

- 중저경도강 (HRC52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금 (0.5 μ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.

- Endmills for various work materials (~HRC52), pre-hardened steels, carbon steels, mold steels
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine (0.5 μ m) WC grade.



Shield Edge 453P

Condition	D Size	D Tolerance	Condition	D Size	D Tolerance
øD ≠ ød	ø0.1	+0 ~ -0.005mm	øD = ød	ø6	-0.005 ~ -0.015mm
	ø0.2 ~ 6	+0 ~ -0.01mm		ø8 ~ 12	-0.01 ~ -0.025mm
	ø8 ~ 12	+0 ~ -0.015mm			

G series

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2HREG 001 003 S04	0.1	0.15	0.3	40	4		2HREG 008 120 S04	0.8	0.9	12	45	4	
2HREG 001 005 S04	0.1	0.15	0.5	40	4		2HREG 008 140 S04	0.8	0.9	14	45	4	
2HREG 002 005 S04	0.2	0.3	0.5	40	4		2HREG 009 060 S04	0.9	1	6	45	4	
2HREG 002 010 S04	0.2	0.2	1	40	4		2HREG 009 080 S04	0.9	1	8	45	4	
2HREG 002 015 S04	0.2	0.2	1.5	40	4		2HREG 009 100 S04	0.9	1	10	45	4	
2HREG 002 020 S04	0.2	0.2	2	40	4		2HREG 010 020 S04	1	1.2	2	45	4	
2HREG 003 010 S04	0.3	0.3	1	40	4		2HREG 010 030 S04	1	1.2	3	45	4	
2HREG 003 015 S04	0.3	0.3	1.5	40	4		2HREG 010 040 S04	1	1.2	4	45	4	
2HREG 003 020 S04	0.3	0.3	2	40	4		2HREG 010 050 S04	1	1.2	5	45	4	
2HREG 003 030 S04	0.3	0.3	3	40	4		2HREG 010 060 S04	1	1.2	6	45	4	
2HREG 003 040 S04	0.3	0.3	4	40	4		2HREG 010 080 S04	1	1.2	8	45	4	
2HREG 003 050 S04	0.3	0.3	5	40	4		2HREG 010 100 S04	1	1.2	10	50	4	
2HREG 004 010 S04	0.4	0.5	1	40	4		2HREG 010 120 S04	1	1.2	12	50	4	
2HREG 004 020 S04	0.4	0.5	2	40	4		2HREG 010 140 S04	1	1.2	14	50	4	
2HREG 004 030 S04	0.4	0.5	3	40	4		2HREG 010 160 S04	1	1.2	16	50	4	
2HREG 004 040 S04	0.4	0.5	4	40	4		2HREG 010 180 S04	1	1.2	18	50	4	
2HREG 004 050 S04	0.4	0.5	5	40	4		2HREG 010 200 S04	1	1.2	20	50	4	
2HREG 004 060 S04	0.4	0.5	6	40	4		2HREG 010 250 S04	1	1.2	25	60	4	
2HREG 004 080 S04	0.4	0.5	8	40	4		2HREG 010 300 S04	1	1.2	30	70	4	
2HREG 004 100 S04	0.4	0.5	10	40	4		2HREG 012 040 S04	1.2	1.4	4	45	4	
2HREG 005 020 S04	0.5	0.6	2	45	4		2HREG 012 060 S04	1.2	1.4	6	45	4	
2HREG 005 030 S04	0.5	0.6	3	45	4		2HREG 012 080 S04	1.2	1.4	8	45	4	
2HREG 005 040 S04	0.5	0.6	4	45	4		2HREG 012 100 S04	1.2	1.4	10	50	4	
2HREG 005 050 S04	0.5	0.6	5	45	4		2HREG 012 120 S04	1.2	1.4	12	50	4	
2HREG 005 060 S04	0.5	0.6	6	45	4		2HREG 012 160 S04	1.2	1.4	16	50	4	
2HREG 005 080 S04	0.5	0.6	8	45	4		2HREG 012 200 S04	1.2	1.4	20	50	4	
2HREG 005 100 S04	0.5	0.6	10	45	4		2HREG 012 250 S04	1.2	1.4	25	60	4	
2HREG 005 120 S04	0.5	0.6	12	45	4		2HREG 012 300 S04	1.2	1.4	30	70	4	
2HREG 005 140 S04	0.5	0.6	14	45	4		2HREG 014 060 S04	1.4	1.6	6	45	4	
