Korea Made

Ver. 2014

초경 엔드밀

Solid Carbide End Mills

SPEED-1

리브기공용 Long Reach

표준기공용 General Use

고경도 고이송용 High Performance

비철용 Non-ferrous

흑연용 Graphite

범용 Special Use

스페셜용 Specials-Custom Made

Venture for Tomorrow Korean Venture Entrepreneurship

INNOBIZ 중소기업기술혁신협회

스타공구(주)
StarTool Co., Ltd.

용도 Use	날 수 # of Flutes	날 형상 End Feature	시리즈 Series	명 칭 Tool Description	코팅 Coating	페이지 Page
고경도용 For Hardened Steels	4	코너 R Corner Radius	4CLH	4날 코너 R 롱–고경도용 4F Corner Radius Long for Hardened Steels	S–HC	47
고이송용 For High Feed Rate	4	코너 R Corner Radius	4CF	4날 코너 R–고이송용 4F Corner Radius for High Feed Rate	AlTiSiN	48
동 가공용 For Copper	2	코너 R Corner Radius	2CC	2날 코너 R–동 가공용 2F Corner Radius for Copper	AlTiN	50
수지 비철 가공용 For Synthetic Materials	2	볼 Ball End	2BY	2날 볼–수지 비철 가공용 2F Ball End for Synthetic Materials	Uncoated	51
		평 Square End	2SY	2날 평–수지 비철 가공용 2F Square End for Synthetic Materials	Uncoated	53
SUS 가공용 For Stainless Steels	4	코너 R Corner Radius	4CS	4날 코너 R–SUS 4F Corner Radius for Stainless Steel	AlTiN	55
알루미늄 가공용 For Aluminum	2	평 Square End	2SA	2날 평–알루미늄 가공용 2F Square End for Aluminum	Uncoated	56
	3	평 Square End	3SA	3날 평–알루미늄 가공용 3F Square End for Aluminum	Uncoated	57
흑연 가공용 For Graphite	2	볼 Ball End	2BG	2날 볼–흑연 가공용 2F Ball End for Graphite	AlTiN	60
		평 Square End	2SG	2날 평–흑연 가공용 2F Square End for Graphite	AlTiN	62
		볼 Ball End	2BD	2날 볼–다이아몬드 코팅 2F Ball End-Diamond Coated	Diamond	63
범용 For Special Use	2	—	2CE	2날 센터링 2F Centering	Uncoated	66
			2NCD	2날 NC 드릴 2F NC Drill	Uncoated	67
			2TC	T 커터 T Slot Cutter	Uncoated	68
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날 형상 End Feature	날 수 # of Flutes	시리즈 Series	명 칭 Tool Description	코팅 Coating	용도 Use	페이지 Page
볼 Ball End	2	2NB	2날 볼 리브 2F Necked Ball End	AlTiSiN	리브 가공용 Long Reach	12
		2NBH	2날 볼 리브–고경도용 2F Necked Ball End for Hardened Steels	S–HC	리브 가공용 Long Reach	40
		2BR	2날 볼 표준 2F Ball End-Regular	AlTiSiN	표준 가공용 General Purpose	26
		2BS	2날 볼 쇼트 2F Ball End-Short	AlTiSiN	표준 가공용 General Purpose	28
		2BH	2날 볼–고경도용 2F Ball End for Hardened Steels	S–HC	고경도용 For Hardned Steels	45
		2NBH	2날 볼 리브–고경도용 2F Necked Ball End for Hardened Steels	S–HC	고경도용 For Hardned Steels	40
		2BG	2날 볼–흑연 가공용 2F Ball End for Graphite	AlTiN	흑연 가공용 For Graphite	60
		2BD	2날 볼–다이아몬드 코팅 2F Ball End-Diamond Coated	Diamond	다이아몬드 코팅 엔드밀 Diamond Coated	63
		2BY	2날 볼–수지 비철 가공용 2F Ball End for Synthetic Materials	Uncoated	수지 비철 가공용 For Synthetic Materials	51
평 Square End	2	2NS	2날 평 리브 2F Necked Square End	AlTiSiN	리브 가공용 Long Reach	15
		2SR	2날 평 표준 2F Square End-Regular	AlTiSiN	표준 가공용 General Purpose	29
		2SL	2날 평 롱 2F Square End-Long	AlTiSiN	표준 가공용 General Purpose	31
		2SG	2날 평–흑연 가공용 2F Square End for Graphite	AlTiN	흑연 가공용 For Graphite	62
		2SA	2날 평–알루미늄 가공용 2F Square End for Aluminum	Uncoated	알루미늄 가공용 For Aluminum	56
		2SY	2날 평–수지 비철 가공용 2F Square End for Synthetic Materials	Uncoated	수지 비철 가공용 For Synthetic Materials	53
	3	3SA	3날 평–알루미늄 가공용 3F Square End for Aluminum	Uncoated	알루미늄 가공용 For Aluminum	57
	4	4SR	4날 평 표준 4F Square End-Regular	AlTiSiN	표준 가공용 General Purpose	34

날 형상 End Feature	날 수 # of Flutes	시리즈 Series	명 칭 Tool Description	코팅 Coating	용도 Use	페이지 Page
평 Square End	4	4SL	4날 평 롱 4F Square End-Long	AlTiSiN	표준 가공용 General Purpose	35
코너 R Corner Radius	2	2NC	2날 코너 R 리브 2F Necked Corner Radius	AlTiSiN	리브 가공용 Long Reach	18
		2NCH	2날 코너 R 리브–고경도용 2F Necked Corner Radius for Hardened Steels	S–HC	리브 가공용 Long Reach	42
		2CL	2날 코너 R 롱 2F Corner Radius-Long	AlTiSiN	표준 가공용 General Purpose	32
		2CLH	2날 코너 R 롱–고경도용 2F Corner Radius Long for Hardened Steels	S–HC	고경도용 For Hardened Steels	46
		2CC	2날 코너 R–동 가공용 2F Corner Radius for Copper	AlTiN	동 가공용 For Copper	50
	4	4NC	4날 코너 R 리브 4F Necked Corner Radius	AlTiSiN	리브 가공용 Long Reach	22
		4CL	4날 코너 R 롱 4F Corner Radius-Long	AlTiSiN	표준 가공용 General Purpose	36
		4CLH	4날 코너 R 롱–고경도용 4F Corner Radius Long for Hardened Steels	S–HC	고경도용 For Hardened Steels	47
		4CF	4날 코너 R–고이송용 4F Corner Radius for High Feed Rate	AlTiSiN	고이송용 For High Feed Rate	48
		4CS	4날 코너 R–SUS 4F Corner Radius for Stainless Steel	AlTiN	스테인리스 가공용 For Stainless Steels	55
기타 Others	2	2CE	2날 센터링 2F Centering	Uncoated	범용 For Special Use	66
		2NCD	2날 NC 드릴 2F NC Drill	Uncoated	범용 For Special Use	67
		2TC	T 커터 T Slot Cutter	Uncoated	범용 For Special Use	68
	—	스페셜 엔드밀 Special End Mills		Uncoated	스페셜 엔드밀 Special End Mills-Custom Made	70

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아이콘 가이드
Icon Glossary

구 분 Type	설 명 Description				
엔드밀 소재 Tool substrate					
	초미립 초경합금 Micrograin Carbide				
헬릭스 각 Helix angle					
	15°	20°	30°	40°	45°
날 수 Number of cutting edges					
	2날 2 Flutes	3날 3 Flutes	4날 4 Flutes		
코 팅 Coating					
	AlTiN/SiN 나노 컴포지트 코팅 Nanocomposite coating	나노 컴포지트 코팅 (고경도용) Nanocomposite coating for hardened steels	AlTiN 코팅 AlTiN coated	다이아몬드 코팅 Diamond coated	코팅 없음 Uncoated

리브 시리즈!

Long Reach End Mills!

리브가공과 같은 깊은 깊이 가공용 엔드밀

End mills specially designed for long reach applications.

복잡한 가공조건에서의 고속가공 솔루션
High speed milling in challenging environments

날경 ø0.2 부터 ø12 mm
유효장 0.5mm 에서 50mm 까지의 제품군

- Come with cutting diameters from ø0.2 through ø12 mm and lengths of reach from 0.5mm through 50mm

볼, 평, 코너 R 형태의 다양한 사이즈의 표준가공용과 고경도 소재가공용 제품이 있어 선택의 폭이 넓습니다.
최적의 인선 치수 형상 설계로 고속 정밀가공에 적합합니다.

- Available with ball end, square and corner radius types for general and high performance milling operations.
- Rigid cutting edge with controlled tolerances enables high speed operations and allows dimensional accuracy.

고경도 소재 가공용 엔드밀!

"Up to 62 HRc"

High performance end mills for hardened steels

마이크로 입자 소결 초경
Micrograin solid carbide

인선부 치수와 형상의 최적설계
Optimized cutting edge geometry

최신 나노컴포지트 코팅
Nanocomposite coating

- 2날 볼 리브 2F Necked Ball End
- 2날 코너 R 리브 2F Necked Corner Radius
- 2날 볼 2F Ball End
- 2날 코너 R 롱 2F Corner Radius Long
- 4날 코너 R 롱 4F Corner Radius Long

- 고경도 소재 가공에서 뛰어난 절삭성을 보여줍니다.
- 최신 나노컴포지트 코팅으로 높은 가공온도에서도 절삭성능이 유지됩니다.
- 증가된 강성으로 채터링 없는 절삭이 가능해 향상된 조도의 절삭면을 얻을 수 있습니다.

- Excellent cutting performance on hardened steels.
- The new nanocomposite coating allows better cutting performance in high temperature environments.
- Improved rigidity enables chatter-free milling giving better workpiece surface quality.

스페셜 엔드밀 솔루션

Custom Made End Mills

- 다양한 특수목적 용도의 엔드밀을 제작해 제공합니다.
- 축적된 형상가공 제작기술로 최상의 제품을 제공합니다.

- StarTool offers a variety of special end mills to suit a wide range of applications.
- We offer the quality end mills with the leading edge of technology.

The specialist in specials : StarTool

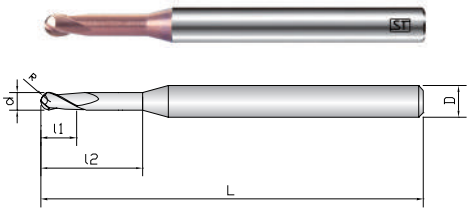
스타공구(주)
StarTool Co., Ltd.

Long Reach

SPEED-1

2날 볼 리브
2F Necked Ball End

2NB



Features
- Extended neck style for long reach applications
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 롱 넥 형상으로 깊은 가공에 적합함
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	R≤0.25: 0/-0.005 R>0.25: 0/-0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NB 020 050	0.2 X R0.1	0.2	0.5	45	4	
2NB 020 100	0.2 X R0.1	0.2	1	45	4	
2NB 020 150	0.2 X R0.1	0.2	1.5	45	4	
2NB 020 200	0.2 X R0.1	0.2	2	45	4	
2NB 020 300	0.2 X R0.1	0.2	3	45	4	
2NB 030 100	0.3 X R0.15	0.3	1	45	4	
2NB 030 150	0.3 X R0.15	0.3	1.5	45	4	
2NB 030 200	0.3 X R0.15	0.3	2	45	4	
2NB 030 300	0.3 X R0.15	0.3	3	45	4	
2NB 040 100	0.4 X R0.2	0.4	1	45	4	
2NB 040 200	0.4 X R0.2	0.4	2	45	4	
2NB 040 300	0.4 X R0.2	0.4	3	45	4	
2NB 040 400	0.4 X R0.2	0.4	4	45	4	
2NB 040 500	0.4 X R0.2	0.4	5	45	4	
2NB 040 600	0.4 X R0.2	0.4	6	45	4	
2NB 040 800	0.4 X R0.2	0.4	8	45	4	
2NB 050 200	0.5 X R0.25	0.5	2	45	4	
2NB 050 300	0.5 X R0.25	0.5	3	45	4	
2NB 050 400	0.5 X R0.25	0.5	4	45	4	
2NB 050 500	0.5 X R0.25	0.5	5	45	4	
2NB 050 600	0.5 X R0.25	0.5	6	45	4	
2NB 050 800	0.5 X R0.25	0.5	8	45	4	
2NB 050 1000	0.5 X R0.25	0.5	10	45	4	
2NB 060 100	0.6 X R0.3	0.6	1	45	4	

2날 볼 리브
2F Necked Ball End

2NB

(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NB 060 200	0.6 X R0.3	0.6	2	45	4	
2NB 060 300	0.6 X R0.3	0.6	3	45	4	
2NB 060 400	0.6 X R0.3	0.6	4	45	4	
2NB 060 500	0.6 X R0.3	0.6	5	45	4	
2NB 060 600	0.6 X R0.3	0.6	6	45	4	
2NB 060 800	0.6 X R0.3	0.6	8	45	4	
2NB 060 1000	0.6 X R0.3	0.6	10	45	4	
2NB 060 1200	0.6 X R0.3	0.6	12	45	4	
2NB 080 200	0.8 X R0.4	0.8	2	45	4	
2NB 080 400	0.8 X R0.4	0.8	4	45	4	
2NB 080 500	0.8 X R0.4	0.8	5	45	4	
2NB 080 600	0.8 X R0.4	0.8	6	45	4	
2NB 080 800	0.8 X R0.4	0.8	8	45	4	
2NB 080 1000	0.8 X R0.4	0.8	10	45	4	
2NB 080 1200	0.8 X R0.4	0.8	12	45	4	
2NB 100 300	1.0 X R0.5	1	3	45	4	
2NB 100 400	1.0 X R0.5	1	4	45	4	
2NB 100 500	1.0 X R0.5	1	5	45	4	
2NB 100 600	1.0 X R0.5	1	6	45	4	
2NB 100 800	1.0 X R0.5	1	8	45	4	
2NB 100 1000	1.0 X R0.5	1	10	45	4	
2NB 100 1200	1.0 X R0.5	1	12	45	4	
2NB 100 1400	1.0 X R0.5	1	14	45	4	
2NB 100 1600	1.0 X R0.5	1	16	50	4	
2NB 100 1800	1.0 X R0.5	1	18	50	4	
2NB 100 2000	1.0 X R0.5	1	20	50	4	
2NB 120 400	1.2 X R0.6	1.2	4	45	4	
2NB 120 600	1.2 X R0.6	1.2	6	45	4	
2NB 120 800	1.2 X R0.6	1.2	8	45	4	
2NB 120 1000	1.2 X R0.6	1.2	10	45	4	
2NB 120 1200	1.2 X R0.6	1.2	12	45	4	
2NB 120 1600	1.2 X R0.6	1.2	16	50	4	
2NB 120 2000	1.2 X R0.6	1.2	20	50	4	
2NB 150 400	1.5 X R0.75	1.5	4	45	4	
2NB 150 600	1.5 X R0.75	1.5	6	45	4	
2NB 150 800	1.5 X R0.75	1.5	8	45	4	
2NB 150 1000	1.5 X R0.75	1.5	10	45	4	
2NB 150 1200	1.5 X R0.75	1.5	12	45	4	
2NB 150 1400	1.5 X R0.75	1.5	14	45	4	
2NB 150 1600	1.5 X R0.75	1.5	16	50	4	
2NB 150 2000	1.5 X R0.75	1.5	20	50	4	
2NB 150 2500	1.5 X R0.75	1.5	25	60	4	
2NB 150 3000	1.5 X R0.75	1.5	30	70	4	
2NB 160 600	1.6 X R0.8	1.6	6	45	4	
2NB 160 800	1.6 X R0.8	1.6	8	45	4	

2날 볼 리브
2F Necked Ball End

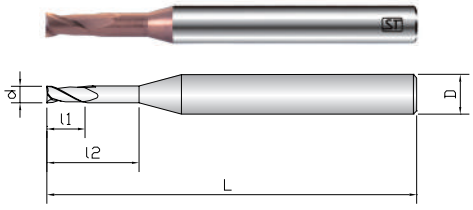
2NB

(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NB 160 1000	1.6 X R0.8	1.6	10	45	4	
2NB 160 1200	1.6 X R0.8	1.6	12	45	4	
2NB 160 1600	1.6 X R0.8	1.6	16	50	4	
2NB 160 2000	1.6 X R0.8	1.6	20	50	4	
2NB 200 500	2.0 X R1.0	2	5	45	4	
2NB 200 600	2.0 X R1.0	2	6	45	4	
2NB 200 800	2.0 X R1.0	2	8	45	4	
2NB 200 1000	2.0 X R1.0	2	10	45	4	
2NB 200 1200	2.0 X R1.0	2	12	45	4	
2NB 200 1400	2.0 X R1.0	2	14	45	4	
2NB 200 1600	2.0 X R1.0	2	16	50	4	
2NB 200 1800	2.0 X R1.0	2	18	50	4	
2NB 200 2000	2.0 X R1.0	2	20	50	4	
2NB 200 2500	2.0 X R1.0	2	25	60	4	
2NB 200 3000	2.0 X R1.0	2	30	70	4	
2NB 200 3500	2.0 X R1.0	2	35	70	4	
2NB 200 4000	2.0 X R1.0	2	40	80	4	
2NB 250 800	2.5 X R1.25	2.5	8	45	4	
2NB 250 1000	2.5 X R1.25	2.5	10	45	4	
2NB 250 1200	2.5 X R1.25	2.5	12	45	4	
2NB 250 1600	2.5 X R1.25	2.5	16	50	4	
2NB 250 2000	2.5 X R1.25	2.5	20	50	4	
2NB 250 2500	2.5 X R1.25	2.5	25	60	4	
2NB 300 800	3.0 X R1.5	3	8	50	6	
2NB 300 1000	3.0 X R1.5	3	10	50	6	
2NB 300 1200	3.0 X R1.5	3	12	50	6	
2NB 300 1600	3.0 X R1.5	3	16	60	6	
2NB 300 2000	3.0 X R1.5	3	20	60	6	
2NB 300 2500	3.0 X R1.5	3	25	60	6	
2NB 300 3000	3.0 X R1.5	3	30	70	6	
2NB 300 3500	3.0 X R1.5	3	35	70	6	
2NB 300 4000	3.0 X R1.5	3	40	80	6	
2NB 300 5000	3.0 X R1.5	3	50	100	6	
2NB 400 1000	4.0 X R2.0	4	10	50	6	
2NB 400 1200	4.0 X R2.0	4	12	50	6	
2NB 400 1600	4.0 X R2.0	4	16	60	6	
2NB 400 2000	4.0 X R2.0	4	20	60	6	
2NB 400 2500	4.0 X R2.0	4	25	60	6	
2NB 400 3000	4.0 X R2.0	4	30	70	6	
2NB 400 3500	4.0 X R2.0	4	35	70	6	
2NB 400 4000	4.0 X R2.0	4	40	80	6	
2NB 400 5000	4.0 X R2.0	4	50	100	6	
2NB 600 1500	6.0 X R3.0	7	15	60	6	
2NB 600 2000	6.0 X R3.0	7	20	60	6	
2NB 600 3000	6.0 X R3.0	7	30	110	6	
2NB 800 2000	8.0 X R4.0	10	20	60	8	
2NB 1000 2500	10.0 X R5.0	12	25	70	10	
2NB 1200 3000	12.0 X R6.0	14	30	80	12	

