



NEW LONG REACH RANGE

SGS[®]
Solid Carbide Tools



Z-CARB HPR

www.kyocera-sgstool.co.uk

Keeping the world moving

NEXT GENERATION Z-CARB

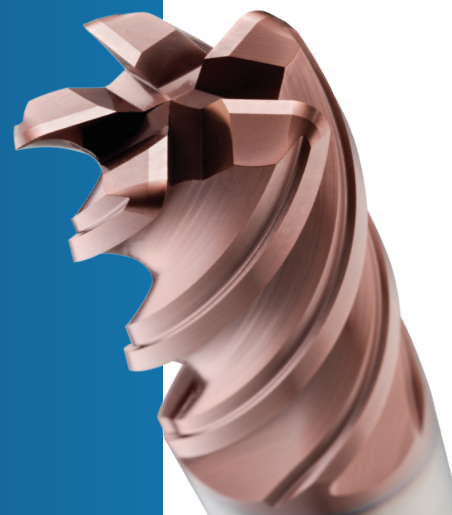
The **Z-Carb HPR** Five Flute Roughing End Mills are ideal for achieving high material removal rates (MRR) and superior finishes. The specialised five flute design is engineered for increased productivity over three and four flute end mills.

The variable indexing geometry allows for improved chatter suppression over symmetrical designs. The series is offered in a variety of length, square and corner radius options and is coated with Ti-NAMITE-M and Ti-NAMITE-A for superior performance in difficult to machine materials like Titanium and Stainless Steel.



The Z-Carb HPR material removal rates (MMR) make this tool ideal for the following target markets:

- Aerospace Structural Components
- Medical Implants
- Automotive & Heavy Transportation
- Energy & Power Generation
- Castings & Forgings
- General Engineering



EXPANSIVE OFFERING



- Over 700 items in portfolio
- Available in stub and regular lengths
- Full complement of corner radii available
- Central coolant hole option available on select diameters
- Plain and weldon flat options available for diameters 12mm and above (other retention methods available upon request)
- Special tooling design attributes available upon request
- Available in Ti-NAMITE-A coating ideal for Stainless Steel applications and Ti-NAMITE-M coating for Titanium applications.
- Available coatings are suitable for dry machining in ferrous based materials such as cast irons and many carbon steels

Ti-NAMITE-M

Features of Ti-NAMITE-M include high wear resistance, reduced friction, and excellent prevention of cutting edge build up. This coating provides superior material removal rates and tool life when used in high performance operations in Cast Iron and Steel and with difficult to machine materials like Titanium.

Hardness (HV): 3600

Oxidation Temperature: 1150°C / 2100°F

Coefficient of Friction: 0.45

Thickness: 1 – 4 Microns (based on tool diameter)

Ti-NAMITE-A

The Z-Carb HPR is available with an abrasive resistant and hard coating, Aluminum Titanium Nitride (AlTiN) or Ti-NAMITE-A. The coating has a high hardness giving ultimate protection against abrasive wear and erosion. Ideal for high temperature alloys and Stainless Steel applications.

Hardness (HV): 3700

Oxidation Temperature: 1100°C / 2010°F

Coefficient of Friction: 0.30

Thickness: 1 – 4 Microns (based on tool diameter)

FEATURES

RADIAL RAKE

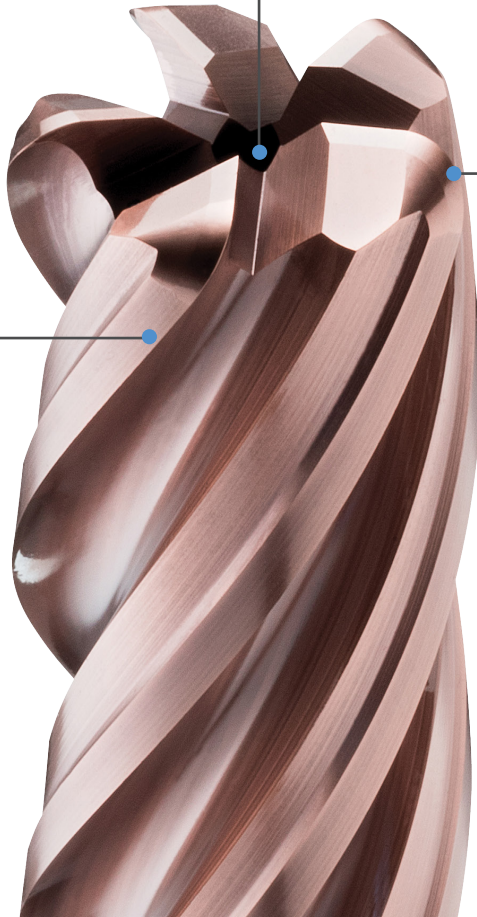
- Specially designed radial rake balances positive cutting action and edge strength
- End grind features include:
 - (1) Positive axial rake for high performance shearing and lifting of material; and
 - (2) Increased clearances to eliminate edge build-up during ramping

