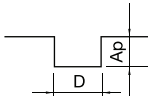


4WSE/4WPE					Cutting Conditions											
Slotting																
Material	Tool Steels / Mould Steels SCM / HPM				Alloy Steels / Pre-hardened Steels NAK80 / KP4M				Hardened Steels STAVAX/SKD11				Heat treated Steels/Hardened Steels SKD11/SKD61			
Hardness	30~ 40HRC				40~ 45HRC				45 ~ 55HRC				50~ 62HRC			
Outside Dia	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
Ø 0.5	50,000	463	0.050	0.500	45,000	350	0.050	0.500	40,000	275	0.030	0.250	33,000	175	0.010	0.125
Ø 0.6	50,000	588	0.060	0.600	45,000	450	0.060	0.600	40,000	356	0.030	0.300	30,000	200	0.020	0.150
Ø 0.8	50,000	750	0.080	0.800	40,000	550	0.080	0.800	30,000	369	0.040	0.400	25,000	231	0.020	0.200
Ø 0.9	49,000	819	0.090	0.900	39,000	650	0.090	0.900	27,800	413	0.050	0.450	22,700	256	0.020	0.225
Ø 1	48,000	1,313	0.100	1.000	38,000	855	0.100	1.000	25,500	538	0.050	0.500	20,500	325	0.030	0.250
Ø 2	33,300	1,488	0.200	2.000	26,000	1,020	0.200	2.000	17,500	625	0.100	1.000	14,500	388	0.050	0.500
Ø 3	21,800	1,488	0.300	3.000	17,300	1,020	0.300	3.000	11,500	625	0.150	1.500	9,500	388	0.080	0.750
Ø 4	16,700	1,540	0.400	4.000	13,200	1,050	0.400	4.000	8,800	663	0.200	2.000	7,200	406	0.100	1.000
Ø 5	15,700	1,750	0.500	5.000	12,500	1,208	0.500	5.000	8,300	750	0.250	2.500	6,400	425	0.130	1.250
Ø 6	13,100	1,663	0.600	6.000	10,350	1,155	0.600	6.000	6,900	719	0.300	3.000	5,300	419	0.150	1.500
Ø 8	9,880	1,625	0.800	8.000	7,800	1,080	0.800	8.000	5,200	669	0.400	4.000	4,000	375	0.200	2.000
Ø 10	7,800	1,488	1.000	10.000	6,150	1,020	1.000	10.000	4,100	625	0.500	5.000	3,200	363	0.250	2.500
Ø 12	6,650	1,488	1.200	12.000	5,250	1,020	1.200	12.000	3,500	625	0.600	6.000	2,650	363	0.300	3.000
Ø 16	5,540	1,363	1.600	16.000	4,340	915	1.600	16.000	2,600	538	0.800	8.000	1,840	269	0.400	4.000
Ø 18	5,540	1,363	1.800	18.000	4,340	913	1.800	18.000	2,600	538	0.900	9.000	1,840	269	0.450	4.500
Ø 20	4,640	1,260	2.000	20.000	4,340	912	2.000	20.000	2,600	538	1.000	10.000	1,840	269	0.500	5.000
Depth of cut	Slotting • Ap : Axial Depth • D : Outside Diameter 															

Side Cutting																	
Material	Tool Steels / Mould Steels SCM / HPM				Alloy Steels / Pre-hardened Steels NAK80 / KP4M				Hardened Steels STAVAX/SKD11				Heat treated Steels/Hardened Steels SKD11/SKD61				
Hardness	30 ~ 40HRC				40 ~ 45HRC				45 ~ 55HRC				50 ~ 62HRC				
Outside Dia	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	
Ø 0.5	50,000	416	0.500	0.015	45,000	315	0.500	0.015	40,000	248	0.250	0.010	33,000	158	0.130	0.005	
Ø 0.6	50,000	529	0.600	0.018	45,000	405	0.600	0.018	40,000	321	0.300	0.012	30,000	180	0.150	0.006	
Ø 0.8	50,000	675	0.800	0.024	40,000	495	0.800	0.024	30,000	332	0.400	0.016	25,000	208	0.200	0.008	
Ø 0.9	49,000	737	0.900	0.027	39,000	585	0.900	0.027	27,800	371	0.450	0.018	22,700	231	0.230	0.009	
Ø 1	48,000	1,181	1.000	0.030	38,000	770	1.000	0.030	25,500	484	0.500	0.020	20,500	293	0.250	0.010	
Ø 2	33,300	1,339	2.000	0.060	26,000	918	2.000	0.060	17,500	563	1.000	0.040	14,500	349	0.500	0.020	
Ø 3	21,800	1,339	3.000	0.090	17,300	918	3.000	0.090	11,500	563	1.500	0.060	9,500	349	0.750	0.030	
Ø 4	16,700	1,386	4.000	0.120	13,200	945	4.000	0.120	8,800	596	2.000	0.080	7,200	366	1.000	0.040	
Ø 5	15,700	1,575	5.000	0.150	12,500	1,087	5.000	0.150	8,300	675	2.500	0.100	6,400	383	1.250	0.050	
Ø 6	13,100	1,496	6.000	0.180	10,350	1,040	6.000	0.180	6,900	647	3.000	0.120	5,300	377	1.500	0.060	
Ø 8	9,880	1,463	8.000	0.240	7,800	972	8.000	0.240	5,200	602	4.000	0.160	4,000	338	2.000	0.080	
Ø 10	7,800	1,339	10.000	0.300	6,150	918	10.000	0.300	4,100	563	5.000	0.200	3,200	326	2.500	0.100	
Ø 12	6,650	1,339	12.000	0.360	5,250	918	12.000	0.360	3,500	563	6.000	0.240	2,650	326	3.000	0.120	
Ø 16	5,540	1,226	16.000	0.480	4,340	824	16.000	0.480	2,600	484	8.000	0.320	1,840	242	4.000	0.160	
Ø 18	5,540	1,226	18.000	0.540	4,340	821	18.000	0.540	2,600	484	9.000	0.360	1,840	242	4.500	0.180	
Ø 20	4,640	1,134	20.000	0.600	4,340	821	20.000	0.600	2,600	484	10.000	0.400	1,840	242	5.000	0.200	
Depth of cut	Side Milling • Ap : Axial Depth • Ae : Radial Depth								Ap Ae								

- The edge of the flute precisely grinded. If you want to measure the tool and to avoid damaging on the flutes, use non-contact measuring method.
- When milling workpiece, HRC over 60 Hardened steel, reduce 20% of the RPM and feed compared to the same diameter.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- Use a machine with low vibration and good rigidity (Ø1 or less, the vibration tolerance management should be within 5µm).
- Air blow or oil mist is recommended for smooth chip emission and wet coolant milling is recommended for copper material.