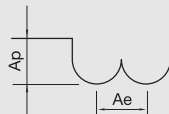
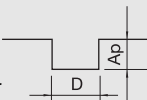
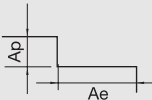




추천 절삭조건

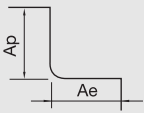
Режимы Резания

파삭재 Material		고경도강/ 프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels				고경도강 Hardened Steels			
		NAK / SKD61				STAVX / SKD61				SKD11 / YXR7 / SKH51			
경도 Hardness		30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 68HRc			
반경 Radius	유효장/날장 Effective Length Length of cut	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R 0.1	0.2	50,000	326	0.005	0.005	50,000	216	0.004	0.004	50,000	120	0.003	0.003
〃	0.5	50,000	308	0.004	0.004	50,000	198	0.003	0.003	50,000	110	0.002	0.003
R 0.15	0.3	50,000	800	0.006	0.010	50,000	520	0.004	0.005	50,000	410	0.003	0.005
〃	0.5	50,000	720	0.006	0.010	50,000	450	0.003	0.005	50,000	390	0.003	0.005
〃	1	50,000	650	0.006	0.010	50,000	410	0.003	0.005	50,000	350	0.003	0.004
R 0.2	0.3	50,000	1,120	0.010	0.010	50,000	750	0.005	0.006	50,000	650	0.005	0.005
〃	1	50,000	1,050	0.010	0.010	50,000	710	0.005	0.005	50,000	600	0.005	0.005
〃	3	50,000	540	0.005	0.005	50,000	360	0.003	0.003	50,000	310	0.002	0.003
R 0.25	0.4	50,000	1,420	0.010	0.020	50,000	1,210	0.050	0.010	50,000	1,030	0.005	0.001
〃	1	50,000	1,290	0.010	0.015	50,000	1,100	0.005	0.010	50,000	980	0.005	0.010
〃	3	50,000	1,090	0.010	0.015	50,000	850	0.005	0.010	50,000	730	0.005	0.010
R 0.3	0.5	50,000	2,300	0.020	0.020	50,000	1,890	0.015	0.015	50,000	1,520	0.010	0.010
〃	1	50,000	2,180	0.020	0.020	50,000	1,760	0.010	0.010	50,000	1,490	0.010	0.010
〃	3	40,000	1,300	0.015	0.020	40,000	1,060	0.010	0.010	40,000	870	0.010	0.010
〃	5	30,000	650	0.015	0.050	30,000	590	0.010	0.010	30,000	390	0.005	0.005
R 0.4	0.6	50,000	2,600	0.020	0.030	50,000	1,980	0.020	0.020	50,000	1,720	0.010	0.020
〃	2	40,000	2,100	0.015	0.020	40,000	1,450	0.015	0.015	40,000	1,210	0.010	0.010
〃	4	30,000	1,540	0.015	0.015	30,000	940	0.010	0.015	30,000	840	0.010	0.010
〃	8	24,000	970	0.010	0.010	24,000	650	0.005	0.010	24,000	470	0.005	0.005
R 0.5	1.5	40,000	2,560	0.030	0.040	40,000	1,980	0.020	0.030	40,000	1,590	0.020	0.020
〃	3	30,000	2,100	0.030	0.030	30,000	1,650	0.020	0.030	30,000	1,240	0.020	0.020
〃	5	30,000	1,700	0.030	0.030	30,000	1,360	0.015	0.020	30,000	1,080	0.010	0.015
〃	10	16,000	780	0.015	0.015	16,000	620	0.010	0.015	16,000	500	0.010	0.010
R 0.75	2	40,000	2,300	0.040	0.040	40,000	1,920	0.030	0.030	40,000	1,530	0.020	0.030
〃	4	30,000	2,010	0.030	0.030	30,000	1,600	0.025	0.025	30,000	1,280	0.020	0.020
〃	8	30,000	1,700	0.030	0.030	30,000	1,360	0.020	0.030	30,000	1,080	0.010	0.010
R 1	2	40,000	3,310	0.050	0.050	40,000	2,640	0.040	0.040	40,000	2,110	0.030	0.040
〃	6	40,000	3,020	0.030	0.040	40,000	2,410	0.030	0.030	40,000	1,930	0.020	0.030
〃	10	24,000	1,210	0.020	0.030	24,000	970	0.010	0.030	24,000	770	0.010	0.020
〃	14	16,000	920	0.010	0.020	16,000	780	0.010	0.010	16,000	630	0.010	0.010
R 1.5	3	40,000	2,500	0.030	0.040	40,000	2,000	0.030	0.030	40,000	1,600	0.020	0.030
〃	6	32,000	2,100	0.030	0.030	32,000	1,680	0.020	0.030	32,000	1,340	0.020	0.030
〃	10	21,000	1,700	0.020	0.030	21,000	1,360	0.020	0.020	21,000	1,080	0.010	0.020
〃	16	16,000	1,100	0.020	0.030	16,000	880	0.010	0.020	16,000	700	0.010	0.010
R 2	4	40,000	2,100	0.030	0.040	40,000	1,680	0.030	0.030	40,000	1,340	0.020	0.030
〃	10	21,000	1,620	0.020	0.030	21,000	1,290	0.020	0.020	21,000	1,030	0.010	0.020
〃	16	16,000	1,060	0.010	0.020	21,000	840	0.010	0.020	16,000	670	0.010	0.010
R 3		16,000~ 50,000	960~ 8000	0.050	0.060	13,000~ 50,000	780~ 6,000	0.050	0.060	11,000~ 50,000	540~ 4,000	0.050	0.060
절입량 Depth of Cut													

파삭재 Material		고경도강 / 프리하트강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels				고경도강 Hardened Steels			
		NAK / SKD61				STAVX / SKD61				SKD11 / YXR7 / SKH51			
경도 Hardness		30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 68HRc			
외경 Outside Diameter	유효장 / 날장 Effective Length Length of cut	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
0.2mm	0.2	50,000	211	0.005	0.005	50,000	140	0.004	0.004	50,000	78	0.003	0.003
〃	0.5	50,000	200	0.004	0.004	50,000	130	0.003	0.003	50,000	71	0.002	0.003
0.3mm	0.3	50,000	520	0.006	0.010	50,000	290	0.004	0.005	50,000	260	0.003	0.005
〃	0.5	50,000	460	0.006	0.010	50,000	270	0.003	0.005	50,000	250	0.003	0.005
〃	1	50,000	422	0.006	0.010	50,000	260	0.003	0.005	50,000	220	0.003	0.004
0.4mm	0.3	50,000	840	0.010	0.010	50,000	490	0.005	0.006	50,000	430	0.005	0.005
〃	1	50,000	690	0.010	0.010	50,000	470	0.005	0.005	50,000	420	0.005	0.005
〃	2	50,000	370	0.005	0.005	50,000	240	0.003	0.003	50,000	209	0.002	0.003
0.5mm	0.4	50,000	940	0.010	0.020	50,000	810	0.050	0.010	50,000	732	0.005	0.010
〃	1	50,000	850	0.010	0.015	50,000	560	0.005	0.010	50,000	523	0.005	0.010
〃	3	50,000	560	0.010	0.015	50,000	530	0.005	0.010	50,000	504	0.005	0.010
0.8mm	0.6	50,000	1,530	0.020	0.020	50,000	1,254	0.015	0.015	50,000	1,083	0.010	0.010
〃	2	50,000	1,440	0.020	0.020	50,000	1,169	0.010	0.010	50,000	1,064	0.010	0.010
〃	4	40,000	860	0.015	0.020	40,000	703	0.010	0.010	40,000	620	0.010	0.010
〃	6	30,000	440	0.015	0.050	30,000	390	0.010	0.010	30,000	280	0.005	0.005
1mm	0.7	50,000	1,730	0.020	0.030	50,000	1,311	0.020	0.020	50,000	1,230	0.010	0.020
〃	2	40,000	1,390	0.015	0.200	40,000	960	0.015	0.015	40,000	870	0.010	0.010
〃	4	30,000	1,030	0.015	0.015	30,000	620	0.010	0.015	30,000	600	0.010	0.010
〃	8	24,000	650	0.010	0.010	24,000	440	0.005	0.010	24,000	340	0.005	0.005
1.5mm	0.8	40,000	1,700	0.030	0.040	40,000	1,090	0.020	0.030	40,000	1,130	0.020	0.020
〃	2	30,000	1,400	0.030	0.030	30,000	1,100	0.020	0.030	30,000	880	0.020	0.020
〃	4	30,000	1,130	0.030	0.030	30,000	900	0.015	0.020	30,000	770	0.010	0.015
〃	8	16,000	520	0.015	0.015	16,000	410	0.010	0.015	16,000	350	0.010	0.010
2mm	2	40,000	1,530	0.040	0.040	40,000	1,270	0.030	0.030	40,000	1,090	0.020	0.030
〃	4	30,000	1,330	0.030	0.030	30,000	1,060	0.025	0.025	30,000	910	0.020	0.020
〃	8	30,000	1,130	0.030	0.030	30,000	900	0.020	0.030	30,000	770	0.010	0.010
2.5mm	1.2	40,000	2,200	0.050	0.050	40,000	1,760	0.040	0.040	40,000	1,500	0.030	0.040
〃	4	40,000	1,540	0.030	0.040	40,000	1,240	0.030	0.030	40,000	1,150	0.020	0.030
〃	10	24,000	810	0.020	0.030	24,000	650	0.010	0.030	24,000	260	0.010	0.020
3mm	6	40,000	1,400	0.030	0.030	40,000	1,120	0.020	0.030	40,000	960	0.020	0.030
〃	10	21,000	1,130	0.020	0.030	21,000	900	0.020	0.020	21,000	770	0.010	0.020
〃	16	16,000	730	0.020	0.030	16,000	590	0.010	0.020	16,000	500	0.010	0.010
4mm	6	40,000	1,430	0.030	0.040	40,000	1,120	0.030	0.030	40,000	1,040	0.020	0.030
〃	10	21,000	1,080	0.020	0.030	21,000	850	0.020	0.020	21,000	740	0.010	0.020
〃	16	16,000	700	0.010	0.020	21,000	560	0.010	0.020	16,000	470	0.010	0.010
6mm		16,000~ 50,000	740~ 6000	0.050	0.060	13,000~ 50,000	590~ 4,000	0.050	0.060	11,000~ 50,000	390~ 3,000	0.050	0.060
절임량 Depth of Cut		Slotting • Ap : Axial Depth • D : Outside Diameter  Side Milling • Ap : Axial Depth • Ae : Radial Depth 											

2CCBN/2SCCBN/4SCCBN

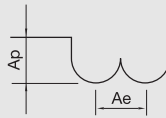
• RPM : rev./min • Feed : mm/min

파삭재 Material		고경도강/프리하든강 Prehardened Steels / Hardened Steels NAK / SKD61				고경도강 Hardened Steels STAVX / SKD61				고경도강 Hardened Steels SKD11 / YXR7 / SKH51			
경도 Hardness		30HRC ~ 45HRC				45HRC ~ 55HRC				55HRC ~ 68HRC			
외경 Outside Diameter	유효장/날장 Effective Length Length of cut	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
0.4mm	0.3	50,000	890	0.010	0.010	50,000	520	0.005	0.006	50,000	450	0.005	0.005
"	1	50,000	730	0.010	0.010	50,000	500	0.005	0.005	50,000	430	0.005	0.005
"	2	50,000	390	0.005	0.005	50,000	250	0.003	0.003	50,000	220	0.002	0.003
0.5mm	0.4	50,000	990	0.010	0.020	50,000	850	0.005	0.010	50,000	770	0.005	0.010
"	1	50,000	900	0.010	0.015	50,000	590	0.005	0.010	50,000	550	0.005	0.010
"	3	50,000	630	0.010	0.015	50,000	560	0.005	0.010	50,000	530	0.005	0.010
0.8mm	0.6	50,000	1,610	0.020	0.020	50,000	1,320	0.015	0.015	50,000	1,140	0.010	0.010
"	2	50,000	1,520	0.020	0.020	50,000	1,230	0.010	0.010	50,000	1,120	0.010	0.010
"	4	40,000	910	0.015	0.020	40,000	740	0.010	0.010	40,000	650	0.010	0.010
"	6	30,000	460	0.015	0.050	30,000	410	0.010	0.010	30,000	290	0.005	0.005
1mm	0.7	50,000	1,820	0.020	0.030	50,000	1,380	0.020	0.020	50,000	1,290	0.010	0.020
"	2	40,000	1,470	0.015	0.200	40,000	1,010	0.015	0.015	40,000	910	0.010	0.010
"	4	30,000	1,080	0.015	0.015	30,000	660	0.010	0.015	30,000	630	0.010	0.010
"	8	24,000	680	0.010	0.010	24,000	460	0.005	0.010	24,000	360	0.005	0.005
1.5mm	0.8	40,000	1,790	0.030	0.040	40,000	1,150	0.020	0.030	40,000	1,190	0.020	0.020
"	2	30,000	1,470	0.030	0.030	30,000	1,160	0.020	0.030	30,000	930	0.020	0.020
"	4	30,000	1,190	0.030	0.030	30,000	950	0.015	0.020	30,000	810	0.010	0.015
"	8	16,000	550	0.015	0.015	16,000	430	0.010	0.015	16,000	370	0.010	0.010
2mm	2	40,000	1,610	0.040	0.040	40,000	1,340	0.030	0.030	40,000	1,150	0.020	0.030
"	4	30,000	1,400	0.030	0.030	30,000	1,120	0.025	0.025	30,000	960	0.020	0.020
"	8	30,000	1,190	0.030	0.030	30,000	950	0.020	0.030	30,000	810	0.010	0.010
2.5mm	1.2	40,000	2,317	0.050	0.050	40,000	1,850	0.040	0.040	40,000	1,580	0.030	0.040
"	4	40,000	1,620	0.030	0.040	40,000	1,300	0.030	0.030	40,000	1,210	0.020	0.030
"	10	24,000	850	0.020	0.030	24,000	680	0.010	0.030	24,000	280	0.010	0.020
3mm	6	40,000	1,470	0.030	0.030	40,000	1,180	0.020	0.030	40,000	1,010	0.020	0.030
"	10	21,000	1,190	0.020	0.030	21,000	950	0.020	0.020	21,000	810	0.010	0.020
"	16	16,000	770	0.020	0.030	16,000	620	0.010	0.020	16,000	530	0.010	0.010
4mm	6	40,000	1,510	0.030	0.040	40,000	1,180	0.030	0.030	40,000	1,100	0.020	0.030
"	10	21,000	1,140	0.020	0.030	21,000	900	0.020	0.020	21,000	780	0.010	0.020
"	16	16,000	740	0.010	0.020	21,000	590	0.010	0.020	16,000	500	0.010	0.010
6mm		16,000~ 50,000	740~ 6000	0.050	0.060	13,000~ 50,000	590~ 4,000	0.050	0.060	11,000~ 50,000	390~ 3,000	0.050	0.060
절입량 Depth of Cut		• Ap : Axial Depth • Ae : Radial Depth 											

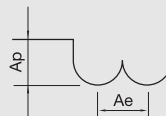
- 4날 사용시 Feed 20% 증가, 절입량 5% 감소 하세요.
- For 4Flute, increase 20% Feed rate & decrease 5% depth of cut.

파삭재 Material		동/탄소강 Copper / Carbon Steels			고경도강/프리하드강 Prehardened Steels / Hardened Steels			고경도강 Hardened Steels			고경도강 Hardened Steels		
		Cu / S45C / S50C			NAK / SKD			SKD / SKT			SKD / SKT		
경도 Hardness		30HRC~45HRC			30HRC~45HRC			45HRC~55HRC			55HRc ~ 68HRc		
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth
R0.1	1.5	42,000	630	0.007	28,350	431	0.005	27,300	326	0.005	27,300	252	0.004
"	2	32,550	368	0.005	22,575	252	0.004	21,000	200	0.003	21,000	179	0.003
R0.15	2	34,650	641	0.008	23,310	399	0.006	21,525	336	0.005	21,525	294	0.004
"	3	32,550	494	0.003	22,050	326	0.002	19,950	242	0.002	19,950	189	0.001
R0.2	3	42,000	1,155	0.016	28,350	788	0.013	26,250	672	0.011	26,250	473	0.008
"	6	25,200	525	0.004	17,850	326	0.003	16,800	294	0.003	16,800	252	0.002
R0.25	4	34,650	1,187	0.019	28,350	861	0.015	24,675	630	0.013	24,675	609	0.011
"	8	21,525	609	0.006	17,850	431	0.005	15,750	368	0.004	15,750	326	0.003
R0.3	4	43,050	2,142	0.032	31,500	1,418	0.022	23,625	788	0.021	23,625	704	0.016
"	8	26,775	998	0.016	22,050	735	0.013	16,800	515	0.011	16,800	410	0.008
"	12	2,625	893	0.008	22,575	714	0.006	14,700	399	0.005	13,650	336	0.004
R0.4	4	43,050	2,310	0.037	29,400	1,470	0.028	24,150	861	0.026	24,150	714	0.016
"	8	26,775	1,365	0.021	18,900	945	0.016	15,750	630	0.016	15,750	578	0.011
"	12	26,775	1,050	0.016	16,275	525	0.013	12,600	462	0.011	12,600	420	0.007
R0.5	8	26,250	2,100	0.047	17,850	1,365	0.037	17,850	1,050	0.032	16,800	861	0.026
"	15	17,850	1,103	0.023	12,600	767	0.019	11,550	683	0.017	11,550	525	0.013
"	25	15,750	945	0.014	10,500	683	0.011	9,450	567	0.008	9,450	462	0.008
"	35	9,450	609	0.008	6,300	399	0.006	6,300	378	0.005	6,300	273	0.004
R0.75	10	18,900	2,205	0.063	12,600	1,470	0.042	12,600	1,155	0.037	12,600	893	0.032
"	20	13,650	1,260	0.032	9,450	945	0.021	9,450	735	0.016	9,450	630	0.014
"	30	9,450	893	0.016	7,350	651	0.013	7,350	546	0.011	7,350	504	0.011
R1	12	15,750	2,468	0.084	11,550	1,785	0.068	11,025	1,428	0.059	11,025	1,124	0.048
"	20	10,500	1,470	0.063	8,400	1,050	0.053	9,450	1,050	0.047	9,450	924	0.037
"	30	9,450	1,260	0.047	7,350	840	0.037	7,350	819	0.032	7,350	672	0.026
"	40	9,450	1,260	0.037	7,035	819	0.032	6,300	735	0.026	6,300	609	0.021
R1.5	20	10,500	2,310	0.095	8,400	1,365	0.074	7,350	1,260	0.063	7,350	1,155	0.053
"	30	9,450	1,890	0.079	7,350	1,103	0.063	6,300	1,050	0.053	6,300	924	0.044
"	40	7,875	1,470	0.063	5,250	924	0.053	5,355	840	0.042	5,355	735	0.037
"	50	7,875	1,365	0.042	5,250	840	0.032	5,355	788	0.026	5,355	683	0.024
R2	40	6,300	1,260	0.085	3,675	630	0.068	3,360	557	0.053	3,360	525	0.045
"	60	4,200	767	0.063	3,150	473	0.047	2,940	420	0.042	2,940	368	0.033
R3	29	9,450	2,205	0.147	7,350	1,103	0.105	6,300	998	0.084	6,300	893	0.061
"	49	4,725	1,470	0.074	4,095	735	0.063	3,570	683	0.053	3,570	578	0.042
R4	33	9,345	2,310	0.189	7,350	1,155	0.147	6,300	1,050	0.105	6,300	840	0.086
"	52	4,515	1,365	0.095	3,360	683	0.084	3,045	578	0.068	3,045	473	0.042
R5	37	5,775	1,785	0.194	3,675	893	0.168	3,570	735	0.126	3,570	630	0.084
"	54	4,200	998	0.093	3,150	504	0.068	2,940	420	0.053	2,940	336	0.034
R6	63	3,990	735	0.126	2,940	368	0.086	2,625	326	0.063	2,625	231	0.047
"	85	2,940	336	0.063	1,995	168	0.032	1,575	158	0.016	1,575	105	0.011
Milling Amount	Roughing	Ae ≤ 0.1D			Ae ≤ 0.1D			Ae ≤ 0.08D			Ae ≤ 0.06D		
	Finishing	Ae = Vf/n											
절입량 Depth of Cut		• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter • n : Speed • Vf : Feed 											

- 에어브로 또는 쿨런트 미스트 사용을 추천합니다. 단, 동 가공에는 습식 쿨런트를 추천합니다.
- 스테인레스강, 초내열합금 가공에는 유성 절삭유가 최적입니다.
- 이 절삭 조건표는 절삭 조건의 참고 수치입니다. 실제 가공시에는 가공 형상, 가공 목적, 적용 기계 등에 따라 조건을 조정하십시오.
- 적용 기계의 회전속도가 부족한 경우에는 회전속도와 이송속도를 같은 비율로 줄여서 적용합니다.
- 이송속도 및 축방향의 절입깊이는 리브창과 테이퍼각에 따라 고려하시고, 절삭상황에 맞추어 조정하십시오.
- 칩을 잘 제거하고 가공시의 발열과 발화에 주의하십시오.
- Recommend air blow or oil mist. When milling copper water soluble or oil is recommended.
- These parameters are for reference only. In operation, we recommend fine adjustments to those parameters according to the milling shape, milling strategy and machine conditions.
- Where the parameters exceed the machine's maximum spindle speed, the RPM and feedrate should be reduced proportionally.
- The Neck length and Taper angle may also affect the parameters used, depending on the operating conditions.
- Remove chips to prevent heat generation and ignition.

파삭재 Material		고경도강/ 프리하트강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels				고경도강 Hardened Steels				고경도강 Hardened Steels			
		NAK / STAVAX				SKD11				HAP10				HAP72			
경도 Hardness		~ 55HRc				55HRc ~ 62HRc				62HRc ~ 66HRc				66HRc ~ 70HRc			
반경 Radius	유효장 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	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.1	0.5	60,000	200	0.003	0.005	60,000	200	0.002	0.003	60,000	130	0.002	0.003	45,000	65	0.002	0.003
"	1	60,000	200	0.003	0.005	60,000	200	0.002	0.003	60,000	130	0.002	0.003	45,000	65	0.002	0.003
"	1.5	60,000	130	0.002	0.003	48,000	80	0.001	0.002	48,000	65	0.001	0.002	36,000	30	0.001	0.002
"	2	60,000	90	0.001	0.002	48,000	50	0.001	0.001	48,000	40	0.001	0.001	36,000	20	0.001	0.001
R0.15	1	60,000	350	0.006	0.008	45,000	310	0.004	0.007	43,500	180	0.003	0.005	32,500	90	0.003	0.005
"	1.5	60,000	350	0.006	0.008	45,000	310	0.004	0.007	43,500	180	0.003	0.005	32,500	90	0.003	0.005
"	2	60,000	210	0.004	0.007	45,000	190	0.003	0.005	43,500	110	0.002	0.004	32,500	55	0.002	0.004
"	3	42,500	140	0.002	0.004	32,000	80	0.002	0.004	32,000	65	0.001	0.002	24,000	30	0.001	0.002
R0.2	1	50,000	500	0.010	0.020	37,500	420	0.007	0.012	35,000	240	0.005	0.008	26,250	120	0.005	0.008
"	2	50,000	500	0.010	0.020	37,500	420	0.007	0.012	35,000	240	0.005	0.008	26,250	120	0.005	0.008
"	3	40,000	250	0.005	0.008	31,900	210	0.004	0.008	30,500	160	0.003	0.005	22,800	80	0.002	0.005
"	4	32,000	180	0.003	0.005	25,500	150	0.002	0.004	24,300	120	0.002	0.004	18,200	60	0.002	0.004
R0.25	1	44,000	650	0.015	0.040	33,000	530	0.010	0.020	30,000	300	0.007	0.010	22,500	150	0.007	0.010
"	2	44,000	650	0.015	0.040	33,000	530	0.010	0.020	30,000	300	0.007	0.010	22,500	150	0.007	0.010
"	3	40,000	500	0.010	0.020	31,000	400	0.007	0.010	28,550	230	0.005	0.008	21,400	115	0.005	0.008
"	4	32,700	180	0.005	0.015	27,150	150	0.003	0.008	25,650	100	0.002	0.005	19,900	50	0.002	0.005
"	5	27,000	135	0.003	0.008	24,200	110	0.002	0.005	23,500	75	0.002	0.004	17,600	35	0.002	0.004
"	6	21,350	90	0.002	0.005	21,300	75	0.001	0.003	21,300	50	0.001	0.002	16,000	25	0.001	0.002
"	8	15,900	60	0.001	0.003	15,900	40	0.001	0.002	15,900	25	0.001	0.002	11,950	12	0.001	0.002
R0.3	1	40,000	1,400	0.045	0.150	30,000	1,500	0.030	0.130	26,500	1,000	0.015	0.090	20,000	500	0.015	0.090
"	2	40,000	1,100	0.030	0.130	30,000	1,200	0.020	0.100	26,500	800	0.010	0.075	20,000	400	0.010	0.075
"	3	40,000	800	0.020	0.100	30,000	800	0.015	0.090	26,500	520	0.008	0.065	20,000	260	0.008	0.065
"	4	40,000	500	0.015	0.090	30,000	500	0.010	0.075	26,500	340	0.006	0.050	20,000	170	0.006	0.050
"	5	32,000	400	0.010	0.075	25,000	390	0.007	0.050	23,000	260	0.005	0.040	18,000	130	0.005	0.040
"	6	24,000	300	0.007	0.060	21,000	320	0.005	0.040	19,500	210	0.004	0.030	15,000	105	0.004	0.030
"	8	16,000	200	0.005	0.050	16,000	240	0.003	0.020	16,000	160	0.003	0.020	12,000	80	0.003	0.020
"	10	14,900	175	0.003	0.020	14,900	175	0.002	0.015	14,900	115	0.002	0.015	11,100	55	0.002	0.015
"	12	13,800	150	0.002	0.015	13,800	110	0.001	0.010	13,800	70	0.001	0.010	10,350	35	0.001	0.010
R0.4	2	35,000	1,600	0.060	0.210	27,000	1,600	0.040	0.170	23,500	1,000	0.020	0.120	17,500	500	0.020	0.120
"	4	35,000	1,200	0.040	0.170	27,000	1,200	0.025	0.135	23,500	600	0.012	0.095	17,500	300	0.012	0.095
"	6	28,000	600	0.020	0.120	23,000	600	0.012	0.095	20,500	400	0.006	0.065	15,500	200	0.006	0.065
"	8	19,500	330	0.012	0.095	18,000	375	0.007	0.070	17,000	285	0.005	0.060	12,750	140	0.005	0.060
"	10	15,000	260	0.010	0.085	14,700	340	0.005	0.060	14,650	225	0.004	0.050	11,000	110	0.004	0.050
R0.5	2	30,000	1,750	0.200	0.400	24,000	2,000	0.100	0.300	21,000	1,750	0.050	0.200	16,000	875	0.050	0.200
"	3	30,000	1,750	0.100	0.300	24,000	2,000	0.050	0.200	21,000	1,750	0.030	0.170	16,000	875	0.030	0.170
"	4	30,000	1,750	0.100	0.300	24,000	2,000	0.050	0.200	21,000	1,750	0.030	0.170	16,000	875	0.030	0.170
"	5	30,000	1,750	0.100	0.300	24,000	2,000	0.050	0.200	21,000	1,750	0.030	0.170	16,000	875	0.030	0.170
"	6	30,000	1,150	0.060	0.230	21,500	1,250	0.030	0.170	19,700	1,050	0.025	0.150	14,500	525	0.025	0.150
"	8	18,500	480	0.025	0.150	18,500	580	0.015	0.120	18,400	480	0.015	0.120	13,800	240	0.015	0.120
"	10	14,800	360	0.018	0.130	14,800	430	0.010	0.090	14,700	360	0.010	0.090	11,100	180	0.010	0.090
"	12	14,150	320	0.015	0.120	13,400	380	0.008	0.080	13,300	290	0.008	0.080	9,950	140	0.008	0.080
"	14	13,500	280	0.012	0.100	12,000	350	0.007	0.080	12,000	220	0.007	0.080	9,000	110	0.007	0.080
"	16	12,750	240	0.008	0.080	10,500	250	0.005	0.045	10,500	160	0.005	0.045	7,850	80	0.005	0.045
"	18	12,350	220	0.006	0.065	9,750	200	0.004	0.035	9,750	130	0.004	0.035	7,300	85	0.004	0.035
"	20	12,000	200	0.005	0.030	9,000	150	0.003	0.020	9,000	100	0.003	0.020	6,750	50	0.003	0.020
"	22	12,000	150	0.003	0.020	9,000	110	0.002	0.012	9,000	75	0.002	0.012	6,750	35	0.002	0.012
R0.6	6	30,000	2,000	0.120	0.360	20,000	2,000	0.060	0.240	17,500	1,750	0.036	0.200	13,100	875	0.036	0.200
"	8	20,200	800	0.050	0.230	16,600	900	0.025	0.170	15,850	750	0.025	0.170	11,900	375	0.025	0.170
"	10	15,500	480	0.030	0.180	15,500	580	0.015	0.130	15,350	480	0.015	0.130	11,500	240	0.015	0.130
R0.7	8	25,200	1,300	0.080	0.320	15,350	1,250	0.040	0.230	14,050	1,050	0.030	0.200	10,550	525	0.030	0.200
R0.75	3	30,000	2,450	0.250	0.550	1,700	2,000	0.120	0.400	15,000	1,750	0.060	0.290	11,250	875	0.060	0.290
"	4	30,000	2,450	0.250	0.550	17,000	2,000	0.120	0.400	15,000	1,750	0.060	0.290	11,250	875	0.060	0.290
"	6	30,000	2,450	0.150	0.450	17,000	2,000	0.070	0.310	15,000	1,750	0.040	0.240	11,250	875	0.040	0.240
"	8	23,500	1,300	0.100	0.370	15,000	1,250	0.045	0.250	14,000	1,050	0.030	0.210	10,500	525	0.030	0.210
"	10	23,500	1,300	0.100	0.370	15,000	1,250	0.045	0.250	14,000	1,050	0.030	0.210	10,500	525	0.030	0.210
"	12	13,100	480	0.030	0.210	13,000	580	0.020	0.170	13,000	480	0.020	0.170	9,750	240	0.020	0.170
"	14	11,200	400	0.025	0.190	10,900	485	0.015	0.145	10,900	385	0.015	0.145	8,200	190	0.015	0.145
"	16	9,350	320	0.020	0.170	8,850	390	0.012	0.130	8,800	290	0.012	0.130	6,600	145	0.012	0.130
"	20	9,000	280	0.018	0.160	8,000	350	0.010	0.120	8,000	220	0.010	0.120	6,000	110	0.010	0.120
절입량 Depth of Cut		• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter • n : Speed • Vf : Feed 															

파삭재 Material		고경도강/ 프리하든강 Prehardened Steels / Hardened Steels NAK / STAVAX				고경도강 Hardened Steels SKD11				고경도강 Hardened Steels HAP10				고경도강 Hardened Steels HAP72			
경도 Hardness		~ 55HRc				55HRc ~ 62HRc				62HRc ~ 66HRc				66HRc ~ 70HRc			
반경 Radius	유효장 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	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.8	8	30,000	2,500	0.160	0.480	17,500	2,100	0.080	0.320	15,300	1,800	0.050	0.275	11,500	900	0.050	0.275
"	12	13,500	500	0.040	0.245	13,500	600	0.024	0.190	13,400	490	0.024	0.190	10,050	245	0.025	0.190
"	16	10,800	375	0.030	0.210	10,800	450	0.016	0.150	10,700	370	0.016	0.150	8,000	185	0.016	0.150
R1	4	28,000	2,900	0.300	0.700	14,000	2,100	0.150	0.500	12,250	1,800	0.080	0.350	9,200	900	0.080	0.350
"	6	28,000	2,900	0.200	0.600	14,000	2,100	0.100	0.400	12,250	1,800	0.060	0.300	9,200	900	0.060	0.300
"	8	28,000	2,900	0.200	0.600	14,000	2,100	0.100	0.400	12,250	1,800	0.060	0.300	9,200	900	0.060	0.300
"	10	28,000	2,900	0.200	0.600	14,000	2,100	0.100	0.400	12,250	1,800	0.060	0.300	9,200	900	0.060	0.300
"	12	19,500	1,350	0.120	0.450	12,400	1,350	0.060	0.340	11,500	1,100	0.045	0.270	8,650	550	0.045	0.270
"	14	19,500	1,350	0.120	0.450	12,400	1,350	0.060	0.340	11,500	1,100	0.045	0.270	8,650	550	0.045	0.270
"	16	10,800	500	0.050	0.300	10,800	600	0.030	0.240	10,700	490	0.030	0.240	8,000	245	0.030	0.240
"	18	9,700	435	0.040	0.280	9,700	520	0.025	0.220	9,650	430	0.025	0.220	7,250	215	0.025	0.220
"	20	8,650	375	0.035	0.250	8,650	450	0.020	0.190	8,560	370	0.020	0.190	6,400	185	0.020	0.190
"	22	8,450	350	0.032	0.245	8,200	440	0.018	0.180	8,200	330	0.018	0.180	6,150	165	0.018	0.180
"	25	8,250	320	0.030	0.240	7,800	440	0.016	0.160	7,800	290	0.016	0.160	5,850	145	0.016	0.160
"	30	7,850	280	0.024	0.200	7,000	350	0.014	0.160	7,000	220	0.014	0.160	5,250	110	0.014	0.160
R1.25	20	9,600	520	0.060	0.380	9,600	630	0.040	0.310	9,600	510	0.040	0.310	7,200	255	0.040	0.310
R1.5	6	21,000	3,000	0.400	1.000	10,500	2,200	0.200	0.700	9,200	1,900	0.120	0.550	6,900	950	0.120	0.550
"	8	21,000	3,000	0.400	1.000	10,500	2,200	0.200	0.700	9,200	1,900	0.120	0.550	6,900	950	0.120	0.550
"	10	21,000	3,000	0.300	0.900	10,500	2,200	0.150	0.650	9,200	1,900	0.100	0.500	6,900	950	0.100	0.500
"	12	21,000	3,000	0.300	0.900	10,500	2,200	0.150	0.650	9,200	1,900	0.100	0.500	6,900	950	0.100	0.500
"	16	21,000	3,000	0.300	0.900	10,500	2,200	0.150	0.650	9,200	1,900	0.100	0.500	6,900	950	0.100	0.500
"	20	14,500	1,360	0.180	0.700	9,250	1,400	0.100	0.500	8,600	1,150	0.075	0.450	6,450	575	0.075	0.450
"	25	8,000	520	0.007	0.450	8,000	630	0.050	0.380	8,000	510	0.050	0.380	6,000	255	0.050	0.380
"	30	5,750	375	0.050	0.380	5,750	450	0.030	0.290	5,700	370	0.030	0.290	4,275	185	0.030	0.290
"	35	5,550	335	0.045	0.360	5,350	440	0.025	0.270	5,350	310	0.025	0.270	4,000	155	0.025	0.270
"	40	5,350	300	0.040	0.340	4,900	390	0.200	0.240	4,950	250	0.020	0.240	3,700	125	0.020	0.240
R2	8	18,000	3,200	0.500	1.300	9,000	2,300	0.250	0.950	7,900	2,000	0.150	0.750	5,900	1,000	0.150	0.750
"	10	18,000	3,200	0.500	1.300	9,000	2,300	0.250	0.950	7,900	2,000	0.150	0.750	5,900	1,000	0.150	0.750
"	12	18,000	3,200	0.400	1.200	9,000	2,300	0.200	0.850	7,900	2,000	0.130	0.700	5,900	1,000	0.130	0.700
"	16	18,000	3,200	0.400	1.200	9,000	2,300	0.200	0.850	7,900	2,000	0.130	0.700	5,900	1,000	0.130	0.700
"	20	18,000	3,200	0.400	1.200	9,000	2,300	0.200	0.850	7,900	2,000	0.130	0.700	5,900	1,000	0.130	0.700
"	25	12,500	1,500	0.250	0.950	8,000	1,450	0.130	0.700	7,450	1,250	0.090	0.550	5,600	625	0.090	0.550
"	30	7,000	550	0.100	0.600	7,000	660	0.060	0.450	7,000	540	0.060	0.450	5,250	270	0.060	0.450
"	35	6,000	520	0.090	0.590	6,000	630	0.055	0.430	6,000	510	0.055	0.430	4,500	255	0.055	0.430
"	40	4,300	375	0.065	0.500	4,300	450	0.040	0.390	4,300	370	0.040	0.390	3,200	185	0.040	0.390
R2.5	20	14,400	3,200	0.500	1.500	7,200	2,300	0.250	1.050	6,350	2,000	0.160	0.880	4,750	1,000	0.160	0.880
"	30	10,000	1,500	0.310	1.200	6,400	1,450	0.160	0.880	6,200	1,250	0.110	0.730	4,650	625	0.110	0.730
"	40	6,000	570	0.125	0.780	6,000	690	0.080	0.625	6,000	570	0.080	0.625	4,500	285	0.080	0.625
"	15	13,000	3,500	0.600	1.800	6,500	2,500	0.300	1.300	5,700	2,200	0.200	1.000	4,300	1,100	0.200	1.000
"	25	9,500	3,000	0.700	2.100	5,200	2,200	0.400	1.700	4,500	1,900	0.250	1.350	3,400	950	0.250	1.350
"	30	7,500	2,500	0.800	2.500	4,300	2,000	0.500	2.100	3,750	1,750	0.300	1.700	2,800	875	0.300	1.700
"	30	6,200	2,000	0.900	3.000	3,600	1,750	0.600	2.600	3,150	1,500	0.350	2.000	2,350	750	0.350	2.000
절임량 Depth of Cut		• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter • n : Speed • Vf : Feed															



- 상기 절삭조건외의 참고는 수치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 쿨런트 사용을 추천, 동가공시 습식 쿨런트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm 이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의

- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet coolant for copper
- The tolerance of below Ø1 is below 5µm.

