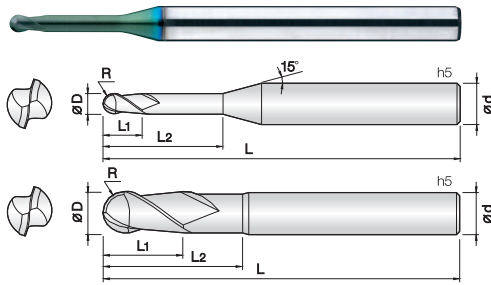




2 Flutes JJ Rib Ball End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 리브 볼 엔드밀



0.05 ~ 2.5R 3 ~ 6R

- 고정도강(HRc52~68), 프리하트강 계열의 고정밀가공 엔드밀
- 고풍량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~68)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.

JJ series

D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJRB 001 003 S04	0.05R X 0.1	0.3	-	40	4		2JJRB 006 020 S04	0.3R X 0.6	0.6	2	45	4	
2JJRB 001 005 S04	0.05R X 0.1	0.5	-	40	4		New 2JJRB 006 020 S06	0.3R X 0.6	0.6	2	50	6	
2JJRB 002 005 S04	0.1R X 0.2	0.2	0.5	40	4		2JJRB 006 030 S04	0.3R X 0.6	0.6	3	45	4	
2JJRB 002 010 S04	0.1R X 0.2	0.2	1	40	4		New 2JJRB 006 030 S06	0.3R X 0.6	0.6	3	50	6	
2JJRB 002 015 S04	0.1R X 0.2	0.2	1.5	40	4		2JJRB 006 040 S04	0.3R X 0.6	0.6	4	45	4	
2JJRB 002 020 S04	0.1R X 0.2	0.2	2	40	4		New 2JJRB 006 040 S06	0.3R X 0.6	0.6	4	50	6	
New 2JJRB 002 025 S04	0.1R X 0.2	0.2	2.5	40	4		2JJRB 006 050 S04	0.3R X 0.6	0.6	5	45	4	
New 2JJRB 002 030 S04	0.1R X 0.2	0.2	3	40	4		New 2JJRB 006 050 S06	0.3R X 0.6	0.6	5	50	6	
2JJRB 003 010 S04	0.15R X 0.3	0.3	1	40	4		2JJRB 006 060 S04	0.3R X 0.6	0.6	6	45	4	
2JJRB 003 015 S04	0.15R X 0.3	0.3	1.5	40	4		New 2JJRB 006 060 S06	0.3R X 0.6	0.6	6	50	6	
2JJRB 003 020 S04	0.15R X 0.3	0.3	2	40	4		2JJRB 006 080 S04	0.3R X 0.6	0.6	8	45	4	
New 2JJRB 003 025 S04	0.15R X 0.3	0.3	2.5	40	4		New 2JJRB 006 080 S06	0.3R X 0.6	0.6	8	50	6	
2JJRB 003 030 S04	0.15R X 0.3	0.3	3	40	4		2JJRB 006 100 S04	0.3R X 0.6	0.6	10	45	4	
New 2JJRB 003 035 S04	0.15R X 0.3	0.3	3.5	40	4		2JJRB 006 120 S04	0.3R X 0.6	0.6	12	45	4	
2JJRB 003 040 S04	0.15R X 0.3	0.3	4	40	4		2JJRB 006 140 S04	0.3R X 0.6	0.6	14	45	4	
New 2JJRB 003 050 S04	0.15R X 0.3	0.3	5	40	4		2JJRB 007 020 S04	0.35R X 0.7	0.7	2	45	4	
2JJRB 004 010 S04	0.2R X 0.4	0.4	1	40	4		2JJRB 007 040 S04	0.35R X 0.7	0.7	4	45	4	
New 2JJRB 004 015 S04	0.2R X 0.4	0.4	1.5	40	4		New 2JJRB 007 060 S04	0.35R X 0.7	0.7	6	45	4	
2JJRB 004 020 S04	0.2R X 0.4	0.4	2	40	4		2JJRB 007 080 S04	0.35R X 0.7	0.7	8	45	4	
New 2JJRB 004 025 S04	0.2R X 0.4	0.4	2.5	40	4		2JJRB 007 100 S04	0.35R X 0.7	0.7	10	45	4	
2JJRB 004 030 S04	0.2R X 0.4	0.4	3	40	4		2JJRB 007 120 S04	0.35R X 0.7	0.7	12	45	4	
New 2JJRB 004 035 S04	0.2R X 0.4	0.4	3.5	40	4		2JJRB 008 020 S04	0.4R X 0.8	0.8	2	45	4	
2JJRB 004 040 S04	0.2R X 0.4	0.4	4	40	4		New 2JJRB 008 020 S06	0.4R X 0.8	0.8	2	50	6	
New 2JJRB 004 045 S04	0.2R X 0.4	0.4	4.5	40	4		New 2JJRB 008 030 S04	0.4R X 0.8	0.8	3	45	4	
2JJRB 004 050 S04	0.2R X 0.4	0.4	5	40	4		New 2JJRB 008 030 S06	0.4R X 0.8	0.8	3	50	6	
2JJRB 004 060 S04	0.2R X 0.4	0.4	6	40	4		2JJRB 008 040 S04	0.4R X 0.8	0.8	4	45	4	
2JJRB 004 080 S04	0.2R X 0.4	0.4	8	40	4		New 2JJRB 008 040 S06	0.4R X 0.8	0.8	4	50	6	
2JJRB 005 010 S04	0.25R X 0.5	0.5	1	45	4		New 2JJRB 008 050 S04	0.4R X 0.8	0.8	5	45	4	
New 2JJRB 005 010 S06	0.25R X 0.5	0.5	1	50	6		New 2JJRB 008 050 S06	0.4R X 0.8	0.8	5	50	6	
New 2JJRB 005 015 S04	0.25R X 0.5	0.5	1.5	45	4		2JJRB 008 060 S04	0.4R X 0.8	0.8	6	45	4	
2JJRB 005 020 S04	0.25R X 0.5	0.5	2	45	4		New 2JJRB 008 060 S06	0.4R X 0.8	0.8	6	50	6	
New 2JJRB 005 020 S06	0.25R X 0.5	0.5	2	50	6		2JJRB 008 080 S04	0.4R X 0.8	0.8	8	45	4	
New 2JJRB 005 025 S04	0.25R X 0.5	0.5	2.5	45	4		New 2JJRB 008 080 S06	0.4R X 0.8	0.8	8	50	6	
2JJRB 005 030 S04	0.25R X 0.5	0.5	3	45	4		2JJRB 008 100 S04	0.4R X 0.8	0.8	10	45	4	
New 2JJRB 005 030 S06	0.25R X 0.5	0.5	3	50	6		2JJRB 008 120 S04	0.4R X 0.8	0.8	12	45	4	
New 2JJRB 005 035 S04	0.25R X 0.5	0.5	3.5	45	4		2JJRB 009 040 S04	0.45R X 0.9	0.9	4	45	4	
2JJRB 005 040 S04	0.25R X 0.5	0.5	4	45	4		New 2JJRB 009 060 S04	0.45R X 0.9	0.9	6	45	4	
New 2JJRB 005 040 S06	0.25R X 0.5	0.5	4	50	6		New 2JJRB 009 080 S04	0.45R X 0.9	0.9	8	45	4	
New 2JJRB 005 045 S04	0.25R X 0.5	0.5	4.5	45	4		New 2JJRB 009 100 S04	0.45R X 0.9	0.9	10	50	4	
2JJRB 005 050 S04	0.25R X 0.5	0.5	5	45	4		New 2JJRB 009 120 S04	0.45R X 0.9	0.9	12	50	4	
New 2JJRB 005 050 S06	0.25R X 0.5	0.5	5	50	6		2JJRB 010 020 S04	0.5R X 1	1	2	45	4	
2JJRB 005 060 S04	0.25R X 0.5	0.5	6	45	4		New 2JJRB 010 020 S06	0.5R X 1	1	2	50	6	
New 2JJRB 005 060 S06	0.25R X 0.5	0.5	6	50	6		2JJRB 010 030 S04	0.5R X 1	1	3	45	4	
2JJRB 005 080 S04	0.25R X 0.5	0.5	8	45	4		New 2JJRB 010 030 S06	0.5R X 1	1	3	50	6	
2JJRB 005 100 S04	0.25R X 0.5	0.5	10	45	4		2JJRB 010 040 S04	0.5R X 1	1	4	45	4	
2JJRB 005 120 S04	0.25R X 0.5	0.5	12	45	4		New 2JJRB 010 040 S06	0.5R X 1	1	4	50	6	
2JJRB 006 010 S04	0.3R X 0.6	0.6	1	45	4		2JJRB 010 050 S04	0.5R X 1	1	5	45	4	
New 2JJRB 006 010 S06	0.3R X 0.6	0.6	1	50	6		New 2JJRB 010 050 S06	0.5R X 1	1	5	50	6	



2 Flutes JJ Rib Ball End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 리브 볼 엔드밀

JJ series

단위 : mm

Order Number	날경 Diameter R×D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Dia d	비고	Order Number	날경 Diameter R×D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Dia d	비고
2JJRB 010 060 S04	0.5R X 1	1	6	45	4		2JJRB 015 200 S04	0.75R X 1.5	1.5	20	50	4	
New 2JJRB 010 060 S06	0.5R X 1	1	6	50	6		2JJRB 015 220 S04	0.75R X 1.5	1.5	22	60	4	
2JJRB 010 080 S04	0.5R X 1	1	8	45	4		2JJRB 015 250 S04	0.75R X 1.5	1.5	25	60	4	
New 2JJRB 010 080 S06	0.5R X 1	1	8	50	6		2JJRB 015 300 S04	0.75R X 1.5	1.5	30	70	4	
2JJRB 010 100 S04	0.5R X 1	1	10	50	4		2JJRB 016 060 S04	0.8R X 1.6	1.6	6	45	4	
New 2JJRB 010 100 S06	0.5R X 1	1	10	50	6		2JJRB 016 080 S04	0.8R X 1.6	1.6	8	45	4	
2JJRB 010 120 S04	0.5R X 1	1	12	50	4		2JJRB 016 120 S04	0.8R X 1.6	1.6	12	50	4	
New 2JJRB 010 120 S06	0.5R X 1	1	12	50	6		2JJRB 016 160 S04	0.8R X 1.6	1.6	16	50	4	
2JJRB 010 140 S04	0.5R X 1	1	14	50	4		2JJRB 016 200 S04	0.8R X 1.6	1.6	20	50	4	
2JJRB 010 160 S04	0.5R X 1	1	16	50	4		2JJRB 018 060 S04	0.9R X 1.8	1.8	6	50	4	
2JJRB 010 180 S04	0.5R X 1	1	18	50	4		2JJRB 018 080 S04	0.9R X 1.8	1.8	8	50	4	
2JJRB 010 200 S04	0.5R X 1	1	20	50	4		2JJRB 018 120 S04	0.9R X 1.8	1.8	12	50	4	
2JJRB 010 220 S04	0.5R X 1	1	22	60	4		2JJRB 018 160 S04	0.9R X 1.8	1.8	16	50	4	
2JJRB 010 250 S04	0.5R X 1	1	25	60	4		2JJRB 018 200 S04	0.9R X 1.8	1.8	20	50	4	
2JJRB 012 040 S04	0.6R X 1.2	1.2	4	45	4		2JJRB 020 040 S04	1R X 2	2	4	45	4	
New 2JJRB 012 040 S06	0.6R X 1.2	1.2	4	50	6		New 2JJRB 020 040 S06	1R X 2	2	4	50	6	
2JJRB 012 060 S04	0.6R X 1.2	1.2	6	45	4		2JJRB 020 060 S04	1R X 2	2	6	45	4	
New 2JJRB 012 060 S06	0.6R X 1.2	1.2	6	50	6		New 2JJRB 020 060 S06	1R X 2	2	6	50	6	
2JJRB 012 080 S04	0.6R X 1.2	1.2	8	45	4		2JJRB 020 080 S04	1R X 2	2	8	45	4	
New 2JJRB 012 080 S06	0.6R X 1.2	1.2	8	50	6		New 2JJRB 020 080 S06	1R X 2	2	8	50	6	
2JJRB 012 100 S04	0.6R X 1.2	1.2	10	50	4		2JJRB 020 100 S04	1R X 2	2	10	50	4	
New 2JJRB 012 100 S06	0.6R X 1.2	1.2	10	50	6		New 2JJRB 020 100 S06	1R X 2	2	10	50	6	
2JJRB 012 120 S04	0.6R X 1.2	1.2	12	50	4		2JJRB 020 120 S04	1R X 2	2	12	50	4	
New 2JJRB 012 120 S06	0.6R X 1.2	1.2	12	50	6		New 2JJRB 020 120 S06	1R X 2	2	12	50	6	
2JJRB 012 160 S04	0.6R X 1.2	1.2	16	50	4		2JJRB 020 140 S04	1R X 2	2	14	50	4	
2JJRB 012 200 S04	0.6R X 1.2	1.2	20	50	4		New 2JJRB 020 140 S06	1R X 2	2	14	50	6	
2JJRB 012 240 S04	0.6R X 1.2	1.2	24	60	4		2JJRB 020 160 S04	1R X 2	2	16	50	4	
2JJRB 014 060 S04	0.7R X 1.4	1.4	6	45	4		New 2JJRB 020 160 S06	1R X 2	2	16	60	6	
2JJRB 014 080 S04	0.7R X 1.4	1.4	8	45	4		2JJRB 020 180 S04	1R X 2	2	18	50	4	
2JJRB 014 120 S04	0.7R X 1.4	1.4	12	50	4		New 2JJRB 020 180 S06	1R X 2	2	18	60	6	
2JJRB 014 160 S04	0.7R X 1.4	1.4	16	50	4		2JJRB 020 200 S04	1R X 2	2	20	50	4	
2JJRB 015 030 S04	0.75R X 1.5	1.5	3	45	4		New 2JJRB 020 200 S06	1R X 2	2	20	60	6	
New 2JJRB 015 030 S06	0.75R X 1.5	1.5	3	50	6		2JJRB 020 220 S04	1R X 2	2	22	60	4	
2JJRB 015 040 S04	0.75R X 1.5	1.5	4	45	4		2JJRB 020 250 S04	1R X 2	2	25	60	4	
New 2JJRB 015 040 S06	0.75R X 1.5	1.5	4	50	6		2JJRB 020 300 S04	1R X 2	2	30	60	4	
2JJRB 015 060 S04	0.75R X 1.5	1.5	6	45	4		2JJRB 025 080 S04	1.25R X 2.5	2.5	8	45	4	
New 2JJRB 015 060 S06	0.75R X 1.5	1.5	6	50	6		New 2JJRB 025 080 S06	1.25R X 2.5	2.5	8	50	6	
2JJRB 015 080 S04	0.75R X 1.5	1.5	8	45	4		2JJRB 025 100 S04	1.25R X 2.5	2.5	10	50	4	
New 2JJRB 015 080 S06	0.75R X 1.5	1.5	8	50	6		New 2JJRB 025 100 S06	1.25R X 2.5	2.5	10	50	6	
2JJRB 015 100 S04	0.75R X 1.5	1.5	10	50	4		2JJRB 025 160 S04	1.25R X 2.5	2.5	16	50	4	
New 2JJRB 015 100 S06	0.75R X 1.5	1.5	10	50	6		New 2JJRB 025 160 S06	1.25R X 2.5	2.5	16	60	6	
2JJRB 015 120 S04	0.75R X 1.5	1.5	12	50	4		2JJRB 025 200 S04	1.25R X 2.5	2.5	20	60	4	
New 2JJRB 015 120 S06	0.75R X 1.5	1.5	12	50	6		New 2JJRB 025 200 S06	1.25R X 2.5	2.5	20	60	6	
2JJRB 015 140 S04	0.75R X 1.5	1.5	14	50	4		2JJRB 025 250 S04	1.25R X 2.5	2.5	25	60	4	
New 2JJRB 015 140 S06	0.75R X 1.5	1.5	14	50	6		2JJRB 025 300 S04	1.25R X 2.5	2.5	30	70	4	
2JJRB 015 160 S04	0.75R X 1.5	1.5	16	50	4		2JJRB 030 060 S06	1.5R X 3	3	6	50	6	
New 2JJRB 015 160 S06	0.75R X 1.5	1.5	16	60	6		2JJRB 030 080 S06	1.5R X 3	3	8	50	6	
2JJRB 015 180 S04	0.75R X 1.5	1.5	18	50	4		2JJRB 030 100 S06	1.5R X 3	3	10	50	6	

단위 : mm

[illegible]

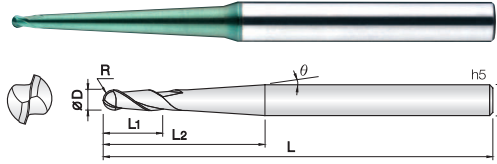


2 Flutes JJ Taper Neck Ball End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 테이퍼 넥 볼 엔드밀

New

JJ series



- 고정도강(HRc52~68), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 유효장을 테이퍼 설계하여 깊은 홈 작업시 목부파손 및 떨림을 최소화 하였습니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc52~68)**
- Good wear resistance by high quality Si-based PVD coating.
- Minimize chattering and fracturing by taper designed flute.
- High precise edge tolerance.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.



