITH THE GARR
TECHNICAL ADVISOR**



MATERIAL HARDNESS (HRC)

G3

X3

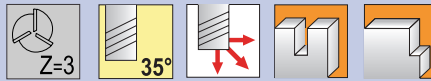
X3**G3****← View the X3****View the G3 →**

TOLERANCES

$d1$	$+0.000" - .002" (+.000mm -.050mm)$
$d2$	$h6$
r	$+0.001" -.001" (+.025 -.025mm)$

HIGH EFFICIENCY MILLING

Series X3, G3



.0312" - .0787"
(0.792mm - 2.000mm)

X3 Recommended for Low, Medium, and High Carbon Tool Steels (up to 50 HRC), cast iron, and stainless steel (Inox).

G3 Recommended for tough machining materials such as Heat Resistant Super Alloys,
PH Stainless steels (Inox), and conditioned tool steels. (50-70 HRC)

3 Flute High Performance End Mills

X3 BALIQ® ALCRONOS Coating (AlCrN-based)

G3 BALIQ® TISINOS PRO Coating (AlTiSiN)

Solid submicron grain carbide - center cutting

h6 shank tolerance

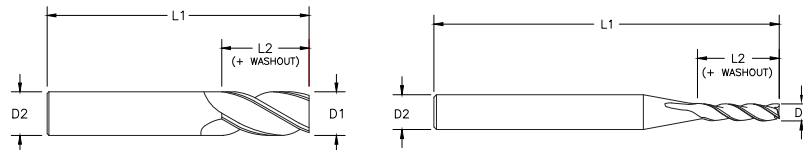
Engineered for High Efficiency Milling

Variable flute grind

Honed edge treatment

Polished fluting

Material and condition specific coatings



X3 EDP#	G3 EDP#	$d1$ † Diameter			$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
		Decimal		Metric								
87100	88100	.0312	1/32"	0.792	1/4"	2"	1/16"	-	33.58	32.12	30.66	29.20
87101	88101	.0312	1/32"	0.792	1/4"	2"	3/32"	-	33.58	32.12	30.66	29.20
87102	88102	.0312	1/32"	0.792	1/4"	2"	1/8"	-	33.58	32.12	30.66	29.20
87103	88103	.0315		0.800	6	50	2.40	-	34.72	33.21	31.70	30.19
87104	88104	.0354		0.900	6	50	2.70	-	34.72	33.21	31.70	30.19
87105	88105	.0394		1.000	6	50	3	-	34.72	33.21	31.70	30.19
87106	88106	.0400	.040"	1.016	1/4"	2"	.120"	-	33.58	32.12	30.66	29.20
87107	88107	.0450	.045"	1.143	1/4"	2"	.135"	-	33.58	32.12	30.66	29.20
87108	88108	.0469	3/64"	1.191	1/4"	2"	5/32"	-	33.58	32.12	30.66	29.20
87109	88109	.0500	.050"	1.270	1/4"	2"	.150"	-	33.58	32.12	30.66	29.20
87110	88110	.0550	.055"	1.397	1/4"	2"	.250"	-	33.58	32.12	30.66	29.20
87111	88111	.0591		1.500	6	50	3	-	34.34	32.85	31.35	29.86
87112	88112	.0591		1.500	6	50	3	0.20	38.73	37.05	35.36	33.68
87113	88113	.0591		1.500	6	50	6	-	34.34	32.85	31.35	29.86
87114	88114	.0591		1.500	6	50	6	0.20	38.73	37.05	35.36	33.68
87115	88115	.0600	.060"	1.524	1/4"	2"	.090"	-	33.21	31.77	30.32	28.88
87116	88116	.0600	.060"	1.524	1/4"	2"	.180"	-	33.21	31.77	30.32	28.88
87117	88117	.0625	1/16"	1.587	1/4"	2"	1/8"	-	33.21	31.77	30.32	28.88
87118	88118	.0625	1/16"	1.587	1/4"	2"	1/8"	.005"	37.49	35.86	34.23	32.60
87119	88119	.0625	1/16"	1.587	1/4"	2"	1/8"	.010"	37.49	35.86	34.23	32.60
87120	88120	.0625	1/16"	1.587	1/4"	2"	1/4"	-	33.21	31.77	30.32	28.88
87121	88121	.0625	1/16"	1.587	1/4"	2"	1/4"	.005"	37.49	35.86	34.23	32.60
87122	88122	.0625	1/16"	1.587	1/4"	2"	1/4"	.010"	37.49	35.86	34.23	32.60
87123	88123	.0700	.070"	1.778	1/4"	2"	.210"	-	33.21	31.77	30.32	28.88
87124	88124	.0781	5/64"	1.983	1/4"	2"	1/4"	-	32.84	31.41	29.98	28.56
87125	88125	.0781	5/64"	1.983	1/4"	2"	1/4"	.005"	37.09	35.48	33.86	32.25
87126	88126	.0781	5/64"	1.983	1/4"	2"	1/4"	.010"	37.09	35.48	33.86	32.25
87127	88127	.0787		2.000	6	50	8	-	33.96	32.48	31.01	29.53
87128	88128	.0787		2.000	6	50	8	0.10	38.32	36.65	34.99	33.32
87129	88129	.0787		2.000	6	50	8	0.20	38.32	36.65	34.99	33.32