2JJSP/4JJSP/4JJSPM

4JJSP/4JJSPM은 아래 수치의 20% Up 적용
Apply 20% up values of below condition for 4JJSP/4JJSPM • RPM : rev./min • Feed : mm/min

파삭재 Material	합금강/ 공구강 Alloy Steels / Tool Steels SCM / SKT / SKS / SKD		고경도강/프리하든강 Hardened Steels/ Prehardened Steels SKT / SKD / NAK55 / HPM11		스테인레스강 / 고경도강 Stainless Steels / Hardened Steels SUS304 / SKD		고경도강 Hardened Steels		고경도강 Hardened Steels	
경도 Hardness	~ 30HRC		30 ~ 38HRC		38 ~ 45HRC		45 ~ 55HRC		55 ~ 60HRC	
반경 Radius	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.5	25,600	680	25,600	680	25,600	680	25,600	680	25,600	610
R0.75	22,000	850	22,000	850	22,000	850	22,000	850	22,000	750
R1	19,200	1,080	19,200	1,080	19,200	1,080	19,200	1,080	17,600	960
R2	12,400	1,440	11,200	1,240	10,800	1,160	10,000	1,080	8,800	920
R3	8,400	1,480	7,600	1,360	7,200	1,280	6,800	1,200	5,900	1,040
R4	6,400	1,120	5,700	1,000	5,500	960	5,100	880	4,400	790
R5	5,100	880	4,600	800	4,400	784	4,000	720	3,600	640
R6	4,800	840	3,800	670	3,640	640	3,400	600	3,000	540
절입량 Depth of Cut	Pf Ap					Ap Pf 0.02D 0.1D				

2JJSB/2JJB

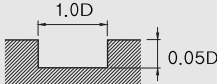
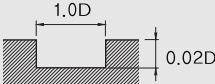
• RPM : rev./min • Feed : mm/min

파삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels NAK / STAVAX				고경도강 Hardened Steels SKD11				고경도강 Hardened Steels HAP10				고경도강 Hardened Steels HAP72			
경도 Hardness	~ 55HRC				55HRC ~ 62HRC				62HRC ~ 65HRC				65HRC ~ 68HRC			
반경 Radius	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
R0.05	60,000	150	0.002	0.004	60,000	150	0.002	0.003	60,000	100	0.001	0.0012	52,500	30	0.001	0.002
R0.1	60,000	180	0.003	0.005	60,000	180	0.002	0.003	60,000	120	0.002	0.003	45,000	60	0.002	0.003
R0.15	60,000	350	0.006	0.008	45,000	310	0.004	0.007	43,500	180	0.003	0.005	32,500	90	0.003	0.005
R0.2	50,000	500	0.01	0.02	37,500	420	0.007	0.012	35,000	240	0.005	0.008	26,250	120	0.005	0.008
R0.25	44,000	650	0.015	0.04	33,000	530	0.010	0.02	30,000	300	0.007	0.01	22,500	150	0.007	0.01
R0.3	40,000	1,100	0.03	0.13	30,000	1,200	0.02	0.1	26,500	800	0.01	0.075	20,000	400	0.01	0.075
R0.4	35,000	1,600	0.06	0.21	27,000	1,600	0.04	0.17	23,500	1,000	0.02	0.12	17,500	500	0.02	0.12
R0.5	30,000	1,750	0.2	0.4	24,000	2,000	0.1	0.3	21,000	1,750	0.05	0.2	16,000	875	0.05	0.2
R0.6	30,000	2,000	0.23	0.45	21,000	2,000	0.1	0.3	18,000	1,750	0.05	0.2	14,500	875	0.05	0.2
R0.75	30,000	2,450	0.25	0.55	17,000	2,000	0.12	0.4	15,000	1,750	0.06	0.29	11,250	875	0.06	0.29
R1	28,000	2,900	0.3	0.7	14,000	2,100	0.15	0.5	12,250	1,800	0.08	0.35	9,200	900	0.08	0.35
R1.25	24,500	2,950	0.35	0.85	12,250	2,150	0.17	0.6	10,700	1,850	0.1	0.45	8,050	925	0.1	0.45
R1.5	21,000	3,000	0.4	1	10,500	2,200	0.2	0.7	9,200	1,900	0.12	0.55	6,900	950	0.12	0.55
R2	18,000	3,200	0.5	1.3	9,000	2,300	0.25	0.95	7,900	2,000	0.15	0.75	5,900	1,000	0.15	0.75
R2.5	15,600	3,500	0.5	1.5	7,800	2,500	0.25	1.05	6,800	2,100	0.15	0.85	5,100	1,050	0.15	0.85
R3	13,000	3,500	0.6	1.8	6,500	2,500	0.3	1.3	5,700	2,200	0.2	1	4,300	1,100	0.2	1
R4	9,500	3,000	0.7	2.1	5,200	2,200	0.4	1.7	4,500	1,900	0.25	1.35	3,400	950	0.25	1.35
R5	7,500	2,500	0.8	2.5	4,300	2,000	0.5	2.1	3,750	1,750	0.3	1.7	2,800	875	0.3	1.7
R6	6,200	2,000	0.9	3	3,600	1,750	0.6	2.6	3,150	1,500	0.35	2	2,350	750	0.35	2
절입량 Depth of Cut	• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter • n : Speed • Vf : Feed															

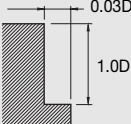
- 상기 절삭조건에 참고는 수치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 쿨런트 사용을 추천, 동가공시 습식 쿨런트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm 이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의

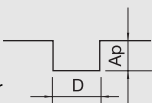
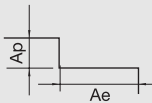
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet coolant for copper
- The tolerance of below Ø1 is below 5µm.

홈절삭 Slotting

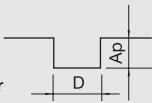
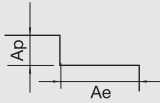
파삭재 Material	고경도강/프리아트강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.1mm	45,000	100	40,000	90	33,000	50	33,000	40	26,400	30
0.2mm	45,000	115	40,000	95	33,000	60	33,000	45	20,000	35
0.3mm	45,000	140	40,000	115	33,000	70	25,000	50	20,000	40
0.4mm	45,000	180	40,000	140	33,000	90	25,000	55	20,000	60
0.5mm	45,000	280	40,000	220	33,000	140	25,000	85	20,000	75
0.6mm	45,000	360	40,000	285	30,000	160	25,000	105	15,200	80
0.8mm	40,000	440	30,000	295	25,000	185	19,000	110	14,000	90
0.9mm	39,000	520	27,800	330	22,700	205	17,500	125	12,500	85
1mm	38,000	570	25,500	360	20,500	215	16,000	135	12,500	85
2mm	26,000	680	17,500	420	14,500	260	11,000	160	9,500	115
3mm	17,300	680	11,500	420	9,500	260	7,500	160	6,400	115
4mm	13,200	700	8,800	440	7,200	270	5,600	170	4,750	118
5mm	12,500	805	8,300	500	6,400	285	5,100	180	4,450	132
6mm	10,350	770	6,900	480	5,300	280	4,200	180	3,700	130
8mm	7,800	720	5,200	445	4,000	255	3,200	165	2,800	120
10mm	6,150	680	4,100	415	3,200	240	2,550	155	2,200	112
12mm	5,250	680	3,500	415	2,650	240	2,100	155	1,860	112
16mm	4,340	610	2,600	360	1,840	180	1,800	100	1,460	100
18mm	4,340	610	2,600	360	1,840	180	1,800	100	1,460	100
20mm	3,650	570	2,100	300	1,460	180	1,400	100	1,100	100
절입량 Depth of Cut										

측면절삭 Side Cutting

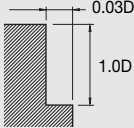
파삭재 Material	고경도강/프리아하강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	38,000	820	25,500	510	20,500	310	16,000	190	12,500	125
2mm	26,000	970	17,500	600	14,500	370	11,000	230	9,500	165
3mm	17,300	970	11,500	600	9,500	370	7,500	230	6,400	165
4mm	13,200	1,000	8,800	625	7,200	385	5,600	240	4,750	170
5mm	12,500	1,150	8,300	710	6,400	410	5,100	260	4,450	190
6mm	10,350	1,100	6,900	690	5,300	400	4,200	255	3,700	185
8mm	7,800	1,030	5,200	635	4,000	365	3,200	235	2,800	170
10mm	6,150	970	4,100	590	3,200	340	2,550	220	2,200	160
12mm	5,250	970	3,500	590	2,650	340	2,100	220	1,860	160
16mm	4,340	880	2,600	530	1,840	300	1,800	190	1,800	190
18mm	4,340	880	2,600	530	1,840	300	1,800	190	1,800	190
20mm	3,650	800	2,100	500	1,460	295	1,400	180	1,400	180
절입량 Depth of Cut										

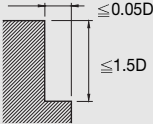
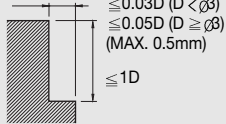
파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels			고경도강 / 프리하든강 Prehardened Steels / Hardened Steels		
					SK / SCM/ SUS			NAK / SKD		
경도 Hardness		35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 65HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap
0.1mm	0.3	48,600	345	0.006	42,750	255	0.006	40,050	206	0.006
"	0.5	48,600	346	0.004	42,750	255	0.004	40,050	206	0.004
0.2mm	0.5	38,250	403	0.020	33,750	301	0.020	31,500	242	0.020
"	1	38,250	403	0.014	33,750	301	0.014	31,500	242	0.014
"	1.5	34,425	362	0.008	30,375	271	0.008	28,350	218	0.008
0.3mm	1	34,000	358	0.021	30,000	267	0.021	28,000	215	0.021
"	1.5	34,000	358	0.021	30,000	267	0.021	28,000	215	0.021
"	2	30,600	322	0.012	27,000	241	0.012	25,200	194	0.012
"	3	30,600	322	0.008	27,000	241	0.008	25,200	194	0.008
0.4mm	1	27,200	446	0.040	24,000	333	0.040	22,400	268	0.040
"	2	27,200	446	0.028	24,000	333	0.028	22,400	268	0.028
"	3	24,480	401	0.016	21,600	299	0.016	20,160	241	0.016
"	4	24,480	401	0.010	21,600	299	0.010	20,160	241	0.010
"	5	21,760	260	0.010	19,200	230	0.010	17,920	181	0.010
"	6	21,760	260	0.006	19,200	230	0.006	17,920	181	0.006
0.5mm	1	27,200	446	0.050	24,000	333	0.050	22,400	268	0.050
"	2	27,200	446	0.035	24,000	333	0.035	22,400	268	0.035
"	3	24,480	401	0.020	21,600	299	0.020	20,160	241	0.020
"	4	24,480	401	0.020	21,600	299	0.020	20,160	241	0.020
"	5	24,480	401	0.013	21,600	299	0.013	20,160	241	0.013
"	6	21,760	260	0.013	19,200	230	0.013	17,920	181	0.013
"	8	21,760	247	0.008	19,200	194	0.008	17,920	147	0.008
0.6mm	2	27,200	636	0.042	24,000	475	0.042	22,400	383	0.042
"	4	24,480	573	0.024	21,600	428	0.024	20,160	345	0.024
"	6	24,480	573	0.015	21,600	428	0.015	20,160	345	0.015
"	8	21,760	372	0.015	19,200	328	0.015	17,920	258	0.015
"	10	21,760	372	0.009	19,200	328	0.009	17,920	258	0.009
0.7mm	2	27,200	636	0.070	24,000	475	0.070	22,400	383	0.070
"	4	24,480	573	0.049	21,600	428	0.049	20,160	345	0.049
"	6	24,480	573	0.018	21,600	428	0.018	20,160	345	0.018
"	8	21,760	372	0.018	19,200	328	0.018	17,920	258	0.018
"	10	21,760	372	0.018	19,200	328	0.018	17,920	258	0.018
0.8mm	4	27,200	636	0.056	24,000	475	0.056	22,400	383	0.056
"	6	24,480	573	0.032	21,600	428	0.032	20,160	345	0.032
"	8	24,480	573	0.020	21,600	428	0.020	20,160	345	0.020
"	10	21,760	372	0.020	19,200	328	0.020	17,920	258	0.020
"	12	21,760	372	0.012	19,200	328	0.012	17,920	258	0.012
0.9mm	6	24,480	573	0.036	21,600	428	0.036	20,160	345	0.036
"	8	24,480	573	0.023	21,600	428	0.023	20,160	345	0.023
"	10	21,760	372	0.023	19,200	328	0.023	17,920	258	0.023
1mm	4	24,480	936	0.100	21,600	699	0.100	20,160	563	0.100
"	6	22,032	773	0.040	19,440	577	0.040	18,144	465	0.040
"	8	22,032	773	0.040	19,440	577	0.040	18,144	465	0.040
"	10	22,032	773	0.025	19,440	577	0.025	18,144	465	0.025
"	12	19,584	502	0.025	17,280	443	0.025	16,128	348	0.025
"	14	19,584	502	0.025	17,280	443	0.025	16,128	348	0.025
"	16	19,584	476	0.015	17,280	373	0.015	16,128	283	0.015
1.2mm	6	21,760	764	0.084	19,200	570	0.084	17,920	460	0.084
"	8	19,584	687	0.048	17,280	513	0.048	16,128	414	0.048
"	10	19,584	687	0.030	17,280	513	0.030	16,128	414	0.030
"	12	19,584	687	0.030	17,280	513	0.030	16,128	414	0.030
"	16	17,408	611	0.020	15,360	456	0.020	14,336	368	0.020
1.4mm	8	19,040	668	0.100	16,800	499	0.100	15,680	402	0.100
"	10	17,136	601	0.056	15,120	449	0.056	14,112	362	0.056
"	14	17,136	601	0.035	15,120	449	0.035	14,112	362	0.035
"	16	15,232	391	0.035	13,440	345	0.035	12,544	271	0.035
절입량 Depth of Cut		Slotting • Ap : Axial Depth • D : Outside Diameter  Side Milling • Ap : Axial Depth • Ae : Radial Depth 								

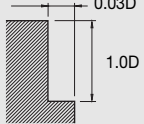
- Recommend airflow or oil mist cutting fluids.
- Remove chips to prevent heat generation and ignition.
- When the parameters exceed the machine's maximum spindle speed, decrease both spindle speed and feed rate by the same proportion.
- To avoid damaging the precision tip point non-contact measuring should be used.

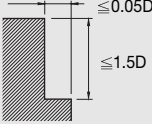
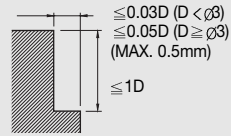
파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels SK / SCM/ SUS			고경도강/프라이든강 Prehardened Steels / Hardened Steels NAK / SKD		
경도 Hardness		35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 65HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap
1.5mm	6	19,040	668	0.110	16,800	499	0.110	15,680	402	0.110
"	8	19,040	668	0.110	16,800	499	0.110	15,680	402	0.110
"	10	17,136	601	0.060	15,120	449	0.060	14,112	362	0.060
"	12	17,136	601	0.060	15,120	449	0.060	14,112	362	0.060
"	14	17,136	601	0.060	15,120	449	0.060	14,112	362	0.060
"	16	15,232	391	0.038	13,440	345	0.038	12,544	271	0.038
"	18	15,232	391	0.038	13,440	345	0.038	12,544	271	0.038
"	20	15,232	391	0.038	13,440	345	0.038	12,544	271	0.038
"	25	11,424	278	0.023	10,080	218	0.023	9,408	165	0.023
1.6mm	10	15,912	621	0.040	14,040	463	0.040	13,104	373	0.040
"	14	15,912	621	0.040	14,040	463	0.040	13,104	373	0.040
"	18	15,912	621	0.040	14,040	463	0.040	13,104	373	0.040
1.8mm	10	15,912	621	0.072	14,040	463	0.072	13,104	373	0.072
"	14	15,912	621	0.072	14,040	463	0.072	13,104	373	0.072
"	18	15,912	621	0.072	14,040	463	0.072	13,104	373	0.072
2mm	6	14,280	668	0.200	12,600	499	0.200	11,760	402	0.200
"	8	14,280	668	0.140	12,600	499	0.140	11,760	402	0.140
"	10	14,280	668	0.140	12,600	499	0.140	11,760	402	0.140
"	12	12,852	601	0.080	11,340	449	0.080	10,584	362	0.080
"	14	12,852	601	0.080	11,340	449	0.080	10,584	362	0.080
"	16	12,852	601	0.080	11,340	449	0.080	10,584	362	0.080
"	18	12,852	601	0.050	11,340	449	0.050	10,584	362	0.050
"	20	12,852	601	0.050	11,340	449	0.050	10,584	362	0.050
"	25	11,424	391	0.050	10,080	345	0.050	9,408	271	0.050
"	30	11,424	391	0.030	10,080	345	0.030	9,408	271	0.030
2.5mm	12	12,240	716	0.180	10,800	535	0.180	10,080	431	0.180
"	16	11,116	644	0.100	9,720	388	0.100	9,072	388	0.100
"	20	11,116	644	0.100	9,720	481	0.100	9,072	388	0.100
3mm	12	10,880	636	0.210	9,600	475	0.210	8,960	383	0.210
"	16	9,792	573	0.120	8,640	428	0.120	8,064	345	0.120
"	20	9792	573	0.12	8640	428	0.12	8064	345	0.12
"	25	9792	573	0.08	8640	428	0.08	8064	345	0.08
"	30	9792	573	0.08	8640	428	0.08	8064	345	0.08
"	40	8704	509	0.05	7680	380	0.05	7168	307	0.05
4mm	12	8000	1358	0.4	7050	902	0.4	6580	727	0.4
"	16	8000	1358	0.4	7050	902	0.4	6580	727	0.4
"	20	7800	1200	0.3	6800	800	0.3	6200	720	0.3
"	25	7800	1200	0.3	6800	800	0.3	6200	720	0.3
"	30	7800	1200	0.3	6800	800	0.3	6200	720	0.3
"	35	7600	1150	0.2	6700	780	0.2	6000	700	0.2
"	40	7600	1150	0.2	6700	780	0.2	6000	700	0.2
"	45	7600	1150	0.2	6700	780	0.2	6000	700	0.2
"	50	7600	1150	0.2	6700	780	0.2	6000	700	0.2
5mm	16	7400	1060	0.1	6600	760	0.4	5900	680	0.4
"	20	7400	1060	0.1	6600	760	0.4	5900	680	0.4
"	25	7400	1060	0.1	6600	760	0.3	5900	680	0.3
"	30	7200	1000	0.09	6200	740	0.2	5800	650	0.2
"	35	7200	1000	0.09	6200	740	0.2	5800	650	0.2
"	40	7000	980	0.09	6000	700	0.2	5600	620	0.2
"	50	7000	980	0.09	6000	700	0.2	5600	620	0.2
6mm	20	6800	950	0.08	5800	680	0.1	5400	600	0.1
"	30	6800	950	0.08	5800	680	0.1	5400	600	0.1
"	40	6800	950	0.08	5800	680	0.1	5400	600	0.1
"	50	6500	900	0.05	5600	650	0.09	5000	560	0.09
"	60	6500	900	0.05	5600	650	0.09	5000	560	0.09
절입량 Depth of Cut		Slotting • Ap : Axial Depth • D : Outside Diameter  Side Milling • Ap : Axial Depth • Ae : Radial Depth 								

- 에어브로, 절삭유, 오일 미스트 등의 쿨란트를 사용하십시오. 단, 동 가공에는 수용성, 또는 유성 절삭유를 추천합니다.
- 칩을 잘 제거하고 가공시의 발열과 발화에 주의하십시오.
- 이 절삭 조건표는 절삭 조건의 참고 수치입니다. 실제 가공 시에는 가공 형상, 가공 목적, 적용 기계 등에 따라 조건을 조정하십시오.
- 기계의 회전수가 부족할 때는 속도와 이송 속도를 같은 비율로 조절하십시오.
- 날 끝이 정밀하게 연삭되어 있습니다. 파손을 피하기 위해 선단 검출은 신중하게 하고, 가능하면 비접촉 방식으로 측정하십시오.

파삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 70HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	38,000	1,050	25,500	710	20,500	430	16,000	270	12,500	175
2mm	26,000	1,250	17,500	840	14,500	520	11,000	320	9,500	230
3mm	17,300	1,250	11,500	840	9,500	520	7,500	320	6,400	230
4mm	13,200	1,300	8,800	880	7,200	540	335	4,750	4,750	240
5mm	12,500	1,500	8,300	1,000	6,400	580	5,100	370	4,450	270
6mm	10,350	1,400	6,900	950	5,300	560	4,200	350	3,700	260
8mm	7,800	1,350	5,200	900	4,000	520	3,200	330	2,800	240
10mm	6,150	1,260	4,100	840	3,200	480	2,550	310	2,200	220
12mm	5,250	1,260	3,500	840	2,650	480	2,100	300	1,860	220
절입량 Depth of Cut										

파삭재 Material	고경도강 Hardened Steels			고경도강 Hardened Steels		
	SKD11			SKS / SKH		
경도 Hardness	55HRc ~ 62HRc			62HRc ~ 68HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
3mm	16,000	1,900	0.1	11,000	1,200	0.05
4mm	12,000	2,200	0.1	8,000	1,300	0.05
5mm	10,000	2,500	0.1	6,000	1,500	0.05
6mm	8,000	2,900	0.2	5,300	1,800	0.1
8mm	6,000	2,900	0.2	4,000	1,800	0.1
10mm	4,800	2,900	0.3	3,200	1,800	0.2
12mm	4,000	2,400	0.3	2,700	1,500	0.2
16mm	3,000	1,800	0.5	2,000	1,100	0.3
20mm	2,400	1,400	0.5	1,600	880	0.3
25mm	2,000	1,000	0.5	1,000	700	0.4
절입량 Depth of Cut						

파삭재 Material	고경도강 Hardened Steels			
경도 Hardness	45HRc ~ 50HRc		50HRc ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED
1mm	38,000	1,050	25,500	710
2mm	26,000	1,250	17,500	840
3mm	17,300	1,250	11,500	840
4mm	13,200	1,300	8,800	880
5mm	12,500	1,500	8,300	1,000
6mm	10,350	1,400	6,900	950
7mm	9,000	1,380	5,200	900
8mm	7,800	1,350	4,100	840
9mm	6,150	1,260	3,500	840
10mm	5,250	1,260	2,800	800
11mm	4,300	1,150	2,500	800
12mm	4,300	1,150	2,300	760
14mm	3,500	1,050	2,100	760
16mm	3,500	1,050	2,000	700
18mm	2,800	1,000	2,000	700
20mm	2,600	980	1,800	650
절입량 Depth of Cut				

파삭재 Material	고경도강 Hardened Steels SKD11			고경도강 Hardened Steels SKS / SKH		
경도 Hardness	55HRc ~ 62HRc			62HRc ~ 68HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
1mm	40,000	800	0.03	32,000	500	0.02
1.5mm	40,000	900	0.04	32,000	550	0.02
2mm	24,000	1,000	0.05	16,000	600	0.05
3mm	38,400	4,560	0.1	19,200	2,280	0.05
4mm	28,800	5,280	0.1	14,400	2,640	0.05
5mm	24,000	6,000	0.1	12,000	3,000	0.05
6mm	19,200	6,960	0.2	9,600	3,480	0.1
8mm	14,400	6,960	0.2	7,200	3,480	0.1
10mm	11,520	6,960	0.3	5,760	3,480	0.2
12mm	9,600	5,760	0.3	4,800	2,880	0.2
16mm	7,200	4,320	0.5	3,600	2,160	0.3
20mm	5,760	3,480	0.5	2,880	1,680	0.3
절입량 Depth of Cut						

홀절삭 Slotting							
피삭재 Material	고경도강 / 프리하드강 Prehardened Steels / Hardened Steels		고경도강 Hardened Steels				
	STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51
경도 Hardness	50HRC ~ 55HRC		55HRC ~ 60HRC		60HRC ~ 65HRC		65HRC ~ 68HRC
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM FEED
0.4mm	40,000	155	33,000	105	25,000	60	25,000 60
0.5mm	40,000	175	33,000	110	25,000	65	20,000 40
0.6mm	40,000	225	30,000	125	25,000	85	20,000 50
0.8mm	30,000	235	25,000	145	19,000	90	16,000 55
1mm	25,500	288	20,500	172	16,000	108	12,500 70
2mm	17,500	336	14,500	208	11,000	128	9,500 92
3mm	11,500	336	9,500	208	7,500	128	6,400 92
4mm	8,800	352	7,200	216	5,600	136	4,750 94
5mm	8,300	400	6,400	228	5,100	144	4,450 105
6mm	6,900	384	5,300	224	4,200	144	3,700 104
8mm	5,200	356	4,000	204	3,200	132	2,800 96
10mm	4,100	332	3,200	192	2,550	124	2,200 90
12mm	3,500	332	2,650	192	2,100	124	1,860 90

절입량

Depth of Cut

측면 절삭 Side Cutting							
파삭재 Material	고경도강 / 프리하드강 Prehardened Steels / Hardened Steels		고경도강 Hardened Steels				
	STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51
경도 Hardness	50HRC ~ 55HRC		55HRC ~ 60HRC		60HRC ~ 65HRC		65HRC ~ 68HRC
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM FEED
0.4mm	40,000	110	33,000	70	25,000	40	25,000 40
0.5mm	40,000	125	33,000	80	25,000	45	20,000 30
0.6mm	40,000	160	30,000	90	25,000	60	20,000 35
0.8mm	30,000	165	25,000	100	19,000	65	16,000 40
1mm	25,500	408	20,500	248	16,000	152	12,500 100
2mm	17,500	480	14,500	296	11,000	184	9,500 132
3mm	11,500	480	9,500	296	7,500	184	6,400 132
4mm	8,800	500	7,200	308	5,600	192	4,750 136
5mm	8,300	568	6,400	328	5,100	208	4,450 152
6mm	6,900	552	5,300	320	4,200	204	3,700 148
8mm	5,200	508	4,000	292	3,200	188	2,800 136
10mm	4,100	472	3,200	272	2,550	176	2,200 128
12mm	3,500	472	2,650	272	2,100	176	1,860 128

절입량

Depth of Cut

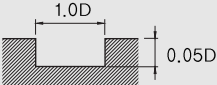
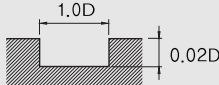
• RPM : rev./min • Feed : mm/min

Diagram of a stepped shaft with dimensions $0.03D$ and $1.0D$.

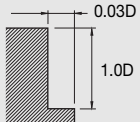
• RPM : rev./min • Feed : mm/min

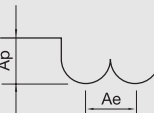
A diagram of a stepped cantilever beam. The beam has a total height of $1.0D$ and a total width of $0.03D$. The left end is fixed to a wall. The beam consists of a vertical section of height $1.0D$ and a horizontal section of width $0.03D$ extending from the top of the vertical section.

