



- 고경도강(HRC52~68), 프리하든강 계열의 고정밀 가공 엔드밀
- 고품질 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.

#### 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 minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

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UWC  
초미립자

TISIN-S  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

30°  
Helix Angle

CUTTING  
DATA

R0.02 ~ 0.5    R1 ~ 1.5    R2 ~ 5    417P

Condition	D Size	D Tolerance	Condition	D Size	D Tolerance
ØD ≠ Ød	Ø0.2 ~ 14	+0 ~ -0.01mm	ØD = Ød	Ø4 ~ 12	-0.005 ~ -0.015mm
				Ø14	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D × R	날장 Length of cut L1	전장 Overall Length L	샤프크 Shank Dia d	비고	Order Number	날경 Diameter D × R	날장 Length of cut L1	전장 Overall Length L	샤프크 Shank Dia d	비고
2JJC 002 0002 S04	0.2 X R0.02	0.4	45	4		2JJC 030 001 S06	3 X R0.1	8	60	6	
2JJC 002 0005 S04	0.2 X R0.05	0.4	45	4		2JJC 030 002 S06	3 X R0.2	8	60	6	
2JJC 003 0002 S04	0.3 X R0.02	0.6	45	4		2JJC 030 003 S06	3 X R0.3	8	60	6	
2JJC 003 0005 S04	0.3 X R0.05	0.6	45	4		2JJC 030 005 S06	3 X R0.5	8	60	6	
2JJC 003 001 S04	0.3 X R0.1	0.6	45	4		2JJC 030 010 S06	3 X R1	8	60	6	
2JJC 004 0002 S04	0.4 X R0.02	0.8	45	4		2JJC 040 001 S04	4 X R0.1	9	60	4	
2JJC 004 0005 S04	0.4 X R0.05	0.8	45	4		2JJC 040 001 S06	4 X R0.1	10	70	6	
2JJC 004 001 S04	0.4 X R0.1	0.8	45	4		2JJC 040 002 S04	4 X R0.2	9	60	4	
2JJC 005 0002 S04	0.5 X R0.02	1	45	4		2JJC 040 002 S06	4 X R0.2	10	70	6	
2JJC 005 0005 S04	0.5 X R0.05	1	45	4		2JJC 040 003 S04	4 X R0.3	9	60	4	
2JJC 005 001 S04	0.5 X R0.1	1	45	4		2JJC 040 003 S06	4 X R0.3	10	70	6	
2JJC 006 0002 S04	0.6 X R0.02	1.2	45	4		2JJC 040 005 S04	4 X R0.5	9	60	4	
2JJC 006 0005 S04	0.6 X R0.05	1.2	45	4		2JJC 040 005 S06	4 X R0.5	10	70	6	
2JJC 006 001 S04	0.6 X R0.1	1.2	45	4		2JJC 040 010 S04	4 X R1	9	60	4	
2JJC 006 002 S04	0.6 X R0.2	1.2	45	4		2JJC 040 010 S06	4 X R1	10	70	6	
2JJC 007 0005 S04	0.7 X R0.05	1.4	45	4		2JJC 050 001 S06	5 X R0.1	13	75	6	
2JJC 007 001 S04	0.7 X R0.1	1.4	45	4		2JJC 050 002 S06	5 X R0.2	13	75	6	
2JJC 007 002 S04	0.7 X R0.2	1.4	45	4		2JJC 050 003 S06	5 X R0.3	13	75	6	
2JJC 008 0002 S04	0.8 X R0.02	1.6	45	4		2JJC 050 005 S06	5 X R0.5	13	75	6	