D Size	D Tolerance
$\phi 0.2 \sim 5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R×D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R×D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJTB 002 003 015	0.1R X 0.2	0°30'	0.2	1.5	40	4		2JJTB 004 020 020	0.2R X 0.4	2°	0.4	2	40	4	
2JJTB 002 003 020	0.1R X 0.2	0°30'	0.2	2	40	4		2JJTB 004 020 030	0.2R X 0.4	2°	0.4	3	40	4	
2JJTB 002 010 015	0.1R X 0.2	1°	0.2	1.5	40	4		2JJTB 004 020 040	0.2R X 0.4	2°	0.4	4	40	4	
2JJTB 002 010 020	0.1R X 0.2	1°	0.2	2	40	4		2JJTB 004 020 050	0.2R X 0.4	2°	0.4	5	40	4	
2JJTB 002 010 025	0.1R X 0.2	1°	0.2	2.5	40	4		2JJTB 004 020 060	0.2R X 0.4	2°	0.4	6	40	4	
2JJTB 002 013 015	0.1R X 0.2	1°30'	0.2	1.5	40	4		2JJTB 005 003 040	0.25R X 0.5	0°30'	0.5	4	45	4	
2JJTB 002 013 020	0.1R X 0.2	1°30'	0.2	2	40	4		2JJTB 005 003 060	0.25R X 0.5	0°30'	0.5	6	45	4	
2JJTB 002 013 025	0.1R X 0.2	1°30'	0.2	2.5	40	4		2JJTB 005 010 040	0.25R X 0.5	1°	0.5	4	45	4	
2JJTB 002 020 015	0.1R X 0.2	2°	0.2	1.5	40	4		2JJTB 005 010 060	0.25R X 0.5	1°	0.5	6	45	4	
2JJTB 002 020 020	0.1R X 0.2	2°	0.2	2	40	4		2JJTB 005 010 080	0.25R X 0.5	1°	0.5	8	45	4	
2JJTB 002 020 025	0.1R X 0.2	2°	0.2	2.5	40	4		2JJTB 005 010 100	0.25R X 0.5	1°	0.5	10	45	4	
2JJTB 002 030 015	0.1R X 0.2	3°	0.2	1.5	40	4		2JJTB 005 013 040	0.25R X 0.5	1°30'	0.5	4	45	4	
2JJTB 002 030 020	0.1R X 0.2	3°	0.2	2	40	4		2JJTB 005 013 060	0.25R X 0.5	1°30'	0.5	6	45	4	
2JJTB 002 030 025	0.1R X 0.2	3°	0.2	2.5	40	4		2JJTB 005 013 080	0.25R X 0.5	1°30'	0.5	8	45	4	
2JJTB 002 050 020	0.1R X 0.2	5°	0.2	2	40	4		2JJTB 005 013 100	0.25R X 0.5	1°30'	0.5	10	45	4	
2JJTB 003 003 030	0.15R X 0.3	0°30'	0.3	3	40	4		2JJTB 005 020 040	0.25R X 0.5	2°	0.5	4	45	4	
2JJTB 003 010 020	0.15R X 0.3	1°	0.3	2	40	4		2JJTB 005 020 060	0.25R X 0.5	2°	0.5	6	45	4	
2JJTB 003 010 030	0.15R X 0.3	1°	0.3	3	40	4		2JJTB 005 020 080	0.25R X 0.5	2°	0.5	8	45	4	
2JJTB 003 010 040	0.15R X 0.3	1°	0.3	4	40	4		2JJTB 005 020 100	0.25R X 0.5	2°	0.5	10	45	4	
2JJTB 003 010 050	0.15R X 0.3	1°	0.3	5	40	4		2JJTB 005 030 080	0.25R X 0.5	3°	0.5	8	45	4	
2JJTB 003 013 020	0.15R X 0.3	1°30'	0.3	2	40	4		2JJTB 005 030 120	0.25R X 0.5	3°	0.5	12	50	4	
2JJTB 003 013 030	0.15R X 0.3	1°30'	0.3	3	40	4		2JJTB 006 003 040	0.3R X 0.6	0°30'	0.6	4	45	4	
2JJTB 003 013 040	0.15R X 0.3	1°30'	0.3	4	40	4		2JJTB 006 003 060	0.3R X 0.6	0°30'	0.6	6	45	4	
2JJTB 003 013 050	0.15R X 0.3	1°30'	0.3	5	40	4		2JJTB 006 003 080	0.3R X 0.6	0°30'	0.6	8	45	4	
2JJTB 003 020 020	0.15R X 0.3	2°	0.3	2	40	4		2JJTB 006 010 040	0.3R X 0.6	1°	0.6	4	45	4	
2JJTB 003 020 030	0.15R X 0.3	2°	0.3	3	40	4		2JJTB 006 010 060	0.3R X 0.6	1°	0.6	6	45	4	
2JJTB 003 020 040	0.15R X 0.3	2°	0.3	4	40	4		2JJTB 006 010 080	0.3R X 0.6	1°	0.6	8	45	4	
2JJTB 003 020 050	0.15R X 0.3	2°	0.3	5	40	4		2JJTB 006 010 100	0.3R X 0.6	1°	0.6	10	45	4	
2JJTB 003 030 020	0.15R X 0.3	3°	0.3	2	40	4		2JJTB 006 010 120	0.3R X 0.6	1°	0.6	12	50	4	
2JJTB 003 030 030	0.15R X 0.3	3°	0.3	3	40	4		2JJTB 006 010 150	0.3R X 0.6	1°	0.6	15	50	4	
2JJTB 003 030 040	0.15R X 0.3	3°	0.3	4	40	4		2JJTB 006 013 040	0.3R X 0.6	1°30'	0.6	4	45	4	
2JJTB 003 030 050	0.15R X 0.3	3°	0.3	5	40	4		2JJTB 006 013 060	0.3R X 0.6	1°30'	0.6	6	45	4	
2JJTB 003 050 050	0.15R X 0.3	5°	0.3	5	40	4		2JJTB 006 013 080	0.3R X 0.6	1°30'	0.6	8	45	4	
2JJTB 004 003 020	0.2R X 0.4	0°30'	0.4	2	40	4		2JJTB 006 013 100	0.3R X 0.6	1°30'	0.6	10	45	4	
2JJTB 004 003 030	0.2R X 0.4	0°30'	0.4	3	40	4		2JJTB 006 013 120	0.3R X 0.6	1°30'	0.6	12	50	4	
2JJTB 004 003 040	0.2R X 0.4	0°30'	0.4	4	40	4		2JJTB 006 020 060	0.3R X 0.6	2°	0.6	6	45	4	
2JJTB 004 003 050	0.2R X 0.4	0°30'	0.4	5	40	4		2JJTB 006 020 080	0.3R X 0.6	2°	0.6	8	45	4	
2JJTB 004 003 060	0.2R X 0.4	0°30'	0.4	6	40	4		2JJTB 006 020 100	0.3R X 0.6	2°	0.6	10	45	4	
2JJTB 004 010 020	0.2R X 0.4	1°	0.4	2	40	4		2JJTB 006 030 130	0.3R X 0.6	3°	0.6	13	50	4	
2JJTB 004 010 030	0.2R X 0.4	1°	0.4	3	40	4		2JJTB 008 003 040	0.4R X 0.8	0°30'	0.8	4	45	4	
2JJTB 004 010 040	0.2R X 0.4	1°	0.4	4	40	4		2JJTB 008 003 060	0.4R X 0.8	0°30'	0.8	6	45	4	
2JJTB 004 010 050	0.2R X 0.4	1°	0.4	5	40	4		2JJTB 008 003 080	0.4R X 0.8	0°30'	0.8	8	45	4	
2JJTB 004 010 060	0.2R X 0.4	1°	0.4	6	40	4		2JJTB 008 003 100	0.4R X 0.8	0°30'	0.8	10	45	4	
2JJTB 004 013 020	0.2R X 0.4	1°30'	0.4	2	40	4		2JJTB 008 003 120	0.4R X 0.8	0°30'	0.8	12	50	4	
2JJTB 004 013 030	0.2R X 0.4	1°30'	0.4	3	40	4		2JJTB 008 010 040	0.4R X 0.8	1°	0.8	4	45	4	
2JJTB 004 013 040	0.2R X 0.4	1°30'	0.4	4	40	4		2JJTB 008 010 060	0.4R X 0.8	1°	0.8	6	45	4	
2JJTB 004 013 050	0.2R X 0.4	1°30'	0.4	5	40	4		2JJTB 008 010 080	0.4R X 0.8	1°	0.8	8	45	4	
2JJTB 004 013 060	0.2R X 0.4	1°30'	0.4	6	40	4		2JJTB 008 010 100	0.4R X 0.8	1°	0.8	10	45	4	



2 Flutes JJ Taper Neck Ball End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 테이퍼 넥 볼 엔드밀



JJ series

Order Number	날경 Diameter R × D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R × D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJTB 008 010 120	0.4R X 0.8	1°	0.8	12	50	4		2JJTB 012 003 240	0.6R X 1.2	0° 30'	1.2	24	60	4	
2JJTB 008 010 160	0.4R X 0.8	1°	0.8	16	50	4		2JJTB 012 010 080	0.6R X 1.2	1°	1.2	8	50	4	
2JJTB 008 013 040	0.4R X 0.8	1° 30'	0.8	4	45	4		2JJTB 012 010 120	0.6R X 1.2	1°	1.2	12	50	4	
2JJTB 008 013 060	0.4R X 0.8	1° 30'	0.8	6	45	4		2JJTB 012 010 180	0.6R X 1.2	1°	1.2	18	50	4	
2JJTB 008 013 080	0.4R X 0.8	1° 30'	0.8	8	45	4		2JJTB 012 010 240	0.6R X 1.2	1°	1.2	24	60	4	
2JJTB 008 013 100	0.4R X 0.8	1° 30'	0.8	10	45	4		2JJTB 012 013 080	0.6R X 1.2	1° 30'	1.2	8	50	4	
2JJTB 008 013 120	0.4R X 0.8	1° 30'	0.8	12	50	4		2JJTB 012 013 120	0.6R X 1.2	1° 30'	1.2	12	50	4	
2JJTB 008 013 160	0.4R X 0.8	1° 30'	0.8	16	50	4		2JJTB 012 013 180	0.6R X 1.2	1° 30'	1.2	18	50	4	
2JJTB 008 020 080	0.4R X 0.8	2°	0.8	8	50	4		2JJTB 012 013 240	0.6R X 1.2	1° 30'	1.2	24	60	4	
2JJTB 008 020 100	0.4R X 0.8	2°	0.8	10	50	4		2JJTB 012 020 080	0.6R X 1.2	2°	1.2	8	50	4	
2JJTB 008 020 120	0.4R X 0.8	2°	0.8	12	50	4		2JJTB 012 020 120	0.6R X 1.2	2°	1.2	12	50	4	
2JJTB 008 020 160	0.4R X 0.8	2°	0.8	16	50	4		2JJTB 012 020 180	0.6R X 1.2	2°	1.2	18	50	4	
2JJTB 008 030 080	0.4R X 0.8	3°	0.8	8	50	4		2JJTB 012 020 240	0.6R X 1.2	2°	1.2	24	60	4	
2JJTB 008 030 120	0.4R X 0.8	3°	0.8	12	50	4		2JJTB 015 003 080	0.75R X 1.5	0° 30'	1.5	8	50	4	
2JJTB 008 030 160	0.4R X 0.8	3°	0.8	16	50	4		2JJTB 015 003 100	0.75R X 1.5	0° 30'	1.5	10	50	4	
2JJTB 010 003 060	0.5R X 1	0° 30'	1	6	50	4		2JJTB 015 003 120	0.75R X 1.5	0° 30'	1.5	12	50	4	
2JJTB 010 003 080	0.5R X 1	0° 30'	1	8	50	4		2JJTB 015 003 150	0.75R X 1.5	0° 30'	1.5	15	50	4	
2JJTB 010 003 100	0.5R X 1	0° 30'	1	10	50	4		2JJTB 015 003 200	0.75R X 1.5	0° 30'	1.5	20	60	4	
2JJTB 010 003 150	0.5R X 1	0° 30'	1	15	50	4		2JJTB 015 003 300	0.75R X 1.5	0° 30'	1.5	30	70	4	
2JJTB 010 003 200	0.5R X 1	0° 30'	1	20	60	4		2JJTB 015 010 080	0.75R X 1.5	1°	1.5	8	50	4	
2JJTB 010 003 250	0.5R X 1	0° 30'	1	25	60	4		2JJTB 015 010 100	0.75R X 1.5	1°	1.5	10	50	4	
2JJTB 010 003 300	0.5R X 1	0° 30'	1	30	70	4		2JJTB 015 010 120	0.75R X 1.5	1°	1.5	12	50	4	
2JJTB 010 010 060	0.5R X 1	1°	1	6	50	4		2JJTB 015 010 150	0.75R X 1.5	1°	1.5	15	50	4	
2JJTB 010 010 080	0.5R X 1	1°	1	8	50	4		2JJTB 015 010 200	0.75R X 1.5	1°	1.5	20	60	4	
2JJTB 010 010 100	0.5R X 1	1°	1	10	50	4		2JJTB 015 010 250	0.75R X 1.5	1°	1.5	25	60	4	
2JJTB 010 010 150	0.5R X 1	1°	1	15	50	4		2JJTB 015 010 300	0.75R X 1.5	1°	1.5	30	70	4	
2JJTB 010 010 200	0.5R X 1	1°	1	20	50	4		2JJTB 015 013 080	0.75R X 1.5	1° 30'	1.5	8	50	4	
2JJTB 010 010 250	0.5R X 1	1°	1	25	60	4		2JJTB 015 013 100	0.75R X 1.5	1° 30'	1.5	10	50	4	
2JJTB 010 010 300	0.5R X 1	1°	1	30	70	4		2JJTB 015 013 120	0.75R X 1.5	1° 30'	1.5	12	50	4	
2JJTB 010 010 350	0.5R X 1	1°	1	35	75	4		2JJTB 015 013 150	0.75R X 1.5	1° 30'	1.5	15	50	4	
2JJTB 010 013 060	0.5R X 1	1° 30'	1	6	50	4		2JJTB 015 013 200	0.75R X 1.5	1° 30'	1.5	20	60	4	
2JJTB 010 013 080	0.5R X 1	1° 30'	1	8	50	4		2JJTB 015 013 250	0.75R X 1.5	1° 30'	1.5	25	60	4	
2JJTB 010 013 100	0.5R X 1	1° 30'	1	10	50	4		2JJTB 015 013 300	0.75R X 1.5	1° 30'	1.5	30	70	4	
2JJTB 010 013 150	0.5R X 1	1° 30'	1	15	50	4		2JJTB 015 020 100	0.75R X 1.5	2°	1.5	10	50	4	
2JJTB 010 013 200	0.5R X 1	1° 30'	1	20	50	4		2JJTB 015 020 150	0.75R X 1.5	2°	1.5	15	50	4	
2JJTB 010 013 250	0.5R X 1	1° 30'	1	25	60	4		2JJTB 015 020 200	0.75R X 1.5	2°	1.5	20	60	4	
2JJTB 010 013 300	0.5R X 1	1° 30'	1	30	70	4		2JJTB 015 020 300	0.75R X 1.5	2°	1.5	30	70	4	
2JJTB 010 020 150	0.5R X 1	2°	1	15	50	4		2JJTB 015 030 420	0.75R X 1.5	3°	1.5	42	80	6	
2JJTB 010 020 200	0.5R X 1	2°	1	20	50	4		2JJTB 015 050 250	0.75R X 1.5	5°	1.5	25	70	6	
2JJTB 010 020 250	0.5R X 1	2°	1	25	60	4		2JJTB 020 003 080	1R X 2	0° 30'	2	8	50	4	
2JJTB 010 020 300	0.5R X 1	2°	1	30	70	4		2JJTB 020 003 120	1R X 2	0° 30'	2	12	50	4	
2JJTB 010 030 200	0.5R X 1	3°	1	20	50	4		2JJTB 020 003 160	1R X 2	0° 30'	2	16	50	4	
2JJTB 010 030 300	0.5R X 1	3°	1	30	70	6		2JJTB 020 003 200	1R X 2	0° 30'	2	20	60	4	
2JJTB 010 030 400	0.5R X 1	3°	1	40	80	6		2JJTB 020 003 300	1R X 2	0° 30'	2	30	70	4	
2JJTB 010 050 230	0.5R X 1	5°	1	23	60	6		2JJTB 020 003 400	1R X 2	0° 30'	2	40	80	4	
2JJTB 012 003 080	0.6R X 1.2	0° 30'	1.2	8	50	4		2JJTB 020 010 080	1R X 2	1°	2	8	50	4	
2JJTB 012 003 120	0.6R X 1.2	0° 30'	1.2	12	50	4		2JJTB 020 010 120	1R X 2	1°	2	12	50	4	
2JJTB 012 003 180	0.6R X 1.2	0° 30'	1.2	18	50	4		2JJTB 020 010 160	1R X 2	1°	2	16	50	4	



2 Flutes JJ Taper Neck Ball End Mills for Hardened Steels

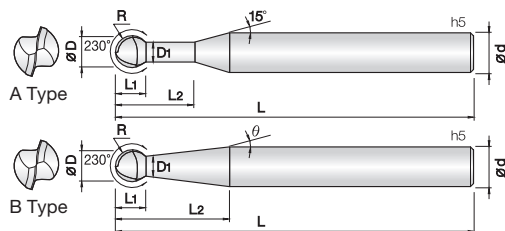
2날 고정도재 가공용 제이제이 테이퍼 넥 볼 엔드밀

New

JJ series

단위 : mm

Order Number	날경 Diameter R × D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R × D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJTB 020 010 200	1R X 2	1°	2	20	60	4		2JJTB 040 013 600	2R X 4	1°30'	4	60	110	8	
2JJTB 020 010 250	1R X 2	1°	2	25	60	4		2JJTB 040 030 250	2R X 4	3°	4	25	70	6	
2JJTB 020 010 300	1R X 2	1°	2	30	70	4		2JJTB 040 050 290	2R X 4	5°	4	29	90	8	
2JJTB 020 010 350	1R X 2	1°	2	35	75	4		2JJTB 050 013 400	2.5R X 5	1°30'	5	40	90	8	
2JJTB 020 010 400	1R X 2	1°	2	40	80	4		2JJTB 050 013 600	2.5R X 5	1°30'	5	60	110	8	
2JJTB 020 010 500	1R X 2	1°	2	50	90	4		2JJTB 050 030 400	2.5R X 5	3°	5	40	90	8	
2JJTB 020 013 080	1R X 2	1°30'	2	8	50	4		2JJTB 060 013 490	3R X 6	1°30'	9	49	110	8	
2JJTB 020 013 120	1R X 2	1°30'	2	12	50	4		2JJTB 060 020 600	3R X 6	2°	9	60	110	10	
2JJTB 020 013 160	1R X 2	1°30'	2	16	50	4		2JJTB 060 030 290	3R X 6	3°	9	29	90	8	
2JJTB 020 013 200	1R X 2	1°30'	2	20	60	4		2JJTB 060 050 320	3R X 6	5°	9	32	110	10	
2JJTB 020 013 250	1R X 2	1°30'	2	25	60	4		2JJTB 080 013 520	4R X 8	1°30'	12	52	110	10	
2JJTB 020 013 300	1R X 2	1°30'	2	30	70	4		2JJTB 080 030 330	4R X 8	3°	12	33	100	10	
2JJTB 020 013 350	1R X 2	1°30'	2	35	75	6		2JJTB 100 013 540	5R X 10	1°30'	18	54	130	12	
2JJTB 020 013 400	1R X 2	1°30'	2	40	80	6		2JJTB 100 030 370	5R X 10	3°	18	37	110	12	
2JJTB 020 013 500	1R X 2	1°30'	2	50	90	6		2JJTB 120 013 850	6R X 12	1°30'	22	85	160	16	
2JJTB 020 020 300	1R X 2	2°	2	30	70	6		2JJTB 120 030 630	6R X 12	3°	22	63	130	16	
2JJTB 020 020 400	1R X 2	2°	2	40	80	6									
2JJTB 020 020 500	1R X 2	2°	2	50	90	6									
2JJTB 020 030 300	1R X 2	3°	2	30	70	6									
2JJTB 020 030 400	1R X 2	3°	2	40	80	6									
2JJTB 020 050 250	1R X 2	5°	2	25	60	6									
2JJTB 020 050 380	1R X 2	5°	2	38	80	8									
2JJTB 030 003 160	1.5R X 3	0°30'	3	16	60	6									
2JJTB 030 003 200	1.5R X 3	0°30'	3	20	65	6									
2JJTB 030 003 300	1.5R X 3	0°30'	3	30	70	6									
2JJTB 030 003 400	1.5R X 3	0°30'	3	40	80	6									
2JJTB 030 003 500	1.5R X 3	0°30'	3	50	90	6									
2JJTB 030 010 160	1.5R X 3	1°	3	16	60	6									
2JJTB 030 010 200	1.5R X 3	1°	3	20	65	6									
2JJTB 030 010 300	1.5R X 3	1°	3	30	70	6									
2JJTB 030 010 400	1.5R X 3	1°	3	40	80	6									
2JJTB 030 010 500	1.5R X 3	1°	3	50	90	6									
2JJTB 030 013 160	1.5R X 3	1°30'	3	16	60	6									
2JJTB 030 013 200	1.5R X 3	1°30'	3	20	65	6									
2JJTB 030 013 300	1.5R X 3	1°30'	3	30	70	6									
2JJTB 030 013 400	1.5R X 3	1°30'	3	40	80	6									
2JJTB 030 013 500	1.5R X 3	1°30'	3	50	90	6									
2JJTB 030 020 160	1.5R X 3	2°	3	16	60	6									
2JJTB 030 020 200	1.5R X 3	2°	3	20	65	6									
2JJTB 030 020 300	1.5R X 3	2°	3	30	70	6									
2JJTB 030 020 480	1.5R X 3	2°	3	48	90	6									
2JJTB 030 030 300	1.5R X 3	3°	3	30	70	6									
2JJTB 030 030 500	1.5R X 3	3°	3	50	90	8									
2JJTB 030 050 330	1.5R X 3	5°	3	33	90	8									
2JJTB 040 003 600	2R X 4	0°30'	4	60	100	6									
2JJTB 040 010 500	2R X 4	1°	4	50	90	6									
2JJTB 040 010 600	2R X 4	1°	4	60	100	6									
2JJTB 040 013 450	2R X 4	1°30'	4	45	90	6									



0.5 ~ 2.5R

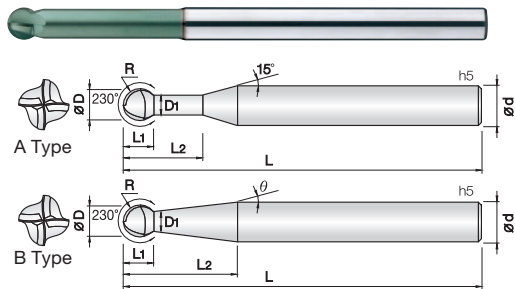
3 ~ 6R

단위 : mm

- **고경도강(HRc52~68), 프리하든강 계열의 고정밀가공 엔드밀**
- 고탄량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 230도 구형의 인선으로 광범위한 3D 가공이 가능합니다.
- 유효장을 직선 및 테이퍼 설계하여 다양한 상황에 맞춰 목부파손 및 떨림을 최소화 하였습니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc52~68)**
- Good wear resistance by high quality Si-based PVD coating.
- 230° degree ball shape for wide range 3D machining.
- Minimize chattering and fracturing by taper and straight designed flute
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.