2HREG 006 020 S04	0.6	0.7	2	45	4		2HREG 014 080 S04	1.4	1.6	8	45	4	
2HREG 006 030 S04	0.6	0.7	3	45	4		2HREG 014 100 S04	1.4	1.6	10	50	4	
2HREG 006 040 S04	0.6	0.7	4	45	4		2HREG 014 140 S04	1.4	1.6	14	50	4	
2HREG 006 050 S04	0.6	0.7	5	45	4		2HREG 014 160 S04	1.4	1.6	16	50	4	
2HREG 006 060 S04	0.6	0.7	6	45	4		2HREG 014 200 S04	1.4	1.6	20	50	4	
2HREG 006 080 S04	0.6	0.7	8	45	4		2HREG 015 040 S04	1.5	1.8	4	45	4	
2HREG 006 100 S04	0.6	0.7	10	45	4		2HREG 015 060 S04	1.5	1.8	6	45	4	
2HREG 006 120 S04	0.6	0.7	12	45	4		2HREG 015 080 S04	1.5	1.8	8	45	4	
2HREG 006 140 S04	0.6	0.7	14	45	4		2HREG 015 100 S04	1.5	1.8	10	50	4	
2HREG 006 160 S04	0.6	0.7	16	45	4		2HREG 015 120 S04	1.5	1.8	12	50	4	
2HREG 007 020 S04	0.7	0.8	2	45	4		2HREG 015 140 S04	1.5	1.8	14	50	4	
2HREG 007 040 S04	0.7	0.8	4	45	4		2HREG 015 160 S04	1.5	1.8	16	50	4	
2HREG 007 060 S04	0.7	0.8	6	45	4		2HREG 015 180 S04	1.5	1.8	18	50	4	
2HREG 007 080 S04	0.7	0.8	8	45	4		2HREG 015 200 S04	1.5	1.8	20	50	4	
2HREG 007 100 S04	0.7	0.8	10	45	4		2HREG 015 250 S04	1.5	1.8	25	60	4	
2HREG 007 120 S04	0.7	0.8	12	45	4		2HREG 015 300 S04	1.5	1.8	30	70	4	
2HREG 008 020 S04	0.8	0.9	2	45	4		2HREG 016 100 S04	1.6	1.9	10	50	4	
2HREG 008 040 S04	0.8	0.9	4	45	4		2HREG 016 140 S04	1.6	1.9	14	50	4	
2HREG 008 060 S04	0.8	0.9	6	45	4		2HREG 016 180 S04	1.6	1.9	18	50	4	
2HREG 008 080 S04	0.8	0.9	8	45	4		2HREG 018 100 S04	1.8	2.1	10	50	4	
2HREG 008 100 S04	0.8	0.9	10	45	4		2HREG 018 140 S04	1.8	2.1	14	50	4	

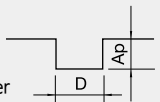
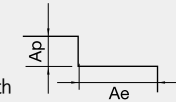
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HREG 018 180 S04	1.8	2.1	18	50	4		2HREG 040 500 S06	4	4.8	50	100	6	
2HREG 020 040 S04	2	2.4	4	45	4		2HREG 040 550 S06	4	4.8	55	100	6	
2HREG 020 060 S04	2	2.4	6	45	4		2HREG 040 600 S06	4	4.8	60	100	6	
2HREG 020 080 S04	2	2.4	8	45	4		2HREG 050 150 S06	5	6	15	55	6	
2HREG 020 100 S04	2	2.4	10	50	4		2HREG 050 200 S06	5	6	20	60	6	
2HREG 020 120 S04	2	2.4	12	50	4		2HREG 050 250 S06	5	6	25	70	6	
2HREG 020 140 S04	2	2.4	14	50	4		2HREG 050 300 S06	5	6	30	75	6	
2HREG 020 160 S04	2	2.4	16	50	4		2HREG 050 350 S06	5	6	35	75	6	
2HREG 020 180 S04	2	2.4	18	50	4		2HREG 050 400 S06	5	6	40	80	6	
2HREG 020 200 S04	2	2.4	20	50	4		2HREG 050 500 S06	5	6	50	100	6	
2HREG 020 220 S04	2	2.4	22	60	4		2HREG 050 600 S06	5	6	60	100	6	
2HREG 020 250 S04	2	2.4	25	60	4		2HREG 060 200 S06	6	10	20	60	6	
2HREG 020 300 S04	2	2.4	30	70	4		2HREG 060 300 S06	6	10	30	75	6	
2HREG 020 350 S04	2	2.4	35	70	4		2HREG 060 400 S06	6	10	40	80	6	