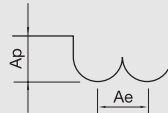
홈절삭 Slotting

파삭재 Material	고경도강/프리하트강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	45,000	100	45,000	100	45,000	100	45,000	100	45,000	100
0.5mm	45,000	115	45,000	115	45,000	115	45,000	115	45,000	115
0.6mm	45,000	140	45,000	140	45,000	140	45,000	140	45,000	140
0.8mm	45,000	180	45,000	180	45,000	180	45,000	180	45,000	180
1mm	45,000	280	45,000	280	45,000	280	45,000	280	45,000	280
2mm	45,000	360	45,000	360	45,000	360	45,000	360	45,000	360
3mm	40,000	440	40,000	440	40,000	440	40,000	440	40,000	440
4mm	39,000	520	39,000	520	39,000	520	39,000	520	39,000	520
5mm	38,000	570	38,000	570	38,000	570	38,000	570	38,000	570
6mm	26,000	680	26,000	680	26,000	680	26,000	680	26,000	680
8mm	17,300	680	17,300	680	17,300	680	17,300	680	17,300	680
10mm	13,200	700	13,200	700	13,200	700	13,200	700	13,200	700
12mm	12,50	805	12,50	805	12,50	805	12,50	805	12,50	805
절입량 Depth of Cut										

측면절삭 Side Cutting

파삭재 Material	고경도강/프리하트강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	45,000	120	40,000	110	33,000	70	25,000	40	25,000	40
0.5mm	45,000	160	40,000	125	33,000	80	25,000	45	20,000	30
0.6mm	45,000	200	40,000	160	30,000	90	25,000	60	20,000	35
0.8mm	40,000	245	30,000	165	25,000	100	19,000	65	16,000	40
1mm	38,000	656	25,500	408	20,500	248	16,000	152	12,500	100
2mm	26,000	776	17,500	480	14,500	296	11,000	184	9,500	132
3mm	17,300	776	11,500	480	9,500	296	7,500	184	6,400	132
4mm	13,200	800	8,800	500	7,200	308	5,600	192	4,750	136
5mm	12,500	920	8,300	568	6,400	328	5,100	208	4,450	152
6mm	10,350	880	6,900	552	5,300	320	4,200	204	3,700	148
8mm	7,800	824	5,200	508	4,000	292	3,200	188	2,800	136
10mm	6,150	776	4,100	472	3,200	272	2,550	176	2,200	128
12mm	5,250	776	3,500	472	2,650	272	2,100	176	1,860	128
절입량 Depth of Cut										

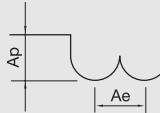
파삭재 Material		동 Copper				고경도강/ 프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels				고경도강 Hardened Steels			
										SKD / SKT				SKD / SKT			
경도 Hardness						30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 65HRc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.05	0.3	50,000	85	0.004	0.004	45,000	70	0.004	0.004	45,000	50	0.002	0.002	45,000	40	0.002	0.002
"	0.5	50,000	75	0.004	0.004	45,000	60	0.002	0.002	45,000	30	0.002	0.002	45,000	30	0.002	0.002
R0.1	0.5	50,000	492	0.010	0.010	45,000	396	0.006	0.007	45,000	260	0.006	0.006	45,000	220	0.005	0.006
"	1	50,000	432	0.007	0.008	45,000	372	0.004	0.005	45,000	276	0.004	0.004	45,000	200	0.004	0.004
"	1.5	50,000	360	0.006	0.006	42,000	276	0.003	0.004	42,000	216	0.003	0.004	42,000	180	0.003	0.003
R0.15	1	50,000	744	0.012	0.013	45,000	552	0.010	0.010	38,000	420	0.090	0.010	38,000	348	0.007	0.009
"	3	48,000	528	0.008	0.009	40,800	360	0.006	0.007	33,600	264	0.005	0.005	33,600	216	0.004	0.005
"	5	39,600	336	0.004	0.005	28,800	216	0.003	0.003	24,000	168	0.003	0.003	21,600	120	0.002	0.002
R0.2	1	61,200	1,020	0.021	0.034	54,000	768	0.016	0.022	39,600	516	0.013	0.022	39,600	432	0.011	0.021
"	3	55,200	768	0.015	0.016	44,400	480	0.010	0.010	32,400	312	0.009	0.010	32,400	264	0.008	0.010
"	5	39,600	468	0.008	0.016	30,000	372	0.008	0.010	26,400	288	0.006	0.010	26,400	228	0.004	0.005
R0.25	1	63,600	1,560	0.026	0.047	45,600	960	0.020	0.033	33,600	636	0.014	0.032	33,600	312	0.007	0.020
"	5	52,800	1,032	0.012	0.014	34,800	552	0.008	0.008	31,200	444	0.007	0.010	31,200	216	0.006	0.009
"	10	38,400	528	0.008	0.016	28,800	456	0.007	0.010	28,800	372	0.005	0.010	27,600	216	0.005	0.009
R0.3	1	63,600	1,956	0.030	0.140	39,600	960	0.022	0.091	27,600	600	0.019	0.091	26,400	516	0.014	0.091
"	5	50,400	1,104	0.014	0.068	28,800	504	0.012	0.043	26,400	396	0.008	0.042	26,400	336	0.007	0.040
"	10	31,200	540	0.006	0.032	24,000	360	0.005	0.020	22,800	312	0.004	0.020	22,800	240	0.003	0.018
R0.4	2	61,200	2,280	0.054	0.160	34,800	816	0.045	0.100	27,600	552	0.038	0.100	26,400	456	0.030	0.010
"	6	51,600	1,452	0.035	0.100	28,800	636	0.028	0.068	21,600	420	0.020	0.068	21,600	348	0.015	0.065
"	10	22,800	672	0.022	0.080	2,040	468	0.020	0.050	19,200	408	0.015	0.050	16,800	336	0.010	0.050
R0.5	2	50,400	2,160	0.068	0.320	33,600	900	0.052	0.220	21,600	540	0.040	0.220	18,000	540	0.008	0.140
"	5	50,400	2,160	0.068	0.320	33,600	900	0.052	0.220	21,600	540	0.040	0.220	18,000	540	0.008	0.014
"	10	30,000	1,164	0.024	0.086	16,320	600	0.020	0.056	15,000	456	0.014	0.056	13,680	312	0.008	0.050
"	16	17,640	720	0.018	0.086	13,680	480	0.016	0.056	12,360	384	0.012	0.056	11,520	252	0.005	0.030
R0.75	3	31,200	2,400	0.167	0.320	21,600	1,152	0.120	0.210	12,960	672	0.100	0.210	12,000	600	0.090	0.210
"	10	26,400	1,680	0.100	0.220	14,760	780	0.080	0.170	9,720	480	0.062	0.170	9,720	456	0.050	0.160
"	18	12,120	624	0.030	0.160	12,120	504	0.022	0.110	9,600	432	0.020	0.110	9,600	408	0.012	0.110
"	30	9,840	516	0.014	0.080	9,840	456	0.012	0.050	9,480	420	0.010	0.050	9,480	396	0.010	0.050
R1	4	26,400	2,448	0.220	0.520	21,000	1,392	0.180	0.350	14,640	1,080	0.140	0.350	14,640	900	0.120	0.350
"	10	26,400	2,256	0.180	0.350	21,000	1,224	0.140	0.230	14,640	972	0.110	0.230	14,640	792	0.090	0.230
"	20	15,960	1,164	0.090	0.165	15,960	600	0.060	0.110	12,720	600	0.055	0.110	12,720	492	0.035	0.110
"	30	10,200	636	0.025	0.070	10,200	480	0.020	0.050	10,200	480	0.015	0.050	10,200	384	0.015	0.045
R1.5	6	16,800	3,240	0.250	0.500	14,400	1,824	0.200	0.340	9,840	1,320	0.160	0.320	6,480	732	0.160	0.320
"	10	16,800	3,240	0.250	0.500	14,400	1,824	0.200	0.340	9,840	1,320	0.160	0.320	6,480	732	0.160	0.300
"	20	14,040	2,244	0.200	0.450	12,360	1,476	0.145	0.320	8,520	1,128	0.120	0.310	5,760	660	0.080	0.300
"	30	10,920	1,620	0.120	0.220	9,360	816	0.100	0.150	8,520	816	0.080	0.150	5,760	384	0.070	0.300
R2	8	12,600	3,012	0.350	0.850	10,440	1,752	0.290	0.550	7,200	1,332	0.220	0.500	7,200	1,056	0.150	0.500
"	20	12,600	3,012	0.350	0.850	10,440	1,752	0.290	0.550	7,200	1,332	0.220	0.500	7,200	1,056	0.150	0.500
"	30	11,160	2,040	0.250	0.500	8,880	1,380	0.200	0.320	6,600	1,056	0.150	0.300	6,600	816	0.130	0.300
"	40	8,160	1,464	0.150	0.500	7,200	1,056	0.132	0.320	6,600	1,056	0.100	0.300	6,600	816	0.090	0.300
R2.5	15	10,800	2,880	0.380	0.800	8,400	1,500	0.300	0.700	6,000	1,140	0.220	0.700	6,000	900	0.200	0.650
"	25	10,800	2,400	0.380	0.800	8,400	1,380	0.300	0.550	6,000	1,080	0.220	0.550	6,000	816	0.200	0.500
"	40	9,360	1,320	0.250	0.800	6,720	840	0.200	0.550	4,920	660	0.150	0.550	4,920	504	0.130	0.500
R3	15	8,400	2,676	0.500	1.000	8,160	1,764	0.420	0.800	5,760	1,320	0.300	0.800	4,440	864	0.300	0.800
"	30	8,400	1,812	0.380	0.900	7,200	1,680	0.300	0.650	5,040	1,176	0.220	0.650	4,440	792	0.220	0.600
R4	25	8,160	1,764	0.410	1.000	7,200	1,176	0.350	0.750	4,920	912	0.180	0.600	4,560	732	0.200	0.630
"	30	7,680	1,680	0.380	1.000	6,960	1,128	0.300	0.750	4,800	864	0.160	0.600	4,320	720	0.200	0.600
R5	30	6,240	1,344	0.560	1.200	5,880	1,128	0.370	0.900	4,800	852	0.200	0.670	4,200	708	0.200	0.650
"	35	6,000	1,296	0.500	1.000	5,400	1,080	0.350	0.850	4,560	816	0.150	0.600	3,840	648	0.200	0.600
R6	30	5,160	1,104	0.650	1.400	4,800	984	0.420	0.900	4,320	828	0.250	0.600	3,600	600	0.250	0.600
"	40	4,920	1,080	0.600	1.200	4,560	960	0.400	0.850	4,080	780	0.200	0.600	3,600	600	0.200	0.600
절입량 Depth of Cut		• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter • n : Speed • Vf : Feed 															



- 상기 절삭조건외의 참고는 수치입, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 쿨런트 사용을 추천, 동가공시 습식 쿨런트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet coolant for copper
- The tolerance of below Ø1 is below 5µm.

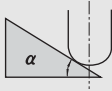
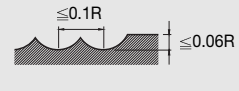
2PHCB/2HSB/2HCB

• RPM : rev./min • Feed : mm/min

파삭재 Material		동 Copper				고경도강/ 프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels				고경도강 Hardened Steels			
						NAK / SKD				SKD / SKT				SKD / SKT			
경도 Hardness						30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 65HRc			
반경 Radius	날장 Cutting Length	RPM	FEED	Ae Radial Depth	Ap Axial Depth	RPM	FEED	Ae Radial Depth	Ap Axial Depth	RPM	FEED	Ae Radial Depth	Ap Axial Depth	RPM	FEED	Ae Radial Depth	Ap Axial Depth
R0.05	0.2	40,000	300	0.010	0.050	40,000	300	0.005	0.040	30,000	200	0.004	0.040	X	X	X	X
R0.1	0.2	54,000	430	0.012	0.008	54,000	630	0.020	0.060	44,300	450	0.040	0.012	30,000	300	0.023	0.008
"	0.4	54,000	430	0.007	0.008	54,000	430	0.020	0.051	44,300	345	0.016	0.040	32,800	260	0.010	0.023
R0.15	0.3	54,000	720	0.020	0.013	54,000	750	0.030	0.090	44,300	600	0.024	0.072	32,800	450	0.015	0.042
"	0.6	54,000	720	0.012	0.013	54,000	715	0.030	0.075	44,300	575	0.024	0.060	32,800	430	0.015	0.035
R0.2	0.4	54,000	870	0.028	0.016	54,000	1,000	0.040	0.120	44,300	800	0.032	0.096	32,800	600	0.020	0.056
"	0.8	54,000	870	0.016	0.016	54,000	880	0.040	0.105	44,300	700	0.032	0.084	32,800	525	0.020	0.049
R0.25	0.5	56,000	1,250	0.035	0.022	53,000	1,250	0.050	0.150	43,500	1,000	0.040	0.120	32,200	750	0.025	0.070
"	1	56,000	1,250	0.021	0.022	50,000	1,000	0.050	0.125	41,350	800	0.040	0.100	30,600	600	0.025	0.058
R0.3	0.6	58,000	1,510	0.042	0.026	52,000	1,380	0.060	0.180	42,650	1,100	0.048	0.144	31,500	825	0.030	0.084
"	1.2	58,000	1,510	0.025	0.026	48,500	1,020	0.060	0.155	40,500	810	0.048	0.124	30,000	610	0.030	0.072
R0.4	0.8	52,000	1,870	0.056	0.036	48,000	1,500	0.080	0.240	39,500	1,200	0.064	0.192	29,250	900	0.040	0.112
"	2	52,000	1,870	0.033	0.036	45,000	1,085	0.080	0.200	37,500	870	0.064	0.160	27,800	650	0.040	0.093
R0.5	1	41,000	1,660	0.063	0.040	45,000	1,560	0.100	0.300	36,900	1,250	0.080	0.240	27,300	940	0.050	0.140
"	2.5	41,000	1,660	0.022	0.040	40,000	1,000	0.100	0.200	31,500	800	0.080	0.160	23,000	600	0.050	0.090
R0.6	3	34,000	1,740	0.072	0.051	40,100	1,550	0.120	0.360	32,800	1,250	0.096	0.288	24,400	940	0.060	0.168
R0.75	1.5	27,000	1,830	0.087	0.068	35,000	1,600	0.150	0.450	28,700	1,280	0.120	0.360	21,500	960	0.075	0.210
"	4	27,000	1,830	0.052	0.068	34,000	1,000	0.150	0.325	26,000	800	0.120	0.260	19,250	600	0.075	0.152
R1	2	20,000	1,780	0.112	0.089	30,000	1,850	0.200	0.600	24,600	1,480	0.160	0.480	18,250	1,110	0.100	0.280
"	5	20,000	1,780	0.067	0.089	26,500	1,350	0.200	0.435	22,000	1,080	0.160	0.348	16,250	810	0.100	0.203
R1.25	6	16,000	1,840	0.067	0.115	25,500	1,600	0.250	0.542	21,000	1,280	0.200	0.430	15,500	960	0.125	0.251
R1.5	3	13,000	2,220	0.197	0.171	25,500	2,520	0.300	0.957	21,000	2,050	0.240	0.766	15,500	1,530	0.150	0.447
"	8	13,000	2,220	0.100	0.171	25,500	2,350	0.300	0.765	21,000	1,880	0.240	0.612	15,500	1,410	0.150	0.357
R2	4	10,000	2,080	0.266	0.208	21,000	2,450	0.400	1.380	17,300	1,960	0.320	1.100	12,800	1,470	0.200	0.644
"	8	10,000	2,080	0.134	0.208	21,000	2,350	0.400	1.020	17,300	1,880	0.320	0.816	12,800	1,410	0.200	0.476
R2.5	5	8,300	1,990	0.215	0.240	18,000	2,560	0.500	1.660	14,800	2,050	0.400	1.330	11,000	1,530	0.250	0.770
"	10	8,300	1,990	0.180	0.240	18,000	2,300	0.500	1.275	14,800	1,840	0.400	1.020	11,000	1,380	0.250	0.595
R3	6	6,900	1,940	0.290	0.281	16,000	2,700	0.600	2.340	13,000	2,160	0.480	1.870	9,600	1,620	0.300	1.090
"	12	6,900	1,940	0.230	0.281	16,000	2,400	0.600	1.530	13,000	1,920	0.480	1.225	9,600	1,440	0.300	0.715
R4	8	5,720	1,000	0.400	0.175	12,500	2,300	0.800	3.100	10,250	1,840	0.640	2.480	7,600	1,380	0.400	1.446
"	14	5,720	1,000	0.400	0.175	12,500	2,000	0.800	2.050	10,250	1,600	0.640	1.640	7,600	1,200	0.400	0.957
R5	10	4,550	700	0.500	0.154	10,500	2,200	1.000	3.750	8,650	1,780	0.800	3.000	6,400	1,340	0.500	1.750
"	18	4,550	700	0.500	0.154	10,500	1,700	1.000	2.550	8,650	1,360	0.800	2.040	6,400	1,020	0.500	1.190
R6	12	3,770	600	0.600	0.159	9,000	1,850	1.200	4.420	7,380	1,480	0.960	3.540	5,450	1,110	0.600	2.060
"	22	3,770	600	0.600	0.159	9,000	1,600	1.200	3.050	7,380	1,280	0.960	2.440	5,450	960	0.600	1.423
R8	30	2,200	460	0.115	0.450	6,800	1,630	3.870	1.120	4,900	1,100	2.350	0.790	4,000	810	1.742	0.500
R10	38	2,000	470	0.100	0.400	6,200	1,450	4.120	1.100	3,900	1,100	2.530	0.840	3,100	800	1.866	0.520
절입량 Depth of Cut		• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter • n : Speed • Vf : Feed 															

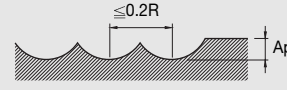
- 상기 절삭조건에 참고는 수치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 쿨런트 사용을 추천, 동가공시 습식 쿨런트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm 이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의

- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet collant for copper
- The tolerance of below Ø1 is below 5µm.

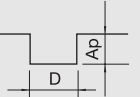
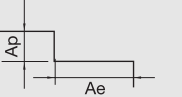
	황삭 가공 for Roughing								정삭 가공 for Finishing							
피삭재 Material	합금강/ 공구강/ 프리하트강 Alloy Steels/ Tool Steels/ Prehardened Steels SKD61 / NAK				고경도강 Hardened Steels SKD61				합금강/ 공구강/ 프리하트강 Alloy Steels/ Tool Steels/ Prehardened Steels SKD61 / NAK				고경도강 Hardened Steels SKD61			
경도 Hardness	~ 45HRc				45 ~ 55HRc				~ 45HRc				45 ~ 55HRc			
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		$\alpha \leq 15^\circ$		$\alpha > 15^\circ$	
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R1	32,000	3,000	25,000	1,170	18,000	1,440	16,000	640	32,000	3,200	32,000	1,500	25,000	2,000	20,000	800
R1.5	27,000	3,350	19,700	1,320	14,000	1,600	12,000	690	28,750	4,100	26,000	1,750	21,000	2,350	16,500	900
R2	18,500	3,700	14,500	1,460	11,000	1,760	9,200	740	25,500	5,000	20,000	2,000	17,000	2,700	13,000	1,000
R2.5	15,700	3,850	12,250	1,480	9,350	1,840	7,800	770	22,750	5,550	17,500	2,100	15,000	2,950	11,500	1,100
R3	13,000	4,000	10,000	1,500	7,700	1,920	6,400	800	20,000	6,100	15,000	2,200	13,000	3,200	10,000	1,200
R4	10,000	5,000	8,000	2,000	6,000	2,300	4,800	920	15,000	7,500	11,000	2,700	10,000	3,800	7,500	1,400
R5	8,000	5,000	6,500	2,000	4,800	2,200	3,800	870	12,000	7,500	9,000	2,700	8,000	3,700	6,000	1,400
R6	6,600	4,600	5,300	1,800	4,000	2,100	3,200	840	10,000	7,000	7,500	2,500	6,600	3,500	5,000	1,300
절입량 Depth of Cut																

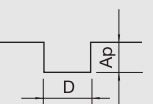
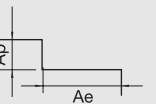
- α 는 공작물 표면의 경사각입니다.
- 만약 절입깊이가 얕다면, RPM과 FEED Rate는 감소하여 사용하십시오.
- 피삭재의 흔들림이 심하고 기계의 강성이 낮은 경우나, 채터링 또는 소음이 발생하는 경우 RPM과 FEED비율을 낮춰주세요.
- α is the inclination angle of the machined surface.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

4HCB

측면절삭 Side Cutting															
피삭재 Material	고경도강 Hardened Steels SKD61					고경도강 Hardened Steels SKD11					고경도강 Hardened Steels SKS / SKH				
경도 Hardness	45 ~ 55HRc					55 ~ 62HRc					62 ~ 68HRc				
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth
	RPM	FEED	RPM	FEED		RPM	FEED	RPM	FEED		RPM	FEED	RPM	FEED	
R1.5	40,000	12,000	32,000	5,600	0.13	32,000	7,700	19,000	2,900	0.12	16,000	4,200	11,000	1,100	0.07
R2	32,000	11,000	24,000	4,700	0.15	24,000	6,200	14,000	2,500	0.13	12,000	3,100	8,000	1,000	0.08
R2.5	25,000	9,000	19,000	3,800	0.2	19,000	5,300	12,000	2,200	0.15	9,600	2,700	6,000	780	0.08
R3	21,000	8,400	15,000	3,400	0.25	16,000	4,800	9,600	2,000	0.2	8,000	2,300	5,000	780	0.09
R4	16,000	6,400	12,000	2,600	0.3	12,000	3,600	7,200	1,600	0.2	6,000	1,900	4,000	620	0.09
R5	13,000	5,200	9,600	2,200	0.5	10,000	3,200	5,800	1,300	0.2	4,800	1,500	3,000	550	0.1
R6	9,000	3,600	7,200	1,700	0.5	7,000	2,200	4,300	940	0.3	3,600	1,100	2,200	400	0.1
절입량 Depth of Cut															

- α 는 공작물 표면의 경사각입니다.
- 만약 절입깊이가 얕다면, RPM과 FEED Rate는 감소하여 사용하십시오.
- 피삭재의 흔들림이 심하고 기계의 강성이 낮은 경우나, 채터링 또는 소음이 발생하는 경우 RPM과 FEED비율을 낮춰주세요.
- α is the inclination angle of the machined surface.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

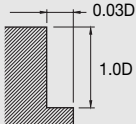
파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels			고경도강/ 프라이트강 Prehardened Steels / Hardened Steels NAK / SKD			고경도강 Hardened Steels			고경도강 Hardened Steels			Ae Milling amount for side Milling
경도 Hardness		(S45C/S50C) ~225HB			225 ~ 325HB			35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 60HRc			
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
0.1mm	0.3	30,000	30	0.004	30,000	15	0.004	30,000	16	0.002							X
"	0.5	28,000	28	0.004	28,000	14	0.004	28,000	14	0.002			0.001			X	X
0.2mm	0.5	56,000	340	0.006	56,000	310	0.005	56,000	270	0.003	44,800	180	0.002	15,000	10	0.001	0.160
"	1	50,900	290	0.005	50,900	260	0.005	50,900	230	0.004	40,800	160	0.003	-	-	-	0.020
"	1.5	48,200	250	0.003	48,200	230	0.003	48,200	200	0.002	38,500	140	0.002	-	-	-	0.006
0.3mm	1	60,000	560	0.009	60,000	500	0.008	60,000	400	0.006	52,100	330	0.004	14,600	14	0.003	0.101
"	1.5	50,800	460	0.008	50,800	410	0.007	50,800	360	0.005	42,700	260	0.004	14,600	13	0.003	0.057
"	2	41,500	350	0.006	41,500	320	0.005	41,500	280	0.004	33,200	190	0.003	14,600	12	0.002	0.013
"	3	31,900	240	0.002	31,900	220	0.002	31,900	190	0.001	25,500	130	0.001	14,600	10	0.001	0.004
"	4	26,200	170	0.001	26,200	160	0.001	26,200	140	0.001	20,900	100	0.001	14,600	9	0.001	0.003
"	5	20,400	100	0.001	20,400	90	0.001	20,400	80	0.001	16,300	60	0.001	-	-	-	-
0.4mm	1	52,700	660	0.012	57,700	640	0.010	48,100	470	0.008	38,500	320	0.005	14,300	17	0.003	0.054
"	5	38,500	380	0.003	34,200	300	0.003	30,100	240	0.002	24,100	160	0.001	14,300	14	0.001	0.003
"	10	33,700	260	0.001	27,300	190	0.001	24,600	150	0.001	19,700	100	0.001	14,300	11	0.001	0.001
0.5mm	2	56,800	900	0.020	54,000	760	0.016	40,600	510	0.014	32,500	350	0.010	14,000	20	0.005	0.098
"	3	44,200	660	0.080	39,900	530	0.090	32,200	370	0.008	25,700	260	0.006	14,000	19	0.004	0.016
"	4	40,600	580	0.009	36,100	460	0.008	29,700	330	0.008	23,700	230	0.005	14,000	18	0.003	0.012
"	5	37,000	500	0.080	32,300	390	0.008	27,200	290	0.006	21,700	200	0.004	14,000	17	0.003	0.008
"	6	33,400	420	0.005	28,500	320	0.005	24,700	250	0.003	19,700	170	0.002	14,000	16	0.001	0.004
"	8	29,100	320	0.002	24,100	240	0.002	21,600	190	0.001	17,400	130	0.001	14,000	14	0.001	0.002
"	10	26,100	250	0.001	21,200	180	0.001	19,600	150	0.001	15,600	100	0.001	14,000	12	0.001	0.001
"	14	21,500	120	0.001	16,700	80	0.001	16,300	70	0.001	13,000	50	0.001	-	-	-	-
0.6mm	2	63,600	1,240	0.025	53,300	930	0.020	39,100	600	0.016	31,300	410	0.011	12,000	23	0.006	0.203
"	3	52,500	990	0.018	44,000	740	0.016	33,500	500	0.013	26,800	340	0.009	12,000	22	0.005	0.114
"	4	41,300	740	0.012	34,700	550	0.011	27,900	390	0.009	22,300	270	0.006	12,000	21	0.003	0.025
"	5	36,700	630	0.010	30,900	470	0.009	25,500	340	0.007	20,400	240	0.005	12,000	20	0.003	0.017
"	6	32,100	520	0.007	27,000	390	0.006	23,000	290	0.005	18,400	200	0.003	12,000	19	0.002	0.008
"	8	26,800	390	0.004	22,600	300	0.004	20,000	230	0.003	16,000	160	0.002	12,000	17	0.001	0.003
"	10	23,400	30	0.002	19,700	230	0.002	17,900	180	0.002	14,300	130	0.001	12,000	15	0.001	0.002
"	12	20,900	240	0.002	17,600	180	0.001	16,400	150	0.001	13,100	100	0.001	12,000	13	0.001	0.001
"	16	16,200	100	0.001	13,700	80	0.001	13,500	70	0.001	10,800	50	0.001	-	-	-	-
0.7mm	2	59,800	1,380	0.030	50,200	1,040	0.027	36,100	660	0.021	28,800	430	0.015	10,000	24	0.010	0.038
"	4	38,900	840	0.017	32,700	630	0.015	25,800	440	0.012	20,600	290	0.009	10,000	22	0.006	0.047
"	6	30,200	600	0.010	25,400	450	0.009	21,200	330	0.007	16,900	230	0.005	10,000	20	0.003	0.014
"	8	25,300	460	0.006	21,300	350	0.005	18,400	260	0.004	14,700	190	0.003	10,000	18	0.002	0.006
"	10	22,000	360	0.004	18,500	270	0.003	16,500	220	0.003	13,200	160	0.002	10,000	16	0.001	0.003
0.8mm	2	41,200	1,050	0.033	34,500	460	0.029	26,200	530	0.023	21,000	370	0.016	8,000	21	0.012	0.108
"	4	37,100	930	0.027	31,100	700	0.024	24,100	480	0.019	19,300	330	0.013	8,000	20	0.010	0.080
"	6	28,800	680	0.015	24,200	510	0.013	19,800	370	0.010	15,800	250	0.007	8,000	18	0.005	0.024
"	8	24,100	520	0.009	20,300	390	0.008	17,200	300	0.006	13,800	200	0.004	8,000	16	0.003	0.010
"	10	21,000	420	0.006	17,700	320	0.005	15,500	240	0.040	12,400	170	0.003	8,000	14	0.002	0.005
"	12	18,700	340	0.004	15,800	260	0.003	14,100	200	0.003	11,300	140	0.002	8,000	12	0.001	0.003
"	14	15,600	230	0.002	13,200	180	0.020	12,300	150	0.001	980	100	0.001	-	-	-	0.001
0.9mm	6	27,600	790	0.019	23,000	590	0.017	18,500	420	0.013	14,800	290	0.010	7,200	18	0.007	0.038
"	8	23,000	600	0.012	19,300	450	0.011	16,100	330	0.008	12,900	230	0.006	7,200	16	0.004	0.016
"	10	20,000	470	0.008	16,800	360	0.007	14,500	270	0.005	11,600	190	0.004	7,200	14	0.002	0.008
1mm	2	37,900	1,340	0.048	31,500	990	0.043	23,400	6,500	0.034	18,700	440	0.024	6,500	15	0.011	0.263
"	3	37,900	1,340	0.048	31,500	990	0.043	23,400	6,500	0.034	18,700	440	0.024	6,500	15	0.011	0.263
"	4	34,100	1,170	0.040	28,400	870	0.036	21,500	580	0.028	17,200	400	0.020	6,500	15	0.010	0.195
"	5	30,300	1,000	0.032	25,300	750	0.029	19,600	510	0.022	15,700	360	0.016	6,500	15	0.009	0.013
"	6	26,500	850	0.023	22,100	630	0.021	17,600	440	0.016	14,100	310	0.012	6,500	14	0.007	0.058
"	8	22,100	660	0.014	18,600	490	0.013	15,300	360	0.010	12,300	250	0.007	6,500	13	0.040	0.024
"	10	19,200	530	0.010	16,200	400	0.009	13,800	300	0.007	11,000	210	0.005	6,500	12	0.003	0.013
"	12	17,200	440	0.007	14,500	330	0.006	12,600	250	0.005	10,100	170	0.003	6,500	11	0.002	0.007
"	14	15,600	360	0.005	13,200	270	0.004	11,700	210	0.003	9,400	150	0.002	650	10	0.001	0.005
"	16	14,300	300	0.004	12,100	230	0.003	11,000	180	0.003	8,800	130	0.002	-	-	-	0.003
"	20	12,500	200	0.003	10,600	160	0.003	9,800	130	0.002	7,900	90	0.001	-	-	-	0.001
"	25	10,800	120	0.003	9,200	90	0.002	8,800	80	0.002	7,100	50	0.001	-	-	-	0.001
"	30	9,700	50	0.002	8,200	40	0.002	8,100	30	0.001	6,500	30	0.001	-	-	-	-
절입량 Depth of Cut		Slotting • Ap : Axial Depth • D : Outside Diameter  Side Milling • Ap : Axial Depth • Ae : Radial Depth 															

파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels			고경도강/ 프리하트닝강 Prehardened Steels / Hardened Steels NAK / SKD			고경도강 Hardened Steels			고경도강 Hardened Steels			Ae Milling amount for side Milling
					SK / SCM / SUS						SKD / SKT			SKD / SKT			
경도 Hardness		(S45C/S50C) ~225HB			225 ~ 325HB			35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 60HRc			
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
1.2mm	4	28,900	1,180	0.050	24,100	870	0.047	18,300	580	0.036	14,500	400	0.026	9,600	34	0.015	0.189
〃	6	24,800	970	0.037	20,700	720	0.034	16,100	490	0.026	12,800	340	0.019	9,600	22	0.011	0.120
〃	8	20,700	760	0.024	17,300	570	0.021	13,900	400	0.016	11,100	280	0.012	9,600	10	0.007	0.051
〃	10	18,000	620	0.016	15,100	470	0.014	12,400	340	0.011	9,900	230	0.008	-	-	-	0.026
〃	12	16,100	520	0.011	13,500	390	0.010	11,400	290	0.008	9,100	200	0.005	-	-	-	0.015
〃	16	13,400	380	0.006	11,300	290	0.005	9,800	220	0.004	7,900	150	0.003	-	-	-	0.006
〃	20	11,700	280	0.004	9,900	210	0.004	8,800	170	0.003	7,000	120	0.002	-	-	-	0.003
〃	25	10,800	120	0.003	9,200	90	0.002	8,800	80	0.002	7,100	50	0.001	-	-	-	0.001
〃	30	9,700	50	0.002	8,200	40	0.002	8,100	30	0.001	6,500	30	0.001	-	-	-	-
1.4mm	6	23,300	1,070	0.052	19,400	800	0.047	14,800	540	0.060	11,900	370	0.026	9,600	44	0.015	0.222
〃	8	19,500	850	0.035	16,300	640	0.032	12,900	440	0.025	10,300	310	0.018	9,600	18	0.010	0.094
〃	10	16,900	710	0.025	14,200	530	0.022	11,500	380	0.017	9,200	260	0.012	-	-	-	0.048
〃	14	13,700	510	0.013	11,500	390	0.012	9,700	290	0.009	7,800	200	0.007	-	-	-	0.018
〃	16	12,600	450	0.010	10,600	340	0.009	9,100	250	0.007	7,300	180	0.005	-	-	-	0.012
〃	20	10,300	300	0.006	8,700	230	0.005	7,800	180	0.004	6,200	120	0.003	-	-	-	0.005
1.5mm	4	26,600	1,340	0.073	22,100	1,000	0.065	16,300	640	0.051	13,000	440	0.036	9,600	95	0.020	0.462
〃	6	22,800	1,120	0.057	19,000	840	0.051	14,400	550	0.040	11,500	380	0.028	9,600	60	0.016	0.293
〃	8	19,000	900	0.041	15,900	670	0.037	12,500	460	0.029	10,000	320	0.020	9,600	25	0.012	0.124
〃	10	16,600	750	0.030	13,800	560	0.027	11,200	390	0.021	8,900	270	0.015	9,600	13	0.009	0.063
〃	12	14,800	630	0.023	12,400	470	0.020	10,200	340	0.016	8,200	240	0.011	-	-	-	0.037
〃	14	13,400	550	0.017	11,200	410	0.016	9,500	300	0.012	7,600	210	0.009	-	-	-	0.023
〃	16	12,300	480	0.013	10,300	360	0.012	8,900	270	0.009	7,100	190	0.007	-	-	-	0.015
〃	18	11,500	420	0.011	9,600	310	0.010	8,400	240	0.007	6,700	170	0.005	-	-	-	0.011
〃	20	10,700	370	0.009	9,000	280	0.008	7,900	220	0.006	6,300	150	0.004	-	-	-	0.008
〃	25	9,300	270	0.005	7,800	200	0.005	7,100	160	0.004	5,700	110	0.003	-	-	-	0.004
〃	30	8,300	200	0.004	7,000	150	0.004	6,500	120	0.003	5,200	90	0.002	-	-	-	0.002
1.6mm	10	16,100	780	0.035	13,500	580	0.032	10,800	410	0.025	8,600	280	0.018	9,600	15	0.010	0.082
〃	14	13,000	580	0.020	10,900	430	0.018	9,100	320	0.014	7,300	220	0.010	-	-	-	0.030
〃	18	11,100	450	0.013	9,300	340	0.012	8,000	260	0.009	6,400	180	0.006	-	-	-	0.014
2.0mm	4	23,000	1,500	0.070	20,000	1,200	0.060	14,000	750	0.052	12,000	500	0.040	9,600	230	0.022	0.966
〃	6	20,300	1,350	0.064	17,400	1,030	0.058	12,500	650	0.045	10,000	450	0.032	9,600	211	0.019	0.926
〃	8	17,000	1,090	0.054	14,500	830	0.048	10,800	540	0.038	8,700	380	0.027	9,600	89	0.016	0.391
〃	10	14,800	920	0.045	12,600	700	0.040	9,700	470	0.031	7,800	330	0.022	9,600	45	0.013	0.200
〃	12	13,200	790	0.037	11,200	600	0.034	8,900	420	0.026	7,100	290	0.019	9,600	56	0.011	0.116
〃	14	12,000	700	0.031	10,200	530	0.028	8,200	370	0.022	6,600	260	0.016	9,600	16	0.009	0.073
〃	16	11,100	620	0.026	9,400	470	0.024	7,700	340	0.018	6,100	230	0.013	9,600	11	0.007	0.049
〃	18	10,300	550	0.022	8,700	420	0.020	7,200	310	0.015	5,800	210	0.011	-	-	-	0.034
〃	20	9,600	500	0.018	8,100	380	0.016	6,900	280	0.013	5,500	190	0.009	-	-	-	0.025
〃	22	8,700	420	0.014	7,500	320	0.014	6,500	250	0.010	5,200	170	0.008	-	-	-	0.018
〃	25	8,400	390	0.012	7,100	290	0.011	6,200	230	0.008	4,900	160	0.006	-	-	-	0.013
〃	30	7,500	310	0.008	6,300	230	0.007	5,600	180	0.005	4,500	130	0.004	-	-	-	0.007
2.5mm	8	15,000	1,340	0.077	12,800	1,020	0.069	9,600	670	0.054	7,700	460	0.039	9,600	227	0.023	0.954
〃	10	13,100	1,140	0.068	11,100	860	0.061	8,600	590	0.048	6,900	400	0.034	9,600	116	0.020	0.488
〃	12	11,800	1,000	0.060	10,000	750	0.054	7,900	520	0.042	6,300	360	0.030	9,600	67	0.018	0.283
〃	16	9,900	790	0.045	8,400	590	0.040	6,800	430	0.031	5,500	290	0.022	9,600	28	0.013	0.119
〃	20	8,700	650	0.033	7,300	490	0.030	6,100	360	0.023	4,900	250	0.017	9,600	14	0.010	0.061
〃	25	7,600	520	0.022	6,400	390	0.019	5,500	300	0.015	4,400	210	0.011	-	-	-	0.031
〃	30	6,800	430	0.014	5,700	320	0.012	5,000	250	0.010	4,000	1,700	0.007	-	-	-	0.018
〃	35	6,200	380	0.009	5,200	280	0.008	4,800	190	0.007	3,800	1,400	0.005	-	-	-	0.012
〃	40	5,700	290	0.005	4,800	220	0.004	4,400	170	0.003	3,500	120	0.002	-	-	-	0.008
〃	50	5,000	190	0.001	4,200	140	0.001	3,900	120	0.001	3,100	80	0.001	-	-	-	0.004
절입량 Depth of Cut		Slotting • Ap : Axial Depth • D : Outside Diameter  Side Milling • Ap : Axial Depth • Ae : Radial Depth 															