D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

[illegible]



- **고경도강(HRC52~68), 프리하든강 계열의 고정밀가공 엔드밀**
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 230도 구형의 인선으로 광범위한 3D 가공이 가능합니다.
- 유효장을 직선 및 테이퍼 설계하여 다양한 상황에 맞춰 목부파손 및 떨림을 최소화 하였습니다.
- 초미립자 초경합금($0.2\mu\text{m}$)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRC52~68)**
- Good wear resistance by high quality Si-based PVD coating.
- 230° degree ball shape for wide range 3D machining.
- Minimize chattering and fracturing by taper and straight designed flute.
- Outstanding performance at high speed machining by ultra fine ($0.2\mu\text{m}$) WC grade.

D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

[illegible]

4 Flutes JJ Spherical End Mills for 3D Cut 270°

4

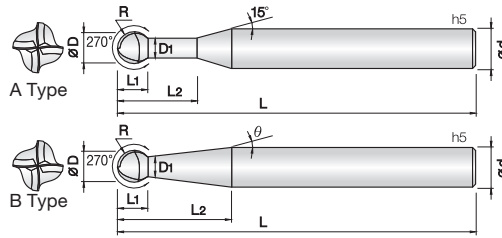
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New



0.5 ~ 2.5R

3 ~ 6R

! 고경도강) 3 D , 프리하든강 계열의 고정밀가공 엔드밀

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! Endmills for pre-hardened and hardened steel (HRc52~68)

! Good wear resistance by high quality Si-based PVD coating.

! 270 degree ball shape for wide range 3D machining.

! Minimize chattering and fracturing by taper and straight designed flute.

! Outstanding performance at high speed machining by ultra fine (0.2 μ) WC grade.

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

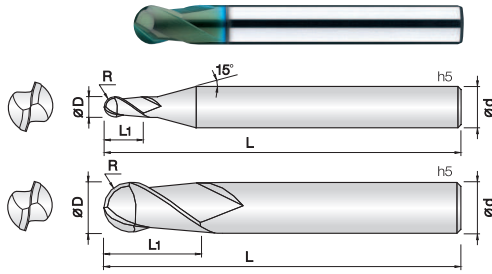
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2 Flutes JJ Short Length Ball End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 짧은 길이 볼 엔드밀

JJ series



- 고정도강(HRc52~68), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 짧은 전장을 채택하여 열박음척 사용이 용이합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2μm)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~68)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Short overall length for easy use with shrinking chuck
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2μm) WC grade.



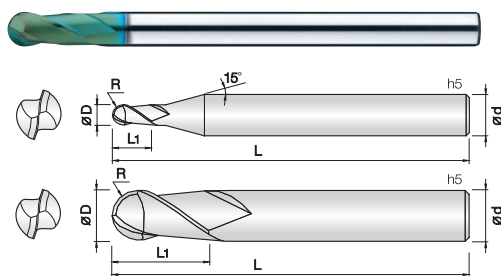
D Size	D Tolerance
Ø0.1 ~ 0.15	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R×D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R×D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
New 2JJSB 001 001 S04	0.05R X 0.1	0.1	38	4		2JJSB 120 120 060	6R X 12	12	60	12	
New 2JJSB 001 0015 S04	0.05R X 0.1	0.15	38	4		New 2JJSB 120 150 060	6R X 12	15	60	12	
New 2JJSB 0015 0015 S04	0.075R X 0.15	0.15	38	4							
New 2JJSB 0015 002 S04	0.075R X 0.15	0.2	38	4							
2JJSB 002 002 S04	0.1R X 0.2	0.2	38	4							
New 2JJSB 002 003 S04	0.1R X 0.2	0.3	38	4							
2JJSB 003 003 S04	0.15R X 0.3	0.3	38	4							
New 2JJSB 003 0045 S04	0.15R X 0.3	0.45	38	4							
2JJSB 004 004 S04	0.2R X 0.4	0.4	38	4							
New 2JJSB 004 006 S04	0.2R X 0.4	0.6	38	4							
2JJSB 005 005 S04	0.25R X 0.5	0.5	38	4							
New 2JJSB 005 0075 S04	0.25R X 0.5	0.75	38	4							
2JJSB 006 006 S04	0.3R X 0.6	0.6	38	4							
New 2JJSB 006 009 S04	0.3R X 0.6	0.9	38	4							
2JJSB 007 007 S04	0.35R X 0.7	0.7	38	4							
New 2JJSB 007 010 S04	0.35R X 0.7	1	38	4							
2JJSB 008 008 S04	0.4R X 0.8	0.8	38	4							
New 2JJSB 008 012 S04	0.4R X 0.8	1.2	38	4							
2JJSB 009 009 S04	0.45R X 0.9	0.9	38	4							
New 2JJSB 009 013 S04	0.45R X 0.9	1.3	38	4							
2JJSB 010 010 S04	0.5R X 1	1	40	4							
New 2JJSB 010 010 S06	0.5R X 1	1	40	6							
New 2JJSB 010 015 S04	0.5R X 1	1.5	40	4							
New 2JJSB 010 015 S06	0.5R X 1	1.5	40	6							
2JJSB 015 015 S04	0.75R X 1.5	1.5	40	4							
New 2JJSB 015 015 S06	0.75R X 1.5	1.5	40	6							
New 2JJSB 015 023 S04	0.75R X 1.5	2.3	40	4							
New 2JJSB 015 023 S06	0.75R X 1.5	2.3	40	6							
2JJSB 020 020 S04	1R X 2	2	45	4							
New 2JJSB 020 020 S06	1R X 2	2	45	6							
New 2JJSB 020 030 S04	1R X 2	3	45	4							
New 2JJSB 020 030 S06	1R X 2	3	45	6							
2JJSB 030 030 S04	1.5R X 3	3	45	4							
2JJSB 030 030 S06	1.5R X 3	3	45	6							
New 2JJSB 030 045 S04	1.5R X 3	4.5	45	4							
New 2JJSB 030 045 S06	1.5R X 3	4.5	45	6							
2JJSB 040 040 S04	2R X 4	4	45	4							
2JJSB 040 040 S06	2R X 4	4	45	6							
New 2JJSB 040 060 S04	2R X 4	6	45	4							
New 2JJSB 040 060 S06	2R X 4	6	45	6							
2JJSB 050 050 S06	2.5R X 5	5	50	6							
New 2JJSB 050 075 S06	2.5R X 5	7.5	50	6							
2JJSB 060 060 050	3R X 6	6	50	6							
New 2JJSB 060 080 055	3R X 6	8	55	6							
2JJSB 080 080 050	4R X 8	8	50	8							
New 2JJSB 080 110 060	4R X 8	11	60	8							
2JJSB 100 100 060	5R X 10	10	60	10							
New 2JJSB 100 130 060	5R X 10	13	60	10							

2 Flutes JJ Ball End Mills for Hardened Steels

2날 고경도재 가공용 제이제이 볼 엔드밀



- **고경도강(HRc52~68), 프리하드강 계열의 고속가공 엔드밀**
- 고탄량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc52~68)**
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.



0.05 ~ 2.5R 3 ~ 6R

D Size	D Tolerance
∅0.1 ~ 0.15	+0 ~ -0.005mm
∅0.2 ~ 5	+0 ~ -0.01mm
∅6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

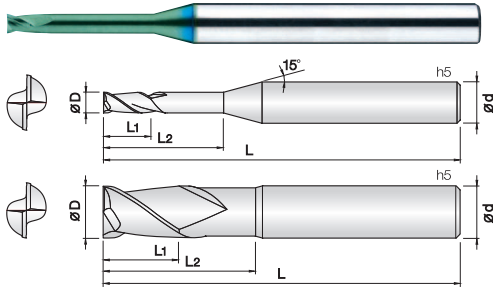
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2 Flutes JJ Rib End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 리브 엔드밀

JJ series



- 고정도강(HRc52~65), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~65)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.



D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고
2JJRE 001 003 S04	0.1	0.3	-	40	4		New 2JJRE 008 030 S04	0.8	0.8	3	40	4	
2JJRE 001 005 S04	0.1	0.5	-	40	4		2JJRE 008 040 S04	0.8	0.8	4	40	4	
2JJRE 002 005 S04	0.2	0.2	0.5	40	4		New 2JJRE 008 050 S04	0.8	0.8	5	40	4	
2JJRE 002 010 S04	0.2	0.2	1	40	4		2JJRE 008 060 S04	0.8	0.8	6	40	4	
2JJRE 002 015 S04	0.2	0.2	1.5	40	4		2JJRE 008 080 S04	0.8	0.8	8	45	4	
2JJRE 002 020 S04	0.2	0.2	2	40	4		2JJRE 008 100 S04	0.8	0.8	10	45	4	
New 2JJRE 002 025 S04	0.2	0.2	2.5	40	4		2JJRE 008 120 S04	0.8	0.8	12	45	4	
New 2JJRE 002 030 S04	0.2	0.2	3	40	4		New 2JJRE 009 040 S04	0.9	0.9	4	40	4	
2JJRE 003 010 S04	0.3	0.3	1	40	4		2JJRE 009 060 S04	0.9	0.9	6	40	4	
2JJRE 003 015 S04	0.3	0.3	1.5	40	4		2JJRE 009 080 S04	0.9	0.9	8	45	4	
2JJRE 003 020 S04	0.3	0.3	2	40	4		2JJRE 009 100 S04	0.9	0.9	10	45	4	
New 2JJRE 003 025 S04	0.3	0.3	2.5	40	4		New 2JJRE 010 020 S04	1	1	2	45	4	
2JJRE 003 030 S04	0.3	0.3	3	40	4		2JJRE 010 030 S04	1	1	3	45	4	
New 2JJRE 003 035 S04	0.3	0.3	3.5	40	4		2JJRE 010 040 S04	1	1	4	45	4	
New 2JJRE 003 040 S04	0.3	0.3	4	40	4		2JJRE 010 050 S04	1	1	5	45	4	
2JJRE 004 010 S04	0.4	0.4	1	40	4		2JJRE 010 060 S04	1	1	6	45	4	
New 2JJRE 004 015 S04	0.4	0.4	1.5	40	4		2JJRE 010 080 S04	1	1	8	45	4	
2JJRE 004 020 S04	0.4	0.4	2	40	4		2JJRE 010 100 S04	1	1	10	45	4	
New 2JJRE 004 025 S04	0.4	0.4	2.5	40	4		2JJRE 010 120 S04	1	1	12	50	4	
2JJRE 004 030 S04	0.4	0.4	3	40	4		2JJRE 010 140 S04	1	1	14	50	4	
New 2JJRE 004 035 S04	0.4	0.4	3.5	40	4		2JJRE 010 160 S04	1	1	16	50	4	
2JJRE 004 040 S04	0.4	0.4	4	40	4		2JJRE 010 180 S04	1	1	18	50	4	
2JJRE 004 050 S04	0.4	0.4	5	40	4		2JJRE 010 200 S04	1	1	20	50	4	
2JJRE 004 060 S04	0.4	0.4	6	40	4		New 2JJRE 010 220 S04	1	1	22	60	4	
2JJRE 004 080 S04	0.4	0.5	8	40	4		2JJRE 010 250 S04	1	1	25	60	4	
New 2JJRE 005 010 S04	0.5	0.5	1	40	4		New 2JJRE 012 040 S04	1.2	1.2	4	45	4	
2JJRE 005 020 S04	0.5	0.5	2	40	4		2JJRE 012 060 S04	1.2	1.2	6	45	4	
2JJRE 005 030 S04	0.5	0.5	3	40	4		2JJRE 012 080 S04	1.2	1.2	8	45	4	
2JJRE 005 040 S04	0.5	0.5	4	40	4		2JJRE 012 100 S04	1.2	1.2	10	45	4	
2JJRE 005 050 S04	0.5	0.5	5	40	4		2JJRE 012 120 S04	1.2	1.2	12	50	4	
2JJRE 005 060 S04	0.5	0.5	6	40	4		2JJRE 012 160 S04	1.2	1.2	16	50	4	
2JJRE 005 080 S04	0.5	0.5	8	45	4		2JJRE 012 200 S04	1.2	1.2	20	50	4	
2JJRE 005 100 S04	0.5	0.6	10	45	4		2JJRE 012 250 S04	1.2	1.2	25	60	4	
New 2JJRE 006 010 S04	0.6	0.6	1	40	4		2JJRE 014 080 S04	1.4	1.4	8	45	4	
2JJRE 006 020 S04	0.6	0.6	2	40	4		2JJRE 014 100 S04	1.4	1.4	10	45	4	
2JJRE 006 030 S04	0.6	0.6	3	40	4		2JJRE 014 140 S04	1.4	1.4	14	50	4	
2JJRE 006 040 S04	0.6	0.6	4	40	4		2JJRE 014 160 S04	1.4	1.4	16	50	4	
2JJRE 006 050 S04	0.6	0.6	5	40	4		2JJRE 014 200 S04	1.4	1.4	20	50	4	
2JJRE 006 060 S04	0.6	0.6	6	40	4		New 2JJRE 015 040 S04	1.5	1.5	4	45	4	
2JJRE 006 080 S04	0.6	0.6	8	45	4		2JJRE 015 060 S04	1.5	1.5	6	45	4	
2JJRE 006 100 S04	0.6	0.7	10	45	4		2JJRE 015 080 S04	1.5	1.5	8	45	4	
2JJRE 007 020 S04	0.7	0.7	2	40	4		2JJRE 015 100 S04	1.5	1.5	10	50	4	
2JJRE 007 040 S04	0.7	0.7	4	40	4		2JJRE 015 120 S04	1.5	1.5	12	50	4	
2JJRE 007 060 S04	0.7	0.7	6	40	4		2JJRE 015 140 S04	1.5	1.5	14	50	4	
2JJRE 007 080 S04	0.7	0.7	8	45	4		2JJRE 015 160 S04	1.5	1.5	16	50	4	
2JJRE 007 100 S04	0.7	0.7	10	45	4		2JJRE 015 180 S04	1.5	1.5	18	50	4	
New 2JJRE 008 010 S04	0.8	0.8	1	40	4		2JJRE 015 200 S04	1.5	1.5	20	50	4	
2JJRE 008 020 S04	0.8	0.8	2	40	4		New 2JJRE 015 220 S04	1.5	1.5	22	60	4	



2 Flutes JJ Rib End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 리브 엔드밀

JJ series

단위 : mm

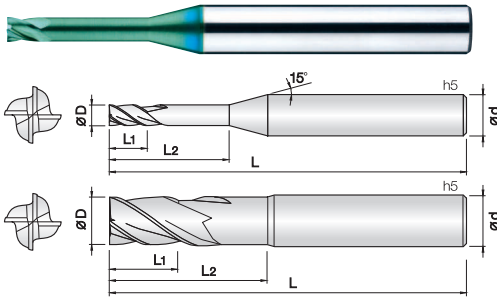
Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJRE 015 250 S04	1.5	1.5	25	60	4		2JJRE 040 350 S06	4	4	35	75	6	
New 2JJRE 016 060 S04	1.6	1.6	6	45	4		2JJRE 040 400 S06	4	4	40	80	6	
2JJRE 016 100 S04	1.6	1.6	10	50	4		2JJRE 040 450 S06	4	4	45	90	6	
2JJRE 016 140 S04	1.6	1.6	14	50	4		2JJRE 040 500 S06	4	4	50	100	6	
2JJRE 016 180 S04	1.6	1.6	18	50	4		2JJRE 050 160 S06	5	6	16	60	6	
2JJRE 018 100 S04	1.8	1.8	10	50	4		2JJRE 050 200 S06	5	6	20	60	6	
2JJRE 018 140 S04	1.8	1.8	14	50	4		2JJRE 050 250 S06	5	6	25	65	6	
2JJRE 018 180 S04	1.8	1.8	18	50	4		2JJRE 050 300 S06	5	6	30	70	6	
2JJRE 020 060 S04	2	2	6	45	4		2JJRE 050 350 S06	5	6	35	75	6	
2JJRE 020 080 S04	2	2	8	45	4		2JJRE 050 400 S06	5	6	40	80	6	
2JJRE 020 100 S04	2	2	10	50	4		2JJRE 050 500 S06	5	6	50	100	6	
2JJRE 020 120 S04	2	2	12	50	4		2JJRE 060 200 S06	6	10	20	60	6	
2JJRE 020 140 S04	2	2	14	50	4		2JJRE 060 300 S06	6	10	30	75	6	
2JJRE 020 160 S04	2	2	16	50	4		2JJRE 060 400 S06	6	10	40	80	6	
2JJRE 020 180 S04	2	2	18	50	4		2JJRE 060 500 S06	6	10	50	90	6	
2JJRE 020 200 S04	2	2	20	50	4		2JJRE 060 600 S06	6	10	60	110	6	
2JJRE 020 220 S04	2	2	22	60	4								
2JJRE 020 250 S04	2	2	25	60	4								
2JJRE 020 300 S04	2	2	30	60	4								
2JJRE 020 350 S04	2	2	35	70	4								
2JJRE 020 400 S04	2	2	40	80	4								
2JJRE 025 100 S04	2.5	2.5	10	50	4								
2JJRE 025 120 S04	2.5	2.5	12	50	4								
2JJRE 025 160 S04	2.5	2.5	16	50	4								
2JJRE 025 200 S04	2.5	2.5	20	50	4								
2JJRE 025 250 S04	2.5	2.5	25	60	4								
2JJRE 025 300 S04	2.5	2.5	30	70	4								
2JJRE 025 350 S04	2.5	2.5	35	70	4								
2JJRE 025 400 S04	2.5	2.5	40	80	4								
New 2JJRE 030 060 S06	3	3	6	45	6								
New 2JJRE 030 080 S06	3	3	8	45	6								
2JJRE 030 100 S06	3	3	10	50	6								
2JJRE 030 120 S06	3	3	12	50	6								
2JJRE 030 160 S06	3	3	16	55	6								
2JJRE 030 200 S06	3	3	20	60	6								
2JJRE 030 250 S06	3	3	25	65	6								
2JJRE 030 300 S06	3	3	30	70	6								
2JJRE 030 350 S06	3	3	35	75	6								
2JJRE 030 400 S06	3	3	40	80	6								
2JJRE 030 450 S06	3	3	45	90	6								
2JJRE 030 500 S06	3	3	50	100	6								
New 2JJRE 040 080 S06	4	4	8	50	6								
2JJRE 040 100 S06	4	4	10	50	6								
2JJRE 040 120 S06	4	4	12	50	6								
2JJRE 040 160 S06	4	4	16	55	6								
2JJRE 040 200 S06	4	4	20	60	6								
2JJRE 040 250 S06	4	4	25	65	6								
2JJRE 040 300 S06	4	4	30	70	6								

4JJRE

4 Flutes JJ Rib End Mills for Hardened Steels

4날 고정도재 가공용 제이제이 리브 엔드밀

JJ series



- 고정도강(HRc52~65), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~65)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.