2HREG 020 400 S04	2	2.4	40	80	4		2HREG 060 500 S06	6	10	50	90	6	
2HREG 020 450 S04	2	2.4	45	80	4		2HREG 060 600 S06	6	10	60	110	6	
2HREG 020 500 S04	2	2.4	50	90	4		2HREG 080 200 S08	8	12	20	65	8	
2HREG 025 080 S04	2.5	3	8	45	4		2HREG 080 300 S08	8	12	30	80	8	
2HREG 025 100 S04	2.5	3	10	50	4		2HREG 080 400 S08	8	12	40	100	8	
2HREG 025 120 S04	2.5	3	12	50	4		2HREG 100 250 S10	10	15	25	70	10	
2HREG 025 160 S04	2.5	3	16	50	4		2HREG 100 350 S10	10	15	35	80	10	
2HREG 025 200 S04	2.5	3	20	50	4		2HREG 100 450 S10	10	15	45	100	10	
2HREG 025 250 S04	2.5	3	25	60	4		2HREG 120 300 S12	12	18	30	80	12	
2HREG 025 300 S04	2.5	3	30	70	4		2HREG 120 400 S12	12	18	40	100	12	
2HREG 025 350 S04	2.5	3	35	70	4		2HREG 120 500 S12	12	18	50	120	12	
2HREG 025 400 S04	2.5	3	40	80	4								
2HREG 025 500 S04	2.5	3	50	90	4								
2HREG 030 060 S06	3	3.6	6	45	6								
2HREG 030 080 S06	3	3.6	8	45	6								
2HREG 030 100 S06	3	3.6	10	50	6								
2HREG 030 120 S06	3	3.6	12	50	6								
2HREG 030 160 S06	3	3.6	16	55	6								
2HREG 030 200 S06	3	3.6	20	60	6								
2HREG 030 250 S06	3	3.6	25	65	6								
2HREG 030 300 S06	3	3.6	30	70	6								
2HREG 030 350 S06	3	3.6	35	75	6								
2HREG 030 400 S06	3	3.6	40	80	6								
2HREG 030 450 S06	3	3.6	45	90	6								
2HREG 030 500 S06	3	3.6	50	100	6								
2HREG 030 600 S06	3	3.6	60	100	6								
2HREG 040 080 S06	4	4.8	8	45	6								
2HREG 040 100 S06	4	4.8	10	50	6								
2HREG 040 120 S06	4	4.8	12	50	6								
2HREG 040 160 S06	4	4.8	16	55	6								
2HREG 040 200 S06	4	4.8	20	60	6								
2HREG 040 250 S06	4	4.8	25	65	6								
2HREG 040 300 S06	4	4.8	30	70	6								
2HREG 040 350 S06	4	4.8	35	75	6								
2HREG 040 400 S06	4	4.8	40	80	6								
2HREG 040 450 S06	4	4.8	45	90	6								

피삭재 Material		동 합금 Copper alloys C1100				합금강 / 프리하든강 Alloy Steels / Prehardened Steels NAK80/KP4M				고경도강 Hardened Steels STAVAX/SKD11			
경도 Hardness						40 ~ 45HRC				45 ~ 55HRC			
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
∅ 0.1	0.3	56,000	544	0.006	0.020	47,600	435	0.005	0.018	42,840	392	0.005	0.015
"	0.5	50,900	464	0.005	0.016	43,265	371	0.005	0.014	38,939	334	0.004	0.012
∅ 0.2	0.5	56,000	544	0.006	0.020	47,600	435	0.005	0.018	42,840	392	0.005	0.015
"	1	50,900	464	0.005	0.016	43,265	371	0.005	0.014	38,939	334	0.004	0.012
"	2	48,200	400	0.003	0.006	40,970	320	0.003	0.005	36,873	288	0.002	0.005
∅ 0.3	1	60,000	896	0.009	0.101	51,000	717	0.008	0.091	45,900	645	0.007	0.077
"	1.5	50,800	736	0.008	0.057	43,180	589	0.007	0.051	38,862	530	0.006	0.044
