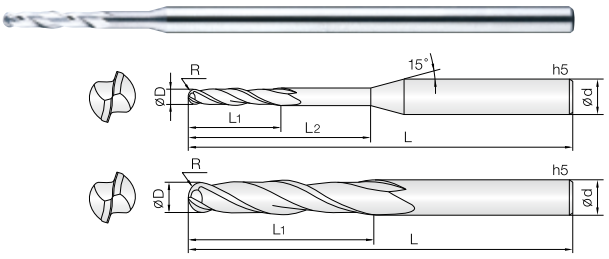
2MLB

2 Flutes Micro Long Ball End Mills

2날 ABS수지 가공용 마이크로 롱 볼 엔드밀



- 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 전용 엔드밀
- 균일한 런아웃 공차관리로 떨림을 최소화 하였습니다.
- 깊은 피삭재 가공시 긴 날장을 채택하여 가공이 용이하며, 칩배출이 좋습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.

- Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials
- Minimize chattering by even run-out and tolerance control.
- Long flute helps chip control in deep groove machining.
- Excellent wear resistance by applying fine WC grade.

2 | WC 미립자 | R ± 0.005 (0.1 ~ 2.5R) | R ± 0.01 (3 ~ 6R) | R ± 0.015 (8R) | 30° Helix Angle | CUTTING DATA 499P

Condition	D Size	D Tolerance
ØD ≠ Ød	Ø0.2 ~ 6	+0 ~ -0.01mm
	Ø8 ~ 16	+0 ~ -0.015mm

Condition	D Size	D Tolerance
ØD = Ød	Ø3 ~ 6	-0.005 ~ -0.015mm
	Ø8 ~ 12	-0.01 ~ -0.025mm
	Ø16	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2MLB 002 010 S03	0.1R X 0.2	0.4	1	40	3	
2MLB 002 015 S03	0.1R X 0.2	0.4	1.5	40	3	
2MLB 002 020 S03	0.1R X 0.2	0.4	2	40	3	
2MLB 003 010 S03	0.15R X 0.3	1	-	45	3	
2MLB 003 015 S03	0.15R X 0.3	1	1.5	45	3	
2MLB 003 018 S03	0.15R X 0.3	1.8	-	45	3	
2MLB 003 020 S03	0.15R X 0.3	1	2	45	3	
2MLB 003 025 S03	0.15R X 0.3	1	2.5	45	3	
2MLB 003 030 S03	0.15R X 0.3	1	3	45	3	
2MLB 003 040 S03	0.15R X 0.3	1	4	45	3	
2MLB 004 012 S03	0.2R X 0.4	1.2	-	45	3	
2MLB 004 020 S03	0.2R X 0.4	2	-	45	3	
2MLB 004 030 S03	0.2R X 0.4	1.2	3	45	3	
2MLB 004 040 S03	0.2R X 0.4	1.2	4	45	3	
2MLB 004 050 S03	0.2R X 0.4	1.2	5	45	3	
2MLB 005 015 S03	0.25R X 0.5	1.5	-	50	3	
2MLB 005 020 S03	0.25R X 0.5	2	-	50	3	
2MLB 005 030 S03	0.25R X 0.5	1.5	3	50	3	
2MLB 005 040 S03	0.25R X 0.5	1.5	4	50	3	
2MLB 005 050 S03	0.25R X 0.5	1.5	5	50	3	
2MLB 005 060 S03	0.25R X 0.5	1.5	6	50	3	
2MLB 005 080 S03	0.25R X 0.5	1.5	8	50	3	
2MLB 005 100 S03	0.25R X 0.5	1.5	10	50	3	
2MLB 006 030 S03	0.3R X 0.6	3	-	50	3	
2MLB 006 060 S03	0.3R X 0.6	3	6	50	3	
2MLB 006 080 S03	0.3R X 0.6	3	8	50	3	
2MLB 006 100 S03	0.3R X 0.6	3	10	50	3	
2MLB 007 030 S03	0.35R X 0.7	3	-	50	3	
2MLB 007 070 S03	0.35R X 0.7	3	7	50	3	
2MLB 007 100 S03	0.35R X 0.7	3	10	50	3	
2MLB 007 120 S03	0.35R X 0.7	3	12	50	3	
2MLB 008 040 S03	0.4R X 0.8	4	-	50	3	
2MLB 008 080 S03	0.4R X 0.8	4	8	50	3	
2MLB 008 100 S03	0.4R X 0.8	4	10	50	3	
2MLB 008 120 S03	0.4R X 0.8	4	12	50	3	
2MLB 009 040 S03	0.45R X 0.9	4	-	50	3	
2MLB 009 060 S03	0.45R X 0.9	4	6	50	3	
2MLB 009 080 S03	0.45R X 0.9	4	8	50	3	
2MLB 009 100 S03	0.45R X 0.9	4	10	50	3	
2MLB 010 050 S03	0.5R X 1	5	-	80	3	
2MLB 010 050 S04	0.5R X 1	5	-	80	4	
2MLB 010 100 S03	0.5R X 1	5	10	80	3	
2MLB 010 100 S04	0.5R X 1	5	10	80	4	
2MLB 010 150 S03	0.5R X 1	5	15	80	3	
2MLB 010 150 S04	0.5R X 1	5	15	80	4	
2MLB 010 200 S03	0.5R X 1	5	20	80	3	
2MLB 010 200 S04	0.5R X 1	5	20	80	4	
2MLB 010 250 S03	0.5R X 1	5	25	80	3	
2MLB 010 250 S04	0.5R X 1	5	25	80	4	
2MLB 010 300 S03	0.5R X 1	5	30	80	3	