continued →

800-248-9003

989-463-6171

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HIGH PERFORMANCE
END MILLS

G3

X3

MATERIAL HARDNESS (RC)

70

35

0

Series X3, G3 (continued)

.0800" - .1562"
(2.032mm - 3.967mm)

X3 EDP#	G3 EDP#	$d1^{\dagger}$			$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	r Corner Radius	1-11	12-24	25-49	50-100
		Decimal	Diameter	Metric								
87130	88130	.0800	.080"	2.032	1/4"	2"	1/4"	-	32.84	31.41	29.98	28.56
87131	88131	.0900	.090"	2.286	1/4"	2"	9/32"	-	32.84	31.41	29.98	28.56
87132	88132	.0938	3/32"	2.382	1/4"	2"	3/16"	-	32.50	31.09	29.67	28.26
87133	88133	.0938	3/32"	2.382	1/4"	2"	3/16"	.005"	36.69	35.09	33.50	31.90
87134	88134	.0938	3/32"	2.382	1/4"	2"	3/16"	.010"	36.69	35.09	33.50	31.90
87135	88135	.0938	3/32"	2.382	1/4"	2"	3/8"	-	32.50	31.09	29.67	28.26
87136	88136	.0938	3/32"	2.382	1/4"	2"	3/8"	.005"	36.69	35.09	33.50	31.90
87137	88137	.0938	3/32"	2.382	1/4"	2"	3/8"	.010"	36.69	35.09	33.50	31.90
87138	88138	.0984		2.500	6	50	8	-	33.60	32.14	30.68	29.22
87139	88139	.0984		2.500	6	50	8	0.10	37.90	36.25	34.60	32.96
87140	88140	.0984		2.500	6	50	8	0.20	37.90	36.25	34.60	32.96
87141	88141	.1000	.100"	2.540	1/4"	2"	3/16"	-	32.50	31.09	29.67	28.26
87142	88142	.1000	.100"	2.540	1/4"	2"	5/16"	-	32.50	31.09	29.67	28.26
87143	88143	.1094	7/64"	2.778	1/4"	2"	1/4"	-	32.50	31.09	29.67	28.26
87144	88144	.1094	7/64"	2.778	1/4"	2"	1/4"	.005"	36.69	35.09	33.50	31.90
87145	88145	.1094	7/64"	2.778	1/4"	2"	1/4"	.010"	36.69	35.09	33.50	31.90
87146	88146	.1094	7/64"	2.778	1/4"	2"	3/8"	-	32.50	31.09	29.67	28.26
87147	88147	.1094	7/64"	2.778	1/4"	2"	3/8"	.005"	36.69	35.09	33.50	31.90
87148	88148	.1094	7/64"	2.778	1/4"	2"	3/8"	.010"	36.69	35.09	33.50	31.90
87149	88149	.1181		3.000	6.0	50	6	-	33.24	31.79	30.35	28.90
87150	88150	.1181		3.000	6.0	50	6	0.10	37.50	35.87	34.24	32.61
87151	88151	.1181		3.000	6.0	50	6	0.20	37.50	35.87	34.24	32.61
87152	88152	.1181		3.000	6.0	50	6	0.30	37.50	35.87	34.24	32.61
