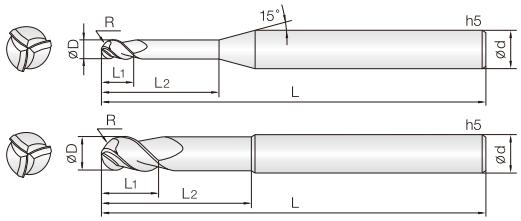
3SURB

3 Flutes 45°Helix Rib Ball End Mills for SUS

3날 45°헬릭스 SUS가공용 리브 볼 엔드밀

New



- **합금강, SUS계열, Ti/Ni계합금, 인코넬등난삭재가공엔드밀**
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 피삭재의 면조도가 향상됩니다.
- 45°헬릭스 형상과 깊은 포켓으로 설계하여 칩배출이 우수하며, 고속·고이송 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금을 채택하여 엔드밀의 파손을 최소화.

- **Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize fracturing by high TRS fine WC grade.
- High speed, feed applicable by 45°degree helix and deep chip pocket design.

3 | WC 미립자 | JCRO Coating | R ± 0.005 | R ± 0.01 | 45° Helix Angle | CUTTING DATA

0.5 ~ 2.5R 3 ~ 6R 350P

D Size	D Tolerance
Ø 1 ~ 5	+0 ~ -0.01mm
Ø 6 ~ 12	-0.005 ~ -0.015mm

단위: mm

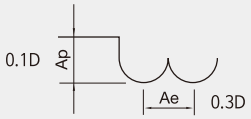
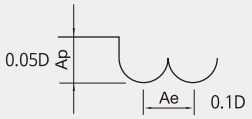
Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
3SURB 010 040 S04	0.5R X 1	1.5	4	50	4	
3SURB 010 060 S04	0.5R X 1	1.5	6	50	4	
3SURB 010 080 S04	0.5R X 1	1.5	8	50	4	
3SURB 010 100 S04	0.5R X 1	1.5	10	50	4	
3SURB 010 120 S04	0.5R X 1	1.5	12	50	4	
3SURB 010 160 S04	0.5R X 1	1.5	16	50	4	
3SURB 010 200 S04	0.5R X 1	1.5	20	50	4	
3SURB 012 030 S04	0.6R X 1.2	1.8	3	50	4	
3SURB 012 040 S04	0.6R X 1.2	1.8	4	50	4	
3SURB 012 060 S04	0.6R X 1.2	1.8	6	50	4	
3SURB 012 080 S04	0.6R X 1.2	1.8	8	50	4	
3SURB 012 100 S04	0.6R X 1.2	1.8	10	50	4	
3SURB 012 120 S04	0.6R X 1.2	1.8	12	50	4	
3SURB 015 040 S04	0.75R X 1.5	2	4	50	4	
3SURB 015 060 S04	0.75R X 1.5	2	6	50	4	
3SURB 015 100 S04	0.75R X 1.5	2	10	50	4	
3SURB 015 120 S04	0.75R X 1.5	2	12	50	4	
3SURB 015 160 S04	0.75R X 1.5	2	16	50	4	
3SURB 015 200 S04	0.75R X 1.5	2	20	50	4	
3SURB 020 040 S06	1R X 2	3	4	50	6	
3SURB 020 060 S06	1R X 2	3	6	50	6	
3SURB 020 100 S06	1R X 2	3	10	50	6	
3SURB 020 120 S06	1R X 2	3	12	60	6	
3SURB 020 160 S06	1R X 2	3	16	60	6	
3SURB 020 200 S06	1R X 2	3	20	60	6	
3SURB 020 250 S06	1R X 2	3	25	65	6	
3SURB 025 060 S06	1.25R X 2.5	4	6	50	6	
3SURB 025 100 S06	1.25R X 2.5	4	10	50	6	
3SURB 025 120 S06	1.25R X 2.5	4	12	60	6	
3SURB 025 160 S06	1.25R X 2.5	4	16	60	6	
3SURB 025 200 S06	1.25R X 2.5	4	20	60	6	
3SURB 030 080 S06	1.5R X 3	4.5	8	60	6	
3SURB 030 120 S06	1.5R X 3	4.5	12	60	6	
3SURB 030 160 S06	1.5R X 3	4.5	16	60	6	
3SURB 030 200 S06	1.5R X 3	4.5	20	60	6	
3SURB 030 250 S06	1.5R X 3	4.5	25	70	6	
3SURB 030 300 S06	1.5R X 3	4.5	30	70	6	
3SURB 030 400 S06	1.5R X 3	4.5	40	80	6	
3SURB 040 100 S06	2R X 4	6	10	60	6	
3SURB 040 160 S06	2R X 4	6	16	60	6	
3SURB 040 200 S06	2R X 4	6	20	60	6	
3SURB 040 250 S06	2R X 4	6	25	70	6	
3SURB 040 300 S06	2R X 4	6	30	70	6	
3SURB 040 400 S06	2R X 4	6	40	80	6	
3SURB 050 160 S06	2.5R X 5	8	16	80	6	
3SURB 050 200 S06	2.5R X 5	8	20	80	6	
3SURB 050 300 S06	2.5R X 5	8	30	80	6	
3SURB 060 200 S06	3R X 6	9	20	90	6	
3SURB 060 400 S06	3R X 6	9	40	90	6	
3SURB 080 300 S08	4R X 8	12	30	100	8	

