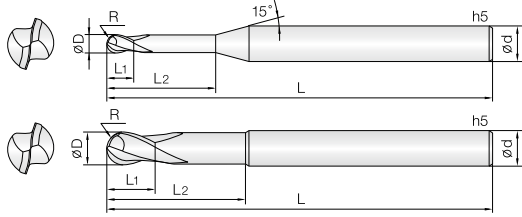


2날 45° 헬릭스 알루미늄 전용 볼 엔드밀



2

WC
미립자

R
± 0.005

R
± 0.01

R
± 0.015

45°
Helix Angle

CUTTING
DATA

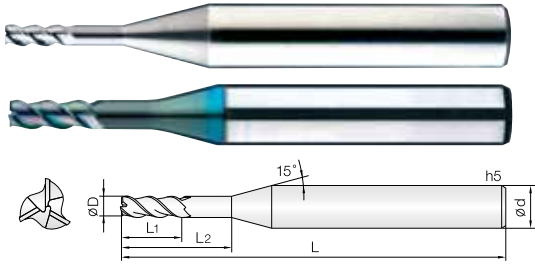
0.25 ~ 2.5R 3R ~ 6R 8R 485P

- 알루미늄, 알루미늄 합금, 동 및 동합금 등 비철 비금속 계열 전용 엔드밀
- 날부인선을 고광면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- 45° 헬릭스 형상과 깊은 포켓으로 설계하여 칩배출이 우수하며, 고속, 고이송 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5µm)을 채택, 엔드밀의 파손을 최소화.
- Endmills for Aluminum, AL alloys, copper, copper alloys, non-ferrous and non-metallic materials.
- Applied fine WC grade for excellent surface finish.
- Minimize fracturing by high TRS fine(0.5µm) WC grade.
- High speed, feed applicable by 45° degree helix and deep chip pocket design

D Size	D Tolerance
Ø 0.5 ~ 5	+0 ~ -0.01mm
Ø 6 ~ 12	-0.005 ~ -0.015mm
Ø 16	-0.01 ~ -0.02mm

단위 : mm

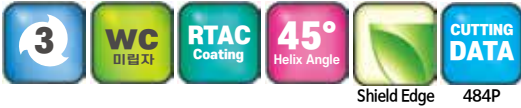
Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2ALB 005 010 S04	0.25R X 0.5	0.7	1	45	4	
2ALB 005 020 S04	0.25R X 0.5	0.7	2	45	4	
2ALB 005 030 S04	0.25R X 0.5	0.7	3	45	4	
2ALB 005 040 S04	0.25R X 0.5	0.7	4	45	4	
2ALB 005 050 S04	0.25R X 0.5	0.7	5	45	4	
2ALB 005 060 S04	0.25R X 0.5	0.7	6	45	4	
2ALB 006 020 S04	0.3R X 0.6	0.9	2	45	4	
2ALB 006 030 S04	0.3R X 0.6	0.9	3	45	4	
2ALB 006 040 S04	0.3R X 0.6	0.9	4	45	4	
2ALB 006 050 S04	0.3R X 0.6	0.9	5	45	4	
2ALB 006 060 S04	0.3R X 0.6	0.9	6	45	4	
2ALB 006 080 S04	0.3R X 0.6	0.9	8	45	4	
2ALB 006 100 S04	0.3R X 0.6	0.9	10	45	4	
2ALB 008 020 S04	0.4R X 0.8	1.2	2	45	4	
2ALB 008 030 S04	0.4R X 0.8	1.2	3	45	4	
2ALB 008 040 S04	0.4R X 0.8	1.2	4	45	4	
2ALB 008 060 S04	0.4R X 0.8	1.2	6	45	4	
2ALB 008 080 S04	0.4R X 0.8	1.2	8	45	4	
2ALB 008 100 S04	0.4R X 0.8	1.2	10	45	4	
2ALB 008 120 S04	0.4R X 0.8	1.2	12	45	4	
2ALB 010 030 S04	0.5R X 1	1.5	3	50	4	
2ALB 010 050 S04	0.5R X 1	1.5	5	50	4	
2ALB 010 080 S04	0.5R X 1	1.5	8	50	4	
2ALB 010 100 S04	0.5R X 1	1.5	10	50	4	
2ALB 010 120 S04	0.5R X 1	1.5	12	50	4	
2ALB 010 160 S04	0.5R X 1	1.5	16	50	4	
2ALB 010 200 S04	0.5R X 1	1.5	20	50	4	
2ALB 012 030 S04	0.6R X 1.2	1.8	3	50	4	
2ALB 012 040 S04	0.6R X 1.2	1.8	4	50	4	
2ALB 012 060 S04	0.6R X 1.2	1.8	6	50	4	
2ALB 012 080 S04	0.6R X 1.2	1.8	8	50	4	
2ALB 012 100 S04	0.6R X 1.2	1.8	10	50	4	
2ALB 012 120 S04	0.6R X 1.2	1.8	12	50	4	
2ALB 015 050 S04	0.75R X 1.5	2	5	50	4	
2ALB 015 080 S04	0.75R X 1.5	2	8	50	4	
2ALB 015 100 S04	0.75R X 1.5	2	10	50	4	
2ALB 015 120 S04	0.75R X 1.5	2	12	50	4	
2ALB 015 160 S04	0.75R X 1.5	2	16	50	4	
2ALB 015 200 S04	0.75R X 1.5	2	20	50	4	
2ALB 020 050 S06	1R X 2	3	5	50	6	
2ALB 020 080 S06	1R X 2	3	8	50	6	
2ALB 020 100 S06	1R X 2	3	10	50	6	
2ALB 020 120 S06	1R X 2	3	12	60	6	
2ALB 020 160 S06	1R X 2	3	16	60	6	
2ALB 020 200 S06	1R X 2	3	20	60	6	
2ALB 020 250 S06	1R X 2	3	25	65	6	
2ALB 025 060 S06	1.25R X 2.5	4	6	50	6	
2ALB 025 100 S06	1.25R X 2.5	4	10	50	6	
2ALB 025 120 S06	1.25R X 2.5	4	12	60	6	
2ALB 025 160 S06	1.25R X 2.5	4	16	60	6	



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 날부인선을 고풍면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- 다양한 작업에 맞추어 짧은 날장에 유효장을 적용하였습니다.
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 2중 인선과 홈포켓을 깊게 설계하여 칩착현상을 최소화 하였습니다.

Endmills for Aluminum, AL alloys, non-ferrous and non-metallic materials.

- Applied fine WC grade for excellent surface finish.
- Applied short flute length for various applications.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.



