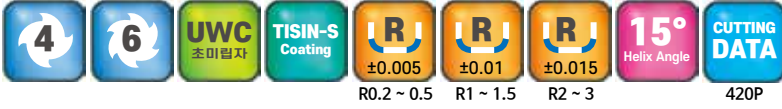


- 고경도강(HRc52~68), 프리하든강 계열의 고정밀 가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 저속 RPM에서 고이송 작업이 가능하도록 설계하였습니다..
- 종삭 및 황삭 가공시 작업 효율이 극대화 됩니다.
- 항절력이 높은 초미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.

• Endmills for pre-hardened and hardened steels(HRc52~68)

- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Designed for low speed with high feed condition.
- Suitable for heavy duty and roughing application.
- Minimize fracturing at high feed by high TRS ultra fine WC grade.



Condition	D Size	D Tolerance
øD ≠ ød	ø1 ~ 16	+0 ~ -0.01mm

Condition	D Size	D Tolerance
øD = ød	ø6 ~ 12	-0.005 ~ -0.015mm
	ø16	-0.01 ~ -0.02mm

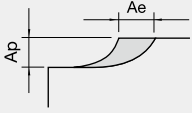
단위 : mm

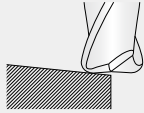
Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤희 Shank Dia d	비고
4JJRC 010 002 025	1 X R0.2	1	2.5	50	4	
4JJRC 015 005 040	1.5 X R0.5	1.5	4	50	4	
4JJRC 020 005 060	2 X R0.5	2	6	50	6	
4JJRC 030 005 080	3 X R0.5	3	8	50	6	
4JJRC 040 005 120	4 X R0.5	4	12	60	6	
4JJRC 040 005 160	4 X R0.5	4	16	60	6	
4JJRC 040 010 120	4 X R1	4	12	60	6	
4JJRC 040 010 160	4 X R1	4	16	60	6	
4JJRC 050 005 150	5 X R0.5	5	15	60	6	
4JJRC 050 010 150	5 X R1	5	15	60	6	
4JJRC 060 003 150	6 X R0.3	6	15	60	6	
4JJRC 060 005 150	6 X R0.5	6	15	60	6	
4JJRC 060 010 150	6 X R1	6	15	60	6	
4JJRC 060 015 150	6 X R1.5	6	15	60	6	
4JJRC 080 003 160	8 X R0.3	8	16	60	8	
4JJRC 080 005 160	8 X R0.5	8	16	60	8	
4JJRC 080 005 200	8 X R0.5	8	20	80	8	
4JJRC 080 005 300	8 X R0.5	8	30	110	8	
4JJRC 080 010 160	8 X R1	8	16	60	8	
4JJRC 080 010 200	8 X R1	8	20	80	8	
4JJRC 080 010 300	8 X R1	8	30	110	8	
4JJRC 080 020 160	8 X R2	8	16	60	8	
4JJRC 080 020 200	8 X R2	8	20	80	8	
4JJRC 080 020 300	8 X R2	8	30	110	8	
4JJRC 100 003 200	10 X R0.3	10	20	70	10	
4JJRC 100 005 200	10 X R0.5	10	20	70	10	
4JJRC 100 005 250	10 X R0.5	10	25	90	10	
4JJRC 100 005 300	10 X R0.5	10	30	120	10	
4JJRC 100 010 200	10 X R1	10	20	70	10	
4JJRC 100 010 250	10 X R1	10	25	90	10	
4JJRC 100 010 300	10 X R1	10	30	120	10	
4JJRC 100 020 200	10 X R2	10	20	70	10	
4JJRC 100 020 250	10 X R2	10	25	90	10	
4JJRC 100 020 300	10 X R2	10	30	120	10	
4JJRC 120 005 250	12 X R0.5	12	25	80	12	
4JJRC 120 005 300	12 X R0.5	12	30	100	12	
4JJRC 120 005 350	12 X R0.5	12	35	130	12	
4JJRC 120 010 250	12 X R1	12	25	80	12	
4JJRC 120 010 300	12 X R1	12	30	100	12	
4JJRC 120 010 350	12 X R1	12	35	130	12	
4JJRC 120 020 250	12 X R2	12	25	80	12	
4JJRC 120 020 300	12 X R2	12	30	100	12	
4JJRC 120 020 350	12 X R2	12	35	130	12	
4JJRC 120 030 250	12 X R3	12	25	80	12	
4JJRC 160 010 300	16 X R1	16	30	110	16	
4JJRC 160 010 400	16 X R1	16	40	160	16	
4JJRC 160 020 300	16 X R2	16	30	110	16	
4JJRC 160 020 400	16 X R2	16	40	160	16	

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샤희 Shank Dia d	비고
6JJRC 060 005 060	6 X R0.5	12	60	6	
6JJRC 060 010 060	6 X R1	12	60	6	
6JJRC 080 005 060	8 X R0.5	16	60	8	
6JJRC 080 010 060	8 X R1	16	60	8	
6JJRC 080 020 060	8 X R2	16	60	8	
6JJRC 100 005 070	10 X R0.5	20	70	10	
6JJRC 100 010 070	10 X R1	20	70	10	
6JJRC 100 020 070	10 X R2	20	70	10	
6JJRC 120 005 080	12 X R0.5	25	80	12	
6JJRC 120 010 080	12 X R1	25	80	12	
6JJRC 120 020 080	12 X R2	25	80	12	
6JJRC 160 005 100	16 X R0.5	30	100	16	
6JJRC 160 005 160	16 X R0.5	30	160	16	
6JJRC 160 010 100	16 X R1	30	100	16	
6JJRC 160 010 160	16 X R1	30	160	16	

