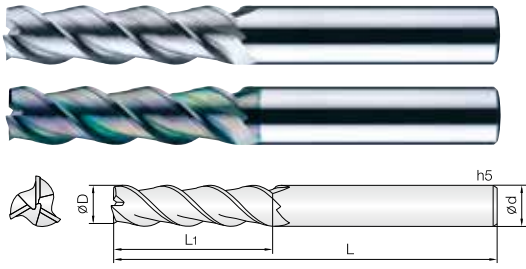
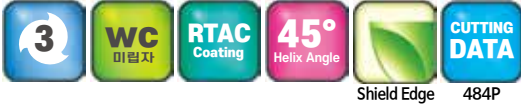


3날 45° 헬릭스 알루미늄 전용 엔드밀



- 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	샙크 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 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤홅크 Shank Dia d	비고	
비코팅 Un coated	RTAC 코팅 RTAC Coated					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

피삭재 Material	알루미늄 합금 Aluminum Alloy Expanding Material AL7075				알루미늄 합금 주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting AC4B / Si13%				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100	
	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
∅ 1	37,500	220	50,000	1,170	37,400	220	50,000	1,170	27,000	160	49,000	820
∅ 1.5	37,500	300	50,000	1,430	37,400	300	50,000	1,430	18,000	170	34,700	820
∅ 2	30,000	350	40,000	1,430	30,000	350	40,000	1,430	13,500	180	28,000	880
∅ 3	20,000	600	27,000	1,430	20,000	600	27,000	1,430	9,400	260	20,000	880
∅ 4	15,000	610	20,000	1,430	14,700	610	20,000	1,430	7,000	270	15,200	880
∅ 6	10,000	700	13,000	1,430	10,000	700	13,000	1,430	4,700	290	9,400	880
∅ 8	7,800	780	11,000	1,560	7,800	780	10,700	1,560	3,400	390	7,700	940
∅ 10	5,900	850	7,800	1,820	5,900	850	7,800	1,820	2,700	390	5,600	1,000
∅ 12	4,000	900	5,900	1,950	4,000	900	5,900	1,950	2,100	410	4,200	1,100
측면절삭 Side Cutting	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae
	1.2D	0.1D	1D	0.1D	1.2D	0.1D	1D	0.1D	1D	0.1D	1D	0.05D
홈절삭 Slotting	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae
	0.3D	0.8D	0.15D	0.8D	0.3D	0.8D	0.15D	0.8D	0.3D	0.8D	0.1D	0.8D
절입량 Depth of Cut												

- 유효장이 긴 경우에는 회전수와 이송속도를 최대 20% 이하로 줄이십시오.
- 측면 절삭시 코너R 부분을 참고하여 절삭하시기 바랍니다.
- 홈 절삭시 날경의 코너R 대비 Ae 값을 설정 하십시오.
- 상기 절삭조건은 참고 수치이므로 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망 합니다.
- 에어브로 혹은 미스트 쿨러를 추천하며 칩 제거 주의 및 가공시 발열, 발화에 주의 하십시오.

- In case of long effective length, reduce the RPM and feed by 20% or less.
- Refer to the corner radius value for side milling
- Consider the corner radius value when you set up the Ae value.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- Air blow or mist coolant is recommended and note for chip emission, heat, or ignition.

3ALR/3ALE

피삭재 Material	알루미늄합금 Aluminum Alloys etc AL7075							
외경 Outside Diameter	3ALR Type				3ALE Type			
	RPM	FEED			RPM	FEED		
		수직 Vertical	홈절삭 Solting	측면절삭 Side Milling		수직 Vertical	홈절삭 Solting	측면절삭 Side Milling
∅ 1	35,000	150	585	715	32,000	130	501	605
∅ 2	30,000	225	1,170	1,398	25,500	190	995	1,170
∅ 3	21,600	225	1,300	1,560	18,400	190	1,100	1,300
∅ 4	16,200	300	1,300	1,560	14,000	255	1,100	1,300
∅ 5	13,000	300	1,300	1,560	11,000	255	1,100	1,300
∅ 6	10,800	300	1,300	1,560	9,200	255	1,100	1,300
∅ 8	8,100	300	1,300	1,560	7,000	255	1,100	1,300
∅ 10	6,480	250	1,300	1,560	5,500	210	1,100	1,300
∅ 12	5,400	200	1,300	1,560	4,400	170	1,100	1,300
∅ 16	-	-	-	-	3,200	130	995	1,235
∅ 20	-	-	-	-	2,000	85	884	1,105
Milling Amount (mm)		Ap=0.75D	Ap=0.75D	Ap=0.75D/ Ae=0.3D		Ap=0.75D	Ap=0.75D	Ap=0.75D/ Ae=0.3D
절입량 Depth of Cut								