"	2	41,500	560	0.006	0.013	35,275	448	0.005	0.012	31,748	403	0.005	0.010
"	3	31,900	384	0.002	0.004	27,115	307	0.002	0.004	24,404	276	0.002	0.003
"	4	26,200	272	0.001	0.003	22,270	218	0.001	0.003	20,043	196	0.001	0.002
"	5	20,400	160	0.001	0.002	17,340	128	0.001	0.002	15,606	115	0.001	0.002
∅ 0.4	1	52,700	1,056	0.012	0.054	44,795	845	0.011	0.049	40,316	760	0.009	0.041
"	5	38,500	608	0.003	0.003	32,725	486	0.003	0.003	29,453	438	0.002	0.002
"	10	33,700	416	0.001	0.001	28,645	333	0.001	0.001	25,781	300	0.001	0.001
∅ 0.5	2	56,800	1,440	0.020	0.098	48,280	1,152	0.018	0.088	43,452	1,037	0.015	0.075
"	3	44,200	1,056	0.009	0.016	37,570	845	0.008	0.014	33,813	760	0.007	0.012
"	4	40,600	928	0.008	0.012	34,510	742	0.008	0.011	31,059	668	0.006	0.009
"	5	37,000	800	0.008	0.008	31,450	640	0.007	0.007	28,305	576	0.006	0.006
"	6	33,400	672	0.005	0.004	28,390	538	0.005	0.004	25,551	484	0.004	0.003
"	8	29,100	512	0.002	0.002	24,735	410	0.002	0.002	22,262	369	0.002	0.002
"	10	26,100	400	0.001	0.001	22,185	320	0.001	0.001	19,967	288	0.001	0.001
"	14	21,500	192	0.001	0.001	18,275	154	0.001	0.001	16,448	138	0.001	0.001
∅ 0.6	2	63,600	1,984	0.025	0.203	54,060	1,587	0.023	0.183	48,654	1,428	0.019	0.155
"	3	52,500	1,584	0.018	0.114	44,625	1,267	0.016	0.103	40,163	1,140	0.014	0.087
"	4	41,300	1,184	0.012	0.025	35,105	947	0.011	0.023	31,595	852	0.009	0.019
"	5	36,700	1,008	0.010	0.017	31,195	806	0.009	0.015	28,076	726	0.008	0.013
"	6	32,100	832	0.007	0.008	27,285	666	0.006	0.007	24,557	599	0.005	0.006
"	8	26,800	624	0.004	0.003	22,780	499	0.004	0.003	20,502	449	0.003	0.002
"	10	23,400	48	0.002	0.002	19,890	38	0.002	0.002	17,901	35	0.002	0.002
"	12	20,900	384	0.002	0.001	17,765	307	0.002	0.001	15,989	276	0.002	0.001
"	16	16,200	160	0.001	0.001	13,770	128	0.001	0.001	12,393	115	0.001	0.001
∅ 0.7	2	59,800	2,208	0.030	0.055	50,830	1,766	0.027	0.050	45,747	1,590	0.023	0.042
"	4	38,900	1,344	0.017	0.047	33,065	1,075	0.015	0.042	29,759	968	0.013	0.036
"	6	30,200	960	0.010	0.014	25,670	768	0.009	0.013	23,103	691	0.008	0.011
"	8	25,300	736	0.006	0.006	21,505	589	0.005	0.005	19,355	530	0.005	0.005
"	10	22,000	576	0.004	0.003	18,700	461	0.004	0.003	16,830	415	0.003	0.002
∅ 0.8	2	41,200	1,680	0.033	0.108	35,020	1,344	0.030	0.097	31,518	1,210	0.025	0.083
"	4	37,100	1,488	0.027	0.08	31,535	1,190	0.024	0.072	28,382	1,071	0.021	0.061
"	6	28,800	1,088	0.015	0.024	24,480	870	0.014	0.022	22,032	783	0.011	0.018
"	8	24,100	832	0.009	0.01	20,485	666	0.008	0.009	18,437	599	0.007	0.008
"	10	21,000	672	0.006	0.005	17,850	538	0.005	0.005	16,065	484	0.005	0.004
