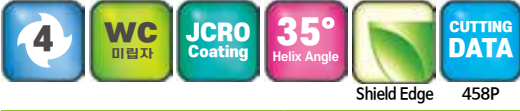


- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 μ m)를 채택, 엔드밀의 파손을 최소화 하였습니다.

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.

G series



Shield Edge 458P

Condition	D Size	D Tolerance	Condition	D Size	D Tolerance
$\varnothing D \neq \varnothing d$	$\varnothing 0.8 \sim 6$	+0 ~ -0.01mm	$\varnothing D = \varnothing d$	$\varnothing 4 \sim 6$	-0.005 ~ -0.015mm
	$\varnothing 6.5 \sim 20$	+0 ~ -0.015mm		$\varnothing 8 \sim 12$	-0.01 ~ -0.025mm
		$\varnothing 14 \sim 20$		-0.015 ~ -0.03mm	

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤프크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤프크 Shank Dia d	비고
4HCEG 008 020 S04	0.8	2	40	4		4HCEG 080 080 S08	8	8	50	8	
4HCEG 010 010 S04	1	1	40	4		4HCEG 080 190 S08	8	19	60	8	
4HCEG 010 025 S04	1	2.5	40	4		4HCEG 080 200 S08	8	20	70	8	
4HCEG 010 025 S06	1	2.5	40	6		4HCEG 085 190 S10	8.5	19	70	10	
4HCEG 010 025 060	1	2.5	60	6		4HCEG 090 190 S10	9	19	70	10	
4HCEG 010 025 080	1	2.5	80	6		4HCEG 095 190 S10	9.5	19	70	10	
4HCEG 010 040 S06	1	4	50	6		4HCEG 100 100 S10	10	10	60	10	
4HCEG 012 012 S04	1.2	1.2	40	4		4HCEG 100 220 S10	10	22	70	10	
4HCEG 012 030 S04	1.2	3	40	4		4HCEG 100 250 S10	10	25	75	10	
4HCEG 012 030 S06	1.2	3	40	6		4HCEG 105 220 S12	10.5	22	75	12	
4HCEG 012 030 060	1.2	3	60	6		4HCEG 110 220 S12	11	22	75	12	
4HCEG 012 060 S06	1.2	6	50	6		4HCEG 115 220 S12	11.5	22	75	12	
4HCEG 015 015 S04	1.5	1.5	40	4		4HCEG 120 120 S12	12	12	65	12	
4HCEG 015 040 S04	1.5	4	40	4		4HCEG 120 260 S12	12	26	75	12	
4HCEG 015 040 S06	1.5	4	40	6		4HCEG 120 300 S12	12	30	80	12	
4HCEG 015 040 060	1.5	4	60	6		4HCEG 140 260 S14	14	26	80	14	
4HCEG 015 040 080	1.5	4	80	6		4HCEG 140 260 S16	14	26	85	16	
4HCEG 020 020 S04	2	2	40	4		4HCEG 160 350 S16	16	35	100	16	
4HCEG 020 060 S04	2	6	40	4		4HCEG 160 400 S16	16	40	100	16	
4HCEG 020 060 S06	2	6	40	6		4HCEG 180 350 S18	18	35	100	18	
4HCEG 020 060 060	2	6	60	6		4HCEG 200 400 S20	20	40	100	20	
4HCEG 020 060 100	2	6	100	6		4HCEG 200 450 S20	20	45	100	20	
4HCEG 025 080 S04	2.5	8	45	4							
4HCEG 025 080 S06	2.5	8	45	6							
4HCEG 025 080 070	2.5	8	70	6							
4HCEG 025 080 100	2.5	8	100	6							
4HCEG 030 080 S03	3	8	45	3							
4HCEG 030 080 S04	3	8	45	4							
4HCEG 030 080 S06	3	8	45	6							
4HCEG 030 080 070	3	8	70	6							
4HCEG 030 080 100	3	8	100	6							
4HCEG 035 100 S06	3.5	10	45	6							
4HCEG 040 040 S04	4	4	40	4							
4HCEG 040 110 S04	4	11	45	4							
4HCEG 040 110 S06	4	11	45	6							
4HCEG 040 110 070	4	11	70	6							
4HCEG 040 110 100	4	11	100	6							
4HCEG 045 110 S06	4.5	11	45	6							
4HCEG 050 130 S06	5	13	50	6							
4HCEG 050 130 080	5	13	80	6							
4HCEG 050 130 100	5	13	100	6							
4HCEG 055 130 S06	5.5	13	50	6							
4HCEG 060 060 S06	6	6	45	6							
4HCEG 060 130 S06	6	13	50	6							
4HCEG 060 130 080	6	13	80	6							
4HCEG 060 130 100	6	13	100	6							
4HCEG 060 150 S06	6	15	60	6							
4HCEG 065 160 S08	6.5	16	60	8							
4HCEG 070 160 S08	7	16	60	8							
4HCEG 075 160 S08	7.5	16	60	8							