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2MLB 010 300 S04	0.5R X 1	5	30	80	4	
2MLB 010 350 S04	0.5R X 1	5	35	100	4	
2MLB 010 400 S04	0.5R X 1	5	40	100	4	
2MLB 015 100 S03	0.75R X 1.5	10	-	80	3	
2MLB 015 100 S04	0.75R X 1.5	10	-	80	4	
2MLB 015 150 S03	0.75R X 1.5	10	15	80	3	
2MLB 015 150 S04	0.75R X 1.5	10	15	80	4	
2MLB 015 200 S03	0.75R X 1.5	10	20	80	3	
2MLB 015 200 S04	0.75R X 1.5	10	20	80	4	
2MLB 015 250 S03	0.75R X 1.5	10	25	80	3	
2MLB 015 250 S04	0.75R X 1.5	10	25	80	4	
2MLB 015 300 S03	0.75R X 1.5	10	30	80	3	
2MLB 015 300 S04	0.75R X 1.5	10	30	80	4	
2MLB 015 350 S04	0.75R X 1.5	10	35	100	4	
2MLB 015 400 S04	0.75R X 1.5	10	40	100	4	
2MLB 020 100 S03	1R X 2	10	-	80	3	
2MLB 020 100 S04	1R X 2	10	-	80	4	
2MLB 020 150 S03	1R X 2	10	15	80	3	
2MLB 020 150 S04	1R X 2	10	15	80	4	
2MLB 020 200 S03	1R X 2	10	20	80	3	
2MLB 020 200 S04	1R X 2	10	20	80	4	
2MLB 020 250 S03	1R X 2	10	25	80	3	
2MLB 020 250 S04	1R X 2	10	25	80	4	
2MLB 020 300 S03	1R X 2	10	30	80	3	
2MLB 020 300 S04	1R X 2	10	30	80	4	
2MLB 020 350 S03	1R X 2	10	35	80	3	
2MLB 020 350 S04	1R X 2	10	35	100	4	
2MLB 020 400 S03	1R X 2	10	40	80	3	
2MLB 020 400 S04	1R X 2	10	40	100	4	
2MLB 025 100 S03	1.25R X 2.5	10	-	80	3	
2MLB 025 150 S03	1.25R X 2.5	15	-	80	3	
2MLB 025 200 S03	1.25R X 2.5	15	20	80	3	
2MLB 030 100 060	1.5R X 3	10	-	60	3	
2MLB 030 200 080	1.5R X 3	20	-	80	3	
2MLB 030 200 100	1.5R X 3	20	-	100	3	
2MLB 030 200 120	1.5R X 3	20	-	120	3	
2MLB 030 150 S06	1.5R X 3	15	-	100	6	
2MLB 030 200 S06	1.5R X 3	15	20	100	6	
2MLB 030 250 S06	1.5R X 3	15	25	100	6	
2MLB 030 300 S06	1.5R X 3	15	30	100	6	
2MLB 030 400 S06	1.5R X 3	15	40	100	6	
2MLB 040 200 080	2R X 4	20	-	80	4	
2MLB 040 200 100	2R X 4	20	-	100	4	
2MLB 040 200 130	2R X 4	20	-	130	4	
2MLB 040 200 S06	2R X 4	20	-	100	6	
2MLB 040 250 S06	2R X 4	20	25	100	6	
2MLB 040 300 S06	2R X 4	20	30	100	6	
2MLB 040 400 S06	2R X 4	20	40	120	6	
2MLB 040 500 S06	2R X 4	20	50	120	6	
2MLB 050 300 100	2.5R X 5	30	-	100	5	

FOR A.B.S

단위 : mm

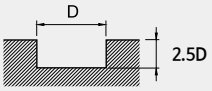
Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2MLB 050 300 120	2.5R X 5	30	-	120	5	
2MLB 060 300 080	3R X 6	30	-	80	6	
2MLB 060 400 100	3R X 6	40	-	100	6	
2MLB 060 400 120	3R X 6	40	-	120	6	
2MLB 060 400 150	3R X 6	40	-	150	6	
2MLB 080 450 120	4R X 8	45	-	120	8	
2MLB 080 450 150	4R X 8	45	-	150	8	
2MLB 100 500 120	5R X 10	50	-	120	10	
2MLB 100 500 150	5R X 10	50	-	150	10	
2MLB 120 550 130	6R X 12	55	-	130	12	
2MLB 120 550 150	6R X 12	55	-	150	12	
2MLB 160 700 160	8R X 16	70	-	160	16	