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
3SURB 100 400 S10	5R X 10	15	40	100	10	
3SURB 120 500 S12	6R X 12	18	50	110	12	

FOR SUS

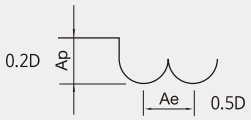
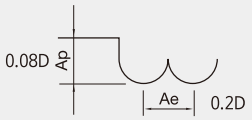
3SURB Cutting Condition

• RPM : rev./min • Feed : mm/min

피삭재 Material	합금강/ 주철 Alloy Steels/ Cast iron				스테인레스강 Stainless steels				고경도강 Hardened Steels			
경도 Hardness	30 ~ 40HRC								45 ~ 55HRC			
반경 Corner Radius	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.5	45000	1300	0.05	0.15	34600	800	0.05	0.15	9000	130	0.025	0.05
R0.75	38000	1850	0.075	0.225	29200	1135	0.075	0.225	7600	185	0.0375	0.075
R1	32000	2250	0.1	0.3	24600	1380	0.1	0.3	6400	225	0.05	0.1
R1.5	27300	2560	0.15	0.45	20800	1520	0.15	0.45	5460	272	0.075	0.15
R2	20800	2240	0.2	0.6	15600	1360	0.2	0.6	4160	208	0.1	0.2
R3	13780	1680	0.3	0.9	10400	1120	0.3	0.9	2730	168	0.15	0.3
R4	10400	1520	0.4	1.2	7800	1120	0.4	1.2	2080	152	0.2	0.4
R5	8320	1440	0.5	1.5	6240	1040	0.5	1.5	1690	144	0.25	0.5
R6	6890	1400	0.6	1.8	5200	1000	0.6	1.8	1430	100	0.3	0.6
절입량 Depth of Cut												

4SUB Cutting Condition

• RPM : rev./min • Feed : mm/min

피삭재 Material	합금강/ 주철 Alloy Steels/ Cast iron				스테인레스강 Stainless steels				고경도강 Hardened Steels			
경도 Hardness	30 ~ 40HRC								45 ~ 55HRC			
반경 Corner Radius	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R1.5	21,000	3,200	0.3	0.75	16,000	1,900	0.25	0.75	4200	340	0.12	0.3
R2	16,000	2,800	0.4	1	12,000	1,700	0.33	1	3200	260	0.16	0.4
R2.5	12,700	2,600	0.5	1.25	9,600	1,500	0.42	1.25	2500	250	0.2	0.5
R3	10,600	2,100	0.6	1.5	8,000	1,400	0.5	1.5	2100	210	0.24	0.6
R4	8,000	1,900	0.8	2	6,000	1,400	0.8	2	1600	190	0.32	0.8
R5	6,400	1,800	1	2.5	4,800	1,300	1	2.5	1300	180	0.4	1
R6	5,300	1,800	1.2	3	4,000	1,300	1.2	3	1100	150	0.48	1.2
절입량 Depth of Cut												

- 유효장 길이가 긴 경우, RPM과 FEED를 동일 비율로 낮춰주세요.
- 절삭 조건이 없는 직경 및 유효장은 비슷한 직경 및 유효장에 비례하여 UP&DOWN 하여 설정 하십시오.
- HRC55 이상 고경도강 가공시 55HRC 조건의 같은 직경 대비 상기 절삭 조건의 20% DOWN 해주십시오.
- 이 절삭 조건표는 절삭 조건의 참고 수치 입니다. 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.
- 원활한 칩배출을 위하여 에어브로 혹은 미스트 쿨런트 사용을 추천 합니다.

- If the effective length is long, reduce the RPM and feed in the same proportion.
- If the diameter or effective length of your tool are not on the table, adjust it compared similarity value on the table.
- When milling workpiece, HRC over 55 hardened steel , reduce 20% of the RPM and feed compared to the same diameter.
- 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, reduce the RPM and feed in the same proportion.
- Air blow or oil mist is recommended for smooth chip emission.

Your specials are our standards.

당신의스페셜은우리의표준품입니다.

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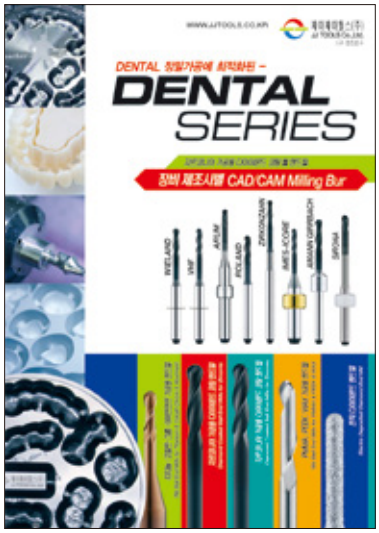

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ISO 9001 ISO 14001

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