D Size	D Tolerance
∅0.8 ~ 20	+0 ~ -0.01mm

단위 : mm

Order Number		날경	날장	유효장	전장	샙크	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated	Diameter D	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	비코팅 Un coated	코팅 Coated
3ALR 008 016 S04	3ALRC 008 016 S04	0.8	1.6	-	50	4		
3ALR 008 030 S04	3ALRC 008 030 S04	0.8	1.6	3	50	4		
3ALR 008 040 S04	3ALRC 008 040 S04	0.8	1.6	4	50	4		
3ALR 008 050 S04	3ALRC 008 050 S04	0.8	1.6	5	50	4		
3ALR 008 060 S04	3ALRC 008 060 S04	0.8	1.6	6	50	4		
3ALR 008 080 S04	3ALRC 008 080 S04	0.8	1.6	8	50	4		
3ALR 008 100 S04	3ALRC 008 100 S04	0.8	1.6	10	50	4		
3ALR 008 120 S04	3ALRC 008 120 S04	0.8	1.6	12	50	4		
3ALR 010 020 S06	3ALRC 010 020 S06	1	2	-	60	6		
3ALR 010 040 S06	3ALRC 010 040 S06	1	2	4	60	6		
3ALR 010 060 S06	3ALRC 010 060 S06	1	2	6	60	6		
3ALR 010 080 S06	3ALRC 010 080 S06	1	2	8	60	6		
3ALR 010 100 S06	3ALRC 010 100 S06	1	2	10	60	6		
3ALR 010 120 S06	3ALRC 010 120 S06	1	2	12	60	6		
3ALR 010 140 S06	3ALRC 010 140 S06	1	2	14	60	6		
3ALR 010 160 S06	3ALRC 010 160 S06	1	2	16	60	6		
3ALR 010 180 S06		1	2	18	60	6		
3ALR 010 200 S06		1	2	20	60	6		
3ALR 015 030 S06	3ALRC 015 030 S06	1.5	3	-	60	6		
3ALR 015 060 S06	3ALRC 015 060 S06	1.5	3	6	60	6		
3ALR 015 080 S06	3ALRC 015 080 S06	1.5	3	8	60	6		
3ALR 015 100 S06	3ALRC 015 100 S06	1.5	3	10	60	6		
3ALR 015 120 S06	3ALRC 015 120 S06	1.5	3	12	60	6		
3ALR 015 140 S06	3ALRC 015 140 S06	1.5	3	14	60	6		
3ALR 015 160 S06	3ALRC 015 160 S06	1.5	3	16	60	6		
3ALR 015 180 S06	3ALRC 015 180 S06	1.5	3	18	60	6		
3ALR 015 200 S06	3ALRC 015 200 S06	1.5	3	20	60	6		
3ALR 015 220 S06		1.5	3	22	65	6		
3ALR 015 250 S06		1.5	3	25	65	6		
3ALR 020 040 S06	3ALRC 020 040 S06	2	4	-	60	6		
3ALR 020 080 S06	3ALRC 020 080 S06	2	4	8	60	6		
3ALR 020 100 S06	3ALRC 020 100 S06	2	4	10	60	6		
3ALR 020 120 S06	3ALRC 020 120 S06	2	4	12	60	6		
3ALR 020 140 S06	3ALRC 020 140 S06	2	4	14	60	6		
3ALR 020 160 S06	3ALRC 020 160 S06	2	4	16	60	6		
3ALR 020 200 S06	3ALRC 020 200 S06	2	4	20	60	6		
3ALR 020 220 S06	3ALRC 020 220 S06	2	4	22	60	6		
3ALR 020 250 S06	3ALRC 020 250 S06	2	4	25	65	6		
3ALR 020 280 S06		2	4	28	70	6		
3ALR 020 300 S06		2	4	30	70	6		
3ALR 025 050 S06	3ALRC 025 050 S06	2.5	5	-	60	6		
3ALR 025 100 S06	3ALRC 025 100 S06	2.5	5	10	60	6		
3ALR 025 150 S06	3ALRC 025 150 S06	2.5	5	15	60	6		
3ALR 025 200 S06	3ALRC 025 200 S06	2.5	5	20	60	6		
3ALR 025 250 S06	3ALRC 025 250 S06	2.5	5	25	65	6		
3ALR 025 300 S06	3ALRC 025 300 S06	2.5	5	30	70	6		
3ALR 025 350 S06		2.5	5	35	80	6		
3ALR 025 400 S06		2.5	5	40	90	6		
3ALR 030 060 S06	3ALRC 030 060 S06	3	6	-	60	6		
3ALR 030 100 S06	3ALRC 030 100 S06	3	6	10	60	6		

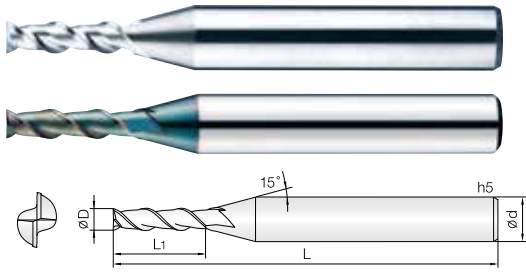


단위 : mm

Order Number		날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated						비코팅 Un coated	코팅 Coated
3ALR 030 150 S06	3ALRC 030 150 S06	3	6	15	60	6		
3ALR 030 200 S06	3ALRC 030 200 S06	3	6	20	70	6		
3ALR 030 250 S06	3ALRC 030 250 S06	3	6	25	70	6		
3ALR 030 300 S06	3ALRC 030 300 S06	3	6	30	80	6		
3ALR 030 350 S06	3ALRC 030 350 S06	3	6	35	80	6		
3ALR 030 400 S06	3ALRC 030 400 S06	3	6	40	90	6		
3ALR 030 450 S06		3	6	45	90	6		
3ALR 030 500 S06		3	6	50	100	6		
3ALR 040 080 S06	3ALRC 040 080 S06	4	8	-	70	6		
3ALR 040 100 S06	3ALRC 040 100 S06	4	8	10	70	6		
3ALR 040 150 S06	3ALRC 040 150 S06	4	8	15	70	6		
3ALR 040 200 S06	3ALRC 040 200 S06	4	8	20	70	6		
3ALR 040 250 S06	3ALRC 040 250 S06	4	8	25	70	6		
3ALR 040 300 S06	3ALRC 040 300 S06	4	8	30	80	6		
3ALR 040 350 S06	3ALRC 040 350 S06	4	8	35	80	6		
3ALR 040 400 S06	3ALRC 040 400 S06	4	8	40	90	6		
3ALR 040 450 S06		4	8	45	90	6		
3ALR 040 500 S06		4	8	50	100	6		
3ALR 050 100 S06	3ALRC 050 100 S06	5	10	-	80	6		
3ALR 050 200 S06	3ALRC 050 200 S06	5	10	20	80	6		
3ALR 050 300 S06	3ALRC 050 300 S06	5	10	30	80	6		
3ALR 050 400 S06	3ALRC 050 400 S06	5	10	40	90	6		
3ALR 050 500 S06	3ALRC 050 500 S06	5	10	50	100	6		
3ALR 050 600 S06		5	10	60	110	6		
3ALR 060 200 S06	3ALRC 060 200 S06	6	12	20	80	6		
3ALR 060 400 S06	3ALRC 060 400 S06	6	12	40	80	6		
3ALR 060 600 110	3ALRC 060 600 110	6	12	60	110	6		
3ALR 060 800 120		6	12	80	120	6		
3ALR 080 400 S08	3ALRC 080 400 S08	8	16	40	100	8		
3ALR 080 600 110	3ALRC 080 600 110	8	16	60	110	8		
3ALR 080 800 120		8	16	80	120	8		
3ALR 100 500 S10	3ALRC 100 500 S10	10	20	50	110	10		
3ALR 100 700 120	3ALRC 100 700 120	10	20	70	120	10		
3ALR 100 900 150		10	20	90	150	10		
3ALR 120 500 S12	3ALRC 120 500 S12	12	24	50	110	12		
3ALR 120 700 130	3ALRC 120 700 130	12	24	70	130	12		
3ALR 120 900 150		12	24	90	150	12		
3ALR 140 600 110		14	28	60	110	14		
3ALR 140 800 120		14	28	80	120	14		
3ALR 160 800 130		16	32	80	130	16		
3ALR 160 1000 160		16	32	100	160	16		
3ALR 200 800 130		20	40	80	130	20		
3ALR 200 1200 160		20	40	120	160	20		
3ALR 200 1500 200		20	40	150	200	20		

FOR ALUMINUM

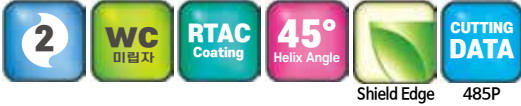
2날45° 헬릭스 알루미늄 전용 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 날부 인선을 고광면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- 다양한 날장(S, L, ExL, Etc) 선택으로 맞춤 가공이 가능합니다.
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 2중 인선과 홈포켓을 깊게 설계하여 흡착현상을 최소화 하였습니다.

