



- 그래파이트(흑연), 강화플라스틱, 탄소섬유 등 비철, 비금속 계열의 다양한 피삭재 전용 엔드밀
- CVD 순수다이아몬드 코팅을 적용하여 내마모성이 우수합니다.
- 다양한 피삭재의 형상에 적용하도록 규격을 다양화하여, 넓은 가공 영역에 뛰어난 수명과 성능을 발휘합니다.
- Endmills for Graphite, reinforced plastics, carbon fiber, Non-ferrous and non-metallic materials.
- Excellent wear resistance by applying qualified CVD diamond coating.
- Wide range products prepared for various work shape and excellent performance.

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WC
미립자

DIA.
Coating

R
±0.01

30°
Helix Angle

CUTTING
DATA

R0.02 ~ 1 471P

D Size	D Tolerance
Ø0.2 ~ 6	+0 ~ -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	유효장 Effective Length L2	전장 Overall Length L	샹크 Shank Dia d	비고
2DCR 002 0002 015	0.2 X R0.02	0.5	1.5	60	4		2DCR 015 0015 030	1.5 X R0.15	3	-	60	4	
2DCR 003 0002 015	0.3 X R0.02	0.6	1.5	60	4		2DCR 015 0015 050	1.5 X R0.15	3	5	60	4	
2DCR 003 0002 030	0.3 X R0.02	0.6	3	60	4		2DCR 015 0015 100	1.5 X R0.15	3	10	60	4	
2DCR 003 0002 045	0.3 X R0.02	0.6	4.5	60	4		2DCR 015 0015 150	1.5 X R0.15	3	15	60	4	
2DCR 003 0002 060	0.3 X R0.02	0.6	6	60	4		2DCR 015 0015 200	1.5 X R0.15	3	20	60	4	
2DCR 004 0002 020	0.4 X R0.02	0.8	2	60	4		2DCR 015 002 030	1.5 X R0.2	3	-	60	4	
2DCR 004 0002 040	0.4 X R0.02	0.8	4	60	4		2DCR 015 002 050	1.5 X R0.2	3	5	60	4	
2DCR 004 0002 060	0.4 X R0.02	0.8	6	60	4		2DCR 015 002 100	1.5 X R0.2	3	10	60	4	
2DCR 004 0002 080	0.4 X R0.02	0.8	8	60	4		2DCR 015 002 150	1.5 X R0.2	3	15	60	4	
2DCR 005 0005 010	0.5 X R0.05	1	-	60	4		2DCR 015 002 200	1.5 X R0.2	3	20	60	4	
2DCR 005 0005 025	0.5 X R0.05	1	2.5	60	4		2DCR 015 003 030	1.5 X R0.3	3	-	60	4	
2DCR 005 0005 035	0.5 X R0.05	1	3.5	60	4		2DCR 015 003 050	1.5 X R0.3	3	5	60	4	
2DCR 005 0005 050	0.5 X R0.05	1	5	60	4		2DCR 015 003 100	1.5 X R0.3	3	10	60	4	
2DCR 005 0005 075	0.5 X R0.05	1	7.5	60	4		2DCR 015 003 150	1.5 X R0.3	3	15	60	4	
2DCR 005 0005 100	0.5 X R0.05	1	10	60	4		2DCR 015 003 200	1.5 X R0.3	3	20	60	4	
2DCR 006 0005 012	0.6 X R0.05	1.2	-	60	4		2DCR 020 0005 035	2 X R0.05	3.5	-	60	4	
2DCR 006 0005 030	0.6 X R0.05	1.2	3	60	4		2DCR 020 0005 060	2 X R0.05	3.5	6	60	4	
2DCR 006 0005 060	0.6 X R0.05	1.2	6	60	4		2DCR 020 0005 120	2 X R0.05	3.5	12	60	4	
2DCR 006 0005 090	0.6 X R0.05	1.2	9	60	4		2DCR 020 0005 180	2 X R0.05	3.5	18	60	4	
2DCR 006 0005 120	0.6 X R0.05	1.2	12	60	4		2DCR 020 0005 250	2 X R0.05	3.5	25	60	4	