THROUGH COOLANT

- Central hole delivers coolant effectively to the cutting zone
- Enhances chip removal when pocketing or slotting
- Select metric diameters in stock

FLUTING & HELIX ANGLE

- Specialised five flute design is engineered for strength, chip evacuation, and increased productivity over three and four flute end mills by 20–40%
- The variable flute pattern provides excellent chatter suppression over a range of spindle speeds
- Open-centre design delivers efficiency during entry movements into the work-piece
- Helix angle engineered for balance between positive cutting action and reduced contact area to control tool pressure and spindle load



CAPABILITIES

RAMPING

- Typical ramp angles of 5 degrees are common; greater than 5 degree ramp angles are obtainable with reduced feed rates
- Entry feed rates can achieve 100% of the slotting value
- The open-centre provides an ideal exit for central coolant and chip flushing while maintaining the 5 degree ramp angle.

ROUGHING

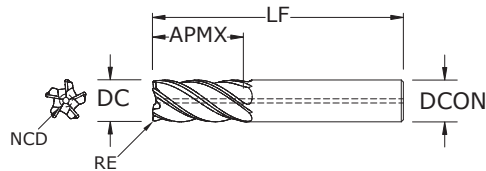
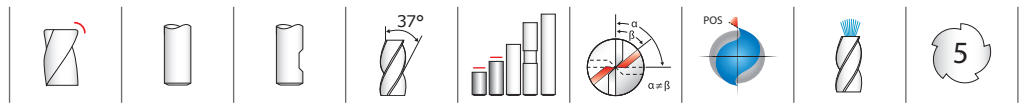
- Tool capable of 2xD slotting
- 50% radial by 150% axial heavy profiling capability is common

FINISHING

- Variable geometry contributes to exceptional finishing capabilities
- 10 µin. Ra possible

HI-SPEED MACHINING

- Variable geometry design and open fluting eliminate vibration to enable increased rates for High Speed Machining.
- Exclusive Ti-NAMITE-M coating for higher heat resistance to enhance tool life in difficult to machine materials like Titanium.
- Available with Ti-NAMITE-A coating for superior wear, edge build-up resistance and extended tool life in difficult to machine materials like Stainless Steel.