Endmills for Aluminum, AL alloys, non-ferrous and non-metallic materials

- Applied fine WC grade for excellent surface finish.
- Various flute length design for covering wide range application.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.



D Size	D Tolerance
Ø 0.5 ~ 20	+0 ~ -0.01mm

단위 : mm

Order Number		날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤프크 Shank Dia d	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated					비코팅 Un coated	코팅 Coated
2ALE 005 005 S04	2ALEC 005 005 S04	0.5	0.5	40	4		
2ALE 005 010 S04	2ALEC 005 010 S04	0.5	1	40	4		
2ALE 005 015 S04	2ALEC 005 015 S04	0.5	1.5	40	4		
2ALE 005 020 S04	2ALEC 005 020 S04	0.5	2	40	4		
2ALE 005 025 S04		0.5	2.5	40	4		
2ALE 005 030 S04		0.5	3	40	4		
2ALE 006 006 S04	2ALEC 006 006 S04	0.6	0.6	40	4		
2ALE 006 012 S04	2ALEC 006 012 S04	0.6	1.2	40	4		
2ALE 006 020 S04	2ALEC 006 020 S04	0.6	2	40	4		
2ALE 006 030 S04		0.6	3	40	4		
2ALE 006 040 S04		0.6	4	40	4		
2ALE 007 007 S04	2ALEC 007 007 S04	0.7	0.7	40	4		
2ALE 007 014 S04	2ALEC 007 014 S04	0.7	1.4	40	4		
2ALE 007 020 S04	2ALEC 007 020 S04	0.7	2	40	4		
2ALE 007 030 S04		0.7	3	40	4		
2ALE 007 040 S04		0.7	4	40	4		
2ALE 008 008 S04	2ALEC 008 008 S04	0.8	0.8	40	4		
2ALE 008 016 S04	2ALEC 008 016 S04	0.8	1.6	40	4		
2ALE 008 020 S04	2ALEC 008 020 S04	0.8	2	40	4		
2ALE 008 030 S04		0.8	3	40	4		
2ALE 008 040 S04		0.8	4	40	4		
2ALE 009 009 S04	2ALEC 009 009 S04	0.9	0.9	40	4		
2ALE 009 018 S04	2ALEC 009 018 S04	0.9	1.8	40	4		
2ALE 009 025 S04	2ALEC 009 025 S04	0.9	2.5	40	4		
2ALE 009 040 S04		0.9	4	40	4		
2ALE 010 015 S04	2ALEC 010 015 S04	1	1.5	40	4		
2ALE 010 015 S06	2ALEC 010 015 S06	1	1.5	40	6		
2ALE 010 025 S04	2ALEC 010 025 S04	1	2.5	40	4		
2ALE 010 025 S06	2ALEC 010 025 S06	1	2.5	40	6		
2ALE 010 035 S04	2ALEC 010 035 S04	1	3.5	40	4		
2ALE 010 035 S06	2ALEC 010 035 S06	1	3.5	40	6		
2ALE 010 050 S06	2ALEC 010 050 S06	1	5	45	6		
2ALE 010 060 S06	2ALEC 010 060 S06	1	6	45	6		
2ALE 010 080 S06	2ALEC 010 080 S06	1	8	45	6		
2ALE 010 100 S06	2ALEC 010 100 S06	1	10	45	6		
2ALE 010 120 S06		1	12	45	6		
2ALE 012 030 S06	2ALEC 012 030 S06	1.2	3	40	6		
2ALE 012 040 S06	2ALEC 012 040 S06	1.2	4	40	6		
2ALE 012 060 S06	2ALEC 012 060 S06	1.2	6	40	6		
2ALE 012 080 S06		1.2	8	45	6		
2ALE 012 100 S06		1.2	10	45	6		
2ALE 015 040 S06	2ALEC 015 040 S06	1.5	4	40	6		
2ALE 015 060 S06	2ALEC 015 060 S06	1.5	6	40	6		
2ALE 015 080 S06	2ALEC 015 080 S06	1.5	8	45	6		
2ALE 015 100 S06	2ALEC 015 100 S06	1.5	10	50	6		
2ALE 015 120 S06	2ALEC 015 120 S06	1.5	12	50	6		
2ALE 015 150 S06	2ALEC 015 150 S06	1.5	15	55	6		
2ALE 015 180 S06		1.5	18	60	6		
2ALE 020 050 S06	2ALEC 020 050 S06	2	5	45	6		
2ALE 020 070 S06	2ALEC 020 070 S06	2	7	45	6		

단위 : mm

Order Number		날경	날장	전장	샙크	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	비코팅 Un coated	코팅 Coated
2ALE 020 100 S06	2ALEC 020 100 S06	2	10	50	6		
2ALE 020 120 S06	2ALEC 020 120 S06	2	12	50	6		
2ALE 020 140 S06	2ALEC 020 140 S06	2	14	50	6		
2ALE 020 160 S06	2ALEC 020 160 S06	2	16	60	6		
2ALE 020 180 S06		2	18	60	6		
2ALE 020 200 S06		2	20	60	6		
2ALE 025 080 S06	2ALEC 025 080 S06	2.5	8	45	6		
2ALE 025 120 S06	2ALEC 025 120 S06	2.5	12	50	6		
2ALE 025 150 S06	2ALEC 025 150 S06	2.5	15	60	6		
2ALE 025 180 S06		2.5	18	60	6		
2ALE 025 200 S06		2.5	20	60	6		
2ALE 030 080 S06	2ALEC 030 080 S06	3	8	45	6		
2ALE 030 100 S06	2ALEC 030 100 S06	3	10	45	6		
2ALE 030 120 S06	2ALEC 030 120 S06	3	12	50	6		
2ALE 030 150 S06	2ALEC 030 150 S06	3	15	50	6		
2ALE 030 200 S06	2ALEC 030 200 S06	3	20	60	6		
2ALE 030 250 S06	2ALEC 030 250 S06	3	25	65	6		
2ALE 030 300 S06		3	30	70	6		
2ALE 035 100 S06	2ALEC 035 100 S06	3.5	10	45	6		
2ALE 035 150 S06	2ALEC 035 150 S06	3.5	15	50	6		
2ALE 035 200 S06		3.5	20	60	6		
2ALE 040 120 S06	2ALEC 040 120 S06	4	12	50	6		
2ALE 040 150 S06	2ALEC 040 150 S06	4	15	55	6		
2ALE 040 180 S06	2ALEC 040 180 S06	4	18	55	6		
2ALE 040 250 S06	2ALEC 040 250 S06	4	25	65	6		
2ALE 040 300 S06	2ALEC 040 300 S06	4	30	70	6		
2ALE 040 350 S06		4	35	75	6		
2ALE 040 400 S06		4	40	80	6		
2ALE 045 120 S06	2ALEC 045 120 S06	4.5	12	50	6		
2ALE 045 180 S06	2ALEC 045 180 S06	4.5	18	55	6		
2ALE 045 220 S06		4.5	22	65	6		
2ALE 045 250 S06		4.5	25	70	6		
2ALE 050 150 S06	2ALEC 050 150 S06	5	15	50	6		
2ALE 050 200 S06	2ALEC 050 200 S06	5	20	60	6		
2ALE 050 250 S06	2ALEC 050 250 S06	5	25	65	6		
2ALE 050 300 S06	2ALEC 050 300 S06	5	30	70	6		
2ALE 050 400 S06		5	40	80	6		
2ALE 055 150 S06	2ALEC 055 150 S06	5.5	15	50	6		
2ALE 060 150 S06	2ALEC 060 150 S06	6	15	50	6		
2ALE 060 200 S06	2ALEC 060 200 S06	6	20	60	6		
2ALE 060 250 S06	2ALEC 060 250 S06	6	25	65	6		
2ALE 060 300 S06	2ALEC 060 300 S06	6	30	70	6		
2ALE 060 350 S06	2ALEC 060 350 S06	6	35	75	6		
2ALE 060 400 S06	2ALEC 060 400 S06	6	40	80	6		
2ALE 060 450 S06		6	45	90	6		
2ALE 060 500 S06		6	50	100	6		
2ALE 070 200 S08	2ALEC 070 200 S08	7	20	60	8		
2ALE 070 300 S08	2ALEC 070 300 S08	7	30	70	8		
2ALE 080 200 S08	2ALEC 080 200 S08	8	20	60	8		
2ALE 080 250 S08	2ALEC 080 250 S08	8	25	65	8		