2JJC 008 0005 S04	0.8 X R0.05	1.6	45	4		2JJC 050 010 S06	5 X R1	13	75	6	
2JJC 008 001 S04	0.8 X R0.1	1.6	45	4		2JJC 060 001 060	6 X R0.1	11	60	6	
2JJC 008 002 S04	0.8 X R0.2	1.6	45	4		2JJC 060 001 090	6 X R0.1	13	90	6	
2JJC 009 0005 S04	0.9 X R0.05	1.8	45	4		2JJC 060 002 060	6 X R0.2	11	60	6	
2JJC 009 001 S04	0.9 X R0.1	1.8	45	4		2JJC 060 002 090	6 X R0.2	13	90	6	
2JJC 010 0002 S04	1 X R0.02	2.5	45	4		2JJC 060 003 060	6 X R0.3	11	60	6	
2JJC 010 0005 S04	1 X R0.05	2.5	45	4		2JJC 060 003 090	6 X R0.3	13	90	6	
2JJC 010 001 S04	1 X R0.1	2.5	45	4		2JJC 060 005 060	6 X R0.5	11	60	6	
2JJC 010 002 S04	1 X R0.2	2.5	45	4		2JJC 060 005 090	6 X R0.5	13	90	6	
2JJC 010 003 S04	1 X R0.3	2.5	45	4		2JJC 060 005 110	6 X R0.5	13	110	6	
2JJC 012 0002 S04	1.2 X R0.02	3.2	45	4		2JJC 060 010 060	6 X R1	11	60	6	
2JJC 012 0005 S04	1.2 X R0.05	3.2	45	4		2JJC 060 010 090	6 X R1	13	90	6	
2JJC 012 001 S04	1.2 X R0.1	3.2	45	4		2JJC 060 010 110	6 X R1	13	110	6	
2JJC 012 002 S04	1.2 X R0.2	3.2	45	4		2JJC 060 015 060	6 X R1.5	11	60	6	
2JJC 012 003 S04	1.2 X R0.3	3.2	45	4		2JJC 060 015 090	6 X R1.5	13	90	6	
2JJC 015 0002 S04	1.5 X R0.02	4	45	4		2JJC 060 020 060	6 X R2	11	60	6	
2JJC 015 0005 S04	1.5 X R0.05	4	45	4		2JJC 060 020 090	6 X R2	13	90	6	
2JJC 015 001 S04	1.5 X R0.1	4	45	4		2JJC 060 025 090	6 X R2.5	13	90	6	
2JJC 015 002 S04	1.5 X R0.2	4	45	4		2JJC 080 001 070	8 X R0.1	16	70	8	
2JJC 015 003 S04	1.5 X R0.3	4	45	4		2JJC 080 001 100	8 X R0.1	19	100	8	
2JJC 015 005 S04	1.5 X R0.5	4	45	4		2JJC 080 002 070	8 X R0.2	16	70	8	
2JJC 020 0002 S04	2 X R0.02	6	45	4		2JJC 080 002 100	8 X R0.2	19	100	8	
2JJC 020 0005 S04	2 X R0.05	6	45	4		2JJC 080 003 070	8 X R0.3	16	70	8	
2JJC 020 001 S04	2 X R0.1	6	45	4		2JJC 080 003 100	8 X R0.3	19	100	8	
2JJC 020 002 S04	2 X R0.2	6	45	4		2JJC 080 005 070	8 X R0.5	16	70	8	
2JJC 020 003 S04	2 X R0.3	6	45	4		2JJC 080 005 100	8 X R0.5	19	100	8	
2JJC 020 005 S04	2 X R0.5	6	45	4		2JJC 080 005 120	8 X R0.5	19	120	8	
2JJC 025 001 S04	2.5 X R0.1	6	50	4		2JJC 080 010 070	8 X R1	16	70	8	
2JJC 025 002 S04	2.5 X R0.2	6	50	4		2JJC 080 010 100	8 X R1	19	100	8	
2JJC 025 003 S04	2.5 X R0.3	6	50	4		2JJC 080 010 120	8 X R1	19	120	8	
2JJC 025 005 S04	2.5 X R0.5	6	50	4		2JJC 080 015 070	8 X R1.5	16	70	8	