mm						EDP NO.					
CUTTING DIAMETER DC	LENGTH OF CUT APMX	OVERALL LENGTH LF	SHANK DIAMETER DCON	CORNER RADIUS RE	NON- CUTTING CENTRE DIAMETER NCD	TI-NAMITE-A (TA)	TI-NAMITE-A (TA) W/FLAT	TI-NAMITE-A (TA) W/INTERNAL COOLANT	TI-NAMITE-M (TM)	TI-NAMITE-M (TM) W/FLAT	TI-NAMITE-M (TM) W/INTERNAL COOLANT
6,0	9,0	54,0	6,0	0,5	2,11	48000	—	—	47000	—	—
6,0	13,0	57,0	6,0	0,3	2,11	48001	—	—	47001	—	—
6,0	13,0	57,0	6,0	0,5	2,11	47120	—	—	47002	—	—
6,0	13,0	57,0	6,0	1,0	2,11	48002	—	—	47003	—	—
6,0	13,0	57,0	6,0	1,5	2,11	48003	—	—	47004	—	—
8,0	11,0	58,0	8,0	0,5	2,79	48004	—	—	47005	—	—
8,0	18,0	63,0	8,0	0,5	2,79	47121	—	—	47006	—	—
8,0	18,0	63,0	8,0	1,0	2,79	47122	—	—	47007	—	—
8,0	18,0	63,0	8,0	1,5	2,79	48005	—	—	47008	—	—
8,0	18,0	63,0	8,0	2,0	2,79	48006	—	—	47009	—	—
10,0	13,0	66,0	10,0	1,0	2,79	48007	—	—	47010	—	—
10,0	22,0	72,0	10,0	0,5	3,51	47123	—	—	47011	—	—
10,0	22,0	72,0	10,0	1,0	3,51	47124	—	—	47012	—	—
10,0	22,0	72,0	10,0	1,5	3,51	48008	—	—	47013	—	—
10,0	22,0	72,0	10,0	2,0	3,51	48009	—	—	47014	—	—
10,0	22,0	72,0	10,0	2,5	3,51	48010	—	—	47015	—	—
12,0	15,0	73,0	12,0	1,0	4,19	48011	48029	—	47016	47024	—
12,0	26,0	83,0	12,0	0,5	4,19	47125	47128	47160	47017	47025	47161
12,0	26,0	83,0	12,0	0,76	4,19	47126	47129	47162	47018	47026	47163
12,0	26,0	83,0	12,0	1,0	4,19	47127	47130	47164	47019	47027	47165
12,0	26,0	83,0	12,0	1,5	4,19	48012	48030	47166	47020	47028	47167
12,0	26,0	83,0	12,0	2,0	4,19	48013	48031	47168	47021	47029	47169
12,0	26,0	83,0	12,0	2,5	4,19	48014	48032	47170	47022	47030	47171
12,0	26,0	83,0	12,0	3,0	4,19	48015	48033	47172	47023	47031	47173
16,0	19,0	82,0	16,0	1,0	5,59	48016	48034	48056	47032	47039	47046
16,0	19,0	82,0	16,0	1,5	5,59	48070	—	—	48071	—	—
16,0	35,0	92,0	16,0	1,0	5,59	47131	48035	47134	47033	47040	47047
16,0	35,0	92,0	16,0	1,5	5,59	48017	48036	48057	47034	47041	47048
16,0	35,0	92,0	16,0	2,0	5,59	47132	48037	47135	47035	47042	47049

- An ideal balance of helix, indexing, flute depth, rake and relief
- Variable indexing for chatter suppression and patented edge geometry for shearing and strength
- Chatter-free geometry allows deep cutting and high speed machining
- Central coolant hole delivers coolant effectively to the cutting zone enhancing chip removal when pocketing or slotting
- Enhanced corner geometry with tight tolerance corner radii
- Excels at roughing, ramping, high speed machining and finishing in a variety of materials
- Recommended for materials ≤ 45 HRC (≤ 420 Bhn)

STEELS
STAINLESS STEELS
CAST IRON
HIGH TEMP ALLOYS
TITANIUM
HARDENED STEELS

TOLERANCES (mm)

