

**NEW...
V SERIES**

**VRX TYPE END MILLS
DESIGNED FOR
TITANIUM, INCONEL,
AND 17-4 STAINLESS**



**101V
supplement to
Catalog 09**

GARR TOOL[®]

V4-R Corner Radius

.2362" - 1.000"
(6.000mm - 25.400mm)



TOLERANCES	
d_1	+0.000" -0.002" (+0.000mm -0.050mm)
d_2	-0.001" -0.004" (-0.025 -0.100mm)
r	+0.001" -0.011" (+0.025 -0.25mm)

Variable Helix 4 Flute End Mill - ALCRONA Coated

Solid submicron grain carbide end mill - center cutting

Recommended for Titanium, Inconel, and Steels (< 40Rc)

PCT (Polish Carbide Treatment) enhances tool life by 20%

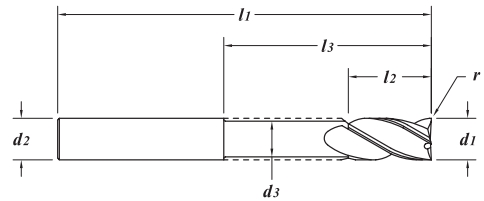
Minimizes burr on part

Helix geometry varies over length of flutes

Variable flute design helps with chip evacuation in slots and pockets

Variable rake aids in chip formation

Can be modified with a flat 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											
50204	.2362"	6.000	6.0	65	19	0.3	-	-	22.38	21.41	20.43	19.46	
50205	.2362"	6.000	6.0	65	19	0.5	-	-	22.38	21.41	20.43	19.46	
50206	.2362"	6.000	6.0	65	19	1.0	-	-	22.38	21.41	20.43	19.46	
50207	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	.010"	-	21.52	20.58	19.65	18.71	
50208	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	21.52	20.58	19.65	18.71	
50209	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	21.52	20.58	19.65	18.71	
50210	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	.060"	-	21.52	20.58	19.65	18.71	
50211	.2500"	1/4"	6.350	1/4"	4"	3/8"	.015"	1-1/4"	.230"	41.70	39.89	38.07	36.26
50212	.3125"	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	29.15	27.88	26.62	25.35	
50213	.3125"	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	-	29.15	27.88	26.62	25.35	
50214	.3150"	8.000	8.0	65	22	0.5	-	-	30.25	28.93	27.62	26.30	
50215	.3150"	8.000	8.0	65	22	1.0	-	-	30.25	28.93	27.62	26.30	
50216	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	.010"	-	34.05	32.57	31.09	29.61	
50217	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	34.05	32.57	31.09	29.61	
50218	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	34.05	32.57	31.09	29.61	
50219	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	.060"	-	34.05	32.57	31.09	29.61	
50220	.3750"	3/8"	9.525	3/8"	4"	1/2"	.020"	1-7/8"	.350"	60.18	57.56	54.95	52.33
50221	.3937"	10.000	10.0	70	22	0.5	-	-	41.11	39.32	37.54	35.75	
50222	.4724"	12.000	12.0	75	32	0.5	-	-	60.56	57.93	55.29	52.66	
50223	.4724"	12.000	12.0	75	32	1.0	-	-	60.56	57.93	55.29	52.66	
50224	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	58.09	55.56	53.04	50.51	
50225	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	58.09	55.56	53.04	50.51	
50226	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	58.09	55.56	53.04	50.51	
50227	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	58.09	55.56	53.04	50.51	
50228	.5000"	1/2"	12.700	1/2"	4"	5/8"	.020"	2-1/4"	.470"	78.37	74.96	71.55	68.15
50229	.6250"	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.020"	-	92.48	88.46	84.44	80.42	
50230	.6250"	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.120"	-	92.48	88.46	84.44	80.42	
50231	.6299"	16.000	16.0	88	32	0.5	-	-	96.51	92.31	88.12	83.92	
50232	.7500"	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	132.62	126.85	121.09	115.32	
50233	1.000"	1"	25.400	1"	4"	1-1/2"	.030"	-	226.42	216.58	206.73	196.89	
50234	1.000"	1"	25.400	1"	5"	2-1/8"	.030"	-	278.59	266.48	254.36	242.25	

V4-S Square End

TOLERANCES	
d_1	+0.000" -0.002" (+0.000mm -0.050mm)
d_2	-0.0001" -0.0004" (-0.0025 -0.0100mm)

.2362" - 1.000"
(6.000mm - 25.400mm)

