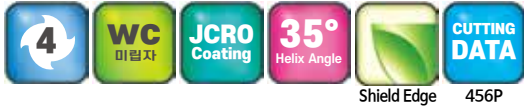


- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5µm)을 채택, 엔드밀의 파손을 최소화 하였습니다.

- 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(0.5µm) WC grade.



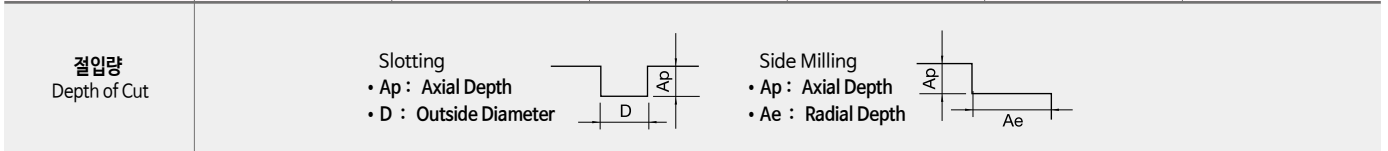
Shield Edge 456P

Condition	D Size	D Tolerance	Condition	D Size	D Tolerance
øD ≠ ød	ø0.8 ~ 6	+0 ~ -0.01mm	øD = ød	ø6	-0.005 ~ -0.015mm
	ø8 ~ 12	+0 ~ -0.015mm		ø8 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고
4HREG 008 020 S04	0.8	0.9	2	45	4		4HREG 030 250 S06	3	3.6	25	65	6	
4HREG 008 040 S04	0.8	0.9	4	45	4		4HREG 030 300 S06	3	3.6	30	70	6	
4HREG 008 060 S04	0.8	0.9	6	45	4		4HREG 030 350 S06	3	3.6	35	75	6	
4HREG 008 080 S04	0.8	0.9	8	45	4		4HREG 030 400 S06	3	3.6	40	80	6	
4HREG 008 100 S04	0.8	0.9	10	45	4		4HREG 040 100 S06	4	4.8	10	50	6	
4HREG 008 120 S04	0.8	0.9	12	45	4		4HREG 040 120 S06	4	4.8	12	50	6	
4HREG 008 160 S04	0.8	0.9	16	45	4		4HREG 040 160 S06	4	4.8	16	55	6	
4HREG 009 020 S04	0.9	1	2	45	4		4HREG 040 200 S06	4	4.8	20	60	6	
4HREG 009 060 S04	0.9	1	6	45	4		4HREG 040 250 S06	4	4.8	25	65	6	
4HREG 009 080 S04	0.9	1	8	45	4		4HREG 040 300 S06	4	4.8	30	70	6	
4HREG 009 100 S04	0.9	1	10	45	4		4HREG 040 400 S06	4	4.8	40	80	6	
4HREG 010 030 S04	1	1.2	3	45	4		4HREG 040 450 S06	4	4.8	45	90	6	
4HREG 010 040 S04	1	1.2	4	45	4		4HREG 040 500 S06	4	4.8	50	100	6	
4HREG 010 060 S04	1	1.2	6	45	4		4HREG 050 150 S06	5	6	15	55	6	
4HREG 010 080 S04	1	1.2	8	45	4		4HREG 050 200 S06	5	6	20	60	6	
4HREG 010 100 S04	1	1.2	10	50	4		4HREG 050 250 S06	5	6	25	65	6	
4HREG 010 120 S04	1	1.2	12	50	4		4HREG 050 300 S06	5	6	30	70	6	
4HREG 010 160 S04	1	1.2	16	50	4		4HREG 050 400 S06	5	6	40	80	6	
4HREG 010 200 S04	1	1.2	20	50	4		4HREG 050 500 S06	5	6	50	100	6	
4HREG 010 250 S04	1	1.2	25	60	4		4HREG 060 200 S06	6	10	20	60	6	
4HREG 012 060 S04	1.2	1.4	6	45	4		4HREG 060 300 S06	6	10	30	75	6	
4HREG 012 080 S04	1.2	1.4	8	45	4		4HREG 060 400 S06	6	10	40	80	6	
4HREG 012 100 S04	1.2	1.4	10	50	4		4HREG 060 500 S06	6	10	50	90	6	
4HREG 012 120 S04	1.2	1.4	12	50	4		4HREG 080 200 S08	8	12	20	65	8	
4HREG 012 160 S04	1.2	1.4	16	50	4		4HREG 080 300 S08	8	12	30	80	8	
4HREG 015 060 S04	1.5	1.8	6	45	4		4HREG 080 400 S08	8	12	40	100	8	
4HREG 015 080 S04	1.5	1.8	8	45	4		4HREG 100 250 S10	10	15	25	70	10	
4HREG 015 100 S04	1.5	1.8	10	50	4		4HREG 100 350 S10	10	15	35	90	10	
4HREG 015 120 S04	1.5	1.8	12	50	4		4HREG 100 450 S10	10	15	45	110	10	
4HREG 015 160 S04	1.5	1.8	16	50	4		4HREG 120 300 S12	12	18	30	80	12	
4HREG 015 200 S04	1.5	1.8	20	50	4		4HREG 120 400 S12	12	18	40	100	12	
4HREG 015 250 S04	1.5	1.8	25	60	4		4HREG 120 500 S12	12	18	50	120	12	
4HREG 020 060 S04	2	2.4	6	45	4								
4HREG 020 080 S04	2	2.4	8	45	4								
4HREG 020 100 S04	2	2.4	10	50	4								
4HREG 020 120 S04	2	2.4	12	50	4								
4HREG 020 160 S04	2	2.4	16	50	4								
4HREG 020 200 S04	2	2.4	20	50	4								
4HREG 020 250 S04	2	2.4	25	60	4								
4HREG 020 300 S04	2	2.4	30	70	4								
4HREG 025 100 S04	2.5	3	10	50	4								
4HREG 025 120 S04	2.5	3	12	50	4								
4HREG 025 160 S04	2.5	3	16	50	4								
4HREG 025 200 S04	2.5	3	20	50	4								
4HREG 025 250 S04	2.5	3	25	60	4								
4HREG 025 300 S04	2.5	3	30	70	4								
4HREG 030 100 S06	3	3.6	10	50	6								
4HREG 030 120 S06	3	3.6	12	50	6								
4HREG 030 160 S06	3	3.6	16	55	6								
4HREG 030 200 S06	3	3.6	20	60	6								