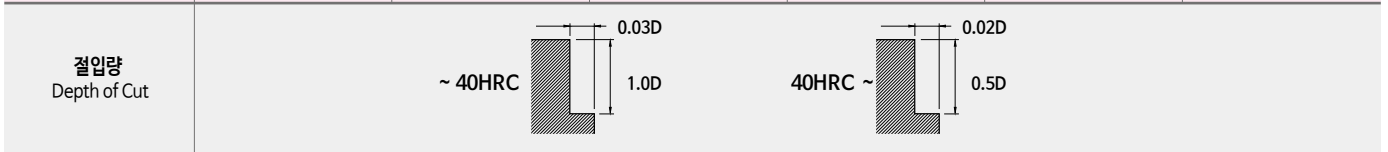
홈절삭 Slotting

피삭재 Material	동 합금 Copper alloys C1100				합금강 / 프리하든강 Alloy Steels / Prehardened Steels NAK80/KP4M				고경도강 Hardened Steels STAVAX/SKD11			
	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
경도 Hardness					40 ~ 45HRC				45 ~ 55HRC			
외경 Outside Diameter	48,000	2,700	0.10	1.0	38,000	2,160	0.80	0.50	25,500	1,512	0.80	0.50
Ø 2	33,300	3,060	0.20	2.0	26,000	2,448	1.60	1.00	17,500	1,714	1.60	1.00
Ø 3	21,800	3,060	0.30	3.0	17,300	2,448	2.40	1.50	11,500	1,714	2.40	1.50
Ø 4	16,700	3,168	0.40	4.0	13,200	2,534	3.20	2.00	8,800	1,774	3.20	2.00
Ø 5	15,700	3,600	0.50	5.0	12,500	2,880	4.00	2.50	8,300	2,016	4.00	2.50
Ø 6	13,000	3,420	0.60	6.0	10,350	2,736	4.80	3.00	6,900	1,915	4.80	3.00
Ø 8	9,880	3,348	0.80	8.0	7,800	2,678	6.40	4.00	5,200	1,875	6.40	4.00
Ø 10	7,800	3,060	1.00	10.0	6,150	2,448	8.00	5.00	4,100	1,714	8.00	5.00
Ø 12	6,650	3,060	1.20	12.0	5,250	2,448	9.60	6.00	3,500	1,714	9.60	6.00
Ø 16	5,540	2,808	1.60	16.0	4,340	2,246	12.80	8.00	2,600	1,572	12.80	8.00
Ø 18	5,540	2,808	1.80	18.0	4,340	2,246	14.40	9.00	2,600	1,572	14.40	9.00
Ø 20	4,640	2,592	2.00	20.0	4,340	2,074	16.00	10.00	2,100	1,452	16.00	10.00



측면절삭 Side Cutting

피삭재 Material	동 Copper alloys C1100				합금강 / 프리하든강 Alloy Steels / Prehardened Steels NAK80/KP4M				고경도강 Hardened Steels STAVAX/SKD11			
	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
경도 Hardness					40 ~ 45HRC				45 ~ 55HRC			
외경 Outside Diameter	48,000	1,155	1	0.03	38,000	809	1	0.03	25,500	566	0.50	0.02
Ø 2	33,300	1,320	2	0.06	26,000	924	2	0.06	17,500	647	1.00	0.04
Ø 3	21,800	1,320	3	0.09	17,300	924	3	0.09	11,500	647	1.50	0.06
Ø 4	16,700	1,375	4	0.12	13,200	963	4	0.12	8,800	674	2.00	0.08
Ø 5	15,700	1,595	5	0.15	12,500	1,117	5	0.15	8,300	782	2.50	0.10
Ø 6	13,000	1,485	6	0.18	10,350	1,040	6	0.18	6,900	728	3.00	0.12
Ø 8	9,880	1,452	8	0.24	7,800	1,016	8	0.24	5,200	711	4.00	0.16
Ø 10	7,800	1,320	10	0.30	6,150	924	10	0.30	4,100	647	5.00	0.20
Ø 12	6,650	1,320	12	0.36	5,250	924	12	0.36	3,500	647	6.00	0.24
Ø 16	5,540	1,100	16	0.48	4,340	770	16	0.48	2,600	539	8.00	0.32
Ø 18	5,540	1,100	18	0.54	4,340	770	18	0.54	2,600	539	9.00	0.36
Ø 20	4,640	1,045	20	0.60	4,340	836	20	0.60	2,100	585	10.00	0.40



- 유효장 길이가 긴 경우, RPM과 FEED를 동일 비율로 낮춰주세요.
- 날 끝이 정밀하게 연삭되어 있습니다. 파손을 피하기 위해 가능하면 비접촉 방식으로 측정하십시오.
- HRC52 이상 고경도강 가공시 같은 직경의 같은 비율로 20% DOWN 시켜주세요.
- 상기 절삭조건은 참고 수치이므로 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망 합니다.
- 조건표가 기계의 최대 스피드 속도를 초과하거나 버 및 적열 현상이 발생할때 스피드 속도와 이송 속도를 비례하여 조정 하십시오.
- 진동이 적고 강성이 좋은 공작기계 사용 요망 합니다 (Ø1이하 사용시 진동 허용 관리 5µm 이내 일것.)
- 에어브로, 절삭유, 오일 미스트 쿨런트를 추천하며, 칩을 잘 제거하고 가공시 발열과 발화에 주의 하십시오
- If the effective length is long, reduce the RPM and feed in the same proportion.
- 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 (Ø1 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.