D Size	D Tolerance
Ø0.8 ~ 5	+0 ~ -0.01mm
Ø6	-0.01 ~ -0.025mm

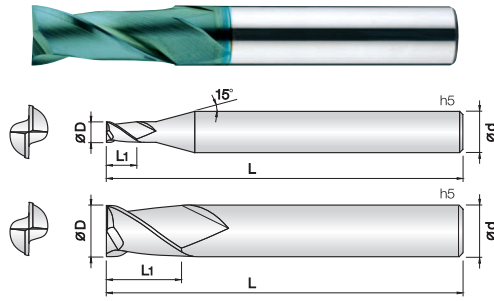
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고
New 4JJRE 008 010 S04	0.8	0.8	1	40	4		4JJRE 030 250 S06	3	3	25	65	6	
New 4JJRE 008 020 S04	0.8	0.8	2	40	4		4JJRE 030 300 S06	3	3	30	70	6	
New 4JJRE 008 030 S04	0.8	0.8	3	40	4		New 4JJRE 040 060 S06	4	4	6	50	6	
New 4JJRE 008 040 S04	0.8	0.8	4	40	4		New 4JJRE 040 080 S06	4	4	8	50	6	
New 4JJRE 008 050 S04	0.8	0.8	5	40	4		4JJRE 040 100 S06	4	4	10	50	6	
New 4JJRE 008 060 S04	0.8	0.8	6	40	4		4JJRE 040 120 S06	4	4	12	50	6	
New 4JJRE 008 080 S04	0.8	0.8	8	40	4		4JJRE 040 160 S06	4	4	16	55	6	
New 4JJRE 010 020 S04	1	1	2	45	4		4JJRE 040 200 S06	4	4	20	60	6	
New 4JJRE 010 030 S04	1	1	3	45	4		4JJRE 040 250 S06	4	4	25	65	6	
4JJRE 010 040 S04	1	1	4	45	4		4JJRE 040 300 S06	4	4	30	70	6	
4JJRE 010 060 S04	1	1	6	45	4		4JJRE 040 400 S06	4	4	40	80	6	
4JJRE 010 080 S04	1	1	8	45	4		4JJRE 050 160 S06	5	5	16	60	6	
4JJRE 010 100 S04	1	1	10	50	4		4JJRE 050 200 S06	5	5	20	60	6	
4JJRE 010 120 S04	1	1	12	50	4		4JJRE 050 250 S06	5	5	25	65	6	
New 4JJRE 010 140 S04	1	1	14	50	4		4JJRE 050 300 S06	5	5	30	70	6	
4JJRE 010 160 S04	1	1	16	50	4		4JJRE 050 400 S06	5	5	40	80	6	
New 4JJRE 012 040 S04	1.2	1.2	4	45	4		4JJRE 060 200 S06	6	6	20	60	6	
4JJRE 012 060 S04	1.2	1.2	6	45	4		4JJRE 060 300 S06	6	6	30	75	6	
4JJRE 012 080 S04	1.2	1.2	8	45	4		4JJRE 060 400 S06	6	6	40	80	6	
4JJRE 012 100 S04	1.2	1.2	10	50	4		4JJRE 060 500 S06	6	6	50	90	6	
4JJRE 012 120 S04	1.2	1.2	12	50	4								
4JJRE 012 160 S04	1.2	1.2	16	50	4								
New 4JJRE 015 040 S04	1.5	1.5	4	45	4								
4JJRE 015 060 S04	1.5	1.5	6	45	4								
4JJRE 015 080 S04	1.5	1.5	8	45	4								
4JJRE 015 100 S04	1.5	1.5	10	50	4								
4JJRE 015 120 S04	1.5	1.5	12	50	4								
4JJRE 015 160 S04	1.5	1.5	16	50	4								
4JJRE 020 040 S04	2	2	4	45	4								
4JJRE 020 060 S04	2	2	6	45	4								
4JJRE 020 080 S04	2	2	8	45	4								
4JJRE 020 100 S04	2	2	10	50	4								
4JJRE 020 120 S04	2	2	12	50	4								
New 4JJRE 020 140 S04	2	2	14	50	4								
4JJRE 020 160 S04	2	2	16	50	4								
New 4JJRE 020 180 S04	2	2	18	50	4								
4JJRE 020 200 S04	2	2	20	50	4								
4JJRE 025 100 S04	2.5	2.5	10	50	4								
4JJRE 025 120 S04	2.5	2.5	12	50	4								
4JJRE 025 160 S04	2.5	2.5	16	50	4								
4JJRE 025 200 S04	2.5	2.5	20	50	4								
4JJRE 025 250 S04	2.5	2.5	25	60	4								
New 4JJRE 030 060 S06	3	3	6	45	6								
New 4JJRE 030 080 S06	3	3	8	45	6								
4JJRE 030 100 S06	3	3	10	50	6								
4JJRE 030 120 S06	3	3	12	50	6								
4JJRE 030 160 S06	3	3	16	55	6								
4JJRE 030 200 S06	3	3	20	60	6								



2 Flutes JJ End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 엔드밀



- 고정도강(HRc52~65), 프리하드강 계열의 고속가공 엔드밀
- 고풍량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보장하여 날부치핑을 최소화 하였습니다.
- 국내최초 날경 0.05mm 제품부터 생산합니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel (HRc52~65)
 - ! Good wear resistance by high quality Si-based PVD coating.
 - ! High precise edge tolerance.
 - ! Reinforced edge design for preventing edge chipping.
 - ! Produce down to 0.05mm in diameter endmills at the first time in Korea.
 - ! Outstanding performance at high speed machining by ultra fine (0.2 μ) WC grade.

JJ series



D Size	D Tolerance
$\phi 0.05 \sim 0.15$	+0 ~ -0.005mm
$\phi 0.2 \sim 5.5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.001 ~ -0.025mm
$\phi 14 \sim 20$	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2JJE 0005 0008 S04	0.05	0.08	38	4		2JJE 030 080 S06	3	8	45	6	
2JJE 0006 001 S04	0.06	0.1	38	4		2JJE 035 100 S06	3.5	10	45	6	
2JJE 0007 0012 S04	0.07	0.12	38	4		2JJE 040 100 S04	4	10	45	4	
2JJE 0008 0015 S04	0.08	0.15	38	4		2JJE 040 110 S06	4	11	45	6	
2JJE 0009 0017 S04	0.09	0.17	38	4		2JJE 045 110 S06	4.5	11	45	6	
2JJE 001 002 S04	0.1	0.2	38	4		2JJE 050 130 S06	5	13	50	6	
2JJE 0015 003 S04	0.15	0.3	38	4		2JJE 055 130 S06	5.5	13	50	6	
2JJE 002 004 S04	0.2	0.4	38	4		2JJE 060 130 S06	6	13	50	6	
2JJE 0025 005 S04	0.25	0.5	38	4		2JJE 065 160 S08	6.5	16	60	8	
2JJE 003 006 S04	0.3	0.6	38	4		2JJE 070 160 S08	7	16	60	8	
2JJE 0035 007 S04	0.35	0.7	38	4		2JJE 075 160 S08	7.5	16	60	8	
2JJE 004 008 S04	0.4	0.8	38	4		2JJE 080 190 S08	8	19	60	8	
2JJE 0045 009 S04	0.45	0.9	38	4		2JJE 085 190 S10	8.5	19	70	10	
2JJE 005 010 S04	0.5	1	38	4		2JJE 090 190 S10	9	19	70	10	
2JJE 0055 011 S04	0.55	1.1	38	4		2JJE 095 190 S10	9.5	19	70	10	
2JJE 006 012 S04	0.6	1.2	38	4		2JJE 100 220 S10	10	22	70	10	
2JJE 0065 013 S04	0.65	1.3	38	4		2JJE 105 220 S12	10.5	22	75	12	
2JJE 007 014 S04	0.7	1.4	38	4		2JJE 110 220 S12	11	22	75	12	
2JJE 0075 015 S04	0.75	1.5	38	4		2JJE 115 220 S12	11.5	22	75	12	
2JJE 008 016 S04	0.8	1.6	38	4		2JJE 120 260 S12	12	26	75	12	
2JJE 0085 017 S04	0.85	1.7	38	4		2JJE 140 260 S14	14	26	80	14	
2JJE 009 020 S04	0.9	2	38	4		2JJE 140 260 S16	14	26	90	16	
2JJE 0095 020 S04	0.95	2	38	4		2JJE 160 350 S16	16	35	100	16	
2JJE 010 025 S04	1	2.5	40	4		2JJE 180 350 S18	18	35	100	18	
2JJE 010 025 S06	1	2.5	40	6		2JJE 200 400 S20	20	40	100	20	
2JJE 011 027 S04	1.1	2.7	40	4							
2JJE 012 030 S04	1.2	3	40	4							
2JJE 013 032 S04	1.3	3.2	40	4							
2JJE 014 035 S04	1.4	3.5	40	4							
2JJE 015 040 S04	1.5	4	40	4							
2JJE 015 040 S06	1.5	4	40	6							
2JJE 016 040 S04	1.6	4	40	4							
2JJE 017 042 S04	1.7	4.2	40	4							
2JJE 018 045 S04	1.8	4.5	40	4							
2JJE 019 050 S04	1.9	5	40	4							
2JJE 020 060 S04	2	6	40	4							
2JJE 020 060 S06	2	6	40	6							
2JJE 021 060 S04	2.1	6	40	4							
2JJE 022 060 S04	2.2	6	40	4							
2JJE 023 060 S04	2.3	6	40	4							
2JJE 024 080 S04	2.4	8	45	4							
2JJE 025 080 S04	2.5	8	45	4							
2JJE 025 080 S06	2.5	8	45	6							
2JJE 026 080 S04	2.6	8	45	4							
2JJE 027 080 S04	2.7	8	45	4							
2JJE 028 080 S04	2.8	8	45	4							
2JJE 029 080 S04	2.9	8	45	4							
2JJE 030 080 S04	3	8	45	4							

4날 고경도재 가공용 제이제이 엔드밀

- **고경도강(HRc52~65), 프리하든강 계열의 고속가공 엔드밀**
- 고탄량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 초미립자 조경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc52~65)**
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.



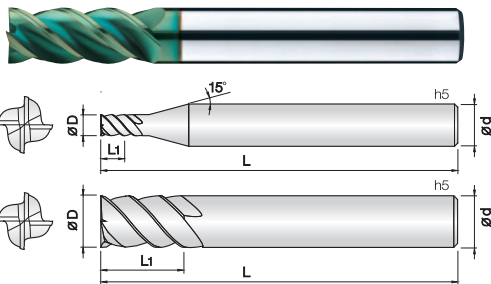
D Size	D Tolerance
∅0.6 ~ 5.5	+0 ~ -0.01mm
∅6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

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4 Flutes JJ 45° Helix End Mills for Hardened Steels

4날 고정도재 가공용 제이제이 45° 헬릭스 엔드밀



- **고경도강(HRC52~65), 프리하드강 계열의 고속가공 엔드밀**
- 고탄량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치침을 최소화 하였습니다.
- 45° 헬릭스 형상으로 설계하여 고속,고이송 가공에 적합합니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRC52~65)**
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.



Ø1 ~ 5

Ø6 ~ 12

Ø16

Shield Edge

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16	-0.015 ~ -0.03mm

단위 : mm

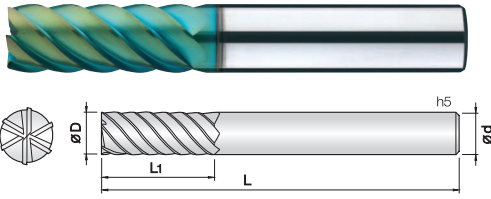
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6&8 Flutes JJ 45° Helix End Mills for Hardened Steels

6&8날 고정도재 가공용 제이제이 45° 헬릭스 엔드밀

JJ series



- 고정도강(HRc52~68), 프리하든강 계열의 고속가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 균일한 런아웃과 고정밀 공차 적용으로 초정밀가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 45° 헬릭스 형상으로 설계하여 고속, 고이송 가공에 적합합니다.
- 초미립자 초경합금(0.2μm)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel (HRc52~68)
- Good wear resistance by high quality Si-based PVD coating.
- Precise run-out and tolerance for finish machining.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2μm) WC grade.



Ø3 ~ 5

Ø6 ~ 12

Ø16 ~ 25

Shield Edge

D Size	D Tolerance
Ø3 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

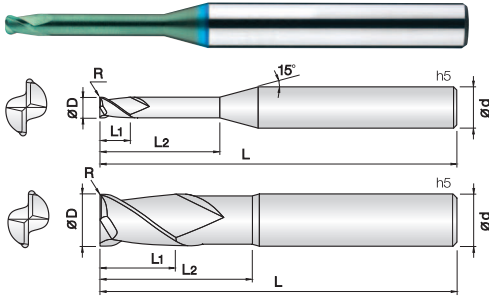
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고						
New 6JJHE 030 100 S06	3	10	50	6							
New 6JJHE 030 150 S06	3	15	50	6							
New 6JJHE 040 120 S06	4	12	50	6							
New 6JJHE 040 160 S06	4	16	50	6							
New 6JJHE 050 150 S06	5	15	50	6							
New 6JJHE 050 200 S06	5	20	60	6							
6JJHE 060 150 S06	6	15	50	6							
6JJHE 060 200 S06	6	20	60	6							
New 6JJHE 060 250 S06	6	25	65	6							
New 6JJHE 060 300 S06	6	30	70	6							
New 6JJHE 060 350 S06	6	35	75	6							
6JJHE 080 200 S08	8	20	60	8							
6JJHE 080 250 S08	8	25	65	8							
New 6JJHE 080 300 S08	8	30	75	8							
6JJHE 080 350 S08	8	35	80	8							
New 6JJHE 080 400 S08	8	40	90	8							
New 6JJHE 080 450 S08	8	45	100	8							
New 6JJHE 080 500 S08	8	50	100	8							
6JJHE 100 250 S10	10	25	70	10							
6JJHE 100 350 S10	10	35	90	10							
New 6JJHE 100 450 S10	10	45	100	10							
New 6JJHE 100 500 S10	10	50	100	10							
New 6JJHE 100 600 S10	10	60	110	10							
6JJHE 120 300 S12	12	30	80	12							
6JJHE 120 400 S12	12	40	90	12							
New 6JJHE 120 500 S12	12	50	100	12							
New 6JJHE 120 600 S12	12	60	110	12							
New 6JJHE 120 700 S12	12	70	120	12							
New 6JJHE 160 350 S16	16	35	90	16							
6JJHE 160 500 S16	16	50	110	16							
6JJHE 160 650 S16	16	65	120	16							
New 6JJHE 160 800 S16	16	80	150	16							
New 6JJHE 160 900 S16	16	90	160	16							
New 6JJHE 160 1000 S16	16	100	160	16							
New 6JJHE 200 450 S20	20	45	100	20							
6JJHE 200 600 S20	20	60	120	20							
6JJHE 200 800 S20	20	80	150	20							
New 6JJHE 200 900 S20	20	90	160	20							
New 6JJHE 200 1000 S20	20	100	160	20							
New 6JJHE 200 1100 S20	20	110	170	20							
New 6JJHE 200 1200 S20	20	120	180	20							
New 8JJHE 250 1000 S25	25	100	160	25							
New 8JJHE 250 1300 S25	25	130	200	25							



2 Flutes JJ Rib Corner Radius End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 리브 코너 레디우스 엔드밀



R0.02 ~ 0.5

R1 ~ 1.5

R2 ~ 3

30°

- 고정도강(HRC52~68), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(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 flute length for wide range application.
 - Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.