"	12	18,700	544	0.004	0.003	15,895	435	0.004	0.003	14,306	392	0.003	0.002
"	14	15,600	368	0.002	0.001	13,260	294	0.002	0.001	11,934	265	0.002	0.001
∅ 0.9	6	27,600	1,264	0.019	0.019	23,460	1,011	0.017	0.017	21,114	910	0.015	0.015
"	8	23,000	960	0.012	0.012	19,550	768	0.011	0.011	17,595	691	0.009	0.009
"	10	20,000	752	0.008	0.008	17,000	602	0.007	0.007	15,300	541	0.006	0.006
∅ 1.0	2	37,900	2,144	0.048	0.263	30,320	1,822	0.038	0.210	27,288	1,640	0.033	0.179
"	3	37,900	2,144	0.048	0.263	30,320	1,822	0.038	0.210	27,288	1,640	0.033	0.179
"	4	34,100	1,872	0.040	0.195	27,280	1,591	0.032	0.156	24,552	1,432	0.027	0.133
"	5	30,300	1,600	0.032	0.083	24,240	1,360	0.026	0.066	21,816	1,224	0.022	0.056
"	6	26,500	1,360	0.023	0.058	21,200	1,156	0.018	0.046	19,080	1,040	0.016	0.039
"	8	22,100	1,056	0.014	0.024	17,680	898	0.011	0.019	15,912	808	0.010	0.016
"	10	19,200	848	0.010	0.013	15,360	721	0.008	0.010	13,824	649	0.007	0.009
"	12	17,200	704	0.007	0.007	13,760	598	0.006	0.006	12,384	539	0.005	0.005
"	14	15,600	576	0.005	0.005	12,480	490	0.004	0.004	11,232	441	0.003	0.003
"	16	14,300	480	0.004	0.003	11,440	408	0.003	0.002	10,296	367	0.003	0.002
"	20	12,500	320	0.003	0.001	10,000	272	0.002	0.001	9,000	245	0.002	0.001
"	25	10,800	192	0.003	0.001	8,640	163	0.002	0.001	7,776	147	0.002	0.001
"	30	9,700	80	0.002	0.001	7,760	68	0.002	0.001	6,984	61	0.001	0.001
∅ 1.2	4	28,900	1,888	0.050	0.189	23,120	1,605	0.040	0.151	20,808	1,444	0.034	0.129
"	6	24,800	1,552	0.037	0.120	19,840	1,319	0.030	0.096	17,856	1,187	0.025	0.082
"	8	20,700	1,216	0.024	0.051	16,560	1,034	0.019	0.041	14,904	930	0.016	0.035
"	10	18,000	992	0.016	0.026	14,400	843	0.013	0.021	12,960	759	0.011	0.018
"	12	16,100	832	0.011	0.015	12,880	707	0.009	0.012	11,592	636	0.007	0.010
"	16	13,400	608	0.006	0.006	10,720	517	0.005	0.005	9,648	465	0.004	0.004
"	20	11,700	448	0.004	0.003	9,360	381	0.003	0.002	8,424	343	0.003	0.002
"	25	10,800	192	0.003	0.001	8,640	163	0.002	0.001	7,776	147	0.002	0.001
"	30	9,700	80	0.002	0.001	7,760	68	0.002	0.001	6,984	61	0.001	0.001

피삭재 Material		동 합금 Copper alloys C1100				합금강 / 프리하드강 Alloy Steels / Prehardened Steels NAK80/KP4M				고경도강 Hardened Steels STAVAX/SKD11			
경도 Hardness		40 ~ 45Hrc								45 ~ 55Hrc			
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
Ø 1.4	6	23,300	1,712	0.052	0.222	18,640	1,455	0.042	0.178	16,776	1,310	0.035	0.151
"	8	19,500	1,360	0.035	0.094	15,600	1,156	0.028	0.075	14,040	1,040	0.024	0.064
"	10	16,900	1,136	0.025	0.048	13,520	966	0.020	0.038	12,168	869	0.017	0.033