피삭재 Material		합금강 / 프리하드강 Alloy Steels / Prehardened Steels NAK80/KP4M				고경도강 Hardened Steels STAVAX/SKD11				열처리 / 고경도강 Heat-treated steels / Hardened Steels SKD11 / SKD61			
경도 Hardness		40 ~ 45HRC				45 ~ 55HRC				55 ~ 62HRC			
외경 Outside Diameter	반경 Corner 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
∅ 1	R 0.2	42,000	7,605	0.02	0.40	35,000	6,375	0.015	0.30	25,000	5,689	0.015	0.30
∅ 1.5	R 0.5	40,000	7,800	0.02	0.60	30,000	6,376	0.025	0.50	21,000	5,691	0.023	0.50
∅ 2	R 0.5	27,000	8,190	0.03	0.80	24,000	6,377	0.030	0.60	16,000	5,693	0.030	0.60
∅ 3	R 0.5	18,000	8,775	0.03	1.20	16,000	6,378	0.045	0.90	11,000	5,695	0.045	0.90
∅ 4	R 0.5	16,000	9,750	0.05	1.60	13,000	6,379	0.060	1.20	9,000	5,697	0.060	1.20
"	R 1.0	14,000	9,263	0.06	1.60	12,000	6,380	0.060	1.20	8,000	5,699	0.060	1.20
∅ 5	R 0.5	12,000	11,700	0.08	2.00	11,000	6,381	0.075	1.50	7,300	5,702	0.075	1.50
"	R 1.0	11,000	10,725	0.08	2.00	9,600	6,382	0.075	1.50	6,400	5,704	0.075	1.50
∅ 6	R 0.3	10,900	12,870	0.09	2.40	10,000	6,383	0.090	1.80	6,500	5,706	0.090	1.80
"	R 0.5	10,600	12,675	0.09	2.40	9,500	6,383	0.090	1.80	6,300	5,708	0.090	1.80
"	R 1.0	12,654	12,285	0.09	2.40	9,000	6,384	0.090	1.80	5,800	5,710	0.090	1.80
"	R 1.5	9,000	10,725	0.09	2.40	8,000	6,385	0.090	1.80	5,300	5,713	0.090	1.80
∅ 8	R 0.3	8,400	13,163	0.12	3.20	7,300	6,386	0.120	2.40	4,700	5,715	0.120	2.40
"	R 0.5	8,200	12,675	0.12	3.20	7,100	6,387	0.120	2.40	4,600	5,717	0.120	2.40
"	R 1.0	8,000	11,700	0.12	3.20	6,700	6,388	0.120	2.40	4,520	5,719	0.120	2.40
"	R 2.0	7,000	10,725	0.12	3.20	6,000	6,389	0.120	2.40	4,000	5,721	0.120	2.40
∅ 10	R 0.3	6,490	12,656	0.15	4.00	5,664	6,390	0.150	3.00	3,776	5,724	0.150	3.00
"	R 0.5	6,325	12,334	0.15	4.00	5,520	6,391	0.150	3.00	3,680	5,726	0.150	3.00
"	R 1.0	6,160	12,012	0.15	4.00	5,376	6,392	0.150	3.00	3,584	5,728	0.150	3.00
"	R 2.0	5,500	10,725	0.15	4.00	4,800	6,393	0.150	3.00	3,200	5,730	0.150	3.00
∅ 12	R 0.5	5,428	11,505	0.18	4.80	4,838	6,394	0.180	3.60	3,186	5,732	0.180	3.60
"	R 1.0	5,290	11,213	0.18	4.80	4,715	6,395	0.180	3.60	3,105	5,734	0.180	3.60
"	R 2.0	5,152	10,920	0.18	4.80	4,592	6,396	0.180	3.60	3,024	5,737	0.180	3.60
"	R 3.0	4,600	9,750	0.18	4.80	4,100	6,397	0.180	3.60	2,700	5,739	0.180	3.60
∅ 16	R 1.0	4,012	10,124	0.24	6.40	3,540	6,398	0.240	4.80	2,360	5,741	0.240	4.80
"	R 2.0	3,400	8,580	0.24	6.40	3,000	6,398	0.240	4.80	2,000	5,743	0.240	4.80

절입량
Depth of Cut





경사진면절삭
Inclined Cutting

■ 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%

- 곡면 절삭시 날경의 코너R 보다 낮은 이동 PITCH를 설정 하십시오.
- 상기 조건표는 4날 기준입니다.
- 날수에 따라 회전수는 유지하고, 피드는 안정적인 속도 내에서 최대 50%까지 UP 해주십시오.
- 상기 절삭조건은 참고 수치이므로 실 가공시 가공 형상, 가공 목적, 적용기계에 따라 조건 변경 요망 합니다.
- 적용 기계의 회전 속도가 부족한 경우에는 회전 속도와 이송 속도를 같은 비율로 줄여 주십시오.
- 유효장 길이가 긴 경우, 위 표와같이 RPM과 FEED를 낮춰주세요.
- 절입 깊이가 얇은 경우, RPM과 FEED를 증가해 주세요.
- 원활한 칩배출을 위하여 에어브로우나 오일 미스트를 추천 합니다.
- For curved milling, raise up the feed up to 30% in stable condition.
- The parameters on the table are based on 4 flutes.
- With 6 flutes milling, raise up the feed up to 50% in stable condition.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If your CNC machine cannot run enough RPM and Feed, reduce the RPM and feed in same proportion.
- In case of long effective length, reduce the RPM and feed by 30% or less.
- If you use small value of Ap, raise up the RPM and feed.
- Air blow or oil mist is recommended for smooth chip emission.