D Size	D Tolerance
Ø0.2 ~ 5	+0 ~ -0.01mm
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	샤프크 Shank Dia d	비고
New	2JJCR 002 0002 005	0.2 X R0.02	0.2	0.5	40	4	
	2JJCR 002 0002 010	0.2 X R0.02	0.2	1	40	4	
	2JJCR 002 0002 015	0.2 X R0.02	0.2	1.5	40	4	
New	2JJCR 002 0005 005	0.2 X R0.05	0.2	0.5	40	4	
	2JJCR 002 0005 010	0.2 X R0.05	0.2	1	40	4	
	2JJCR 002 0005 015	0.2 X R0.05	0.2	1.5	40	4	
New	2JJCR 003 0002 010	0.3 X R0.02	0.3	1	40	4	
New	2JJCR 003 0002 020	0.3 X R0.02	0.3	2	40	4	
New	2JJCR 003 0002 030	0.3 X R0.02	0.3	3	40	4	
	2JJCR 003 0005 010	0.3 X R0.05	0.3	1	40	4	
	2JJCR 003 0005 020	0.3 X R0.05	0.3	2	40	4	
	2JJCR 003 0005 030	0.3 X R0.05	0.3	3	40	4	
New	2JJCR 004 0002 010	0.4 X R0.02	0.4	1	40	4	
New	2JJCR 004 0002 020	0.4 X R0.02	0.4	2	40	4	
New	2JJCR 004 0002 030	0.4 X R0.02	0.4	3	40	4	
New	2JJCR 004 0002 040	0.4 X R0.02	0.4	4	40	4	
	2JJCR 004 0005 010	0.4 X R0.05	0.4	1	40	4	
	2JJCR 004 0005 020	0.4 X R0.05	0.4	2	40	4	
	2JJCR 004 0005 030	0.4 X R0.05	0.4	3	40	4	
	2JJCR 004 0005 040	0.4 X R0.05	0.4	4	40	4	
	2JJCR 004 001 010	0.4 X R0.1	0.4	1	40	4	
	2JJCR 004 001 015	0.4 X R0.1	0.4	1.5	40	4	
	2JJCR 004 001 020	0.4 X R0.1	0.4	2	40	4	
	2JJCR 004 001 030	0.4 X R0.1	0.4	3	40	4	
	2JJCR 004 001 040	0.4 X R0.1	0.4	4	40	4	
New	2JJCR 005 0002 010	0.5 X R0.02	0.5	1	45	4	
New	2JJCR 005 0002 015	0.5 X R0.02	0.5	1.5	45	4	
New	2JJCR 005 0002 020	0.5 X R0.02	0.5	2	45	4	
New	2JJCR 005 0002 025	0.5 X R0.02	0.5	2.5	45	4	
New	2JJCR 005 0002 030	0.5 X R0.02	0.5	3	45	4	
New	2JJCR 005 0002 040	0.5 X R0.02	0.5	4	45	4	
New	2JJCR 005 0002 050	0.5 X R0.02	0.5	5	45	4	
New	2JJCR 005 0002 060	0.5 X R0.02	0.5	6	45	4	
	2JJCR 005 0005 010	0.5 X R0.05	0.5	1	45	4	
	2JJCR 005 0005 015	0.5 X R0.05	0.5	1.5	45	4	
	2JJCR 005 0005 020	0.5 X R0.05	0.5	2	45	4	
	2JJCR 005 0005 025	0.5 X R0.05	0.5	2.5	45	4	
	2JJCR 005 0005 030	0.5 X R0.05	0.5	3	45	4	
	2JJCR 005 0005 040	0.5 X R0.05	0.5	4	45	4	
	2JJCR 005 0005 050	0.5 X R0.05	0.5	5	45	4	
	2JJCR 005 0005 060	0.5 X R0.05	0.5	6	45	4	
	2JJCR 005 001 010	0.5 X R0.1	0.5	1	45	4	
	2JJCR 005 001 015	0.5 X R0.1	0.5	1.5	45	4	
	2JJCR 005 001 020	0.5 X R0.1	0.5	2	45	4	
	2JJCR 005 001 025	0.5 X R0.1	0.5	2.5	45	4	
	2JJCR 005 001 030	0.5 X R0.1	0.5	3	45	4	
	2JJCR 005 001 040	0.5 X R0.1	0.5	4	45	4	
	2JJCR 005 001 050	0.5 X R0.1	0.5	5	45	4	
	2JJCR 005 001 060	0.5 X R0.1	0.5	6	45	4	
	2JJCR 005 001 070	0.5 X R0.1	0.5	7	45	4	
	2JJCR 005 001 080	0.5 X R0.1	0.5	8	45	4	
	2JJCR 005 001 090	0.5 X R0.1	0.5	9	45	4	
	2JJCR 005 001 100	0.5 X R0.1	0.5	10	45	4	
	2JJCR 005 001 110	0.5 X R0.1	0.5	11	45	4	
	2JJCR 005 001 120	0.5 X R0.1	0.5	12	45	4	
	2JJCR 005 001 130	0.5 X R0.1	0.5	13	45	4	
	2JJCR 005 001 140	0.5 X R0.1	0.5	14	45	4	
	2JJCR 005 001 150	0.5 X R0.1	0.5	15	45	4	
	2JJCR 005 001 160	0.5 X R0.1	0.5	16	45	4	
	2JJCR 005 001 170	0.5 X R0.1	0.5	17	45	4	
	2JJCR 005 001 180	0.5 X R0.1	0.5	18	45	4	
	2JJCR 005 001 190	0.5 X R0.1	0.5	19	45	4	
	2JJCR 005 001 200	0.5 X R0.1	0.5	20	45	4	
	2JJCR 005 001 210	0.5 X R0.1	0.5	21	45	4	
	2JJCR 005 001 220	0.5 X R0.1	0.5	22	45	4	
	2JJCR 005 001 230	0.5 X R0.1	0.5	23	45	4	
	2JJCR 005 001 240	0.5 X R0.1	0.5	24	45	4	
	2JJCR 005 001 250	0.5 X R0.1	0.5	25	45	4	
	2JJCR 005 001 260	0.5 X R0.1	0.5	26	45	4	
	2JJCR 005 001 270	0.5 X R0.1	0.5	27	45	4	
	2JJCR 005 001 280	0.5 X R0.1	0.5	28	45	4	
	2JJCR 005 001 290	0.5 X R0.1	0.5	29	45	4	
	2JJCR 005 001 300	0.5 X R0.1	0.5	30	45	4	
	2JJCR 005 001 310	0.5 X R0.1	0.5	31	45	4	
	2JJCR 005 001 320	0.5 X R0.1	0.5	32	45	4	
	2JJCR 005 001 330	0.5 X R0.1	0.5	33	45	4	
	2JJCR 005 001 340	0.5 X R0.1	0.5	34	45	4	
	2JJCR 005 001 350	0.5 X R0.1	0.5	35	45	4	
	2JJCR 005 001 360	0.5 X R0.1	0.5	36	45	4	
	2JJCR 005 001 370	0.5 X R0.1	0.5	37	45	4	
	2JJCR 005 001 380	0.5 X R0.1	0.5	38	45	4	
	2JJCR 005 001 390	0.5 X R0.1	0.5	39	45	4	
	2JJCR 005 001 400	0.5 X R0.1	0.5	40	45	4	
	2JJCR 005 001 410	0.5 X R0.1	0.5	41	45	4	
	2JJCR 005 001 420	0.5 X R0.1	0.5	42	45	4	
	2JJCR 005 001 430	0.5 X R0.1	0.5	43	45	4	
	2JJCR 005 001 440	0.5 X R0.1	0.5	44	45	4	
	2JJCR 005 001 450	0.5 X R0.1	0.5	45	45	4	
	2JJCR 005 001 460	0.5 X R0.1	0.5	46	45	4	
	2JJCR 005 001 470	0.5 X R0.1	0.5	47	45	4	
	2JJCR 005 001 480	0.5 X R0.1	0.5	48	45	4	
	2JJCR 005 001 490	0.5 X R0.1	0.5	49	45	4	
	2JJCR 005 001 500	0.5 X R0.1	0.5	50	45	4	
	2JJCR 005 001 510	0.5 X R0.1	0.5	51	45	4	
	2JJCR 005 001 520	0.5 X R0.1	0.5	52	45	4	
	2JJCR 005 001 530	0.5 X R0.1	0.5	53	45	4	
	2JJCR 005 001 540	0.5 X R0.1	0.5	54	45	4	
	2JJCR 005 001 550	0.5 X R0.1	0.5	55	45	4	
	2JJCR 005 001 560	0.5 X R0.1	0.5	56	45	4	
	2JJCR 005 001 570	0.5 X R0.1	0.5	57	45	4	
	2JJCR 005 001 580	0.5 X R0.1	0.5	58	45	4	
	2JJCR 005 001 590	0.5 X R0.1	0.5	59	45	4	
	2JJCR 005 001 600	0.5 X R0.1	0.5	60	45	4	
	2JJCR 005 001 610	0.5 X R0.1	0.5	61	45	4	
	2JJCR 005 001 620	0.5 X R0.1	0.5	62	45	4	
	2JJCR 005 001 630	0.5 X R0.1	0.5	63	45	4	
	2JJCR 005 001 640	0.5 X R0.1	0.5	64	45	4	
	2JJCR 005 001 650	0.5 X R0.1	0.5	65	45	4	
	2JJCR 005 001 660	0.5 X R0.1	0.5	66	45	4	
	2JJCR 005 001 670	0.5 X R0.1	0.5	67	45	4	
	2JJCR 005 001 680	0.5 X R0.1	0.5	68	45	4	
	2JJCR 005 001 690	0.5 X R0.1	0.5	69	45	4	
	2JJCR 005 001 700	0.5 X R0.1	0.5	70	45	4	
	2JJCR 005 001 710	0.5 X R0.1	0.5	71	45	4	
	2JJCR 005 001 720	0.5 X R0.1	0.5	72	45	4	
	2JJCR 005 001 730	0.5 X R0.1	0.5	73	45	4	
	2JJCR 005 001 740	0.5 X R0.1	0.5	74	45	4	
	2JJCR 005 001 750	0.5 X R0.1	0.5	75	45	4	
	2JJCR 005 001 760	0.5 X R0.1	0.5	76	45	4	
	2JJCR 005 001 770	0.5 X R0.1	0.5	77	45	4	
	2JJCR 005 001 780	0.5 X R0.1	0.5	78	45	4	
	2JJCR 005 001 790	0.5 X R0.1	0.5	79	45	4	
	2JJCR 005 001 800	0.5 X R0.1	0.5	80	45	4	
	2JJCR 005 001 810	0.5 X R0.1	0.5	81	45	4	
	2JJCR 005 001 820	0.5 X R0.1	0.5	82	45	4	
	2JJCR 005 001 830	0.5 X R0.1	0.5	83	45	4	
	2JJCR 005 001 840	0.5 X R0.1	0.5	84	45	4	
	2JJCR 005 001 850	0.5 X R0.1	0.5	85	45	4	
	2JJCR 005 001 860	0.5 X R0.1	0.5	86	45	4	
	2JJCR 005 001 870	0.5 X R0.1	0.5	87	45	4	
	2JJCR 005 001 880	0.5 X R0.1	0.5	88	45	4	
	2JJCR 005 001 890	0.5 X R0.1	0.5	89	45	4	
	2JJCR 005 001 900	0.5 X R0.1	0.5	90	45	4	
	2JJCR 005 001 910	0.5 X R0.1	0.5	91	45	4	
	2JJCR 005 001 920	0.5 X R0.1	0.5	92	45	4	
	2JJCR 005 001 930	0.5 X R0.1	0.5	93	45	4	
	2JJCR 005 001 940	0.5 X R0.1	0.5	94	45	4	
	2JJCR 005 001 950	0.5 X R0.1	0.5	95	45	4	
	2JJCR 005 001 960	0.5 X R0.1	0.5	96	45	4	
	2JJCR 005 001 970	0.5 X R0.1	0.5	97	45	4	
	2JJCR 005 001 980	0.5 X R0.1	0.5	98	45	4	
	2JJCR 005 001 990	0.5 X R0.1	0.5	99	45	4	
	2JJCR 005 001 1000	0.5 X R0.1	0.5	100	45	4	
	2JJCR 005 001 1010	0.5 X R0.1	0.5	101	45	4	
	2JJCR 005 001 1020	0.5 X R0.1	0.5	102	45	4	
	2JJCR 005 001 1030	0.5 X R0.1	0.5	103	45	4	
	2JJCR 005 001 1040	0.5 X R0.1	0.5	104	45	4	
	2JJCR 005 001 1050	0.5 X R0.1	0.5	105	45	4	
	2JJCR 005 001 1060	0.5 X R0.1	0.5	106	45	4	
	2JJCR 005 001 1070	0.5 X R0.1	0.5	107	45	4	
	2JJCR 005 001 1080	0.5 X R0.1	0.5	108	45	4	
	2JJCR 005 001 1090	0.5 X R0.1	0.5	109	45	4	
	2JJCR 005 001 1100	0.5 X R0.1	0.5	110	45	4	
	2JJCR 005 001 1110	0.5 X R0.1	0.5	111	45	4	
	2JJCR 005 001 1120	0.5 X R0.1	0.5	112	45	4	
	2JJCR 005 001 1130	0.5 X R0.1	0.5	113	45	4	
	2JJCR 005 001 1140	0.5 X R0.1	0.5	114	45	4	
	2JJCR 005 001 1150	0.5 X R0.1	0.5</				



2 Flutes JJ Rib Corner Radius End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 리브 코너 레디우스 엔드밀

JJ series

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
New 2JJCR 010 0005 200	1 X R0.05	1	20	50	4		New 2JJCR 015 0002 200	1.5 X R0.02	1.5	20	50	4	
2JJCR 010 001 040	1 X R0.1	1	4	45	4		New 2JJCR 015 0005 040	1.5 X R0.05	1.5	4	45	4	
2JJCR 010 001 060	1 X R0.1	1	6	45	4		New 2JJCR 015 0005 060	1.5 X R0.05	1.5	6	45	4	
2JJCR 010 001 080	1 X R0.1	1	8	45	4		New 2JJCR 015 0005 080	1.5 X R0.05	1.5	8	45	4	
2JJCR 010 001 100	1 X R0.1	1	10	50	4		New 2JJCR 015 0005 100	1.5 X R0.05	1.5	10	50	4	
2JJCR 010 001 120	1 X R0.1	1	12	50	4		New 2JJCR 015 0005 120	1.5 X R0.05	1.5	12	50	4	
2JJCR 010 001 160	1 X R0.1	1	16	50	4		New 2JJCR 015 0005 160	1.5 X R0.05	1.5	16	50	4	
2JJCR 010 002 200	1 X R0.1	1	20	50	4		New 2JJCR 015 0005 200	1.5 X R0.05	1.5	20	50	4	
2JJCR 010 002 040	1 X R0.2	1	4	45	4		2JJCR 015 001 040	1.5 X R0.1	1.5	4	45	4	
2JJCR 010 002 060	1 X R0.2	1	6	45	4		2JJCR 015 001 060	1.5 X R0.1	1.5	6	45	4	
2JJCR 010 002 080	1 X R0.2	1	8	45	4		2JJCR 015 001 080	1.5 X R0.1	1.5	8	45	4	
2JJCR 010 002 100	1 X R0.2	1	10	50	4		2JJCR 015 001 100	1.5 X R0.1	1.5	10	50	4	
2JJCR 010 002 120	1 X R0.2	1	12	50	4		2JJCR 015 001 120	1.5 X R0.1	1.5	12	50	4	
2JJCR 010 002 160	1 X R0.2	1	16	50	4		2JJCR 015 001 160	1.5 X R0.1	1.5	16	50	4	
2JJCR 010 002 200	1 X R0.2	1	20	50	4		2JJCR 015 001 200	1.5 X R0.1	1.5	20	50	4	
2JJCR 010 003 040	1 X R0.3	1	4	45	4		2JJCR 015 002 040	1.5 X R0.2	1.5	4	45	4	
2JJCR 010 003 060	1 X R0.3	1	6	45	4		2JJCR 015 002 060	1.5 X R0.2	1.5	6	45	4	
2JJCR 010 003 080	1 X R0.3	1	8	45	4		2JJCR 015 002 080	1.5 X R0.2	1.5	8	45	4	
2JJCR 010 003 100	1 X R0.3	1	10	50	4		2JJCR 015 002 100	1.5 X R0.2	1.5	10	50	4	
2JJCR 010 003 120	1 X R0.3	1	12	50	4		2JJCR 015 002 120	1.5 X R0.2	1.5	12	50	4	
2JJCR 010 003 160	1 X R0.3	1	16	50	4		2JJCR 015 002 160	1.5 X R0.2	1.5	16	50	4	
2JJCR 010 003 200	1 X R0.3	1	20	50	4		2JJCR 015 002 200	1.5 X R0.2	1.5	20	50	4	
New 2JJCR 012 0002 040	1.2 X R0.02	1.2	4	45	4		2JJCR 015 003 040	1.5 X R0.3	1.5	4	45	4	
New 2JJCR 012 0002 060	1.2 X R0.02	1.2	6	45	4		2JJCR 015 003 060	1.5 X R0.3	1.5	6	45	4	
New 2JJCR 012 0002 080	1.2 X R0.02	1.2	8	45	4		2JJCR 015 003 080	1.5 X R0.3	1.5	8	45	4	
New 2JJCR 012 0002 100	1.2 X R0.02	1.2	10	50	4		2JJCR 015 003 100	1.5 X R0.3	1.5	10	50	4	
New 2JJCR 012 0002 120	1.2 X R0.02	1.2	12	50	4		2JJCR 015 003 120	1.5 X R0.3	1.5	12	50	4	
New 2JJCR 012 0002 160	1.2 X R0.02	1.2	16	50	4		2JJCR 015 003 160	1.5 X R0.3	1.5	16	50	4	
New 2JJCR 012 0002 200	1.2 X R0.02	1.2	20	50	4		2JJCR 015 003 200	1.5 X R0.3	1.5	20	50	4	
New 2JJCR 012 0005 040	1.2 X R0.05	1.2	4	45	4		2JJCR 015 005 040	1.5 X R0.5	1.5	4	45	4	
New 2JJCR 012 0005 060	1.2 X R0.05	1.2	6	45	4		2JJCR 015 005 060	1.5 X R0.5	1.5	6	45	4	
New 2JJCR 012 0005 080	1.2 X R0.05	1.2	8	45	4		2JJCR 015 005 080	1.5 X R0.5	1.5	8	45	4	
New 2JJCR 012 0005 100	1.2 X R0.05	1.2	10	50	4		2JJCR 015 005 100	1.5 X R0.5	1.5	10	50	4	
New 2JJCR 012 0005 120	1.2 X R0.05	1.2	12	50	4		2JJCR 015 005 120	1.5 X R0.5	1.5	12	50	4	
New 2JJCR 012 0005 160	1.2 X R0.05	1.2	16	50	4		2JJCR 015 005 160	1.5 X R0.5	1.5	16	50	4	
New 2JJCR 012 0005 200	1.2 X R0.05	1.2	20	50	4		2JJCR 015 005 200	1.5 X R0.5	1.5	20	50	4	
2JJCR 012 001 040	1.2 X R0.1	1.2	4	45	4		New 2JJCR 020 0002 060	2 X R0.02	2	6	45	4	
2JJCR 012 001 060	1.2 X R0.1	1.2	6	45	4		New 2JJCR 020 0002 080	2 X R0.02	2	8	45	4	
2JJCR 012 001 080	1.2 X R0.1	1.2	8	45	4		New 2JJCR 020 0002 100	2 X R0.02	2	10	50	4	
2JJCR 012 001 100	1.2 X R0.1	1.2	10	50	4		New 2JJCR 020 0002 120	2 X R0.02	2	12	50	4	
2JJCR 012 001 120	1.2 X R0.1	1.2	12	50	4		New 2JJCR 020 0002 160	2 X R0.02	2	16	50	4	
2JJCR 012 001 160	1.2 X R0.1	1.2	16	50	4		New 2JJCR 020 0002 200	2 X R0.02	2	20	50	4	
2JJCR 012 001 200	1.2 X R0.1	1.2	20	50	4		New 2JJCR 020 0002 250	2 X R0.02	2	25	60	4	
2JJCR 012 002 040	1.2 X R0.2	1.2	4	45	4		New 2JJCR 020 0005 060	2 X R0.05	2	6	45	4	
2JJCR 012 002 060	1.2 X R0.2	1.2	6	45	4		New 2JJCR 020 0005 080	2 X R0.05	2	8	45	4	
2JJCR 012 002 080	1.2 X R0.2	1.2	8	45	4		New 2JJCR 020 0005 100	2 X R0.05	2	10	50	4	
2JJCR 012 002 100	1.2 X R0.2	1.2	10	50	4		New 2JJCR 020 0005 120	2 X R0.05	2	12	50	4	
2JJCR 012 002 120	1.2 X R0.2	1.2	12	50	4		New 2JJCR 020 0005 160	2 X R0.05	2	16	50	4	
2JJCR 012 002 160	1.2 X R0.2	1.2	16	50	4		New 2JJCR 020 0005 200	2 X R0.05	2	20	50	4	
2JJCR 012 002 200	1.2 X R0.2	1.2	20	50	4		New 2JJCR 020 0005 250	2 X R0.05	2	25	60	4	
2JJCR 012 003 040	1.2 X R0.3	1.2	4	45	4		2JJCR 020 001 060	2 X R0.1	2	6	45	4	
2JJCR 012 003 060	1.2 X R0.3	1.2	6	45	4		2JJCR 020 001 080	2 X R0.1	2	8	45	4	
2JJCR 012 003 080	1.2 X R0.3	1.2	8	45	4		2JJCR 020 001 100	2 X R0.1	2	10	50	4	
2JJCR 012 003 100	1.2 X R0.3	1.2	10	50	4		2JJCR 020 001 120	2 X R0.1	2	12	50	4	
2JJCR 012 003 120	1.2 X R0.3	1.2	12	50	4		2JJCR 020 001 160	2 X R0.1	2	16	50	4	
2JJCR 012 003 160	1.2 X R0.3	1.2	16	50	4		2JJCR 020 001 200	2 X R0.1	2	20	50	4	
2JJCR 012 003 200	1.2 X R0.3	1.2	20	50	4		2JJCR 020 001 250	2 X R0.1	2	25	60	4	
New 2JJCR 015 0002 040	1.5 X R0.02	1.5	4	45	4		2JJCR 020 002 060	2 X R0.2	2	6	45	4	
New 2JJCR 015 0002 060	1.5 X R0.02	1.5	6	45	4		2JJCR 020 002 080	2 X R0.2	2	8	45	4	
New 2JJCR 015 0002 080	1.5 X R0.02	1.5	8	45	4		2JJCR 020 002 100	2 X R0.2	2	10	50	4	
New 2JJCR 015 0002 100	1.5 X R0.02	1.5	10	50	4		2JJCR 020 002 120	2 X R0.2	2	12	50	4	
New 2JJCR 015 0002 120	1.5 X R0.02	1.5	12	50	4		2JJCR 020 002 160	2 X R0.2	2	16	50	4	
New 2JJCR 015 0002 160	1.5 X R0.02	1.5	16	50	4		2JJCR 020 002 200	2 X R0.2	2	20	50	4	