"	14	13,700	816	0.013	0.018	10,960	694	0.010	0.014	9,864	624	0.009	0.012
"	16	12,600	720	0.010	0.012	10,080	612	0.008	0.010	9,072	551	0.007	0.008
"	20	10,300	480	0.006	0.005	8,240	408	0.005	0.004	7,416	367	0.004	0.003
Ø 1.5	4	26,600	2,144	0.073	0.462	21,280	1,822	0.058	0.370	19,152	1,640	0.050	0.314
"	6	22,800	1,792	0.057	0.293	18,240	1,523	0.046	0.234	16,416	1,371	0.039	0.199
"	8	19,000	1,440	0.041	0.124	15,200	1,224	0.033	0.099	13,680	1,102	0.028	0.084
"	10	16,600	1,200	0.030	0.063	13,280	1,020	0.024	0.050	11,952	918	0.020	0.043
"	12	14,800	1,008	0.023	0.037	11,840	857	0.018	0.030	10,656	771	0.016	0.025
"	14	13,400	880	0.017	0.023	10,720	748	0.014	0.018	9,648	673	0.012	0.016
"	16	12,300	768	0.013	0.015	9,840	653	0.010	0.012	8,856	588	0.009	0.010
"	18	11,500	672	0.011	0.011	9,200	571	0.009	0.009	8,280	514	0.007	0.007
"	20	10,700	592	0.009	0.008	8,560	503	0.007	0.006	7,704	453	0.006	0.005
"	25	9,300	432	0.005	0.004	7,440	367	0.004	0.003	6,696	330	0.003	0.003
"	30	8,300	320	0.004	0.002	6,640	272	0.003	0.002	5,976	245	0.003	0.001
Ø 1.6	10	16,100	1,248	0.035	0.082	12,880	1,061	0.028	0.066	11,592	955	0.024	0.056
"	14	13,000	928	0.020	0.030	10,400	789	0.016	0.024	9,360	710	0.014	0.020
"	18	11,100	720	0.013	0.014	8,880	612	0.010	0.011	7,992	551	0.009	0.010
Ø 2.0	4	23,000	2,400	0.070	0.966	18,400	2,040	0.056	0.773	16,560	1,836	0.048	0.657
"	6	20,300	2,160	0.064	0.926	16,240	1,836	0.051	0.741	14,616	1,652	0.044	0.630
"	8	17,000	1,744	0.054	0.391	13,600	1,482	0.043	0.313	12,240	1,334	0.037	0.266
"	10	14,800	1,472	0.045	0.200	11,840	1,251	0.036	0.160	10,656	1,126	0.031	0.136
"	12	13,200	1,264	0.037	0.116	10,560	1,074	0.030	0.093	9,504	967	0.025	0.079
"	14	12,000	1,120	0.031	0.073	9,600	952	0.025	0.058	8,640	857	0.021	0.050
"	16	11,100	992	0.026	0.049	8,880	843	0.021	0.039	7,992	759	0.018	0.033
"	18	10,300	880	0.022	0.034	8,240	748	0.018	0.027	7,416	673	0.015	0.023
"	20	9,600	800	0.018	0.025	7,680	680	0.014	0.020	6,912	612	0.012	0.017
"	22	8,700	672	0.014	0.018	6,960	571	0.011	0.014	6,264	514	0.010	0.012
"	25	8,400	624	0.012	0.013	6,720	530	0.010	0.010	6,048	477	0.008	0.009
"	30	7,500	496	0.008	0.007	6,000	422	0.006	0.006	5,400	379	0.005	0.005
Ø 2.5	8	15,000	2,144	0.077	0.954	12,000	1,822	0.062	0.763	10,800	1,640	0.052	0.649
"	10	13,100	1,824	0.068	0.488	10,480	1,550	0.054	0.390	9,432	1,395	0.046	0.332
"	12	11,800	1,600	0.060	0.283	9,440	1,360	0.048	0.226	8,496	1,224	0.041	0.192
"	16	9,900	1,264	0.045	0.119	7,920	1,074	0.036	0.095	7,128	967	0.031	0.081
