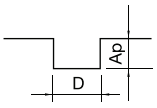
RPM : rev./min FEED : mm/min

4ERE — Cutting Conditions

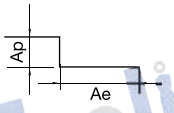
Material		Copper Alloys C1100				Alloy Steels / Pre-hardened Steels NAK80/KP4M				Hardened Steels STAVAX/SKD11			
Hardness						40~ 45HRC				45 ~ 55HRC			
Outside Dia	Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
Ø 0.8	8	24,100	1,235	0.009	0.010	20,485	988	0.008	0.010	18,430	840	0.006	0.010
〃	12	18,700	707	0.004	0.003	15,895	566	0.004	0.003	14,306	481	0.003	0.002
Ø 1	8	22,100	1,373	0.014	0.024	17,680	1,098	0.011	0.019	15,912	934	0.010	0.016
〃	16	14,300	624	0.004	0.003	11,440	499	0.003	0.002	10,296	424	0.003	0.002
〃	25	10,800	250	0.003	0.001	8,640	200	0.002	0.001	7,776	170	0.002	0.001
Ø 1.5	8	19,000	1,872	0.041	0.124	15,200	1,498	0.033	0.099	13,680	1,273	0.028	0.084
〃	16	12,300	998	0.013	0.015	9,840	799	0.010	0.012	8,856	679	0.009	0.010
〃	25	9,300	562	0.005	0.004	7,440	449	0.004	0.003	6,696	382	0.003	0.003
Ø 2	8	17,000	2,267	0.054	0.391	13,600	1,814	0.043	0.313	12,240	1,542	0.037	0.266
〃	16	11,100	1,290	0.026	0.049	8,880	1,032	0.021	0.039	7,992	877	0.018	0.033
〃	25	8,400	811	0.012	0.013	6,720	649	0.010	0.010	6,048	552	0.008	0.009
Ø 2.5	10	13,100	2,371	0.068	0.488	10,480	1,897	0.054	0.390	9,432	1,612	0.046	0.332
〃	16	9,900	1,643	0.045	0.119	7,920	1,315	0.036	0.095	7,128	1,117	0.031	0.081
〃	30	6,800	894	0.014	0.018	5,440	716	0.011	0.014	4,896	608	0.010	0.012
Ø 3	10	11,600	2,642	0.092	1.013	9,280	2,113	0.074	0.810	8,352	1,796	0.063	0.689
〃	16	8,900	1,872	0.064	0.247	7,120	1,498	0.051	0.198	6,408	1,273	0.044	0.168
〃	25	6,900	1,290	0.036	0.065	5,520	1,032	0.029	0.052	4,968	877	0.024	0.044
〃	35	5,700	915	0.018	0.024	4,560	732	0.014	0.019	4,104	622	0.012	0.016
Ø 4	10	9,200	2,912	0.120	1.960	7,360	2,330	0.096	1.568	6,624	1,980	0.082	1.333
〃	16	7,200	2,184	0.093	0.781	5,760	1,747	0.074	0.625	5,184	1,485	0.063	0.531
〃	25	5,600	1,560	0.061	0.205	4,480	1,248	0.049	0.164	4,032	1,061	0.041	0.139
〃	40	4,200	978	0.030	0.050	3,360	782	0.024	0.040	3,024	665	0.020	0.034
Ø 5	15	6,000	2,371	0.127	1.907	4,800	1,897	0.102	1.526	4,320	1,612	0.086	1.297
〃	25	4,600	1,706	0.109	0.500	3,680	1,364	0.087	0.400	3,312	1,160	0.074	0.340
〃	40	3,500	1,123	0.060	0.122	2,800	899	0.048	0.098	2,520	764	0.041	0.083
Ø 6	20	4,200	1,997	0.126	2.025	3,360	1,597	0.101	1.620	3,024	1,358	0.086	1.377
〃	40	3,000	1,248	0.083	0.253	2,400	998	0.066	0.202	2,160	849	0.056	0.172
Ø 8	20	3,200	1,893	0.180	1.600	2,560	1,514	0.144	1.280	2,304	1,287	0.122	1.088
〃	40	2,600	1,248	0.120	0.200	2,080	998	0.096	0.160	1,872	849	0.082	0.136
Ø 10	25	2,900	1,851	0.200	1.760	2,320	1,481	0.160	1.408	2,088	1,259	0.136	1.197
〃	45	2,200	1,206	0.140	0.240	1,760	965	0.112	0.192	1,584	820	0.095	0.163
Ø 12	30	2,000	1,685	0.190	1.650	1,600	1,348	0.152	1.320	1,440	1,146	0.129	1.122
〃	50	1,950	1,186	0.150	0.250	1,560	948	0.120	0.200	1,404	806	0.102	0.170

Depth of cut

Slotting
- Ap : Axial Depth
- D : Outside Diameter



Side Milling
- Ap : Axial Depth
- Ae : Radial Depth



- Use a rigid precise machine and holder.
- Ap(mm): Axial Depth of cut
- Ae(mm): Radial Depth of cut
- The edge of the flute precisely grinded,if you want measure the tool and to avoid damaging on the flutes,use non-contact measuring method
- When milling workpiece HRC over 50 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.
- If the table over the maximum RPM and feed of your machine, adjust RPM and feed in the same proportion.
- 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.
- The Above condition are only reference.In actual machining conditions adjust these parameters according to the milling shape, machine ability and the operation environment.