

- 고경도강(HRc50~72)의 고정밀(±5μm) 정삭 가공용 엔드밀
- 고품질의 PCBN 소재를 적용하여 장시간가공이 가능합니다.
- 날부인선의 조도가 뛰어나 경면가공에 적합합니다.
- 다양한 유효장을 적용함으로써 최상의 작업이 가능합니다.
- 오일미스트 사용을 권장하며, RPM 2만~5만 범위의 고속가공을 추천합니다
- C.B.N (Cubic Boron Nitride)

• PCBN Endmills for precise finishing (±5μm) of hardened steels (HRc50~72)

- Long tool life by high content PCBN.
- Excellent surface finish.
- Various flute length for optimum performance.
- Recommend high speed (20,000~50,000RPM) with oil-mist.
- C.B.N (Cubic Boron Nitride)



0.1 ~ 1.25R 1.5 ~ 2R 3R 401P

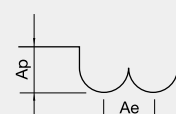
D Size	D Tolerance
ø0.2 ~ 6	+0 ~ -0.01mm

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2BCBN 002 002 S04	0.1R X 0.2	0.2	-	48	4		2BCBN 010 050 S04	0.5R X 1	0.7	5	48	4	
2BCBN 002 004 S04	0.1R X 0.2	0.4	-	48	4		2BCBN 010 060 S04	0.5R X 1	0.7	6	48	4	
2BCBN 003 003 S04	0.15R X 0.3	0.3	-	48	4		2BCBN 010 080 S04	0.5R X 1	0.7	8	48	4	
2BCBN 003 005 S04	0.15R X 0.3	0.5	-	48	4		2BCBN 010 100 S04	0.5R X 1	0.7	10	48	4	
2BCBN 004 003 S04	0.2R X 0.4	0.3	-	48	4		2BCBN 010 120 S04	0.5R X 1	0.7	12	48	4	
2BCBN 004 010 S04	0.2R X 0.4	0.3	1	48	4		2BCBN 010 160 S04	0.5R X 1	0.7	16	48	4	
2BCBN 004 015 S04	0.2R X 0.4	0.3	1.5	48	4		2BCBN 012 008 S04	0.6R X 1.2	0.8	-	48	4	
2BCBN 004 020 S04	0.2R X 0.4	0.3	2	48	4		2BCBN 012 020 S04	0.6R X 1.2	0.8	2	48	4	
2BCBN 004 030 S04	0.2R X 0.4	0.3	3	48	4		2BCBN 012 040 S04	0.6R X 1.2	0.8	4	48	4	
2BCBN 004 040 S04	0.2R X 0.4	0.3	4	48	4		2BCBN 012 060 S04	0.6R X 1.2	0.8	6	48	4	
2BCBN 004 050 S04	0.2R X 0.4	0.3	5	48	4		2BCBN 012 080 S04	0.6R X 1.2	0.8	8	48	4	
2BCBN 004 060 S04	0.2R X 0.4	0.3	6	48	4		2BCBN 012 100 S04	0.6R X 1.2	0.8	10	48	4	
2BCBN 005 004 S04	0.25R X 0.5	0.4	-	48	4		2BCBN 012 120 S04	0.6R X 1.2	0.8	12	48	4	
2BCBN 005 010 S04	0.25R X 0.5	0.4	1	48	4		2BCBN 012 160 S04	0.6R X 1.2	0.8	16	48	4	
2BCBN 005 015 S04	0.25R X 0.5	0.4	1.5	48	4		2BCBN 015 010 S04	0.75R X 1.5	1	-	48	4	
2BCBN 005 020 S04	0.25R X 0.5	0.4	2	48	4		2BCBN 015 020 S04	0.75R X 1.5	1	2	48	4	
2BCBN 005 030 S04	0.25R X 0.5	0.4	3	48	4		2BCBN 015 040 S04	0.75R X 1.5	1	4	48	4	
2BCBN 005 040 S04	0.25R X 0.5	0.4	4	48	4		2BCBN 015 060 S04	0.75R X 1.5	1	6	48	4	
2BCBN 005 050 S04	0.25R X 0.5	0.4	5	48	4		2BCBN 015 080 S04	0.75R X 1.5	1	8	48	4	
2BCBN 005 060 S04	0.25R X 0.5	0.4	6	48	4		2BCBN 015 100 S04	0.75R X 1.5	1	10	48	4	
2BCBN 005 080 S04	0.25R X 0.5	0.4	8	48	4		2BCBN 015 120 S04	0.75R X 1.5	1	12	48	4	