87153	88153	.1181		3.000	6.0	50	6	0.50	37.50	35.87	34.24	32.61
87154	88154	.1181		3.000	6.0	50	9	-	33.24	31.79	30.35	28.90
87155	88155	.1181		3.000	6.0	50	9	0.20	37.50	35.87	34.24	32.61
87156	88156	.1181		3.000	6.0	50	9	0.30	37.50	35.87	34.24	32.61
87157	88157	.1181		3.000	6.0	50	9	0.50	37.50	35.87	34.24	32.61
87158	88158	.1181		3.000	6.0	65	12	-	35.08	33.55	32.03	30.50
87159	88159	.1181		3.000	6.0	65	12	0.10	39.27	37.56	35.86	34.15
87160	88160	.1181		3.000	6.0	65	12	0.20	39.27	37.56	35.86	34.15
87161	88161	.1181		3.000	6.0	65	12	0.30	39.27	37.56	35.86	34.15
87162	88162	.1181		3.000	6.0	65	12	0.50	39.27	37.56	35.86	34.15
87163	88163	.1250	1/8"	3.175	1/4"	2"	1/4"	-	32.15	30.75	29.35	27.96
87164	88164	.1250	1/8"	3.175	1/4"	2"	1/4"	.010"	36.29	34.71	33.13	31.56
87165	88165	.1250	1/8"	3.175	1/4"	2"	1/4"	.015"	36.29	34.71	33.13	31.56
87166	88166	.1250	1/8"	3.175	1/4"	2"	1/4"	.020"	36.29	34.71	33.13	31.56
87167	88167	.1250	1/8"	3.175	1/4"	2"	3/8"	-	32.15	30.75	29.35	27.96
87168	88168	.1250	1/8"	3.175	1/4"	2"	3/8"	.010"	36.29	34.71	33.13	31.56
87169	88169	.1250	1/8"	3.175	1/4"	2"	3/8"	.015"	36.29	34.71	33.13	31.56
87170	88170	.1250	1/8"	3.175	1/4"	2-1/2"	1/2"	-	34.03	32.55	31.07	29.59
87171	88171	.1250	1/8"	3.175	1/4"	2-1/2"	1/2"	.005"	37.94	36.29	34.64	32.99
87172	88172	.1250	1/8"	3.175	1/4"	2-1/2"	1/2"	.010"	37.94	36.29	34.64	32.99
87173	88173	.1250	1/8"	3.175	1/4"	2-1/2"	1/2"	.015"	37.94	36.29	34.64	32.99
87174	88174	.1250	1/8"	3.175	1/4"	2-1/2"	1/2"	.020"	37.94	36.29	34.64	32.99
87175	88175	.1562	5/32"	3.967	1/4"	2"	5/16"	-	31.81	30.43	29.04	27.66
87176	88176	.1562	5/32"	3.967	1/4"	2"	5/16"	.010"	35.91	34.35	32.79	31.23
87177	88177	.1562	5/32"	3.967	1/4"	2"	7/16"	-	31.81	30.43	29.04	27.66
87178	88178	.1562	5/32"	3.967	1/4"	2"	7/16"	.010"	35.91	34.35	32.79	31.23
87179	88179	.1562	5/32"	3.967	1/4"	2-1/2"	9/16"	-	33.66	32.20	30.73	29.27
87180	88180	.1562	5/32"	3.967	1/4"	2-1/2"	9/16"	.010"	37.54	35.91	34.28	32.64