2날 평 리브
2F Necked Square End

2NS



Features
- Extended neck style for long reach applications
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 롱 넥 형상으로 깊은 가공에 적합함
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NS 020 100	0.2	0.3	1	45	4	
2NS 020 150	0.2	0.3	1.5	45	4	
2NS 020 200	0.2	0.3	2	45	4	
2NS 020 300	0.2	0.3	3	45	4	
2NS 030 100	0.3	0.4	1	45	4	
2NS 030 150	0.3	0.4	1.5	45	4	
2NS 030 200	0.3	0.4	2	45	4	
2NS 030 300	0.3	0.4	3	45	4	
2NS 030 400	0.3	0.4	4	45	4	
2NS 040 100	0.4	0.6	1	45	4	
2NS 040 200	0.4	0.6	2	45	4	
2NS 040 300	0.4	0.6	3	45	4	
2NS 040 400	0.4	0.6	4	45	4	
2NS 040 500	0.4	0.6	5	45	4	
2NS 040 600	0.4	0.6	6	45	4	
2NS 040 800	0.4	0.6	8	45	4	
2NS 050 200	0.5	0.7	2	45	4	
2NS 050 300	0.5	0.7	3	45	4	
2NS 050 400	0.5	0.7	4	45	4	
2NS 050 500	0.5	0.7	5	45	4	
2NS 050 600	0.5	0.7	6	45	4	
2NS 050 800	0.5	0.7	8	45	4	
2NS 050 1000	0.5	0.7	10	45	4	
2NS 060 200	0.6	0.9	2	45	4	

2날 평 리브
2F Necked Square End

2NS

(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NS 060 300	0.6	0.9	3	45	4	
2NS 060 400	0.6	0.9	4	45	4	
2NS 060 500	0.6	0.9	5	45	4	
2NS 060 600	0.6	0.9	6	45	4	
2NS 060 800	0.6	0.9	8	45	4	
2NS 060 1000	0.6	0.9	10	45	4	
2NS 060 1200	0.6	0.9	12	45	4	
2NS 070 200	0.7	1	2	45	4	
2NS 070 300	0.7	1	3	45	4	
2NS 070 400	0.7	1	4	45	4	
2NS 070 600	0.7	1	6	45	4	
2NS 070 800	0.7	1	8	45	4	
2NS 070 1000	0.7	1	10	45	4	
2NS 080 200	0.8	1.2	2	45	4	
2NS 080 300	0.8	1.2	3	45	4	
2NS 080 400	0.8	1.2	4	45	4	
2NS 080 500	0.8	1.2	5	45	4	
2NS 080 600	0.8	1.2	6	45	4	
2NS 080 800	0.8	1.2	8	45	4	
2NS 080 1000	0.8	1.2	10	45	4	
2NS 080 1200	0.8	1.2	12	45	4	
2NS 100 300	1	1.5	3	45	4	
2NS 100 400	1	1.5	4	45	4	
2NS 100 500	1	1.5	5	45	4	
2NS 100 600	1	1.5	6	45	4	
2NS 100 800	1	1.5	8	45	4	
2NS 100 1000	1	1.5	10	45	4	
2NS 100 1200	1	1.5	12	45	4	
2NS 100 1400	1	1.5	14	45	4	
2NS 100 1600	1	1.5	16	50	4	
2NS 100 1800	1	1.5	18	50	4	
2NS 100 2000	1	1.5	20	50	4	
2NS 100 2500	1	1.5	25	60	4	
2NS 120 400	1.2	1.8	4	45	4	
2NS 120 600	1.2	1.8	6	45	4	
2NS 120 800	1.2	1.8	8	45	4	
2NS 120 1000	1.2	1.8	10	45	4	
2NS 120 1200	1.2	1.8	12	45	4	
2NS 120 1600	1.2	1.8	16	50	4	
2NS 120 2000	1.2	1.8	20	50	4	
2NS 120 2500	1.2	1.8	25	60	4	
2NS 150 400	1.5	2.3	4	45	4	
2NS 150 600	1.5	2.3	6	45	4	
2NS 150 800	1.5	2.3	8	45	4	
2NS 150 1000	1.5	2.3	10	45	4	

2날 평 리브
2F Necked Square End

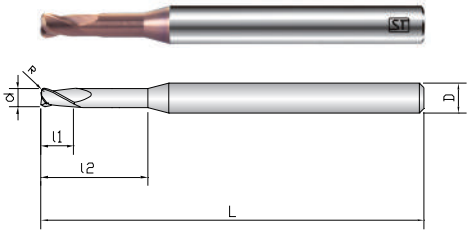
2NS

(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NS 150 1200	1.5	2.3	12	45	4	
2NS 150 1600	1.5	2.3	16	50	4	
2NS 150 1800	1.5	2.3	18	50	4	
2NS 150 2000	1.5	2.3	20	50	4	
2NS 150 2500	1.5	2.3	25	60	4	
2NS 160 1000	1.6	2.4	10	45	4	
2NS 160 1200	1.6	2.4	12	45	4	
2NS 160 1400	1.6	2.4	14	45	4	
2NS 160 1600	1.6	2.4	16	50	4	
2NS 160 1800	1.6	2.4	18	50	4	
2NS 200 600	2	3	6	45	4	
2NS 200 800	2	3	8	45	4	
2NS 200 1000	2	3	10	45	4	
2NS 200 1200	2	3	12	45	4	
2NS 200 1400	2	3	14	45	4	
2NS 200 1600	2	3	16	50	4	
2NS 200 1800	2	3	18	50	4	
2NS 200 2000	2	3	20	50	4	
2NS 200 2500	2	3	25	60	4	
2NS 200 3000	2	3	30	60	4	
2NS 250 1000	2.5	3	10	45	4	
2NS 250 1200	2.5	3	12	45	4	
2NS 250 1600	2.5	3	16	50	4	
2NS 250 2000	2.5	3	20	50	4	
2NS 250 2500	2.5	3	25	60	4	
2NS 300 1000	3	4.5	10	50	6	
2NS 300 1200	3	4.5	12	50	6	
2NS 300 1600	3	4.5	16	60	6	
2NS 300 2000	3	4.5	20	60	6	
2NS 300 2500	3	4.5	25	60	6	
2NS 300 3000	3	4.5	30	70	6	
2NS 300 3500	3	4.5	35	70	6	
2NS 300 4000	3	4.5	40	80	6	
2NS 400 1200	4	6	12	50	6	
2NS 400 1400	4	6	14	50	6	
2NS 400 1600	4	6	16	60	6	
2NS 400 2000	4	6	20	60	6	
2NS 400 2500	4	6	25	60	6	
2NS 400 3000	4	6	30	70	6	
2NS 400 3500	4	6	35	70	6	
2NS 400 4000	4	6	40	80	6	
2NS 400 5000	4	6	50	100	6	
2NS 600 1500	6	9	15	60	6	
2NS 600 2000	6	9	20	60	6	
2NS 800 2000	8	12	20	80	8	

2날 코너 R 리브
2F Necked Corner Radius

2NC



Features
- Extended neck style for long reach applications
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 롱 넥 형상으로 깊은 가공에 적합함
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Corner Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NC 040 R010 300	0.4 X R0.1	0.6	3	45	4	
2NC 050 R010 400	0.5 X R0.1	0.7	4	45	4	
2NC 060 R010 200	0.6 X R0.1	0.9	2	45	4	
2NC 060 R010 400	0.6 X R0.1	0.9	4	45	4	
2NC 060 R010 600	0.6 X R0.1	0.9	6	45	4	
2NC 080 R010 200	0.8 X R0.1	1.2	2	45	4	
2NC 080 R010 400	0.8 X R0.1	1.2	4	45	4	
2NC 080 R010 600	0.8 X R0.1	1.2	6	45	4	
2NC 080 R010 800	0.8 X R0.1	1.2	8	45	4	
2NC 080 R020 200	0.8 X R0.2	1.2	2	45	4	
2NC 080 R020 400	0.8 X R0.2	1.2	4	45	4	
2NC 080 R020 600	0.8 X R0.2	1.2	6	45	4	
2NC 080 R020 800	0.8 X R0.2	1.2	8	45	4	
2NC 100 R010 400	1.0 X R0.1	1.5	4	45	4	
2NC 100 R010 600	1.0 X R0.1	1.5	6	45	4	
2NC 100 R010 800	1.0 X R0.1	1.5	8	45	4	
2NC 100 R010 1000	1.0 X R0.1	1.5	10	45	4	
2NC 100 R010 1200	1.0 X R0.1	1.5	12	45	4	
2NC 100 R010 1600	1.0 X R0.1	1.5	16	50	4	
2NC 100 R010 2000	1.0 X R0.1	1.5	20	50	4	
2NC 100 R020 400	1.0 X R0.2	1.5	4	45	4	
2NC 100 R020 600	1.0 X R0.2	1.5	6	45	4	
2NC 100 R020 800	1.0 X R0.2	1.5	8	45	4	
2NC 100 R020 1000	1.0 X R0.2	1.5	10	45	4	

2날 코너 R 리브
2F Necked Corner Radius

2NC

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NC 100 R020 1200	1.0 X R0.2	1.5	12	45	4	
2NC 100 R020 1600	1.0 X R0.2	1.5	16	50	4	
2NC 100 R020 2000	1.0 X R0.2	1.5	20	50	4	
2NC 100 R030 400	1.0 X R0.3	1.5	4	45	4	
2NC 100 R030 600	1.0 X R0.3	1.5	6	45	4	
2NC 100 R030 800	1.0 X R0.3	1.5	8	45	4	
2NC 100 R030 1000	1.0 X R0.3	1.5	10	45	4	
2NC 100 R030 1200	1.0 X R0.3	1.5	12	45	4	
2NC 100 R030 1600	1.0 X R0.3	1.5	16	50	4	
2NC 100 R030 2000	1.0 X R0.3	1.5	20	50	4	
2NC 150 R010 400	1.5 X R0.1	2.3	4	45	4	
2NC 150 R010 600	1.5 X R0.1	2.3	6	45	4	
2NC 150 R010 800	1.5 X R0.1	2.3	8	45	4	
2NC 150 R010 1000	1.5 X R0.1	2.3	10	45	4	
2NC 150 R010 1200	1.5 X R0.1	2.3	12	45	4	
2NC 150 R010 1600	1.5 X R0.1	2.3	16	50	4	
2NC 150 R010 2000	1.5 X R0.1	2.3	20	50	4	
2NC 150 R020 400	1.5 X R0.2	2.3	4	45	4	
2NC 150 R020 600	1.5 X R0.2	2.3	6	45	4	
2NC 150 R020 800	1.5 X R0.2	2.3	8	45	4	
2NC 150 R020 1000	1.5 X R0.2	2.3	10	45	4	
2NC 150 R020 1200	1.5 X R0.2	2.3	12	45	4	
2NC 150 R020 1600	1.5 X R0.2	2.3	16	50	4	
2NC 150 R020 2000	1.5 X R0.2	2.3	20	50	4	
2NC 150 R030 400	1.5 X R0.3	2.3	4	45	4	
2NC 150 R030 600	1.5 X R0.3	2.3	6	45	4	
2NC 150 R030 800	1.5 X R0.3	2.3	8	45	4	
2NC 150 R030 1000	1.5 X R0.3	2.3	10	45	4	
2NC 150 R030 1200	1.5 X R0.3	2.3	12	45	4	
2NC 150 R030 1600	1.5 X R0.3	2.3	16	50	4	
2NC 150 R030 2000	1.5 X R0.3	2.3	20	50	4	
2NC 150 R050 400	1.5 X R0.5	2.3	4	45	4	
2NC 150 R050 600	1.5 X R0.5	2.3	6	45	4	
2NC 150 R050 800	1.5 X R0.5	2.3	8	45	4	
2NC 150 R050 1000	1.5 X R0.5	2.3	10	45	4	
2NC 150 R050 1200	1.5 X R0.5	2.3	12	45	4	
2NC 150 R050 1600	1.5 X R0.5	2.3	16	50	4	
2NC 150 R050 2000	1.5 X R0.5	2.3	20	50	4	
2NC 200 R010 600	2.0 X R0.1	3	6	45	4	
2NC 200 R010 800	2.0 X R0.1	3	8	45	4	
2NC 200 R010 1000	2.0 X R0.1	3	10	45	4	
2NC 200 R010 1200	2.0 X R0.1	3	12	45	4	
2NC 200 R010 1600	2.0 X R0.1	3	16	50	4	
2NC 200 R010 2000	2.0 X R0.1	3	20	50	4	
2NC 200 R020 600	2.0 X R0.2	3	6	45	4	

2날 코너 R 리브
2F Necked Corner Radius

2NC

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NC 200 R020 800	2.0 X R0.2	3	8	45	4	
2NC 200 R020 1000	2.0 X R0.2	3	10	45	4	
2NC 200 R020 1200	2.0 X R0.2	3	12	45	4	
2NC 200 R020 1600	2.0 X R0.2	3	16	50	4	
2NC 200 R020 2000	2.0 X R0.2	3	20	50	4	
2NC 200 R030 600	2.0 X R0.3	3	6	45	4	
2NC 200 R030 800	2.0 X R0.3	3	8	45	4	
2NC 200 R030 1000	2.0 X R0.3	3	10	45	4	
2NC 200 R030 1200	2.0 X R0.3	3	12	45	4	
2NC 200 R030 1600	2.0 X R0.3	3	16	50	4	
2NC 200 R030 2000	2.0 X R0.3	3	20	50	4	
2NC 200 R050 600	2.0 X R0.5	3	6	45	4	
2NC 200 R050 800	2.0 X R0.5	3	8	45	4	
2NC 200 R050 1000	2.0 X R0.5	3	10	45	4	
2NC 200 R050 1200	2.0 X R0.5	3	12	45	4	
2NC 200 R050 1600	2.0 X R0.5	3	16	50	4	
2NC 200 R050 2000	2.0 X R0.5	3	20	50	4	
2NC 300 R010 800	3.0 X R0.1	4.5	8	50	6	
2NC 300 R010 1000	3.0 X R0.1	4.5	10	50	6	
2NC 300 R010 1200	3.0 X R0.1	4.5	12	50	6	
2NC 300 R010 1600	3.0 X R0.1	4.5	16	60	6	
2NC 300 R010 2000	3.0 X R0.1	4.5	20	60	6	
2NC 300 R010 2500	3.0 X R0.1	4.5	25	60	6	
2NC 300 R020 800	3.0 X R0.2	4.5	8	50	6	
2NC 300 R020 1000	3.0 X R0.2	4.5	10	50	6	
2NC 300 R020 1200	3.0 X R0.2	4.5	12	50	6	
2NC 300 R020 1600	3.0 X R0.2	4.5	16	60	6	
2NC 300 R020 2000	3.0 X R0.2	4.5	20	60	6	
2NC 300 R020 2500	3.0 X R0.2	4.5	25	60	6	
2NC 300 R030 800	3.0 X R0.3	4.5	8	50	6	
2NC 300 R030 1000	3.0 X R0.3	4.5	10	50	6	
2NC 300 R030 1200	3.0 X R0.3	4.5	12	50	6	
2NC 300 R030 1600	3.0 X R0.3	4.5	16	60	6	
2NC 300 R030 2000	3.0 X R0.3	4.5	20	60	6	
2NC 300 R030 2500	3.0 X R0.3	4.5	25	60	6	
2NC 300 R050 800	3.0 X R0.5	4.5	8	50	6	
2NC 300 R050 1000	3.0 X R0.5	4.5	10	50	6	
2NC 300 R050 1200	3.0 X R0.5	4.5	12	50	6	
2NC 300 R050 1600	3.0 X R0.5	4.5	16	60	6	
2NC 300 R050 2000	3.0 X R0.5	4.5	20	60	6	
2NC 300 R050 2500	3.0 X R0.5	4.5	25	60	6	
2NC 300 R100 800	3.0 X R1.0	4.5	8	50	6	
2NC 300 R100 1000	3.0 X R1.0	4.5	10	50	6	
2NC 300 R100 1200	3.0 X R1.0	4.5	12	50	6	
2NC 300 R100 1600	3.0 X R1.0	4.5	16	60	6	
2NC 300 R100 2000	3.0 X R1.0	4.5	20	60	6	
2NC 300 R100 2500	3.0 X R1.0	4.5	25	60	6	

2날 코너 R 리브
2F Necked Corner Radius

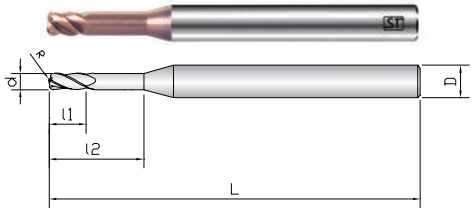
2NC

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NC 400 R010 1000	4.0 X R0.1	6	10	50	6	
2NC 400 R010 1200	4.0 X R0.1	6	12	50	6	
2NC 400 R010 1600	4.0 X R0.1	6	16	60	6	
2NC 400 R010 2000	4.0 X R0.1	6	20	60	6	
2NC 400 R010 2500	4.0 X R0.1	6	25	60	6	
2NC 400 R010 3000	4.0 X R0.1	6	30	70	6	
2NC 400 R020 1000	4.0 X R0.2	6	10	50	6	
2NC 400 R020 1200	4.0 X R0.2	6	12	50	6	
2NC 400 R020 1600	4.0 X R0.2	6	16	60	6	
2NC 400 R020 2000	4.0 X R0.2	6	20	60	6	
2NC 400 R020 2500	4.0 X R0.2	6	25	60	6	
2NC 400 R020 3000	4.0 X R0.2	6	30	70	6	
2NC 400 R030 1000	4.0 X R0.3	6	10	50	6	
2NC 400 R030 1200	4.0 X R0.3	6	12	50	6	
2NC 400 R030 1600	4.0 X R0.3	6	16	60	6	
2NC 400 R030 2000	4.0 X R0.3	6	20	60	6	
2NC 400 R030 2500	4.0 X R0.3	6	25	60	6	
2NC 400 R030 3000	4.0 X R0.3	6	30	70	6	
2NC 400 R050 1000	4.0 X R0.5	6	10	50	6	
2NC 400 R050 1200	4.0 X R0.5	6	12	50	6	
2NC 400 R050 1600	4.0 X R0.5	6	16	60	6	
2NC 400 R050 2000	4.0 X R0.5	6	20	60	6	
2NC 400 R050 2500	4.0 X R0.5	6	25	60	6	
2NC 400 R050 3000	4.0 X R0.5	6	30	70	6	
2NC 400 R100 1000	4.0 X R1.0	6	10	50	6	
2NC 400 R100 1200	4.0 X R1.0	6	12	50	6	
2NC 400 R100 1600	4.0 X R1.0	6	16	60	6	
2NC 400 R100 2000	4.0 X R1.0	6	20	60	6	
2NC 400 R100 2500	4.0 X R1.0	6	25	60	6	
2NC 400 R100 3000	4.0 X R1.0	6	30	70	6	
2NC 600 R010 2000	6.0 X R0.1	9	20	60	6	
2NC 600 R020 2000	6.0 X R0.2	9	20	60	6	
2NC 600 R030 2000	6.0 X R0.3	9	20	60	6	
2NC 600 R050 1600	6.0 X R0.5	9	16	60	6	
2NC 600 R050 2000	6.0 X R0.5	9	20	60	6	
2NC 600 R100 2000	6.0 X R1.0	9	20	60	6	
2NC 600 R150 2000	6.0 X R1.5	9	20	60	6	
2NC 800 R020 2400	8.0 X R0.2	12	24	65	8	
2NC 800 R030 2400	8.0 X R0.3	12	24	65	8	
2NC 800 R050 2400	8.0 X R0.5	12	24	65	8	
2NC 800 R100 2400	8.0 X R1.0	12	24	65	8	
2NC 800 R150 2400	8.0 X R1.5	12	24	65	8	
2NC 1000 R050 2500	10.0 X R0.5	15	25	70	10	
2NC 1000 R100 2500	10.0 X R1.0	15	25	70	10	
2NC 1200 R050 2500	12.0 X R0.5	15	25	80	12	
2NC 1200 R100 2500	12.0 X R1.0	15	25	80	12	