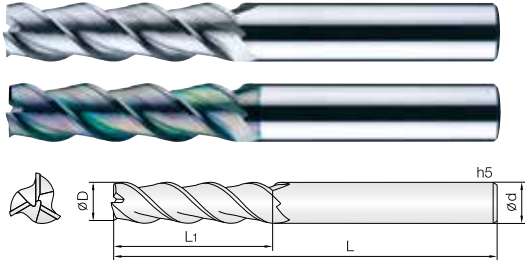
FOR ALUMINUM

단위: mm

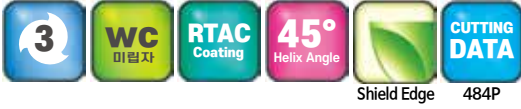
Order Number		날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated					비코팅 Un coated	코팅 Coated
2ALE 080 300 S08	2ALEC 080 300 S08	8	30	70	8		
2ALE 080 400 S08	2ALEC 080 400 S08	8	40	80	8		
2ALE 080 450 S08	2ALEC 080 450 S08	8	45	90	8		
2ALE 080 500 S08		8	50	100	8		
2ALE 100 250 S10	2ALEC 100 250 S10	10	25	70	10		
2ALE 100 300 S10	2ALEC 100 300 S10	10	30	75	10		
2ALE 100 350 S10	2ALEC 100 350 S10	10	35	80	10		
2ALE 100 450 S10	2ALEC 100 450 S10	10	45	90	10		
2ALE 100 500 S10	2ALEC 100 500 S10	10	50	100	10		
2ALE 100 600 S10		10	60	110	10		
2ALE 120 300 S12	2ALEC 120 300 S12	12	30	75	12		
2ALE 120 350 S12	2ALEC 120 350 S12	12	35	80	12		
2ALE 120 400 S12	2ALEC 120 400 S12	12	40	90	12		
2ALE 120 450 S12	2ALEC120 450 S12	12	45	100	12		
2ALE 120 500 S12	2ALEC 120 500 S12	12	50	100	12		
2ALE 120 600 S12	2ALEC 120 600 S12	12	60	110	12		
2ALE 120 700 S12		12	70	120	12		
2ALE 140 300 S14	2ALEC 140 300 S14	14	30	80	14		
2ALE 140 500 S14		14	50	90	14		
2ALE 140 600 S14		14	60	110	14		
2ALE 160 400 S16	2ALEC 160 400 S16	16	40	90	16		
2ALE 160 550 S16	2ALEC 160 550 S16	16	55	110	16		
2ALE 160 700 S16	2ALEC 160 700 S16	16	70	120	16		
2ALE 160 900 S16		16	90	150	16		
2ALE 200 450 S20	2ALEC 200 450 S20	20	45	100	20		
2ALE 200 650 S20	2ALEC 200 650 S20	20	65	120	20		
2ALE 200 800 S20	2ALEC 200 800 S20	20	80	135	20		
2ALE 200 1000 S20		20	100	160	20		

FOR ALUMINUM

3날 45° 헬릭스 알루미늄 전용 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 날부 인선을 고풍면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- 다양한 날장(S, L, ExL, Etc) 선택으로 맞춤 가공이 가능합니다.
- 코팅 피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 2중 인선과 홈포켓을 깊게 설계하여 흡착현상을 최소화 하였습니다.
- Endmills for Aluminum, AL alloys, non-ferrous and non-metallic materials
- Applied fine WC grade for excellent surface finish.
- Various flute length design for covering wide range application.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.



D Size	D Tolerance
ø0.8 ~ 20	+0 ~ -0.01mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	
					비코팅 Un coated	코팅 Coated
3ALE 008 012 S04	0.8	1.2	40	4		
3ALE 008 020 S04	0.8	2	40	4		
3ALE 008 030 S04	0.8	3	40	4		
3ALE 008 040 S04	0.8	4	40	4		
3ALE 010 015 S06	1	1.5	40	6		
3ALE 010 030 S06	1	3	40	6		
3ALE 010 050 S06	1	5	45	6		
3ALE 010 060 S06	1	6	45	6		
3ALE 010 080 S06	1	8	45	6		
3ALE 010 100 S06	1	10	45	6		
3ALE 010 120 S06	1	12	50	6		
3ALE 010 140 S06	1	14	50	6		
3ALE 012 030 S06	1.2	3	40	6		
3ALE 012 040 S06	1.2	4	40	6		
3ALE 012 060 S06	1.2	6	45	6		
3ALE 012 080 S06	1.2	8	45	6		
3ALE 012 100 S06	1.2	10	45	6		
3ALE 012 120 S06	1.2	12	50	6		
3ALE 015 025 S06	1.5	2.5	40	6		
3ALE 015 040 S06	1.5	4	40	6		
3ALE 015 060 S06	1.5	6	45	6		
3ALE 015 080 S06	1.5	8	45	6		
3ALE 015 100 S06	1.5	10	50	6		
3ALE 015 120 S06	1.5	12	50	6		
3ALE 015 150 S06	1.5	15	50	6		
3ALE 015 180 S06	1.5	18	60	6		
3ALE 015 200 S06	1.5	20	60	6		
3ALE 020 030 S06	2	3	45	6		
3ALE 020 050 S06	2	5	45	6		
3ALE 020 070 S06	2	7	45	6		
3ALE 020 100 S06	2	10	50	6		
3ALE 020 120 S06	2	12	50	6		
3ALE 020 140 S06	2	14	60	6		
3ALE 020 160 S06	2	16	60	6		
3ALE 020 180 S06	2	18	60	6		
3ALE 020 200 S06	2	20	60	6		
3ALE 020 220 S06	2	22	60	6		
3ALE 020 250 S06	2	25	65	6		
3ALE 025 040 S06	2.5	4	45	6		
3ALE 025 080 S06	2.5	8	45	6		
3ALE 025 120 S06	2.5	12	50	6		
3ALE 025 150 S06	2.5	15	60	6		
3ALE 025 200 S06	2.5	20	60	6		
3ALE 025 250 S06	2.5	25	65	6		
3ALE 030 045 S06	3	4.5	45	6		
3ALE 030 080 S06	3	8	45	6		
3ALE 030 120 S06	3	12	50	6		
3ALE 030 150 S06	3	15	50	6		
3ALE 030 200 S06	3	20	55	6		
3ALE 030 250 S06	3	25	60	6		