2 Flutes JJ Rib Corner Radius End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 리브 코너 레디우스 엔드밀

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJCR 020 002 250	2 X R0.2	2	25	60	4		2JJCR 030 010 250	3 X R1	3	25	65	6	
2JJCR 020 003 060	2 X R0.3	2	6	45	4		New 2JJCR 030 010 300	3 X R1	3	30	70	6	
2JJCR 020 003 080	2 X R0.3	2	8	45	4		New 2JJCR 030 010 350	3 X R1	3	35	75	6	
2JJCR 020 003 100	2 X R0.3	2	10	50	4		New 2JJCR 030 010 400	3 X R1	3	40	80	6	
2JJCR 020 003 120	2 X R0.3	2	12	50	4		2JJCR 040 001 120	4 X R0.1	4	12	50	6	
2JJCR 020 003 160	2 X R0.3	2	16	50	4		2JJCR 040 001 160	4 X R0.1	4	16	55	6	
2JJCR 020 003 200	2 X R0.3	2	20	50	4		2JJCR 040 001 200	4 X R0.1	4	20	60	6	
2JJCR 020 003 250	2 X R0.3	2	25	60	4		2JJCR 040 001 250	4 X R0.1	4	25	65	6	
2JJCR 020 005 060	2 X R0.5	2	6	45	4		2JJCR 040 001 300	4 X R0.1	4	30	70	6	
2JJCR 020 005 080	2 X R0.5	2	8	45	4		New 2JJCR 040 001 350	4 X R0.1	4	35	75	6	
2JJCR 020 005 100	2 X R0.5	2	10	50	4		New 2JJCR 040 001 400	4 X R0.1	4	40	80	6	
2JJCR 020 005 120	2 X R0.5	2	12	50	4		2JJCR 040 002 120	4 X R0.2	4	12	50	6	
2JJCR 020 005 160	2 X R0.5	2	16	50	4		2JJCR 040 002 160	4 X R0.2	4	16	55	6	
2JJCR 020 005 200	2 X R0.5	2	20	50	4		2JJCR 040 002 200	4 X R0.2	4	20	60	6	
2JJCR 020 005 250	2 X R0.5	2	25	60	4		2JJCR 040 002 250	4 X R0.2	4	25	65	6	
2JJCR 025 001 100	2.5 X R0.1	2.5	10	50	4		2JJCR 040 002 300	4 X R0.2	4	30	70	6	
2JJCR 025 001 160	2.5 X R0.1	2.5	16	50	4		New 2JJCR 040 002 350	4 X R0.2	4	35	75	6	
2JJCR 025 001 200	2.5 X R0.1	2.5	20	50	4		New 2JJCR 040 002 400	4 X R0.2	4	40	80	6	
2JJCR 025 002 100	2.5 X R0.2	2.5	10	50	4		2JJCR 040 003 120	4 X R0.3	4	12	50	6	
2JJCR 025 002 160	2.5 X R0.2	2.5	16	50	4		2JJCR 040 003 160	4 X R0.3	4	16	55	6	
2JJCR 025 002 200	2.5 X R0.2	2.5	20	50	4		2JJCR 040 003 200	4 X R0.3	4	20	60	6	
2JJCR 025 003 100	2.5 X R0.3	2.5	10	50	4		2JJCR 040 003 250	4 X R0.3	4	25	65	6	
2JJCR 025 003 160	2.5 X R0.3	2.5	16	50	4		2JJCR 040 003 300	4 X R0.3	4	30	70	6	
2JJCR 025 003 200	2.5 X R0.3	2.5	20	50	4		New 2JJCR 040 003 350	4 X R0.3	4	35	75	6	
2JJCR 025 005 100	2.5 X R0.5	2.5	10	50	4		New 2JJCR 040 003 400	4 X R0.3	4	40	80	6	
2JJCR 025 005 160	2.5 X R0.5	2.5	16	50	4		2JJCR 040 005 120	4 X R0.5	4	12	50	6	
2JJCR 025 005 200	2.5 X R0.5	2.5	20	50	4		2JJCR 040 005 160	4 X R0.5	4	16	55	6	
2JJCR 030 001 100	3 X R0.1	3	10	50	6		2JJCR 040 005 200	4 X R0.5	4	20	60	6	
2JJCR 030 001 120	3 X R0.1	3	12	50	6		2JJCR 040 005 250	4 X R0.5	4	25	65	6	
2JJCR 030 001 160	3 X R0.1	3	16	55	6		2JJCR 040 005 300	4 X R0.5	4	30	70	6	
2JJCR 030 001 200	3 X R0.1	3	20	60	6		New 2JJCR 040 005 350	4 X R0.5	4	35	75	6	
2JJCR 030 001 250	3 X R0.1	3	25	65	6		New 2JJCR 040 005 400	4 X R0.5	4	40	80	6	
New 2JJCR 030 001 300	3 X R0.1	3	30	70	6		2JJCR 040 010 120	4 X R1	4	12	50	6	
New 2JJCR 030 001 350	3 X R0.1	3	35	75	6		2JJCR 040 010 160	4 X R1	4	16	55	6	
New 2JJCR 030 001 400	3 X R0.1	3	40	80	6		2JJCR 040 010 200	4 X R1	4	20	60	6	
2JJCR 030 002 100	3 X R0.2	3	10	50	6		2JJCR 040 010 250	4 X R1	4	25	65	6	
2JJCR 030 002 120	3 X R0.2	3	12	50	6		2JJCR 040 010 300	4 X R1	4	30	70	6	
2JJCR 030 002 160	3 X R0.2	3	16	55	6		New 2JJCR 040 010 350	4 X R1	4	35	75	6	
2JJCR 030 002 200	3 X R0.2	3	20	60	6		New 2JJCR 040 010 400	4 X R1	4	40	80	6	
2JJCR 030 002 250	3 X R0.2	3	25	65	6		2JJCR 050 002 150	5 X R0.2	6	15	60	6	
New 2JJCR 030 002 300	3 X R0.2	3	30	70	6		2JJCR 050 002 250	5 X R0.2	6	25	70	6	
New 2JJCR 030 002 350	3 X R0.2	3	35	75	6		New 2JJCR 050 002 300	5 X R0.2	6	30	70	6	
New 2JJCR 030 002 400	3 X R0.2	3	40	80	6		New 2JJCR 050 002 400	5 X R0.2	6	40	80	6	
2JJCR 030 003 100	3 X R0.3	3	10	50	6		2JJCR 050 005 150	5 X R0.5	6	15	60	6	
2JJCR 030 003 120	3 X R0.3	3	12	50	6		2JJCR 050 005 250	5 X R0.5	6	25	70	6	
2JJCR 030 003 160	3 X R0.3	3	16	55	6		New 2JJCR 050 005 300	5 X R0.5	6	30	70	6	
2JJCR 030 003 200	3 X R0.3	3	20	60	6		New 2JJCR 050 005 400	5 X R0.5	6	40	80	6	
2JJCR 030 003 250	3 X R0.3	3	25	65	6		2JJCR 050 010 150	5 X R1	6	15	60	6	
New 2JJCR 030 003 300	3 X R0.3	3	30	70	6		2JJCR 050 010 250	5 X R1	6	25	70	6	
New 2JJCR 030 003 350	3 X R0.3	3	35	75	6		New 2JJCR 050 010 300	5 X R1	6	30	70	6	
New 2JJCR 030 003 400	3 X R0.3	3	40	80	6		New 2JJCR 050 010 400	5 X R1	6	40	80	6	
2JJCR 030 005 100	3 X R0.5	3	10	50	6		2JJCR 060 001 200	6 X R0.1	7	20	60	6	
2JJCR 030 005 120	3 X R0.5	3	12	50	6		2JJCR 060 001 400	6 X R0.1	7	40	80	6	
2JJCR 030 005 160	3 X R0.5	3	16	55	6		2JJCR 060 002 200	6 X R0.2	7	20	60	6	
2JJCR 030 005 200	3 X R0.5	3	20	60	6		2JJCR 060 002 400	6 X R0.2	7	40	80	6	
2JJCR 030 005 250	3 X R0.5	3	25	65	6		2JJCR 060 003 200	6 X R0.3	7	20	60	6	
New 2JJCR 030 005 300	3 X R0.5	3	30	70	6		2JJCR 060 003 400	6 X R0.3	7	40	80	6	
New 2JJCR 030 005 350	3 X R0.5	3	35	75	6		2JJCR 060 005 200	6 X R0.5	7	20	60	6	
New 2JJCR 030 005 400	3 X R0.5	3	40	80	6		2JJCR 060 005 400	6 X R0.5	7	40	80	6	
2JJCR 030 010 100	3 X R1	3	10	50	6		2JJCR 060 010 200	6 X R1	7	20	60	6	
2JJCR 030 010 120	3 X R1	3	12	50	6		2JJCR 060 010 400	6 X R1	7	40	80	6	
2JJCR 030 010 160	3 X R1	3	16	55	6		2JJCR 060 015 200	6 X R1.5	7	20	60	6	
2JJCR 030 010 200	3 X R1	3	20	60	6		2JJCR 060 015 400	6 X R1.5	7	40	80	6	

JJ series

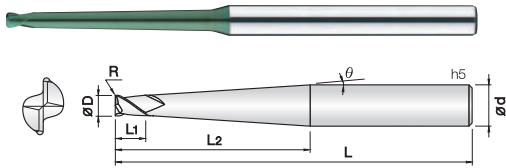
단위 : mm

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2 Flutes JJ Taper Neck Corner Radius End Mills for Hardened Steels

New



! (J) 3 D _ _ ; Z J D » >
! a * ; 47t J ; r C } I B
! , , b 8 * I , L 7 X , & ~
! m #
! 3 8 f Ix (, #
! » 0 x 5 a » > x
! a • @ W a W 8 ;

JJ series

! Endmills for pre-hardened and hardened steel(HRC52~68)

- ! Good wear resistance by high quality Si-based PVD coating.
- ! Minimize chattering and fracturing by taper designed flute.
- ! Designed for minimizing edge chipping by corner R shape.
- ! High precise edge tolerance.
- ! Outstanding performance at high speed machining by ultra fine (0.2 μ) WC grade.



R0.1 ~ 0.5

R1

D Size	D Tolerance
Ø1 ~ 4	+0 ~ -0.01mm

단위 : mm

Order Number	날경 D×R	∠ Angle	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤크 Shank Dia d	비고	Order Number	날경 D×R	∠ Angle	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤크 Shank Dia d	비고
2JJTC 010 001 0601	1 X R0.1	1	1	6	50	4		2JJTC 020 003 1601	2 X R0.3	1	2	16	50	4	
2JJTC 010 001 1001	1 X R0.1	1	1	10	50	4		2JJTC 020 003 2001	2 X R0.3	1	2	20	60	4	
2JJTC 010 001 1501	1 X R0.1	1	1	15	50	4		2JJTC 020 003 2501	2 X R0.3	1	2	25	60	4	
2JJTC 010 001 2001	1 X R0.1	1	1	20	60	4		2JJTC 020 003 3001	2 X R0.3	1	2	30	70	4	
2JJTC 010 001 2501	1 X R0.1	1	1	25	60	4		2JJTC 020 003 3501	2 X R0.3	1	2	35	75	4	
2JJTC 010 001 3001	1 X R0.1	1	1	30	70	4		2JJTC 020 003 4001	2 X R0.3	1	2	40	80	4	
2JJTC 010 001 3501	1 X R0.1	1	1	35	75	4		2JJTC 020 003 5001	2 X R0.3	1	2	50	90	4	
2JJTC 010 002 0601	1 X R0.2	1	1	6	50	4		2JJTC 020 005 1201	2 X R0.5	1	2	12	50	4	
2JJTC 010 002 1001	1 X R0.2	1	1	10	50	4		2JJTC 020 005 1601	2 X R0.5	1	2	16	50	4	
2JJTC 010 002 1501	1 X R0.2	1	1	15	50	4		2JJTC 020 005 2001	2 X R0.5	1	2	20	60	4	
2JJTC 010 002 2001	1 X R0.2	1	1	20	60	4		2JJTC 020 005 2501	2 X R0.5	1	2	25	60	4	
2JJTC 010 002 2501	1 X R0.2	1	1	25	60	4		2JJTC 020 005 3001	2 X R0.5	1	2	30	70	4	
2JJTC 010 002 3001	1 X R0.2	1	1	30	70	4		2JJTC 020 005 3501	2 X R0.5	1	2	35	75	4	
2JJTC 010 002 3501	1 X R0.2	1	1	35	75	4		2JJTC 020 005 4001	2 X R0.5	1	2	40	80	4	
2JJTC 010 003 0601	1 X R0.3	1	1	6	50	4		2JJTC 020 005 5001	2 X R0.5	1	2	50	90	4	
2JJTC 010 003 1001	1 X R0.3	1	1	10	50	4		2JJTC 030 002 2001	3 X R0.2	1	3	20	60	6	
2JJTC 010 003 1501	1 X R0.3	1	1	15	50	4		2JJTC 030 002 3001	3 X R0.2	1	3	30	70	6	
2JJTC 010 003 2001	1 X R0.3	1	1	20	60	4		2JJTC 030 002 4001	3 X R0.2	1	3	40	80	6	
2JJTC 010 003 2501	1 X R0.3	1	1	25	60	4		2JJTC 030 002 5001	3 X R0.2	1	3	50	90	6	
2JJTC 010 003 3001	1 X R0.3	1	1	30	70	4		2JJTC 030 002 6001	3 X R0.2	1	3	60	100	6	
2JJTC 010 003 3501	1 X R0.3	1	1	35	75	4		2JJTC 030 003 2001	3 X R0.3	1	3	20	60	6	
2JJTC 015 002 1001	1.5 X R0.2	1	1.5	10	50	4		2JJTC 030 003 3001	3 X R0.3	1	3	30	70	6	
2JJTC 015 002 1501	1.5 X R0.2	1	1.5	15	50	4		2JJTC 030 003 4001	3 X R0.3	1	3	40	80	6	
2JJTC 015 002 2001	1.5 X R0.2	1	1.5	20	60	4		2JJTC 030 003 5001	3 X R0.3	1	3	50	90	6	
2JJTC 015 002 2501	1.5 X R0.2	1	1.5	25	60	4		2JJTC 030 003 6001	3 X R0.3	1	3	60	100	6	
2JJTC 015 002 3001	1.5 X R0.2	1	1.5	30	70	4		2JJTC 030 005 2001	3 X R0.5	1	3	20	60	6	
2JJTC 015 002 3501	1.5 X R0.2	1	1.5	35	75	4		2JJTC 030 005 3001	3 X R0.5	1	3	30	70	6	
2JJTC 015 003 1001	1.5 X R0.3	1	1.5	10	50	4		2JJTC 030 005 4001	3 X R0.5	1	3	40	80	6	
2JJTC 015 003 1501	1.5 X R0.3	1	1.5	15	50	4		2JJTC 030 005 5001	3 X R0.5	1	3	50	90	6	
2JJTC 015 003 2001	1.5 X R0.3	1	1.5	20	60	4		2JJTC 030 005 6001	3 X R0.5	1	3	60	100	6	
2JJTC 015 003 2501	1.5 X R0.3	1	1.5	25	60	4		2JJTC 030 010 2001	3 X R1	1	3	20	60	6	
2JJTC 015 003 3001	1.5 X R0.3	1	1.5	30	70	4		2JJTC 030 010 3001	3 X R1	1	3	30	70	6	
2JJTC 015 003 3501	1.5 X R0.3	1	1.5	35	75	4		2JJTC 030 010 4001	3 X R1	1	3	40	80	6	
2JJTC 015 005 1001	1.5 X R0.5	1	1.5	10	50	4		2JJTC 030 010 5001	3 X R1	1	3	50	90	6	
2JJTC 015 005 1501	1.5 X R0.5	1	1.5	15	50	4		2JJTC 030 010 6001	3 X R1	1	3	60	100	6	
2JJTC 015 005 2001	1.5 X R0.5	1	1.5	20	60	4		2JJTC 040 002 2001	4 X R0.2	1	4	20	60	6	
2JJTC 015 005 2501	1.5 X R0.5	1	1.5	25	60	4		2JJTC 040 002 3001	4 X R0.2	1	4	30	70	6	
2JJTC 015 005 3001	1.5 X R0.5	1	1.5	30	70	4		2JJTC 040 002 4001	4 X R0.2	1	4	40	80	6	
2JJTC 015 005 3501	1.5 X R0.5	1	1.5	35	75	4		2JJTC 040 002 5001	4 X R0.2	1	4	50	90	6	
2JJTC 020 002 1201	2 X R0.2	1	2	12	50	4		2JJTC 040 002 6001	4 X R0.2	1	4	60	100	6	
2JJTC 020 002 1601	2 X R0.2	1	2	16	50	4		2JJTC 040 003 2001	4 X R0.3	1	4	20	60	6	
2JJTC 020 002 2001	2 X R0.2	1	2	20	60	4		2JJTC 040 003 3001	4 X R0.3	1	4	30	70	6	
2JJTC 020 002 2501	2 X R0.2	1	2	25	60	4		2JJTC 040 003 4001	4 X R0.3	1	4	40	80	6	
2JJTC 020 002 3001	2 X R0.2	1	2	30	70	4		2JJTC 040 003 5001	4 X R0.3	1	4	50	90	6	
2JJTC 020 002 3501	2 X R0.2	1	2	35	75	4		2JJTC 040 003 6001	4 X R0.3	1	4	60	100	6	
2JJTC 020 002 4001	2 X R0.2	1	2	40	80	4		2JJTC 040 005 2001	4 X R0.5	1	4	20	60	6	
2JJTC 020 002 5001	2 X R0.2	1	2	50	90	4		2JJTC 040 005 3001	4 X R0.5	1	4	30	70	6	
2JJTC 020 003 1201	2 X R0.3	1	2	12	50	4		2JJTC 040 005 4001	4 X R0.5	1	4	40	80	6	

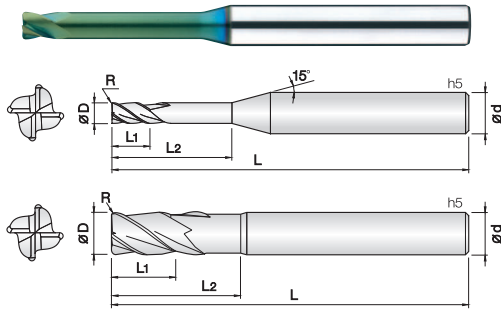
단위 : mm

[illegible]



4 Flutes JJ Rib Corner Radius End Mills for Hardened Steels

4날 고정도재 가공용 제이제이 리브 코너 레디우스 엔드밀



R0.02 ~ 0.5

R1 ~ 1.5

R2 ~ 3

- 고정도강(HRC52~68), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(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 flute length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.