단위 : mm

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2JJC 080 015 100	8 X R1.5	19	100	8							
2JJC 080 020 070	8 X R2	16	70	8							
2JJC 080 020 100	8 X R2	19	100	8							
2JJC 080 025 100	8 X R2.5	19	100	8							
2JJC 080 030 100	8 X R3	19	100	8							
2JJC 080 035 100	8 X R3.5	19	100	8							
2JJC 100 001 075	10 X R0.1	19	75	10							
2JJC 100 001 100	10 X R0.1	22	100	10							
2JJC 100 002 075	10 X R0.2	19	75	10							
2JJC 100 002 100	10 X R0.2	22	100	10							
2JJC 100 003 075	10 X R0.3	19	75	10							
2JJC 100 003 100	10 X R0.3	22	100	10							
2JJC 100 005 075	10 X R0.5	19	75	10							
2JJC 100 005 100	10 X R0.5	22	100	10							
2JJC 100 005 120	10 X R0.5	22	120	10							
2JJC 100 010 075	10 X R1	19	75	10							
2JJC 100 010 100	10 X R1	22	100	10							
2JJC 100 010 120	10 X R1	22	120	10							
2JJC 100 015 075	10 X R1.5	19	75	10							
2JJC 100 015 100	10 X R1.5	22	100	10							
2JJC 100 020 075	10 X R2	19	75	10							
2JJC 100 020 100	10 X R2	22	100	10							
2JJC 100 025 100	10 X R2.5	22	100	10							
2JJC 100 030 100	10 X R3	22	100	10							
2JJC 100 040 100	10 X R4	22	100	10							
2JJC 120 001 080	12 X R0.1	22	80	12							
2JJC 120 001 110	12 X R0.1	26	110	12							
2JJC 120 002 080	12 X R0.2	22	80	12							
2JJC 120 002 110	12 X R0.2	26	110	12							
2JJC 120 003 080	12 X R0.3	22	80	12							
2JJC 120 003 110	12 X R0.3	26	110	12							
2JJC 120 005 080	12 X R0.5	22	80	12							
2JJC 120 005 110	12 X R0.5	26	110	12							
2JJC 120 005 130	12 X R0.5	26	130	12							
2JJC 120 010 080	12 X R1	22	80	12							
2JJC 120 010 110	12 X R1	26	110	12							
2JJC 120 010 130	12 X R1	26	130	12							
2JJC 120 015 080	12 X R1.5	22	80	12							
2JJC 120 015 110	12 X R1.5	26	110	12							
2JJC 120 020 080	12 X R2	22	80	12							
2JJC 120 020 110	12 X R2	26	110	12							
2JJC 120 020 130	12 X R2	26	130	12							
2JJC 120 025 110	12 X R2.5	26	110	12							
2JJC 120 030 110	12 X R3	26	110	12							
2JJC 120 040 110	12 X R4	26	110	12							
2JJC 120 050 110	12 X R5	26	110	12							
2JJC 140 005 110	14 X R0.5	30	110	14							
2JJC 140 010 110	14 X R1	30	110	14							
2JJC 140 020 110	14 X R2	30	110	14							