단위 : mm

Order Number		날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샹크 Shank Dia d	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated					비코팅 Un coated	코팅 Coated
3ALE 030 300 S06	3ALEC 030 300 S06	3	30	65	6		
3ALE 030 350 S06		3	35	75	6		
3ALE 030 400 S06		3	40	80	6		
3ALE 035 055 S06	3ALEC 035 055 S06	3.5	5.5	45	6		
3ALE 035 100 S06	3ALEC 035 100 S06	3.5	10	45	6		
3ALE 035 150 S06	3ALEC 035 150 S06	3.5	15	50	6		
3ALE 035 200 S06	3ALEC 035 200 S06	3.5	20	55	6		
3ALE 035 250 S06	3ALEC 035 250 S06	3.5	25	60	6		
3ALE 035 300 S06	3ALEC 035 300 S06	3.5	30	65	6		
3ALE 035 350 S06		3.5	35	75	6		
3ALE 040 060 S06	3ALEC 040 060 S06	4	6	45	6		
3ALE 040 110 S06	3ALEC 040 110 S06	4	11	45	6		
3ALE 040 160 S06	3ALEC 040 160 S06	4	16	50	6		
3ALE 040 200 S06	3ALEC 040 200 S06	4	20	55	6		
3ALE 040 250 S06	3ALEC 040 250 S06	4	25	60	6		
3ALE 040 300 S06	3ALEC 040 300 S06	4	30	65	6		
3ALE 040 350 S06		4	35	75	6		
3ALE 040 400 S06		4	40	80	6		
3ALE 045 120 S06	3ALEC 045 120 S06	4.5	12	50	6		
3ALE 045 180 S06	3ALEC 045 180 S06	4.5	18	55	6		
3ALE 045 250 S06	3ALEC 045 250 S06	4.5	25	60	6		
3ALE 045 300 S06	3ALEC 045 300 S06	4.5	30	65	6		
3ALE 050 075 S06	3ALEC 050 075 S06	5	7.5	50	6		
3ALE 050 130 S06	3ALEC 050 130 S06	5	13	50	6		
3ALE 050 200 S06	3ALEC 050 200 S06	5	20	55	6		
3ALE 050 250 S06	3ALEC 050 250 S06	5	25	60	6		
3ALE 050 300 S06	3ALEC 050 300 S06	5	30	65	6		
3ALE 050 350 S06	3ALEC 050 350 S06	5	35	70	6		
3ALE 050 400 S06	3ALEC 050 400 S06	5	40	75	6		
3ALE 050 450 S06		5	45	80	6		
3ALE 055 150 S06	3ALEC 055 150 S06	5.5	15	50	6		
3ALE 055 200 S06	3ALEC 055 200 S06	5.5	20	55	6		
3ALE 055 250 S06	3ALEC 055 250 S06	5.5	25	60	6		
3ALE 060 090 050	3ALEC 060 090 050	6	9	50	6		
3ALE 060 150 050	3ALEC 060 150 050	6	15	50	6		
3ALE 060 200 055	3ALEC 060 200 055	6	20	55	6		
3ALE 060 250 060	3ALEC 060 250 060	6	25	60	6		
3ALE 060 300 070	3ALEC 060 300 070	6	30	70	6		
3ALE 060 350 070	3ALEC 060 350 070	6	35	70	6		
3ALE 060 400 075	3ALEC 060 400 075	6	40	75	6		
3ALE 060 450 080	3ALEC 060 450 080	6	45	80	6		
3ALE 060 500 090	3ALEC 060 500 090	6	50	90	6		
3ALE 070 200 060	3ALEC 070 200 060	7	20	60	8		
3ALE 070 300 075	3ALEC 070 300 075	7	30	75	8		
3ALE 070 400 090	3ALEC 070 400 090	7	40	90	8		
3ALE 080 120 060	3ALEC 080 120 060	8	12	60	8		
3ALE 080 200 060	3ALEC 080 200 060	8	20	60	8		
3ALE 080 250 065	3ALEC 080 250 065	8	25	65	8		
3ALE 080 300 070	3ALEC 080 300 070	8	30	70	8		
3ALE 080 350 075	3ALEC 080 350 075	8	35	75	8		

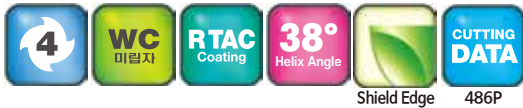
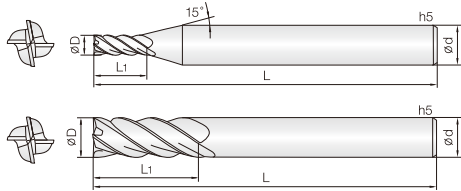


단위 : mm

Order Number		날경	날장	전장	샤희	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	비코팅 Un coated	코팅 Coated
3ALE 080 400 080	3ALEC 080 400 080	8	40	80	8		
3ALE 080 450 090	3ALEC 080 450 090	8	45	90	8		
3ALE 080 500 090	3ALEC 080 500 090	8	50	90	8		
3ALE 080 550 100	3ALEC 080 550 100	8	55	100	8		
3ALE 080 600 110	3ALEC 080 600 110	8	60	110	8		
3ALE 080 700 120	3ALEC 080 700 120	8	70	120	8		
3ALE 100 150 070	3ALEC 100 150 070	10	15	70	10		
3ALE 100 250 070	3ALEC 100 250 070	10	25	70	10		
3ALE 100 300 075	3ALEC 100 300 075	10	30	75	10		
3ALE 100 350 080	3ALEC 100 350 080	10	35	80	10		
3ALE 100 400 090	3ALEC 100 400 090	10	40	90	10		
3ALE 100 450 090	3ALEC 100 450 090	10	45	90	10		
3ALE 100 500 100	3ALEC 100 500 100	10	50	100	10		
3ALE 100 550 100	3ALEC 100 550 100	10	55	100	10		
3ALE 100 600 110	3ALEC 100 600 110	10	60	110	10		
3ALE 100 650 110	3ALEC 100 650 110	10	65	110	10		
3ALE 100 700 120	3ALEC 100 700 120	10	70	120	10		
3ALE 100 800 130	3ALEC 100 800 130	10	80	130	10		
3ALE 120 180 075	3ALEC 120 180 075	12	18	75	12		
3ALE 120 260 075	3ALEC 120 260 075	12	26	75	12		
3ALE 120 350 080	3ALEC 120 350 080	12	35	80	12		
3ALE 120 400 090	3ALEC 120 400 090	12	40	90	12		
3ALE 120 450 090	3ALEC 120 450 090	12	45	90	12		
3ALE 120 500 100	3ALEC 120 500 100	12	50	100	12		
3ALE 120 550 100	3ALEC 120 550 100	12	55	100	12		
3ALE 120 650 110	3ALEC 120 650 110	12	65	110	12		
3ALE 120 700 120	3ALEC 120 700 120	12	70	120	12		
3ALE 120 800 130	3ALEC 120 800 130	12	80	130	12		
3ALE 140 300 080	3ALEC 140 300 080	14	30	80	14		
3ALE 140 450 110	3ALEC 140 450 110	14	45	110	14		
3ALE 140 600 120		14	60	120	14		
3ALE 160 300 090	3ALEC 160 300 090	16	30	90	16		
3ALE 160 500 110	3ALEC 160 500 110	16	50	110	16		
3ALE 160 650 120	3ALEC 160 650 120	16	65	120	16		
3ALE 160 800 130	3ALEC 160 800 130	16	80	130	16		
3ALE 160 1000 160	3ALEC 160 1000 160	16	100	160	16		
3ALE 200 500 100	3ALEC 200 500 100	20	50	100	20		
3ALE 200 750 130	3ALEC 200 750 130	20	75	130	20		
3ALE 200 1000 160	3ALEC 200 1000 160	20	100	160	20		
3ALE 200 1300 200	3ALEC 200 1300 200	20	130	200	20		
3ALE 200 1500 220	3ALEC 200 1500 220	20	150	220	20		

FOR ALUMINUM

4날 알루미늄 고이송 전용 엔드밀



Shield Edge 486P

- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 강력한 채터링 방지 설계로 측벽 가공 시 엔드밀의 진동을 최소화하였습니다.
- 2중 인선을 적용하여 중, 황삭 가공 시 뛰어난 성능을 발휘합니다.
- 코팅 피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 홈포켓을 깊게 설계하여 흡착현상을 최소화 하였습니다.