6 DIAMETER
DC = +0,000/-0,030
DCON = h_8
RE = +0,000/-0,050

>6-10 DIAMETER
DC = +0,000/-0,040
DCON = h_8
RE = +0,000/-0,050

>10-25 DIAMETER
DC = +0,000/-0,050
DCON = h_8
RE = +0,000/-0,050

For patent
information visit
www.ksptpatents.com

METRIC

Z-Carb HPR



mm						EDP NO.					
CUTTING DIAMETER DC	LENGTH OF CUT APMX	OVERALL LENGTH LF	SHANK DIAMETER DCON	CORNER RADIUS RE	NON- CUTTING CENTRE DIAMETER NCD	TI-NAMITE-A (TA)	TI-NAMITE-A (TA) W/FLAT	TI-NAMITE-A (TA) W/INTERNAL COOLANT	TI-NAMITE-M (TM)	TI-NAMITE-M (TM) W/ FLAT	TI-NAMITE-M (TM) W/INTERNAL COOLANT
16,0	35,0	92,0	16,0	2,5	5,59	48018	48038	48058	47036	47043	47050
16,0	35,0	92,0	16,0	3,0	5,59	47133	48039	47136	47037	47044	47051
16,0	35,0	92,0	16,0	4,0	5,59	48019	48040	48059	47038	47045	47052
20,0	23,0	92,0	20,0	1,0	7,01	48020	48041	48060	47053	47061	47069
20,0	43,0	104,0	20,0	1,0	7,01	47137	48042	47140	47054	47062	47070
20,0	43,0	104,0	20,0	1,5	7,01	48021	48043	48061	47055	47063	47071
20,0	43,0	104,0	20,0	2,0	7,01	47138	48044	47141	47056	47064	47072
20,0	43,0	104,0	20,0	2,5	7,01	48022	48045	48062	47057	47065	47073
20,0	43,0	104,0	20,0	3,0	7,01	47139	48046	47142	47058	47066	47074
20,0	43,0	104,0	20,0	4,0	7,01	48023	48047	48063	47059	47067	47075
20,0	43,0	104,0	20,0	5,0	7,01	48024	48048	48064	47060	47068	47076
25,0	28,0	100,0	25,0	1,0	8,76	48025	48049	48065	47077	47084	47091
25,0	53,0	121,0	25,0	1,0	8,76	47143	48050	47146	47078	47085	47092
25,0	53,0	121,0	25,0	2,0	8,76	47144	48051	47147	47079	47086	47093
25,0	53,0	121,0	25,0	2,5	8,76	48026	48052	48066	47080	47087	47094
25,0	53,0	121,0	25,0	3,0	8,76	47145	48053	47148	47081	47088	47095
25,0	53,0	121,0	25,0	4,0	8,76	48027	48054	48067	47082	47089	47096
25,0	53,0	121,0	25,0	5,0	8,76	48028	48055	48068	47083	47090	47097

For patent
information visit
www.ksptpatents.com

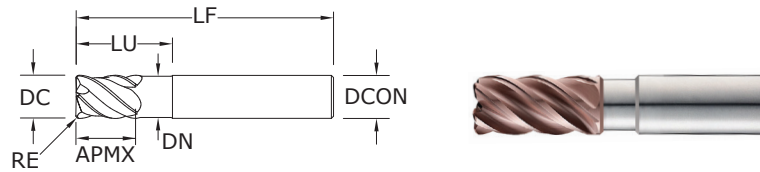
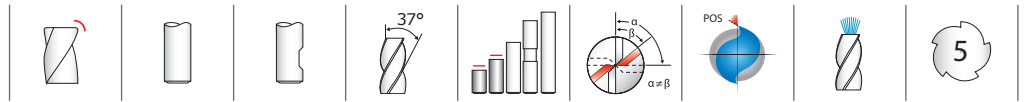
THE Z-CARB RANGE

H TEMP ALLOY AND MOULD & DIE



OTHER Z-CARB RANGES

Z-

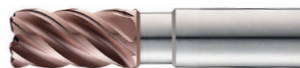


mm						EDP NO.			
CUTTING DIAMETER DC	LENGTH OF CUT APMX	OVERALL LENGTH LF	SHANK DIAMETER DCON	CORNER RADIUS RE	NON-CUTTING CENTRE DIAMETER NCD	REACH LU	NECK DIAMETER DN	TI-NAMITE-A (TA)	TI-NAMITE-M (TM)
6,0	13,0	57,0	6,0	0,3	2,11	19	5,49	48001LR19	47001LR19
6,0	13,0	57,0	6,0	0,5	2,11	19	5,49	47120 LR19	47002LR19
6,0	13,0	57,0	6,0	1,0	2,11	19	5,49	48002 LR19	47003LR19
6,0	13,0	57,0	6,0	1,5	2,11	19	5,49	48003LR19	47004LR19
8,0	18,0	63,0	8,0	0,5	2,79	25	7,49	47121LR25	47006LR25
8,0	18,0	63,0	8,0	1,0	2,79	25	7,49	47122LR25	47007 LR25
8,0	18,0	63,0	8,0	1,5	2,79	25	7,49	48005LR25	47008 LR25
8,0	18,0	63,0	8,0	2,0	2,79	25	7,49	48006LR25	47009 LR25
10,0	22,0	72,0	10,0	0,5	3,51	31	9,50	47123LR31	47011LR31
10,0	22,0	72,0	10,0	1,0	3,51	31	9,50	47124LR31	47012LR31
10,0	22,0	72,0	10,0	1,5	3,51	31	9,50	48008LR31	47013LR31
10,0	22,0	72,0	10,0	2,0	3,51	31	9,50	48009LR31	47014LR31
10,0	22,0	72,0	10,0	2,5	3,51	31	9,50	48010LR31	47015LR31
12,0	26,0	83,0	12,0	0,5	4,19	38	11,48	47125LR38	47017LR38
12,0	26,0	83,0	12,0	0,76	4,19	38	11,48	47126LR38	47018LR38
12,0	26,0	83,0	12,0	1,0	4,19	38	11,48	47127LR38	47019LR38
12,0	26,0	83,0	12,0	1,5	4,19	38	11,48	48012LR38	47020LR38
12,0	26,0	83,0	12,0	2,0	4,19	38	11,48	48013LR38	47021LR38
12,0	26,0	83,0	12,0	2,5	4,19	38	11,48	48014LR38	47022LR38
12,0	26,0	83,0	12,0	3,0	4,19	38	11,48	48015LR38	47023LR38
16,0	19,0	82,0	16,0	1,5	5,59	50	15,49	48070LR50	48071LR50
16,0	35,0	92,0	16,0	1,0	5,59	50	15,49	47131LR50	47033LR50
16,0	35,0	92,0	16,0	1,5	5,59	50	15,49	48017LR50	47034LR50
16,0	35,0	92,0	16,0	2,0	5,59	50	15,49	47132LR50	47035LR50