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
∅ 0.8	8	24,100	1,235	0.009	0.01	20,485	988	0.008	0.01	18,430	840	0.006	0.01
"	12	18,700	707	0.004	0.003	15,895	566	0.004	0.003	14,306	481	0.003	0.002
∅ 1	8	22,100	1,373	0.014	0.024	17,680	1,098	0.011	0.019	15,912	934	0.010	0.016
"	16	14,300	624	0.004	0.003	11,440	499	0.003	0.002	10,296	424	0.003	0.002
"	25	10,800	250	0.003	0.001	8,640	200	0.002	0.001	7,776	170	0.002	0.001
∅ 1.5	8	19,000	1,872	0.041	0.124	15,200	1,498	0.033	0.099	13,680	1,273	0.028	0.084
"	16	12,300	998	0.013	0.015	9,840	799	0.010	0.012	8,856	679	0.009	0.010
"	25	9,300	562	0.005	0.004	7,440	449	0.004	0.003	6,696	382	0.003	0.003
∅ 2	8	17,000	2,267	0.054	0.391	13,600	1,814	0.043	0.313	12,240	1,542	0.037	0.266
"	16	11,100	1,290	0.026	0.049	8,880	1,032	0.021	0.039	7,992	877	0.018	0.033
"	25	8,400	811	0.012	0.013	6,720	649	0.010	0.010	6,048	552	0.008	0.009
∅ 2.5	10	13,100	2,371	0.068	0.488	10,480	1,897	0.054	0.390	9,432	1,612	0.046	0.332
"	16	9,900	1,643	0.045	0.119	7,920	1,315	0.036	0.095	7,128	1,117	0.031	0.081
"	30	6,800	894	0.014	0.018	5,440	716	0.011	0.014	4,896	608	0.010	0.012
∅ 3	10	11,600	2,642	0.092	1.013	9,280	2,113	0.074	0.810	8,352	1,796	0.063	0.689
"	16	8,900	1,872	0.064	0.247	7,120	1,498	0.051	0.198	6,408	1,273	0.044	0.168
"	25	6,900	1,290	0.036	0.065	5,520	1,032	0.029	0.052	4,968	877	0.024	0.044
"	35	5,700	915	0.018	0.024	4,560	732	0.014	0.019	4,104	622	0.012	0.016
∅ 4	10	9,200	2,912	0.120	1.960	7,360	2,330	0.096	1.568	6,624	1,980	0.082	1.333
"	16	7,200	2,184	0.093	0.781	5,760	1,747	0.074	0.625	5,184	1,485	0.063	0.531
"	25	5,600	1,560	0.061	0.205	4,480	1,248	0.049	0.164	4,032	1,061	0.041	0.139
"	40	4,200	978	0.030	0.050	3,360	782	0.024	0.040	3,024	665	0.020	0.034
∅ 5	15	6,000	2,371	0.127	1.907	4,800	1,897	0.102	1.526	4,320	1,612	0.086	1.297
"	25	4,600	1,706	0.109	0.500	3,680	1,364	0.087	0.400	3,312	1,160	0.074	0.340
"	40	3,500	1,123	0.060	0.122	2,800	899	0.048	0.098	2,520	764	0.041	0.083
∅ 6	20	4,200	1,997	0.126	2.025	3,360	1,597	0.101	1.620	3,024	1,358	0.086	1.377
"	40	3,000	1,248	0.083	0.253	2,400	998	0.066	0.202	2,160	849	0.056	0.172
∅ 8	20	3,200	1,893	0.180	1.600	2,560	1,514	0.144	1.280	2,304	1,287	0.122	1.088
"	40	2,600	1,248	0.120	0.200	2,080	998	0.096	0.160	1,872	849	0.082	0.136
∅ 10	25	2,900	1,851	0.200	1.760	2,320	1,481	0.160	1.408	2,088	1,259	0.136	1.197
"	45	2,200	1,206	0.140	0.240	1,760	965	0.112	0.192	1,584	820	0.095	0.163
∅ 12	30	2,000	1,685	0.190	1.650	1,600	1,348	0.152	1.320	1,440	1,146	0.129	1.122
"	50	1,950	1,186	0.150	0.250	1,560	948	0.120	0.200	1,404	806	0.102	0.170



- 날 끝이 정밀하게 연삭되어 있습니다. 파손을 피하기 위해 가능하면 비접촉 방식으로 측정하십시오.
- HRC52 이상 고경도강 가공시 같은 직경의 같은 비율로 20% DOWN 시켜주십시오.
- 상기 절삭조건은 참고 수치이므로 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 이송속도를 비례하여 조정 하십시오.
- 진동이 적고 강성이 좋은 공작기계 사용 요망 합니다 (∅1이하 사용자 진동 허용 관리 5μm이내 일것.)
- 에어브로, 절삭유, 오일 미스트 콜러트를 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 (∅1 or less, the vibration tolerance management should be within 5μm).
- Air blow or mist coolants are recommended and note for chip emission, heat, or ignition.