Endmills for Aluminum, AL alloys, non-ferrous and non-metallic materials

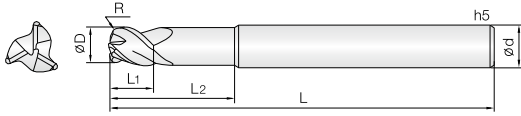
- The powerful anti-chattering design minimizes the vibration of the endmill during side milling.
- Excellent performance in semi-finishing and roughing by applying a double cutting edge.
- the poket is deeply designed to adsorption.

Condition	D Size	D Tolerance	Condition	D Size	D Tolerance
øD ≠ ød	ø3 ~ 6	+0 ~ -0.01mm	øD = ød	ø6	-0.005 ~ -0.015mm
	ø8 ~ 20	+0 ~ -0.015mm		ø8 ~ 12	-0.01 ~ -0.025mm
		ø16 ~ 20		-0.015 ~ -0.03mm	

단위 : mm

Order Number		날경	날장	전장	생크	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated	Diameter D	Length of cut L1	Overall Length L	Shank Dia d	비코팅 Un coated	코팅 Coated
4ALE 030 120 S06	4ALEC 030 120 S06	3	12	50	6		
4ALE 030 150 S06	4ALEC 030 150 S06	3	15	50	6		
4ALE 030 150 070	4ALEC 030 150 070	3	15	70	6		
4ALE 030 200 S06	4ALEC 030 200 S06	3	20	55	6		
4ALE 040 110 S06	4ALEC 040 110 S06	4	11	50	6		
4ALE 040 160 S06	4ALEC 040 160 S06	4	16	50	6		
4ALE 040 160 070	4ALEC 040 160 070	4	16	70	6		
4ALE 040 200 S06	4ALEC 040 200 S06	4	20	55	6		
4ALE 050 130 S06	4ALEC 050 130 S06	5	13	50	6		
4ALE 050 200 S06	4ALEC 050 200 S06	5	20	55	6		
4ALE 050 200 080	4ALEC 050 200 080	5	20	80	6		
4ALE 050 250 S06	4ALEC 050 250 S06	5	25	60	6		
4ALE 060 150 S06	4ALEC 060 150 S06	6	15	50	6		
4ALE 060 200 S06	4ALEC 060 200 S06	6	20	55	6		
4ALE 060 200 080	4ALEC 060 200 080	6	20	80	6		
4ALE 060 250 S06	4ALEC 060 250 S06	6	25	60	6		
4ALE 060 300 S06	4ALEC 060 300 S06	6	30	70	6		
4ALE 080 200 S08	4ALEC 080 200 S08	8	20	60	8		
4ALE 080 250 S08	4ALEC 080 250 S08	8	25	65	8		
4ALE 080 250 090	4ALEC 080 250 090	8	25	90	8		
4ALE 080 300 S08	4ALEC 080 300 S08	8	30	70	8		
4ALE 080 350 S08	4ALEC 080 350 S08	8	35	75	8		
4ALE 100 250 S10	4ALEC 100 250 S10	10	25	70	10		
4ALE 100 300 S10	4ALEC 100 300 S10	10	30	75	10		
4ALE 100 300 100	4ALEC 100 300 100	10	30	100	10		
4ALE 100 350 S10	4ALEC 100 350 S10	10	35	80	10		
4ALE 100 400 S10	4ALEC 100 400 S10	10	40	90	10		
4ALE 120 260 S12	4ALEC 120 260 S12	12	26	75	12		
4ALE 120 350 S12	4ALEC 120 350 S12	12	35	80	12		
4ALE 120 350 110	4ALEC 120 350 110	12	35	110	12		
4ALE 120 400 S12	4ALEC 120 400 S12	12	40	90	12		
4ALE 120 450 S12	4ALEC 120 450 S12	12	45	90	12		
4ALE 160 300 S16	4ALEC 160 300 S16	16	30	90	16		
4ALE 160 500 S16	4ALEC 160 500 S16	16	50	110	16		
4ALE 160 500 150	4ALEC 160 500 150	16	50	150	16		
4ALE 160 650 S16	4ALEC 160 650 S16	16	65	120	16		
4ALE 160 800 S16	4ALEC 160 800 S16	16	80	130	16		
4ALE 200 500 S20	4ALEC 200 500 S20	20	50	110	20		
4ALE 200 750 S20	4ALEC 200 750 S20	20	75	130	20		
4ALE 200 750 160	4ALEC 200 750 160	20	75	160	20		
4ALE 200 1000 S20	4ALEC 200 1000 S20	20	100	160	20		

3날 45° 헬릭스 알루미늄 전용 코너 레디우스 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 날부 인선을 고광면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- 2중 인선과 홈포켓을 깊게 설계하여 흠착현상을 최소화 하였습니다.
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 3날45°헬릭스의 짧은 날장으로 설계, 고속 고이송 작업에 적합합니다.

Endmills for Aluminum, AL alloys, non-ferrous and non-metallic materials

- Applied fine WC grade for excellent surface finish.
- Minimize built up edge by double edge and deep pocket design.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- High speed, feed applicable by 3 flute 45° degree helix and short flute design.