X3 EDP#	G3 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								
87181	88181	.1575	4.000	6	50	8	-	32.89	31.46	30.03	28.60
87182	88182	.1575	4.000	6	50	8	0.30	37.10	35.49	33.87	32.26
87183	88183	.1575	4.000	6	50	8	0.50	37.10	35.49	33.87	32.26
87184	88184	.1875	3/16"	1/4"	2"	5/16"	-	31.48	30.11	28.74	27.37
87185	88185	.1875	3/16"	1/4"	2"	5/16"	.010"	35.54	33.99	32.45	30.90
87186	88186	.1875	3/16"	1/4"	2"	5/16"	.015"	35.54	33.99	32.45	30.90
87187	88187	.1875	3/16"	1/4"	2"	7/16"	-	31.48	30.11	28.74	27.37
87188	88188	.1875	3/16"	1/4"	2"	7/16"	.010"	35.54	33.99	32.45	30.90
87189	88189	.1875	3/16"	1/4"	2"	7/16"	.015"	35.54	33.99	32.45	30.90
87190	88190	.1875	3/16"	1/4"	2-1/2"	9/16"	-	33.32	31.87	30.42	28.97
87191	88191	.1875	3/16"	1/4"	2-1/2"	9/16"	.010"	37.15	35.53	33.92	32.30
87192	88192	.1875	3/16"	1/4"	2-1/2"	9/16"	.015"	37.15	35.53	33.92	32.30
87193	88193	.1969	5.000	6	50	10	-	32.21	30.81	29.41	28.01
87194	88194	.1969	5.000	6	50	10	0.30	36.33	34.75	33.17	31.59
87195	88195	.1969	5.000	6	50	10	0.50	36.33	34.75	33.17	31.59
87196	88196	.1969	5.000	6	65	15	-	33.99	32.51	31.03	29.56
87197	88197	.1969	5.000	6	65	15	0.30	38.05	36.40	34.74	33.09
87198	88198	.1969	5.000	6	65	15	0.50	38.05	36.40	34.74	33.09
87199	88199	.2188	7/32"	1/4"	2"	3/8"	-	31.15	29.80	28.44	27.09
87200	88200	.2188	7/32"	1/4"	2"	3/8"	.015"	35.18	33.65	32.12	30.59
87201	88201	.2188	7/32"	1/4"	2-1/2"	3/4"	-	32.97	31.54	30.10	28.67
87202	88202	.2188	7/32"	1/4"	2-1/2"	3/4"	.015"	36.77	35.17	33.57	31.97
87203	88203	.2362	6.000	6	50	13	-	31.25	29.89	28.53	27.17
87204	88204	.2362	6.000	6	50	13	0.30	35.24	33.71	32.18	30.64
87205	88205	.2362	6.000	6	50	13	0.50	35.24	33.71	32.18	30.64
87206	88206	.2362	6.000	6	65	19	-	32.97	31.54	30.10	28.67
87207	88207	.2362	6.000	6	65	19	0.30	36.92	35.31	33.71	32.10
87208	88208	.2362	6.000	6	65	19	0.50	36.92	35.31	33.71	32.10
87209	88209	.2362	6.000	6	75	26	-	47.02	44.98	42.93	40.89
87210	88210	.2362	6.000	6	75	26	0.30	52.83	50.53	48.24	45.94
87211	88211	.2362	6.000	6	75	26	0.50	52.83	50.53	48.24	45.94
87212	88212	.2500	1/4"	1/4"	2-1/2"	1/2"	-	31.98	30.59	29.20	27.81
87213	88213	.2500	1/4"	1/4"	2-1/2"	1/2"	.010"	35.66	34.11	32.56	31.01
87214	88214	.2500	1/4"	1/4"	2-1/2"	1/2"	.015"	35.66	34.11	32.56	31.01
87215	88215	.2500	1/4"	1/4"	2-1/2"	1/2"	.020"	35.66	34.11	32.56	31.01
87216	88216	.2500	1/4"	1/4"	2-1/2"	1/2"	.030"	35.66	34.11	32.56	31.01
87217	88217	.2500	1/4"	1/4"	2-1/2"	5/8"	-	31.98	30.59	29.20	27.81
87218	88218	.2500	1/4"	1/4"	2-1/2"	5/8"	.010"	35.66	34.11	32.56	31.01
87219	88219	.2500	1/4"	1/4"	2-1/2"	5/8"	.015"	35.66	34.11	32.56	31.01
87220	88220	.2500	1/4"	1/4"	2-1/2"	5/8"	.020"	35.66	34.11	32.56	31.01
87221	88221	.2500	1/4"	1/4"	2-1/2"	5/8"	.030"	35.66	34.11	32.56	31.01
87222	88222	.2500	1/4"	1/4"	2-1/2"	3/4"	-	31.98	30.59	29.20	27.81
87223	88223	.2500	1/4"	1/4"	2-1/2"	3/4"	.010"	35.66	34.11	32.56	31.01
87224	88224	.2500	1/4"	1/4"	2-1/2"	3/4"	.015"	35.66	34.11	32.56	31.01
87225	88225	.2500	1/4"	1/4"	2-1/2"	3/4"	.020"	35.66	34.11	32.56	31.01
87226	88226	.2500	1/4"	1/4"	2-1/2"	3/4"	.030"	35.66	34.11	32.56	31.01
87227	88227	.2500	1/4"	1/4"	2-1/2"	3/4"	.060"	35.66	34.11	32.56	31.01
87228	88228	.2500	1/4"	1/4"	3"	1"	-	46.59	44.56	42.54	40.51
87229	88229	.2500	1/4"	1/4"	3"	1"	.015"	50.80	48.59	46.38	44.17
87230	88230	.2500	1/4"	1/4"	3"	1"	.030"	50.80	48.59	46.38	44.17

70 → G3

X3

35 →

MATERIAL HARDNESS (Rc)

0 →