피삭재 Material		고경도강 Hardened Steels STAVAX/SKD11				열처리 / 고경도강 Heat-treated steels / Hardened Steels SKD11 / SKD61				열처리 / 고경도강 Heat-treated steels / Hardened Steels YXR7 / SKH51			
경도 Hardness		45 ~ 55HRC				55 ~ 62HRC				62 ~ 70HRC			
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
ø 0.2	R0.02	40,000	55	0.005	0.005	37,000	30	0.002	0.005	36,000	30	0.003	0.005
ø 0.3	R0.02	40,000	60	0.007	0.007	37,000	35	0.003	0.006	36,000	35	0.004	0.006
ø 0.4	R0.1	33,000	70	0.010	0.01	25,000	40	0.005	0.008	25,000	40	0.005	0.008
ø 0.5	R0.1	33,000	80	0.015	0.02	25,000	45	0.007	0.010	20,000	30	0.007	0.010
ø 0.6	R0.2	30,000	90	0.02	0.10	25,000	60	0.01	0.075	20,000	35	0.01	0.075
ø 0.8	R0.2	25,000	100	0.04	0.15	19,000	65	0.02	0.12	16,000	40	0.02	0.12
ø 1	R0.3	20,500	583	0.10	0.30	16,000	281	0.05	0.20	12,500	175	0.05	0.20
ø 1.5	R0.1	16,500	623	0.12	0.35	13,000	283	0.07	0.30	10,500	177	0.07	0.30
ø 2	R0.1	14,500	696	0.15	0.40	11,000	285	0.10	0.35	9,500	179	0.10	0.30
ø 2.5	R0.1	11,500	696	0.20	0.60	8,800	287	0.12	0.40	7,400	180	0.10	0.35
"	R0.5	11,500	696	0.21	0.60	8,800	289	0.12	0.45	7,400	182	0.10	0.40
ø 3	R0.1	9,500	705	0.20	0.50	7,500	290	0.15	0.55	6,400	184	0.12	0.45
"	R0.5	9,500	705	0.22	0.50	7,500	292	0.15	0.55	6,400	186	0.12	0.45
"	R1	9,500	705	0.25	0.70	7,500	294	0.20	0.65	6,400	187	0.16	0.55
ø 4	R0.1	7,200	724	0.25	0.95	5,600	296	0.15	0.75	4,750	189	0.15	0.65
"	R0.5	7,200	724	0.25	0.95	5,600	298	0.15	0.75	4,750	191	0.15	0.65
"	R1	7,200	724	0.30	1.20	5,600	300	0.20	1.00	4,750	193	0.20	0.90
ø 5	R0.1	6,400	771	0.20	0.90	5,100	302	0.15	0.70	4,450	194	0.15	0.85
"	R0.5	6,400	771	0.20	0.90	5,100	303	0.15	0.70	4,450	196	0.15	0.85
"	R1	6,400	771	0.25	1.10	5,100	305	0.20	0.90	4,450	198	0.20	1.00
ø 6	R0.5	5,300	752	0.30	1.30	4,200	307	0.20	0.80	3,700	200	0.20	0.80
"	R1	5,300	752	0.30	1.30	4,200	309	0.20	0.80	3,700	201	0.20	0.80
"	R1.5	5,300	752	0.30	1.40	4,200	311	0.25	1.20	3,700	203	0.25	1.20
"	R2.5	5,300	752	0.30	1.40	4,200	313	0.25	1.20	3,700	205	0.25	1.20
ø 8	R0.5	4,000	686	0.30	1.70	3,200	315	0.25	1.35	2,800	207	0.25	1.35
"	R1	4,000	686	0.30	1.70	3,200	316	0.25	1.35	2,800	208	0.25	1.35
"	R1.5	4,000	686	0.30	1.70	3,200	318	0.25	1.35	2,800	210	0.25	1.35
"	R2	4,000	686	0.40	2.00	3,200	320	0.25	1.50	2,800	212	0.30	1.40
"	R2.5	4,000	686	0.40	2.00	3,200	322	0.25	1.50	2,800	214	0.30	1.40
"	R3	4,000	686	0.40	2.00	3,200	324	0.25	1.50	2,800	215	0.30	1.40
ø 10	R0.5	3,200	639	0.50	2.10	2,550	326	0.30	1.70	2,200	217	0.30	1.50
"	R1	3,200	639	0.50	2.10	2,550	327	0.30	1.70	2,200	219	0.30	1.50
"	R1.5	3,200	639	0.60	2.40	2,550	329	0.30	1.80	2,200	221	0.30	1.60
"	R2	3,200	639	0.60	2.40	2,550	331	0.30	1.80	2,200	222	0.30	1.60
"	R2.5	3,200	639	0.60	2.40	2,550	333	0.30	1.80	2,200	224	0.30	1.60
ø 12	R0.5	2,650	639	0.80	2.50	2,100	335	0.40	2.00	1,860	226	0.35	1.80
"	R1	2,650	639	0.80	2.50	2,100	337	0.40	2.00	1,860	228	0.35	1.80
"	R1.5	2,650	639	0.80	2.50	2,100	339	0.40	2.00	1,860	229	0.35	1.80
"	R2	2,650	639	1.00	2.60	2,100	340	0.50	2.10	1,860	231	0.40	2.00
"	R2.5	2,650	639	1.00	2.60	2,100	342	0.50	2.10	1,860	233	0.40	2.00
"	R3	2,650	639	1.00	2.60	2,100	344	0.50	2.10	1,860	235	0.40	2.00

<p><b>절입량</b> Depth of Cut</p>	<p>Slotting</p> <ul style="list-style-type: none"> <li>• Ap : Axial Depth</li> <li>• D : Outside Diameter</li> </ul> 	<p>Side Milling</p> <ul style="list-style-type: none"> <li>• Ap : Axial Depth</li> <li>• Ae : Radial Depth</li> </ul> 	<p>경사진면절삭 Inclined Cutting</p> 
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- 상기 조건표는 홈 절삭 조건표이며, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망 합니다.
- 곡면 절삭시 날경의 코너R 보다 낮은 이동 PITCH를 설정 하십시오.
- 곡면 절삭시 안정적인 속도 내에서 피드를 최대30%까지 UP 해주십시오.
- 적용 기계의 회전속도가 부족한 경우에는 회전 속도와 이송 속도를 같은 비율로 줄여서 적용합니다.
- 에어브로 혹은 미스트 콜러트를 추천하며 칩 제거 주의 및 가공시 발열, 발화에 주의 하십시오.
- Above the table is a reference for groove milling, and adjust parameters depending on material shape, milling purpose, and CNC machine.
- For curved milling, set up the pitch value lower than corner radius value.
- For curved milling, raise up the feed up to 30% in stable condition.
- If the table over the maximum RPM and feed of your machine, adjust RPM and feed in the same proportion.
- Air blow or mist coolant is recommended and note for chip emission, heat, or ignition.