4날 코너 R 리브
4F Necked Corner Radius

4NC



Features
- Extended neck style for long reach applications
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 롱 넥 형상으로 깊은 가공에 적합함
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Corner Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
4NC 100 R020 400	1.0 X R0.2	1.5	4	45	4	
4NC 100 R020 600	1.0 X R0.2	1.5	6	45	4	
4NC 100 R020 800	1.0 X R0.2	1.5	8	45	4	
4NC 200 R020 600	2.0 X R0.2	3	6	45	4	
4NC 200 R020 800	2.0 X R0.2	3	8	45	4	
4NC 200 R020 1000	2.0 X R0.2	3	10	45	4	
4NC 200 R020 1200	2.0 X R0.2	3	12	45	4	
4NC 200 R020 1600	2.0 X R0.2	3	16	50	4	
4NC 200 R020 2000	2.0 X R0.2	3	20	50	4	
4NC 200 R030 600	2.0 X R0.3	3	6	45	4	
4NC 200 R030 800	2.0 X R0.3	3	8	45	4	
4NC 200 R030 1000	2.0 X R0.3	3	10	45	4	
4NC 200 R030 1200	2.0 X R0.3	3	12	45	4	
4NC 200 R030 1600	2.0 X R0.3	3	16	50	4	
4NC 200 R030 2000	2.0 X R0.3	3	20	50	4	
4NC 200 R050 600	2.0 X R0.5	3	6	45	4	
4NC 200 R050 800	2.0 X R0.5	3	8	45	4	
4NC 200 R050 1000	2.0 X R0.5	3	10	45	4	
4NC 200 R050 1200	2.0 X R0.5	3	12	45	4	
4NC 200 R050 1600	2.0 X R0.5	3	16	50	4	
4NC 200 R050 2000	2.0 X R0.5	3	20	50	4	
4NC 250 R050 1000	2.5 X R0.5	3.5	10	45	4	
4NC 250 R050 1600	2.5 X R0.5	3.5	16	50	4	
4NC 300 R020 1000	3.0 X R0.2	4.5	10	50	6	

4날 코너 R 리브
4F Necked Corner Radius

4NC

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
4NC 300 R020 1200	3.0 X R0.2	4.5	12	50	6	
4NC 300 R020 1600	3.0 X R0.2	4.5	16	60	6	
4NC 300 R020 2000	3.0 X R0.2	4.5	20	60	6	
4NC 300 R020 2500	3.0 X R0.2	4.5	25	60	6	
4NC 300 R030 1000	3.0 X R0.3	4.5	10	50	6	
4NC 300 R030 1200	3.0 X R0.3	4.5	12	50	6	
4NC 300 R030 1600	3.0 X R0.3	4.5	16	60	6	
4NC 300 R030 2000	3.0 X R0.3	4.5	20	60	6	
4NC 300 R030 2500	3.0 X R0.3	4.5	25	60	6	
4NC 300 R050 1000	3.0 X R0.5	4.5	10	50	6	
4NC 300 R050 1200	3.0 X R0.5	4.5	12	50	6	
4NC 300 R050 1600	3.0 X R0.5	4.5	16	60	6	
4NC 300 R050 2000	3.0 X R0.5	4.5	20	60	6	
4NC 300 R050 2500	3.0 X R0.5	4.5	25	60	6	
4NC 300 R100 1000	3.0 X R1.0	4.5	10	50	6	
4NC 300 R100 1200	3.0 X R1.0	4.5	12	50	6	
4NC 300 R100 1600	3.0 X R1.0	4.5	16	60	6	
4NC 300 R100 2000	3.0 X R1.0	4.5	20	60	6	
4NC 300 R100 2500	3.0 X R1.0	4.5	25	60	6	
4NC 400 R020 1000	4.0 X R0.2	6	10	50	6	
4NC 400 R020 1200	4.0 X R0.2	6	12	50	6	
4NC 400 R020 1600	4.0 X R0.2	6	16	60	6	
4NC 400 R020 2000	4.0 X R0.2	6	20	60	6	
4NC 400 R020 2500	4.0 X R0.2	6	25	60	6	
4NC 400 R030 1000	4.0 X R0.3	6	10	50	6	
4NC 400 R030 1200	4.0 X R0.3	6	12	50	6	
4NC 400 R030 1600	4.0 X R0.3	6	16	60	6	
4NC 400 R030 2000	4.0 X R0.3	6	20	60	6	
4NC 400 R030 2500	4.0 X R0.3	6	25	60	6	
4NC 400 R050 1000	4.0 X R0.5	6	10	50	6	
4NC 400 R050 1200	4.0 X R0.5	6	12	50	6	
4NC 400 R050 1600	4.0 X R0.5	6	16	60	6	
4NC 400 R050 2000	4.0 X R0.5	6	20	60	6	
4NC 400 R050 2500	4.0 X R0.5	6	25	60	6	
4NC 400 R100 1000	4.0 X R1.0	6	10	50	6	
4NC 400 R100 1200	4.0 X R1.0	6	12	50	6	
4NC 400 R100 1600	4.0 X R1.0	6	16	60	6	
4NC 400 R100 2000	4.0 X R1.0	6	20	60	6	
4NC 400 R100 2500	4.0 X R1.0	6	25	60	6	
4NC 500 R020 1200	5.0 X R0.2	9	12	60	6	
4NC 500 R020 1600	5.0 X R0.2	9	16	60	6	
4NC 500 R050 1200	5.0 X R0.5	9	12	60	6	
4NC 500 R050 1600	5.0 X R0.5	9	16	60	6	
4NC 600 R020 1600	6.0 X R0.2	9	16	60	6	
4NC 600 R020 2000	6.0 X R0.2	9	20	60	6	

4날 코너 R 리브
4F Necked Corner Radius

4NC

(Unit: mm)

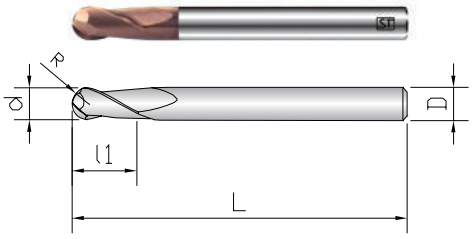
주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
4NC 600 R030 1600	6.0 X R0.3	9	16	60	6	
4NC 600 R030 2000	6.0 X R0.3	9	20	60	6	
4NC 600 R050 1600	6.0 X R0.5	9	16	60	6	
4NC 600 R050 2000	6.0 X R0.5	9	20	60	6	
4NC 600 R100 1600	6.0 X R1.0	9	16	60	6	
4NC 600 R100 2000	6.0 X R1.0	9	20	60	6	
4NC 800 R030 2400	8.0 X R0.3	12	24	65	8	
4NC 800 R050 2400	8.0 X R0.5	12	24	65	8	
4NC 800 R100 2400	8.0 X R1.0	12	24	65	8	
4NC 800 R150 2400	8.0 X R1.5	12	24	65	8	
4NC 1000 R050 2500	10.0 X R0.5	11	25	70	10	
4NC 1000 R100 2500	10.0 X R1.0	11	25	70	10	
4NC 1000 R150 2500	10.0 X R1.5	11	25	70	10	
4NC 1000 R200 2500	10.0 X R2.0	11	25	70	10	
4NC 1200 R050 3000	12.0 X R0.5	12	30	80	12	
4NC 1200 R100 3000	12.0 X R1.0	12	30	80	12	
4NC 1200 R150 3000	12.0 X R1.5	12	30	80	12	
4NC 1200 R200 3000	12.0 X R2.0	12	30	80	12	

General Use

SPEED-1

2날 볼 표준
2F Ball End-Regular

2BR



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	R≤0.25: 0/-0.005 R>0.25: 0/-0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BR 020 040 S4	0.2 X R0.1	0.4	45	4	
2BR 030 060 S4	0.3 X R0.15	0.6	45	4	
2BR 040 080 S4	0.4 X R0.2	0.8	45	4	
2BR 050 100 S4	0.5 X R0.25	1	45	4	
2BR 060 120 S4	0.6 X R0.3	1.2	45	4	
2BR 070 150 S4	0.7 X R0.35	1.5	45	4	
2BR 100 250 S4	1.0 X R0.5	2.5	45	4	
2BR 100 250 S6	1.0 X R0.5	2.5	50	6	
2BR 120 300 S4	1.2 X R0.6	3	45	4	
2BR 150 300 S4	1.5 X R0.75	3	45	4	
2BR 150 300 S6	1.5 X R0.75	3	50	6	
2BR 200 500 S4	2.0 X R1.0	5	45	4	
2BR 200 500 S6	2.0 X R1.0	5	50	6	
2BR 250 600 S4	2.5 X R1.25	6	45	4	
2BR 250 600 S6	2.5 X R1.25	6	50	6	
2BR 300 800 S4	3.0 X R1.5	8	50	4	
2BR 300 800 S6	3.0 X R1.5	8	60	6	
2BR 400 800 S4	4.0 X R2.0	8	60	4	
2BR 400 800 S6	4.0 X R2.0	8	60	6	
2BR 500 1000 S6	5.0 X R2.5	10	70	6	
2BR 600 1200 60	6.0 X R3.0	12	60	6	
2BR 600 1200 70	6.0 X R3.0	12	70	6	
2BR 600 1200 80	6.0 X R3.0	12	80	6	
2BR 600 1200 90	6.0 X R3.0	12	90	6	

2날 볼 표준
2F Ball End-Regular

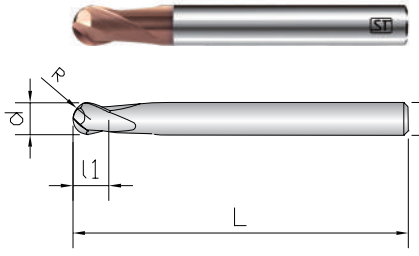
2BR

(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BR 600 1200 100	6.0 X R3.0	12	100	6	
2BR 800 1400 90	8.0 X R4.0	14	90	8	
2BR 800 1400 100	8.0 X R4.0	14	100	8	
2BR 800 1400 110	8.0 X R4.0	14	110	8	
2BR 1000 1800 90	10.0 X R5.0	18	90	10	
2BR 1000 1800 100	10.0 X R5.0	18	100	10	
2BR 1200 2200 100	12.0 X R6.0	22	100	12	
2BR 1200 2200 130	12.0 X R6.0	22	130	12	

2날 볼 쇼트
2F Ball End-Short

2BS



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality
- Suitable for heat shirink fit chucks

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함
- 열박음척에 사용하는데 적합함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	R≤0.25: 0/-0.005 R>0.25: 0/-0.01

Recommended workpiece Material :

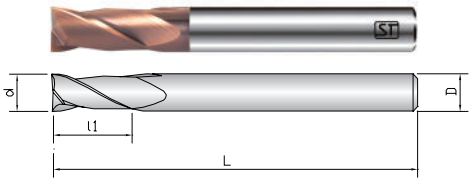
탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BS 050 050 S4	0.5 X R0.25	0.5	45	4	
2BS 100 100 S4	1.0 X R0.5	1	45	4	
2BS 150 150 S4	1.5 X R0.75	1.5	45	4	
2BS 200 200 S4	2.0 X R1.0	2	45	4	
2BS 300 300 S4	3.0 X R1.5	3	45	4	
2BS 400 400 S4	4.0 X R2.0	4	45	4	
2BS 600 600 S6	6.0 X R3.0	6	50	6	
2BS 800 1000 S8	8.0 X R4.0	10	60	8	
2BS 1000 1000 S10	10.0 X R5.0	10	70	10	
2BS 1200 1200 S12	12.0 X R6.0	12	75	12	

2날 평 표준
2F Square End-Regular

2SR



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

General Use

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날직경 Cutting Dia. d	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2SR 020 030 S4	0.2	0.3	45	4	
2SR 030 050 S4	0.3	0.5	45	4	
2SR 040 080 S4	0.4	0.8	45	4	
2SR 050 100 S4	0.5	1	45	4	
2SR 060 120 S4	0.6	1.2	45	4	
2SR 070 140 S4	0.7	1.4	45	4	
2SR 080 160 S4	0.8	1.6	45	4	
2SR 100 250 S4	1	2.5	45	4	
2SR 100 250 S6	1	2.5	45	6	
2SR 120 300 S4	1.2	3	45	4	
2SR 150 400 S4	1.5	4	45	4	
2SR 150 400 S6	1.5	4	45	6	
2SR 200 600 S4	2	6	45	4	
2SR 200 600 S6	2	6	45	6	
2SR 250 800 S4	2.5	8	45	4	
2SR 250 800 S6	2.5	8	45	6	
2SR 300 800 S4	3	8	45	4	
2SR 300 800 S6	3	8	45	6	
2SR 400 1000 S4	4	10	45	4	
2SR 400 1000 S6	4	10	45	6	
2SR 500 1300 S6	5	13	50	6	
2SR 600 1500 S6	6	15	50	6	
2SR 700 1600 S8	7	16	60	8	
2SR 800 1900 S8	8	19	60	8	

2날 평 표준
2F Square End-Regular

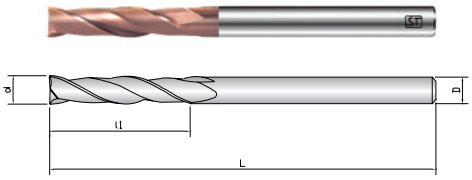
2SR

(Unit: mm)

주문 번호 EDP No.	날직경 Cutting Dia. d	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2SR 900 1900 S10	9	19	70	10	
2SR 1000 2200 S10	10	22	70	10	
2SR 1100 2200 S12	11	22	75	12	
2SR 1200 2600 S12	12	26	75	12	

2날 평 롱
2F Square End-Long

2SL



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

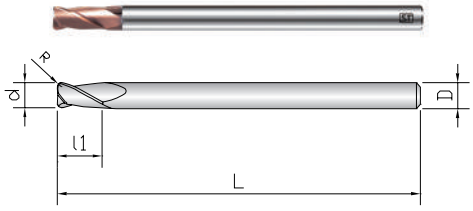
탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날직경 Cutting Dia. d	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2SL 100 500 60	1	5	60	6	
2SL 150 1000 60	1.5	10	60	6	
2SL 200 1000 60	2	10	60	6	
2SL 300 1500 70	3	15	70	6	
2SL 400 2000 70	4	20	70	6	
2SL 500 2000 70	5	20	70	6	
2SL 600 2000 70	6	20	70	6	
2SL 600 2500 75	6	25	75	6	
2SL 600 3000 80	6	30	80	6	
2SL 800 2500 75	8	25	75	8	
2SL 800 3000 80	8	30	80	8	
2SL 800 4000 90	8	40	90	8	
2SL 1000 3000 80	10	30	80	10	
2SL 1000 3500 80	10	35	80	10	
2SL 1000 4000 90	10	40	90	10	
2SL 1000 5000 100	10	50	100	10	
2SL 1200 3000 80	12	30	80	12	
2SL 1200 4000 100	12	40	100	12	
2SL 1200 5000 110	12	50	110	12	

2날 코너 R 롱
2F Corner Radius-Long

2CL



Features
- Used micrograin solid carbide excellent for high speed cutting:
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수

Tolerance :

Cutting Dia.	Corner Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2CL 080 R020 45	0.8 X R0.2	1.6	45	4	
2CL 100 R010 45	1.0 X R0.1	2.5	45	4	
2CL 100 R020 45	1.0 X R0.2	2.5	45	4	
2CL 100 R030 45	1.0 X R0.3	2.5	45	4	
2CL 120 R010 45	1.2 X R0.1	3	45	4	
2CL 120 R020 45	1.2 X R0.2	3	45	4	
2CL 150 R010 45	1.5 X R0.1	4	45	4	
2CL 150 R020 45	1.5 X R0.2	4	45	4	
2CL 150 R030 45	1.5 X R0.3	4	45	4	
2CL 150 R050 45	1.5 X R0.5	4	45	4	
2CL 200 R010 45	2.0 X R0.1	6	45	4	
2CL 200 R020 45	2.0 X R0.2	6	45	4	
2CL 200 R030 45	2.0 X R0.3	6	45	4	
2CL 200 R050 45	2.0 X R0.5	6	45	4	
2CL 300 R010 60	3.0 X R0.1	8	60	6	
2CL 300 R020 60	3.0 X R0.2	8	60	6	
2CL 300 R030 60	3.0 X R0.3	8	60	6	
2CL 300 R050 60	3.0 X R0.5	8	60	6	
2CL 400 R010 70	4.0 X R0.1	11	70	6	
2CL 400 R020 70	4.0 X R0.2	11	70	6	
2CL 400 R030 70	4.0 X R0.3	11	70	6	
2CL 400 R050 70	4.0 X R0.5	11	70	6	
2CL 400 R100 70	4.0 X R1.0	11	70	6	
2CL 500 R020 75	5.0 X R0.2	13	75	6	

2날 코너 R 롱
2F Corner Radius-Long

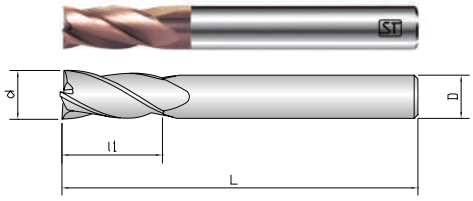
2CL

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2CL 600 R010 90	6.0 X R0.1	13	90	6	
2CL 600 R020 90	6.0 X R0.2	13	90	6	
2CL 600 R030 90	6.0 X R0.3	13	90	6	
2CL 600 R050 90	6.0 X R0.5	13	90	6	
2CL 600 R100 90	6.0 X R1.0	13	90	6	
2CL 600 R150 90	6.0 X R1.5	13	90	6	
2CL 800 R010 90	8.0 X R0.1	19	90	8	
2CL 800 R020 90	8.0 X R0.2	19	90	8	
2CL 800 R030 90	8.0 X R0.3	19	90	8	
2CL 800 R050 90	8.0 X R0.5	19	90	8	
2CL 800 R050 100	8.0 X R0.5	19	100	8	
2CL 800 R100 90	8.0 X R1.0	19	90	8	
2CL 800 R100 100	8.0 X R1.0	19	100	8	
2CL 800 R200 90	8.0 X R2.0	19	90	8	
2CL 1000 R020 100	10.0 X R0.2	22	100	10	
2CL 1000 R030 100	10.0 X R0.3	22	100	10	
2CL 1000 R050 100	10.0 X R0.5	22	100	10	
2CL 1000 R050 130	10.0 X R0.5	22	130	10	
2CL 1000 R100 100	10.0 X R1.0	22	100	10	
2CL 1000 R100 130	10.0 X R1.0	22	130	10	
2CL 1000 R150 100	10.0 X R1.5	22	100	10	
2CL 1000 R200 100	10.0 X R2.0	22	100	10	
2CL 1000 R250 100	10.0 X R2.5	22	100	10	
2CL 1200 R050 100	12.0 X R0.5	26	100	12	
2CL 1200 R050 130	12.0 X R0.5	26	130	12	
2CL 1200 R100 100	12.0 X R1.0	26	100	12	
2CL 1200 R100 130	12.0 X R1.0	26	130	12	
2CL 1200 R150 100	12.0 X R1.5	26	100	12	
2CL 1200 R200 100	12.0 X R2.0	26	100	12	

4날 평 표준
4F Square End-Regular

4SR



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

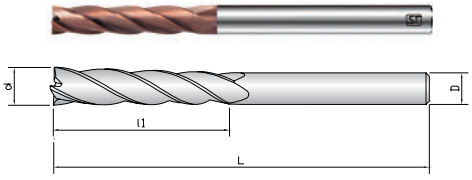
탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날직경 Cutting Dia. d	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
4SR 100 250 S4	1	2.5	45	4	
4SR 100 250 S6	1	2.5	45	6	
4SR 150 400 S4	1.5	4	45	4	
4SR 150 400 S6	1.5	4	45	6	
4SR 200 600 S4	2	6	45	4	
4SR 200 600 S6	2	6	45	6	
4SR 250 800 S4	2.5	8	45	4	
4SR 250 800 S6	2.5	8	45	6	
4SR 300 800 S4	3	8	45	4	
4SR 300 800 S6	3	8	45	6	
4SR 400 1000 S4	4	10	45	4	
4SR 400 1000 S6	4	10	45	6	
4SR 500 1300 S6	5	13	50	6	
4SR 600 1500 S6	6	15	50	6	
4SR 700 1600 S8	7	16	60	8	
4SR 800 1900 S8	8	19	60	8	
4SR 1000 2200 S10	10	22	70	10	
4SR 1200 2600 S12	12	26	75	12	