파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels			고경도강/ 프리하든강 Prehardened Steels / Hardened Steels NAK / SKD			고경도강 Hardened Steels			고경도강 Hardened Steels			Ae Milling amount for side Milling
경도 Hardness		(S45C/S50C) ~225HB			225 ~ 325HB			35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 60HRc			
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
3mm	6	13,200	1,470	0.103	10,900	1,080	0.093	8,000	700	0.072	6,400	480	0.052	8,000	435	0.031	1.978
"	10	11,600	1,270	0.092	9,600	930	0.083	7,200	620	0.064	5,800	430	0.046	8,000	222	0.027	1.013
"	12	10,500	1,110	0.081	8,700	830	0.073	6,700	560	0.057	5,300	380	0.041	8,000	128	0.024	0.586
"	16	8,900	900	0.064	7,400	670	0.058	5,900	470	0.045	4,700	320	0.032	8,000	54	0.019	0.247
"	20	7,800	750	0.050	6,600	560	0.045	5,300	400	0.035	4,300	280	0.025	8,000	27	0.015	0.127
"	25	6,900	620	0.036	5,800	460	0.032	4,800	340	0.025	3,900	230	0.018	8,000	14	0.010	0.065
"	30	6,200	520	0.026	5,200	390	0.023	4,500	290	0.018	3,600	200	0.013	8,000	10	0.007	0.038
"	35	5,700	440	0.018	4,800	330	0.016	4,200	250	0.013	3,300	170	0.009	-	-	-	0.024
"	40	5,300	370	0.013	4,500	280	0.012	3,900	220	0.009	3,100	150	0.006	-	-	-	0.016
"	45	5,000	330	0.008	4,200	230	0.008	3,700	180	0.006	2,900	130	0.005	-	-	-	0.012
"	50	4700	270	0.006	3900	200	0.005	3600	160	0.004	2800	110	0.003	-	-	-	0.008
"	60	4,500	250	0.003	3,600	180	0.003	3,200	130	0.003	2,500	90	0.002	-	-	-	0.005
4mm	8	10,000	1,600	0.014	8,800	1,100	0.0140	6,800	770	0.093	5,300	500	0.070	6,000	450	0.050	1.990
"	10	9,200	1,400	0.0120	8,000	1,000	0.0120	5,900	690	0.085	4,700	460	0.066	6,000	420	0.040	1.960
"	12	8,500	1,280	0.0112	7,100	950	0.0101	5,100	600	0.078	4,100	410	0.056	6,000	388	0.033	1.852
"	16	7,200	1,050	0.093	6,000	770	0.084	4,400	510	0.065	3,600	350	0.046	6,000	164	0.027	0.781
"	20	6,300	880	0.077	5,200	650	0.069	4,000	440	0.054	3,200	300	0.038	6,000	84	0.022	0.400
"	25	5,600	750	0.061	4,600	540	0.055	3,600	380	0.042	2,900	260	0.030	6,000	43	0.018	0.205
"	30	5,000	630	0.048	4,100	460	0.043	3,300	330	0.033	2,600	230	0.024	6,000	24	0.014	0.119
"	35	4,600	540	0.038	3,800	400	0.034	3,100	290	0.026	2,500	200	0.019	6,000	15	0.011	0.075
"	40	4,200	470	0.030	3,500	350	0.027	2,900	250	0.021	2,300	180	0.015	6,000	10	0.009	0.050
"	45	3,900	410	0.023	3,300	300	0.021	2,700	230	0.016	2,200	160	0.012	-	-	-	0.035
"	50	3700	360	0.018	3100	270	0.016	2600	200	0.013	2100	140	0.009	-	-	-	0.026
"	55	3,500	320	0.015	2,950	250	0.015	2,500	180	0.010	2,000	130	0.007	-	-	-	0.020
"	60	3,300	280	0.011	2,800	210	0.010	2,400	160	0.008	1,900	110	0.006	-	-	-	0.015
5mm	16	6,000	1,140	0.127	5,100	860	0.114	3,500	520	0.089	2,800	360	0.064	4,800	457	0.038	1.907
"	20	5,300	980	0.121	4,400	730	0.109	3,100	440	0.085	2,500	310	0.061	4,800	234	0.036	0.977
"	25	4,600	820	0.109	3,800	600	0.099	2,800	390	0.077	2,200	270	0.055	4,800	120	0.033	0.500
"	30	4,200	710	0.094	3,400	510	0.085	2,500	340	0.066	2,000	230	0.047	4,800	69	0.028	0.289
"	35	3,800	620	0.077	3,100	450	0.069	2,300	300	0.054	1,900	210	0.038	4,800	43	0.022	0.182
"	40	3,500	540	0.060	2,800	390	0.054	2,200	270	0.042	1,700	180	0.030	4,800	29	0.018	0.122
"	50	3,100	430	0.031	2,400	300	0.028	1,900	210	0.022	1,500	150	0.016	4,800	15	0.009	0.063
"	60	2,800	350	0.013	2,100	240	0.012	1,800	170	0.009	1,400	120	0.007	4,800	10	0.004	0.036
6mm	20	4,200	960	0.126	3,800	780	0.114	2,600	470	0.088	2,100	330	0.063	4,000	607	0.037	2.025
"	30	3,400	730	0.109	2,800	540	0.099	2,000	340	0.077	1,600	240	0.055	4,000	180	0.033	0.600
"	40	3,000	600	0.083	2,300	410	0.074	1,700	260	0.058	1,300	170	0.041	4,000	75	0.024	0.253
"	50	2,600	480	0.054	1,900	310	0.049	1,500	220	0.038	1,200	160	0.027	4,000	38	0.016	0.130
"	60	2,400	410	0.031	1,700	260	0.028	1,300	170	0.022	1,000	120	0.016	4,000	22	0.009	0.075
8mm	20	3,200	910	0.180	2,800	710	0.160	2,300	450	0.130	1,700	330	0.090	3,400	580	0.050	1.600
"	40	2,600	600	0.120	2,000	410	0.100	1,500	250	0.800	1,100	160	0.060	3,400	84	0.035	0.200
"	25	2,900	890	0.200	2,700	680	0.180	2,100	430	0.130	1,500	310	0.080	3,200	540	0.050	1.760
"	45	2,200	580	0.140	2,000	400	0.120	1,300	220	0.700	900	150	0.050	3,200	76	0.030	0.240
"	30	2,500	710	0.220	2,300	580	0.200	2,000	400	0.140	1,400	280	0.080	3,000	540	0.050	1.840
"	50	1,900	420	0.160	1,700	350	0.130	1,500	200	0.800	800	140	0.050	3,000	72	0.030	0.280

절입량 Depth of Cut	Slotting		Side Milling	
	• Ap : Axial Depth	• D : Outside Diameter	• Ap : Axial Depth	• Ae : Radial Depth

- 에어브로, 절삭유, 오일 미스트 등의 쿨런트를 사용하십시오. 단, 동 가공에는 수용성, 또는 유성 절삭유를 추천합니다.
- 칩을 잘 제거하고 가공시의 발열과 발화에 주의하십시오
- 이 절삭 조건표는 절삭 조건의 참고 수치입니다. 실제 가공시에는 가공 형상, 가공 목적, 적용 기계 등에 따라 조건을 조정하십시오.
- 기계의 회전수가 부족할 때는 속도와 이송 속도를 같은 비율로 조절하십시오.
- 날 끝이 정밀하게 연삭되어 있습니다. 파손을 피하기 위해 선단 검출은 신중하게 하고, 가능하면 비접촉 방식으로 측정하십시오.
- Recommend airblow or oil mist cutting fluids.
- Remove chips to prevent heat generation and ignition.
- When the parameters exceed the machine's maximum spindle speed, decrease both spindle speed and feed rate by the same proportion.
- To avoid damaging the precision tip point non-contact measuring should be used.

파삭재 Material	합금강/내열강 Alloy Steels/ Heat Resistant Steels		고경도강/프라이하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels			
			NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11	
경도 Hardness	30HRC ~ 40HRC		40HRC ~ 50HRC		50HRC ~ 55HRC		55HRC ~ 60HRC		60HRC ~ 65HRC	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	48,000	1,480	38,000	1,050	25,500	710	20,500	430	16,000	270
2mm	33,300	1,750	26,000	1,250	17,500	840	14,500	520	11,000	320
3mm	21,800	1,750	17,300	1,250	11,500	840	9,500	520	7,500	320
4mm	16,700	1,800	13,200	1,300	8,800	880	7,200	540	335	4,750
5mm	15,700	2,000	12,500	1,500	8,300	1,000	6,400	580	5,100	370
6mm	13,100	1,950	10,350	1,400	6,900	950	5,300	560	4,200	350
8mm	9,880	1,880	7,800	1,350	5,200	900	4,000	520	3,200	330
10mm	7,800	1,750	6,150	1,260	4,100	840	3,200	480	2,550	310
12mm	6,650	1,750	5,250	1,260	3,500	840	2,650	480	2,100	300
절입량 Depth of Cut										

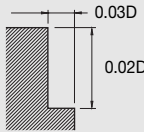
파삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels S45C / S50C / SK / SCM		고경도강/프라이하든강 Hardened Steels/ Prehardened Steels NAK / SKD		스테인레스강 Stainless Steels SUS304 / SUS316		고경도강 Hardened Steels SKD61	
	~ 30HRC		30 ~ 45HRC				45 ~ 55HRC	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	13,000	60 (60)	9,000	35 (35)	6,500 (6,500)	20 (20)	5,700	20 (15)
1.5mm	10,000	60 (60)	6,000	45 (45)	5,000 (4,500)	35 (35)	4,500	25 (15)
2mm	6,400	60 (60)	4,800	45 (45)	3,500 (3,500)	30 (30)	3,000	25 (15)
3mm	4,200	65 (60)	3,400	55 (55)	2,600 (2,600)	40 (40)	2,100	30 (20)
4mm	3,400	80 (60)	2,700	65 (30)	2,100 (1,600)	50 (20)	1,700	35 (20)
5mm	2,900	100 (60)	2,300	80 (40)	1,800 (1,350)	60 (25)	1,500	40 (20)
6mm	2,500	120 (60)	2,000	100 (50)	1,500 (1,100)	75 (30)	1,300	50 (25)
8mm	1,900	130 (60)	1,500	100 (50)	1,200 (900)	85 (35)	1,000	50 (25)
10mm	1,600	130 (60)	1,300	100 (50)	950 (710)	75 (30)	800	50 (25)
12mm	1,300	120 (60)	1,100	90 (45)	800 (600)	60 (25)	670	40 (20)
16mm	1,000	80 (40)	820	65 (30)	600 (450)	45 (20)	500	30 (15)
20mm	800	65 (30)	650	50 (25)	480 (360)	40 (15)	400	25 (13)
25mm	650	50 (25)	520	40 (20)	380 (280)	30 (12)	320	20 (10)
절입량 Depth of Cut								

- 팔호안의 수치는 홈 가공시 회전속도, 이송속도 기준입니다.
- 오스테나이트계 스테인레스강 절삭에는 수용성 절삭유제의 사용이 특히 효과적입니다.
- 절입이 작은경우, 회전속도와 이송속도를 더욱 올릴수 있습니다.
- 기계나 가공물 장착의 강성이 없는경우나 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- When cutting austenitic stainless steels, the use of water-soluble cutting fluid is effective.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- When drilling, please set the feed rate at 1/3 or below the values above.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

4HSE/4HCE

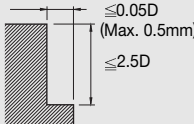
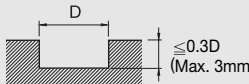
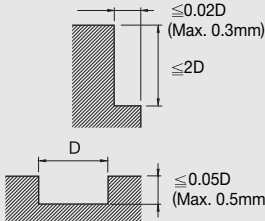
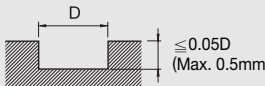
■ 4HSE는 아래 수치의 20% Up 적용
■ Apply 20% up values of below condition for 4HSE

• RPM : rev./min • Feed : mm/min

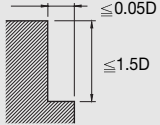
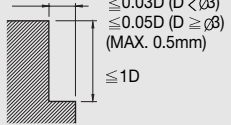
파삭재 Material	합금강/내열강 Alloy Steels/ Heat Resistant Steels		고경도강 Hardened Steels NAK / SKD	
경도 Hardness	30HRC ~ 40HRC		40 ~ 50HRC	
외경 Outside Diameter	RPM	FEED	RPM	FEED
1mm	48,000	1,480	38,000	1,050
2mm	33,300	1,750	26,000	1,250
3mm	21,800	1,750	17,300	1,250
4mm	16,700	1,800	13,200	1,300
5mm	15,700	2,000	12,500	1,500
6mm	13,100	1,950	10,350	1,400
7mm	11,000	1,900	9,000	1,380
8mm	9,880	1,880	7,800	1,350
9mm	7,800	1,750	6,150	1,260
10mm	6,650	1,750	5,250	1,260
11mm	5,600	1,680	4,300	1,150
12mm	5,600	1,680	4,300	1,150
14mm	4,650	1,600	3,500	1,050
16mm	4,650	1,600	3,500	1,050
18mm	3,750	1,560	2,800	1,000
20mm	3,500	1,460	2,600	980
절입량 Milling Amount of Side Milling				

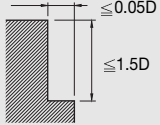
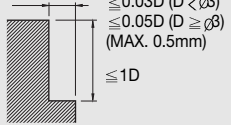
4LEM

• RPM : rev./min • Feed : mm/min

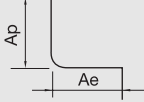
파삭재 Material	탄소강 Carbon Steels S50 / SCM		고경도강/ 프리하든강 Hardened Steels/ Prehardened Steels NAK / SKD61		스테인레스강 Stainless Steels SUS304 / SUS316		고경도강 Hardened Steels SKD61	
경도 Hardness	~ 30HRc		30 ~ 45HRc				45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	6,800	85	5,800	85	4,800	55	4,000	25
1.5mm	6,000	90	5,000	90	4,100	60	3,400	30
2mm	5,000	100	4,000	86	3,200	65	2,800	40
3mm	4,200	110	3,400	95	2,600	70	2,100	50
4mm	3,400	140	2,700	110	2,100	85	1,700	60
5mm	2,900	170	2,300	140	1,800	100	1,500	70
6mm	2,500	200	2,000	170	1,500	130	1,300	85
8mm	1,900	220	1,500	170	1,200	150	1,000	85
10mm	1,600	220	1,300	170	950	130	800	85
12mm	1,300	170	1,100	150	800	100	670	70
16mm	1,000	140	820	110	600	80	500	50
20mm	800	110	650	85	480	70	400	40
25mm	650	85	520	70	380	50	320	35
절입량 Depth of Cut								
								

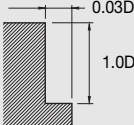
- 오스테나이트계 스테인레스강 절삭에는 수용성 절삭유제의 사용이 특히 효과적입니다.
- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴수 있습니다.
- 기계나 가공물 장치의 강성이 없는 경우나 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- When cutting austenitic stainless steels, the use of water-soluble cutting fluid is effective.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- When drilling, please set the feed rate at 1/3 or below the values above.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

파삭재 Material	고경도강 Hardened Steels SKD61			고경도강 Hardened Steels SKD11		
	경도 Hardness 45HRc ~ 55HRc			55HRc ~ 62HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
1mm	40,000	1,200	0.05	40,000	800	0.03
1.5mm	40,000	1,500	0.05	40,000	900	0.04
2mm	40,000	2,000	0.1	24,000	1,000	0.05
3mm	38,400	4,560	0.2	19,200	2,280	0.1
4mm	28,800	5,280	0.2	14,400	2,640	0.1
5mm	24,000	6,000	0.2	12,000	3,000	0.1
6mm	19,200	6,960	0.3	9,600	3,480	0.2
8mm	14,400	6,960	0.4	7,200	3,480	0.2
10mm	11,520	6,960	0.5	5,760	3,480	0.3
12mm	9,600	5,760	0.6	4,800	2,880	0.3
16mm	7,200	4,320	0.8	3,600	2,160	0.5
20mm	5,760	3,480	1	2,880	1,680	0.5
절입량 Depth of Cut						

파삭재 Material	고경도강 Hardened Steels SKD61			고경도강 Hardened Steels SKD11		
	경도 Hardness 45HRc ~ 55HRc			55HRc ~ 62HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
3mm	32,000	3,800	0.2	16,000	1,900	0.1
4mm	24,000	4,400	0.2	12,000	2,200	0.1
5mm	20,000	5,000	0.2	10,000	2,500	0.1
6mm	16,000	5,800	0.3	8,000	2,900	0.2
8mm	12,000	5,800	0.4	6,000	2,900	0.2
10mm	9,600	5,800	0.5	4,800	2,900	0.3
12mm	8,000	4,800	0.6	4,000	2,400	0.3
16mm	6,000	3,600	0.8	3,000	1,800	0.5
20mm	4,800	2,900	1	2,400	1,400	0.5
25mm	3,000	2,000	1	2,000	1,000	0.5
절입량 Depth of Cut						

파삭재 Material		동 Copper				고경도강/ 프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels				고경도강 Hardened Steels			
						NAK / SKD				SKD / SKT				SKD / SKT			
경도 Hardness						30HRC ~ 45HRC				45HRC ~ 55HRC				55HRC ~ 65HRC			
외경 Outside Diameter	유효장 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	RPM	FEED	Ap Axial Depth	Ae Radial Depth
0.2mm	1mm	50,000	196	0.264	0.020	50,000	196	0.006	0.020	34,500	150	0.004	0.020	14,950	24	0.001	0.015
"	1.5	50,000	173	0.017	0.010	50,000	173	0.005	0.010	26,450	104	0.003	0.010	11,730	20	0.001	0.007
0.3mm	1	50,000	483	0.029	0.020	50,000	495	0.007	0.020	34,500	345	0.005	0.015	21,505	34	0.004	0.015
"	3	50,000	207	0.029	0.015	50,000	219	0.006	0.015	24,150	81	0.003	0.010	14,605	20	0.002	0.010
0.4mm	1	47,150	598	0.047	0.062	50,000	495	0.013	0.070	39,675	368	0.011	0.070	23,575	39	0.004	0.070
"	3	33,350	449	0.026	0.053	26,450	380	0.008	0.026	26,450	276	0.007	0.026	15,755	29	0.003	0.026
0.5mm	1	48,300	1,334	0.079	0.114	48,300	1,116	0.033	0.119	39,100	840	0.029	0.119	24,150	92	0.013	0.119
"	3	31,050	748	0.056	0.088	31,050	621	0.022	0.110	25,415	460	0.020	0.110	15,755	51	0.008	0.110
"	5	25,760	552	0.026	0.044	25,760	459	0.011	0.010	20,700	345	0.010	0.010	12,995	38	0.004	0.010
0.6mm	2	27,945	598	0.111	0.158	27,945	495	0.010	0.214	23,000	380	0.010	0.214	14,835	42	0.004	0.214
"	6	16,445	288	0.035	0.044	16,445	242	0.003	0.010	13,570	184	0.003	0.010	8,740	21	0.001	0.010
0.8mm	4	17,250	529	0.129	0.194	17,020	437	0.014	0.114	14,720	345	0.015	0.114	9,890	40	0.007	0.114
"	8	12,650	299	0.029	0.098	12,650	264	0.005	0.088	10,695	184	0.004	0.088	7,475	20	0.002	0.088
1 mm	4	13,800	955	0.196	0.396	13,800	805	0.029	0.264	11,730	655	0.034	0.264	8,280	78	0.017	0.264
"	10	8,625	380	0.047	0.308	8,625	311	0.011	0.123	7,475	264	0.013	0.123	5,290	31	0.006	0.123
"	16	6,900	230	0.018	0.220	6,900	184	0.004	0.026	5,980	161	0.005	0.026	4,255	19	0.002	0.026
1.2mm	6	9,200	690	0.182	0.457	9,200	575	0.018	0.088	8,165	483	0.015	0.088	6,095	59	0.011	0.088
"	12	6,670	437	0.053	0.396	6,670	368	0.007	0.070	5,980	299	0.008	0.070	4,370	37	0.004	0.070
1.5 mm	4	12,880	1,265	0.293	0.660	12,880	1,070	0.044	0.440	11,730	920	0.059	0.440	8,970	121	0.032	0.440
"	10	8,280	874	0.147	0.554	8,280	736	0.031	0.282	7,590	633	0.041	0.282	5,865	83	0.022	0.282
"	20	5,865	472	0.041	0.352	5,865	403	0.005	0.106	5,405	345	0.006	0.106	4,140	45	0.003	0.106
2mm	6	12,535	1,185	0.314	0.836	12,535	1,001	0.042	0.792	11,730	909	0.059	0.792	9,430	130	0.035	0.792
"	12	9,200	955	0.182	0.704	9,200	805	0.030	0.440	8,280	725	0.043	0.440	6,785	105	0.025	0.440
"	20	6,900	748	0.091	0.651	6,900	633	0.017	0.194	6,440	564	0.023	0.194	5,175	82	0.014	0.194
"	30	5,865	655	0.049	0.440	5,865	541	0.005	0.132	5,405	495	0.005	0.132	4,255	68	0.002	0.132
2.5mm	10	10,350	1,185	0.331	0.836	10,350	1,001	0.051	0.528	9,775	943	0.073	0.528	8,165	151	0.047	0.528
"	30	6,210	529	0.067	0.616	6,210	437	0.011	0.176	5,865	414	0.016	0.176	4,830	65	0.010	0.176
3mm	12	10,350	1,564	0.381	0.831	10,350	1,127	0.103	0.616	9,775	874	0.103	0.655	8,740	196	0.073	0.655
"	20	8,165	1,024	0.254	0.762	8,165	863	0.071	0.567	7,705	667	0.071	0.567	6,900	147	0.043	0.567
"	30	6,900	850	0.137	0.674	6,900	702	0.049	0.371	6,325	541	0.049	0.371	5,865	115	0.028	0.352
4mm	12	8,740	1,265	0.401	1.525	8,740	1,058	0.081	1.124	7,360	920	0.117	1.124	6,210	210	0.083	1.124
"	20	6,785	1,150	0.375	1.325	6,785	978	0.053	0.880	5,750	840	0.078	0.880	4,830	194	0.057	0.880
"	30	5,750	897	0.196	1.210	5,750	748	0.028	0.671	4,715	656	0.041	0.671	4,025	149	0.030	0.708
"	45	4,715	437	0.096	1.118	4,715	368	0.007	0.326	4,025	322	0.010	0.326	3,450	75	0.007	0.326
5mm	15	7,705	2,047	0.697	2.277	7,705	1,702	0.106	1.346	5,520	1,139	0.150	1.346	4,600	342	0.110	1.346
"	30	5,290	978	0.342	1.760	5,290	817	0.053	1.035	3,795	541	0.075	1.035	3,220	164	0.055	1.035
6mm	20	5,980	1,380	0.600	2.194	5,980	1,219	0.476	1.356	3,565	1,035	0.186	1.356	3,105	393	0.145	1.356
"	40	4,600	1,150	0.565	2.049	4,600	909	0.410	1.304	2,645	759	0.164	1.304	2,300	304	0.123	1.304
8mm	22	5,520	1,265	0.528	2.542	5,520	1,081	0.419	1.518	3,220	909	0.164	1.518	2,760	346	0.128	1.518
"	40	4,140	965	0.497	2.277	4,140	805	0.361	1.323	2,415	667	0.144	1.323	1,955	268	0.108	1.323
10mm	24	4,600	1,035	0.449	2.887	4,485	920	0.356	1.645	2,760	771	0.139	1.645	2,300	294	0.108	1.645
"	45	3,450	817	0.423	2.438	3,450	679	0.307	1.334	1,955	564	0.122	1.334	1,725	228	0.092	1.334
12mm	26	3,795	874	0.377	3.013	3,795	771	0.299	2.024	2,300	644	0.117	2.024	1,955	247	0.091	2.024
"	50	2,875	690	0.355	2.415	2,875	575	0.258	1.403	1,725	483	0.103	1.403	1,380	191	0.077	1.403
16mm	35	2,990	702	0.302	2.921	2,990	610	0.239	2.162	1,725	518	0.094	2.162	1,610	198	0.073	2.162
측면 절삭 Milling amount of side milling	• Ap : Axial Depth • Ae : Radial Depth Ap Ae																

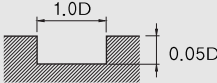
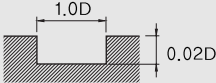
파삭재 Material		고경도강/프리하든강 Prehardened Steels / Hardened Steels NAK / SKD				고경도강 Hardened Steels SKD / SKT			
경도 Hardness		30HRc ~ 45HRc				45HRc ~ 55HRc			
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
1mm	4	13,455	1,265	0.038	0.264	11,730	1,046	0.030	0.238
"	10	8,625	495	0.011	0.123	7,475	495	0.009	0.098
1.2mm	4	12,880	1,380	0.031	0.440	11,730	1,070	0.023	0.293
"	10	8,855	782	0.017	0.176	7,130	587	0.009	0.147
1.5mm	6	11,385	1,265	0.040	0.475	10,350	1,150	0.037	0.435
"	12	8,280	817	0.028	0.317	7,590	759	0.025	0.290
2mm	6	12,650	1,265	0.063	0.633	11,730	1,173	0.059	0.713
"	12	8,970	1,012	0.045	0.396	8,280	943	0.043	0.396
2.5mm	10	10,580	1,380	0.065	0.528	9,775	1,150	0.065	0.528
"	20	7,590	1,150	0.047	0.264	7,360	655	0.030	0.220
3mm	10	11,040	2,070	0.094	0.684	10,235	2,070	0.059	0.684
"	20	8,165	1,495	0.057	0.567	7,705	1,495	0.035	0.567
4mm	13	9,085	1,576	0.105	1.150	7,590	1,530	0.082	1.150
"	20	7,130	1,380	0.069	0.920	5,980	1,288	0.054	0.920
"	30	6,325	1,104	0.043	0.745	5,290	1,058	0.033	0.745
6mm	20	5,635	1,691	0.176	2.305	3,335	978	0.176	1.281
"	40	2,875	782	0.098	1.320	1,610	460	0.098	0.733
8mm	22	4,600	1,840	0.212	2.921	2,760	782	0.212	1.518
10mm	24	3,680	2,013	0.242	3.140	2,185	621	0.253	1.645
12mm	26	2,875	2,070	0.265	3.105	1,725	495	0.276	1.714
측면 절삭 Milling amount of side milling		• Ap : Axial Depth • Ae : Radial Depth 							

측면 절삭 Side Milling																			
파삭재 Material	합금강 Alloy Steels SKD				고경도강 Prehardened Steels CENA1, NAK80				고경도강 Hardened Steels SKD61~SKT4				고경도강 Hardened Steels SKD11~SKH51						
	경도 Hardness				25HRC ~ 35HRC				35HRC ~ 45HRC				45HRC ~ 55HRC				55HRC ~ 65HRC		
외경 Outside Diameter	High Speed		General		High Speed		General		High Speed		General		High Speed		General				
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED			
6mm	13,000	4,910	6,400	2,420	13,000	4,390	5,300	1,250	11,000	3,270	4,200	870	8,000	2,160	3,200	600			
8mm	10,000	5,040	4,800	2,420	10,000	4,500	4,000	1,260	8,000	3,170	3,200	890	6,000	2,160	2,400	600			
10mm	8,000	4,840	3,800	2,300	8,000	4,320	3,200	1,210	6,400	3,040	2,500	830	4,800	2,070	1,900	570			
12mm	6,600	4,440	3,200	2,150	6,600	3,960	2,700	1,130	5,300	2,800	2,100	780	4,000	1,920	1,600	540			
16mm	5,000	4,200	2,400	2,070	5,000	3,750	2,000	1,080	4,000	2,640	1,600	760	3,000	1,800	1,200	520			
절입량 Depth of Cut																			

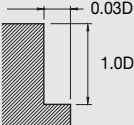
- 가능한 가공성이 좋은 기계를 사용하십시오.
- 파삭재와 절삭형상을 위한 적절한 쿨란트를 사용하십시오.
- 이 조건들은 일반적인 조건들입니다. 실제 가공에서는 사용 기계와 파삭재 상태에 따라 절삭조건을 조정하십시오.
- 가능한 RPM이 추천조건 보다 작을 때에는 FEED값도 동일한 비율로 낮추어 사용하십시오.

- Use a highly rigid and accurate machine as possible.
- Use the appropriate coolant for the work material and machining shape.
- These condions are for general guidance: in actual machining conditoinis adjust the parameters according to your actual machine and work-piece conditions.
- If the rpm available is lower than that recmmended please reduce the feed rate to the same ratio.

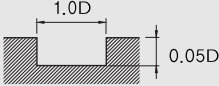
홈절삭 Slotting

파삭재 Material	합금강/내열강 Alloy Steels/ Heat Resistant Steels		고경도강/프러하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels			
			NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11	
경도 Hardness	30HRc ~ 40HRc		40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	50,000	250	45,000	200	40,000	155	33,000	105	25,000	60
0.5mm	50,000	295	45,000	225	40,000	175	33,000	110	25,000	65
0.6mm	50,000	375	45,000	285	40,000	225	30,000	125	25,000	85
0.8mm	50,000	480	45,000	350	30,000	235	25,000	145	19,000	90
1mm	48,000	600	38,000	456	25,500	288	20,500	172	16,000	108
2mm	33,300	680	26,000	544	17,500	336	14,500	208	11,000	128
3mm	21,800	680	17,300	544	11,500	336	9,500	208	7,500	128
4mm	16,700	704	13,200	560	8,800	352	7,200	216	5,600	136
5mm	15,700	800	12,500	644	8,300	400	6,400	228	5,100	144
6mm	13,100	760	10,350	616	6,900	384	5,300	224	4,200	144
8mm	9,880	744	7,800	576	5,200	356	4,000	204	3,200	132
10mm	7,800	680	6,150	544	4,100	332	3,200	192	2,550	124
12mm	6,650	680	5,250	544	3,500	332	2,650	192	2,100	124
절입량 Depth of Cut										

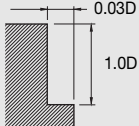
측면절삭 Side Cutting

파삭재 Material	합금강/내열강 Alloy Steels/ Heat Resistant Steels		고경도강/프러하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels			
			NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11	
경도 Hardness	30HRc ~ 40HRc		40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	50,000	185	45,000	120	40,000	110	33,000	70	25,000	40
0.5mm	50,000	205	45,000	160	40,000	125	33,000	80	25,000	45
0.6mm	50,000	265	45,000	200	40,000	160	30,000	90	25,000	60
0.8mm	50,000	335	40,000	245	30,000	165	25,000	100	19,000	65
1mm	48,000	840	38,000	656	25,500	408	20,500	248	16,000	152
2mm	33,300	960	26,000	776	17,500	480	14,500	296	11,000	184
3mm	21,800	960	17,300	776	11,500	480	9,500	296	7,500	184
4mm	16,700	1,000	13,200	800	8,800	500	7,200	308	5,600	192
5mm	15,700	1,160	12,500	920	8,300	568	6,400	328	5,100	208
6mm	13,100	1,080	10,350	880	6,900	552	5,300	320	4,200	204
8mm	9,880	1,056	7,800	824	5,200	508	4,000	292	3,200	188
10mm	7,800	960	6,150	776	4,100	472	3,200	272	2,550	176
12mm	6,650	960	5,250	776	3,500	472	2,650	272	2,100	176
절입량 Depth of Cut										

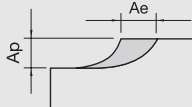
홈절삭 Slotting

피삭재 Material	합금강 Alloy Steels SKD61 / SKD11				합금강 Alloy Steels SCM440				고경도강 Hardened Steels NAK80				고경도강 Hardened Steels SKD61~SKT4			
경도 Hardness	200~250HB				25HRc ~ 35HRc				35HRc ~ 45HRc				45HRc ~ 55HRc			
외경 Outside Diameter	High Speed		General		High Speed		General		High Speed		General		High Speed		General	
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3mm	8,500	820	6,400	490	-	-	6,400	440	-	-	5,800	360	-	-	5,300	240
4mm	6,400	920	4,800	550	-	-	4,800	500	-	-	4,400	410	-	-	4,000	280
6mm	4,200	1,010	3,200	610	-	-	3,200	550	-	-	2,900	450	-	-	2,700	310
8mm	3,200	1,090	2,400	650	-	-	2,400	590	-	-	2,200	480	-	-	2,000	330
10mm	2,500	950	1,900	580	-	-	1,900	520	-	-	1,800	440	-	-	1,600	290
12mm	2,100	880	1,600	540	-	-	1,600	480	-	-	1,500	400	-	-	1,300	260
절입량 Depth of Cut																

측면절삭 Side Cutting

피삭재 Material	합금강 Alloy Steels SKD61 / SKD11				합금강 Alloy Steels SCM440				고경도강 Hardened Steels NAK80				고경도강 Hardened Steels SKD61~SKT4			
경도 Hardness	200~250HB				25HRc ~ 35HRc				35HRc ~ 45HRc				45HRc ~ 55HRc			
외경 Outside Diameter	High Speed		General		High Speed		General		High Speed		General		High Speed		General	
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3mm	16,000	1,800	9,600	860	14,000	1,400	9,600	770	12,000	1,100	8,500	610	11,000	860	7,400	460
4mm	12,000	1,900	7,200	920	10,000	1,400	7,200	830	8,800	1,100	6,400	660	8,000	900	5,600	500
6mm	8,000	2,200	4,800	1,080	6,900	1,700	4,800	970	5,800	1,300	5,100	720	5,300	1,040	3,700	580
8mm	6,000	2,400	3,600	1,150	5,200	1,900	3,600	1,040	4,400	1,400	4,200	750	4,000	1,120	2,800	630
10mm	4,800	2,200	2,900	1,070	4,100	1,700	2,900	960	3,500	1,300	2,500	740	3,200	1,030	2,200	570
12mm	4,000	2,100	2,400	1,000	3,500	1,600	2,400	900	2,900	1,200	2,100	700	2,700	980	1,900	550
절입량 Depth of Cut																

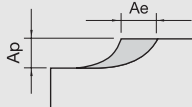
- 가능한 가공성이 좋은 기계를 사용하십시오.
- 피삭재와 절삭형상을 위한 적절한 쿨런트를 사용하십시오.
- 이 조건들은 일반적인 조건들입니다. 실제 가공에서는 사용 기계와 피삭재 상태에 따라 절삭조건을 조정하십시오.
- 가능한 RPM이 추천조건 보다 작을 때에는 FEED값도 동일한 비율로 낮추어 사용하십시오.
- Use a highly rigid and accurate machine as possible.
- Use the appropriate coolant for the work material and machining shape.
- These conditions are for general guidance: in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.