D Size	D Tolerance
Ø0.8 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고
New 4JJCR 008 0002 020	0.8 X R0.02	0.8	2	45	4		New 4JJCR 012 0005 100	1.2 X R0.05	1.2	10	50	4	
New 4JJCR 008 0002 040	0.8 X R0.02	0.8	4	45	4		New 4JJCR 012 0005 120	1.2 X R0.05	1.2	12	50	4	
New 4JJCR 008 0002 060	0.8 X R0.02	0.8	6	45	4		4JJCR 012 001 040	1.2 X R0.1	1.2	4	45	4	
New 4JJCR 008 0002 080	0.8 X R0.02	0.8	8	45	4		4JJCR 012 001 060	1.2 X R0.1	1.2	6	45	4	
New 4JJCR 008 0002 100	0.8 X R0.02	0.8	10	45	4		4JJCR 012 001 080	1.2 X R0.1	1.2	8	45	4	
New 4JJCR 008 0005 020	0.8 X R0.05	0.8	2	45	4		4JJCR 012 001 100	1.2 X R0.1	1.2	10	50	4	
New 4JJCR 008 0005 040	0.8 X R0.05	0.8	4	45	4		4JJCR 012 001 120	1.2 X R0.1	1.2	12	50	4	
New 4JJCR 008 0005 060	0.8 X R0.05	0.8	6	45	4		4JJCR 012 002 040	1.2 X R0.2	1.2	4	45	4	
New 4JJCR 008 0005 080	0.8 X R0.05	0.8	8	45	4		4JJCR 012 002 060	1.2 X R0.2	1.2	6	45	4	
New 4JJCR 008 0005 100	0.8 X R0.05	0.8	10	45	4		4JJCR 012 002 080	1.2 X R0.2	1.2	8	45	4	
New 4JJCR 008 001 020	0.8 X R0.1	0.8	2	45	4		4JJCR 012 002 100	1.2 X R0.2	1.2	10	50	4	
New 4JJCR 008 001 040	0.8 X R0.1	0.8	4	45	4		4JJCR 012 002 120	1.2 X R0.2	1.2	12	50	4	
New 4JJCR 008 001 060	0.8 X R0.1	0.8	6	45	4		4JJCR 012 003 040	1.2 X R0.3	1.2	4	45	4	
New 4JJCR 008 001 080	0.8 X R0.1	0.8	8	45	4		4JJCR 012 003 060	1.2 X R0.3	1.2	6	45	4	
New 4JJCR 008 001 100	0.8 X R0.1	0.8	10	45	4		4JJCR 012 003 080	1.2 X R0.3	1.2	8	45	4	
New 4JJCR 010 0002 040	1 X R0.02	1	4	45	4		4JJCR 012 003 100	1.2 X R0.3	1.2	10	50	4	
New 4JJCR 010 0002 060	1 X R0.02	1	6	45	4		4JJCR 012 003 120	1.2 X R0.3	1.2	12	50	4	
New 4JJCR 010 0002 080	1 X R0.02	1	8	45	4		New 4JJCR 015 0002 060	1.5XR0.02	1.5	6	45	4	
New 4JJCR 010 0002 100	1 X R0.02	1	10	50	4		New 4JJCR 015 0002 080	1.5XR0.02	1.5	8	45	4	
New 4JJCR 010 0002 120	1 X R0.02	1	12	50	4		New 4JJCR 015 0002 100	1.5XR0.02	1.5	10	50	4	
4JJCR 010 0005 040	1 X R0.05	1	4	45	4		New 4JJCR 015 0002 120	1.5XR0.02	1.5	12	50	4	
4JJCR 010 0005 060	1 X R0.05	1	6	45	4		New 4JJCR 015 0002 160	1.5XR0.02	1.5	16	50	4	
4JJCR 010 0005 080	1 X R0.05	1	8	45	4		New 4JJCR 015 0005 060	1.5XR0.05	1.5	6	45	4	
4JJCR 010 0005 100	1 X R0.05	1	10	50	4		New 4JJCR 015 0005 080	1.5XR0.05	1.5	8	45	4	
4JJCR 010 0005 120	1 X R0.05	1	12	50	4		New 4JJCR 015 0005 100	1.5XR0.05	1.5	10	50	4	
4JJCR 010 001 040	1 X R0.1	1	4	45	4		New 4JJCR 015 0005 120	1.5XR0.05	1.5	12	50	4	
4JJCR 010 001 060	1 X R0.1	1	6	45	4		New 4JJCR 015 0005 160	1.5XR0.05	1.5	16	50	4	
4JJCR 010 001 080	1 X R0.1	1	8	45	4		4JJCR 015 001 060	1.5 X R0.1	1.5	6	45	4	
4JJCR 010 001 100	1 X R0.1	1	10	50	4		4JJCR 015 001 080	1.5 X R0.1	1.5	8	45	4	
4JJCR 010 001 120	1 X R0.1	1	12	50	4		4JJCR 015 001 100	1.5 X R0.1	1.5	10	50	4	
4JJCR 010 002 040	1 X R0.2	1	4	45	4		4JJCR 015 001 120	1.5 X R0.1	1.5	12	50	4	
4JJCR 010 002 060	1 X R0.2	1	6	45	4		4JJCR 015 001 160	1.5 X R0.1	1.5	16	50	4	
4JJCR 010 002 080	1 X R0.2	1	8	45	4		4JJCR 015 002 060	1.5 X R0.2	1.5	6	45	4	
4JJCR 010 002 100	1 X R0.2	1	10	50	4		4JJCR 015 002 080	1.5 X R0.2	1.5	8	45	4	
4JJCR 010 002 120	1 X R0.2	1	12	50	4		4JJCR 015 002 100	1.5 X R0.2	1.5	10	50	4	
4JJCR 010 003 040	1 X R0.3	1	4	45	4		4JJCR 015 002 120	1.5 X R0.2	1.5	12	50	4	
4JJCR 010 003 060	1 X R0.3	1	6	45	4		4JJCR 015 002 160	1.5 X R0.2	1.5	16	50	4	
4JJCR 010 003 080	1 X R0.3	1	8	45	4		4JJCR 015 003 060	1.5 X R0.3	1.5	6	45	4	
4JJCR 010 003 100	1 X R0.3	1	10	50	4		4JJCR 015 003 080	1.5 X R0.3	1.5	8	45	4	
4JJCR 010 003 120	1 X R0.3	1	12	50	4		4JJCR 015 003 100	1.5 X R0.3	1.5	10	50	4	
New 4JJCR 012 0002 040	1.2 X R0.02	1.2	4	45	4		4JJCR 015 003 120	1.5 X R0.3	1.5	12	50	4	
New 4JJCR 012 0002 060	1.2 X R0.02	1.2	6	45	4		4JJCR 015 003 160	1.5 X R0.3	1.5	16	50	4	
New 4JJCR 012 0002 080	1.2 X R0.02	1.2	8	45	4		4JJCR 015 005 060	1.5 X R0.5	1.5	6	45	4	
New 4JJCR 012 0002 100	1.2 X R0.02	1.2	10	50	4		4JJCR 015 005 080	1.5 X R0.5	1.5	8	45	4	
New 4JJCR 012 0002 120	1.2 X R0.02	1.2	12	50	4		4JJCR 015 005 100	1.5 X R0.5	1.5	10	50	4	
New 4JJCR 012 0005 040	1.2 X R0.05	1.2	4	45	4		4JJCR 015 005 120	1.5 X R0.5	1.5	12	50	4	
New 4JJCR 012 0005 060	1.2 X R0.05	1.2	6	45	4		4JJCR 015 005 160	1.5 X R0.5	1.5	16	50	4	
New 4JJCR 012 0005 080	1.2 X R0.05	1.2	8	45	4		New 4JJCR 020 0002 060	2 X R0.02	2	6	45	4	



4 Flutes JJ Rib Corner Radius End Mills for Hardened Steels

4날 고정도재 가공용 제이제이 리브 코너 레디우스 엔드밀

JJ series

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
New 4JJCR 020 0002 080	2 X R0.02	2	8	45	4		4JJCR 030 001 300	3 X R0.1	3	30	70	6	
New 4JJCR 020 0002 100	2 X R0.02	2	10	50	4		4JJCR 030 001 350	3 X R0.1	3	35	75	6	
New 4JJCR 020 0002 120	2 X R0.02	2	12	50	4		4JJCR 030 002 100	3 X R0.2	3	10	50	6	
New 4JJCR 020 0002 160	2 X R0.02	2	16	50	4		New 4JJCR 030 002 120	3 X R0.2	3	12	50	6	
New 4JJCR 020 0002 200	2 X R0.02	2	20	50	4		4JJCR 030 002 160	3 X R0.2	3	16	55	6	
New 4JJCR 020 0002 250	2 X R0.02	2	25	60	4		4JJCR 030 002 200	3 X R0.2	3	20	60	6	
New 4JJCR 020 0005 060	2 X R0.05	2	6	45	4		4JJCR 030 002 250	3 X R0.2	3	25	65	6	
New 4JJCR 020 0005 080	2 X R0.05	2	8	45	4		4JJCR 030 002 300	3 X R0.2	3	30	70	6	
New 4JJCR 020 0005 100	2 X R0.05	2	10	50	4		4JJCR 030 002 350	3 X R0.2	3	35	75	6	
New 4JJCR 020 0005 120	2 X R0.05	2	12	50	4		4JJCR 030 003 100	3 X R0.3	3	10	50	6	
New 4JJCR 020 0005 160	2 X R0.05	2	16	50	4		New 4JJCR 030 003 120	3 X R0.3	3	12	50	6	
New 4JJCR 020 0005 200	2 X R0.05	2	20	50	4		4JJCR 030 003 160	3 X R0.3	3	16	55	6	
New 4JJCR 020 0005 250	2 X R0.05	2	25	60	4		4JJCR 030 003 200	3 X R0.3	3	20	60	6	
4JJCR 020 001 060	2 X R0.1	2	6	45	4		4JJCR 030 003 250	3 X R0.3	3	25	65	6	
4JJCR 020 001 080	2 X R0.1	2	8	45	4		4JJCR 030 003 300	3 X R0.3	3	30	70	6	
4JJCR 020 001 100	2 X R0.1	2	10	50	4		4JJCR 030 003 350	3 X R0.3	3	35	75	6	
4JJCR 020 001 120	2 X R0.1	2	12	50	4		4JJCR 030 005 100	3 X R0.5	3	10	50	6	
4JJCR 020 001 160	2 X R0.1	2	16	50	4		New 4JJCR 030 005 120	3 X R0.5	3	12	50	6	
4JJCR 020 001 200	2 X R0.1	2	20	50	4		4JJCR 030 005 160	3 X R0.5	3	16	55	6	
4JJCR 020 001 250	2 X R0.1	2	25	60	4		4JJCR 030 005 200	3 X R0.5	3	20	60	6	
4JJCR 020 002 060	2 X R0.2	2	6	45	4		4JJCR 030 005 250	3 X R0.5	3	25	65	6	
4JJCR 020 002 080	2 X R0.2	2	8	45	4		4JJCR 030 005 300	3 X R0.5	3	30	70	6	
4JJCR 020 002 100	2 X R0.2	2	10	50	4		4JJCR 030 005 350	3 X R0.5	3	35	75	6	
4JJCR 020 002 120	2 X R0.2	2	12	50	4		4JJCR 030 010 100	3 X R1	3	10	50	6	
4JJCR 020 002 160	2 X R0.2	2	16	50	4		New 4JJCR 030 010 120	3 X R1	3	12	50	6	
4JJCR 020 002 200	2 X R0.2	2	20	50	4		4JJCR 030 010 160	3 X R1	3	16	55	6	
4JJCR 020 002 250	2 X R0.2	2	25	60	4		4JJCR 030 010 200	3 X R1	3	20	60	6	
4JJCR 020 003 060	2 X R0.3	2	6	45	4		4JJCR 030 010 250	3 X R1	3	25	65	6	
4JJCR 020 003 080	2 X R0.3	2	8	45	4		4JJCR 030 010 300	3 X R1	3	30	70	6	
4JJCR 020 003 100	2 X R0.3	2	10	50	4		4JJCR 030 010 350	3 X R1	3	35	75	6	
4JJCR 020 003 120	2 X R0.3	2	12	50	4		4JJCR 040 001 130	4 X R0.1	4	13	55	6	
4JJCR 020 003 160	2 X R0.3	2	16	50	4		4JJCR 040 001 160	4 X R0.1	4	16	55	6	
4JJCR 020 003 200	2 X R0.3	2	20	50	4		4JJCR 040 001 200	4 X R0.1	4	20	60	6	
4JJCR 020 003 250	2 X R0.3	2	25	60	4		4JJCR 040 001 250	4 X R0.1	4	25	65	6	
4JJCR 020 005 060	2 X R0.5	2	6	45	4		4JJCR 040 001 300	4 X R0.1	4	30	70	6	
4JJCR 020 005 080	2 X R0.5	2	8	45	4		4JJCR 040 001 350	4 X R0.1	4	35	75	6	
4JJCR 020 005 100	2 X R0.5	2	10	50	4		4JJCR 040 001 400	4 X R0.1	4	40	80	6	
4JJCR 020 005 120	2 X R0.5	2	12	50	4		4JJCR 040 002 130	4 X R0.2	4	13	55	6	
4JJCR 020 005 160	2 X R0.5	2	16	50	4		4JJCR 040 002 160	4 X R0.2	4	16	55	6	
4JJCR 020 005 200	2 X R0.5	2	20	50	4		4JJCR 040 002 200	4 X R0.2	4	20	60	6	
4JJCR 020 005 250	2 X R0.5	2	25	60	4		4JJCR 040 002 250	4 X R0.2	4	25	65	6	
4JJCR 025 001 100	2.5 X R0.1	2.5	10	50	4		4JJCR 040 002 300	4 X R0.2	4	30	70	6	
4JJCR 025 001 160	2.5 X R0.1	2.5	16	50	4		4JJCR 040 002 350	4 X R0.2	4	35	75	6	
4JJCR 025 001 200	2.5 X R0.1	2.5	20	50	4		4JJCR 040 002 400	4 X R0.2	4	40	80	6	
4JJCR 025 001 250	2.5 X R0.1	2.5	25	60	4		4JJCR 040 003 130	4 X R0.3	4	13	55	6	
4JJCR 025 002 100	2.5 X R0.2	2.5	10	50	4		4JJCR 040 003 160	4 X R0.3	4	16	55	6	
4JJCR 025 002 160	2.5 X R0.2	2.5	16	50	4		4JJCR 040 003 200	4 X R0.3	4	20	60	6	
4JJCR 025 002 200	2.5 X R0.2	2.5	20	50	4		4JJCR 040 003 250	4 X R0.3	4	25	65	6	
4JJCR 025 002 250	2.5 X R0.2	2.5	25	60	4		4JJCR 040 003 300	4 X R0.3	4	30	70	6	
4JJCR 025 003 100	2.5 X R0.3	2.5	10	50	4		4JJCR 040 003 350	4 X R0.3	4	35	75	6	
4JJCR 025 003 160	2.5 X R0.3	2.5	16	50	4		4JJCR 040 003 400	4 X R0.3	4	40	80	6	
4JJCR 025 003 200	2.5 X R0.3	2.5	20	50	4		4JJCR 040 005 130	4 X R0.5	4	13	55	6	
4JJCR 025 003 250	2.5 X R0.3	2.5	25	60	4		4JJCR 040 005 160	4 X R0.5	4	16	55	6	
4JJCR 025 005 100	2.5 X R0.5	2.5	10	50	4		4JJCR 040 005 200	4 X R0.5	4	20	60	6	
4JJCR 025 005 160	2.5 X R0.5	2.5	16	50	4		4JJCR 040 005 250	4 X R0.5	4	25	65	6	
4JJCR 025 005 200	2.5 X R0.5	2.5	20	50	4		4JJCR 040 005 300	4 X R0.5	4	30	70	6	
4JJCR 025 005 250	2.5 X R0.5	2.5	25	60	4		4JJCR 040 005 350	4 X R0.5	4	35	75	6	
New 4JJCR 030 001 100	3 X R0.1	3	10	50	6		4JJCR 040 005 400	4 X R0.5	4	40	80	6	
New 4JJCR 030 001 120	3 X R0.1	3	12	50	6		4JJCR 040 010 130	4 X R1	4	13	55	6	
4JJCR 030 001 160	3 X R0.1	3	16	55	6		4JJCR 040 010 160	4 X R1	4	16	55	6	
4JJCR 030 001 200	3 X R0.1	3	20	60	6		4JJCR 040 010 200	4 X R1	4	20	60	6	
4JJCR 030 001 250	3 X R0.1	3	25	65	6		4JJCR 040 010 250	4 X R1	4	25	65	6	