2BCBN 006 005 S04	0.3R X 0.6	0.5	-	48	4		2BCBN 015 140 S04	0.75R X 1.5	1	14	48	4	
2BCBN 006 010 S04	0.3R X 0.6	0.5	1	48	4		2BCBN 015 160 S04	0.75R X 1.5	1	16	48	4	
2BCBN 006 015 S04	0.3R X 0.6	0.5	1.5	48	4		2BCBN 015 180 S04	0.75R X 1.5	1	18	48	4	
2BCBN 006 020 S04	0.3R X 0.6	0.5	2	48	4		2BCBN 020 012 S04	1R X 2	1.2	-	50	4	
2BCBN 006 030 S04	0.3R X 0.6	0.5	3	48	4		2BCBN 020 030 S04	1R X 2	1.2	3	50	4	
2BCBN 006 040 S04	0.3R X 0.6	0.5	4	48	4		2BCBN 020 040 S04	1R X 2	1.2	4	50	4	
2BCBN 006 050 S04	0.3R X 0.6	0.5	5	48	4		2BCBN 020 060 S04	1R X 2	1.2	6	50	4	
2BCBN 006 060 S04	0.3R X 0.6	0.5	6	48	4		2BCBN 020 080 S04	1R X 2	1.2	8	50	4	
2BCBN 006 080 S04	0.3R X 0.6	0.5	8	48	4		2BCBN 020 100 S04	1R X 2	1.2	10	50	4	
2BCBN 006 100 S04	0.3R X 0.6	0.5	10	48	4		2BCBN 020 120 S04	1R X 2	1.2	12	50	4	
2BCBN 007 005 S04	0.35R X 0.7	0.5	-	48	4		2BCBN 020 140 S04	1R X 2	1.2	14	50	4	
2BCBN 007 010 S04	0.35R X 0.7	0.5	1	48	4		2BCBN 020 160 S04	1R X 2	1.2	16	50	4	
2BCBN 007 020 S04	0.35R X 0.7	0.5	2	48	4		2BCBN 020 180 S04	1R X 2	1.2	18	50	4	
2BCBN 007 040 S04	0.35R X 0.7	0.5	4	48	4		2BCBN 025 016 S06	1.25R X 2.5	1.6	-	66	6	
2BCBN 008 006 S04	0.4R X 0.8	0.6	-	48	4		2BCBN 025 030 S06	1.25R X 2.5	1.6	3	66	6	
2BCBN 008 010 S04	0.4R X 0.8	0.6	1	48	4		2BCBN 025 060 S06	1.25R X 2.5	1.6	6	66	6	
2BCBN 008 020 S04	0.4R X 0.8	0.6	2	48	4		2BCBN 025 100 S06	1.25R X 2.5	1.6	10	66	6	
2BCBN 008 040 S04	0.4R X 0.8	0.6	4	48	4		2BCBN 025 160 S06	1.25R X 2.5	1.6	16	66	6	
2BCBN 008 060 S04	0.4R X 0.8	0.6	6	48	4		2BCBN 025 200 S06	1.25R X 2.5	1.6	20	66	6	
2BCBN 008 080 S04	0.4R X 0.8	0.6	8	48	4		2BCBN 030 018 S06	1.5R X 3	1.8	-	66	6	
2BCBN 008 100 S04	0.4R X 0.8	0.6	10	48	4		2BCBN 030 030 S06	1.5R X 3	1.8	3	66	6	
2BCBN 009 006 S04	0.45R X 0.9	0.6	-	48	4		2BCBN 030 060 S06	1.5R X 3	1.8	6	66	6	
2BCBN 009 010 S04	0.45R X 0.9	0.6	1	48	4		2BCBN 030 080 S06	1.5R X 3	1.8	8	66	6	
2BCBN 009 020 S04	0.45R X 0.9	0.6	2	48	4		2BCBN 030 100 S06	1.5R X 3	1.8	10	66	6	
2BCBN 009 040 S04	0.45R X 0.9	0.6	4	48	4		2BCBN 030 120 S06	1.5R X 3	1.8	12	66	6	
2BCBN 010 007 S04	0.5R X 1	0.7	-	48	4		2BCBN 030 160 S06	1.5R X 3	1.8	16	66	6	
2BCBN 010 015 S04	0.5R X 1	0.7	1.5	48	4		2BCBN 030 200 S06	1.5R X 3	1.8	20	66	6	
2BCBN 010 025 S04	0.5R X 1	0.7	2.5	48	4		2BCBN 040 024 S06	2R X 4	2.4	-	66	6	
2BCBN 010 040 S04	0.5R X 1	0.7	4	48	4		2BCBN 040 040 S06	2R X 4	2.4	4	66	6	