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METRIC

Z-Carb HPR Long Reach



mm								EDP NO.	
CUTTING DIAMETER DC	LENGTH OF CUT APMX	OVERALL LENGTH LF	SHANK DIAMETER DCON	CORNER RADIUS RE	NON- CUTTING CENTRE DIAMETER NCD	REACH LU	NECK DIAMETER DN	TI-NAMITE-A (TA)	TI-NAMITE-M (TM)
16,0	35,0	92,0	16,0	2,5	5,59	50	15,49	48018LR50	47036LR50
16,0	35,0	92,0	16,0	3,0	5,59	50	15,49	47133LR50	47037LR50
16,0	35,0	92,0	16,0	4,0	5,59	50	15,49	48019LR50	47038LR50
20,0	43,0	104,0	20,0	1,0	7,01	62	19,48	47137LR62*	47054LR62*
20,0	43,0	104,0	20,0	1,5	7,01	62	19,48	48021LR62*	47055LR62*
20,0	43,0	104,0	20,0	2,0	7,01	62	19,48	47138LR62*	47056LR62*
20,0	43,0	104,0	20,0	2,5	7,01	62	19,48	48022LR62*	47057LR62*
20,0	43,0	104,0	20,0	3,0	7,01	62	19,48	47139LR62*	47058LR62*
20,0	43,0	104,0	20,0	4,0	7,01	62	19,48	48023LR62*	47059LR62*
20,0	43,0	104,0	20,0	5,0	7,01	62	19,48	48024LR62*	47060LR62*
25,0	53,0	121,0	25,0	1,0	8,76	77	24,48	47143LR77*	47078LR77*
25,0	53,0	121,0	25,0	2,0	8,76	77	24,48	47144LR77*	47079LR77*
25,0	53,0	121,0	25,0	2,5	8,76	77	24,48	48026LR77*	47080LR77*
25,0	53,0	121,0	25,0	3,0	8,76	77	24,48	47145LR77*	47081LR77*
25,0	53,0	121,0	25,0	4,0	8,76	77	24,48	48027LR77*	47082LR77*
25,0	53,0	121,0	25,0	5,0	8,76	77	24,48	48028LR77*	47083LR77*

* These products are manufactured to order.



CTION



Titanium demo cutting with only MQL

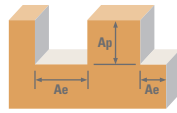
KYOCERA

SGS
Solid Carbide Tools

Scan the QR code
to see our Z-Carb
HPR in action.