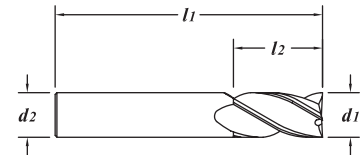


Variable Helix 4 Flute End Mill - ALCRONA Coated

- Solid submicron grain carbide end mill - center cutting
- Recommended for Titanium, Inconel, and Steels (< 40Rc)
- PCT (Polish Carbide Treatment) enhances tool life by 20%
- Minimizes burr on part
- Helix geometry varies over length of flutes
- Variable flute design helps with chip evacuation in slots and pockets
- Variable rake aids in chip formation
- Can be modified with a flat within 48 hours



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								
50237	.2362"	6.000	6.0	65	19	19.69	18.83	17.98	17.12	
50238	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	19.00	18.17	17.35	16.52
50239	.3125"	5/16"	7.937	5/16"	2-1/2"	13/16"	27.09	25.91	24.73	23.56
50240	.3150"		8.000	8.0	65	22	28.07	26.85	25.63	24.41
50241	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	31.97	30.58	29.19	27.80
50242	.3937"		10.000	10.0	70	22	38.32	36.65	34.99	33.32
50243	.4724"		12.000	12.0	75	32	49.80	47.63	45.47	43.30
50244	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	47.81	45.73	43.65	41.57
50245	.5000"	1/2"	12.700	1/2"	4"	2-1/8"	64.69	61.88	59.06	56.25
50246	.6250"	5/8"	15.875	5/8"	3-1/2"	1-1/4"	88.21	84.37	80.54	76.70
50247	.6299"		16.000	16.0	88	32	92.03	88.03	84.03	80.03
50248	.7500"	3/4"	19.050	3/4"	4"	1-1/2"	125.91	120.44	114.96	109.49
50249	.7874"		20.000	20.0	100	38	170.12	162.72	155.33	147.93
50250	1.000"	1"	25.400	1"	4"	1-1/2"	188.11	179.93	171.75	163.57

V4-B Ball End

.2362" - 1.000"
(6.000mm - 25.400mm)



TOLERANCES	
d_1	+0.000" -0.002" (+.000mm -.050mm)
d_2	-0.0001" -.0004" (-.0025 -.0100mm)
ball radius	+0.000" -.001" (+.000 -.025mm)

Variable Helix 4 Flute End Mill - ALCRONA Coated

Solid submicron grain carbide end mill - center cutting

Recommended for Titanium, Inconel, and Steels (< 40Rc)

PCT (Polish Carbide Treatment) enhances tool life by 20%

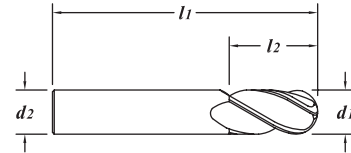
Minimizes burr on part

Helix geometry varies over length of flutes

Variable flute design helps with chip evacuation in slots and pockets

Variable rake aids in chip formation

Can be modified with a flat 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								
50253	.2362"	6.000	6.0	65	19	22.38	21.41	20.43	19.46	
50254	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	21.52	20.58	19.65	18.71
50255	.3125"	5/16"	7.937	5/16"	2-1/2"	13/16"	29.15	27.88	26.62	25.35
50256	.3150"		8.000	8.0	65	22	30.25	28.93	27.62	26.30
50257	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	34.05	32.57	31.09	29.61
50258	.3937"		10.000	10.0	70	22	41.11	39.32	37.54	35.75
50259	.4724"		12.000	12.0	75	32	60.56	57.93	55.29	52.66
50260	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	58.09	55.56	53.04	50.51
50261	.5000"	1/2"	12.700	1/2"	4"	2-1/8"	68.66	65.67	62.69	59.70
50262	.6250"	5/8"	15.875	5/8"	3-1/2"	1-1/4"	92.48	88.46	84.44	80.42
50263	.6299"		16.000	16.0	88	32	96.51	92.31	88.12	83.92
50264	.7500"	3/4"	19.050	3/4"	4"	1-1/2"	132.62	126.85	121.09	115.32
50265	.7874"		20.000	20.0	100	38	187.70	179.54	171.38	163.22
50266	1.000"	1"	25.400	1"	4"	1-1/2"	226.42	216.58	206.73	196.89

V5 - 5 Flute

.2362" - .3150"
(6.000mm - 8.000mm)