피삭재 Material		합금강/프리하드강 Alloy Steels / Pre-hardened Steels NAK80 / KP4M				고경도강 Hardened Steels STAVAX / SKD11				열처리 / 고경도강 Heat-treated steels / Hardened Steels YXR7 / SKH51			
경도 Hardness		40 ~ 45HRc				45 ~ 55HRc				55 ~ 62HRc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap		RPM	FEED	Ap		RPM	FEED	Ap	
				Axial Depth	Radial Depth			Axial Depth	Radial Depth			Axial Depth	Radial Depth
R 0.1	0.2	50,000	326	0.005	0.005	50,000	216	0.004	0.004	50,000	120	0.003	0.003
"	0.5	50,000	308	0.004	0.004	50,000	198	0.003	0.003	50,000	110	0.002	0.003
R 0.15	0.3	50,000	800	0.006	0.010	50,000	520	0.004	0.005	50,000	410	0.003	0.005
"	0.5	50,000	720	0.006	0.010	50,000	450	0.003	0.005	50,000	390	0.003	0.005
"	1	50,000	650	0.006	0.010	50,000	410	0.003	0.005	50,000	350	0.003	0.004
R 0.2	0.3	50,000	1,120	0.010	0.010	50,000	750	0.005	0.006	50,000	650	0.005	0.005
"	1	50,000	1,050	0.010	0.010	50,000	710	0.005	0.005	50,000	600	0.005	0.005
"	3	50,000	540	0.005	0.005	50,000	360	0.003	0.003	50,000	310	0.002	0.003
R 0.25	0.4	50,000	1,420	0.010	0.020	50,000	1,210	0.005	0.010	50,000	1,030	0.005	0.010
"	1	50,000	1,290	0.010	0.015	50,000	1,100	0.005	0.010	50,000	980	0.005	0.010
"	3	50,000	1,090	0.010	0.015	50,000	850	0.005	0.010	50,000	730	0.005	0.010
R 0.3	0.5	50,000	2,300	0.020	0.020	50,000	1,890	0.015	0.015	50,000	1,520	0.010	0.010
"	1	50,000	2,180	0.020	0.020	50,000	1,760	0.010	0.010	50,000	1,490	0.010	0.010
"	3	40,000	1,300	0.015	0.020	40,000	1,060	0.010	0.010	40,000	870	0.010	0.010
"	5	30,000	650	0.015	0.015	30,000	590	0.010	0.010	30,000	390	0.005	0.005
R 0.4	0.6	50,000	2,600	0.020	0.030	50,000	1,980	0.020	0.020	50,000	1,720	0.010	0.020
"	2	40,000	2,100	0.015	0.020	40,000	1,450	0.015	0.015	40,000	1,210	0.010	0.010
"	4	30,000	1,540	0.015	0.015	30,000	940	0.010	0.015	30,000	840	0.010	0.010
"	8	24,000	970	0.010	0.010	24,000	650	0.005	0.010	24,000	470	0.005	0.005
R 0.5	1.5	40,000	2,560	0.030	0.040	40,000	1,980	0.020	0.030	40,000	1,590	0.020	0.020
"	3	30,000	2,100	0.030	0.030	30,000	1,650	0.020	0.030	30,000	1,240	0.020	0.020
"	5	30,000	1,700	0.030	0.030	30,000	1,360	0.015	0.020	30,000	1,080	0.010	0.015