"	20	8,700	1,040	0.033	0.061	6,960	884	0.026	0.049	6,264	796	0.022	0.041
"	25	7,600	832	0.022	0.031	6,080	707	0.018	0.025	5,472	636	0.015	0.021
"	30	6,800	688	0.014	0.018	5,440	585	0.011	0.014	4,896	526	0.010	0.012
"	35	6,200	608	0.009	0.012	4,960	517	0.007	0.010	4,464	465	0.006	0.008
"	40	5,700	464	0.005	0.008	4,560	394	0.004	0.006	4,104	355	0.003	0.005
"	50	5,000	304	0.001	0.004	4,000	258	0.001	0.003	3,600	233	0.001	0.003
Ø 3	6	13,200	2,352	0.103	1.978	10,560	1,999	0.082	1.582	9,504	1,799	0.070	1.345
"	10	11,600	2,032	0.092	1.013	9,280	1,727	0.074	0.810	8,352	1,554	0.063	0.689
"	12	10,500	1,776	0.081	0.586	8,400	1,510	0.065	0.469	7,560	1,359	0.055	0.398
"	16	8,900	1,440	0.064	0.247	7,120	1,224	0.051	0.198	6,408	1,102	0.044	0.168
"	20	7,800	1,200	0.050	0.127	6,240	1,020	0.040	0.102	5,616	918	0.034	0.086
"	25	6,900	992	0.036	0.065	5,520	843	0.029	0.052	4,968	759	0.024	0.044
"	30	6,200	832	0.026	0.038	4,960	707	0.021	0.030	4,464	636	0.018	0.026
"	35	5,700	704	0.018	0.024	4,560	598	0.014	0.019	4,104	539	0.012	0.016
"	40	5,300	592	0.013	0.016	4,240	503	0.010	0.013	3,816	453	0.009	0.011
"	45	5,000	528	0.008	0.012	4,000	449	0.006	0.010	3,600	404	0.005	0.008
"	50	4,700	432	0.006	0.008	3,760	367	0.005	0.006	3,384	330	0.004	0.005
"	60	4,500	400	0.003	0.005	3,600	340	0.002	0.004	3,240	306	0.002	0.003
Ø 4	8	10,000	2,560	0.140	1.990	8,000	2,176	0.112	1.592	7,200	1,958	0.095	1.353
"	10	9,200	2,240	0.120	1.960	7,360	1,904	0.096	1.568	6,624	1,714	0.082	1.333
"	12	8,500	2,048	0.112	1.852	6,800	1,741	0.090	1.482	6,120	1,567	0.076	1.259
"	16	7,200	1,680	0.093	0.781	5,760	1,428	0.074	0.625	5,184	1,285	0.063	0.531
"	20	6,300	1,408	0.077	0.400	5,040	1,197	0.062	0.320	4,536	1,077	0.052	0.272
"	25	5,600	1,200	0.061	0.205	4,480	1,020	0.049	0.164	4,032	918	0.041	0.139
"	30	5,000	1,008	0.048	0.119	4,000	857	0.038	0.095	3,600	771	0.033	0.081
"	35	4,600	864	0.038	0.075	3,680	734	0.030	0.060	3,312	661	0.026	0.051
"	40	4,200	752	0.030	0.050	3,360	639	0.024	0.040	3,024	575	0.020	0.034
"	45	3,900	656	0.023	0.035	3,120	558	0.018	0.028	2,808	502	0.016	0.024
"	50	3,700	576	0.018	0.026	2,960	490	0.014	0.021	2,664	441	0.012	0.018
"	55	3,500	512	0.015	0.020	2,800	435	0.012	0.016	2,520	392	0.010	0.014
"	60	3,300	448	0.011	0.015	2,640	381	0.009	0.012	2,376	343	0.007	0.010

피삭재 Material		동 합금 Copper alloys C1100				합금강 / 프리하드강 Alloy Steels / Prehardened Steels NAK80/KP4M				고경도강 Hardened Steels STAVAX/SKD11			
경도 Hardness						40 ~ 50HRC				50 ~ 52HRC			
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