3

WC
미립자

RTAC
Coating

R
± 0.005

R
± 0.01

R
± 0.015

45°
Helix Angle

CUTTING
DATA

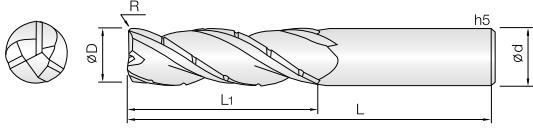
R0.5 R1 ~ 1.5 R2 ~ 5 487P

D Size	D Tolerance
Ø 3 ~ 20	+0 ~ -0.015mm

단위 : mm

Order Number		날경	날장	유효장	전장	샤프크	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated	Diameter D × R	Length of cut L1	Effective Length L2	Overall Length L	Shank Dia d	비코팅 Un coated	코팅 Coated
3ALC 030 005 050	3ALCC 030 005 050	3 X R0.5	10	-	50	6		
3ALC 030 005 060	3ALCC 030 005 060	3 X R0.5	10	15	60	6		
3ALC 030 010 050	3ALCC 030 010 050	3 X R1	10	-	50	6		
3ALC 030 010 060	3ALCC 030 010 060	3 X R1	10	15	60	6		
3ALC 040 005 050	3ALCC 040 005 050	4 X R0.5	12	-	50	6		
3ALC 040 005 060	3ALCC 040 005 060	4 X R0.5	12	20	60	6		
3ALC 040 010 050	3ALCC 040 010 050	4 X R1	12	-	50	6		
3ALC 040 010 060	3ALCC 040 010 060	4 X R1	12	20	60	6		
3ALC 050 005 050	3ALCC 050 005 050	5 X R0.5	15	-	50	6		
3ALC 050 005 060	3ALCC 050 005 060	5 X R0.5	15	20	60	6		
3ALC 050 010 050	3ALCC 050 010 050	5 X R1	15	-	50	6		
3ALC 050 010 060	3ALCC 050 010 060	5 X R1	15	20	60	6		
3ALC 060 005 050	3ALCC 060 005 050	6 X R0.5	15	-	50	6		
3ALC 060 005 070	3ALCC 060 005 070	6 X R0.5	7	20	70	6		
3ALC 060 010 050	3ALCC 060 010 050	6 X R1	15	-	50	6		
3ALC 060 010 070	3ALCC 060 010 070	6 X R1	7	20	70	6		
3ALC 080 005 060	3ALCC 080 005 060	8 X R0.5	20	-	60	8		
3ALC 080 005 080	3ALCC 080 005 080	8 X R0.5	9	25	80	8		
3ALC 080 010 060	3ALCC 080 010 060	8 X R1	20	-	60	8		
3ALC 080 010 080	3ALCC 080 010 080	8 X R1	9	25	80	8		
3ALC 080 020 060	3ALCC 080 020 060	8 X R2	20	-	60	8		
3ALC 080 020 080	3ALCC 080 020 080	8 X R2	9	25	80	8		
3ALC 080 025 080	3ALCC 080 025 080	8 X R2.5	9	25	80	8		
3ALC 100 005 070	3ALCC 100 005 070	10 X R0.5	25	-	70	10		
3ALC 100 005 100	3ALCC 100 005 100	10 X R0.5	11	30	100	10		
3ALC 100 010 070	3ALCC 100 010 070	10 X R1	25	-	70	10		
3ALC 100 010 100	3ALCC 100 010 100	10 X R1	11	30	100	10		
3ALC 100 015 070	3ALCC 100 015 070	10 X R1.5	25	-	70	10		
3ALC 100 015 100	3ALCC 100 015 100	10 X R1.5	11	30	100	10		
3ALC 100 020 070	3ALCC 100 020 070	10 X R2	25	-	70	10		
3ALC 100 020 100	3ALCC 100 020 100	10 X R2	11	30	100	10		
3ALC 100 025 100	3ALCC 100 025 100	10 X R2.5	11	30	100	10		
3ALC 120 005 075	3ALCC 120 005 075	12 X R0.5	30	-	75	12		
3ALC 120 005 110	3ALCC 120 005 110	12 X R0.5	13	36	110	12		
3ALC 120 010 075	3ALCC 120 010 075	12 X R1	30	-	75	12		
3ALC 120 010 110	3ALCC 120 010 110	12 X R1	13	36	110	12		
3ALC 120 015 075	3ALCC 120 015 075	12 X R1.5	30	-	75	12		
3ALC 120 015 110	3ALCC 120 015 110	12 X R1.5	13	36	110	12		
3ALC 120 020 075	3ALCC 120 020 075	12 X R2	30	-	75	12		
3ALC 120 020 110	3ALCC 120 020 110	12 X R2	13	36	110	12		
3ALC 120 025 110	3ALCC 120 025 110	12 X R2.5	13	36	110	12		
3ALC 120 030 075	3ALCC 120 030 075	12 X R3	30	-	75	12		
3ALC 120 030 110	3ALCC 120 030 110	12 X R3	13	36	110	12		
3ALC 120 040 075	3ALCC 120 040 075	12 X R4	30	-	75	12		
3ALC 120 040 110	3ALCC 120 040 110	12 X R4	13	36	110	12		
3ALC 160 005 130	3ALCC 160 005 130	16 X R0.5	17	50	130	16		
3ALC 160 010 090	3ALCC 160 010 090	16 X R1	35	-	90	16		
3ALC 160 010 130	3ALCC 160 010 130	16 X R1	17	50	130	16		
3ALC 160 020 090	3ALCC 160 020 090	16 X R2	35	-	90	16		
3ALC 160 020 130	3ALCC 160 020 130	16 X R2	17	50	130	16		

3날 알루미늄 고이송 황삭 전용 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 칩 브레이커와 홀포켓을 깊게 설계하여 흡착현상을 최소화하며, 종삭 및 황삭의 고속 작업시 우수한 성능을 보냅니다.
- 코팅 피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수합니다
- 일반 알루미늄 라핑과 다르게 피삭재의 가공면이 깨끗합니다.
- 항절력이 높은 미립자 초경합금을 채택, 엔드밀의 파손을 최소화 하였습니다.

• Endmills for Aluminum, AL alloys, non-ferrous and non-metallic materials

- Minimize built up edge by chip braker and deep pocket design.
- Tetrabond TAC coating provides high hardness and low friction on the coating layer
- Good surface integrity differently from competitor's AL roughing endmills.
- Minimize fracturing by high TRS fine(0.5 μ m) WC grade.



Condition	D Size	D Tolerance	Condition	D Size	D Tolerance
$\phi D \neq \phi d$	$\phi 3 - 6$	$+0 \sim -0.01\text{mm}$	$\phi D = \phi d$	$\phi 6$	$-0.005 \sim -0.015\text{mm}$
	$\phi 8 - 20$	$+0 \sim -0.015\text{mm}$		$\phi 8 \sim 12$	$-0.01 \sim -0.025\text{mm}$
		$\phi 16 \sim 20$		$-0.015 \sim -0.03\text{mm}$	

단위 : mm

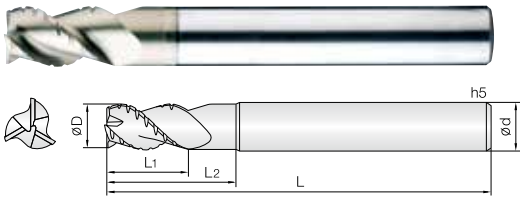
Order Number		날경	날장	전장	샤프트	비고	
		Diameter	Length of cut	Overall Length	Shank Dia	비코팅	코팅
		D x R	L1	L	d	Un coated	Coated
비코팅 Un coated		RTAC 코팅 RTAC Coated					
3ALCB 030 080 S06	3ALCBC 030 080 S06	3 X R0.2	8	55	6		
3ALCB 030 110 S06	3ALCBC 030 110 S06	3 X R0.2	11	55	6		
3ALCB 040 100 S06	3ALCBC 040 100 S06	4 X R0.2	10	55	6		
3ALCB 040 130 S06	3ALCBC 040 130 S06	4 X R0.2	13	55	6		
3ALCB 050 120 S06	3ALCBC 050 120 S06	5 X R0.2	12	55	6		
3ALCB 050 170 S06	3ALCBC 050 170 S06	5 X R0.2	17	55	6		
3ALCB 060 170 S06	3ALCBC 060 170 S06	6 X R0.2	17	60	6		
3ALCB 060 250 S06	3ALCBC 060 250 S06	6 X R0.2	25	80	6		
3ALCB 080 220 S08	3ALCBC 080 220 S08	8 X R0.2	22	70	8		
3ALCB 080 300 S08	3ALCBC 080 300 S08	8 X R0.2	30	90	8		
3ALCB 100 270 S10	3ALCBC 100 270 S10	10 X R0.2	27	75	10		
3ALCB 100 400 S10	3ALCBC 100 400 S10	10 X R0.2	40	100	10		
3ALCB 120 350 S12	3ALCBC 120 350 S12	12 X R0.2	35	80	12		
3ALCB 120 500 S12	3ALCBC 120 500 S12	12 X R0.2	50	110	12		
3ALCB 160 420 S16	3ALCBC 160 420 S16	16 X R0.2	42	100	16		
3ALCB 160 520 S16	3ALCBC 160 520 S16	16 X R0.2	52	150	16		
3ALCB 200 480 S20	3ALCBC 200 480 S20	20 X R0.2	48	100	20		
3ALCB 200 550 S20	3ALCBC 200 550 S20	20 X R0.2	55	160	20		

FOR ALUMINUM

3ARE

3 Flutes Semi-Finishing & Roughing End Mills for Aluminum

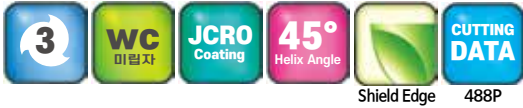
3날 알루미늄 세미 피니싱 & 라핑 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 칩 브레이커와 홈포켓을 깊게 설계하여 흡착현상을 최소화하며, 중삭 및 황삭의 고속 작업시 우수한 성능을 보입니다.
- 일반 알루미늄 라핑과 다르게 피삭재의 가공면이 깨끗합니다.
- 항절력이 높은 미립자 초경합금을 채택, 엔드밀의 파손을 최소화 하였습니다.