4날 평 롱
4F Square End-Long

4SL



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
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Recommended workpiece Material :

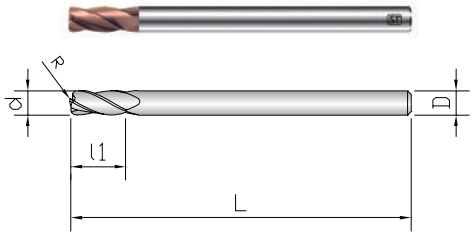
탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날직경 Cutting Dia. d	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
4SL 200 1000 60	2	10	60	6	
4SL 300 1500 70	3	15	70	6	
4SL 300 2000 70	3	20	70	6	
4SL 400 1500 70	4	15	70	6	
4SL 400 2000 70	4	20	70	6	
4SL 500 2500 70	5	25	70	6	
4SL 600 2000 70	6	20	70	6	
4SL 600 3000 80	6	30	80	6	
4SL 800 3000 80	8	30	80	8	
4SL 800 3500 90	8	35	90	8	
4SL 800 4000 90	8	40	90	8	
4SL 1000 3500 90	10	35	90	10	
4SL 1000 4000 90	10	40	90	10	
4SL 1000 5000 100	10	50	100	10	
4SL 1000 6000 110	10	60	110	10	
4SL 1200 3000 90	12	30	90	12	
4SL 1200 4000 100	12	40	100	12	
4SL 1200 6000 110	12	60	110	12	

4날 코너 R 롱
4F Corner Radius-Long

4CL



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
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- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Corner Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
4CL 150 R020 45	1.5 X R0.2	4	45	4	
4CL 150 R030 45	1.5 X R0.3	4	45	4	
4CL 200 R020 45	2.0 X R0.2	6	45	4	
4CL 200 R030 45	2.0 X R0.3	6	45	4	
4CL 200 R050 45	2.0 X R0.5	6	45	4	
4CL 300 R020 60	3.0 X R0.2	8	60	6	
4CL 300 R030 60	3.0 X R0.3	8	60	6	
4CL 300 R050 60	3.0 X R0.5	8	60	6	
4CL 400 R020 70	4.0 X R0.2	11	70	6	
4CL 400 R030 70	4.0 X R0.3	11	70	6	
4CL 400 R050 70	4.0 X R0.5	11	70	6	
4CL 400 R100 70	4.0 X R1.0	11	70	6	
4CL 500 R050 70	5.0 X R0.5	11	70	6	
4CL 600 R020 80	6.0 X R0.2	13	80	6	
4CL 600 R030 80	6.0 X R0.3	13	80	6	
4CL 600 R050 80	6.0 X R0.5	13	80	6	
4CL 600 R100 80	6.0 X R1.0	13	80	6	
4CL 600 R150 80	6.0 X R1.5	13	80	6	
4CL 800 R020 90	8.0 X R0.2	19	90	8	
4CL 800 R030 90	8.0 X R0.3	19	90	8	
4CL 800 R050 90	8.0 X R0.5	19	90	8	
4CL 800 R100 90	8.0 X R1.0	19	90	8	
4CL 1000 R050 100	10.0 X R0.5	22	100	10	
4CL 1000 R100 100	10.0 X R1.0	22	100	10	

4날 코너 R 롱
4F Corner Radius-Long

4CL

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
4CL 1000 R150 100	10.0 X R1.5	22	100	10	
4CL 1200 R050 110	12.0 X R0.5	26	110	12	
4CL 1200 R100 110	12.0 X R1.0	26	110	12	
4CL 1200 R200 110	12.0 X R2.0	26	110	12	

스타공구(주)
StarTool Co., Ltd.

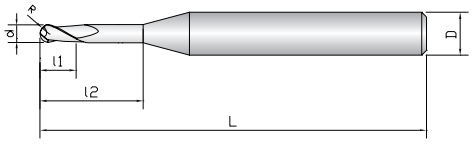
High Performance

SPEED-1

2날 볼 리브-고경도용
2F Necked Ball End for Hardened Steels

2NBH

2 | HX30° | M/G Carbide | S-HC Coated



Features

- Extended neck style for long reach applications
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- A highly-wear resistant nanocomposite coating for oxidation resistance and extreme hardness
- Cutting geometry specifically engineered for hardened steels
- Improved workpiece surface quality

특징

- 롱 넥 형상으로 깊은 가공에 적합함
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 고 내마모성의 나노컴포지트 코팅으로 내열성이 좋고 고경도소재의 가공에 적합함
- 절삭날의 치수와 형상은 고경도 소재 가공에 최적화됨
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	R≤0.25: 0/-0.005 R>0.25: 0/-0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
				○					

(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NBH 040 100	0.4 X R0.2	0.4	1	45	4	
2NBH 040 200	0.4 X R0.2	0.4	2	45	4	
2NBH 040 300	0.4 X R0.2	0.4	3	45	4	
2NBH 050 200	0.5 X R0.25	0.5	2	45	4	
2NBH 050 300	0.5 X R0.25	0.5	3	45	4	
2NBH 050 400	0.5 X R0.25	0.5	4	45	4	
2NBH 060 300	0.6 X R0.3	0.6	3	45	4	
2NBH 060 400	0.6 X R0.3	0.6	4	45	4	
2NBH 060 600	0.6 X R0.3	0.6	6	45	4	
2NBH 080 400	0.8 X R0.4	0.8	4	45	4	
2NBH 080 600	0.8 X R0.4	0.8	6	45	4	
2NBH 080 800	0.8 X R0.4	0.8	8	45	4	
2NBH 100 400	1.0 X R0.5	1	4	45	4	
2NBH 100 500	1.0 X R0.5	1	5	45	4	
2NBH 100 600	1.0 X R0.5	1	6	45	4	
2NBH 100 800	1.0 X R0.5	1	8	45	4	
2NBH 100 1000	1.0 X R0.5	1	10	45	4	
2NBH 120 600	1.2 X R0.6	1.2	6	45	4	
2NBH 120 800	1.2 X R0.6	1.2	8	45	4	
2NBH 120 1000	1.2 X R0.6	1.2	10	45	4	
2NBH 150 600	1.5 X R0.75	1.5	6	45	4	
2NBH 150 800	1.5 X R0.75	1.5	8	45	4	

2날 볼 리브-고경도용
2F Necked Ball End for Hardened Steels

2NBH

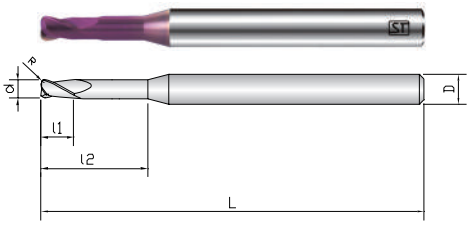
(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NBH 150 1000	1.5 X R0.75	1.5	10	45	4	
2NBH 150 1200	1.5 X R0.75	1.5	12	45	4	
2NBH 200 600	2.0 X R1.0	2	6	45	4	
2NBH 200 800	2.0 X R1.0	2	8	45	4	
2NBH 200 1000	2.0 X R1.0	2	10	45	4	
2NBH 200 1200	2.0 X R1.0	2	12	45	4	
2NBH 300 800	3.0 X R1.5	3	8	50	6	
2NBH 300 1000	3.0 X R1.5	3	10	50	6	
2NBH 300 1200	3.0 X R1.5	3	12	50	6	
2NBH 300 1600	3.0 X R1.5	3	16	60	6	
2NBH 400 1200	4.0 X R2.0	4	12	50	6	
2NBH 400 1600	4.0 X R2.0	4	16	60	6	
2NBH 400 2000	4.0 X R2.0	4	20	60	6	
2NBH 600 1500	6.0 X R3.0	9	15	60	6	
2NBH 600 2000	6.0 X R3.0	9	20	60	6	
2NBH 600 3000	6.0 X R3.0	9	30	60	6	
2NBH 800 2500	8.0 X R4.0	10	25	60	8	
2NBH 1000 3000	10.0 X R5.0	12	30	70	10	
2NBH 1200 3000	12.0 X R6.0	14	30	80	12	

2날 코너 R 리브-고경도용
2F Necked Corner Radius for Hardened Steels

2NCH

2 | HX30° | M/G Carbide | S-HC Coated



Features
- Extended neck style for long reach applications
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- A highly-wear resistant nanocomposite coating for oxidation resistance and extreme hardness
- Cutting geometry specifically engineered for hardened steels
- Improved workpiece surface quality

특징
- 롱 넥 형상으로 깊은 가공에 적합함
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 고 내마모성의 나노컴포지트 코팅으로 내열성이 좋고 고경도소재의 가공에 적합함
- 절삭날의 치수와 형상은 고경도 소재 가공에 최적화됨
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Corner Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
				○					

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NCH 080 R010 200	0.8 X R0.1	1.2	2	45	4	
2NCH 080 R010 400	0.8 X R0.1	1.2	4	45	4	
2NCH 080 R010 600	0.8 X R0.1	1.2	6	45	4	
2NCH 080 R010 800	0.8 X R0.1	1.2	8	45	4	
2NCH 080 R020 200	0.8 X R0.2	1.2	2	45	4	
2NCH 080 R020 400	0.8 X R0.2	1.2	4	45	4	
2NCH 080 R020 600	0.8 X R0.2	1.2	6	45	4	
2NCH 080 R020 800	0.8 X R0.2	1.2	8	45	4	
2NCH 100 R010 400	1.0 X R0.1	1.5	4	45	4	
2NCH 100 R010 600	1.0 X R0.1	1.5	6	45	4	
2NCH 100 R010 800	1.0 X R0.1	1.5	8	45	4	
2NCH 100 R010 1000	1.0 X R0.1	1.5	10	45	4	
2NCH 100 R020 400	1.0 X R0.2	1.5	4	45	4	
2NCH 100 R020 600	1.0 X R0.2	1.5	6	45	4	
2NCH 100 R020 800	1.0 X R0.2	1.5	8	45	4	
2NCH 100 R020 1000	1.0 X R0.2	1.5	10	45	4	
2NCH 150 R010 400	1.5 X R0.1	2.3	4	45	4	
2NCH 150 R010 600	1.5 X R0.1	2.3	6	45	4	
2NCH 150 R010 800	1.5 X R0.1	2.3	8	45	4	
2NCH 150 R010 1000	1.5 X R0.1	2.3	10	45	4	
2NCH 150 R020 400	1.5 X R0.2	2.3	4	45	4	
2NCH 150 R020 600	1.5 X R0.2	2.3	6	45	4	

2날 코너 R 리브-고경도용
2F Necked Corner Radius for Hardened Steels

2NCH

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NCH 150 R020 800	1.5 X R0.2	2.3	8	45	4	
2NCH 150 R020 1000	1.5 X R0.2	2.3	10	45	4	
2NCH 150 R030 400	1.5 X R0.3	2.3	4	45	4	
2NCH 150 R030 600	1.5 X R0.3	2.3	6	45	4	
2NCH 150 R030 800	1.5 X R0.3	2.3	8	45	4	
2NCH 150 R030 1000	1.5 X R0.3	2.3	10	45	4	
2NCH 200 R010 600	2.0 X R0.1	3	6	45	4	
2NCH 200 R010 800	2.0 X R0.1	3	8	45	4	
2NCH 200 R010 1000	2.0 X R0.1	3	10	45	4	
2NCH 200 R010 1200	2.0 X R0.1	3	12	45	4	
2NCH 200 R020 600	2.0 X R0.2	3	6	45	4	
2NCH 200 R020 800	2.0 X R0.2	3	8	45	4	
2NCH 200 R020 1000	2.0 X R0.2	3	10	45	4	
2NCH 200 R020 1200	2.0 X R0.2	3	12	45	4	
2NCH 200 R030 600	2.0 X R0.3	3	6	45	4	
2NCH 200 R030 800	2.0 X R0.3	3	8	45	4	
2NCH 200 R030 1000	2.0 X R0.3	3	10	45	4	
2NCH 200 R030 1200	2.0 X R0.3	3	12	45	4	
2NCH 300 R020 800	3.0 X R0.2	4.5	8	50	6	
2NCH 300 R020 1000	3.0 X R0.2	4.5	10	50	6	
2NCH 300 R020 1200	3.0 X R0.2	4.5	12	50	6	
2NCH 300 R020 1600	3.0 X R0.2	4.5	16	60	6	
2NCH 300 R030 800	3.0 X R0.3	4.5	8	50	6	
2NCH 300 R030 1000	3.0 X R0.3	4.5	10	50	6	
2NCH 300 R030 1200	3.0 X R0.3	4.5	12	50	6	
2NCH 300 R030 1600	3.0 X R0.3	4.5	16	60	6	
2NCH 300 R050 800	3.0 X R0.5	4.5	8	50	6	
2NCH 300 R050 1000	3.0 X R0.5	4.5	10	50	6	
2NCH 300 R050 1200	3.0 X R0.5	4.5	12	50	6	
2NCH 300 R050 1600	3.0 X R0.5	4.5	16	60	6	
2NCH 400 R020 1000	4.0 X R0.2	6	10	50	6	
2NCH 400 R020 1200	4.0 X R0.2	6	12	50	6	
2NCH 400 R020 1600	4.0 X R0.2	6	16	60	6	
2NCH 400 R020 2000	4.0 X R0.2	6	20	60	6	
2NCH 400 R030 1000	4.0 X R0.3	6	10	50	6	
2NCH 400 R030 1200	4.0 X R0.3	6	12	50	6	
2NCH 400 R030 1600	4.0 X R0.3	6	16	60	6	
2NCH 400 R030 2000	4.0 X R0.3	6	20	60	6	
2NCH 400 R050 1000	4.0 X R0.5	6	10	50	6	
2NCH 400 R050 1200	4.0 X R0.5	6	12	50	6	
2NCH 400 R050 1600	4.0 X R0.5	6	16	60	6	
2NCH 400 R050 2000	4.0 X R0.5	6	20	60	6	
2NCH 400 R100 1000	4.0 X R1.0	6	10	50	6	
2NCH 400 R100 1200	4.0 X R1.0	6	12	50	6	
2NCH 400 R100 1600	4.0 X R1.0	6	16	60	6	

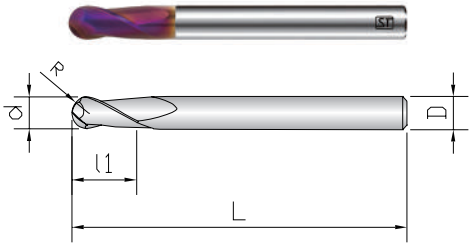
2날 코너 R 리브-고경도용
2F Necked Corner Radius for Hardened Steels

2NCH

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NCH 400 R100 2000	4.0 X R1.0	6	20	60	6	
2NCH 600 R020 2000	6.0 X R0.2	9	20	60	6	
2NCH 600 R030 2000	6.0 X R0.3	9	20	60	6	
2NCH 600 R050 1600	6.0 X R0.5	9	16	60	6	
2NCH 600 R050 2000	6.0 X R0.5	9	20	60	6	
2NCH 600 R100 2000	6.0 X R1.0	9	20	60	6	
2NCH 800 R020 2400	8.0 X R0.2	12	24	65	8	
2NCH 800 R030 2400	8.0 X R0.3	12	24	65	8	
2NCH 800 R050 2400	8.0 X R0.5	12	24	65	8	
2NCH 800 R100 2400	8.0 X R1.0	12	24	65	8	
2NCH 1000 R050 2500	10.0 X R0.5	15	25	70	10	
2NCH 1000 R100 2500	10.0 X R1.0	15	25	70	10	
2NCH 1200 R050 2500	12.0 X R0.5	15	25	80	12	
2NCH 1200 R100 2500	12.0 X R1.0	15	25	80	12	

2날 볼-고경도용
2F Ball End for Hardened Steels

2BH



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- A highly-wear resistant nanocomposite coating for oxidation resistance and extreme hardness
- Cutting geometry specifically engineered for hardened steels
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 고 내마모성의 나노컴포지트 코팅으로 내열성이 좋고 고경도소재의 가공에 적합함
- 절삭날의 치수와 형상은 고경도 소재 가공에 최적화됨
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	R≤0.25: 0/-0.005 R>0.25: 0/-0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
				○					

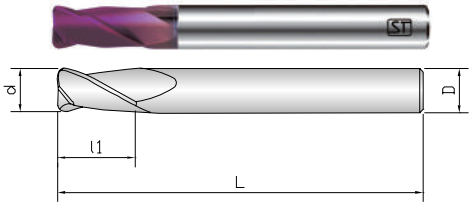
(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BH 020 040 S4	0.2 X R0.1	0.4	45	4	
2BH 030 060 S4	0.3 X R0.15	0.6	45	4	
2BH 040 080 S4	0.4 X R0.2	0.8	45	4	
2BH 050 100 S4	0.5 X R0.25	1	45	4	
2BH 060 120 S4	0.6 X R0.3	1.2	45	4	
2BH 080 200 S4	0.8 X R0.4	2	45	4	
2BH 100 250 S6	1.0 X R0.5	2.5	50	6	
2BH 150 300 S6	1.5 X R0.75	3	50	6	
2BH 200 500 S6	2.0 X R1.0	5	50	6	
2BH 250 600 S6	2.5 X R1.25	6	50	6	
2BH 300 800 S6	3.0 X R1.5	8	60	6	
2BH 400 800 S6	4.0 X R2.0	8	60	6	
2BH 500 1000 S6	5.0 X R2.5	10	60	6	
2BH 600 1200 60	6.0 X R3.0	12	60	6	
2BH 600 1200 90	6.0 X R3.0	12	90	6	
2BH 800 1400 60	8.0 X R4.0	14	60	8	
2BH 800 1400 100	8.0 X R4.0	14	100	8	
2BH 1000 1800 100	10.0 X R5.0	18	100	10	
2BH 1200 2200 110	12.0 X R6.0	22	110	12	

2날 코너 R 롱-고경도용
2F Coarner Radius Long for Hardened Steels

2CLH

2 | HX30° | M/G Carbide | S-HC Coated



Features

- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- A highly-wear resistant nanocomposite coating for oxidation resistance and extreme hardness
- Cutting geometry specifically engineered for hardened steels
- Improved workpiece surface quality

특징

- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 고 내마모성의 나노컴포지트 코팅으로 내열성이 좋고 고경도소재의 가공에 적합함
- 절삭날의 치수와 형상은 고경도 소재 가공에 최적화됨
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

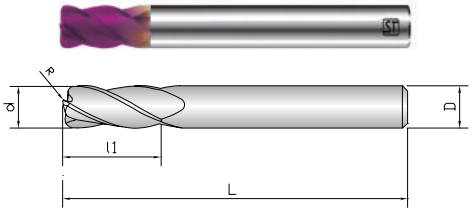
탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
				○					

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2CLH 100 R010 50	1.0 X R0.1	2.5	50	6	
2CLH 100 R020 50	1.0 X R0.2	2.5	50	6	
2CLH 150 R020 50	1.5 X R0.2	4	50	6	
2CLH 150 R030 50	1.5 X R0.3	4	50	6	
2CLH 200 R010 50	2.0 X R0.1	6	50	6	
2CLH 200 R020 50	2.0 X R0.2	6	50	6	
2CLH 200 R030 50	2.0 X R0.3	6	50	6	
2CLH 300 R020 60	3.0 X R0.2	8	60	6	
2CLH 300 R030 60	3.0 X R0.3	8	60	6	
2CLH 300 R050 60	3.0 X R0.5	8	60	6	
2CLH 400 R020 60	4.0 X R0.2	11	60	6	
2CLH 400 R030 60	4.0 X R0.3	11	60	6	
2CLH 400 R050 60	4.0 X R0.5	11	60	6	
2CLH 600 R020 60	6.0 X R0.2	15	60	6	
2CLH 600 R030 60	6.0 X R0.3	15	60	6	
2CLH 600 R050 60	6.0 X R0.5	15	60	6	
2CLH 600 R100 60	6.0 X R1.0	15	60	6	
2CLH 800 R050 60	8.0 X R0.5	19	60	8	
2CLH 800 R100 60	8.0 X R1.0	19	60	8	
2CLH 1000 R050 70	10.0 X R0.5	22	70	10	
2CLH 1000 R100 70	10.0 X R1.0	22	70	10	
2CLH 1200 R050 75	12.0 X R0.5	26	75	12	
2CLH 1200 R100 75	12.0 X R1.0	26	75	12	