2DCR 008 0005 016	0.8 X R0.05	1.6	-	60	4		2DCR 020 0005 300	2 X R0.05	3.5	30	60	4	
2DCR 008 0005 040	0.8 X R0.05	1.6	4	60	4		New 2DCR 020 001 035	2 X R0.1	3.5	-	60	4	
2DCR 008 0005 080	0.8 X R0.05	1.6	8	60	4		New 2DCR 020 001 060	2 X R0.1	3.5	6	60	4	
2DCR 008 0005 100	0.8 X R0.05	1.6	10	60	4		New 2DCR 020 001 120	2 X R0.1	3.5	12	60	4	
2DCR 008 0005 160	0.8 X R0.05	1.6	16	60	4		New 2DCR 020 001 180	2 X R0.1	3.5	18	60	4	
2DCR 010 0005 020	1 X R0.05	2	-	60	4		New 2DCR 020 001 250	2 X R0.1	3.5	25	60	4	
2DCR 010 0005 050	1 X R0.05	2	5	60	4		New 2DCR 020 001 300	2 X R0.1	3.5	30	60	4	
2DCR 010 0005 100	1 X R0.05	2	10	60	4		2DCR 020 002 035	2 X R0.2	3.5	-	60	4	
2DCR 010 0005 150	1 X R0.05	2	15	60	4		2DCR 020 002 060	2 X R0.2	3.5	6	60	4	
2DCR 010 0005 200	1 X R0.05	2	20	60	4		2DCR 020 002 120	2 X R0.2	3.5	12	60	4	
2DCR 010 001 020	1 X R0.1	2	-	60	4		2DCR 020 002 180	2 X R0.2	3.5	18	60	4	
2DCR 010 001 050	1 X R0.1	2	5	60	4		2DCR 020 002 250	2 X R0.2	3.5	25	60	4	
2DCR 010 001 100	1 X R0.1	2	10	60	4		2DCR 020 002 300	2 X R0.2	3.5	30	60	4	
2DCR 010 001 150	1 X R0.1	2	15	60	4		2DCR 020 003 035	2 X R0.3	3.5	-	60	4	
2DCR 010 001 200	1 X R0.1	2	20	60	4		2DCR 020 003 060	2 X R0.3	3.5	6	60	4	
2DCR 010 002 020	1 X R0.2	2	-	60	4		2DCR 020 003 120	2 X R0.3	3.5	12	60	4	
2DCR 010 002 050	1 X R0.2	2	5	60	4		2DCR 020 003 180	2 X R0.3	3.5	18	60	4	
2DCR 010 002 100	1 X R0.2	2	10	60	4		2DCR 020 003 250	2 X R0.3	3.5	25	60	4	
2DCR 010 002 150	1 X R0.2	2	15	60	4		2DCR 020 003 300	2 X R0.3	3.5	30	60	4	
2DCR 010 002 200	1 X R0.2	2	20	60	4		2DCR 020 005 035	2 X R0.5	3.5	-	60	4	
2DCR 015 0005 030	1.5 X R0.05	3	-	60	4		2DCR 020 005 060	2 X R0.5	3.5	6	60	4	
2DCR 015 0005 050	1.5 X R0.05	3	5	60	4		2DCR 020 005 120	2 X R0.5	3.5	12	60	4	
2DCR 015 0005 100	1.5 X R0.05	3	10	60	4		2DCR 020 005 180	2 X R0.5	3.5	18	60	4	
2DCR 015 0005 150	1.5 X R0.05	3	15	60	4		2DCR 020 005 250	2 X R0.5	3.5	25	60	4	
2DCR 015 0005 200	1.5 X R0.05	3	20	60	4		2DCR 020 005 300	2 X R0.5	3.5	30	60	4	
2DCR 015 001 030	1.5 X R0.1	3	-	60	4		2DCR 030 0005 040	3 X R0.05	4	-	80	4	
2DCR 015 001 050	1.5 X R0.1	3	5	60	4		2DCR 030 0005 100	3 X R0.05	4	10	80	4	
2DCR 015 001 100	1.5 X R0.1	3	10	60	4		2DCR 030 0005 200	3 X R0.05	4	20	80	4	
2DCR 015 001 150	1.5 X R0.1	3	15	60	4		2DCR 030 0005 300	3 X R0.05	4	30	80	4	
2DCR 015 001 200	1.5 X R0.1	3	20	60	4		2DCR 030 0005 400	3 X R0.05	4	40	80	4	