피삭재 Material		합금강 Alloy Steels S50C / FC 250 / SCM				합금강/공구강 Alloy Steels/ Tool Steels SKD61 / SK / NAK				고경도강 Hardened Steels SKD61				고경도강 Hardened Steels SKD11			
경도 Hardness		~ 30HRc				30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 62HRc			
외경 Outside Diameter	반경 Radius	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
1mm	R0.2	45,000	7,000	0.05	0.05	42,000	7,800	0.03	0.05	35,000	6,800	0.02	0.05	25,000	2,600	0.02	0.05
1.5mm	R0.5	40,000	9,000	0.06	0.06	40,000	8,000	0.04	0.06	30,000	7,000	0.03	0.60	21,000	2,800	0.02	0.06
2mm	R0.5	33,000	10,000	0.08	0.80	27,000	8,400	0.05	0.08	24,000	7,500	0.04	0.80	16,000	3,000	0.03	0.80
3mm	R0.5	22,000	11,000	0.12	1.20	18,000	9,000	0.08	1.20	16,000	8,500	0.06	1.20	11,000	3,300	0.05	1.20
4mm	R0.5	19,000	1,300	0.17	1.70	16,000	10,000	0.13	1.70	13,000	10,000	0.09	1.70	900	4,000	0.08	1.70
"	R1.0	17,000	12,000	0.15	1.50	14,000	9,500	0.12	1.50	12,000	8,800	0.08	1.50	8,000	3,500	0.07	1.50
5mm	R0.5	15,000	14,000	0.23	2.30	12,000	12,000	0.17	2.30	11,000	10,000	0.12	2.30	7,300	4,300	0.09	2.30
"	R1.0	13,000	13,000	0.20	2.00	11,000	11,000	0.15	2.00	9,600	9,500	0.10	2.00	6,400	3,800	0.08	2.00
6mm	R0.3	13,310	15,730	0.30	2.95	10,900	13,200	0.18	2.95	10,000	13,000	0.12	2.95	6,500	4,600	0.12	2.95
"	R0.5	12,980	15,340	0.29	2.85	10,600	13,000	0.17	2.85	9,500	12,000	0.11	2.85	6,300	4,500	0.11	2.85
"	R1.0	12,600	12,600	0.28	2.80	12,654	12,600	0.17	2.80	9,000	11,000	0.11	2.80	5,800	4,100	0.11	2.80
"	R1.5	11,000	13,000	0.25	2.50	9,000	11,000	0.15	2.50	8,000	9,600	0.10	2.50	5,300	3,800	0.10	2.50
8mm	R0.3	9,800	17,500	0.35	3.54	8,400	13,500	0.24	3.54	7,300	15,000	0.18	3.54	4,700	4,484	0.15	3.54
"	R0.5	8,800	16,500	0.34	3.42	8,200	13,000	0.23	3.42	7,100	13,000	0.17	3.42	4,600	4,370	0.15	3.42
"	R1.0	8,400	15,000	0.34	3.36	8,000	12,000	0.22	3.36	6,700	11,000	0.17	3.36	4,520	4,294	0.15	3.36
"	R2.0	8,200	13,000	0.30	3.00	7,000	11,000	0.20	3.00	6,000	9,600	0.15	3.00	4,000	3,800	0.13	3.00
10mm	R0.3	7,670	15,340	0.35	5.31	6,490	12,980	0.24	5.31	5,664	11,210	0.18	5.31	3,776	4,484	0.15	5.31
"	R0.5	7,475	14,950	0.34	5.13	6,325	12,650	0.23	5.13	5,520	10,925	0.17	5.13	3,680	4,370	0.15	5.13
"	R1.0	7,280	14,560	0.34	5.04	6,160	12,320	0.22	5.04	5,376	10,640	0.17	5.04	3,584	4,256	0.15	5.04
"	R2.0	6,500	13,000	0.30	4.50	5,500	11,000	0.20	4.50	4,800	9,500	0.15	4.50	3,200	3,800	0.13	4.50
12mm	R0.5	7,000	1,500	0.53	5.31	5,428	11,800	0.35	5.31	4,838	10,620	0.30	5.31	3,186	4,130	0.24	5.31
"	R1.0	6,400	14,000	0.51	5.13	5,290	11,500	0.34	5.13	4,715	10,350	0.29	5.13	3,105	4,025	0.23	5.13
"	R2.0	6,000	12,500	0.50	5.04	5,152	11,200	0.34	5.04	4,592	10,080	0.28	5.04	3,024	3,920	0.22	5.04
"	R3.0	5,500	12,000	0.45	4.50	4,600	10,000	0.30	4.50	4,100	9,000	0.25	4.50	2,700	3,500	0.20	4.50
16mm	R1.0	4,838	11,800	0.42	7.32	4,012	10,384	0.25	7.10	3,540	9,204	0.22	7.15	2,360	3,776	0.13	7.35
"	R2.0	4,100	10,000	0.45	7.50	3,400	8,800	0.30	7.50	3,000	7,800	0.25	7.50	2,000	3,200	0.20	7.50
절입량 Depth of Cut																	

- 상기 절삭조건은 코너R 가공시 사용합니다.
- 상기 절삭조건은 Overhang 길이가 5D이하인 경우에 적용됩니다. Overhang 길이가 긴 경우, RPM이나 FEED도 동일 비율로 낮춰주세요.
- 절입깊이가 얇은 경우, RPM과 FEED를 증가해주세요.
- 원활한 칩배출을 위하여 에어브로나 오일 미스트를 추천합니다.
- 몰드 같은 프로파일 가공을 위한 가공방법과 절입깊이 등의 절삭조건은 피삭재에 따라 다르게 사용하세요. 피삭재의 코너부위 작업시 FEED를 줄여 작업해주세요.
- Z축 작업시, 가공 경사 각도를 2도로 설정해주시고 FEED를 50%까지 줄여주세요..
- The above table shows cutting conditions when machining with the corner radius cutting edge.
- This table shows the cutting conditions with less than 5D overhang length. In the case of longer overhangs, the revolution and the feed rate should be reduced proportionately.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- Air blow or oil mist is recommended for good chip evacuation.
- For profile machining such as mould, machining conditions may differ considerably depending on the workpiece geometry, machining methods and depth of cut. Reduce the feed rate especially when machining the corner sections of a workpiece.
- When machining inclinations in the Z direction, set the inclination angle at 2° and reduce the feed rate by 50%.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

■ Coefficients respective of tool overhang

Type	Overhang	Revolution	Feed rate	Depth of Cut ap
Straight	L/D ≤ 5	100%	100%	100%
	L/D = 6	90%	80%	80%
	L/D = 7	80%	70%	70%
Taper neck	L/D = 6	100%	100%	100%
	L/D = 8	90%	80%	80%
	L/D ≥ 10	80%	70%	70%

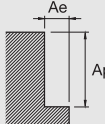
피삭재 Material		합금강 Alloy Steels S50C / FC 250 / SCM				합금강/공구강 Alloy Steels/ Tool Steels SKD61 / SK / NAK				고경도강 Hardened Steels SKD61				고경도강 Hardened Steels SKD11			
경도 Hardness		~ 30HRc				30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 62HRc			
외경 Outside Diameter	반경 Radius	RPM	FEED	Ap Axial Depth	Ae Radial 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
1mm	R0.2	45,000	7,700	0.05	0.05	42,000	8,580	0.03	0.05	35,000	7,480	0.02	0.05	25,000	2,860	0.02	0.05
1.5mm	R0.5	40,000	9,900	0.06	0.06	40,000	8,800	0.04	0.06	30,000	7,700	0.03	0.60	21,000	3,080	0.02	0.06
2mm	R0.5	33,000	11,000	0.08	0.80	27,000	9,240	0.05	0.08	24,000	8,250	0.04	0.80	16,000	3,300	0.03	0.80
3mm	R0.5	22,000	12,100	0.12	1.20	18,000	9,900	0.08	1.20	16,000	9,350	0.06	1.20	11,000	3,630	0.05	1.20
4mm	R0.5	19,000	1,430	0.17	1.70	16,000	11,000	0.13	1.70	13,000	11,000	0.09	1.70	900	4,400	0.08	1.70
"	R1.0	17,000	13,200	0.15	1.50	14,000	10,450	0.12	1.50	12,000	9,680	0.08	1.50	8,000	3,850	0.07	1.50
5mm	R0.5	15,000	15,400	0.23	2.30	12,000	13,200	0.17	2.30	11,000	11,000	0.12	2.30	7,300	4,730	0.09	2.30
"	R1.0	13,000	14,300	0.20	2.00	11,000	12,100	0.15	2.00	9,600	10,450	0.10	2.00	6,400	4,180	0.08	2.00
6mm	R0.3	13,310	17,303	0.30	2.95	10,900	14,520	0.18	2.95	10,000	14,300	0.12	2.95	6,500	5,060	0.12	2.95
"	R0.5	12,980	16,874	0.29	2.85	10,600	14,300	0.17	2.85	9,500	13,200	0.11	2.85	6,300	4,950	0.11	2.85
"	R1.0	12,600	13,860	0.28	2.80	12,654	13,860	0.17	2.80	9,000	12,100	0.11	2.80	5,800	4,510	0.11	2.80
"	R1.5	11,000	14,300	0.25	2.50	9,000	12,100	0.15	2.50	8,000	10,560	0.10	2.50	5,300	4,180	0.10	2.50
8mm	R0.3	9,800	19,250	0.35	3.54	8,400	14,850	0.24	3.54	7,300	16,500	0.18	3.54	4,700	4,932	0.15	3.54
"	R0.5	8,800	18,150	0.34	3.42	8,200	14,300	0.23	3.42	7,100	14,300	0.17	3.42	4,600	4,807	0.15	3.42
"	R1.0	8,400	16,500	0.34	3.36	8,000	13,200	0.22	3.36	6,700	12,100	0.17	3.36	4,520	4,723	0.15	3.36
"	R2.0	8,200	14,300	0.30	3.00	7,000	12,100	0.20	3.00	6,000	10,560	0.15	3.00	4,000	4,180	0.13	3.00
10mm	R0.3	7,670	16,874	0.35	5.31	6,490	14,278	0.24	5.31	5,664	12,331	0.18	5.31	3,776	4,932	0.15	5.31
"	R0.5	7,475	16,445	0.34	5.13	6,325	13,915	0.23	5.13	5,520	12,018	0.17	5.13	3,680	4,807	0.15	5.13
"	R1.0	7,280	16,016	0.34	5.04	6,160	13,552	0.22	5.04	5,376	11,704	0.17	5.04	3,584	4,682	0.15	5.04
"	R2.0	6,500	14,300	0.30	4.50	5,500	12,100	0.20	4.50	4,800	10,450	0.15	4.50	3,200	4,180	0.13	4.50
12mm	R0.5	7,000	1,650	0.53	5.31	5,428	12,980	0.35	5.31	4,838	11,682	0.30	5.31	3,186	4,543	0.24	5.31
"	R1.0	6,400	15,400	0.51	5.13	5,290	12,650	0.34	5.13	4,715	11,385	0.29	5.13	3,105	4,428	0.23	5.13
"	R2.0	6,000	13,750	0.50	5.04	5,152	12,320	0.34	5.04	4,592	11,088	0.28	5.04	3,024	4,312	0.22	5.04
"	R3.0	5,500	13,200	0.45	4.50	4,600	11,000	0.30	4.50	4,100	9,900	0.25	4.50	2,700	3,850	0.20	4.50
16mm	R1.0	4,838	12,980	0.42	7.32	4,012	11,422	0.25	7.10	3,540	10,124	0.22	7.15	2,360	4,154	0.13	7.35
"	R2.0	4,100	11,000	0.45	7.50	3,400	9,680	0.30	7.50	3,000	8,580	0.25	7.50	2,000	3,520	0.20	7.50
절입량 Depth of Cut																	

- 상기 절삭조건은 코너 가공시 사용합니다.
- 상기 절삭조건은 Overhang 길이가 5D이하인 경우에 적용됩니다. Overhang 길이가 긴 경우, RPM이나 FEED도 동일 비율로 낮춰주세요.
- 절입깊이가 얇은 경우, RPM과 FEED를 증가해주세요.
- 원활한 칩배출을 위하여 에어브로나 오일 미스트를 추천합니다.
- 몰드 같은 프로파일 가공을 위한 가공방법과 절입깊이 등의 절삭조건은 피삭재에 따라 다르게 사용하세요. 피삭재의 코너부위 작업시 FEED를 줄여 작업해주세요.
- Z축 작업시, 가공 경사 각도를 2도로 설정해주시고 FEED를 50%까지 줄여주세요..
- The above table shows cutting conditions when machining with the corner radius cutting edge.
- This table shows the cutting conditions with less than 5D overhang length. In the case of longer overhangs, the revolution and the feed rate should be reduced proportionately.
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- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

■ Coefficients respective of tool overhang

Type	Overhang	Revolution	Feed rate	Depth of Cut ap
Straight	L/D ≤ 5	100%	100%	100%
	L/D = 6	90%	80%	80%
	L/D = 7	80%	70%	70%
Taper neck	L/D = 6	100%	100%	100%
	L/D = 8	90%	80%	80%
	L/D ≥ 10	80%	70%	70%

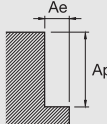
측면 절삭 Side Cutting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels SS400 / S55C		합금강/ 공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD		공구강/ 프러하드강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1		공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD									
경도 Hardness	~750N/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc									
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED								
4mm	5,000	510	4,200	260	3,600	180	2,800	130								
5mm	5,000	510	4,200	270	3,200	200	2,400	150								
6mm	4,200	510	3,600	290	2,800	220	2,100	170								
8mm	3,200	510	2,700	330	2,100	250	1,600	190								
10mm	2,600	510	2,200	345	1,600	260	1,300	210								
12mm	2,100	510	1,800	360	1,400	270	1,100	215								
16mm	1,600	510	1,400	385	1,000	290	800	220								
20mm	1,300	480	1,100	375	800	280	640	210								
절입량 Depth of Cut	<table><tr><td>Ap</td><td>Ae</td></tr><tr><td>1.5D</td><td>0.4D</td></tr></table>		Ap	Ae	1.5D	0.4D					<table><tr><td>Ap</td><td>Aa</td></tr><tr><td>1.5D</td><td>0.3D</td></tr></table>		Ap	Aa	1.5D	0.3D
	Ap	Ae														
1.5D	0.4D															
Ap	Aa															
1.5D	0.3D															

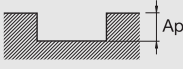
홈절삭 Slotting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels SS400 / S55C		합금강/ 공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD		공구강/ 프리하드강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1		공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD	
경도 Hardness	~750N/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,000	430	3,800	200	2,800	140	2,400	110
5mm	4,000	430	3,400	220	2,500	160	2,200	130
6mm	3,600	430	3,000	240	2,300	185	1,900	150
8mm	2,700	430	2,200	270	1,800	210	1,400	180
10mm	2,200	430	1,800	290	1,400	220	1,200	185
12mm	1,800	430	1,500	300	1,200	230	960	190
16mm	1,400	430	1,100	310	900	250	720	200
20mm	1,100	410	900	310	700	240	560	185
절입량 Depth of Cut	Ap : 0.75D ApMax=12mm 				Ap : 0.5D			

측면 절삭 Side Cutting

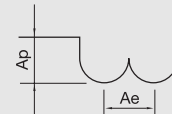
파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels SS400 / S55C		합금강/ 공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD		공구강/ 프러하드강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1		공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD									
경도 Hardness	~750N/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc									
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED								
4mm	5,800	600	4,800	300	4,100	200	3,200	150								
5mm	5,800	600	4,800	310	3,700	230	2,800	170								
6mm	4,800	600	4,200	330	3,200	250	2,400	200								
8mm	3,700	600	3,100	380	2,400	290	1,800	220								
10mm	3,000	600	2,500	400	1,800	300	1,500	250								
12mm	2,400	600	2,100	410	1,600	310	1,300	250								
16mm	1,850	600	1,600	440	1,200	330	1,000	250								
20mm	1,500	550	1,300	430	900	320	750	240								
절입량 Depth of Cut	<table><tr><td>Ap</td><td>Ae</td></tr><tr><td>1.5D</td><td>0.4D</td></tr></table>		Ap	Ae	1.5D	0.4D					<table><tr><td>Ap</td><td>Aa</td></tr><tr><td>1.5D</td><td>0.3D</td></tr></table>		Ap	Aa	1.5D	0.3D
	Ap	Ae														
1.5D	0.4D															
Ap	Aa															
1.5D	0.3D															

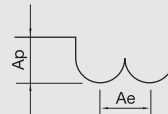
홈절삭 Slotting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels SS400 / S55C		합금강/공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD		공구강/프리하드강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1		공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD	
경도 Hardness	~750N/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,600	500	4,400	230	3,200	160	2,800	130
5mm	4,600	500	4,000	250	2,900	180	2,500	150
6mm	4,100	500	3,500	280	2,700	210	2,200	170
8mm	3,100	500	2,500	310	2,100	240	1,700	210
10mm	2,500	500	2,100	330	1,600	250	1,300	210
12mm	2,100	500	1,700	350	1,400	270	1,100	220
16mm	1,600	500	1,300	360	1,000	290	800	230
20mm	1,300	480	1,000	360	800	270	650	210
절입량 Depth of Cut	Ap : 0.75D ApMax=12mm 				Ap : 0.5D			

파삭재 Material		동 Copper				프리트강/열처리강 Prehardened Steels / Hardened Steels				열처리강 Hardened Steels			
						NAK / SKD				SKD / SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 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
R0.05	—	54,000	85	0.004	0.004	48,000	75	0.004	0.004	48,000	55	0.002	0.002
	0.5	54,000	430	0.010	0.010	48,000	350	0.006	0.007	48,000	280	0.006	0.007
R0.1	1	54,000	380	0.008	0.008	48,000	330	0.005	0.005	48,000	250	0.005	0.005
	1.5	47,000	320	0.006	0.006	47,000	250	0.004	0.004	47,000	200	0.004	0.004
	2	42,000	290	0.004	0.004	42,000	200	0.003	0.003	42,000	200	0.003	0.003
R0.15	1.5	54,000	640	0.014	0.015	48,000	480	0.010	0.010	41,000	370	0.009	0.010
	2	49,000	530	0.011	0.011	43,000	370	0.008	0.008	37,000	270	0.008	0.008
	3	43,000	460	0.009	0.010	38,000	320	0.007	0.006	32,000	240	0.006	0.006
	4	37,000	300	0.004	0.006	28,000	200	0.003	0.004	24,000	160	0.003	0.004
	5	31,000	200	0.002	0.004	26,000	125	0.001	0.003	18,000	110	0.002	0.003
R0.2	1	54,000	870	0.023	0.036	48,000	660	0.018	0.024	37,000	450	0.015	0.024
	2	54,000	790	0.022	0.036	48,000	590	0.018	0.024	37,000	400	0.015	0.020
	3	50,000	660	0.017	0.018	41,000	420	0.012	0.012	31,000	280	0.011	0.012
	4	50,000	640	0.012	0.018	38,000	400	0.009	0.012	30,000	270	0.009	0.012
	5	37,000	410	0.009	0.018	29,000	330	0.008	0.012	26,000	260	0.007	0.012
	6	37,000	360	0.006	0.010	29,000	260	0.005	0.006	26,000	200	0.004	0.006
	8	27,000	200	0.003	0.006	27,000	170	0.003	0.003	23,000	150	0.002	0.003
	10	20,000	110	0.002	0.004	25,000	110	0.002	0.002	20,000	110	0.001	0.002
R0.25	1	57,000	1,380	0.029	0.054	42,000	830	0.023	0.036	32,000	550	0.018	0.036
	2	57,000	1,250	0.028	0.054	42,000	750	0.022	0.036	32,000	500	0.018	0.036
	3	55,000	1,010	0.021	0.036	38,000	580	0.017	0.024	31,000	400	0.014	0.024
	4	55,000	1,010	0.021	0.036	38,000	580	0.017	0.024	31,000	400	0.014	0.024
	5	48,000	800	0.016	0.018	33,000	480	0.012	0.012	30,000	390	0.009	0.012
	6	36,000	610	0.009	0.018	28,000	400	0.008	0.012	27,000	330	0.005	0.012
	8	36,000	590	0.009	0.018	28,000	400	0.008	0.012	27,000	330	0.005	0.012
	10	36,000	460	0.009	0.018	28,000	400	0.008	0.012	27,000	330	0.005	0.012
	12	24,000	280	0.004	0.010	26,000	280	0.004	0.006	24,000	280	0.002	0.006
	14	16,000	170	0.001	0.006	24,000	200	0.002	0.003	21,000	240	0.001	0.003
R0.3	1	57,000	1,670	0.035	0.144	37,000	840	0.027	0.096	27,000	540	0.023	0.096
	2	57,000	1,540	0.034	0.144	37,000	770	0.027	0.096	27,000	500	0.021	0.096
	3	57,000	1,540	0.034	0.144	37,000	770	0.027	0.096	27,000	500	0.021	0.096
	4	54,000	1,130	0.026	0.108	35,000	600	0.020	0.072	26,000	380	0.016	0.072
	5	46,000	960	0.019	0.072	28,000	460	0.016	0.048	26,000	370	0.012	0.048
	6	46,000	960	0.019	0.072	28,000	460	0.016	0.048	26,000	370	0.012	0.048
	8	30,000	570	0.010	0.054	24,000	400	0.009	0.036	23,000	320	0.006	0.036
	10	30,000	490	0.007	0.036	24,000	330	0.006	0.024	23,000	290	0.004	0.024
	12	30,000	490	0.007	0.036	24,000	330	0.006	0.024	23,000	290	0.004	0.024
	14	20,000	300	0.004	0.027	22,000	300	0.004	0.018	20,000	250	0.002	0.018
R0.35	16	13,000	180	0.002	0.020	21,000	260	0.002	0.014	18,000	220	0.001	0.014
	2	56,000	1,800	0.050	0.162	35,000	740	0.039	0.108	27,000	500	0.031	0.108
	4	54,500	1,500	0.045	0.063	33,000	600	0.035	0.042	26,500	410	0.029	0.096
	8	32,000	800	0.019	0.072	12,215	420	0.020	0.048	22,500	355	0.012	0.048
	10	26,500	540	0.017	0.063	22,500	380	0.014	0.042	21,500	330	0.011	0.042
	12	23,000	420	0.017	0.063	21,500	380	0.012	0.032	21,500	320	0.010	0.042
R0.4	2	55,000	2,060	0.063	0.180	33,000	710	0.050	0.120	27,000	500	0.041	0.120
	4	55,000	1,860	0.063	0.018	31,000	600	0.050	0.012	27,000	440	0.041	0.120
	6	47,000	1,410	0.038	0.108	28,000	570	0.030	0.072	22,000	390	0.024	0.072
	8	34,000	1,040	0.027	0.090	21,000	430	0.021	0.060	22,000	390	0.018	0.060
	10	23,000	600	0.027	0.090	21,000	430	0.021	0.060	20,000	370	0.017	0.060
	12	16,000	350	0.027	0.090	19,000	430	0.018	0.040	20,000	350	0.016	0.060
	14	11,000	200	0.027	0.090	19,000	430	0.015	0.027	20,000	330	0.015	0.060
	16	7,600	115	0.027	0.090	16,000	430	0.013	0.018	20,000	310	0.014	0.060
R0.45	4	50,500	1,900	0.067	0.190	32,000	685	0.054	0.130	24,500	460	0.043	0.180
R0.5	2	46,000	2,000	0.072	0.360	32,000	770	0.057	0.240	22,000	480	0.045	0.240
	3	46,000	2,000	0.072	0.360	32,000	770	0.057	0.240	22,000	480	0.045	0.240
	4	46,000	2,000	0.071	0.360	32,000	770	0.057	0.240	22,000	480	0.045	0.240
	5	46,000	2,000	0.071	0.360	32,000	770	0.057	0.240	22,000	480	0.045	0.240
	6	39,000	1,500	0.071	0.180	26,000	760	0.055	0.120	17,600	480	0.009	0.120
	8	39,000	1,500	0.043	0.180	26,000	760	0.034	0.120	17,600	480	0.027	0.120
	10	29,000	1,110	0.028	0.090	17,600	530	0.024	0.060	16,500	420	0.018	0.060
	12	18,700	660	0.027	0.090	17,600	530	0.024	0.060	16,500	420	0.018	0.060
	14	18,700	640	0.022	0.090	15,400	440	0.018	0.060	14,300	360	0.014	0.060
	16	18,700	640	0.022	0.090	15,400	440	0.018	0.060	14,300	360	0.014	0.060
	18	18,700	540	0.017	0.090	14,300	440	0.013	0.060	13,200	360	0.009	0.060

파삭재 Material		동 Copper				프라이하트강/열처리강 Prehardened Steels / Hardened Steels				열처리강 Hardened Steels			
						NAK / SKD				SKD / SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 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
R0.5	20	18,700	540	0.017	0.054	14,300	360	0.013	0.036	13,200	300	0.009	0.036
	22	18,700	540	0.017	0.054	14,300	360	0.013	0.036	13,200	300	0.009	0.036
	25	18,700	540	0.016	0.052	14,300	360	0.013	0.030	13,200	300	0.009	0.030
R0.6	4	38,000	2,000	0.085	0.360	26,000	770	0.068	0.024	18,200	480	0.054	0.240
	6	38,000	2,000	0.085	0.360	26,000	770	0.068	0.240	18,200	480	0.054	0.240
	8	32,000	1,490	0.084	0.360	21,000	700	0.067	0.240	15,100	440	0.054	0.240
	10	24,000	1,080	0.036	0.180	16,400	530	0.027	0.120	15,100	420	0.022	0.120
	12	24,000	1,080	0.036	0.018	15,300	530	0.027	0.120	14,100	420	0.022	0.120
	16	15,400	580	0.024	0.144	13,100	460	0.019	0.096	11,900	380	0.016	0.096
	20	15,400	580	0.017	0.090	12,100	380	0.013	0.060	11,000	320	0.009	0.060
R0.7	24	15,400	580	0.010	0.060	11,100	320	0.009	0.040	9,800	290	0.070	0.040
	6	28,000	1,470	0.099	0.270	17,600	680	0.076	0.180	13,600	440	0.063	0.180
	8	28,000	1,470	0.099	0.270	17,600	680	0.079	0.180	13,600	440	0.063	0.180
	12	19,800	1,080	0.042	0.270	13,800	530	0.033	0.180	13,600	420	0.027	0.180
R0.75	16	13,200	620	0.033	0.180	13,100	480	0.027	0.120	11,900	390	0.021	0.120
	3	30,000	2,200	0.171	0.324	21,000	1060	0.137	0.216	14,800	660	0.110	0.216
	4	30,000	2,200	0.171	0.324	21,000	1060	0.137	0.216	14,800	660	0.110	0.216
	6	30,000	1,980	0.147	0.324	21,000	940	0.117	0.216	14,800	580	0.090	0.216
	8	26,000	1,500	0.106	0.270	16,300	700	0.084	0.180	12,100	450	0.069	0.180
	10	26,000	1,500	0.106	0.270	16,300	700	0.084	0.180	12,100	450	0.069	0.180
	12	26,000	1,500	0.106	0.270	16,300	700	0.084	0.180	12,100	450	0.069	0.180
	14	18,700	1,100	0.045	0.180	12,600	530	0.036	0.120	12,100	440	0.027	0.120
	16	12,100	620	0.036	0.180	12,400	480	0.027	0.120	11,600	390	0.022	0.120
	18	12,100	620	0.036	0.180	12,400	480	0.027	0.120	11,600	390	0.022	0.120
	20	12,100	620	0.019	0.090	12,400	480	0.016	0.060	11,600	390	0.012	0.060
	22	12,100	620	0.019	0.090	12,400	480	0.016	0.060	11,000	390	0.012	0.060
	25	11,000	500	0.019	0.090	12,400	440	0.016	0.060	11,000	390	0.012	0.060
	30	10,700	450	0.019	0.090	10,900	400	0.016	0.060	11,000	390	0.012	0.060
	35	10,700	410	0.019	0.090	9,000	380	0.016	0.060	11,000	390	0.012	0.060
R0.8	6	27,040	2,600	0.220	0.580	18,900	1,200	0.180	0.390	1,650	760	0.150	0.390
	8	26,000	1,970	0.157	0.324	18,900	940	0.126	0.216	13,800	580	0.102	0.216
	12	25,000	1,490	0.112	0.180	15,100	700	0.090	0.120	11,500	440	0.072	0.120
	16	17,600	110	0.046	0.144	12,300	530	0.036	0.096	11,400	440	0.030	0.096
	20	11,000	630	0.036	0.090	11,500	480	0.030	0.060	10,900	400	0.024	0.060
R0.9	6	32,000	2,600	0.230	0.021	18,400	1,200	0.185	0.320	18,400	738	0.150	0.320
	8	26,000	1,950	0.165	0.270	16,300	930	0.132	0.240	13,800	570	0.108	0.240
	12	21,000	1,480	0.120	0.270	13,800	700	0.094	0.180	10,300	440	0.077	0.180
	16	15,400	1,080	0.048	0.180	10,800	530	0.039	0.120	9,900	420	0.031	0.120
	20	10,500	630	0.039	0.090	10,200	480	0.031	0.060	9,700	400	0.025	0.060
R1	4	22,000	2,140	0.232	0.540	18,500	12,600	0.185	0.360	13,200	960	0.150	0.360
	6	22,000	2,140	0.232	0.540	18,500	12,600	0.185	0.360	13,200	960	0.150	0.360
	8	22,000	1,920	0.185	0.360	18,500	1,120	0.147	0.240	13,200	870	0.120	0.240
	10	22,000	1,920	0.185	0.360	18,500	1,120	0.147	0.240	13,200	870	0.120	0.240
	12	18,700	1,470	0.166	0.360	16,000	990	0.133	0.240	11,700	780	0.107	0.240
	14	18,700	1,470	0.166	0.360	16,000	990	0.133	0.240	11,700	780	0.107	0.240
	16	18,700	1,470	0.148	0.360	16,000	990	0.118	0.240	11,700	780	0.090	0.240
	18	14,300	1,070	0.093	0.180	14,700	580	0.074	0.120	11,600	580	0.061	0.120
	20	14,300	1,070	0.093	0.180	14,700	580	0.074	0.120	11,600	580	0.061	0.120
	22	9,500	630	0.074	0.180	10,600	450	0.058	0.120	10,200	450	0.045	0.120
	25	9,500	630	0.074	0.180	10,600	450	0.058	0.120	10,200	450	0.045	0.120
	30	9,500	530	0.033	0.090	10,600	450	0.026	0.060	10,200	380	0.021	0.060
	35	9,500	530	0.026	0.090	10,600	380	0.019	0.060	10,200	380	0.017	0.060
	40	9,500	530	0.026	0.090	10,600	380	0.019	0.060	10,200	380	0.017	0.060
	45	9,500	445	0.011	0.045	10,000	380	0.009	0.030	10,200	320	0.008	0.030
R1.25	8	18,400	2,400	0.232	0.360	14,500	1,400	0.185	0.240	9,700	1,080	0.150	0.240
	10	18,400	2,400	0.232	0.360	14,500	1,400	0.185	0.240	9,700	1,080	0.150	0.240
	16	16,100	1,810	0.208	0.360	13,500	1,230	0.166	0.240	8,400	980	0.135	0.240
	20	11,500	1,330	0.116	0.180	10,200	950	0.093	0.120	8,400	980	0.074	0.120
	25	6,900	770	0.093	0.180	8,400	540	0.074	0.120	8,400	560	0.061	0.120
	30	6,900	770	0.040	0.090	8,400	540	0.033	0.060	8,400	560	0.026	0.060
	35	6,900	770	0.018	0.050	8,400	540	0.015	0.030	8,400	560	0.011	0.030
R1.5	6	15,000	2,890	0.278	0.540	12,900	1,680	0.222	0.360	9,200	1,300	0.180	0.360
	8	15,000	2,890	0.278	0.540	12,900	1,680	0.222	0.360	9,200	1,300	0.180	0.360
	10	15,000	2,600	0.278	0.540	12,900	1,680	0.222	0.360	9,200	1,300	0.180	0.360

파삭재 Material		동 Copper				프라하든강/ 열처리강 Prehardened Steels / Hardened Steels				열처리강 Hardened Steels			
						NAK / SKD				SKD / SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 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
R1.5	12	15,000	2,600	0.278	0.540	12,900	1,510	0.222	0.360	9,200	1,170	0.180	0.360
	16	12,700	1,970	0.029	0.504	11,300	1,330	0.166	0.360	8,100	1,040	0.135	0.360
	20	12,700	1,970	0.029	0.504	11,300	1,330	0.166	0.360	8,100	1,040	0.135	0.360
	25	10,100	1,450	0.139	0.270	8,800	1,040	0.111	0.180	8,100	1,040	0.090	0.180
	30	10,100	1,450	0.139	0.270	8,800	780	0.111	0.180	8,100	780	0.090	0.180
	35	6,600	840	0.073	0.270	7,900	620	0.055	0.180	7,500	650	0.045	0.180
	40	6,600	840	0.073	0.270	7,900	620	0.055	0.180	7,500	520	0.045	0.180
	45	4,500	500	0.040	0.270	6,200	500	0.035	0.100	7,000	450	0.023	0.180
	50	4,300	490	0.040	0.270	6,200	500	0.030	0.090	7,000	350	0.023	0.180
60	3,700	420	0.034	0.360	5,900	450	0.030	0.080	6,000	300	0.020	0.150	
R2	8	11,500	2,710	0.370	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	10	11,500	2,710	0.370	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	12	11,500	2,710	0.390	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	16	11,500	2,710	0.390	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	20	11,500	2,710	0.390	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	25	10,300	1,850	0.279	0.540	8,400	1,250	0.223	0.360	6,000	980	0.180	0.360
	30	10,300	1,850	0.279	0.540	8,400	1,250	0.223	0.360	6,000	980	0.180	0.361
	35	7,500	1,360	0.185	0.540	6,600	950	0.148	0.360	6,000	700	0.120	0.360
	40	7,500	1,360	0.185	0.540	6,600	950	0.148	0.360	6,000	700	0.120	0.360
	45	5,000	780	0.093	0.360	5,900	470	0.074	0.240	5,600	490	0.060	0.240
	50	5,000	780	0.093	0.360	5,900	470	0.074	0.240	5,600	490	0.060	0.240
	55	4,500	640	0.090	0.330	5,200	375	0.068	0.225	5,400	370	0.050	0.251
	60	4,000	500	0.078	0.300	5,000	280	0.062	0.210	5,200	250	0.040	0.180
R2.5	15	9,600	2,590	0.406	0.900	7,800	1,350	0.324	0.800	5,600	1,050	0.252	0.800
	20	9,600	2,100	0.406	0.900	7,800	1,240	0.324	0.600	5,600	950	0.252	0.600
	25	9,600	2,100	0.406	0.900	7,800	1,240	0.324	0.600	5,600	950	0.252	0.600
	30	8,200	1,320	0.305	0.900	7,800	760	0.243	0.600	4,800	600	0.197	0.600
	40	7,000	830	0.230	0.900	7,800	470	0.200	0.600	4,300	380	0.154	0.600
	45	5,000	520	0.173	0.900	6,800	290	0.165	0.600	3,900	240	0.120	0.600
	50	4,500	330	0.131	0.900	6,800	180	0.135	0.600	3,500	150	0.094	0.600
	60	4,000	300	0.099	0.800	6,800	110	0.112	0.600	3,300	100	0.074	0.600
R3	15	8,000	2,530	0.555	1.800	7,400	1,670	0.443	1.200	5,200	1,300	0.360	1.200
	30	8,000	1,810	0.418	1.080	7,400	1,500	0.334	0.720	4,600	1,170	0.270	0.720
R4	25	9,000	2,400	0.600	1.500	7,200	1,200	0.500	1.000	5,200	920	0.350	1.000
	30	7,700	1,500	0.450	1.200	7,200	740	0.380	0.800	4,500	580	0.300	0.800
R5	30	7,800	1,300	0.300	0.900	6,800	720	0.230	0.600	4,600	570	0.190	0.570
	35	7,125	1,292	0.176	0.513	6,800	902.5	0.140	0.340	5,700	665	0.110	0.340
R6	30	7,410	1,235	0.285	0.855	6,350	684	0.210	0.570	4,370	541.5	0.181	0.550
	40	6,800	1,100	0.260	0.780	6,350	630	0.200	0.520	4,020	500	0.160	0.500
절입량 Depth of Cut		• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter • n : Speed • Vf : Feed 											



- 상기 절삭조건에 참고는 수치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 쿨런트 사용을 추천, 동가공시 습식 쿨런트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5 μ m 이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet coolant for copper
- The tolerance of below Ø1 is below 5 μ m.