4날 코너 R 롱-고경도용
4F Corner Radius Long for Hardened Steels

4CLH



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- A highly-wear resistant nanocomposite coating for oxidation resistance and extreme hardness
- Cutting geometry specifically engineered for hardened steels
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 고 내마모성의 나노컴포지트 코팅으로 내열성이 좋고 고경도소재의 가공에 적합함
- 절삭날의 치수와 형상은 고경도 소재 가공에 최적화됨
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
				○					

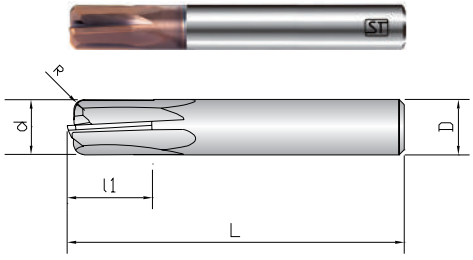
(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
4CLH 300 R020 60	3.0 X R0.2	8	60	6	
4CLH 300 R030 60	3.0 X R0.3	8	60	6	
4CLH 300 R050 60	3.0 X R0.5	8	60	6	
4CLH 400 R020 60	4.0 X R0.2	11	60	6	
4CLH 400 R030 60	4.0 X R0.3	11	60	6	
4CLH 400 R050 60	4.0 X R0.5	11	60	6	
4CLH 400 R100 60	4.0 X R1.0	11	60	6	
4CLH 600 R020 70	6.0 X R0.2	15	70	6	
4CLH 600 R030 70	6.0 X R0.3	15	70	6	
4CLH 600 R050 70	6.0 X R0.5	15	70	6	
4CLH 600 R100 70	6.0 X R1.0	15	70	6	
4CLH 800 R050 80	8.0 X R0.5	19	80	8	
4CLH 800 R100 80	8.0 X R1.0	19	80	8	
4CLH 1000 R050 80	10.0 X R0.5	22	80	10	
4CLH 1000 R100 80	10.0 X R1.0	22	80	10	
4CLH 1200 R050 80	12.0 X R0.5	26	80	12	
4CLH 1200 R100 80	12.0 X R1.0	26	80	12	

4날 코너 R-고이송용
4F Corner Radius for High Feed Rate

4CF

4 | M/G Carbide | AlTiSiN Coated



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Nanocomposite coatings for improved wear resistance and longer tool life
- Improved workpiece surface quality
- Suitable for roughing and semi-roughing at higher feed rate

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 나노컴포지트 코팅 처리로 공구 수명이 길어지고 내마모성이 커짐
- 가공면의 조도가 우수함
- 고이송 황삭 및 중삭에 적합

Tolerance :

Cutting Dia.	Corner Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○	○		○				

(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
4CF 600 R100 60	6.0 X R1.0	9	16	60	6	
4CF 800 R100 65	8.0 X R1.0	12	25	65	8	
4CF 1000 R200 70	10.0 X R2.0	15	25	70	10	
4CF 1000 R200 100	10.0 X R2.0	15	30	100	10	
4CF 1200 R200 70	12.0 X R2.0	18	30	70	12	
4CF 1200 R200 100	12.0 X R2.0	18	35	100	12	

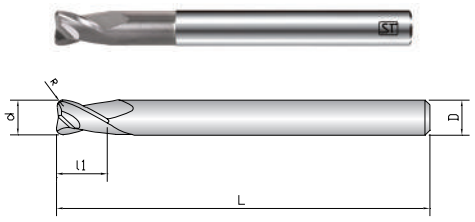
Non-ferrous

SPEED-1

2날 코너 R-동 가공용
2F Corner Radius for Copper

2CC

2 | Helix 30° | M/G Carbide | AlTiN Coated



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- AlTiN coating for improved wear resistance
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- AlTiN 코팅 처리로 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Corner Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
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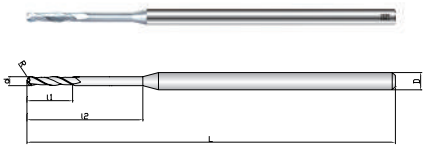
(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2CC 200 R030 S4	2.0 X R0.3	3	10	45	4	
2CC 200 R050 S4	2.0 X R0.5	3	10	45	4	
2CC 300 R050 S6	3.0 X R0.5	4.5	12	50	6	
2CC 400 R030 S6	4.0 X R0.3	6	20	60	6	
2CC 400 R050 S6	4.0 X R0.5	6	20	60	6	
2CC 600 R050 S6	6.0 X R0.5	9	20	60	6	
2CC 600 R100 S6	6.0 X R1.0	9	20	60	6	
2CC 800 R050 S8	8.0 X R0.5	12	24	65	8	
2CC 800 R100 S8	8.0 X R1.0	12	24	65	8	
2CC 1000 R050 S10	10.0 X R0.5	20	30	70	10	
2CC 1000 R100 S10	10.0 X R1.0	20	30	70	10	
2CC 1200 R050 S12	12.0 X R0.5	20	30	80	12	
2CC 1200 R100 S12	12.0 X R1.0	20	30	80	12	

2날 볼-수지 비철 가공용
2F Ball End for Synthetic Materials

2BY



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	R≤0.25: 0/-0.005 R>0.25: 0/-0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
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(Unit: mm)

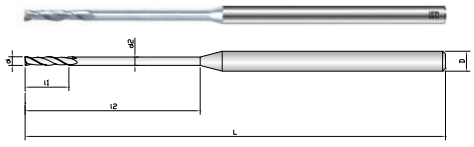
주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BY 030 070 45	0.3 X R0.15	0.7		45	3	
2BY 030 180 45	0.3 X R0.15	1.8		45	3	
2BY 050 100 50	0.5 X R0.25	1		50	3	
2BY 050 200 50	0.5 X R0.25	2		50	3	
2BY 100 500 60	1.0 X R0.5	5		60	3	
2BY 100 1000 60	1.0 X R0.5	5	10	60	3	
2BY 100 1500 60	1.0 X R0.5	5	15	60	3	
2BY 100 2000 70	1.0 X R0.5	5	20	70	3	
2BY 150 1000 60	1.5 X R0.75	10		60	3	
2BY 150 1500 70	1.5 X R0.75	10	15	70	3	
2BY 150 2000 70	1.5 X R0.75	10	20	70	3	
2BY 200 1000 60	2.0 X R1.0	10		60	3	
2BY 200 1500 60	2.0 X R1.0	10	15	60	3	
2BY 200 2000 70	2.0 X R1.0	10	20	70	3	
2BY 250 1000 60	2.5 X R1.25	10		60	3	
2BY 300 1000 60	3.0 X R1.5	10		60	3	
2BY 300 1500 60	3.0 X R1.5	15		60	3	
2BY 300 2000 80	3.0 X R1.5	20		80	3	
2BY 400 2000 80	4.0 X R2.0	20		80	4	
2BY 400 2000 100	4.0 X R2.0	20		100	4	
2BY 400 2000 130	4.0 X R2.0	20		130	4	
2BY 500 3000 100	5.0 X R2.5	30		100	6	
2BY 600 2000 100	6.0 X R3.0	20		100	6	
2BY 600 3000 80	6.0 X R3.0	30		80	6	
2BY 600 3000 100	6.0 X R3.0	30		100	6	
2BY 600 4000 100	6.0 X R3.0	40		100	6	
2BY 600 4000 120	6.0 X R3.0	40		120	6	

2날 볼-수지 비철 가공용
2F Ball End for Synthetic Materials

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BY 600 4000 150	6.0 X R3.0	40		150	6	
2BY 800 4500 120	8.0 X R4.0	45		120	8	
2BY 800 4500 150	8.0 X R4.0	45		150	8	
2BY 1000 5000 120	10.0 X R5.0	50		120	10	
2BY 1000 5000 150	10.0 X R5.0	50		150	10	
2BY 1200 5000 130	12.0 X R6.0	50		130	12	
2BY 1200 5000 150	12.0 X R6.0	50		150	12	

2날 평-수지 비철 가공용
2F Square End for Synthetic Materials

2SY



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
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(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2SY 030 070 45	0.3	0.7		45	3	
2SY 030 180 45	0.3	1.8		45	3	
2SY 050 100 50	0.5	1		50	3	
2SY 050 500 50	0.5	1.5	5	50	3	
2SY 050 200 50	0.5	2		50	3	
2SY 070 500 50	0.7	1.5	5	50	3	
2SY 100 500 60	1	5		60	3	
2SY 100 1000 60	1	5	10	60	3	
2SY 100 1500 60	1	5	15	60	3	
2SY 100 2000 70	1	5	20	70	3	
2SY 150 1000 60	1.5	10		60	3	
2SY 150 1500 70	1.5	10	15	70	3	
2SY 150 2000 70	1.5	10	20	70	3	
2SY 200 1000 60	2	10		60	3	
2SY 200 1500 70	2	10	15	70	3	
2SY 200 2000 70	2	10	20	70	3	
2SY 250 1000 60	2.5	10		60	3	
2SY 300 1000 50	3	10		50	3	
2SY 300 1500 60	3	15		60	3	
2SY 300 2000 80	3	20		80	3	
2SY 400 2000 80	4	20		80	4	
2SY 500 3000 100	5	30		100	6	
2SY 600 3000 80	6	30		80	6	
2SY 600 4000 100	6	40		100	6	
2SY 600 4000 120	6	40		120	6	
2SY 600 4000 150	6	40		150	6	
2SY 800 4500 120	8	45		120	8	

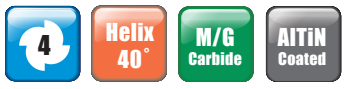
2날 평-수지 비철 가공용
2F Square End for Synthetic Materials

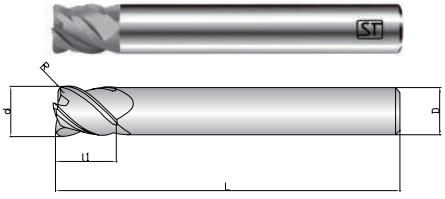
2SY

주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2SY 800 4500 150	8	45		150	8	
2SY 1000 3000 80	10	30		80	10	
2SY 1000 5000 120	10	50		120	10	
2SY 1000 5000 150	10	50		150	10	
2SY 1200 5000 130	12	50		130	12	
2SY 1200 5000 150	12	50		150	12	

4날 코너 R-SUS
4F Corner Radius for Stainless Steel

4CS





Features

- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- AlTiN coating for improved wear resistance
- Improved workpiece surface quality
- Designed with 40° helix angle and variable flute spacing for use on stainless steels
- Faster cutting action and rapid chip evacuation

특징

- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- AlTiN 코팅 처리로 내마모성이 커짐
- 가공면의 조도가 우수함
- 40°의 헬릭스각과 부등분할로 설계로 SUS 가공에 적합함
- 칩배출과 절삭성이 우수함

Tolerance :

Cutting Dia.	Corner Radius
D≤6: 0/-0.01 D>6: 0/-0.015	±0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
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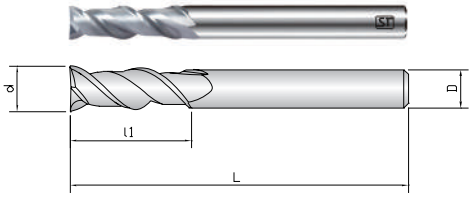
(Unit: mm)

주문 번호 EDP No.	날경 X 코너R Cutting Dia. X Corner R d X CR	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
4CS 300 R020 S6	3.0 X R0.2	10	60	6	
4CS 300 R050 S6	3.0 X R0.5	10	60	6	
4CS 400 R020 S6	4.0 X R0.2	12	60	6	
4CS 400 R050 S6	4.0 X R0.5	12	60	6	
4CS 500 R020 S6	5.0 X R0.2	15	60	6	
4CS 500 R050 S6	5.0 X R0.5	15	60	6	
4CS 600 R030 S6	6.0 X R0.3	15	60	6	
4CS 600 R050 S6	6.0 X R0.5	15	60	6	
4CS 600 R100 S6	6.0 X R1.0	15	60	6	
4CS 800 R030 S8	8.0 X R0.3	20	80	8	
4CS 800 R050 S8	8.0 X R0.5	20	80	8	
4CS 800 R100 S8	8.0 X R1.0	20	80	8	
4CS 1000 R030 S10	10.0 X R0.3	25	80	10	
4CS 1000 R050 S10	10.0 X R0.5	25	80	10	
4CS 1000 R100 S10	10.0 X R1.0	25	80	10	
4CS 1200 R050 S12	12.0 X R0.5	30	100	12	
4CS 1200 R100 S12	12.0 X R1.0	30	100	12	
4CS 1200 R150 S12	12.0 X R1.5	30	100	12	

2날 평-알루미늄 가공용
2F Square End for Aluminum

2SA



Features
- For use on aluminum alloy and non-ferrous materials
- Provides higher metal removal rate
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Improved workpiece surface quality

특징
- AL 및 비철용으로 적합
- 보다 넓은 칩포켓으로 가공성 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

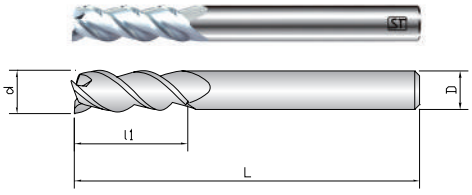
탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
							○		

(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia d	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
2SA 100 250	1	2.5	45	6	
2SA 150 400	1.5	4	45	6	
2SA 200 600	2	6	50	6	
2SA 200 1000	2	10	50	6	
2SA 300 800	3	8	50	6	
2SA 300 1500	3	15	50	6	
2SA 400 1100	4	11	50	6	
2SA 400 1600	4	16	60	6	
2SA 600 1600	6	16	50	6	
2SA 600 2000	6	20	60	6	
2SA 600 2500	6	25	65	6	
2SA 800 2000	8	20	60	8	
2SA 800 3000	8	30	70	8	
2SA 1000 2500	10	25	75	10	
2SA 1000 3500	10	35	80	10	
2SA 1200 3000	12	30	80	12	
2SA 1200 3500	12	35	80	12	

3날 평-알루미늄 가공용
3F Square End for Aluminum

3SA



Features
- For use on aluminum alloy and non-ferrous materials
- Provides higher metal removal rate
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Improved workpiece surface quality

특징
- AL 및 비철용으로 적합
- 보다 넓은 칩포켓으로 가공성 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
							○		

(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
3SA 100 200	1	2	45	6	
3SA 100 300	1	3	45	6	
3SA 100 500	1	5	45	6	
3SA 150 300	1.5	3	45	6	
3SA 150 500	1.5	5	45	6	
3SA 150 800	1.5	8	45	6	
3SA 200 300	2	3	45	6	
3SA 200 700	2	7	45	6	
3SA 200 1000	2	10	50	6	
3SA 200 1200	2	12	50	6	
3SA 300 400	3	4	45	6	
3SA 300 800	3	8	50	6	
3SA 300 1300	3	13	50	6	
3SA 300 1500	3	15	50	6	
3SA 300 2000	3	20	55	6	
3SA 300 2500	3	25	60	6	
3SA 400 600	4	6	45	6	
3SA 400 1100	4	11	50	6	
3SA 400 1600	4	16	50	6	
3SA 400 2000	4	20	55	6	
3SA 400 2500	4	25	60	6	
3SA 400 3000	4	30	70	6	

3날 평-알루미늄 가공용
3F Square End for Aluminum

3SA

(Unit: mm)

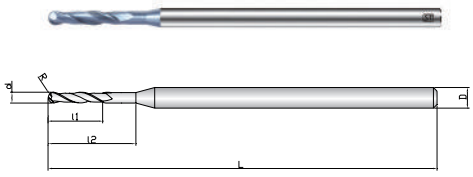
주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	전장 Overall Length L	생크경 Shank Dia. D	비 고
3SA 500 700	5	7	50	6	
3SA 500 2000	5	20	55	6	
3SA 500 3000	5	30	65	6	
3SA 600 900	6	9	50	6	
3SA 600 1600	6	16	50	6	
3SA 600 2000	6	20	60	6	
3SA 600 2500	6	25	60	6	
3SA 600 3000	6	30	70	6	
3SA 800 1200	8	12	60	8	
3SA 800 2000	8	20	60	8	
3SA 800 3000	8	30	70	8	
3SA 800 4000	8	40	80	8	
3SA 800 5500	8	55	100	8	
3SA 1000 1500	10	15	70	10	
3SA 1000 2500	10	25	70	10	
3SA 1000 5500	10	55	100	10	
3SA 1200 2600	12	26	75	12	
3SA 1200 3000	12	30	80	12	
3SA 1200 3500	12	35	80	12	

Graphite

SPEED-1

2날 볼-흑연 가공용
2F Ball End for Graphite

2BG



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- AlTiN coating for improved wear resistance
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- AlTiN 코팅 처리로 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	R≤0.25: 0/-0.005 R>0.25: 0/-0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
									○

(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BG 050 200 50	0.5 X R0.25	2		50	4	
2BG 050 500 50	0.5 X R0.25	2	5	50	4	
2BG 100 500 60	1.0 X R0.5	5		60	4	
2BG 100 1000 60	1.0 X R0.5	5	10	60	4	
2BG 100 1500 60	1.0 X R0.5	5	15	60	4	
2BG 100 2000 80	1.0 X R0.5	5	20	80	4	
2BG 100 2500 80	1.0 X R0.5	5	25	80	4	
2BG 150 1000 60	1.5 X R0.75	10		60	4	
2BG 150 1500 60	1.5 X R0.75	10	15	60	4	
2BG 150 2000 60	1.5 X R0.75	10	20	60	4	
2BG 200 1000 60	2.0 X R1.0	10		60	4	
2BG 200 2000 60	2.0 X R1.0	10	20	60	4	
2BG 200 3000 80	2.0 X R1.0	10	30	80	4	
2BG 200 3000 100	2.0 X R1.0	10	30	100	4	
2BG 200 4000 80	2.0 X R1.0	10	40	80	4	
2BG 200 4000 100	2.0 X R1.0	10	40	100	4	
2BG 250 2000 70	2.5 X R1.25	10	20	70	4	
2BG 300 2000 70	3.0 X R1.5	10	20	70	4	
2BG 300 3000 80	3.0 X R1.5	10	30	80	4	
2BG 400 2000 80	4.0 X R2.0	20		80	4	
2BG 400 2000 100	4.0 X R2.0	20		100	4	
2BG 400 2000 130	4.0 X R2.0	20		130	4	
2BG 500 2500 100	5.0 X R2.5	25		100	6	
2BG 600 3000 80	6.0 X R3.0	30		80	6	

2날 볼-흑연 가공용
2F Ball End for Graphite

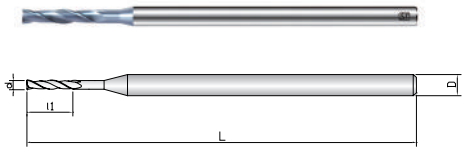
2BG

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BG 600 3000 100	6.0 X R3.0	30		100	6	
2BG 600 4000 150	6.0 X R3.0	40		150	6	
2BG 800 4500 120	8.0 X R4.0	45		120	8	
2BG 800 4500 150	8.0 X R4.0	45		150	8	
2BG 1000 5000 120	10.0 X R5.0	50		120	10	
2BG 1000 5000 150	10.0 X R5.0	50		150	10	
2BG 1200 5000 130	12.0 X R6.0	50		130	12	
2BG 1200 5000 150	12.0 X R6.0	50		150	12	