Speed & Feed Recommendation



Series Z5MCR Metric	Hardness		Vc (m/min)	DC • mm									
				6	8	10	12	16	20	25			
P	CARBON STEELS 1018,1040,1080,1090, 10L50, 1140, 1212, 12L15, 1525, 1536	 Profile	≤ 0.5	≤ 1.5	169 (135-203)	RPM	8967	6725	5380	4484	3363	2690	2152
						Fz	0.029	0.049	0.061	0.074	0.087	0.099	0.108
						Feed (mm/min)	1291	1650	1650	1668	1463	1327	1157
		 Slot	1	≤ 1	134 (107-161)	RPM	7109	5332	4265	3555	2666	2133	1706
						Fz	0.029	0.049	0.061	0.074	0.087	0.099	0.108
						Feed (mm/min)	1024	1308	1308	1322	1160	1052	917
	ALLOY STEELS 4140,4150,4320,5120, 5150, 8630, 86L20, 50100	 Profile	≤ 0.5	≤ 1.5	96 (77-115)	RPM	5089	3817	3054	2545	1909	1527	1221
						Fz	0.022	0.036	0.045	0.055	0.067	0.075	0.080
						Feed (mm/min)	550	692	692	702	635	570	489
		 Slot	1	≤ 1	76 (61-91)	RPM	4039	3029	2424	2020	1515	1212	969
						Fz	0.022	0.036	0.045	0.055	0.067	0.075	0.080
						Feed (mm/min)	436	549	549	557	504	452	388
K	CAST IRONS (LOW & MEDIUM ALLOY) Grey, Malleable, Ductile	 Profile	≤ 0.5	≤ 1.5	136 (109-163)	RPM	7190	5392	4314	3595	2696	2157	1726
						Fz	0.026	0.045	0.056	0.067	0.079	0.091	0.098
						Feed (mm/min)	949	1208	1208	1208	1070	978	841
		 Slot	1	≤ 1	108 (87-130)	RPM	5736	4302	3441	2868	2151	1721	1377
						Fz	0.026	0.045	0.056	0.067	0.079	0.091	0.098
						Feed (mm/min)	757	964	964	964	853	780	671
	CAST IRONS (HIGH ALLOY) Grey, Malleable, Ductile	 Profile	≤ 0.5	≤ 1.5	104 (83-124)	RPM	5493	4120	3296	2747	2060	1648	1318
						Fz	0.020	0.034	0.043	0.050	0.059	0.067	0.073
						Feed (mm/min)	554	703	703	692	606	549	478
		 Slot	1	≤ 1	82 (66-99)	RPM	4362	3272	2617	2181	1636	1309	1047
						Fz	0.020	0.034	0.043	0.050	0.059	0.067	0.073
						Feed (mm/min)	440	558	558	550	482	436	380
M	STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F	 Profile	≤ 0.5	≤ 1.5	149 (119-179)	RPM	7917	5938	4750	3958	2969	2375	1900
						Fz	0.022	0.036	0.045	0.055	0.067	0.075	0.080
						Feed (mm/min)	855	1077	1077	1092	988	887	760
		 Slot	1	≤ 1	119 (95-143)	RPM	6301	4726	3781	3151	2363	1890	1512
						Fz	0.022	0.036	0.045	0.055	0.067	0.075	0.080
						Feed (mm/min)	680	857	857	869	786	706	605
	STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L	 Profile	≤ 0.5	≤ 1.5	104 (83-124)	RPM	5493	4120	3296	2747	2060	1648	1318
						Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.063
						Feed (mm/min)	461	615	615	593	527	483	412
		 Slot	1	≤ 1	82 (66-99)	RPM	4362	3272	2617	2181	1636	1309	1047
						Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.063
						Feed (mm/min)	366	489	489	471	419	384	327
	STAINLESS STEELS (PH) 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	 Profile	≤ 0.5	≤ 1.5	94 (76-113)	RPM	5009	3756	3005	2504	1878	1503	1202
						Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.063
						Feed (mm/min)	421	561	561	541	481	441	376
		 Slot	1	≤ 1	76 (61-91)	RPM	4039	3029	2424	2020	1515	1212	969
						Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.063
						Feed (mm/min)	339	452	452	436	388	355	303