파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
0.1	—	40,000	500	0.001
	0.5	40,000	600	0.004
0.2	1	40,000	400	0.001
	1.5	40,000	200	0.002
	2	40,000	200	0.005
	1	40,000	650	0.007
	1.5	40,000	600	0.005
0.3	2	40,000	550	0.004
	3	40,000	500	0.002
	4	30,000	200	0.001
	5	22,000	150	0.001
	1	40,000	800	0.007
	2	40,000	800	0.007
	3	40,000	800	0.005
0.4	4	40,000	800	0.003
	5	35,000	500	0.002
	6	28,000	350	0.001
	8	20,000	200	0.001
	10	17,000	150	0.001
	2	40,000	950	0.003
	3	40,000	900	0.003
	4	40,000	850	0.003
	5	40,000	800	0.003
0.5	6	40,000	700	0.003
	8	30,000	500	0.002
	10	25,000	400	0.002
	12	20,000	300	0.001
	14	14,000	150	0.001
	2	40,000	950	0.010
	3	40,000	950	0.010
	4	40,000	950	0.010
	5	40,000	950	0.010
0.6	6	40,000	800	0.005
	8	35,000	500	0.004
	10	25,000	450	0.003
	12	20,000	300	0.002
	14	15,000	200	0.001
	16	12,000	150	0.001
	2	40,000	1,000	0.020
0.7	4	40,000	950	0.015
	6	40,000	900	0.010
	8	30,000	700	0.005
	10	11,000	300	0.005
	12	9,000	200	0.002
	2	40,000	1,200	0.020
	4	40,000	1,100	0.015
0.8	6	40,000	1,100	0.010
	8	40,000	1,000	0.010
	10	30,000	500	0.010
	12	25,000	400	0.030
	14	20,000	300	0.020
0.9	6	40,000	1,300	0.020
	8	38,000	1,200	0.010
	10	35,000	1,000	0.010
	2	40,000	1,600	0.040
	3	40,000	1,600	0.040
	4	40,000	1,600	0.040
1	5	40,000	1,600	0.040
	6	40,000	1,600	0.040
	8	40,000	1,600	0.030
	10	38,000	1,300	0.025
	12	30,000	1,000	0.020

파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
	14	28,000	700	0.015
	16	23,000	600	0.010
	18	19,000	500	0.006
1	20	15,000	400	0.005
	25	10,000	200	0.002
	30	8,000	150	0.001
	4	40,000	1,900	0.060
	6	40,000	1,900	0.060
	8	40,000	1,900	0.040
	10	35,000	1,500	0.040
1.2	12	25,000	1,000	0.030
	16	15,000	500	0.02
	20	6,500	150	0.01
	25	6,000	100	0.01
	30	5,500	50	0.01
	6	40,000	1,900	0.060
	8	40,000	1,900	0.040
1.4	10	35,000	1,500	0.040
	14	25,000	1,000	0.030
	16	15,000	500	0.02
	20	6,500	150	0.01
	4	40,000	2,400	0.1
	6	40,000	2,400	0.1
	8	35,000	2,000	0.08
	10	30,000	1,800	0.05
1.5	12	28,000	1,300	0.04
	14	23,000	1,000	0.03
	16	20,000	800	0.02
	18	16,000	700	0.02
	20	15,000	600	0.02
	25	10,000	350	0.008
	30	7,500	300	0.005
1.6	10	30,000	1,800	0.07
	14	25,000	1,500	0.05
	18	20,000	1,000	0.04
1.8	10	30,000	1,800	0.07
	14	25,000	1,500	0.05
	18	20,000	1,000	0.04
	4	40,000	2,500	0.2
	6	40,000	2,400	0.18
	8	35,000	2,000	0.15
	10	30,000	1,800	0.1
	12	25,000	1,500	0.08
	14	23,000	1,300	0.07
2	16	20,000	1,000	0.06
	18	15,000	900	0.05
	20	12,000	800	0.05
	22	10,000	700	0.05
	25	9,000	600	0.04
	30	8,000	500	0.04
	35	6,500	300	0.02
	40	6,000	250	0.01
	45	5,000	200	0.005
	50	4,200	150	0.003
	8	25,000	2,500	0.2
	10	22,000	2,300	0.18
2.5	12	20,000	2,000	0.15
	16	18,000	1,700	0.1
	20	12,000	1,000	0.08
	25	10,000	700	0.07
	30	9,000	600	0.06
	35	8,500	500	0.05

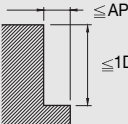
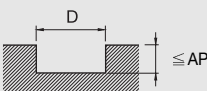
파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
2.5mm	40	8,000	400	0.03
	50	4,000	150	0.15
	6	20,000	2,000	0.3
	8	20,000	2,000	0.3
	10	20,000	1,600	0.25
3mm	12	20,000	1,500	0.18
	16	15,000	1,400	0.15
	20	10,000	800	0.1
	25	8,000	600	0.08
	30	7,000	450	0.06
	35	6,000	300	0.05
	40	5,000	250	0.02
	45	4,500	200	0.01
	50	3,700	150	0.01
	60	3,500	100	0.01
4mm	8	20,000	3,500	0.3
	10	20,000	3,200	0.3
	12	15,000	3,000	0.3
	16	13,000	2,500	0.25
	20	11,000	2,200	0.22
	25	8,000	1,500	0.15
	30	6,400	1,200	0.12
	35	5,000	700	0.08
	40	4,500	400	0.05
	45	3,500	300	0.03

파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
4mm	50	2,800	150	0.018
	55	2,500	100	0.015
	60	2,300	80	0.01
5mm	15	12,000	2,500	0.35
	20	10,000	1,200	0.3
	25	8,000	1,000	0.25
	30	6,000	900	0.2
	35	5,100	750	0.15
	40	4,000	450	0.05
	50	3,000	300	0.03
	60	2,200	150	0.02
	20	10,000	2,000	0.4
	30	6,000	1,200	0.3
6mm	40	4,200	800	0.2
	50	3,000	300	0.1
	60	1,900	150	0.1
8mm	20	3,200	910	0.18
	30	3,000	800	0.15
	40	2,600	600	0.12
10mm	25	2,900	890	0.20
	35	2,500	700	0.16
	45	2,200	580	0.14
12mm	30	2,500	710	0.22
	40	2,300	500	0.18
	50	1,900	420	0.16

4HEMG

• RPM : rev./min • Feed : mm/min

파삭재 Material	General Steels			SKD61		
경도 Hardness	~ 45 HRc			45 ~ 55 HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
1mm	40,000	3,000	0.06	32,000	2,400	0.06
1.5mm	40,000	4,500	0.12	32,000	3,600	0.08
2mm	30,000	4,500	0.18	24,000	3,600	0.10
2.5mm	24,000	3,900	0.25	19,000	3,000	0.13
2mm	20,000	3,500	0.30	16,000	2,700	0.15
4mm	15,000	3,000	0.40	12,000	2,400	0.20
5mm	12,000	2,400	0.50	9,000	1,800	0.25
6mm	10,000	2,100	0.60	7,000	1,500	0.30
8mm	8,000	1,500	0.80	5,600	1,100	0.40
10mm	6,400	1,400	1.00	4,500	950	0.50
12mm	5,400	1,200	1.00	3,800	860	0.50
16mm	2,400	550	3.00	1,200	120	0.80
20mm	1,900	480	4.00	1,000	100	1.00

절입량 Depth of Cut	 
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- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴 수 있습니다.
- Ø3 이상의 엔드밀로 홈절삭을 하는 경우에는 회전속도를 상기표의 50~70%, 이송속도를 40~60%까지 내려서 사용하여 주십시오.
- 세로이송으로 사용되는 경우에는 회전속도를 상기표의 1/3이하로 해주십시오.
- 기계나 가공물 장착의 강성이 없는 경우, 떨림이나 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려주십시오.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- When Slotting with end mills with Ø3 or larger, reduce the revolution to 50~70% and the feed rate to 40~60%.
- When drilling, please set the feed rate at 1/3 or below the values above.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

파삭재 Material		동 Copper				프라이든강/ 열처리강 Prehardened Steels / Hardened Steels				열처리강 Hardened Steels			
						NAK / SKD				SKD / SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 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
R0.05	0.2	40,000	300	Less than 0.010	0.050	40,000	300	Less than 0.005	0.040	30,000	200	Less than 0.004	0.040
R0.075	0.15	50,000	380	0.010	0.030	45,000	500	0.005	0.050	40,000	350	0.004	0.043
R0.1	0.2	54,000	430	0.012	0.008	54,000	630	0.020	0.060	44,300	500	0.016	0.048
	0.4	54,000	430	0.005	0.008	54,000	410	0.020	0.049	44,300	320	0.016	0.038
R0.1.5	0.3	54,000	720	0.020	0.013	54,000	750	0.030	0.090	44,300	600	0.024	0.072
	0.6	54,000	720	0.010	0.013	54,000	700	0.030	0.065	44,300	570	0.020	0.058
R0.2	0.4	54,000	870	0.028	0.016	54,000	1,000	0.040	0.120	44,300	800	0.032	0.096
	0.8	54,000	870	0.014	0.016	54,000	840	0.040	0.100	44,300	650	0.032	0.075
R0.25	0.5	56,000	1,250	0.035	0.022	53,000	1,250	0.050	0.150	43,500	1,000	0.040	0.120
R0.3	0.6	58,000	1,510	0.042	0.026	52,000	1,380	0.060	0.180	42,650	1,100	0.048	0.144
R0.35	0.7	55,000	1,690	0.049	0.031	50,000	1,440	0.070	0.210	41,075	1,150	0.056	0.168
R0.4	0.8	52,000	1,870	0.056	0.036	48,000	1,500	0.080	0.240	39,500	1,200	0.064	0.192
	2	52,000	1,870	0.300	0.036	45,000	1,075	0.080	0.150	35,000	810	0.064	0.100
R0.5	1	41,000	1,660	0.063	0.040	45,000	1,560	0.100	0.300	36,900	1,250	0.080	0.240
	2.5	41,000	1,660	0.022	0.040	40,000	1,000	0.100	0.200	31,500	800	0.080	0.160
R0.6	3	34,000	1,740	0.650	0.400	40,100	1,550	0.100	0.280	32,800	1,250	0.800	0.266
R0.75	1.5	27,000	1,830	0.087	0.068	35,000	1,600	0.150	0.450	28,700	1,280	0.120	0.360
	4	27,000	1,830	0.052	0.068	34,500	1,000	0.145	0.325	26,000	800	0.120	0.260
R1	2	20,000	1,780	0.112	0.089	30,000	1,850	0.200	0.600	24,600	1,480	0.160	0.480
	5	20,000	1,780	0.070	0.091	27,000	1,450	0.200	0.485	22,800	1,100	0.160	0.388
R1.25	6	16,000	1,840	0.067	0.115	25,500	1,600	0.250	0.542	21,000	1,280	0.200	0.430
R1.5	3	13,000	2,220	0.197	0.171	25,500	2,520	0.300	0.957	21,000	2,050	0.240	0.766
	8	13,000	2,220	0.100	0.171	25,500	2,350	0.300	0.765	21,000	18,800	0.240	0.612
R1.75	8	11,500	2,150	0.183	0.190	23,000	2,400	0.350	1.073	19,150	10,380	0.280	0.856
R2	4	10,000	2,080	0.266	0.208	21,000	2,450	0.400	1.380	17,300	1,960	0.320	1.100
	8	10,000	2,080	0.134	0.208	21,000	2,350	0.400	1.020	17,300	1,880	0.320	0.816
R2.5	5	8,300	1,990	0.215	0.240	18,000	2,560	0.500	1.660	14,800	2,050	0.400	1.330
	8	8,300	1,990	0.200	0.240	18,000	2,450	0.500	1.500	14,800	1,960	0.400	1.200
R3	10	8,300	1,990	0.190	0.240	18,000	2,400	0.500	1.300	14,800	1,900	0.400	1.020
	6	6,900	1,940	0.290	0.281	16,000	2,700	0.600	2.340	13,000	2,160	0.480	1.870
R3.5	10	6,900	1,940	0.250	0.281	16,000	2,500	0.600	1.800	13,000	2,000	0.480	1.440
	12	6,900	1,940	0.230	0.281	16,000	2,400	0.600	1.530	13,000	1,920	0.480	1.225
R3.5	14	6,310	1,470	0.315	0.228	14,500	2,350	0.700	2.315	11,625	1,880	0.560	1.853
R4	8	5,720	1,000	0.400	0.175	12,500	2,300	0.800	3.100	10,250	1,840	0.640	2.480
	14	5,720	1,000	0.400	0.175	12,500	2,000	0.800	2.050	10,250	1,600	0.640	1.640
R4.5	16	5,135	850	0.450	0.165	11,000	2,100	0.900	2.900	9,450	1,690	0.720	2.320
R5	10	4,550	700	0.500	0.154	10,500	2,200	1.000	3.750	8,650	1,780	0.800	3.000
	15	4,550	700	0.500	0.154	10,500	1,900	1.000	3.000	8,650	1,520	0.800	2.400
R5.5	18	4,550	700	0.500	0.154	10,500	1,700	1.000	2.550	8,650	1,360	0.800	2.040
	20	4,160	650	0.550	0.157	10,000	1,700	1.100	3.075	8,015	1,360	0.880	2.460
R0.6	18	3,770	600	0.600	0.159	9,000	1,700	1.200	3.600	7,380	1,360	0.960	2.880
	22	3,770	600	0.600	0.159	9,000	1,850	1.200	4.420	7,380	1,480	0.960	3.540
R6.5	24	3,728	653	0.549	0.156	9,000	1,825	1.098	3.938	7,193	1,540	0.878	3.152
R7	24	3,686	706	0.498	0.153	7,000	1,800	0.996	3.456	7,007	1,600	0.797	2.765
R8	30	2,985	600	0.413	0.147	7,000	1,700	0.827	3.318	5,675	1,360	0.661	2.654
R10	38	2,429	360	0.276	0.133	7,000	1,600	0.551	3.015	4,617	816	0.441	2.412

절입량
Depth of Cut

• Ap : Axial Depth

• Ae : Radial Depth

• D : Outside Diameter

• n : Speed

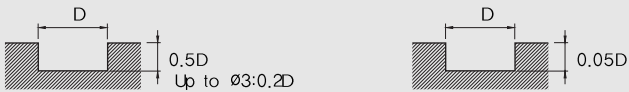
• Vf : Feed

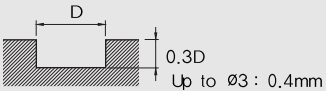
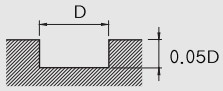
- 상기 절삭조건에 참고는 수치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 쿨런트 사용을 추천, 동가공시 습식 쿨런트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의

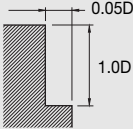
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet collant for copper
- The tolerance of below Ø1 is below 5µm.

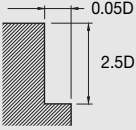
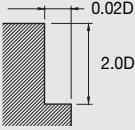
파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
0.8mm	2	40,000	3,000	0.025
	4	40,000	3,000	0.020
	6	38,000	2,800	0.020
	8	36,000	2,400	0.010
	10	30,000	1,500	0.009
	12	20,000	1,000	0.009
	16	10,000	500	0.005
0.9mm	2	40,000	3,000	0.030
	6	40,000	3,000	0.025
	8	38,000	2,800	0.020
	10	36,000	2,400	0.020
1mm	3	40,000	3,000	0.040
	4	40,000	3,000	0.040
	6	38,000	2,800	0.035
	8	36,000	2,400	0.030
	10	30,000	1,500	0.025
	12	20,000	1,000	0.020
	16	10,000	500	0.005
1.2mm	6	40,000	3,000	0.050
	8	38,000	2,800	0.045
	10	36,000	2,400	0.040
	12	20,000	1,200	0.030
	16	12,000	600	0.010
1.5mm	6	40,000	3,200	0.060
	8	38,000	2,600	0.050
	10	35,000	2,500	0.050
	12	32,000	2,400	0.050
	16	16,000	1,100	0.030
	20	10,000	600	0.010
	25	9,000	500	0.009
2mm	6	40,000	4,000	0.100
	8	38,000	3,600	0.090
	10	35,000	3,500	0.080
	12	32,000	3,200	0.070
	16	24,000	2,400	0.050
	20	12,000	1,200	0.030
2.5mm	25	10,000	800	0.020
	30	5,000	500	0.010
	10	32,000	4,000	0.200
	12	28,000	2,500	0.120

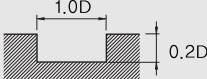
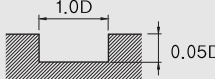
파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
2.5mm	16	23,000	1,800	0.100
	20	20,000	1,500	0.060
	25	9,000	1,100	0.040
	30	2,500	300	0.005
3mm	10	25,000	3,600	0.400
	12	23,000	3,000	0.300
	16	18,000	2,500	0.200
	20	15,000	2,000	0.150
	25	12,000	1,700	0.100
	30	7,000	800	0.050
4mm	35	5,000	300	0.030
	40	4,200	250	0.030
	10	20,000	3,200	1.200
	12	18,000	3,000	1.000
	16	15,000	2,500	1.000
	20	12,000	2,000	0.500
5mm	25	10,000	1,800	0.400
	30	8,000	1,300	0.200
	40	4,200	700	0.080
	45	3,500	550	0.050
	50	2,400	400	0.030
	15	14,000	2,700	1.000
6mm	20	12,000	2,300	1.000
	25	9,500	1,800	0.500
	30	6,400	1,200	0.200
	40	5,000	750	0.100
	50	3,200	600	0.050
	20	11,000	2,200	1.200
8mm	30	8,000	1,600	0.600
	40	5,400	1,100	0.250
	50	3,200	640	0.150
	20	8,000	1,600	1.600
	30	4,000	800	0.500
	40	4,000	800	0.500
10mm	25	6,400	1,300	2.000
	35	3,200	640	0.600
	45	3,200	640	0.600
12mm	30	6,000	1,200	2.000
	40	3,200	640	0.600
	50	3,200	640	0.600

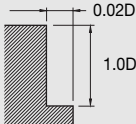
파삭재 Material	탄소강 / 합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45C		프라이하든강 Prehardened Steels NAK / CENA / KP4		스테인레스강 Stainless Steels SUS		고경도강 Hardened Steels SKD / SKT / STAVAX	
경도 Hardness	~ 35 HRC		35 ~ 45 HRC				45 ~ 55HRC	
강도	~1,100N/mm ²		1,100~1,500N/mm ²				1500~2000N/mm ²	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	13,020	170	9,000	100	8,100	70	7,020	30
1.5mm	12,300	180	8,880	110	7,360	80	5,940	30
2mm	11,560	190	7,560	120	6,300	90	5,040	35
2.5mm	10,300	200	6,620	130	5,480	110	4,320	35
3mm	8,920	210	5,560	140	4,620	120	3,360	40
4mm	7,560	300	4,620	180	3,880	150	2,940	40
5mm	6,300	320	3,780	190	3,160	160	2,320	50
6mm	5,560	350	3,360	220	2,840	180	2,000	55
8mm	4,200	380	2,520	200	2,100	180	1,680	75
10mm	3,260	330	2,000	160	1,680	160	1,360	60
12mm	2,740	280	1,680	130	1,360	130	1,160	55
16mm	2,200	220	1,360	110	1,060	110	900	40
20mm	1,680	170	1,060	80	840	80	680	30
절입량 Depth of Cut								

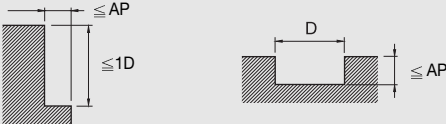
파삭재 Material	탄소강 Carbon Steels S50 / SCM		합금강 / 공구강 / 프라이하든강 Alloy Steels / Prehardened Steels SKD61 / NAK		고경도강 Hardened Steels SKD61	
경도 Hardness	~ 30HRC		30 ~ 45HRC		45 ~ 55HRC	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	8,570	45	6,570	40	4,200	15
1.5mm	7,800	50	6,000	45	3,700	20
2mm	6,300	60	5,040	50	3,150	25
3mm	4,410	70	3,570	60	2,200	30
4mm	3,570	85	2,840	70	1,790	35
5mm	3,050	105	2,420	85	1,580	40
6mm	2,630	125	2,100	105	1,370	50
8mm	2,000	135	1,580	105	1,050	50
10mm	1,680	135	1,370	105	840	50
12mm	1,370	105	1,160	95	700	40
16mm	1,160	95	890	75	560	35
20mm	840	70	680	50	420	25
25mm	600	55	510	35	300	15
절입량 Depth of Cut						

파삭재 Material	탄소강 / 합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45C		프라이하드강 Prehardened Steels NAK / CENA / KP4		스테인레스강 Stainless Steels SUS		고경도강 Hardened Steels SKD / SKT / STAVAX	
경도 Hardness	~ 35 HRc		35 ~ 45 HRc				45 ~ 55HRc	
강도	~1100N/mm ²		1100~1500N/mm ²				1500~2000N/mm ²	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2mm	11,560	280	7,560	170	6,300	140	5,040	50
3mm	8,920	320	5,560	200	4,620	170	3,360	60
4mm	7,560	570	4,620	350	3,880	280	2,940	60
5mm	6,300	600	3,780	360	3,160	300	2,320	70
6mm	5,560	660	3,360	410	2,840	330	2,000	80
8mm	4,200	710	2,520	380	2,100	350	1,680	110
10mm	3,260	610	2,000	300	1,680	300	1,360	90
12mm	2,740	520	1,680	250	1,360	240	1,160	80
14mm	2,420	510	1,460	225	1,210	220	960	70
16mm	2,200	410	1,360	200	1,100	200	900	60
18mm	1820	350	1210	180	950	175	820	50
20mm	1,680	320	1,060	160	840	150	680	40
절입량 Depth of Cut								

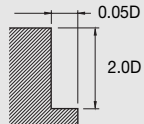
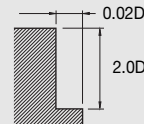
파삭재 Material	탄소강 Carbon Steels S50 / SCM		합금강 / 공구강 / 프라이하드강 Alloy Steels / Prehardened Steels SKD61 / NAK		고경도강 Hardened Steels SKD61	
경도 Hardness	~ 30HRc		30 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	8,200	85	6,100	65	4,300	30
1.5mm	7,100	95	5,500	75	3,500	40
2mm	6,300	100	5,040	80	3,150	45
3mm	4,410	115	3,570	100	2,200	55
4mm	3,570	140	2,840	115	1,790	60
5mm	3,050	180	2,420	140	1,580	70
6mm	2,630	215	2,100	180	1,370	90
8mm	2,000	230	1,580	180	1,050	90
10mm	1,680	230	1,370	180	840	90
12mm	1,370	180	1,160	160	700	70
16mm	1,160	160	890	125	560	60
20mm	840	115	680	90	420	45
25mm	650	80	790	65	310	30
절입량 Depth of Cut						

파삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45		프리하드강 Prehardened Steels NAK / CENA / KP4		고경도강 Hardened Steels SKD / SKT / STAVAX	
경도 Hardness	~ 35HRc		35 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.2mm	50,000	170	34,500	75	21,150	45
0.3mm	50,000	200	32,000	85	20,000	50
0.4mm	50,000	200	32,000	85	20,000	50
0.5mm	43,000	220	28,000	95	17,100	60
0.6mm	36,400	250	24,000	110	14,500	65
0.8mm	36,400	250	24,000	110	14,500	65
1mm	33,100	280	21,600	120	13,200	70
1.2mm	30,000	300	18,000	125	12,000	70
1.5mm	26,400	300	16,200	130	10,200	70
2mm	21,600	310	13,800	140	8,640	80
2.5mm	18,000	320	11,400	150	7,320	80
3mm	15,900	330	10,300	160	6,300	80
4mm	12,800	400	8,200	200	5,150	95
5mm	11,000	500	7,000	240	4,560	120
6mm	9,500	600	6,000	300	3,930	140
8mm	7,200	640	4,550	300	3,020	140
10mm	6,000	640	4,000	300	2,420	140
12mm	5,000	500	3,340	270	2,000	120
16mm	3,720	450	2,520	210	1,540	95
절입량 Depth of Cut						

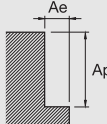
파삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45		프리하드강 Prehardened Steels NAK / CENA / KP4		고경도강 Hardened Steels SKD / SKT / STAVAX	
경도 Hardness	~ 35HRc		35 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	33,100	360	21,600	260	13,200	140
1.2mm	30,000	65	18,200	265	12,100	140
1.5mm	26,400	370	16,200	270	10,200	140
2mm	21,600	380	13,800	280	8,640	150
2.5mm	18,000	390	11,400	300	7,320	150
3mm	15,900	400	10,300	310	6,300	150
4mm	12,800	500	8,200	360	5,150	160
5mm	11,000	510	7,000	430	4,560	200
6mm	9,500	510	6,000	430	3,930	200
8mm	7,200	550	4,550	430	3,020	200
10mm	6,000	550	400	430	2,420	200
12mm	5,000	430	3,340	380	2,000	160
절입량 Depth of Cut						

파삭재 Material	General Steels			SKD61		
경도 Hardness	~45 HRc			45~55 HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
0.1mm	40,000	40	0.001	40,000	40	0.001
0.2mm	40,000	100	0.002	40,000	100	0.002
0.3mm	40,000	200	0.005	40,000	200	0.005
0.4mm	40,000	600	0.010	40,000	600	0.010
0.5mm	40,000	1,000	0.015	40,000	960	0.015
0.6mm	40,000	1,200	0.020	40,000	1,200	0.020
0.7mm	40,000	1,400	0.020	40,000	1,400	0.020
0.8mm	40,000	1,600	0.030	40,000	1,600	0.030
0.9mm	40,000	1,800	0.040	40,000	1,600	0.040
1mm	40,000	2,000	0.060	32,000	1,600	0.060
1.5mm	40,000	3,000	0.120	32,000	1,900	0.080
2mm	30,000	3,000	0.180	24,000	1,900	0.100
2.5mm	24,000	2,600	0.250	19,000	1,600	0.130
3mm	20,000	2,300	0.300	16,000	1,400	0.150
4mm	15,000	2,000	0.400	12,000	1,200	0.200
5mm	12,000	1,600	0.500	9,000	900	0.250
6mm	10,000	1,400	0.600	7,000	700	0.300
8mm	8,000	1,000	0.800	5,600	550	0.400
10mm	6,400	900	1.000	4,500	500	0.500
12mm	5,400	820	1.000	3,800	450	0.500
16mm	2,400	380	3.000	1,200	100	0.800
20mm	1,900	320	4.000	1,000	80	1.000
절입량 Depth of Cut						

- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴 수 있습니다.
- Ø3 이상의 엔드밀로 홈절삭을 하는 경우에는 회전속도를 상기표의 50~70%, 이송속도를 40~60%까지 내려서 사용하여 주십시오.
- 세로이송으로 사용되는 경우에는 회전속도를 상기표의 1/3이하로 해주십시오.
- 기계나 가공물 장착의 강성이 없는 경우, 떨림이나 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려주십시오.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- When Slotting with end mills with Ø3 or larger, reduce the revolution to 50~70% and the feed rate to 40~60%.
- When drilling, please set the feed rate at 1/3 or below the values above.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

파삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45		프라이하트강 Prehardened Steels NAK / CENA / KP4		고경도강 Hardened Steels SKD / SKT / STAVAX	
경도 Hardness	~ 35HRc		35 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	27,600	300	18,000	220	11,000	120
1.5mm	22,000	310	13,500	230	8,500	120
2mm	18,000	320	11,560	240	7,200	130
2.5mm	15,000	330	9,500	250	6,100	130
3mm	13,240	340	8,560	260	5,280	130
4mm	10,720	420	6,820	300	4,300	140
5mm	9,160	430	5,800	360	3,800	170
6mm	7,900	430	5,040	360	3,280	170
8mm	6,000	460	3,800	360	2,520	170
10mm	5,040	460	3,280	360	2,020	170
12mm	4,120	360	2,780	320	1,680	140
16mm	3,100	280	2,100	230	1,280	115
절입량 Depth of Cut						

측면 절삭 Side Cutting

파삭재 Material	일반구조강/ 탄소강 Mild Steels/ Carbon Steels SS400 / S55C		합금강/ 공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD		공구강/ 프래하드강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1		공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD									
경도 Hardness	~750N/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc									
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED								
4mm	5,000	510	4,200	260	3,600	180	2,800	130								
5mm	5,000	510	4,200	270	3,200	200	2,400	150								
6mm	4,200	510	3,600	290	2,800	220	2,100	170								
8mm	3,200	510	2,700	330	2,100	250	1,600	190								
10mm	2,600	510	2,200	345	1,600	260	1,300	210								
12mm	2,100	510	1,800	360	1,400	270	1,100	215								
16mm	1,600	510	1,400	385	1,000	290	800	220								
20mm	1,300	480	1,100	375	800	280	640	210								
절입량 Depth of Cut	<table><tr><td>Ap</td><td>Ae</td></tr><tr><td>1.5D</td><td>0.4D</td></tr></table> 				Ap	Ae	1.5D	0.4D	<table><tr><td>Ap</td><td>Aa</td></tr><tr><td>1.5D</td><td>0.3D</td></tr></table>				Ap	Aa	1.5D	0.3D
Ap	Ae															
1.5D	0.4D															
Ap	Aa															
1.5D	0.3D															

홈절삭 Slotting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels SS400 / S55C		합금강/ 공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD		공구강/ 프라하드강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1		공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD	
경도 Hardness	~750N/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,000	430	3,800	200	2,800	140	2,400	110
5mm	4,000	430	3,400	220	2,500	160	2,200	130
6mm	3,600	430	3,000	240	2,300	185	1,900	150
8mm	2,700	430	2,200	270	1,800	210	1,400	180
10mm	2,200	430	1,800	290	1,400	220	1,200	185
12mm	1,800	430	1,500	300	1,200	230	960	190
16mm	1,400	430	1,100	310	900	250	720	200
20mm	1,100	410	900	310	700	240	560	185
절입량 Depth of Cut	Ap : 0.75D ApMax=12mm 				Ap : 0.5D			

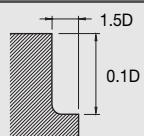
측면 절삭 Side Cutting

피삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels		합금강/ 공구강 Alloy Steels/ Tool Steels		공구강/ 프라하든강 Tool Steels/ Prehardened Steels		공구강/ 스테인레스강 Tool Steels/ Stainless Steels	
	SS400 / S55C		SCM / SKT / SKD		SKD / SKT / NAK55 / HPM1		SUS304 / SKD	
경도 Hardness	~750N/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	5,800	600	4,800	300	4,100	200	3,200	150
5mm	5,800	600	4,800	310	3,700	230	2,800	170
6mm	4,800	600	4,200	330	3,200	250	2,400	200
8mm	3,700	600	3,100	380	2,400	290	1,800	220
10mm	3,000	600	2,500	400	1,800	300	1,500	250
12mm	2,400	600	2,100	410	1,600	310	1,300	250
16mm	1,850	600	1,600	440	1,200	330	1,000	250
20mm	1,500	550	1,300	430	900	320	750	240
절입량 Depth of Cut	Ae Ap				Aa Ap			

홈절삭 Slotting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels SS400 / S55C		합금강/ 공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD		공구강/ 프래하든강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1		공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD	
경도 Hardness	~750N/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,600	500	4,400	230	3,200	160	2,800	130
5mm	4,600	500	4,000	250	2,900	180	2,500	150
6mm	4,100	500	3,500	280	2,700	210	2,200	170
8mm	3,100	500	2,500	310	2,100	240	1,700	210
10mm	2,500	500	2,100	330	1,600	250	1,300	210
12mm	2,100	500	1,700	350	1,400	270	1,100	220
16mm	1,600	500	1,300	360	1,000	290	800	230
20mm	1,300	480	1,000	360	800	270	650	210
절입량 Depth of Cut	Ap : 0.75D ApMax=12mm				Ap : 0.5D			

2DEM/4DEM/6DEM

	2DEM		4DEM		6DEM	
파삭재 Material	흑연 Graphite		흑연 Graphite		흑연 Graphite	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.2mm	40,000	100	-	-	-	-
0.4mm	40,000	200	-	-	-	-
0.6mm	40,000	350	-	-	-	-
0.8mm	40,000	550	-	-	-	-
1mm	40,000	700	-	-	-	-
2mm	25,000	800	-	-	-	-
3mm	20,000	800	20,000	1,600	-	-
4mm	18,000	950	18,000	1,900	-	-
5mm	14,000	1,200	14,000	2,400	-	-
6mm	11,000	1,400	11,000	2,800	22,200	8,000
8mm	8,000	1,300	8,000	2,600	16,800	8,000
10mm	6,500	1,200	6,500	2,400	13,400	8,000
12mm	5,500	1,200	5,500	2,400	11,350	6,700
16mm	5,500	1,200	-	-	8,400	5,000
절입량 Depth of Cut						

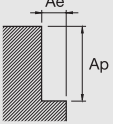
2GEM/4GEM/6GEM

• RPM : rev./min • Feed : mm/min

	2GEM		4GEM		6GEM	
파삭재 Material	흑연 Graphite		흑연 Graphite		흑연 Graphite	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	8,000	160	-	-	-	-
2mm	8,000	250	-	-	-	-
3mm	8,000	380	8,000	430	-	-
4mm	8,000	510	8,000	570	-	-
5mm	8,000	640	8,000	720	-	-
6mm	8,000	770	8,000	860	8,000	960
8mm	8,000	1,000	8,000	1,100	8,000	1,300
10mm	8,000	1,250	8,000	1,400	8,000	1,600
12mm	8,000	1,500	7,000	1,400	7,000	1,600
16mm	8,000	1,600	7,000	1,500	7,000	1,800
20mm	8,000	1,600	7,000	1,500	7,000	1,800