2날 평-흑연 가공용
2F Square End for Graphite

2SG

2 | HX30° | M/G Carbide | AlTiN Coated



Features
- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- AlTiN coating for improved wear resistance
- Improved workpiece surface quality

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- AlTiN 코팅 처리로 내마모성이 커짐
- 가공면의 조도가 우수함

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
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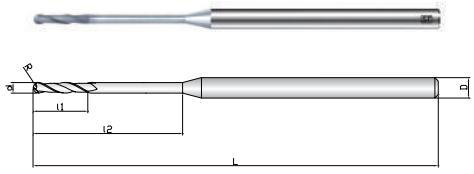
(Unit: mm)

주문 번호 EDP No.	날경 Cutting d	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2SG 050 100 50	0.5	1		50	4	
2SG 050 200 50	0.5	2		50	4	
2SG 050 600 50	0.5	0.7	6	50	4	
2SG 100 500 60	1	5		60	4	
2SG 100 1000 60	1	5	10	60	4	
2SG 100 1500 60	1	5	15	60	4	
2SG 100 2000 60	1	5	20	60	4	
2SG 150 1000 60	1.5	10		60	4	
2SG 150 1500 60	1.5	10	15	60	4	
2SG 150 2000 60	1.5	10	20	60	4	
2SG 200 1000 60	2	10		60	4	
2SG 200 1500 60	2	10	15	60	4	
2SG 200 2000 60	2	10	20	60	4	
2SG 200 2500 70	2	10	25	70	4	
2SG 200 3000 80	2	10	30	80	4	
2SG 300 1500 70	3	15		70	4	
2SG 300 2500 75	3	15	25	75	4	
2SG 300 3000 80	3	15	30	80	4	
2SG 400 2000 80	4	20		80	4	
2SG 400 2000 100	4	20		100	4	
2SG 500 3000 100	5	30		100	6	
2SG 600 3000 100	6	30		100	6	
2SG 600 4000 150	6	40		150	6	
2SG 800 4500 150	8	45		150	8	
2SG 1000 5000 150	10	50		150	10	
2SG 1200 6000 150	12	60		150	12	

2날 볼-다이아몬드 코팅
2F Ball End-Diamond Coated

2BD



Features
- Used micrograin solid carbide excellent for high speed cutting
- Diamond coated for improved abrasion resistance and higher feed rates
- Greater rigidity and reduced chattering through optimized geometry

특징
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 고경도의 다이아몬드 코팅으로 내마모성이 커 고속가공이 가능함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음

Tolerance :

Cutting Dia.	Radius
D≤6: 0/-0.01 D>6: 0/-0.015	R≤0.25: 0/-0.005 R>0.25: 0/-0.01

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
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(Unit: mm)

주문 번호 EDP No.	날경 X 볼반경 Cutting Dia. X Radius of Ball Nose d X R	날장 Length of Cut l1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2BD 100 1000 60	1.0 X R0.5	3	10	60	4	
2BD 100 1500 60	1.0 X R0.5	3	15	60	4	
2BD 100 2000 60	1.0 X R0.5	3	20	60	4	
2BD 150 1500 60	1.5 X R0.75	6	15	60	4	
2BD 150 2000 60	1.5 X R0.75	6	20	60	4	
2BD 200 1500 80	2.0 X R1.0	8	15	80	4	
2BD 200 2000 80	2.0 X R1.0	8	20	80	4	
2BD 200 3000 80	2.0 X R1.0	8	30	80	4	
2BD 200 4000 80	2.0 X R1.0	8	40	80	4	
2BD 300 2000 100	3.0 X R1.5	12	20	100	4	
2BD 300 3000 100	3.0 X R1.5	12	30	100	4	
2BD 300 4000 100	3.0 X R1.5	12	40	100	4	
2BD 400 1600 80	4.0 X R2.0	16		80	4	
2BD 400 1600 100	4.0 X R2.0	16		100	4	
2BD 400 1600 130	4.0 X R2.0	16		130	4	
2BD 600 2500 80	6.0 X R3.0	25		80	6	
2BD 600 2500 105	6.0 X R3.0	25		105	6	
2BD 600 2500 150	6.0 X R3.0	25		150	6	
2BD 800 3000 105	8.0 X R4.0	30		105	8	
2BD 800 3500 150	8.0 X R4.0	35		150	8	
2BD 1000 3500 105	10.0 X R5.0	35		105	10	
2BD 1000 4000 150	10.0 X R5.0	40		150	10	
2BD 1200 5000 150	12.0 X R6.0	50		150	12	

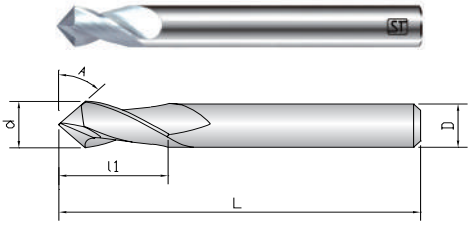
스타공구(주)
StarTool Co., Ltd.

Special Use

SPEED-1

2날 센터링
2F Centering

2CE



Features
- Made from micrograin solid carbide
- For centering and spot drilling applications
- 45 deg point angle

특징
- 초미립 초경 소재를 적용함
- 센터링과 스폿 드릴용
- 날각 45도

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
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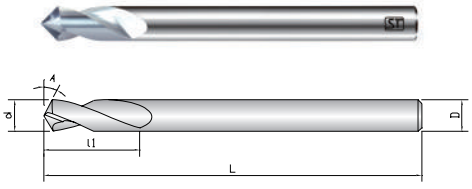
(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	각도 Angle A(°)	전장 Overall Length L	생크경 Shank Dia. D	비 고
2CE 300 600	3	6	45	50	3	
2CE 400 800	4	8	45	50	6	
2CE 600 1200	6	12	45	60	6	
2CE 800 1600	8	16	45	70	8	
2CE 1000 1800	10	18	45	70	10	
2CE 1200 2000	12	20	45	75	12	

2날 NC 드릴
2F NC Drill

2NCD



Features
- Made from micrograin solid carbide
- Drill & countersink with one tool

특징
- 초미립 초경 소재를 적용함
- 드릴링과 카운터 싱킹 가공용

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
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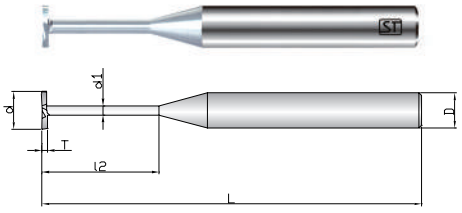
(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia. d	날장 Length of Cut l1	각도 Angle A(°)	전장 Overall Length L	생크경 Shank Dia. D	비 고
2NCD 300 1000	3	10	45	45	3	
2NCD 400 1200	4	12	45	50	4	
2NCD 600 1600	6	16	45	60	6	
2NCD 800 2400	8	24	45	80	8	
2NCD 1000 2600	10	26	45	80	10	
2NCD 1200 3000	12	30	45	80	12	

T 커터
T Slot Cutter

2TC

2 | Helix 15° | M/G Carbide | Uncoated



Features
- Made from micrograin solid carbide
- High cutting edge rigidity with smaller spiral angle

특징
- 초미립 초경 소재를 적용함
- 작은 비틀림각을 적용하여 인선부의 강성이 큼

Tolerance :

Cutting Dia.
D≤6: 0/-0.01 D>6: 0/-0.015

Recommended workpiece Material :

탄소강 / 합금강 (~HB 350) Carbon Steel / Alloy Steel (up to 350 HB)	스테인리스 (~HB 240) Stainless Steel (up to 240 HB)	주철 (~HB 260) Cast Iron (up to 260 HB)	고경도강 (HRc 40~50) Hardened Steel (40 to 50 HRc)	고경도강 (HRc 51~62) Hardened Steel (51 to 62 HRc)	티타늄 합금 Titanium Alloy	동 합금 Copper Alloy	알루미늄 합금 Aluminum Alloy	수지 & 플라스틱 Resin & Plastics	흑연 Graphite
○		○			○	○	○	○	

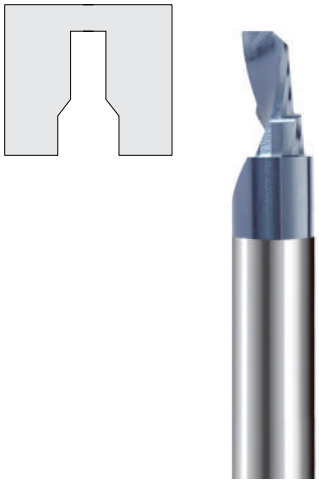
(Unit: mm)

주문 번호 EDP No.	날경 Cutting Dia. d	두께 Thickness T	목경 Neck Dia. d1	유효장 Length of Reach l2	전장 Overall Length L	생크경 Shank Dia. D	비 고
2TC 300 030	3	0.3	1.2	10	50	6	
2TC 300 050	3	0.5	1.2	10	50	6	
2TC 300 100	3	1	1.2	10	50	6	
2TC 400 030	4	0.3	1.5	10	50	6	
2TC 400 050	4	0.5	1.5	10	50	6	
2TC 400 100	4	1	1.5	10	50	6	
2TC 500 100	5	1	2	10	50	6	
2TC 600 050	6	0.5	2	15	54	6	
2TC 600 100	6	1	2	15	54	6	
2TC 600 150	6	1.5	2	15	54	6	
2TC 600 200	6	2	2	15	54	6	
2TC 800 100	8	1	3	15	60	8	
2TC 1000 100	10	1	4	15	60	10	
2TC 1000 200	10	2	4	15	60	10	

Specials-Custom Made

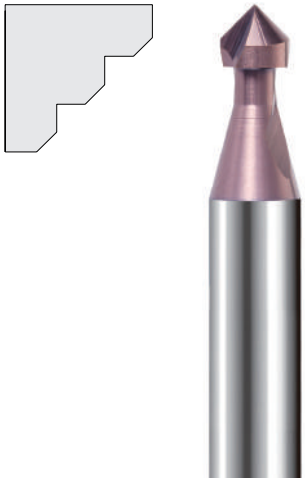
SPEED-1

● 외날 스텝



● 테이퍼 스텝

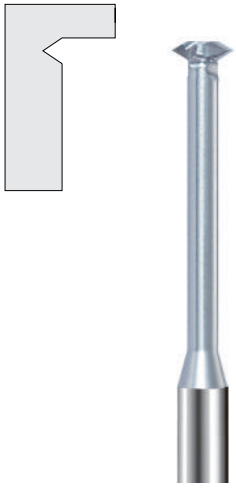
● 챔퍼툴



● 회전형 피치 가공툴

● 롤리 팝 볼

● 테이퍼 앵글 커터

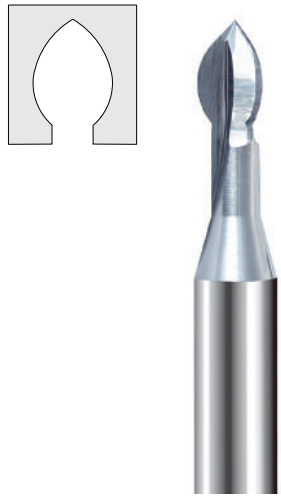


● 여러날 T커터

● 면취용 버니싱

● 일자 게싱 프로파일

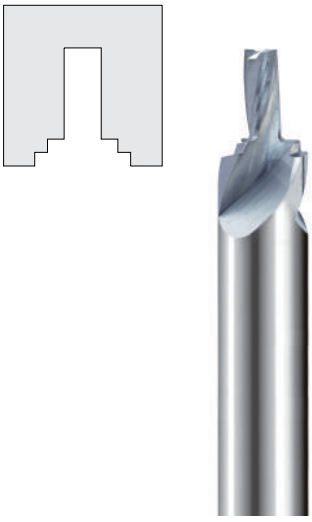
● 촛불형 3날 센터 볼



● 역R

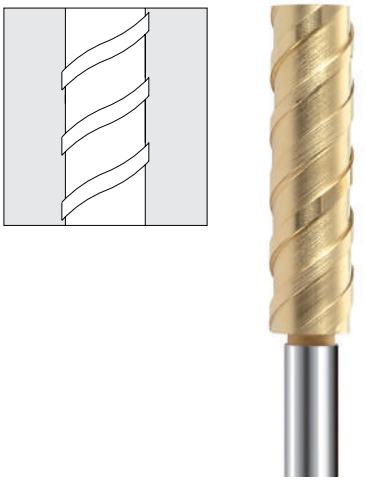
● 언더컷

● 다중스텝

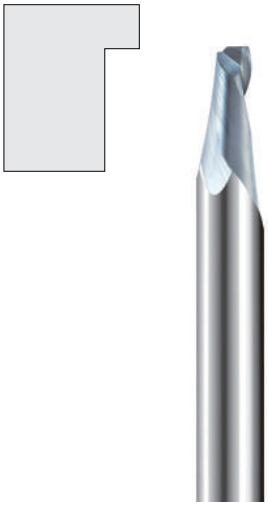


● R-T커터

● 스크류 금형

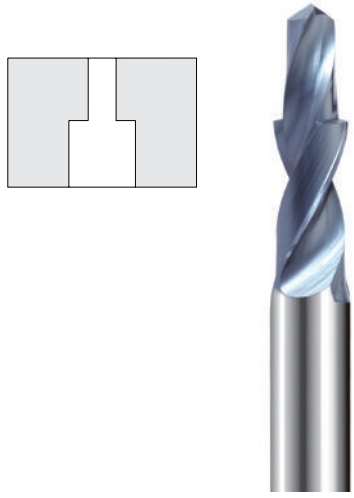


● 외날(좌날)



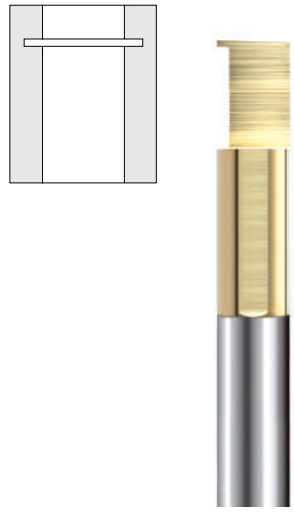
● 외날 테이퍼(비틀림 타입)

● 스텝



● 앵글 커터

● 내경 홈



● 형상 바이트

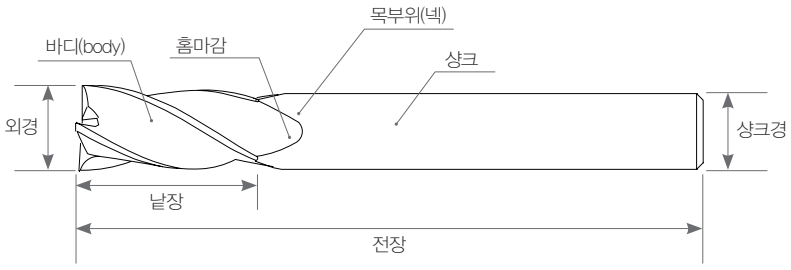
● 좌비틀 좌날 볼

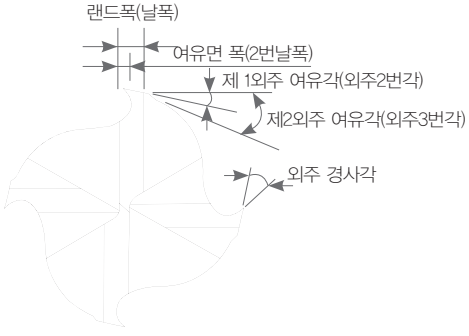
■ 엔드밀 가공의 트러블 대책

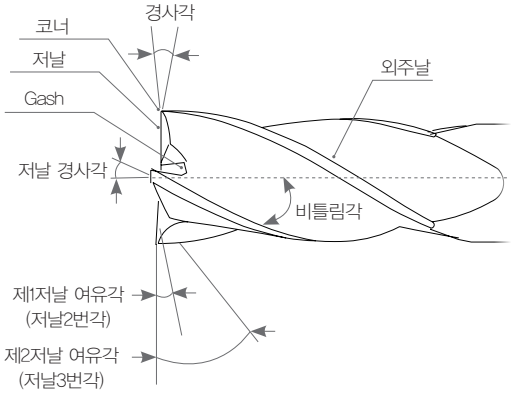
트러블 내용	요인	대책	공구 재종의 선정	절삭조건									공구형상						기계장착					
			코팅제품으로 한다	절삭속도	이송	절입	피크피드(Pf)	절삭방향	에어블로어를 사용한다	절삭유제			비틀림각	날수	경사각	공구경	공구강성의 향상	칩포켓을 크게	공구돌출을 짧게 한다	공구체결정도의 향상	스핀들콜릿홀더들림정도향상	콜렛의 점검교환	척보지력을 높인다	워크체결강성의 향상
				높인다 ↗ 낮춘다 ↘			↘ 작게			분사량을많게한다	비수용성으로한다	건식·습식의재검토	크게 ↗다 작게 ↘소											
수명 악화	외주날의 마모가 현저하다	비코팅품을 사용하고 있다	●																					
		날수가 적다												↗●										
		절삭조건의 부적정		●↘							●													
		업커터로 가공하고 있다						down Cut																
	칩핑이 많다	절삭조건의 부적정																						
		인선강도가 약하다															●							
		척의 체결이 불충분																				●	●	
		체결강성이 낮다																	●	●	●	●	●	●
	가공중에 절손이 많다	절삭조건의 부적정				●↘																		
		엔드밀의 강성이 낮다														↗●	●							
		필요이상으로 돌출이 길다				●↘													●					
		칩이 막혀 있다								●								●						
정삭면 조도의 악화	가공중에 떨림이 발생한다	절삭조건의 부적정		●↘	●↘																			
		엔드밀의 강성이 낮다											↗●	↗●		↗●	●							
		체결강성이 낮다																	●	●	●	●	●	●
	벽면의 정삭면 조도가 나쁘다	절인의 마모가 크다	●																					
		절삭조건의 부적정		●↘		●↘																		
		칩이 물려든다							●	●		● 습식												
	저면의 정삭면 조도가 나쁘다	저날의 요철부 각도가 없다			●↘	●↘									↗●									
		피크피드가 크다					●↘																	
	벽면의 휨	절인의 마모가 크다	●																					
		절삭조건의 부적정			●↘	●↘																		
		엔드밀의 강성 부족											↗●	↗●		↗●	●							
	정삭치수 정도가 나쁘다	절삭조건의 부적정		●↘	●↘	●↘																		
		체결강성이 낮다																	●	●	●	●	●	●
버·가공물 마무리단계 결손	버·가공물 마무리단계 결손이 발생하고 있다	정삭조건의 부적정			●↘	●↘																		
		비틀림각이 크다											●↘											
	버 발생이 빠르다	경계마모가 발생하고 있다	●																					
		절삭조건의 부적정		●↘	↗●																			
칩처리	칩막힘이 발생하고 있다	가공량이 너무 크다			●↘	●↘																		
		칩포켓의 부족												●↘				●						

■ 엔드밀 각부 명칭 · 날수

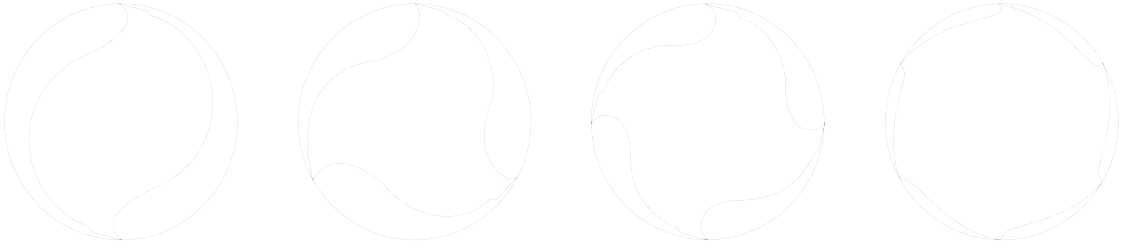
▶ 엔드밀의 각 부 명칭







▶ 칩 포켓 단면적 비교



2 날
50%

3 날
45%

4 날
40%

6 날
20%

▶ 날 수에 따른 엔드밀의 특징과 용도

		2날	3날	4날	6날
특 징	장 점	칩배출성 양호 세로이송 가공 용이 절삭저항이 낮다	칩배출성 양호 세로이송 가공 용이	강성이 높다	강성이 높다 절인의 내구성이 우수하다
	단 점	강성이 낮다	외경 측정이 어렵다	칩배출성이 나쁘다	칩배출성이 나쁘다
용 도		홈, 측면가공 드릴가공 등 사용용도가 넓다	홈, 측면가공 중삭가공, 정삭가공	얕은 홈, 측면가공 정삭가공	고경도재 가공 얕은 홈, 측면가공

스타공구(주)
StarTool Co., Ltd.