High speed semi finishing and roughing Endmills for Aluminum, AL alloys, non-ferrous and non-metallic materials.

- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize built up edge by chip braker and deep pocket design.
- Minimize fracturing by high TRS fine (0.5 μ m) WC grade.
- Good surface integrity differently from competitor's AL roughing endmills.



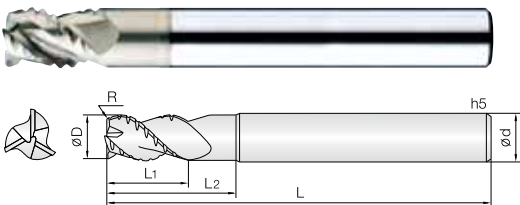
D Size	D Tolerance
Ø 6 ~ 8	-0.02 ~ -0.04mm
Ø 10 ~ 20	-0.02 ~ -0.05mm

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
3ARE 060 150 S06	6	10	15	50	6		3ARE 200 500 S20	20	35	50	110	20	
3ARE 060 200 S06	6	15	20	70	6		3ARE 200 600 S20	20	45	60	120	20	
3ARE 080 200 S08	8	15	20	60	8								
3ARE 080 250 S08	8	20	25	80	8								
3ARE 100 250 S10	10	18	25	70	10								
3ARE 100 300 S10	10	23	30	90	10								
3ARE 120 300 S12	12	20	30	80	12								
3ARE 120 400 S12	12	30	40	100	12								
3ARE 160 350 S16	16	25	35	110	16								
3ARE 160 500 S16	16	35	50	120	16								

3ARC

3 Flutes Semi-Finishing & Roughing Corner Radius End Mills for Aluminum

3날 알루미늄 세미 피니싱 & 라핑 코너 레디우스 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 칩 브레이커와 홈포켓을 깊게 설계하여 흡착현상을 최소화하며, 중삭 및 황삭의 고속 작업시 우수한 성능을 보입니다.
- 일반 알루미늄 라핑과 다르게 피삭재의 가공면이 깨끗합니다.
- 항절력이 높은 미립자 초경합금을 채택, 엔드밀의 파손을 최소화 하였습니다.

High speed semi finishing and roughing End Mills for Aluminum, AL alloys, non-ferrous and non-metallic materials

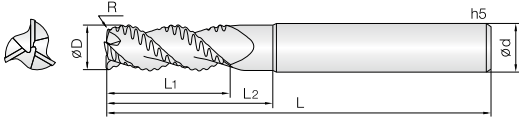
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize built up edge by chip braker and deep pocket design.
- Minimize fracturing by high TRS fine (0.5 μ m) WC grade.
- Good surface integrity differently from competitor's AL roughing endmills.



D Size	D Tolerance
Ø 6 ~ 8	-0.02 ~ -0.04mm
Ø 10 ~ 20	-0.02 ~ -0.05mm

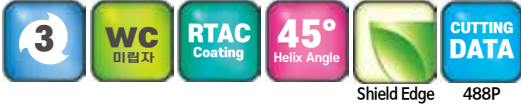
Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
3ARC 060 005 S06	6 X R0.5	9	15	65	6		3ARC 200 020 S20	20 X R2	30	50	110	20	
3ARC 060 010 S06	6 X R1	9	15	65	6		3ARC 200 030 S20	20 X R3	30	50	110	20	
3ARC 080 005 S08	8 X R0.5	12	20	70	8								
3ARC 080 010 S08	8 X R1	12	20	70	8								
3ARC 100 010 S10	10 X R1	15	25	75	10								
3ARC 100 020 S10	10 X R2	15	25	75	10								
3ARC 120 010 S12	12 X R1	20	30	80	12								
3ARC 120 020 S12	12 X R2	20	30	80	12								
3ARC 120 030 S12	12 X R3	20	30	80	12								
3ARC 160 010 S16	16 X R1	25	35	110	16								
3ARC 160 020 S16	16 X R2	25	35	110	16								
3ARC 160 030 S16	16 X R3	25	35	110	16								

FOR ALUMINUM



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열의 고속 중삭 및 황삭
- 칩 브레이커와 홈포켓을 깊게 설계하여 흠착현상을 최소화하며, 중삭 및 황삭의 고속 작업시 우수한 성능을 보입니다.
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 항절력이 높은 미립자 초경합금을 채택하여 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.

- High speed semi finishing and roughing Endmills for Aluminum, AL alloys, non-ferrous and non-metallic materials
- Minimize built up edge by chip braker and deep pocket design.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize fracturing at high feed by high TRS fine WC grade.



D Size	D Tolerance
Ø 4 ~ 8	-0.02 ~ -0.04mm
Ø 10 ~ 20	-0.02 ~ -0.05mm

단위 : mm

Order Number		날경 Diameter	날장 Length of cut	유효장 Effective Length	전장 Overall Length	샤프크 Shank Dia	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated	D	L1	L2	L	d	비코팅 Un coated	코팅 Coated
3ARO 040 080 S06	3AROC 040 080 S06	4	8	-	50	6		
3ARO 040 150 S06	3AROC 040 150 S06	4	10	15	60	6		
3ARO 050 100 S06	3AROC 050 100 S06	5	10	-	60	6		
3ARO 050 200 S06	3AROC 050 200 S06	5	15	20	60	6		
3ARO 060 120 S06	3AROC 060 120 S06	6	12	-	60	6		
New 3ARO 060 150 S06	New 3AROC 060 150 S06	6	15	-	60	6		
3ARO 060 210 S06	3AROC 060 210 S06	6	16	21	65	6		
New 3ARO 060 250 080	New 3AROC 060 250 080	6	25	-	80	6		
3ARO 080 160 S08	3AROC 080 160 S08	8	16	-	70	8		
New 3ARO 080 200 S08	New 3AROC 080 200 S08	8	20	-	70	8		
3ARO 080 270 S08	3AROC 080 270 S08	8	21	27	70	8		
New 3ARO 080 300 S08	New 3AROC 080 300 S08	8	30	-	90	8		
3ARO 100 200 S10	3AROC 100 200 S10	10	20	-	70	10		
New 3ARO 100 250 S10	New 3AROC 100 250 S10	10	25	-	70	10		
3ARO 100 310 S10	3AROC 100 310 S10	10	26	31	75	10		
New 3ARO 100 400 S10	New 3AROC 100 400 S10	10	40	-	100	10		
3ARO 120 240 S12	3AROC 120 240 S12	12	24	-	75	12		
New 3ARO 120 300 S12	New 3AROC 120 300 S12	12	30	-	80	12		
3ARO 120 380 S12	3AROC 120 380 S12	12	30	38	80	12		
New 3ARO 120 500 S12	New 3AROC 120 500 S12	12	50	-	110	12		
New 3ARO 140 350 S14	New 3AROC 140 350 S14	14	35	-	90	14		
3ARO 160 320 S16	3AROC 160 320 S16	16	32	-	100	16		
New 3ARO 160 420 S16	New 3AROC 160 420 S16	16	42	-	100	16		
3ARO 160 450 S16	3AROC 160 450 S16	16	36	45	100	16		
New 3ARO 160 520 S16	New 3AROC 160 520 S16	16	52	-	150	16		
New 3ARO 180 450 S18	New 3AROC 180 450 S18	18	45	-	100	18		
New 3ARO 200 480 S20	New 3AROC 200 480 S20	20	48	-	100	20		
3ARO 200 550 S20	3AROC 200 550 S20	20	41	55	110	20		
New 3ARO 200 550 160	New 3AROC 200 550 160	20	55	-	160	20		