∅ 5	16	6,000	1,824	0.127	1.907	4,800	1,550	0.102	1.526	4,320	1,395	0.086	1.297
"	20	5,300	1,568	0.121	0.977	4,240	1,333	0.097	0.782	3,816	1,200	0.082	0.664
"	25	4,600	1,312	0.109	0.500	3,680	1,115	0.087	0.400	3,312	1,004	0.074	0.340
"	30	4,200	1,136	0.094	0.289	3,360	966	0.075	0.231	3,024	869	0.064	0.197
"	35	3,800	992	0.077	0.182	3,040	843	0.062	0.146	2,736	759	0.052	0.124
"	40	3,500	864	0.060	0.122	2,800	734	0.048	0.098	2,520	661	0.041	0.083
"	50	3,100	688	0.031	0.063	2,480	585	0.025	0.050	2,232	526	0.021	0.043
"	60	2,800	560	0.013	0.036	2,240	476	0.010	0.029	2,016	428	0.009	0.024
∅ 6	20	4,200	1,536	0.126	2.025	3,360	1,306	0.101	1.620	3,024	1,175	0.086	1.377
"	30	3,400	1,168	0.109	0.600	2,720	993	0.087	0.480	2,448	894	0.074	0.408
"	40	3,000	960	0.083	0.253	2,400	816	0.066	0.202	2,160	734	0.056	0.172
"	50	2,600	768	0.054	0.130	2,080	653	0.043	0.104	1,872	588	0.037	0.088
"	60	2,400	656	0.031	0.075	1,920	558	0.025	0.060	1,728	502	0.021	0.051
∅ 8	20	3,200	1,456	0.180	1.600	2,560	1,238	0.144	1.280	2,304	1,114	0.122	1.088
"	40	2,600	960	0.120	0.200	2,080	816	0.096	0.160	1,872	734	0.082	0.136
∅ 10	25	2,900	1,424	0.200	1.760	2,320	1,210	0.160	1.408	2,088	1,089	0.136	1.197
"	45	2,200	928	0.140	0.240	1,760	789	0.112	0.192	1,584	710	0.095	0.163
∅ 12	30	2,000	1,296	0.190	1.650	1,600	1,102	0.152	1.320	1,440	991	0.129	1.122
"	50	1,950	912	0.150	0.250	1,560	775	0.120	0.200	1,404	698	0.102	0.170

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

- 날 끝이 정밀하게 연삭되어 있습니다. 파손을 피하기 위해 가능하면 비접촉 방식으로 측정 하십시오.
- HRC52 이상 고경도강 가공시 같은 직경의 같은 비율로 20% DOWN 시켜주십시오.
- 상기 절삭조건은 참고 수치이며 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망 합니다.
- 조건표가 기계의 최대 스피들 속도를 초과 하거나 버 및 적열 현상이 발생할때 스피들 속도와 이송 속도를 비례하여 조정 하십시오.
- 진동이 적고 강성이 좋은 공작기계 사용 요망 합니다 (∅1이하 사용시 진동 허용 관리 5 μ m 이내 일것.)
- 에어브로, 절삭유, 오일 미스트 클린트를 추천하며, 칩을 잘 제거하고 가공시 발열과 발화에 주의 하십시오
- The edge of the flute precisely grinded. If you want to measure the tool, and to avoid damaging on the flutes, use non-contact measuring method.
- When milling workpiece HRC over 52 hardened steel, reduce 20% of the RPM and feed compared to the same diameter.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If the table over the maximum RPM and feed of your machine, or found red heat on the material, adjust RPM and feed in the same proportion.
- Use a machine with low vibration and good rigidity ($\varnothing 1$ or less, the vibration tolerance management should be within 5 μ m).
- Air blow or mist coolants are recommended and note for chip emission, heat, or ignition.