절삭조건표

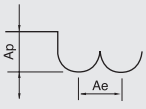
Speed and Feed Recommendations

SPEED-1

Feed: mm / min

피삭재 Material		동 Copper				고경도강/프리하든강 Prehardendd Steels / Hardened Steels				고경도강 Hardened Steels			
						NAK/SKD				SKD/SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 Length of Reach	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth
R0.1	1.5	42,000	300	0.006	0.006	42,000	230	0.003	0.004	42,000	180	0.003	0.004
R0.15	5	33,000	280	0.001	0.005	24,000	180	0.003	0.003	20,000	140	0.003	0.003
R0.2	5	33,000	390	0.008	0.016	25,000	310	0.008	0.01	22,000	240	0.006	0.01
R0.25	10	32,000	440	0.008	0.016	24,000	380	0.007	0.01	24,000	310	0.005	0.01
R0.3	10	26,000	450	0.006	0.032	20,000	300	0.005	0.02	19,000	260	0.004	0.02
R0.4	10	19,000	560	0.022	0.08	24,000	390	0.02	0.05	16,000	340	0.015	0.05
R0.5	10	25,000	970	0.024	0.086	13,600	500	0.02	0.0556	12,500	380	0.014	0.056
R0.75	18	10,100	520	0.03	0.16	10,100	420	0.022	0.11	8,000	360	0.02	0.11
R1.0	20	13,300	970	0.009	0.165	13,300	500	0.06	0.11	10,600	500	0.055	0.11
R1.5	20	11,700	1,870	0.2	0.45	10,300	1,230	0.145	0.32	7,100	940	0.12	0.31
R2.0	30	9,300	1,700	0.25	0.5	7,400	1,150	0.2	0.32	5,500	880	0.15	0.3
R2.5	25	9,000	2,000	0.38	0.8	7,000	1,150	0.3	0.55	5,000	900	0.22	0.55
R3.0	30	7,000	1,510	0.38	0.9	6,000	1,400	0.3	0.65	4,200	990	0.22	0.65
R4.0	30	6,400	1,400	0.38	1	5,800	940	0.3	0.75	4,000	720	0.16	0.6
R5.0	35	5,000	1,080	0.5	1	4,500	900	0.35	0.85	3,800	680	0.15	0.6
R6.0	40	4,100	900	0.6	1.2	3,800	8,000	0.4	0.85	3,400	650	0.2	0.003

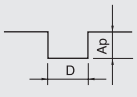
절입량 Depth of Cut



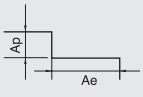
피삭재 Material		탄소강 Carbon Steels			합금강/공구강 Alloy Steels SK/SCM/SUS			고경도강/프리하든강 Hardened Steels/Prehardened Steels NAK/SKD			고경도강 Hardened Steels SKD/SKT		
경도 Hardness		(S45C/S50C)~225HB			225 ~ 325HB			35 ~ 45HRc			45 ~ 55HRc		
외경 Outer Diameter	유효장 Length of Reach	RPM	Feed (mm/min)	Ap Axial	RPM	Feed (mm/min)	Ap Axial	RPM	Feed (mm/min)	Ap Axial	RPM	Feed (mm/min)	Ae Radial Depth
0.2	1.5	45,200	220	0.003	45,200	210	0.003	45,200	180	0.002	35,500	120	0.002
0.3	3	29,800	210	0.002	29,800	200	0.002	29,800	170	0.001	22,500	110	0.001
0.4	5	36,500	350	0.003	31,200	280	0.003	28,100	220	0.002	21,100	140	0.001
0.5	6	30,400	400	0.005	26,500	300	0.005	20,700	220	0.004	17,700	150	0.002
0.8	8	21,100	490	0.011	17,300	370	0.01	15,200	270	0.008	10,800	180	0.005
1.0	10	17,200	500	0.012	14,200	370	0.01	11,800	280	0.008	10,000	190	0.006
1.5	10	14,600	650	0.04	12,800	500	0.03	10,200	350	0.025	7,800	250	0.02
2.0	20	8,700	450	0.025	7,500	360	0.022	6,000	260	0.015	5,000	170	0.012
2.5	30	6,000	420	0.018	5,300	300	0.015	4,500	230	0.012	3,700	150	0.008
3.0	30	5,900	500	0.035	4,800	370	0.03	4,200	270	0.02	3,200	180	0.015
4.0	20	5,800	800	0.1	4,800	600	0.8	3,500	400	0.065	290	280	0.05
5.0	30	4,100	610	0.12	3,200	480	0.1	2,400	320	0.07	1,800	200	0.06
6.0	40	2,800	570	0.11	2,100	390	0.1	1,600	240	0.07	1,200	150	0.05
8.0	40	2,600	600	0.12	2,000	410	0.1	1,500	250	0.8	1,100	160	0.06

절입량 Depth of Cut

Slotting
- Ap : Axial Depth
- D : Outside Diameter



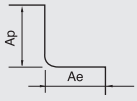
Side Milling
- Ap : Axial Depth
- Ae : Radial Depth



피삭재 Material		동 Copper				고경도강/프리하든강 Prehardendd Steels / Hardened Steels NAK/SKD				고경도강 Hardened Steels SKD/SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
외경 Outer Diameter	유효장 Length of Reach	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth
0.8	8	11,000	260	0.026	0.085	11,000	230	0.004	0.077	9,300	160	0.003	0.077
1.0	10	7,500	330	0.041	0.268	7,500	270	0.009	0.107	6,500	230	0.011	0.107
1.5	10	7,200	760	0.128	0.482	7,200	640	0.027	0.245	6,600	550	0.036	0.245
2.0	12	8,000	830	0.158	0.612	8,000	700	0.026	0.383	7,200	630	0.037	0.383
3.0	12	9,000	1,360	0.332	0.723	9,000	980	0.089	0.536	8,500	760	0.089	0.57
4.0	20	5,900	1,000	0.326	1.152	5,900	850	0.046	0.765	5,000	730	0.068	0.765
6.0	20	5,200	1,200	0.522	1.908	5,200	1,060	0.414	1.179	3,100	900	0.162	1.179
8.0	22	4,800	1,100	0.459	2.21	4,800	940	0.364	1.32	2,800	790	0.143	1.32
10.0	24	4,000	900	0.39	2.51	3,900	800	0.31	1.43	2,400	670	0.121	1.43
12.0	26	3,300	760	0.328	2.62	3,300	670	0.26	1.76	2,000	560	0.102	1.76

측면절삭 Milling amount of side milling

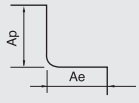
- Ap : Axial Depth
- Ae : Radial Depth

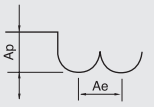


피삭재 Material		고경도강/프리하든강 Hardened Steels/Prehardened Steels NAK/SKD				고경도강 Hardened Steels SKD/SKT			
경도 Hardness		30 ~ 45HRc				45 ~ 55HRc			
외경 Outer Diameter	유효장 Length of Reach	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth
1.0	4	11,700	1,100	0.033	0.23	10,200	910	0.026	0.207
1.5	6	9,900	1,100	0.035	0.413	9,000	1,000	0.032	0.378
2.0	12	7,800	880	0.039	0.344	7,200	820	0.037	0.344
2.5	20	6,600	1,000	0.041	0.23	6,400	570	0.026	0.191
3.0	20	7,100	1,300	0.049	0.493	6,700	1,300	0.031	0.493
4.0	20	6,200	1,200	0.06	0.8	5,200	1,120	0.047	0.8
6.0	20	4,900	1,470	0.153	2.004	2,900	850	0.153	1.114
8.0	22	4,000	1,600	0.184	2.54	2,400	680	0.184	1.32
10.0	24	3,200	1,750	0.21	2.73	1,900	540	0.22	1.43
12.0	26	2,500	1,800	0.23	2.7	1,500	430	0.24	1.49

측면절삭 Milling amount of side milling

- Ap : Axial Depth
- Ae : Radial Depth

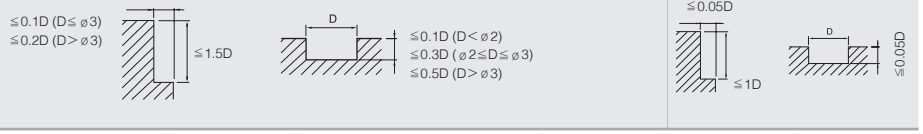


피삭재 Material		동 Copper				고경도강/프리하든강 Prehardendd Steels / Hardened Steels NAK/SKD				고경도강 Hardened Steels SKD/SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	날장 Cutting Length	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth
R0.15	0.6	50,000	680	0.01	0.01	50,000	620	0.065	0.022	41,300	530	0.045	0.02
R0.25	0.5	52,000	1,050	0.017	0.03	49,000	1,050	0.14	0.045	40,800	900	0.11	0.035
R0.5	1	32,800	1,300	0.032	0.05	36,000	1,200	0.24	0.08	29,500	1,000	0.192	0.064
R0.75	1.5	21,600	1,500	0.054	0.07	28,000	1,280	0.36	0.12	23,000	1,024	0.288	0.096
R1.0	2	16,000	1,500	0.071	0.09	24,000	1,480	0.48	0.16	20,000	1,184	0.36	0.128
R1.5	3	10,400	1,800	0.137	0.158	20,400	2,010	0.766	0.24	16,800	1,640	0.613	0.192
R2.0	4	8,000	1,700	0.166	0.213	16,800	1,960	0.88	0.32	14,000	1,560	0.88	0.256
R3.0	6	5,500	1,500	0.225	0.232	12,800	2,160	1.872	0.48	10,400	1,720	1.496	0.384
R4.0	8	4,500	800	0.14	0.32	10,000	1,840	2.48	0.65	8,200	1,400	1.984	0.512
R5.0	10	2,600	560	0.123	0.4	8,400	1,760	3	0.8	6,900	1,400	2.4	0.64
R6.0	22	3,000	480	0.127	0.48	7,200	1,400	3.53	0.96	5,900	1,180	2.224	0.768
절입량 Depth of Cut													

• 홈가공의 경우, 상기표 Feed 값을 반으로 하십시오.
• For slotting, set the feed rate in half.

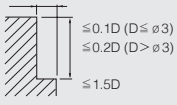
피삭재 Material	탄소강/합금강 Carbon Steels/Alloy Steels S45C/S50C/SK/SCM		고경도강/프리하든강 Hardened Steels/Prehardened Steels SKT / SKD / NAK55 / HPM1		스테인레스강 Stainless Steels SUS304/SUS316		고경도강 Hardened Steels SKD11/SKD61/SKT	
경도 Hardness	~30HRc		30 ~ 45HB				45 ~ 55HRc	
외경 Outer Diameter	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
0.3	40,000	140	40,000	130	40,000	130	40,000	80
0.5	40,000	300	40,000	280	30,000	220	40,000	100
1.0	28,000	550	18,000	350	14,000	28	30,000	140
2.0	14,000	850	90,00	550	7,000	420	14,000	140
3.0	8,000	200	5,000	130	4,200	110	7,200	55
4.0	7,000	290	4,000	180	3,400	110	3,000	60
5.0	5,600	300	3,200	180	2,400	110	2,500	65
6.0	4,900	340	2,900	190	2,200	130	2,200	80
8.0	3,600	360	2,200	190	1,600	130	1,800	95
10.0	2,800	310	1,700	150	1,300	110	1,300	80
12.0	2,400	260	1,400	130	1,000	90	1,200	70

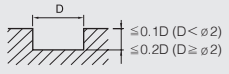
절입량 Milling Amount of Side Milling

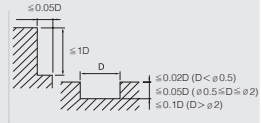


피삭재 Material	탄소강/합금강 Carbon Steels/Alloy Steels S50/SCM		합금강/공구강/프리하든강 Alloy Steels/Tool Steels /Prehardened Steels SKD/NAK		스테인레스강 Stainless Steels SUS304/SUS316		고경도강 Hardened Steels	
경도 Hardness	~30HRc		30 ~ 45HRc				45 ~ 55HRc	
외경 Outer Diameter	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
0.8	30,600	430	22,500	310	20,700	230	17,100	110
1.0	27,000	540	18,000	360	16,200	270	13,500	110
1.5	18,000	540	12,600	360	10,800	270	9,000	110
2.0	13,500	540	9,000	360	8,200	270	7,200	110
3.0	9,000	540	6,300	360	5,400	270	4,500	110
4.0	6,800	540	4,700	360	4,100	270	3,600	110
5.0	5,400	540	3,800	360	3,200	270	2,900	110
6.0	4,500	540	3,200	360	2,700	270	2,400	110
8.0	3,600	470	2,500	320	2,200	230	1,800	110
10.0	2,900	410	2,000	270	1,700	210	1,400	90
12.0	2,400	370	1,700	240	1,400	190	1,200	90

절입량 Depth of Cut

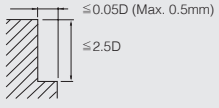


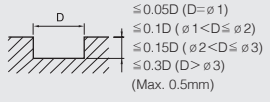


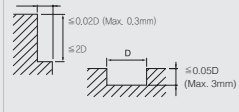


피삭재 Material	탄소강/합금강 Carbon Steels/Alloy Steels		고경도강/프리하든강 Hardened Steels /Prehardened Steels		스테인레스강 Stainless Steels		고경도강 Hardened Steels	
	S45C/S50C/SK/SCM		NAK/SKD		SUS304/SUS316			
경도 Hardness	~30HRc		30 ~ 45HRc				45 ~ 55HRc	
외경 Outer Diameter	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
1.0	13,000	230	7,500	140	7,200	100	5,500	50
1.5	11,000	240	7,000	150	6,000	110	5,000	55
2.0	10,000	250	6,800	160	5,800	120	4,500	60
3.0	7,500	270	4,900	180	4,000	150	3,000	75
4.0	6,800	500	4,000	300	3,400	250	2,500	100
5.0	5,600	540	3,200	320	2,800	270	2,000	110
6.0	5,000	580	3,000	320	2,500	290	1,800	120
8.0	3,700	650	2,100	320	1,800	300	1,400	150
10.0	2,800	540	1,700	260	1,400	270	1,200	130
12.0	2,700	470	1,400	220	1,200	210	1,000	120

절입량 Depth of Cut







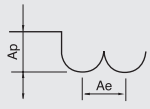
• 홈가공의 경우, 상기표 Feed 값을 반으로 하십시오. 또한 스테인레스강 홈가공의 경우에, 회전속도는 상기표의 60%, 이송속도는 40% 기준입니다.
• For slotting, set the feed rate in half. In case of slotting for stainless steel, set 60% of RPM and 40% of the feed rate in the table above.

피삭재 Material	탄소강/합금강 Carbon Steels S50/SCM		합금강/공구강/프리하든강 Alloy Steels/Tool Steels /Prehardened Steels SKD/NAK		스테인레스강 Stainless Steels SUS304/SUS316		고경도강 Hardened Steels SKD61	
경도 Hardness	~30HRc		30 ~ 45HRc				45 ~ 55HRc	
외경 Outer Diameter	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
2.0	4,200	80	3,600	70	2,900	50	2,200	35
3.0	3,600	90	2,900	80	2,200	60	1,800	40
4.0	2,900	120	2,300	90	1,800	70	1,400	50
5.0	2,500	150	2,000	120	1,500	90	1,300	60
6.0	2,100	170	1,700	150	1,300	110	1,100	70
8.0	1,600	190	1,300	150	1,000	130	900	70
10.0	1,400	150	1,100	150	800	110	700	70
12.0	1,100	120	900	120	700	90	570	60
절입량 Depth of Cut	≤0.05D (Max. 0.5mm) ≤2.5D		D ≤0.3D (Max. 3mm)				≤0.02D (Max. 0.3mm) ≤2D D ≤0.05D (Max. 0.5mm)	

• 스테인레스강 홈가공의 경우에, 회전속도는 상기표의 60%, 이송속도는 40% 기준입니다.
• In case of slotting for stainless steel, set 60% of RPM and 40% of the feed rate in the table above.

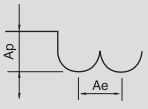
피삭재 Material		고경도강/프리하든강 Prehardened Steels/Hardened Steels NAK / STAVAX				고경도강 Hardened Steels SKD11				고경도강 Hardened Steels HAP10				고경도강 Hardened Steels HAP72			
경도 Hardness		~55HRc				55 ~ 62HRc				62 ~ 66HRc				66 ~ 70HRc			
반경 Radius	유효장 Length of Reach	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)*	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)*	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)*	Ap Axial Depth	Ae Radial Depth
R0.5	2	30,000	1,600	0.2	0.4	24,000	1,800	0.1	0.3	21,000	1,600	0.05	0.2	16,000	800	0.05	0.2
R0.5	5	30,000	1,600	0.01	0.3	24,000	1,800	0.05	0.2	21,000	1,600	0.03	0.17	16,000	800	0.03	0.17
R0.5	10	14,800	320	0.018	0.13	14,800	400	0.01	0.09	14,700	320	0.01	0.09	11,100	160	0.01	0.09
R0.75	3	30,000	2,450	0.25	0.55	17,000	1,800	0.12	0.4	15,000	1,600	0.06	0.29	11,250	850	0.06	0.29
R0.75	10	23,500	1,200	0.1	0.35	15,000	1,100	0.045	0.25	14,000	1,000	0.03	0.21	10,500	500	0.03	0.21
R1	4	28,000	2,700	0.3	0.7	14,000	2,000	0.15	0.5	12,250	1,800	0.08	0.35	9,200	800	0.08	0.35
R1	10	28,000	2,700	0.2	0.6	14,000	2,000	0.1	0.4	12,250	1,800	0.06	0.3	9,200	800	0.06	0.3
R1	20	8,650	360	0.035	0.25	8,650	450	0.02	0.19	8,560	340	0.02	0.19	6,400	170	0.02	0.19
R1.5	6	21,000	2,800	0.4	1	10,500	2,000	0.2	0.7	9,200	1,700	0.12	0.55	6,900	900	0.12	0.55
R1.5	10	21,000	2,800	0.3	0.9	10,500	2,000	0.15	0.65	9,200	1,700	0.1	0.5	6,900	900	0.1	0.5
R1.5	20	14,500	1,300	0.18	0.7	9,250	1,300	0.1	0.5	8,400	1,050	0.75	0.45	6,450	500	0.075	0.45
R2	8	18,000	3,000	0.5	1.3	9,000	2,100	0.25	0.95	7,900	1,800	0.15	0.75	5,900	900	0.15	0.75
R2	20	18,000	3,000	0.4	1.2	9,000	2,100	0.2	0.85	7,900	1,800	0.13	0.7	5,900	900	0.13	0.7
R2	30	7,000	500	0.1	0.6	7,000	600	0.06	0.45	7,000	500	0.06	0.45	5,250	240	0.06	0.45
R3	15	13,000	3,500	0.6	1.8	6,500	2,500	0.3	1.3	5,700	2,200	0.2	1	4,300	1,100	0.2	1
R4	25	9,500	2,800	0.7	2.1	5,200	2,100	0.4	1.7	4,500	1,800	0.25	1.35	3,400	900	0.25	1.35
R5	30	7,500	2,300	0.8	2.5	4,300	2,800	0.5	2.1	3,750	1,600	0.3	1.7	2,800	850	0.3	1.7
R6	30	6,200	1,800	0.9	3	3,600	1,600	0.6	2.6	3,150	1,400	0.35	2	2,350	680	0.35	2