절입량
Depth of Cut

Ap	Ae
1D	0.1D

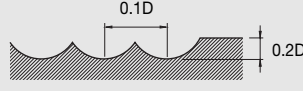
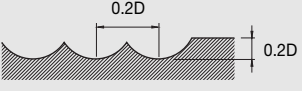


2DBE/3DBE/4DBE

• RPM : rev./min • Feed : mm/min

	2DBE		4DBE	
파삭재 Material	흑연 Graphite		흑연 Graphite	
외경 Outside Diameter	RPM	FEED	RPM	FEED
1mm	16,000	400	20,000	700
2mm	16,000	800	16,000	1,200
3mm	16,000	1,450	16,000	2,000
4mm	16,000	2,100	16,000	3,100
5mm	15,500	2,550	15,000	3,800
6mm	15,000	2,950	15,000	4,400
8mm	13,000	3,000	13,000	4,500
10mm	11,500	3,000	12,000	4,600
12mm	10,700	3,200	10,000	4,700

절입량
Depth of Cut

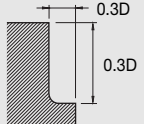



2DCR/4DCR

• RPM : rev./min • Feed : mm/min

	2DCR		4DCR	
파삭재 Material	흑연 Graphite		흑연 Graphite	
외경 Outside Diameter	RPM	FEED	RPM	FEED
0.2mm	40,000	100	-	-
0.4mm	40,000	200	-	-
0.5mm	40,000	300	-	-
0.6mm	40,000	400	-	-
0.8mm	40,000	500	-	-
1mm	40,000	900	-	-
2mm	36,000	900	-	-
3mm	32,000	1,300	-	-
4mm	26,000	1,500	40,000	3,500
5mm	24,000	1,100	-	-
6mm	21,000	1,100	40,000	5,600
8mm	-	-	32,000	5,600
10mm	-	-	26,000	5,700
12mm	-	-	21,000	5,500
16mm	-	-	15,800	5,500

절입량
Depth of Cut



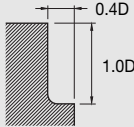
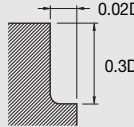
3CPR__DLC Coating

• RPM : rev./min • Feed : mm/min

파삭재 Material	CFRP			
외경 Outside Diameter	RPM	FEED	Vc (m/min)	Fz (mm/rev)
6mm	8,000	600	100~200	0.03~0.12
8mm	6,000	600	100~200	0.04~0.15
10mm	4,800	540	100~200	0.04~0.15
12mm	4,000	540	100~200	0.05~0.17

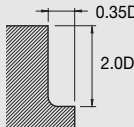
4&6CPR__DIA Coating

• RPM : rev./min • Feed : mm/min • Vc : m/min • Fz : mm/t

파삭재 Material	CFRP				GFRP				CFRP				GFRP			
외경 Outside Diameter	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
6mm	7,900	1,100	150	0.035	4,200	430	80	0.025	10,500	1,950	200	0.047	5,300	740	100	0.035
8mm	5,960	1,600	150	0.045	3,200	590	80	0.031	7,970	2,950	200	0.062	3,900	950	100	0.04
10mm	4,750	1,500	150	0.05	2,550	560	80	0.037	6,350	2,930	200	0.077	3,120	850	100	0.045
12mm	3,950	2,060	150	0.06	2,120	725	80	0.043	5,300	3,900	200	0.092	2,600	1,050	100	0.05
절입량 Depth of Cut																

8 ~ 16CPO

• RPM : rev./min • Feed : mm/min • Vc : m/min • Fz : mm/rev

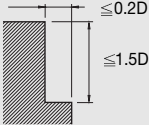
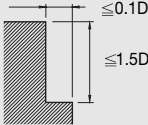
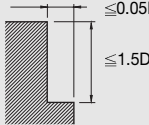
파삭재 Material	CFRP			GFRP		
외경 Outside Diameter	RPM	FEED	Vc (m/min)	RPM	FEED	Vc (m/min)
4mm	15,900	1,400	200	7,900	700	100
5mm	1,300	1,900	200	6,300	950	100
6mm	10,600	2,200	200	5,300	1,000	100
8mm	7,950	2,600	200	3,900	1,300	100
10mm	6300	3050	200	3100	1500	100
12mm	5300	3300	200	2600	1600	100
절입량 Depth of Cut						

2DDC

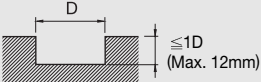
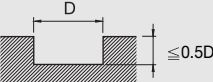
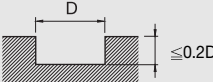
• RPM : rev./min • Feed : mm/min

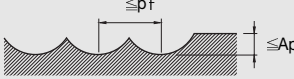
파삭재 Material	CFRP		
외경 Outside Diameter	SPEED (m/min)	RPM	Feed (mm/rev)
2mm	100 ~ 150	13,000 ~ 20,000	0.03 ~ 0.07
2.5mm	100 ~ 150	11,000 ~ 16,000	0.03 ~ 0.07
3mm	100 ~ 150	8,000 ~ 12,000	0.03 ~ 0.07
4mm	100 ~ 150	6,500 ~ 9,700	0.03 ~ 0.07
5mm	100 ~ 150	5,300 ~ 8,100	0.03 ~ 0.07
6mm	100 ~ 150	4,000 ~ 6,000	0.03 ~ 0.07
8mm	100 ~ 150	13,000 ~ 20,000	0.03 ~ 0.07
9mm	100 ~ 150	3,500 ~ 5,300	0.03 ~ 0.07
10mm	100 ~ 150	3,500 ~ 4,700	0.03 ~ 0.07
11mm	100 ~ 150	2,900 ~ 4,300	0.03 ~ 0.07
12mm	100 ~ 150	2,700 ~ 3,900	0.03 ~ 0.07

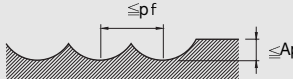
측면 절삭 Side Cutting

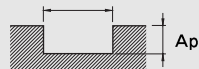
파삭재 Material	합금강/공구강 Alloy Steels / Tools steel SKD61 / SK / NAK		SUS가공용 SUS304 / SUS316 / Ti6A		고경도강 Hardened Steels Inconel 718	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2mm	21,000	1,100	14,000	560	4,800	130
3mm	15,000	1,250	10,600	850	4,200	200
4mm	11,000	1,400	8,000	960	3,200	220
5mm	9,600	1,900	6,400	1,000	2,500	250
6mm	8,000	2,200	5,300	1,000	2,100	250
7mm	6,800	1,900	4,500	1,000	1,800	260
8mm	6,000	1,600	4,000	960	1,600	260
9mm	5,300	1,480	3,500	840	1,400	220
10mm	4,800	1,440	3,200	770	1,300	210
11mm	4,400	1,350	2,900	760	1,200	190
12mm	4,000	1,250	2,700	760	1,100	180
16mm	3,000	1,140	2,000	560	800	130
20mm	2,400	860	1,600	510	600	100
절입량 Depth of Cut						

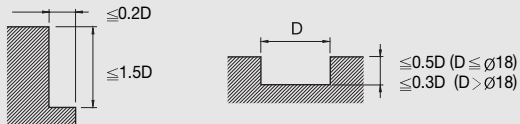
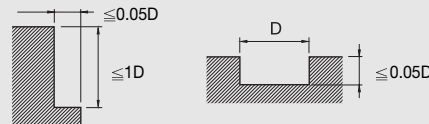
홈절삭 Slotting

파삭재 Material	합금강/공구강 Alloy Steels / Tools steel SKD61 / SK / NAK		SUS가공용 SUS304 / SUS316 / Ti6A		고경도강 Hardened Steels Inconel 718	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2mm	10,000	400	9,600	310	3,200	80
3mm	6,900	410	7,400	380	2,700	110
4mm	5,600	490	5,600	400	2,000	120
5mm	4,500	630	4,500	410	1,600	130
6mm	3,700	740	3,700	440	1,300	160
7mm	3,200	700	3,200	410	1,100	140
8mm	2,800	670	2,800	390	1,000	130
9mm	2,500	600	2,500	350	900	130
10mm	2,200	530	2,200	350	800	130
11mm	2,000	530	2,000	320	720	120
12mm	1,900	530	1,900	300	660	110
16mm	1,400	390	1,400	280	500	80
20mm	1,100	350	1,100	260	400	60
절입량 Depth of Cut						

파삭재 Material	합금강, 프리하든강 S45C, SCM440, SS400, S10C, NAK, PX5, SNCM439						스테인레스스틸 SUS 티타늄 4V, SUS630, SUS631, SUS431, SUS420J2					
	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap	
반경 Radius	RPM	FEED	RPM	FEED	Axial Depth		RPM	FEED	RPM	FEED	Axial Depth	
R1.5	32,000	7,700	21,000	3,200	0.25	0.75	24,000	4,800	16,000	1,900	0.25	
R2	24,000	5,800	16,000	2,800	0.33	1	18,000	4,000	12,000	1,700	0.33	
R2.5	19,000	5,300	12,700	2,600	0.42	1.25	14,400	3,500	9,600	1,500	0.42	
R3	16,000	4,800	10,600	2,100	0.5	1.5	12,000	3,200	8,000	1,400	0.5	
R4	12,000	4,300	8,000	1,900	0.8	2	9,000	3,200	6,000	1,400	0.8	
R5	9,600	4,100	6,400	1,800	1	2.5	7,200	3,000	4,800	1,300	1	
R6	8,000	4,000	5,300	1,800	1.2	3	6,000	3,000	4,000	1,300	1.2	
절입량 Depth of Cut												

파삭재 Material	동, 동합금 Copper						열처리강 inconel718						
	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	pf
		RPM	FEED	RPM	FEED			RPM	FEED	RPM	FEED		
R1.5	0.75	38,000	9,100	25,000	3,800	0.25	0.75	6,400	640	4,200	340	0.13	0.3
R2	1	29,000	7,000	19,000	3,300	0.33	1	4,800	580	3,200	260	0.17	0.4
R2.5	1.25	23,000	6,400	15,000	3,100	0.42	1.25	3,800	530	2,500	250	0.21	0.5
R3	1.5	19,000	5,700	13,000	2,600	0.5	1.5	3,200	500	2,100	210	0.25	0.6
R4	2	14,000	5,000	9,600	2,300	0.8	2	2,400	430	1,600	190	0.4	0.8
R5	2.5	12,000	5,100	7,700	2,200	1	2.5	2,000	420	1,300	180	0.5	1
R6	3	9,600	4,800	6,400	2,200	1.2	3	1,700	350	1,100	150	0.6	1.2
절입량 Depth of Cut													

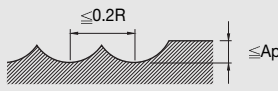
파삭재 Material		
외경 Outside Diameter	RPM	FEED
3mm	4,400	380
4mm	3,800	350
5mm	3,300	350
6mm	3,000	340
7mm	2,700	340
8mm	2,200	340
9mm	2,000	340
10mm	1,750	330
12mm	1,300	330
14mm	5,000	310
16mm	4,800	300
20mm	4,700	210
절입량 Depth of Cut	 Ap $\phi 6 \sim 10 = 0.25 \times D$ $\phi 12 \sim 16 = 0.15 \times D$ $\phi 18 \sim 20 = 0.1 \times D$	

파삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels SS400 / S50C / SCM		스테인레스강 / 티타늄합금 Stainless Steels/ Titanium Alloy Steels SUS304 / SUS316 / Ti-6AL-4V		고경도강 Hardened Steels SKD61		초내열합금 / 인코넬 Superhit resistance / Inconel	
경도 Hardness	~ 45HRc				45 ~ 55HRc			
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.8mm (3F)	7,200	80	6,400	60	3,900	30	2,000	10
1mm (3F)	6,400	100	5,600	70	3,500	30	1,700	15
2mm (3F)	5,600	110	4,800	80	2,900	34	1,400	20
3mm (3F)	4,800	200	4,000	90	2,200	45	1,400	25
4mm (3F)	4,000	200	3,300	140	1,800	70	1,200	35
5mm (3F)	3,200	230	2,700	170	1,500	90	1,000	45
6mm (3F)	2,900	250	2,400	180	1,400	90	900	45
8mm (3F)	2,200	270	1,800	190	1,000	100	720	40
10mm (3F)	1,700	260	1,400	190	900	110	600	40
12mm (3F)	1,400	230	1,200	150	700	90	500	35
16mm (3F)	1,000	160	900	120	550	60	360	30
절입량 Depth of Cut								

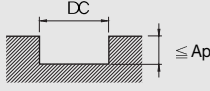
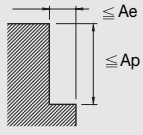
- 상기표는 측면가공기준입니다. 홈가공의 경우, 회전속도는 상기표의 80~100%, 이송속도는 60~80%를 기준으로 하여주십시오.
- In case of slotting, 80~100% of speed and 60~80% of feed on the talbe.

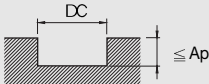
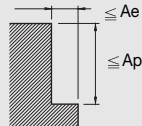
2COB

• RPM : rev./min • Feed : mm/min

파삭재 Material	Stainless Steels		동 합금 Copper Alloys		Ap Axial Depth
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		
	RPM	FEED	RPM	FEED	
R0.5	40,000	8,000	40,000	3,200	0.06
R0.75	40,000	9,600	40,000	400	0.09
R1	40,000	9,600	39,000	4,700	0.11
R1.5	40,000	12,000	30,000	4,500	0.12
R2	40,000	12,000	27,000	4,300	0.13
R2.5	32,000	11,000	20,000	3,600	0.15
R3	25,000	9,000	16,000	2,900	0.2
R4	21,000	8,400	13,000	2,600	0.25
R5	16,000	6,400	10,000	2,000	0.3
R6	13,000	5,200	8,000	1,700	0.5
R8	9,000	3,600	6,000	1,300	0.5
절입량 Depth of Cut					

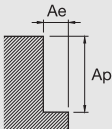
- α 란 가공면의 경사각입니다.
- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴 수 있습니다.
- 수용성 절삭유제의 사용을 추천합니다.
- 기계나 가공물 장착의 강성이 없는 경우, 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- α is the inclination angle of the machined surface.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- Water-soluble cutting fluid is recommended.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

			홈절삭 Slotting			측면 절삭 Side Cutting			
피삭재 Material			동 / 동 합금 Copper / Copper Alloys			동 / 동 합금 Copper / Copper Alloys			
외경 Outside Diameter	반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ap Radial Depth
1mm	R0.1, R0.2	3	45,000	2,500	0.036	45,000	4,500	0.036	0.2
"	R0.1, R0.2	6	40,000	2,000	0.03	40,000	3,000	0.03	0.2
"	R0.1, R0.2	10	35,000	1,600	0.025	35,000	2,000	0.025	0.2
1.5mm	R0.1, R0.2	5	23,000	1,800	0.08	50,000	6,000	0.08	0.3
"	R0.1, R0.2	8	26,000	1,600	0.06	45,000	5,500	0.06	0.3
"	R0.1, R0.2	12	30,000	1,500	0.05	40,000	4,500	0.04	0.3
2mm	R0.1, R0.2	6	35,000	1,800	0.14	45,000	5,000	0.12	0.8
"	R0.1, R0.2	10	30,000	1,600	0.12	40,000	4,700	0.1	0.6
"	R0.1, R0.2	14	30,000	1,200	0.08	30,000	3,800	0.06	0.4
3mm	R0.2, R0.3	10	30,000	2,200	0.14	40,000	6,500	0.12	1
"	R0.2, R0.3	16	20,000	2,000	0.12	35,000	6,000	0.1	0.6
"	R0.2, R0.3	20	20,000	2,000	0.12	35,000	6,000	0.1	0.6
"	R0.5	10	20,000	2,600	0.14	38,000	10,000	0.12	0.8
"	R0.5	16	20,000	2,200	0.12	35,000	8,000	0.1	0.6
"	R0.5	20	20,000	2,200	0.12	35,000	8,000	0.1	0.6
4mm	R0.2, R0.3	12	20,000	2,600	0.5	40,000	8,000	0.18	0.12
"	R0.2, R0.3	16	15,000	2,400	0.3	32,000	5,000	0.16	0.1
"	R0.2, R0.3	20	15,000	2,000	0.25	32,000	5,000	0.15	0.8
"	R0.5	12	20,000	2,400	0.5	35,000	10,000	0.3	0.1
"	R0.5	16	15,000	2,200	0.25	32,000	7,000	0.15	0.8
"	R0.5	20	15,000	2,200	0.25	32,000	7,000	0.15	0.8
6mm	R0.3, R0.5	20	10,000	1,400	0.6	20,000	5,200	0.25	1.2
"	R0.3, R0.5	30	10,000	1,200	0.4	20,000	5,000	0.25	1.2
"	R1	20	10,000	1,800	0.6	20,000	9,000	0.25	1.2
"	R1	30	10,000	1,500	0.4	20,000	7,000	0.25	1.2
8mm	R0.3, R0.5	25	8,000	1,000	0.3	15,000	5,000	0.3	1.5
"	R1	25	8,000	1,300	0.3	15,000	10,000	0.3	1.5
10mm	R0.5	30	7,000	1,300	0.3	13,000	7,000	0.2	1.5
"	R1	30	7,000	1,500	0.3	13,000	12,000	0.2	1.5
12mm	R0.5	35	6,000	1,100	0.2	10,000	9,000	0.15	2
"	R1	35	6,000	1,300	0.2	10,000	15,000	0.15	2
절입량 Depth of Cut									

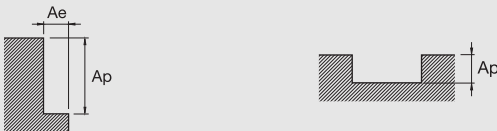
			홈절삭 Slotting			측면 절삭 Side Cutting			
피삭재 Material			동 / 동 합금 Copper / Copper Alloys			동 / 동 합금 Copper / Copper Alloys			
외경 Outside Diameter	반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ap Radial Depth
1mm	R0.1, R0.2	3	45,000	2,500	0.036	45,000	4,500	0.036	0.2
"	R0.1, R0.2	6	40,000	2,000	0.03	40,000	3,000	0.03	0.2
"	R0.1, R0.2	10	35,000	1,600	0.025	35,000	2,000	0.025	0.2
1.5mm	R0.1, R0.2	5	32,000	1,800	0.08	50,000	6,000	0.08	0.3
"	R0.1, R0.2	8	30,000	1,600	0.06	45,000	5,500	0.06	0.3
"	R0.1, R0.2	12	30,000	1,500	0.05	40,000	4,500	0.04	0.3
2mm	R0.1, R0.2	6	35,000	1,800	0.14	45,000	5,000	0.12	0.8
"	R0.1, R0.2	10	30,000	1,600	0.12	40,000	4,700	0.1	0.6
"	R0.1, R0.2	14	30,000	1,200	0.08	30,000	3,800	0.06	0.4
2.5mm	R0.1, R0.2	8	32,000	2,000	0.15	40,000	5,300	0.08	0.6
"	R0.1, R0.2	12	30,000	1,900	0.13	38,000	5,300	0.1	0.7
"	R0.1, R0.2	16	30,000	1,600	0.13	38,000	5,100	0.1	0.7
"	R0.5	8	22,000	2,800	0.15	41,000	11,000	0.13	0.8
"	R0.5	12	20,000	2,600	0.14	40,000	10,500	0.12	0.7
"	R0.5	16	20,000	2,500	0.13	40,000	10,200	1.12	0.7
3mm	R0.2, R0.3	10	30,000	2,200	0.14	40,000	6,500	0.12	1
"	R0.2, R0.3	16	20,000	2,000	0.12	35,000	6,000	0.1	0.6
"	R0.2, R0.3	20	20,000	2,000	0.12	35,000	6,000	0.1	0.6
"	R0.5	10	20,000	2,600	0.14	38,000	10,000	0.12	0.8
"	R0.5	16	20,000	2,200	0.12	35,000	8,000	0.1	0.6
"	R0.5	20	20,000	2,200	0.12	35,000	8,000	0.1	0.6
4mm	R0.2, R0.3	12	20,000	2,600	0.5	40,000	8,000	0.18	0.12
"	R0.2, R0.3	16	15,000	2,400	0.3	32,000	5,000	0.16	0.1
"	R0.2, R0.3	20	15,000	2,000	0.25	32,000	5,000	0.15	0.8
"	R0.5	12	20,000	2,400	0.5	35,000	10,000	0.3	0.1
"	R0.5	16	15,000	2,200	0.25	32,000	7,000	0.15	0.8
"	R0.5	20	15,000	2,200	0.25	32,000	7,000	0.15	0.8
6mm	R0.3, R0.5	20	10,000	1,400	0.6	20,000	5,200	0.25	1.2
"	R0.3, R0.5	30	10,000	1,200	0.4	20,000	5,000	0.25	1.2
"	R1	20	10,000	1,800	0.6	20,000	9,000	0.25	1.2
"	R1	30	10,000	1,500	0.4	20,000	7,000	0.25	1.2
8mm	R0.3, R0.5	25	8,000	1,000	0.3	15,000	5,000	0.3	1.5
"	R1	25	8,000	1,300	0.3	15,000	10,000	0.3	1.5
10mm	R0.5	30	7,000	1,300	0.3	13,000	7,000	0.2	1.5
"	R1	30	7,000	1,500	0.3	13,000	12,000	0.2	1.5
12mm	R0.5	35	6,000	1,100	0.2	10,000	9,000	0.15	2
"	R1	35	6,000	1,300	0.2	10,000	15000	0.15	2
절입량 Depth of Cut									

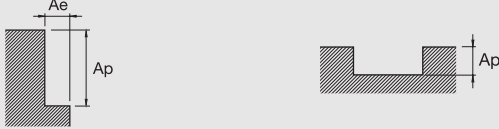
파삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material				알루미늄합금 주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100	
	A7075				Si1 3%							
	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling	
반경 Radius	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.1	32,000	220	45,000	290	32,000	220	45,000	290	32,000	220	45,000	290
R0.3	32,000	480	45,000	660	32,000	480	45,000	660	32,000	480	45,000	660
R0.5	28,800	760	45,000	1,100	28,800	760	45,000	1,100	28,800	760	45,000	1,100
R0.8	28,800	850	45,000	1,400	28,800	850	45,000	1,400	25,200	850	35,900	1,300
R1	28,600	1,400	45,000	2,000	28,600	1,400	43,000	1,900	21,500	1,000	35,900	1,600
R1.5	19,100	1,400	45,000	3,000	19,100	1,400	28,600	1,900	14,300	1,000	23,900	1,600
R2	14,300	1,400	35,900	3,200	14,300	1,400	21,400	1,900	10,700	1,000	17,900	1,600
R3	9,500	1,400	23,900	3,200	9,500	1,400	14,300	1,900	7,200	1,000	12,000	1,600
R4	7,200	1,800	17,600	4,100	7,200	1,800	10,700	2,400	5,400	1,300	8,900	2,000
R5	5,700	1,600	14,000	3,600	5,700	1,600	8,600	2,200	4,300	1,200	7,200	1,800
R6	4,800	1,500	11,700	3,400	4,800	1,500	7,200	2,000	3,600	1,100	5,900	1,700
	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf
	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.02D	0.05D
절입량 Depth of Cut												

- 3DRE는 아래 수치의 **20% Up** 적용
- Apply 20% up values of below condition for 3DRE

피삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material A7075					알루미늄합금주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting Si1 3%					탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100					동합금 Copper Alloy C1100		
	일반가공 Regular Milling			고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling			고속가공 High Speed Milling					
	Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED					
0.5mm	28,800	160	45,000	500	28,800	160	45,000	450	28,800	140	45,000	410						
0.6mm	28,800	180	45,000	590	28,800	180	45,000	540	28,800	160	45,000	500						
0.8mm	28,800	200	45,000	770	28,800	200	45,000	720	26,100	180	45,000	590						
1mm	28,800	200	45,000	900	28,800	200	45,000	960	20,700	200	37,800	630						
1.2mm	28,800	210	45,000	1,100	28,800	210	45,000	1,000	17,100	200	32,400	630						
1.5mm	28,800	250	45,000	1,400	28,800	250	45,000	1,100	14,000	200	26,600	630						
2mm	28,800	400	45,000	1,800	28,800	380	45,000	1,100	13,000	200	25,200	680						
2.5mm	22,500	540	43,200	1,900	22,500	540	27,900	1,100	8,600	230	18,000	680						
3mm	18,900	630	36,000	1,900	18,900	630	23,400	1,100	7,200	230	15,300	680						
4mm	14,000	650	29,700	2,000	14,000	650	18,000	1,200	5,400	250	12,600	720						
5mm	11,300	680	27,900	2,500	11,300	680	17,280	1,500	4,300	270	11,300	860						
6mm	9,500	750	23,400	2,500	9,500	750	14,310	1,500	3,600	280	9,500	900						
8mm	7,200	800	17,550	2,600	7,200	800	10,800	1,600	2,600	270	7,100	900						
10mm	5,700	900	13,950	2,900	5,700	900	8,640	1,700	2,100	330	5,700	1,000						
12mm	4,800	950	11,700	2,900	4,800	950	7,200	1,700	1,800	350	4,800	1,000						
	Ap	Ae	Ap	Ap	Ae	Ap	Ap	Ae	Ap	Ap	Ap	Ae	Ap	Ap	Ae	Ap		
	1.5D	0.1D	$\begin{matrix} 0.3D \\ \varnothing 0.5 \leq Dc \leq \varnothing 0.8 \\ 0.5D \\ \varnothing 1 \leq Dc \end{matrix}$	1D	0.1D	0.15D	1.5D	0.1D	$\begin{matrix} 0.3D \\ \varnothing 0.5 \leq Dc \leq \varnothing 0.8 \\ 0.5D \\ \varnothing 1 \leq Dc \end{matrix}$	1D	0.1D	0.15D	1.5D	0.1D	$\begin{matrix} 0.3D \\ \varnothing 0.5 \leq Dc \leq \varnothing 0.8 \\ 0.5D \\ \varnothing 1 \leq Dc \end{matrix}$	1D	0.05D	0.1D
절임량 Depth of Cut	 																	

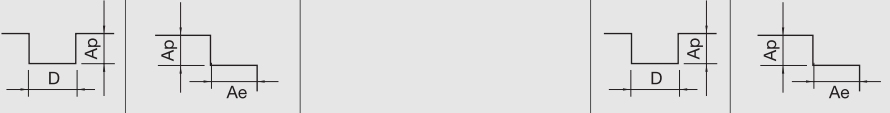
파삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material				알루미늄합금 주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100	
	A7075				Si1 3%							
반경 Radius	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling	
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.1	28,800	180	40,000	240	28,800	180	36,100	230	28,800	180	31,600	200
R0.3	28,800	350	40,000	490	28,800	350	36,100	480	28,800	350	31,600	420
R0.5	23,400	720	31,500	950	23,400	720	25,200	900	23,400	720	20,700	800
R0.8	23,400	760	35,900	1,120	23,400	760	25,200	1,000	22,500	720	20,700	800
R1	22,500	950	31,500	1,260	22,500	950	25,200	1,100	17,100	720	20,700	800
R1.5	15,300	950	20,700	1,260	15,300	950	16,700	1,100	11,300	720	13,500	800
R2	11,300	950	15,800	1,260	11,300	950	12,600	1,100	8,600	720	10,400	800
R3	9,000	950	13,200	1,260	9,000	950	12,600	1,100	5,900	720	8,900	800
R4	6,400	1,150	11,600	1,260	6,400	1,150	9,800	1,000	4,800	880	6,400	950
R5	5,200	1,050	9,400	1,120	5,200	1,050	7,800	860	3,900	760	5,300	880
R6	4,100	1,000	6,700	950	4,100	1,000	5,400	520	3,000	740	4,600	840
절입량 Depth of Cut	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf
	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.02D	0.05D

파삭재 Material			알루미늄 합금재 Aluminum Alloy Expanding Material A7075				알루미늄합금 주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting Si1 3%				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100				동합금 Copper Alloy C1100	
			일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling			
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED		
0.1mm	32,000	35	45,000	120	32,000	35	45,000	120	32,000	35	45,000	100	45,000	100		
0.3mm	32,000	60	45,000	300	32,000	60	45,000	300	32,000	60	45,000	210	45,000	210		
0.5mm	28,800	90	45,000	500	28,800	90	45,000	500	28,800	90	45,000	390	45,000	390		
0.8mm	28,800	120	45,000	700	28,800	130	45,000	700	23,000	110	45,000	500	45,000	500		
1mm	28,800	170	45,000	900	28,800	170	45,000	900	20,700	125	37,800	630	37,800	630		
1.5mm	28,800	230	40,500	1,100	28,800	230	40,500	1,100	14,000	130	26,700	630	26,700	630		
2mm	23,000	270	30,600	1,100	23,000	270	30,600	1,100	10,400	135	21,600	675	21,600	675		
3mm	15,300	460	20,700	1,100	15,300	460	20,700	1,100	7,200	200	15,300	675	15,300	675		
4mm	11,300	470	15,300	1,100	11,300	470	15,300	1,100	5,400	210	11,700	675	11,700	675		
5mm	9,000	490	12,200	1,100	9,000	490	12,200	1,100	4,300	225	9,000	675	9,000	675		
6mm	7,700	540	10,000	1,100	7,700	540	10,000	1,100	3,600	225	7,200	675	7,200	675		
8mm	6,000	600	8,200	1,200	6,000	600	8,200	1,200	2,600	300	5,900	720	5,900	720		
10mm	4,500	650	6,000	1,400	4,500	650	6,000	1,400	2,100	300	4,300	800	4,300	800		
12mm	3,100	690	4,500	1,500	3,100	690	4,500	1,500	1,600	320	3,200	850	3,200	850		
	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap		
	1.2D 0.1D	0.3D	1D 0.1D	0.15D	1.2D 0.1D	0.3D	1D 0.1D	0.15D	1D 0.1D	0.15D	1D 0.1D	0.3D	1D 0.05D	0.1D		
절입량 Depth of Cut																

파삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material A7075				알루미늄합금주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting SI1 3%				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100	
	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	37,500	220	50,000	1,170	37,400	220	50,000	1,170	27,000	160	49,000	820
1.5mm	37,500	300	50,000	1,430	37,400	300	50,000	1,430	18,000	170	34,700	820
2mm	30,000	350	40,000	1,430	30,000	350	40,000	1,430	13,500	180	28,000	880
3mm	20,000	600	27,000	1,430	20,000	600	27,000	1,430	9,400	260	20,000	880
4mm	15,000	610	20,000	1,430	14,700	610	20,000	1,430	7,000	270	15,200	880
6mm	10,000	700	13,000	1,430	10,000	700	13,000	1,430	4,700	290	9,400	880
8mm	7,800	780	11,000	1,560	7,800	780	10,700	1,560	3,400	390	7,700	940
10mm	5,900	850	7,800	1,820	5,900	850	7,800	1,820	2,700	390	5,600	1,000
12mm	4,000	900	5,900	1,950	4,000	900	5,900	1,950	2,100	410	4,200	1,100
	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap
	1.2D 0.1D	0.3D	1D 0.1D	0.15D	1.2D 0.1D	0.3D	1D 0.1D	0.15D	1D 0.1D	0.3D	1D 0.05D	0.1D
절입량 Depth of Cut												

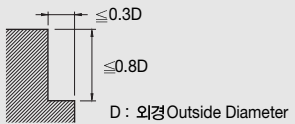
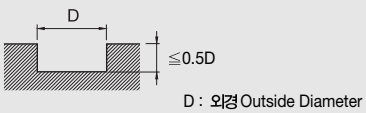
3ALR/3ALE

• RPM : rev./min • Feed : mm/min

파삭재 Material	알루미늄 합금 Aluminum Alloys etc.							
	3ALE				3ALR			
외경 Outside Diameter	RPM	FEED			RPM	FEED		
		수직 Vertical	홈절삭 Solting	측면 절삭 Side Milling		수직 Vertical	홈절삭 Solting	측면 절삭 Side Milling
1mm	25,500	130	770	930	30,000	150	900	1,100
2mm	25,500	190	1,530	1,800	30,000	225	1,800	2,150
3mm	18,400	190	1,700	2,000	21,600	225	2,000	2,400
4mm	14,000	255	1,700	2,000	16,200	300	2,000	2,400
5mm	11,000	255	1,700	2,000	13,000	300	2,000	2,400
6mm	9,200	255	1,700	2,000	10,800	300	2,000	2,400
8mm	7,000	255	1,700	2,000	8,100	300	2,000	2,400
10mm	5,500	210	1,700	2,000	6,480	250	2,000	2,400
12mm	4,400	170	1,700	2,000	5,400	200	2,000	2,400
16mm	3,200	130	1,530	1,900	-	-	-	-
20mm	2,000	85	1,360	1,700	-	-	-	-
Milling Amount (mm)		Ap=0.75D	Ap=0.75D	Ap=0.75D/ Ae=0.3D		Ap=0.75D	Ap=0.75D	Ap=0.75D/ Ae=0.3D
절입량 Depth of Cut								

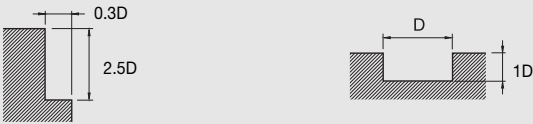
3ALC

• RPM : rev./min • Feed : mm/min

	측면 절삭 Side Cutting		홈 절삭 Slotting	
파삭재 Material	알루미늄 합금 Aluminum Alloys / A7075 etc.		알루미늄 합금 Aluminum Alloys / A7075 etc.	
외경 Outside Diameter	RPM	FEED	RPM	FEED
6mm	20,000	8,400	20,000	6,600
8mm	18,000	7,500	18,000	5,400
10mm	15,000	6,000	15,000	4,000
12mm	13,000	5,400	13,000	3,200
16mm	10,000	5,400	10,000	3,200
20mm	8,000	5,000	8,000	3,000
절입량 Depth of Cut				

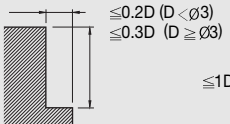
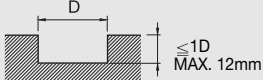
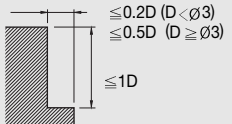
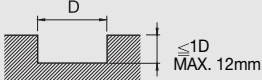
3ARE/3ARC

• RPM : rev./min • Feed : mm/min

파삭재 Material	동 Copper		알루미늄 Aluminum	
절삭속도 Speed	80m/min		80 ~ 150m/min	
외경 Outside Diameter	RPM	FEED	RPM	FEED
6mm	4,200	320	8,000	1,200
8mm	3,200	320	6,000	1,200
10mm	2,600	320	4,800	1,200
12mm	2,100	320	4,000	1,200
16mm	1,600	320	3,000	1,200
20mm	1,300	320	2,400	1,200
절입량 Depth of Cut				