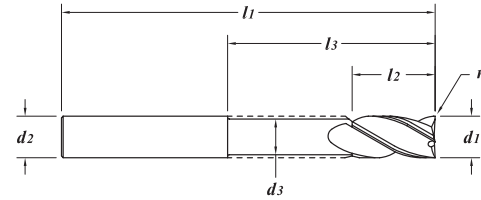


TOLERANCES	
d_1	+0.000" - .002" (+0.000mm - .050mm)
d_2	-.0001" - .0004" (-.0025 - .0100mm)
r	+0.001" - .001" (+.025 - .025mm)

HIGH PERFORMANCE
END MILLS

Variable Helix 5 Flute End Mill - ALCRONA Coated

- Solid submicron grain carbide end mill - center cutting
- Recommended for Titanium, Inconel, and Stainless Steel
- PCT (Polish Carbide Treatment) enhances tool life by 20%
- Minimizes burr on part
- Helix geometry varies over length of flutes
- Staggered flutes to control harmonics
- Variable flute design helps with chip evacuation in slots and pockets
- Variable rake aids in chip formation
- Can be modified with a flat 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											
50000	.2362"	6.000	6.0	50	13	-	-	-	18.25	17.46	16.66	15.87	
50001	.2362"	6.000	6.0	50	13	0.5	-	-	21.10	20.18	19.27	18.35	
50002	.2362"	6.000	6.0	65	19	-	-	-	20.57	19.68	18.78	17.89	
50003	.2362"	6.000	6.0	65	19	0.5	-	-	23.39	22.37	21.36	20.34	
50004	.2362"	6.000	6.0	65	13	-	20	5.4	27.44	26.25	25.05	23.86	
50005	.2362"	6.000	6.0	65	13	0.5	20	5.4	30.26	28.94	27.63	26.31	
50006	.2362"	6.000	6.0	65	13	1.0	20	5.4	30.26	28.94	27.63	26.31	
50007	.2500"	1/4"	6.350	1/4"	2"	3/8"	-	-	17.51	16.75	15.99	15.23	
50008	.2500"	1/4"	6.350	1/4"	2"	3/8"	.015"	-	20.31	19.43	18.54	17.66	
50009	.2500"	1/4"	6.350	1/4"	2"	3/8"	.030"	-	20.31	19.43	18.54	17.66	
50011	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	-	-	19.86	19.00	18.13	17.27	
50012	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	.015"	-	22.49	21.51	20.53	19.56	
50013	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	.020"	-	22.49	21.51	20.53	19.56	
50014	.2500"	1/4"	6.350	1/4"	2-1/2"	3/4"	.030"	-	22.49	21.51	20.53	19.56	
50015	.2500"	1/4"	6.350	1/4"	3"	1"	-	-	30.33	29.01	27.69	26.37	
50016	.2500"	1/4"	6.350	1/4"	3"	1"	.030"	-	33.33	31.88	30.43	28.98	
50017	.2500"	1/4"	6.350	1/4"	4"	1/2"	.015"	1-1/4"	.235"	43.59	41.69	39.80	37.90
50018	.3125"	5/16"	7.938	5/16"	2-1/2"	13/16"	-	-	28.32	27.09	25.86	24.63	
50019	.3125"	5/16"	7.938	5/16"	2-1/2"	13/16"	.015"	-	30.49	29.16	27.84	26.51	
50021	.3125"	5/16"	7.938	5/16"	2-1/2"	13/16"	.020"	-	30.49	29.16	27.84	26.51	
50022	.3125"	5/16"	7.938	5/16"	2-1/2"	13/16"	.030"	-	30.49	29.16	27.84	26.51	
50023	.2756"	7.000	8.0	65	22	0.2	-	-	36.20	34.63	33.05	31.48	
50024	.3150"	8.000	8.0	65	22	0.2	-	-	31.63	30.25	28.88	27.50	
50025	.3150"	8.000	8.0	65	22	0.5	-	-	31.63	30.25	28.88	27.50	
50026	.3150"	8.000	8.0	75	19	-	26	7.2	49.11	46.97	44.84	42.70	
50027	.3150"	8.000	8.0	75	19	0.5	26	7.2	53.14	50.83	48.52	46.21	
50028	.3150"	8.000	8.0	75	19	1.0	26	7.2	53.14	50.83	48.52	46.21	

continued →

V5 - 5 Flute (continued)

.3750" - .7087"
(9.525mm - 18.000mm)

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											
50029	.3750"	3/8"	9.525	3/8"	2"	1/2"	-	-	-	28.60	27.36	26.11	24.87
50031	.3750"	3/8"	9.525	3/8"	2"	1/2"	.015"	-	-	32.74	31.32	29.89	28.47
50032	.3750"	3/8"	9.525	3/8"	2"	1/2"	.020"	-	-	32.74	31.32	29.89	28.47
50033	.3750"	3/8"	9.525	3/8"	2"	1/2"	.030"	-	-	32.74	31.32	29.89	28.47
50034	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	-	-	-	33.42	31.97	30.51	29.06
50035	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	.015"	-	-	35.60	34.05	32.50	30.96
50036	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	.020"	-	-	35.60	34.05	32.50	30.96
50037	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	.030"	-	-	35.60	34.05	32.50	30.96
50038	.3750"	3/8"	9.525	3/8"	2-1/2"	1"	.060"	-	-	35.60	34.05	32.50	30.96
50039	.3750"	3/8"	9.525	3/8"	4"	2"	-	-	-	48.22	46.12	44.03	41.93
50041	.3750"	3/8"	9.525	3/8"	4"	2"	.030"	-	-	52.73	50.44	48.14	45.85
50042	.3750"	3/8"	9.525	3/8"	4"	7/8"	.015"	1-7/8"	.355"	62.92	60.18	57.45	54.71
50043	.3937"		10.000	10.0	70	22	-	-	-	40.08	38.34	36.59	34.85
50044	.3937"		10.000	10.0	70	22	0.5	-	-	42.99	41.12	39.25	37.38
50045	.3937"		10.000	10.0	75	22	-	32	9.0	55.55	53.13	50.72	48.30
50046	.3937"		10.000	10.0	75	22	0.5	32	9.0	59.92	57.31	54.71	52.10
50047	.3937"		10.000	10.0	75	22	1.0	32	9.0	59.92	57.31	54.71	52.10
50048	.4724"		12.000	12.0	75	32	-	-	-	52.05	49.79	47.52	45.26
50049	.4724"		12.000	12.0	75	32	0.5	-	-	63.31	60.56	57.80	55.05
50051	.4724"		12.000	12.0	100	26	-	38	10.8	79.71	76.24	72.78	69.31
50052	.4724"		12.000	12.0	100	26	0.5	38	10.8	83.82	80.18	76.53	72.89
50053	.4724"		12.000	12.0	100	26	1.0	38	10.8	83.82	80.18	76.53	72.89
50054	.5000"	1/2"	12.700	1/2"	2-1/2"	5/8"	-	-	-	46.78	44.75	42.71	40.68
50106	.5000"	1/2"	12.700	1/2"	2-1/2"	5/8"	.010"	-	-	54.41	52.04	49.68	47.31
50055	.5000"	1/2"	12.700	1/2"	2-1/2"	5/8"	.020"	-	-	54.41	52.04	49.68	47.31
50107	.5000"	1/2"	12.700	1/2"	2-1/2"	5/8"	.030"	-	-	54.41	52.04	49.68	47.31
50056	.5000"	1/2"	12.700	1/2"	3"	1"	-	-	-	49.98	47.81	45.63	43.46
50108	.5000"	1/2"	12.700	1/2"	3"	1"	.010"	-	-	60.73	58.09	55.45	52.81
50057	.5000"	1/2"	12.700	1/2"	3"	1"	.020"	-	-	60.73	58.09	55.45	52.81
50109	.5000"	1/2"	12.700	1/2"	3"	1"	.030"	-	-	60.73	58.09	55.45	52.81
50058	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	-	-	-	49.98	47.81	45.63	43.46
50111	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.010"	-	-	60.73	58.09	55.45	52.81
50059	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.015"	-	-	60.73	58.09	55.45	52.81
50061	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.020"	-	-	60.73	58.09	55.45	52.81
50062	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.030"	-	-	60.73	58.09	55.45	52.81
50063	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.045"	-	-	60.73	58.09	55.45	52.81
50064	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.060"	-	-	60.73	58.09	55.45	52.81
50065	.5000"	1/2"	12.700	1/2"	3"	1-1/4"	.090"	-	-	60.73	58.09	55.45	52.81
50066	.5000"	1/2"	12.700	1/2"	4"	1-1/4"	.030"	2-1/4"	.475"	81.93	78.37	74.81	71.24
50067	.5000"	1/2"	12.700	1/2"	4"	2-1/8"	-	-	-	67.63	64.69	61.75	58.81
50068	.5000"	1/2"	12.700	1/2"	4"	2-1/8"	.030"	-	-	71.77	68.65	65.53	62.41
50069	.6250"	5/8"	15.875	5/8"	3-1/2"	1-1/4"	-	-	-	92.22	88.21	84.20	80.19
50071	.6250"	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.030"	-	-	96.69	92.49	88.28	84.08
50072	.6250"	5/8"	15.875	5/8"	3-1/2"	1-1/4"	.060"	-	-	96.69	92.49	88.28	84.08
50073	.6250"	5/8"	15.875	5/8"	4"	1-1/4"	.030"	2-1/4"	.590"	113.94	108.99	104.03	99.08
50074	.6299"		16.000	16.0	88	32	-	-	-	96.21	92.03	87.84	83.66
50075	.6299"		16.000	16.0	88	32	0.5	-	-	100.89	96.50	92.12	87.73
50076	.6299"		16.000	16.0	100	32	-	50	14.4	111.18	106.35	101.51	96.68
50077	.6299"		16.000	16.0	100	32	0.5	50	14.4	116.13	111.08	106.03	100.98
50078	.7087"		18.000	18.0	100	32	0.75	-	-	144.84	138.54	132.24	125.95

V5 - 5 Flute (continued)

.7500" - 1.000"
(19.050mm - 25.400mm)

HIGH PERFORMANCE
END MILLS

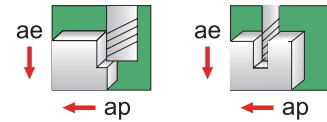
EDP#	$d1$ † Diameter		$d2$ Shank Diameter	$l1$ Overall Length	$l2$ Flute Length	r Corner Radius	$l3$ Reach Length	$d3$ Neck Diameter	1-11	12-24	25-49	50-100	
	Decimal	Metric											
50079	.7500"	3/4"	19.050	3/4"	3"	7/8"	-	-	-	128.69	123.09	117.50	111.90
50081	.7500"	3/4"	19.050	3/4"	3"	7/8"	.030"	-	-	135.70	129.80	123.90	118.00
50082	.7500"	3/4"	19.050	3/4"	4"	1-1/2"	-	-	-	131.64	125.92	120.19	114.47
50083	.7500"	3/4"	19.050	3/4"	4"	1-1/2"	.030"	-	-	138.66	132.63	126.60	120.57
50084	.7500"	3/4"	19.050	3/4"	4"	1-1/2"	.060"	-	-	138.66	132.63	126.60	120.57
50085	.7500"	3/4"	19.050	3/4"	4"	1-1/2"	.120"	-	-	138.66	132.63	126.60	120.57
50086	.7500"	3/4"	19.050	3/4"	5"	2-1/8"	-	-	-	176.69	169.01	161.33	153.64
50087	.7500"	3/4"	19.050	3/4"	5"	2-1/8"	.030"	-	-	192.33	183.97	175.60	167.24
50088	.7500"	3/4"	19.050	3/4"	5-1/2"	1-1/2"	.030"	3-1/4"	.705"	238.69	228.31	217.93	207.56
50089	.7500"	3/4"	19.050	3/4"	6"	3-1/4"	-	-	-	206.77	197.78	188.79	179.80
50091	.7500"	3/4"	19.050	3/4"	6"	3-1/4"	.030"	-	-	228.46	218.53	208.59	198.66
50092	.7874"		20.000	20.0	100	38	-	-	-	177.85	170.12	162.38	154.65
50093	.7874"		20.000	20.0	100	38	0.75	-	-	196.24	187.71	179.17	170.64
50094	1.000"	1"	25.400	1"	4"	1-1/4"	-	-	-	196.66	188.11	179.56	171.01
50095	1.000"	1"	25.400	1"	4"	1-1/4"	.030"	-	-	236.72	226.43	216.13	205.84
50096	1.000"	1"	25.400	1"	4"	1-1/4"	.060"	-	-	236.72	226.43	216.13	205.84
50097	1.000"	1"	25.400	1"	4"	1-3/4"	-	-	-	196.66	188.11	179.56	171.01
50098	1.000"	1"	25.400	1"	4"	1-3/4"	.030"	-	-	236.72	226.43	216.13	205.84
50099	1.000"	1"	25.400	1"	4"	1-3/4"	.060"	-	-	236.72	226.43	216.13	205.84
50101	1.000"	1"	25.400	1"	5-1/2"	1-3/4"	.030"	3-1/4"	.940"	386.23	369.44	352.64	335.85
50102	1.000"	1"	25.400	1"	5-1/2"	1-3/4"	.060"	3-1/4"	.940"	386.23	369.44	352.64	335.85
50103	1.000"	1"	25.400	1"	5-1/2"	1-3/4"	.120"	3-1/4"	.940"	386.23	369.44	352.64	335.85
50104	1.000"	1"	25.400	1"	6"	3-1/4"	-	-	-	342.90	328.00	313.09	298.18
50105	1.000"	1"	25.400	1"	6"	3-1/4"	.030"	-	-	379.86	363.34	346.83	330.31

GARR TOOL High Speed Milling Guide for V4 End Mills in Titanium, Inconel, and Stainless

FRACTIONAL

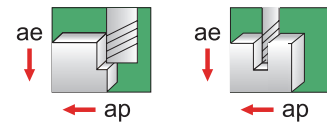
	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)
	SFM = 150 - 250	SFM = 60 - 125	SFM = 150 - 300
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)
.1575" - .2755"	.0004" - .0008"	.0004" - .0008"	.0005" - .0010"
.2756" - .3124"	.0005" - .0010"	.0005" - .0010"	.0007" - .0012"
.3125" - .3749"	.0007" - .0012"	.0007" - .0012"	.0008" - .0015"
.3750" - .4999"	.0008" - .0015"	.0008" - .0015"	.0010" - .0018"
.5000" - .6249"	.0010" - .0018"	.0010" - .0018"	.0012" - .0020"
.6250" - .7499"	.0012" - .0020"	.0012" - .0020"	.0015" - .0022"
.7500" - .8749"	.0015" - .0022"	.0015" - .0022"	.0018" - .0025"
.8750" - 1.000"	.0018" - .0025"	.0018" - .0025"	.0022" - .0030"

	Profiling Side Cutting	Slotting Pocket Milling
Axial (ae)	1xD	100% of Dia.
Radial (ap)	100% of Dia.	1xD



	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)
	SFM = 150 - 250	SFM = 60 - 125	SFM = 150 - 300
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)
.1575" - .2755"	.0008" - .0011"	.0004" - .0008"	.0008" - .0012"
.2756" - .3124"	.0010" - .0015"	.0005" - .0010"	.0010" - .0018"
.3125" - .3749"	.0012" - .0018"	.0007" - .0012"	.0012" - .0020"
.3750" - .4999"	.0012" - .0021"	.0008" - .0015"	.0015" - .0022"
.5000" - .6249"	.0015" - .0025"	.0010" - .0018"	.0018" - .0030"
.6250" - .7499"	.0018" - .0030"	.0012" - .0020"	.0020" - .0033"
.7500" - .8749"	.0020" - .0032"	.0015" - .0022"	.0023" - .0037"
.8750" - 1.000"	.0025" - .0035"	.0018" - .0025"	.0027" - .0040"

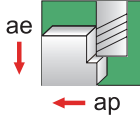
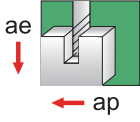
	Profiling Side Cutting	Slotting Pocket Milling
Axial (ae)	1xD	50% of Dia.
Radial (ap)	50% of Dia.	1xD

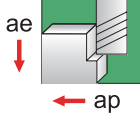
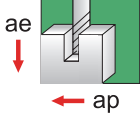


NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL High Speed Milling Guide for V4 End Mills in Titanium, Inconel, and Stainless

METRIC

	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)		Profiling Side Cutting	Slotting Pocket Milling
	SMM = 45 - 75	SMM = 20 - 40	SMM = 45 - 90	Axial (ae)	1xD	100% of Dia.
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)	Radial (ap)	100% of Dia.	1xD
4.0 - 7.0	0.010 - 0.020	0.010 - 0.020	0.010 - 0.025			
7.0 - 8.0	0.012 - 0.025	0.012 - 0.025	0.015 - 0.030			
8.0 - 10.0	0.015 - 0.030	0.015 - 0.030	0.020 - 0.040			
10.0 - 13.0	0.020 - 0.040	0.020 - 0.040	0.025 - 0.045			
13.0 - 16.0	0.025 - 0.045	0.025 - 0.045	0.030 - 0.050			
16.0 - 19.0	0.030 - 0.050	0.030 - 0.050	0.035 - 0.055			
19.0 - 22.0	0.035 - 0.055	0.035 - 0.055	0.045 - 0.065			
22.0 - 25.0	0.045 - 0.065	0.045 - 0.065	0.055 - 0.075			

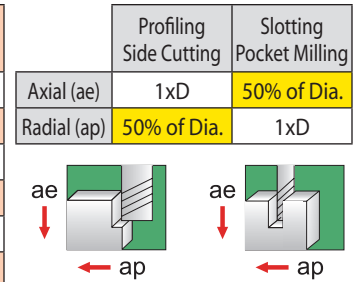
	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)		Profiling Side Cutting	Slotting Pocket Milling
	SMM = 45 - 75	SMM = 20 - 40	SMM = 45 - 90	Axial (ae)	1xD	50% of Dia.
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)	Radial (ap)	50% of Dia.	1xD
4.0 - 7.0	0.020 - 0.030	0.010 - 0.020	0.020 - 0.030			
7.0 - 8.0	0.025 - 0.040	0.013 - 0.025	0.025 - 0.045			
8.0 - 10.0	0.030 - 0.045	0.018 - 0.030	0.030 - 0.050			
10.0 - 13.0	0.030 - 0.050	0.020 - 0.040	0.035 - 0.055			
13.0 - 16.0	0.035 - 0.060	0.025 - 0.045	0.045 - 0.075			
16.0 - 19.0	0.045 - 0.075	0.030 - 0.050	0.050 - 0.080			
19.0 - 22.0	0.050 - 0.080	0.035 - 0.055	0.055 - 0.095			
22.0 - 25.0	0.060 - 0.090	0.045 - 0.065	0.065 - 0.105			

NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

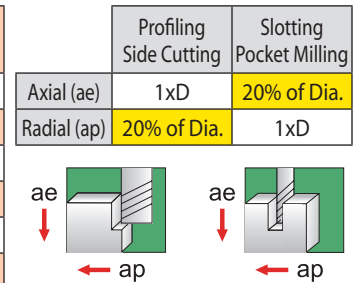
GARR TOOL High Speed Milling Guide for V5 End Mills in Titanium, Inconel, and Stainless

FRACTIONAL

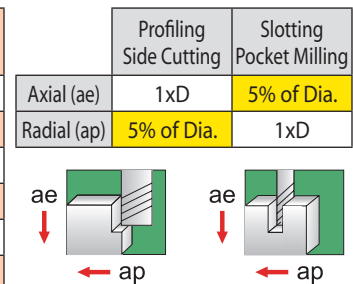
	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)
	SFM = 150 - 250	SFM = 60 - 125	SFM = 150 - 300
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)
.2362" - .2755"	.0008" - .0011"	.0004" - .0008"	.0008" - .0012"
.2756" - .3124"	.0010" - .0015"	.0005" - .0010"	.0010" - .0018"
.3125" - .3749"	.0012" - .0018"	.0007" - .0012"	.0012" - .0020"
.3750" - .4999"	.0012" - .0021"	.0008" - .0015"	.0015" - .0022"
.5000" - .6249"	.0015" - .0025"	.0010" - .0018"	.0018" - .0030"
.6250" - .7499"	.0018" - .0030"	.0012" - .0020"	.0020" - .0033"
.7500" - .8749"	.0020" - .0032"	.0015" - .0022"	.0025" - .0037"
.8750" - 1.000"	.0025" - .0035"	.0018" - .0025"	.0030" - .0042"



	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)
	SFM = 300 - 500	SFM = 100 - 200	SFM = 250 - 400
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)
.2362" - .2755"	.0008" - .0012"	.0004" - .0008"	.0008" - .0012"
.2756" - .3124"	.0010" - .0018"	.0005" - .0010"	.0012" - .0018"
.3125" - .3749"	.0012" - .0020"	.0007" - .0012"	.0015" - .0022"
.3750" - .4999"	.0015" - .0022"	.0008" - .0015"	.0018" - .0025"
.5000" - .6249"	.0018" - .0030"	.0010" - .0018"	.0020" - .0030"
.6250" - .7499"	.0020" - .0033"	.0012" - .0020"	.0025" - .0035"
.7500" - .8749"	.0025" - .0037"	.0015" - .0022"	.0030" - .0040"
.8750" - 1.000"	.0030" - .0042"	.0018" - .0025"	.0035" - .0045"



	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)
	SFM = 400 - 700	SFM = 150 - 250	SFM = 300 - 500
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)
.2362" - .2755"	.0008" - .0012"	.0005" - .0010"	.0010" - .0015"
.2756" - .3124"	.0012" - .0018"	.0007" - .0012"	.0012" - .0020"
.3125" - .3749"	.0015" - .0022"	.0008" - .0015"	.0015" - .0025"
.3750" - .4999"	.0018" - .0025"	.0010" - .0018"	.0018" - .0030"
.5000" - .6249"	.0020" - .0030"	.0012" - .0020"	.0020" - .0035"
.6250" - .7499"	.0025" - .0035"	.0015" - .0022"	.0022" - .0040"
.7500" - .8749"	.0030" - .0040"	.0018" - .0025"	.0025" - .0045"
.8750" - 1.000"	.0035" - .0045"	.0022" - .0030"	.0030" - .0050"



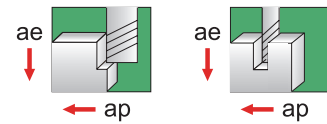
NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL High Speed Milling Guide for V5 End Mills in Titanium, Inconel, and Stainless

METRIC

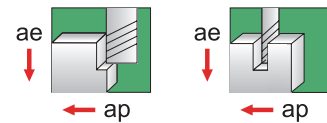
	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)
	SMM = 45 - 75	SMM = 20 - 40	SMM = 45 - 90
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)
6.0 - 8.0	0.020 - 0.030	0.010 - 0.020	0.020 - 0.030
8.0 - 10.0	0.025 - 0.040	0.013 - 0.025	0.025 - 0.045
10.0 - 12.0	0.030 - 0.045	0.018 - 0.030	0.030 - 0.050
12.0 - 14.0	0.030 - 0.050	0.020 - 0.040	0.035 - 0.055
14.0 - 16.0	0.035 - 0.060	0.025 - 0.045	0.045 - 0.075
16.0 - 18.0	0.045 - 0.075	0.030 - 0.050	0.050 - 0.080
18.0 - 20.0	0.050 - 0.080	0.035 - 0.055	0.055 - 0.095
22.0 - 25.0	0.060 - 0.090	0.045 - 0.065	0.065 - 0.105

	Profiling Side Cutting	Slotting Pocket Milling
Axial (ae)	1xD	50% of Dia.
Radial (ap)	50% of Dia.	1xD



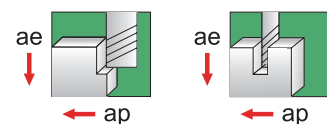
	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)
	SMM = 90 - 150	SMM = 30 - 60	SMM = 75 - 120
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)
6.0 - 8.0	0.020 - 0.030	0.010 - 0.020	0.020 - 0.030
8.0 - 10.0	0.025 - 0.045	0.013 - 0.025	0.030 - 0.045
10.0 - 12.0	0.035 - 0.055	0.020 - 0.035	0.045 - 0.060
12.0 - 14.0	0.045 - 0.060	0.025 - 0.040	0.050 - 0.070
14.0 - 16.0	0.050 - 0.075	0.030 - 0.045	0.055 - 0.075
16.0 - 18.0	0.055 - 0.080	0.035 - 0.055	0.065 - 0.085
18.0 - 20.0	0.060 - 0.085	0.040 - 0.065	0.070 - 0.090
22.0 - 25.0	0.065 - 0.090	0.045 - 0.075	0.080 - 0.100

	Profiling Side Cutting	Slotting Pocket Milling
Axial (ae)	1xD	20% of Dia.
Radial (ap)	20% of Dia.	1xD



	Titanium Alloys	Nickel or Cobalt-based Material	Stainless (400 Series, pH Series)
	SMM = 120 - 210	SMM = 45 - 75	SMM = 90 - 150
DIAMETER	CPT (Fz)	CPT (Fz)	CPT (Fz)
6.0 - 8.0	0.020 - 0.040	0.010 - 0.020	0.025 - 0.045
8.0 - 10.0	0.040 - 0.055	0.013 - 0.025	0.040 - 0.060
10.0 - 12.0	0.050 - 0.060	0.020 - 0.040	0.050 - 0.070
12.0 - 14.0	0.055 - 0.065	0.025 - 0.045	0.055 - 0.075
14.0 - 16.0	0.060 - 0.075	0.030 - 0.050	0.065 - 0.085
16.0 - 18.0	0.070 - 0.090	0.035 - 0.060	0.080 - 0.100
18.0 - 20.0	0.085 - 0.100	0.040 - 0.070	0.090 - 0.110
22.0 - 25.0	0.090 - 0.110	0.045 - 0.080	0.095 - 0.120

	Profiling Side Cutting	Slotting Pocket Milling
Axial (ae)	1xD	5% of Dia.
Radial (ap)	5% of Dia.	1xD



NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

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