Speed & Feed Recommendation



Series				Vc	DC • mm														
Z5MCR	Hardness	Ae x DC	Ap x DC	(m/min)		6	8	10	12	16	20	25							
Metric																			
S	SUPER ALLOYS (NICKEL , COBALT, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400	≤ 300 Bhn or ≤ 32 HRC	Profile		≤ 0.5	≤ 1.5	24 (20-29)	RPM	1293	969	776	646	485	388	310				
			Fz					0.0160	0.0272	0.0340	0.0409	0.0478	0.0531	0.0599					
			Feed (mm/min)					103	132	132	132	116	103	93					
		Slot		1	≤ 1	20 (16-24)	RPM	1050	788	630	525	394	315	252					
							Fz	0.0160	0.0272	0.0340	0.0409	0.0478	0.0531	0.0599					
							Feed (mm/min)	84	107	107	107	94	84	75					
	SUPER ALLOYS (NICKEL, COBALT, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRC	Profile		≤ 0.5	≤ 1.5	19 (15-23)	RPM	1002	751	601	501	376	301	240				
			Fz					0.0112	0.0192	0.0239	0.0284	0.0333	0.0371	0.0420					
			Feed (mm/min)					56	72	72	71	63	56	50					
		Slot		1	≤ 1	15 (12-18)	RPM	808	606	485	404	303	242	194					
							Fz	0.0112	0.0192	0.0239	0.0284	0.0333	0.0371	0.0420					
							Feed (mm/min)	45	58	58	57	50	45	41					
	TITANIUM ALLOYS Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRC	Profile		≤ 0.5	≤ 1.5	66 (52-79)	RPM	3474	2605	2084	1737	1303	1042	834				
			Fz					0.019	0.032	0.040	0.048	0.056	0.064	0.070					
			Feed (mm/min)					333	417	417	417	367	333	292					
			Slot						1	≤ 1	52 (41-62)	RPM	2747	2060	1648	1373	1030	824	659
												Fz	0.019	0.032	0.040	0.048	0.056	0.064	0.070
		TITANIUM ALLOYS (DIFFICULT) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	≤ 440 Bhn or ≤ 47 HRC	Profile		≤ 0.5	≤ 1.5	23 (18-27)	RPM	1212	909	727	606	454	364	291			
				Fz					0.0160	0.0272	0.0340	0.0409	0.0478	0.0531	0.0599				
Feed (mm/min)				116					145	145	145	128	116	103					
Slot									1	≤ 1	18 (15-22)	RPM	969	727	582	485	364	291	233
												Fz	0.019	0.032	0.040	0.048	0.056	0.064	0.071
TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRC	Profile		≤ 0.5	≤ 1.5	56 (45-68)	RPM	2989	2242	1793	1495	1121	897	717					
		Fz					0.017	0.030	0.037	0.043	0.051	0.059	0.065						
		Feed (mm/min)					251	335	335	323	287	263	233						
		Slot						1	≤ 1	44 (35-53)	RPM	2343	1757	1406	1171	879	703	562	
											Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.065	
		</																	

Bhn (Brinell) HRC (Rockwell C)

$rpm = (Vc \times 1000) / (DC \times 3.14)$

$mm/min = Fz \times 5 \times rpm$

ramp up to 5 degrees using slotting speed and feed rates. Do not plunge.

reduce speed and feed for materials harder than listed

reduce feed and Ae when finish milling (.02 x DC maximum)

feed rates listed have chip thinning adjustments included where applicable

refer to the SGS Tool Wizard* for complete technical information (www.kyocera-sgstool.co.uk)

OUR SERVICES

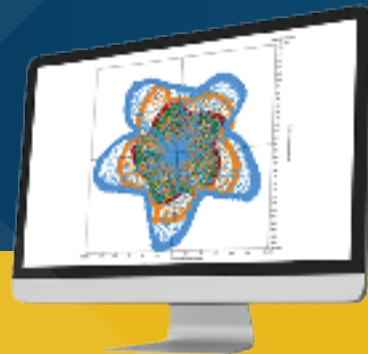


PROCESS DEVELOPMENT

SGS tech hubs can help obtain the best from our high-performance range of tooling by applying the correct tools and optimum strategies.

Using our in-house Multi-Axis CNC milling machines we can perfect a process working in conjunction with our partners.

Whether it be machine tools, tool holding, work holding or software suppliers of the latest CAD-CAM, we are committed to help find the best solution.



BESPOKE TOOLING SOLUTIONS

SGS R&D can develop specific tooling unique to your requirements, through extensive knowledge and creative thinking.

Using the latest technology in spindle monitoring and high-magnification measuring equipment, we can develop tooling to suit your application and material specification.





What you can expect from us



Product research
and development



Product engineering and
tool application support



CAD/CAM software
support



Same-day despatch
on stock items



On-site customer
training



Annual Customer
Satisfaction Survey



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