JJ series

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고							
4JJCR 040 010 300	4 X R1	4	30	70	6								
4JJCR 040 010 350	4 X R1	4	35	75	6								
4JJCR 040 010 400	4 X R1	4	40	80	6								
4JJCR 050 001 160	5 X R0.1	5	16	60	6								
4JJCR 050 001 300	5 X R0.1	5	30	70	6								
4JJCR 050 002 160	5 X R0.2	5	16	60	6								
4JJCR 050 002 300	5 X R0.2	5	30	70	6								
4JJCR 050 003 160	5 X R0.3	5	16	60	6								
4JJCR 050 003 300	5 X R0.3	5	30	70	6								
4JJCR 050 005 160	5 X R0.5	5	16	60	6								
4JJCR 050 005 300	5 X R0.5	5	30	70	6								
4JJCR 050 010 160	5 X R1	5	16	60	6								
4JJCR 050 010 300	5 X R1	5	30	70	6								
4JJCR 060 001 200	6 X R0.1	7	20	60	6								
4JJCR 060 001 400	6 X R0.1	7	40	80	6								
4JJCR 060 002 200	6 X R0.2	7	20	60	6								
4JJCR 060 002 400	6 X R0.2	7	40	80	6								
4JJCR 060 003 200	6 X R0.3	7	20	60	6								
4JJCR 060 003 400	6 X R0.3	7	40	80	6								
4JJCR 060 005 200	6 X R0.5	7	20	60	6								
4JJCR 060 005 400	6 X R0.5	7	40	80	6								
4JJCR 060 010 200	6 X R1	7	20	60	6								
4JJCR 060 010 400	6 X R1	7	40	80	6								
4JJCR 060 015 200	6 X R1.5	7	20	60	6								
4JJCR 060 015 400	6 X R1.5	7	40	80	6								
4JJCR 080 003 220	8 X R0.3	9	22	65	8								
4JJCR 080 005 220	8 X R0.5	9	22	65	8								
4JJCR 080 005 400	8 X R0.5	9	40	100	8								
4JJCR 080 010 220	8 X R1	9	22	65	8								
4JJCR 080 010 400	8 X R1	9	40	100	8								
4JJCR 080 015 220	8 X R1.5	9	22	65	8								
4JJCR 080 020 220	8 X R2	9	22	65	8								
4JJCR 100 003 240	10 X R0.3	11	24	70	10								
4JJCR 100 005 240	10 X R0.5	11	24	70	10								
4JJCR 100 005 400	10 X R0.5	11	40	100	10								
4JJCR 100 010 240	10 X R1	11	24	70	10								
4JJCR 100 010 400	10 X R1	11	40	100	10								
4JJCR 100 015 240	10 X R1.5	11	24	70	10								
4JJCR 100 020 240	10 X R2	11	24	70	10								
4JJCR 100 025 240	10 X R2.5	11	24	70	10								
4JJCR 120 003 260	12 X R0.3	13	26	80	12								
4JJCR 120 005 260	12 X R0.5	13	26	80	12								
4JJCR 120 005 400	12 X R0.5	13	40										

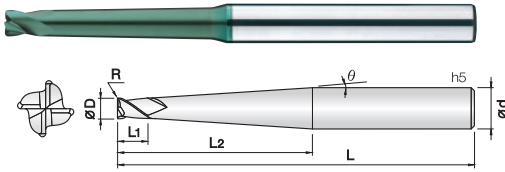


4 Flutes JJ Taper Neck Corner Radius End Mills for Hardened Steels

4날 고정도재 가공용 제이제이 테이퍼 벡 코너 레디우스 엔드밀

New

JJ series



- 고정도강(HRc52~68), 프리하든강 계열의 고정밀가공 엔드밀
- 고풍량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 유효장을 테이퍼 설계하여 깊은 홈 작업시 목부파손 및 떨림을 최소화 하였습니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 초미립자 초경합금(0.2μm)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc52~68)**
- Good wear resistance by high quality Si-based PVD coating.
- Minimize chattering and fracturing by taper designed flute.
- Designed for minimizing edge chipping by corner R shape.
- High precise edge tolerance.
- Outstanding performance at high speed machining by ultra fine (0.2μm) WC grade.



R0.1 ~ 0.5

D Size	D Tolerance
Ø1 ~ 4	+0 ~ -0.01mm

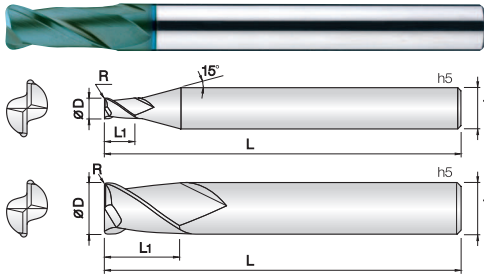
단위 : mm

Order Number	날경 Diameter D×R	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고	Order Number	날경 Diameter D×R	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고
4JJTC 010001 0601	1 X R0.1	1°	1	6	50	4		4JJTC 030005 3001	3 X R0.5	1°	3	30	70	6	
4JJTC 010001 1001	1 X R0.1	1°	1	10	50	4		4JJTC 030005 4001	3 X R0.5	1°	3	40	80	6	
4JJTC 010001 1501	1 X R0.1	1°	1	15	50	4		4JJTC 030005 5001	3 X R0.5	1°	3	50	90	6	
4JJTC 010001 2001	1 X R0.1	1°	1	20	60	4		4JJTC 030005 6001	3 X R0.5	1°	3	60	100	6	
4JJTC 010001 2501	1 X R0.1	1°	1	25	60	4		4JJTC 040002 2001	4 X R0.2	1°	4	20	60	6	
4JJTC 010001 3001	1 X R0.1	1°	1	30	70	4		4JJTC 040002 3001	4 X R0.2	1°	4	30	70	6	
4JJTC 010001 3501	1 X R0.1	1°	1	35	75	4		4JJTC 040002 4001	4 X R0.2	1°	4	40	80	6	
4JJTC 010002 0601	1 X R0.2	1°	1	6	50	4		4JJTC 040002 5001	4 X R0.2	1°	4	50	90	6	
4JJTC 010002 1001	1 X R0.2	1°	1	10	50	4		4JJTC 040002 6001	4 X R0.2	1°	4	60	100	6	
4JJTC 010002 1501	1 X R0.2	1°	1	15	50	4		4JJTC 040005 2001	4 X R0.5	1°	4	20	60	6	
4JJTC 010002 2001	1 X R0.2	1°	1	20	60	4		4JJTC 040005 3001	4 X R0.5	1°	4	30	70	6	
4JJTC 010002 2501	1 X R0.2	1°	1	25	60	4		4JJTC 040005 4001	4 X R0.5	1°	4	40	80	6	
4JJTC 010002 3001	1 X R0.2	1°	1	30	70	4		4JJTC 040005 5001	4 X R0.5	1°	4	50	90	6	
4JJTC 010002 3501	1 X R0.2	1°	1	35	75	4		4JJTC 040005 6001	4 X R0.5	1°	4	60	100	6	
4JJTC 015002 1001	1.5 X R0.2	1°	1.5	10	50	4									
4JJTC 015002 1501	1.5 X R0.2	1°	1.5	15	50	4									
4JJTC 015002 2001	1.5 X R0.2	1°	1.5	20	60	4									
4JJTC 015002 2501	1.5 X R0.2	1°	1.5	25	60	4									
4JJTC 015002 3001	1.5 X R0.2	1°	1.5	30	70	4									
4JJTC 015002 3501	1.5 X R0.2	1°	1.5	35	75	4									
4JJTC 015005 1001	1.5 X R0.5	1°	1.5	10	50	4									
4JJTC 015005 1501	1.5 X R0.5	1°	1.5	15	50	4									
4JJTC 015005 2001	1.5 X R0.5	1°	1.5	20	60	4									
4JJTC 015005 2501	1.5 X R0.5	1°	1.5	25	60	4									
4JJTC 015005 3001	1.5 X R0.5	1°	1.5	30	70	4									
4JJTC 015005 3501	1.5 X R0.5	1°	1.5	35	75	4									
4JJTC 020002 1201	2 X R0.2	1°	2	12	50	4									
4JJTC 020002 1601	2 X R0.2	1°	2	16	50	4									
4JJTC 020002 2001	2 X R0.2	1°	2	20	60	4									
4JJTC 020002 2501	2 X R0.2	1°	2	25	60	4									
4JJTC 020002 3001	2 X R0.2	1°	2	30	70	4									
4JJTC 020002 3501	2 X R0.2	1°	2	35	75	4									
4JJTC 020002 4001	2 X R0.2	1°	2	40	80	4									
4JJTC 020002 5001	2 X R0.2	1°	2	50	90	4									
4JJTC 020005 1201	2 X R0.5	1°	2	12	50	4									
4JJTC 020005 1601	2 X R0.5	1°	2	16	50	4									
4JJTC 020005 2001	2 X R0.5	1°	2	20	60	4									
4JJTC 020005 2501	2 X R0.5	1°	2	25	60	4									
4JJTC 020005 3001	2 X R0.5	1°	2	30	70	4									
4JJTC 020005 3501	2 X R0.5	1°	2	35	75	4									
4JJTC 020005 4001	2 X R0.5	1°	2	40	80	4									
4JJTC 020005 5001	2 X R0.5	1°	2	50	90	4									
4JJTC 030002 2001	3 X R0.2	1°	3	20	60	6									
4JJTC 030002 3001	3 X R0.2	1°	3	30	70	6									
4JJTC 030002 4001	3 X R0.2	1°	3	40	80	6									
4JJTC 030002 5001	3 X R0.2	1°	3	50	90	6									
4JJTC 030002 6001	3 X R0.2	1°	3	60	100	6									
4JJTC 030005 2001	3 X R0.5	1°	3	20	60	6									



2 Flutes JJ Corner Radius End Mills for Hardened Steels

2날 고정도재 가공용 제이제이 코너 레디우스 엔드밀



- 고정도강(HRc52~68), 프리하드강 계열의 고속가공 엔드밀
- 고품량 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(0.2μm)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(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 (0.2μm) WC grade.

JJ series



R0.02 ~ 0.5

R1 ~ 1.5

R2 ~ 5

D Size	D Tolerance
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

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



2 Flutes JJ Corner Radius End Mills for Hardened Steels

2날 고경도재 가공용 제이제이 코너 레디우스 엔드밀

JJ series

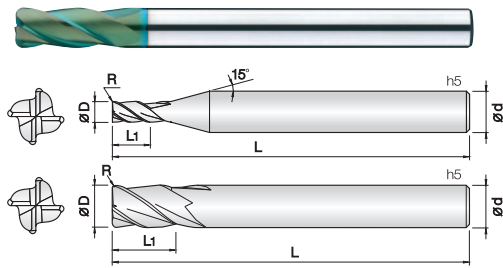
단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고						
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 100 010 075	10 X R1	19	75	10							
2JJC 100 010 100	10 X R1	22	100	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 120 010 080	12 X R1	22	80	12							
2JJC 120 010 110	12 X R1	26	110	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 120 025 110	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							



4 Flutes JJ Corner Radius End Mills for Hardened Steels

4날 고정도재 가공용 제이제이 코너 레디우스 엔드밀



! (J) 3 D _ _ ; Z J D >
! a * ; 4Jt J ; " r C } z I ß
! » 0 x 5 a » > x
! ~ 3 8 f Ix (, #
! a • @ W a 3 y b 5 0 z > I >
! a • @ W a 3 y b 5 0 z > I >
! Endmills for pre-hardened and hardened steel(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 µ) WC grade.

JJ series



D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4JJC 010 0005 S04	1 X R0.05	2.5	45	4		4JJC 060 002 055	6 X R0.2	11	55	6	
4JJC 010 001 S04	1 X R0.1	2.5	45	4		4JJC 060 002 080	6 X R0.2	13	80	6	
4JJC 010 002 S04	1 X R0.2	2.5	45	4		4JJC 060 003 055	6 X R0.3	11	55	6	
4JJC 010 003 S04	1 X R0.3	2.5	45	4		4JJC 060 003 080	6 X R0.3	13	80	6	
4JJC 015 0005 S04	1.5 X R0.05	4	45	4		4JJC 060 005 055	6 X R0.5	11	55	6	
4JJC 015 001 S04	1.5 X R0.1	4	45	4		4JJC 060 005 080	6 X R0.5	13	80	6	
4JJC 015 002 S04	1.5 X R0.2	4	45	4		4JJC 060 010 055	6 X R1	11	55	6	
4JJC 015 003 S04	1.5 X R0.3	4	45	4		4JJC 060 010 080	6 X R1	13	80	6	
4JJC 015 005 S04	1.5 X R0.5	4	45	4		4JJC 060 015 055	6 X R1.5	11	55	6	
4JJC 020 0005 S04	2 X R0.05	6	45	4		4JJC 060 015 080	6 X R1.5	13	80	6	
4JJC 020 001 S04	2 X R0.1	6	45	4		4JJC 060 020 055	6 X R2	11	55	6	
4JJC 020 002 S04	2 X R0.2	6	45	4		4JJC 060 020 080	6 X R2	13	80	6	
4JJC 020 003 S04	2 X R0.3	6	45	4		4JJC 080 003 060	8 X R0.3	16	60	8	
4JJC 020 005 S04	2 X R0.5	6	45	4		4JJC 080 003 090	8 X R0.3	19	90	8	
4JJC 025 001 S04	2.5 X R0.1	6	50	4		4JJC 080 005 060	8 X R0.5	16	60	8	
4JJC 025 002 S04	2.5 X R0.2	6	50	4		4JJC 080 005 090	8 X R0.5	19	90	8	
4JJC 025 003 S04	2.5 X R0.3	6	50	4		4JJC 080 010 060	8 X R1	16	60	8	
4JJC 025 005 S04	2.5 X R0.5	6	50	4		4JJC 080 010 090	8 X R1	19	90	8	
4JJC 030 001 S06	3 X R0.1	8	60	6		4JJC 080 015 060	8 X R1.5	16	60	8	
4JJC 030 002 S06	3 X R0.2	8	60	6		4JJC 080 015 090	8 X R1.5	19	90	8	
4JJC 030 003 S06	3 X R0.3	8	60	6		4JJC 080 020 060	8 X R2	16	60	8	
4JJC 030 005 S06	3 X R0.5	8	60	6		4JJC 080 020 090	8 X R2	19	90	8	
4JJC 030 010 S06	3 X R1	8	60	6		4JJC 100 003 070	10 X R0.3	19	70	10	
New 4JJC 035 001 S06	3.5 X R0.1	9	70	6		4JJC 100 003 100	10 X R0.3	22	100	10	
New 4JJC 035 002 S06	3.5 X R0.2	9	70	6		4JJC 100 005 070	10 X R0.5	19	70	10	
New 4JJC 035 003 S06	3.5 X R0.3	9	70	6		4JJC 100 005 100	10 X R0.5	22	100	10	
New 4JJC 035 005 S06	3.5 X R0.5	9	70	6		4JJC 100 010 070	10 X R1	19	70	10	
4JJC 040 001 S04	4 X R0.1	9	60	4		4JJC 100 010 100	10 X R1	22	100	10	
4JJC 040 001 S06	4 X R0.1	10	70	6		4JJC 100 015 070	10 X R1.5	19	70	10	
4JJC 040 002 S04	4 X R0.2	9	60	4		4JJC 100 015 100	10 X R1.5	22	100	10	
4JJC 040 002 S06	4 X R0.2	10	70	6		4JJC 100 020 070	10 X R2	19	70	10	
4JJC 040 003 S04	4 X R0.3	9	60	4		4JJC 100 020 100	10 X R2	22	100	10	
4JJC 040 003 S06	4 X R0.3	10	70	6		4JJC 100 025 070	10 X R2.5	19	70	10	
4JJC 040 005 S04	4 X R0.5	9	60	4		4JJC 100 025 100	10 X R2.5	22	100	10	
4JJC 040 005 S06	4 X R0.5	10	70	6		4JJC 120 003 075	12 X R0.3	22	75	12	
4JJC 040 010 S04	4 X R1	9	60	4		4JJC 120 003 110	12 X R0.3	26	110	12	
4JJC 040 010 S06	4 X R1	10	70	6		4JJC 120 005 075	12 X R0.5	22	75	12	
New 4JJC 045 002 S06	4.5 X R0.2	11	75	6		4JJC 120 005 110	12 X R0.5	26	110	12	
New 4JJC 045 005 S06	4.5 X R0.5	11	75	6		4JJC 120 010 075	12 X R1	22	75	12	
4JJC 050 001 S06	5 X R0.1	13	75	6		4JJC 120 010 110	12 X R1	26	110	12	
4JJC 050 002 S06	5 X R0.2	13	75	6		4JJC 120 015 075	12 X R1.5	22	75	12	
4JJC 050 003 S06	5 X R0.3	13	75	6		4JJC 120 015 110	12 X R1.5	26	110	12	
4JJC 050 005 S06	5 X R0.5	13	75	6		4JJC 120 020 075	12 X R2	22	75	12	
4JJC 050 010 S06	5 X R1	13	75	6		4JJC 120 020 110	12 X R2	26	110	12	
New 4JJC 060 0005 055	6 X R0.05	11	55	6		4JJC 120 025 075	12 X R2.5	22	75	12	
New 4JJC 060 0005 080	6 X R0.05	13	80	6		4JJC 120 025 110	12 X R2.5	26	110	12	
4JJC 060 001 055	6 X R0.1	11	55	6		4JJC 120 030 075	12 X R3	22	75	12	
4JJC 060 001 080	6 X R0.1	13	80	6		4JJC 120 030 110	12 X R3	26	110	12	

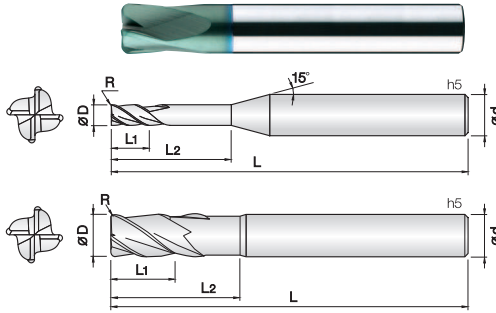
4&6JJRC

4 Flutes JJ Rib Corner Radius Cutter for Hardened Steels

New

4날 고정도재 가공용 제이제이 코너 레디우스 커터

JJ series



- 고정도강(HRc52~68), 프리하드강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 저속 RPM에서 고이송 작업이 가능 하도록 설계하였습니다.
- 중삭 및 황삭 가공시 작업 효율이 극대화 됩니다.
- 항절력이 높은 초미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel(HRc52~68)
- Good wear resistance by high quality Si-based PVD coating.
- Good wear resistance by Si-based PVD coating.
- 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.



D Size	D Tolerance
1 ~ 5Ø	+0 ~ -0.01mm
6 ~ 12Ø	-0.005 ~ -0.015mm
16Ø	-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	샹크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샹크 Shank Dia d	비고
4JJRC 010 002 025	1 X R0.2	1	2.5	50	4		6JJRC 060 005 060	6 X R0.5	12	60	6	
4JJRC 015 005 040	1.5 X R0.5	1.5	4	50	4		6JJRC 060 010 060	6 X R1	12	60	6	
4JJRC 020 005 060	2 X R0.5	2	6	50	6		6JJRC 080 005 060	8 X R0.5	16	60	8	
4JJRC 030 005 080	3 X R0.5	3	8	50	6		6JJRC 080 010 060	8 X R1	16	60	8	
4JJRC 040 005 120	4 X R0.5	4	12	60	6		6JJRC 080 020 060	8 X R2	16	60	8	
4JJRC 040 005 160	4 X R0.5	4	16	60	6		6JJRC 100 005 070	10 X R0.5	20	70	10	
4JJRC 040 010 120	4 X R1	4	12	60	6		6JJRC 100 010 070	10 X R1	20	70	10	
4JJRC 040 010 160	4 X R1	4	16	60	6		6JJRC 100 020 070	10 X R2	20	70	10	
4JJRC 050 005 150	5 X R0.5	5	15	60	6		6JJRC 120 005 080	12 X R0.5	25	80	12	
4JJRC 050 010 150	5 X R1	5	15	60	6		6JJRC 120 010 080	12 X R1	25	80	12	
4JJRC 060 003 150	6 X R0.3	6	15	60	6		6JJRC 120 020 080	12 X R2	25	80	12	
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							