절입량 Depth of Cut



피삭재 Material	고경도강/프리하든강 Prehardened Steels/Hardened Steels NAK / STAVAX				고경도강 Hardened Steels SKD11				고경도강 Hardened Steels HAP10				고경도강 Hardened Steels HAP72			
경도 Hardness	~55HRc				55 ~ 62HRc				62 ~ 66HRc				66 ~ 70HRc			
반경 Radius	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth
R0.1	60,000	180	0.003	0.005	60,000	180	0.002	0.003	60,000	120	0.002	0.003	45,000	60	0.002	0.003
R0.15	60,000	330	0.006	0.008	45,000	300	0.004	0.007	43,500	160	0.003	0.003	32,500	80	0.003	0.005
R0.2	50,000	480	0.01	0.02	37,500	400	0.007	0.012	35,000	220	0.005	0.008	26,250	110	0.005	0.008
R0.25	44,000	630	0.015	0.04	33,000	520	0.01	0.02	30,000	280	0.007	0.01	22,500	140	0.007	0.01
R0.3	40,000	1,000	0.03	0.13	30,000	1,100	0.02	0.1	26,500	700	0.01	0.075	20,000	380	0.01	0.075
R0.4	35,000	1,500	0.06	0.21	27,000	1,500	0.04	0.17	23,500	950	0.02	0.12	17,500	480	0.02	0.12
R0.5	30,000	1,600	0.2	0.4	24,000	1,800	0.1	0.3	21,000	1600	0.05	0.2	16,000	800	0.05	0.2
R0.75	30,000	2,400	0.25	0.55	17,000	1,800	0.12	0.4	15,000	1,600	0.06	0.29	11,250	850	0.06	0.29
R1.4	28,000	2,700	0.3	0.7	14,000	2,000	0.15	0.5	12,250	1,800	0.08	0.35	9,200	800	0.08	0.35
R1.25	21,000	2,800	0.4	1	10,500	2,000	0.2	0.7	9,200	1,700	0.12	0.55	6,900	900	0.12	0.55
R2	18,000	3,000	0.5	1.3	9,000	2,100	0.25	0.95	7,900	1,800	0.15	0.75	5,900	900	0.15	0.75
R2.5	15,600	3,000	0.5	1.5	7,800	2,100	0.25	1.05	6,800	1,900	0.16	0.88	5,100	900	0.15	0.088
R3	13,000	3,300	0.6	1.8	6,500	2,300	0.3	0.3	5,700	2,000	0.2	1	4,300	1,000	0.2	1
R4	9,500	2,800	0.7	2.1	5,200	2,100	0.4	0.7	4,500	1,800	0.25	1.35	3,400	900	0.25	1.35
R5	7,500	2,300	0.8	2.5	4,300	2,800	0.5	2.1	3,750	1,600	0.3	1.7	2,800	850	0.3	1.7
R6	6,200	1,800	0.9	3	3,600	1,600	0.6	2.6	3,150	1,400	0.35	2	2,350	680	0.35	2

절입량 Depth of Cut

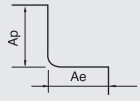


4날 코너 R–고경도용 4F Corner Radius for Hardened Steels 4CLH

피삭재 Material		고경도강/프리하든강 Prehardened Steels/Hardened Steels NAK/SKD				고경도강 Hardened Steels SKD/SKT				고경도강 Hardened Steels SKD/SKT			
경도 Hardness		30 ~ 45HRc				45 ~ 55HRc				55 ~ 65HRc			
외경 Outer Diameter	유효장 Length of Reach	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth	RPM	Feed (mm/min)	Ap Axial Depth	Ae Radial Depth
3	10	11,500	1,800	0.082	0.595	10,700	1,800	0.051	0.595	9,100	620	0.038	0.476
4	12	9,500	1,370	0.091	1	7,900	1,330	0.071	1	9,400	740	0.043	0.7
6	15	6,000	1,470	0.153	2.004	3,500	850	0.153	1.114	3,000	650	0.06	1.114
8	20	4,800	1,600	0.184	2.54	2,900	680	0.184	1.32	2,400	650	0.087	1.32
10	25	3,840	1,750	0.21	2.73	2,300	540	0.22	1.43	1,900	460	0.094	1.45
12	26	3,000	1,800	0.23	2.7	1,800	430	0.24	1.49	1,600	450	0.11	1.5

절입량 Depth of Cut

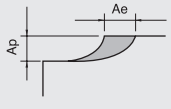
• AP : Axial Depth
• Ae : Radial Depth

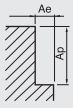


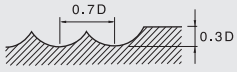
4날 코너 R–고이송용 4F Corner Radius for High Feed Rate 4CF

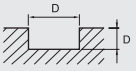
피삭재 Material	탄소강/합금강 Carbon Steels/Alloy Steels S50C/SCM				합금강/프리하든강 Alloy Steels/Prehardened Steels SKD61/SKD11/NAK				고경도강 Hardened Steels SKD61/STAVAX			
경도 Hardness	~30HRc				30 ~ 45HRc				45 ~ 55HRc			
외경 Outer Diameter	RPM	Feed (mm/min)	Ae(mm)	Ap(mm)	RPM	Feed (mm/min)	Ae(mm)	Ap(mm)	RPM	Feed (mm/min)	Ae(mm)	Ap(mm)
6.0	11,000	13,000	2.5	0.25	9,000	11,000	2	0.15	8,000	9,600	2.5	0.1
8.0	8,200	13,000	3	0.3	7,000	11,000	3	0.2	6,000	9,600	3	0.15
10.0	6,500	13,000	4.5	0.3	5,500	11,000	4.5	0.2	4,800	9,500	4.5	0.15
12.0	5,500	12,000	5.5	0.3	5,000	10,000	5.5	0.2	4,100	9,000	4.5	0.25

절입량 Depth of Cut

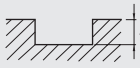


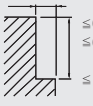
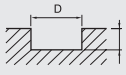
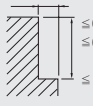
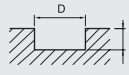
피삭재 Material	알루미늄 합금재 Aluminum Alloys Expanding Material A7075				알루미늄 합금재 Aluminum Alloys Casting <Si 13%				알루미늄 합금/동 Aluminum Alloys Steels / Copper AZ91/AZ80A/C1100			
	일반가공		고속가공		일반가공		고속가공		일반가공		고속가공	
	Regular Milling		High Speed Milling		Regular Milling		High Speed Milling		Regular Milling		High Speed Milling	
외경 Outer Diamete	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
2.0	20,600	800	37,000	1,400	20,600	800	24,000	800	9,600	230	15,200	340
3.0	16,800	900	32,000	1,700	16,800	900	19,200	1,000	6,400	260	13,600	500
4.0	12,400	1,000	25,600	2,000	12,400	1,000	15,400	1,200	4,800	290	11,400	640
6.0	8,400	1,100	21,200	2,800	8,300	1,120	12,700	1,700	3,200	320	8,500	770
8.0	6,400	1,200	16,000	3,000	6,400	1,200	9,600	1,800	2,400	370	6,400	900
10.0	5,100	1,360	12,800	3,400	5,100	1,360	7,700	2,000	1,900	380	5,100	920
12.0	4,200	1,400	10,600	3,500	4200	1,400	6,400	2,100	1,600	400	4,200	1,000
절입량 Depth of Cut	 • Ap : 1D • Ae : 0.2D		• Ap : 1D • Ae : 0.1D		• Ap : 1D • Ae : 0.2D		• Ap : 1D • Ae : 0.1D		• Ap : 1D • Ae : 0.2D		• Ap : 1D • Ae : 0.1D	

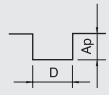
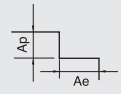
피삭재 Material	수지 Synthetic Materials	
반경 Radius	RPM	Feed (mm/min)
R0.1	37,000	50
R0.2	37,000	100
R0.3	37,000	140
R0.4	37,000	190
R0.5	32,000	210
R1.0	16,000	210
R1.5	11,000	210
R2.0	8,200	210
R2.5	6,000	250
R3.0	5,500	250
R4.0	4,100	280
R5.0	3,200	280
R6.0	2,700	330
절입량 Depth of Cut		

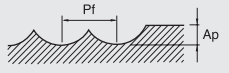
피삭재 Material	수지 Synthetic Materials	
외경 Outer Diameter	RPM	Feed (mm/min)
0.4	50,000	200
0.5	50,000	240
0.6	40,000	240
0.8	30,000	240
1.0	24,000	240
2.0	12,000	240
3.0	8,000	240
4.0	6,000	240
5.0	4,800	240
6.0	4,000	260
8.0	3,000	260
10.0	3,000	260
12.0	2,000	260
절입량 Depth of Cut		

홈가공 데이터임 / Data for slot milling

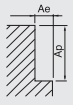
피삭재 Material	합금강/공구강 Alloy Steels/Tool Steels SKD11/SKD61/NAK		고경도강/프리하든강 Hardened Steels/Prehardened Steels SKT/SKD/NAK55/HPM1		고경도강/스테인레스강 Hardened Steels/Stainless Steels SUS304/SKD	
경도 Hardness	~30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outer Diameter	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
3.0	7,700	620	7,100	470	6,700	420
4.0	5,800	700	5,300	470	5,000	460
5.0	4,600	680	4,200	490	4,000	490
6.0	3,800	570	3,600	520	3,300	510
8.0	2,900	500	2,700	500	2,500	470
10.0	2,300	490	2,100	430	2,000	430
12.0	1,900	430	1,800	410	1,700	400
절입량 Depth of Cut	 Ap ≤1D Ap Max=12				Ap ≤0.5D	

피삭재 Material	알루미늄 합금 Aluminum Alloys				알루미늄합금 주물 Aluminum Alloys			
	300m/min		240m/min		240m/min		200m/min	
	측면가공 Side Milling		홈가공 Soltting		측면가공 Side Milling		홈가공 Soltting	
외경 Outer Diamete	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
1.0	34,000	500	34000	400	34000	400	34000	300
2.0	34,000	950	32300	720	32300	720	27200	470
3.0	27,200	1,200	21300	800	21300	800	18000	510
4.0	20,400	1,300	16000	850	16000	850	14000	550
5.0	16,200	1,400	13000	850	13000	850	11000	600
6.0	13,600	1,600	11000	940	11000	940	9400	640
8.0	10,200	1,600	8000	1000	8000	1000	6800	680
10.0	8,100	1,600	6500	1000	6500	1000	5400	680
12.0	6,800	1,600	5400	1000	5400	1000	4500	680
절입량 Depth of Cut	 ≤0.2D (D＜ø3) ≤0.3D (D≥ø3) ≤1D		 ≤1D (Max. 12mm)		 ≤0.2D (D＜ø3) ≤0.5D (D≥ø3) ≤1D		 ≤1D (Max. 12mm)	

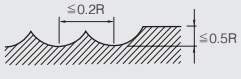
피삭재 Material	알루미늄 합금 Aluminum Alloys			
외경 Outer Diamete	RPM	Feed (mm/min)		
		수직 Vertical	홈절삭 Soltting	측면절삭 Side Milling
1.0	25,500	130	770	930
2.0	25,500	190	1,530	1,800
3.0	18,400	190	1,700	2,000
4.0	14,000	255	1,700	2,000
5.0	11,000	255	1,700	2,000
6.0	9,200	255	1,700	2,000
8.0	7,000	255	1,700	2,000
10.0	5,500	210	1,700	2,000
12.0	4,400	170	1,700	2,000
16.0	3,200	130	1,530	1,900
20.0	2,000	85	1,360	1,700
Milling Amount (mm)		Ap=0.75D	Ap=0.75D	Ap=0.75D / Ae=0.3D
절입량 Depth of Cut				

피삭재 Material	흑연 Graphite	
반경 Radius	RPM	Feed (mm/min)
R0.25	32,000	1,000
R0.5	32,000	1,600
R0.75	28,000	1,600
R1.0	24,000	1,600
R1.5	16,000	1,600
R2.0	12,000	1,600
R2.5	9,600	1,400
R3.0	8,000	1,200
R4.0	6,400	640
R5.0	5,200	650
R6.0	4,300	600
R5.0	3,200	280
R6.0	2,700	330
절입량 Depth of Cut	Ap: 1.0D, Pf: 0.3D 	

2날 평–흑연 가공용 2F Square End for Graphite 2SG

피삭재 Material	흑연 Graphite	
외경 Outer Diameter	RPM	Feed (mm/min)
	8,000	160
2.0	8,000	250
3.0	8,000	380
4.0	8,000	510
5.0	8,000	640
6.0	8,000	770
8.0	8,000	1,000
10.0	8,000	1,250
절입량 Depth of Cut	Ap: 1D, Ae: 0.1D 	

2날 볼–다이아몬드 코팅 2F Ball End-Diamond Coated 2BD

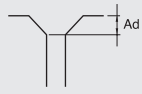
피삭재 Material	흑연 Graphite	
반경 Radius	RPM	Feed (mm/min)
R0.5	40,000	2,000
R1.0	40,000	2,200
R1.5	30,000	2,400
R2.0	24,000	2,600
R3.0	16,000	2,600
R4.0	12,000	2,800
R5.0	10,000	3,000
R6.0	8,000	3,000
절입량 Depth of Cut		

2날 센터링 2F Centering 2CE

피삭재 Material	일반구조강/탄소강 Mild Steels/Carbon Steels SS400 / SS55C		합금강/공구강 Alloy Steels/Tool Steels SKD / SCM		프리하든강 Prehardened Steels HPM/NAK(30~45HRC)		알루미늄 합금 Aluminum Alloys	
외경 Outer Diameter	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
	1,400	100	800	50	650	40	4,800	280
4	1,280	100	690	50	580	40	4,200	280
5	1,300	100	640	50	520	40	3,300	280
6	1,150	100	600	50	480	40	2,900	280
8	1,000	100	530	50	420	40	2,600	280
10	850	100	490	40	390	30	2,400	260
12	720	90	410	40	310	30	1,900	260

절입량 Depth of Cut

Ad : 0.5D~1.0D



2날 NC 드릴 2F NC Drill 2NCD

피삭재 Material	일반구조강/탄소강 Mild Steels/Carbon Steels SS400 / SS55C		합금강/공구강 Alloy Steels/Tool Steels SKD/SUS/SCM		알루미늄 합금 Aluminum Alloys	
인선직경 Cutting Dia.	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
3.0	860	9,600	480	8,000	1,150	1,800
4.0	650	7,200	360	6,000	860	9,600
6.0	430	4,800	240	4,000	580	6,400
8.0	430	3,600	180	3,000	580	4,800
10.0	410	2,900	140	2,400	530	3,800
12.0	380	2,400	120	2,000	510	3,200

절입량 Depth of Cut

Ad < 0.3D

재연마 단가표

2013.07.01

SPEED-1

ST

▶ 초경 ENDMILL 절단 및 밑날

규 격	연마(절단 및 밑날)		연마+코팅(AlTiSiN)	
	2F	4F	2F	4F
1이하	4,000	4,500	5,800	6,800
6이하	4,000	4,500	5,800	6,800
10이하	4,000	4,500	6,300	7,300
12이하	5,000	5,500	8,300	8,900
16이하	6,000	6,500	12,300	12,600
20이하	10,000	11,000	15,300	16,800
25이하	12,000	14,000	18,300	21,300

▶ 초경 BALL ENDMILL

BG초경× 1.3

규 격	연마(절단 및 밑날) – 노코팅		연마+코팅(AlTiSiN)	
	2F	4F	2F	4F
1이하	5,000	6,000	7,300	8,400
6이하	5,000	6,000	7,300	8,400
10이하	5,000	6,000	9,000	10,600
12이하	6,000	7,000	11,000	12,500
16이하	8,000	10,000	13,300	15,000
20이하	12,000	15,000	21,300	24,000
25이하	15,000	20,000	23,300	28,300

▶ 초경 ENDMILL(외경연마)

날경	6이상	12이하	16이하	20이하	25이하	30이하
2날	4,000	5,000	7,000	10,000	15,000	21,000
4날	5,000	6,000	8,000	12,000	18,000	25,000

LONG : ×1.3　EX LONG : ×1.5　수리 : ×2　절수 : ×1.5

▶ ROUGHING ENDMILL

날경	20이하	30이하	40이하	50이하
	4,000	5,000	8,000	15,000

LONG : × 1.5　EX LONG : × 2　절수:× 1.5　C/C:+500원

▶ ROUGHING ENDMILL(절단만+밑날)

날경	20이하	30이하	40이하	50이하
	6,000	7,500	12,000	22,500

▶ 초경 TAPER ENDMILL

각 도	TAPER 상단부위 DIA							
	6이하	8이하	10이하	12이하	16이하	20이하	25이하	30이하
2도미만	9,000	10,000	11,000	12,000	15,000	20,000	25,000	30,000
2도이상	9,000	10,000	12,000	14,000	18,000	24,000	28,000	32,000
30도이상	6,000	7,000	8,000	9,000	11,000	15,000	19,000	25,000

30도이상수리제작 : ×1.5　30도미만수리제작 : ×2

HSS TAPER ENDMILL

각 도	TAPER 상단부위 DIA				
	16이하	20이하	25이하	32이하	35이상
2도이하	7,000	8,000	9,000	12,000	15,000
10도이하	8,000	10,000	12,000	15,000	18,000
30도미만	8,000	10,000	12,000	15,000	18,000
30도이상	6,000	7,000	8,000	10,000	12,000

LONG : ×1.5　수리제작 : ×2　역 : ×2

▶ HSS ENDMILL(외경연마)

날 경	20이하	30이하	40이하	50이하
2날	3,000	4,000	7,000	12,000
4날	4,000	5,000	8,000	15,000

LONG : ×1.5, EX LONG : ×2, 절수 : ×1.5, 수리 : ×2, C/C:+500

▶ HSS ENDMILL(절단만+밑날)

날 경	20이하	30이하	40이하	50이하
2날	4,500	6,000	14,000	24,000
4날	6,000	7,500	16,000	30,000

▶ 날붙이 초경 ENDMILL(BG) – 외경연마

날 경	20이하	30이하	40이하	50이하
2날	5,000	8,000	10,000	15,000
4날	6,000	9,000	12,000	20,000

LONG : ×1.5 EX LONG : ×2 절수 : ×1.5

▶ 날붙이 초경 ENDMILL(BG) – 절단만+밑날

날경	20이하	30이하	40이하	50이하
2날	7,500	12,000	20,000	30,000
4날	9,000	13,500	24,000	40,000

▶ 초경 인서트 팁

날 경	12	16	20	25	32
연 마	6,000	7,000	8,000	9,000	12,000
연마+코팅	10,000	12,000	13,000	14,000	17,000

▶ 초경 래디우스

날경	10이하	12이하	16이하	20이하
2날	6,000	7,000	9,000	12,000
4날	7,000	8,000	11,000	16,000

▶ 중간원통 가격(B,F 포함)

생크경	가격	생크경	가격
10이하*20L	2,000	12이하*100L	10,000
10이하*50L	4,000	20이하*60L	8,000
10이하*100L	8,000	20이하*120L	16,000
12이하*30L	3,000	30이하*60L	10,000
12이하*60L	6,000	30이하*120L	20,000

*하이스, 초경 상관없이 동일함

▶ 코팅단가 AlTiSiN코팅만(B,F 포함)

ø6	ø8	ø10	ø12	ø16	ø20	ø25
2,500	3,000	3,600	5,000	9,000	10,000	15,000

MEMO