"	10	25,000	780	0.015	0.015	25,000	620	0.010	0.015	16,000	500	0.010	0.010
R 0.75	2	40,000	2,300	0.040	0.040	40,000	1,920	0.030	0.030	40,000	1,530	0.020	0.030
"	4	30,000	2,010	0.030	0.030	30,000	1,600	0.025	0.025	30,000	1,280	0.020	0.020
"	8	30,000	1,700	0.030	0.030	30,000	1,360	0.020	0.020	30,000	1,080	0.010	0.010
R 1	2	40,000	3,310	0.050	0.050	40,000	2,640	0.040	0.040	40,000	2,110	0.030	0.040
"	6	40,000	3,020	0.030	0.040	40,000	2,410	0.030	0.030	40,000	1,930	0.020	0.030
"	10	24,000	1,210	0.020	0.030	24,000	970	0.010	0.030	24,000	770	0.010	0.020
"	14	16,000	920	0.010	0.020	16,000	780	0.010	0.010	16,000	630	0.010	0.010
R 1.5	3	40,000	2,500	0.030	0.040	40,000	2,000	0.030	0.030	40,000	1,600	0.020	0.030
"	6	32,000	2,100	0.030	0.030	32,000	1,680	0.020	0.030	32,000	1,340	0.020	0.030
"	10	21,000	1,700	0.020	0.030	21,000	1,360	0.020	0.020	21,000	1,080	0.010	0.020
"	16	16,000	1,100	0.020	0.030	16,000	880	0.010	0.020	16,000	700	0.010	0.010
R 2	4	40,000	2,100	0.030	0.040	40,000	1,680	0.030	0.030	40,000	1,340	0.020	0.030
"	10	21,000	1,620	0.020	0.030	21,000	1,290	0.020	0.020	21,000	1,030	0.010	0.020
"	16	16,000	1,060	0.010	0.020	16,000	840	0.010	0.020	16,000	670	0.010	0.010
R 3		16,000~50,000	960~3,000	0.050	0.060	13,000~50,000	780~2,000	0.050	0.060	11,000~50,000	540~1,500	0.050	0.060

절입량
Depth of Cut



Ap : Axial Depth 축 방향의 절입 깊이(mm)
 Ae : Radial Depth 반경 방향의 절입 깊이(mm)
 D : Outside Diameter 외경(mm)
 n : Speed 회전 속도 (min⁻¹)
 Vf : Feed 이송 속도 (mm/min)

- HRC68 이상 고경도강 가공 시 같은 직경의 같은 비율로 20% DOWN 시켜주십시오.
- 상기 절삭조건은 참고 수치이므로 실제 가공시에는 가공 형상, 가공 목적, 적용 기계 등에 따라 조건을 조정 하십시오.
- 절삭조건이 없는 유효장은 비슷한 유효장에 비례하여 사용 하십시오.
- 길이가 긴 엔드밀의 경우 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- In case machining Hardened steel HRC upper 68, reduce 20% of cutting parameter on the table.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If there is no effective length of your endmill on the table, use a similar type of effective length and apply the same proportion.
- In case of long length endmill shaking or abnormal sound, lower the rotation speed and feed speed of the table above by the same ratio.