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고

FOR A.B.S

1MBE

• RPM : rev./min • Feed : mm/min

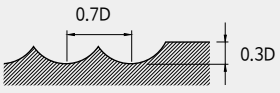
피삭재 Material	ABS 수지 / 아크릴 ABS resin / Acrylic			알루미늄합금 Aluminum Alloys AL7075		
외경 Outside Diameter	RPM	FEED	Ap (Axial Depth)	RPM	FEED	Ap (Axial Depth)
R0.5	41,600	2,200	2.5	29,900	1,430	2.5
R1	41,600	2,420	5	29,900	1,650	5
R1.5	32,500	2,640	7.5	23,400	1,870	7.5
R2	26,000	2,640	10	19,500	1,980	10
R2.5	19,500	2,420	12.5	15,600	1,980	12.5
R3	17,550	2,530	15	13,000	1,980	15
R4	17,000	2,640	20	12,500	2,090	20
R5	16,000	2,640	25	12,000	2,200	25
R6	14,000	2,420	30	10,000	2,090	30
R8	13,000	2,350	40	8,700	2,000	40
절입량 Depth of Cut						

- 절삭날의 칩 융착을 주의하십시오.
- 최대한 공구 진입 시 피삭재 밖에서 진입하십시오
- 상기 절살조건은 참고 수치이므로 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건 변경 요망합니다.
- 조건표가 기계의 최대 스핀들 속도를 초과하거나 버 및 적열 현상이 발생할 때 스핀들 속도와 이송 속도를 비례하여 조정 하십시오.

- Please be mindful of chip adhesion on the cutting edge.
- When entering the tool to the workpiece, enter the tool from outside to the workpiece.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If the table over the maximum RPM and feed of your machine, or found red heat on the material, adjust RPM and feed in the same proportion.

2MLB

• RPM : rev./min • Feed : mm/min

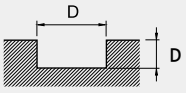
피삭재 Material	ABS 수지 / 아크릴 ABS resin / Acrylic			
반경 Radius	RPM	FEED	Ap Axial Depth	Ap Radial Depth
R 0.1	37,000	50	0.06	0.14
R 0.2	37,000	100	0.12	0.28
R 0.3	37,000	140	0.18	0.42
R 0.4	37,000	190	0.24	0.56
R 0.5	32,000	210	0.30	0.7
R 1	16,000	210	0.60	1.4
R 1.5	11,000	210	0.90	2.1
R 2	8,200	210	1.20	2.8
R 2.5	6,000	250	1.50	3.5
R 3	5,500	250	1.80	4.2
R 4	4,100	280	2.40	5.6
R 5	3,200	280	3.00	7.0
R 6	2,700	330	3.60	8.4
R 8	2,200	330	4.80	11.2
절입량 Depth of Cut				

- 유효장 길이가 긴 경우, RPM과 FEED를 동일 비율로 낮춰주세요.
- 상기 절사조건은 참고 수치이므로 실 가공시 가공 형상, 가공 목적, 적용기계에 따라 조건변경 요망 합니다.
- 적용 기계의 회전속도가 부족한 경우에는 회전 속도와 이송속도를 같은 비율로 줄여서 적용합니다.

- If the effective length is long, reduce the RPM and feed in the same proportion.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If the table over the maximum RPM and feed of your machine, adjust RPM and feed in the same proportion.

2MLE

• RPM : rev./min • Feed : mm/min

피삭재 Material	ABS 수지 / 아크릴 ABS resin / Acrylic			
외경 Outside Diameter	RPM	FEED	Ap Axial Depth	Ap Radial Depth
ø 0.2	50,000	100	0.2	0.2
ø 0.4	50,000	200	0.4	0.4
ø 0.5	50,000	240	0.5	0.5
ø 0.6	40,000	240	0.6	0.6
ø 0.8	30,000	240	0.8	0.8
ø 1	24,000	240	1	1
ø 2	12,000	240	2	2
ø 3	8,000	240	3	3
ø 4	6,000	240	4	4
ø 5	4,800	240	5	5
ø 6	4,000	260	6	6
ø 8	3,000	260	8	8
ø 10	3,000	260	10	10
ø 12	2,000	260	12	12
ø 16	1,400	260	16	16
절입량 Depth of Cut				

- 날 끝이 정밀하게 연삭되어 있습니다. 파손을 피하기 위해 가능하면 비접촉 방식으로 측정하십시오.
- 유효장 길이가 긴 경우, RPM과 FEED를 동일 비율로 낮춰주세요.
- 상기 절사조건은 참고 수치이므로 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망 합니다.
- 적용 기계의 회전 속도가 부족한 경우에는 회전 속도와 이송속도를 같은 비율로 줄여서 적용합니다.

- The edge of the flute precisely grinded. If you want to measure the tool, and to avoid damaging on the flutes, use non-contact measuring method.
- If the effective length is long, reduce the RPM and feed in the same proportion.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If the table over the maximum RPM and feed of your machine, adjust RPM and feed in the same proportion.