단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2DCR 030 002 040	3 X R0.2	4	-	80	4		2DCR 060 0005 300	6 X R0.05	7	30	110	6	
2DCR 030 002 100	3 X R0.2	4	10	80	4		2DCR 060 0005 500	6 X R0.05	7	50	110	6	
2DCR 030 002 200	3 X R0.2	4	20	80	4		2DCR 060 002 070	6 X R0.2	7	-	110	6	
2DCR 030 002 300	3 X R0.2	4	30	80	4		2DCR 060 002 200	6 X R0.2	7	20	110	6	
2DCR 030 002 400	3 X R0.2	4	40	80	4		2DCR 060 002 300	6 X R0.2	7	30	110	6	
2DCR 030 003 040	3 X R0.3	4	-	80	4		2DCR 060 002 500	6 X R0.2	7	50	110	6	
2DCR 030 003 100	3 X R0.3	4	10	80	4		2DCR 060 005 070	6 X R0.5	7	-	110	6	
2DCR 030 003 200	3 X R0.3	4	20	80	4		2DCR 060 005 200	6 X R0.5	7	20	110	6	
2DCR 030 003 300	3 X R0.3	4	30	80	4		2DCR 060 005 300	6 X R0.5	7	30	110	6	
2DCR 030 003 400	3 X R0.3	4	40	80	4		2DCR 060 005 500	6 X R0.5	7	50	110	6	
2DCR 030 005 040	3 X R0.5	4	-	80	4		2DCR 060 010 070	6 X R1	7	-	110	6	
2DCR 030 005 100	3 X R0.5	4	10	80	4		2DCR 060 010 200	6 X R1	7	20	110	6	
2DCR 030 005 200	3 X R0.5	4	20	80	4		2DCR 060 010 300	6 X R1	7	30	110	6	
2DCR 030 005 300	3 X R0.5	4	30	80	4		2DCR 060 010 500	6 X R1	7	50	110	6	
2DCR 030 005 400	3 X R0.5	4	40	80	4								
2DCR 030 010 040	3 X R1	4	-	80	4								
2DCR 030 010 100	3 X R1	4	10	80	4								
2DCR 030 010 200	3 X R1	4	20	80	4								
2DCR 030 010 300	3 X R1	4	30	80	4								
2DCR 030 010 400	3 X R1	4	40	80	4								
2DCR 040 0005 050	4 X R0.05	5	-	80	4								
2DCR 040 0005 150	4 X R0.05	5	15	80	4								
2DCR 040 0005 250	4 X R0.05	5	25	80	4								
2DCR 040 0005 400	4 X R0.05	5	40	80	4								
2DCR 040 002 050	4 X R0.2	5	-	80	4								
2DCR 040 002 150	4 X R0.2	5	15	80	4								
2DCR 040 002 250	4 X R0.2	5	25	80	4								
2DCR 040 002 400	4 X R0.2	5	40	80	4								
2DCR 040 005 050	4 X R0.5	5	-	80	4								
2DCR 040 005 150	4 X R0.5	5	15	80	4								
2DCR 040 005 250	4 X R0.5	5	25	80	4								
2DCR 040 005 400	4 X R0.5	5	40	80	4								
2DCR 040 010 050	4 X R1	5	-	80	4								
2DCR 040 010 150	4 X R1	5	15	80	4								
2DCR 040 010 250	4 X R1	5	25	80	4								
2DCR 040 010 400	4 X R1	5	40	80	4								
2DCR 050 0005 060	5 X R0.05	6	-	110	6								
2DCR 050 0005 150	5 X R0.05	6	15	110	6								
2DCR 050 0005 300	5 X R0.05	6	30	110	6								
2DCR 050 0005 500	5 X R0.05	6	50	110	6								
2DCR 050 002 060	5 X R0.2	6	-	110	6								
2DCR 050 002 150	5 X R0.2	6	15	110	6								
2DCR 050 002 300	5 X R0.2	6	30	110	6								
2DCR 050 002 500	5 X R0.2	6	50	110	6								
2DCR 050 005 060	5 X R0.2	6	-	110	6								
2DCR 050 005 150	5 X R0.2	6	15	110	6								
2DCR 050 005 300	5 X R0.2	6	30	110	6								
2DCR 050 005 500	5 X R0.2	6	50	110	6								
2DCR 060 0005 070	6 X R0.05	7	-	110	6								
2DCR 060 0005 200	6 X R0.05	7	20	110	6								

FOR GRAPHITE

2GEM/4GEM/6GEM Cutting Condition

• RPM : rev./min • Feed : mm/min

피삭재 Material	2 G E M				4 G E M				6 G E M			
	흑연 Graphite				흑연 Graphite				흑연 Graphite			
외경 Outside Diameter	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
Ø 1	36,000	700	1.00	0.10	-	-	-	-	-	-	-	-
Ø 2	28,000	700	2.00	0.20	-	-	-	-	-	-	-	-
Ø 3	18,000	800	3.00	0.30	18,000	1,600	3.00	0.30	-	-	-	-
Ø 4	16,000	1,000	4.00	0.40	16,000	2,000	4.00	0.40	-	-	-	-
Ø 5	15,000	1,200	5.00	0.50	15,000	2,400	5.00	0.50	-	-	-	-
Ø 6	12,000	1,300	6.00	0.60	12,000	2,600	6.00	0.60	23,400	2,880	6.00	0.60
Ø 8	10,000	1,500	8.00	0.80	10,000	3,000	8.00	0.80	19,500	3,900	8.00	0.80
Ø 10	8,000	1,400	10.00	1.00	8,000	2,800	10.00	1.00	15,600	4,800	10.00	1.00
Ø 12	6,500	1,400	12.00	1.20	6,500	2,800	12.00	1.20	12,675	4,800	12.00	1.20
Ø 16	5,800	1,300	16.00	1.60	5,800	2,600	16.00	1.60	11,310	5,400	16.00	1.60
Ø 20	5,000	1,200	20.00	2.00	5,000	2,400	20.00	2.00	9,750	5,400	20.00	2.00

절입량
Depth of Cut

- 유효장 길이가 긴 경우, RPM과 FEED를 동일 비율로 낮춰 주세요.
- 날 끝이 정밀하게 연삭되어 있습니다. 파손을 피하기 위해 가능하면 비접촉 방식으로 측정 하십시오.
- 상기 절삭조건은 참고 수치이므로 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망 합니다.
- 조건표가 기계의 최대 스피들 속도를 초과 하거나 버 및 적열 현상이 발생할때 스피들 속도와 이송속도를 비례하여 조정 하십시오.
- 진동이 적고 강성이 좋은 공작기계 사용 요망 합니다 (Ø1이하 사용시 진동 허용 관리 5µm이내 일것.)
- 흑연 가공시 에어브로를 추천 합니다.
- If the effective length is long, reduce the RPM and feed in the same proportion.
- The edge of the flute precisely grinded. If you want to measure the tool, and to avoid damaging on the flutes, use non-contac measuring method.
- 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.
- Use a machine with low vibration and good rigidity (Ø1 or less, the vibration tolerance management should be within 5µm).
- For graphite milling, air blow method is recommended.

2DCR/4DCR Cutting Condition

• RPM : rev./min • Feed : mm/min

피삭재 Material	2 D C R				4 D C R			
	흑연 Graphite				흑연 Graphite			
외경 Outside Diameter	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
Ø 0.2	40,000	100	0.06	0.06	-	-	-	-
Ø 0.4	40,000	230	0.12	0.12	-	-	-	-
Ø 0.5	40,000	300	0.15	0.15	-	-	-	-
Ø 0.6	40,000	400	0.18	0.18	-	-	-	-
Ø 0.8	40,000	630	0.24	0.24	-	-	-	-
Ø 1	35,000	800	0.30	0.30	-	-	-	-
Ø 2	25,000	920	0.60	0.60	25,000	1,840	0.60	0.60
Ø 3	16,500	920	0.90	0.90	16,500	1,840	0.90	0.90
Ø 4	15,000	1,300	1.20	1.20	15,000	2,600	1.2	1.2
Ø 5	14,000	1,600	1.50	1.50	-	-	-	-
Ø 6	11,000	1,700	1.80	1.80	11,000	3,390	1.8	1.8
Ø 8	-	-	-	-	8,000	2,030	2.4	2.4
Ø 10	-	-	-	-	6,500	1,700	3.0	3.0
Ø 12	-	-	-	-	5,500	1,700	3.6	3.6
Ø 16	-	-	-	-	5,500	1,500	4.8	4.8

절입량
Depth of Cut

경사진면절삭
Inclined Cutting

- 유효장이 긴 경우에는 회전수와 이송속도를 최대20% 이하로 줄이십시오.
- 곡면 절삭시 날경의 코너R 보다 낮은 이동 PITCH를 설정 하십시오.
- 곡면 절삭시 안정적인 속도 내에서 피드를 최대 50%까지 UP 해주십시오.
- 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.
- 적절한 쿨런트 사용과 가공시 발열, 발화에 주의 하십시오.
- If the effective length is long, reduce the RPM and feed in the same proportion.
- For curved milling, set up the lower value of the pitch than the corner radius value of tool diameter.
- For curved milling, raise up the feed up to 50% in stable milling condition.
- For groove milling, set up the Ae value by considering of corner radius value.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- Use the adequate coolant for work material and machining geometry and note for heat and ignition.