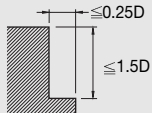
2ALE

• RPM : rev./min • Feed : mm/min

파삭재 Material	알루미늄 합금 Aluminum Alloys / A7075 etc.				알루미늄합금 주물 Aluminum Alloys / AC4B etc.			
절삭속도 Speed	300m/min		240m/min		240m/min		200m/min	
	측면 가공 Side Milling		홈가공 Slotting		측면 가공 Side Milling		홈가공 Slotting	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	34,000	500	34,000	400	34,000	400	34,000	300
2mm	34,000	950	32,300	720	32,300	720	27,200	470
3mm	27,200	1,200	21,300	800	21,300	800	18,000	510
4mm	20,400	1,300	16,000	850	16,000	850	14,000	550
5mm	16,200	1,400	13,000	850	13,000	850	11,000	600
6mm	13,600	1,600	11,000	940	11,000	940	9,400	640
8mm	10,200	1,600	8,000	1,000	8,000	1,000	6,800	680
10mm	8,100	1,600	6,500	1,000	6,500	1,000	5,400	680
12mm	6,800	1,600	5,400	1,000	5,400	1,000	4,500	680
16mm	5,100	1,600	4,100	1,000	4,100	1,000	3,400	610
20mm	4,100	1,300	3,200	850	3,200	850	2,700	560
절입량 Depth of Cut								

3ARO

• RPM : rev./min • Feed : mm/min

	측면 절삭 Side Cutting			
파삭재 Material	알루미늄 합금 Aluminum Alloys / A7075 etc.		알루미늄합금 주물 Aluminum Alloys / AC4B etc.	
외경 Outside Diameter	RPM	FEED	RPM	FEED
4mm	30,000	4,200	16,000	1,800
5mm	27,000	4,900	14,400	2,000
6mm	24,300	5,500	11,700	2,100
8mm	18,000	5,400	9,000	2,200
10mm	14,400	5,200	7,200	2,100
12mm	11,700	4,800	5,900	1,900
16mm	9,000	4,600	4,500	1,800
20mm	7,200	4,300	3,600	1,700
절입량 Depth of Cut				

파삭재 Material	합금강 / 공구강 / 프러하든강 Alloy Steels / Tool Steels / Prehardened Steels S50C / FC250 / SCM / NAK					고경도강 Hardened Steels SKD61				
	경도 Hardness ~ 45HRc					45 ~ 55HRc				
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth
	RPM	FEED	RPM	FEED		RPM	FEED	RPM	FEED	
R0.5	40,000	5,600	40,000	3,200	0.06	40,000	5,600	40,000	3,000	0.05
R0.75	40,000	6,500	40,000	4,000	0.09	40,000	6,500	32,000	3,200	0.08
R1	40,000	6,500	39,000	4,700	0.11	40,000	6,500	31,000	3,500	0.11
R1.25	40,000	7,000	30,000	4,500	0.12	36,000	6,500	26,000	3,500	0.12
R1.5	40,000	7,500	27,000	4,300	0.13	32,000	6,000	22,000	3,400	0.13
R2	32,000	7,500	20,000	3,600	0.15	25,000	6,000	16,000	2,700	0.15
R2.5	25,000	6,000	16,000	2,900	0.2	20,000	5,400	13,000	2,300	0.2
R3	21,000	5,800	13,000	2,600	0.25	17,000	4,700	10,000	2,000	0.25
R4	16,000	4,500	10,000	2,000	0.3	13,000	3,600	8,000	1,500	0.3
R5	13,000	3,600	8,000	1,700	0.5	10,000	2,900	6,400	1,200	0.5
R6	9,000	2,500	6,000	1,300	0.5	7,200	2,000	4,800	1,000	0.5

절입량
Depth of Cut

- α 란 가공면의 경사각입니다.
- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴 수 있습니다.
- 기계나 가공물 장치의 강성이 없는 경우, 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- α is the inclination angle of the machined surface.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

2CTE

• RPM : rev./min • Feed : mm/min

파삭재 Material	일반구조용강/탄소강 Mild Steels / Carbon Steels SS400 / S55C		합금강/공구강 Alloy Steels / Tool Steels SCM / SKT / SKS / SKD		고경도강/프러하든강 Hardened Steels / Prehardened Steels SKT / SKD / NAK55 / HPM1		고경도강/ 스테인레스강 Hardened Steels / Stainless Steels SUS304 / SKD		고경도강 Hardened Steels	
	경도 Hardness ~750HN/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	15,500	155	15,500	130	13,000	90	12,000	90	10,500	40
1.5mm	10,500	155	10,500	130	8,900	90	8,250	90	7,000	40
2mm	7,950	155	7,950	130	6,650	90	6,200	90	5,250	40
2.5mm	6,200	145	6,200	125	5,300	90	4,950	90	4,200	40
3mm	5,150	145	5,150	125	4,450	90	4,100	90	3,500	40
4mm	3,850	145	3,850	125	3,300	90	3,100	85	2,600	40
5mm	3,100	145	3,100	125	2,650	90	2,450	85	2,100	40
6mm	2,600	145	2,600	125	2,200	90	2,050	85	1,750	40
8mm	1,950	145	1,950	125	1,650	90	1,550	85	1,300	40
10mm	1,550	145	1,550	120	1,300	90	1,200	85	1,050	40

절입량
Depth of Cut

Ap	Ae
2.5D	0.02D

- 단단하고 정밀한 기계와 홀더를 사용하십시오.
- 떨림이 발생시 속도와 이송량을 동시에 줄여주십시오.
- 연기발생을 억제하는 적절한 절삭유제를 사용해 주십시오.
- Use a rigid and precise machine and holder.
- When chattering occurs, reduce the speed and feed simultaneously.
- Use a suitable cutting fluid with high smoke retardant properties.

4CTE

• RPM : rev./min • Feed : mm/min

파삭재 Material	일반구조용강/탄소강 Mild Steels / Carbon Steels SS400 / S55C		합금강/공구강 Alloy Steels / Tool Steels SCM / SKT / SKS / SKD		고경도강/프리하든강 Hardened Steels / Prehardened Steels SKT / SKD / NAK55 / HPM1		고경도강/스테인레스강 Hardened Steels / Stainless Steels SUS304 / SKD		고경도강 Hardened Steels	
경도 Hardness	~750HN/mm ²		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3mm	5,300	225	4,450	225	4,450	180	4,100	130	3,500	130
4mm	3,950	245	3,300	245	3,300	195	3,100	150	2,600	150
5mm	3,150	275	2,650	275	2,650	225	2,450	160	2,100	160
6mm	2,200	275	2,200	275	2,200	225	2,050	175	1,750	175
8mm	1,950	270	1,650	270	1,650	225	1,550	190	1,300	190
10mm	1,550	270	1,300	270	1,300	225	1,200	180	1,050	180
절입량 Depth of Cut	Ap Ae 2.5D 0.02D									

- 단단하고 정밀한 기계와 홀더를 사용하십시오.
- 떨림이 발생시 속도와 이송량을 동시에 줄여주십시오.
- 연기발생을 억제하는 적절한 절삭유제를 사용해주십시오.
- Use a rigid and precise machine and holder.
- When chattering occurs, reduce the speed and feed simultaneously.
- Use a suitable cutting fluid with high smoke retardant properties.

4RTE

• RPM : rev./min • Feed : mm/min

파삭재 Material	일반구조용강/탄소강 Mild Steels / Carbon Steels SS400 / S55C			합금강/공구강 Alloy Steels / Tool Steels SCM / SKT / SKS / SKD			고경도강/프리하든강 Prehardened Steels / Hardened Steels SKT / SKD / NAK55 / HPM1			고경도강/스테인레스강 Hardened Steels / Stainless Steels SUS304 / SKD			고경도강 Hardened Steels		
경도 Hardness	~750HN/mm ²			~ 30HRc			30HRc ~ 38HRc			38HRc ~ 45HRc			45HRc ~ 55HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap
0.5mm	31,500	630	0.01~0.025	31,500	565	0.01~0.025	31,500	475	0.01~0.025	31,500	440	0.01~0.025	19,000	250	0.005~0.01
0.6mm	31,500	755	0.012~0.03	31,500	680	0.012~0.03	29,500	530	0.012~0.03	26,500	445	0.012~0.03	15,500	260	0.006~0.012
0.7mm	29,000	940	0.014~0.035	27,000	680	0.014~0.035	25,000	530	0.014~0.035	22,500	445	0.014~0.035	13,500	260	0.007~0.014
0.8mm	25,000	935	0.016~0.004	23,500	680	0.016~0.04	22,000	630	0.016~0.04	19,500	445	0.016~0.04	11,500	260	0.008~0.016
0.9mm	22,500	935	0.018~0.045	21,000	680	0.018~0.045	19,500	530	0.018~0.045	17,500	445	0.018~0.045	10,500	260	0.009~0.018
1mm	20,000	930	0.02~0.05	19,000	680	0.02~0.05	17,500	530	0.02~0.05	15,500	445	0.02~0.05	9,500	260	0.01~0.02
1.2mm	16,500	930	0.024~0.06	15,500	680	0.024~0.06	14,500	530	0.024~0.06	13,000	445	0.024~0.06	7,950	260	0.012~0.024
1.5mm	13,500	930	0.03~0.075	12,500	680	0.03~0.075	11,500	530	0.03~0.075	10,500	445	0.03~0.075	6,350	260	0.015~0.03
2mm	10,000	930	0.04~0.1	9,500	680	0.04~0.1	8,900	530	0.04~0.1	7,950	445	0.04~0.1	4,750	260	0.02~0.04
2.5mm	8,100	930	0.05~0.125	7,600	680	0.05~0.125	7,100	530	0.05~0.125	7,950	445	0.04~0.1	4,750	260	0.02~0.04
절입량 Depth of Cut															

- 날 깊이를 얻기 위해서는 순차적으로 하나씩 목부길이를 맞추는 것이 가장 효과적입니다.
- 코너 작업을 할 때, 피드값을 50% 줄이십시오.
- 절삭유를 사용하십시오.
- To achieve flute depth, sequential one neck length at a time is most effective.
- When corner processing, reduce the feed rate by approximately half.
- Use cutting fluid.

2CRC

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 Carbon Steels S54C ~ S55C		합금강,공구강 Alloy Steels / Tool Steels SKD / SUS / SCM		열처리강(35 ~ 45Hrc) Hardened Steels NAK / HPM	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.9mm	3,200	60	2,300	50	2,500	40
2.9mm	2,500	60	1,800	50	1,800	40
3.9mm	1,850	60	1,400	50	1,400	40
4.9mm	1,600	60	1,100	50	1,200	40
5.9mm	1,400	60	900	50	1,000	40

4CRC

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 Carbon Steels S54C ~ S55C		합금강, 공구강 Alloy Steels / Tool Steels SKD / SUS / SCM		열처리강(35 ~ 45Hrc) Hardened Steels NAK / HPM	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.9mm	5,940	1,260	4,950	1,050	3,960	840
2.9mm	5,280	1,130	4,400	940	3,520	750
3.9mm	4,700	1,010	3,910	840	3,100	670
4.9mm	4,200	910	3,400	750	2,800	600
5.9mm	3,700	820	3,000	670	2,400	540

1STE/2STE/4STE

• RPM : rev./min • Feed : mm/min

파삭재 Material	일반구조강 / 탄소강 Mild Steels / Carbon Steels S54C ~ S55C		합금강 Alloy Steels SKD / SUS / SCM		프리하드강 Prehardened Steels NAK / HPM	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2mm	3,400 ~ 7,000	70 ~ 100	2,600 ~ 5,200	50 ~ 90	2,000 ~ 4,000	40 ~ 60
3mm	2,700 ~ 5,300	60 ~ 85	2,100 ~ 4,200	45 ~ 70	1,600 ~ 3,200	35 ~ 50
4mm	2,000 ~ 4,000	50 ~ 70	1,600 ~ 3,200	40 ~ 55	1,200 ~ 2,400	30 ~ 40
5mm	1,700 ~ 3,400	45 ~ 60	1,400 ~ 2,600	35 ~ 50	1,000 ~ 2,000	26 ~ 35
6mm	1,300 ~ 2,700	40 ~ 50	1,100 ~ 2,100	30 ~ 40	800 ~ 1,600	22 ~ 30
7mm	1,150 ~ 2,400	35 ~ 45	950 ~ 1,900	28 ~ 37	700 ~ 1,400	21 ~ 28
8mm	1,000 ~ 2,000	30 ~ 40	800 ~ 1,600	26 ~ 34	600 ~ 1,200	20 ~ 25
9mm	900 ~ 1,800	30 ~ 40	700 ~ 1,450	24 ~ 32	550 ~ 1,100	18 ~ 23
10mm	800 ~ 1,600	30 ~ 37	600 ~ 1,300	23 ~ 29	500 ~ 1,000	17 ~ 22
11mm	750 ~ 1,450	30 ~ 37	550 ~ 1,200	22 ~ 28	450 ~ 900	16 ~ 21
12mm	700 ~ 1,300	28 ~ 35	500 ~ 1,100	21 ~ 27	400 ~ 800	16 ~ 20

절입량
Depth of Cut

Ad : 0.05D이하

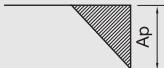
2CCMC

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 S45C - S55C			합금공구강 SCM / SKD			스틸강(35 ~ 40HRC) HPM / NAK			동 Copper			알루미늄 Aluminum		
외경 Outside Diameter	RPM	FEED		RPM	FEED		RPM	FEED		RPM	FEED		RPM	FEED	
		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting
1mm	28,000	230	180	24,500	180	150	17,500	120	100	23,000	150	140	50,000	400	270
1.5mm	18,700	340	180	16,300	180	150	11,700	120	100	13,000	150	140	40,900	400	270
2mm	14,000	360	190	12,300	220	150	8,800	170	130	11,500	150	140	31,800	400	270
3mm	9,300	390	250	8,200	240	170	5,800	170	130	8,000	200	180	21,200	400	270
4mm	7,000	390	260	6,100	240	190	4,400	180	130	6,000	200	180	15,900	500	330
5mm	5,600	470	330	4,900	260	260	3,500	200	150	5,000	200	180	12,700	500	330
6mm	4,700	480	330	4,100	270	210	2,900	200	130	4,000	200	180	10,600	500	330
8mm	3,500	470	330	3,100	270	210	2,200	200	130	3,000	200	180	8,000	600	400
10mm	2,800	480	310	2,500	280	210	1,800	200	110	2,400	200	180	6,400	600	400
12mm	2,300	470	300	2,000	260	200	1,500	200	110	2,000	200	180	5,300	700	470
	Rd	Ad	Ad	Rd	Ad	Ad	Rd	Ad	Ad	Rd	Ad	Ad	Rd	Ad	Ad
날경 (D)	Side Milling		Solting	Side Milling		Solting	Side Milling		Solting	Side Milling		Solting	Side Milling		Solting
D < 1	≤ 0.05D	≤ 1.5D	≤ 0.02D	≤ 0.05D	≤ 1.5D	≤ 0.02D	≤ 0.05D	≤ 1.5D	≤ 0.02D	≤ 0.1D	≤ 1.5D	≤ 0.1D	≤ 0.2D	≤ 1.5D	≤ 0.2D
1 ≤ D < 3	≤ 0.07D	≤ 1.5D	≤ 0.05D	≤ 0.07D	≤ 1.5D	≤ 0.05D	≤ 0.07D	≤ 1.5D	≤ 0.05D	≤ 0.2D	≤ 1.5D	≤ 0.2D	≤ 0.2D	≤ 1.5D	≤ 0.2D
3 ≤ D < 6	≤ 0.1D	≤ 1.5D	≤ 0.15D	≤ 0.1D	≤ 1.5D	≤ 0.15D	≤ 0.1D	≤ 1.5D	≤ 0.15D	≤ 0.2D	≤ 1.5D	≤ 0.2D	≤ 0.2D	≤ 1.5D	≤ 0.2D
6 ≤ D	0 ≤ .15D	≤ 1.5D	≤ 0.2D	≤ 0.15D	≤ 1.5D	≤ 0.2D	≤ 0.15D	≤ 1.5D	≤ 0.2D	≤ 0.2D	≤ 1.5D	≤ 0.2D	≤ 0.2D	≤ 1.5D	≤ 0.2D

- 사용하는 가공기의 회전속도가 높아지지 않을경우는 피드와 회전속도를 같은 비율로 내려주세요.
- 엔드밀 부착할때는 밑날부분의 진동은 0.01mm이내로 유지해주시시오.
- 측면절삭시 떨림이 생겼을때는 절삭조건을 내려서 사용해주세요.
- If the machine capacity is not enough for high RPM& Feed, please reduce them same rate.
- When you attach Endmill, keep vibration of botton of cutting-edge under 0.01mm.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 Carbon Steels S45C / S50C		합금강 Alloy Steels SK / SCM / SUS		프라이하드강 / 열처리강 Prehardened Steels/ Hardened Steels NAK / SCM / SUS	
경도 Hardness	~ 225HB		225 ~ 325HB		30 ~ 45HRC	
절삭속도 Velocity	Vc = 25 ~ 50m/min		Vc = 20 ~ 40m/min		Vc = 15 ~ 40m/min	
Shank Diameter	RPM	FEED	RPM	FEED	RPM	FEED
3mm	2,700 ~ 5,300	59 ~ 86	2,100 ~ 4,200	46 ~ 67	1,600 ~ 3,200	35 ~ 51
4mm	2,000 ~ 4,000	48 ~ 68	1,600 ~ 3,200	38 ~ 54	1,200 ~ 2,400	29 ~ 41
6mm	1,300 ~ 2,700	36 ~ 49	1,100 ~ 2,100	31 ~ 42	800 ~ 1,600	22 ~ 30
8mm	1,000 ~ 2,000	32 ~ 42	800 ~ 1,600	26 ~ 34	600 ~ 1,200	22 ~ 30
10mm	800 ~ 1,600	30 ~ 37	640 ~ 1,300	23 ~ 29	600 ~ 1,200	17 ~ 22
12mm	700 ~ 1,300	28 ~ 35	530 ~ 1,100	21 ~ 27	400 ~ 800	17 ~ 22
절입량 Depth of Cut	Ap : 0,1d Ap : Axial Depth d : Shank diameter 					

- 수용성이나 유성 절삭유 추천 • Water Soluble or Oil Cutting fluid is recommended.

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 Carbon Steels S45C / S50C	합금강 Alloy steels SK / SCM / SUS	프라이하든강 / 열처리강 Prehardened Steels/ Hardened Steels NAK / SCM / SUS
경도 Hardness	~ 225HB	225 ~ 325HB	30 ~ 45HRC
절삭속도 Velocity	Vc = 25 ~ 50m/min	Vc = 20 ~ 40m/min	Vc = 15 ~ 40m/min
Shank Diameter	RPM FEED	RPM FEED	RPM FEED
3mm	2,700 ~ 5,300 47 ~ 69	2,100 ~ 4,200 37 ~ 54	1,600 ~ 3,200 28 ~ 41
4mm	2,000 ~ 4,000 38 ~ 54	1,600 ~ 3,200 30 ~ 43	1,200 ~ 2,400 23 ~ 33
6mm	1,300 ~ 2,700 29 ~ 39	1,100 ~ 2,100 25 ~ 34	800 ~ 1,600 18 ~ 24
8mm	1,000 ~ 2,000 26 ~ 34	800 ~ 1,600 21 ~ 27	600 ~ 1,200 18 ~ 24
10mm	800 ~ 1,600 24 ~ 30	640 ~ 1,300 18 ~ 23	600 ~ 1,200 14 ~ 18
12mm	700 ~ 1,300 22 ~ 28	530 ~ 1,100 17 ~ 22	400 ~ 800 14 ~ 18
절입량 Depth of Cut	$A_p : 0,1d$ A_p : Axial Depth d : Shank diameter 		

- 수용성이나 유성 절삭유 추천
- Water Soluble or Oil Cutting fluid is recommended.

• RPM : rev./min • Feed : mm/min

파삭재 Material	일반구조강 / 탄소강 Mild Steels / Carbon Steels		합금강 / 공구강 Alloy Steels / Tools Steels		프리하르딩강 Prehardened Steels		알루미늄 합금 Aluminum Alloys	
	SS400 / S55C		SKD / SUS / SCM		HPM / NAK (30~45HRC)			
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2mm	1,400	100	800	50	650	40	4,800	280
3mm	1,400	100	800	50	650	40	4,800	280
4mm	1,280	100	690	50	580	40	4,200	280
5mm	1,300	100	640	50	520	40	3,300	280
6mm	1,150	100	600	50	480	40	2,900	280
8mm	1,000	100	530	50	420	40	2,600	280
10mm	850	90	490	40	390	30	2,400	260
12mm	720	90	410	40	310	30	1,900	260
14mm	610	90	340	40	270	30	1,700	240
16mm	550	90	310	40	250	30	1,500	230

절입량

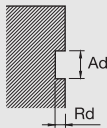
Depth of Cut

Ad : 0.5D~1.0D

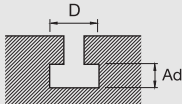
4TES/4TRS/4&6TDA/4&6TAC

• RPM : rev./min • Feed : mm/min

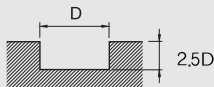
측면 절삭 Side Cutting

파삭재 Material	일반구조강 / 탄소강 Mild Steels / Carbon Steels		합금강 Alloy Steels		프리하르드강 Prehardened Steels	
	SS400 / S55C		SKD / SUS / SCM		NAK / HPM	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.5mm	3,050	162	1,890	94	1,530	76
2mm	2,850	149	1,790	88	1,440	70
2.5mm	2,680	135	1,700	83	1,350	65
3mm	2,500	122	1,610	79	1,260	59
4mm	2,150	108	1,430	72	1,080	54
5mm	1,800	95	1,200	65	900	49
6mm	1,430	86	950	58	720	43
8mm	1,070	64	720	43	540	32
10mm	860	52	580	34	430	26
12mm	720	43	480	29	360	22
절입량 Depth of Cut	 $RD = 0.1D$					

홈절삭 Slotting

파삭재 Material	일반구조강 / 탄소강 Mild Steels / Carbon Steels		합금강 Alloy Steels		프리하르드강 Prehardened Steels	
	SS400 / S55C		SKD / SUS / SCM		NAK / HPM	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.5mm	3,050	117	1,890	77	1,530	59
2mm	2,850	110	1,790	72	1,440	55
2.5mm	2,680	99	1,700	66	1,350	50
3mm	2,500	92	1,610	60	1,260	45
4mm	2,150	81	1,430	54	1,080	41
5mm	1,800	70	1,200	47	900	35
6mm	1,430	59	950	39	720	30
8mm	1,070	44	720	30	540	22
10mm	860	35	580	23	430	17
12mm	720	30	480	20	360	14
절입량 Depth of Cut						

1MEM/1REM

파삭재 Material	아크릴 Acrylic		합금강 Alloy Steels	
외경 Outside Diameter	RPM	FEED	RPM	FEED
1mm	32,000	2,000	23,000	1,300
2mm	32,000	2,200	23,000	1,500
3mm	25,000	2,400	18,000	1,700
4mm	20,000	2,400	15,000	1,800
5mm	15,000	2,200	12,000	1,800
6mm	13,500	2,300	10,000	1,800
8mm	10,000	2,400	7,800	1,900
10mm	8,000	2,400	6,000	2,000
12mm	7,000	2,200	5,000	1,900
절입량 Depth of Cut				

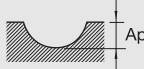
2MRB/3MRB

3MRB는 아래 수치의 10% Up 적용
Apply 10% up values of below condition for 3MRB

• RPM : rev./min • Feed : mm/min

파삭재 Material	Aluminium Alloys			Plastic		
절삭속도 Velocity	Vc = 65 ~ 70m/min			Vc = 40 ~ 45m/min		
반경 Radius	RPM	FEED	Ap	RPM	FEED	Ap
R0.1	35,000	420	0.008~0.01	35,000	1,000	0.05~0.15
R0.2	35,000	560	0.005~0.01	35,000	1,100	0.07~0.2
R0.25	35,000	700	0.003~0.01	28,000	1,200	0.08~0.25
R0.3	35,000	910	0.006~0.03	24,000	1,200	0.1~0.3
R0.4	26,000	940	0.006~0.05	18,000	900	0.13~0.3
R0.5	21,000	970	0.005~0.08	14,000	700	0.17~0.5
R0.6	18,000	1,010	0.04~0.09	12,000	600	0.2~0.6
R0.7	15,000	1,020	0.05~0.1	10,000	500	0.23~0.7
R0.75	14,000	1,010	0.06~0.12	9,500	480	0.25~0.75
R0.8	13,000	1,010	0.08~0.13	9,000	450	0.27~0.8
R0.9	12,000	1,060	0.09~0.15	8,000	400	0.3~0.9
R1	11,000	1,100	0.03~0.21	7,000	350	0.33~1
R1.5	6,900	760	0.03~0.23	4,800	240	0.5~1.5
R2	5,200	690	0.01~0.28	3,600	180	0.6~2
R2.5	4,200	590	0.16~0.31	2,900	150	0.8~2.5
R3	3,500	550	0.22~0.36	2,400	120	1~3

절입량
Depth of Cut

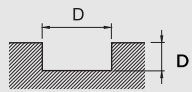
Slotting
• Ap : Axial Depth


2MLE

• RPM : rev./min • Feed : mm/min

파삭재 Material	ABS 수지 / Acrylic	
외경 Outside Diameter	RPM	FEED
0.2mm	50,000	100
0.4mm	50,000	200
0.5mm	50,000	240
0.6mm	40,000	240
0.8mm	30,000	240
1mm	24,000	240
2mm	12,000	240
3mm	8,000	240
4mm	6,000	240
5mm	4,800	240
6mm	4,000	260
8mm	3,000	260
10mm	3,000	260
12mm	2,000	260
16mm	1,400	260

절입량
Depth of Cut

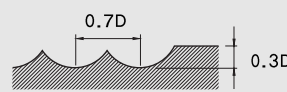


2MLB

• RPM : rev./min • Feed : mm/min

파삭재 Material	ABS 수지 / Acrylic	
반경 Radius	RPM	FEED
R0.1	37,000	50
R0.2	37,000	100
R0.3	37,000	140
R0.4	37,000	190
R0.5	32,000	210
R1	16,000	210
R1.5	11,000	210
R2	8,200	210
R2.5	6,000	250
R3	5,500	250
R4	4,100	280
R5	3,200	280
R6	2,700	330
R8	2,200	330

절입량
Depth of Cut



• RPM : rev./min • Feed : mm/min

2MEM/3MEM : 3MEM은 아래 수치의 10% Up 적용
: Apply 10% up values of below condition for 3MEM

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 Carbon Steels S50C			합금강 Alloy steels SCM / SKD / SUS			프리하든강 Prehardened Steels HPM / NAK			알루미늄 Aluminum			동 Copper		
절삭속도 Speed	40~50m/min			35~45m/min			23~35m/min			100~200m/min			60~80m/min		
외경 Outside Diameter	RPM	FEED		RPM	FEED		RPM	FEED		RPM	FEED		RPM	FEED	
		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting
1mm	12,900	125	60	11,400	90	30	8,600	70	35	43,000	510	180	20,100	240	90
1.5mm	8,600	125	60	7,700	90	30	5,800	70	35	29,000	580	200	13,400	270	90
2mm	6,500	125	60	5,800	110	35	4,300	80	40	22,000	650	225	10,000	300	110
2.5mm	5,100	150	80	4,600	110	34	3,400	85	45	17,200	680	240	8,000	325	110
3mm	4,300	170	85	3,800	120	40	2,900	90	45	14,300	720	240	6,700	330	120
4mm	3,200	200	100	2,900	120	40	2,200	90	45	10,700	750	240	5,000	350	120
5mm	2,600	210	110	2,300	135	45	1,700	115	60	8,600	775	250	4,000	370	120
6mm	2,200	220	110	1,900	150	50	1,400	125	65	7,200	790	260	3,300	370	120
8mm	1,600	200	100	1,400	145	45	1,100	115	60	5,400	700	230	2,500	320	110
10mm	1,300	180	90	1,200	145	45	900	115	60	4,300	650	220	2,000	300	100
12mm	1,100	170	85	1,000	135	45	700	110	55	3,600	610	200	1,700	290	100

절입량
Depth of Cut

A_e
 $\varnothing 1 \sim 2.9=0.07D$
 $\varnothing 3 \sim 6=0.15D$

A_p
 $\varnothing 1 \sim 1.2=0.15D$
 $\varnothing 1.5 \sim 3.5=0.5D$
 $\varnothing 4 \sim 6=0.75D$

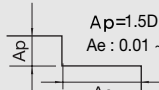
A_p
 $\varnothing 1 \sim 0.4=0.1D$
 $\varnothing 0.5 \sim 1.2=0.4D$
 $\varnothing 1.5 \sim 6=0.75D$

2MRE/3MRE

3MRE는 아래 수치의 10% Up 적용
Apply 10% up values of below condition for 3MRE

• RPM : rev./min • Feed : mm/min

피삭재 Material		ABS / MC Nylon			Acrylic / Polyacetal			Polycarbonate		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth
0.5mm	2	6,000	300	0.20	15,000	300	0.20	9,000	300	0.20
"	4	6,000	300	0.20	15,000	300	0.20	9,000	300	0.20
"	6	6,000	300	0.20	15,000	300	0.20	9,000	300	0.20
0.6mm	4	6,000	340	0.20	14,400	300	0.20	8,800	540	0.20
"	6	6,000	340	0.20	14,400	300	0.20	8,800	540	0.20
0.7mm	4	6,000	380	0.20	13,800	300	0.20	8,600	780	0.20
"	6	6,000	380	0.20	13,800	300	0.20	8,600	780	0.20
0.8mm	6	6,000	420	0.20	13,200	300	0.20	8,400	1,000	0.20
"	8	6,000	420	0.20	12,900	280	0.20	8,200	960	0.20
0.9mm	6	6,000	460	0.20	12,600	300	0.20	8,200	1,300	0.20
"	10	6,000	460	0.20	11,800	260	0.20	7,800	1,000	0.20
1mm	6	6,000	500	0.30	12,000	300	0.30	8,000	1,500	0.30
"	8	6,000	500	0.30	11,500	270	0.30	7,700	1,400	0.30
"	10	6,000	500	0.30	11,000	240	0.30	7,500	1,200	0.30
"	12	6,000	500	0.30	10,400	220	0.30	7,200	1,100	0.30
"	16	6,000	500	0.30	9,300	160	0.30	6,700	830	0.30
"	20	6,000	500	0.30	8,000	90	0.30	6,000	500	0.30
1.2mm	6	6,000	610	0.40	11,700	330	0.40	8,000	1,500	0.40
"	8	6,000	610	0.40	11,200	300	0.40	7,700	1,400	0.40
"	10	6,000	600	0.40	10,700	280	0.40	7,500	1,300	0.40
"	12	6,000	600	0.40	10,200	250	0.40	7,200	1,200	0.40
1.4mm	6	6,000	720	0.40	11,340	360	0.40	8,000	1,600	0.40
"	10	6,000	700	0.40	10,700	310	0.40	7,700	1,400	0.40
"	16	6,000	680	0.40	9,800	230	0.40	7,200	1,000	0.40
1.5mm	6	6,100	780	0.50	11,200	380	0.50	8,000	1,600	0.50
"	10	6,000	760	0.50	10,200	330	0.50	7,500	1,400	0.50
"	14	6,000	730	0.50	9,600	270	0.50	7,000	1,100	0.50
"	16	6,000	730	0.50	8,800	250	0.50	6,700	1,000	0.50
"	20	5,900	700	0.50	7,600	180	0.50	6,100	750	0.50
1.6mm	6	6,100	830	0.80	11,000	390	0.80	8,000	1,600	0.80
2mm	8	6,100	1,000	1.00	10,100	440	1.00	7,900	1,700	1.00
"	10	6,000	980	1.00	9,800	420	1.00	7,700	1,600	1.00
"	12	6,000	970	1.00	9,500	400	1.00	7,500	1,600	1.00
"	14	5,900	950	1.00	9,100	380	1.00	7,300	1,500	1.00
"	16	5,900	930	1.00	8,800	360	1.00	7,100	1,400	1.00
"	18	5,800	920	1.00	8,500	340	1.00	6,900	1,300	1.00
"	20	5,700	890	1.00	8,000	300	1.00	6,500	1,200	1.00
"	25	5,600	850	1.00	7,200	250	1.00	6,000	1,100	1.00
"	30	5,400	800	1.00	6,200	190	1.00	5,400	850	1.00
2.5mm	12	6,000	1,300	1.20	8,600	480	1.20	7,400	1,600	1.20
"	20	5,700	1,100	1.00	6,800	350	1.00	6,200	1,300	1.00
3mm	8	6,200	1,600	1.50	8,700	610	1.50	8,000	1,900	1.50
"	12	6,000	1,500	1.50	8,000	560	1.50	7,500	1,800	1.50
"	16	5,800	1,400	1.50	7,300	510	1.50	7,000	1,700	1.50
"	20	5,600	1,300	1.50	6,400	440	1.50	6,300	1,800	1.50
"	25	5,400	1,200	1.50	5,500	370	1.50	5,600	1,400	1.50
"	30	5,200	1,100	1.50	4,500	290	1.50	4,800	1,200	1.50
"	40	4,800	960	1.50	2,700	160	1.50	3,500	840	1.50
4mm	12	5,000	1,400	2.00	7,000	520	2.00	5,800	1,500	2.00
"	16	4,900	1,400	2.00	6,500	480	2.00	5,500	1,400	2.00
"	18	4,800	1,400	2.00	6,300	470	2.00	5,400	1,400	2.00
"	20	4,800	1,400	2.00	6,000	440	2.00	5,100	1,300	2.00
"	25	4,700	1,300	2.00	5,600	410	2.00	4,900	1,300	2.00
"	30	4,500	1,300	2.00	4,700	340	2.00	4,400	1,100	2.00
"	35	4,300	1,300	2.00	4,200	300	2.00	4,100	1,100	2.00
"	40	4,200	1,300	2.00	3,600	250	2.00	3,600	960	2.00
"	50	3,900	1,200	2.00	2,400	160	2.00	2,900	780	2.00
5mm	16	3,400	1,200	2.50	5,800	470	2.50	4,000	1,200	2.50
"	35	3,200	1,100	2.50	3,900	260	2.50	2,900	910	2.50
6mm	35	2,400	960	3.00	2,600	240	3.00	1,900	760	3.00
"	50	2,200	890	3.00	1,900	170	3.00	1,700	670	3.00
"	60	2,000	800	3.00	1,000	90	3.00	1,500	600	3.00

절임량 Depth of Cut	Slotting		$Ap \leq 0.5D$	Side Milling		$Ap = 1.5D$ $Ae : 0.01 \sim 0.015D$ (Min. 0.01mm)
	• Ap : Axial Depth • D : Outside Diameter			• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter		