INNOBIZ 기술혁신형중소기업

STAR TOOL

We manufacture solid carbide end mills and custom made specials.

스타공구 (주)
STAR TOOL CO., LTD.

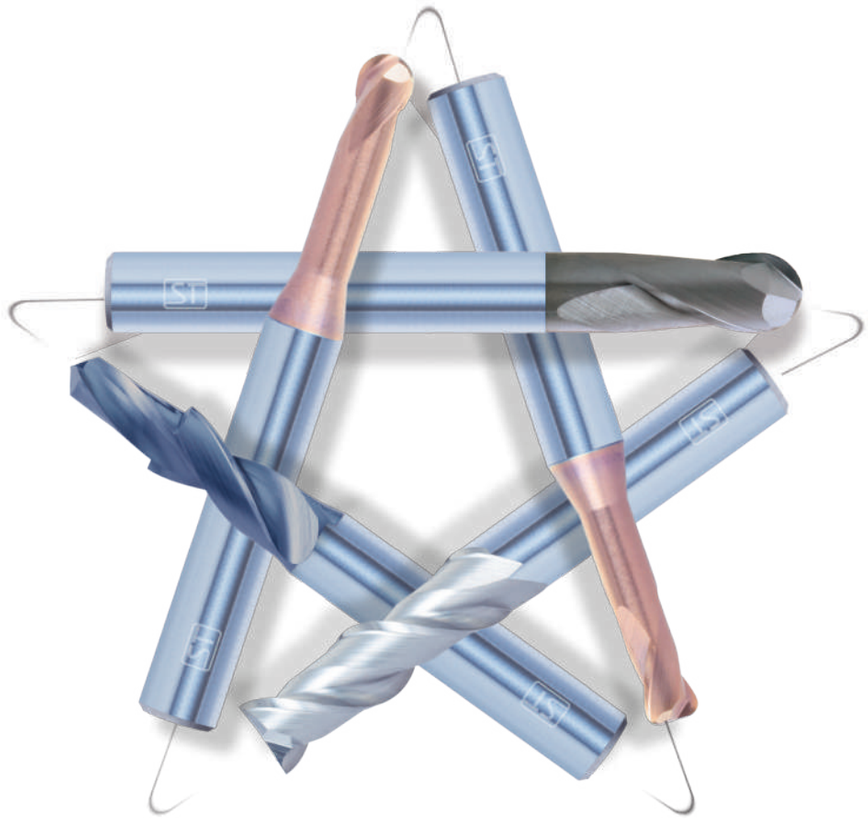
27-15, Beoman-ro 15-gil, Geumcheon-gu, Seoul, Republic of Korea
Tel : +82 (0)2 809 0946 / Fax : +82 (0)2 806 0946
E_mail : startool09@naver.com / startools@daum.net

END MILLS

STAR TOOL CO., LTD.

VER. 12

www.startool.co.kr
Made in Korea
VER. 12



INNOBIZ 기술혁신형중소기업

STAR TOOL

SOLID CARBIDE
END MILLS

스타공구 (주)
STAR TOOL CO., LTD.

Star Tool Production Equipment Lineup

Equipped with equipment to produce micro end mills and mass production!
Excellent precision tolerance with world-class measuring equipment!

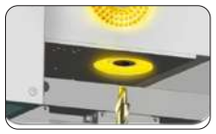
· 초소형 엔드밀 생산 및 대량 생산 설비 완비
· 세계 최고 수준의 측정 장비로 뛰어난 정밀 공차!

Star Tool has greatly improved the quality by using high-precision equipment, and has minimized the loading time with 5-axis CNC machine and 6-axis robot arm.

스타공구는 고정밀 장비를 이용해 풀질을 크게 향상시켰으며, 5축 CNC 기계와 6축 로봇 팔로 로딩 시간을 최소화하였습니다.

Star Tool uses a non-contact super-precision 3D measuring machine to manage tolerances thoroughly. It can measure from 0.1mm to 100mm in tools diameter, all tool is measured and managed.

스타공구는 비접촉 초정밀 3D 측정기를 사용하여 철저히 관리합니다. 공구 직경은 0.1mm에서 100mm까지 측정할 수 있으며 모든 공구를 측정 관리합니다.



World-class quality end mill production
세계적인 품질의 엔드밀 생산

High level of precision tolerance
높은 수준의 정밀 공차

Star tools is able to manufacture micro end mills(0.1Ø~) by introducing the latest 6-axis precision machine, and the quality has been greatly improved.

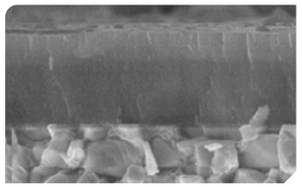
스타공구는 최신식 6축 정밀기계 도입으로 초소형 직경(0.1Ø~) 제작이 가능하며 품질이 크게 향상되었습니다.

Star Tools manufactures end mills with accurate machining depth according to the inclination angle of the workpiece.

스타공구는 피삭재의 경사각도에 따라 정확한 가공 깊이로 엔드밀을 제작합니다.

StarTool Coating Description

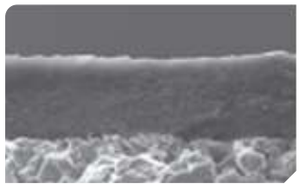
Coating of
Endmill for Super Hardened Steels



Coating layer hardness (Hv0,05): 4,000
Features: Nano-composite structure with higher Si content compared to hardcut, further improved wear and oxidation resistance

코팅층경도(Hv0,05): 4,000
특징: Hardcut 대비 Si함량이 더 높은 나노 복합구조, 내마모 및 내산화성이 더욱 개선

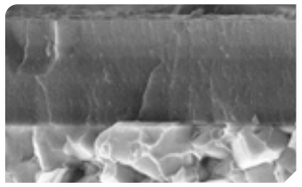
Coating of
Endmill for Hardened Steels



Coating layer hardness (Hv0,05): 3,600
Features: TiSiN nanocomposite structure with ultra-high hardness, wear resistance compared to AlTiN, and excellent oxidation resistance

코팅층경도(Hv0,05): 3,600
특징: TiSiN 나노 복합구조의 초고경도, AlTiN대비 내마모성, 내산화성 우수

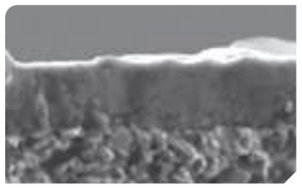
Coating of
Endmill for Multipurpose



Coating layer hardness (Hv0,05): 3,600
Features: Improved toughness compared to hardcut, greatly improved cutting range by realizing low friction/low heat transfer. especially uniform wear in interrupted machining.

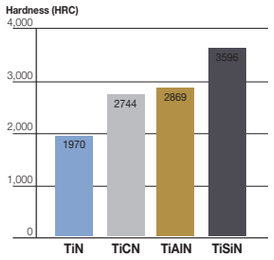
코팅층경도(Hv0,05): 3,600
특징: Hardcut 대비 인성 향상, 저마찰/저열전달 실현으로 절삭 범위 대폭 개선. 특히 단속 가공에서 균일한 마모

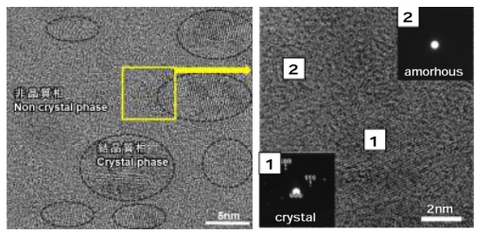
Coating of
Economic Series



Coating layer hardness (Hv0,05): 2,800
Features: Excellent toughness and abrasion resistance, especially consistent wear characteristics even in interrupted conditions

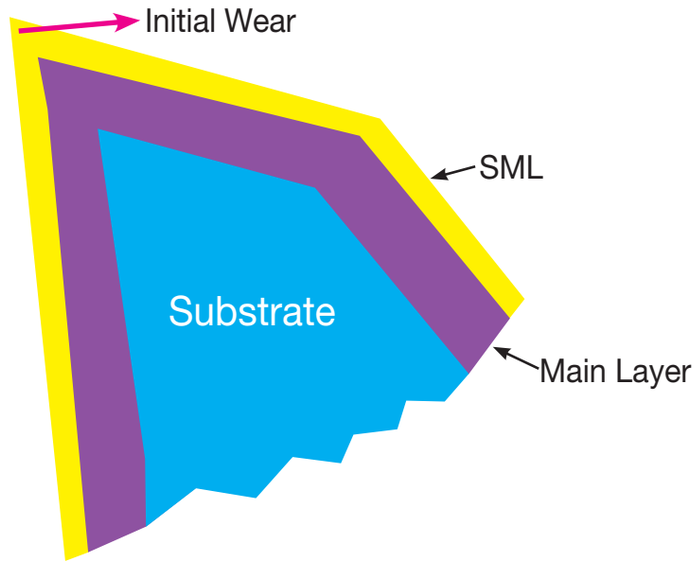
코팅층경도(Hv0,05): 2,800
특징: 인성 및 내마모 우수, 특히 단속에서도 균일 마모 특성





- Nano composite of dispersed Si3N4 precipitates in TiSiN matrix
- Cutting performance highly dependent on Si content

HR coating
Endmill for Multipurpose



특징

- ▶ Hardcut에 표면 개질층 (Surface Modification Layer, SML) 부여
- ▶ 인성 증가로 내치핑성 개선
- ▶ 단속 가공에서 성능 향상
- ▶ 습식/건식 환경에서 모두 절삭 가능(열크랙 발생 및 Si의 수산화 억제)
- ▶ 공구 수명 증가
- ▶ 강/주철 이외에 비철 가공 영역 확대 (Ni, Ti, Co, Ta, etc.)

Featues

- ▶ Applying a Surface Modification Layer (SML) to Hardcut
- ▶ Improved chipping resistance by increasing toughness.
- ▶ Improved performance in interrupted machining
- ▶ Cutting possible in both wet/dry environments(thermal cracking and Si hydroxylation suppression)
- ▶ Increased tool life
- ▶ Expansion of non-ferrous machining range other than steel/cast iron(Ni, Ti, Co, Ta, etc.)

Diamond Coating

The most suitable diamond coating for machining non-ferrous materials!

비철 소재 가공에 가장 적합한 다이아몬드 코팅!

2BD, 4BD, 2CD, 4CD

Applications (적용분야)

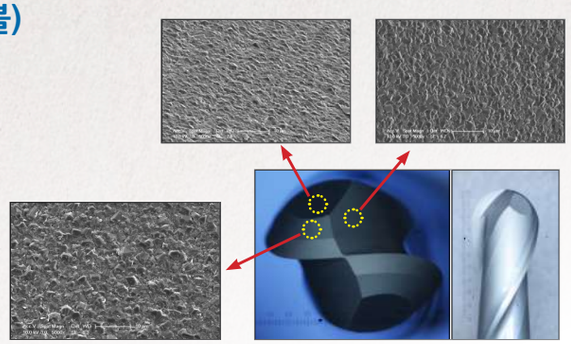
Copper Alloy

Alumium Alloy

Graphite

Information of Diamond Coating (다이아몬드 코팅 정보)

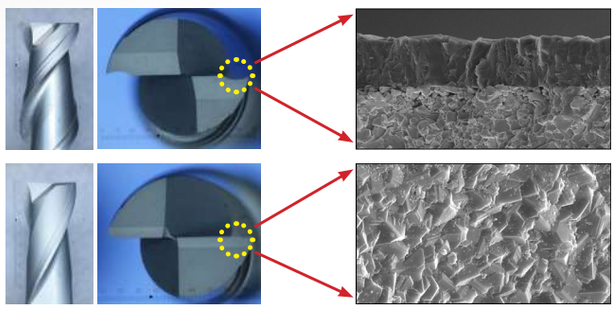
■ **Ball(볼)**



- Suitable for non-ferrous processing such as graphite/aluminum
- Uniform particle size
- Good surface finish
- Improve tool life

- 흑연/알루미늄 등 비철 가공에 적합
- 입자크기 균일
- 포면조도 양호
- 공구 수명 향상

■ **Square & Corner R(평 & 코너 R)**



Dense section structure(x10,000)
치밀한 단면구조(x10,000)

Cubic Diamond(x20,000)
입방정 다이아몬드(x20,000)

ALNOVA

NEW

Optimized for Machining Stainless Steel

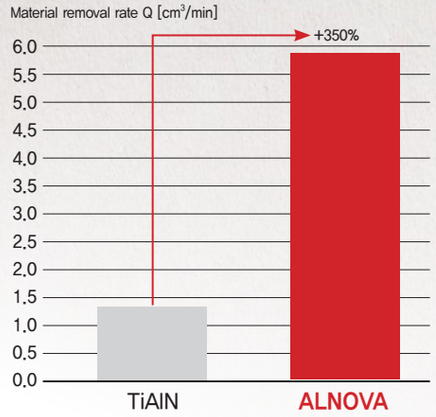
스테인리스 강 작업에 최적화

Premium coating for machining Stainless Steel
스테인리스 강 가공을 위한 프리미엄 코팅

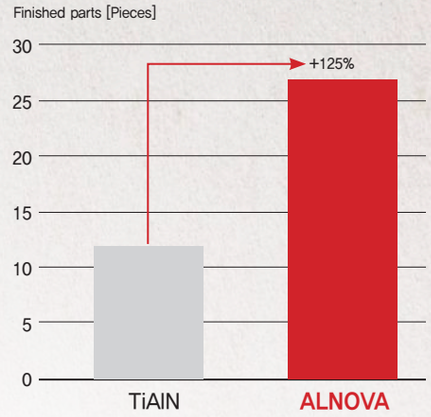
4CSN, 4SSN

Machining of turbine blades made of Inconel

Milling Stainless Steel



Rough Milling of Titanium

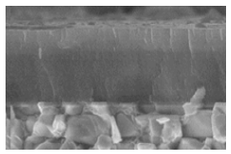


Endmill for Super Hardened Steels ~HRC68

Features

- Used super micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Increases tool life by post-treatment process
- 극초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 후처리 공정으로 공구 수명 증가

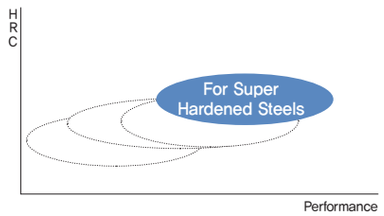
Coating



Applications:
High-speed dry cutting on super hardened steel(up to HRC68)

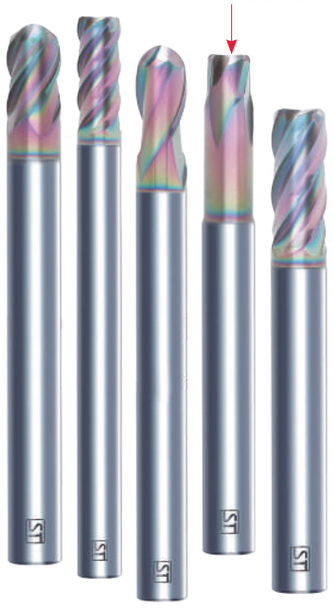
적용분야: 초고경도강(HRC68이하)에서 고속 건식 가공

Application



Endmill for Multipurpose NEW ~HRC55

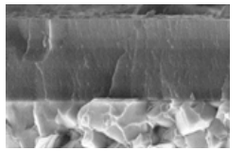
4CHFHR(변경할제품확인)



Features

- Used micrograin solid carbide with high TRS excellent for low/high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Optimal design for multipurpose machining
- 력이 높은 초미립 초경 소재를 사용해 저/고속 절삭에 우수
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 다목적 가공을 위한 최적의 디자인

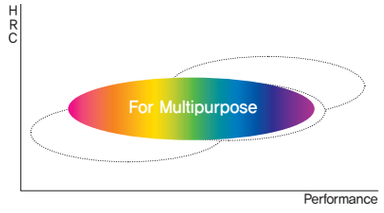
Coating



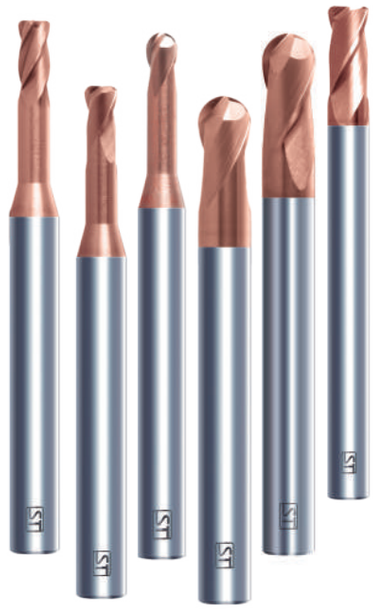
Applications:
Multi-purpose, wide-ranging coating capable of cutting special materials (Inconel, Ti alloy, SUS, etc.) other than medium/high-speed machining of medium/high-hardness steel and cast iron

적용분야: 중/고경도강 및 특수 소재(Inconel, Ti alloy SUS등)를 중/고속으로 가공 가능한 다목적 광범위 코팅

Application



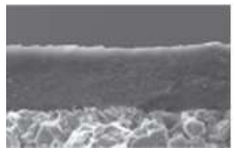
Endmill for Hardened Steels ~HRC55



Features

- Used super micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- Increases tool life by post-treatment process
- 극초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 후처리 공정으로 공구 수명 증가

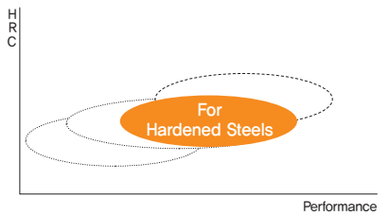
Coating



Applications:
Dry high-speed machining of high-hardness steel with up to HRC55, high-speed, high-load drilling of difficult-to-cut materials, and high-speed dry gear machining

적용분야: HRC55 이하의 고경도강의 건식 고속가공, 난삭재의 고속 고부하 드릴 작업, 고속 건식 기어가공

Application

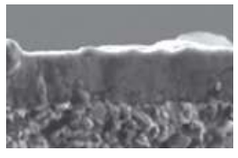


Economic Series ~HRC50

Features

- Used micrograin solid carbide excellent for high speed cutting
- Greater rigidity and reduced chattering through optimized geometry
- 초미립 초경 소재를 사용해 고속 가공성능이 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음

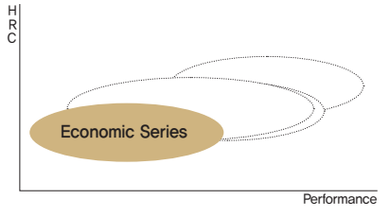
Coating



Applications:
General-purpose cutting of medium and high hardness steel Wet and dry cutting of heat-resistant steel and high hardness steel below HRC50

적용분야: 중,고경도강의 범용 절삭 가공 내열강, HRC500이하 고경도 강의 습,건식 절삭

Application



Endmill for Super Hardened Steels

Product list (제품 목록)

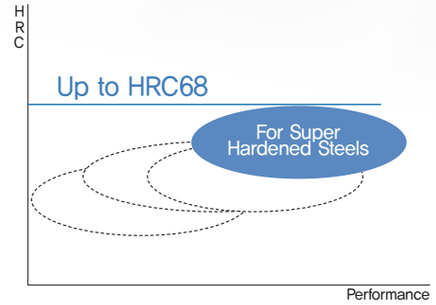
Ball	Corner R	Square
2NBH	2NCH	2NSH
2BH	2CLH	2SH
2BTH	4NCH	4SH
3BH	4CLH	4SHH
		6SH

Super micrograin solid carbide
극초미립 입자 소결 초경

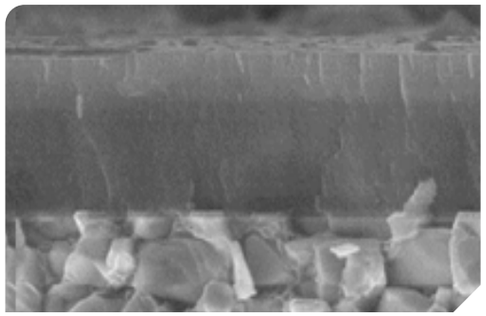
Optimized cutting edge geometry
인선부 치수와 형상의 최적 설계

Nanocomposite coating with high Si
Si고함량 나노컴포지트 코팅

• Application



• Coating



Endmill for Hardened Steels

Product list (제품 목록)

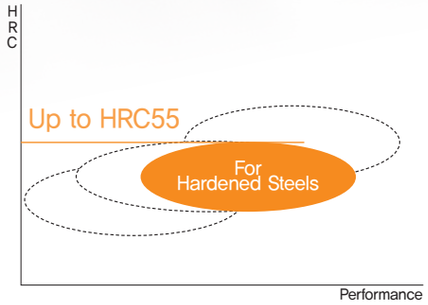
Ball	Corner R	Square
2NB	2NC	2NS
2BS	2CL	2SR
2BR	2CT	2SL
2TB	4NC	4NS
	4CL	4SR
	4CF	4SL
	4CHF	4TE
		6SR

Super micrograin solid carbide
극초미립 입자 소결 초경

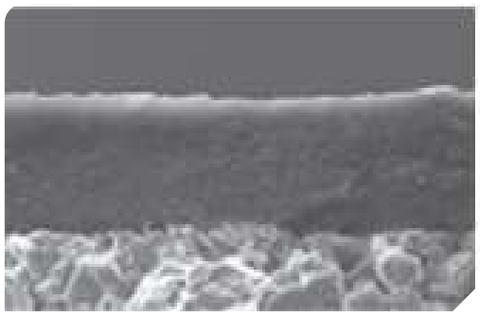
Optimized cutting edge geometry
인선부 치수와 형상의 최적 설계

Nanocomposite coating
나노컴포지트 코팅

• Application



• Coating



Endmill for Multipurpose

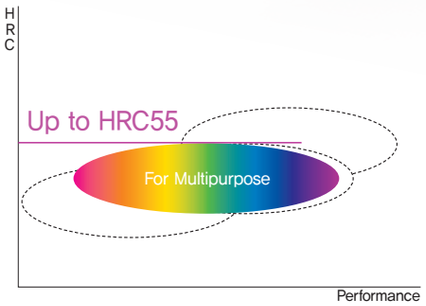
NEW

Product list (제품 목록)

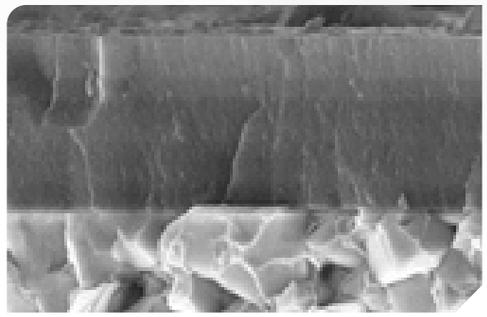
Ball	Corner R	Square
2BRHR	4CLHR	4SRHR
4BRHR	4CHFHR	
	6CLHR	

- Micrograin solid carbide with high TRS
  항절력이 높은 초미립 입자 소결 초경
- Optimized cutting edge geometry
  인선부 치수와 형상의 최적 설계
- Chipping resistant multipurpose coating
  내치핑성 다목적 코팅

• Application



• Coating



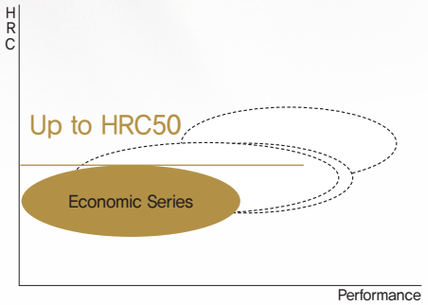
Economic Series

Product list (제품 목록)

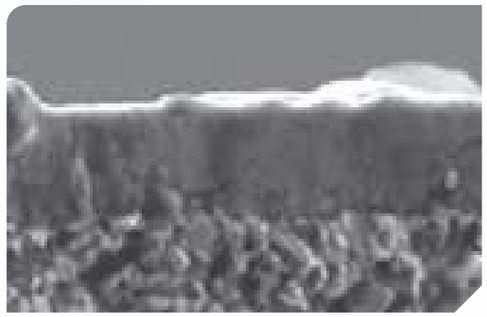
Ball	Corner R	Square
2BRE	2CLE	2SRE
2BTE	4CLE	4SRE
		4SLE

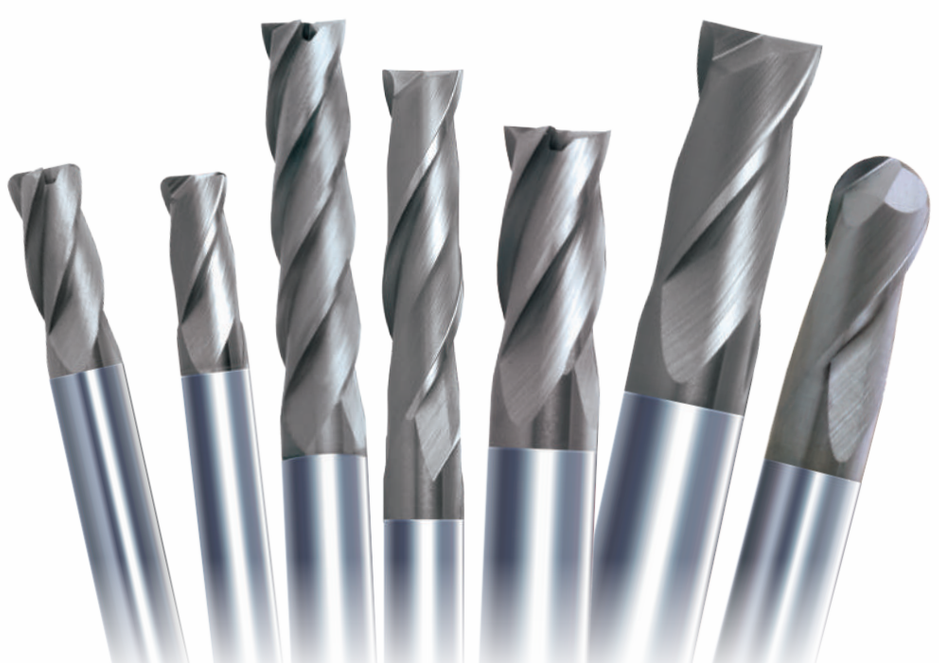
- Micrograin solid carbide
  초미립 입자 소결 초경
- Optimized cutting edge geometry
  인선부 치수와 형상의 최적 설계
- Coating of consistent wear
  균일한 마모의 코팅

• Application



• Coating





NEW

High-Feed! High-Speed!

Corner Radius for High Feed Rate
고이송용 엔드밀

4CF, 4CHF, 4CHFHR

- Optimized for high-feed machining with a material with excellent TRS
- Optimal design suitable for high-feed roughing and semi-roughing
- Applying the optimal helix angle for each application
- Work time reduction

- 우수한 항절력을 가진 소재로 고이송 가공에 최적화
- 최적의 설계로 고이송 황삭 및 중삭에 적합
- 용도별 최적의 헬릭스 각도 적용
- 작업시간 단축

4CHFHR(변경할제품확인)

Helix 0° **Helix 12°** **Helix 10°**

NEW

TROCHOIDAL

Excellent for in advanced roughing machining
[Applicable to various materials]

진보된 황삭 가공에 뛰어남
[다양한 소재에 적용 가능]

5, 6TROCHOIDAL

- Reduce chattering and increase tool life with variable helix and unequal divided flute
- Excellent chip evacuation by applying chip break
- Optimized for roughing machining with a material with excellent TRS
- Sidelock applied to 14dia or more

- 가변헬릭스와 부등분할로 채터링 감소와 공구 수명 증가
- 칩브레이크 적용으로 우수한 칩배출
- 우수한 항절력을 가진 소재로 황삭 가공에 최적화
- 14파이 이상 사이드락 적용

NEW

Engraving Ball Endmill

2EBTHR

- Design optimized for engraving
- Greater rigidity and reduced chattering through optimized geometry
- Various standards

- 조각 작업에 최적화된 디자인
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 다양한 규격

Custom Made End Mills!

- Star Tool 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

- 다양한 특수목적 용도의 엔드밀을 제작하여 제공
- 축적된 형상가공 제작 기술로 최상의 제품을 제공

The specialist in specials : **Star Tool**

STAR TOOL

We manufacture solid carbide end mills and
custom made specials.

Icon Guide

아이콘 가이드

Tool Material / 엔드밀 소재

- SMG Carbide · Super Micrograin carbide · 극초미립 초경합금
- MG Carbide · Micrograin carbide · 초미립 초경합금

Coating / 코팅

- S-HC Coated · Nanocomposite coating for Super hardened steels · 나노 컴포지트 코팅 (초고경도용)
- AlTiSiN Coated · AlTiSiN · AlTiSiN 코팅
- HR Coated · HR Hardcut · HR Hardcut 코팅
- AlTiCrSiN Coated · AlTiCrSiN · AlTiCrSiN 코팅
- AlTiN Coated · AlTiN · AlTiN 코팅
- Diamond Coated · Diamond · 다이아몬드 코팅
- ALNOVA Coated · ALNOVA · ALNOVA 코팅
- Uncoated · Uncoated · 코팅없음

Helix Angle / 헬릭스 각

- HX 0° · Helix 0 °
- HX 10° · Helix 10 °
- HX 12° · Helix 12 °
- HX 15° · Helix 15 °
- HX 20° · Helix 20 °
- HX 27° · Helix 27 °
- HX 30° · Helix 30 °
- HX 35/38° · Helix 35/38 °
- HX 37/38° · Helix 37/38 °
- HX 40° · Helix 40 °
- HX 45° · Helix 45 °

Number of Flute / 날 수

- 1 · 1 Flute · 1날
- 2 · 2 Flute · 2날
- 3 · 3 Flute · 3날
- 4 · 4 Flute · 4날
- 5 · 5 Flute · 5날
- 6 · 6 Flute · 6날

Application / 절삭적용

- Side · Side
- Slot · Slot
- 3D · 3D
- Face · Face
- Plunge · Plunging
- C · C chamfering
- R · R Chamfering

HRC / 경도

- ≦68 HRC · ~68 HRC
- ≦55 HRC · ~55 HRC
- ≦50 HRC · ~50 HRC

Shape / 형상

- Sharp Edge · Sharp Edge
- Corner R · Corner R
- Unequal Flute Spacing · Unequal Flute Spacing · 부등분할

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◎: 최적 (First choice), ○: 보통 (Alternative choice), △: 제한적 (Limited choice)

Use 용도	End Feature 날 형상	# of Flute 날 수	Code Name 제품코드	Tool Description 명칭	Tool Dia 크기	Coating 코팅	Page 페이지		Carbon Steel/Alloy Steel/Tool Steel (Up to 350 HB) 탄소강/합금강 (~HB 350)	Stainless Steel (Up to 240 HB) 스테인리스 (~HB 240)	Cast Iron (Up to 260 HB) 주철 (~HB 260)	Prehardened Steel (Up to 50 HRC) 중저경도강 (~HRC 50)	Hardened Steel (45 to 55 HRC) 고경도강 (HRC 45~55)	Super Hardened Steel (55 to 68 HRC) 초고경도강 (HRC 55~68)	Nickel& Titanium Alloy 니켈 & 티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지&플라스틱	Graphite 흑연
For Super Hardened Steels (~HRC68) 초고경도용	Ball End 볼	2F	2NBH	2F Necked Ball End for Super Hardened Steels 2날 볼 리브– 초고경도용	0.2~12	S-HC	27		○	△	○		○	◎					
			2BH	2F Ball End for Super Hardened Steels 2날 볼–초고경도용	0.2~12	S-HC	32		○	△	○		○	◎					
			2BTH NEW	2F Ball End–Tapered Neck 2날 볼–테이퍼 넥	0.5~4	S-HC	34		○	△	○		○	◎					
		3F	3BH NEW	3F Ball End for Super Hardened Steels 3날 볼–초고경도용	1~6	S-HC	38		○	△	○		○	◎					
	Corner Radius 코너 R	2F	2NCH	2F Necked Corner Radius for Super Hardened Steels 2날 코너 R 리브–초고경도용	0.2~12	S-HC	39		○	△	○		○	◎					
			2CLH	2F Corner Radius Long for Super Hardened Steels 2날 코너 R 롱–초고경도용	0.8~12	S-HC	48		○	△	○		○	◎					
		4F	4NCH	4F Necked Corner Raduus for Hardened Steels 4날 코너 R 리브–초고경도용	1~12	S-HC	50		○	△	○		○	◎					
			4CLH	4F Corner Radius Long for Super Hardened Steels 4날 코너 R 롱–초고경도용	1.5~12	S-HC	55		○	△	○		○	◎					
	Square End 평	2F	2NSH	2F Necked Square End for Super Hardened Steels2날 평 리브–초고경도용	0.1~8	S-HC	57		○	△	○		○	◎					
			2SH	2F Square End for Super Hardened Steels 2날 평–초고경도용	0.2~12	S-HC	62		○	△	○		○	◎					
		4F	4SH	4F Square End for Super Hardened Steels 4날 평–초고경도용	1~12	S-HC	64		○	△	○		○	◎					
			4SHH NEW	4F Square End for Super Hardened Steels H/X45° 4날 평–초고경도용 H/X45°	1~20	S-HC	65		○	△	○		○	◎					
		6F	6SH	6F Square Endmill for Super Hardened Steels 6날 평–초고경도용	6~20	S-HC	67		○	△	○		○	◎					
For Hardened Steels (~HRC55) 고경도용	Ball End 볼	2F	2NB	2F Necked Ball End 2날 볼 리브	0.2~12	AlTiSiN	69		○	△	○	○	◎	○	○	△			
			2BS	2F Ball End–Short 2날 볼 쇼트	0.5~12	AlTiSiN	74		○	△	○	○	◎	○	○	△			
			2BR	2F Ball End–Regular 2날 볼 표준	0.2~20	AlTiSiN	75		○	△	○	○	◎	○	○	△			
			2TB NEW	2F Tapered Ball End 2날 테이퍼 볼	0.5~3	AlTiSiN	77		○	△	○	○	◎	○	○	△			
	Corner Radius 코너 R	2F	2NC	2F Necked Corner Radius 2날 코너 R 리브	0.2~12	AlTiSiN	79		○	△	○	○	◎	○	○	△			
			2CL	2F Corner Radius–Long 2날 코너 R 롱	0.8~12	AlTiSiN	87		○	△	○	○	◎	○	○	△			
			2CT NEW	2F Tapered Corner Radius 2날 테이퍼 코너 R	0.3~3	AlTiSiN	89		○	△	○	○	◎	○	○	△			
		4F	4NC	4F Necked Corner Radius 4날 코너 R 리브	1~12	AlTiSiN	91		○	△	○	○	◎	○	○	△			
			4CL	4F Corner Radius–Long 4날 코너 R 롱	1.5~12	AlTiSiN	97		○	△	○	○	◎	○	○	△			
			4CF	4F Corner Radius–High Feed Rate 4날 코너 R–고이송용	6~12	AlTiSiN	99		○	△	○	○	◎	○	○	△			
			4CHF NEW	4F Corner Radius–High Feed Rate H/X12° 4날 코너 R–고이송용 H/X12°	5~12	AlTiSiN	100		○	△	○	○	◎	○	○	△			

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Use 용도	End Feature 날 형상	# of Flute 날 수	Code Name 제품코드	Tool Description 명칭	Tool Dia 크기	Coating 코팅	Page 페이지		Carbon Steel/Alloy Steel/Tool Steel (Up to 350 HB) 탄소강/합금강 (~HB 350)	Stainless Steel (Up to 240 HB) 스테인리스 (~HB 240)	Cast Iron (Up to 260 HB) 주철 (~HB 260)	Prehardened Steel (Up to 50 HRC) 중저경도강 (~HRC 50)	Hardened Steel (45 to 55 HRC) 고경도강 (HRC 45~55)	Super Hardened Steel (55 to 68 HRC) 초고경도강 (HRC 55~68)	Nickel& Titanium Alloy 니켈 & 티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지&플라스틱	Graphite 흑연
For Hardened Steels (~HRC55) 고경도용	Square End 평	2F	2NS	2F Necked Square End 2날 평 리브	0.1~8	AlTiSiN	101		○	△	○	○	◎	○	○	△			
			2SR	2F Square End-Regular 2날 평 표준	0.2~20	AlTiSiN	106		○	△	○	○	◎	○	○	△			
			2SL	2F Square End-Long 2날 평 롱	1~20	AlTiSiN	108		○	△	○	○	◎	○	○	△			
		4F	4NS NEW	4F Necked Square End 4날 평 리브	1~6	AlTiSiN	109		○	△	○	○	◎	○	○	△			
			4SR	4F Square End-Regular 4날 평 표준	1~20	AlTiSiN	111		○	△	○	○	◎	○	○	△			
			4SL	4F Square End-Long 4날 평 롱	2~20	AlTiSiN	113		○	△	○	○	◎	○	○	△			
			4TE	4F Tapered End Mill 4날 테이퍼 엔드밀	0.7~1	AlTiSiN	114		○	△	○	○	◎	○	○	△			
		6F	6SR	6F Square End-Regular 6날 평 표준	6~20	AlTiSiN	115		○	△	○	○	◎	○	○	△			
For multipurpose (~HRC55) 복합소재용	Ball End 볼	2F	2BRHR NEW	2F Ball End for Multipurpose 2날 볼-복합소재용	1~12	HR	117		○	◎	○	◎	◎	○	◎	○			
		4F	4BRHR NEW	4F Ball End for Multipurpose 4날 볼-복합소재용	2~12	HR	118		○	◎	○	◎	◎	○	◎	○			
	Corner Radius 코너 R	4F	4CLHR NEW	4F Corner Radius-Long for Multipurpose 4날 코너 R 롱-복합소재용	6~12	HR	119		○	◎	○	◎	◎	○	◎	○			
			4CHFHR NEW	4F Corner Radius-High Feed Rate for Multipurpose 4날 코너 R-고이송용-복합소재용	6~12	HR	120		○	◎	○	◎	◎	○	◎	○			
		6F	6CLHR NEW	6F Corner Radius-Long for Multipurpose 6날 코너 R 롱-복합소재용	6~12	HR	121		○	◎	○	◎	◎	○	◎	○			
	Square End 평	4F	4SRHR NEW	4F Square End for Multipurpose 4날 평-복합소재용	3~12	HR	122		○	◎	○	◎	◎	○	◎	○			
Economic Series (~HRC50) 이코노믹 시리즈	Ball End 볼	2F	2BRE	2F Ball End-Economic 2날 볼-이코노믹	0.2~20	AlTiCrSiN	125		◎	△	◎	◎	○		○	△			
			2BTE NEW	2F Ball End-Tapered Neck-Economic 2날 볼-테이퍼 넥-이코노믹	1~10	AlTiCrSiN	126		◎	△	◎	◎	○		○	△			
	Corner Radius 코너 R	2F	2CLE	2F Corner Radius-Long-Economic 2날 코너 R 롱-이코노믹	1~12	AlTiCrSiN	127		◎	△	◎	◎	○		○	△			
		4F	4CLE	4F Corner Radius-Long-Economic 4날 코너 R 롱-이코노믹	1.5~16	AlTiCrSiN	129		◎	△	◎	◎	○		○	△			
	Square End 평	2F	2SRE	2F Square End-Economic 2날 평-이코노믹	0.2~20	AlTiCrSiN	131		◎	△	◎	◎	○		○	△			
			2SLE	2F Square End-Long-Econimic 2날 평 롱-이코노믹	1~20	AlTiCrSiN	132		◎	△	◎	◎	○		○	△			
		4F	4SRE	4F Square End-Economic 4날 평-이코노믹	1~20	AlTiCrSiN	133		◎	△	◎	◎	○		○	△			
			4SLE	4F Square End-Long-Economic 4날 평 롱-이코노믹	2~20	AlTiCrSiN	134		◎	△	◎	◎	○		○	△			
황삭용 For Roughing	코너 R Corner Radius	5,6F	5,6TROHR NEW	5,6F Trochoidal End for Multipurpose 5,6날 트로코이달 엔드밀-복합소재용	6~20	HR	137		○	◎	○	◎	◎	○	◎	○			
	평 Square End	4F	4SRR NEW	4F Square Roughing End 4날 평-중절삭용	6~12	AlTiCrSiN	138		◎	△	◎	◎	○		○	△			
알루미늄 가공용 For Aluminum	코너 R Corner Radius	3F	3CA	3F Corner Radius End for Aluminum 3날 코너 R-알루미늄 가공용	3~16	Uncoated	141									△	◎	△	
	평 Square End	2F	2SA	2F Square End for Aluminum 2날 평-알루미늄 가공용	1~12	Uncoated	142									△	◎	△	

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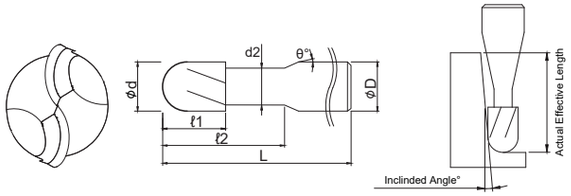
Use 용도	End Feature 날 형상	# of Flute 날 수	Code Name 제품코드	Tool Description 명칭	Tool Dia 크기	Coating 코팅	Page 페이지		Carbon Steel/Alloy Steel/Tool Steel (Up to 350 HB) 탄소강/합금강 (~HB 350)	Stainless Steel (Up to 240 HB) 스테인리스 (~HB 240)	Cast Iron (Up to 260 HB) 주철 (~HB 260)	Prehardened Steel (Up to 50 HRC) 중저경도강 (~HRC 50)	Hardened Steel (45 to 55 HRC) 고경도강 (HRC 45~55)	Super Hardened Steel (55 to 68 HRC) 초고경도강 (HRC 55~68)	Nickel& Titanium Alloy 니켈 & 티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지&플라스틱	Graphite 흑연
알루미늄 가공용 For Aluminum	평 Square End	3F	3SA	3F Square End for Aluminum 3날 평–알루미늄 가공용	1~20	Uncoated	143									△	◎	△	
For Stainless steel 스테인리스 강 가공용	Square End 평	4F	NEW 4SSN	4F Square for Stainless Steels 4날 평–SUS	1~12	ALNOVA	147		○	◎	○				◎	○	○	△	
			NEW 4SST	4F Square for Stainless Steels 4날 평–SUS	1~12	AlTiN	148		○	◎	○				◎	○	○	△	
	Corner Radius 코너 R	4F	NEW 4CSN	4F Corner Radius for Ctainless Steels 4날 코너 R–SUS	1~12	ALNOVA	149		○	◎	○				◎	○	○	△	
			NEW 4CST	4F Corner Radius for Ctainless Steels 4날 코너 R–SUS	1~12	AlTiN	151		○	◎	○				◎	○	○	△	
For Graphite 흑연용	Ball End 볼	2F	2BG	2F Ball End for Graphites 2날 볼–흑연 가공용	0.5~12	AlTiN	155		△		△					△	△	△	◎
	Square End 평	2F	2SG	2F Square End for Graphie 2날 평–흑연 가공용	0.5~12	AlTiN	157		△		△					△	△	△	◎
	Ball End 볼	2F	2BD	2F Ball End–Diamond Coating 2날 볼–다이아몬드 코팅	0.5~12	Diamond	158											△	◎
		4F	NEW 4BD	4F Ball End–Diamond Coating 4날 볼 – 다이아몬드 코팅	1.5~12	Diamond	161											△	◎
	Corner Radius 코너 R	2F	NEW 2CD	2F Corner Radius–Diamond Coating 2날 코너 R–다이아몬드 코팅	0.5~4	Diamond	163											△	◎
		4F	NEW 4CD	4F Corner Radius–Diamond Coating 4날 코너 R–다이아몬드 코팅	2~12	Diamond	164											△	◎
For Coppor 구리 가공용	Ball End 볼	2F	NEW 2NBC	2F Necked Ball End for Copper 2날 볼 리브–동 가공용	0.2~6	AlTiN	167		△		△					△	◎	△	
	Corner Radius 코너 R	2F	NEW 2NCC	2F Necked Corner Radius for Copper 2날 코너 R 리브–동 가공용	0.2~6	AlTiN	168		△		△					△	◎	△	
For Synthetic Material 수지, 비철 가공용	Ball End 볼	2F	2BY	2F Ball End for Synthetic Materials 2날 볼–수지 비철 가공용	0.3~12	Uncoated	171										△	◎	△
	Square End 평	2F	2SY	2F Square End for Synthetic Materials 2날 평–수지 비철 가공용	0.3~12	Uncoated	173										△	◎	△
범용 Special	Ball End 볼	2F	NEW 2EBTHR	2F Engraving Ball–Tapered for Multipurpose 2날 조각 볼–테이퍼–복합소재용	0.2~1	HR	177		○	◎	○	◎	◎	○	◎	○			
	Square End 평	1F	1FE	1F End Mill 1날 엔드밀	0.2~6	Uncoated	178		△	△	△					△	◎	◎	
	–	2F	2NCD	2F NC Drill 2날 NC 드릴	3~12	Uncoated	179		△	△	△					△	○	◎	
	–	2F	NEW 2NCDHR	2F NC Drill for Multipurpose 2날 NC 드릴–복합소재용	4~12	HR	180		○	◎	○	◎	◎	○	◎	○			
	–	2F	2CRR	2F Corner Rounding R 2날 역 R	1~12	Uncoated	181		△	△	△					△	○	◎	
	–	2F	2CRRC	2F Corner Rounding R–C 2날 역 R–C	1~12	AlTiN	182		◎		◎		◎		○	○	◎	◎	
	–	2F	2CE	2F Centering 2날 센터링	3~12	Uncoated	183		△	△	△					△	○	◎	
	–	2F	2TC	2F T Slot Cutter 2날 T 커터	3~12	Uncoated	184		△	△	△					△	○	◎	
	–	4F	4RTC	4F Round T Slot Cutter 4날 라운드 T 커터			185		△	△	△					△	○	◎	
	–	4F	4TRCC	4F Round T Slot Cutter–C 4날 라운드 T 커터–C			186		◎		◎		◎		○	○	◎	◎	

스타공구(주)
STAR TOOL CO., LTD.

For Super Hardened Steels

INNOBIZ
기술혁신형중소기업

2NBH 2F Necked Ball End for Super Hardened Steels
2날 볼 리브-초고경도용



2 | HX 30° | SMG Carbide | S-HC Coated | ≦68 HRC | 3D | CUTTING P.199

Features
- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징
- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30´	1°	1°30´	2°	3°
2NBH 020 050	0.2 X R0.1	0.15	0.50	0.18	15	45	4	0.55	0.56	0.58	0.6	0.64
2NBH 020 075	0.2 X R0.1	0.15	0.75	0.18	15	45	4	0.81	0.83	0.86	0.89	0.95
2NBH 020 100	0.2 X R0.1	0.15	1.00	0.18	15	45	4	1.06	1.1	1.13	1.17	1.26
2NBH 020 125	0.2 X R0.1	0.15	1.25	0.18	15	45	4	1.32	1.37	1.41	1.46	1.57
2NBH 020 150	0.2 X R0.1	0.15	1.50	0.18	15	45	4	1.58	1.63	1.69	1.75	1.88
2NBH 020 200	0.2 X R0.1	0.15	2.00	0.18	15	45	4	2.1	2.17	2.24	2.32	2.5
2NBH 020 250	0.2 X R0.1	0.15	2.50	0.18	15	45	4	2.61	2.7	2.8	2.9	3.12
2NBH 020 300	0.2 X R0.1	0.15	3.00	0.18	15	45	4	3.13	3.24	3.35	3.47	3.75
2NBH 030 050	0.3 X R0.15	0.25	0.50	0.28	15	45	4	0.55	0.56	0.57	0.59	0.63
2NBH 030 075	0.3 X R0.15	0.25	0.75	0.28	15	45	4	0.80	0.83	0.85	0.88	0.94
2NBH 030 100	0.3 X R0.15	0.25	1.00	0.28	15	45	4	1.06	1.09	1.13	1.17	1.25
2NBH 030 125	0.3 X R0.15	0.25	1.25	0.28	15	45	4	1.32	1.36	1.41	1.45	1.56
2NBH 030 150	0.3 X R0.15	0.25	1.50	0.28	15	45	4	1.58	1.63	1.68	1.74	1.87
2NBH 030 200	0.3 X R0.15	0.25	2.00	0.28	15	45	4	2.10	2.16	2.24	2.32	2.49
2NBH 030 250	0.3 X R0.15	0.25	2.50	0.28	15	45	4	2.61	2.70	2.79	2.89	3.11
2NBH 030 300	0.3 X R0.15	0.25	3.00	0.28	15	45	4	3.13	3.23	3.35	3.47	3.73
2NBH 040 100	0.4 X R0.2	0.30	1.00	0.37	15	45	4	1.08	1.11	1.14	1.18	1.26
2NBH 040 150	0.4 X R0.2	0.30	1.50	0.37	15	45	4	1.60	1.65	1.70	1.75	1.88
2NBH 040 200	0.4 X R0.2	0.30	2.00	0.37	15	45	4	2.11	2.18	2.25	2.33	2.50
2NBH 040 250	0.4 X R0.2	0.30	2.50	0.37	15	45	4	2.63	2.72	2.81	2.90	3.12

2NBH 2F Necked Ball End for Super Hardened Steels
2날 볼 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30´	1°	1°30´	2°	3°
2NBH 040 300	0.4 X R0.2	0.30	3.00	0.37	15	45	4	3.15	3.25	3.36	3.48	3.75
2NBH 040 350	0.4 X R0.2	0.30	3.50	0.37	15	45	4	3.66	3.78	3.91	4.05	4.37
2NBH 040 400	0.4 X R0.2	0.30	4.00	0.37	15	45	4	4.18	4.32	4.47	4.63	4.99
2NBH 040 450	0.4 X R0.2	0.30	4.50	0.37	15	45	4	4.70	4.85	5.02	5.20	5.61
2NBH 040 500	0.4 X R0.2	0.30	5.00	0.37	15	45	4	5.21	5.39	5.58	5.78	6.23
2NBH 040 600	0.4 X R0.2	0.30	6.00	0.37	15	45	4	6.25	6.46	6.69	6.93	7.47
2NBH 040 800	0.4 X R0.2	0.30	8.00	0.37	15	45	4	8.32	8.60	8.90	9.23	9.96
2NBH 050 100	0.5 X R0.25	0.35	1.00	0.47	15	45	4	1.08	1.11	1.14	1.17	1.25
2NBH 050 150	0.5 X R0.25	0.35	1.50	0.47	15	45	4	1.59	1.64	1.69	1.75	1.87
2NBH 050 200	0.5 X R0.25	0.35	2.00	0.47	15	45	4	2.11	2.18	2.25	2.32	2.49
2NBH 050 250	0.5 X R0.25	0.35	2.50	0.47	15	45	4	2.63	2.71	2.80	2.90	3.11
2NBH 050 300	0.5 X R0.25	0.35	3.00	0.47	15	45	4	3.15	3.25	3.35	3.47	3.73
2NBH 050 400	0.5 X R0.25	0.35	4.00	0.47	15	45	4	4.18	4.32	4.46	4.62	4.98
2NBH 050 500	0.5 X R0.25	0.35	5.00	0.47	15	45	4	5.21	5.39	5.57	5.77	6.22
2NBH 050 600	0.5 X R0.25	0.35	6.00	0.47	15	45	4	6.25	6.46	6.68	6.92	7.46
2NBH 050 800	0.5 X R0.25	0.35	8.00	0.47	15	45	4	8.31	8.59	8.90	9.22	9.95
2NBH 050 1000	0.5 X R0.25	0.35	10.00	0.47	15	45	4	10.38	10.73	11.11	11.52	12.44
2NBH 060 100	0.6 X R0.3	0.40	1.00	0.57	15	45	4	1.08	1.10	1.13	1.16	1.23
2NBH 060 200	0.6 X R0.3	0.40	2.00	0.57	15	45	4	2.11	2.17	2.24	2.31	2.48
2NBH 060 250	0.6 X R0.3	0.40	2.50	0.57	15	45	4	2.63	2.71	2.80	2.89	3.10
2NBH 060 300	0.6 X R0.3	0.40	3.00	0.57	15	45	4	3.14	3.24	3.35	3.46	3.72
2NBH 060 350	0.6 X R0.3	0.40	3.50	0.57	15	45	4	3.66	3.78	3.90	4.04	4.34
2NBH 060 400	0.6 X R0.3	0.40	4.00	0.57	15	45	4	4.18	4.31	4.46	4.61	4.96
2NBH 060 450	0.6 X R0.3	0.40	4.50	0.57	15	45	4	4.69	4.85	5.01	5.19	5.59
2NBH 060 500	0.6 X R0.3	0.40	5.00	0.57	15	45	4	5.21	5.38	5.57	5.76	6.21
2NBH 060 550	0.6 X R0.3	0.40	5.50	0.57	15	45	4	5.73	5.92	6.12	6.34	6.83
2NBH 060 600	0.6 X R0.3	0.40	6.00	0.57	15	45	4	6.24	6.45	6.67	6.91	7.45
2NBH 060 800	0.6 X R0.3	0.40	8.00	0.57	15	45	4	8.31	8.59	8.89	9.21	9.94
2NBH 060 1000	0.6 X R0.3	0.40	10.00	0.57	15	45	4	10.38	10.73	11.11	11.51	12.42
2NBH 060 1200	0.6 X R0.3	0.40	12.00	0.57	15	45	4	12.45	12.87	13.32	13.81	14.91
2NBH 070 200	0.7 X R0.35	0.45	2.00	0.66	15	45	4	2.13	2.19	2.26	2.33	2.49
2NBH 070 400	0.7 X R0.35	0.45	4.00	0.66	15	45	4	4.20	4.33	4.47	4.63	4.98
2NBH 070 600	0.7 X R0.35	0.45	6.00	0.66	15	45	4	6.26	6.47	6.69	6.93	7.46
2NBH 070 800	0.7 X R0.35	0.45	8.00	0.66	15	45	4	8.33	8.61	8.91	9.23	9.95
2NBH 080 200	0.8 X R0.4	0.50	2.00	0.77	15	45	4	2.11	2.17	2.23	2.30	2.45
2NBH 080 300	0.8 X R0.4	0.50	3.00	0.77	15	45	4	3.14	3.24	3.34	3.45	3.70
2NBH 080 400	0.8 X R0.4	0.50	4.00	0.77	15	45	4	4.17	4.31	4.45	4.60	4.94
2NBH 080 500	0.8 X R0.4	0.50	5.00	0.77	15	45	4	5.21	5.38	5.56	5.75	6.18
2NBH 080 600	0.8 X R0.4	0.50	6.00	0.77	15	45	4	6.24	6.45	6.66	6.90	7.43
2NBH 080 800	0.8 X R0.4	0.50	8.00	0.77	15	45	4	8.31	8.58	8.88	9.20	9.91
2NBH 080 1000	0.8 X R0.4	0.50	10.00	0.77	15	45	4	10.38	10.72	11.10	11.50	12.40
2NBH 080 1200	0.8 X R0.4	0.50	12.00	0.77	15	45	4	12.44	12.86	13.31	13.80	14.89
2NBH 090 200	0.9X R0.45	0.60	2.00	0.85	15	45	4	2.14	2.20	2.27	2.33	2.49
2NBH 090 400	0.9X R0.45	0.60	4.00	0.85	15	45	4	4.21	4.34	4.48	4.63	4.97
2NBH 090 600	0.9X R0.45	0.60	6.00	0.85	15	45	4	6.28	6.48	6.70	6.93	7.46
2NBH 090 800	0.9X R0.45	0.60	8.00	0.85	15	45	4	8.35	8.62	8.92	9.23	9.95

2NBH 2F Necked Ball End for Super Hardened Steels
2날 볼 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NBH 090 1000	0.9X R0.45	0.60	10.00	0.85	15	45	4	10.41	10.76	11.13	11.53	12.43
2NBH 100 200	1.0 X R0.5	0.80	2.00	0.95	15	45	4	2.14	2.20	2.26	2.33	2.48
2NBH 100 300	1.0 X R0.5	0.80	3.00	0.95	15	45	4	3.18	3.27	3.37	3.48	3.72
2NBH 100 400	1.0 X R0.5	0.80	4.00	0.95	15	45	4	4.21	4.34	4.48	4.63	4.96
2NBH 100 400 S6	1.0 X R0.5	0.80	4.00	0.95	15	50	6	4.21	4.34	4.48	4.63	4.96
2NBH 100 500	1.0 X R0.5	0.80	5.00	0.95	15	45	4	5.24	5.41	5.59	5.78	6.21
2NBH 100 600	1.0 X R0.5	0.80	6.00	0.95	15	45	4	6.28	6.48	6.69	6.93	7.45
2NBH 100 600 S6	1.0 X R0.5	0.80	6.00	0.95	15	50	6	6.28	6.48	6.69	6.93	7.45
2NBH 100 800	1.0 X R0.5	0.80	8.00	0.95	15	45	4	8.34	8.62	8.91	9.23	9.93
2NBH 100 800 S6	1.0 X R0.5	0.80	8.00	0.95	15	50	6	8.34	8.62	8.91	9.23	9.93
2NBH 100 1000	1.0 X R0.5	0.80	10.00	0.95	15	45	4	10.41	10.76	11.13	11.53	12.42
2NBH 100 1000 S6	1.0 X R0.5	0.80	10.00	0.95	15	50	6	10.41	10.76	11.13	11.53	12.42
2NBH 100 1200	1.0 X R0.5	0.80	12.00	0.95	15	45	4	12.48	12.90	13.34	13.83	14.91
2NBH 100 1200 S6	1.0 X R0.5	0.80	12.00	0.95	15	50	6	12.48	12.90	13.34	13.83	14.91
2NBH 100 1400	1.0 X R0.5	0.80	14.00	0.95	15	45	4	14.55	15.04	15.56	16.13	17.39
2NBH 100 1600	1.0 X R0.5	0.80	16.00	0.95	15	50	4	16.61	17.17	17.78	18.43	19.88
2NBH 100 1600 S6	1.0 X R0.5	0.80	16.00	0.95	15	60	6	16.61	17.17	17.78	18.43	19.88
2NBH 100 1800	1.0 X R0.5	0.80	18.00	0.95	15	50	4	18.68	19.31	19.99	20.72	22.37
2NBH 100 2000	1.0 X R0.5	0.80	20.00	0.95	15	50	4	20.75	21.45	22.21	23.02	24.85
2NBH 100 2000 S6	1.0 X R0.5	0.80	20.00	0.95	15	60	6	20.75	21.45	22.21	23.02	24.85
2NBH 120 400	1.2 X R0.6	1.20	4.00	1.14	15	45	4	4.23	4.35	4.49	4.63	4.96
2NBH 120 600	1.2 X R0.6	1.20	6.00	1.14	15	45	4	6.29	6.49	6.70	6.93	7.45
2NBH 120 800	1.2 X R0.6	1.20	8.00	1.14	15	45	4	8.36	8.63	8.92	9.23	9.93
2NBH 120 1000	1.2 X R0.6	1.20	10.00	1.14	15	45	4	10.43	10.77	11.14	11.53	12.42
2NBH 120 1200	1.2 X R0.6	1.20	12.00	1.14	15	45	4	12.49	12.91	13.35	13.83	14.91
2NBH 120 1600	1.2 X R0.6	1.20	16.00	1.14	15	50	4	16.63	17.19	17.79	18.43	19.88
2NBH 120 2000	1.2 X R0.6	1.20	20.00	1.14	15	50	4	20.76	21.47	22.22	23.03	24.85
2NBH 150 300	1.5 X R0.75	1.35	3.00	1.44	15	45	4	3.19	3.27	3.36	3.46	3.68
2NBH 150 400	1.5 X R0.75	1.35	4.00	1.44	15	45	4	4.22	4.34	4.47	4.61	4.92
2NBH 150 400 S6	1.5 X R0.75	1.35	4.00	1.44	15	50	6	4.22	4.34	4.47	4.61	4.92
2NBH 150 600	1.5 X R0.75	1.35	6.00	1.44	15	45	4	6.29	6.48	6.69	6.91	7.41
2NBH 150 600 S6	1.5 X R0.75	1.35	6.00	1.44	15	50	6	6.29	6.48	6.69	6.91	7.41
2NBH 150 800	1.5 X R0.75	1.35	8.00	1.44	15	45	4	8.35	8.62	8.90	9.21	9.90
2NBH 150 800 S6	1.5 X R0.75	1.35	8.00	1.44	15	50	6	8.35	8.62	8.90	9.21	9.90
2NBH 150 1000	1.5 X R0.75	1.35	10.00	1.44	15	45	4	10.42	10.76	11.12	11.51	12.38
2NBH 150 1000 S6	1.5 X R0.75	1.35	10.00	1.44	15	50	6	10.42	10.76	11.12	11.51	12.38
2NBH 150 1200	1.5 X R0.75	1.35	12.00	1.44	15	45	4	12.49	12.90	13.34	13.81	14.87
2NBH 150 1200 S6	1.5 X R0.75	1.35	12.00	1.44	15	50	6	12.49	12.90	13.34	13.81	14.87
2NBH 150 1400	1.5 X R0.75	1.35	14.00	1.44	15	45	4	14.56	15.04	15.55	16.11	17.36
2NBH 150 1600	1.5 X R0.75	1.35	16.00	1.44	15	50	4	16.62	17.18	17.77	18.41	19.84
2NBH 150 1600 S6	1.5 X R0.75	1.35	16.00	1.44	15	60	6	16.62	17.18	17.77	18.41	19.84
2NBH 150 2000	1.5 X R0.75	1.35	20.00	1.44	15	50	4	20.76	21.46	22.20	23.01	FREE
2NBH 150 2000 S6	1.5 X R0.75	1.35	20.00	1.44	15	60	6	20.76	21.46	22.20	23.01	24.81
2NBH 150 2500	1.5 X R0.75	1.35	25.00	1.44	15	60	4	25.93	26.80	27.75	28.76	FREE
2NBH 150 3000	1.5 X R0.75	1.35	30.00	1.44	15	70	4	31.10	32.15	33.29	34.51	FREE
2NBH 160 600	1.6 X R0.8	1.60	6.00	1.55	15	45	4	6.27	6.46	6.66	6.88	7.38

2NBH 2F Necked Ball End for Super Hardened Steels
2날 볼 리브-초고경도용

(Unit: mm)

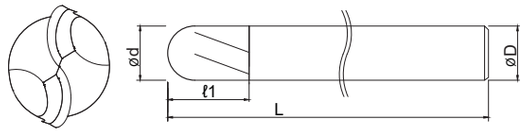
Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NBH 160 800	1.6 X R0.8	1.60	8.00	1.55	15	45	4	8.33	8.60	8.88	9.18	9.86
2NBH 160 1000	1.6 X R0.8	1.60	10.00	1.55	15	45	4	10.40	10.74	11.09	11.48	12.35
2NBH 160 1200	1.6 X R0.8	1.60	12.00	1.55	15	45	4	12.47	12.88	13.31	13.78	14.83
2NBH 160 1600	1.6 X R0.8	1.60	16.00	1.55	15	50	4	16.60	17.15	17.74	18.38	19.81
2NBH 160 2000	1.6 X R0.8	1.60	20.00	1.55	15	50	4	20.74	21.43	22.18	22.98	FREE
2NBH 200 400	2.0 X R1.0	1.80	4.00	1.92	15	45	4	4.25	4.36	4.49	4.62	4.91
2NBH 200 600	2.0 X R1.0	1.80	6.00	1.92	15	45	4	6.32	6.50	6.70	6.92	7.40
2NBH 200 600 S6	2.0 X R1.0	1.80	6.00	1.92	15	50	6	6.32	6.50	6.70	6.92	7.40
2NBH 200 800	2.0 X R1.0	1.80	8.00	1.92	15	45	4	8.38	8.64	8.92	9.22	9.88
2NBH 200 800 S6	2.0 X R1.0	1.80	8.00	1.92	15	50	6	8.38	8.64	8.92	9.22	9.88
2NBH 200 1000	2.0 X R1.0	1.80	10.00	1.92	15	45	4	10.45	10.78	11.14	11.52	12.37
2NBH 200 1000 S6	2.0 X R1.0	1.80	10.00	1.92	15	50	6	10.45	10.78	11.14	11.52	12.37
2NBH 200 1200	2.0 X R1.0	1.80	12.00	1.92	15	45	4	12.52	12.92	13.35	13.82	14.86
2NBH 200 1200 S6	2.0 X R1.0	1.80	12.00	1.92	15	50	6	12.52	12.92	13.35	13.82	14.86
2NBH 200 1400	2.0 X R1.0	1.80	14.00	1.92	15	45	4	14.59	15.06	15.57	16.11	17.34
2NBH 200 1600	2.0 X R1.0	1.80	16.00	1.92	15	50	4	16.65	17.20	17.79	18.41	19.83
2NBH 200 1600 S6	2.0 X R1.0	1.80	16.00	1.92	15	60	6	16.65	17.20	17.79	18.41	19.83
2NBH 200 1800	2.0 X R1.0	1.80	18.00	1.92	15	50	4	18.72	19.34	20.00	20.71	FREE
2NBH 200 2000	2.0 X R1.0	1.80	20.00	1.92	15	50	4	20.79	21.48	22.22	23.01	FREE
2NBH 200 2000 S6	2.0 X R1.0	1.80	20.00	1.92	15	60	6	20.79	21.48	22.22	23.01	24.80
2NBH 200 2500	2.0 X R1.0	1.80	25.00	1.92	15	60	4	25.96	26.83	27.76	28.76	FREE
2NBH 200 2500 S6	2.0 X R1.0	1.80	25.00	1.92	15	60	6	25.96	26.83	27.76	28.76	31.02
2NBH 200 3000	2.0 X R1.0	1.80	30.00	1.92	15	70	4	31.13	32.18	33.30	FREE	FREE
2NBH 200 3500	2.0 X R1.0	1.80	35.00	1.92	15	70	4	36.29	37.52	38.84	FREE	FREE
2NBH 200 4000	2.0 X R1.0	1.80	40.00	1.92	15	80	4	41.46	42.87	FREE	FREE	FREE
2NBH 250 800	2.5 X R1.25	2.50	8.00	2.39	15	45	4	8.43	8.68	8.95	9.24	9.89
2NBH 250 1000	2.5 X R1.25	2.50	10.00	2.39	15	45	4	10.50	10.82	11.17	11.54	12.38
2NBH 250 1200	2.5 X R1.25	2.50	12.00	2.39	15	45	4	12.57	12.96	13.39	13.84	14.86
2NBH 250 1600	2.5 X R1.25	2.50	16.00	2.39	15	50	4	16.70	17.24	17.82	18.44	FREE
2NBH 250 2000	2.5 X R1.25	2.50	20.00	2.39	15	50	4	20.84	21.52	22.25	FREE	FREE
2NBH 250 2500	2.5 X R1.25	2.50	25.00	2.39	15	60	4	26.01	26.87	27.79	FREE	FREE
2NBH 300 600	3.0 X R1.5	3.00	6.00	2.86	15	50	6	6.42	6.59	6.77	6.97	7.41
2NBH 300 800	3.0 X R1.5	3.00	8.00	2.86	15	50	6	8.48	8.73	8.99	9.27	9.90
2NBH 300 1000	3.0 X R1.5	3.00	10.00	2.86	15	50	6	10.55	10.87	11.21	11.57	12.39
2NBH 300 1200	3.0 X R1.5	3.00	12.00	2.86	15	50	6	12.62	13.01	13.42	13.87	14.87
2NBH 300 1400	3.0 X R1.5	3.00	14.00	2.86	15	50	6	14.69	15.15	15.64	16.17	17.36
2NBH 300 1600	3.0 X R1.5	3.00	16.00	2.86	15	60	6	16.75	17.28	17.86	18.47	19.85
2NBH 300 1800	3.0 X R1.5	3.00	18.00	2.86	15	60	6	18.82	19.42	20.07	20.77	22.33
2NBH 300 2000	3.0 X R1.5	3.00	20.00	2.86	15	60	6	20.89	21.56	22.29	23.07	24.82
2NBH 300 2500	3.0 X R1.5	3.00	25.00	2.86	15	60	6	26.06	26.91	27.83	28.82	FREE
2NBH 300 3000	3.0 X R1.5	3.00	30.00	2.86	15	70	6	31.22	32.26	33.37	34.57	FREE
2NBH 300 3500	3.0 X R1.5	3.00	35.00	2.86	15	70	6	36.39	37.61	38.91	40.32	FREE
2NBH 300 4000	3.0 X R1.5	3.00	40.00	2.86	15	80	6	41.56	42.96	44.45	FREE	FREE
2NBH 300 5000	3.0 X R1.5	3.00	50.00	2.86	15	100	6	51.90	53.65	55.54	FREE	FREE
2NBH 350 1500	3.5 X R1.75	3.50	15.00	3.35	15	60	6	15.73	16.22	16.74	17.30	18.56
2NBH 350 2000	3.5 X R1.75	3.50	20.00	3.35	15	60	6	20.90	21.57	22.28	23.05	24.78

2NBH 2F Necked Ball End for Super Hardened Steels
2날 볼 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NBH 350 2500	3.5 X R1.75	3.50	25.00	3.35	15	60	6	26.07	26.91	27.82	28.80	FREE
2NBH 350 3000	3.5 X R1.75	3.50	30.00	3.35	15	70	6	31.24	32.26	33.37	34.55	FREE
2NBH 350 4000	3.5 X R1.75	3.50	40.00	3.35	15	80	6	41.57	42.96	44.45	FREE	FREE
2NBH 400 1000	4.0 X R2.0	4.00	10.00	3.80	15	50	6	10.65	10.95	11.28	11.62	12.40
2NBH 400 1200	4.0 X R2.0	4.00	12.00	3.80	15	50	6	12.72	13.09	13.49	13.92	14.89
2NBH 400 1600	4.0 X R2.0	4.00	16.00	3.80	15	60	6	16.85	17.37	17.93	18.52	19.86
2NBH 400 2000	4.0 X R2.0	4.00	20.00	3.80	15	60	6	20.99	21.65	22.36	23.12	FREE
2NBH 400 2500	4.0 X R2.0	4.00	25.00	3.80	15	60	6	26.16	27.00	27.90	28.87	FREE
2NBH 400 3000	4.0 X R2.0	4.00	30.00	3.80	15	70	6	31.32	32.35	33.44	FREE	FREE
2NBH 400 3500	4.0 X R2.0	4.00	35.00	3.80	15	70	6	36.49	37.69	38.98	FREE	FREE
2NBH 400 4000	4.0 X R2.0	4.00	40.00	3.80	15	80	6	41.66	43.04	FREE	FREE	FREE
2NBH 400 5000	4.0 X R2.0	4.00	50.00	3.80	15	100	6	52.00	53.74	FREE	FREE	FREE
2NBH 600 1500	6.0 X R3.0	7.00	15.00	5.70	–	60	6	FREE	FREE	FREE	FREE	FREE
2NBH 600 2000	6.0 X R3.0	7.00	20.00	5.70	–	60	6	FREE	FREE	FREE	FREE	FREE
2NBH 600 3000	6.0 X R3.0	7.00	30.00	5.70	–	110	6	FREE	FREE	FREE	FREE	FREE
2NBH 800 2000	8.0 X R4.0	10.00	20.00	7.60	–	60	8	FREE	FREE	FREE	FREE	FREE
2NBH 800 2500	8.0 X R4.0	10.00	25.00	7.60	–	60	8	FREE	FREE	FREE	FREE	FREE
2NBH 800 3000	8.0 X R4.0	10.00	30.00	7.60	–	100	8	FREE	FREE	FREE	FREE	FREE
2NBH 1000 2500	10.0 X R5.0	12.00	25.00	9.50	–	70	10	FREE	FREE	FREE	FREE	FREE
2NBH 1000 3000	10.0 X R5.0	12.00	30.00	9.50	–	70	10	FREE	FREE	FREE	FREE	FREE
2NBH 1000 3500	10.0 X R5.0	12.00	35.00	9.50	–	100	10	FREE	FREE	FREE	FREE	FREE
2NBH 1200 3000	12.0 X R6.0	14.00	30.00	11.50	–	80	12	FREE	FREE	FREE	FREE	FREE
2NBH 1200 4000	12.0 X R6.0	14.00	40.00	11.50	–	110	12	FREE	FREE	FREE	FREE	FREE

2BH 2F Ball End for Super Hardened Steels
2날 볼-초고경도용



Features
- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 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 070 150 S4	0.7 X R0.35	1.5	45	4	
2BH 080 200 S4	0.8 X R0.4	2	45	4	
2BH 100 250 S4	1.0 X R0.5	2.5	45	4	
2BH 100 250 S6	1.0 X R0.5	2.5	50	6	
2BH 120 300 S4	1.2 X R0.6	3	45	4	
2BH 150 300 S4	1.5 X R0.75	3	45	4	
2BH 150 300 S6	1.5 X R0.75	3	50	6	
2BH 200 500 S4	2.0 X R1.0	5	45	4	
2BH 200 500 S6	2.0 X R1.0	5	50	6	
2BH 250 600 S4	2.5 X R1.25	6	45	4	
2BH 250 600 S6	2.5 X R1.25	6	50	6	
2BH 300 800 S4	3.0 X R1.5	8	50	4	
2BH 300 800 S6	3.0 X R1.5	8	60	6	
2BH 350 800 S4	3.5 X R1.75	8	50	4	
2BH 400 800 S4	4.0 X R2.0	8	60	4	
2BH 400 800 S6	4.0 X R2.0	8	60	6	

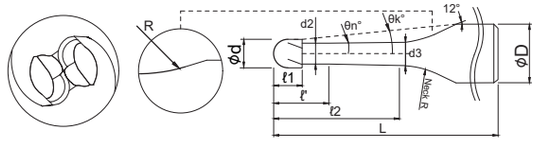
2BH 2F Ball End for Super Hardened Steels
2날 볼–초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
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 70	6.0 X R3.0	12	70	6	
2BH 600 1200 80	6.0 X R3.0	12	80	6	
2BH 600 1200 90	6.0 X R3.0	12	90	6	
2BH 600 1200 100	6.0 X R3.0	12	100	6	
2BH 700 1400 80	7.0 X R3.5	14	80	8	
2BH 800 1400 60	8.0 X R4.0	14	60	8	
2BH 800 1400 90	8.0 X R4.0	14	90	8	
2BH 800 1400 100	8.0 X R4.0	14	100	8	
2BH 800 1400 110	8.0 X R4.0	14	110	8	
2BH 900 1600 100	9.0 X R4.5	16	100	10	
2BH 1000 1800 70	10.0 X R5.0	18	70	10	
2BH 1000 1800 90	10.0 X R5.0	18	90	10	
2BH 1000 1800 100	10.0 X R5.0	18	100	10	
2BH 1200 2200 75	12.0 X R6.0	22	75	12	
2BH 1200 2200 100	12.0 X R6.0	22	100	12	
2BH 1200 2200 110	12.0 X R6.0	22	110	12	

2BTH 2F Ball Endmill-Tapered Neck for Super Hardened Steels
2날 볼–테이퍼 넥–초고경도용

NEW



Features
- Tapered neck for vibration-reduced cutting
- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- Only for Dry cutting

특 징
- 넥 부분이 테이퍼로 되어 진동이 감소하고 절삭면의 조도가 향상됨
- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식가공용

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Taper Angle 구배각 θn	Length of Reach 유효장 ℓ2	Length of Cut 날장 ℓ1	Neck Dia 목경 d2	Under Neck Dia 유효장 목경 d3	Overall Length 전장 L	Shank Dia 생크경 D	Neck R 반지름	Approx neck length 목장 ℓ'	Interference Angle 간섭각 θk	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
												0.5°	1°	1.5°	2°	3°
2BTH 050 040 400	0.5 X R0.25	0.4	4	0.35	0.47	0.521	50	4	7	2.49	8.35	4.62	5	5.3	5.55	5.99
2BTH 050 040 600	0.5 X R0.25	0.4	6	0.35	0.47	0.549	50	4	10	2.49	7.2	6.8	7.41	7.86	8.24	8.89
2BTH 050 090 1200	0.5 X R0.25	0.9	12	0.35	0.47	0.836	50	4	10	1.3	5.21	2.62	13.05	13.94	14.55	15.49
2BTH 050 090 600	0.5 X R0.25	0.9	6	0.35	0.47	0.648	50	4	10	1.3	7.32	2.62	6.92	7.52	7.97	8.69
2BTH 050 090 800	0.5 X R0.25	0.9	8	0.35	0.47	0.71	50	4	10	1.3	6.45	2.62	8.96	9.67	10.18	10.99
2BTH 060 040 200	0.6 X R0.3	0.4	2	0.40	0.57	0.592	50	4	4	2.17	9.93	2.42	2.59	2.73	2.85	3.08
2BTH 060 040 400	0.6 X R0.3	0.4	4	0.40	0.57	0.62	50	4	7	2.54	8.31	4.62	5	5.29	5.54	5.98
2BTH 060 040 600	0.6 X R0.3	0.4	6	0.40	0.57	0.648	50	4	10	2.54	7.14	6.8	7.41	7.85	8.23	8.88
2BTH 060 040 800	0.6 X R0.3	0.4	8	0.40	0.57	0.676	50	4	10	2.54	6.26	8.85	9.56	10.07	10.5	11.22
2BTH 060 040 1000	0.6 X R0.3	0.4	10	0.40	0.57	0.7041	50	4	10	2.54	5.57	10.89	11.7	12.27	12.73	13.52
2BTH 060 040 1200	0.6 X R0.3	0.4	12	0.40	0.57	0.732	50	4	10	2.54	5.02	12.94	13.83	14.44	14.95	15.79
2BTH 060 040 1500	0.6 X R0.3	0.4	15	0.40	0.57	0.774	50	4	10	2.54	4.37	15.99	17.01	17.68	18.24	19.27
2BTH 060 090 400	0.6 X R0.3	0.9	4	0.40	0.57	0.683	50	4	7	1.35	8.41	2.67	4.7	5.07	5.37	5.85
2BTH 060 090 600	0.6 X R0.3	0.9	6	0.40	0.57	0.746	50	4	10	1.35	7.26	2.67	6.92	7.51	7.96	8.68
2BTH 060 090 800	0.6 X R0.3	0.9	8	0.40	0.57	0.809	50	4	10	1.35	6.38	2.67	8.96	9.67	10.18	10.98
2BTH 060 090 1000	0.6 X R0.3	0.9	10	0.40	0.57	0.872	50	4	10	1.35	5.7	2.67	11.01	11.81	12.37	13.25
2BTH 060 090 1200	0.6 X R0.3	0.9	12	0.40	0.57	0.934	55	4	10	1.35	5.14	2.67	13.05	13.94	14.54	15.49
2BTH 060 090 1500	0.6 X R0.3	0.9	15	0.40	0.57	1.029	55	4	10	1.35	4.49	2.67	16.1	17.11	17.78	18.81
2BTH 060 140 400	0.6 X R0.3	1.4	4	0.40	0.57	0.746	50	4	7	1.01	8.52	1.41	2.8	4.78	5.16	5.7
2BTH 060 140 500	0.6 X R0.3	1.4	5	0.40	0.57	0.795	50	4	7	1.01	7.91	1.41	2.8	5.8	6.23	6.83

2BTH 2F Ball Endmill-Tapered Neck for Super Hardened Steels
2날 볼-테이퍼 넥-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Taper Angle 구배각 θn	Length of Reach 유효장 ℓ2	Length of Cut 날장 ℓ1	Neck Dia 목경 d2	Under Neck Dia 유효장 목경 d3	Overall Length 전장 L	Shank Dia 생크경 D	Neck R 반지름	Approx neck length 목장 ℓ'	Interference Angle 간섭각 θ'	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
												0.5°	1°	1.5°	2°	3°
2BTH 060 140 600	0.6 X R0.3	1.4	6	0.40	0.57	0.844	50	4	10	1.01	7.39	1.41	2.8	7.04	7.63	8.45
2BTH 060 140 800	0.6 X R0.3	1.4	8	0.40	0.57	0.941	50	4	10	1.01	6.52	1.41	2.8	9.08	9.78	10.71
2BTH 060 140 1000	0.6 X R0.3	1.4	10	0.40	0.57	1.039	50	4	10	1.01	5.83	1.41	2.8	11.13	11.92	12.94
2BTH 060 140 2000	0.6 X R0.3	1.4	20	0.40	0.57	1.528	60	4	10	1.01	3.82	1.41	2.8	21.31	22.47	23.84
2BTH 060 290 600	0.6 X R0.3	2.9	6	0.40	0.57	1.137	50	4	10	0.69	7.79	0.77	0.9	1.12	1.58	7.45
2BTH 060 290 800	0.6 X R0.3	2.9	8	0.40	0.57	1.34	50	4	10	0.69	6.95	0.77	0.9	1.12	1.58	9.49
2BTH 060 290 1200	0.6 X R0.3	2.9	12	0.40	0.57	1.745	55	4	10	0.69	5.71	0.77	0.9	1.12	1.58	13.56
2BTH 080 040 400	0.8 X R0.4	0.4	4	0.50	0.77	0.819	50	4	7	2.64	8.22	4.613	4.99	5.28	5.53	5.97
2BTH 080 040 600	0.8 X R0.4	0.4	6	0.50	0.77	0.847	50	4	7	2.64	7.01	6.66	7.14	7.5	7.79	8.3
2BTH 080 040 800	0.8 X R0.4	0.4	8	0.50	0.77	0.875	50	4	10	2.64	6.11	8.85	9.56	10.06	10.49	11.21
2BTH 080 040 1200	0.8 X R0.4	0.4	12	0.50	0.77	0.931	55	4	10	2.64	4.86	12.93	13.83	14.44	14.94	15.77
2BTH 080 090 800	0.8 X R0.4	0.9	8	0.50	0.77	1.006	50	4	10	1.45	6.24	2.77	8.96	9.66	10.17	10.97
2BTH 080 090 1200	0.8 X R0.4	0.9	12	0.50	0.77	1.131	55	4	10	1.45	4.99	2.77	13.04	13.93	14.54	15.48
2BTH 080 090 1600	0.8 X R0.4	0.9	16	0.50	0.77	1.257	55	4	10	1.45	4.15	2.77	17.12	18.16	18.85	19.9
2BTH 100 040 600	1.0 X R0.5	0.4	6	0.80	0.94	1.013	50	6	7	5.09	8.26	6.82	7.24	7.57	7.85	8.34
2BTH 100 040 800	1.0 X R0.5	0.4	8	0.80	0.94	1.041	55	6	7	5.09	7.44	8.85	9.36	9.74	10.07	10.62
2BTH 100 040 1000	1.0 X R0.5	0.4	10	0.80	0.94	1.068	55	6	10	5.09	6.76	11.07	11.79	12.33	12.78	13.54
2BTH 100 040 1500	1.0 X R0.5	0.4	15	0.80	0.94	1.138	60	6	10	5.09	5.51	16.16	17.08	17.73	18.27	19.31
2BTH 100 040 2000	1.0 X R0.5	0.4	20	0.80	0.94	1.208	65	6	10	5.09	4.65	21.23	22.33	23.08	23.69	25.73
2BTH 100 040 2500	1.0 X R0.5	0.4	25	0.80	0.94	1.278	70	6	10	5.09	4.02	26.31	27.56	28.38	29.05	32.15
2BTH 100 040 3000	1.0 X R0.5	0.4	30	0.80	0.94	1.348	75	6	10	5.09	3.54	31.37	32.76	33.66	34.82	38.57
2BTH 100 040 5000	1.0 X R0.5	0.4	50	0.80	0.94	1.627	95	6	10	5.09	2.4	51.62	53.44	55.27	57.96	FREE
2BTH 100 040 7000	1.0 X R0.5	0.4	70	0.80	0.94	1.906	115	6	10	5.09	1.81	71.83	73.98	77.33	FREE	FREE
2BTH 100 090 600	1.0 X R0.5	0.9	6	0.80	0.94	1.103	50	6	7	2.7	8.36	5.47	9.61	7.32	7.65	8.19
2BTH 100 090 1000	1.0 X R0.5	0.9	10	0.80	0.94	1.229	55	6	10	2.7	6.88	5.47	11.2	11.91	12.44	13.28
2BTH 100 090 1500	1.0 X R0.5	0.9	15	0.80	0.94	1.386	60	6	10	2.7	5.64	5.47	16.28	17.19	17.84	18.84
2BTH 100 090 1600	1.0 X R0.5	0.9	16	0.80	0.94	1.418	60	6	10	2.7	5.44	5.47	17.29	18.24	18.91	19.94
2BTH 100 090 2000	1.0 X R0.5	0.9	20	0.80	0.94	1.543	65	6	10	2.7	4.77	5.47	21.35	22.44	23.18	24.68
2BTH 100 090 2500	1.0 X R0.5	0.9	25	0.80	0.94	1.7	70	6	10	2.7	4.14	5.47	26.42	27.66	28.48	30.83
2BTH 100 090 3000	1.0 X R0.5	0.9	30	0.80	0.94	1.857	75	6	10	2.7	3.65	5.47	31.49	32.86	33.75	36.98
2BTH 100 090 3500	1.0 X R0.5	0.9	35	0.80	0.94	2.015	80	6	10	2.7	3.27	5.47	36.55	38.04	39	43.12
2BTH 100 090 4000	1.0 X R0.5	0.9	40	0.80	0.94	2.172	85	6	10	2.7	2.96	5.47	41.61	43.22	44.46	FREE
2BTH 100 090 5000	1.0 X R0.5	0.9	50	0.80	0.94	2.486	95	6	10	2.7	2.48	5.47	51.73	53.53	55.55	FREE
2BTH 100 090 6000	1.0 X R0.5	0.9	60	0.80	0.94	2.8	105	6	10	2.7	2.14	5.47	61.84	63.81	66.63	FREE
2BTH 100 090 7000	1.0 X R0.5	0.9	70	0.80	0.94	3.114	115	6	10	2.7	1.88	5.47	71.94	74.09	FREE	FREE
2BTH 100 140 600	1.0 X R0.5	1.4	6	0.80	0.94	1.194	50	6	7	2.02	8.47	2.87	5.85	7.01	7.41	8.01
2BTH 100 140 1200	1.0 X R0.5	1.4	12	0.80	0.94	1.487	60	6	10	2.02	6.45	2.87	5.85	13.36	14.14	15.2
2BTH 100 140 1600	1.0 X R0.5	1.4	16	0.80	0.94	1.683	60	6	10	2.02	5.57	2.87	5.85	17.42	18.36	19.56
2BTH 100 140 2000	1.0 X R0.5	1.4	20	0.80	0.94	1.878	65	6	10	2.02	4.9	2.87	5.85	21.48	22.55	23.88
2BTH 100 140 2200	1.0 X R0.5	1.4	22	0.80	0.94	1.976	70	6	10	2.02	4.62	2.87	5.85	23.5	24.64	26.03
2BTH 100 140 2500	1.0 X R0.5	1.4	25	0.80	0.94	2.123	70	6	10	2.02	4.26	2.87	5.85	26.55	27.76	29.51
2BTH 100 140 5000	1.0 X R0.5	1.4	50	0.80	0.94	3.345	95	6	10	2.02	2.57	2.87	5.85	51.84	53.63	FREE
2BTH 100 290 1000	1.0 X R0.5	2.9	10	0.80	0.94	1.872	55	6	10	1.39	7.42	1.57	1.86	2.35	3.39	11.74
2BTH 100 290 1500	1.0 X R0.5	2.9	15	0.80	0.94	2.379	60	6	10	1.39	6.2	1.57	1.86	2.35	3.39	16.81
2BTH 100 290 2000	1.0 X R0.5	2.9	20	0.80	0.94	2.885	65	6	10	1.39	5.33	1.57	1.86	2.35	3.39	21.88
2BTH 100 290 3000	1.0 X R0.5	2.9	30	0.80	0.94	3.898	75	6	10	1.39	4.16	1.57	1.86	2.35	3.39	32

2BTH 2F Ball Endmill-Tapered Neck for Super Hardened Steels
2날 볼-테이퍼 넥-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Taper Angle 구배각 θn	Length of Reach 유효장 ℓ2	Length of Cut 날장 ℓ1	Neck Dia 목경 d2	Under Neck Dia 유효장 목경 d3	Overall Length 전장 L	Shank Dia 생크경 D	Neck R 반지름	Approx neck length 목장 ℓ'	Interference Angle 간섭각 θ'	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
												0.5°	1°	1.5°	2°	3°
2BTH 150 040 800	1.5 X R0.75	0.4	8	1.35	1.42	1.513	55	6	7	7.07	7.21	8.95	9.41	9.78	10.09	10.62
2BTH 150 040 1000	1.5 X R0.75	0.4	10	1.35	1.42	1.541	55	6	7	7.07	6.51	10.07	11.52	11.93	12.28	12.9
2BTH 150 040 1200	1.5 X R0.75	0.4	12	1.35	1.42	1.569	55	6	7	7.07	5.93	13	13.62	14.07	14.45	15.47
2BTH 150 040 3000	1.5 X R0.75	0.4	30	1.35	1.42	1.82	75	6	10	7.07	3.3	31.46	32.79	33.68	34.85	38.57
2BTH 150 090 1000	1.5 X R0.75	0.9	10	1.35	1.42	1.692	55	6	7	3.89	6.63	7.83	11.08	11.61	12.02	12.67
2BTH 150 090 1500	1.5 X R0.75	0.9	15	1.35	1.42	1.849	60	6	10	3.89	5.36	7.83	16.4	17.25	17.88	18.86
2BTH 150 090 2000	1.5 X R0.75	0.9	20	1.35	1.42	2.006	65	6	10	3.89	4.5	7.83	21.47	22.49	23.21	24.72
2BTH 150 090 3000	1.5 X R0.75	0.9	30	1.35	1.42	2.32	75	6	10	3.89	3.4	7.83	31.59	32.9	33.78	37.01
2BTH 150 140 1000	1.5 X R0.75	1.4	10	1.35	1.42	1.843	55	6	7	2.98	6.75	4.23	8.59	11.19	11.7	12.45
2BTH 150 140 2000	1.5 X R0.75	1.4	20	1.35	1.42	2.332	65	6	10	2.98	4.62	4.23	8.59	21.61	22.61	23.91
2BTH 150 140 3000	1.5 X R0.75	1.4	30	1.35	1.42	2.82	75	6	10	2.98	3.51	4.23	8.59	31.73	33.02	35.45
2BTH 150 140 4000	1.5 X R0.75	1.4	40	1.35	1.42	3.309	85	6	10	2.98	2.83	4.23	8.59	41.84	43.36	FREE
2BTH 150 140 5000	1.5 X R0.75	1.4	50	1.35	1.42	3.798	95	6	10	2.98	2.37	4.23	8.59	51.95	53.67	FREE
2BTH 150 290 2000	1.5 X R0.75	2.9	20	1.35	1.42	3.31	65	6	10	2.13	5.03	2.42	2.87	3.63	5.25	22.05
2BTH 200 040 800	2.0 X R1.0	0.4	8	1.70	1.92	2.008	50	6	4	7.42	6.96	8.7	9.03	9.28	9.5	10.27
2BTH 200 040 1200	2.0 X R1.0	0.4	12	1.70	1.92	2.064	55	6	7	7.42	5.64	13	13.61	14.06	14.43	15.4
2BTH 200 040 1600	2.0 X R1.0	0.4	16	1.70	1.92	2.12	60	6	7	7.42	4.74	17.05	17.79	18.31	18.74	20.54
2BTH 200 040 2000	2.0 X R1.0	0.4	20	1.70	1.92	2.176	65	6	10	7.42	4.09	21.33	22.37	23.09	23.68	25.67
2BTH 200 040 2500	2.0 X R1.0	0.4	25	1.70	1.92	2.245	65	6	10	7.42	3.49	26.4	27.59	28.39	29.05	32.09
2BTH 200 040 3000	2.0 X R1.0	0.4	30	1.70	1.92	2.315	70	6	10	7.42	3.04	31.46	32.79	33.67	34.81	38.51
2BTH 200 040 4000	2.0 X R1.0	0.4	40	1.70	1.92	2.455	80	6	10	7.42	2.42	41.58	43.14	44.26	46.39	FREE
2BTH 200 040 8000	2.0 X R1.0	0.4	80	1.70	1.92	3.013	120	6	10	7.42	1.34	81.99	84.47	44.26	46.39	FREE
2BTH 200 090 1200	2.0 X R1.0	0.9	12	1.70	1.92	2.244	55	6	7	4.24	5.76	8.3	13.11	13.7	14.14	14.84
2BTH 200 090 1600	2.0 X R1.0	0.9	16	1.70	1.92	2.369	60	6	7	4.24	4.86	8.3	17.16	17.88	18.39	19.76
2BTH 200 090 2000	2.0 X R1.0	0.9	20	1.70	1.92	2.495	65	6	10	4.24	4.2	8.3	21.48	22.49	23.2	24.68
2BTH 200 090 2500	2.0 X R1.0	0.9	25	1.70	1.92	2.652	65	6	10	4.24	3.6	8.3	26.54	27.7	28.5	30.82
2BTH 200 090 3000	2.0 X R1.0	0.9	30	1.70	1.92	2.809	70	6	10	4.24	3.14	8.3	31.6	32.9	33.77	36.97
2BTH 200 090 3500	2.0 X R1.0	0.9	35	1.70	1.92	2.966	75	6	10	4.24	2.79	8.3	36.66	38.08	39.02	FREE
2BTH 200 090 4000	2.0 X R1.0	0.9	40	1.70	1.92	3.123	80	6	10	4.24	2.51	8.3	41.72	43.25	44.5	FREE
2BTH 200 090 5000	2.0 X R1.0	0.9	50	1.70	1.92	3.438	90	6	10	4.24	2.09	8.3	51.82	53.56	55.58	FREE
2BTH 200 090 6000	2.0 X R1.0	0.9	60	1.70	1.92	3.752	100	6	10	4.24	1.79	8.3	61.92	63.84	FREE	FREE
2BTH 200 090 7000	2.0 X R1.0	0.9	70	1.70	1.92	4.066	110	6	10	4.24	1.56	8.3	72.02	74.15	FREE	FREE
2BTH 200 140 1000	2.0 X R1.0	1.4	10	1.70	1.92	2.326	55	6	7	3.33	6.47	4.63	9.19	11.2	11.7	12.43
2BTH 200 140 1600	2.0 X R1.0	1.4	16	1.70	1.92	2.619	60	6	7	3.33	4.98	4.63	9.19	17.27	17.97	18.98
2BTH 200 140 2000	2.0 X R1.0	1.4	20	1.70	1.92	2.814	65	6	10	3.33	4.32	4.63	9.19	21.62	22.61	23.9
2BTH 200 140 2200	2.0 X R1.0	1.4	22	1.70	1.92	2.912	65	6	10	3.33	4.05	4.63	9.19	23.65	24.7	26.05
2BTH 200 140 2500	2.0 X R1.0	1.4	25	1.70	1.92	3.059	65	6	10	3.33	3.71	4.63	9.19	26.68	27.82	29.55
2BTH 200 140 3000	2.0 X R1.0	1.4	30	1.70	1.92	3.303	70	6	10	3.33	3.24	4.63	9.19	31.74	33.02	35.42
2BTH 200 140 4000	2.0 X R1.0	1.4	40	1.70	1.92	3.792	80	6	10	3.33	2.6	4.63	9.19	41.85	43.36	FREE
2BTH 200 290 1200	2.0 X R1.0	2.9	12	1.70	1.92	2.964	55	6	7	2.48	6.3	2.8	3.27	4.09	5.83	13.57
2BTH 200 290 1500	2.0 X R1.0	2.9	15	1.70	1.92	3.267	60	6	7	2.48	5.6	2.8	3.27	4.09	5.83	16.59
2BTH 200 290 2000	2.0 X R1.0	2.9	20	1.70	1.92	3.774	65	6	10	2.48	4.72	2.8	3.27	4.09	5.83	22.08
2BTH 300 040 800	3.0 X R1.5	0.4	8	2.50	2.86	2.937	50	6	4	8.5	6.25	8.87	9.13	9.35	9.55	10.33
2BTH 300 040 1600	3.0 X R1.5	0.4	16	2.50	2.86	3.048	55	6	7	12.52	4.01	17.25	17.89	18.38	18.79	20.6
2BTH 300 040 2000	3.0 X R1.5	0.4	20	2.50	2.86	3.104	60	6	7	12.52	3.4	21.29	22.04	22.6	23.34	25.74
2BTH 300 040 3000	3.0 X R1.5	0.4	30	2.50	2.86	3.244	70	6	10	12.52	2.46	31.67	32.88	33.73	34.92	FREE

2BTH 2F Ball Endmill-Tapered Neck for Super Hardened Steels

2날 볼-테이퍼 넥-초고경도용

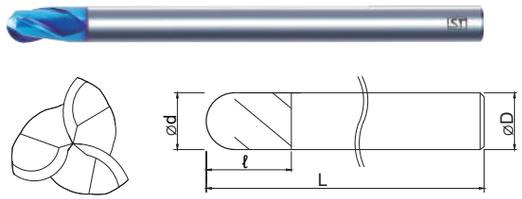
(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Taper Angle 구배각 θn	Length of Reach 유효장 ℓ2	Length of Cut 날장 ℓ1	Neck Dia 목경 d2	Under Neck Dia 유효장 목경 d3	Overall Length 전장 L	Shank Dia 생크경 D	Neck R 반지름	Approx neck length 목장 ℓ'	Interference Angle 간섭각 θ'	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
												0.5°	1°	1.5°	2°	3°
2BTH 300 040 4000	3.0 X R1.5	0.4	40	2.50	2.86	3.384	80	6	10	12.52	1.93	41.78	43.23	44.38	FREE	FREE
2BTH 300 040 5000	3.0 X R1.5	0.4	50	2.50	2.86	3.523	90	6	10	12.52	1.59	51.87	53.53	55.41	FREE	FREE
2BTH 300 040 8000	3.0 X R1.5	0.4	80	2.50	2.86	3.942	120	6	10	12.52	1.04	82.14	84.6	FREE	FREE	FREE
2BTH 300 090 1500	3.0 X R1.5	0.9	15	2.50	2.86	3.253	55	6	7	6.95	4.3	13.78	16.35	16.95	17.41	18.64
2BTH 300 090 2000	3.0 X R1.5	0.9	20	2.50	2.86	3.41	60	6	7	6.95	3.5	13.78	21.4	22.14	22.68	24.78
2BTH 300 090 3000	3.0 X R1.5	0.9	30	2.50	2.86	3.724	70	6	10	6.95	2.54	13.78	31.82	33	33.84	FREE
2BTH 300 090 3500	3.0 X R1.5	0.9	35	2.50	2.86	3.881	75	6	10	6.95	2.24	13.78	36.87	38.18	39.11	FREE
2BTH 300 090 4000	3.0 X R1.5	0.9	40	2.50	2.86	4.038	80	6	10	6.95	2	13.78	41.92	43.34	FREE	FREE
2BTH 300 090 5000	3.0 X R1.5	0.9	50	2.50	2.86	4.352	90	6	10	6.95	1.64	13.78	52.01	53.64	FREE	FREE
2BTH 300 090 6000	3.0 X R1.5	0.9	60	2.50	2.86	4.667	100	6	10	6.95	1.39	13.78	62.1	FREE	FREE	FREE
2BTH 300 090 7000	3.0 X R1.5	0.9	70	2.50	2.86	4.981	110	6	10	6.95	1.2	13.78	72.19	FREE	FREE	FREE
2BTH 300 090 9000	3.0 X R1.5	0.9	90	2.50	2.86	5.609	130	6	10	6.95	0.95	13.78	FREE	FREE	FREE	FREE
2BTH 300 140 3000	3.0 X R1.5	1.4	30	2.50	2.86	4.204	70	6	10	5.36	2.63	7.51	15.05	31.97	33.13	FREE
2BTH 300 140 4000	3.0 X R1.5	1.4	40	2.50	2.86	4.693	80	6	10	5.36	2.05	7.51	15.05	42.06	43.46	FREE
2BTH 300 140 5000	3.0 X R1.5	1.4	50	2.50	2.86	5.182	90	6	10	5.36	1.68	7.51	15.05	52.16	FREE	FREE
2BTH 400 040 6000	4 X R2.0	0.4	60	8.00	3.86	4.586	110	8	10	18.02	1.74	62.14	63.88	66.58	FREE	FREE
2BTH 400 090 2000	4 X R2.0	0.9	20	8.00	3.86	4.237	65	8	7	12.45	4.26	20.79	21.76	22.37	22.87	25.16
2BTH 400 090 3000	4 X R2.0	0.9	30	8.00	3.86	4.551	80	8	7	12.45	3.17	25.53	31.83	32.66	33.95	37.45
2BTH 400 090 3500	4 X R2.0	0.9	35	8.00	3.86	4.708	85	8	7	12.45	2.82	25.53	36.87	37.79	39.5	FREE
2BTH 400 090 4000	4 X R2.0	0.9	40	8.00	3.86	4.865	90	8	7	12.45	2.53	25.53	42.31	43.56	45.04	FREE
2BTH 400 090 5000	4 X R2.0	0.9	50	8.00	3.86	5.18	100	8	7	12.45	2.1	25.53	52.39	53.84	56.12	FREE
2BTH 400 090 6000	4 X R2.0	0.9	60	8.00	3.86	5.494	110	8	7	12.45	1.8	25.53	62.46	64.14	FREE	FREE
2BTH 400 140 4500	4 X R2.0	1.4	45	8.00	3.86	5.669	95	8	7	10.86	2.37	15.79	33.06	47.66	48.93	FREE
2BTH 400 140 8000	4 X R2.0	1.4	80	8.00	3.86	7.379	130	8	7	10.86	1.43	15.79	33.06	FREE	FREE	FREE
2BTH 400 290 2500	4 X R2.0	2.9	25	8.00	3.86	5.582	75	8	7	9.38	3.99	10.91	13.27	17.3	25.73	27.74

3BH 3F Ball End for Super Hardened Steels

3날 볼-초고경도용

NEW



Features

- High-efficiency machining is realized by suppressing chattering with a unique 3 flute design and unequal divided flute
- Greater rigidity and reduced chattering through optimized geometry
- Only for Dry cutting

특 징

- 독창적인 3날 디자인과 부등분할로 채터링을 억제하여 고효율 가공 실현
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식가공용

3 | HX 40° | SMG Carbide | S-HC Coated | ≦68 HRC | Unequal Flute Spacing | 3D | CUTTING P.203

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 :

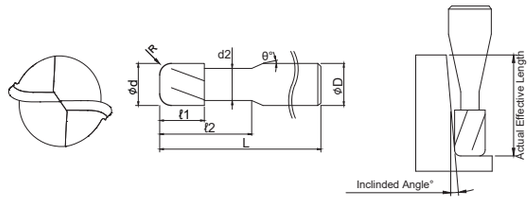
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d x R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
3BH 100 150 S6	1.0 X R0.5	1.5	50	6	
3BH 150 300 S6	1.5 X R0.75	3	50	6	
3BH 200 300 S6	2.0 X R1.0	3	50	6	
3BH 300 500 S6	3.0 X R1.5	5	50	6	
3BH 400 600 S6	4.0 X R2.0	6	70	6	
3BH 600 900 S6	6.0 X R3.0	9	80	6	

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용



2 | HX 30° | SMG Carbide | S-HC Coated | ≦68 HRC

Side | Slot | Face | R | CUTTING P.209

Features

- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징

- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30'	1°	1°30'	2°	3°
2NCH 020 R002 050	0.2 X R0.02	0.15	0.50	0.18	15	45	4	0.55	0.57	0.59	0.61	0.66
2NCH 020 R002 100	0.2 X R0.02	0.15	1.00	0.18	15	45	4	1.07	1.10	1.14	1.18	1.28
2NCH 020 R002 200	0.2 X R0.02	0.15	2.00	0.18	15	45	4	2.10	2.17	2.25	2.33	2.52
2NCH 020 R005 050	0.2 X R0.05	0.15	0.50	0.18	15	45	4	0.55	0.57	0.59	0.61	0.65
2NCH 020 R005 100	0.2 X R0.05	0.15	1.00	0.18	15	45	4	1.07	1.10	1.14	1.18	1.27
2NCH 020 R005 150	0.2 X R0.05	0.15	1.50	0.18	15	45	4	1.58	1.64	1.69	1.76	1.89
2NCH 020 R005 200	0.2 X R0.05	0.15	2.00	0.18	15	45	4	2.10	2.17	2.25	2.33	2.52
2NCH 030 R002 100	0.3 X R0.02	0.25	1.00	0.28	15	45	4	1.07	1.10	1.14	1.18	1.28
2NCH 030 R002 200	0.3 X R0.02	0.25	2.00	0.28	15	45	4	2.10	2.17	2.25	2.33	2.52
2NCH 030 R002 300	0.3 X R0.02	0.25	3.00	0.28	15	45	4	3.13	3.24	3.36	3.48	3.77
2NCH 030 R005 100	0.3 X R0.05	0.25	1.00	0.28	15	45	4	1.07	1.10	1.14	1.18	1.27
2NCH 030 R005 150	0.3 X R0.05	0.25	1.50	0.28	15	45	4	1.58	1.64	1.69	1.76	1.89
2NCH 030 R005 200	0.3 X R0.05	0.25	2.00	0.28	15	45	4	2.10	2.17	2.25	2.33	2.52
2NCH 030 R005 250	0.3 X R0.05	0.25	2.50	0.28	15	45	4	2.62	2.71	2.80	2.91	3.14
2NCH 030 R005 300	0.3 X R0.05	0.25	3.00	0.28	15	45	4	3.13	3.24	3.36	3.48	3.76
2NCH 040 R002 100	0.4 X R0.02	0.30	1.00	0.37	15	45	4	1.09	1.12	1.16	1.21	1.30
2NCH 040 R002 200	0.4 X R0.02	0.30	2.00	0.37	15	45	4	2.12	2.19	2.27	2.36	2.55
2NCH 040 R002 300	0.4 X R0.02	0.30	3.00	0.37	15	45	4	3.15	3.26	3.38	3.51	3.79
2NCH 040 R002 400	0.4 X R0.02	0.30	4.00	0.37	15	45	4	4.19	4.33	4.49	4.66	5.03
2NCH 040 R005 100	0.4 X R0.05	0.30	1.00	0.37	15	45	4	1.08	1.12	1.16	1.20	1.30

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30'	1°	1°30'	2°	3°
2NCH 040 R005 200	0.4 X R0.05	0.30	2.00	0.37	15	45	4	2.12	2.19	2.27	2.35	2.54
2NCH 040 R005 300	0.4 X R0.05	0.30	3.00	0.37	15	45	4	3.15	3.26	3.38	3.50	3.78
2NCH 040 R005 400	0.4 X R0.05	0.30	4.00	0.37	15	45	4	4.19	4.33	4.48	4.65	5.03
2NCH 040 R010 100	0.4 X R0.1	0.30	1.00	0.37	15	45	4	1.08	1.12	1.15	1.19	1.28
2NCH 040 R010 200	0.4 X R0.1	0.30	2.00	0.37	15	45	4	2.12	2.19	2.26	2.34	2.53
2NCH 040 R010 300	0.4 X R0.1	0.30	3.00	0.37	15	45	4	3.15	3.26	3.37	3.49	3.77
2NCH 040 R010 400	0.4 X R0.1	0.30	4.00	0.37	15	45	4	4.18	4.33	4.48	4.64	5.01
2NCH 050 R002 100	0.5 X R0.02	0.40	1.00	0.47	15	45	4	1.09	1.12	1.16	1.21	1.30
2NCH 050 R002 200	0.5 X R0.02	0.40	2.00	0.47	15	45	4	2.12	2.19	2.27	2.36	2.55
2NCH 050 R002 300	0.5 X R0.02	0.40	3.00	0.47	15	45	4	3.15	3.26	3.38	3.51	3.79
2NCH 050 R002 400	0.5 X R0.02	0.40	4.00	0.47	15	45	4	4.19	4.33	4.49	4.66	5.03
2NCH 050 R002 500	0.5 X R0.02	0.40	5.00	0.47	15	45	4	5.22	5.40	5.60	5.81	6.28
2NCH 050 R005 100	0.5 X R0.05	0.40	1.00	0.47	15	45	4	1.08	1.12	1.16	1.20	1.30
2NCH 050 R005 200	0.5 X R0.05	0.40	2.00	0.47	15	45	4	2.12	2.19	2.27	2.35	2.54
2NCH 050 R005 300	0.5 X R0.05	0.40	3.00	0.47	15	45	4	3.15	3.26	3.38	3.50	3.78
2NCH 050 R005 400	0.5 X R0.05	0.40	4.00	0.47	15	45	4	4.19	4.33	4.48	4.65	5.03
2NCH 050 R005 500	0.5 X R0.05	0.40	5.00	0.47	15	45	4	5.22	5.40	5.59	5.80	6.27
2NCH 050 R010 100	0.5 X R0.1	0.40	1.00	0.47	15	45	4	1.08	1.12	1.15	1.19	1.28
2NCH 050 R010 200	0.5 X R0.1	0.40	2.00	0.47	15	45	4	2.12	2.19	2.26	2.34	2.53
2NCH 050 R010 300	0.5 X R0.1	0.40	3.00	0.47	15	45	4	3.15	3.26	3.37	3.49	3.77
2NCH 050 R010 400	0.5 X R0.1	0.40	4.00	0.47	15	45	4	4.18	4.33	4.48	4.64	5.01
2NCH 050 R010 500	0.5 X R0.1	0.40	5.00	0.47	15	45	4	5.22	5.40	5.59	5.79	6.26
2NCH 060 R002 200	0.6 X R0.02	0.50	2.00	0.57	15	45	4	2.12	2.19	2.27	2.36	2.55
2NCH 060 R002 400	0.6 X R0.02	0.50	4.00	0.57	15	45	4	4.19	4.33	4.49	4.66	5.03
2NCH 060 R002 600	0.6 X R0.02	0.50	6.00	0.57	15	45	4	6.25	6.47	6.70	6.96	7.52
2NCH 060 R005 200	0.6 X R0.05	0.50	2.00	0.57	15	45	4	2.12	2.19	2.27	2.35	2.54
2NCH 060 R005 400	0.6 X R0.05	0.50	4.00	0.57	15	45	4	4.19	4.33	4.48	4.65	5.03
2NCH 060 R005 600	0.6 X R0.05	0.50	6.00	0.57	15	45	4	6.25	6.47	6.70	6.95	7.51
2NCH 060 R010 200	0.6 X R0.1	0.50	2.00	0.57	15	45	4	2.12	2.19	2.26	2.34	2.53
2NCH 060 R010 400	0.6 X R0.1	0.50	4.00	0.57	15	45	4	4.18	4.33	4.48	4.64	5.01
2NCH 060 R010 600	0.6 X R0.1	0.50	6.00	0.57	15	45	4	6.25	6.47	6.70	6.94	7.50
2NCH 070 R005 400	0.7 X R0.05	0.55	4.00	0.66	15	45	4	4.21	4.35	4.51	4.67	5.05
2NCH 070 R005 600	0.7 X R0.05	0.55	6.00	0.66	15	45	4	6.27	6.49	6.72	6.97	7.53
2NCH 070 R010 400	0.7 X R0.1	0.55	4.00	0.66	15	45	4	4.20	4.35	4.50	4.67	5.04
2NCH 070 R010 600	0.7 X R0.1	0.55	6.00	0.66	15	45	4	6.27	6.49	6.72	6.96	7.52
2NCH 080 R002 200	0.8 X R0.02	0.65	2.00	0.77	15	45	4	2.12	2.19	2.27	2.36	2.55
2NCH 080 R002 400	0.8 X R0.02	0.65	4.00	0.77	15	45	4	4.19	4.33	4.49	4.66	5.03
2NCH 080 R002 600	0.8 X R0.02	0.65	6.00	0.77	15	45	4	6.25	6.47	6.70	6.96	7.52
2NCH 080 R002 800	0.8 X R0.02	0.65	8.00	0.77	15	45	4	8.32	8.61	8.92	9.26	10.00
2NCH 080 R005 200	0.8 X R0.05	0.65	2.00	0.77	15	45	4	2.12	2.19	2.27	2.35	2.54
2NCH 080 R005 400	0.8 X R0.05	0.65	4.00	0.77	15	45	4	4.19	4.33	4.48	4.65	5.03
2NCH 080 R005 600	0.8 X R0.05	0.65	6.00	0.77	15	45	4	6.25	6.47	6.70	6.95	7.51
2NCH 080 R005 800	0.8 X R0.05	0.65	8.00	0.77	15	45	4	8.32	8.61	8.92	9.25	10.00
2NCH 080 R010 200	0.8 X R0.1	0.65	2.00	0.77	15	45	4	2.12	2.19	2.26	2.34	2.53

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30'	1°	1°30'	2°	3°
2NCH 080 R010 400	0.8 X R0.1	0.65	4.00	0.77	15	45	4	4.18	4.33	4.48	4.64	5.01
2NCH 080 R010 600	0.8 X R0.1	0.65	6.00	0.77	15	45	4	6.25	6.47	6.70	6.94	7.50
2NCH 080 R010 800	0.8 X R0.1	0.65	8.00	0.77	15	45	4	8.32	8.61	8.91	9.24	9.99
2NCH 080 R020 200	0.8 X R0.2	0.65	2.00	0.77	15	45	4	2.11	2.18	2.25	2.33	2.50
2NCH 080 R020 400	0.8 X R0.2	0.65	4.00	0.77	15	45	4	4.18	4.32	4.47	4.63	4.99
2NCH 080 R020 600	0.8 X R0.2	0.65	6.00	0.77	15	45	4	6.25	6.46	6.69	6.93	7.47
2NCH 080 R020 800	0.8 X R0.2	0.65	8.00	0.77	15	45	4	8.32	8.60	8.90	9.23	9.96
2NCH 090 R010 400	0.9 X R0.1	0.70	4.00	0.85	15	45	4	4.22	4.37	4.52	4.69	5.06
2NCH 090 R010 800	0.9 X R0.1	0.70	8.00	0.85	15	45	4	8.36	8.65	8.95	9.29	10.03
2NCH 100 R002 200	1.0 X R0.02	0.80	2.00	0.95	15	45	4	2.16	2.23	2.31	2.40	2.59
2NCH 100 R002 400	1.0 X R0.02	0.80	4.00	0.95	15	45	4	4.23	4.37	4.53	4.70	5.08
2NCH 100 R002 600	1.0 X R0.02	0.80	6.00	0.95	15	45	4	6.29	6.51	6.75	7.00	7.56
2NCH 100 R002 800	1.0 X R0.02	0.80	8.00	0.95	15	45	4	8.36	8.65	8.96	9.30	10.05
2NCH 100 R002 1000	1.0 X R0.02	0.80	10.00	0.95	15	45	4	10.43	10.79	11.18	11.60	12.54
2NCH 100 R005 200	1.0 X R0.05	0.80	2.00	0.95	15	45	4	2.16	2.23	2.31	2.39	2.59
2NCH 100 R005 400	1.0 X R0.05	0.80	4.00	0.95	15	45	4	4.22	4.37	4.53	4.69	5.07
2NCH 100 R005 600	1.0 X R0.05	0.80	6.00	0.95	15	45	4	6.29	6.51	6.74	6.99	7.56
2NCH 100 R005 800	1.0 X R0.05	0.80	8.00	0.95	15	45	4	8.36	8.65	8.96	9.29	10.04
2NCH 100 R005 1000	1.0 X R0.05	0.80	10.00	0.95	15	45	4	10.43	10.79	11.18	11.59	12.53
2NCH 100 R005 1200	1.0 X R0.05	0.80	12.00	0.95	15	45	4	12.49	12.93	13.39	13.89	15.02
2NCH 100 R005 1600	1.0 X R0.05	0.80	16.00	0.95	15	50	4	16.63	17.21	17.83	18.49	19.99
2NCH 100 R005 2000	1.0 X R0.05	0.80	20.00	0.95	15	50	4	20.76	21.48	22.26	23.09	24.96
2NCH 100 R010 200	1.0 X R0.1	0.80	2.00	0.95	15	45	4	2.16	2.23	2.30	2.39	2.57
2NCH 100 R010 400	1.0 X R0.1	0.80	4.00	0.95	15	45	4	4.22	4.37	4.52	4.69	5.06
2NCH 100 R010 600	1.0 X R0.1	0.80	6.00	0.95	15	45	4	6.29	6.51	6.74	6.99	7.55
2NCH 100 R010 800	1.0 X R0.1	0.80	8.00	0.95	15	45	4	8.36	8.65	8.95	9.29	10.03
2NCH 100 R010 1000	1.0 X R0.1	0.80	10.00	0.95	15	45	4	10.42	10.78	11.17	11.59	12.52
2NCH 100 R010 1200	1.0 X R0.1	0.80	12.00	0.95	15	45	4	12.49	12.92	13.39	13.89	15.00
2NCH 100 R010 1600	1.0 X R0.1	0.80	16.00	0.95	15	50	4	16.63	17.20	17.82	18.48	19.98
2NCH 100 R010 2000	1.0 X R0.1	0.80	20.00	0.95	15	50	4	20.76	21.48	22.25	23.08	24.95
2NCH 100 R020 200	1.0 X R0.2	0.80	2.00	0.95	15	45	4	2.15	2.22	2.29	2.37	2.55
2NCH 100 R020 400	1.0 X R0.2	0.80	4.00	0.95	15	45	4	4.22	4.36	4.51	4.67	5.03
2NCH 100 R020 600	1.0 X R0.2	0.80	6.00	0.95	15	45	4	6.29	6.50	6.73	6.97	7.52
2NCH 100 R020 800	1.0 X R0.2	0.80	8.00	0.95	15	45	4	8.35	8.64	8.94	9.27	10.01
2NCH 100 R020 800 S6	1.0 X R0.2	0.80	8.00	0.95	15	50	6	8.35	8.64	8.94	9.27	10.01
2NCH 100 R020 1000	1.0 X R0.2	0.80	10.00	0.95	15	45	4	10.42	10.78	11.16	11.57	12.49
2NCH 100 R020 1200	1.0 X R0.2	0.80	12.00	0.95	15	45	4	12.49	12.92	13.38	13.87	14.98
2NCH 100 R020 1600	1.0 X R0.2	0.80	16.00	0.95	15	50	4	16.62	17.20	17.81	18.47	19.95
2NCH 100 R020 2000	1.0 X R0.2	0.80	20.00	0.95	15	50	4	20.76	21.47	22.24	23.07	24.93
2NCH 100 R030 200	1.0 X R0.3	0.80	2.00	0.95	15	45	4	2.15	2.21	2.28	2.36	2.52
2NCH 100 R030 400	1.0 X R0.3	0.80	4.00	0.95	15	45	4	4.22	4.35	4.50	4.66	5.01
2NCH 100 R030 600	1.0 X R0.3	0.80	6.00	0.95	15	45	4	6.28	6.49	6.72	6.96	7.50
2NCH 100 R030 800	1.0 X R0.3	0.80	8.00	0.95	15	45	4	8.35	8.63	8.93	9.26	9.98
2NCH 100 R030 1000	1.0 X R0.3	0.80	10.00	0.95	15	45	4	10.42	10.77	11.15	11.56	12.47

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30'	1°	1°30'	2°	3°
2NCH 100 R030 1200	1.0 X R0.3	0.80	12.00	0.95	15	45	4	12.49	12.91	13.37	13.86	14.96
2NCH 100 R030 1600	1.0 X R0.3	0.80	16.00	0.95	15	50	4	16.62	17.19	17.80	18.46	19.93
2NCH 100 R030 2000	1.0 X R0.3	0.80	20.00	0.95	15	50	4	20.75	21.47	22.23	23.05	24.90
2NCH 120 R010 400	1.2 X R0.1	1.00	4.00	1.14	15	45	4	4.24	4.39	4.54	4.71	5.08
2NCH 120 R010 600	1.2 X R0.1	1.00	6.00	1.14	15	45	4	6.31	6.53	6.76	7.01	7.57
2NCH 120 R010 1000	1.2 X R0.1	1.00	10.00	1.14	15	45	4	10.44	10.80	11.19	11.61	12.54
2NCH 120 R020 400	1.2 X R0.2	1.00	4.00	1.14	15	45	4	4.24	4.38	4.53	4.69	5.06
2NCH 120 R020 600	1.2 X R0.2	1.00	6.00	1.14	15	45	4	6.31	6.52	6.75	6.99	7.54
2NCH 120 R020 1000	1.2 X R0.2	1.00	10.00	1.14	15	45	4	10.44	10.80	11.18	11.59	12.52
2NCH 120 R020 1200	1.2 X R0.2	1.00	12.00	1.14	15	45	4	12.51	12.94	13.40	13.89	15.00
2NCH 120 R020 1600	1.2 X R0.2	1.00	16.00	1.14	15	50	4	16.64	17.22	17.83	18.49	19.97
2NCH 120 R020 2000	1.2 X R0.2	1.00	20.00	1.14	15	50	4	20.77	21.50	22.27	23.09	24.95
2NCH 120 R030 400	1.2 X R0.3	1.00	4.00	1.14	15	45	4	4.24	4.37	4.52	4.68	5.03
2NCH 120 R030 600	1.2 X R0.3	1.00	6.00	1.14	15	45	4	6.30	6.51	6.74	6.98	7.52
2NCH 120 R030 1000	1.2 X R0.3	1.00	10.00	1.14	15	45	4	10.44	10.79	11.17	11.58	12.49
2NCH 120 R030 1200	1.2 X R0.3	1.00	12.00	1.14	15	45	4	12.51	12.94	13.40	13.89	15.00
2NCH 120 R030 1600	1.2 X R0.3	1.00	16.00	1.14	15	50	4	16.64	17.22	17.83	18.49	19.97
2NCH 120 R030 2000	1.2 X R0.3	1.00	20.00	1.14	15	50	4	20.77	21.50	22.27	23.09	24.95
2NCH 150 R005 300	1.5 X R0.05	1.50	3.00	1.44	15	45	4	3.21	3.32	3.44	3.57	3.85
2NCH 150 R005 400	1.5 X R0.05	1.50	4.00	1.44	15	45	4	4.24	4.39	4.55	4.72	5.09
2NCH 150 R005 600	1.5 X R0.05	1.50	6.00	1.44	15	45	4	6.31	6.53	6.76	7.02	7.58
2NCH 150 R005 800	1.5 X R0.05	1.50	8.00	1.44	15	45	4	8.38	8.67	8.98	9.32	10.07
2NCH 150 R005 1000	1.5 X R0.05	1.50	10.00	1.44	15	45	4	10.45	10.81	11.20	11.61	12.55
2NCH 150 R005 1200	1.5 X R0.05	1.50	12.00	1.44	15	45	4	12.51	12.95	13.41	13.91	15.04
2NCH 150 R005 1600	1.5 X R0.05	1.50	16.00	1.44	15	50	4	16.65	17.23	17.85	18.51	20.01
2NCH 150 R005 2000	1.5 X R0.05	1.50	20.00	1.44	15	50	4	20.78	21.50	22.28	23.11	free
2NCH 150 R010 300	1.5 X R0.1	1.50	3.00	1.44	15	45	4	3.21	3.32	3.43	3.56	3.84
2NCH 150 R010 400	1.5 X R0.1	1.50	4.00	1.44	15	45	4	4.24	4.39	4.54	4.71	5.08
2NCH 150 R010 600	1.5 X R0.1	1.50	6.00	1.44	15	45	4	6.31	6.53	6.76	7.01	7.57
2NCH 150 R010 800	1.5 X R0.1	1.50	8.00	1.44	15	45	4	8.38	8.67	8.97	9.31	10.06
2NCH 150 R010 1000	1.5 X R0.1	1.50	10.00	1.44	15	45	4	10.44	10.80	11.19	11.61	12.54
2NCH 150 R010 1200	1.5 X R0.1	1.50	12.00	1.44	15	45	4	12.51	12.94	13.41	13.91	15.03
2NCH 150 R010 1600	1.5 X R0.1	1.50	16.00	1.44	15	50	4	16.65	17.22	17.84	18.51	20.00
2NCH 150 R010 2000	1.5 X R0.1	1.50	20.00	1.44	15	50	4	20.78	21.50	22.27	23.11	free
2NCH 150 R020 300	1.5 X R0.2	1.50	3.00	1.44	15	45	4	3.20	3.31	3.42	3.54	3.81
2NCH 150 R020 400	1.5 X R0.2	1.50	4.00	1.44	15	45	4	4.24	4.38	4.53	4.69	5.06
2NCH 150 R020 600	1.5 X R0.2	1.50	6.00	1.44	15	45	4	6.31	6.52	6.75	6.99	7.54
2NCH 150 R020 800	1.5 X R0.2	1.50	8.00	1.44	15	45	4	8.37	8.66	8.96	9.29	10.03
2NCH 150 R020 1000	1.5 X R0.2	1.50	10.00	1.44	15	45	4	10.44	10.80	11.18	11.59	12.52
2NCH 150 R020 1000 S6	1.5 X R0.2	1.50	10.00	1.44	15	50	6	10.44	10.80	11.18	11.59	12.52
2NCH 150 R020 1200	1.5 X R0.2	1.50	12.00	1.44	15	45	4	12.51	12.94	13.40	13.89	15.00
2NCH 150 R020 1600	1.5 X R0.2	1.50	16.00	1.44	15	50	4	16.64	17.22	17.83	18.49	19.98
2NCH 150 R020 2000	1.5 X R0.2	1.50	20.00	1.44	15	50	4	20.78	21.49	22.26	23.09	free
2NCH 150 R030 300	1.5 X R0.3	1.50	3.00	1.44	15	45	4	3.20	3.30	3.41	3.53	3.79

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30'	1°	1°30'	2°	3°
2NCH 150 R030 400	1.5 X R0.3	1.50	4.00	1.44	15	45	4	4.24	4.37	4.52	4.68	5.03
2NCH 150 R030 600	1.5 X R0.3	1.50	6.00	1.44	15	45	4	6.30	6.51	6.74	6.98	7.52
2NCH 150 R030 800	1.5 X R0.3	1.50	8.00	1.44	15	45	4	8.37	8.65	8.95	9.28	10.01
2NCH 150 R030 1000	1.5 X R0.3	1.50	10.00	1.44	15	45	4	10.44	10.79	11.17	11.58	12.49
2NCH 150 R030 1200	1.5 X R0.3	1.50	12.00	1.44	15	45	4	12.50	12.93	13.39	13.88	14.98
2NCH 150 R030 1600	1.5 X R0.3	1.50	16.00	1.44	15	50	4	16.64	17.21	17.82	18.48	19.95
2NCH 150 R030 2000	1.5 X R0.3	1.50	20.00	1.44	15	50	4	20.77	21.49	22.25	23.08	free
2NCH 150 R050 300	1.5 X R0.5	1.50	3.00	1.44	15	45	4	3.19	3.29	3.39	3.50	3.74
2NCH 150 R050 400	1.5 X R0.5	1.50	4.00	1.44	15	45	4	4.23	4.36	4.50	4.65	4.99
2NCH 150 R050 600	1.5 X R0.5	1.50	6.00	1.44	15	45	4	6.30	6.50	6.71	6.95	7.47
2NCH 150 R050 800	1.5 X R0.5	1.50	8.00	1.44	15	45	4	8.36	8.64	8.93	9.25	9.96
2NCH 150 R050 1000	1.5 X R0.5	1.50	10.00	1.44	15	45	4	10.43	10.78	11.15	11.55	12.44
2NCH 150 R050 1200	1.5 X R0.5	1.50	12.00	1.44	15	45	4	12.50	12.92	13.36	13.85	14.93
2NCH 150 R050 1600	1.5 X R0.5	1.50	16.00	1.44	15	50	4	16.63	17.19	17.80	18.45	19.90
2NCH 150 R050 2000	1.5 X R0.5	1.50	20.00	1.44	15	50	4	20.77	21.47	22.23	23.05	free
2NCH 200 R005 400	2.0 X R0.05	1.70	4.00	1.92	15	45	4	4.28	4.43	4.59	4.76	5.14
2NCH 200 R005 600	2.0 X R0.05	1.70	6.00	1.92	15	45	4	6.35	6.57	6.80	7.06	7.63
2NCH 200 R005 800	2.0 X R0.05	1.70	8.00	1.92	15	45	4	8.42	8.71	9.02	9.36	10.11
2NCH 200 R005 1000	2.0 X R0.05	1.70	10.00	1.92	15	45	4	10.48	10.85	11.24	11.66	12.60
2NCH 200 R005 1200	2.0 X R0.05	1.70	12.00	1.92	15	45	4	12.55	12.99	13.45	13.96	15.09
2NCH 200 R005 1600	2.0 X R0.05	1.70	16.00	1.92	15	50	4	16.69	17.27	17.89	18.56	free
2NCH 200 R005 2000	2.0 X R0.05	1.70	20.00	1.92	15	50	4	20.82	21.54	22.32	23.16	free
2NCH 200 R010 400	2.0 X R0.1	1.70	4.00	1.92	15	45	4	4.28	4.43	4.58	4.75	5.13
2NCH 200 R010 600	2.0 X R0.1	1.70	6.00	1.92	15	45	4	6.35	6.57	6.80	7.05	7.62
2NCH 200 R010 800	2.0 X R0.1	1.70	8.00	1.92	15	45	4	8.42	8.71	9.02	9.35	10.10
2NCH 200 R010 1000	2.0 X R0.1	1.70	10.00	1.92	15	45	4	10.48	10.84	11.23	11.65	12.59
2NCH 200 R010 1200	2.0 X R0.1	1.70	12.00	1.92	15	45	4	12.55	12.98	13.45	13.95	15.07
2NCH 200 R010 1600	2.0 X R0.1	1.70	16.00	1.92	15	50	4	16.68	17.26	17.88	18.55	free
2NCH 200 R010 2000	2.0 X R0.1	1.70	20.00	1.92	15	50	4	20.82	21.54	22.32	23.15	free
2NCH 200 R020 400	2.0 X R0.2	1.70	4.00	1.92	15	45	4	4.28	4.42	4.57	4.74	5.10
2NCH 200 R020 600	2.0 X R0.2	1.70	6.00	1.92	15	45	4	6.34	6.56	6.79	7.04	7.59
2NCH 200 R020 800	2.0 X R0.2	1.70	8.00	1.92	15	45	4	8.41	8.70	9.01	9.34	10.08
2NCH 200 R020 1000	2.0 X R0.2	1.70	10.00	1.92	15	45	4	10.48	10.84	11.22	11.64	12.56
2NCH 200 R020 1200	2.0 X R0.2	1.70	12.00	1.92	15	45	4	12.55	12.98	13.44	13.93	15.05
2NCH 200 R020 1600	2.0 X R0.2	1.70	16.00	1.92	15	50	4	16.68	17.26	17.87	18.53	free
2NCH 200 R020 2000	2.0 X R0.2	1.70	20.00	1.92	15	50	4	20.82	21.53	22.31	23.13	free
2NCH 200 R030 400	2.0 X R0.3	1.70	4.00	1.92	15	45	4	4.27	4.41	4.56	4.72	5.08
2NCH 200 R030 600	2.0 X R0.3	1.70	6.00	1.92	15	45	4	6.34	6.55	6.78	7.02	7.57
2NCH 200 R030 800	2.0 X R0.3	1.70	8.00	1.92	15	45	4	8.41	8.69	8.99	9.32	10.05
2NCH 200 R030 1000	2.0 X R0.3	1.70	10.00	1.92	15	45	4	10.48	10.83	11.21	11.62	12.54
2NCH 200 R030 1200	2.0 X R0.3	1.70	12.00	1.92	15	45	4	12.54	12.97	13.43	13.92	15.03
2NCH 200 R030 1600	2.0 X R0.3	1.70	16.00	1.92	15	50	4	16.68	17.25	17.86	18.52	free
2NCH 200 R030 2000	2.0 X R0.3	1.70	20.00	1.92	15	50	4	20.81	21.53	22.29	23.12	free
2NCH 200 R050 400	2.0 X R0.5	1.70	4.00	1.92	15	45	4	4.27	4.40	4.54	4.69	5.03

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30'	1°	1°30'	2°	3°
2NCH 200 R050 600	2.0 X R0.5	1.70	6.00	1.92	15	45	4	6.33	6.54	6.76	6.99	7.52
2NCH 200 R050 800	2.0 X R0.5	1.70	8.00	1.92	15	45	4	8.40	8.68	8.97	9.29	10.00
2NCH 200 R050 1000	2.0 X R0.5	1.70	10.00	1.92	15	45	4	10.47	10.82	11.19	11.59	12.49
2NCH 200 R050 1200	2.0 X R0.5	1.70	12.00	1.92	15	45	4	12.54	12.96	13.41	13.89	14.98
2NCH 200 R050 1200 S6	2.0 X R0.5	1.70	12.00	1.92	15	55	6	12.54	12.96	13.41	13.89	14.98
2NCH 200 R050 1600	2.0 X R0.5	1.70	16.00	1.92	15	50	4	16.67	17.23	17.84	18.49	free
2NCH 200 R050 2000	2.0 X R0.5	1.70	20.00	1.92	15	50	4	20.81	21.51	22.27	23.09	free
2NCH 250 R010 1000	2.5 X R0.1	2.00	10.00	2.39	15	45	4	10.54	10.90	11.29	11.71	12.66
2NCH 250 R010 2000	2.5 X R0.1	2.00	20.00	2.39	15	50	4	20.88	21.60	22.38	free	free
2NCH 250 R010 3000	2.5 X R0.1	2.00	30.00	2.39	15	70	4	31.21	32.30	free	free	free
2NCH 250 R020 1000	2.5 X R0.2	2.00	10.00	2.39	15	45	4	10.54	10.90	11.28	11.70	12.63
2NCH 250 R020 2000	2.5 X R0.2	2.00	20.00	2.39	15	50	4	20.87	21.59	22.37	free	free
2NCH 250 R020 3000	2.5 X R0.2	2.00	30.00	2.39	15	70	4	31.21	32.29	free	free	free
2NCH 250 R030 1000	2.5 X R0.3	2.00	10.00	2.39	15	45	4	10.53	10.89	11.27	11.68	12.61
2NCH 250 R030 2000	2.5 X R0.3	2.00	20.00	2.39	15	50	4	20.87	21.59	22.36	free	free
2NCH 250 R030 3000	2.5 X R0.3	2.00	30.00	2.39	15	70	4	31.21	32.28	free	free	free
2NCH 250 R050 1000	2.5 X R0.5	2.00	10.00	2.39	15	45	4	10.53	10.88	11.25	11.65	12.56
2NCH 250 R050 2000	2.5 X R0.5	2.00	20.00	2.39	15	50	4	20.86	21.57	22.33	free	free
2NCH 250 R050 3000	2.5 X R0.5	2.00	30.00	2.39	15	70	4	31.20	32.27	free	free	free
2NCH 300 R005 400	3.0 X R0.05	2.50	4.00	2.86	15	50	6	4.40	4.55	4.71	4.89	5.28
2NCH 300 R005 600	3.0 X R0.05	2.50	6.00	2.86	15	50	6	6.47	6.69	6.93	7.19	7.77
2NCH 300 R005 800	3.0 X R0.05	2.50	8.00	2.86	15	50	6	8.53	8.83	9.15	9.49	10.25
2NCH 300 R005 1000	3.0 X R0.05	2.50	10.00	2.86	15	50	6	10.60	10.97	11.36	11.79	12.74
2NCH 300 R005 1200	3.0 X R0.05	2.50	12.00	2.86	15	50	6	12.67	13.11	13.58	14.09	15.23
2NCH 300 R005 1600	3.0 X R0.05	2.50	16.00	2.86	15	60	6	16.80	17.39	18.01	18.69	20.20
2NCH 300 R005 2000	3.0 X R0.05	2.50	20.00	2.86	15	60	6	20.94	21.66	22.45	23.29	25.17
2NCH 300 R010 400	3.0 X R0.1	2.50	4.00	2.86	15	50	6	4.40	4.55	4.71	4.88	5.27
2NCH 300 R010 600	3.0 X R0.1	2.50	6.00	2.86	15	50	6	6.46	6.69	6.92	7.18	7.75
2NCH 300 R010 800	3.0 X R0.1	2.50	8.00	2.86	15	50	6	8.53	8.82	9.14	9.48	10.24
2NCH 300 R010 1000	3.0 X R0.1	2.50	10.00	2.86	15	50	6	10.60	10.96	11.36	11.78	12.73
2NCH 300 R010 1200	3.0 X R0.1	2.50	12.00	2.86	15	50	6	12.67	13.10	13.57	14.08	15.21
2NCH 300 R010 1600	3.0 X R0.1	2.50	16.00	2.86	15	60	6	16.80	17.38	18.01	18.68	20.19
2NCH 300 R010 2000	3.0 X R0.1	2.50	20.00	2.86	15	60	6	20.93	21.66	22.44	23.28	25.16
2NCH 300 R010 2500	3.0 X R0.1	2.50	25.00	2.86	15	60	6	26.10	27.01	27.98	29.03	free
2NCH 300 R010 3000	3.0 X R0.1	2.50	30.00	2.86	15	70	6	31.27	32.36	33.52	34.78	free
2NCH 300 R010 3500	3.0 X R0.1	2.50	35.00	2.86	15	70	6	36.44	37.71	39.06	40.53	free
2NCH 300 R020 400	3.0 X R0.2	2.50	4.00	2.86	15	50	6	4.39	4.54	4.70	4.86	5.24
2NCH 300 R020 600	3.0 X R0.2	2.50	6.00	2.86	15	50	6	6.46	6.68	6.91	7.16	7.73
2NCH 300 R020 800	3.0 X R0.2	2.50	8.00	2.86	15	50	6	8.53	8.82	9.13	9.46	10.22
2NCH 300 R020 1000	3.0 X R0.2	2.50	10.00	2.86	15	50	6	10.59	10.96	11.35	11.76	12.70
2NCH 300 R020 1200	3.0 X R0.2	2.50	12.00	2.86	15	50	6	12.66	13.10	13.56	14.06	15.19
2NCH 300 R020 1600	3.0 X R0.2	2.50	16.00	2.86	15	60	6	16.80	17.38	18.00	18.66	20.16
2NCH 300 R020 2000	3.0 X R0.2	2.50	20.00	2.86	15	60	6	20.93	21.65	22.43	23.26	25.13
2NCH 300 R020 2500	3.0 X R0.2	2.50	25.00	2.86	15	60	6	26.10	27.00	27.97	29.01	free

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30'	1°	1°30'	2°	3°
2NCH 300 R020 3000	3.0 X R0.2	2.50	30.00	2.86	15	70	6	31.27	32.35	33.51	34.76	free
2NCH 300 R020 3500	3.0 X R0.2	2.50	35.00	2.86	15	70	6	36.44	37.70	39.05	40.51	free
2NCH 300 R030 400	3.0 X R0.3	2.50	4.00	2.86	15	50	6	4.39	4.53	4.69	4.85	5.22
2NCH 300 R030 600	3.0 X R0.3	2.50	6.00	2.86	15	50	6	6.46	6.67	6.90	7.15	7.71
2NCH 300 R030 800	3.0 X R0.3	2.50	8.00	2.86	15	50	6	8.52	8.81	9.12	9.45	10.19
2NCH 300 R030 1000	3.0 X R0.3	2.50	10.00	2.86	15	50	6	10.59	10.95	11.34	11.75	12.68
2NCH 300 R030 1200	3.0 X R0.3	2.50	12.00	2.86	15	50	6	12.66	13.09	13.55	14.05	15.16
2NCH 300 R030 1600	3.0 X R0.3	2.50	16.00	2.86	15	60	6	16.79	17.37	17.99	18.65	20.14
2NCH 300 R030 2000	3.0 X R0.3	2.50	20.00	2.86	15	60	6	20.93	21.65	22.42	23.25	25.11
2NCH 300 R030 2500	3.0 X R0.3	2.50	25.00	2.86	15	60	6	26.10	27.00	27.96	29.00	free
2NCH 300 R030 3000	3.0 X R0.3	2.50	30.00	2.86	15	70	6	31.26	32.34	33.50	34.75	free
2NCH 300 R030 3500	3.0 X R0.3	2.50	35.00	2.86	15	70	6	36.43	37.69	39.04	40.50	free
2NCH 300 R050 400	3.0 X R0.5	2.50	4.00	2.86	15	50	6	4.38	4.52	4.66	4.82	5.17
2NCH 300 R050 600	3.0 X R0.5	2.50	6.00	2.86	15	50	6	6.45	6.66	6.88	7.12	7.66
2NCH 300 R050 800	3.0 X R0.5	2.50	8.00	2.86	15	50	6	8.52	8.80	9.10	9.42	10.14
2NCH 300 R050 1000	3.0 X R0.5	2.50	10.00	2.86	15	50	6	10.58	10.94	11.31	11.72	12.63
2NCH 300 R050 1200	3.0 X R0.5	2.50	12.00	2.86	15	50	6	12.65	13.08	13.53	14.02	15.12
2NCH 300 R050 1600	3.0 X R0.5	2.50	16.00	2.86	15	60	6	16.79	17.35	17.96	18.62	20.09
2NCH 300 R050 2000	3.0 X R0.5	2.50	20.00	2.86	15	60	6	20.92	21.63	22.40	23.22	25.06
2NCH 300 R050 2500	3.0 X R0.5	2.50	25.00	2.86	15	60	6	26.09	26.98	27.94	28.97	free
2NCH 300 R050 3000	3.0 X R0.5	2.50	30.00	2.86	15	70	6	31.26	32.33	33.48	34.72	free
2NCH 300 R050 3500	3.0 X R0.5	2.50	35.00	2.86	15	70	6	36.43	37.68	39.02	40.47	free
2NCH 300 R100 800	3.0 X R1.0	2.50	8.00	2.86	15	50	6	8.50	8.76	9.04	9.34	10.02
2NCH 300 R100 1000	3.0 X R1.0	2.50	10.00	2.86	15	50	6	10.57	10.90	11.26	11.64	12.51
2NCH 300 R100 1200	3.0 X R1.0	2.50	12.00	2.86	15	50	6	12.64	13.04	13.48	13.94	14.99
2NCH 300 R100 1600	3.0 X R1.0	2.50	16.00	2.86	15	60	6	16.77	17.32	17.91	18.54	19.97
2NCH 300 R100 2000	3.0 X R1.0	2.50	20.00	2.86	15	60	6	20.90	21.60	22.34	23.14	24.94
2NCH 300 R100 2500	3.0 X R1.0	2.50	25.00	2.86	15	60	6	26.07	26.95	27.88	28.89	free
2NCH 300 R100 3000	3.0 X R1.0	2.50	30.00	2.86	15	70	6	31.24	32.30	33.43	34.64	free
2NCH 300 R100 3500	3.0 X R1.0	2.50	35.00	2.86	15	70	6	36.41	37.64	38.97	40.39	free
2NCH 400 R010 800	4.0 X R0.1	3.50	8.00	3.80	15	50	6	8.65	8.94	9.26	9.61	10.38
2NCH 400 R010 1000	4.0 X R0.1	3.50	10.00	3.80	15	50	6	10.71	11.08	11.48	11.91	12.87
2NCH 400 R010 1200	4.0 X R0.1	3.50	12.00	3.80	15	50	6	12.78	13.22	13.70	14.21	15.35
2NCH 400 R010 1600	4.0 X R0.1	3.50	16.00	3.80	15	60	6	16.92	17.50	18.13	18.81	free
2NCH 400 R010 2000	4.0 X R0.1	3.50	20.00	3.80	15	60	6	21.05	21.78	22.56	23.41	free
2NCH 400 R010 2500	4.0 X R0.1	3.50	25.00	3.80	15	60	6	26.22	27.13	28.11	free	free
2NCH 400 R010 3000	4.0 X R0.1	3.50	30.00	3.80	15	70	6	31.39	32.48	33.65	free	free
2NCH 400 R010 4000	4.0 X R0.1	3.50	40.00	3.80	15	80	6	41.72	43.17	free	free	free
2NCH 400 R020 800	4.0 X R0.2	3.50	8.00	3.80	15	50	6	8.64	8.94	9.25	9.59	10.36
2NCH 400 R020 1000	4.0 X R0.2	3.50	10.00	3.80	15	50	6	10.71	11.08	11.47	11.89	12.84
2NCH 400 R020 1200	4.0 X R0.2	3.50	12.00	3.80	15	50	6	12.78	13.22	13.69	14.19	15.33
2NCH 400 R020 1600	4.0 X R0.2	3.50	16.00	3.80	15	60	6	16.91	17.50	18.12	18.79	free
2NCH 400 R020 2000	4.0 X R0.2	3.50	20.00	3.80	15	60	6	21.05	21.77	22.55	23.39	free
2NCH 400 R020 2500	4.0 X R0.2	3.50	25.00	3.80	15	60	6	26.22	27.12	28.09	free	free

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용

(Unit: mm)

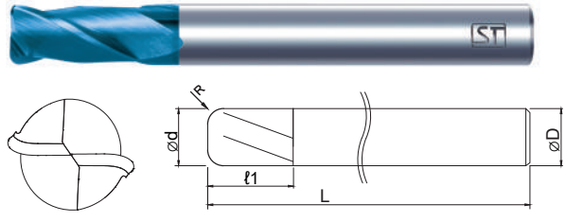
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30'	1°	1°30'	2°	3°
2NCH 400 R020 3000	4.0 X R0.2	3.50	30.00	3.80	15	70	6	31.38	32.47	33.64	free	free
2NCH 400 R020 4000	4.0 X R0.2	3.50	40.00	3.80	15	80	6	41.72	43.17	free	free	free
2NCH 400 R030 800	4.0 X R0.3	3.50	8.00	3.80	15	50	6	8.64	8.93	9.24	9.58	10.33
2NCH 400 R030 1000	4.0 X R0.3	3.50	10.00	3.80	15	50	6	10.71	11.07	11.46	11.88	12.82
2NCH 400 R030 1200	4.0 X R0.3	3.50	12.00	3.80	15	50	6	12.77	13.21	13.68	14.18	15.30
2NCH 400 R030 1600	4.0 X R0.3	3.50	16.00	3.80	15	60	6	16.91	17.49	18.11	18.78	free
2NCH 400 R030 2000	4.0 X R0.3	3.50	20.00	3.80	15	60	6	21.04	21.77	22.54	23.38	free
2NCH 400 R030 2500	4.0 X R0.3	3.50	25.00	3.80	15	60	6	26.21	27.12	28.08	free	free
2NCH 400 R030 3000	4.0 X R0.3	3.50	30.00	3.80	15	70	6	31.38	32.46	33.63	free	free
2NCH 400 R030 4000	4.0 X R0.3	3.50	40.00	3.80	15	80	6	41.72	43.16	free	free	free
2NCH 400 R050 800	4.0 X R0.5	3.50	8.00	3.80	15	50	6	8.63	8.92	9.22	9.55	10.28
2NCH 400 R050 1000	4.0 X R0.5	3.50	10.00	3.80	15	50	6	10.70	11.06	11.44	11.85	12.77
2NCH 400 R050 1200	4.0 X R0.5	3.50	12.00	3.80	15	50	6	12.77	13.20	13.65	14.15	15.26
2NCH 400 R050 1600	4.0 X R0.5	3.50	16.00	3.80	15	60	6	16.90	17.47	18.09	18.75	free
2NCH 400 R050 2000	4.0 X R0.5	3.50	20.00	3.80	15	60	6	21.04	21.75	22.52	23.35	free
2NCH 400 R050 2500	4.0 X R0.5	3.50	25.00	3.80	15	60	6	26.21	27.10	28.06	29.10	free
2NCH 400 R050 3000	4.0 X R0.5	3.50	30.00	3.80	15	70	6	31.37	32.45	33.60	free	free
2NCH 400 R050 4000	4.0 X R0.5	3.50	40.00	3.80	15	80	6	41.71	43.15	free	free	free
2NCH 400 R100 800	4.0 X R1.0	3.50	8.00	3.80	15	50	6	8.62	8.88	9.17	9.47	10.16
2NCH 400 R100 1000	4.0 X R1.0	3.50	10.00	3.80	15	50	6	10.68	11.02	11.38	11.77	12.65
2NCH 400 R100 1200	4.0 X R1.0	3.50	12.00	3.80	15	50	6	12.75	13.16	13.60	14.07	15.13
2NCH 400 R100 1600	4.0 X R1.0	3.50	16.00	3.80	15	60	6	16.89	17.44	18.03	18.67	free
2NCH 400 R100 2000	4.0 X R1.0	3.50	20.00	3.80	15	60	6	21.02	21.72	22.47	23.27	free
2NCH 400 R100 2500	4.0 X R1.0	3.50	25.00	3.80	15	60	6	26.19	27.07	28.01	29.02	free
2NCH 400 R100 3000	4.0 X R1.0	3.50	30.00	3.80	15	70	6	31.36	32.42	33.55	free	free
2NCH 400 R100 4000	4.0 X R1.0	3.50	40.00	3.80	15	80	6	41.69	43.11	free	free	free
2NCH 500 R010 2000	5.0 X R0.1	4.00	20.00	4.75	15	60	6	21.15	21.88	free	free	free
2NCH 500 R010 4000	5.0 X R0.1	4.00	40.00	4.75	15	80	6	41.82	free	free	free	free
2NCH 500 R020 2000	5.0 X R0.2	4.00	20.00	4.75	15	60	6	21.14	21.87	free	free	free
2NCH 500 R020 4000	5.0 X R0.2	4.00	40.00	4.75	15	80	6	41.82	free	free	free	free
2NCH 500 R030 2000	5.0 X R0.3	4.00	20.00	4.75	15	60	6	21.14	21.87	free	free	free
2NCH 500 R030 4000	5.0 X R0.3	4.00	40.00	4.75	15	80	6	41.81	free	free	free	free
2NCH 500 R050 2000	5.0 X R0.5	4.00	20.00	4.75	15	60	6	21.13	21.85	free	free	free
2NCH 500 R050 4000	5.0 X R0.5	4.00	40.00	4.75	15	80	6	41.81	free	free	free	free
2NCH 500 R100 2000	5.0 X R1.0	4.00	20.00	4.75	15	60	6	21.12	21.82	free	free	free
2NCH 500 R100 4000	5.0 X R1.0	4.00	40.00	4.75	15	80	6	41.79	free	free	free	free
2NCH 600 R010 1200	6.0 X R0.1	5.00	12.00	5.70	–	50	6	free	free	free	free	free
2NCH 600 R010 1600	6.0 X R0.1	5.00	16.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R010 2000	6.0 X R0.1	5.00	20.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R010 3000	6.0 X R0.1	5.00	30.00	5.70	–	70	6	free	free	free	free	free
2NCH 600 R020 1200	6.0 X R0.2	5.00	12.00	5.70	–	50	6	free	free	free	free	free
2NCH 600 R020 1600	6.0 X R0.2	5.00	16.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R020 2000	6.0 X R0.2	5.00	20.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R020 3000	6.0 X R0.2	5.00	30.00	5.70	–	70	6	free	free	free	free	free

2NCH 2F Necked Corner Radius for Super Hardened Steels
2날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30'	1°	1°30'	2°	3°
2NCH 600 R030 1200	6.0 X R0.3	5.00	12.00	5.70	–	50	6	free	free	free	free	free
2NCH 600 R030 1600	6.0 X R0.3	5.00	16.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R030 2000	6.0 X R0.3	5.00	20.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R030 3000	6.0 X R0.3	5.00	30.00	5.70	–	70	6	free	free	free	free	free
2NCH 600 R050 1200	6.0 X R0.5	5.00	12.00	5.70	–	50	6	free	free	free	free	free
2NCH 600 R050 1600	6.0 X R0.5	5.00	16.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R050 2000	6.0 X R0.5	5.00	20.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R050 3000	6.0 X R0.5	5.00	30.00	5.70	–	70	6	free	free	free	free	free
2NCH 600 R100 1200	6.0 X R1.0	5.00	12.00	5.70	–	50	6	free	free	free	free	free
2NCH 600 R100 1600	6.0 X R1.0	5.00	16.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R100 2000	6.0 X R1.0	5.00	20.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R100 3000	6.0 X R1.0	5.00	30.00	5.70	–	70	6	free	free	free	free	free
2NCH 600 R150 2000	6.0 X R1.5	5.00	20.00	5.70	–	60	6	free	free	free	free	free
2NCH 600 R150 3000	6.0 X R1.5	5.00	30.00	5.70	–	70	6	free	free	free	free	free
2NCH 800 R020 2400	8.0 X R0.2	8.00	24.00	7.60	–	65	8	free	free	free	free	free
2NCH 800 R030 2400	8.0 X R0.3	8.00	24.00	7.60	–	65	8	free	free	free	free	free
2NCH 800 R050 2400	8.0 X R0.5	8.00	24.00	7.60	–	65	8	free	free	free	free	free
2NCH 800 R100 2400	8.0 X R1.0	8.00	24.00	7.60	–	65	8	free	free	free	free	free
2NCH 800 R150 2400	8.0 X R1.5	8.00	24.00	7.60	–	65	8	free	free	free	free	free
2NCH 1000 R050 2500	10.0 X R0.5	10.00	25.00	9.50	–	70	10	free	free	free	free	free
2NCH 1000 R100 2500	10.0 X R1.0	10.00	25.00	9.50	–	70	10	free	free	free	free	free
2NCH 1200 R050 2500	12.0 X R0.5	12.00	25.00	11.50	–	80	12	free	free	free	free	free
2NCH 1200 R100 2500	12.0 X R1.0	12.00	25.00	11.50	–	80	12	free	free	free	free	free

2CLH 2F Corner Radius Long for Super Hardened Steels
2날 코너 R 롱-초고경도용



Features

- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

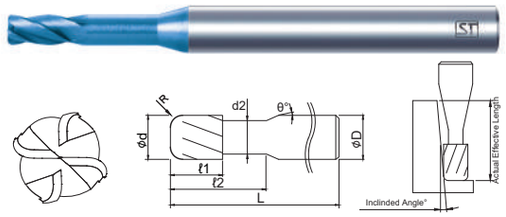
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d x CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CLH 080 R020 50	0.8 X R0.2	1.6	50	6	
2CLH 100 R010 50	1.0 X R0.1	2.5	50	6	
2CLH 100 R020 50	1.0 X R0.2	2.5	50	6	
2CLH 100 R030 50	1.0 X R0.3	2.5	50	6	
2CLH 120 R010 50	1.2 X R0.1	3	50	6	
2CLH 120 R020 50	1.2 X R0.2	3	50	6	
2CLH 150 R010 50	1.5 X R0.1	4	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 150 R050 50	1.5 X R0.5	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 200 R050 50	2.0 X R0.5	6	50	6	
2CLH 300 R010 60	3.0 X R0.1	8	60	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 300 R100 60	3.0 X R1.0	8	60	6	
2CLH 400 R010 60	4.0 X R0.1	11	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 2F Corner Radius Long for Super Hardened Steels
2날 코너 R 롱–초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d x CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CLH 400 R050 60	4.0 X R0.5	11	60	6	
2CLH 400 R100 60	4.0 X R1.0	11	60	6	
2CLH 500 R020 60	5.0 X R0.2	15	60	6	
2CLH 600 R010 60	6.0 X R0.1	15	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 600 R150 60	6.0 X R1.5	15	60	6	
2CLH 800 R010 60	8.0 X R0.1	19	60	8	
2CLH 800 R020 60	8.0 X R0.2	19	60	8	
2CLH 800 R030 60	8.0 X R0.3	19	60	8	
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 800 R200 60	8.0 X R2.0	19	60	8	
2CLH 1000 R020 70	10.0 X R0.2	22	70	10	
2CLH 1000 R030 70	10.0 X R0.3	22	70	10	
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 1000 R150 70	10.0 X R1.5	22	70	10	
2CLH 1000 R200 70	10.0 X R2.0	22	70	10	
2CLH 1000 R250 70	10.0 X R2.5	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	
2CLH 1200 R150 75	12.0 X R1.5	26	75	12	
2CLH 1200 R200 75	12.0 X R2.0	26	75	12	

4NCH 4F Necked Corner Radius for Super Hardened Steels
4날 코너 R 리브–초고경도용



Features

- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징

- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NCH 100 R005 400	1.0 X R0.05	0.80	4.00	0.95	15	45	4	4.22	4.37	4.53	4.69	5.07
4NCH 100 R005 500	1.0 X R0.05	0.80	5.00	0.95	15	45	4	5.26	5.44	5.63	5.84	6.31
4NCH 100 R005 600	1.0 X R0.05	0.80	6.00	0.95	15	45	4	6.29	6.51	6.74	6.99	7.56
4NCH 100 R005 800	1.0 X R0.05	0.80	8.00	0.95	15	45	4	8.36	8.65	8.96	9.29	10.04
4NCH 100 R005 1000	1.0 X R0.05	0.80	10.00	0.95	15	45	4	10.43	10.79	11.18	11.59	12.53
4NCH 100 R005 1200	1.0 X R0.05	0.80	12.00	0.95	15	45	4	12.49	12.93	13.39	13.89	15.02
4NCH 100 R005 1600	1.0 X R0.05	0.80	16.00	0.95	15	50	4	16.63	17.21	17.83	18.49	19.99
4NCH 100 R010 400	1.0 X R0.1	0.80	4.00	0.95	15	45	4	4.22	4.37	4.52	4.69	5.06
4NCH 100 R010 500	1.0 X R0.1	0.80	5.00	0.95	15	45	4	5.26	5.44	5.63	5.84	6.30
4NCH 100 R010 600	1.0 X R0.1	0.80	6.00	0.95	15	45	4	6.29	6.51	6.74	6.99	7.55
4NCH 100 R010 800	1.0 X R0.1	0.80	8.00	0.95	15	45	4	8.36	8.65	8.95	9.29	10.03
4NCH 100 R010 1000	1.0 X R0.1	0.80	10.00	0.95	15	45	4	10.42	10.78	11.17	11.59	12.52
4NCH 100 R010 1200	1.0 X R0.1	0.80	12.00	0.95	15	45	4	12.49	12.92	13.39	13.89	15.00
4NCH 100 R010 1600	1.0 X R0.1	0.80	16.00	0.95	15	50	4	16.63	17.20	17.82	18.48	19.98
4NCH 100 R020 400	1.0 X R0.2	0.80	4.00	0.95	15	45	4	4.22	4.36	4.51	4.67	5.03
4NCH 100 R020 500	1.0 X R0.2	0.80	5.00	0.95	15	45	4	5.25	5.43	5.62	5.82	6.28
4NCH 100 R020 600	1.0 X R0.2	0.80	6.00	0.95	15	45	4	6.29	6.50	6.73	6.97	7.52
4NCH 100 R020 800	1.0 X R0.2	0.80	8.00	0.95	15	45	4	8.35	8.64	8.94	9.27	10.01
4NCH 100 R020 1000	1.0 X R0.2	0.80	10.00	0.95	15	45	4	10.42	10.78	11.16	11.57	12.49
4NCH 100 R020 1200	1.0 X R0.2	0.80	12.00	0.95	15	45	4	12.49	12.92	13.38	13.87	14.98
4NCH 100 R020 1600	1.0 X R0.2	0.80	16.00	0.95	15	50	4	16.62	17.20	17.81	18.47	19.95

4NCH 4F Necked Corner Radius for Super Hardened Steels

4날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NCH 100 R030 400	1.0 X R0.3	0.80	4.00	0.95	15	45	4	4.22	4.35	4.50	4.66	5.01
4NCH 100 R030 500	1.0 X R0.3	0.80	5.00	0.95	15	45	4	5.25	5.42	5.61	5.81	6.25
4NCH 100 R030 600	1.0 X R0.3	0.80	6.00	0.95	15	45	4	6.28	6.49	6.72	6.96	7.50
4NCH 100 R030 800	1.0 X R0.3	0.80	8.00	0.95	15	45	4	8.35	8.63	8.93	9.26	9.98
4NCH 100 R030 1000	1.0 X R0.3	0.80	10.00	0.95	15	45	4	10.42	10.77	11.15	11.56	12.47
4NCH 100 R030 1200	1.0 X R0.3	0.80	12.00	0.95	15	45	4	12.49	12.91	13.37	13.86	14.96
4NCH 100 R030 1600	1.0 X R0.3	0.80	16.00	0.95	15	50	4	16.62	17.19	17.80	18.46	19.93
4NCH 120 R010 400	1.2 X R0.1	1.00	4.00	1.14	15	45	4	4.24	4.39	4.54	4.71	5.08
4NCH 120 R010 600	1.2 X R0.1	1.00	6.00	1.14	15	45	4	6.31	6.53	6.76	7.01	7.57
4NCH 120 R010 800	1.2 X R0.1	1.00	8.00	1.14	15	45	4	8.38	8.67	8.97	9.31	10.06
4NCH 120 R010 1200	1.2 X R0.1	1.00	12.00	1.14	15	45	4	12.51	12.94	13.41	13.91	15.03
4NCH 120 R020 400	1.2 X R0.2	1.00	4.00	1.14	15	45	4	4.24	4.38	4.53	4.69	5.06
4NCH 120 R020 600	1.2 X R0.2	1.00	6.00	1.14	15	45	4	6.31	6.52	6.75	6.99	7.54
4NCH 120 R020 800	1.2 X R0.2	1.00	8.00	1.14	15	45	4	8.37	8.66	8.96	9.29	10.03
4NCH 120 R020 1200	1.2 X R0.2	1.00	12.00	1.14	15	45	4	12.51	12.94	13.40	13.89	15.00
4NCH 120 R030 400	1.2 X R0.3	1.00	4.00	1.14	15	45	4	4.24	4.37	4.52	4.68	5.03
4NCH 120 R030 600	1.2 X R0.3	1.00	6.00	1.14	15	45	4	6.30	6.51	6.74	6.98	7.52
4NCH 120 R030 800	1.2 X R0.3	1.00	8.00	1.14	15	45	4	8.37	8.65	8.95	9.28	10.01
4NCH 120 R030 1200	1.2 X R0.3	1.00	12.00	1.14	15	45	4	12.50	12.93	13.39	13.88	14.98
4NCH 150 R010 600	1.5 X R0.1	1.35	6.00	1.44	15	45	4	6.31	6.53	6.76	7.01	7.57
4NCH 150 R010 800	1.5 X R0.1	1.35	8.00	1.44	15	45	4	8.38	8.67	8.97	9.31	10.06
4NCH 150 R010 1200	1.5 X R0.1	1.35	12.00	1.44	15	45	4	12.51	12.94	13.41	13.91	15.03
4NCH 150 R010 1600	1.5 X R0.1	1.35	16.00	1.44	15	50	4	16.65	17.22	17.84	18.51	20.00
4NCH 150 R010 2000	1.5 X R0.1	1.35	20.00	1.44	15	50	4	20.78	21.50	22.27	23.11	free
4NCH 150 R020 600	1.5 X R0.2	1.35	6.00	1.44	15	45	4	6.31	6.52	6.75	6.99	7.54
4NCH 150 R020 800	1.5 X R0.2	1.35	8.00	1.44	15	45	4	8.37	8.66	8.96	9.29	10.03
4NCH 150 R020 1200	1.5 X R0.2	1.35	12.00	1.44	15	45	4	12.51	12.94	13.40	13.89	15.00
4NCH 150 R020 1600	1.5 X R0.2	1.35	16.00	1.44	15	50	4	16.64	17.22	17.83	18.49	19.98
4NCH 150 R020 2000	1.5 X R0.2	1.35	20.00	1.44	15	50	4	20.78	21.49	22.26	23.09	free
4NCH 150 R030 600	1.5 X R0.3	1.35	6.00	1.44	15	45	4	6.30	6.51	6.74	6.98	7.52
4NCH 150 R030 800	1.5 X R0.3	1.35	8.00	1.44	15	45	4	8.37	8.65	8.95	9.28	10.01
4NCH 150 R030 1200	1.5 X R0.3	1.35	12.00	1.44	15	45	4	12.50	12.93	13.39	13.88	14.98
4NCH 150 R030 1600	1.5 X R0.3	1.35	16.00	1.44	15	50	4	16.64	17.21	17.82	18.48	19.95
4NCH 150 R030 2000	1.5 X R0.3	1.35	20.00	1.44	15	50	4	20.77	21.49	22.25	23.08	free
4NCH 150 R050 600	1.5 X R0.5	1.35	6.00	1.44	15	45	4	6.30	6.50	6.71	6.95	7.47
4NCH 150 R050 800	1.5 X R0.5	1.35	8.00	1.44	15	45	4	8.36	8.64	8.93	9.25	9.96
4NCH 150 R050 1200	1.5 X R0.5	1.35	12.00	1.44	15	45	4	12.50	12.92	13.36	13.85	14.93
4NCH 150 R050 1600	1.5 X R0.5	1.35	16.00	1.44	15	50	4	16.63	17.19	17.80	18.45	19.90
4NCH 150 R050 2000	1.5 X R0.5	1.35	20.00	1.44	15	50	4	20.77	21.47	22.23	23.05	free
4NCH 200 R010 600	2.0 X R0.1	1.70	6.00	1.92	15	45	4	6.35	6.57	6.80	7.05	7.62
4NCH 200 R010 800	2.0 X R0.1	1.70	8.00	1.92	15	45	4	8.42	8.71	9.02	9.35	10.10
4NCH 200 R010 1000	2.0 X R0.1	1.70	10.00	1.92	15	45	4	10.48	10.84	11.23	11.65	12.59
4NCH 200 R010 1200	2.0 X R0.1	1.70	12.00	1.92	15	45	4	12.55	12.98	13.45	13.95	15.07
4NCH 200 R010 1600	2.0 X R0.1	1.70	16.00	1.92	15	50	4	16.68	17.26	17.88	18.55	free
4NCH 200 R010 2000	2.0 X R0.1	1.70	20.00	1.92	15	50	4	20.82	21.54	22.32	23.15	free
4NCH 200 R010 2500	2.0 X R0.1	1.70	25.00	1.92	15	60	4	25.99	26.89	27.86	free	free
4NCH 200 R020 600	2.0 X R0.2	1.70	6.00	1.92	15	45	4	6.34	6.56	6.79	7.04	7.59

4NCH 4F Necked Corner Radius for Super Hardened Steels
4날 코너 R 리브-초고경도용
(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NCH 200 R020 800	2.0 X R0.2	1.70	8.00	1.92	15	45	4	8.41	8.70	9.01	9.34	10.08
4NCH 200 R020 1000	2.0 X R0.2	1.70	10.00	1.92	15	45	4	10.48	10.84	11.22	11.64	12.56
4NCH 200 R020 1200	2.0 X R0.2	1.70	12.00	1.92	15	45	4	12.55	12.98	13.44	13.93	15.05
4NCH 200 R020 1600	2.0 X R0.2	1.70	16.00	1.92	15	50	4	16.68	17.26	17.87	18.53	free
4NCH 200 R020 2000	2.0 X R0.2	1.70	20.00	1.92	15	50	4	20.82	21.53	22.31	23.13	free
4NCH 200 R020 2500	2.0 X R0.2	1.70	25.00	1.92	15	60	4	25.98	26.88	27.85	28.88	free
4NCH 200 R030 600	2.0 X R0.3	1.70	6.00	1.92	15	45	4	6.34	6.55	6.78	7.02	7.57
4NCH 200 R030 800	2.0 X R0.3	1.70	8.00	1.92	15	45	4	8.41	8.69	8.99	9.32	10.05
4NCH 200 R030 1000	2.0 X R0.3	1.70	10.00	1.92	15	45	4	10.48	10.83	11.21	11.62	12.54
4NCH 200 R030 1200	2.0 X R0.3	1.70	12.00	1.92	15	45	4	12.54	12.97	13.43	13.92	15.03
4NCH 200 R030 1600	2.0 X R0.3	1.70	16.00	1.92	15	50	4	16.68	17.25	17.86	18.52	free
4NCH 200 R030 2000	2.0 X R0.3	1.70	20.00	1.92	15	50	4	20.81	21.53	22.29	23.12	free
4NCH 200 R030 2500	2.0 X R0.3	1.70	25.00	1.92	15	60	4	25.98	26.88	27.84	28.87	free
4NCH 200 R050 600	2.0 X R0.5	1.70	6.00	1.92	15	45	4	6.33	6.54	6.76	6.99	7.52
4NCH 200 R050 800	2.0 X R0.5	1.70	8.00	1.92	15	45	4	8.40	8.68	8.97	9.29	10.00
4NCH 200 R050 1000	2.0 X R0.5	1.70	10.00	1.92	15	45	4	10.47	10.82	11.19	11.59	12.49
4NCH 200 R050 1200	2.0 X R0.5	1.70	12.00	1.92	15	45	4	12.54	12.96	13.41	13.89	14.98
4NCH 200 R050 1600	2.0 X R0.5	1.70	16.00	1.92	15	50	4	16.67	17.23	17.84	18.49	free
4NCH 200 R050 2000	2.0 X R0.5	1.70	20.00	1.92	15	50	4	20.81	21.51	22.27	23.09	free
4NCH 200 R050 2500	2.0 X R0.5	1.70	25.00	1.92	15	60	4	25.97	26.86	27.81	28.84	free
4NCH 250 R010 1000	2.5 X R0.1	2.00	10.00	2.39	15	45	4	10.54	10.90	11.29	11.71	12.66
4NCH 250 R010 1600	2.5 X R0.1	2.00	16.00	2.39	15	50	4	16.74	17.32	17.94	18.61	free
4NCH 250 R010 2500	2.5 X R0.1	2.00	25.00	2.39	15	60	4	26.05	26.95	27.92	free	free
4NCH 250 R020 1000	2.5 X R0.2	2.00	10.00	2.39	15	45	4	10.54	10.90	11.28	11.70	12.63
4NCH 250 R020 1600	2.5 X R0.2	2.00	16.00	2.39	15	50	4	16.74	17.32	17.93	18.60	free
4NCH 250 R020 2500	2.5 X R0.2	2.00	25.00	2.39	15	60	4	26.04	26.94	27.91	free	free
4NCH 250 R030 1000	2.5 X R0.3	2.00	10.00	2.39	15	45	4	10.53	10.89	11.27	11.68	12.61
4NCH 250 R030 1600	2.5 X R0.3	2.00	16.00	2.39	15	50	4	16.74	17.31	17.92	18.58	free
4NCH 250 R030 2500	2.5 X R0.3	2.00	25.00	2.39	15	60	4	26.04	26.94	27.90	free	free
4NCH 250 R050 1000	2.5 X R0.5	2.00	10.00	2.39	15	45	4	10.53	10.88	11.25	11.65	12.56
4NCH 250 R050 1600	2.5 X R0.5	2.00	16.00	2.39	15	50	4	16.73	17.29	17.90	18.55	free
4NCH 250 R050 2500	2.5 X R0.5	2.00	25.00	2.39	15	60	4	26.03	26.92	27.88	free	free
4NCH 300 R010 1000	3.0 X R0.1	2.50	10.00	2.86	15	50	6	10.60	10.96	11.36	11.78	12.73
4NCH 300 R010 1200	3.0 X R0.1	2.50	12.00	2.86	15	50	6	12.67	13.10	13.57	14.08	15.21
4NCH 300 R010 1600	3.0 X R0.1	2.50	16.00	2.86	15	60	6	16.80	17.38	18.01	18.68	20.19
4NCH 300 R010 2000	3.0 X R0.1	2.50	20.00	2.86	15	60	6	20.93	21.66	22.44	23.28	25.16
4NCH 300 R010 2500	3.0 X R0.1	2.50	25.00	2.86	15	60	6	26.10	27.01	27.98	29.03	free
4NCH 300 R010 3000	3.0 X R0.1	2.50	30.00	2.86	15	70	6	31.27	32.36	33.52	34.78	free
4NCH 300 R010 3500	3.0 X R0.1	2.50	35.00	2.86	15	70	6	36.44	37.71	39.06	40.53	free
4NCH 300 R020 1000	3.0 X R0.2	2.50	10.00	2.86	15	50	6	10.59	10.96	11.35	11.76	12.70
4NCH 300 R020 1200	3.0 X R0.2	2.50	12.00	2.86	15	50	6	12.66	13.10	13.56	14.06	15.19
4NCH 300 R020 1600	3.0 X R0.2	2.50	16.00	2.86	15	60	6	16.80	17.38	18.00	18.66	20.16
4NCH 300 R020 2000	3.0 X R0.2	2.50	20.00	2.86	15	60	6	20.93	21.65	22.43	23.26	25.13
4NCH 300 R020 2500	3.0 X R0.2	2.50	25.00	2.86	15	60	6	26.10	27.00	27.97	29.01	free
4NCH 300 R020 3000	3.0 X R0.2	2.50	30.00	2.86	15	70	6	31.27	32.35	33.51	34.76	free
4NCH 300 R020 3500	3.0 X R0.2	2.50	35.00	2.86	15	70	6	36.44	37.70	39.05	40.51	free
4NCH 300 R030 1000	3.0 X R0.3	2.50	10.00	2.86	15	50	6	10.59	10.95	11.34	11.75	12.68

4NCH 4F Necked Corner Radius for Super Hardened Steels
4날 코너 R 리브-초고경도용

(Unit: mm)

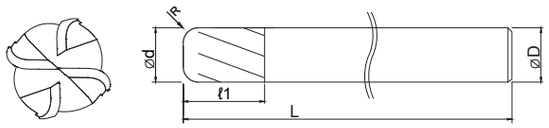
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NCH 300 R030 1200	3.0 X R0.3	2.50	12.00	2.86	15	50	6	12.66	13.09	13.55	14.05	15.16
4NCH 300 R030 1600	3.0 X R0.3	2.50	16.00	2.86	15	60	6	16.79	17.37	17.99	18.65	20.14
4NCH 300 R030 2000	3.0 X R0.3	2.50	20.00	2.86	15	60	6	20.93	21.65	22.42	23.25	25.11
4NCH 300 R030 2500	3.0 X R0.3	2.50	25.00	2.86	15	60	6	26.10	27.00	27.96	29.00	free
4NCH 300 R030 3000	3.0 X R0.3	2.50	30.00	2.86	15	70	6	31.26	32.34	33.50	34.75	free
4NCH 300 R030 3500	3.0 X R0.3	2.50	35.00	2.86	15	70	6	36.43	37.69	39.04	40.50	free
4NCH 300 R050 1000	3.0 X R0.5	2.50	10.00	2.86	15	50	6	10.58	10.94	11.31	11.72	12.63
4NCH 300 R050 1200	3.0 X R0.5	2.50	12.00	2.86	15	50	6	12.65	13.08	13.53	14.02	15.12
4NCH 300 R050 1600	3.0 X R0.5	2.50	16.00	2.86	15	60	6	16.79	17.35	17.96	18.62	20.09
4NCH 300 R050 2000	3.0 X R0.5	2.50	20.00	2.86	15	60	6	20.92	21.63	22.40	23.22	25.06
4NCH 300 R050 2500	3.0 X R0.5	2.50	25.00	2.86	15	60	6	26.09	26.98	27.94	28.97	free
4NCH 300 R050 3000	3.0 X R0.5	2.50	30.00	2.86	15	70	6	31.26	32.33	33.48	34.72	free
4NCH 300 R050 3500	3.0 X R0.5	2.50	35.00	2.86	15	70	6	36.43	37.68	39.02	40.47	free
4NCH 300 R100 1000	3.0 X R1.0	2.50	10.00	2.86	15	50	6	10.57	10.90	11.26	11.64	12.51
4NCH 300 R100 1200	3.0 X R1.0	2.50	12.00	2.86	15	50	6	12.64	13.04	13.48	13.94	14.99
4NCH 300 R100 1600	3.0 X R1.0	2.50	16.00	2.86	15	60	6	16.77	17.32	17.91	18.54	19.97
4NCH 300 R100 2000	3.0 X R1.0	2.50	20.00	2.86	15	60	6	20.90	21.60	22.34	23.14	24.94
4NCH 300 R100 2500	3.0 X R1.0	2.50	25.00	2.86	15	60	6	26.07	26.95	27.88	28.89	free
4NCH 300 R100 3000	3.0 X R1.0	2.50	30.00	2.86	15	70	6	31.24	32.30	33.43	34.64	free
4NCH 300 R100 3500	3.0 X R1.0	2.50	35.00	2.86	15	70	6	36.41	37.64	38.97	40.39	free
4NCH 400 R010 1200	4.0 X R0.1	4.00	12.00	3.80	15	50	6	12.78	13.22	13.70	14.21	15.35
4NCH 400 R010 1600	4.0 X R0.1	4.00	16.00	3.80	15	60	6	16.92	17.50	18.13	18.81	free
4NCH 400 R010 2000	4.0 X R0.1	4.00	20.00	3.80	15	60	6	21.05	21.78	22.56	23.41	free
4NCH 400 R010 2500	4.0 X R0.1	4.00	25.00	3.80	15	60	6	26.22	27.13	28.11	free	free
4NCH 400 R010 3000	4.0 X R0.1	4.00	30.00	3.80	15	70	6	31.39	32.48	33.65	free	free
4NCH 400 R010 3500	4.0 X R0.1	4.00	35.00	3.80	15	70	6	36.56	37.83	free	free	free
4NCH 400 R010 4000	4.0 X R0.1	4.00	40.00	3.80	15	80	6	41.72	43.17	free	free	free
4NCH 400 R020 1200	4.0 X R0.2	4.00	12.00	3.80	15	50	6	12.78	13.22	13.69	14.19	15.33
4NCH 400 R020 1600	4.0 X R0.2	4.00	16.00	3.80	15	60	6	16.91	17.50	18.12	18.79	free
4NCH 400 R020 2000	4.0 X R0.2	4.00	20.00	3.80	15	60	6	21.05	21.77	22.55	23.39	free
4NCH 400 R020 2500	4.0 X R0.2	4.00	25.00	3.80	15	60	6	26.22	27.12	28.09	free	free
4NCH 400 R020 3000	4.0 X R0.2	4.00	30.00	3.80	15	70	6	31.38	32.47	33.64	free	free
4NCH 400 R020 3500	4.0 X R0.2	4.00	35.00	3.80	15	70	6	36.55	37.82	free	free	free
4NCH 400 R020 4000	4.0 X R0.2	4.00	40.00	3.80	15	80	6	41.72	43.17	free	free	free
4NCH 400 R030 1200	4.0 X R0.3	4.00	12.00	3.80	15	50	6	12.77	13.21	13.68	14.18	15.30
4NCH 400 R030 1600	4.0 X R0.3	4.00	16.00	3.80	15	60	6	16.91	17.49	18.11	18.78	free
4NCH 400 R030 2000	4.0 X R0.3	4.00	20.00	3.80	15	60	6	21.04	21.77	22.54	23.38	free
4NCH 400 R030 2500	4.0 X R0.3	4.00	25.00	3.80	15	60	6	26.21	27.12	28.08	free	free
4NCH 400 R030 3000	4.0 X R0.3	4.00	30.00	3.80	15	70	6	31.38	32.46	33.63	free	free
4NCH 400 R030 3500	4.0 X R0.3	4.00	35.00	3.80	15	70	6	36.55	37.81	free	free	free
4NCH 400 R030 4000	4.0 X R0.3	4.00	40.00	3.80	15	80	6	41.72	43.16	free	free	free
4NCH 400 R050 1200	4.0 X R0.5	4.00	12.00	3.80	12	50	6	12.77	13.20	13.65	14.15	15.26
4NCH 400 R050 1600	4.0 X R0.5	4.00	16.00	3.80	16	60	6	16.90	17.47	18.09	18.75	free
4NCH 400 R050 2000	4.0 X R0.5	4.00	20.00	3.80	20	60	6	21.04	21.75	22.52	23.35	free
4NCH 400 R050 2500	4.0 X R0.5	4.00	25.00	3.80	25	60	6	26.21	27.10	28.06	29.10	free
4NCH 400 R050 3000	4.0 X R0.5	4.00	30.00	3.80	15	70	6	31.37	32.45	33.60	free	free
4NCH 400 R050 3500	4.0 X R0.5	4.00	35.00	3.80	15	70	6	36.54	37.80	free	free	free

4NCH 4F Necked Corner Radius for Super Hardened Steels
4날 코너 R 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NCH 400 R050 4000	4.0 X R0.5	4.00	40.00	3.80	15	80	6	41.71	43.15	free	free	free
4NCH 400 R100 1200	4.0 X R1.0	4.00	12.00	3.80	15	50	6	12.75	13.16	13.60	14.07	15.13
4NCH 400 R100 1600	4.0 X R1.0	4.00	16.00	3.80	15	60	6	16.89	17.44	18.03	18.67	free
4NCH 400 R100 2000	4.0 X R1.0	4.00	20.00	3.80	15	60	6	21.02	21.72	22.47	23.27	free
4NCH 400 R100 2500	4.0 X R1.0	4.00	25.00	3.80	15	60	6	26.19	27.07	28.01	29.02	free
4NCH 400 R100 3000	4.0 X R1.0	4.00	30.00	3.80	15	70	6	31.36	32.42	33.55	free	free
4NCH 400 R100 3500	4.0 X R1.0	4.00	35.00	3.80	15	70	6	36.53	37.76	39.09	free	free
4NCH 400 R100 4000	4.0 X R1.0	4.00	40.00	3.80	15	80	6	41.69	43.11	free	free	free
4NCH 500 R010 2000	5.0 X R0.1	5.00	20.00	4.75	15	60	6	21.15	21.88	free	free	free
4NCH 500 R010 4000	5.0 X R0.1	5.00	40.00	4.75	15	80	6	41.82	free	free	free	free
4NCH 500 R020 2000	5.0 X R0.2	5.00	20.00	4.75	15	60	6	21.14	21.87	free	free	free
4NCH 500 R020 4000	5.0 X R0.2	5.00	40.00	4.75	15	80	6	41.82	free	free	free	free
4NCH 500 R030 2000	5.0 X R0.3	5.00	20.00	4.75	15	60	6	21.14	21.87	free	free	free
4NCH 500 R030 4000	5.0 X R0.3	5.00	40.00	4.75	15	80	6	41.81	free	free	free	free
4NCH 500 R050 2000	5.0 X R0.5	5.00	20.00	4.75	15	60	6	21.13	21.85	free	free	free
4NCH 500 R050 4000	5.0 X R0.5	5.00	40.00	4.75	15	80	6	41.81	free	free	free	free
4NCH 500 R100 2000	5.0 X R1.0	5.00	20.00	4.75	15	60	6	21.12	21.82	free	free	free
4NCH 500 R100 4000	5.0 X R1.0	5.00	40.00	4.75	15	80	6	41.79	free	free	free	free
4NCH 600 R010 2000	6.0 X R0.1	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NCH 600 R010 4000	6.0 X R0.1	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NCH 600 R020 2000	6.0 X R0.2	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NCH 600 R020 4000	6.0 X R0.2	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NCH 600 R030 2000	6.0 X R0.3	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NCH 600 R030 4000	6.0 X R0.3	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NCH 600 R050 2000	6.0 X R0.5	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NCH 600 R050 4000	6.0 X R0.5	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NCH 600 R100 2000	6.0 X R1.0	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NCH 600 R100 4000	6.0 X R1.0	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NCH 800 R030 2500	8.0 X R0.3	9.00	25.00	7.60	–	65	8	free	free	free	free	free
4NCH 800 R050 2500	8.0 X R0.5	9.00	25.00	7.60	–	65	8	free	free	free	free	free
4NCH 800 R100 2500	8.0 X R1.0	9.00	25.00	7.60	–	65	8	free	free	free	free	free
4NCH 800 R150 2500	8.0 X R1.5	9.00	25.00	7.60	–	65	8	free	free	free	free	free
4NCH 1000 R050 2500	10.0 X R0.5	11.00	25.00	9.50	–	70	10	free	free	free	free	free
4NCH 1000 R100 2500	10.0 X R1.0	11.00	25.00	9.50	–	70	10	free	free	free	free	free
4NCH 1000 R150 2500	10.0 X R1.5	11.00	25.00	9.50	–	70	10	free	free	free	free	free
4NCH 1000 R200 2500	10.0 X R2.0	11.00	25.00	9.50	–	70	10	free	free	free	free	free
4NCH 1200 R050 3000	12.0 X R0.5	12.00	30.00	11.50	–	80	12	free	free	free	free	free
4NCH 1200 R100 3000	12.0 X R1.0	12.00	30.00	11.50	–	80	12	free	free	free	free	free
4NCH 1200 R150 3000	12.0 X R1.5	12.00	30.00	11.50	–	80	12	free	free	free	free	free
4NCH 1200 R200 3000	12.0 X R2.0	12.00	30.00	11.50	–	80	12	free	free	free	free	free

4CLH 4F Corner Radius Long for Super Hardened Steels
4날 코너 R 롱-초고경도용



Features

- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

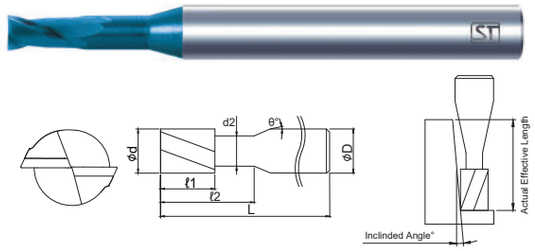
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d x CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CLH 150 R020 45	1.5 X R0.2	4	45	4	
4CLH 150 R030 45	1.5 X R0.3	4	45	4	
4CLH 200 R020 45	2.0 X R0.2	6	45	4	
4CLH 200 R030 45	2.0 X R0.3	6	45	4	
4CLH 200 R050 45	2.0 X R0.5	6	45	4	
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 S4 60	4.0 X R0.5	11	60	4	
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 500 R050 60	5.0 X R0.5	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 R050 100	6.0 X R0.5	15	100	6	
4CLH 600 R100 70	6.0 X R1.0	15	70	6	
4CLH 600 R150 70	6.0 X R1.5	15	70	6	
4CLH 800 R020 80	8.0 X R0.2	19	80	8	
4CLH 800 R030 80	8.0 X R0.3	19	80	8	

4CLH 4F Corner Radius Long for Super Hardened Steels
4날 코너 R 롱-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d x CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CLH 800 R050 60	8.0 X R0.5	19	60	8	
4CLH 800 R050 80	8.0 X R0.5	19	80	8	
4CLH 800 R050 100	8.0 X R0.5	19	100	8	
4CLH 800 R100 60	8.0 X R1.0	19	60	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 R050 100	10.0 X R0.5	22	100	10	
4CLH 1000 R100 80	10.0 X R1.0	22	80	10	
4CLH 1000 R150 80	10.0 X R1.5	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	
4CLH 1200 R200 80	12.0 X R2.0	26	80	12	

2NSH 2F Necked Square End for Super Hardened Steel
2날 평 리브–초고경도용



Features
- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징
- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30´	1°	1°30´	2°	3°
2NSH 010 030	0.1	0.10	0.30	0.085	15	45	4	0.33	0.35	0.36	0.37	0.40
2NSH 010 050	0.1	0.10	0.50	0.085	15	45	4	0.54	0.56	0.58	0.60	0.65
2NSH 010 100	0.1	0.10	1.00	0.085	15	45	4	1.06	1.09	1.13	1.18	1.27
2NSH 015 030	0.15	0.15	0.30	0.13	15	45	4	0.34	0.36	0.37	0.38	0.41
2NSH 015 050	0.15	0.15	0.50	0.13	15	45	4	0.55	0.57	0.59	0.61	0.66
2NSH 015 100	0.15	0.15	1.00	0.13	15	45	4	1.07	1.10	1.14	1.19	1.28
2NSH 020 050	0.2	0.20	0.50	0.18	15	45	4	0.55	0.57	0.59	0.61	0.66
2NSH 020 100	0.2	0.20	1.00	0.18	15	45	4	1.07	1.10	1.14	1.19	1.28
2NSH 020 150	0.2	0.20	1.50	0.18	15	45	4	1.58	1.64	1.70	1.76	1.91
2NSH 020 200	0.2	0.20	2.00	0.18	15	45	4	2.10	2.17	2.25	2.34	2.53
2NSH 020 300	0.2	0.20	3.00	0.18	15	45	4	3.13	3.24	3.36	3.49	3.77
2NSH 020 400	0.2	0.20	4.00	0.18	15	45	4	4.17	4.31	4.47	4.64	5.01
2NSH 030 100	0.3	0.30	1.00	0.28	15	45	4	1.07	1.10	1.14	1.19	1.28
2NSH 030 150	0.3	0.30	1.50	0.28	15	45	4	1.58	1.64	1.70	1.76	1.91
2NSH 030 200	0.3	0.30	2.00	0.28	15	45	4	2.10	2.17	2.25	2.34	2.53
2NSH 030 300	0.3	0.30	3.00	0.28	15	45	4	3.13	3.24	3.36	3.49	3.77
2NSH 030 400	0.3	0.30	4.00	0.28	15	45	4	4.17	4.31	4.47	4.64	5.01
2NSH 030 600	0.3	0.30	6.00	0.28	15	45	4	6.24	6.45	6.69	6.94	7.50
2NSH 030 800	0.3	0.30	8.00	0.28	15	45	4	8.30	8.59	8.90	9.24	9.99
2NSH 040 100	0.4	0.40	1.00	0.37	15	45	4	1.09	1.12	1.17	1.21	1.31

2NSH 2F Necked Square End for Super Hardened Steel
2날 평 리브–초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30´	1°	1°30´	2°	3°
2NSH 040 150	0.4	0.40	1.50	0.37	15	45	4	1.60	1.66	1.72	1.78	1.93
2NSH 040 200	0.4	0.40	2.00	0.37	15	45	4	2.12	2.19	2.27	2.36	2.55
2NSH 040 250	0.4	0.40	2.50	0.37	15	45	4	2.64	2.73	2.83	2.93	3.17
2NSH 040 300	0.4	0.40	3.00	0.37	15	45	4	3.15	3.26	3.38	3.51	3.79
2NSH 040 350	0.4	0.40	3.50	0.37	15	45	4	3.67	3.80	3.94	4.08	4.42
2NSH 040 400	0.4	0.40	4.00	0.37	15	45	4	4.19	4.33	4.49	4.66	5.04
2NSH 040 500	0.4	0.40	5.00	0.37	15	45	4	5.22	5.40	5.60	5.81	6.28
2NSH 040 600	0.4	0.40	6.00	0.37	15	45	4	6.25	6.47	6.71	6.96	7.52
2NSH 040 800	0.4	0.40	8.00	0.37	15	45	4	8.32	8.61	8.92	9.26	10.01
2NSH 040 1000	0.4	0.40	10.00	0.37	15	45	4	10.39	10.75	11.14	11.56	12.50
2NSH 040 1200	0.4	0.40	12.00	0.37	15	45	4	12.46	12.89	13.36	13.86	14.98
2NSH 050 100	0.5	0.50	1.00	0.47	15	45	4	1.09	1.12	1.17	1.21	1.31
2NSH 050 150	0.5	0.50	1.50	0.47	15	45	4	1.60	1.66	1.72	1.78	1.93
2NSH 050 200	0.5	0.50	2.00	0.47	15	45	4	2.12	2.19	2.27	2.36	2.55
2NSH 050 250	0.5	0.50	2.50	0.47	15	45	4	2.64	2.73	2.83	2.93	3.17
2NSH 050 300	0.5	0.50	3.00	0.47	15	45	4	3.15	3.26	3.38	3.51	3.79
2NSH 050 350	0.5	0.50	3.50	0.47	15	45	4	3.67	3.80	3.94	4.08	4.42
2NSH 050 400	0.5	0.50	4.00	0.47	15	45	4	4.19	4.33	4.49	4.66	5.04
2NSH 050 500	0.5	0.50	5.00	0.47	15	45	4	5.22	5.40	5.60	5.81	6.28
2NSH 050 600	0.5	0.50	6.00	0.47	15	45	4	6.25	6.47	6.71	6.96	7.52
2NSH 050 800	0.5	0.50	8.00	0.47	15	45	4	8.32	8.61	8.92	9.26	10.01
2NSH 050 1000	0.5	0.50	10.00	0.47	15	45	4	10.39	10.75	11.14	11.56	12.50
2NSH 050 1200	0.5	0.50	12.00	0.47	15	45	4	12.46	12.89	13.36	13.86	14.98
2NSH 060 150	0.6	0.60	1.50	0.57	15	45	4	1.60	1.66	1.72	1.78	1.93
2NSH 060 200	0.6	0.60	2.00	0.57	15	45	4	2.12	2.19	2.27	2.36	2.55
2NSH 060 300	0.6	0.60	3.00	0.57	15	45	4	3.15	3.26	3.38	3.51	3.79
2NSH 060 400	0.6	0.60	4.00	0.57	15	45	4	4.19	4.33	4.49	4.66	5.04
2NSH 060 500	0.6	0.60	5.00	0.57	15	45	4	5.22	5.40	5.60	5.81	6.28
2NSH 060 600	0.6	0.60	6.00	0.57	15	45	4	6.25	6.47	6.71	6.96	7.52
2NSH 060 800	0.6	0.60	8.00	0.57	15	45	4	8.32	8.61	8.92	9.26	10.01
2NSH 060 1000	0.6	0.60	10.00	0.57	15	45	4	10.39	10.75	11.14	11.56	12.50
2NSH 060 1200	0.6	0.60	12.00	0.57	15	45	4	12.46	12.89	13.36	13.86	14.98
2NSH 060 1600	0.6	0.60	16.00	0.57	15	50	4	16.59	17.17	17.79	18.46	19.95
2NSH 070 200	0.7	0.70	2.00	0.66	15	45	4	2.14	2.21	2.29	2.38	2.57
2NSH 070 300	0.7	0.70	3.00	0.66	15	45	4	3.17	3.28	3.40	3.53	3.82
2NSH 070 400	0.7	0.70	4.00	0.66	15	45	4	4.21	4.35	4.51	4.68	5.06
2NSH 070 600	0.7	0.70	6.00	0.66	15	45	4	6.27	6.49	6.73	6.98	7.55
2NSH 070 800	0.7	0.70	8.00	0.66	15	45	4	8.34	8.63	8.94	9.28	10.03
2NSH 070 1000	0.7	0.70	10.00	0.66	15	45	4	10.41	10.77	11.16	11.58	12.52
2NSH 080 200	0.8	0.80	2.00	0.77	15	45	4	2.12	2.19	2.27	2.36	2.55
2NSH 080 300	0.8	0.80	3.00	0.77	15	45	4	3.15	3.26	3.38	3.51	3.79
2NSH 080 400	0.8	0.80	4.00	0.77	15	45	4	4.19	4.33	4.49	4.66	5.04
2NSH 080 500	0.8	0.80	5.00	0.77	15	45	4	5.22	5.40	5.60	5.81	6.28
2NSH 080 600	0.8	0.80	6.00	0.77	15	45	4	6.25	6.47	6.71	6.96	7.52
2NSH 080 800	0.8	0.80	8.00	0.77	15	45	4	8.32	8.61	8.92	9.26	10.01
2NSH 080 1000	0.8	0.80	10.00	0.77	15	45	4	10.39	10.75	11.14	11.56	12.50

2NSH 2F Necked Square End for Super Hardened Steel
2날 평 리브-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NSH 080 1200	0.8	0.80	12.00	0.77	15	45	4	12.46	12.89	13.36	13.86	14.98
2NSH 080 1600	0.8	0.80	16.00	0.77	15	50	4	16.59	17.17	17.79	18.46	19.95
2NSH 080 2000	0.8	0.80	20.00	0.77	15	50	4	20.73	21.45	22.22	23.06	24.93
2NSH 080 2500	0.8	0.80	25.00	0.77	15	60	4	25.89	26.80	27.76	28.81	free
2NSH 090 200	0.9	0.90	2.00	0.85	15	45	4	2.16	2.23	2.32	2.40	2.60
2NSH 090 400	0.9	0.90	4.00	0.85	15	45	4	4.23	4.37	4.53	4.70	5.08
2NSH 090 600	0.9	0.90	6.00	0.85	15	45	4	6.29	6.51	6.75	7.00	7.57
2NSH 090 800	0.9	0.90	8.00	0.85	15	45	4	8.36	8.65	8.96	9.30	10.06
2NSH 090 1000	0.9	0.90	10.00	0.85	15	45	4	10.43	10.79	11.18	11.60	12.54
2NSH 100 200	1.0	1.00	2.00	0.95	15	45	4	2.16	2.23	2.32	2.40	2.60
2NSH 100 300	1.0	1.00	3.00	0.95	15	45	4	3.19	3.30	3.42	3.55	3.84
2NSH 100 400	1.0	1.00	4.00	0.95	15	45	4	4.23	4.37	4.53	4.70	5.08
2NSH 100 500	1.0	1.00	5.00	0.95	15	45	4	5.26	5.44	5.64	5.85	6.33
2NSH 100 600	1.0	1.00	6.00	0.95	15	45	4	6.29	6.51	6.75	7.00	7.57
2NSH 100 800	1.0	1.00	8.00	0.95	15	45	4	8.36	8.65	8.96	9.30	10.06
2NSH 100 1000	1.0	1.00	10.00	0.95	15	45	4	10.43	10.79	11.18	11.60	12.54
2NSH 100 1200	1.0	1.00	12.00	0.95	15	45	4	12.50	12.93	13.40	13.90	15.03
2NSH 100 1400	1.0	1.00	14.00	0.95	15	45	4	14.56	15.07	15.61	16.20	17.52
2NSH 100 1600	1.0	1.00	16.00	0.95	15	50	4	16.63	17.21	17.83	18.50	20.00
2NSH 100 1800	1.0	1.00	18.00	0.95	15	50	4	18.70	19.35	20.05	20.80	22.49
2NSH 100 2000	1.0	1.00	20.00	0.95	15	50	4	20.76	21.49	22.26	23.10	24.97
2NSH 100 2500	1.0	1.00	25.00	0.95	15	60	4	25.93	26.84	27.81	28.85	free
2NSH 100 3000	1.0	1.00	30.00	0.95	15	70	4	31.10	32.19	33.35	34.60	free
2NSH 120 400	1.2	1.20	4.00	1.14	15	45	4	4.25	4.39	4.55	4.72	5.11
2NSH 120 600	1.2	1.20	6.00	1.14	15	45	4	6.31	6.53	6.77	7.02	7.59
2NSH 120 800	1.2	1.20	8.00	1.14	15	45	4	8.38	8.67	8.99	9.32	10.08
2NSH 120 1000	1.2	1.20	10.00	1.14	15	45	4	10.45	10.81	11.20	11.62	12.57
2NSH 120 1200	1.2	1.20	12.00	1.14	15	45	4	12.51	12.95	13.42	13.92	15.05
2NSH 120 1600	1.2	1.20	16.00	1.14	15	50	4	16.65	17.23	17.85	18.52	20.02
2NSH 120 2000	1.2	1.20	20.00	1.14	15	50	4	20.78	21.51	22.29	23.12	25.00
2NSH 120 2500	1.2	1.20	25.00	1.14	15	60	4	25.95	26.86	27.83	28.87	free
2NSH 150 400	1.5	1.50	4.00	1.44	15	45	4	4.25	4.39	4.55	4.72	5.11
2NSH 150 600	1.5	1.50	6.00	1.44	15	45	4	6.31	6.53	6.77	7.02	7.59
2NSH 150 800	1.5	1.50	8.00	1.44	15	45	4	8.38	8.67	8.99	9.32	10.08
2NSH 150 1000	1.5	1.50	10.00	1.44	15	45	4	10.45	10.81	11.20	11.62	12.57
2NSH 150 1200	1.5	1.50	12.00	1.44	15	45	4	12.51	12.95	13.42	13.92	15.05
2NSH 150 1600	1.5	1.50	16.00	1.44	15	50	4	16.65	17.23	17.85	18.52	20.02
2NSH 150 1800	1.5	1.50	18.00	1.44	15	50	4	18.72	19.37	20.07	20.82	22.51
2NSH 150 2000	1.5	1.50	20.00	1.44	15	50	4	20.78	21.51	22.29	23.12	free
2NSH 150 2500	1.5	1.50	25.00	1.44	15	60	4	25.95	26.86	27.83	28.87	free
2NSH 150 3000	1.5	1.50	30.00	1.44	15	70	4	31.12	32.21	33.37	34.62	free
2NSH 150 4000	1.5	1.50	40.00	1.44	15	80	4	41.46	42.90	44.45	free	free
2NSH 160 800	1.6	1.60	8.00	1.55	15	45	4	8.36	8.65	8.96	9.30	10.06
2NSH 160 1000	1.6	1.60	10.00	1.55	15	45	4	10.43	10.79	11.18	11.60	12.54
2NSH 160 1200	1.6	1.60	12.00	1.55	15	45	4	12.50	12.93	13.40	13.90	15.03
2NSH 160 1400	1.6	1.60	14.00	1.55	15	45	4	14.56	15.07	15.61	16.20	17.52

2NSH 2F Necked Square End for Super Hardened Steel
2날 평 리브-초고경도용

(Unit: mm)

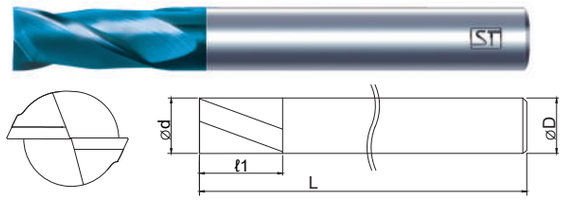
Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NSH 160 1600	1.6	1.60	16.00	1.55	15	50	4	16.63	17.21	17.83	18.50	20.00
2NSH 160 1800	1.6	1.60	18.00	1.55	15	50	4	18.70	19.35	20.05	20.80	22.49
2NSH 160 2000	1.6	1.60	20.00	1.55	15	50	4	20.76	21.49	22.26	23.10	free
2NSH 180 800	1.8	1.80	8.00	1.75	15	45	4	8.36	8.65	8.96	9.30	10.06
2NSH 180 1000	1.8	1.80	10.00	1.75	15	45	4	10.43	10.79	11.18	11.60	12.54
2NSH 180 1200	1.8	1.80	12.00	1.75	15	45	4	12.50	12.93	13.40	13.90	15.03
2NSH 180 1400	1.8	1.80	14.00	1.75	15	45	4	14.56	15.07	15.61	16.20	17.52
2NSH 180 1600	1.8	1.80	16.00	1.75	15	50	4	16.63	17.21	17.83	18.50	20.00
2NSH 180 1800	1.8	1.80	18.00	1.75	15	50	4	18.70	19.35	20.05	20.80	free
2NSH 180 2000	1.8	1.80	20.00	1.75	15	50	4	20.76	21.49	22.26	23.10	free
2NSH 200 400	2.0	2.00	4.00	1.92	15	45	4	4.28	4.43	4.59	4.77	5.15
2NSH 200 600	2.0	2.00	6.00	1.92	15	45	4	6.35	6.57	6.81	7.07	7.64
2NSH 200 800	2.0	2.00	8.00	1.92	15	45	4	8.42	8.71	9.03	9.37	10.13
2NSH 200 1000	2.0	2.00	10.00	1.92	15	45	4	10.49	10.85	11.24	11.67	12.61
2NSH 200 1200	2.0	2.00	12.00	1.92	15	45	4	12.55	12.99	13.46	13.96	15.10
2NSH 200 1400	2.0	2.00	14.00	1.92	15	45	4	14.62	15.13	15.68	16.26	17.58
2NSH 200 1600	2.0	2.00	16.00	1.92	15	50	4	16.69	17.27	17.89	18.56	free
2NSH 200 1800	2.0	2.00	18.00	1.92	15	50	4	18.76	19.41	20.11	20.86	free
2NSH 200 2000	2.0	2.00	20.00	1.92	15	50	4	20.82	21.55	22.33	23.16	free
2NSH 200 2500	2.0	2.00	25.00	1.92	15	60	4	25.99	26.90	27.87	free	free
2NSH 200 3000	2.0	2.00	30.00	1.92	15	70	4	31.16	32.25	33.41	free	free
2NSH 200 4000	2.0	2.00	40.00	1.92	15	80	4	41.50	42.94	free	free	free
2NSH 250 1000	2.5	2.50	10.00	2.39	15	45	4	10.54	10.91	11.31	11.73	12.68
2NSH 250 1200	2.5	2.50	12.00	2.39	15	45	4	12.61	13.05	13.52	14.03	free
2NSH 250 1600	2.5	2.50	16.00	2.39	15	50	4	16.75	17.33	17.96	18.63	free
2NSH 250 2000	2.5	2.50	20.00	2.39	15	50	4	20.88	21.61	22.39	free	free
2NSH 250 2500	2.5	2.50	25.00	2.39	15	60	4	26.05	26.96	27.93	free	free
2NSH 250 3000	2.5	2.50	30.00	2.39	15	70	4	31.22	32.31	free	free	free
2NSH 300 800	3.0	3.00	8.00	2.86	15	50	6	8.53	8.83	9.15	9.49	10.26
2NSH 300 1000	3.0	3.00	10.00	2.86	15	50	6	10.60	10.97	11.37	11.79	12.75
2NSH 300 1200	3.0	3.00	12.00	2.86	15	50	6	12.67	13.11	13.58	14.09	15.24
2NSH 300 1600	3.0	3.00	16.00	2.86	15	60	6	16.80	17.39	18.02	18.69	20.21
2NSH 300 2000	3.0	3.00	20.00	2.86	15	60	6	20.94	21.67	22.45	23.29	25.18
2NSH 300 2500	3.0	3.00	25.00	2.86	15	60	6	26.11	27.02	27.99	29.04	free
2NSH 300 3000	3.0	3.00	30.00	2.86	15	70	6	31.28	32.36	33.53	34.79	free
2NSH 300 3500	3.0	3.00	35.00	2.86	15	70	6	36.44	37.71	39.08	40.54	free
2NSH 300 4000	3.0	3.00	40.00	2.86	15	80	6	41.61	43.06	44.62	free	free
2NSH 400 1000	4.0	4.00	10.00	3.80	15	50	6	10.72	11.09	11.49	11.92	12.89
2NSH 400 1200	4.0	4.00	12.00	3.80	15	50	6	12.78	13.23	13.71	14.22	15.38
2NSH 400 1400	4.0	4.00	14.00	3.80	15	50	6	14.85	15.37	15.93	16.52	17.86
2NSH 400 1600	4.0	4.00	16.00	3.80	15	60	6	16.92	17.51	18.14	18.82	free
2NSH 400 2000	4.0	4.00	20.00	3.80	15	60	6	21.05	21.79	22.57	23.42	free
2NSH 400 2500	4.0	4.00	25.00	3.80	15	60	6	26.22	27.14	28.12	free	free
2NSH 400 3000	4.0	4.00	30.00	3.80	15	70	6	31.39	32.48	33.66	free	free
2NSH 400 3500	4.0	4.00	35.00	3.80	15	70	6	36.56	37.83	free	free	free
2NSH 400 4000	4.0	4.00	40.00	3.80	15	80	6	41.73	43.18	free	free	free

2NSH 2F Necked Square End for Super Hardened Steel
2날 평 리브–초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NSH 400 5000	4.0	4.00	50.00	3.80	15	100	6	52.06	53.88	free	free	free
2NSH 500 1600	5.0	5.00	16.00	4.75	15	60	6	17.02	17.61	18.25	free	free
2NSH 500 2000	5.0	5.00	20.00	4.75	15	60	6	21.15	21.89	free	free	free
2NSH 500 2500	5.0	5.00	25.00	4.75	15	60	6	26.32	27.24	free	free	free
2NSH 500 3000	5.0	5.00	30.00	4.75	15	70	6	31.49	free	free	free	free
2NSH 500 3500	5.0	5.00	35.00	4.75	15	70	6	36.66	free	free	free	free
2NSH 500 4000	5.0	5.00	40.00	4.75	15	80	6	41.82	free	free	free	free
2NSH 500 5000	5.0	5.00	50.00	4.75	15	100	6	52.16	free	free	free	free
2NSH 600 1500	6.0	6.00	15.00	5.70	–	60	6	free	free	free	free	free
2NSH 600 2000	6.0	6.00	20.00	5.70	–	60	6	free	free	free	free	free
2NSH 600 3000	6.0	6.00	30.00	5.70	–	70	6	free	free	free	free	free
2NSH 600 4000	6.0	6.00	40.00	5.70	–	80	6	free	free	free	free	free
2NSH 800 2000	8.0	8.00	20.00	7.60	–	80	8	free	free	free	free	free
2NSH 800 3000	8.0	8.00	30.00	7.60	–	80	8	free	free	free	free	free
2NSH 800 4000	8.0	8.00	40.00	7.60	–	100	8	free	free	free	free	free

2SH 2F Square End for Super Hardened Steels
2날 평–초고경도용



Features

- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

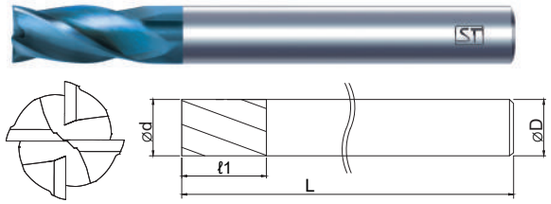
Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2SH 020 040 S4	0.2	0.4	38	4	
2SH 030 060 S4	0.3	0.6	38	4	
2SH 040 080 S4	0.4	0.8	38	4	
2SH 050 100 S4	0.5	1	38	4	
2SH 060 120 S4	0.6	1.2	38	4	
2SH 070 140 S4	0.7	1.4	38	4	
2SH 080 160 S4	0.8	1.6	38	4	
2SH 100 250 S4	1.0	2.5	40	4	
2SH 100 250 S6	1.0	2.5	40	6	
2SH 120 300 S4	1.2	3	40	4	
2SH 150 400 S4	1.5	4	40	4	
2SH 150 400 S6	1.5	4	40	6	
2SH 200 600 S4	2.0	6	40	4	
2SH 200 600 S6	2.0	6	40	6	
2SH 250 800 S4	2.5	8	40	4	
2SH 250 800 S6	2.5	8	40	6	
2SH 300 800 S4	3.0	8	45	4	
2SH 300 800 S6	3.0	8	45	6	
2SH 350 800 S4	3.5	8	45	4	
2SH 400 1000 S4	4.0	10	45	4	
2SH 400 1100 S6	4.0	11	45	6	
2SH 450 1100 S6	4.5	11	45	6	

2SH 2F Square End for Super Hardened Steels
2날 평–초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2SH 500 1300 S6	5.0	13	50	6	
2SH 550 1300 S6	5.5	13	50	6	
2SH 600 1300 S6	6.0	13	50	6	
2SH 650 1500 S8	6.5	15	60	8	
2SH 700 1600 S8	7.0	16	60	8	
2SH 750 1600 S8	7.5	16	60	8	
2SH 800 1900 S8	8.0	19	60	8	
2SH 850 1900 S10	8.5	19	70	10	
2SH 900 1900 S10	9.0	19	70	10	
2SH 950 1900 S10	9.5	19	70	10	
2SH 1000 2200 S10	10.0	22	70	10	
2SH 1050 2200 S12	10.5	22	75	12	
2SH 1100 2200 S12	11.0	22	75	12	
2SH 1200 2600 S12	12.0	26	75	12	

4SH 4F Square End for Super Hardened Steels
4날 평–초고경도용



Features

- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

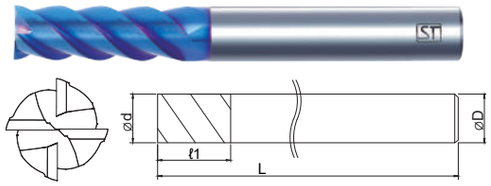
(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SH 100 250 S4	1.0	2.5	40	4	
4SH 100 250 S6	1.0	2.5	40	6	
4SH 150 400 S4	1.5	4	40	4	
4SH 150 400 S6	1.5	4	40	6	
4SH 200 600 S4	2.0	6	40	4	
4SH 200 600 S6	2.0	6	40	6	
4SH 250 800 S4	2.5	8	40	4	
4SH 250 800 S6	2.5	8	40	6	
4SH 300 800 S4	3.0	8	45	4	
4SH 300 800 S6	3.0	8	45	6	
4SH 350 800 S4	3.5	8	45	4	
4SH 400 1100 S4	4.0	11	45	4	
4SH 400 1100 S6	4.0	11	45	6	
4SH 450 1100 S6	4.5	11	45	6	
4SH 500 1300 S6	5.0	13	50	6	
4SH 600 1500 S6	6.0	15	50	6	
4SH 600 1500 S6 100	6.0	15	100	6	
4SH 800 1900 S8	8.0	19	60	8	
4SH 1000 2200 S10	10.0	22	70	10	
4SH 1000 2200 S10 100	10.0	22	100	10	
4SH 1200 2600 S12	12.0	26	75	12	

4SHH 4F Square End for Super Hardened Steels

4날 평-초고경도용

NEW



Features

- Suitalbe for heay cutting with Helix 45°
- Flute design to prevent chipping
- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically designed for super hardened steels
- Only for Dry cutting

특 징

- 헬릭스 45도로 강력 절삭에 적합
- 치핑 방지를 위한 날 끝 설계
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 초고경도 소재를 위해 특별히 설계된 절삭 형상
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SHH 100 250 S6	1.0	2.5	40	6	
4SHH 100 500 S6	1.0	5	40	6	
4SHH 150 400 S6	1.5	4	40	6	
4SHH 150 600 S6	1.5	6	40	6	
4SHH 200 500 S6	2.0	5	40	6	
4SHH 200 800 S6	2.0	8	40	6	
4SHH 200 1000 S6	2.0	10	50	6	
4SHH 250 800 S6	2.5	8	45	6	
4SHH 250 1000 S6	2.5	10	50	6	
4SHH 300 800 S6	3.0	8	45	6	
4SHH 300 1200 S3	3.0	12	50	3	
4SHH 300 1200 S6	3.0	12	50	6	
4SHH 300 1500 S6	3.0	15	55	6	
4SHH 400 1000 S6	4.0	10	45	6	
4SHH 400 1500 S6	4.0	15	55	6	
4SHH 400 2000 S4	4.0	20	60	4	
4SHH 400 2000 S6	4.0	20	60	6	
4SHH 500 1500 S6	5.0	15	55	6	
4SHH 500 2500 S6	5.0	25	60	6	
4SHH 600 1500 S6	6.0	15	55	6	
4SHH 600 1500 100	6.0	15	100	6	
4SHH 600 2000 S6	6.0	20	60	6	

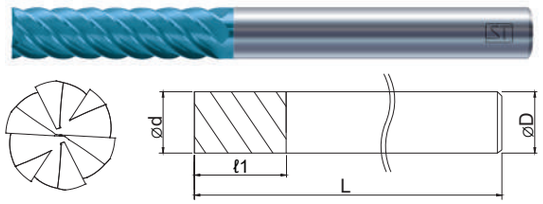
4SHH 4F Square End for Super Hardened Steels
4날 평-초고경도용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SHH 600 2500 S6	6.0	25	65	6	
4SHH 600 3000 S6	6.0	30	70	6	
4SHH 800 2000 S8	8.0	20	60	8	
4SHH 800 2000 100	8.0	20	100	8	
4SHH 800 2500 S8	8.0	25	65	8	
4SHH 800 3000 S8	8.0	30	70	8	
4SHH 800 4000 S8	8.0	40	80	8	
4SHH 1000 2000 S10	10.0	20	60	10	
4SHH 1000 2200 100	10.0	22	100	10	
4SHH 1000 3000 S10	10.0	30	70	10	
4SHH 1000 4000 S10	10.0	40	80	10	
4SHH 1000 5000 S10	10.0	50	100	10	
4SHH 1200 3000 S12	12.0	30	75	12	
4SHH 1200 4000 S12	12.0	40	80	12	
4SHH 1200 5000 S12	12.0	50	100	12	
4SHH 1400 3500 S14	14.0	35	80	14	
4SHH 1600 3500 S16	16.0	35	80	16	
4SHH 1600 5000 S16	16.0	50	100	16	
4SHH 1600 7000 S16	16.0	70	120	16	
4SHH 2000 5000 S20	20.0	50	110	20	
4SHH 2000 7000 S20	20.0	70	130	20	

6SH 6F Square End for Super Hardened Steels

6날 평-초고경도용



Features

- Greater rigidity and reduced chattering through optimized geometry
- Cutting geometry specifically engineered for super hardened steels
- Only for Dry cutting

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 절삭날의 치수와 형상은 초고경도 소재 가공에 최적화됨
- 건식가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○		○	◎					

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
6SH 600 1500 50	6.0	15	50	6	
6SH 600 2000 60	6.0	20	60	6	
6SH 600 2500 65	6.0	25	65	6	
6SH 600 3000 70	6.0	30	70	6	
6SH 800 2500 65	8.0	25	65	8	
6SH 800 3000 70	8.0	30	70	8	
6SH 800 3500 90	8.0	35	90	8	
6SH 800 4000 90	8.0	40	90	8	
6SH 1000 3500 80	10.0	35	80	10	
6SH 1000 4500 100	10.0	45	100	10	
6SH 1000 5500 110	10.0	55	110	10	
6SH 1200 4000 90	12.0	40	90	12	
6SH 1200 5000 100	12.0	50	100	12	
6SH 1200 6000 110	12.0	60	110	12	
6SH 1600 4500 100	16.0	45	100	16	
6SH 1600 5000 110	16.0	50	110	16	
6SH 1600 8000 150	16.0	80	150	16	
6SH 2000 5000 110	20.0	50	110	20	
6SH 2000 8000 150	20.0	80	150	20	
6SH 2000 10000 160	20.0	100	160	20	

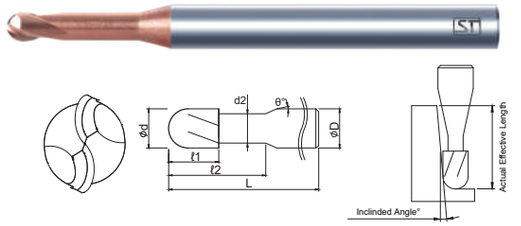
스타공구 (주)
STAR TOOL CO., LTD.

For Hardened Steels

ISO 9001

INNOBIZ 기술혁신형중소기업

2NB 2F Necked Ball End
2날 볼 리브



2 | HX 30° | SMG Carbide | AlTiSiN Coated | ≤55 HRC | 3D | CUTTING P.220

Features
- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30′	1°	1°30′	2°	3°
2NB 020 050	0.2 X R0.1	0.15	0.50	0.18	15	45	4	0.55	0.56	0.58	0.6	0.64
2NB 020 075	0.2 X R0.1	0.15	0.75	0.18	15	45	4	0.81	0.83	0.86	0.89	0.95
2NB 020 100	0.2 X R0.1	0.15	1.00	0.18	15	45	4	1.06	1.1	1.13	1.17	1.26
2NB 020 125	0.2 X R0.1	0.15	1.25	0.18	15	45	4	1.32	1.37	1.41	1.46	1.57
2NB 020 150	0.2 X R0.1	0.15	1.50	0.18	15	45	4	1.58	1.63	1.69	1.75	1.88
2NB 020 200	0.2 X R0.1	0.15	2.00	0.18	15	45	4	2.1	2.17	2.24	2.32	2.5
2NB 020 250	0.2 X R0.1	0.15	2.50	0.18	15	45	4	2.61	2.7	2.8	2.9	3.12
2NB 020 300	0.2 X R0.1	0.15	3.00	0.18	15	45	4	3.13	3.24	3.35	3.47	3.75
2NB 030 050	0.3 X R0.15	0.25	0.50	0.28	15	45	4	0.55	0.56	0.57	0.59	0.63
2NB 030 075	0.3 X R0.15	0.25	0.75	0.28	15	45	4	0.80	0.83	0.85	0.88	0.94
2NB 030 100	0.3 X R0.15	0.25	1.00	0.28	15	45	4	1.06	1.09	1.13	1.17	1.25
2NB 030 125	0.3 X R0.15	0.25	1.25	0.28	15	45	4	1.32	1.36	1.41	1.45	1.56
2NB 030 150	0.3 X R0.15	0.25	1.50	0.28	15	45	4	1.58	1.63	1.68	1.74	1.87
2NB 030 200	0.3 X R0.15	0.25	2.00	0.28	15	45	4	2.10	2.16	2.24	2.32	2.49
2NB 030 250	0.3 X R0.15	0.25	2.50	0.28	15	45	4	2.61	2.70	2.79	2.89	3.11
2NB 030 300	0.3 X R0.15	0.25	3.00	0.28	15	45	4	3.13	3.23	3.35	3.47	3.73
2NB 040 100	0.4 X R0.2	0.30	1.00	0.37	15	45	4	1.08	1.11	1.14	1.18	1.26
2NB 040 150	0.4 X R0.2	0.30	1.50	0.37	15	45	4	1.60	1.65	1.70	1.75	1.88
2NB 040 200	0.4 X R0.2	0.30	2.00	0.37	15	45	4	2.11	2.18	2.25	2.33	2.50
2NB 040 250	0.4 X R0.2	0.30	2.50	0.37	15	45	4	2.63	2.72	2.81	2.90	3.12
2NB 040 300	0.4 X R0.2	0.30	3.00	0.37	15	45	4	3.15	3.25	3.36	3.48	3.75

2NB 2F Necked Ball End
2날 볼 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30′	1°	1°30′	2°	3°
2NB 040 350	0.4 X R0.2	0.30	3.50	0.37	15	45	4	3.66	3.78	3.91	4.05	4.37
2NB 040 400	0.4 X R0.2	0.30	4.00	0.37	15	45	4	4.18	4.32	4.47	4.63	4.99
2NB 040 450	0.4 X R0.2	0.30	4.50	0.37	15	45	4	4.70	4.85	5.02	5.20	5.61
2NB 040 500	0.4 X R0.2	0.30	5.00	0.37	15	45	4	5.21	5.39	5.58	5.78	6.23
2NB 040 600	0.4 X R0.2	0.30	6.00	0.37	15	45	4	6.25	6.46	6.69	6.93	7.47
2NB 040 800	0.4 X R0.2	0.30	8.00	0.37	15	45	4	8.32	8.60	8.90	9.23	9.96
2NB 050 100	0.5 X R0.25	0.35	1.00	0.47	15	45	4	1.08	1.11	1.14	1.17	1.25
2NB 050 150	0.5 X R0.25	0.35	1.50	0.47	15	45	4	1.59	1.64	1.69	1.75	1.87
2NB 050 200	0.5 X R0.25	0.35	2.00	0.47	15	45	4	2.11	2.18	2.25	2.32	2.49
2NB 050 250	0.5 X R0.25	0.35	2.50	0.47	15	45	4	2.63	2.71	2.80	2.90	3.11
2NB 050 300	0.5 X R0.25	0.35	3.00	0.47	15	45	4	3.15	3.25	3.35	3.47	3.73
2NB 050 400	0.5 X R0.25	0.35	4.00	0.47	15	45	4	4.18	4.32	4.46	4.62	4.98
2NB 050 500	0.5 X R0.25	0.35	5.00	0.47	15	45	4	5.21	5.39	5.57	5.77	6.22
2NB 050 600	0.5 X R0.25	0.35	6.00	0.47	15	45	4	6.25	6.46	6.68	6.92	7.46
2NB 050 800	0.5 X R0.25	0.35	8.00	0.47	15	45	4	8.31	8.59	8.90	9.22	9.95
2NB 050 1000	0.5 X R0.25	0.35	10.00	0.47	15	45	4	10.38	10.73	11.11	11.52	12.44
2NB 060 100	0.6 X R0.3	0.40	1.00	0.57	15	45	4	1.08	1.10	1.13	1.16	1.23
2NB 060 200	0.6 X R0.3	0.40	2.00	0.57	15	45	4	2.11	2.17	2.24	2.31	2.48
2NB 060 250	0.6 X R0.3	0.40	2.50	0.57	15	45	4	2.63	2.71	2.80	2.89	3.10
2NB 060 300	0.6 X R0.3	0.40	3.00	0.57	15	45	4	3.14	3.24	3.35	3.46	3.72
2NB 060 350	0.6 X R0.3	0.40	3.50	0.57	15	45	4	3.66	3.78	3.90	4.04	4.34
2NB 060 400	0.6 X R0.3	0.40	4.00	0.57	15	45	4	4.18	4.31	4.46	4.61	4.96
2NB 060 450	0.6 X R0.3	0.40	4.50	0.57	15	45	4	4.69	4.85	5.01	5.19	5.59
2NB 060 500	0.6 X R0.3	0.40	5.00	0.57	15	45	4	5.21	5.38	5.57	5.76	6.21
2NB 060 550	0.6 X R0.3	0.40	5.50	0.57	15	45	4	5.73	5.92	6.12	6.34	6.83
2NB 060 600	0.6 X R0.3	0.40	6.00	0.57	15	45	4	6.24	6.45	6.67	6.91	7.45
2NB 060 800	0.6 X R0.3	0.40	8.00	0.57	15	45	4	8.31	8.59	8.89	9.21	9.94
2NB 060 1000	0.6 X R0.3	0.40	10.00	0.57	15	45	4	10.38	10.73	11.11	11.51	12.42
2NB 060 1200	0.6 X R0.3	0.40	12.00	0.57	15	45	4	12.45	12.87	13.32	13.81	14.91
2NB 070 200	0.7 X R0.35	0.45	2.00	0.66	15	45	4	2.13	2.19	2.26	2.33	2.49
2NB 070 400	0.7 X R0.35	0.45	4.00	0.66	15	45	4	4.20	4.33	4.47	4.63	4.98
2NB 070 600	0.7 X R0.35	0.45	6.00	0.66	15	45	4	6.26	6.47	6.69	6.93	7.46
2NB 070 800	0.7 X R0.35	0.45	8.00	0.66	15	45	4	8.33	8.61	8.91	9.23	9.95
2NB 080 200	0.8 X R0.4	0.50	2.00	0.77	15	45	4	2.11	2.17	2.23	2.30	2.45
2NB 080 300	0.8 X R0.4	0.50	3.00	0.77	15	45	4	3.14	3.24	3.34	3.45	3.70
2NB 080 400	0.8 X R0.4	0.50	4.00	0.77	15	45	4	4.17	4.31	4.45	4.60	4.94
2NB 080 500	0.8 X R0.4	0.50	5.00	0.77	15	45	4	5.21	5.38	5.56	5.75	6.18
2NB 080 600	0.8 X R0.4	0.50	6.00	0.77	15	45	4	6.24	6.45	6.66	6.90	7.43
2NB 080 800	0.8 X R0.4	0.50	8.00	0.77	15	45	4	8.31	8.58	8.88	9.20	9.91
2NB 080 1000	0.8 X R0.4	0.50	10.00	0.77	15	45	4	10.38	10.72	11.10	11.50	12.40
2NB 080 1200	0.8 X R0.4	0.50	12.00	0.77	15	45	4	12.44	12.86	13.31	13.80	14.89
2NB 090 200	0.9X R0.45	0.60	2.00	0.85	15	45	4	2.14	2.20	2.27	2.33	2.49
2NB 090 400	0.9X R0.45	0.60	4.00	0.85	15	45	4	4.21	4.34	4.48	4.63	4.97
2NB 090 600	0.9X R0.45	0.60	6.00	0.85	15	45	4	6.28	6.48	6.70	6.93	7.46
2NB 090 800	0.9X R0.45	0.60	8.00	0.85	15	45	4	8.35	8.62	8.92	9.23	9.95
2NB 090 1000	0.9X R0.45	0.60	10.00	0.85	15	45	4	10.41	10.76	11.13	11.53	12.43
2NB 100 200	1.0 X R0.5	0.80	2.00	0.95	15	45	4	2.14	2.20	2.26	2.33	2.48

2NB 2F Necked Ball End
2날 볼 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NB 100 300	1.0 X R0.5	0.80	3.00	0.95	15	45	4	3.18	3.27	3.37	3.48	3.72
2NB 100 400	1.0 X R0.5	0.80	4.00	0.95	15	45	4	4.21	4.34	4.48	4.63	4.96
2NB 100 400 S6	1.0 X R0.5	0.80	4.00	0.95	15	50	6	4.21	4.34	4.48	4.63	4.96
2NB 100 500	1.0 X R0.5	0.80	5.00	0.95	15	45	4	5.24	5.41	5.59	5.78	6.21
2NB 100 600	1.0 X R0.5	0.80	6.00	0.95	15	45	4	6.28	6.48	6.69	6.93	7.45
2NB 100 600 S6	1.0 X R0.5	0.80	6.00	0.95	15	50	6	6.28	6.48	6.69	6.93	7.45
2NB 100 800	1.0 X R0.5	0.80	8.00	0.95	15	45	4	8.34	8.62	8.91	9.23	9.93
2NB 100 800 S6	1.0 X R0.5	0.80	8.00	0.95	15	50	6	8.34	8.62	8.91	9.23	9.93
2NB 100 1000	1.0 X R0.5	0.80	10.00	0.95	15	45	4	10.41	10.76	11.13	11.53	12.42
2NB 100 1000 S6	1.0 X R0.5	0.80	10.00	0.95	15	50	6	10.41	10.76	11.13	11.53	12.42
2NB 100 1200	1.0 X R0.5	0.80	12.00	0.95	15	45	4	12.48	12.90	13.34	13.83	14.91
2NB 100 1200 S6	1.0 X R0.5	0.80	12.00	0.95	15	50	6	12.48	12.90	13.34	13.83	14.91
2NB 100 1400	1.0 X R0.5	0.80	14.00	0.95	15	45	4	14.55	15.04	15.56	16.13	17.39
2NB 100 1600	1.0 X R0.5	0.80	16.00	0.95	15	50	4	16.61	17.17	17.78	18.43	19.88
2NB 100 1600 S6	1.0 X R0.5	0.80	16.00	0.95	15	60	6	16.61	17.17	17.78	18.43	19.88
2NB 100 1800	1.0 X R0.5	0.80	18.00	0.95	15	50	4	18.68	19.31	19.99	20.72	22.37
2NB 100 2000	1.0 X R0.5	0.80	20.00	0.95	15	50	4	20.75	21.45	22.21	23.02	24.85
2NB 100 2000 S6	1.0 X R0.5	0.80	20.00	0.95	15	60	6	20.75	21.45	22.21	23.02	24.85
2NB 120 400	1.2 X R0.6	1.20	4.00	1.14	15	45	4	4.23	4.35	4.49	4.63	4.96
2NB 120 600	1.2 X R0.6	1.20	6.00	1.14	15	45	4	6.29	6.49	6.70	6.93	7.45
2NB 120 800	1.2 X R0.6	1.20	8.00	1.14	15	45	4	8.36	8.63	8.92	9.23	9.93
2NB 120 1000	1.2 X R0.6	1.20	10.00	1.14	15	45	4	10.43	10.77	11.14	11.53	12.42
2NB 120 1200	1.2 X R0.6	1.20	12.00	1.14	15	45	4	12.49	12.91	13.35	13.83	14.91
2NB 120 1600	1.2 X R0.6	1.20	16.00	1.14	15	50	4	16.63	17.19	17.79	18.43	19.88
2NB 120 2000	1.2 X R0.6	1.20	20.00	1.14	15	50	4	20.76	21.47	22.22	23.03	24.85
2NB 150 300	1.5 X R0.75	1.35	3.00	1.44	15	45	4	3.19	3.27	3.36	3.46	3.68
2NB 150 400	1.5 X R0.75	1.35	4.00	1.44	15	45	4	4.22	4.34	4.47	4.61	4.92
2NB 150 400 S6	1.5 X R0.75	1.35	4.00	1.44	15	50	6	4.22	4.34	4.47	4.61	4.92
2NB 150 600	1.5 X R0.75	1.35	6.00	1.44	15	45	4	6.29	6.48	6.69	6.91	7.41
2NB 150 600 S6	1.5 X R0.75	1.35	6.00	1.44	15	50	6	6.29	6.48	6.69	6.91	7.41
2NB 150 800	1.5 X R0.75	1.35	8.00	1.44	15	45	4	8.35	8.62	8.90	9.21	9.90
2NB 150 800 S6	1.5 X R0.75	1.35	8.00	1.44	15	50	6	8.35	8.62	8.90	9.21	9.90
2NB 150 1000	1.5 X R0.75	1.35	10.00	1.44	15	45	4	10.42	10.76	11.12	11.51	12.38
2NB 150 1000 S6	1.5 X R0.75	1.35	10.00	1.44	15	50	6	10.42	10.76	11.12	11.51	12.38
2NB 150 1200	1.5 X R0.75	1.35	12.00	1.44	15	45	4	12.49	12.90	13.34	13.81	14.87
2NB 150 1200 S6	1.5 X R0.75	1.35	12.00	1.44	15	50	6	12.49	12.90	13.34	13.81	14.87
2NB 150 1400	1.5 X R0.75	1.35	14.00	1.44	15	45	4	14.56	15.04	15.55	16.11	17.36
2NB 150 1600	1.5 X R0.75	1.35	16.00	1.44	15	50	4	16.62	17.18	17.77	18.41	19.84
2NB 150 1600 S6	1.5 X R0.75	1.35	16.00	1.44	15	60	6	16.62	17.18	17.77	18.41	19.84
2NB 150 2000	1.5 X R0.75	1.35	20.00	1.44	15	50	4	20.76	21.46	22.20	23.01	free
2NB 150 2000 S6	1.5 X R0.75	1.35	20.00	1.44	15	60	6	20.76	21.46	22.20	23.01	24.81
2NB 150 2500	1.5 X R0.75	1.35	25.00	1.44	15	60	4	25.93	26.80	27.75	28.76	free
2NB 150 3000	1.5 X R0.75	1.35	30.00	1.44	15	70	4	31.10	32.15	33.29	34.51	free
2NB 160 600	1.6 X R0.8	1.60	6.00	1.55	15	45	4	6.27	6.46	6.66	6.88	7.38
2NB 160 800	1.6 X R0.8	1.60	8.00	1.55	15	45	4	8.33	8.60	8.88	9.18	9.86
2NB 160 1000	1.6 X R0.8	1.60	10.00	1.55	15	45	4	10.40	10.74	11.09	11.48	12.35
2NB 160 1200	1.6 X R0.8	1.60	12.00	1.55	15	45	4	12.47	12.88	13.31	13.78	14.83

2NB 2F Necked Ball End
2날 볼 리브

(Unit: mm)

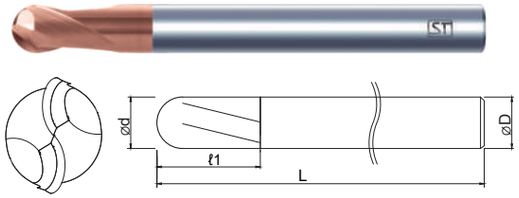
Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NB 160 1600	1.6 X R0.8	1.60	16.00	1.55	15	50	4	16.60	17.15	17.74	18.38	19.81
2NB 160 2000	1.6 X R0.8	1.60	20.00	1.55	15	50	4	20.74	21.43	22.18	22.98	free
2NB 200 400	2.0 X R1.0	1.80	4.00	1.92	15	45	4	4.25	4.36	4.49	4.62	4.91
2NB 200 500	2.0 X R1.0	1.80	5.00	1.92	15	45	4	5.28	5.43	5.59	5.77	6.15
2NB 200 600	2.0 X R1.0	1.80	6.00	1.92	15	45	4	6.32	6.50	6.70	6.92	7.40
2NB 200 600 S6	2.0 X R1.0	1.80	6.00	1.92	15	50	6	6.32	6.50	6.70	6.92	7.40
2NB 200 800	2.0 X R1.0	1.80	8.00	1.92	15	45	4	8.38	8.64	8.92	9.22	9.88
2NB 200 800 S6	2.0 X R1.0	1.80	8.00	1.92	15	50	6	8.38	8.64	8.92	9.22	9.88
2NB 200 1000	2.0 X R1.0	1.80	10.00	1.92	15	45	4	10.45	10.78	11.14	11.52	12.37
2NB 200 1000 S6	2.0 X R1.0	1.80	10.00	1.92	15	50	6	10.45	10.78	11.14	11.52	12.37
2NB 200 1200	2.0 X R1.0	1.80	12.00	1.92	15	45	4	12.52	12.92	13.35	13.82	14.86
2NB 200 1200 S6	2.0 X R1.0	1.80	12.00	1.92	15	50	6	12.52	12.92	13.35	13.82	14.86
2NB 200 1400	2.0 X R1.0	1.80	14.00	1.92	15	45	4	14.59	15.06	15.57	16.11	17.34
2NB 200 1600	2.0 X R1.0	1.80	16.00	1.92	15	50	4	16.65	17.20	17.79	18.41	19.83
2NB 200 1600 S6	2.0 X R1.0	1.80	16.00	1.92	15	60	6	16.65	17.20	17.79	18.41	19.83
2NB 200 1800	2.0 X R1.0	1.80	18.00	1.92	15	50	4	18.72	19.34	20.00	20.71	free
2NB 200 1800 S6	2.0 X R1.0	1.80	18.00	1.92	15	60	6	18.72	19.34	20.00	20.71	free
2NB 200 2000	2.0 X R1.0	1.80	20.00	1.92	15	50	4	20.79	21.48	22.22	23.01	free
2NB 200 2000 S6	2.0 X R1.0	1.80	20.00	1.92	15	60	6	20.79	21.48	22.22	23.01	24.80
2NB 200 2200	2.0 X R1.0	1.80	22.00	1.92	15	60	4	20.79	21.48	22.22	23.01	free
2NB 200 2500	2.0 X R1.0	1.80	25.00	1.92	15	60	4	25.96	26.83	27.76	28.76	free
2NB 200 2500 S6	2.0 X R1.0	1.80	25.00	1.92	15	60	6	25.96	26.83	27.76	28.76	31.02
2NB 200 3000	2.0 X R1.0	1.80	30.00	1.92	15	70	4	31.13	32.18	33.30	free	free
2NB 200 3500	2.0 X R1.0	1.80	35.00	1.92	15	70	4	36.29	37.52	38.84	free	free
2NB 200 4000	2.0 X R1.0	1.80	40.00	1.92	15	80	4	41.46	42.87	free	free	free
2NB 250 800	2.5 X R1.25	2.50	8.00	2.39	15	45	4	8.43	8.68	8.95	9.24	9.89
2NB 250 1000	2.5 X R1.25	2.50	10.00	2.39	15	45	4	10.50	10.82	11.17	11.54	12.38
2NB 250 1200	2.5 X R1.25	2.50	12.00	2.39	15	45	4	12.57	12.96	13.39	13.84	14.86
2NB 250 1600	2.5 X R1.25	2.50	16.00	2.39	15	50	4	16.70	17.24	17.82	18.44	free
2NB 250 2000	2.5 X R1.25	2.50	20.00	2.39	15	50	4	20.84	21.52	22.25	free	free
2NB 250 2500	2.5 X R1.25	2.50	25.00	2.39	15	60	4	26.01	26.87	27.79	free	free
2NB 300 600	3.0 X R1.5	3.00	6.00	2.86	15	50	6	6.42	6.59	6.77	6.97	7.41
2NB 300 800	3.0 X R1.5	3.00	8.00	2.86	15	50	6	8.48	8.73	8.99	9.27	9.90
2NB 300 1000	3.0 X R1.5	3.00	10.00	2.86	15	50	6	10.55	10.87	11.21	11.57	12.39
2NB 300 1200	3.0 X R1.5	3.00	12.00	2.86	15	50	6	12.62	13.01	13.42	13.87	14.87
2NB 300 1400	3.0 X R1.5	3.00	14.00	2.86	15	50	6	14.69	15.15	15.64	16.17	17.36
2NB 300 1600	3.0 X R1.5	3.00	16.00	2.86	15	60	6	16.75	17.28	17.86	18.47	19.85
2NB 300 1800	3.0 X R1.5	3.00	18.00	2.86	15	60	6	18.82	19.42	20.07	20.77	22.33
2NB 300 2000	3.0 X R1.5	3.00	20.00	2.86	15	60	6	20.89	21.56	22.29	23.07	24.82
2NB 300 2500	3.0 X R1.5	3.00	25.00	2.86	15	60	6	26.06	26.91	27.83	28.82	free
2NB 300 3000	3.0 X R1.5	3.00	30.00	2.86	15	70	6	31.22	32.26	33.37	34.57	free
2NB 300 3500	3.0 X R1.5	3.00	35.00	2.86	15	70	6	36.39	37.61	38.91	40.32	free
2NB 300 4000	3.0 X R1.5	3.00	40.00	2.86	15	80	6	41.56	42.96	44.45	free	free
2NB 300 5000	3.0 X R1.5	3.00	50.00	2.86	15	100	6	51.90	53.65	55.54	free	free
2NB 350 1500	3.5 X R1.75	3.50	15.00	3.35	15	60	6	15.73	16.22	16.74	17.30	18.56
2NB 350 2000	3.5 X R1.75	3.50	20.00	3.35	15	60	6	20.90	21.57	22.28	23.05	24.78
2NB 350 2500	3.5 X R1.75	3.50	25.00	3.35	15	60	6	26.07	26.91	27.82	28.80	free

2NB 2F Necked Ball End
2날 볼 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Cut 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NB 350 3000	3.5 X R1.75	3.50	30.00	3.35	15	70	6	31.24	32.26	33.37	34.55	free
2NB 350 4000	3.5 X R1.75	3.50	40.00	3.35	15	80	6	41.57	42.96	44.45	free	free
2NB 400 1000	4.0 X R2.0	4.00	10.00	3.80	15	50	6	10.65	10.95	11.28	11.62	12.40
2NB 400 1200	4.0 X R2.0	4.00	12.00	3.80	15	50	6	12.72	13.09	13.49	13.92	14.89
2NB 400 1600	4.0 X R2.0	4.00	16.00	3.80	15	60	6	16.85	17.37	17.93	18.52	19.86
2NB 400 2000	4.0 X R2.0	4.00	20.00	3.80	15	60	6	20.99	21.65	22.36	23.12	free
2NB 400 2500	4.0 X R2.0	4.00	25.00	3.80	15	60	6	26.16	27.00	27.90	28.87	free
2NB 400 3000	4.0 X R2.0	4.00	30.00	3.80	15	70	6	31.32	32.35	33.44	free	free
2NB 400 3500	4.0 X R2.0	4.00	35.00	3.80	15	70	6	36.49	37.69	38.98	free	free
2NB 400 4000	4.0 X R2.0	4.00	40.00	3.80	15	80	6	41.66	43.04	free	free	free
2NB 400 5000	4.0 X R2.0	4.00	50.00	3.80	15	100	6	52.00	53.74	free	free	free
2NB 600 1500	6.0 X R3.0	7.00	15.00	5.70	–	60	6	free	free	free	free	free
2NB 600 2000	6.0 X R3.0	7.00	20.00	5.70	–	60	6	free	free	free	free	free
2NB 600 3000	6.0 X R3.0	7.00	30.00	5.70	–	110	6	free	free	free	free	free
2NB 800 2000	8.0 X R4.0	10.00	20.00	7.60	–	60	8	free	free	free	free	free
2NB 800 3000	8.0 X R4.0	10.00	30.00	7.60	–	100	8	free	free	free	free	free
2NB 1000 2500	10.0 X R5.0	12.00	25.00	9.50	–	70	10	free	free	free	free	free
2NB 1000 3500	10.0 X R5.0	12.00	35.00	9.50	–	100	10	free	free	free	free	free
2NB 1200 3000	12.0 X R6.0	14.00	30.00	11.50	–	80	12	free	free	free	free	free
2NB 1200 4000	12.0 X R6.0	14.00	40.00	11.50	–	110	12	free	free	free	free	free

2BS 2F Ball End-Short
2날 볼 쇼트



Features
- Greater rigidity and reduced chattering through optimized geometry
- Suitable for heat shrink fit chucks
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 열박음척에 사용하는데 적합함
- 건식 및 습식용

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 :

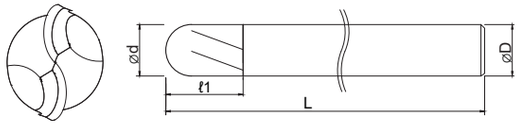
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 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	

2BR 2F Ball End-Regular
2날 볼 표준



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 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 080 200 S4	0.8 X R0.4	2	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 350 800 S4	3.5 X R1.75	8	50	4	
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	

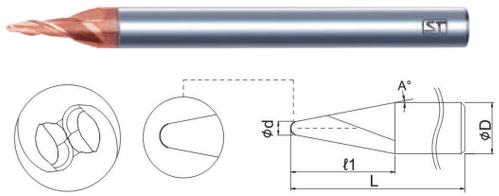
2BR 2F Ball End-Regular
2날 볼 표준

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
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	
2BR 600 1200 100	6.0 X R3.0	12	100	6	
2BR 700 1400 80	7.0 X R3.5	14	80	8	
2BR 800 1400 60	8.0 X R4.0	14	60	8	
2BR 800 1400 80	8.0 X R4.0	14	80	8	
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 900 1600 100	9.0 X R4.5	16	100	10	
2BR 1000 1800 70	10.0 X R5.0	18	70	10	
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 75	12.0 X R6.0	22	75	12	
2BR 1200 2200 100	12.0 X R6.0	22	100	12	
2BR 1200 2200 110	12.0 X R6.0	22	110	12	
2BR 1200 2200 130	12.0 X R6.0	22	130	12	
2BR 1400 2400 105	14.0 X R7.0	24	105	14	
2BR 1600 3000 105	16.0 X R8.0	30	105	16	
2BR 1600 3000 160	16.0 X R8.0	30	160	16	
2BR 2000 3800 160	20.0 X R10.0	38	160	20	

2TB 2F Ball Tapered End Mill
2날 볼 테이퍼 엔드밀

NEW



2 | HX 30° | SMG Carbide | AlTiSiN Coated | ≦55 HRC | 3D | CUTTING P.226

Features

- Reduce vibration and improve workpiece surface quality by tapered neck
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징

- 테이퍼 넥으로 진동을 줄이고, 절삭면의 조도 향상
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

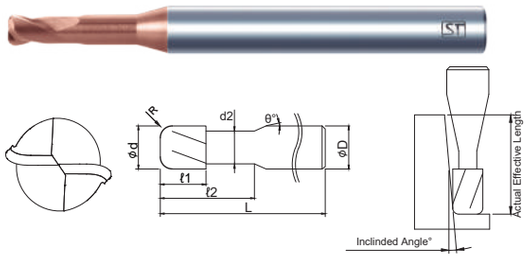
Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Angle 각도 A()	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2TB 050 200 S4	0.5 X R0.25	2	3	45	4	
2TB 050 300 S4	0.5 X R0.25	3	3	45	4	
2TB 050 400 S4	0.5 X R0.25	4	3.5	45	4	
2TB 050 500 S4	0.5 X R0.25	5	3.5	45	4	
2TB 050 700 S4	0.5 X R0.25	7	3.5	45	4	
2TB 050 1000 S4	0.5 X R0.25	10	3.5	45	4	
2TB 060 200 S4	0.6 X R0.3	2	3	45	4	
2TB 060 300 S4	0.6 X R0.3	3	3	45	4	
2TB 060 400 S4	0.6 X R0.3	4	3.5	45	4	
2TB 060 500 S4	0.6 X R0.3	5	3.5	45	4	
2TB 060 700 S4	0.6 X R0.3	7	3.5	45	4	
2TB 060 1000 S4	0.6 X R0.3	10	3.5	45	4	
2TB 080 200 S4	0.8 X R0.4	2	3	45	4	
2TB 080 300 S4	0.8 X R0.4	3	3	45	4	
2TB 080 400 S4	0.8 X R0.4	4	4	45	4	
2TB 080 500 S4	0.8 X R0.4	5	4	45	4	
2TB 080 700 S4	0.8 X R0.4	7	4	45	4	
2TB 080 1000 S4	0.8 X R0.4	10	4	45	4	
2TB 100 100 S4	1.0 X R0.5	1	3	45	4	
2TB 100 200 S4	1.0 X R0.5	2	4	45	4	
2TB 100 300 S4	1.0 X R0.5	3	4	45	4	
2TB 100 400 S4	1.0 X R0.5	4	6	45	4	

2TB 2F Ball Tapered End Mill
2날 볼 테이퍼 엔드밀

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Angle 각도 A()	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2TB 100 500 S4	1.0 X R0.5	5	6	45	4	
2TB 100 700 S4	1.0 X R0.5	7	6	45	4	
2TB 100 1000 S4	1.0 X R0.5	10	6	45	4	
2TB 150 100 S4	1.5 X R0.75	1	6	45	4	
2TB 150 200 S4	1.5 X R0.75	2	6	45	4	
2TB 150 300 S4	1.5 X R0.75	3	6	45	4	
2TB 150 400 S4	1.5 X R0.75	4	6	45	4	
2TB 150 500 S4	1.5 X R0.75	5	6	45	4	
2TB 150 700 S4	1.5 X R0.75	7	6	45	4	
2TB 150 1000 S4	1.5 X R0.75	10	6	45	4	
2TB 200 100 S4	2.0 X R1.0	1	8	45	4	
2TB 200 200 S4	2.0 X R1.0	2	8	45	4	
2TB 200 300 S4	2.0 X R1.0	3	8	45	4	
2TB 200 400 S4	2.0 X R1.0	4	8	45	4	
2TB 200 500 S4	2.0 X R1.0	5	8	45	4	
2TB 200 700 S4	2.0 X R1.0	7	8	45	4	
2TB 200 1000 S6	2.0 X R1.0	10	8	50	6	
2TB 300 100 S6	3.0 X R1.5	1	12	60	6	
2TB 300 200 S6	3.0 X R1.5	2	12	60	6	
2TB 300 300 S6	3.0 X R1.5	3	12	60	6	
2TB 300 400 S6	3.0 X R1.5	4	12	60	6	
2TB 300 500 S6	3.0 X R1.5	5	12	60	6	
2TB 300 700 S6	3.0 X R1.5	7	12	60	6	
2TB 300 1000 S6	3.0 X R1.5	10	12	60	8	

2NC 2F Necked Corner Radius
2날 코너 R 리브



Features
- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30´	1°	1°30´	2°	3°
2NC 020 R002 050	0.2 X R0.02	0.15	0.50	0.18	15	45	4	0.55	0.57	0.59	0.61	0.66
2NC 020 R002 100	0.2 X R0.02	0.15	1.00	0.18	15	45	4	1.07	1.10	1.14	1.18	1.28
2NC 020 R002 200	0.2 X R0.02	0.15	2.00	0.18	15	45	4	2.10	2.17	2.25	2.33	2.52
2NC 020 R005 050	0.2 X R0.05	0.15	0.50	0.18	15	45	4	0.55	0.57	0.59	0.61	0.65
2NC 020 R005 100	0.2 X R0.05	0.15	1.00	0.18	15	45	4	1.07	1.10	1.14	1.18	1.27
2NC 020 R005 150	0.2 X R0.05	0.15	1.50	0.18	15	45	4	1.58	1.64	1.69	1.76	1.89
2NC 020 R005 200	0.2 X R0.05	0.15	2.00	0.18	15	45	4	2.10	2.17	2.25	2.33	2.52
2NC 030 R002 100	0.3 X R0.02	0.25	1.00	0.28	15	45	4	1.07	1.10	1.14	1.18	1.28
2NC 030 R002 200	0.3 X R0.02	0.25	2.00	0.28	15	45	4	2.10	2.17	2.25	2.33	2.52
2NC 030 R002 300	0.3 X R0.02	0.25	3.00	0.28	15	45	4	3.13	3.24	3.36	3.48	3.77
2NC 030 R005 100	0.3 X R0.05	0.25	1.00	0.28	15	45	4	1.07	1.10	1.14	1.18	1.27
2NC 030 R005 150	0.3 X R0.05	0.25	1.50	0.28	15	45	4	1.58	1.64	1.69	1.76	1.89
2NC 030 R005 200	0.3 X R0.05	0.25	2.00	0.28	15	45	4	2.10	2.17	2.25	2.33	2.52
2NC 030 R005 250	0.3 X R0.05	0.25	2.50	0.28	15	45	4	2.62	2.71	2.80	2.91	3.14
2NC 030 R005 300	0.3 X R0.05	0.25	3.00	0.28	15	45	4	3.13	3.24	3.36	3.48	3.76
2NC 040 R002 100	0.4 X R0.02	0.30	1.00	0.37	15	45	4	1.09	1.12	1.16	1.21	1.30
2NC 040 R002 200	0.4 X R0.02	0.30	2.00	0.37	15	45	4	2.12	2.19	2.27	2.36	2.55
2NC 040 R002 300	0.4 X R0.02	0.30	3.00	0.37	15	45	4	3.15	3.26	3.38	3.51	3.79
2NC 040 R002 400	0.4 X R0.02	0.30	4.00	0.37	15	45	4	4.19	4.33	4.49	4.66	5.03
2NC 040 R005 100	0.4 X R0.05	0.30	1.00	0.37	15	45	4	1.08	1.12	1.16	1.20	1.30
2NC 040 R005 200	0.4 X R0.05	0.30	2.00	0.37	15	45	4	2.12	2.19	2.27	2.35	2.54

2NC 2F Necked Corner Radius
2날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30´	1°	1°30´	2°	3°
2NC 040 R005 300	0.4 X R0.05	0.30	3.00	0.37	15	45	4	3.15	3.26	3.38	3.50	3.78
2NC 040 R005 400	0.4 X R0.05	0.30	4.00	0.37	15	45	4	4.19	4.33	4.48	4.65	5.03
2NC 040 R010 100	0.4 X R0.1	0.30	1.00	0.37	15	45	4	1.08	1.12	1.15	1.19	1.28
2NC 040 R010 200	0.4 X R0.1	0.30	2.00	0.37	15	45	4	2.12	2.19	2.26	2.34	2.53
2NC 040 R010 300	0.4 X R0.1	0.30	3.00	0.37	15	45	4	3.15	3.26	3.37	3.49	3.77
2NC 040 R010 400	0.4 X R0.1	0.30	4.00	0.37	15	45	4	4.18	4.33	4.48	4.64	5.01
2NC 050 R002 100	0.5 X R0.02	0.40	1.00	0.47	15	45	4	1.09	1.12	1.16	1.21	1.30
2NC 050 R002 200	0.5 X R0.02	0.40	2.00	0.47	15	45	4	2.12	2.19	2.27	2.36	2.55
2NC 050 R002 300	0.5 X R0.02	0.40	3.00	0.47	15	45	4	3.15	3.26	3.38	3.51	3.79
2NC 050 R002 400	0.5 X R0.02	0.40	4.00	0.47	15	45	4	4.19	4.33	4.49	4.66	5.03
2NC 050 R002 500	0.5 X R0.02	0.40	5.00	0.47	15	45	4	5.22	5.40	5.60	5.81	6.28
2NC 050 R005 100	0.5 X R0.05	0.40	1.00	0.47	15	45	4	1.08	1.12	1.16	1.20	1.30
2NC 050 R005 200	0.5 X R0.05	0.40	2.00	0.47	15	45	4	2.12	2.19	2.27	2.35	2.54
2NC 050 R005 300	0.5 X R0.05	0.40	3.00	0.47	15	45	4	3.15	3.26	3.38	3.50	3.78
2NC 050 R005 400	0.5 X R0.05	0.40	4.00	0.47	15	45	4	4.19	4.33	4.48	4.65	5.03
2NC 050 R005 500	0.5 X R0.05	0.40	5.00	0.47	15	45	4	5.22	5.40	5.59	5.80	6.27
2NC 050 R010 100	0.5 X R0.1	0.40	1.00	0.47	15	45	4	1.08	1.12	1.15	1.19	1.28
2NC 050 R010 200	0.5 X R0.1	0.40	2.00	0.47	15	45	4	2.12	2.19	2.26	2.34	2.53
2NC 050 R010 300	0.5 X R0.1	0.40	3.00	0.47	15	45	4	3.15	3.26	3.37	3.49	3.77
2NC 050 R010 400	0.5 X R0.1	0.40	4.00	0.47	15	45	4	4.18	4.33	4.48	4.64	5.01
2NC 050 R010 500	0.5 X R0.1	0.40	5.00	0.47	15	45	4	5.22	5.40	5.59	5.79	6.26
2NC 060 R002 200	0.6 X R0.02	0.50	2.00	0.57	15	45	4	2.12	2.19	2.27	2.36	2.55
2NC 060 R002 400	0.6 X R0.02	0.50	4.00	0.57	15	45	4	4.19	4.33	4.49	4.66	5.03
2NC 060 R002 600	0.6 X R0.02	0.50	6.00	0.57	15	45	4	6.25	6.47	6.70	6.96	7.52
2NC 060 R005 200	0.6 X R0.05	0.50	2.00	0.57	15	45	4	2.12	2.19	2.27	2.35	2.54
2NC 060 R005 400	0.6 X R0.05	0.50	4.00	0.57	15	45	4	4.19	4.33	4.48	4.65	5.03
2NC 060 R005 600	0.6 X R0.05	0.50	6.00	0.57	15	45	4	6.25	6.47	6.70	6.95	7.51
2NC 060 R010 200	0.6 X R0.1	0.50	2.00	0.57	15	45	4	2.12	2.19	2.26	2.34	2.53
2NC 060 R010 400	0.6 X R0.1	0.50	4.00	0.57	15	45	4	4.18	4.33	4.48	4.64	5.01
2NC 060 R010 600	0.6 X R0.1	0.50	6.00	0.57	15	45	4	6.25	6.47	6.70	6.94	7.50
2NC 070 R005 400	0.7 X R0.05	0.55	4.00	0.66	15	45	4	4.21	4.35	4.51	4.67	5.05
2NC 070 R005 600	0.7 X R0.05	0.55	6.00	0.66	15	45	4	6.27	6.49	6.72	6.97	7.53
2NC 070 R010 400	0.7 X R0.1	0.55	4.00	0.66	15	45	4	4.20	4.35	4.50	4.67	5.04
2NC 070 R010 600	0.7 X R0.1	0.55	6.00	0.66	15	45	4	6.27	6.49	6.72	6.96	7.52
2NC 080 R002 200	0.8 X R0.02	0.65	2.00	0.77	15	45	4	2.12	2.19	2.27	2.36	2.55
2NC 080 R002 400	0.8 X R0.02	0.65	4.00	0.77	15	45	4	4.19	4.33	4.49	4.66	5.03
2NC 080 R002 600	0.8 X R0.02	0.65	6.00	0.77	15	45	4	6.25	6.47	6.70	6.96	7.52
2NC 080 R002 800	0.8 X R0.02	0.65	8.00	0.77	15	45	4	8.32	8.61	8.92	9.26	10.00
2NC 080 R005 200	0.8 X R0.05	0.65	2.00	0.77	15	45	4	2.12	2.19	2.27	2.35	2.54
2NC 080 R005 400	0.8 X R0.05	0.65	4.00	0.77	15	45	4	4.19	4.33	4.48	4.65	5.03
2NC 080 R005 600	0.8 X R0.05	0.65	6.00	0.77	15	45	4	6.25	6.47	6.70	6.95	7.51
2NC 080 R005 800	0.8 X R0.05	0.65	8.00	0.77	15	45	4	8.32	8.61	8.92	9.25	10.00
2NC 080 R010 200	0.8 X R0.1	0.65	2.00	0.77	15	45	4	2.12	2.19	2.26	2.34	2.53
2NC 080 R010 400	0.8 X R0.1	0.65	4.00	0.77	15	45	4	4.18	4.33	4.48	4.64	5.01
2NC 080 R010 600	0.8 X R0.1	0.65	6.00	0.77	15	45	4	6.25	6.47	6.70	6.94	7.50
2NC 080 R010 800	0.8 X R0.1	0.65	8.00	0.77	15	45	4	8.32	8.61	8.91	9.24	9.99
2NC 080 R020 200	0.8 X R0.2	0.65	2.00	0.77	15	45	4	2.11	2.18	2.25	2.33	2.50

2NC 2F Necked Corner Radius
2날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NC 080 R020 400	0.8 X R0.2	0.65	4.00	0.77	15	45	4	4.18	4.32	4.47	4.63	4.99
2NC 080 R020 600	0.8 X R0.2	0.65	6.00	0.77	15	45	4	6.25	6.46	6.69	6.93	7.47
2NC 080 R020 800	0.8 X R0.2	0.65	8.00	0.77	15	45	4	8.32	8.60	8.90	9.23	9.96
2NC 090 R010 400	0.9 X R0.1	0.70	4.00	0.85	15	45	4	4.22	4.37	4.52	4.69	5.06
2NC 090 R010 800	0.9 X R0.1	0.70	8.00	0.85	15	45	4	8.36	8.65	8.95	9.29	10.03
2NC 100 R002 200	1.0 X R0.02	0.80	2.00	0.95	15	45	4	2.16	2.23	2.31	2.40	2.59
2NC 100 R002 400	1.0 X R0.02	0.80	4.00	0.95	15	45	4	4.23	4.37	4.53	4.70	5.08
2NC 100 R002 600	1.0 X R0.02	0.80	6.00	0.95	15	45	4	6.29	6.51	6.75	7.00	7.56
2NC 100 R002 800	1.0 X R0.02	0.80	8.00	0.95	15	45	4	8.36	8.65	8.96	9.30	10.05
2NC 100 R002 1000	1.0 X R0.02	0.80	10.00	0.95	15	45	4	10.43	10.79	11.18	11.60	12.54
2NC 100 R005 200	1.0 X R0.05	0.80	2.00	0.95	15	45	4	2.16	2.23	2.31	2.39	2.59
2NC 100 R005 400	1.0 X R0.05	0.80	4.00	0.95	15	45	4	4.22	4.37	4.53	4.69	5.07
2NC 100 R005 600	1.0 X R0.05	0.80	6.00	0.95	15	45	4	6.29	6.51	6.74	6.99	7.56
2NC 100 R005 800	1.0 X R0.05	0.80	8.00	0.95	15	45	4	8.36	8.65	8.96	9.29	10.04
2NC 100 R005 1000	1.0 X R0.05	0.80	10.00	0.95	15	45	4	10.43	10.79	11.18	11.59	12.53
2NC 100 R005 1200	1.0 X R0.05	0.80	12.00	0.95	15	45	4	12.49	12.93	13.39	13.89	15.02
2NC 100 R005 1600	1.0 X R0.05	0.80	16.00	0.95	15	50	4	16.63	17.21	17.83	18.49	19.99
2NC 100 R005 2000	1.0 X R0.05	0.80	20.00	0.95	15	50	4	20.76	21.48	22.26	23.09	24.96
2NC 100 R010 200	1.0 X R0.1	0.80	2.00	0.95	15	45	4	2.16	2.23	2.30	2.39	2.57
2NC 100 R010 400	1.0 X R0.1	0.80	4.00	0.95	15	45	4	4.22	4.37	4.52	4.69	5.06
2NC 100 R010 600	1.0 X R0.1	0.80	6.00	0.95	15	45	4	6.29	6.51	6.74	6.99	7.55
2NC 100 R010 800	1.0 X R0.1	0.80	8.00	0.95	15	45	4	8.36	8.65	8.95	9.29	10.03
2NC 100 R010 1000	1.0 X R0.1	0.80	10.00	0.95	15	45	4	10.42	10.78	11.17	11.59	12.52
2NC 100 R010 1200	1.0 X R0.1	0.80	12.00	0.95	15	45	4	12.49	12.92	13.39	13.89	15.00
2NC 100 R010 1600	1.0 X R0.1	0.80	16.00	0.95	15	50	4	16.63	17.20	17.82	18.48	19.98
2NC 100 R010 2000	1.0 X R0.1	0.80	20.00	0.95	15	50	4	20.76	21.48	22.25	23.08	24.95
2NC 100 R020 200	1.0 X R0.2	0.80	2.00	0.95	15	45	4	2.15	2.22	2.29	2.37	2.55
2NC 100 R020 400	1.0 X R0.2	0.80	4.00	0.95	15	45	4	4.22	4.36	4.51	4.67	5.03
2NC 100 R020 600	1.0 X R0.2	0.80	6.00	0.95	15	45	4	6.29	6.50	6.73	6.97	7.52
2NC 100 R020 800	1.0 X R0.2	0.80	8.00	0.95	15	45	4	8.35	8.64	8.94	9.27	10.01
2NC 100 R020 1000	1.0 X R0.2	0.80	10.00	0.95	15	45	4	10.42	10.78	11.16	11.57	12.49
2NC 100 R020 1200	1.0 X R0.2	0.80	12.00	0.95	15	45	4	12.49	12.92	13.38	13.87	14.98
2NC 100 R020 1600	1.0 X R0.2	0.80	16.00	0.95	15	50	4	16.62	17.20	17.81	18.47	19.95
2NC 100 R020 2000	1.0 X R0.2	0.80	20.00	0.95	15	50	4	20.76	21.47	22.24	23.07	24.93
2NC 100 R030 200	1.0 X R0.3	0.80	2.00	0.95	15	45	4	2.15	2.21	2.28	2.36	2.52
2NC 100 R030 400	1.0 X R0.3	0.80	4.00	0.95	15	45	4	4.22	4.35	4.50	4.66	5.01
2NC 100 R030 600	1.0 X R0.3	0.80	6.00	0.95	15	45	4	6.28	6.49	6.72	6.96	7.50
2NC 100 R030 800	1.0 X R0.3	0.80	8.00	0.95	15	45	4	8.35	8.63	8.93	9.26	9.98
2NC 100 R030 1000	1.0 X R0.3	0.80	10.00	0.95	15	45	4	10.42	10.77	11.15	11.56	12.47
2NC 100 R030 1200	1.0 X R0.3	0.80	12.00	0.95	15	45	4	12.49	12.91	13.37	13.86	14.96
2NC 100 R030 1600	1.0 X R0.3	0.80	16.00	0.95	15	50	4	16.62	17.19	17.80	18.46	19.93
2NC 100 R030 2000	1.0 X R0.3	0.80	20.00	0.95	15	50	4	20.75	21.47	22.23	23.05	24.90
2NC 120 R010 400	1.2 X R0.1	1.00	4.00	1.14	15	45	4	4.24	4.39	4.54	4.71	5.08
2NC 120 R010 600	1.2 X R0.1	1.00	6.00	1.14	15	45	4	6.31	6.53	6.76	7.01	7.57
2NC 120 R010 1000	1.2 X R0.1	1.00	10.00	1.14	15	45	4	10.44	10.80	11.19	11.61	12.54
2NC 120 R020 400	1.2 X R0.2	1.00	4.00	1.14	15	45	4	4.24	4.38	4.53	4.69	5.06
2NC 120 R020 600	1.2 X R0.2	1.00	6.00	1.14	15	45	4	6.31	6.52	6.75	6.99	7.54

2NC 2F Necked Corner Radius
2날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NC 120 R020 1000	1.2 X R0.2	1.00	10.00	1.14	15	45	4	10.44	10.80	11.18	11.59	12.52
2NC 120 R020 1200	1.2 X R0.2	1.00	12.00	1.14	15	45	4	12.51	12.94	13.40	13.89	15.00
2NC 120 R020 1600	1.2 X R0.2	1.00	16.00	1.14	15	50	4	16.64	17.22	17.83	18.49	19.97
2NC 120 R020 2000	1.2 X R0.2	1.00	20.00	1.14	15	50	4	20.77	21.50	22.27	23.09	24.95
2NC 120 R030 400	1.2 X R0.3	1.00	4.00	1.14	15	45	4	4.24	4.37	4.52	4.68	5.03
2NC 120 R030 600	1.2 X R0.3	1.00	6.00	1.14	15	45	4	6.30	6.51	6.74	6.98	7.52
2NC 120 R030 1000	1.2 X R0.3	1.00	10.00	1.14	15	45	4	10.44	10.79	11.17	11.58	12.49
2NC 120 R030 1200	1.2 X R0.3	1.00	12.00	1.14	15	45	4	12.51	12.94	13.40	13.89	15.00
2NC 120 R030 1600	1.2 X R0.3	1.00	16.00	1.14	15	50	4	16.64	17.22	17.83	18.49	19.97
2NC 120 R030 2000	1.2 X R0.3	1.00	20.00	1.14	15	50	4	20.77	21.50	22.27	23.09	24.95
2NC 150 R005 300	1.5 X R0.05	1.50	3.00	1.44	15	45	4	3.21	3.32	3.44	3.57	3.85
2NC 150 R005 400	1.5 X R0.05	1.50	4.00	1.44	15	45	4	4.24	4.39	4.55	4.72	5.09
2NC 150 R005 600	1.5 X R0.05	1.50	6.00	1.44	15	45	4	6.31	6.53	6.76	7.02	7.58
2NC 150 R005 800	1.5 X R0.05	1.50	8.00	1.44	15	45	4	8.38	8.67	8.98	9.32	10.07
2NC 150 R005 1000	1.5 X R0.05	1.50	10.00	1.44	15	45	4	10.45	10.81	11.20	11.61	12.55
2NC 150 R005 1200	1.5 X R0.05	1.50	12.00	1.44	15	45	4	12.51	12.95	13.41	13.91	15.04
2NC 150 R005 1600	1.5 X R0.05	1.50	16.00	1.44	15	50	4	16.65	17.23	17.85	18.51	20.01
2NC 150 R005 2000	1.5 X R0.05	1.50	20.00	1.44	15	50	4	20.78	21.50	22.28	23.11	free
2NC 150 R010 300	1.5 X R0.1	1.50	3.00	1.44	15	45	4	3.21	3.32	3.43	3.56	3.84
2NC 150 R010 400	1.5 X R0.1	1.50	4.00	1.44	15	45	4	4.24	4.39	4.54	4.71	5.08
2NC 150 R010 600	1.5 X R0.1	1.50	6.00	1.44	15	45	4	6.31	6.53	6.76	7.01	7.57
2NC 150 R010 800	1.5 X R0.1	1.50	8.00	1.44	15	45	4	8.38	8.67	8.97	9.31	10.06
2NC 150 R010 1000	1.5 X R0.1	1.50	10.00	1.44	15	45	4	10.44	10.80	11.19	11.61	12.54
2NC 150 R010 1200	1.5 X R0.1	1.50	12.00	1.44	15	45	4	12.51	12.94	13.41	13.91	15.03
2NC 150 R010 1600	1.5 X R0.1	1.50	16.00	1.44	15	50	4	16.65	17.22	17.84	18.51	20.00
2NC 150 R010 2000	1.5 X R0.1	1.50	20.00	1.44	15	50	4	20.78	21.50	22.27	23.11	free
2NC 150 R020 300	1.5 X R0.2	1.50	3.00	1.44	15	45	4	3.20	3.31	3.42	3.54	3.81
2NC 150 R020 400	1.5 X R0.2	1.50	4.00	1.44	15	45	4	4.24	4.38	4.53	4.69	5.06
2NC 150 R020 600	1.5 X R0.2	1.50	6.00	1.44	15	45	4	6.31	6.52	6.75	6.99	7.54
2NC 150 R020 800	1.5 X R0.2	1.50	8.00	1.44	15	45	4	8.37	8.66	8.96	9.29	10.03
2NC 150 R020 1000	1.5 X R0.2	1.50	10.00	1.44	15	45	4	10.44	10.80	11.18	11.59	12.52
2NC 150 R020 1200	1.5 X R0.2	1.50	12.00	1.44	15	45	4	12.51	12.94	13.40	13.89	15.00
2NC 150 R020 1600	1.5 X R0.2	1.50	16.00	1.44	15	50	4	16.64	17.22	17.83	18.49	19.98
2NC 150 R020 2000	1.5 X R0.2	1.50	20.00	1.44	15	50	4	20.78	21.49	22.26	23.09	free
2NC 150 R030 300	1.5 X R0.3	1.50	3.00	1.44	15	45	4	3.20	3.30	3.41	3.53	3.79
2NC 150 R030 400	1.5 X R0.3	1.50	4.00	1.44	15	45	4	4.24	4.37	4.52	4.68	5.03
2NC 150 R030 600	1.5 X R0.3	1.50	6.00	1.44	15	45	4	6.30	6.51	6.74	6.98	7.52
2NC 150 R030 800	1.5 X R0.3	1.50	8.00	1.44	15	45	4	8.37	8.65	8.95	9.28	10.01
2NC 150 R030 1000	1.5 X R0.3	1.50	10.00	1.44	15	45	4	10.44	10.79	11.17	11.58	12.49
2NC 150 R030 1200	1.5 X R0.3	1.50	12.00	1.44	15	45	4	12.50	12.93	13.39	13.88	14.98
2NC 150 R030 1600	1.5 X R0.3	1.50	16.00	1.44	15	50	4	16.64	17.21	17.82	18.48	19.95
2NC 150 R030 2000	1.5 X R0.3	1.50	20.00	1.44	15	50	4	20.77	21.49	22.25	23.08	free
2NC 150 R050 300	1.5 X R0.5	1.50	3.00	1.44	15	45	4	3.19	3.29	3.39	3.50	3.74
2NC 150 R050 400	1.5 X R0.5	1.50	4.00	1.44	15	45	4	4.23	4.36	4.50	4.65	4.99
2NC 150 R050 600	1.5 X R0.5	1.50	6.00	1.44	15	45	4	6.30	6.50	6.71	6.95	7.47
2NC 150 R050 800	1.5 X R0.5	1.50	8.00	1.44	15	45	4	8.36	8.64	8.93	9.25	9.96
2NC 150 R050 1000	1.5 X R0.5	1.50	10.00	1.44	15	45	4	10.43	10.78	11.15	11.55	12.44

2NC 2F Necked Corner Radius
2날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NC 150 R050 1200	1.5 X R0.5	1.50	12.00	1.44	15	45	4	12.50	12.92	13.36	13.85	14.93
2NC 150 R050 1600	1.5 X R0.5	1.50	16.00	1.44	15	50	4	16.63	17.19	17.80	18.45	19.90
2NC 150 R050 2000	1.5 X R0.5	1.50	20.00	1.44	15	50	4	20.77	21.47	22.23	23.05	free
2NC 200 R005 400	2.0 X R0.05	1.70	4.00	1.92	15	45	4	4.28	4.43	4.59	4.76	5.14
2NC 200 R005 600	2.0 X R0.05	1.70	6.00	1.92	15	45	4	6.35	6.57	6.80	7.06	7.63
2NC 200 R005 800	2.0 X R0.05	1.70	8.00	1.92	15	45	4	8.42	8.71	9.02	9.36	10.11
2NC 200 R005 1000	2.0 X R0.05	1.70	10.00	1.92	15	45	4	10.48	10.85	11.24	11.66	12.60
2NC 200 R005 1200	2.0 X R0.05	1.70	12.00	1.92	15	45	4	12.55	12.99	13.45	13.96	15.09
2NC 200 R005 1600	2.0 X R0.05	1.70	16.00	1.92	15	50	4	16.69	17.27	17.89	18.56	free
2NC 200 R005 2000	2.0 X R0.05	1.70	20.00	1.92	15	50	4	20.82	21.54	22.32	23.16	free
2NC 200 R010 400	2.0 X R0.1	1.70	4.00	1.92	15	45	4	4.28	4.43	4.58	4.75	5.13
2NC 200 R010 600	2.0 X R0.1	1.70	6.00	1.92	15	45	4	6.35	6.57	6.80	7.05	7.62
2NC 200 R010 800	2.0 X R0.1	1.70	8.00	1.92	15	45	4	8.42	8.71	9.02	9.35	10.10
2NC 200 R010 1000	2.0 X R0.1	1.70	10.00	1.92	15	45	4	10.48	10.84	11.23	11.65	12.59
2NC 200 R010 1200	2.0 X R0.1	1.70	12.00	1.92	15	45	4	12.55	12.98	13.45	13.95	15.07
2NC 200 R010 1600	2.0 X R0.1	1.70	16.00	1.92	15	50	4	16.68	17.26	17.88	18.55	free
2NC 200 R010 2000	2.0 X R0.1	1.70	20.00	1.92	15	50	4	20.82	21.54	22.32	23.15	free
2NC 200 R020 400	2.0 X R0.2	1.70	4.00	1.92	15	45	4	4.28	4.42	4.57	4.74	5.10
2NC 200 R020 600	2.0 X R0.2	1.70	6.00	1.92	15	45	4	6.34	6.56	6.79	7.04	7.59
2NC 200 R020 800	2.0 X R0.2	1.70	8.00	1.92	15	45	4	8.41	8.70	9.01	9.34	10.08
2NC 200 R020 1000	2.0 X R0.2	1.70	10.00	1.92	15	45	4	10.48	10.84	11.22	11.64	12.56
2NC 200 R020 1200	2.0 X R0.2	1.70	12.00	1.92	15	45	4	12.55	12.98	13.44	13.93	15.05
2NC 200 R020 1600	2.0 X R0.2	1.70	16.00	1.92	15	50	4	16.68	17.26	17.87	18.53	free
2NC 200 R020 2000	2.0 X R0.2	1.70	20.00	1.92	15	50	4	20.82	21.53	22.31	23.13	free
2NC 200 R030 400	2.0 X R0.3	1.70	4.00	1.92	15	45	4	4.27	4.41	4.56	4.72	5.08
2NC 200 R030 600	2.0 X R0.3	1.70	6.00	1.92	15	45	4	6.34	6.55	6.78	7.02	7.57
2NC 200 R030 800	2.0 X R0.3	1.70	8.00	1.92	15	45	4	8.41	8.69	8.99	9.32	10.05
2NC 200 R030 1000	2.0 X R0.3	1.70	10.00	1.92	15	45	4	10.48	10.83	11.21	11.62	12.54
2NC 200 R030 1200	2.0 X R0.3	1.70	12.00	1.92	15	45	4	12.54	12.97	13.43	13.92	15.03
2NC 200 R030 1600	2.0 X R0.3	1.70	16.00	1.92	15	50	4	16.68	17.25	17.86	18.52	free
2NC 200 R030 2000	2.0 X R0.3	1.70	20.00	1.92	15	50	4	20.81	21.53	22.29	23.12	free
2NC 200 R050 400	2.0 X R0.5	1.70	4.00	1.92	15	45	4	4.27	4.40	4.54	4.69	5.03
2NC 200 R050 600	2.0 X R0.5	1.70	6.00	1.92	15	45	4	6.33	6.54	6.76	6.99	7.52
2NC 200 R050 800	2.0 X R0.5	1.70	8.00	1.92	15	45	4	8.40	8.68	8.97	9.29	10.00
2NC 200 R050 1000	2.0 X R0.5	1.70	10.00	1.92	15	45	4	10.47	10.82	11.19	11.59	12.49
2NC 200 R050 1200	2.0 X R0.5	1.70	12.00	1.92	15	45	4	12.54	12.96	13.41	13.89	14.98
2NC 200 R050 1600	2.0 X R0.5	1.70	16.00	1.92	15	50	4	16.67	17.23	17.84	18.49	free
2NC 200 R050 2000	2.0 X R0.5	1.70	20.00	1.92	15	50	4	20.81	21.51	22.27	23.09	free
2NC 250 R010 1000	2.5 X R0.1	2.00	10.00	2.39	15	45	4	10.54	10.90	11.29	11.71	12.66
2NC 250 R010 2000	2.5 X R0.1	2.00	20.00	2.39	15	50	4	20.88	21.60	22.38	free	free
2NC 250 R010 3000	2.5 X R0.1	2.00	30.00	2.39	15	70	4	31.21	32.30	free	free	free
2NC 250 R020 1000	2.5 X R0.2	2.00	10.00	2.39	15	45	4	10.54	10.90	11.28	11.70	12.63
2NC 250 R020 2000	2.5 X R0.2	2.00	20.00	2.39	15	50	4	20.87	21.59	22.37	free	free
2NC 250 R020 3000	2.5 X R0.2	2.00	30.00	2.39	15	70	4	31.21	32.29	free	free	free
2NC 250 R030 1000	2.5 X R0.3	2.00	10.00	2.39	15	45	4	10.53	10.89	11.27	11.68	12.61
2NC 250 R030 2000	2.5 X R0.3	2.00	20.00	2.39	15	50	4	20.87	21.59	22.36	free	free
2NC 250 R030 3000	2.5 X R0.3	2.00	30.00	2.39	15	70	4	31.21	32.28	free	free	free

2NC 2F Necked Corner Radius
2날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NC 250 R050 1000	2.5 X R0.5	2.00	10.00	2.39	15	45	4	10.53	10.88	11.25	11.65	12.56
2NC 250 R050 2000	2.5 X R0.5	2.00	20.00	2.39	15	50	4	20.86	21.57	22.33	free	free
2NC 250 R050 3000	2.5 X R0.5	2.00	30.00	2.39	15	70	4	31.20	32.27	free	free	free
2NC 300 R005 400	3.0 X R0.05	4.00	4.00	2.86	15	50	6	4.40	4.55	4.71	4.89	5.28
2NC 300 R005 600	3.0 X R0.05	4.00	6.00	2.86	15	50	6	6.47	6.69	6.93	7.19	7.77
2NC 300 R005 800	3.0 X R0.05	4.00	8.00	2.86	15	50	6	8.53	8.83	9.15	9.49	10.25
2NC 300 R005 1000	3.0 X R0.05	4.00	10.00	2.86	15	50	6	10.60	10.97	11.36	11.79	12.74
2NC 300 R005 1200	3.0 X R0.05	4.00	12.00	2.86	15	50	6	12.67	13.11	13.58	14.09	15.23
2NC 300 R005 1600	3.0 X R0.05	4.00	16.00	2.86	15	60	6	16.80	17.39	18.01	18.69	20.20
2NC 300 R005 2000	3.0 X R0.05	4.00	20.00	2.86	15	60	6	20.94	21.66	22.45	23.29	25.17
2NC 300 R010 400	3.0 X R0.1	4.00	4.00	2.86	15	50	6	4.40	4.55	4.71	4.88	5.27
2NC 300 R010 600	3.0 X R0.1	4.00	6.00	2.86	15	50	6	6.46	6.69	6.92	7.18	7.75
2NC 300 R010 800	3.0 X R0.1	4.00	8.00	2.86	15	50	6	8.53	8.82	9.14	9.48	10.24
2NC 300 R010 1000	3.0 X R0.1	4.00	10.00	2.86	15	50	6	10.60	10.96	11.36	11.78	12.73
2NC 300 R010 1200	3.0 X R0.1	4.00	12.00	2.86	15	50	6	12.67	13.10	13.57	14.08	15.21
2NC 300 R010 1600	3.0 X R0.1	4.00	16.00	2.86	15	60	6	16.80	17.38	18.01	18.68	20.19
2NC 300 R010 2000	3.0 X R0.1	4.00	20.00	2.86	15	60	6	20.93	21.66	22.44	23.28	25.16
2NC 300 R010 2500	3.0 X R0.1	4.00	25.00	2.86	15	60	6	26.10	27.01	27.98	29.03	free
2NC 300 R010 3000	3.0 X R0.1	4.00	30.00	2.86	15	70	6	31.27	32.36	33.52	34.78	free
2NC 300 R010 3500	3.0 X R0.1	4.00	35.00	2.86	15	70	6	36.44	37.71	39.06	40.53	free
2NC 300 R020 400	3.0 X R0.2	4.00	4.00	2.86	15	50	6	4.39	4.54	4.70	4.86	5.24
2NC 300 R020 600	3.0 X R0.2	4.00	6.00	2.86	15	50	6	6.46	6.68	6.91	7.16	7.73
2NC 300 R020 800	3.0 X R0.2	4.00	8.00	2.86	15	50	6	8.53	8.82	9.13	9.46	10.22
2NC 300 R020 1000	3.0 X R0.2	4.00	10.00	2.86	15	50	6	10.59	10.96	11.35	11.76	12.70
2NC 300 R020 1200	3.0 X R0.2	4.00	12.00	2.86	15	50	6	12.66	13.10	13.56	14.06	15.19
2NC 300 R020 1600	3.0 X R0.2	4.00	16.00	2.86	15	60	6	16.80	17.38	18.00	18.66	20.16
2NC 300 R020 2000	3.0 X R0.2	4.00	20.00	2.86	15	60	6	20.93	21.65	22.43	23.26	25.13
2NC 300 R020 2500	3.0 X R0.2	4.00	25.00	2.86	15	60	6	26.10	27.00	27.97	29.01	free
2NC 300 R020 3000	3.0 X R0.2	4.00	30.00	2.86	15	70	6	31.27	32.35	33.51	34.76	free
2NC 300 R020 3500	3.0 X R0.2	4.00	35.00	2.86	15	70	6	36.44	37.70	39.05	40.51	free
2NC 300 R030 400	3.0 X R0.3	4.00	4.00	2.86	15	50	6	4.39	4.53	4.69	4.85	5.22
2NC 300 R030 600	3.0 X R0.3	4.00	6.00	2.86	15	50	6	6.46	6.67	6.90	7.15	7.71
2NC 300 R030 800	3.0 X R0.3	4.00	8.00	2.86	15	50	6	8.52	8.81	9.12	9.45	10.19
2NC 300 R030 1000	3.0 X R0.3	4.00	10.00	2.86	15	50	6	10.59	10.95	11.34	11.75	12.68
2NC 300 R030 1200	3.0 X R0.3	4.00	12.00	2.86	15	50	6	12.66	13.09	13.55	14.05	15.16
2NC 300 R030 1600	3.0 X R0.3	4.00	16.00	2.86	15	60	6	16.79	17.37	17.99	18.65	20.14
2NC 300 R030 2000	3.0 X R0.3	4.00	20.00	2.86	15	60	6	20.93	21.65	22.42	23.25	25.11
2NC 300 R030 2500	3.0 X R0.3	4.00	25.00	2.86	15	60	6	26.10	27.00	27.96	29.00	free
2NC 300 R030 3000	3.0 X R0.3	4.00	30.00	2.86	15	70	6	31.26	32.34	33.50	34.75	free
2NC 300 R030 3500	3.0 X R0.3	4.00	35.00	2.86	15	70	6	36.43	37.69	39.04	40.50	free
2NC 300 R050 400	3.0 X R0.5	4.00	4.00	2.86	15	50	6	4.38	4.52	4.66	4.82	5.17
2NC 300 R050 600	3.0 X R0.5	4.00	6.00	2.86	15	50	6	6.45	6.66	6.88	7.12	7.66
2NC 300 R050 800	3.0 X R0.5	4.00	8.00	2.86	15	50	6	8.52	8.80	9.10	9.42	10.14
2NC 300 R050 1000	3.0 X R0.5	4.00	10.00	2.86	15	50	6	10.58	10.94	11.31	11.72	12.63
2NC 300 R050 1200	3.0 X R0.5	4.00	12.00	2.86	15	50	6	12.65	13.08	13.53	14.02	15.12
2NC 300 R050 1600	3.0 X R0.5	4.00	16.00	2.86	15	60	6	16.79	17.35	17.96	18.62	20.09
2NC 300 R050 2000	3.0 X R0.5	4.00	20.00	2.86	15	60	6	20.92	21.63	22.40	23.22	25.06

2NC 2F Necked Corner Radius
2날 코너 R 리브

(Unit: mm)

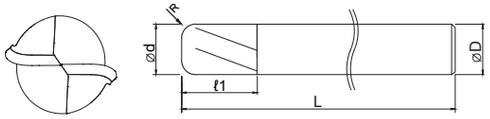
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NC 300 R050 2500	3.0 X R0.5	4.00	25.00	2.86	15	60	6	26.09	26.98	27.94	28.97	free
2NC 300 R050 3000	3.0 X R0.5	4.00	30.00	2.86	15	70	6	31.26	32.33	33.48	34.72	free
2NC 300 R050 3500	3.0 X R0.5	4.00	35.00	2.86	15	70	6	36.43	37.68	39.02	40.47	free
2NC 300 R100 800	3.0 X R1.0	4.00	8.00	2.86	15	50	6	8.50	8.76	9.04	9.34	10.02
2NC 300 R100 1000	3.0 X R1.0	4.00	10.00	2.86	15	50	6	10.57	10.90	11.26	11.64	12.51
2NC 300 R100 1200	3.0 X R1.0	4.00	12.00	2.86	15	50	6	12.64	13.04	13.48	13.94	14.99
2NC 300 R100 1600	3.0 X R1.0	4.00	16.00	2.86	15	60	6	16.77	17.32	17.91	18.54	19.97
2NC 300 R100 2000	3.0 X R1.0	4.00	20.00	2.86	15	60	6	20.90	21.60	22.34	23.14	24.94
2NC 300 R100 2500	3.0 X R1.0	4.00	25.00	2.86	15	60	6	26.07	26.95	27.88	28.89	free
2NC 300 R100 3000	3.0 X R1.0	4.00	30.00	2.86	15	70	6	31.24	32.30	33.43	34.64	free
2NC 300 R100 3500	3.0 X R1.0	4.00	35.00	2.86	15	70	6	36.41	37.64	38.97	40.39	free
2NC 400 R010 800	4.0 X R0.1	5.00	8.00	3.80	15	50	6	8.65	8.94	9.26	9.61	10.38
2NC 400 R010 1000	4.0 X R0.1	5.00	10.00	3.80	15	50	6	10.71	11.08	11.48	11.91	12.87
2NC 400 R010 1200	4.0 X R0.1	5.00	12.00	3.80	15	50	6	12.78	13.22	13.70	14.21	15.35
2NC 400 R010 1600	4.0 X R0.1	5.00	16.00	3.80	15	60	6	16.92	17.50	18.13	18.81	free
2NC 400 R010 2000	4.0 X R0.1	5.00	20.00	3.80	15	60	6	21.05	21.78	22.56	23.41	free
2NC 400 R010 2500	4.0 X R0.1	5.00	25.00	3.80	15	60	6	26.22	27.13	28.11	free	free
2NC 400 R010 3000	4.0 X R0.1	5.00	30.00	3.80	15	70	6	31.39	32.48	33.65	free	free
2NC 400 R010 4000	4.0 X R0.1	5.00	40.00	3.80	15	80	6	41.72	43.17	free	free	free
2NC 400 R020 800	4.0 X R0.2	5.00	8.00	3.80	15	50	6	8.64	8.94	9.25	9.59	10.36
2NC 400 R020 1000	4.0 X R0.2	5.00	10.00	3.80	15	50	6	10.71	11.08	11.47	11.89	12.84
2NC 400 R020 1200	4.0 X R0.2	5.00	12.00	3.80	15	50	6	12.78	13.22	13.69	14.19	15.33
2NC 400 R020 1600	4.0 X R0.2	5.00	16.00	3.80	15	60	6	16.91	17.50	18.12	18.79	free
2NC 400 R020 2000	4.0 X R0.2	5.00	20.00	3.80	15	60	6	21.05	21.77	22.55	23.39	free
2NC 400 R020 2500	4.0 X R0.2	5.00	25.00	3.80	15	60	6	26.22	27.12	28.09	free	free
2NC 400 R020 3000	4.0 X R0.2	5.00	30.00	3.80	15	70	6	31.38	32.47	33.64	free	free
2NC 400 R020 4000	4.0 X R0.2	5.00	40.00	3.80	15	80	6	41.72	43.17	free	free	free
2NC 400 R030 800	4.0 X R0.3	5.00	8.00	3.80	15	50	6	8.64	8.93	9.24	9.58	10.33
2NC 400 R030 1000	4.0 X R0.3	5.00	10.00	3.80	15	50	6	10.71	11.07	11.46	11.88	12.82
2NC 400 R030 1200	4.0 X R0.3	5.00	12.00	3.80	15	50	6	12.77	13.21	13.68	14.18	15.30
2NC 400 R030 1600	4.0 X R0.3	5.00	16.00	3.80	15	60	6	16.91	17.49	18.11	18.78	free
2NC 400 R030 2000	4.0 X R0.3	5.00	20.00	3.80	15	60	6	21.04	21.77	22.54	23.38	free
2NC 400 R030 2500	4.0 X R0.3	5.00	25.00	3.80	15	60	6	26.21	27.12	28.08	free	free
2NC 400 R030 3000	4.0 X R0.3	5.00	30.00	3.80	15	70	6	31.38	32.46	33.63	free	free
2NC 400 R030 4000	4.0 X R0.3	5.00	40.00	3.80	15	80	6	41.72	43.16	free	free	free
2NC 400 R050 800	4.0 X R0.5	5.00	8.00	3.80	15	50	6	8.63	8.92	9.22	9.55	10.28
2NC 400 R050 1000	4.0 X R0.5	5.00	10.00	3.80	15	50	6	10.70	11.06	11.44	11.85	12.77
2NC 400 R050 1200	4.0 X R0.5	5.00	12.00	3.80	15	50	6	12.77	13.20	13.65	14.15	15.26
2NC 400 R050 1600	4.0 X R0.5	5.00	16.00	3.80	15	60	6	16.90	17.47	18.09	18.75	free
2NC 400 R050 2000	4.0 X R0.5	5.00	20.00	3.80	15	60	6	21.04	21.75	22.52	23.35	free
2NC 400 R050 2500	4.0 X R0.5	5.00	25.00	3.80	15	60	6	26.21	27.10	28.06	29.10	free
2NC 400 R050 3000	4.0 X R0.5	5.00	30.00	3.80	15	70	6	31.37	32.45	33.60	free	free
2NC 400 R050 3500	4.0 X R0.5	5.00	35.00	3.80	15	75	6	36.52	37.80	39.14	free	free
2NC 400 R050 4000	4.0 X R0.5	5.00	40.00	3.80	15	80	6	41.71	43.15	free	free	free
2NC 400 R100 800	4.0 X R1.0	5.00	8.00	3.80	15	50	6	8.62	8.88	9.17	9.47	10.16
2NC 400 R100 1000	4.0 X R1.0	5.00	10.00	3.80	15	50	6	10.68	11.02	11.38	11.77	12.65
2NC 400 R100 1200	4.0 X R1.0	5.00	12.00	3.80	15	50	6	12.75	13.16	13.60	14.07	15.13

2NC 2F Necked Corner Radius
2날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NC 400 R100 1600	4.0 X R1.0	5.00	16.00	3.80	15	60	6	16.89	17.44	18.03	18.67	free
2NC 400 R100 2000	4.0 X R1.0	5.00	20.00	3.80	15	60	6	21.02	21.72	22.47	23.27	free
2NC 400 R100 2500	4.0 X R1.0	5.00	25.00	3.80	15	60	6	26.19	27.07	28.01	29.02	free
2NC 400 R100 3000	4.0 X R1.0	5.00	30.00	3.80	15	70	6	31.36	32.42	33.55	free	free
2NC 400 R100 3500	4.0 X R1.0	5.00	35.00	3.80	15	75	6	36.53	37.77	39.09	free	free
2NC 400 R100 4000	4.0 X R1.0	5.00	40.00	3.80	15	80	6	41.69	43.11	free	free	free
2NC 500 R010 2000	5.0 X R0.1	4.00	20.00	4.75	15	60	6	21.15	21.88	free	free	free
2NC 500 R010 4000	5.0 X R0.1	4.00	40.00	4.75	15	80	6	41.82	free	free	free	free
2NC 500 R020 2000	5.0 X R0.2	4.00	20.00	4.75	15	60	6	21.14	21.87	free	free	free
2NC 500 R020 4000	5.0 X R0.2	4.00	40.00	4.75	15	80	6	41.82	free	free	free	free
2NC 500 R030 2000	5.0 X R0.3	4.00	20.00	4.75	15	60	6	21.14	21.87	free	free	free
2NC 500 R030 4000	5.0 X R0.3	4.00	40.00	4.75	15	80	6	41.81	free	free	free	free
2NC 500 R050 2000	5.0 X R0.5	4.00	20.00	4.75	15	60	6	21.13	21.85	free	free	free
2NC 500 R050 4000	5.0 X R0.5	4.00	40.00	4.75	15	80	6	41.81	free	free	free	free
2NC 500 R100 2000	5.0 X R1.0	4.00	20.00	4.75	15	60	6	21.12	21.82	free	free	free
2NC 500 R100 4000	5.0 X R1.0	4.00	40.00	4.75	15	80	6	41.79	free	free	free	free
2NC 600 R010 1200	6.0 X R0.1	8.00	12.00	5.70	–	50	6	free	free	free	free	free
2NC 600 R010 1600	6.0 X R0.1	8.00	16.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R010 2000	6.0 X R0.1	8.00	20.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R010 3000	6.0 X R0.1	8.00	30.00	5.70	–	70	6	free	free	free	free	free
2NC 600 R020 1200	6.0 X R0.2	8.00	12.00	5.70	–	50	6	free	free	free	free	free
2NC 600 R020 1600	6.0 X R0.2	8.00	16.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R020 2000	6.0 X R0.2	8.00	20.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R020 3000	6.0 X R0.2	8.00	30.00	5.70	–	70	6	free	free	free	free	free
2NC 600 R030 1200	6.0 X R0.3	8.00	12.00	5.70	–	50	6	free	free	free	free	free
2NC 600 R030 1600	6.0 X R0.3	8.00	16.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R030 2000	6.0 X R0.3	8.00	20.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R030 3000	6.0 X R0.3	8.00	30.00	5.70	–	70	6	free	free	free	free	free
2NC 600 R050 1200	6.0 X R0.5	8.00	12.00	5.70	–	50	6	free	free	free	free	free
2NC 600 R050 1600	6.0 X R0.5	8.00	16.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R050 2000	6.0 X R0.5	8.00	20.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R050 3000	6.0 X R0.5	8.00	30.00	5.70	–	70	6	free	free	free	free	free
2NC 600 R100 1200	6.0 X R1.0	8.00	12.00	5.70	–	50	6	free	free	free	free	free
2NC 600 R100 1600	6.0 X R1.0	8.00	16.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R100 2000	6.0 X R1.0	8.00	20.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R100 3000	6.0 X R1.0	8.00	30.00	5.70	–	70	6	free	free	free	free	free
2NC 600 R150 2000	6.0 X R1.5	8.00	20.00	5.70	–	60	6	free	free	free	free	free
2NC 600 R150 3000	6.0 X R1.5	8.00	30.00	5.70	–	70	6	free	free	free	free	free
2NC 800 R020 2400	8.0 X R0.2	12.00	24.00	7.60	–	65	8	free	free	free	free	free
2NC 800 R030 2400	8.0 X R0.3	12.00	24.00	7.60	–	65	8	free	free	free	free	free
2NC 800 R050 2400	8.0 X R0.5	12.00	24.00	7.60	–	65	8	free	free	free	free	free
2NC 800 R100 2400	8.0 X R1.0	12.00	24.00	7.60	-	65	8	free	free	free	free	free
2NC 800 R150 2400	8.0 X R1.5	12.00	24.00	7.60	-	65	8	free	free	free	free	free
2NC 1000 R050 2500	10.0 X R0.5	15.00	25.00	9.50	-	70	10	free	free	free	free	free
2NC 1000 R100 2500	10.0 X R1.0	15.00	25.00	9.50	-	70	10	free	free	free	free	free
2NC 1200 R050 2500	12.0 X R0.5	15.00	25.00	11.50	-	80	12	free	free	free	free	free
2NC 1200 R100 2500	12.0 X R1.0	15.00	25.00	11.50	-	80	12	free	free	free	free	free

2CL 2F Corner Radius-Long
2날 코너 R 롱



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 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	

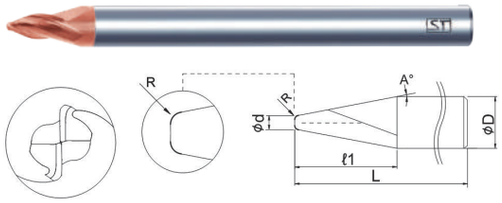
2CL 2F Corner Radius-Long
2날 코너 R 롱

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CL 400 R100 70	4.0 X R1.0	11	70	6	
2CL 500 R020 75	5.0 X R0.2	13	75	6	
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 60	6.0 X R1.0	13	60	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	

2CT 2F Corner R Tapered End Mill
2날 코너 R 테이퍼 엔드밀

NEW



Features

- Reduce vibration and improve workpiece surface quality by tapered neck
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징

- 테이퍼 넥으로 진동을 줄이고, 절삭면의 조도 향상
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

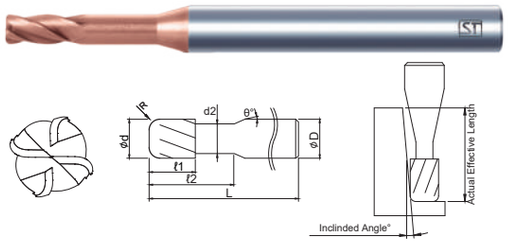
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Angle 각도 A(°)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CT 030 050 S4	0.3 X R0.05	0.5	1.2	45	4	
2CT 030 100 S4	0.3 X R0.05	1	1.2	45	4	
2CT 030 150 S4	0.3 X R0.05	1.5	1.2	45	4	
2CT 030 200 S4	0.3 X R0.05	2	1.2	45	4	
2CT 030 500 S4	0.3 X R0.05	5	1.2	45	4	
2CT 030 700 S4	0.3 X R0.05	7	1.5	45	4	
2CT 030 1000 S4	0.3 X R0.05	10	1.5	45	4	
2CT 030 1500 S4	0.3 X R0.05	15	1.5	45	4	
2CT 050 050 S4	0.5 X R0.1	0.5	2	45	4	
2CT 050 100 S4	0.5 X R0.1	1	2	45	4	
2CT 050 150 S4	0.5 X R0.1	1.5	2	45	4	
2CT 050 200 S4	0.5 X R0.1	2	2	45	4	
2CT 050 500 S4	0.5 X R0.1	5	2	45	4	
2CT 050 700 S4	0.5 X R0.1	7	2.5	45	4	
2CT 050 1000 S4	0.5 X R0.1	10	2.5	45	4	
2CT 050 1500 S4	0.5 X R0.1	15	2.5	45	4	
2CT 100 050 S4	1.0 X R0.25	0.5	4	45	4	
2CT 100 100 S4	1.0 X R0.25	1	4	45	4	
2CT 100 150 S4	1.0 X R0.25	1.5	4	45	4	
2CT 100 200 S4	1.0 X R0.25	2	4	45	4	
2CT 100 500 S4	1.0 X R0.25	5	4	45	4	

2CT 2F Corner R Tapered End Mill
2날 코너 R 테이퍼 엔드밀

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Angle 각도 A(°)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CT 100 700 S4	1.0 X R0.25	7	4	45	4	
2CT 100 1000 S4	1.0 X R0.25	10	4	45	4	
2CT 100 1500 600 S4	1.0 X R0.25	15	6	45	4	
2CT 100 1500 S4	1.0 X R0.25	15	4	50	4	
2CT 150 050 S4	1.5 X R0.4	0.5	5	45	4	
2CT 150 100 S4	1.5 X R0.4	1	5	45	4	
2CT 150 150 S4	1.5 X R0.4	1.5	6	45	4	
2CT 150 200 S4	1.5 X R0.4	2	7	45	4	
2CT 150 200 S4	1.5 X R0.4	5	10	50	4	
2CT 150 700 S4	1.5 X R0.4	7	10	50	4	
2CT 150 1000 S6	1.5 X R0.4	10	10	50	6	
2CT 150 1500 S6	1.5 X R0.4	15	6	50	6	
2CT 200 050 S4	2.0 X R0.5	0.5	6	45	4	
2CT 200 100 S4	2.0 X R0.5	1	6	45	4	
2CT 200 150 S4	2.0 X R0.5	1.5	6	45	4	
2CT 200 200 S4	2.0 X R0.5	2	8	45	4	
2CT 200 500 S4	2.0 X R0.5	5	10	50	4	
2CT 200 700 S6	2.0 X R0.5	7	10	50	6	
2CT 200 1000 S6	2.0 X R0.5	10	11	50	6	
2CT 200 1500 S6	2.0 X R0.5	15	7	50	6	
2CT 300 050 S6	3.0 X R0.75	0.5	12	50	6	
2CT 300 100 S6	3.0 X R0.75	1	12	50	6	
2CT 300 150 S6	3.0 X R0.75	1.5	12	50	6	
2CT 300 200 S6	3.0 X R0.75	2	12	50	6	
2CT 300 500 S6	3.0 X R0.75	5	12	50	6	
2CT 300 700 S6	3.0 X R0.75	7	12	50	6	
2CT 300 1000 S6	3.0 X R0.75	10	8	50	6	
2CT 300 1500 S8	3.0 X R0.75	15	9	60	8	

4NC 4F Necked Corner Radius
4날 코너 R 리브



Features
- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30´	1°	1°30´	2°	3°
4NC 100 R005 400	1.0 X R0.05	0.80	4.00	0.95	15	45	4	4.22	4.37	4.53	4.69	5.07
4NC 100 R005 500	1.0 X R0.05	0.80	5.00	0.95	15	45	4	5.26	5.44	5.63	5.84	6.31
4NC 100 R005 600	1.0 X R0.05	0.80	6.00	0.95	15	45	4	6.29	6.51	6.74	6.99	7.56
4NC 100 R005 800	1.0 X R0.05	0.80	8.00	0.95	15	45	4	8.36	8.65	8.96	9.29	10.04
4NC 100 R005 1000	1.0 X R0.05	0.80	10.00	0.95	15	45	4	10.43	10.79	11.18	11.59	12.53
4NC 100 R005 1200	1.0 X R0.05	0.80	12.00	0.95	15	45	4	12.49	12.93	13.39	13.89	15.02
4NC 100 R005 1600	1.0 X R0.05	0.80	16.00	0.95	15	50	4	16.63	17.21	17.83	18.49	19.99
4NC 100 R010 400	1.0 X R0.1	0.80	4.00	0.95	15	45	4	4.22	4.37	4.52	4.69	5.06
4NC 100 R010 500	1.0 X R0.1	0.80	5.00	0.95	15	45	4	5.26	5.44	5.63	5.84	6.30
4NC 100 R010 600	1.0 X R0.1	0.80	6.00	0.95	15	45	4	6.29	6.51	6.74	6.99	7.55
4NC 100 R010 800	1.0 X R0.1	0.80	8.00	0.95	15	45	4	8.36	8.65	8.95	9.29	10.03
4NC 100 R010 1000	1.0 X R0.1	0.80	10.00	0.95	15	45	4	10.42	10.78	11.17	11.59	12.52
4NC 100 R010 1200	1.0 X R0.1	0.80	12.00	0.95	15	45	4	12.49	12.92	13.39	13.89	15.00
4NC 100 R010 1600	1.0 X R0.1	0.80	16.00	0.95	15	50	4	16.63	17.20	17.82	18.48	19.98
4NC 100 R020 400	1.0 X R0.2	0.80	4.00	0.95	15	45	4	4.22	4.36	4.51	4.67	5.03
4NC 100 R020 500	1.0 X R0.2	0.80	5.00	0.95	15	45	4	5.25	5.43	5.62	5.82	6.28
4NC 100 R020 600	1.0 X R0.2	0.80	6.00	0.95	15	45	4	6.29	6.50	6.73	6.97	7.52
4NC 100 R020 800	1.0 X R0.2	0.80	8.00	0.95	15	45	4	8.35	8.64	8.94	9.27	10.01
4NC 100 R020 1000	1.0 X R0.2	0.80	10.00	0.95	15	45	4	10.42	10.78	11.16	11.57	12.49
4NC 100 R020 1200	1.0 X R0.2	0.80	12.00	0.95	15	45	4	12.49	12.92	13.38	13.87	14.98
4NC 100 R020 1600	1.0 X R0.2	0.80	16.00	0.95	15	50	4	16.62	17.20	17.81	18.47	19.95

4NC 4F Necked Corner Radius
4날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30´	1°	1°30´	2°	3°
4NC 100 R030 400	1.0 X R0.3	0.80	4.00	0.95	15	45	4	4.22	4.35	4.50	4.66	5.01
4NC 100 R030 500	1.0 X R0.3	0.80	5.00	0.95	15	45	4	5.25	5.42	5.61	5.81	6.25
4NC 100 R030 600	1.0 X R0.3	0.80	6.00	0.95	15	45	4	6.28	6.49	6.72	6.96	7.50
4NC 100 R030 800	1.0 X R0.3	0.80	8.00	0.95	15	45	4	8.35	8.63	8.93	9.26	9.98
4NC 100 R030 1000	1.0 X R0.3	0.80	10.00	0.95	15	45	4	10.42	10.77	11.15	11.56	12.47
4NC 100 R030 1200	1.0 X R0.3	0.80	12.00	0.95	15	45	4	12.49	12.91	13.37	13.86	14.96
4NC 100 R030 1600	1.0 X R0.3	0.80	16.00	0.95	15	50	4	16.62	17.19	17.80	18.46	19.93
4NC 120 R010 400	1.2X R0.1	1.00	4.00	1.14	15	45	4	4.24	4.39	4.54	4.71	5.08
4NC 120 R010 600	1.2 X R0.1	1.00	6.00	1.14	15	45	4	6.31	6.53	6.76	7.01	7.57
4NC 120 R010 800	1.2 X R0.1	1.00	8.00	1.14	15	45	4	8.38	8.67	8.97	9.31	10.06
4NC 120 R010 1200	1.2 X R0.1	1.00	12.00	1.14	15	45	4	12.51	12.94	13.41	13.91	15.03
4NC 120 R020 400	1.2X R0.2	1.00	4.00	1.14	15	45	4	4.24	4.38	4.53	4.69	5.06
4NC 120 R020 600	1.2 X R0.2	1.00	6.00	1.14	15	45	4	6.31	6.52	6.75	6.99	7.54
4NC 120 R020 800	1.2 X R0.2	1.00	8.00	1.14	15	45	4	8.37	8.66	8.96	9.29	10.03
4NC 120 R020 1200	1.2 X R0.2	1.00	12.00	1.14	15	45	4	12.51	12.94	13.40	13.89	15.00
4NC 120 R030 400	1.2X R0.3	1.00	4.00	1.14	15	45	4	4.24	4.37	4.52	4.68	5.03
4NC 120 R030 600	1.2 X R0.3	1.00	6.00	1.14	15	45	4	6.30	6.51	6.74	6.98	7.52
4NC 120 R030 800	1.2 X R0.3	1.00	8.00	1.14	15	45	4	8.37	8.65	8.95	9.28	10.01
4NC 120 R030 1200	1.2 X R0.3	1.00	12.00	1.14	15	45	4	12.50	12.93	13.39	13.88	14.98
4NC 150 R010 600	1.5 X R0.1	1.35	6.00	1.44	15	45	4	6.31	6.53	6.76	7.01	7.57
4NC 150 R010 800	1.5 X R0.1	1.35	8.00	1.44	15	45	4	8.38	8.67	8.97	9.31	10.06
4NC 150 R010 1200	1.5 X R0.1	1.35	12.00	1.44	15	45	4	12.51	12.94	13.41	13.91	15.03
4NC 150 R010 1600	1.5 X R0.1	1.35	16.00	1.44	15	50	4	16.65	17.22	17.84	18.51	20.00
4NC 150 R010 2000	1.5 X R0.1	1.35	20.00	1.44	15	50	4	20.78	21.50	22.27	23.11	free
4NC 150 R020 600	1.5 X R0.2	1.35	6.00	1.44	15	45	4	6.31	6.52	6.75	6.99	7.54
4NC 150 R020 800	1.5 X R0.2	1.35	8.00	1.44	15	45	4	8.37	8.66	8.96	9.29	10.03
4NC 150 R020 1200	1.5 X R0.2	1.35	12.00	1.44	15	45	4	12.51	12.94	13.40	13.89	15.00
4NC 150 R020 1600	1.5 X R0.2	1.35	16.00	1.44	15	50	4	16.64	17.22	17.83	18.49	19.98
4NC 150 R020 2000	1.5 X R0.2	1.35	20.00	1.44	15	50	4	20.78	21.49	22.26	23.09	free
4NC 150 R030 600	1.5 X R0.3	1.35	6.00	1.44	15	45	4	6.30	6.51	6.74	6.98	7.52
4NC 150 R030 800	1.5 X R0.3	1.35	8.00	1.44	15	45	4	8.37	8.65	8.95	9.28	10.01
4NC 150 R030 1200	1.5 X R0.3	1.35	12.00	1.44	15	45	4	12.50	12.93	13.39	13.88	14.98
4NC 150 R030 1600	1.5 X R0.3	1.35	16.00	1.44	15	50	4	16.64	17.21	17.82	18.48	19.95
4NC 150 R030 2000	1.5 X R0.3	1.35	20.00	1.44	15	50	4	20.77	21.49	22.25	23.08	free
4NC 150 R050 600	1.5 X R0.5	1.35	6.00	1.44	15	45	4	6.30	6.50	6.71	6.95	7.47
4NC 150 R050 800	1.5 X R0.5	1.35	8.00	1.44	15	45	4	8.36	8.64	8.93	9.25	9.96
4NC 150 R050 1200	1.5 X R0.5	1.35	12.00	1.44	15	45	4	12.50	12.92	13.36	13.85	14.93
4NC 150 R050 1600	1.5 X R0.5	1.35	16.00	1.44	15	50	4	16.63	17.19	17.80	18.45	19.90
4NC 150 R050 2000	1.5 X R0.5	1.35	20.00	1.44	15	50	4	20.77	21.47	22.23	23.05	free
4NC 200 R010 600	2.0 X R0.1	1.70	6.00	1.92	15	45	4	6.35	6.57	6.80	7.05	7.62
4NC 200 R010 800	2.0 X R0.1	1.70	8.00	1.92	15	45	4	8.42	8.71	9.02	9.35	10.10
4NC 200 R010 1000	2.0 X R0.1	1.70	10.00	1.92	15	45	4	10.48	10.84	11.23	11.65	12.59
4NC 200 R010 1200	2.0 X R0.1	1.70	12.00	1.92	15	45	4	12.55	12.98	13.45	13.95	15.07
4NC 200 R010 1600	2.0 X R0.1	1.70	16.00	1.92	15	50	4	16.68	17.26	17.88	18.55	free
4NC 200 R010 2000	2.0 X R0.1	1.70	20.00	1.92	15	50	4	20.82	21.54	22.32	23.15	free
4NC 200 R010 2500	2.0 X R0.1	1.70	25.00	1.92	15	60	4	25.99	26.89	27.86	free	free
4NC 200 R020 600	2.0 X R0.2	1.70	6.00	1.92	15	45	4	6.34	6.56	6.79	7.04	7.59

4NC 4F Necked Corner Radius
4날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NC 200 R020 800	2.0 X R0.2	1.70	8.00	1.92	15	45	4	8.41	8.70	9.01	9.34	10.08
4NC 200 R020 1000	2.0 X R0.2	1.70	10.00	1.92	15	45	4	10.48	10.84	11.22	11.64	12.56
4NC 200 R020 1200	2.0 X R0.2	1.70	12.00	1.92	15	45	4	12.55	12.98	13.44	13.93	15.05
4NC 200 R020 1600	2.0 X R0.2	1.70	16.00	1.92	15	50	4	16.68	17.26	17.87	18.53	free
4NC 200 R020 2000	2.0 X R0.2	1.70	20.00	1.92	15	50	4	20.82	21.53	22.31	23.13	free
4NC 200 R020 2500	2.0 X R0.2	1.70	25.00	1.92	15	60	4	25.98	26.88	27.85	28.88	free
4NC 200 R030 600	2.0 X R0.3	1.70	6.00	1.92	15	45	4	6.34	6.55	6.78	7.02	7.57
4NC 200 R030 800	2.0 X R0.3	1.70	8.00	1.92	15	45	4	8.41	8.69	8.99	9.32	10.05
4NC 200 R030 1000	2.0 X R0.3	1.70	10.00	1.92	15	45	4	10.48	10.83	11.21	11.62	12.54
4NC 200 R030 1200	2.0 X R0.3	1.70	12.00	1.92	15	45	4	12.54	12.97	13.43	13.92	15.03
4NC 200 R030 1600	2.0 X R0.3	1.70	16.00	1.92	15	50	4	16.68	17.25	17.86	18.52	free
4NC 200 R030 2000	2.0 X R0.3	1.70	20.00	1.92	15	50	4	20.81	21.53	22.29	23.12	free
4NC 200 R030 2500	2.0 X R0.3	1.70	25.00	1.92	15	60	4	25.98	26.88	27.84	28.87	free
4NC 200 R050 600	2.0 X R0.5	1.70	6.00	1.92	15	45	4	6.33	6.54	6.76	6.99	7.52
4NC 200 R050 800	2.0 X R0.5	1.70	8.00	1.92	15	45	4	8.40	8.68	8.97	9.29	10.00
4NC 200 R050 1000	2.0 X R0.5	1.70	10.00	1.92	15	45	4	10.47	10.82	11.19	11.59	12.49
4NC 200 R050 1200	2.0 X R0.5	1.70	12.00	1.92	15	45	4	12.54	12.96	13.41	13.89	14.98
4NC 200 R050 1600	2.0 X R0.5	1.70	16.00	1.92	15	50	4	16.67	17.23	17.84	18.49	free
4NC 200 R050 2000	2.0 X R0.5	1.70	20.00	1.92	15	50	4	20.81	21.51	22.27	23.09	free
4NC 200 R050 2500	2.0 X R0.5	1.70	25.00	1.92	15	60	4	25.97	26.86	27.81	28.84	free
4NC 250 R010 1000	2.5 X R0.1	2.00	10.00	2.39	15	45	4	10.54	10.90	11.29	11.71	12.66
4NC 250 R010 1600	2.5 X R0.1	2.00	16.00	2.39	15	50	4	16.74	17.32	17.94	18.61	free
4NC 250 R010 2500	2.5 X R0.1	2.00	25.00	2.39	15	60	4	26.05	26.95	27.92	free	free
4NC 250 R020 1000	2.5 X R0.2	2.00	10.00	2.39	15	45	4	10.54	10.90	11.28	11.70	12.63
4NC 250 R020 1600	2.5 X R0.2	2.00	16.00	2.39	15	50	4	16.74	17.32	17.93	18.60	free
4NC 250 R020 2500	2.5 X R0.2	2.00	25.00	2.39	15	60	4	26.04	26.94	27.91	free	free
4NC 250 R030 1000	2.5 X R0.3	2.00	10.00	2.39	15	45	4	10.53	10.89	11.27	11.68	12.61
4NC 250 R030 1600	2.5 X R0.3	2.00	16.00	2.39	15	50	4	16.74	17.31	17.92	18.58	free
4NC 250 R030 2500	2.5 X R0.3	2.00	25.00	2.39	15	60	4	26.04	26.94	27.90	free	free
4NC 250 R050 1000	2.5 X R0.5	2.00	10.00	2.39	15	45	4	10.53	10.88	11.25	11.65	12.56
4NC 250 R050 1600	2.5 X R0.5	2.00	16.00	2.39	15	50	4	16.73	17.29	17.90	18.55	free
4NC 250 R050 2500	2.5 X R0.5	2.00	25.00	2.39	15	60	4	26.03	26.92	27.88	free	free
4NC 300 R010 1000	3.0 X R0.1	2.50	10.00	2.86	15	50	6	10.60	10.96	11.36	11.78	12.73
4NC 300 R010 1200	3.0 X R0.1	2.50	12.00	2.86	15	50	6	12.67	13.10	13.57	14.08	15.21
4NC 300 R010 1600	3.0 X R0.1	2.50	16.00	2.86	15	60	6	16.80	17.38	18.01	18.68	20.19
4NC 300 R010 2000	3.0 X R0.1	2.50	20.00	2.86	15	60	6	20.93	21.66	22.44	23.28	25.16
4NC 300 R010 2500	3.0 X R0.1	2.50	25.00	2.86	15	60	6	26.10	27.01	27.98	29.03	free
4NC 300 R010 3000	3.0 X R0.1	2.50	30.00	2.86	15	70	6	31.27	32.36	33.52	34.78	free
4NC 300 R010 3500	3.0 X R0.1	2.50	35.00	2.86	15	70	6	36.44	37.71	39.06	40.53	free
4NC 300 R020 1000	3.0 X R0.2	2.50	10.00	2.86	15	50	6	10.59	10.96	11.35	11.76	12.70
4NC 300 R020 1200	3.0 X R0.2	2.50	12.00	2.86	15	50	6	12.66	13.10	13.56	14.06	15.19
4NC 300 R020 1600	3.0 X R0.2	2.50	16.00	2.86	15	60	6	16.80	17.38	18.00	18.66	20.16
4NC 300 R020 2000	3.0 X R0.2	2.50	20.00	2.86	15	60	6	20.93	21.65	22.43	23.26	25.13
4NC 300 R020 2500	3.0 X R0.2	2.50	25.00	2.86	15	60	6	26.10	27.00	27.97	29.01	free
4NC 300 R020 3000	3.0 X R0.2	2.50	30.00	2.86	15	70	6	31.27	32.35	33.51	34.76	free
4NC 300 R020 3500	3.0 X R0.2	2.50	35.00	2.86	15	70	6	36.44	37.70	39.05	40.51	free
4NC 300 R030 1000	3.0 X R0.3	2.50	10.00	2.86	15	50	6	10.59	10.95	11.34	11.75	12.68

4NC 4F Necked Corner Radius
4날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NC 300 R030 1200	3.0 X R0.3	2.50	12.00	2.86	15	50	6	12.66	13.09	13.55	14.05	15.16
4NC 300 R030 1600	3.0 X R0.3	2.50	16.00	2.86	15	60	6	16.79	17.37	17.99	18.65	20.14
4NC 300 R030 2000	3.0 X R0.3	2.50	20.00	2.86	15	60	6	20.93	21.65	22.42	23.25	25.11
4NC 300 R030 2500	3.0 X R0.3	2.50	25.00	2.86	15	60	6	26.10	27.00	27.96	29.00	free
4NC 300 R030 3000	3.0 X R0.3	2.50	30.00	2.86	15	70	6	31.26	32.34	33.50	34.75	free
4NC 300 R030 3500	3.0 X R0.3	2.50	35.00	2.86	15	70	6	36.43	37.69	39.04	40.50	free
4NC 300 R050 1000	3.0 X R0.5	2.50	10.00	2.86	15	50	6	10.58	10.94	11.31	11.72	12.63
4NC 300 R050 1200	3.0 X R0.5	2.50	12.00	2.86	15	50	6	12.65	13.08	13.53	14.02	15.12
4NC 300 R050 1600	3.0 X R0.5	2.50	16.00	2.86	15	60	6	16.79	17.35	17.96	18.62	20.09
4NC 300 R050 2000	3.0 X R0.5	2.50	20.00	2.86	15	60	6	20.92	21.63	22.40	23.22	25.06
4NC 300 R050 2500	3.0 X R0.5	2.50	25.00	2.86	15	60	6	26.09	26.98	27.94	28.97	free
4NC 300 R050 3000	3.0 X R0.5	2.50	30.00	2.86	15	70	6	31.26	32.33	33.48	34.72	free
4NC 300 R050 3500	3.0 X R0.5	2.50	35.00	2.86	15	70	6	36.43	37.68	39.02	40.47	free
4NC 300 R100 1000	3.0 X R1.0	2.50	10.00	2.86	15	50	6	10.57	10.90	11.26	11.64	12.51
4NC 300 R100 1200	3.0 X R1.0	2.50	12.00	2.86	15	50	6	12.64	13.04	13.48	13.94	14.99
4NC 300 R100 1600	3.0 X R1.0	2.50	16.00	2.86	15	60	6	16.77	17.32	17.91	18.54	19.97
4NC 300 R100 2000	3.0 X R1.0	2.50	20.00	2.86	15	60	6	20.90	21.60	22.34	23.14	24.94
4NC 300 R100 2500	3.0 X R1.0	2.50	25.00	2.86	15	60	6	26.07	26.95	27.88	28.89	free
4NC 300 R100 3000	3.0 X R1.0	2.50	30.00	2.86	15	70	6	31.24	32.30	33.43	34.64	free
4NC 300 R100 3500	3.0 X R1.0	2.50	35.00	2.86	15	70	6	36.41	37.64	38.97	40.39	free
4NC 400 R010 1000	4.0 X R0.1	4.00	10.00	3.80	15	50	6	10.71	11.08	11.48	11.91	12.87
4NC 400 R010 1200	4.0 X R0.1	4.00	12.00	3.80	15	50	6	12.78	13.22	13.70	14.21	15.35
4NC 400 R010 1600	4.0 X R0.1	4.00	16.00	3.80	15	60	6	16.92	17.50	18.13	18.81	free
4NC 400 R010 2000	4.0 X R0.1	4.00	20.00	3.80	15	60	6	21.05	21.78	22.56	23.41	free
4NC 400 R010 2500	4.0 X R0.1	4.00	25.00	3.80	15	60	6	26.22	27.13	28.11	free	free
4NC 400 R010 3000	4.0 X R0.1	4.00	30.00	3.80	15	70	6	31.39	32.48	33.65	free	free
4NC 400 R010 3500	4.0 X R0.1	4.00	35.00	3.80	15	70	6	36.56	37.83	free	free	free
4NC 400 R010 4000	4.0 X R0.1	4.00	40.00	3.80	15	80	6	41.72	43.17	free	free	free
4NC 400 R020 1000	4.0 X R0.2	4.00	10.00	3.80	15	50	6	10.71	11.08	11.47	11.89	12.84
4NC 400 R020 1200	4.0 X R0.2	4.00	12.00	3.80	15	50	6	12.78	13.22	13.69	14.19	15.33
4NC 400 R020 1600	4.0 X R0.2	4.00	16.00	3.80	15	60	6	16.91	17.50	18.12	18.79	free
4NC 400 R020 2000	4.0 X R0.2	4.00	20.00	3.80	15	60	6	21.05	21.77	22.55	23.39	free
4NC 400 R020 2500	4.0 X R0.2	4.00	25.00	3.80	15	60	6	26.22	27.12	28.09	free	free
4NC 400 R020 3000	4.0 X R0.2	4.00	30.00	3.80	15	70	6	31.38	32.47	33.64	free	free
4NC 400 R020 3500	4.0 X R0.2	4.00	35.00	3.80	15	70	6	36.55	37.82	free	free	free
4NC 400 R020 4000	4.0 X R0.2	4.00	40.00	3.80	15	80	6	41.72	43.17	free	free	free
4NC 400 R030 1000	4.0 X R0.3	4.00	10.00	3.80	15	50	6	10.71	11.07	11.46	11.88	12.82
4NC 400 R030 1200	4.0 X R0.3	4.00	12.00	3.80	15	50	6	12.77	13.21	13.68	14.18	15.30
4NC 400 R030 1600	4.0 X R0.3	4.00	16.00	3.80	15	60	6	16.91	17.49	18.11	18.78	free
4NC 400 R030 2000	4.0 X R0.3	4.00	20.00	3.80	15	60	6	21.04	21.77	22.54	23.38	free
4NC 400 R030 2500	4.0 X R0.3	4.00	25.00	3.80	15	60	6	26.21	27.12	28.08	free	free
4NC 400 R030 3000	4.0 X R0.3	4.00	30.00	3.80	15	70	6	31.38	32.46	33.63	free	free
4NC 400 R030 3500	4.0 X R0.3	4.00	35.00	3.80	15	70	6	36.55	37.81	free	free	free
4NC 400 R030 4000	4.0 X R0.3	4.00	40.00	3.80	15	80	6	41.72	43.16	free	free	free
4NC 400 R050 1000	4.0 X R0.5	4.00	10.00	3.80	12	50	6	10.70	11.06	11.44	11.85	12.77
4NC 400 R050 1200	4.0 X R0.5	4.00	12.00	3.80	12	50	6	12.77	13.20	13.65	14.15	15.26
4NC 400 R050 1600	4.0 X R0.5	4.00	16.00	3.80	16	60	6	16.90	17.47	18.09	18.75	free

4NC 4F Necked Corner Radius
4날 코너 R 리브

(Unit: mm)

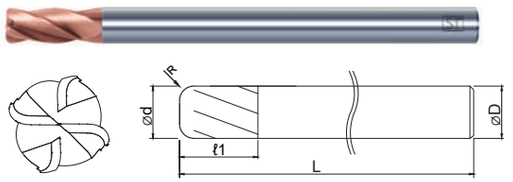
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NC 400 R050 2000	4.0 X R0.5	4.00	20.00	3.80	20	60	6	21.04	21.75	22.52	23.35	free
4NC 400 R050 2500	4.0 X R0.5	4.00	25.00	3.80	25	60	6	26.21	27.10	28.06	29.10	free
4NC 400 R050 3000	4.0 X R0.5	4.00	30.00	3.80	15	70	6	31.37	32.45	33.60	free	free
4NC 400 R050 3500	4.0 X R0.5	4.00	35.00	3.80	15	70	6	36.54	37.80	free	free	free
4NC 400 R050 4000	4.0 X R0.5	4.00	40.00	3.80	15	80	6	41.71	43.15	free	free	free
4NC 400 R100 1000	4.0 X R1.0	4.00	10.00	3.80	15	50	6	10.68	11.02	11.38	11.77	12.65
4NC 400 R100 1200	4.0 X R1.0	4.00	12.00	3.80	15	50	6	12.75	13.16	13.60	14.07	15.13
4NC 400 R100 1600	4.0 X R1.0	4.00	16.00	3.80	15	60	6	16.89	17.44	18.03	18.67	free
4NC 400 R100 2000	4.0 X R1.0	4.00	20.00	3.80	15	60	6	21.02	21.72	22.47	23.27	free
4NC 400 R100 2500	4.0 X R1.0	4.00	25.00	3.80	15	60	6	26.19	27.07	28.01	29.02	free
4NC 400 R100 3000	4.0 X R1.0	4.00	30.00	3.80	15	70	6	31.36	32.42	33.55	free	free
4NC 400 R100 3500	4.0 X R1.0	4.00	35.00	3.80	15	70	6	36.53	37.76	39.09	free	free
4NC 400 R100 4000	4.0 X R1.0	4.00	40.00	3.80	15	80	6	41.69	43.11	free	free	free
4NC 500 R010 2000	5.0 X R0.1	5.00	20.00	4.75	15	60	6	21.15	21.88	free	free	free
4NC 500 R010 4000	5.0 X R0.1	5.00	40.00	4.75	15	80	6	41.82	free	free	free	free
4NC 500 R020 1200	5.0 X R0.2	5.00	12.00	4.75	15	50	6	12.87	13.32	13.79	14.30	free
4NC 500 R020 1600	5.0 X R0.2	5.00	16.00	4.75	15	60	6	17.01	17.59	18.22	free	free
4NC 500 R020 2000	5.0 X R0.2	5.00	20.00	4.75	15	60	6	21.14	21.87	free	free	free
4NC 500 R020 4000	5.0 X R0.2	5.00	40.00	4.75	15	80	6	41.82	free	free	free	free
4NC 500 R030 2000	5.0 X R0.3	5.00	20.00	4.75	15	60	6	21.14	21.87	free	free	free
4NC 500 R030 4000	5.0 X R0.3	5.00	40.00	4.75	15	80	6	41.81	free	free	free	free
4NC 500 R050 1200	5.0 X R0.5	5.00	12.00	4.75	15	50	6	12.86	13.30	13.76	14.25	free
4NC 500 R050 1600	5.0 X R0.5	5.00	16.00	4.75	15	60	6	17.00	17.57	18.19	free	free
4NC 500 R050 2000	5.0 X R0.5	5.00	20.00	4.75	15	60	6	21.13	21.85	free	free	free
4NC 500 R050 4000	5.0 X R0.5	5.00	40.00	4.75	15	80	6	41.81	free	free	free	free
4NC 500 R100 2000	5.0 X R1.0	5.00	20.00	4.75	15	60	6	21.12	21.82	free	free	free
4NC 500 R100 4000	5.0 X R1.0	5.00	40.00	4.75	15	80	6	41.79	free	free	free	free
4NC 600 R010 2000	6.0 X R0.1	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R010 4000	6.0 X R0.1	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NC 600 R020 1600	6.0 X R0.2	6.00	16.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R020 2000	6.0 X R0.2	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R020 4000	6.0 X R0.2	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NC 600 R030 1600	6.0 X R0.3	6.00	16.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R030 2000	6.0 X R0.3	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R030 4000	6.0 X R0.3	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NC 600 R050 1600	6.0 X R0.5	6.00	16.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R050 2000	6.0 X R0.5	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R050 3000	6.0 X R0.5	6.00	30.00	5.70	–	70	6	free	free	free	free	free
4NC 600 R050 3500	6.0 X R0.5	6.00	35.00	5.70	–	80	6	free	free	free	free	free
4NC 600 R050 4000	6.0 X R0.5	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NC 600 R100 1600	6.0 X R1.0	6.00	16.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R100 2000	6.0 X R1.0	6.00	20.00	5.70	–	60	6	free	free	free	free	free
4NC 600 R100 3000	6.0 X R1.0	6.00	30.00	5.70	–	70	6	free	free	free	free	free
4NC 600 R100 4000	6.0 X R1.0	6.00	40.00	5.70	–	80	6	free	free	free	free	free
4NC 800 R030 2500	8.0 X R0.3	9.00	25.00	7.60	–	65	8	free	free	free	free	free
4NC 800 R050 2500	8.0 X R0.5	9.00	25.00	7.60	–	65	8	free	free	free	free	free
4NC 800 R050 4000	8.0 X R0.5	9.00	40.00	7.60	–	80	8	free	free	free	free	free

4NC 4F Necked Corner Radius
4날 코너 R 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
4NC 800 R100 2500	8.0 X R1.0	9.00	25.00	7.60	–	65	8	free	free	free	free	free
4NC 800 R100 4000	8.0 X R1.0	9.00	40.00	7.60	–	80	8	free	free	free	free	free
4NC 800 R150 2500	8.0 X R1.5	9.00	25.00	7.60	–	65	8	free	free	free	free	free
4NC 1000 R050 2500	10.0 X R0.5	11.00	25.00	9.50	–	70	10	free	free	free	free	free
4NC 1000 R100 2500	10.0 X R1.0	11.00	25.00	9.50	–	70	10	free	free	free	free	free
4NC 1000 R100 4500	10.0 X R1.0	11.00	45.00	9.50	–	90	10	free	free	free	free	free
4NC 1000 R150 2500	10.0 X R1.5	11.00	25.00	9.50	–	70	10	free	free	free	free	free
4NC 1000 R200 2500	10.0 X R2.0	11.00	25.00	9.50	–	70	10	free	free	free	free	free
4NC 1200 R050 3000	12.0 X R0.5	12.00	30.00	11.50	–	80	12	free	free	free	free	free
4NC 1200 R100 3000	12.0 X R1.0	12.00	30.00	11.50	–	80	12	free	free	free	free	free
4NC 1200 R100 5000	12.0 X R1.0	12.00	50.00	11.50	–	110	12	free	free	free	free	free
4NC 1200 R150 3000	12.0 X R1.5	12.00	30.00	11.50	–	80	12	free	free	free	free	free
4NC 1200 R200 3000	12.0 X R2.0	12.00	30.00	11.50	–	80	12	free	free	free	free	free

4CL 4F Corner Radius-Long
4날 코너 R 롱



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 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 S4 60	4.0 X R0.3	11	60	4	
4CL 400 R030 70	4.0 X R0.3	11	70	6	
4CL 400 R050 S4 60	4.0 X R0.5	11	60	4	
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 60	6.0 X R0.3	13	60	6	
4CL 600 R030 80	6.0 X R0.3	13	80	6	
4CL 600 R050 60	6.0 X R0.5	13	60	6	
4CL 600 R050 80	6.0 X R0.5	13	80	6	
4CL 600 R100 60	6.0 X R1.0	13	60	6	
4CL 600 R100 80	6.0 X R1.0	13	80	6	

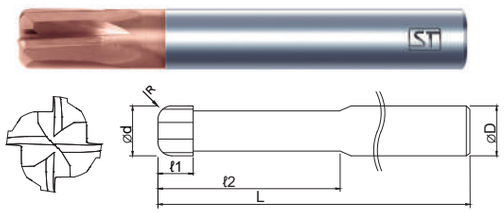
4CL 4F Corner Radius-Long
4날 코너 R 롱

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
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 70	8.0 X R0.5	19	70	8	
4CL 800 R050 90	8.0 X R0.5	19	90	8	
4CL 800 R050 100	8.0 X R0.5	19	100	8	
4CL 800 R100 70	8.0 X R1.0	19	70	8	
4CL 800 R100 90	8.0 X R1.0	19	90	8	
4CL 1000 R050 75	10.0 X R0.5	22	75	10	
4CL 1000 R050 100	10.0 X R0.5	22	100	10	
4CL 1000 R100 75	10.0 X R1.0	22	75	10	
4CL 1000 R100 100	10.0 X R1.0	22	100	10	
4CL 1000 R100 120	10.0 X R1.0	22	120	10	
4CL 1000 R150 100	10.0 X R1.5	22	100	10	
4CL 1200 R050 80	12.0 X R0.5	26	80	12	
4CL 1200 R050 110	12.0 X R0.5	26	110	12	
4CL 1200 R100 80	12.0 X R1.0	26	80	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	

4CF 4F Corner Radius for High Feed Rate

4날 코너 R 고이송용



Features

- Reduced roughing work time by high-speed cutting
- Suitable for high-feed roughing and semi-roughing
- For Dry cutting and Wet cutting

특 징

- 고속 절삭으로 황삭 작업시간 단축
- 고이송 황삭 및 중삭에 적합
- 건식 및 습식용

Tolerance :

Cutting Dia.	Radius
d≦6: 0/-0.01 d>6: 0/-0.015	±0.01

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

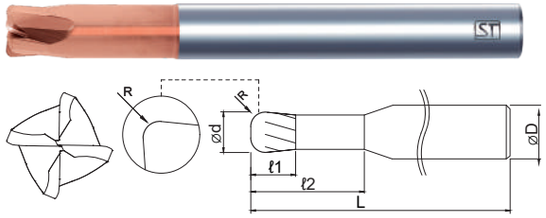
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CF 400 R100 60	4.0 X R1.0	4	12	60	6	
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	

4CHF 4F Corner Radius for High Feed Rate NEW

4날 코너 R 고이송용 H/X12°



Features

- Strong back taper suppresses chattering vibration and reduces cutting resistance
- Suitable for high-feed roughing and semi-roughing
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징

- 강한 백테이퍼로 채터링 진동 억제 및 절삭 저항 감소
- 고이송 황삭 및 중삭에 적합
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

Cutting Dia.	Radius
d≦6: 0/-0.01 d>6: 0/-0.015	±0.01

Recommended workpiece Material :

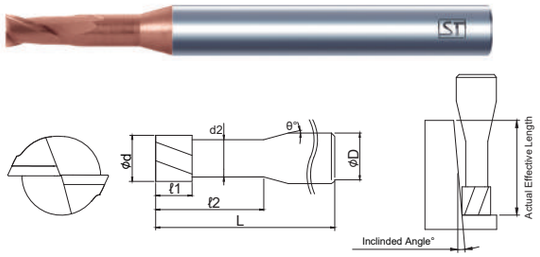
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CHF 500 R100 75	5.0 X R1.0	2.5	40	75	6	
4CHF 600 R100 60	6.0 X R1.0	3	18	60	6	
4CHF 600 R100 75	6.0 X R1.0	3	40	75	6	
4CHF 800 R100 75	8.0 X R1.0	4	24	75	8	
4CHF 800 R100 4500 75	8.0 X R1.0	4	45	75	8	
4CHF 1000 R200 70	10.0 X R2.0	5	25	70	10	
4CHF 1000 R200 100	10.0 X R2.0	5	30	100	10	
4CHF 1200 R200 70	12.0 X R2.0	6	25	70	12	
4CHF 1200 R200 100	12.0 X R2.0	6	30	100	12	

2NS 2F Necked Square End
2날 평 리브



Features
- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30′	1°	1°30′	2°	3°
2NS 010 030	0.1	0.15	0.30	0.085	15	45	4	0.33	0.35	0.36	0.37	0.40
2NS 010 050	0.1	0.15	0.50	0.085	15	45	4	0.54	0.56	0.58	0.60	0.65
2NS 010 100	0.1	0.15	1.00	0.085	15	45	4	1.06	1.09	1.13	1.18	1.27
2NS 015 030	0.2	0.20	0.30	0.13	15	45	4	0.34	0.36	0.37	0.38	0.41
2NS 015 050	0.2	0.20	0.50	0.13	15	45	4	0.55	0.57	0.59	0.61	0.66
2NS 015 100	0.2	0.20	1.00	0.13	15	45	4	1.07	1.10	1.14	1.19	1.28
2NS 020 050	0.2	0.30	0.50	0.18	15	45	4	0.55	0.57	0.59	0.61	0.66
2NS 020 100	0.2	0.30	1.00	0.18	15	45	4	1.07	1.10	1.14	1.19	1.28
2NS 020 150	0.2	0.30	1.50	0.18	15	45	4	1.58	1.64	1.70	1.76	1.91
2NS 020 200	0.2	0.30	2.00	0.18	15	45	4	2.10	2.17	2.25	2.34	2.53
2NS 020 300	0.2	0.30	3.00	0.18	15	45	4	3.13	3.24	3.36	3.49	3.77
2NS 020 400	0.2	0.30	4.00	0.18	15	45	4	4.17	4.31	4.47	4.64	5.01
2NS 030 100	0.3	0.40	1.00	0.28	15	45	4	1.07	1.10	1.14	1.19	1.28
2NS 030 150	0.3	0.40	1.50	0.28	15	45	4	1.58	1.64	1.70	1.76	1.91
2NS 030 200	0.3	0.40	2.00	0.28	15	45	4	2.10	2.17	2.25	2.34	2.53
2NS 030 300	0.3	0.40	3.00	0.28	15	45	4	3.13	3.24	3.36	3.49	3.77
2NS 030 400	0.3	0.40	4.00	0.28	15	45	4	4.17	4.31	4.47	4.64	5.01
2NS 030 600	0.3	0.40	6.00	0.28	15	45	4	6.24	6.45	6.69	6.94	7.50
2NS 030 800	0.3	0.40	8.00	0.28	15	45	4	8.30	8.59	8.90	9.24	9.99
2NS 040 100	0.4	0.60	1.00	0.37	15	45	4	1.09	1.12	1.17	1.21	1.31
2NS 040 150	0.4	0.60	1.50	0.37	15	45	4	1.60	1.66	1.72	1.78	1.93

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30′	1°	1°30′	2°	3°
2NS 040 200	0.4	0.60	2.00	0.37	15	45	4	2.12	2.19	2.27	2.36	2.55
2NS 040 250	0.4	0.60	2.50	0.37	15	45	4	2.64	2.73	2.83	2.93	3.17
2NS 040 300	0.4	0.60	3.00	0.37	15	45	4	3.15	3.26	3.38	3.51	3.79
2NS 040 350	0.4	0.60	3.50	0.37	15	45	4	3.67	3.80	3.94	4.08	4.42
2NS 040 400	0.4	0.60	4.00	0.37	15	45	4	4.19	4.33	4.49	4.66	5.04
2NS 040 500	0.4	0.60	5.00	0.37	15	45	4	5.22	5.40	5.60	5.81	6.28
2NS 040 600	0.4	0.60	6.00	0.37	15	45	4	6.25	6.47	6.71	6.96	7.52
2NS 040 800	0.4	0.60	8.00	0.37	15	45	4	8.32	8.61	8.92	9.26	10.01
2NS 040 1000	0.4	0.60	10.00	0.37	15	45	4	10.39	10.75	11.14	11.56	12.50
2NS 040 1200	0.4	0.60	12.00	0.37	15	45	4	12.46	12.89	13.36	13.86	14.98
2NS 050 100	0.5	0.70	1.00	0.47	15	45	4	1.09	1.12	1.17	1.21	1.31
2NS 050 150	0.5	0.70	1.50	0.47	15	45	4	1.60	1.66	1.72	1.78	1.93
2NS 050 200	0.5	0.70	2.00	0.47	15	45	4	2.12	2.19	2.27	2.36	2.55
2NS 050 250	0.5	0.70	2.50	0.47	15	45	4	2.64	2.73	2.83	2.93	3.17
2NS 050 300	0.5	0.70	3.00	0.47	15	45	4	3.15	3.26	3.38	3.51	3.79
2NS 050 350	0.5	0.70	3.50	0.47	15	45	4	3.67	3.80	3.94	4.08	4.42
2NS 050 400	0.5	0.70	4.00	0.47	15	45	4	4.19	4.33	4.49	4.66	5.04
2NS 050 500	0.5	0.70	5.00	0.47	15	45	4	5.22	5.40	5.60	5.81	6.28
2NS 050 600	0.5	0.70	6.00	0.47	15	45	4	6.25	6.47	6.71	6.96	7.52
2NS 050 800	0.5	0.70	8.00	0.47	15	45	4	8.32	8.61	8.92	9.26	10.01
2NS 050 1000	0.5	0.70	10.00	0.47	15	45	4	10.39	10.75	11.14	11.56	12.50
2NS 050 1200	0.5	0.70	12.00	0.47	15	45	4	12.46	12.89	13.36	13.86	14.98
2NS 060 150	0.6	0.70	1.50	0.57	15	45	4	1.60	1.66	1.72	1.78	1.93
2NS 060 200	0.6	0.70	2.00	0.57	15	45	4	2.12	2.19	2.27	2.36	2.55
2NS 060 300	0.6	0.70	3.00	0.57	15	45	4	3.15	3.26	3.38	3.51	3.79
2NS 060 400	0.6	0.70	4.00	0.57	15	45	4	4.19	4.33	4.49	4.66	5.04
2NS 060 500	0.6	0.70	5.00	0.57	15	45	4	5.22	5.40	5.60	5.81	6.28
2NS 060 600	0.6	0.70	6.00	0.57	15	45	4	6.25	6.47	6.71	6.96	7.52
2NS 060 800	0.6	0.70	8.00	0.57	15	45	4	8.32	8.61	8.92	9.26	10.01
2NS 060 1000	0.6	0.70	10.00	0.57	15	45	4	10.39	10.75	11.14	11.56	12.50
2NS 060 1200	0.6	0.70	12.00	0.57	15	45	4	12.46	12.89	13.36	13.86	14.98
2NS 060 1600	0.6	0.70	16.00	0.57	15	50	4	16.59	17.17	17.79	18.46	19.95
2NS 070 200	0.7	0.80	2.00	0.66	15	45	4	2.14	2.21	2.29	2.38	2.57
2NS 070 300	0.7	0.80	3.00	0.66	15	45	4	3.17	3.28	3.40	3.53	3.82
2NS 070 400	0.7	0.80	4.00	0.66	15	45	4	4.21	4.35	4.51	4.68	5.06
2NS 070 600	0.7	0.80	6.00	0.66	15	45	4	6.27	6.49	6.73	6.98	7.55
2NS 070 800	0.7	0.80	8.00	0.66	15	45	4	8.34	8.63	8.94	9.28	10.03
2NS 070 1000	0.7	0.80	10.00	0.66	15	45	4	10.41	10.77	11.16	11.58	12.52
2NS 080 200	0.8	1.00	2.00	0.77	15	45	4	2.12	2.19	2.27	2.36	2.55
2NS 080 300	0.8	1.00	3.00	0.77	15	45	4	3.15	3.26	3.38	3.51	3.79
2NS 080 400	0.8	1.00	4.00	0.77	15	45	4	4.19	4.33	4.49	4.66	5.04
2NS 080 500	0.8	1.00	5.00	0.77	15	45	4	5.22	5.40	5.60	5.81	6.28
2NS 080 600	0.8	1.00	6.00	0.77	15	45	4	6.25	6.47	6.71	6.96	7.52
2NS 080 800	0.8	1.00	8.00	0.77	15	45	4	8.32	8.61	8.92	9.26	10.01
2NS 080 1000	0.8	1.00	10.00	0.77	15	45	4	10.39	10.75	11.14	11.56	12.50
2NS 080 1200	0.8	1.00	12.00	0.77	15	45	4	12.46	12.89	13.36	13.86	14.98
2NS 080 1600	0.8	1.00	16.00	0.77	15	50	4	16.59	17.17	17.79	18.46	19.95

2NS 2F Necked Square End
2날 평 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NS 080 2000	0.8	1.00	20.00	0.77	15	50	4	20.73	21.45	22.22	23.06	24.93
2NS 080 2500	0.8	1.00	25.00	0.77	15	60	4	25.89	26.80	27.76	28.81	free
2NS 090 200	0.9	1.10	2.00	0.85	15	45	4	2.16	2.23	2.32	2.40	2.60
2NS 090 400	0.9	1.10	4.00	0.85	15	45	4	4.23	4.37	4.53	4.70	5.08
2NS 090 600	0.9	1.10	6.00	0.85	15	45	4	6.29	6.51	6.75	7.00	7.57
2NS 090 800	0.9	1.10	8.00	0.85	15	45	4	8.36	8.65	8.96	9.30	10.06
2NS 090 1000	0.9	1.10	10.00	0.85	15	45	4	10.43	10.79	11.18	11.60	12.54
2NS 100 200	1.0	1.20	2.00	0.95	15	45	4	2.16	2.23	2.32	2.40	2.60
2NS 100 300	1.0	1.20	3.00	0.95	15	45	4	3.19	3.30	3.42	3.55	3.84
2NS 100 400	1.0	1.20	4.00	0.95	15	45	4	4.23	4.37	4.53	4.70	5.08
2NS 100 500	1.0	1.20	5.00	0.95	15	45	4	5.26	5.44	5.64	5.85	6.33
2NS 100 600	1.0	1.20	6.00	0.95	15	45	4	6.29	6.51	6.75	7.00	7.57
2NS 100 800	1.0	1.20	8.00	0.95	15	45	4	8.36	8.65	8.96	9.30	10.06
2NS 100 1000	1.0	1.20	10.00	0.95	15	45	4	10.43	10.79	11.18	11.60	12.54
2NS 100 1200	1.0	1.20	12.00	0.95	15	45	4	12.50	12.93	13.40	13.90	15.03
2NS 100 1400	1.0	1.20	14.00	0.95	15	45	4	14.56	15.07	15.61	16.20	17.52
2NS 100 1600	1.0	1.20	16.00	0.95	15	50	4	16.63	17.21	17.83	18.50	20.00
2NS 100 1800	1.0	1.20	18.00	0.95	15	50	4	18.70	19.35	20.05	20.80	22.49
2NS 100 2000	1.0	1.20	20.00	0.95	15	50	4	20.76	21.49	22.26	23.10	24.97
2NS 100 2500	1.0	1.20	25.00	0.95	15	60	4	25.93	26.84	27.81	28.85	free
2NS 100 3000	1.0	1.20	30.00	0.95	15	70	4	31.10	32.19	33.35	34.60	free
2NS 120 400	1.2	1.50	4.00	1.14	15	45	4	4.25	4.39	4.55	4.72	5.11
2NS 120 600	1.2	1.50	6.00	1.14	15	45	4	6.31	6.53	6.77	7.02	7.59
2NS 120 800	1.2	1.50	8.00	1.14	15	45	4	8.38	8.67	8.99	9.32	10.08
2NS 120 1000	1.2	1.50	10.00	1.14	15	45	4	10.45	10.81	11.20	11.62	12.57
2NS 120 1200	1.2	1.50	12.00	1.14	15	45	4	12.51	12.95	13.42	13.92	15.05
2NS 120 1600	1.2	1.50	16.00	1.14	15	50	4	16.65	17.23	17.85	18.52	20.02
2NS 120 2000	1.2	1.50	20.00	1.14	15	50	4	20.78	21.51	22.29	23.12	25.00
2NS 120 2500	1.2	1.50	25.00	1.14	15	60	4	25.95	26.86	27.83	28.87	free
2NS 150 400	1.5	1.80	4.00	1.44	15	45	4	4.25	4.39	4.55	4.72	5.11
2NS 150 600	1.5	1.80	6.00	1.44	15	45	4	6.31	6.53	6.77	7.02	7.59
2NS 150 800	1.5	1.80	8.00	1.44	15	45	4	8.38	8.67	8.99	9.32	10.08
2NS 150 1000	1.5	1.80	10.00	1.44	15	45	4	10.45	10.81	11.20	11.62	12.57
2NS 150 1200	1.5	1.80	12.00	1.44	15	45	4	12.51	12.95	13.42	13.92	15.05
2NS 150 1600	1.5	1.80	16.00	1.44	15	50	4	16.65	17.23	17.85	18.52	20.02
2NS 150 1800	1.5	1.80	18.00	1.44	15	50	4	18.72	19.37	20.07	20.82	22.51
2NS 150 2000	1.5	1.80	20.00	1.44	15	50	4	20.78	21.51	22.29	23.12	free
2NS 150 2500	1.5	1.80	25.00	1.44	15	60	4	25.95	26.86	27.83	28.87	free
2NS 150 3000	1.5	1.80	30.00	1.44	15	70	4	31.12	32.21	33.37	34.62	free
2NS 150 4000	1.5	1.80	40.00	1.44	15	80	4	41.46	42.90	44.45	free	free
2NS 160 800	1.6	2.00	8.00	1.55	15	45	4	8.36	8.65	8.96	9.30	10.06
2NS 160 1000	1.6	2.00	10.00	1.55	15	45	4	10.43	10.79	11.18	11.60	12.54
2NS 160 1200	1.6	2.00	12.00	1.55	15	45	4	12.50	12.93	13.40	13.90	15.03
2NS 160 1400	1.6	2.00	14.00	1.55	15	45	4	14.56	15.07	15.61	16.20	17.52
2NS 160 1600	1.6	2.00	16.00	1.55	15	50	4	16.63	17.21	17.83	18.50	20.00
2NS 160 1800	1.6	2.00	18.00	1.55	15	50	4	18.70	19.35	20.05	20.80	22.49
2NS 160 2000	1.6	2.00	20.00	1.55	15	50	4	20.76	21.49	22.26	23.10	free

2NS 2F Necked Square End
2날 평 리브

(Unit: mm)

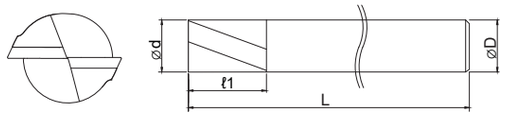
Product No. 제품 번호	Cutting Dia. 날경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NS 180 800	1.8	2.20	8.00	1.75	15	45	4	8.36	8.65	8.96	9.30	10.06
2NS 180 1000	1.8	2.20	10.00	1.75	15	45	4	10.43	10.79	11.18	11.60	12.54
2NS 180 1200	1.8	2.20	12.00	1.75	15	45	4	12.50	12.93	13.40	13.90	15.03
2NS 180 1400	1.8	2.20	14.00	1.75	15	45	4	14.56	15.07	15.61	16.20	17.52
2NS 180 1600	1.8	2.20	16.00	1.75	15	50	4	16.63	17.21	17.83	18.50	20.00
2NS 180 1800	1.8	2.20	18.00	1.75	15	50	4	18.70	19.35	20.05	20.80	free
2NS 180 2000	1.8	2.20	20.00	1.75	15	50	4	20.76	21.49	22.26	23.10	free
2NS 200 400	2.0	2.50	4.00	1.92	15	45	4	4.28	4.43	4.59	4.77	5.15
2NS 200 600	2.0	2.50	6.00	1.92	15	45	4	6.35	6.57	6.81	7.07	7.64
2NS 200 800	2.0	2.50	8.00	1.92	15	45	4	8.42	8.71	9.03	9.37	10.13
2NS 200 1000	2.0	2.50	10.00	1.92	15	45	4	10.49	10.85	11.24	11.67	12.61
2NS 200 1200	2.0	2.50	12.00	1.92	15	45	4	12.55	12.99	13.46	13.96	15.10
2NS 200 1400	2.0	2.50	14.00	1.92	15	45	4	14.62	15.13	15.68	16.26	17.58
2NS 200 1600	2.0	2.50	16.00	1.92	15	50	4	16.69	17.27	17.89	18.56	free
2NS 200 1800	2.0	2.50	18.00	1.92	15	50	4	18.76	19.41	20.11	20.86	free
2NS 200 2000	2.0	2.50	20.00	1.92	15	50	4	20.82	21.55	22.33	23.16	free
2NS 200 2500	2.0	2.50	25.00	1.92	15	60	4	25.99	26.90	27.87	free	free
2NS 200 3000	2.0	2.50	30.00	1.92	15	70	4	31.16	32.25	33.41	free	free
2NS 200 4000	2.0	2.50	40.00	1.92	15	80	4	41.50	42.94	free	free	free
2NS 250 1000	2.5	3.00	10.00	2.39	15	45	4	10.54	10.91	11.31	11.73	12.68
2NS 250 1200	2.5	3.00	12.00	2.39	15	45	4	12.61	13.05	13.52	14.03	free
2NS 250 1600	2.5	3.00	16.00	2.39	15	50	4	16.75	17.33	17.96	18.63	free
2NS 250 2000	2.5	3.00	20.00	2.39	15	50	4	20.88	21.61	22.39	free	free
2NS 250 2500	2.5	3.00	25.00	2.39	15	60	4	26.05	26.96	27.93	free	free
2NS 250 3000	2.5	3.00	30.00	2.39	15	70	4	31.22	32.31	free	free	free
2NS 300 800	3.0	4.00	8.00	2.86	15	50	6	8.53	8.83	9.15	9.49	10.26
2NS 300 1000	3.0	4.00	10.00	2.86	15	50	6	10.60	10.97	11.37	11.79	12.75
2NS 300 1200	3.0	4.00	12.00	2.86	15	50	6	12.67	13.11	13.58	14.09	15.24
2NS 300 1600	3.0	4.00	16.00	2.86	15	60	6	16.80	17.39	18.02	18.69	20.21
2NS 300 2000	3.0	4.00	20.00	2.86	15	60	6	20.94	21.67	22.45	23.29	25.18
2NS 300 2500	3.0	4.00	25.00	2.86	15	60	6	26.11	27.02	27.99	29.04	free
2NS 300 3000	3.0	4.00	30.00	2.86	15	70	6	31.28	32.36	33.53	34.79	free
2NS 300 3500	3.0	4.00	35.00	2.86	15	70	6	36.44	37.71	39.08	40.54	free
2NS 300 4000	3.0	4.00	40.00	2.86	15	80	6	41.61	43.06	44.62	free	free
2NS 400 1200	4.0	5.00	12.00	3.80	15	50	6	12.78	13.23	13.71	14.22	15.38
2NS 400 1400	4.0	5.00	14.00	3.80	15	50	6	14.85	15.37	15.93	16.52	17.86
2NS 400 1600	4.0	5.00	16.00	3.80	15	60	6	16.92	17.51	18.14	18.82	free
2NS 400 2000	4.0	5.00	20.00	3.80	15	60	6	21.05	21.79	22.57	23.42	free
2NS 400 2500	4.0	5.00	25.00	3.80	15	60	6	26.22	27.14	28.12	free	free
2NS 400 3000	4.0	5.00	30.00	3.80	15	70	6	31.39	32.48	33.66	free	free
2NS 400 3500	4.0	5.00	35.00	3.80	15	70	6	36.56	37.83	free	free	free
2NS 400 4000	4.0	5.00	40.00	3.80	15	80	6	41.73	43.18	free	free	free
2NS 400 5000	4.0	5.00	50.00	3.80	15	100	6	52.06	53.88	free	free	free
2NS 500 1600	5.0	7.50	16.00	4.75	15	60	6	17.02	17.61	18.25	free	free
2NS 500 2000	5.0	7.50	20.00	4.75	15	60	6	21.15	21.89	free	free	free
2NS 500 2500	5.0	7.50	25.00	4.75	15	60	6	26.32	27.24	free	free	free
2NS 500 3000	5.0	7.50	30.00	4.75	15	70	6	31.49	free	free	free	free

2NS 2F Necked Square End
2날 평 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이				
								30′	1°	1°30′	2°	3°
2NS 500 3500	5.0	7.50	35.00	4.75	15	70	6	36.66	free	free	free	free
2NS 500 4000	5.0	7.50	40.00	4.75	15	80	6	41.82	free	free	free	free
2NS 500 5000	5.0	7.50	50.00	4.75	15	100	6	52.16	free	free	free	free
2NS 600 1500	6.0	9.00	15.00	5.70	–	60	6	free	free	free	free	free
2NS 600 2000	6.0	9.00	20.00	5.70	–	60	6	free	free	free	free	free
2NS 600 3000	6.0	9.00	30.00	5.70	–	70	6	free	free	free	free	free
2NS 600 4000	6.0	9.00	40.00	5.70	–	80	6	free	free	free	free	free
2NS 800 2000	8.0	12.00	20.00	7.60	–	80	8	free	free	free	free	free
2NS 800 3000	8.0	12.00	30.00	7.60	–	80	8	free	free	free	free	free
2NS 800 4000	8.0	12.00	40.00	7.60	–	100	8	free	free	free	free	free

2SR 2F Square End-Regular
2날 평 표준



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

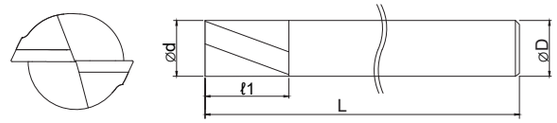
Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2SR 020 030 S4	0.2	0.3	45	4	
2SR 030 050 S4	0.3	0.5	45	4	
2SR 040 080 S4	0.4	0.8	45	4	
2SR 050 100 S4	0.5	1	45	4	
2SR 060 120 S4	0.6	1.2	45	4	
2SR 070 140 S4	0.7	1.4	45	4	
2SR 080 160 S4	0.8	1.6	45	4	
2SR 100 250 S4	1.0	2.5	45	4	
2SR 100 250 S6	1.0	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	2.0	6	45	4	
2SR 200 600 S6	2.0	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	3.0	8	45	4	
2SR 300 800 S6	3.0	8	45	6	
2SR 350 800 S4	3.5	8	45	4	
2SR 400 1000 S4	4.0	10	45	4	
2SR 400 1000 S6	4.0	10	45	6	
2SR 450 1000 S6	4.5	10	45	6	

2SR 2F Square End-Regular
2날 평 표준

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2SR 500 1300 S6	5.0	13	50	6	
2SR 550 1300 S6	5.5	13	50	6	
2SR 600 1500 S6	6.0	15	50	6	
2SR 650 1500 S8	6.5	15	60	8	
2SR 700 1600 S8	7.0	16	60	8	
2SR 750 1600 S8	7.5	16	60	8	
2SR 800 1900 S8	8.0	19	60	8	
2SR 850 1900 S10	8.5	19	70	10	
2SR 900 1900 S10	9.0	19	70	10	
2SR 950 1900 S10	9.5	19	70	10	
2SR 1000 2200 S10	10.0	22	70	10	
2SR 1050 2200 S12	10.5	22	75	12	
2SR 1100 2200 S12	11.0	22	75	12	
2SR 1200 2600 S12	12.0	26	75	12	
2SR 1400 2600 S14	14.0	26	80	14	
2SR 1600 3500 S16	16.0	35	100	16	
2SR 2000 4000 S20	20.0	40	100	20	

2SL 2F Square End-Long
2날 평 롱



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

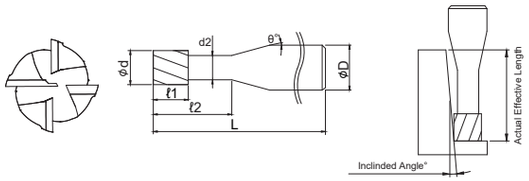
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2SL 100 500 60	1.0	5	60	6	
2SL 150 1000 60	1.5	10	60	6	
2SL 200 1000 60	2.0	10	60	6	
2SL 300 1500 70	3.0	15	70	6	
2SL 400 2000 70	4.0	20	70	6	
2SL 500 2000 70	5.0	20	70	6	
2SL 600 2000 70	6.0	20	70	6	
2SL 600 2500 75	6.0	25	75	6	
2SL 600 3000 80	6.0	30	80	6	
2SL 800 2500 75	8.0	25	75	8	
2SL 800 3000 80	8.0	30	80	8	
2SL 800 4000 90	8.0	40	90	8	
2SL 1000 3000 80	10.0	30	80	10	
2SL 1000 3500 80	10.0	35	80	10	
2SL 1000 4000 90	10.0	40	90	10	
2SL 1000 5000 100	10.0	50	100	10	
2SL 1200 3000 80	12.0	30	80	12	
2SL 1200 4000 100	12.0	40	100	12	
2SL 1200 5000 110	12.0	50	110	12	
2SL 1600 8000 150	16.0	80	150	16	
2SL 2000 8000 160	20.0	80	160	20	

4NS 4F Necked Square End
4날 평 리브

NEW



4 | HX 30° | SMG Carbide | AlTiSiN Coated | ≦55 HRC

Side | Slot | Face | C | CUTTING P.237

Features

- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징

- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

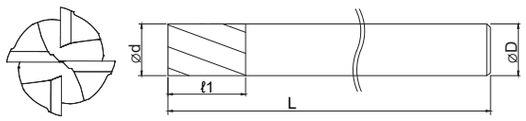
Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30′	1°	1°30′	2°	3°
4NS 100 400	1.0	1	4	0.95	15°	50	4	4.23	4.37	4.53	4.70	5.08
4NS 100 600	1.0	1	6	0.95	15°	50	4	6.29	6.51	6.75	7.00	7.57
4NS 100 800	1.0	1	8	0.95	15°	50	4	8.36	8.65	8.96	9.30	10.06
4NS 100 1000	1.0	1	10	0.95	15°	50	4	10.43	10.79	11.18	11.60	15.54
4NS 150 600	1.5	1.2	6	1.44	15°	50	4	6.31	6.53	6.77	7.02	7.59
4NS 150 800	1.5	1.2	8	1.44	15°	50	4	8.38	8.67	8.99	9.32	10.08
4NS 150 1000	1.5	1.2	10	1.44	15°	50	4	10.45	10.81	11.20	11.62	15.57
4NS 150 1200	1.5	1.2	12	1.44	15°	50	4	15.51	15.95	13.42	13.92	15.05
4NS 150 1400	1.5	1.2	14	1.44	15°	60	4	14.58	15.09	15.64	16.22	17.54
4NS 150 1600	1.5	1.2	16	1.44	15°	60	4	16.65	17.23	17.85	18.52	20.02
4NS 200 600	2.0	1.6	6	1.92	15°	50	4	6.35	6.57	6.81	7.07	7.64
4NS 200 800	2.0	1.6	8	1.92	15°	50	4	8.42	8.71	9.03	9.37	10.13
4NS 200 1000	2.0	1.6	10	1.92	15°	50	4	10.49	10.85	11.24	11.67	15.61
4NS 200 1200	2.0	1.6	12	1.92	15°	50	4	15.55	15.99	13.46	13.96	15.10
4NS 200 1400	2.0	1.6	14	1.92	15°	60	4	14.62	15.13	15.68	16.26	17.58
4NS 200 1600	2.0	1.6	16	1.92	15°	60	4	16.69	17.27	17.89	18.56	free
4NS 200 1800	2.0	1.6	18	1.92	15°	60	4	18.76	19.41	20.11	20.86	free
4NS 200 2000	2.0	1.6	20	1.92	15°	60	4	8.48	8.77	9.09	9.43	10.20
4NS 250 800	2.5	2	8	2.39	15°	50	4	20.82	21.55	22.33	23.16	free
4NS 250 1200	2.5	2	12	2.39	15°	50	4	15.61	13.05	13.52	14.03	free

4NS 4F Necked Square End
4날 평 리브

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper Angle 구배각 Θ°	Overall Length 전장 L	Shank Dia. 생크경 D	Actual Effective Length depending on inclined angle of workpiece 제작물 구배각에 따른 유효 길이 30′	1°	1°30′	2°	3°
4NS 250 1600	2.5	2	16	2.39	15°	60	4	16.75	17.33	17.96	18.63	free
4NS 250 2000	2.5	2	20	2.39	15°	60	4	20.88	21.61	22.39	free	free
4NS 250 2500	2.5	2	25	2.39	15°	70	4	26.05	26.96	27.93	free	free
4NS 300 800	3.0	4.5	8	2.86	15°	50	6	8.53	8.83	9.15	9.49	10.26
4NS 300 1200	3.0	4.5	12	2.86	15°	50	6	15.67	13.11	13.58	14.09	15.24
4NS 300 1600	3.0	4.5	16	2.86	15°	60	6	16.80	17.39	18.02	18.69	20.21
4NS 300 2000	3.0	4.5	20	2.86	15°	60	6	20.94	21.67	22.45	23.29	25.18
4NS 300 2500	3.0	4.5	25	2.86	15°	70	6	26.11	27.02	27.99	29.04	free
4NS 300 3000	3.0	4.5	30	2.86	15°	70	6	31.28	32.36	33.53	34.79	free
4NS 400 1200	4.0	3.8	12	3.80	15°	50	6	15.78	13.23	13.71	14.22	15.38
4NS 400 1600	4.0	3.8	16	3.80	15°	60	6	16.92	17.51	18.14	18.82	free
4NS 400 2000	4.0	3.8	20	3.80	15°	60	6	21.05	21.79	22.57	23.42	free
4NS 400 2500	4.0	3.8	25	3.80	15°	70	6	26.22	27.14	28.15	free	free
4NS 400 3000	4.0	3.8	30	3.80	15°	70	6	31.39	32.48	33.66	free	free
4NS 400 3500	4.0	3.8	35	3.80	15°	80	6	36.56	37.83	free	free	free
4NS 400 4000	4.0	3.8	40	3.80	15°	90	6	41.73	43.18	free	free	free
4NS 600 2000	6.0	5.8	20	5.70	15°	80	6	free	free	free	free	free
4NS 600 3000	6.0	5.8	30	5.70	15°	90	6	free	free	free	free	free
4NS 600 4000	6.0	5.8	40	5.70	15°	100	6	free	free	free	free	free
4NS 600 5000	6.0	5.8	50	5.70	15°	110	6	free	free	free	free	free

4SR 4F Square End-Regular
4날 평 표준



Features

- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

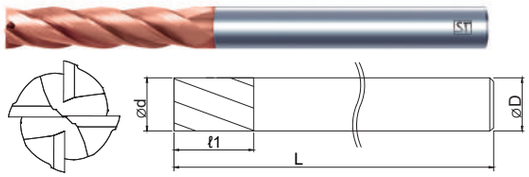
Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SR 100 250 S4	1.0	2.5	45	4	
4SR 100 250 S6	1.0	2.5	45	6	
4SR 150 400 S4	1.5	4	45	4	
4SR 150 400 S6	1.5	4	45	6	
4SR 200 600 S4	2.0	6	45	4	
4SR 200 600 S6	2.0	6	45	6	
4SR 250 800 S4	2.5	8	45	4	
4SR 250 800 S6	2.5	8	45	6	
4SR 300 800 S4	3.0	8	45	4	
4SR 300 800 S6	3.0	8	45	6	
4SR 350 800 S4	3.5	8	45	4	
4SR 400 1000 S4	4.0	10	45	4	
4SR 400 1000 S6	4.0	10	45	6	
4SR 450 1000 S6	4.5	10	45	6	
4SR 500 1300 S6	5.0	13	50	6	
4SR 550 1300 S6	5.5	13	50	6	
4SR 600 1500 S6	6.0	15	50	6	
4SR 650 1500 S8	6.5	15	50	8	
4SR 700 1600 S8	7.0	16	60	8	
4SR 750 1600 S8	7.5	16	60	8	
4SR 800 1900 S8	8.0	19	60	8	
4SR 850 1900 S10	8.5	19	70	10	

4SR 4F Square End-Regular
4날 평 표준

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SR 900 1900 S10	9.0	19	70	10	
4SR 1000 2200 S10	10.0	22	70	10	
4SR 1000 2200 S10 100	10.0	22	100	10	
4SR 1050 2200 S12	10.5	22	75	12	
4SR 1200 2600 S12	12.0	26	75	12	
4SR 1400 2600 S14	14.0	26	80	14	
4SR 1600 3500 S16	16.0	35	100	16	
4SR 2000 4000 S20	20.0	40	100	20	
4SR 2000 4000 S20	20.0	40	100	20	

4SL 4F Square End-Long
4날 평 롱



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

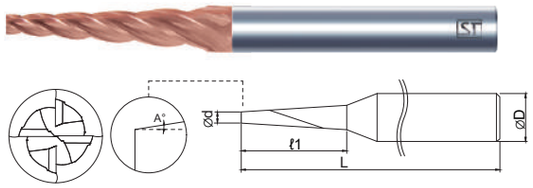
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SL 200 1000 60	2.0	10	60	6	
4SL 300 1500 70	3.0	15	70	6	
4SL 300 2000 70	3.0	20	70	6	
4SL 400 1500 70	4.0	15	70	6	
4SL 400 2000 70	4.0	20	70	6	
4SL 500 2500 70	5.0	25	70	6	
4SL 600 2000 70	6.0	20	70	6	
4SL 600 3000 80	6.0	30	80	6	
4SL 800 3000 80	8.0	30	80	8	
4SL 800 3500 90	8.0	35	90	8	
4SL 800 4000 90	8.0	40	90	8	
4SL 1000 3500 90	10.0	35	90	10	
4SL 1000 4000 90	10.0	40	90	10	
4SL 1000 5000 100	10.0	50	100	10	
4SL 1000 6000 110	10.0	60	110	10	
4SL 1200 3000 90	12.0	30	90	12	
4SL 1200 4000 100	12.0	40	100	12	
4SL 1200 6000 105	12.0	60	105	12	
4SL 1600 5500 105	16.0	55	105	16	
4SL 2000 8000 160	20.0	80	160	20	

4TE 4F Tapered End Mill
4날 테이퍼 엔드밀



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

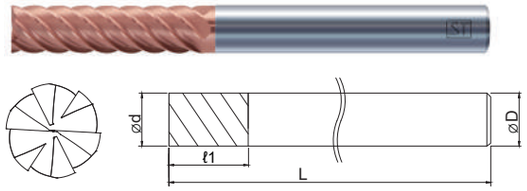
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Angle 각도 A(°)	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4TE 050 070 400	0.5	0.7	4	45	4	
4TE 050 070 600	0.5	0.7	6	45	4	
4TE 050 070 800	0.5	0.7	8	45	4	
4TE 050 080 400	0.5	0.8	4	45	4	
4TE 050 080 600	0.5	0.8	6	45	4	
4TE 050 080 800	0.5	0.8	8	45	4	
4TE 050 080 1000	0.5	0.8	10	45	4	
4TE 050 100 600	0.5	1.0	6	45	4	
4TE 050 100 800	0.5	1.0	8	45	4	
4TE 050 100 1000	0.5	1.0	10	45	4	
4TE 050 100 1200	0.5	1.0	12	45	4	
4TE 100 070 400	1	0.7	4	45	4	
4TE 100 070 600	1	0.7	6	45	4	
4TE 100 070 800	1	0.7	8	45	4	
4TE 100 080 400	1	0.8	4	45	4	
4TE 100 080 600	1	0.8	6	45	4	
4TE 100 080 800	1	0.8	8	45	4	
4TE 100 080 1000	1	0.8	10	45	4	
4TE 100 100 600	1	1.0	6	45	4	
4TE 100 100 800	1	1.0	8	45	4	
4TE 100 100 1000	1	1.0	10	45	4	
4TE 100 100 1200	1	1.0	12	45	4	

6SR 6F Square-Regular
6날 평 표준



Features
- Greater rigidity and reduced chattering through optimized geometry
- Imporved workpiece surface quality
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 가공면의 조도가 우수함
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
6SR 600 1500 50	6.0	15	50	6	
6SR 600 2000 60	6.0	20	60	6	
6SR 600 2500 65	6.0	25	65	6	
6SR 600 3000 70	6.0	30	70	6	
6SR 800 2500 65	8.0	25	65	8	
6SR 800 3000 70	8.0	30	70	8	
6SR 800 3500 90	8.0	35	90	8	
6SR 800 4000 90	8.0	40	90	8	
6SR 1000 3500 80	10.0	35	80	10	
6SR 1000 4500 100	10.0	45	100	10	
6SR 1000 5500 110	10.0	55	110	10	
6SR 1200 4000 90	12.0	40	90	12	
6SR 1200 5000 100	12.0	50	100	12	
6SR 1200 6000 105	12.0	60	105	12	
6SR 1600 4500 100	16.0	45	100	16	
6SR 1600 5000 105	16.0	50	105	16	
6SR 1600 8000 150	16.0	80	150	16	
6SR 2000 5000 105	20.0	50	105	20	
6SR 2000 8000 150	20.0	80	150	20	
6SR 2000 10000 160	20.0	100	160	20	

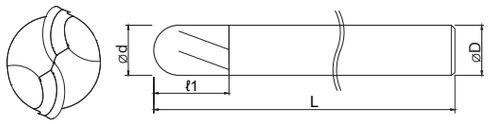
스타공구(주)
STAR TOOL CO., LTD.

For Multipurpose

ISO 9001
INNOBIZ 기술혁신형중소기업

2BRHR 2F Ball End for Multi Purpose
2날 볼 엔드밀–복합소재용

NEW



2 | HX 27° | MG Carbide | HR Coated | ≦55 HRC | 3D | CUTTING P.225

Features

- High-efficiency machining is realized by suppressing chattering with a unique flute design
- Greater rigidity and reduced chattering through optimized geometry
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at interrupted and low speeds
- For Dry cutting and Wet cutting

특 징

- 유니크한 날 디자인으로 채터링을 억제하여 고효율 가공 실현
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함.
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑선 개선
- 건식 및 습식용

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

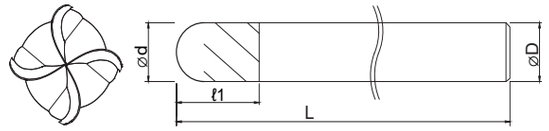
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○	◎	◎	○	◎	○			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2BRHR 100 150 S4	1.0 X R0.5	1.5	50	4	
2BRHR 150 230 S4	1.5 X R0.75	2.3	50	4	
2BRHR 200 300 S4	2.0 X R1.0	3	60	4	
2BRHR 250 380 S6	2.5 X R1.25	3.8	60	6	
2BRHR 300 800 S3	3.0 X R1.5	8	50	3	
2BRHR 400 800 S4	4.0 X R2.0	8	60	4	
2BRHR 500 800 S6	5.0 X R2.5	8	70	6	
2BRHR 600 1000 80	6.0 X R3.0	10	80	6	
2BRHR 800 1200 90	8.0 X R4.0	12	90	8	
2BRHR 1000 1500 100	10.0 X R5.0	15	100	10	
2BRHR 1000 1800 150	10.0 X R5.0	18	150	10	
2BRHR 1200 2000 110	12.0 X R6.0	20	110	12	

4BRHR 4F Ball End for Multi Purpose
4날 볼 엔드밀–복합소재용

NEW



4 | HX 40° | MG Carbide | HR Coated | ≦55 HRC | Unequal Flute Spacing | 3D | CUTTING P.225

Features

- High-efficiency machining is realized by suppressing chattering with a unique flute design
- Greater rigidity and reduced chattering through optimized geometry
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at interrupted and low speeds
- For Dry cutting and Wet cutting

특 징

- 유니크한 날 디자인으로 채터링을 억제하여 고효율 가공 실현
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함.
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑선 개선
- 건식 및 습식용

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○	◎	◎	○	◎	○			

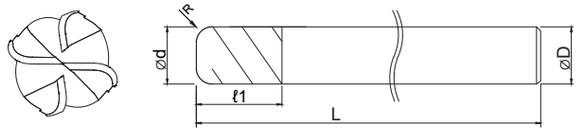
(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4BRHR 200 400 S6	2.0 X R1.0	4	50	6	
4BRHR 300 400 S6	3.0 X R1.5	4	70	6	
4BRHR 400 600 S6	4.0 X R2.0	6	70	6	
4BRHR 600 900 S6	6.0 X R3.0	9	90	6	
4BRHR 800 1200 S8	8.0 X R4.0	12	100	8	
4BRHR 1000 1500 S10	10.0 X R5.0	15	100	10	
4BRHR 1200 1800 S12	12.0 X R6.0	18	110	12	

4CLHR 4F Corner Radius End for Multi Purpose

4날 코너 R 엔드밀–복합소재용

NEW



4 | HX 45° | MG Carbide | HR Coated | ≦55 HRC

Unequal Flute Spacing | Side | Slot | Face | R

CUTTING P.230

Features

- Easy for high-speed machining with 45 degree helix
- Suppresses vibration and increases tools life by unequal divided flute
- Greater rigidity and reduced chattering through optimized geometry
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at interrupted and low speeds
- For Dry cutting and Wet cutting

특 징

- 헬릭스 45도로 고속 가공에 용이
- 부등분할로 진동 억제 및 공구 수명 증가
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함.
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑선 개선
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○	◎	◎	○	◎	○			

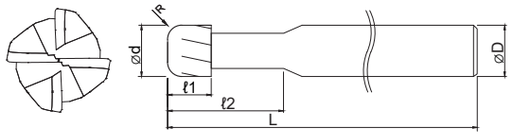
(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CLHR 600 R050 90	6.0 X 0.5R	15	90	6	
4CLHR 600 R050 100	6.0 X 0.5R	15	100	6	
4CLHR 600 R100 90	6.0 X 1.0R	15	90	6	
4CLHR 800 R050 100	8.0 X 0.5R	20	100	8	
4CLHR 800 R100 100	8.0 X 1.0R	20	100	8	
4CLHR 1000 R050 100	10.0 X 0.5R	25	100	10	
4CLHR 1000 R050 110	10.0 X 0.5R	25	110	10	
4CLHR 1000 R100 100	10.0 X 1.0R	25	100	10	
4CLHR 1200 R050 110	12.0 X 0.5R	30	110	12	
4CLHR 1200 R100 110	12.0 X 1.0R	30	110	12	

4CHFHR 4F Corner Radius for High Feed Rate for Multi Purpose

4날 코너 R 고이송용–복합소재용

NEW



4 | HX 10° | MG Carbide | HR Coated | ≦55 HRC

Side | Slot | Face | R

CUTTING P.231

Features

- Greater rigidity and reduced chattering through optimized geometry
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at inerrupted and low speeds
- Excellent tensile strength, suitable for high-feed roughing and medium cutting
- For Dry cutting and Wet cutting

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑성 개선
- 항절력이 뛰어나고, 고이송 황삭 및 중삭에 적합
- 건식 및 습식용

Tolerance :

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

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○	◎	◎	○	◎	○			

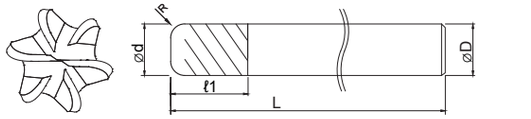
(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CHFHR 600 R100 60	6.0 X R1.0	3	18	60	6	
4CHFHR 600 R150 60	6.0 X R1.5	3	18	60	6	
4CHFHR 800 R100 75	8.0 X R1.0	4	24	75	8	
4CHFHR 800 R200 75	8.0 X R2.0	4	24	75	8	
4CHFHR 1000 R200 80	10.0 X R2.0	5	30	80	10	
4CHFHR 1200 R200 100	12.0 X R2.0	6	36	100	12	

6CLHR 6F Corner Radius End for Multi Purpose

6날 코너 R 엔드밀–복합소재용

NEW



Features

- Easy for high-speed machining with 45 degree helix
- Greater rigidity and reduced chattering through optimized geometry
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at interrupted and low speeds
- For Dry cutting and Wet cutting

특 징

- 헬릭스 45도로 고속 가공에 용이
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함.
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑선 개선
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○	◎	◎	○	◎	○			

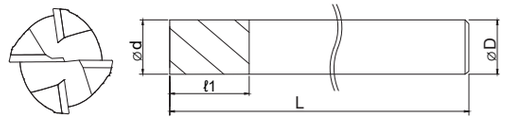
(Unit: mm)

제품 번호 Product No.	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
6CLHR 600 R050 60	6.0 X 0.5R	12	60	6	
6CLHR 600 R100 60	6.0 X 1.0R	12	60	6	
6CLHR 800 R050 65	8.0 X 0.5R	16	65	8	
6CLHR 800 R100 65	8.0 X 1.0R	16	65	8	
6CLHR 1000 R050 75	10.0 X 0.5R	20	75	10	
6CLHR 1000 R100 75	10.0 X 1.0R	20	75	10	
6CLHR 1200 R050 80	12.0 X 0.5R	24	80	12	
6CLHR 1200 R100 80	12.0 X 1.0R	24	80	12	

4SRHR 4F Square End for Multi Purpose

4날 평 엔드밀–복합소재용

NEW



Features

- High-efficiency machining is realized by suppressing chattering and increasing tool life with variable helix (35~38) and unequal division
- Greater rigidity and reduced chattering through optimized geometry
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at interrupted and low speeds
- For Dry cutting and Wet cutting

특 징

- 가변헬릭스(35~38)와 부등분할로 채터링을 억제하고 공구 수명을 증가시켜 고효율 가공 실현
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함.
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑선 개선
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○	◎	◎	○	◎	○			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SRHR 300 800 S6	3.0	8	50	6	
4SRHR 400 1000 S6	4.0	10	50	6	
4SRHR 500 1500 S6	5.0	15	60	6	
4SRHR 600 1500 S6	6.0	15	60	6	
4SRHR 700 2000 S8	7.0	20	60	8	
4SRHR 800 2000 S8	8.0	20	70	8	
4SRHR 900 2200 S10	9.0	22	70	10	
4SRHR 1000 2500 S10	10.0	25	75	10	
4SRHR 1200 3000 S12	12.0	30	80	12	

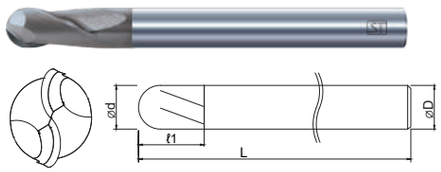
스타공구(주)
STAR TOOL CO., LTD.

Economic Series

ISO 9001

INNOBIZ
기술혁신형중소기업

2BRE 2F Ball End-Economic
2날 볼–이코노믹



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

2 | HX 30° | MG Carbide | AlTiCrSiN Coated | ≤50 HRC | 3D | CUTTING P.243

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

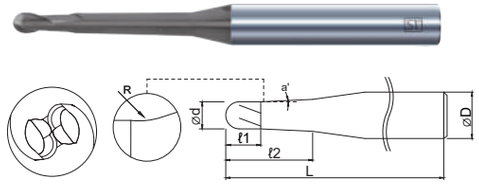
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2BRE 020 040 S4	0.2 X R0.1	0.4	40	4	
2BRE 030 060 S4	0.3 X R0.15	0.6	40	4	
2BRE 040 080 S4	0.4 X R0.2	0.8	40	4	
2BRE 050 100 S4	0.5 X R0.25	1	45	4	
2BRE 060 120 S4	0.6 X R0.3	1.2	45	4	
2BRE 070 140 S4	0.7 X R0.35	1.4	45	4	
2BRE 080 160 S4	0.8 X R0.4	1.6	45	4	
2BRE 100 150 S4	1.0 X R0.5	1.5	45	4	
2BRE 100 250 S4	1.0 X R0.5	2.5	45	4	
2BRE 150 200 S4	1.5 X R0.75	2	45	4	
2BRE 150 300 S4	1.5 X R0.75	3	45	4	
2BRE 200 400 S4	2.0 X R1.0	4	45	4	
2BRE 250 500 S6	2.5 X R1.25	5	45	6	
2BRE 300 500 S4	3.0 X R1.5	5	45	4	
2BRE 300 500 S6	3.0 X R1.5	5	50	6	
2BRE 400 600 S4	4.0 X R2.0	6	45	4	
2BRE 400 600 S6	4.0 X R2.0	6	50	6	
2BRE 600 900 50	6.0 X R3.0	9	50	6	
2BRE 600 1200 60	6.0 X R3.0	12	60	6	
2BRE 600 1200 90	6.0 X R3.0	12	90	6	
2BRE 800 1400 90	8.0 X R4.0	14	90	8	
2BRE 1000 1800 90	10.0 X R5.0	18	90	10	
2BRE 1200 2200 100	12.0 X R6.0	22	100	12	
2BRE 1600 3000 110	16.0 X R8.0	30	110	16	
2BRE 1600 3000 160	16.0 X R8.0	30	160	16	
2BRE 2000 4000 150	20.0 X R10.0	40	150	20	

2BTE 2F Ball Endmill-Tapered Neck-Economic
2날 볼–테이퍼 넥–이코노믹

NEW



Features
- Excellent stability with a R-shaped neck
- Reduces vibration and improves workpiece surface quality by tapered neck
- Extended neck style for long reach applications
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 목부분 R형상으로 뛰어난 안정성
- 테이퍼 넥으로 진동을 줄이고, 절삭면의 조도 향상
- 롱 넥 형상으로 깊은 가공에 적합함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

2 | HX 30° | MG Carbide | AlTiCrSiN Coated | ≤50 HRC | 3D | CUTTING P.244

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 :

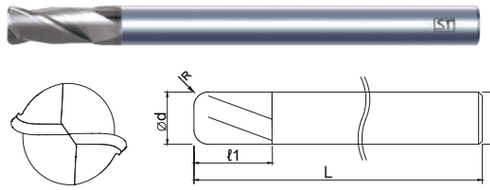
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

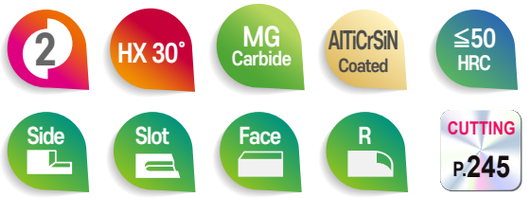
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Angle 각도 A(°)	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2BTE 100 300 4000 80	1.0 X R0.5	3	3	40	80	6	
2BTE 100 500 2000 60	1.0 X R0.5	3	5	20	60	6	
2BTE 200 300 4000 80	2.0 X R1.0	5	3	40	80	6	
2BTE 200 500 2000 60	2.0 X R1.0	5	5	20	60	6	
2BTE 400 150 4820 90	4.0 X R2.0	8	1.5	48.2	90	6	
2BTE 400 300 2910 70	4.0 X R2.0	8	3	29.1	70	6	
2BTE 600 150 5220 110	6.0 X R3.0	12	1.5	52.2	110	8	
2BTE 600 300 3310 90	6.0 X R3.0	12	3	33.1	90	8	
2BTE 800 150 5420 120	8.0 X R4.0	14	1.5	54.2	120	10	
2BTE 800 300 3510 100	8.0 X R4.0	14	3	35.1	100	10	
2BTE 1000 150 5820 130	10.0 X R5.0	18	1.5	58.2	130	12	
2BTE 1000 300 3910 110	10.0 X R5.0	18	3	39.1	110	12	

2CLE 2F Corner Radius-Long-Economic
2날 코너R 롱-이코노믹





Features

- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

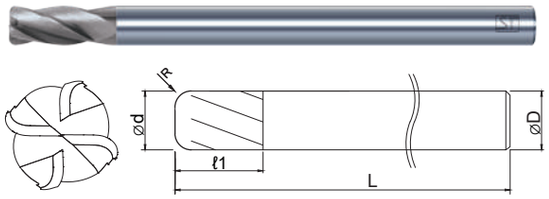
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CLE 100 R020 45	1.0 X R0.2	2.5	45	4	
2CLE 150 R020 45	1.5 X R0.2	4	45	4	
2CLE 200 R020 45	2.0 X R0.2	4	45	4	
2CLE 200 R030 45	2.0 X R0.3	4	45	4	
2CLE 300 R020 50	3.0 X R0.2	6	50	4	
2CLE 300 R030 50	3.0 X R0.3	6	50	4	
2CLE 300 R050 50	3.0 X R0.5	6	50	4	
2CLE 400 R020 70	4.0 X R0.2	8	70	6	
2CLE 400 R030 70	4.0 X R0.3	8	70	6	
2CLE 400 R050 70	4.0 X R0.5	8	70	6	
2CLE 400 R100 70	4.0 X R1.0	8	70	6	
2CLE 600 R020 90	6.0 X R0.2	12	90	6	
2CLE 600 R030 90	6.0 X R0.3	12	90	6	
2CLE 600 R050 90	6.0 X R0.5	12	90	6	
2CLE 600 R100 90	6.0 X R1.0	12	90	6	
2CLE 800 R020 90	8.0 X R0.2	16	90	8	
2CLE 800 R030 90	8.0 X R0.3	16	90	8	
2CLE 800 R050 90	8.0 X R0.5	16	90	8	
2CLE 800 R050 100	8.0 X R0.5	16	100	8	
2CLE 800 R100 90	8.0 X R1.0	16	90	8	
2CLE 800 R100 100	8.0 X R1.0	16	100	8	

2CLE 2F Corner Radius-Long-Economic
2날 코너R 롱-이코노믹

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CLE 1000 R050 100	10.0 X R0.5	18	100	10	
2CLE 1000 R050 130	10.0 X R0.5	18	130	10	
2CLE 1000 R100 100	10.0 X R1.0	18	100	10	
2CLE 1000 R100 130	10.0 X R1.0	18	130	10	
2CLE 1200 R050 100	12.0 X R0.5	22	100	12	
2CLE 1200 R050 130	12.0 X R0.5	22	130	12	
2CLE 1200 R100 100	12.0 X R1.0	22	100	12	
2CLE 1200 R100 130	12.0 X R1.0	22	130	12	

4CLE 4F Corner Radius-Long-Economic
4날 코너R 롱-이코노믹



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

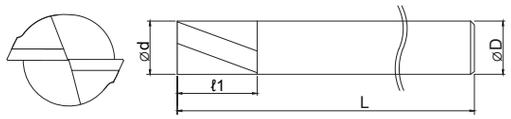
Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CLE 150 R020 45	1.5 X R0.2	3	45	4	
4CLE 150 R030 45	1.5 X R0.3	3	45	4	
4CLE 200 R020 45	2.0 X R0.2	4	45	4	
4CLE 300 R020 60	3.0 X R0.2	6	60	6	
4CLE 300 R030 60	3.0 X R0.3	6	60	6	
4CLE 300 R050 45	3.0 X R0.5	6	45	4	
4CLE 300 R050 60	3.0 X R0.5	6	60	6	
4CLE 400 R020 70	4.0 X R0.2	8	70	6	
4CLE 400 R030 70	4.0 X R0.3	8	70	6	
4CLE 400 R050 45	4.0 X R0.5	8	45	4	
4CLE 400 R050 70	4.0 X R0.5	8	70	6	
4CLE 600 R020 80	6.0 X R0.2	12	80	6	
4CLE 600 R030 60	6.0 X R0.3	12	60	6	
4CLE 600 R030 80	6.0 X R0.3	12	80	6	
4CLE 600 R050 60	6.0 X R0.5	12	60	6	
4CLE 600 R050 80	6.0 X R0.5	12	80	6	
4CLE 600 R100 60	6.0 X R1.0	12	60	6	
4CLE 600 R150 80	6.0 X R1.5	12	80	6	
4CLE 800 R020 90	8.0 X R0.2	16	90	8	
4CLE 800 R030 90	8.0 X R0.3	16	90	8	
4CLE 800 R050 60	8.0 X R0.5	16	60	8	

4CLE 4F Corner Radius-Long-Economic
4날 코너R 롱-이코노믹

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CLE 800 R050 90	8.0 X R0.5	16	90	8	
4CLE 800 R100 60	8.0 X R1.0	16	60	8	
4CLE 800 R100 90	8.0 X R1.0	16	90	8	
4CLE 1000 R050 75	10.0 X R0.5	20	75	10	
4CLE 1000 R050 100	10.0 X R0.5	20	100	10	
4CLE 1000 R100 75	10.0 X R1.0	20	75	10	
4CLE 1000 R100 100	10.0 X R1.0	20	100	10	
4CLE 1200 R050 80	12.0 X R0.5	24	80	12	
4CLE 1200 R050 100	12.0 X R0.5	24	100	12	
4CLE 1200 R100 80	12.0 X R1.0	24	80	12	
4CLE 1200 R100 100	12.0 X R1.0	24	100	12	
4CLE 1200 R200 100	12.0 X R2.0	24	100	12	
4CLE 1600 R050 110	16.0 X R0.5	28	110	16	
4CLE 1600 R100 110	16.0 X R1.0	28	110	16	

2SRE 2F Square End-Economic
2날 평–이코노믹



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

Cutting Dia.
d≦6: 0/-0.01 d>6: 0/-0.015

Recommended workpiece Material :

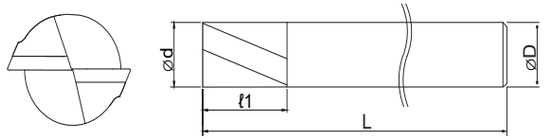
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2SRE 020 040 S4	0.2	0.4	40	4	
2SRE 030 060 S4	0.3	0.6	40	4	
2SRE 040 080 S4	0.4	0.8	40	4	
2SRE 050 100 S4	0.5	1	45	4	
2SRE 060 120 S4	0.6	1.2	45	4	
2SRE 070 140 S4	0.7	1.4	45	4	
2SRE 080 160 S4	0.8	1.6	45	4	
2SRE 100 150 S4	1.0	1.5	45	4	
2SRE 100 250 S4	1.0	2.5	45	4	
2SRE 150 200 S4	1.5	2	45	4	
2SRE 150 400 S4	1.5	4	45	4	
2SRE 200 350 S4	2.0	3.5	45	4	
2SRE 200 600 S4	2.0	6	45	4	
2SRE 250 800 S4	2.5	8	45	4	
2SRE 300 800 S4	3.0	8	45	4	
2SRE 400 1000 S4	4.0	10	45	4	
2SRE 500 1000 S6	5.0	10	50	6	
2SRE 500 1300 S6	5.0	13	50	6	
2SRE 600 1300 S6	6.0	13	50	6	
2SRE 600 1500 S6	6.0	15	50	6	
2SRE 800 1600 S8	8.0	16	60	8	
2SRE 800 1900 S8	8.0	19	60	8	
2SRE 1000 1800 S10	10.0	18	70	10	
2SRE 1000 2200 S10	10.0	22	70	10	
2SRE 1200 2200 S12	12.0	22	75	12	
2SRE 1200 2600 S12	12.0	26	75	12	
2SRE 1600 4000 S16	16.0	40	100	16	
2SRE 2000 5000 S20	20.0	50	110	20	

2SLE 2F Square End-Long-Economic
2날 평 롱–이코노믹



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

Cutting Dia.
d≦6: 0/-0.01 d>6: 0/-0.015

Recommended workpiece Material :

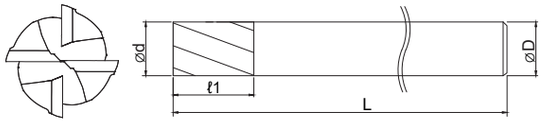
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

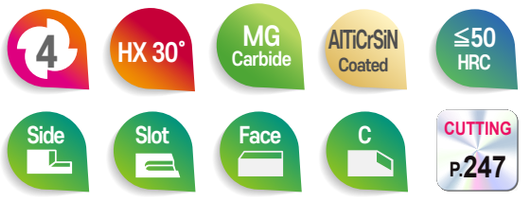
Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2SLE 100 500 60	1.0	5	60	4	
2SLE 150 800 60	1.5	8	60	4	
2SLE 200 800 60	2.0	8	60	4	
2SLE 300 1500 70	3.0	15	70	6	
2SLE 400 2000 70	4.0	20	70	6	
2SLE 600 2000 70	6.0	20	70	6	
2SLE 600 3000 80	6.0	30	80	6	
2SLE 800 2500 75	8.0	25	75	8	
2SLE 800 4000 90	8.0	40	90	8	
2SLE 1000 3000 80	10.0	30	80	10	
2SLE 1000 5000 100	10.0	50	100	10	
2SLE 1200 3000 90	12.0	30	90	12	
2SLE 1200 5000 100	12.0	50	100	12	
2SLE 1600 4000 150	16.0	40	150	16	
2SLE 2000 5000 150	20.0	50	150	20	

4SRE 4F Square End-Economic
4날 평–이코노믹



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용



Tolerance :

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

Recommended workpiece Material :

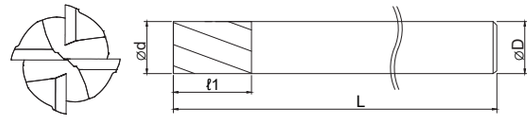
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SRE 100 250 S4	1.0	2.5	45	4	
4SRE 150 400 S4	1.5	4	45	4	
4SRE 200 350 S4	2.0	3.5	45	4	
4SRE 200 600 S4	2.0	6	45	4	
4SRE 250 800 S4	2.5	8	45	4	
4SRE 300 500 S4	3.0	5	45	4	
4SRE 300 800 S4	3.0	8	45	4	
4SRE 300 1200 S4	3.0	12	45	4	
4SRE 400 600 S4	4.0	6	45	4	
4SRE 400 1100 S4	4.0	11	45	4	
4SRE 400 1300 S6	4.0	13	50	6	
4SRE 500 1300 S6	5.0	13	50	6	
4SRE 500 2000 S6	5.0	20	60	6	
4SRE 600 1300 S6	6.0	13	45	6	
4SRE 600 1500 S6	6.0	15	45	6	
4SRE 800 1600 S8	8.0	16	60	8	
4SRE 800 1900 S8	8.0	19	60	8	
4SRE 1000 1800 S10	10.0	18	70	10	
4SRE 1000 2200 S10	10.0	22	70	10	
4SRE 1200 2200 S12	12.0	22	75	12	
4SRE 1200 2600 S12	12.0	26	75	12	
4SRE 1600 4000 S16	16.0	40	100	16	
4SRE 2000 4000 S20	20.0	40	100	20	

4SLE 2F Square End-Long-Economic
2날 평 롱–이코노믹



Features
- Greater rigidity and reduced chattering through optimized geometry
- For Dry cutting and Wet cutting

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SLE 200 800 60	2.0	8	60	6	
4SLE 300 1200 70	3.0	12	70	6	
4SLE 400 1500 70	4.0	15	70	6	
4SLE 400 2000 70	4.0	20	70	6	
4SLE 600 2000 70	6.0	20	70	6	
4SLE 600 3000 80	6.0	30	80	6	
4SLE 800 2500 75	8.0	25	75	8	
4SLE 800 4000 90	8.0	40	90	8	
4SLE 1000 3000 80	10.0	30	80	10	
4SLE 1000 5000 100	10.0	50	100	10	
4SLE 1200 3000 90	12.0	30	90	12	
4SLE 1200 5000 100	12.0	50	100	12	
4SLE 1600 4000 160	16.0	40	160	16	
4SLE 2000 5000 160	20.0	50	160	20	

스타공구 (주)
STAR TOOL CO., LTD.

For Roughing

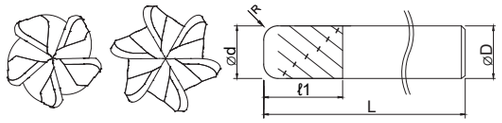
ISO 9001

INNOBIZ
기술혁신형중소기업

5,6TROCHOIDAL

5,6F Trochoidal for miltipurpose
5,6날 트로코이달 엔드밀–복합소재용

NEW



5 | 6 | HX 37/38° | MG Carbide | HR Coated | ≦55 HRC

Unequal Flute Spacing | Side | Slot | Face | R | Plunge

CUTTING P.248

Features

- High-efficiency machining is realized by suppressing chattering and increasing tools life with variable helix(37°~38°) and unequal divided flute.
- Greater rigidity and reduced chattering through optimized geometry
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at interrupted and low speeds
- Sidelock applied to 14dia or more
- For Dry cutting and Wet cutting

특 징

- 가변헬릭스(37~38)와 부등분할로 채터링을 억제하고 공구 수명을 증가시켜 고효율 가공 실현
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함.
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑선 개선
- 14파이 이상은 사이드락 적용
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	△	○	○	◎	○	○	△			

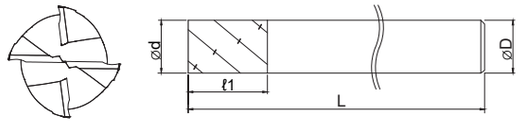
(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	Flute No 날 수	비 고
5TROHR 600 R020 65	6.0 X 0.2R	24	–	65	6	5	
5TROHR 600 R050 2600	6.0 X 0.5R	18	26	65	6	5	
5TROHR 800 R020 68	8.0 X 0.2R	24	–	68	8	5	
5TROHR 800 R050 3100	8.0 X 0.5R	24	31	80	8	5	
5TROHR 1000 R020 80	10.0 X 0.2R	30	–	80	10	5	
5TROHR 1000 R050 3800	10.0 X 0.5R	30	38	80	10	5	
5TROHR 1200 R050 90	12.0 X 0.5R	36	–	90	12	5	
5TROHR 1200 R100 4600	12.0 X 1.0R	36	46	90	12	5	
5TROHR 1600 R100 5800	16.0 X 1.0R	48	58	110	16	5	
5TROHR 2000 R200 120	20.0 X 2.0R	60	–	120	20	5	
6TROHR 1000 R050 80	10.0 X 0.5R	30	–	80	10	6	
6TROHR 1200 R050 90	12.0 X 0.5R	36	–	90	12	6	
6TROHR 1600 R100 120	16.0 X 1.0R	36	–	120	16	6	
6TROHR 2000 R100 130	20.0 X 1.0R	60	–	130	20	6	

4SRR

4F Square Semi-finishing End-Economic
4날 평 황,절삭용–이코노믹

NEW



4 | HX 38° | MG Carbide | AlTiCrSiN Coated | ≦50 HRC

Unequal Flute Spacing | Side | Slot | Face | C

Features

- Chip break and unequal divided flute increase tool life and enable stable cutting
- Greater rigidity and reduced chattering through optimized geometry
- For roughing and semi-roughing
- For Dry cutting and Wet cutting

특 징

- 칩브레이크와 부등분할로 공구수명이 증가하고 안정적인 절삭 가능
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- 황,중삭용
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎	△	◎	◎	○		○	△			

(Unit: mm)

제품 번호 Product No.	날경 Cutting Dia. d	날장 Length of Cut ℓ1	전장 Overall Length L	생크경 Shank Dia. D	비 고
4SRR 600 2000 S6	6.0	20	60	6	
4SRR 800 2400 S8	8.0	24	65	8	
4SRR 1000 3000 S10	10.0	30	80	10	
4SRR 1200 3600 S12	12.0	36	82	12	

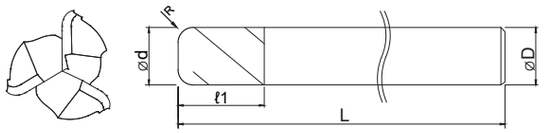
스타공구(주)
STAR TOOL CO., LTD.

For Aluminum

ISO 9001

INNOBIZ
기술혁신형중소기업

3CA 3F Corner Radius End for Aluminum
3날 코너 R-알루미늄 가공용



Features
- For use on aluminum alloy and non-ferrous materials
- Provides higher metal removal rate
- Greater rigidity and reduced chattering through optimized geometry

특 징
- AL 및 비철용으로 적합
- 보다 넓은 칩포켓으로 가공성 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음

Tolerance :

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

Recommended workpiece Material :

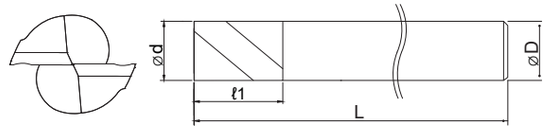
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
							△	◎	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
3CA 300 R020 50	3.0 X R0.2	8	50	6	
3CA 300 R030 50	3.0 X R0.3	8	50	6	
3CA 300 R050 50	3.0 X R0.5	8	50	6	
3CA 400 R030 50	4.0 X R0.3	11	50	6	
3CA 400 R050 50	4.0 X R0.5	11	50	6	
3CA 400 R100 50	4.0 X R1.0	11	50	6	
3CA 600 R030 60	6.0 X R0.3	16	60	6	
3CA 600 R050 60	6.0 X R0.5	16	60	6	
3CA 600 R100 60	6.0 X R1.0	16	60	6	
3CA 800 R050 65	8.0 X R0.5	20	65	8	
3CA 800 R100 65	8.0 X R1.0	20	65	8	
3CA 1000 R050 70	10.0 X R0.5	25	70	10	
3CA 1000 R100 70	10.0 X R1.0	25	70	10	
3CA 1000 R200 70	10.0 X R2.0	25	70	10	
3CA 1200 R050 75	12.0 X R0.5	26	75	12	
3CA 1200 R100 75	12.0 X R1.0	26	75	12	
3CA 1200 R200 75	12.0 X R2.0	26	75	12	
3CA 1200 R300 75	12.0 X R3.0	26	75	12	
3CA 1600 R100 90	16.0 X R1.0	35	90	16	
3CA 1600 R200 90	16.0 X R2.0	35	90	16	
3CA 1600 R300 90	16.0 X R3.0	35	90	16	

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



Features
- For use on aluminum alloy and non-ferrous materials
- Provides higher metal removal rate
- Greater rigidity and reduced chattering through optimized geometry

특 징
- AL 및 비철용으로 적합
- 보다 넓은 칩포켓으로 가공성 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음

Tolerance :

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

Recommended workpiece Material :

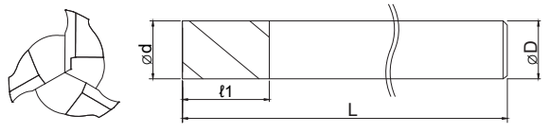
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
							△	◎	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2SA 100 250	1.0	2.5	45	6	
2SA 150 400	1.5	4	45	6	
2SA 200 600	2.0	6	50	6	
2SA 200 1000	2.0	10	50	6	
2SA 300 800	3.0	8	50	6	
2SA 300 1500	3.0	15	50	6	
2SA 400 1100	4.0	11	50	6	
2SA 400 1600	4.0	16	60	6	
2SA 600 1600	6.0	16	50	6	
2SA 600 2000	6.0	20	60	6	
2SA 600 2500	6.0	25	65	6	
2SA 800 2000	8.0	20	60	8	
2SA 800 3000	8.0	30	70	8	
2SA 1000 2500	10.0	25	75	10	
2SA 1000 3500	10.0	35	80	10	
2SA 1200 3000	12.0	30	80	12	
2SA 1200 3500	12.0	35	80	12	

3SA 3F Square End for Aluminum
3날 평–알루미늄 가공용



Features

- For use on aluminum alloy and non-ferrous materials
- Provides higher metal removal rate
- Greater rigidity and reduced chattering through optimized geometry

특 징

- AL 및 비철용으로 적합
- 보다 넓은 칩포켓으로 가공성 우수함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
							△	◎	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
3SA 100 200	1.0	2	45	6	
3SA 100 300	1.0	3	45	6	
3SA 100 500	1.0	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	2.0	3	45	6	
3SA 200 700	2.0	7	45	6	
3SA 200 1000	2.0	10	50	6	
3SA 200 1200	2.0	12	50	6	
3SA 300 400	3.0	4	45	6	
3SA 300 800	3.0	8	50	6	
3SA 300 1300	3.0	13	50	6	
3SA 300 1500	3.0	15	50	6	
3SA 300 2000	3.0	20	55	6	
3SA 300 2500	3.0	25	60	6	
3SA 400 600	4.0	6	45	6	
3SA 400 1100	4.0	11	50	6	
3SA 400 1600	4.0	16	50	6	
3SA 400 2000	4.0	20	55	6	
3SA 400 2500	4.0	25	60	6	
3SA 400 3000	4.0	30	70	6	
3SA 500 700	5.0	7	50	6	

3SA 3F Square End for Aluminum
3날 평–알루미늄 가공용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
3SA 500 2000	5.0	20	55	6	
3SA 500 3000	5.0	30	65	6	
3SA 600 900	6.0	9	50	6	
3SA 600 1600	6.0	16	50	6	
3SA 600 2000	6.0	20	60	6	
3SA 600 2500	6.0	25	60	6	
3SA 600 3000	6.0	30	70	6	
3SA 800 1200	8.0	12	60	8	
3SA 800 2000	8.0	20	60	8	
3SA 800 3000	8.0	30	70	8	
3SA 800 4000	8.0	40	80	8	
3SA 800 5500	8.0	55	100	8	
3SA 1000 1500	10.0	15	70	10	
3SA 1000 2500	10.0	25	70	10	
3SA 1000 3500	10.0	35	80	10	
3SA 1000 5500	10.0	55	100	10	
3SA 1200 2600	12.0	26	75	12	
3SA 1200 3000	12.0	30	80	12	
3SA 1200 3500	12.0	35	80	12	
3SA 1400 4500	14.0	45	100	14	
3SA 1600 6000	16.0	60	110	16	
3SA 2000 7500	20.0	75	130	20	

스타공구(주)
STAR TOOL CO., LTD.

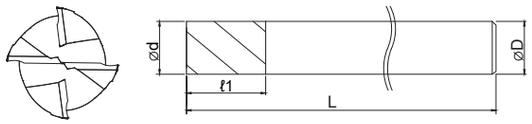
For Stainless Steel

ISO 9001

INNOBIZ
기술혁신형중소기업

4SSN 4F Square for Stainless Steel
4날 평–SUS

NEW



4 | HX 35/38° | MG Carbide | ALNOVA Coated

Side | Slot | Face | C | CUTTING P.248

Features

- Minimize frictional resistance, improve workpiece surface, and maximize tool life by Premium coating (ALNOVA)
- Reduce chattering and chipping by small chamfer at corner
- Designed with variable helix angle(35˚~38˚) and unequal divided flutes for only stainless steel.
- Faster cutting action and easy chip evacuation

특 징

- 프리미엄 코팅(ALNOVA)을 통해 마찰 저항 최소화, 표면 조도 향상, 공구 수명 극대화
- 작은 챔퍼 추가로 칩핑 및 떨림 방지
- 가변 헬릭스 앵글(35°~38°) 및 부등분할로 인한 공구수명 2~3 배 증가
- 칩 배출 우수성과 빠른 절삭성

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

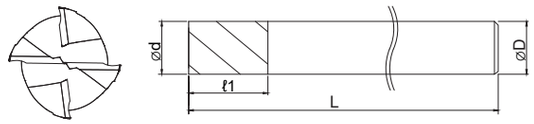
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○				◎	○	○	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SSN 100 250 50	1.0	2.5	50	4	
4SSN 150 400 50	1.5	4	50	4	
4SSN 200 600 50	2.0	6	50	4	
4SSN 250 700 50	2.5	7	50	4	
4SSN 300 1000 60	3.0	10	60	6	
4SSN 400 1200 60	4.0	12	60	6	
4SSN 500 1500 60	5.0	15	60	6	
4SSN 600 1500 50	6.0	15	50	6	
4SSN 600 2000 70	6.0	20	70	6	
4SSN 800 1900 60	8.0	19	60	8	
4SSN 1000 2200 70	10.0	22	70	10	
4SSN 1200 2600 75	12.0	26	75	12	

4SST 4F Square for Stainless Steel
4날 평–SUS

NEW



4 | HX 35/38° | MG Carbide | AlTiN Coated

Side | Slot | Face | C | CUTTING P.248

Features

- Minimize friction resistance, improve workpiece surface, and maximize tool life by applying AlTiN coating
- Reduce chattering and chipping by small chamfer at corner
- Designed with variable helix angle(35˚~38˚) and unequal divided flutes for only stainless steel.
- Faster cutting action and easy chip evacuation

특 징

- AlTiN 코팅 적용으로 마찰저항 최소화, 표면조도향상, 공구수명 극대화
- 작은 챔퍼 추가로 칩핑 및 떨림 방지
- 가변 헬릭스 앵글(35°~38°) 및 부등분할로 인한 공구수명 2~3 배 증가
- 칩 배출 우수성과 빠른 절삭성

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

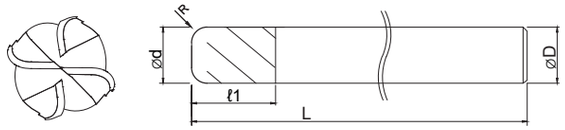
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○				◎	○	○	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4SST 100 250 50	1.0	2.5	50	4	
4SST 150 400 50	1.5	4	50	4	
4SST 200 600 50	2.0	6	50	4	
4SST 250 700 50	2.5	7	50	4	
4SST 300 1000 60	3.0	10	60	6	
4SST 400 1200 60	4.0	12	60	6	
4SST 500 1500 60	5.0	15	60	6	
4SST 600 1500 50	6.0	15	50	6	
4SST 600 2000 70	6.0	20	70	6	
4SST 800 1900 60	8.0	19	60	8	
4SST 1000 2200 70	10.0	22	70	10	
4SST 1200 2600 75	12.0	26	75	12	

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

NEW



Features

- Minimize frictional resistance, improve workpiece surface, and maximize tool life by Premium coating (ALNOVA)
- Reduce chattering and chipping by small chamfer at corner
- Designed with variable helix angle(35°~38°) and unequal divided flutes for only stainless steel.
- Faster cutting action and easy chip evacuation

특 징

- 프리미엄 코팅(ALNOVA)을 통해 마찰 저항 최소화, 표면 조도 향상, 공구 수명 극대화
- 작은 챔퍼 추가로 칩핑 및 떨림 방지
- 가변 헬릭스 앵글(35°~38°) 및 부등분할로 인한 공구수명 2~3배 증가
- 칩 배출 우수성과 빠른 절삭성

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○				◎	○	○	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CSN 100 R010 S4	1.0 X R0.1	2.5	50	4	
4CSN 100 R020 S4	1.0 X R0.2	2.5	50	4	
4CSN 150 R010 S4	1.5 X R0.1	4	50	4	
4CSN 150 R020 S4	1.5 X R0.2	4	50	4	
4CSN 200 R010 S4	2.0 X R0.1	6	50	4	
4CSN 200 R020 S4	2.0 X R0.2	6	50	4	
4CSN 250 R020 S4	2.5 X R0.2	7	50	4	
4CSN 300 R020 S6	3.0 X R0.2	10	60	6	
4CSN 300 R050 S6	3.0 X R0.5	10	60	6	
4CSN 400 R020 S6	4.0 X R0.2	12	60	6	
4CSN 400 R050 S6	4.0 X R0.5	12	60	6	
4CSN 500 R020 S6	5.0 X R0.2	15	60	6	
4CSN 500 R050 S6	5.0 X R0.5	15	60	6	
4CSN 600 R030 S6	6.0 X R0.3	15	60	6	
4CSN 600 R050 S6	6.0 X R0.5	15	60	6	
4CSN 600 R100 S6	6.0 X R1.0	15	60	6	
4CSN 800 R030 S8	8.0 X R0.3	20	80	8	
4CSN 800 R050 S8	8.0 X R0.5	20	80	8	
4CSN 800 R100 S8	8.0 X R1.0	20	80	8	
4CSN 1000 R030 S10	10.0 X R0.3	25	80	10	
4CSN 1000 R050 S10	10.0 X R0.5	25	80	10	
4CSN 1000 R100 S10	10.0 X R1.0	25	80	10	

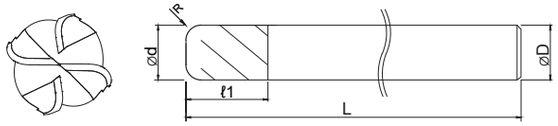
4CSN 4F Corner Radius for Stainless Steel
4날 코너 R-SUS

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CSN 1000 R150 S10	10.0 X R1.5	25	80	10	
4CSN 1000 R200 S10	10.0 X R2.0	25	80	10	
4CSN 1200 R050 S12	12.0 X R0.5	30	80	12	
4CSN 1200 R100 S12	12.0 X R1.0	30	80	12	
4CSN 1200 R150 S12	12.0 X R1.5	30	80	12	
4CSN 1200 R200 S12	12.0 X R2.0	30	80	12	

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

NEW



Features

- Minimize friction resistance, improve workpiece surface, and maximize tool life by applying AlTiN coating
- Reduce chattering and chipping by small chamfer at corner
- Designed with variable helix angle(35°~38°) and unequal divided flutes for only stainless steel.
- Faster cutting action and easy chip evacuation

특 징

- AlTiN 코팅 적용으로 마찰저항 최소화, 표면조도향상, 공구수명 극대화
- 작은 챔퍼 추가로 칩핑 및 떨림 방지
- 가변 헬릭스 앵글(35°~38°) 및 부등분할로 인한 공구수명 2~3배 증가
- 칩 배출 우수성과 빠른 절삭성

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○				◎	○	○	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CST 100 R010 S4	1.0 X R0.1	2.5	50	4	
4CST 100 R020 S4	1.0 X R0.2	2.5	50	4	
4CST 150 R010 S4	1.5 X R0.1	4	50	4	
4CST 150 R020 S4	1.5 X R0.2	4	50	4	
4CST 200 R010 S4	2.0 X R0.1	6	50	4	
4CST 200 R020 S4	2.0 X R0.2	6	50	4	
4CST 250 R020 S4	2.5 X R0.2	7	50	4	
4CST 300 R020 S6	3.0 X R0.2	10	60	6	
4CST 300 R050 S6	3.0 X R0.5	10	60	6	
4CST 400 R020 S6	4.0 X R0.2	12	60	6	
4CST 400 R050 S6	4.0 X R0.5	12	60	6	
4CST 500 R020 S6	5.0 X R0.2	15	60	6	
4CST 500 R050 S6	5.0 X R0.5	15	60	6	
4CST 600 R030 S6	6.0 X R0.3	15	60	6	
4CST 600 R050 S6	6.0 X R0.5	15	60	6	
4CST 600 R100 S6	6.0 X R1.0	15	60	6	
4CST 800 R030 S8	8.0 X R0.3	20	80	8	
4CST 800 R050 S8	8.0 X R0.5	20	80	8	
4CST 800 R100 S8	8.0 X R1.0	20	80	8	
4CST 1000 R030 S10	10.0 X R0.3	25	80	10	
4CST 1000 R050 S10	10.0 X R0.5	25	80	10	
4CST 1000 R100 S10	10.0 X R1.0	25	80	10	

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

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CST 1000 R150 S10	10.0 X R1.5	25	80	10	
4CST 1000 R200 S10	10.0 X R2.0	25	80	10	
4CST 1200 R050 S12	12.0 X R0.5	30	80	12	
4CST 1200 R100 S12	12.0 X R1.0	30	80	12	
4CST 1200 R150 S12	12.0 X R1.5	30	80	12	
4CST 1200 R200 S12	12.0 X R2.0	30	80	12	

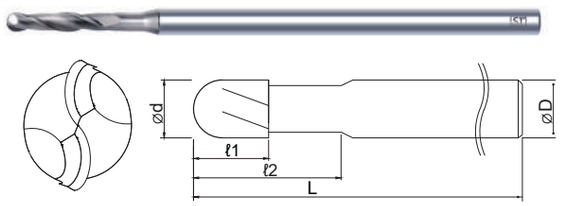
스타공구(주)
STAR TOOL CO., LTD.

For Graphite

ISO 9001

INNOBIZ
기술혁신형중소기업

2BG 2F Ball End for Graphite
2날 볼–흑연 가공용



Features

- Greater rigidity and reduced chattering through optimized geometry
- AlTiN coating for improved wear resistance

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- AlTiN 코팅 처리로 내마모성이 커짐

2 | HX 30° | MG Carbide | AlTiN Coated | 3D | CUTTING P.249

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 :

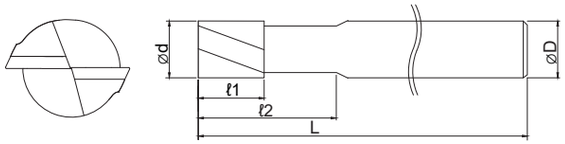
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△		△					△	△	△	◎

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 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	

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



Features
- Greater rigidity and reduced chattering through optimized geometry
- AlTiN coating for improved wear resistance

특 징
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- AlTiN 코팅 처리로 내마모성이 커짐

2 | HX 30° | MG Carbide | AlTiN Coated

Side | Slot | Face | C | CUTTING P.250

Tolerance :

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

Recommended workpiece Material :

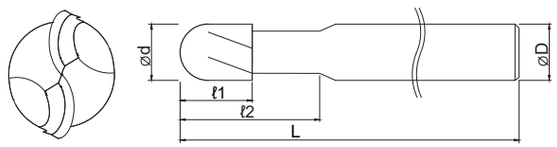
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△		△					△	△	△	◎

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 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	1.0	5	–	60	4	
2SG 100 1000 60	1.0	5	10	60	4	
2SG 100 1500 60	1.0	5	15	60	4	
2SG 100 2000 60	1.0	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	2.0	10	–	60	4	
2SG 200 1500 60	2.0	10	15	60	4	
2SG 200 2000 60	2.0	10	20	60	4	
2SG 200 2500 70	2.0	10	25	70	4	
2SG 200 3000 80	2.0	10	30	80	4	
2SG 300 1500 70	3.0	15	–	70	4	
2SG 300 2500 75	3.0	15	25	75	4	
2SG 300 3000 80	3.0	15	30	80	4	
2SG 400 2000 80	4.0	20	–	80	4	
2SG 400 2000 100	4.0	20	–	100	4	
2SG 500 3000 100	5.0	30	–	100	6	
2SG 600 3000 100	6.0	30	–	100	6	
2SG 600 4000 150	6.0	40	–	150	6	
2SG 800 4500 150	8.0	45	–	150	8	
2SG 1000 5000 150	10.0	50	–	150	10	
2SG 1200 6000 150	12.0	60	–	150	12	

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



Features
- Diamond coated for improved abrasion resistance and higher feed rates
- Greater rigidity and reduced chattering through optimized geometry

특 징
- 고경도의 다이아몬드 코팅으로 내마모성이 커 고속가공이 가능함
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음

2 | HX 30° | MG Carbide | Diamond Coated

3D | CUTTING P.250

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
									△	◎

(Unit: mm)

Product No. 제품 번호.	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2BD 050 200 45	0.5 X R0.25	2	–	45	4	
2BD 050 300 45	0.5 X R0.25	2	3	45	4	
2BD 050 400 45	0.5 X R0.25	2	4	45	4	
2BD 050 500 45	0.5 X R0.25	2	5	45	4	
2BD 050 600 45	0.5 X R0.25	2	6	45	4	
2BD 050 800 45	0.5 X R0.25	2	8	45	4	
2BD 060 200 45	0.6 X R0.3	2	–	45	4	
2BD 060 300 45	0.6 X R0.3	2	3	45	4	
2BD 060 400 45	0.6 X R0.3	2	4	45	4	
2BD 060 500 45	0.6 X R0.3	2	5	45	4	
2BD 060 600 45	0.6 X R0.3	2	6	45	4	
2BD 060 800 45	0.6 X R0.3	2	8	45	4	
2BD 060 1000 45	0.6 X R0.3	2	10	45	4	
2BD 060 1200 45	0.6 X R0.3	2	12	45	4	
2BD 080 300 45	0.8 X R0.4	3	–	45	4	
2BD 080 400 45	0.8 X R0.4	3	4	45	4	
2BD 080 500 45	0.8 X R0.4	3	5	45	4	
2BD 080 600 45	0.8 X R0.4	3	6	45	4	
2BD 080 800 45	0.8 X R0.4	3	8	45	4	
2BD 080 1000 45	0.8 X R0.4	3	10	45	4	
2BD 080 1500 45	0.8 X R0.4	3	15	45	4	
2BD 080 2000 45	0.8 X R0.4	3	20	50	4	

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

(Unit: mm)

Product No. 제품 번호.	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2BD 100 300 60	1.0 X R0.5	3	–	60	4	
2BD 100 400 60	1.0 X R0.5	3	4	60	4	
2BD 100 500 60	1.0 X R0.5	3	5	60	4	
2BD 100 600 60	1.0 X R0.5	3	6	60	4	
2BD 100 800 60	1.0 X R0.5	3	8	60	4	
2BD 100 1000 60	1.0 X R0.5	3	10	60	4	
2BD 100 1200 60	1.0 X R0.5	3	12	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 100 2500 80	1.0 X R0.5	3	25	80	4	
2BD 100 3000 80	1.0 X R0.5	3	30	80	4	
2BD 100 3500 80	1.0 X R0.5	3	35	80	4	
2BD 100 4000 80	1.0 X R0.5	3	40	80	4	
2BD 150 600 60	1.5 X R0.75	6	–	60	4	
2BD 150 800 60	1.5 X R0.75	6	8	60	4	
2BD 150 1000 60	1.5 X R0.75	6	10	60	4	
2BD 150 1200 60	1.5 X R0.75	6	12	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 150 2500 80	1.5 X R0.75	6	25	80	4	
2BD 150 3000 80	1.5 X R0.75	6	30	80	4	
2BD 150 3500 80	1.5 X R0.75	6	35	80	4	
2BD 150 4000 80	1.5 X R0.75	6	40	80	4	
2BD 200 800 60	2.0 X R1.0	8	–	60	4	
2BD 200 1000 80	2.0 X R1.0	8	10	80	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 2500 80	2.0 X R1.0	8	25	80	4	
2BD 200 3000 80	2.0 X R1.0	8	30	80	4	
2BD 200 3500 80	2.0 X R1.0	8	35	80	4	
2BD 200 4000 80	2.0 X R1.0	8	40	80	4	
2BD 200 4500 100	2.0 X R1.0	8	45	100	4	
2BD 200 5000 100	2.0 X R1.0	8	50	100	4	
2BD 200 6000 100	2.0 X R1.0	8	60	100	4	
2BD 300 2000 100	3.0 X R1.5	12	20	100	4	
2BD 300 2500 100	3.0 X R1.5	12	25	100	4	
2BD 300 3000 100	3.0 X R1.5	12	30	100	4	
2BD 300 3500 100	3.0 X R1.5	12	35	100	4	
2BD 300 4000 100	3.0 X R1.5	12	40	100	4	
2BD 300 5000 100	3.0 X R1.5	12	50	100	4	
2BD 300 6000 100	3.0 X R1.5	12	60	100	4	
2BD 400 1600 60	4.0 X R2.0	16	–	60	4	
2BD 400 1600 80	4.0 X R2.0	16	–	80	4	
2BD 400 3000 80	4.0 X R2.0	16	30	80	4	
2BD 400 1600 100	4.0 X R2.0	16	–	100	4	
2BD 400 4000 100	4.0 X R2.0	16	40	100	4	
2BD 400 1600 130	4.0 X R2.0	16	–	130	4	

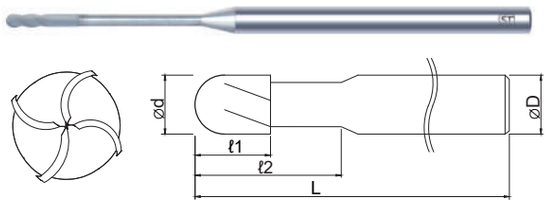
2BD 2F Ball End-Diamond Coated
2날 볼–다이아몬드 코팅

(Unit: mm)

Product No. 제품 번호.	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2BD 400 4000 130	4.0 X R2.0	16	40	130	4	
2BD 400 1600 150	4.0 X R2.0	16	–	150	4	
2BD 400 5000 150	4.0 X R2.0	16	50	150	4	
2BD 500 2000 105	5.0 X R2.5	16	20	105	6	
2BD 600 2500 75	6.0 X R3.0	25	–	75	6	
2BD 600 2500 105	6.0 X R3.0	25	–	105	6	
2BD 600 4000 105	6.0 X R3.0	25	40	105	6	
2BD 600 2500 150	6.0 X R3.0	25	–	150	6	
2BD 600 5000 150	6.0 X R3.0	25	50	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	

4BD 4F Ball End-Diamond Coated
4날 볼–다이아몬드 코팅

NEW



Features

- Diamond coated for improved abrasion resistance and higher feed rates
- Greater rigidity and reduced chattering through optimized geometry

특 징

- 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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
									△	◎

(Unit: mm)

Product No. 제품 번호.	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4BD 150 450 60	1.5 X R0.75	4.5	–	60	4	
4BD 150 1000 60	1.5 X R0.75	4.5	10	60	4	
4BD 150 1500 60	1.5 X R0.75	4.5	15	60	4	
4BD 150 2000 60	1.5 X R0.75	4.5	20	60	4	
4BD 150 2500 60	1.5 X R0.75	4.5	25	60	4	
4BD 200 600 60	2.0 X R1.0	6	–	60	4	
4BD 200 1000 80	2.0 X R1.0	6	10	80	4	
4BD 200 2000 80	2.0 X R1.0	6	20	80	4	
4BD 200 3000 80	2.0 X R1.0	6	30	80	4	
4BD 200 4000 80	2.0 X R1.0	6	40	80	4	
4BD 300 800 60	3.0 X R1.5	8	–	60	4	
4BD 300 1500 100	3.0 X R1.5	8	15	100	4	
4BD 300 2000 100	3.0 X R1.5	8	20	100	4	
4BD 300 3000 100	3.0 X R1.5	8	30	100	4	
4BD 300 4000 100	3.0 X R1.5	8	40	100	4	
4BD 300 5000 100	3.0 X R1.5	8	50	100	4	
4BD 400 1600 60	4.0 X R2.0	16	–	60	4	
4BD 400 1600 80	4.0 X R2.0	16	–	80	4	
4BD 400 1600 100	4.0 X R2.0	16	–	100	4	
4BD 400 1600 130	4.0 X R2.0	16	–	130	4	
4BD 600 2500 75	6.0 X R3.0	16	25	75	6	
4BD 600 2500 105	6.0 X R3.0	16	25	105	6	

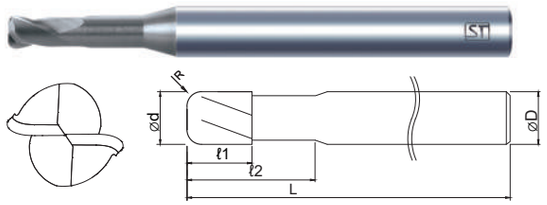
4BD 4F Ball End-Diamond Coated
4날 볼–다이아몬드 코팅

(Unit: mm)

Product No. 제품 번호.	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4BD 600 3000 150	6.0 X R3.0	16	30	150	6	
4BD 800 3000 75	8.0 X R4.0	20	30	75	8	
4BD 800 3000 105	8.0 X R4.0	20	30	105	8	
4BD 800 3500 150	8.0 X R4.0	20	35	150	8	
4BD 800 4000 200	8.0 X R4.0	20	40	200	8	
4BD 1000 3500 75	10.0 X R5.0	22	35	75	10	
4BD 1000 3500 105	10.0 X R5.0	22	35	105	10	
4BD 1000 4000 160	10.0 X R5.0	22	40	160	10	
4BD 1000 5000 200	10.0 X R5.0	22	50	200	10	
4BD 1200 5000 105	12.0 X R6.0	25	50	105	12	
4BD 1200 5000 150	12.0 X R6.0	25	50	150	12	
4BD 1200 6000 200	12.0 X R6.0	25	60	200	12	

2CD 2F Corner Radius-Diamond Coating
2날 코너R-다이아몬드 코팅

NEW



Features
- Diamond coated for improved abrasion resistance and higher feed rates
- Greater rigidity and reduced chattering through optimized geometry

특 징
- 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	±0.01

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

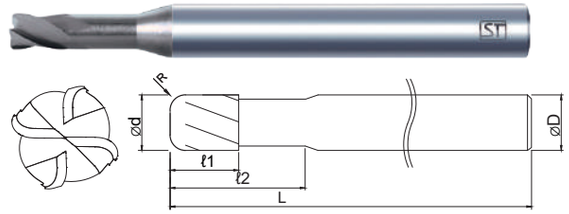
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
									△	◎

(Unit: mm)

Product No. 제품 번호.	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CD 050 R005 500 60	0.5 X R0.05	1	5	60	4	
2CD 060 R005 900 60	0.6 X R0.05	1.2	9	60	4	
2CD 080 R005 1000 60	0.8 X R0.05	1.6	10	60	4	
2CD 100 R010 1000 60	1.0 X R0.1	2	10	60	4	
2CD 100 R010 1500 60	1.0 X R0.1	2	15	60	4	
2CD 100 R010 2000 60	1.0 X R0.1	2	20	60	4	
2CD 100 R010 2500 60	1.0 X R0.1	2	25	60	4	
2CD 150 R010 1500 60	1.5 X R0.1	3	15	60	4	
2CD 200 R020 1500 60	2.0 X R0.2	3.5	15	60	4	
2CD 300 R020 3000 65	3.0 X R0.2	4	30	65	6	
2CD 300 R030 3000 80	3.0 X R0.3	4	30	80	6	
2CD 300 R030 6000 80	3.0 X R0.3	4	60	80	6	
2CD 400 R050 2500 60	4.0 X R0.5	5	25	60	4	
2CD 400 R050 2500 80	4.0 X R0.5	5	25	80	4	
2CD 400 R050 3500 60	4.0 X R0.5	5	35	60	4	
2CD 400 R050 3500 80	4.0 X R0.5	5	35	80	4	

4CD 4F Corner Radius-Diamond Coating
4날 코너R-다이아몬드 코팅

NEW



Features
- Diamond coated for improved abrasion resistance and higher feed rates
- Greater rigidity and reduced chattering through optimized geometry

특 징
- 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	±0.01

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
									△	◎

(Unit: mm)

Product No. 제품 번호.	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CD 200 R005 350 60	2.0 X R0.05	3.5	–	60	4	
4CD 200 R005 600 60	2.0 X R0.05	3.5	6	60	4	
4CD 200 R005 1200 60	2.0 X R0.05	3.5	12	60	4	
4CD 200 R005 1800 60	2.0 X R0.05	3.5	18	60	4	
4CD 200 R005 2500 80	2.0 X R0.05	3.5	25	80	4	
4CD 200 R005 3000 80	2.0 X R0.05	3.5	30	80	4	
4CD 200 R020 350 60	2.0 X R0.2	3.5	–	60	4	
4CD 200 R020 600 60	2.0 X R0.2	3.5	6	60	4	
4CD 200 R020 1200 60	2.0 X R0.2	3.5	12	60	4	
4CD 200 R020 1800 60	2.0 X R0.2	3.5	18	60	4	
4CD 200 R020 2500 80	2.0 X R0.2	3.5	25	80	4	
4CD 200 R020 3000 80	2.0 X R0.2	3.5	30	80	4	
4CD 200 R030 350 60	2.0 X R0.3	3.5	–	60	4	
4CD 200 R030 600 60	2.0 X R0.3	3.5	6	60	4	
4CD 200 R030 1200 60	2.0 X R0.3	3.5	12	60	4	
4CD 200 R030 1800 60	2.0 X R0.3	3.5	18	60	4	
4CD 200 R030 2500 80	2.0 X R0.3	3.5	25	80	4	
4CD 200 R030 3000 80	2.0 X R0.3	3.5	30	80	4	
4CD 200 R050 350 60	2.0 X R0.5	3.5	–	60	4	
4CD 200 R050 600 60	2.0 X R0.5	3.5	6	60	4	
4CD 200 R050 1200 60	2.0 X R0.5	3.5	12	60	4	
4CD 200 R050 1800 60	2.0 X R0.5	3.5	18	60	4	

4CD 4F Corner Radius-Diamond Coating
4날 코너R-다이아몬드 코팅

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4CD 200 R050 2500 80	2.0 X R0.5	3.5	25	80	4	
4CD 200 R050 3000 80	2.0 X R0.5	3.5	30	80	4	
4CD 300 R005 400 80	3.0 X R0.05	4	–	80	4	
4CD 300 R005 1000 80	3.0 X R0.05	4	10	80	4	
4CD 300 R005 2000 80	3.0 X R0.05	4	20	80	4	
4CD 300 R005 3000 80	3.0 X R0.05	4	30	80	4	
4CD 300 R005 4000 80	3.0 X R0.05	4	40	80	4	
4CD 300 R020 400 80	3.0 X R0.2	4	–	80	4	
4CD 300 R020 1000 80	3.0 X R0.2	4	10	80	4	
4CD 300 R020 2000 80	3.0 X R0.2	4	20	80	4	
4CD 300 R020 3000 80	3.0 X R0.2	4	30	80	4	
4CD 300 R020 4000 80	3.0 X R0.2	4	40	80	4	
4CD 300 R030 400 80	3.0 X R0.3	4	–	80	4	
4CD 300 R030 1000 80	3.0 X R0.3	4	10	80	4	
4CD 300 R030 2000 80	3.0 X R0.3	4	20	80	4	
4CD 300 R030 3000 80	3.0 X R0.3	4	30	80	4	
4CD 300 R030 4000 80	3.0 X R0.3	4	40	80	4	
4CD 300 R050 400 80	3.0 X R0.5	4	–	80	4	
4CD 300 R050 1000 80	3.0 X R0.5	4	10	80	4	
4CD 300 R050 2000 80	3.0 X R0.5	4	20	80	4	
4CD 300 R050 3000 80	3.0 X R0.5	4	30	80	4	
4CD 300 R050 4000 80	3.0 X R0.5	4	40	80	4	
4CD 300 R100 400 80	3.0 X R1.0	4	–	80	4	
4CD 300 R100 1000 80	3.0 X R1.0	4	10	80	4	
4CD 300 R100 2000 80	3.0 X R1.0	4	20	80	4	
4CD 300 R100 3000 80	3.0 X R1.0	4	30	80	4	
4CD 300 R100 4000 80	3.0 X R1.0	4	40	80	4	
4CD 400 R030 2000 100	4.0 X R0.3	6	20	100	4	
4CD 400 R050 2000 100	4.0 X R0.5	6	20	100	4	
4CD 400 R100 2000 100	4.0 X R1.0	6	20	100	4	
4CD 600 R030 2500 110	6.0 X R0.3	9	25	110	6	
4CD 600 R050 2500 110	6.0 X R0.5	9	25	110	6	
4CD 600 R050 3000 150	6.0 X R0.5	9	30	150	6	
4CD 600 R100 2500 110	6.0 X R1.0	9	25	110	6	
4CD 600 R100 3000 150	6.0 X R1.0	9	30	150	6	
4CD 800 R030 3000 110	8.0 X R0.3	12	30	110	8	
4CD 800 R050 3000 110	8.0 X R0.5	12	30	110	8	
4CD 800 R050 5000 150	8.0 X R0.5	12	50	150	8	
4CD 800 R100 3000 110	8.0 X R1.0	12	30	110	8	
4CD 800 R100 5000 150	8.0 X R1.0	12	50	150	8	
4CD 1000 R050 3500 110	10.0 X R0.5	15	35	110	10	
4CD 1000 R050 4500 160	10.0 X R0.5	15	45	160	10	
4CD 1000 R100 3500 110	10.0 X R1.0	15	35	110	10	
4CD 1000 R100 4500 160	10.0 X R1.0	15	45	160	10	
4CD 1200 R050 4000 110	12.0 X R0.5	18	40	110	12	
4CD 1200 R050 6000 160	12.0 X R0.5	18	60	160	12	
4CD 1200 R100 4000 110	12.0 X R1.0	18	40	110	12	
4CD 1200 R100 6000 160	12.0 X R1.0	18	60	160	12	

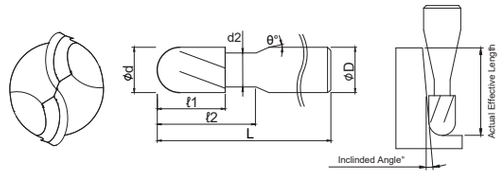
스타공구(주)
STAR TOOL CO., LTD.

For Copper

INNOBIZ 기술혁신형중소기업

2NBC 2F Necked Ball End for Copper
2날 볼 리브-동 가공용

NEW



2 | HX 30° | MG Carbide | AlTiN Coated

3D | CUTTING P.251

Features

- Greater rigidity and reduced chattering through optimized geometry
- AlTiN coating for improved wear resistance

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- AlTiN 코팅 처리로 내마모성이 커짐

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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

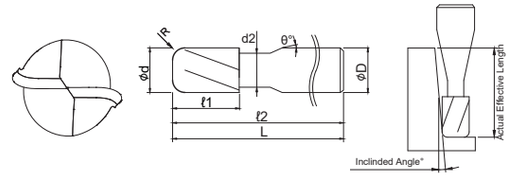
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△		△					△	◎	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper angle 구배각 θ°	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2NBC 020 100	0.2 X R0.1	0.15	1	0.18	12	45	4	
2NBC 030 100	0.3 X R0.15	0.2	1	0.28	12	45	4	
2NBC 040 200	0.4 X R0.2	0.3	2	0.37	12	45	4	
2NBC 050 200	0.5 X R0.25	0.35	2	0.46	12	45	4	
2NBC 050 400	0.5 X R0.25	0.35	4	0.46	12	45	4	
2NBC 060 200	0.6 X R0.3	0.45	2	0.56	12	45	4	
2NBC 060 400	0.6 X R0.3	0.45	4	0.56	12	45	4	
2NBC 080 300	0.8 X R0.4	0.6	3	0.76	12	45	4	
2NBC 080 600	0.8 X R0.4	0.6	6	0.76	12	45	4	
2NBC 100 600	1.0 X R0.5	0.75	6	0.95	12	45	4	
2NBC 100 1000	1.0 X R0.5	0.75	10	0.95	12	45	4	
2NBC 100 1200	1.0 X R0.5	0.75	12	0.95	12	45	4	
2NBC 150 600	1.5 X R0.75	1.1	6	1.45	12	45	4	
2NBC 150 1200	1.5 X R0.75	1.1	12	1.45	12	45	4	
2NBC 150 1800	1.5 X R0.75	1.1	18	1.45	12	45	4	
2NBC 200 1000	2.0 X R1.0	1.5	10	1.94	12	45	4	
2NBC 200 1200	2.0 X R1.0	1.5	12	1.94	12	45	4	
2NBC 200 1600	2.0 X R1.0	1.5	16	1.94	12	50	4	
2NBC 200 2000	2.0 X R1.0	1.5	20	1.94	12	50	4	
2NBC 200 2500	2.0 X R1.0	1.5	25	1.94	12	60	4	
2NBC 300 1000	3.0 X R1.5	2.5	10	2.85	12	50	6	
2NBC 300 1500	3.0 X R1.5	2.5	15	2.85	12	60	6	
2NBC 300 2000	3.0 X R1.5	2.5	20	2.85	12	60	6	
2NBC 300 2500	3.0 X R1.5	2.5	25	2.85	12	60	6	
2NBC 400 1500	4.0 X R2.0	3	15	3.80	12	60	6	
2NBC 400 2000	4.0 X R2.0	3	20	3.80	12	60	6	
2NBC 400 2500	4.0 X R2.0	3	25	3.80	12	60	6	
2NBC 400 3000	4.0 X R2.0	3	30	3.80	12	70	6	
2NBC 600 2000	6.0 X R3.0	6	20	5.70	-	80	6	

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

NEW



2 | HX 30° | MG Carbide | AlTiN Coated

Side | Slot | Face | R | CUTTING P.251

Features

- Greater rigidity and reduced chattering through optimized geometry
- AlTiN coating for improved wear resistance

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- AlTiN 코팅 처리로 내마모성이 커짐

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△		△					△	◎	△	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Corner R 날경 X 코너R (d X CR)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	Neck Dia 목경 d2	Taper angle 구배각 θ°	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2NCC 020 R005 100	0.2 X R0.05	0.4	1	0.18	15	45	4	
2NCC 030 R005 150	0.3 X R0.05	0.6	1.5	0.28	15	45	4	
2NCC 040 R005 200	0.4 X R0.05	0.8	2	0.37	15	45	4	
2NCC 050 R005 200	0.5 X R0.05	1	2	0.46	15	45	4	
2NCC 100 R005 300	1.0 X R0.05	2	3	0.95	15	45	4	
2NCC 100 R010 300	1.0 X R0.1	2	3	0.95	15	45	4	
2NCC 100 R020 500	1.0 X R0.2	2	5	0.95	15	45	4	
2NCC 100 R020 1000	1.0 X R0.2	2	10	0.95	15	45	4	
2NCC 150 R010 1000	1.5 X R0.1	3	10	1.45	15	45	4	
2NCC 150 R020 1000	1.5 X R0.2	3	10	1.45	15	45	4	
2NCC 150 R030 2000	1.5 X R0.3	3	20	1.45	15	45	4	
2NCC 150 R050 2000	1.5 X R0.5	3	20	1.45	15	45	4	
2NCC 200 R010 1500	2.0 X R0.1	4	15	1.94	15	50	4	
2NCC 200 R030 1500	2.0 X R0.3	4	15	1.94	15	50	4	
2NCC 200 R030 2000	2.0 X R0.3	4	20	1.94	15	50	4	
2NCC 200 R050 2000	2.0 X R0.5	4	20	1.94	15	50	4	
2NCC 300 R010 1200	3.0 X R0.1	6	12	2.85	15	50	6	
2NCC 300 R020 1200	3.0 X R0.2	6	12	2.85	15	50	6	
2NCC 300 R050 1200	3.0 X R0.5	6	12	2.85	15	50	6	
2NCC 300 R050 3000	3.0 X R0.5	6	30	2.85	15	70	6	
2NCC 400 R010 2400	4.0 X R0.1	8	24	3.80	15	60	6	
2NCC 400 R020 2400	4.0 X R0.2	8	24	3.80	15	60	6	
2NCC 400 R050 1600	4.0 X R0.5	8	16	3.80	15	60	6	
2NCC 400 R050 2400	4.0 X R0.5	8	24	3.80	15	60	6	
2NCC 400 R050 3200	4.0 X R0.5	8	32	3.80	15	70	6	
2NCC 400 R100 2400	4.0 X R1.0	8	24	3.80	15	60	6	
2NCC 400 R100 3200	4.0 X R1.0	8	32	3.80	15	70	6	
2NCC 600 R020 2400	6.0 X R0.2	12	24	5.80	-	60	6	
2NCC 600 R050 3000	6.0 X R0.5	12	30	5.80	-	70	6	

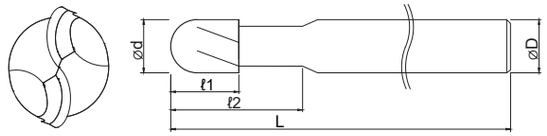
스타공구(주)
STAR TOOL CO., LTD.

For Synthetic Material

ISO 9001

INNOBIZ
기술혁신형중소기업

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



Features

- Greater rigidity and reduced chattering through optimized geometry

특 징

- 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 :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
								△	◎	△

(Unit: mm)

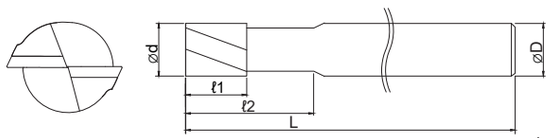
Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	OverallLength 전장 L	Shank Dia. 생크경 D	비 고
2BY 030 070 45	0.3 X R0.15	0.7	–	45	3	
2BY 030 180 45	0.3 X R0.15	1.8	–	45	3	
2BY 050 100 50	0.5 X R0.25	1	–	50	3	
2BY 050 200 50	0.5 X R0.25	2	–	50	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 2F Ball End for Synthetic Materials
2날 볼–수지 비철 가공용

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	OverallLength 전장 L	Shank Dia. 생크경 D	비 고
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	
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	

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



Features

- Greater rigidity and reduced chattering through optimized geometry

특 징

- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
								△	◎	△

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Length of Reach 유효장 ℓ2	OverallLength 전장 L	Shank Dia. 생크경 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	1.0	5	–	60	3	
2SY 100 1000 60	1.0	5	10	60	3	
2SY 100 1500 60	1.0	5	15	60	3	
2SY 100 2000 70	1.0	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	2.0	10	–	60	3	
2SY 200 1500 70	2.0	10	15	70	3	
2SY 200 2000 70	2.0	10	20	70	3	
2SY 250 1000 60	2.5	10	–	60	3	
2SY 300 1000 50	3.0	10	–	50	3	
2SY 300 1500 60	3.0	15	–	60	3	
2SY 300 2000 80	3.0	20	–	80	3	
2SY 400 2000 80	4.0	20	–	80	4	

스타공구(주)
STAR TOOL CO., LTD.

Special

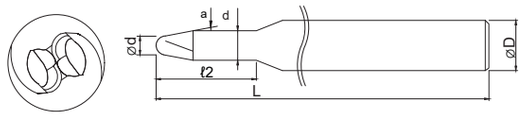
ISO 9001

INNOBIZ
기술혁신형중소기업

2EBTHR 2F Engraving Ball Tapered for Multi Purpose

2날 조각 볼 테이퍼 엔드밀–복합소재용

NEW



Features

- Design optimized for engraving
- Greater rigidity and reduced chattering through optimized geometry
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at interrupted and low speeds
- For Dry cutting and Wet cutting

특 징

- 조각 작업에 최적화된 디자인
- 최적의 설계로 날부의 강성이 크며 채터링 발생이 적음
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함.
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑선 개선
- 건식 및 습식용

2 | HX 0° | MG Carbide | HR Coated | ≦55 HRC

3D | Plunge

Tolerance :

Cutting Dia.
d≤5: 0/-0.02 d>5: 0/-0.003

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

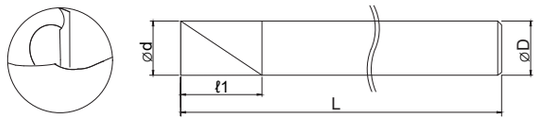
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△	△	△					△	◎	◎	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. X Radius of Ball Nose 날경 X 볼반경 (d X R)	Angle 각도 A(°)	Neck Dia 목경 d2	Length of Reach 유효장 ℓ2	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2EBTHR 020 1500 1200	0.2 X R0.1	15	3	12	50	6	
2EBTHR 020 3000 1200	0.2 X R0.1	30	4	12	50	6	
2EBTHR 030 1500 1200	0.3 X R0.15	15	3	12	50	6	
2EBTHR 030 2000 1200	0.3 X R0.15	20	3	12	50	6	
2EBTHR 030 3000 1200	0.3 X R0.15	30	4	12	50	6	
2EBTHR 040 1500 1200	0.4 X R0.2	15	3	12	50	6	
2EBTHR 040 3000 1200	0.4 X R0.2	30	4	12	50	6	
2EBTHR 050 1500 1200	0.5 X R0.25	15	3	12	50	6	
2EBTHR 050 3000 1200	0.5 X R0.25	30	4	12	50	6	
2EBTHR 060 1500 1200	0.6 X R0.3	15	3	12	50	6	
2EBTHR 060 2000 1200	0.6 X R0.3	20	3	12	50	6	
2EBTHR 060 3000 1200	0.6 X R0.3	30	4	12	50	6	
2EBTHR 080 1500 1200	0.8 X R0.4	15	3	12	50	6	
2EBTHR 080 3000 1200	0.8 X R0.4	30	4	12	50	6	
2EBTHR 100 1500 1200	1.0 X R0.5	15	3	12	50	6	
2EBTHR 100 3000 1200	1.0 X R0.5	30	4	12	50	6	
2EBTHR 100 4500 1200	1.0 X R0.5	45	4	12	50	6	

1FE 1F End Mill

1날 엔드밀



Features

- Flute geometry is designed for superior performance in alumium and plastic milling applications For Dry cutting and Wet cutting

특 징

- 절삭날은 알루미늄과 플라스틱과 같은 비철 비금속 소재의 가공에서 최상의 성능을 내도록 설계됨

1 | HX 30° | MG Carbide | Uncoated

Side | Slot | CUTTING P.252

Tolerance :

Cutting Dia.
d≤5: 0/-0.02 d>5: 0/-0.003

Recommended workpiece Material :

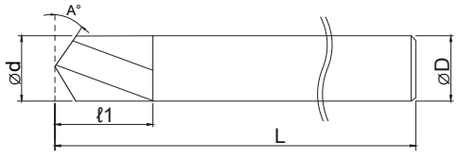
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△	△	△					△	◎	◎	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
1FE 020 040	0.2	0.4	45	4	
1FE 050 150	0.5	1.5	45	4	
1FE 080 240	0.8	2.4	45	4	
1FE 100 300	1.0	3	50	6	
1FE 120 300	1.2	3	50	6	
1FE 150 400	1.5	4	50	6	
1FE 200 600	2.0	6	50	6	
1FE 250 600	2.5	6	50	6	
1FE 300 800	3.0	8	50	6	
1FE 400 1000	4.0	10	50	6	
1FE 600 1500	6.0	15	60	6	

2NCD 2F NC Drill
2날 NC드릴



Features
- Drill & countersink with one tool

특 징
- 드릴링과 카운터 싱킹 가공용

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

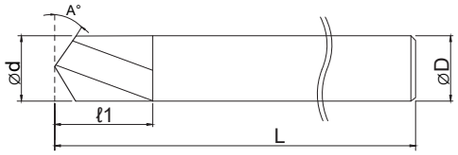
Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△	△	△					△	◎	◎	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Angle 각도 A(°)	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2NCD 300 1000	3.0	10	45	45	3	
2NCD 400 1200	4.0	12	45	50	4	
2NCD 600 1600	6.0	16	45	60	6	
2NCD 800 2400	8.0	24	45	80	8	
2NCD 1000 2600	10.0	26	45	80	10	
2NCD 1200 3000	12.0	30	45	80	12	

2NCDHR 2F NC Drill for Multi Purpose
2날 NC드릴–복합소재용

NEW



Features
- Drill & countersink with one tool
- HR coating enables cutting low-speed/low-hardness materials~high-speed/high-hardness materials and heat resistant materials in various cutting condition and environments
- HR coating has high toughness, improving chipping resistance at interrupted and low speeds
- For Dry cutting and Wet cutting

특 징
- 드릴링과 카운터 싱킹 가공용
- HR 코팅은 다양한 절삭 환경 및 영역에서 저속/저경도 소재~고속/고경도 소재, 내열소재 절삭을 가능하게 함.
- HR 코팅은 인성을 증가시켜 단속 및 저속에서 내치핑선 개선
- 건식 및 습식용

Tolerance :

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

Recommended workpiece Material :

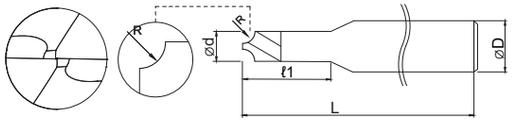
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
○	◎	○	◎	◎	○	◎	○			

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Angle 각도 A(°)	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2NCDHR 300 1000	3.0	10	45	45	3	
2NCDHR 400 1200	4.0	12	45	45	4	
2NCDHR 600 1500	6.0	15	45	50	6	
2NCDHR 800 2000	8.0	20	45	60	8	
2NCDHR 1000 2200	10.0	22	45	70	10	
2NCDHR 1200 2400	12.0	24	45	80	12	

2CRR 2F Corner Rounding R
2날 역 R



Features
- Designed with wide chip space

특 징
- 큰 칩 포켓 형상

2 | HX 0° | MG Carbide | Uncoated | Side

Tolerance :

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

Recommended workpiece Material :

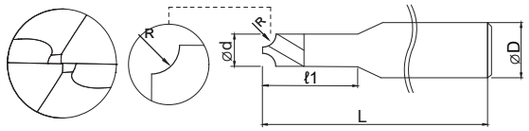
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△	△	△					△	◎	◎	

(Unit: mm)

Product No. 제품 번호	Corner R 코너R CR	Dia. 외경 d	Length of Reach 유효장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CRR 020 100	0.2	1.0	2.5	45	4	
2CRR 030 120	0.3	1.2	2.5	45	4	
2CRR 050 160	0.5	1.6	2.5	45	4	
2CRR 075 300	0.75	3.0	5	45	4	
2CRR 100 300	1.0	3.0	5	50	6	
2CRR 150 450	1.5	4.5	8	50	6	
2CRR 200 550	1.0	5.5	10	50	6	
2CRR 300 800	3.0	8.0	10	60	8	
2CRR 400 1000	4.0	10.0	10	60	10	
2CRR 500 1200	5.0	12.0	10	70	12	

2CRRC 2F Corner Rounding R-C
2날 역 R–Coating



Features
- Designed with wide chip space
- Application of coatings with excellent wear-resistance
- For Dry cutting and Wey cutting

특 징
- 큰 칩 포켓 형상
- 내마모성이 뛰어난 코팅 적용
- 건식 및 습식용

2 | HX 0° | MG Carbide | AlTiN Coated | Side

Tolerance :

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

Recommended workpiece Material :

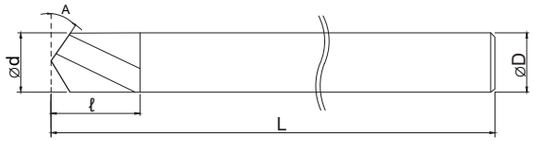
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎		◎		◎		○	○	◎	◎	

(Unit: mm)

Product No. 제품 번호	Corner R 코너R CR	Dia. 외경 d	Length of Reach 유효장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CRRC 020 100	0.2	1.0	2.5	45	4	
2CRRC 030 120	0.3	1.2	2.5	45	4	
2CRRC 050 160	0.5	1.6	2.5	45	4	
2CRRC 075 300	0.75	3.0	5	45	4	
2CRRC 100 300	1.0	3.0	5	50	6	
2CRRC 150 450	1.5	4.5	8	50	6	
2CRRC 200 550	2.0	5.5	10	50	6	
2CRRC 300 800	3.0	8.0	10	60	8	
2CRRC 400 1000	4.0	10.0	10	60	10	
2CRRC 500 1200	5.0	12.0	10	70	12	

2CE 2F Centering
2날 센터링



Features
- For centering and spot drilling applications
- 45 deg point angle

특 징
- 센터링과 스폿 드릴용
- 날각 45도

2 | HX 30° | MG Carbide | Uncoated | Plunge | CUTTING P.253

Tolerance :

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

Recommended workpiece Material :

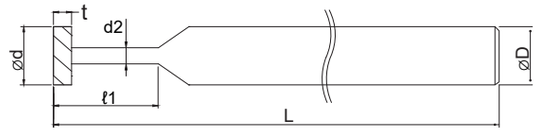
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△	△	△					△	◎	◎	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Length of Cut 날장 ℓ1	Angle 각도 A(°)	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2CE 300 600	3.0	6	45	50	3	
2CE 300 600	3.0	6	45	50	4	
2CE 400 800	4.0	8	45	50	6	
2CE 600 1200	6.0	12	45	60	6	
2CE 800 1600	8.0	16	45	70	8	
2CE 1000 1800	10.0	18	45	70	10	
2CE 1200 2000	12.0	20	45	75	12	

2TC 2F T Slot Cutter
2날 T 커터



Features
- High cutting edge rigidity with smaller spiral angle

특 징
- 작은 비틀림각을 적용하여 인선부의 강성이 큼

2 | HX 15° | MG Carbide | Uncoated

Tolerance :

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

Recommended workpiece Material :

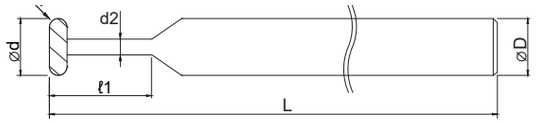
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△	△	△					△	○	◎	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Thickness 두께 t	Neck Dia 목경 d2	Length of Reach 유효장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
2TC 300 030	3.0	0.3	1.2	10	50	6	
2TC 300 050	3.0	0.5	1.2	10	50	6	
2TC 300 100	3.0	1	1.2	10	50	6	
2TC 400 030	4.0	0.3	1.5	10	50	6	
2TC 400 050	4.0	0.5	1.5	10	50	6	
2TC 400 100	4.0	1	1.5	10	50	6	
2TC 500 100	5.0	1	2	10	50	6	
2TC 600 050	6.0	0.5	2	15	54	6	
2TC 600 100	6.0	1	2	15	54	6	
2TC 600 150	6.0	1.5	2	15	54	6	
2TC 600 200	6.0	2	2	15	54	6	
2TC 800 100	8.0	1	3	15	60	8	
2TC 1000 100	10.0	1	4	15	60	10	
2TC 1000 200	10.0	2	4	15	60	10	
2TC 1200 200	12.0	2	4	15	70	12	
2TC 1200 300	12.0	3	4	15	70	12	

4RTC 4F Round T Slot Cutter
4날 라운드 T 커터



Features
- High cutting edge rigidity with smaller spiral angle

특 징
- 작은 비틀림각을 적용하여 인선부의 강성이 큼

4 | HX 15° | MG Carbide | Uncoated

Tolerance :

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

Recommended workpiece Material :

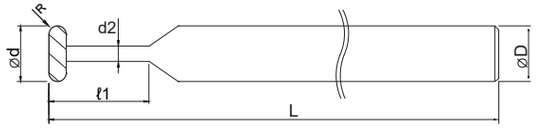
◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
△	△	△					△	○	◎	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Corner R 코너R CR	Neck Dia 목경 d2	Length of Reach 유효장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4RTC 600 050	6.0	0.5	3	6	54	6	
4RTC 600 075	6.0	0.75	3	6	54	6	
4RTC 600 100	6.0	1	3	6	54	6	
4RTC 800 100	8.0	1	4	8	60	8	
4RTC 800 150	8.0	1.5	4	8	60	8	
4RTC 1000 200	10.0	2	4.5	10	70	10	

4RTCC 4F Round T Slot Cutter-C
4날 라운드 T 커터-C



Features
- High cutting edge rigidity with smaller spiral angle
- Application of coatings with excellent wear-resistance
- For Dry cutting and Wey cutting

특 징
- 작은 비틀림각을 적용하여 인선부의 강성이 큼
- 내마모성이 뛰어난 코팅 적용
- 건식 및 습식용

4 | HX 15° | MG Carbide | AlTiN Coated

CUTTING P.253

Tolerance :

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

Recommended workpiece Material :

◎: 최적(First choice), ○: 보통(Alternative choice), △: 제한적(Limited choice)

Carbon Steel / Alloy Steel / Tool Steel (~HB 350) 탄소강 / 합금강 (~HB 350)	Stainless Steel (~HB 240) 스테인리스 (~HB 240)	Cast Iron (~HB 260) 주철 (~HB 260)	Prehardened Steel (~HRc 50) 중저경도강 (~HRc 50)	Hardened Steel (HRc 45~55) 고경도강 (HRc 45~55)	Super Hardened Steel (HRc 55~68) 초고경도강 (HRc 55~68)	Nickel& Titanium Alloy 니켈&티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지 & 플라스틱	Graphite 흑연
◎		◎		◎		○	○	◎	◎	

(Unit: mm)

Product No. 제품 번호	Cutting Dia. 날경 d	Corner R 코너R CR	Neck Dia 목경 d2	Length of Reach 유효장 ℓ1	Overall Length 전장 L	Shank Dia. 생크경 D	비 고
4RTCC 600 050	6.0	0.5	3	6	54	6	
4RTCC 600 075	6.0	0.75	3	6	54	6	
4RTCC 600 100	6.0	1	3	6	54	6	
4RTCC 800 100	8.0	1	4	8	60	8	
4RTCC 800 150	8.0	1.5	4	8	60	8	
4RTCC 1000 200	10.0	2	4.5	10	70	10	

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Specials-
Custom Made

ISO 9001

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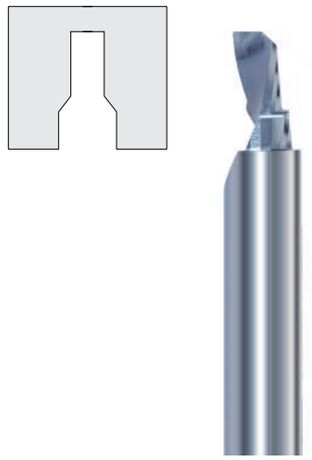
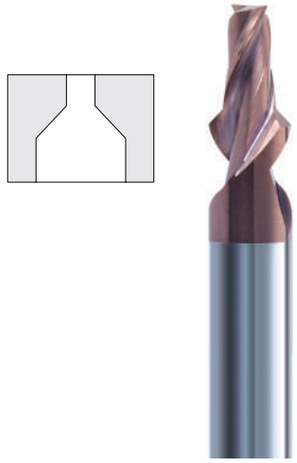
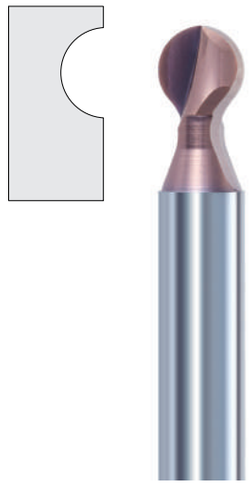
외날 스텝



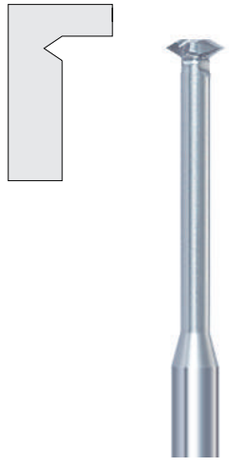
테이퍼 스텝



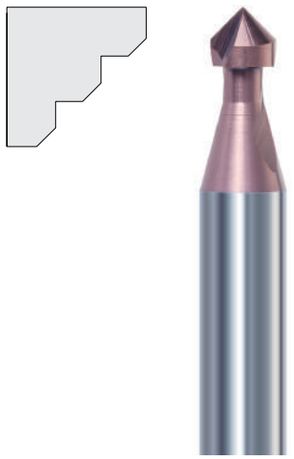
롤리 팝 볼



테이퍼 앵글 커터



챔퍼툴



회전형 피치 가공툴

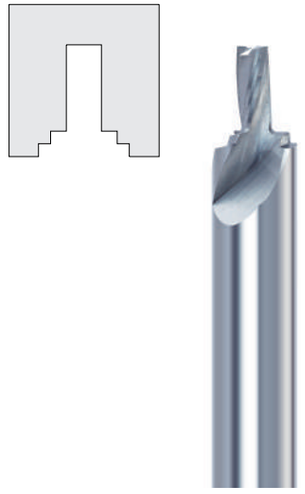
여러날 T커터

면취용 버니싱

●일자 게싱 프로파일

●촛불형 3날 센터 볼

●다중스텝

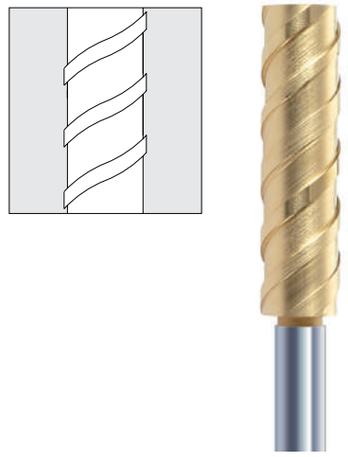


●R-T커터

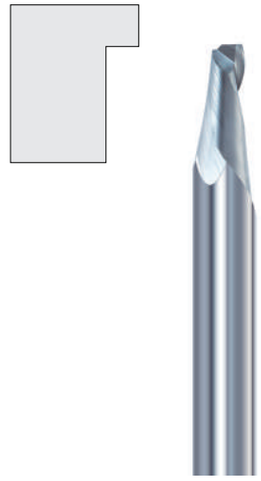
●역R

●언더컷

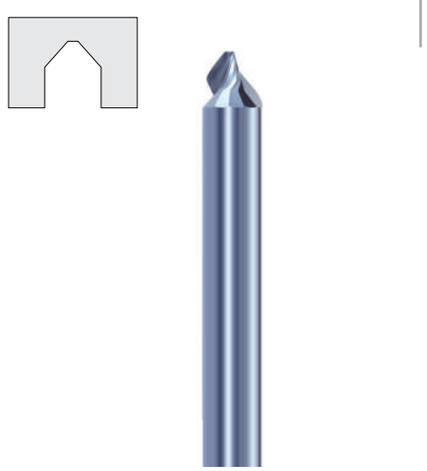
●스크류 금형



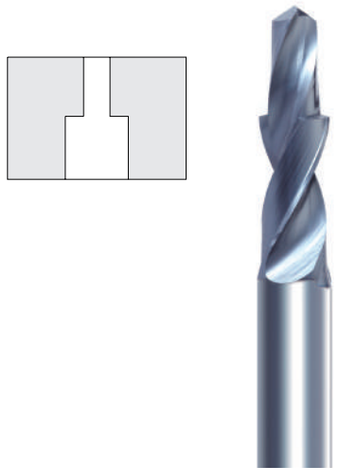
●외날(좌날)



●외날 테이퍼(비틀림 타입)



●스텝

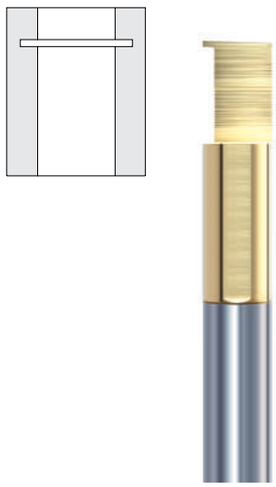


●형상 바이트

●좌비틀 좌날 볼

●앵글 커터

●내경 홈

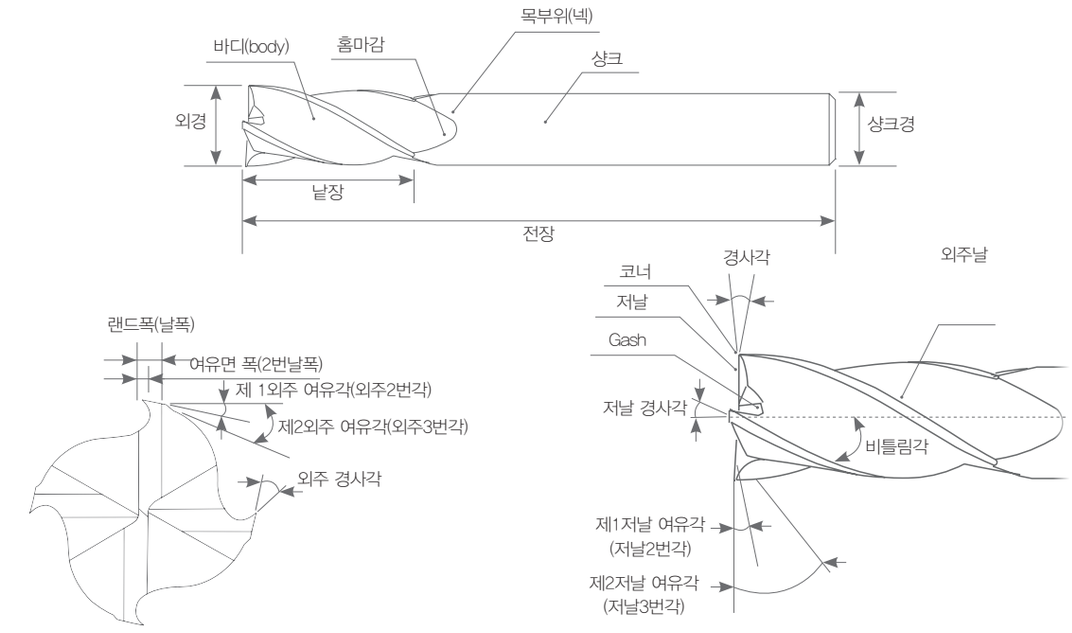


엔드밀 가공의 트러블 대책

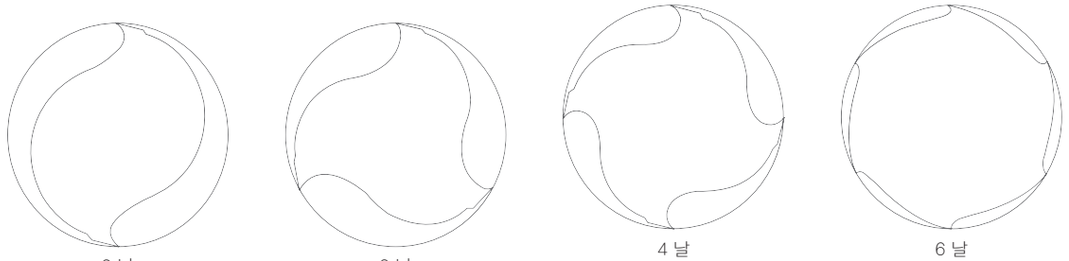
트러블 내용	요인	대책	공구 재종의 선정	절삭조건									공구형상						기계장착					
			코팅 제품으로 한다	절	이송	절입	피크피드(Pf)	절삭방향	에어블로어를 사용한다	절삭유제			비틀림각	날수	경사각	공구경	공구강성의향상	칩포켓을 크게	공구돌출을 짧게한다	공구체결정도의향상	스핀들콜릿홀더흔들림정도향상	콜렛의정검교환	척보지력을높인다	워크체결강성의향상
				높인다 ↗ 낮춘다 ↘			↘작게			분사량을 많게한다	비수용성으로한다	건식·습식의재검토	크게 ↗다 작게 ↘소											
수명 악화	외주날의 마모가 현저하다	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



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 홀, 측면가공

스타공구 (주)
STAR TOOL CO., LTD.

Speed and Feed Recommendations

절삭조건표

ISO 9001

INNOBIZ
기술혁신형중소기업

2NBH

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.1	0 5	45,000	396	0.006	0.007	45,000	260	0.006	0.006
	0.8	45,000	384	0.005	0.006	45,000	268	0.005	0.005
	1.0	45,000	372	0.004	0.005	45,000	276	0.004	0.004
	1.25	43,500	324	0.004	0.005	43,500	246	0.004	0.004
	1.5	42,000	276	0.003	0.004	42,000	216	0.003	0.004
	2.0	43,500	324	0.004	0.005	43,500	246	0.004	0.004
	2.5	43,500	324	0.004	0.005	43,500	246	0.004	0.004
	3.0	42,700	300	0.003	0.004	42,700	231	0.003	0.004
R0.15	0.5	43,400	480	0.009	0.009	36,300	362	0.058	0.008
	0.8	43,900	504	0.009	0.009	36,900	381	0.069	0.009
	1.0	45,000	552	0.010	0.010	38,000	420	0.090	0.010
	1.25	42,900	456	0.008	0.009	35,800	342	0.048	0.008
	1.5	41,800	408	0.007	0.008	34,700	303	0.026	0.006
	2.0	41,300	384	0.007	0.007	34,100	284	0.016	0.006
	2.5	41,000	372	0.006	0.007	33,800	274	0.010	0.005
	3.0	40,800	360	0.006	0.007	33,600	264	0.005	0.005
R0.2	1.0	54,000	769	0.160	0.022	39,600	516	0.013	0.022
	1.5	49,200	625	0.085	0.016	36,000	414	0.011	0.016
	2.0	46,800	552	0.048	0.013	34,200	363	0.010	0.013
	2.5	45,600	516	0.029	0.012	33,300	338	0.010	0.012
	3.0	44,400	480	0.010	0.010	32,400	312	0.009	0.010
	3.5	37,200	426	0.009	0.010	29,400	300	0.008	0.010
	4.0	33,600	399	0.009	0.010	27,900	294	0.007	0.010
	4.5	31,800	386	0.008	0.010	27,100	291	0.006	0.010
	5.0	30,000	372	0.008	0.010	26,400	288	0.006	0.010
	6.0	30,900	379	0.008	0.010	26,700	290	0.006	0.010
	8.0	30,400	375	0.008	0.010	26,500	289	0.006	0.010
R0.25	1.0	45,600	960	0.020	0.033	33,600	636	0.014	0.032
	1.5	40,200	756	0.014	0.021	32,400	540	0.011	0.021
	2.0	37,500	654	0.011	0.014	31,800	492	0.009	0.016
	2.5	36,100	603	0.010	0.011	31,500	468	0.008	0.013
	3.0	35,400	578	0.009	0.010	31,300	456	0.007	0.011
	4.0	35,100	565	0.008	0.009	31,200	450	0.007	0.011
	5.0	34,800	552	0.008	0.008	31,200	444	0.007	0.010
	6.0	31,800	504	0.008	0.009	30,000	408	0.006	0.010
	8.0	30,200	468	0.007	0.070	29,700	384	0.005	0.010
		28,800	456	0.007	0.010	28,800	372	0.005	0.010
R0.3	1.0	39,600	960	0.022	0.091	27,600	600	0.019	0.091
	2.0	34,200	732	0.017	0.067	27,000	498	0.014	0.067
	2.5	31,500	618	0.015	0.055	26,700	447	0.011	0.054
	3.0	30,100	561	0.013	0.049	26,500	422	0.009	0.048
	3.5	29,400	533	0.013	0.046	26,400	409	0.009	0.045
	4.0	29,100	518	0.012	0.045	26,400	402	0.008	0.044
	4.5	28,900	511	0.012	0.044	26,400	399	0.008	0.043

2NBH

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.3	5.0	28,800	504	0.012	0.043	26,400	396	0.008	0.042
	5.5	26,400	432	0.009	0.032	24,600	354	0.006	0.031
	6.0	25,200	396	0.007	0.026	23,700	333	0.005	0.026
	8.0	24,600	378	0.006	0.023	23,200	323	0.005	0.023
	10.0	24,000	360	0.005	0.020	22,800	312	0.004	0.020
	12.0	23,800	357	0.005	0.020	21,700	310	0.039	0.190
R0.35	2.0	34,500	774	0.031	0.084	27,300	525	0.026	0.083
	4.0	28,900	577	0.020	0.056	24,000	411	0.014	0.056
	6.0	27,000	516	0.017	0.047	22,600	377	0.013	0.047
	8.0	25,300	465	0.015	0.041	21,300	368	0.011	0.041
R0.4	2.0	34,800	816	0.045	0.100	27,600	552	0.038	0.100
	3.0	31,800	726	0.037	0.084	24,600	486	0.029	0.084
	4.0	30,300	681	0.032	0.076	23,100	453	0.025	0.076
	5.0	29,500	659	0.030	0.072	22,300	437	0.022	0.072
	6.0	28,800	636	0.028	0.068	21,600	420	0.020	0.068
	8.0	26,100	552	0.024	0.059	19,400	414	0.018	0.059
	10.0	23,400	468	0.020	0.050	17,300	408	0.015	0.050
	12.0	23,800	357	0.022	0.020	21,700	310	0.039	0.190
R0.45	2.0	34,200	858	0.049	0.160	24,600	546	0.039	0.160
	4.0	31,900	791	0.042	0.148	22,300	497	0.032	0.148
	6.0	26,800	693	0.032	0.103	19,900	459	0.024	0.103
	8.0	23,300	614	0.026	0.078	18,000	446	0.019	0.078
	10.0	19,800	534	0.020	0.053	16,100	432	0.015	0.053
R0.5	2.0	33,600	900	0.052	0.220	21,600	540	0.040	0.220
	3.0	33,600	900	0.052	0.220	21,600	540	0.040	0.220
	4.0	28,850	900	0.052	0.220	21,600	540	0.040	0.220
	5.0	33,600	900	0.052	0.220	21,600	540	0.040	0.220
	6.0	24,900	750	0.036	0.138	18,300	498	0.027	0.138
	8.0	20,600	675	0.028	0.097	16,600	477	0.021	0.097
	10.0	16,300	600	0.020	0.056	15,000	456	0.014	0.056
	12.0	15,000	540	0.018	0.056	13,600	420	0.067	0.056
	14.0	14,300	510	0.017	0.056	13,000	402	0.094	0.056
	16.0	13,600	480	0.016	0.056	12,300	384	0.120	0.056
	18.0	14,000	495	0.017	0.056	12,600	393	0.107	0.056
	20.0	13,800	488	0.016	0.056	12,500	389	0.113	0.056
R0.6	4.0	25,800	933	0.076	0.205	16,400	558	0.061	0.205
	6.0	20,700	812	0.063	0.159	14,400	513	0.049	0.159
	8.0	18,100	751	0.057	0.136	13,300	491	0.044	0.136
	10.0	15,500	690	0.050	0.113	12,300	468	0.038	0.113
	12.0	13,600	579	0.032	0.083	11,600	435	0.052	0.083
	16.0	12,000	488	0.018	0.061	10,900	406	0.068	0.061
		11,900	482	0.016	0.057	11,000	406	0.063	0.057
R0.75	3.0	21,600	1,152	0.120	0.210	12,900	672	0.100	0.210
	4.0	18,100	966	0.100	0.190	11,300	576	0.081	0.190

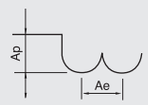
2NBH

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.75	6.0	16,400	873	0.090	0.180	10,500	528	0.072	0.180
	8.0	15,600	827	0.085	0.175	10,100	504	0.067	0.175
	10.0	14,700	780	0.080	0.170	9,700	480	0.062	0.170
	12.0	12,300	618	0.046	0.110	9,600	450	0.036	0.110
	14.0	11,000	537	0.029	0.080	9,500	435	0.023	0.080
	16.0	10,400	497	0.021	0.065	9,500	428	0.017	0.065
	20.0	10,100	476	0.016	0.058	9,400	424	0.013	0.058
	25.0	9,900	466	0.014	0.054	9,400	422	0.012	0.054
	30.0	9,800	456	0.012	0.050	9,400	420	0.010	0.050
R0.8	6.0	18,700	1,070	0.120	0.220	12,500	764	0.095	0.220
	8.0	18,300	1,036	0.115	0.210	12,300	745	0.090	0.210
	10.0	17,800	1,002	0.110	0.200	12,100	726	0.086	0.200
	12.0	15,300	765	0.073	0.140	11,600	618	0.059	0.140
	16.0	13,500	587	0.045	0.095	11,200	537	0.039	0.095
	20.0	13,000	538	0.038	0.084	11,100	512	0.034	0.084
R1.0	4.0	21,000	1,392	0.180	0.350	14,600	1,080	0.140	0.350
	5.0	21,000	1,308	0.160	0.290	14,600	1,026	0.125	0.290
	6.0	21,000	1,266	0.150	0.260	14,600	999	0.118	0.260
	8.0	21,000	1,245	0.145	0.245	14,600	986	0.114	0.245
	10.0	21,000	1,224	0.140	0.230	14,600	972	0.110	0.230
	12.0	18,400	912	0.100	0.170	13,600	786	0.083	0.170
	14.0	17,200	756	0.080	0.140	13,200	693	0.069	0.140
	16.0	16,500	678	0.070	0.125	12,900	647	0.062	0.125
	18.0	16,200	639	0.065	0.118	12,800	623	0.058	0.118
	20.0	15,900	600	0.060	0.110	12,700	600	0.055	0.110
	22.0	13,000	540	0.040	0.080	11,400	540	0.103	0.080
	25.0	11,600	510	0.030	0.065	10,800	510	0.126	0.065
	30.0	10,200	480	0.020	0.050	10,200	480	0.150	0.050
	35.0	10,900	495	0.025	0.058	10,500	495	0.138	0.058
	40.0	10,500	488	0.023	0.054	10,300	488	0.144	0.054
R1.25	8.0	17,700	1,535	0.173	0.293	12,200	1,153	0.137	0.283
	10.0	17,700	1,524	0.170	0.285	12,200	1,146	0.135	0.275
	12.0	15,900	1,281	0.136	0.250	11,400	1,005	0.111	0.243
	16.0	14,600	1,099	0.111	0.224	10,800	899	0.093	0.218
	20.0	14,100	1,038	0.103	0.215	10,600	864	0.088	0.210
		11,200	828	0.076	0.150	9,600	741	0.113	0.148
R1.5	6.0	14,400	1,824	0.200	0.340	9,800	1,320	0.160	0.320
	8.0	14,400	1,824	0.200	0.340	9,800	1,320	0.160	0.320
	10.0	14,400	1,824	0.200	0.340	9,800	1,320	0.160	0.320
	12.0	13,300	1,650	0.173	0.330	9,100	1,224	0.140	0.315
	14.0	12,800	1,563	0.159	0.325	8,800	1,176	0.130	0.313
	16.0	12,600	1,520	0.152	0.323	8,600	1,152	0.125	0.311
	18.0	12,400	1,498	0.148	0.321	8,600	1,140	0.123	0.311
	20.0	12,300	1,476	0.145	0.320	8,500	1,128	0.120	0.310

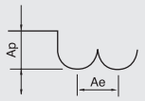
2NBH

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R1.5	25.0	10,800	1,146	0.123	0.235	8,500	972	0.100	0.230
	30.0	9,300	816	0.100	0.150	8,500	816	0.080	0.150
	35.0	10,100	981	0.111	0.193	8,500	894	0.090	0.190
	40.0	9,700	899	0.106	0.171	8,500	855	0.085	0.170
	50.0	9,900	940	0.108	0.182	8,500	875	0.088	0.180
R1.75	15.0	12,300	1,554	0.170	0.351	8,500	1,178	0.138	0.335
	20.0	11,400	1,614	0.218	0.435	7,800	1,230	0.170	0.405
	25.0	10,200	1,356	0.184	0.335	7,700	1,083	0.143	0.315
	30.0	9,100	1,098	0.150	0.235	7,500	936	0.115	0.225
	40.0	8,400	977	0.119	0.246	7,500	956	0.093	0.235
R2.0	10.0	13,300	1,689	0.185	0.346	9,100	1,249	0.149	0.328
	12.0	12,800	1,602	0.171	0.341	8,800	1,201	0.139	0.325
	16.0	12,100	1,589	0.188	0.380	8,300	1,203	0.150	0.359
	20.0	10,400	1,752	0.290	0.550	7,200	1,332	0.220	0.500
	25.0	9,600	1,566	0.245	0.435	6,900	1,194	0.185	0.400
	30.0	8,800	1,380	0.200	0.320	6,600	1,056	0.150	0.300
	35.0	8,000	1,218	0.166	0.320	6,600	1,056	0.125	0.300
	40.0	7,200	1,056	0.132	0.320	6,600	1,056	0.100	0.300
	50.0	6,880	980	0.112	0.320	6,000	1,040	0.080	0.200
R3.0	15.0	8,100	1,764	0.420	0.800	5,700	1,320	0.300	0.800
	20.0	7,600	1,722	0.360	0.725	5,400	1,248	0.260	0.725
	30.0	7,200	1,680	0.300	0.650	5,000	1,176	0.220	0.650
R4.0	20.0	7,200	1,176	0.350	0.750	4,900	912	0.180	0.600
	30.0	6,900	1,128	0.300	0.750	4,800	864	0.160	0.600
R5.0	25.0	5,800	1,128	0.370	0.900	4,800	852	0.200	0.670
	35.0	5,400	1,080	0.350	0.850	4,500	816	0.150	0.600
R6.0	30.0	4,800	984	0.420	0.900	4,300	828	0.250	0.600
		4,500	9,600	0.400	0.850	4,000	780	0.200	0.600
Depth of Cut 절입량									

2,3BH

Cutting Condition

Work Material 피삭재	Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도	55~60HRC				60~65HRC				65~68HRC			
Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.1	60,000	180	0.002	0.003	60,000	120	0.002	0.003	45,000	60	0.002	0.003
R0.15	45,000	310	0.004	0.007	43,500	180	0.003	0.005	32,500	90	0.003	0.005
R0.2	37,500	420	0.007	0.012	35,000	240	0.005	0.008	26,250	120	0.005	0.008
R0.25	33,000	530	0.010	0.020	30,000	300	0.007	0.010	22,500	150	0.007	0.010
R0.3	30,000	1,200	0.020	0.100	26,500	800	0.010	0.075	20,000	400	0.010	0.075
R0.35	28,500	1,400	0.030	0.135	25,000	900	0.015	0.098	18,750	450	0.015	0.098
R0.4	27,000	1,600	0.040	0.170	23,500	1,000	0.020	0.120	17,500	500	0.020	0.120
R0.5	24,000	2,000	0.100	0.300	21,000	1,750	0.050	0.200	16,000	875	0.050	0.200
R0.6	21,000	2,000	0.100	0.300	18,000	1,750	0.050	0.200	14,500	875	0.050	0.200
R0.75	17,000	2,000	0.120	0.400	15,000	1,750	0.060	0.290	11,250	875	0.060	0.290
R1.0	14,000	2,100	0.150	0.500	12,250	1,800	0.080	0.350	9,200	900	0.080	0.350
R1.25	12,250	2,150	0.170	0.600	10,700	1,850	0.100	0.450	8,050	925	0.100	0.450
R1.5	10,500	2,200	0.200	0.700	9,200	1,900	0.120	0.550	6,900	950	0.120	0.550
R1.75	9,750	2,250	0.225	0.825	8,550	1,950	0.135	0.650	6,400	975	0.135	0.650
R2.0	9,000	2,300	0.250	0.950	7,900	2,000	0.150	0.750	5,900	1,000	0.150	0.750
R2.5	7,800	2,500	0.250	1.050	6,800	2,100	0.150	0.850	5,100	1,050	0.150	0.850
R3.0	6,500	2,500	0.300	1.300	5,700	2,200	0.200	1.000	4,300	1,100	0.200	1.000
R3.5	5,850	2,350	0.350	1.500	5,100	2,050	0.225	1.175	3,850	1,025	0.225	1.175
R4.0	5,200	2,200	0.400	1.700	4,500	1,900	0.250	1.350	3,400	950	0.250	1.350
R4.5	4,750	2,100	0.450	1.900	4,125	1,825	0.275	1.525	3,100	913	0.275	1.525
R5.0	4,300	2,000	0.500	2.100	3,750	1,750	0.300	1.700	2,800	875	0.300	1.700
R6.0	3,600	1,750	0.600	2.600	3,150	1,500	0.350	2.000	2,350	750	0.350	2.000
Depth of Cut 절입량												

2BTH

Cutting Condition

Work Material 피삭재			Pre-Hardened Steels 저경도강			Hardened Steels 고경도강			Super Hardened Steels 초고경도강		
Hardness 경도			35~45HRC			45~55HRC			55~65HRC		
Radius 반경	Neck Angle 구배각	EffectiveLength 유효장	RPM	Feed (mm/min)	Ap	RPM	Feed (mm/min)	Ap	RPM	Feed (mm/min)	Ap
R0.25	0.4	4	28,000	1,260	0.017	26,000	1,040	0.014	26,000	910	0.012
		6	18,200	728	0.013	16,900	608	0.010	16,900	547	0.010
	0.9	6	18,200	728	0.014	16,900	608	0.011	16,900	547	0.011
		8	18,200	446	0.006	16,900	414	0.005	16,900	355	0.005
			15,680	384	0.003	14,560	357	0.003	14,560	306	0.002
R0.3	0.4	2	28,000	1,512	0.035	26,000	1,248	0.029	26,000	1,092	0.026
		4	28,000	1,512	0.022	26,000	1,248	0.018	26,000	1,092	0.017
		6	22,400	968	0.012	20,800	799	0.009	20,800	699	0.009
		8	18,200	698	0.010	16,900	583	0.008	16,900	524	0.007
		10	18,200	535	0.008	16,900	497	0.007	16,900	426	0.006
		12	18,200	535	0.005	16,900	497	0.004	16,900	426	0.004
		15	15,680	461	0.003	14,560	367	0.003	14,560	311	0.002
	0.9	4	28,000	1,512	0.024	26,000	1,248	0.020	26,000	1,092	0.018
		6	22,400	968	0.013	20,800	799	0.010	20,800	699	0.010
		8	18,200	612	0.012	16,900	568	0.009	16,900	487	0.009
		10	18,200	535	0.010	16,900	497	0.008	16,900	426	0.007
		12	18,200	535	0.006	16,900	497	0.005	16,900	426	0.005
		15	15,680	461	0.004	14,560	367	0.003	14,560	311	0.003
	1.4	4	28,000	1,512	0.027	26,000	1,248	0.022	26,000	1,092	0.020
		5	25,090	1,254	0.019	22,580	1,015	0.015	20,320	822	0.014
		6	22,400	968	0.014	20,800	799	0.011	20,800	699	0.011
		8	18,200	612	0.013	16,900	568	0.010	16,900	487	0.010
		10	18,200	535	0.010	16,900	497	0.008	16,900	426	0.008
		20	13,460	406	0.003	12,110	328	0.003	12,110	295	0.002
	2.9	6	22,400	968	0.015	20,800	799	0.012	20,800	699	0.011
		8	18,200	612	0.014	16,900	568	0.011	16,900	487	0.011
			18,200	535	0.007	16,900	497	0.006	16,900	426	0.005
R0.4	0.4	4	22,400	1,613	0.040	20,800	1,331	0.032	20,800	1,165	0.030
		6	22,400	1,613	0.029	20,800	1,331	0.023	20,800	1,165	0.022
		8	17,920	1,032	0.015	16,640	852	0.012	16,640	745	0.011
		12	14,560	699	0.012	13,520	606	0.009	13,520	519	0.009
	0.9	8	17,920	1,032	0.017	16,640	852	0.014	16,640	745	0.012
		12	14,560	699	0.013	13,520	606	0.010	13,520	519	0.010
			14,560	612	0.012	13,520	530	0.009	13,520	454	0.009
R0.5	0.4	6	17,920	1,613	0.035	16,640	1,331	0.029	16,640	1,165	0.026
		8	17,920	1,613	0.035	16,640	1,331	0.029	16,640	1,165	0.026
		10	14,560	1,310	0.020	13,520	1,082	0.017	13,520	946	0.015
		15	11,650	874	0.017	10,820	757	0.014	10,820	649	0.013
		20	11,650	874	0.012	10,820	757	0.009	10,820	649	0.009
		25	10,190	764	0.011	9,460	662	0.009	9,460	568	0.008
		30	8,740	568	0.010	8,110	487	0.008	8,110	406	0.007
		50	6,650	432	0.004	6,180	371	0.003	6,180	309	0.003
		70	5,950	387	0.001	5,530	332	0.001	5,530	276	0.001

2BTH

Cutting Condition

Work Material 피삭재			Pre-Hardened Steels 저경도강			Hardened Steels 고경도강			Super Hardened Steels 초고경도강		
Hardness 경도			35~45HRC			45~55HRC			55~65HRC		
Radius 반경	Neck Angle 구배각	EffectiveLength 유효장	RPM	Feed (mm/min)	Ap	RPM	Feed (mm/min)	Ap	RPM	Feed (mm/min)	Ap
R0.5	0.9	6	17,920	1,613	0.040	16,640	1,331	0.033	16,640	1,165	0.030
		10	14,560	1,310	0.022	13,520	1,082	0.018	13,520	946	0.017
		15	11,650	874	0.018	10,820	757	0.015	10,820	649	0.013
		16	11,650	874	0.018	10,820	757	0.015	10,820	649	0.013
		20	11,650	874	0.013	10,820	757	0.010	10,820	649	0.010
		25	10,190	764	0.011	9,460	662	0.009	9,460	568	0.008
		30	8,740	568	0.011	8,110	487	0.009	8,110	406	0.008
		35	7,280	473	0.006	6,760	406	0.005	6,760	338	0.005
		40	7,000	455	0.006	6,500	390	0.005	6,500	325	0.004
		50	6,650	432	0.004	6,180	371	0.004	6,180	309	0.003
		60	6,300	410	0.003	5,850	351	0.003	5,850	293	0.002
		70	5,950	387	0.002	5,530	332	0.002	5,530	276	0.001
	1.4	6	17,920	1,613	0.044	16,640	1,331	0.035	16,640	1,165	0.033
		12	14,560	1,310	0.026	13,520	1,082	0.021	13,520	946	0.019
		16	11,650	874	0.021	10,820	757	0.017	10,820	649	0.016
		20	11,650	874	0.014	10,820	757	0.011	10,820	649	0.011
		22	11,650	874	0.014	10,820	757	0.011	10,820	649	0.011
		25	10,190	764	0.013	9,460	662	0.011	9,460	568	0.010
		50	6,650	432	0.005	6,180	371	0.004	6,180	309	0.004
	2.9	10	14,560	1,310	0.028	13,520	1,082	0.022	13,520	946	0.021
		15	11,650	874	0.023	10,820	757	0.019	10,820	649	0.017
		20	11,650	874	0.015	10,820	757	0.012	10,820	649	0.012
			8,740	568	0.013	8,110	487	0.010	8,110	406	0.010
R0.75	0.4	8	11,870	1,603	0.045	11,020	1,323	0.036	11,020	1,158	0.034
		10	11,870	1,603	0.045	11,020	1,323	0.036	11,020	1,158	0.034
		12	11,870	1,603	0.045	11,020	1,323	0.036	11,020	1,158	0.034
		30	7,720	810	0.015	7,170	752	0.012	7,170	645	0.012
	0.9	10	11,870	1,603	0.051	11,020	1,323	0.042	11,020	1,158	0.038
		15	9,500	1,282	0.029	8,820	1,058	0.023	8,820	926	0.022
		20	7,720	810	0.026	7,170	752	0.021	7,170	645	0.019
		30	7,720	810	0.018	7,170	752	0.015	7,170	645	0.013
	1.4	10	11,870	1,603	0.058	11,020	1,323	0.047	11,020	1,158	0.043
		20	7,720	810	0.029	7,170	752	0.023	7,170	645	0.022
		30	7,720	810	0.019	7,170	752	0.016	7,170	645	0.014
		40	6,630	728	0.010	5,970	589	0.008	5,970	530	0.007
		50	6,630	662	0.007	5,970	536	0.006	5,970	482	0.005
	2.9	20	7,720	810	0.031	7,170	752	0.025	7,170	645	0.023
R1.0	0.4	8	10,640	1,915	0.096	9,880	1,581	0.078	9,880	1,383	0.072
		12	10,640	1,915	0.058	9,880	1,581	0.047	9,880	1,383	0.043
		16	10,640	1,915	0.058	9,880	1,581	0.047	9,880	1,383	0.043
		20	8,510	1,532	0.038	7,900	1,265	0.031	7,900	1,107	0.029
		25	6,916	968	0.032	6,420	899	0.026	6,420	771	0.024
		30	6,916	968	0.026	6,420	899	0.021	6,420	771	0.019
		40	6,916	968	0.019	6,420	899	0.016	6,420	771	0.014

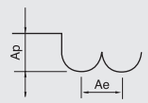
2BTH

Cutting Condition

Work Material 피삭재			Pre-Hardened Steels 저경도강			Hardened Steels 고경도강			Super Hardened Steels 초고경도강		
Hardness 경도			35~45HRC			45~55HRC			55~65HRC		
Radius 반경	Neck Angle 구배각	EffectiveLength 유효장	RPM	Feed (mm/min)	Ap	RPM	Feed (mm/min)	Ap	RPM	Feed (mm/min)	Ap
R1.0	0.4	80	4,305	560	0.003	4,000	480	0.002	4,000	400	0.002
	0.9	12	10,640	1,915	0.064	9,880	1,581	0.052	9,880	1,383	0.048
		16	10,640	1,915	0.064	9,880	1,581	0.052	9,880	1,383	0.048
		20	8,512	1,532	0.045	7,900	1,265	0.036	7,900	1,107	0.034
		25	6,916	968	0.045	6,420	899	0.036	6,420	771	0.034
		30	6,916	968	0.029	6,420	899	0.023	6,420	771	0.022
		35	6,916	968	0.029	6,420	899	0.023	6,420	771	0.022
		40	6,916	968	0.022	6,420	899	0.018	6,420	771	0.017
		50	5,958	775	0.011	5,530	664	0.009	5,530	553	0.008
		60	5,065	658	0.006	4,700	564	0.005	4,700	470	0.004
		70	4,305	560	0.003	4,000	480	0.003	4,000	400	0.002
	1.4	10	10,640	1,915	0.070	9,880	1,581	0.057	9,880	1,383	0.053
		16	10,640	1,915	0.070	9,880	1,581	0.057	9,880	1,383	0.053
		20	8,512	1,532	0.048	7,900	1,265	0.039	7,900	1,107	0.036
		22	8,512	1,532	0.048	7,900	1,265	0.039	7,900	1,107	0.036
		25	6,916	968	0.040	6,420	899	0.032	6,420	771	0.030
		30	6,916	968	0.032	6,420	899	0.026	6,420	771	0.024
		40	6,916	968	0.024	6,420	899	0.019	6,420	771	0.018
	2.9	12	10,640	1,915	0.077	9,880	1,581	0.062	9,880	1,383	0.058
		15	10,640	1,915	0.077	9,880	1,581	0.062	9,880	1,383	0.058
			8,512	1,532	0.051	7,900	1,265	0.042	7,900	1,107	0.038
R1.5	0.4	8	8,904	2,404	0.205	8,270	1,984	0.166	8,270	1,736	0.154
		16	8,904	2,404	0.141	8,270	1,984	0.114	8,270	1,736	0.106
		20	8,904	2,137	0.096	8,270	1,736	0.078	8,270	1,488	0.072
		30	7,123	1,496	0.051	6,610	1,389	0.042	6,610	1,191	0.038
		40	5,788	1,215	0.038	5,370	1,129	0.031	5,370	967	0.029
		50	5,788	1,215	0.028	5,370	1,129	0.022	5,370	967	0.021
		80	4,363	896	0.010	4,050	748	0.008	4,050	673	0.008
	0.9	15	8,904	2,404	0.160	8,270	1,984	0.130	8,270	1,736	0.120
		20	8,904	2,137	0.109	8,270	1,736	0.088	8,270	1,488	0.082
		30	7,123	1,496	0.058	6,640	1,389	0.047	6,610	1,191	0.043
		35	7,123	1,496	0.051	6,640	1,389	0.042	6,610	1,191	0.038
		40	5,788	1,215	0.045	5,370	1,129	0.036	5,370	967	0.034
		50	5,788	1,215	0.032	5,370	1,129	0.026	5,370	967	0.024
		60	4,986	1,047	0.019	4,630	972	0.016	4,630	833	0.014
		70	4,363	916	0.013	4,050	851	0.010	4,050	729	0.010
		90	4,363	896	0.008	4,050	748	0.007	4,050	673	0.006
	1.4	30	7,123	1,496	0.064	6,610	1,389	0.052	6,610	1,191	0.048
		40	5,788	1,215	0.048	5,370	1,129	0.039	5,370	967	0.036
			5,788	1,215	0.034	5,370	1,129	0.028	5,370	967	0.025
R2	0.4	60	5,800	1,120	0.038	5,000	920	0.031	5,000	870	0.029
	0.9	20	9,000	2,050	0.205	7,800	1,680	0.166	7,800	1,590	0.154
		30	9,000	1,850	0.147	7,800	1,520	0.120	7,800	1,430	0.110
		35	9,000	1,850	0.128	7,800	1,520	0.104	7,800	1,430	0.096

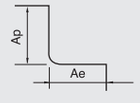
2BTH

Cutting Condition

Work Material 피삭재			Pre-Hardened Steels 저경도강			Hardened Steels 고경도강			Super Hardened Steels 초고경도강		
Hardness 경도			35~45HRC			45~55HRC			55~65HRC		
Radius 반경	Neck Angle 구배각	EffectiveLength 유효장	RPM	Feed (mm/min)	Ap	RPM	Feed (mm/min)	Ap	RPM	Feed (mm/min)	Ap
R2	0.9	40	7,200	1,400	0.090	6,200	1,140	0.073	6,200	1,080	0.067
		50	5,800	1,120	0.070	5,000	920	0.057	5,000	870	0.053
		60	5,800	1,120	0.045	5,000	920	0.036	5,000	870	0.034
	1.4	45	5,800	1,120	0.077	5,000	920	0.062	5,000	870	0.058
		80	4,350	869	0.038	3,920	704	0.031	3,920	633	0.029
	2.9	25	9,000	1,850	0.160	7,800	1,520	0.130	7,800	1,430	0.120
Depth of Cut 절입량											

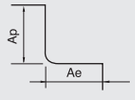
2CLH

Cutting Condition

Work Material 피삭재		Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도		55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.8	–	25,000	100	0.04	0.15	19,000	65	0.02	0.12	16,000	40	0.02	0.12
1.0	–	20,500	248	0.10	0.30	16,000	152	0.05	0.20	12,500	100	0.05	0.20
1.2	–	18,500	257	0.11	0.33	14,500	160	0.06	0.25	11,500	109	0.06	0.25
1.5	–	16,500	265	0.12	0.35	13,000	168	0.07	0.30	10,500	118	0.07	0.30
2.0	–	14,500	296	0.15	0.40	11,000	184	0.10	0.35	9,500	132	0.10	0.30
3.0	0.1	9,500	300	0.20	0.50	7,500	188	0.15	0.55	6,400	134	0.12	0.45
	0.5	9,500	300	0.22	0.50	7,500	188	0.15	0.55	6,400	134	0.12	0.45
	1.0	9,500	300	0.25	0.70	7,500	188	0.20	0.65	6,400	134	0.16	0.55
4.0	0.1	7,200	308	0.25	0.95	5,600	192	0.15	0.75	4,750	136	0.15	0.65
	0.5	7,200	308	0.25	0.95	5,600	192	0.15	0.75	4,750	136	0.15	0.65
	1.0	7,200	308	0.30	1.20	5,600	192	0.20	1.00	4,750	136	0.20	0.90
5.0	0.1	6,400	328	0.20	0.90	5,100	208	0.15	0.70	4,450	152	0.15	0.85
	0.5	6,400	328	0.20	0.90	5,100	208	0.15	0.70	4,450	152	0.15	0.85
	1.0	6,400	328	0.25	1.10	5,100	208	0.20	0.90	4,450	152	0.20	1.00
6.0	0.5	5,300	320	0.30	1.30	4,200	204	0.20	0.80	3,700	148	0.20	0.80
	1.0	5,300	320	0.30	1.30	4,200	204	0.20	0.80	3,700	148	0.20	0.80
	1.5	5,300	320	0.30	1.40	4,200	204	0.25	1.20	3,700	148	0.25	1.20
	2.5	5,300	320	0.30	1.40	4,200	204	0.25	1.20	3,700	148	0.25	1.20
8.0	0.5	4,000	292	0.30	1.70	3,200	188	0.25	1.35	2,800	136	0.25	1.35
	1.0	4,000	292	0.30	1.70	3,200	188	0.25	1.35	2,800	136	0.25	1.35
	1.5	4,000	292	0.30	1.70	3,200	188	0.25	1.35	2,800	136	0.25	1.35
	2.0	4,000	292	0.40	2.00	3,200	188	0.25	1.50	2,800	136	0.30	1.40
	2.5	4,000	292	0.40	2.00	3,200	188	0.25	1.50	2,800	136	0.30	1.40
	3.0	4,000	292	0.40	2.00	3,200	188	0.25	1.50	2,800	136	0.30	1.40
10.0	0.5	3,200	272	0.50	2.10	2,550	176	0.30	1.70	2,200	128	0.30	1.50
	1.0	3,200	272	0.50	2.10	2,550	176	0.30	1.70	2,200	128	0.30	1.50
	1.5	3,200	272	0.60	2.40	2,550	176	0.30	1.80	2,200	128	0.30	1.60
	2.0	3,200	272	0.60	2.40	2,550	176	0.30	1.80	2,200	128	0.30	1.60
	2.5	3,200	272	0.60	2.40	2,550	176	0.30	1.80	2,200	128	0.30	1.60
12.0	0.5	2,650	272	0.80	2.50	2,100	176	0.40	2.00	1,860	128	0.35	1.80
	1.0	2,650	272	0.80	2.50	2,100	176	0.40	2.00	1,860	128	0.35	1.80
	1.5	2,650	272	0.80	2.50	2,100	176	0.40	2.00	1,860	128	0.35	1.80
	2.0	2,650	272	1.00	2.60	2,100	176	0.50	2.10	1,860	128	0.40	2.00
	2.5	2,650	272	1.00	2.60	2,100	176	0.50	2.10	1,860	128	0.40	2.00
Depth of Cut 절입량		• AP : Axial Depth • Ae : Radial Depth 											

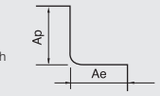
2NCH

Cutting Condition

Slotting													
Work Material 피삭재		Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도		55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.2	–	33,000	100	0.005	0.005	25,000	55	0.003	0.005	25,000	50	0.003	0.005
0.3	–	33,000	100	0.005	0.005	25,000	55	0.003	0.005	25,000	50	0.003	0.005
0.4	–	33,000	105	0.01	0.01	25,000	60	0.005	0.008	25,000	60	0.005	0.008
0.5	–	33,000	110	0.015	0.02	25,000	65	0.007	0.01	20,000	40	0.007	0.010
0.6	–	33,000	110	0.015	0.02	25,000	65	0.007	0.01	20,000	40	0.007	0.010
0.7	–	30,000	125	0.02	0.10	25,000	85	0.01	0.075	20,000	50	0.01	0.075
0.8	–	30,000	125	0.02	0.10	25,000	85	0.01	0.075	20,000	50	0.01	0.075
1.0	–	25,000	145	0.04	0.15	19,000	90	0.02	0.12	16,000	55	0.02	0.12
1.2	–	22,750	159	0.07	0.23	17,500	99	0.04	0.16	14,250	63	0.04	0.16
1.5	–	20,500	172	0.10	0.30	16,000	108	0.05	0.2	12,500	70	0.05	0.20
2.0	–	14,500	208	0.15	0.50	11,000	128	0.10	0.25	9,500	92	0.10	0.30
2.5	–	9,500	208	0.20	0.50	7,500	128	0.12	0.350	6,400	92	0.12	0.40
3.0	–	9,500	208	0.20	0.50	7,500	128	0.12	0.35	6,400	92	0.12	0.40
4.0	–	7,200	216	0.25	0.30	5,600	136	0.15	0.20	4,750	94	0.15	0.30
5.0	0.5	6,400	228	0.25	0.50	5,100	144	0.15	0.50	4,450	105	0.15	0.40
	1.0	6,400	228	0.40	1.05	5,100	144	0.35	0.80	4,450	105	0.30	0.70
6.0	0.5	5,300	224	0.20	0.70	4,200	144	0.20	0.60	3,700	104	0.20	0.50
	1.0	5,300	224	0.30	1.00	4,200	144	0.30	0.80	3,700	104	0.20	0.65
	1.5	5,300	224	0.50	1.30	4,200	144	0.40	1.00	3,700	104	0.30	0.80
8.0	0.5	4,000	204	0.30	0.70	3,200	132	0.20	0.60	2,800	96	0.20	0.50
	1.0	4,000	204	0.40	1.00	3,200	132	0.25	0.90	2,800	96	0.25	0.70
	1.5	4,000	204	0.40	1.30	3,200	132	0.25	1.20	2,800	96	0.25	0.80
10.0	0.5	3,200	192	0.40	0.80	2,550	124	0.20	0.60	2,200	90	0.20	0.50
	1	3,200	192	0.50	1.00	2,550	124	0.30	0.80	2,200	90	0.30	0.80
12.0	0.5	2,650	192	0.50	1.00	2,100	124	0.35	0.80	1,860	90	0.20	0.60
		2,650	192	0.60	1.30	2,100	124	0.35	1.20	1,860	90	0.30	1.00
Depth of Cut 절입량		• AP : Axial Depth • Ae : Radial Depth 											

2NCH

Cutting Condition

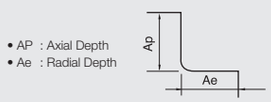
Side Milling												
Work Material 피삭재	Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도	55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.4	33,000	105	0.40	0.012	25,000	60	0.20	0.008	25,000	60	0.20	0.008
0.5	33,000	110	0.50	0.015	25,000	65	0.25	0.01	20,000	40	0.25	0.001
0.8	30,000	125	0.80	0.024	25,000	85	0.40	0.016	20,000	50	0.40	0.016
1.0	25,000	145	1.0	0.03	19,000	90	0.50	0.02	16,000	55	0.50	0.02
1.5	19,750	177	1.5	0.045	15,000	109	0.75	0.03	12,750	74	0.75	0.03
2.0	14,500	208	2.0	0.06	11,000	128	1.00	0.04	9,500	92	1.00	0.04
3.0	9,500	208	3.0	0.09	7,500	128	1.50	0.06	6,400	92	1.50	0.06
4.0	7,200	216	4.0	0.12	5,600	136	2.00	0.08	4,750	94	2.00	0.08
6.0	5,300	224	6.0	0.18	4,200	144	3.0	0.12	3,700	104	3.0	0.12
8.0	4,000	204	8.0	0.24	3,200	132	4.0	0.16	2,800	96	4.0	0.16
10.0	3,200	192	10.0	0.30	2,550	124	5.0	0.20	2,200	90	5.0	0.20
12.0	2,650	192	12.0	0.36	2,100	124	6.0	0.24	1,860	90	6.0	0.24
Depth of Cut 절입량	• AP : Axial Depth • Ae : Radial Depth 											

4NCH

Cutting Condition

Work Material 피삭재		Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도		55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	0.10	20,500	430	0.08	0.80	16,000	270	0.04	0.06	12,500	175	0.03	0.05
	0.30	20,500	430	0.10	0.40	16,000	270	0.05	0.08	12,500	175	0.05	0.06
1.2	0.10	19,250	445	0.10	1.05	14,500	285	0.06	0.08	11,500	188	0.04	0.07
	0.30	19,250	445	0.13	0.45	14,500	285	0.08	0.10	11,500	188	0.06	0.08
1.5	0.10	18,000	460	0.12	1.30	13,000	300	0.07	0.10	10,500	200	0.05	0.08
	0.50	18,000	460	0.15	0.50	13,000	300	0.10	0.12	10,500	200	0.07	0.10
2.0	0.10	14,500	520	0.15	1.80	11,000	320	0.10	0.12	9,500	230	0.10	0.10
	0.50	14,500	520	0.18	1.00	11,000	320	0.10	0.14	9,500	230	0.10	0.12
2.5	0.10	11,500	520	0.16	2.00	8,500	320	0.10	0.13	7,500	230	0.10	0.10
	0.50	11,500	520	0.19	1.50	8,500	320	0.10	0.15	7,500	230	0.10	0.12
3.0	0.10	9,500	520	0.16	2.50	7,500	320	0.12	0.13	6,400	230	0.12	0.10
	0.50	9,500	520	0.18	2.00	7,500	320	0.12	0.14	6,400	230	0.12	0.12
	1.00	9,500	520	0.20	1.00	7,500	320	0.12	0.16	6,400	230	0.12	0.13
4.0	0.10	7,200	540	0.20	3.50	5,600	335	0.12	0.16	4,750	240	0.12	0.13
	0.50	7,200	540	0.25	3.00	5,600	335	0.12	0.20	4,750	240	0.15	0.16
	1.00	7,200	540	0.25	2.00	5,600	335	0.15	8.00	4,750	240	0.15	0.16
5.0	0.10	6,400	580	0.25	4.50	5,100	370	0.12	0.20	4,450	270	0.12	0.16
	0.5	6,400	580	0.28	4.00	5,100	370	0.15	0.22	4,450	270	0.15	0.18
	1.0	6,400	580	0.30	3.00	5,100	370	0.15	0.24	4,450	270	0.15	0.19
6.0	0.1	5,300	560	0.30	5.50	4,200	350	0.20	0.24	3,700	260	0.20	0.19
	0.5	5,300	560	0.30	5.00	4,200	350	0.20	0.24	3,700	260	0.20	0.19
	1.0	5,300	560	0.40	4.00	4,200	350	0.25	0.32	3,700	260	0.25	0.26
	1.5	5,300	560	0.40	3.00	4,200	350	0.25	0.32	3,700	260	0.25	0.26
8.0	0.5	4,000	520	0.30	7.50	3,200	330	0.20	0.24	2,800	240	0.20	0.19
	1.0	4,000	520	0.30	6.00	3,200	330	0.20	0.24	2,800	240	0.20	0.19
	1.5	4,000	520	0.40	5.00	3,200	330	0.25	0.32	2,800	240	0.25	0.26
	2	4,000	520	0.50	4.00	3,200	330	0.30	0.40	2,800	240	0.25	0.32
10.0	0.5	3,200	480	0.40	9.50	2,550	310	0.20	0.32	2,200	220	0.20	0.26
	1.0	3,200	480	0.45	9.00	2,550	310	0.25	0.36	2,200	220	0.25	0.29
	1.5	3,200	480	0.50	7.00	2,550	310	0.30	0.40	2,200	220	0.30	0.32
	2.0	3,200	480	0.50	6.00	2,550	310	0.30	0.40	2,200	220	0.30	0.32
	2.5	3,200	480	0.50	5.00	2,550	310	0.30	0.40	2,200	220	0.30	0.32
12.0	0.5	2,650	480	0.50	11.00	2,100	300	0.35	0.40	1,860	220	0.30	0.32
	1.0	2,650	480	0.70	10.00	2,100	300	0.35	0.56	1,860	220	0.35	0.45
	1.5	2,650	480	0.80	9.00	2,100	300	0.40	0.64	1,860	220	0.35	0.51
	2.0	2,650	480	0.80	8.00	2,100	300	0.40	0.64	1,860	220	0.35	0.51
		2,650	480	0.80	6.00	2,100	300	0.40	0.64	1,860	220	0.35	0.51

Depth of Cut 절입량

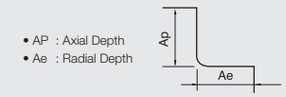


4CLH

Cutting Condition

Work Material 피삭재		Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도		55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.5	0.1	18,000	388	0.10	0.30	13,000	235	0.07	0.30	10,500	160	0.08	0.25
	0.5	18,000	388	0.13	0.40	13,000	235	0.07	0.30	10,500	160	0.08	0.25
2.0	0.1	14,500	416	0.15	0.50	11,000	256	0.10	0.45	9,500	184	0.10	0.45
	0.5	14,500	416	0.15	0.50	11,000	256	0.10	0.45	9,500	184	0.10	0.45
3.0	0.5	8,300	424	0.23	0.80	6,400	268	0.13	0.60	5,600	192	0.13	0.60
	1.0	8,300	424	0.23	0.80	6,400	268	0.13	0.60	5,600	192	0.13	0.60
4.0	0.5	7,200	432	0.25	0.95	5,600	268	0.15	0.75	4,750	192	0.15	0.75
	1.0	7,200	432	0.25	1.00	5,600	268	0.15	0.80	4,750	192	0.15	0.80
5.0	0.5	6,400	464	0.25	1.05	5,100	296	0.15	0.85	4,450	216	0.15	0.85
	1.0	6,400	464	0.30	1.20	5,100	296	0.17	0.90	4,450	216	0.17	0.85
6.0	0.5	5,300	448	0.30	1.30	4,200	280	0.20	1.00	3,700	208	0.20	0.90
	1.0	5,300	448	0.30	1.40	4,200	296	0.20	1.00	3,700	216	0.20	0.90
	1.5	5,300	448	0.35	1.50	4,200	280	0.23	1.20	3,700	208	0.22	1.20
	2.0	5,300	448	0.35	1.60	4,200	296	0.23	1.20	3,700	216	0.22	1.20
8.0	0.5	4,000	416	0.40	1.70	3,200	264	0.25	1.35	2,800	192	0.25	1.30
	1.0	4,000	416	0.40	1.70	3,200	264	0.25	1.35	2,800	192	0.25	1.30
	1.5	4,000	416	0.45	2.00	3,200	264	0.28	1.50	2,800	192	0.27	1.40
	2.0	4,000	416	0.45	2.00	3,200	264	0.28	1.50	2,800	192	0.27	1.40
10.0	0.5	3,200	384	0.50	2.10	2,550	248	0.30	1.70	2,200	176	0.30	1.70
	1.0	3,200	384	0.50	2.10	2,550	248	0.30	1.70	2,200	176	0.30	1.70
	1.5	3,200	384	0.55	2.30	2,550	248	0.35	1.80	2,200	176	0.35	1.80
	2.0	3,200	384	0.55	2.30	2,550	248	0.35	1.90	2,200	176	0.35	1.90
	2.5	3,200	384	0.60	2.30	2,550	248	0.35	1.90	2,200	176	0.35	1.90
12.0	0.5	2,650	384	0.60	2.60	2,100	240	0.35	2.00	1,860	176	0.35	2.00
	1.0	2,650	384	0.60	2.60	2,100	240	0.35	2.00	1,860	176	0.35	2.00
	1.5	2,650	384	0.60	2.60	2,100	240	0.35	2.00	1,860	176	0.35	2.00
	2.0	2,650	384	0.80	3.00	2,100	240	0.50	2.20	1,860	176	0.45	2.30
		2,650	384	1.00	3.00	2,100	240	0.65	2.40	1,860	176	0.55	2.50

Depth of Cut 절입량



2NSH

Cutting Condition

Work Material 피삭재		Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도		55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	2.0	28,000	1,150	0.200	0.200	25,000	920	0.200	0.200	22,050	600	0.200	0.200
	3.0	26,000	1,050	0.150	0.150	23,000	830	0.150	0.150	21,000	580	0.150	0.150
	4.0	24,480	936	0.100	0.100	21,600	699	0.100	0.100	20,160	563	0.100	0.100
	5.0	23,256	855	0.070	0.070	20,520	638	0.070	0.070	19,152	514	0.070	0.070
	6.0	22,032	773	0.040	0.040	19,440	577	0.040	0.040	18,144	465	0.040	0.040
	8.0	22,032	773	0.040	0.040	19,440	577	0.040	0.040	18,144	465	0.040	0.040
	10.0	22,032	773	0.025	0.025	19,440	577	0.250	0.250	18,144	465	0.025	0.025
	12.0	19,584	502	0.025	0.025	17,280	443	0.025	0.025	16,128	348	0.025	0.025
	14.0	19,584	502	0.025	0.025	17,280	443	0.025	0.025	16,128	348	0.025	0.025
	16.0	19,584	476	0.015	0.015	17,280	373	0.015	0.015	16,128	283	0.015	0.015
	20.0	17,100	400	0.010	0.010	15,500	300	0.010	0.010	14,300	220	0.010	0.010
	25.0	15,200	300	0.007	0.007	13,100	250	0.007	0.007	12,500	170	0.007	0.007
1.2	4.0	22,740	828	0.115	0.115	20,050	615	0.115	0.115	18,605	497	0.115	0.115
	6.0	21,760	764	0.084	0.084	19,200	570	0.084	0.084	17,920	460	0.084	0.084
	8.0	19,584	687	0.048	0.048	17,280	513	0.048	0.048	16,128	414	0.048	0.048
	10.0	19,584	687	0.030	0.030	17,280	513	0.030	0.030	16,128	414	0.030	0.030
	12.0	19,584	687	0.030	0.030	17,280	513	0.030	0.030	16,128	414	0.030	0.030
	16.0	17,408	611	0.020	0.020	15,360	456	0.020	0.020	14,336	368	0.020	0.020
1.5	4.0	21,000	720	0.130	0.130	18,500	530	0.130	0.130	17,050	430	0.130	0.130
	6.0	19,040	668	0.110	0.110	16,800	499	0.110	0.110	15,680	402	0.110	0.110
	8.0	19,040	668	0.110	0.110	16,800	499	0.110	0.110	15,680	402	0.110	0.110
	10.0	17,136	601	0.060	0.060	15,120	449	0.060	0.060	14,112	362	0.060	0.060
	12.0	17,136	601	0.060	0.060	15,120	449	0.060	0.060	14,112	362	0.060	0.060
	16.0	15,232	391	0.038	0.038	13,440	345	0.038	0.038	12,544	271	0.038	0.038
	18.0	15,232	391	0.038	0.038	13,440	345	0.038	0.038	12,544	271	0.038	0.038
	20.0	15,232	391	0.038	0.038	13,440	345	0.038	0.038	12,544	271	0.038	0.038
	25.0	11,424	278	0.023	0.023	10,080	218	0.023	0.023	9,408	165	0.023	0.023
	30.0	11,424	278	0.023	0.023	10,080	218	0.023	0.023	9,408	165	0.023	0.023
	40.0	10,500	230	0.180	0.180	9,500	160	0.018	0.018	8,800	120	0.018	0.018
1.6	8.0	17,850	668	0.118	0.118	15,750	499	0.118	0.118	14,700	402	0.118	0.118
1.8	8.0	15,470	668	0.133	0.133	13,650	499	0.133	0.133	12,740	402	0.133	0.133
2.0	4.0	14,800	690	0.220	0.220	13,200	530	0.250	0.250	12,500	450	0.250	0.250
	6.0	14,280	668	0.200	0.200	12,600	499	0.200	0.200	11,760	402	0.200	0.200
	8.0	14,280	668	0.140	0.140	12,600	499	0.140	0.140	11,760	402	0.140	0.140
	10.0	14,280	668	0.140	0.140	12,600	499	0.140	0.140	11,760	402	0.140	0.140
	12.0	12,852	601	0.080	0.080	11,340	449	0.080	0.080	10,584	362	0.080	0.080
	14.0	12,852	601	0.080	0.080	11,340	449	0.080	0.080	10,584	362	0.080	0.080
	16.0	12,852	601	0.080	0.080	11,340	449	0.080	0.080	10,584	362	0.080	0.080
	18.0	12,852	601	0.050	0.050	11,340	449	0.050	0.050	10,584	362	0.050	0.050
	20.0	12,852	601	0.050	0.050	11,340	449	0.050	0.050	10,584	362	0.050	0.050
	25.0	11,424	391	0.050	0.050	10,080	345	0.050	0.050	9,408	271	0.050	0.050
	30.0	11,424	391	0.030	0.030	10,080	345	0.030	0.030	9,408	271	0.030	0.030
		10,500	300	0.020	0.020	9,500	280	0.020	0.020	8,800	180	0.020	0.020

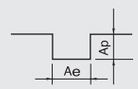
2NSH

Cutting Condition

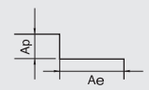
Work Material 피삭재		Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도		55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
2.5	12.0	12,240	716	0.180	0.180	10,800	535	0.180	0.180	10,080	431	0.180	0.180
	16.0	11,116	644	0.100	0.100	9,720	388	0.100	0.100	9,072	388	0.100	0.100
	20.0	11,116	644	0.100	0.100	9,720	481	0.100	0.100	9,072	388	0.100	0.100
	30.0	10,608	482	0.055	0.055	9,360	387	0.055	0.055	8,736	308	0.055	0.055
3.0	8.0	10,800	636	0.210	0.210	9,600	475	0.210	0.210	8,960	383	0.210	0.210
	12.0	10,800	636	0.210	0.210	9,600	475	0.210	0.210	8,960	383	0.210	0.210
	16.0	9,792	573	0.120	0.120	8,640	428	0.120	0.120	8,064	345	0.120	0.120
	20.0	9,792	873	0.120	0.120	8,640	428	0.120	0.120	8,064	345	0.120	0.120
	25.0	9,792	873	0.080	0.080	8,640	428	0.080	0.080	8,064	345	0.080	0.080
	30.0	9,792	573	0.080	0.080	8,640	428	0.080	0.080	8,064	345	0.080	0.080
	40.0	8,704	509	0.050	0.050	7,680	380	0.050	0.050	7,168	307	0.050	0.050
4.0	12.0	8,000	1,358	0.400	0.400	7,050	902	0.400	0.400	6,580	727	0.400	0.400
	16.0	8,000	1,358	0.400	0.400	7,050	902	0.400	0.400	6,580	727	0.400	0.400
	20.0	7,800	1,200	0.300	0.300	6,800	800	0.300	0.300	6,200	720	0.300	0.300
	25.0	7,800	1,200	0.300	0.300	6,800	800	0.300	0.300	6,200	720	0.300	0.300
	30.0	7,800	1,200	0.300	0.300	6,800	800	0.300	0.300	6,200	720	0.300	0.300
	35.0	7,600	1,150	0.200	0.200	6,700	780	0.200	0.200	6,000	700	0.200	0.200
	40.0	7,600	1,150	0.200	0.200	6,700	780	0.200	0.200	6,000	700	0.200	0.200
	50.0	7,600	1,150	0.200	0.200	6,700	780	0.200	0.200	6,000	700	0.200	0.200
5.0	20.0	7,400	1,060	0.100	0.100	6,600	760	0.400	0.400	5,900	680	0.400	0.400
	25.0	7,400	1,060	0.100	0.100	6,600	760	0.300	0.300	5,900	680	0.300	0.300
	30.0	7,200	1,000	0.090	0.090	6,200	740	0.200	0.200	5,800	650	0.200	0.200
	40.0	7,000	890	0.090	0.090	6,000	700	0.200	0.200	5,600	620	0.200	0.200
	50.0	7,000	890	0.090	0.090	6,000	700	0.200	0.200	5,600	620	0.200	0.200
6.0	20.0	6,800	950	0.080	0.080	5,800	680	0.100	0.100	5,400	600	0.100	0.100
	30.0	6,800	950	0.080	0.080	5,800	680	0.100	0.100	5,400	600	0.100	0.100
	40.0	6,800	950	0.080	0.080	5,800	680	0.100	0.100	5,400	600	0.100	0.100
8.0	20.0	6,000	750	0.060	0.060	5,000	600	0.080	0.080	4,800	520	0.080	0.080
	30.0	6,000	750	0.060	0.060	5,000	600	0.080	0.080	4,800	520	0.080	0.080
		6,000	750	0.060	0.060	5,000	600	0.080	0.080	4,800	520	0.080	0.080

Depth of Cut
절입량

Slotting
- Ap : Axial Depth
- Ae : Radial Depth



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



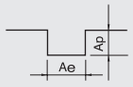
2SH

Cutting Condition

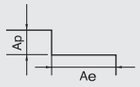
Slotting												
Work Material 피삭재	Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도	55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.2	33,000	60	0.010	0.160	33,000	45	0.004	0.100	20,000	35	0.004	0.100
0.3	33,000	70	0.015	0.240	25,000	50	0.006	0.150	20,000	40	0.004	0.150
0.4	33,000	90	0.020	0.320	25,000	55	0.008	0.200	20,000	60	0.004	0.200
0.5	33,000	140	0.025	0.400	25,000	85	0.010	0.250	20,000	75	0.004	0.250
0.6	30,000	160	0.030	0.480	25,000	105	0.012	0.300	15,200	80	0.004	0.300
0.7	27,500	173	0.035	0.560	22,000	108	0.014	0.350	14,600	85	0.004	0.350
0.8	25,000	185	0.040	0.640	19,000	110	0.016	0.400	14,000	90	0.004	0.400
1.0	20,500	215	0.050	0.800	16,000	135	0.020	0.500	12,500	85	0.004	0.500
1.2	19,000	226	0.060	0.960	14,750	141	0.024	0.600	11,750	93	0.004	0.600
1.5	17,500	238	0.075	1.200	13,500	148	0.030	0.750	11,000	100	0.004	0.750
2.0	14,500	260	0.100	1.600	11,000	160	0.040	1.000	9,500	115	0.004	1.000
2.5	12,000	260	0.125	2.000	9,250	160	0.050	1.250	7,950	115	0.004	1.250
3.0	9,500	260	0.150	2.400	7,500	160	0.060	1.500	6,400	115	0.004	1.500
3.5	8,350	265	0.175	2.800	6,550	165	0.070	1.750	5,575	117	0.004	1.750
4.0	7,200	270	0.200	3.200	5,600	170	0.080	2.000	4,750	118	0.004	2.000
4.5	6,800	278	0.225	3.600	5,350	175	0.090	2.250	4,600	125	0.004	2.250
5.0	6,400	285	0.250	4.000	5,100	180	0.100	2.500	4,450	132	0.004	2.500
5.5	5,850	283	0.275	4.400	4,650	180	0.110	2.750	4,075	131	0.004	2.750
6.0	5,300	280	0.300	4.800	4,200	180	0.120	3.000	3,700	130	0.004	3.000
6.5	4,975	274	0.325	5.200	3,950	176	0.130	3.250	3,475	128	0.004	3.250
7.0	4,650	268	0.350	5.600	3,700	173	0.140	3.500	3,250	125	0.004	3.500
7.5	4,325	261	0.375	6.000	3,450	169	0.150	3.750	3,025	123	0.004	3.750
8.0	4,000	255	0.400	6.400	3,200	165	0.160	4.000	2,800	120	0.004	4.000
8.5	3,800	251	0.425	6.800	3,038	163	0.170	4.250	2,650	118	0.004	4.250
9.0	3,600	248	0.450	7.200	2,875	160	0.180	4.500	2,500	116	0.004	4.500
9.5	3,400	244	0.475	7.600	2,713	158	0.190	4.750	2,350	114	0.004	4.750
10.0	3,200	240	0.500	8.000	2,550	155	0.200	5.000	2,200	112	0.004	5.000
10.5	3,063	240	0.525	8.400	2,440	155	0.210	5.250	2,115	112	0.004	5.250
11.0	2,925	240	0.550	8.800	2,330	155	0.220	5.500	2,030	112	0.004	5.500
12.0	2,650	240	0.600	9.600	2,110	155	0.240	6.000	1,860	112	0.004	6.000

Depth of Cut
절입량

Slotting
- Ap : Axial Depth
- Ae : Radial Depth



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



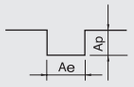
2SH

Cutting Condition

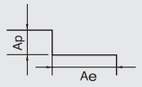
Side Milling												
Work Material 피삭재	Hardened Steels 고경도강								Super Hardened Steels 초고경도강			
Hardness 경도	55~60HRC				60~65HRC				65~68HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.2	Side cutting is not possible 측면 절삭 불가											
0.3												
0.4												
0.5												
0.6												
0.7												
0.8												
1.0	20,500	310	1.000	0.030	16,000	190	0.500	0.020	12,500	125	0.500	0.020
1.2	19,000	325	1.000	0.030	14,750	200	0.500	0.020	11,750	135	0.500	0.020
1.5	17,500	340	1.000	0.030	13,500	210	0.500	0.020	11,000	145	0.500	0.020
2.0	14,500	370	1.000	0.030	11,000	230	0.500	0.020	9,500	165	0.500	0.020
2.5	12,000	370	1.000	0.030	9,250	230	0.500	0.020	7,950	165	0.500	0.020
3.0	9,500	370	1.000	0.030	7,500	230	0.500	0.020	6,400	165	0.500	0.020
3.5	8,350	378	1.000	0.030	6,550	235	0.500	0.020	5,575	168	0.500	0.020
4.0	7,200	385	1.000	0.030	5,600	240	0.500	0.020	4,750	170	0.500	0.020
4.5	6,800	398	1.000	0.030	5,350	250	0.500	0.020	4,600	180	0.500	0.020
5.0	6,400	410	1.000	0.030	5,100	260	0.500	0.020	4,450	190	0.500	0.020
5.5	5,850	405	1.000	0.030	4,650	258	0.500	0.020	4,075	188	0.500	0.020
6.0	5,300	400	1.000	0.030	4,200	255	0.500	0.020	3,700	185	0.500	0.020
6.5	4,975	391	1.000	0.030	3,950	250	0.500	0.020	3,475	181	0.500	0.020
7.0	4,650	383	1.000	0.030	3,700	245	0.500	0.020	3,250	178	0.500	0.020
7.5	4,325	374	1.000	0.030	3,450	240	0.500	0.020	3,025	174	0.500	0.020
8.0	4,000	365	1.000	0.030	3,200	235	0.500	0.020	2,800	170	0.500	0.020
8.5	3,800	359	1.000	0.030	3,038	231	0.500	0.020	2,650	168	0.500	0.020
9.0	3,600	353	1.000	0.030	2,875	228	0.500	0.020	2,500	165	0.500	0.020
9.5	3,400	346	1.000	0.030	2,713	224	0.500	0.020	2,350	163	0.500	0.020
10.0	3,200	340	1.000	0.030	2,550	220	0.500	0.020	2,200	160	0.500	0.020
10.5	3,063	340	1.000	0.030	2,438	220	0.500	0.020	2,115	160	0.500	0.020
11.0	2,925	340	1.000	0.030	2,325	220	0.500	0.020	2,030	160	0.500	0.020
12.0	2,650	340	1.000	0.030	2,100	220	0.500	0.020	1,860	160	0.500	0.020

Depth of Cut
절입량

Slotting
- Ap : Axial Depth
- Ae : Radial Depth

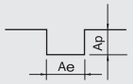
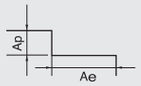


Side Milling
- Ap : Axial Depth
- Ae : Radial Depth



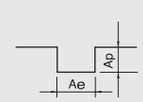
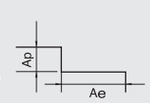
4SH

Cutting Condition

Work Material 피삭재	Hardened Steels 고경도강							
Hardness 경도	40~50HRC				50~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	31,500	1,050	1.000	0.030	20,300	710	1.000	0.030
1.5	25,850	1,150	1.500	0.045	17,300	775	1.500	0.030
2.0	20,200	1,250	2.000	0.060	14,300	840	2.000	0.030
2.5	17,250	1,250	2.500	0.075	11,400	840	2.500	0.030
3.0	14,300	1,250	3.000	0.090	8,500	840	3.000	0.030
3.5	12,850	1,275	3.500	0.105	7,850	860	3.500	0.030
4.0	11,400	1,300	4.000	0.120	7,200	880	4.000	0.030
4.5	10,950	1,400	4.500	0.135	6,950	940	4.500	0.030
5.0	10,500	1,500	5.000	0.150	6,700	1,000	5.000	0.030
6.0	8,450	1,400	6.000	0.180	5,600	950	6.000	0.030
8.0	6,500	1,350	8.000	0.240	3,830	840	8.000	0.030
10.0	5,250	1,260	10.000	0.300	2,800	800	10.000	0.030
12.0	4,300	1,150	12.000	0.360	2,300	760	12.000	0.030
Depth of Cut 절입량	Slotting • Ap : Axial Depth • Ae : Radial Depth 				Side Milling • Ap : Axial Depth • Ae : Radial Depth 			

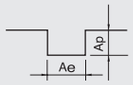
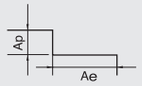
4SHH

Cutting Condition

Work Material 피삭재	Hardened Steels 고경도강							
Hardness 경도	55~62HRC				62~68HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	32,000	800	0.500	0.020	28,000	500	0.500	0.020
1.5	30,000	900	0.500	0.020	25,000	550	0.500	0.020
2.0	24,000	1,000	0.500	0.020	16,000	600	0.500	0.020
2.5	31,200	2,780	0.500	0.020	15,600	1,440	0.500	0.020
3.0	38,400	4,560	0.500	0.020	15,200	2,280	0.500	0.020
4.0	28,800	5,280	0.500	0.020	114,400	2,640	0.500	0.020
5.0	24,000	6,000	0.500	0.020	12,000	3,000	0.500	0.020
6.0	19,200	6,960	0.500	0.020	9,600	3,480	0.500	0.020
8.0	14,400	6,960	0.500	0.020	7,200	3,480	0.500	0.020
10.0	11,520	6,960	0.500	0.020	5,760	3,480	0.500	0.020
12.0	9,600	5,760	0.500	0.020	4,800	2,880	0.500	0.020
14.0	8,400	5,040	0.500	0.020	4,200	2,520	0.500	0.020
16.0	7,200	4,320	0.500	0.020	3,600	2,160	0.500	0.020
20.0	5,760	3,480	0.500	0.020	2,880	1,680	0.500	0.020
Depth of Cut 절입량	Slotting • Ap : Axial Depth • Ae : Radial Depth 				Side Milling • Ap : Axial Depth • Ae : Radial Depth 			

6SH

Cutting Condition

Work Material 피삭재	Hardened Steels 고경도강							
Hardness 경도	55~62HRC				62~68HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
6.0	19,200	10,440	3.000	0.120	9,600	5,220	3.000	0.120
8.0	14,400	10,440	3.000	0.120	7,200	5,220	3.000	0.120
10.0	11,520	10,440	3.000	0.120	5,760	5,220	3.000	0.120
12.0	9,600	8,640	3.000	0.120	4,800	4,320	3.000	0.120
16.0	7,200	6,480	3.000	0.120	3,600	3,240	3.000	0.120
20.0	5,760	5,220	3.000	0.120	2,880	2,520	3.000	0.120
Depth of Cut 절입량	Slotting • Ap : Axial Depth • Ae : Radial Depth 				Side Milling • Ap : Axial Depth • Ae : Radial Depth 			

2NB

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.1	0.5	45,000	396	0.006	0.007	45,000	260	0.006	0.006
	0.8	45,000	384	0.005	0.006	45,000	268	0.005	0.005
	1.0	45,000	372	0.004	0.005	45,000	276	0.004	0.004
	1.25	43,500	324	0.004	0.005	43,500	246	0.004	0.004
	1.5	42,000	276	0.003	0.004	42,000	216	0.003	0.004
	2.0	43,500	324	0.004	0.005	43,500	246	0.004	0.004
	2.5	43,500	324	0.004	0.005	43,500	246	0.004	0.004
	3.0	42,700	300	0.003	0.004	42,700	231	0.003	0.004
R0.15	0.5	43,400	480	0.009	0.009	36,300	362	0.058	0.008
	0.8	43,900	504	0.009	0.009	36,900	381	0.069	0.009
	1.0	45,000	552	0.010	0.010	38,000	420	0.090	0.010
	1.25	42,900	456	0.008	0.009	35,800	342	0.048	0.008
	1.5	41,800	408	0.007	0.008	34,700	303	0.026	0.006
	2.0	41,300	384	0.007	0.007	34,100	284	0.016	0.006
	2.5	41,000	372	0.006	0.007	33,800	274	0.010	0.005
	3.0	40,800	360	0.006	0.007	33,600	264	0.005	0.005
R0.2	1.0	54,000	769	0.160	0.022	39,600	516	0.013	0.022
	1.5	49,200	625	0.085	0.016	36,000	414	0.011	0.016
	2.0	46,800	552	0.048	0.013	34,200	363	0.010	0.013
	2.5	45,600	516	0.029	0.012	33,300	338	0.010	0.012
	3.0	44,400	480	0.010	0.010	32,400	312	0.009	0.010
	3.5	37,200	426	0.009	0.010	29,400	300	0.008	0.010
	4.0	33,600	399	0.009	0.010	27,900	294	0.007	0.010
	4.5	31,800	386	0.008	0.010	27,100	291	0.006	0.010
	5.0	30,000	372	0.008	0.010	26,400	288	0.006	0.010
	6.0	30,900	379	0.008	0.010	26,700	290	0.006	0.010
	8.0	30,400	375	0.008	0.010	26,500	289	0.006	0.010
R0.25	1.0	45,600	960	0.020	0.033	33,600	636	0.014	0.032
	1.5	40,200	756	0.014	0.021	32,400	540	0.011	0.021
	2.0	37,500	654	0.011	0.014	31,800	492	0.009	0.016
	2.5	36,100	603	0.010	0.011	31,500	468	0.008	0.013
	3.0	35,400	578	0.009	0.010	31,300	456	0.007	0.011
	4.0	35,100	565	0.008	0.009	31,200	450	0.007	0.011
	5.0	34,800	552	0.008	0.008	31,200	444	0.007	0.010
	6.0	31,800	504	0.008	0.009	30,000	408	0.006	0.010
	8.0	30,200	468	0.007	0.070	29,700	384	0.005	0.010
		28,800	456	0.007	0.010	28,800	372	0.005	0.010
R0.3	1.0	39,600	960	0.022	0.091	27,600	600	0.019	0.091
	2.0	34,200	732	0.017	0.067	27,000	498	0.014	0.067
	2.5	31,500	618	0.015	0.055	26,700	447	0.011	0.054
	3.0	30,100	561	0.013	0.049	26,500	422	0.009	0.048
	3.5	29,400	533	0.013	0.046	26,400	409	0.009	0.045
	4.0	29,100	518	0.012	0.045	26,400	402	0.008	0.044
	4.5	28,900	511	0.012	0.044	26,400	399	0.008	0.043

2NB

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.3	5.0	28,800	504	0.012	0.043	26,400	396	0.008	0.042
	5.5	26,400	432	0.009	0.032	24,600	354	0.006	0.031
	6.0	25,200	396	0.007	0.026	23,700	333	0.005	0.026
	8.0	24,600	378	0.006	0.023	23,200	323	0.005	0.023
	10.0	24,000	360	0.005	0.020	22,800	312	0.004	0.020
	12.0	23,800	357	0.005	0.020	21,700	310	0.039	0.190
R0.35	2.0	34,500	774	0.031	0.084	27,300	525	0.026	0.083
	4.0	28,900	577	0.020	0.056	24,000	411	0.014	0.056
	6.0	27,000	516	0.017	0.047	22,600	377	0.013	0.047
	8.0	25,300	465	0.015	0.041	21,300	368	0.011	0.041
R0.4	2.0	34,800	816	0.045	0.100	27,600	552	0.038	0.100
	3.0	31,800	726	0.037	0.084	24,600	486	0.029	0.084
	4.0	30,300	681	0.032	0.076	23,100	453	0.025	0.076
	5.0	29,500	659	0.030	0.072	22,300	437	0.022	0.072
	6.0	28,800	636	0.028	0.068	21,600	420	0.020	0.068
	8.0	26,100	552	0.024	0.059	19,400	414	0.018	0.059
	10.0	23,400	468	0.020	0.050	17,300	408	0.015	0.050
	12.0	23,800	357	0.022	0.020	21,700	310	0.039	0.190
R0.45	2.0	34,200	858	0.049	0.160	24,600	546	0.039	0.160
	4.0	31,900	791	0.042	0.148	22,300	497	0.032	0.148
	6.0	26,800	693	0.032	0.103	19,900	459	0.024	0.103
	8.0	23,300	614	0.026	0.078	18,000	446	0.019	0.078
	10.0	19,800	534	0.020	0.053	16,100	432	0.015	0.053
R0.5	2.0	33,600	900	0.052	0.220	21,600	540	0.040	0.220
	3.0	33,600	900	0.052	0.220	21,600	540	0.040	0.220
	4.0	28,850	900	0.052	0.220	21,600	540	0.040	0.220
	5.0	33,600	900	0.052	0.220	21,600	540	0.040	0.220
	6.0	24,900	750	0.036	0.138	18,300	498	0.027	0.138
	8.0	20,600	675	0.028	0.097	16,600	477	0.021	0.097
	10.0	16,300	600	0.020	0.056	15,000	456	0.014	0.056
	12.0	15,000	540	0.018	0.056	13,600	420	0.067	0.056
	14.0	14,300	510	0.017	0.056	13,000	402	0.094	0.056
	16.0	13,600	480	0.016	0.056	12,300	384	0.120	0.056
	18.0	14,000	495	0.017	0.056	12,600	393	0.107	0.056
	20.0	13,800	488	0.016	0.056	12,500	389	0.113	0.056
R0.6	4.0	25,800	933	0.076	0.205	16,400	558	0.061	0.205
	6.0	20,700	812	0.063	0.159	14,400	513	0.049	0.159
	8.0	18,100	751	0.057	0.136	13,300	491	0.044	0.136
	10.0	15,500	690	0.050	0.113	12,300	468	0.038	0.113
	12.0	13,600	579	0.032	0.083	11,600	435	0.052	0.083
	16.0	12,000	488	0.018	0.061	10,900	406	0.068	0.061
		11,900	482	0.016	0.057	11,000	406	0.063	0.057
R0.75	3.0	21,600	1,152	0.120	0.210	12,900	672	0.100	0.210
	4.0	18,100	966	0.100	0.190	11,300	576	0.081	0.190

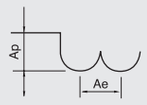
2NB

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.75	6.0	16,400	873	0.090	0.180	10,500	528	0.072	0.180
	8.0	15,600	827	0.085	0.175	10,100	504	0.067	0.175
	10.0	14,700	780	0.080	0.170	9,700	480	0.062	0.170
	12.0	12,300	618	0.046	0.110	9,600	450	0.036	0.110
	14.0	11,000	537	0.029	0.080	9,500	435	0.023	0.080
	16.0	10,400	497	0.021	0.065	9,500	428	0.017	0.065
	20.0	10,100	476	0.016	0.058	9,400	424	0.013	0.058
	25.0	9,900	466	0.014	0.054	9,400	422	0.012	0.054
	30.0	9,800	456	0.012	0.050	9,400	420	0.010	0.050
R0.8	6.0	18,700	1,070	0.120	0.220	12,500	764	0.095	0.220
	8.0	18,300	1,036	0.115	0.210	12,300	745	0.090	0.210
	10.0	17,800	1,002	0.110	0.200	12,100	726	0.086	0.200
	12.0	15,300	765	0.073	0.140	11,600	618	0.059	0.140
	16.0	13,500	587	0.045	0.095	11,200	537	0.039	0.095
	20.0	13,000	538	0.038	0.084	11,100	512	0.034	0.084
R1.0	4.0	21,000	1,392	0.180	0.350	14,600	1,080	0.140	0.350
	5.0	21,000	1,308	0.160	0.290	14,600	1,026	0.125	0.290
	6.0	21,000	1,266	0.150	0.260	14,600	999	0.118	0.260
	8.0	21,000	1,245	0.145	0.245	14,600	986	0.114	0.245
	10.0	21,000	1,224	0.140	0.230	14,600	972	0.110	0.230
	12.0	18,400	912	0.100	0.170	13,600	786	0.083	0.170
	14.0	17,200	756	0.080	0.140	13,200	693	0.069	0.140
	16.0	16,500	678	0.070	0.125	12,900	647	0.062	0.125
	18.0	16,200	639	0.065	0.118	12,800	623	0.058	0.118
	20.0	15,900	600	0.060	0.110	12,700	600	0.055	0.110
	22.0	13,000	540	0.040	0.080	11,400	540	0.103	0.080
	25.0	11,600	510	0.030	0.065	10,800	510	0.126	0.065
	30.0	10,200	480	0.020	0.050	10,200	480	0.150	0.050
	35.0	10,900	495	0.025	0.058	10,500	495	0.138	0.058
	40.0	10,500	488	0.023	0.054	10,300	488	0.144	0.054
R1.25	8.0	17,700	1,535	0.173	0.293	12,200	1,153	0.137	0.283
	10.0	17,700	1,524	0.170	0.285	12,200	1,146	0.135	0.275
	12.0	15,900	1,281	0.136	0.250	11,400	1,005	0.111	0.243
	16.0	14,600	1,099	0.111	0.224	10,800	899	0.093	0.218
	20.0	14,100	1,038	0.103	0.215	10,600	864	0.088	0.210
		11,200	828	0.076	0.150	9,600	741	0.113	0.148
R1.5	6.0	14,400	1,824	0.200	0.340	9,800	1,320	0.160	0.320
	8.0	14,400	1,824	0.200	0.340	9,800	1,320	0.160	0.320
	10.0	14,400	1,824	0.200	0.340	9,800	1,320	0.160	0.320
	12.0	13,300	1,650	0.173	0.330	9,100	1,224	0.140	0.315
	14.0	12,800	1,563	0.159	0.325	8,800	1,176	0.130	0.313
	16.0	12,600	1,520	0.152	0.323	8,600	1,152	0.125	0.311
	18.0	12,400	1,498	0.148	0.321	8,600	1,140	0.123	0.311
	20.0	12,300	1,476	0.145	0.320	8,500	1,128	0.120	0.310

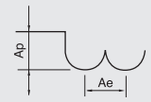
2NB

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R1.5	25.0	10,800	1,146	0.123	0.235	8,500	972	0.100	0.230
	30.0	9,300	816	0.100	0.150	8,500	816	0.080	0.150
	35.0	10,100	981	0.111	0.193	8,500	894	0.090	0.190
	40.0	9,700	899	0.106	0.171	8,500	855	0.085	0.170
	50.0	9,900	940	0.108	0.182	8,500	875	0.088	0.180
R1.75	15.0	12,300	1,554	0.170	0.351	8,500	1,178	0.138	0.335
	20.0	11,400	1,614	0.218	0.435	7,800	1,230	0.170	0.405
	25.0	10,200	1,356	0.184	0.335	7,700	1,083	0.143	0.315
	30.0	9,100	1,098	0.150	0.235	7,500	936	0.115	0.225
	40.0	8,400	977	0.119	0.246	7,500	956	0.093	0.235
R2.0	10.0	13,300	1,689	0.185	0.346	9,100	1,249	0.149	0.328
	12.0	12,800	1,602	0.171	0.341	8,800	1,201	0.139	0.325
	16.0	12,100	1,589	0.188	0.380	8,300	1,203	0.150	0.359
	20.0	10,400	1,752	0.290	0.550	7,200	1,332	0.220	0.500
	25.0	9,600	1,566	0.245	0.435	6,900	1,194	0.185	0.400
	30.0	8,800	1,380	0.200	0.320	6,600	1,056	0.150	0.300
	35.0	8,000	1,218	0.166	0.320	6,600	1,056	0.125	0.300
	40.0	7,200	1,056	0.132	0.320	6,600	1,056	0.100	0.300
	50.0	6,880	980	0.112	0.320	6,000	1,040	0.080	0.200
R3.0	15.0	8,100	1,764	0.420	0.800	5,700	1,320	0.300	0.800
	20.0	7,600	1,722	0.360	0.725	5,400	1,248	0.260	0.725
	30.0	7,200	1,680	0.300	0.650	5,000	1,176	0.220	0.650
R4.0	20.0	7,200	1,176	0.350	0.750	4,900	912	0.180	0.600
	30.0	6,900	1,128	0.300	0.750	4,800	864	0.160	0.600
R5.0	25.0	5,800	1,128	0.370	0.900	4,800	852	0.200	0.670
	35.0	5,400	1,080	0.350	0.850	4,500	816	0.150	0.600
R6.0	30.0	4,800	984	0.420	0.900	4,300	828	0.250	0.600
		4,500	9,600	0.400	0.850	4,000	780	0.200	0.600
Depth of Cut 절입량									

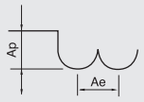
2BS

Cutting Condition

Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.25	53,000	1,250	0.050	0.150	43,500	1,000	0.040	0.120
R0.5	38,540	1,560	0.100	0.300	36,900	1,250	0.080	0.240
R0.75	25,380	1,600	0.150	0.450	28,700	1,280	0.120	0.360
R1.0	30,730	1,850	0.200	0.600	24,600	1,480	0.160	0.480
R1.5	24,530	2,520	0.300	0.957	23,790	2,050	0.240	0.766
R2.0	17,670	2,450	0.400	1.380	17,140	1,960	0.320	1.100
R3.0	15,500	2,700	0.600	2.340	15,000	2,160	0.480	1.870
R4.0	10,900	2,300	0.800	3.100	10,600	1,840	0.640	2.480
R5.0	8,980	2,200	1.000	3.750	8,700	1,780	0.800	3.000
R6.0	6,670	1,850	1.200	4.420	6,470	1,480	0.960	3.540
Depth of Cut 절입량								

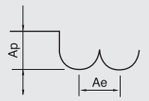
2BR,2BRHR,4BRHR

Cutting Condition

Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.1	54,000	430	0.020	0.051	44,300	345	0.016	0.040
R0.15	54,000	715	0.030	0.075	44,300	575	0.024	0.060
R0.2	54,000	880	0.040	0.105	44,300	700	0.032	0.084
R0.25	53,000	1,250	0.050	0.150	43,500	1,000	0.040	0.120
R0.3	48,500	1,020	0.060	0.155	40,500	810	0.048	0.124
R0.35	46,750	1,053	0.070	0.178	39,000	840	0.056	0.142
R0.4	45,000	1,085	0.080	0.200	37,500	870	0.064	0.160
R0.5	38,540	1,560	0.100	0.300	36,900	1,250	0.080	0.240
R0.6	31,960	1,550	0.120	0.360	32,800	1,250	0.096	0.288
R0.75	25,380	1,600	0.150	0.450	28,700	1,280	0.120	0.360
R1.0	30,730	1,850	0.200	0.600	24,600	1,480	0.160	0.480
R1.25	28,700	1,600	0.250	0.542	27,900	1,280	0.200	0.430
R1.5	24,530	2,520	0.300	0.957	23,790	2,050	0.240	0.766
R1.75	21,100	2,480	0.350	1.169	20,460	2,000	0.280	0.933
R2.0	17,670	2,450	0.400	1.380	17,140	1,960	0.320	1.100
R2.5	16,500	2,570	0.500	1.860	16,000	2,060	0.400	1.485
R3.0	15,500	2,700	0.600	2.340	15,000	2,160	0.480	1.870
R3.5	13,200	2,500	0.700	2.720	12,800	2,000	0.560	2.175
R4.0	10,900	2,300	0.800	3.100	10,600	1,840	0.640	2.480
R4.5	9,940	2,250	0.900	3.425	9,650	1,810	0.720	2.740
R5.0	8,980	2,200	1.000	3.750	8,700	1,780	0.800	3.000
R6.0	6,670	1,850	1.200	4.420	6,470	1,480	0.960	3.540
R7.0	5,520	1,740	2.535	2.770	5,355	795	1.655	2.170
R8.0	4,370	1,630	3.870	1.120	4,240	110	2.350	0.800
R10.0	3,000	1,450	4.120	1.100	2,900	110	2.530	0.840
Depth of Cut 절입량								

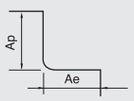
2TB

Cutting Condition

Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강						Hardened Steels 고경도강					
Hardness 경도	~45HRC						45~55HRC					
Radius 반경	Angle A (°) 각도 ≤15 °		Angle A (°) 각도 >15 °		Ap	Ae	Angle A (°) 각도 ≤15 °		Angle A (°) 각도 >15 °		Ap	Ae
	RPM	Feed (mm/min)	RPM	Feed (mm/min)			RPM	Feed (mm/min)	RPM	Feed (mm/min)		
R0.25	40,000	5,938	40,000	3,500	0.071	0.119	40,000	5,938	37,000	3,075	0.061	0.119
R0.3	40,000	5,825	40,000	3,400	0.068	0.113	40,000	5,825	38,000	3,050	0.058	0.113
R0.4	40,000	6,050	40,000	3,600	0.075	0.125	40,000	6,050	36,000	3,100	0.065	0.125
R0.5	40,000	5,600	40,000	3,200	0.060	0.100	40,000	5,600	40,000	3,000	0.050	0.100
R0.75	40,000	6,500	40,000	4,000	0.090	0.150	40,000	6,500	32,000	3,200	0.080	0.150
R1.0	40,000	6,500	39,000	4,700	0.110	0.200	40,000	6,500	31,000	3,500	0.110	0.200
R1.5	40,000	7,500	27,000	4,300	0.130	0.300	32,000	6,000	22,000	3,400	0.130	0.300
Depth of Cut 절입량												

2NC

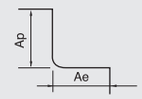
Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Diameter 날경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.2	0.5	50,000	205	0.006	0.020	34,500	150	0.004	0.020
	2.0	50,000	170	0.005	0.010	26,400	100	0.003	0.010
0.3	1.0	50,000	495	0.007	0.020	34,500	345	0.005	0.015
	3.0	50,000	219	0.006	0.015	24,150	81	0.003	0.010
0.4	1.0	50,000	495	0.013	0.070	39,670	368	0.011	0.070
	4.0	26,000	380	0.008	0.026	26,400	276	0.007	0.026
0.5	1.0	48,300	1,116	0.033	0.119	39,100	840	0.029	0.119
	5.0	25,760	459	0.011	0.010	20,700	345	0.010	0.010
0.6	2.0	27,900	495	0.010	0.214	23,000	380	0.010	0.214
	6.0	16,400	242	0.003	0.010	13,570	184	0.003	0.010
0.7	4.0	22,350	350	0.008	0.058	18,850	278	0.007	0.057
	6.0	14,540	253	0.004	0.049	12,130	184	0.004	0.049
0.8	2.0	18,700	320	0.007	0.090	11,300	280	0.007	0.088
	8.0	12,650	264	0.005	0.088	10,690	184	0.004	0.088
0.9	4.0	18,070	578	0.018	0.161	15,290	467	0.021	0.161
	8.0	10,630	288	0.008	0.106	9,080	224	0.009	0.106
1.0	4.0	13,800	805	0.029	0.264	11,730	655	0.034	0.264
	10.0	8,620	311	0.011	0.123	7,475	264	0.013	0.123
	16.0	6,900	184	0.004	0.026	5,980	161	0.005	0.026
	20.0	5,380	160	0.002	0.010	4,230	143	0.002	0.010
1.2	6.0	9,200	575	0.018	0.088	8,160	483	0.215	0.088
	16.0	6,625	294	0.005	0.066	5,070	253	0.006	0.066
1.5	4.0	12,880	1,070	0.044	0.440	11,730	920	0.059	0.440
	10.0	8,280	736	0.031	0.282	7,590	633	0.041	0.282
	20.0	6,350	403	0.005	0.106	4,160	345	0.006	0.106
2.0	6.0	12,530	1,000	0.042	0.792	11,730	909	0.059	0.792
	12.0	9,200	805	0.030	0.440	8,280	725	0.043	0.440
	20.0	6,200	633	0.017	0.194	3,520	564	0.023	0.194
2.5	10.0	10,350	1,000	0.051	0.528	9,770	943	0.073	0.528
	30.0	6,210	437	0.011	0.176	5,865	414	0.016	0.176
3.0	12.0	10,350	1,127	0.103	0.616	9,775	874	0.103	0.655
	20.0	6,050	863	0.071	0.567	3,420	667	0.071	0.567
	30.0	3,300	702	0.049	0.370	2,890	541	0.049	0.371
4.0	12.0	8,740	1,058	0.080	1.120	7,360	920	0.117	0.120
	20.0	5,880	810	0.053	0.880	5,750	840	0.078	0.880
	30.0	2,950	418	0.028	0.671	2,540	656	0.410	0.671
5.0	20.0	5,240	1,260	0.080	1.191	4,650	840	0.113	1.188
	40.0	4,900	1,015	0.065	0.864	4,280	680	0.084	0.920
6.0	20.0	5,460	1,219	0.746	1.356	3,565	1,035	0.186	1.356
	30.0	3,920	1,064	0.578	1.330	2,860	897	0.175	1.330
8.0	24.0	5,520	1,081	0.419	1.518	3,220	909	0.164	1.518
10.0	25.0	4,485	920	0.356	1.645	2,760	771	0.139	1.645
12.0	25.0	3,790	771	0.299	2.024	2,300	644	0.117	2.024
Milling amount of side milling 측면절삭		• Ap : Axial Depth • Ae : Radial Depth 							

2CL

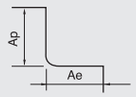
Cutting Condition

Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.8	45,000	450	0.040	0.640	30,000	180	0.016	0.400
1.0	38,000	1,116	0.050	0.800	25,500	446	0.020	0.500
1.2	32,000	1,224	0.075	1.200	21,500	490	0.030	0.750
1.5	29,000	1,278	0.088	1.400	19,500	511	0.035	0.875
2.0	26,000	1,332	0.100	1.600	17,500	533	0.040	1.000
3.0	17,300	1,350	0.150	2.400	11,500	540	0.060	1.500
4.0	13,200	1,386	0.200	3.200	8,800	5,540	0.080	2.000
5.0	12,500	1,476	0.250	4.000	8,300	590	0.100	2.500
6.0	10,350	1,440	0.300	4.800	6,900	576	0.120	3.000
8.0	7,800	1,314	0.400	6.400	5,200	526	0.160	4.000
10.0	6,150	1,224	0.500	8.000	4,100	490	0.200	5.000
12.0	5,250	1,224	0.600	9.600	3,500	490	0.240	6.000

Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.8	40,000	452	0.800	0.024	30,000	271	0.400	0.016
1.0	38,000	882	1.000	0.030	25,500	529	0.500	0.020
1.2	32,000	1,089	1.500	0.045	21,500	654	0.750	0.030
1.5	29,000	1,193	1.750	0.053	19,500	716	0.875	0.035
2.0	26,000	1,296	2.000	0.060	17,500	778	1.000	0.040
3.0	17,300	1,323	3.000	0.090	11,500	794	1.500	0.060
4.0	13,200	1,350	4.000	0.120	8,800	810	2.000	0.080
5.0	12,500	1,566	5.000	0.150	8,300	940	2.500	0.100
6.0	10,350	1,458	6.000	0.180	6,900	875	3.000	0.120
8.0	7,800	1,426	8.000	0.240	5,200	855	4.000	0.160
10.0	6,150	1,296	10.000	0.300	4,100	778	5.000	0.200
12.0	5,250	1,296	12.000	0.360	3,500	778	6.000	0.240
Depth of Cut 절입량	• Ap : Axial Depth • Ae : Radial Depth 							

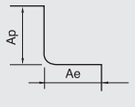
2CT

Cutting Condition

Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.3	19,400	90	0.750	0.006	17,500	40	0.750	0.006
0.5	15,700	90	1.250	0.010	14,000	40	1.250	0.010
1.0	12,000	90	2.500	0.020	10,500	40	2.500	0.020
1.5	8,250	90	3.750	0.030	7,000	40	3.750	0.030
2.0	6,200	90	5.000	0.040	5,250	40	5.000	0.040
3.0	4,100	90	7.500	0.060	3,500	40	7.500	0.060
Depth of Cut 절입량	• Ap : Axial Depth • Ae : Radial Depth 							

4NC

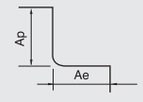
Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1	4.00	13,450	1,265	0.038	0.264	11,730	1,046	0.030	0.238
	10.00	8,620	495	0.011	0.123	7,470	495	0.009	0.098
1.2	4.00	12,880	1,380	0.031	0.440	11,730	1,070	0.023	0.293
	12.00	8,750	760	0.016	0.016	7,030	510	0.009	0.147
1.5	6.00	11,380	1,265	0.040	0.475	10,350	1,150	0.037	0.435
	12.00	9,280	817	0.028	0.317	6,790	759	0.025	0.290
2	6.00	12,650	1,265	0.063	0.633	11,730	1,173	0.059	0.713
	12.00	9,970	1,012	0.045	0.396	8,280	943	0.043	0.396
2.5	10.00	10,580	1,380	0.065	0.528	9,770	1,150	0.065	0.528
	25.00	7,980	1,050	0.037	0.164	4,240	505	0.030	0.120
3	10.00	11,040	2,070	0.094	0.684	10,230	2,070	0.059	0.684
	20.00	7,340	1,495	0.057	0.567	6,230	1,495	0.035	0.567
4	16.00	8,100	1,478	0.087	1.035	6,780	1,409	0.068	1.035
	20.00	7,130	1,380	0.069	0.920	5,980	1,288	0.054	0.920
	30.00	6,320	1,104	0.043	0.745	5,290	1,058	0.033	0.745
5	20.00	6,380	1,536	0.123	1.613	4,658	1,133	0.115	1.101
	40.00	4,595	943	0.071	1.033	3,450	759	0.066	0.739
6	20.00	5,630	1,691	0.176	2.305	3,335	978	0.176	1.281
	40.00	2,870	782	0.098	1.320	1,610	460	0.098	0.733
8	25.00	4,600	1,840	0.212	2.921	2,760	782	0.212	1.518
10	25.00	3,680	2,013	0.242	3.140	2,185	621	0.253	1.645
12	30.00	2,875	2,070	0.265	3.105	1,725	495	0.276	1.714
Milling amount of side milling 측면절삭		• Ap : Axial Depth • Ae : Radial Depth 							

4CL,4CLHR

Cutting Condition

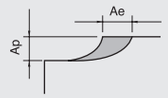
Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.5	29,000	1,661	0.088	1.400	19,500	665	0.035	0.875
2.0	26,000	1,732	0.100	1.600	17,500	693	0.040	1.000
3.0	17,300	1,755	0.150	2.400	11,500	702	0.060	1.500
4.0	13,200	1,802	0.200	3.200	8,800	7,202	0.080	2.000
5.0	12,500	1,919	0.250	4.000	8,300	767	0.100	2.500
6.0	10,350	1,872	0.300	4.800	6,900	749	0.120	3.000
8.0	7,800	1,708	0.400	6.400	5,200	684	0.160	4.000
10.0	6,150	1,591	0.500	8.000	4,100	637	0.200	5.000
12.0	5,250	1,591	0.600	9.600	3,500	637	0.240	6.000

Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.5	29,000	1,550	1.750	0.053	19,500	930	0.875	0.035
2.0	26,000	1,685	2.000	0.060	17,500	1,011	1.000	0.040
3.0	17,300	1,720	3.000	0.090	11,500	1,032	1.500	0.060
4.0	13,200	1,755	4.000	0.120	8,800	1,053	2.000	0.080
5.0	12,500	2,036	5.000	0.150	8,300	1,222	2.500	0.100
6.0	10,350	1,895	6.000	0.180	6,900	1,138	3.000	0.120
8.0	7,800	1,854	8.000	0.240	5,200	1,112	4.000	0.160
10.0	6,150	1,685	10.000	0.300	4,100	1,011	5.000	0.200
12.0	5,250	1,685	12.000	0.360	3,500	1,011	6.000	0.240
Depth of Cut 절입량	• Ap : Axial Depth • Ae : Radial Depth 							

• 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.

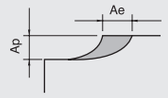
4CF

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Diameter 날경	Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
6.0	1.0	12,650	12,600	0.170	3.020	9,000	11,000	0.110	2.800
8.0	1.0	8,000	12,000	0.220	3.630	6,700	11,000	0.170	3.360
10.0	2.0	5,500	11,000	0.200	4.860	4,800	9,500	0.150	4.500
12.0	2.0	5,150	11,200	0.340	5.440	4,590	10,080	0.280	5.040
Depth of Cut 절입량									

4CHF,4CHFHR

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Diameter 날경	Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
5	1.0	11,000	11,000	0.150	2.160	9,600	9,500	0.100	2.000
6.0	1.0	12,650	12,600	0.170	3.020	9,000	11,000	0.110	2.800
8.0	1.0	8,000	12,000	0.220	3.630	6,700	11,000	0.170	3.360
10.0	2.0	5,500	11,000	0.200	4.860	4,800	9,500	0.150	4.500
12.0	2.0	5,150	11,200	0.340	5.440	4,590	10,080	0.280	5.040
Depth of Cut 절입량									

2NS

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Diameter 날경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.2	0.5	56,000	270	0.003	0.160	44,800	180	0.002	0.144
	1.0	50,900	230	0.004	0.020	40,800	160	0.000	0.180
	1.5	48,200	200	0.002	0.006	38,500	140	0.002	0.005
0.3	1.0	60,000	400	0.006	0.101	52,100	330	0.004	0.090
	1.5	50,800	360	0.005	0.057	42,700	260	0.004	0.051
	2.0	41,500	280	0.004	0.013	33,200	190	0.003	0.011
	3.0	31,900	190	0.001	0.004	25,500	130	0.001	0.003
	4.0	26,200	140	0.001	0.003	20,900	100	0.001	0.003
	6.0	20,400	80	0.001	0.002	16,300	60	0.001	0.002
0.4	1.0	48,100	470	0.008	0.054	38,500	320	0.005	0.049
	5.0	30,100	240	0.002	0.003	24,100	160	0.001	0.003
	10.0	24,600	150	0.001	0.001	19,700	100	0.001	0.001
0.5	2.0	40,600	510	0.014	0.098	32,500	350	0.010	0.088
	3.0	32,200	370	0.008	0.016	25,700	260	0.006	0.014
	4.0	29,700	330	0.008	0.012	23,700	230	0.005	0.011
	5.0	27,200	290	0.006	0.008	21,700	200	0.004	0.007
	6.0	24,700	250	0.003	0.004	19,700	170	0.002	0.004
	8.0	21,600	190	0.001	0.002	17,400	130	0.001	0.002
	10.0	19,600	150	0.001	0.001	15,600	100	0.001	0.001
0.6	2.0	39,100	600	0.016	0.203	31,300	410	0.011	0.183
	3.0	33,500	500	0.013	0.114	26,800	340	0.009	0.103
	4.0	27,900	390	0.009	0.025	22,300	270	0.006	0.023
	5.0	25,500	340	0.007	0.017	20,400	240	0.005	0.015
	6.0	23,000	290	0.005	0.008	18,400	200	0.003	0.007
	8.0	20,000	230	0.003	0.003	16,000	160	0.002	0.003
	10.0	17,900	180	0.002	0.002	14,300	130	0.001	0.002
	12.0	16,400	150	0.001	0.001	13,100	100	0.001	0.001
	16.0	13,500	70	0.001	0.001	10,800	50	0.001	0.001
0.7	2.0	36,100	660	0.021	0.038	28,800	430	0.015	0.034
	4.0	25,800	440	0.012	0.047	20,600	290	0.009	0.042
	6.0	21,200	330	0.007	0.014	16,900	230	0.005	0.013
	8.0	18,400	260	0.004	0.006	14,700	190	0.003	0.005
	10.0	16,500	220	0.003	0.003	13,200	160	0.002	0.003
0.8	2.0	26,200	530	0.023	0.108	21,000	370	0.016	0.097
	4.0	24,100	480	0.019	0.080	19,300	330	0.013	0.072
	6.0	19,800	370	0.010	0.024	15,800	250	0.007	0.022
	8.0	17,200	300	0.006	0.010	13,800	200	0.004	0.009
	10.0	15,500	240	0.040	0.005	12,400	170	0.003	0.005
	12.0	14,100	200	0.003	0.003	11,300	140	0.002	0.003
0.9	6.0	18,500	420	0.013	0.019	14,800	290	0.010	0.017
	8.0	16,100	330	0.008	0.012	12,900	230	0.006	0.011
		14,500	270	0.005	0.008	11,600	190	0.004	0.007
1.0	2.0	23,400	6,500	0.034	0.263	18,700	440	0.237	0.237
	3.0	23,400	6,500	0.034	0.263	18,700	440	0.237	0.237

2NS

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Diameter 날경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	4.0	21,500	580	0.028	0.195	17,200	400	0.176	0.176
	5.0	19,600	510	0.022	0.013	15,700	360	0.011	0.011
	6.0	17,600	440	0.016	0.058	14,100	310	0.052	0.052
	8.0	15,300	360	0.010	0.024	12,300	250	0.022	0.022
	10.0	13,800	300	0.007	0.013	11,000	210	0.012	0.012
	12.0	12,600	250	0.005	0.007	10,100	170	0.006	0.006
	14.0	11,700	210	0.003	0.005	9,400	150	0.005	0.005
	16.0	11,000	180	0.003	0.003	8,800	130	0.003	0.003
	20.0	9,800	130	0.002	0.001	7,900	90	0.001	0.001
	25.0	8,800	80	0.002	0.001	7,100	50	0.001	0.001
	30.0	8,100	30	0.001	0.001	6,500	30	0.001	0.001
1.2	4.0	18,300	580	0.036	0.189	14,500	400	0.170	0.170
	6.0	16,100	4,910	0.026	0.120	1,280	340	0.108	0.108
	8.0	13,900	400	0.016	0.051	11,100	280	0.046	0.046
	10.0	12,400	340	0.011	0.026	9,900	230	0.023	0.023
	12.0	11,400	290	0.008	0.015	9,100	200	0.014	0.014
	16.0	9,800	220	0.004	0.006	7,900	150	0.005	0.005
	20.0	8,800	170	0.003	0.003	7,000	120	0.003	0.003
	25.0	8,800	80	0.002	0.001	7,100	50	0.001	0.001
1.5	4.0	16,300	640	0.051	0.462	13,000	440	0.416	0.416
	6.0	14,400	550	0.040	0.293	11,500	380	0.264	0.264
	8.0	12,500	460	0.029	0.124	10,000	320	0.112	0.112
	10.0	11,200	390	0.021	0.063	8,900	270	0.057	0.057
	12.0	10,200	340	0.016	0.037	8,200	240	0.033	0.033
	16.0	8,900	270	0.009	0.015	7,100	190	0.014	0.014
	18.0	8,400	240	0.007	0.011	6,700	170	0.010	0.010
	20.0	7,900	220	0.006	0.008	6,300	150	0.007	0.007
	25.0	7,100	160	0.004	0.004	5,700	110	0.004	0.004
	30.0	6,500	120	0.003	0.002	5,200	90	0.002	0.002
1.6	10.0	10,800	410	0.025	0.082	8,600	280	0.018	0.074
	14.0	9,100	320	0.014	0.030	7,300	220	0.010	0.003
	18.0	8,000	260	0.009	0.014	6,400	180	0.006	0.013
2.0	4.0	14,000	750	0.052	0.966	12,000	500	0.040	0.869
	6.0	12,500	650	0.045	0.926	10,000	450	0.032	0.833
	8.0	10,800	540	0.038	0.391	8,700	380	0.027	0.352
	10.0	9,700	470	0.031	2.000	7,800	330	0.020	0.180
	12.0	8,900	420	0.026	0.116	7,100	290	0.019	0.104
	14.0	8,200	370	0.022	0.073	6,600	260	0.016	0.066
	16.0	7,700	340	0.018	0.049	6,100	230	0.013	0.044
	18.0	7,200	310	0.015	0.034	5,800	210	0.010	0.031
	20.0	6,900	280	0.013	0.025	5,500	190	0.009	0.023
	25.0	6,200	230	0.008	0.013	4,900	160	0.006	0.012
		5,600	180	0.005	0.007	4,500	130	0.004	0.006
2.5	10.0	8,600	590	0.048	0.488	6,900	400	0.034	0.439

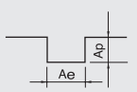
2NS

Cutting Condition

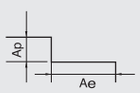
Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Diameter 날경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
2.5	12.0	7,900	520	0.042	0.283	6,300	360	0.030	0.255
	16.0	6,800	430	0.031	0.119	5,500	290	0.022	0.107
	20.0	6,100	360	0.023	0.061	4,900	250	0.017	0.055
	25.0	5,500	300	0.015	0.031	4,400	210	0.011	0.028
	30.0	5,000	250	0.010	0.080	4,000	170	0.007	0.016
3.0	10.0	7,200	620	0.064	1.013	5,800	430	0.046	0.912
	12.0	6,700	560	0.057	0.586	5,300	380	0.041	0.527
	16.0	5,900	470	0.045	0.247	4,700	320	0.032	0.222
	20.0	5,300	400	0.035	0.127	4,300	280	0.025	0.114
	25.0	4,800	340	0.025	0.065	3,900	230	0.018	0.059
	30.0	4,500	290	0.018	0.038	3,600	200	0.013	0.034
	35.0	4,200	250	0.013	0.024	3,300	170	0.009	0.022
	40.0	3,900	220	0.009	0.016	3,100	150	0.006	0.014
4.0	12.0	5,100	600	0.078	1.852	4,100	410	0.056	1.667
	16.0	4,400	510	0.065	0.781	3,600	350	0.046	0.703
	20.0	4,000	440	0.054	0.400	3,200	300	0.038	0.360
	25.0	3,600	380	0.042	0.205	2,900	260	0.030	0.185
	30.0	3,300	330	0.033	0.119	2,600	230	0.024	0.107
	35.0	3,100	290	0.026	0.075	2,500	200	0.019	0.068
	40.0	2,900	250	0.210	0.050	2,300	180	0.015	0.045
	50.0	2,600	200	0.013	0.026	2,100	140	0.009	0.023
5.0	16.0	3,500	520	0.089	1.907	2,800	360	0.064	1.716
	20.0	3,100	440	0.085	0.977	2,500	310	0.061	0.879
	25.0	2,800	390	0.077	0.500	2,200	270	0.055	0.450
	30.0	2,500	340	0.066	0.28/9	2,000	230	0.047	0.260
	35.0	2,300	300	0.040	0.182	1,900	210	0.038	0.164
	40.0	2,200	270	0.042	0.122	1,700	180	0.030	0.110
	50.0	1,900	210	0.022	0.063	1,500	150	0.016	0.057
6.0	20.0	2,600	470	0.088	2.025	2,100	330	0.063	1.823
	30.0	2,000	340	0.077	0.600	1,600	240	0.055	0.540
	40.0	1,700	260	0.058	0.253	1,300	170	0.041	0.228
8.0	20.0	2,300	450	0.130	1.600	1,700	330	0.090	1.440
		1,500	250	0.080	0.200	1,100	160	0.060	0.180

Depth of Cut
절입량

Slotting
• Ap : Axial Depth
• Ae : Radial Depth

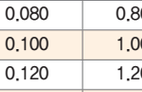
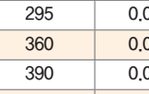


Side Milling
• Ap : Axial Depth
• Ae : Radial Depth



2SR

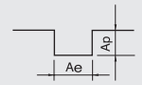
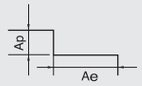
Cutting Condition

Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.2	45,000	115	0.020	0.200	40,000	95	0.010	0.100
0.3	45,000	140	0.030	0.300	40,000	115	0.015	0.150
0.4	45,000	180	0.040	0.400	40,000	140	0.020	0.200
0.5	45,000	280	0.050	0.500	40,000	220	0.025	0.250
0.6	45,000	360	0.060	0.600	40,000	285	0.030	0.300
0.7	42,500	400	0.070	0.700	35,000	290	0.035	0.350
0.8	40,000	440	0.080	0.800	30,000	295	0.040	0.400
1.0	38,000	570	0.100	1.000	25,500	360	0.050	0.500
1.2	32,000	625	0.120	1.200	21,500	390	0.060	0.600
1.5	29,000	653	0.150	1.500	19,500	405	0.075	0.750
2.0	26,000	680	0.200	2.000	17,500	420	0.100	1.000
2.5	21,650	680	0.250	2.500	14,500	420	0.125	1.250
3.0	17,300	680	0.300	3.000	11,500	420	0.150	1.500
3.5	15,250	690	0.350	3.500	10,150	430	0.175	1.750
4.0	13,200	700	0.400	4.000	8,800	440	0.200	2.000
4.5	12,850	753	0.450	4.500	8,550	470	0.225	2.250
5.0	12,500	805	0.500	5.000	8,300	500	0.250	2.500
5.5	11,425	788	0.550	5.500	7,600	490	0.275	2.750
6.0	10,350	770	0.600	6.000	6,900	480	0.300	3.000
6.5	9,070	745	0.650	6.500	6,050	463	0.325	3.250
7.0	8,430	733	0.700	7.000	5,620	454	0.350	3.500
7.5	8,110	726	0.750	7.500	5,410	449	0.375	3.750
8.0	7,800	720	0.800	8.000	5,200	445	0.400	4.000
8.5	6,970	700	0.850	8.500	4,650	430	0.425	4.250
9.0	6,560	690	0.900	9.000	4,370	423	0.450	4.500
9.5	6,350	685	0.950	9.500	4,230	419	0.475	4.750
10.0	6,150	680	1.000	10.000	4,100	415	0.500	5.000
10.5	5,700	680	1.050	10.500	3,800	415	0.525	5.250
11.0	5,470	680	1.100	11.000	3,650	415	0.550	5.500
12.0	5,250	680	1.200	12.000	3,500	415	0.600	6.000
14.0	15,620	680	1.400	14.000	10,500	418	0.700	7.000
16.0	4,340	610	1.600	16.000	2,600	360	0.800	8.000
20.0	4,340	570	2.000	20.000	2,100	300	1.000	10.000
Depth of Cut 절입량	Slotting • Ap : Axial Depth • Ae : Radial Depth  Side Milling • Ap : Axial Depth • Ae : Radial Depth 							

2SL,4SL

Cutting Condition

Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	9,000	35	0.100	1.000	5,700	15	0.050	0.500
1.5	6,000	45	0.150	1.500	4,500	15	0.075	0.750
2.0	4,800	45	0.200	2.000	3,000	15	0.100	1.000
3.0	3,400	55	0.300	3.000	2,100	20	0.150	1.500
4.0	2,700	30	0.400	4.000	1,700	20	0.200	2.000
5.0	2,300	40	0.500	5.000	1,500	20	0.250	2.500
6.0	2,000	50	0.600	6.000	1,300	25	0.300	3.000
8.0	1,500	50	0.800	8.000	1,000	25	0.400	4.000
10.0	1,300	50	1.000	10.000	800	25	0.500	5.000
12.0	1,100	45	1.200	12.000	670	20	0.600	6.000
16.0	820	30	1.600	16.000	500	15	0.800	8.000
20.0	650	25	2.000	20.000	400	13	1.000	10.000

Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	9,000	35	0.100	1.000	6,500	20	0.050	0.500
1.5	6,000	45	0.150	1.500	5,000	35	0.075	0.750
2.0	4,800	45	0.200	2.000	3,500	30	0.100	1.000
3.0	3,400	55	0.300	3.000	2,600	40	0.150	1.500
4.0	2,700	65	0.400	4.000	2,100	50	0.200	2.000
5.0	2,300	80	0.500	5.000	1,800	60	0.250	2.500
6.0	2,000	100	0.600	6.000	1,500	75	0.300	3.000
8.0	1,500	100	0.800	8.000	1,200	85	0.400	4.000
10.0	1,300	100	1.000	10.000	950	75	0.500	5.000
12.0	1,100	90	1.200	12.000	800	60	0.600	6.000
16.0	820	65	1.600	16.000	600	45	0.800	8.000
20.0	650	50	2.000	20.000	480	40	1.000	10.000
Depth of Cut 절입량	Slotting • Ap : Axial Depth • Ae : Radial Depth  Side Milling • Ap : Axial Depth • Ae : Radial Depth 							

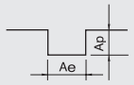
4NS

Cutting Condition

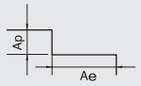
Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		~45HRC				45~55HRC			
Radius 반경	Effective Length 유효장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	8.0	16,900	390	0.010	0.024	14,200	265	0.007	0.022
1.5	8.0	14,600	520	0.029	0.124	12,400	355	0.020	0.112
1.5	16.0	10,500	322	0.009	0.015	8,000	230	0.007	0.014
2.0	8.0	12,800	630	0.038	0.391	10,600	470	0.027	0.352
2.0	16.0	9,800	378	0.018	0.049	7,300	268	0.013	0.044
2.5	16.0	7,220	480	0.031	0.119	6,700	326	0.022	0.107
2.5	25.0	6,360	338	0.015	0.031	5,500	273	0.011	0.028
3.0	8.0	8,800	736	0.064	1.978	6,900	553	0.046	1.780
3.0	16.0	6,300	543	0.045	0.248	5,890	362	0.032	0.222
3.0	25.0	5,880	397	0.025	0.038	3,900	293	0.018	0.034
4.0	16.0	5,100	573	0.065	0.781	5,150	397	0.046	0.703
4.0	20.0	4,640	503	0.054	0.493	4,160	351	0.038	0.444
4.0	25.0	4,180	433	0.042	0.205	3,180	304	0.030	0.185
4.0	40.0	3,300	341	0.021	0.050	2,770	208	0.015	0.045

Depth of Cut
절입량

Slotting
- Ap : Axial Depth
- Ae : Radial Depth



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

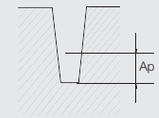


4TE

Cutting Condition

Material 피삭재	Carbon Steels 탄소강			Alloy Steels 합금강			Hardened Steels/ Prehardened Steels 고경도강/프리하든강			Hardened Steels/ Stainless Steels 고경도강/스테인레스강			Hardened Steels 고경도강		
	~750 HN/mm2			~30 HRc			30~38 HRc			39~45 HRc			46~55 HRc		
Cutting Dia. 날경	RPM	Feed (mm/min)	Ap Axial Depth	RPM	Feed (mm/min)	Ap Axial Depth	RPM	Feed (mm/min)	Ap Axial Depth	RPM	Feed (mm/min)	Ap Axial Depth	RPM	Feed (mm/min)	Ap Axial Depth
0.7	23,200	750	0.014-0.030	21,600	545	0.014-0.030	20,000	420	0.014-0.030	18,000	355	0.014-0.030	10,800	210	0.007-0.014
0.8	20,000	750	0.016-0.035	18,800	545	0.016-0.035	17,600	420	0.016-0.035	15,600	355	0.016-0.035	9,200	210	0.008-0.016
1.0	16,000	745	0.02-0.045	15,200	545	0.02-0.045	14,000	420	0.02-0.045	12,400	355	0.02-0.045	7,600	210	0.01-0.02

Depth of Cut
절입량



4SR,4SRHR

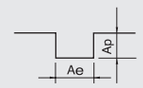
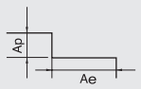
Cutting Condition

Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	38,000	684	0.100	1.000	25,500	430	0.050	0.500
1.5	32,000	750	0.150	1.500	21,500	465	0.075	0.750
2.0	26,000	816	0.200	2.000	17,500	500	0.100	1.000
2.5	21,650	816	0.250	2.500	14,500	500	0.125	1.250
3.0	17,300	816	0.300	3.000	11,500	500	0.150	1.500
3.5	15,250	828	0.350	3.500	10,150	515	0.175	1.750
4.0	13,200	840	0.400	4.000	8,800	530	0.200	2.000
4.5	12,850	903	0.450	4.500	8,550	565	0.225	2.250
5.0	12,500	966	0.500	5.000	8,300	600	0.250	2.500
5.5	11,425	945	0.550	5.500	7,600	588	0.275	2.750
6.0	10,350	924	0.600	6.000	6,900	575	0.300	3.000
7.0	9,075	894	0.700	7.000	6,050	555	0.350	3.500
8.0	7,800	864	0.800	8.000	5,200	535	0.400	4.000
9.0	12,850	903	0.450	4.500	8,550	565	0.225	2.250
10.0	6,150	816	1.000	10.000	4,100	50	0.500	5.000
12.0	5,250	816	1.200	12.000	3,500	500	0.600	6.000
14.0	10,250	920	0.625	6.250	6,825	571	0.313	3.125
16.0	4,340	732	1.600	16.000	2,600	430	0.800	8.000
20.0	4,340	730	2.000	20.000	2,600	430	1.000	10.000
Depth of Cut 절입량	Slotting • Ap : Axial Depth • Ae : Radial Depth  Side Milling • Ap : Axial Depth • Ae : Radial Depth 							

• 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.

4SR,4SRHR

Cutting Condition

Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	38,000	821	1.000	0.030	25,500	516	0.500	0.020
1.5	32,000	900	1.500	0.045	21,500	558	0.750	0.030
2.0	26,000	979	2.000	0.060	17,500	600	1.000	0.040
2.5	21,650	979	2.500	0.075	14,500	600	1.250	0.050
3.0	17,300	979	3.000	0.090	11,500	600	1.500	0.060
3.5	15,250	994	3.500	0.105	10,150	618	1.750	0.070
4.0	13,200	1,008	4.000	0.120	8,800	636	2.000	0.080
4.5	12,850	1,084	4.500	0.135	8,550	678	2.250	0.090
5.0	12,500	1,159	5.000	0.150	8,300	720	2.500	0.100
5.5	11,425	1,134	5.500	0.165	7,600	705	2.750	0.110
6.0	10,350	1,109	6.000	0.180	6,900	690	3.000	0.120
7.0	9,075	1,073	7.000	0.210	6,050	666	3.500	0.140
8.0	7,800	1,037	8.000	0.240	5,200	642	4.000	0.160
9.0	6,975	1,008	9.000	0.270	4,650	621	4.500	0.180
10.0	6,150	979	10.000	0.300	4,100	600	5.000	0.200
12.0	5,250	979	12.000	0.360	3,500	600	6.000	0.240
14.0	4,795	929	14.000	0.420	3,050	558	7.000	0.280
16.0	4,340	878	16.000	0.480	2,600	516	8.000	0.320
20.0	4,340	876	20.000	0.600	2,600	516	10.000	0.400
Depth of Cut 절입량	Slotting • Ap : Axial Depth • Ae : Radial Depth  Side Milling • Ap : Axial Depth • Ae : Radial Depth 							

• 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.

6SR

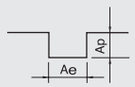
Cutting Condition

Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
6.0	17,280	9,396	9.00	0.30	13,820	6,578	3.00	0.18
8.0	12,960	9,396	12.00	0.40	10,360	6,578	4.00	0.24
10.0	10,360	9,396	15.00	0.50	8,290	6,578	5.00	0.30
12.0	8,640	7,776	18.00	0.60	6,910	5,444	6.00	0.36

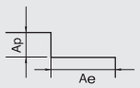
Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
6.0	17,280	9,396	9.00	0.30	13,820	6,578	3.00	0.18
8.0	12,960	9,396	12.00	0.40	10,360	6,578	4.00	0.24
10.0	10,360	9,396	15.00	0.50	8,290	6,578	5.00	0.30
12.0	8,640	7,776	18.00	0.60	6,910	5,444	6.00	0.36
16.0	6,480	5,832	24.00	0.80	5,180	4,083	8.00	0.48
20.0	5,180	1,998	30.00	1.00	4,140	3,288	10.00	0.60

Depth of Cut 절입량	

Slotting
• Ap : Axial Depth
• Ae : Radial Depth



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



6CLHR

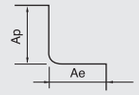
Cutting Condition

Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
6.0	10,350	1,440	0.30	4.80	6,900	576	0.12	3.00
8.0	7,800	1,314	0.40	6.40	5,200	526	0.16	4.00
10.0	6,150	1,224	0.50	8.00	4,100	490	0.20	5.00
12.0	5,250	1,224	0.60	9.60	3,500	490	0.24	6.00

Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
6.0	10,350	1,458	6.00	0.18	6,900	875	3.00	0.12
8.0	7,800	1,426	8.00	0.24	5,200	855	4.00	0.16
10.0	6,150	1,296	10.00	0.30	4,100	778	5.00	0.20
12.0	5,250	1,296	12.00	0.36	3,500	778	6.00	0.24

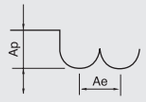
Depth of Cut 절입량	

• Ap : Axial Depth
• Ae : Radial Depth



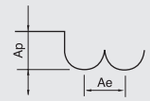
2BRE

Cutting Condition

Work Material 피삭재		Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도		40~50HRC				50~52HRC			
Radius 반경	Cutting Length 날장	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.1	0.4	43,200	439	0.005	0.007	34,560	351	0.004	0.006
R0.15	0.6	43,200	734	0.009	0.012	34,560	588	0.007	0.009
R0.2	0.8	43,200	887	0.013	0.014	34,560	710	0.010	0.012
R0.25	1.0	44,800	1,275	0.016	0.020	35,840	1,020	0.012	0.016
R0.3	1.2	46,400	1,540	0.019	0.023	37,120	1,232	0.015	0.019
R0.35	1.4	44,000	1,724	0.022	0.028	35,200	1,379	0.017	0.022
R0.4	1.6	41,600	1,907	0.160	0.032	33,280	1,526	0.128	0.026
R0.5	1.2	32,800	1,693	0.045	0.036	26,240	1,355	0.040	0.029
	2.5	32,800	1,693	0.020	0.036	26,240	1,355	0.016	0.029
R0.75	2.0	21,600	1,867	0.070	0.061	17,280	1,493	0.057	0.049
	3.0	21,600	1,867	0.053	0.061	17,280	1,493	0.043	0.049
R1.0	4.0	16,000	1,816	0.073	0.082	12,800	1,452	0.060	0.066
R1.25	5.0	12,800	1,877	0.050	0.104	10,240	1,501	0.040	0.083
R1.5	5.0	10,400	2,264	0.125	0.154	8,320	1,812	0.115	0.123
R2.0	6.0	8,000	2,122	0.180	0.187	6,400	1,697	0.144	0.150
R3.0	9.0	5,520	1,979	0.235	0.253	4,416	1,583	0.190	0.202
	12.0	5,520	1,979	0.207	0.253	4,416	1,583	0.166	0.202
R4.0	14.0	4,576	1,020	0.360	0.158	3,661	816	0.288	0.126
R5.0	18.0	3,640	714	0.450	0.139	2,912	571	0.360	0.111
R6.0	22.0	3,016	612	0.540	0.143	2,413	490	0.432	0.114
R8.0	30.0	2,388	612	0.372	0.132	1,911	490	0.298	0.106
R10.0	40.0	1,943	367	0.248	0.120	1,554	294	0.198	0.096
Depth of Cut 절입량									

2BTE

Cutting Condition

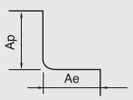
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	~45HRC				45~55HRC			
Radius 반경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
R0.5	13,000	1,800	0.025	0.100	10,000	500	0.025	0.100
R1.0	11,100	1,500	0.050	0.200	8,000	640	0.050	0.200
R2.0	7,200	1,600	0.200	0.400	4,700	940	0.200	0.400
R3.0	5,800	1,400	0.300	0.600	5,800	1,300	0.300	0.600
R4.0	4,800	1,440	0.400	0.800	4,800	1,350	0.400	0.800
R5.0	4,800	1,440	0.500	1.000	4,800	1,450	0.500	1.000
Depth of Cut 절입량								

2,4CLE

Cutting Condition

Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	40~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	38,000	1,116	0.050	0.800	25,500	446	0.020	0.500
1.5	32,000	1,224	0.075	1.200	21,500	490	0.030	0.750
2.0	26,000	1,332	0.100	1.600	17,500	533	0.040	1.000
3.0	17,300	1,350	0.150	2.400	11,500	540	0.060	1.500
4.0	13,200	1,386	0.200	3.200	8,800	554	0.080	2.000
6.0	10,350	1,440	0.300	4.800	6,900	576	0.120	3.000
8.0	7,800	1,314	0.400	6.400	5,200	526	0.160	4.000
10.0	6,150	1,224	0.500	8.000	4,100	490	0.200	5.000
12.0	5,250	1,224	0.600	9.600	3,500	490	0.240	6.000

Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	40~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	38,000	882	1.000	0.030	25,500	529	0.500	0.020
1.5								
2.0	26,000	1,296	2.000	0.060	17,500	778	1.000	0.040
3.0	17,300	1,323	3.000	0.090	11,500	794	1.500	0.060
4.0	13,200	1,350	4.000	0.120	8,800	810	2.000	0.080
6.0	10,350	1,458	6.000	0.180	6,900	875	3.000	0.120
8.0	7,800	1,426	8.000	0.240	5,200	855	4.000	0.160
10.0	6,150	1,296	10.000	0.300	4,100	778	5.000	0.200
12.0	5,250	1,296	12.000	0.360	3,500	778	6.000	24.000

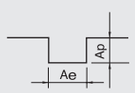
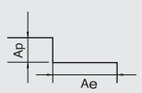
Depth of Cut 절입량	• Ap : Axial Depth • Ae : Radial Depth 

2SRE,SLE

Cutting Condition

Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	40~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
0.2	45,000	312	0.02	0.20	40,500	218	0.16	0.10
0.3	45,000	456	0.03	0.30	40,500	319	0.24	0.15
0.4	45,000	564	0.04	0.40	40,500	395	0.32	0.20
0.5	45,000	888	0.05	0.50	40,500	622	0.40	0.25
0.6	45,000	1,128	0.06	0.60	40,500	790	0.48	0.30
0.7	42,500	1,284	0.07	0.70	35,250	899	0.56	0.35
0.8	40,000	1,440	0.08	0.80	30,000	1,008	0.64	0.40
1.0	38,000	1,800	0.10	1.00	25,500	1,260	0.80	0.50
1.5	32,000	1,920	0.15	1.50	21,500	1,344	1.20	0.75
2.0	26,000	2,040	0.20	2.00	17,500	1,428	1.60	1.00
2.5	21,650	2,040	0.25	2.50	14,500	1,428	2.00	1.25
3.0	17,300	2,040	0.30	3.00	11,500	1,428	2.40	1.50
4.0	13,200	2,112	0.40	4.00	8,800	1,478	3.20	2.00
5.0	12,500	2,400	0.50	5.00	8,300	1,680	4.00	2.50
6.0	10,350	2,280	0.60	6.00	6,900	1,596	4.80	3.00
8.0	7,800	2,232	0.80	8.00	5,200	1,562	6.40	4.00
10.0	6,150	2,040	1.00	10.00	4,100	1,428	8.00	5.00
12.0	5,250	2,040	1.20	12.00	3,500	1,428	9.60	6.00
16.0	4,340	1,872	1.60	16.00	2,600	1,310	12.80	8.00
20.0	4,340	1,728	2.00	20.00	2,100	1,210	16.00	10.00

Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	40~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	38,000	735	1.00	0.03	2,550	515	0.50	0.02
1.5	32,000	788	1.50	0.05	10,025	552	0.75	0.03
2.0	26,000	840	2.00	0.06	17,500	588	1.00	0.04
2.5	21,650	840	2.50	0.08	14,500	588	1.25	0.05
3.0	17,300	840	3.00	0.09	11,500	588	1.50	0.06
4.0	13,200	875	4.00	0.12	8,800	613	2.00	0.08
5.0	12,500	1,015	5.00	0.15	8,300	711	2.50	0.10
6.0	10,350	945	6.00	0.18	6,900	662	3.00	0.12
8.0	7,800	924	8.00	0.24	5,200	647	4.00	0.16
10.0	6,150	840	10.00	0.30	4,100	588	5.00	0.20
12.0	5,250	840	12.00	0.36	3,500	588	6.00	0.24
16.0	4,340	700	16.00	0.48	2,600	490	8.00	0.32
20.0	4,340	760	20.00	0.60	2,100	532	10.00	0.40

Depth of Cut 절입량	Slotting • Ap : Axial Depth • Ae : Radial Depth  Side Milling • Ap : Axial Depth • Ae : Radial Depth 

4SRE,4SLE

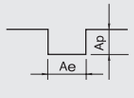
Cutting Condition

Slotting								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	40~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	38,000	2,160	0.10	1.00	25,500	1,512	0.80	0.50
1.5	32,000	2,304	0.15	1.50	21,500	1,613	1.20	0.75
2.0	26,000	2,448	0.20	2.00	17,500	1,714	1.60	1.00
2.5	21,650	2,448	0.25	2.50	14,500	1,714	2.00	1.25
3.0	17,300	2,448	0.30	3.00	11,500	1,714	2.40	1.50
4.0	13,200	2,534	0.40	4.00	8,800	1,774	3.20	2.00
5.0	12,500	2,880	0.50	5.00	8,300	2,016	4.00	2.50
6.0	10,350	2,736	0.60	6.00	6,900	1,915	4.80	3.00
8.0	7,800	2,678	0.80	8.00	5,200	1,875	6.40	4.00
10.0	6,150	2,448	1.00	10.00	4,100	1,714	8.00	5.00
12.0	5,250	2,448	1.20	12.00	3,500	1,714	9.60	6.00
16.0	4,340	2,246	1.60	16.00	2,600	1,572	12.80	8.00
20.0	4,340	2,074	2.00	20.00	2,100	1,452	16.00	10.00

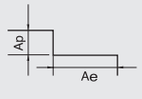
Side Milling								
Work Material 피삭재	Prehardened Steels / Hardened Steels 프리하든강/고경도강				Hardened Steels 고경도강			
Hardness 경도	40~45HRC				45~55HRC			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	38,000	809	1.00	0.03	25,500	566	0.50	0.02
1.5	32,000	867	1.50	0.05	21,500	607	0.75	0.03
2.0	26,000	924	2.00	0.06	17,500	647	1.00	0.04
2.5	21,650	924	2.50	0.08	14,500	647	1.25	0.05
3.0	17,300	924	3.00	0.09	11,500	647	1.50	0.06
4.0	13,200	963	4.00	0.12	8,800	674	2.00	0.08
5.0	12,500	1,117	5.00	0.15	8,300	782	2.50	0.10
6.0	10,350	1,040	6.00	0.18	6,900	728	3.00	0.12
8.0	7,800	1,016	8.00	0.24	5,200	711	4.00	0.16
10.0	6,150	924	10.00	0.30	4,100	647	5.00	0.20
12.0	5,250	924	12.00	0.36	3,500	647	6.00	0.24
16.0	4,340	770	16.00	0.48	2,600	539	8.00	0.32
20.0	4,340	836	20.00	0.60	2,100	585	10.00	0.40

Depth of Cut
절입량

Slotting
- Ap : Axial Depth
- Ae : Radial Depth



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



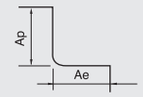
5,6TROCHOIDAL

Cutting Condition

Work Material 피삭재	Alloy Steels 합금강				Stainless Steels/Titanium Alloty Steels 스테인리스강/티타늄합금				Hardened Steels 고경도강			
Diameter 날경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
6.0	3,700	450	6.00	0.30	3,200	380	6.00	0.30	1,100	65	6.00	0.30
8.0	2,800	400	8.00	0.40	2,350	420	8.00	0.40	950	60	8.00	0.40
10.0	2,250	325	10.00	0.50	1,990	350	10.00	0.50	750	60	10.00	0.50
12.0	1,990	300	12.00	0.60	1,550	270	12.00	0.60	600	55	12.00	0.60
16.0	1,550	250	16.00	0.80	1,250	250	16.00	0.80	500	50	16.00	0.80
20.0	1,200	180	20.00	1.00	900	150	20.00	1.00	350	50	20.00	1.00

Depth of Cut
절입량

- Ap : Axial Depth
- Ae : Radial Depth

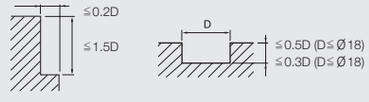


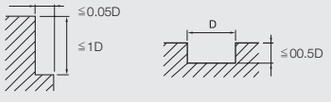
4SSN,4SST

Cutting Condition

Work Material 피삭재	Carbon Steels/Alloy Steels 탄소강/합금강		Titanium Alloy/Stainless Steels 티타늄 합금/스테인레스강		Hardened Steels 고경도강		Ultra Hardened Steels/Inconel 초내열합금/인코넬	
Hardness 경도	~45 HRc				45~55 HRc			
Cutting Dia. 날직경	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
2	6,100	120	5,300	90	3,200	40	1,500	22
3	5,300	220	4,400	100	2,400	50	1,540	28
4	4,400	220	3,700	150	2,000	80	1,300	40
6	3,200	280	2,600	200	1,500	100	1,000	50
8	2,400	300	2,000	210	1,100	110	800	45
10	1,900	2,800	1,500	210	1,000	120	700	45
12	1,500	1,500	1,300	160	800	100	550	38

Depth of Cut
절입량





- 위의 값은 측면가공 기준임. 슬로팅 가공의 경우 RPM은 80~100%, 이송속도는 60~80%를 적용함.
- The above data are based on side milling. For slotting, apply 80~100% of the RPM and 60~80% of the feed shown on the table.

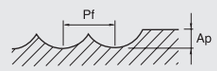
4CSN,4CST

Cutting Condition

Work Material 피삭재	Alloy Steels/Tool Steels 합금강합금강/공구강 SKD11/SKD61/NAK		Hardened Steels/Prehardened Steels 고경도강/프리하든강 SKT/SKD/NAK55/HPM1		Hardened Steels/Stainless Steels 고경도강/스테인레스강 SUS304/SKD	
Hardness 경도	~30HRc		30 ~ 38HRc		38 ~ 45HRc	
Diameter 날경	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
3	7,700	620	7,100	470	6,700	420
4	5,800	700	5,300	470	5,000	460
5	4,600	680	4,200	490	4,000	490
6	3,800	570	3,600	520	3,300	510
8	2,900	500	2,700	500	2,500	470
10	2,300	490	2,100	430	2,000	430
12	1,900	430	1,800	410	1,700	400
Depth of Cut 절입량	Ap ≤1D Ap Max=12		Ap ≤0.5D			

2BG

Cutting Condition

Work Material 피삭재	Graphite 흑연	
Radius 반경	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
Depth of Cut 절입량	Ap: 1.0D, Pf: 0.3D 	

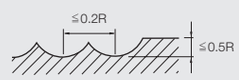
2SG

Cutting Condition

Work Material 피삭재	Graphite 흑연	
Outer Diameter 외경	RPM	Feed (mm/min)
2	8,000	250
3	8,000	380
4	8,000	510
5	8,000	640
6	8,000	770
8	8,000	1,000
10	8,000	1,250
Depth of Cut 절입량	Ap: 1D, Ae: 0.1D 	

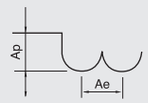
2,4BD

Cutting Condition

Work Material 피삭재	Graphite 흑연	
Radius 반경	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
Depth of Cut 절입량		

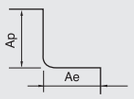
2NBC

Cutting Condition

Work Material 피삭재	Copper Alloys 동 합금			
Radius 반경	RPM	Feed (mm/min)	Ap	Ae
R0.5	40,000	3,200	0.04	0.10
R0.75	40,000	4,000	0.07	0.15
R1.0	39,000	4,700	0.09	0.20
R1.5	30,000	4,500	0.10	0.30
R2.0	27,000	4,300	0.11	0.40
R3.0	16,000	2,900	0.18	0.60
Depth of Cut 절입량				

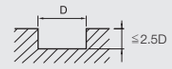
2NCC

Cutting Condition

Work Material 피삭재	Copper Alloys 동 합금							
Diameter 날경	Slotting				Side Milling			
	RPM	Feed (mm/min)	Ap	Ae	RPM	Feed (mm/min)	Ap	Ae
1.0	40,000	2,000	0.03	1.00	40,000	3,000	0.03	0.20
1.5	26,000	16,000	0.06	1.50	45,000	5,500	0.06	0.30
2.0	30,000	1,600	0.12	2.00	40,000	4,700	0.10	0.60
3.0	20,000	2,200	0.12	3.00	35,000	8,000	0.10	0.60
4.0	15,000	2,200	0.25	4.00	32,000	7,000	0.15	0.80
Depth of Cut 절입량	• Ap : Axial Depth • Ae : Radial Depth 							

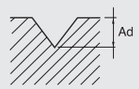
1FE

Cutting Condition

Work Material 피삭재	Acrylic 아크릴		Alloy Steels 합금강	
Outer Diameter 외경	RPM	Feed (mm/min)	RPM	Feed (mm/min)
1.0	32,000	2,000	23,000	1,300
1.2	32,000	2,100	23,000	1,400
1.5	32,000	2,100	23,000	1,400
2.0	32,000	2,200	23,000	1,500
2.5	28,000	2,300	21,000	1,600
3.0	25,000	2,400	18,000	1,700
4.0	20,000	2,400	15,000	1,800
6.0	13,500	2,300	10,000	1,800
Depth of Cut 절입량				

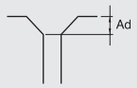
2NCD,2NCDHR

Cutting Condition

Work Material 피삭재	Mild Steels/Carbon Steels 일반구조강/탄소강 SS400 / SS55C		Alloy Steels/Tool Steels 합금강합금강/공구강 SKD/SUS/SCM		Aluminum Alloys 알루미늄 합금	
Cutting Dia. 인선직경	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
Depth of Cut 절입량	Ad < 0.3D 					

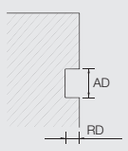
2CE

Cutting Condition

Work Material 피삭재	Mild Steels/Carbon Steels 일반구조강/탄소강 SS400 / SS55C		Alloy Steels/Tool Steels 합금강/공구강 SKD / SCM		Prehardened Steels 프리하든강 HPM/NAK(30~45HRC)		Aluminum Alloys 알루미늄 합금	
Diameter 날경	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
Depth of Cut 절입량	Ad : 0.5D~1.0D 							

4RTCC

Cutting Condition

Work Material 피삭재	Carbon Steels 탄소강		Alloy Steels 합금강		Prehardened Steels 프리하든강	
Cutting Dia. 날직경	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
6	1430	86	950	58	720	43
8	1070	64	720	43	540	32
10	860	52	580	34	430	26
Depth of Cut 절입량	RD = 0.1D 					

스타공구(주)
STAR TOOL CO., LTD.

재연마 단가표

(20. 01. 02)

INNOBIZ 기술혁신형중소기업

▶ 초경 BALL E/M, 코너R E/M

규격	비코팅		코팅	
	2날	3, 4, 6날	2날	3, 4, 6날
6이하	5,500	7,500	7,500	9,300
10이하	6,000	8,500	8,600	11,300
12이하	7,000	10,000	9,900	12,100
16이하	9,000	11,000	12,100	13,800
20이하	12,000	15,000	17,300	21,600
25이하	15,000	20,000	19,000	24,000
32이하	35,000	45,000	–	–
42이하	45,000	55,000		

* 고경도코팅 x 1.1 * 초경ROUGHING C/R x 1.2 * LONG x 1.5

▶ 초경 E/M 절단 및 밑날

규격	비코팅		코팅	
	2날	3, 4, 6날	2날	3, 4, 6날
6이하	4,200	5,300	4,800	5,800
10이하	4,800	5,900	5,200	6,300
12이하	6,400	7,500	7,100	8,500
16이하	8,500	10,700	10,100	12,400
20이하	10,700	12,300	12,400	13,800
25이하	13,900	17,100	15,200	18,200
30이하	33,000	33,000	48,900	48,900

* 다이아 × 2 *초경 ROUGHING 절단및 밑날 일때 가격 × 1.2 *고경도코팅 x 1.1

▶ 초경 END MILL (외경연삭)

LONG × 1.2 EX LONG × 1.5

날경	8이하	12이하	16이하	20이하	25이하	30이하	40이하
2날	5,500	6,400	8,900	12,700	19,000	26,600	38,000
4날	6,900	7,600	10,200	15,200	22,800	31,700	48,000

*부등분할일때 가격 × 1.5 *절수(=절단수리) 작업시 가격 × 1.5 *외경연삭+COAT x 1.2

▶ HSS END MILL (외경연삭 또는 절단만)

LONG × 1.5 EX LONG × 2

날경	20이하	30이하	40이하	50이하	60이하
2날	4,000	5,300	9,300	15,900	24,000
4날	5,300	6,600	10,600	19,800	30,000

* 절수 작업시 가격 × 1.5 * 수리 작업시 가격 × 2 * 절단+밑날 x 1.5

A.치수 지정(맞추는 경우) = 절수가격 적용
B.수리는 골수리, 절단, 뒷니방 중 2개이상 적용시 수리청구

▶ HSS ROUGHING E/M (외경연삭)

LONG × 1.5 EX LONG × 2

날경	20 이하	30 이하	40 이하	50 이하
단가	5,300	6,600	9,300	11,900

* 절수작업시 가격 × 1.5 * CR추가시 +5,000 * 절단+밑날 x 1.5

▶ 초경 ROUGHING E/M (외경연삭)

LONG × 1.5 EX LONG × 2

날경	10이하	12이하	16이하	20이하	25이하	30이하
단가	13,200	13,800	15,900	21,200	30,000	36,000

* 절수작업시 가격 × 1.5 * CR추가시 +5,000

▶ 날붙이(BG)초경 E/M(외경연삭)

LONG × 1.5 EX LONG × 2

날경	20이하	30이하	40이하	50이하
2날	6,600	10,600	13,200	19,800
4날	8,000	11,900	15,900	26,400

* 절수작업시 가격 × 1.5 * 절단+밑날 x 1.5

뒷니방작업=절수적용

▶ 초경 TAPER E/M

LONG × 1.5

TAPER	TAPER 생크경(Ø)							
	Ø6	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
2° 미만	11,400	12,700	14,000	15,200	19,000	25,300	31,700	38,000
2° 이상	11,400	12,700	15,200	17,800	22,800	30,400	35,500	40,800
30° 이상	7,600	8,900	10,200	11,400	14,000	19,000	24,100	31,700

" **소치수없는 45° 이상** *30° 미만 NC수리제작 X 2 *30° 이상 45° 미만 x 1.5 *역 X 1.5 *역제작수리 X 2.5 *30도이상 소치수 있는수리 X 2 *30도이상 소치수 없는 수리 X 1.5 *절단 x 1.2 "

▶ HSS TAPER E/M

LONG × 1.5

TAPER	TAPER 생크경(Ø)				
	16 이하	20 이하	25 이하	32 이하	35이상
2° 이하	9,300	10,600	11,900	15,900	19,800
2° 이상	10,600	13,200	15,900	19,800	23,800
30° 이상	8,000	9,300	10,600	13,200	15,900

* 수리제작 작업시 가격 × 2 * 역 작업시 가격 × 1.5

▶ 히다찌 BALL & 코너R 인서트

규격	비코팅시	코팅시
R6 × 12,13	6,900	11,500
R8 × 16,17	8,100	13,800
R10 × 20,21	9,200	15,000
R12.5 × 25,26	10,400	16,100
R15 × 30	13,800	19,600
R16 x 32	17,300	23,000

▶ 중간원통

초경		HSS	
60이하	3,000	200이하	3,000
120이하	4,500	250이하	3,800
200이하	12,000	300이하	4,500
320이하	15,000	400이하	7,500
		500이하	12,000

▶ HSS DRILL(NC DRILL)

규격	6 이하	10 이하	15 이하	20 이하	25 이하
단가	3,000	3,600	4,800	7,200	8,400
규격	30 이하	35 이하	40 이하	45 이하	50 이하
단가	9,600	12,000	18,000	24,000	30,000

* 절단 x 1.5

▶ 초경 DRILL(초경 NC DRILL)

규격	4 이하	6 이하	8 이하	10 이하	12 이하
단가	3,500	4,100	5,800	6,900	8,100
규격	14 이하	16 이하	20 이하	25 이하	35이하
단가	10,400	13,800	17,300	23,000	32,000

* 절단 x 1.5

▶ 초경 DRILL(연마+코팅)

규격	5 이하	6 이하	7 이하	8 이하	10 이하	12 이하	13 이하	14 이하
단가	5,000	5,800	6,900	8,100	10,400	12,700	13,800	15,000
규격	15 이하	16 이하	17 이하	18 이하	20 이하	22 이하	25 이하	30 이하
단가	16,100	18,400	19,600	20,700	23,000	25,300	28,800	34,500

* 절단 x 1.5

▶ 초경ROUGHING래디우스(밑날)-노코팅

날경	10 이하	12 이하	16 이하	20 이하
2날	7,700	8,800	12,100	15,400
4날	8,800	9,900	14,300	19,800

▶ BG 초경 B/E(BG초경 볼엔드밀)

규격	2날	3, 4, 6날
60이하	9,500	12,900
100이하	10,400	14,700
120이하	12,000	17,200
160이하	15,500	18,900
200이하	20,700	25,800
250이하	25,800	34,400
320이하	34,400	42,000
450이하	42,000	50,400
550이하	55,000	65,000

▶ HSS BALL

형상 x 1.5

규격	2날	3, 4, 6날
100이하	6,000	7,200
160이하	7,200	8,400
200이하	9,600	12,000
250이하	12,000	15,600
320이하	18,000	21,600
400이하	24,000	30,000
500이하	36,000	48,000

▶ T-C수리

10 이하	12 이하	16 이하	20 이하	25 이하	32 이하
12,000	14,400	19,200	24,000	30,000	38,400

▶ 카운터 싱크

날경	10 이하	20 이하	30 이하	40 이하	50 이하
연마	9,700	11,900	15,200	18,500	24,000
연마 + 코팅	13,000	16,300	19,600	24,000	31,700

▶ 초경 하이 헬릭스 H-E/M (외경연삭)

LONG × 1.2 EX LONG × 1.5

날경	100이하	120이하	160이하	200이하	250이하	320이하
6날	12,100	14,600	18,200	21,800	33,900	40,000

* 절수 작업시 가격 × 1.5

▶ 역R E/M

초경X2

규격	-R1~-R5	-R6	-R7	-R8	-R10	R-15
2날	11,500	13,800	17,300	20,700	23,000	28,800
4날	13,800	17,300	23,000	28,800	34,500	40,300

▶ HSS 래디우스

날경	10 이하	16 이하	20 이하	25 이하	32 이하	42 이하	50 이하
2날	8,400	9,600	12,000	14,400	24,000	36,000	48,000
4날	9,600	12,000	14,400	18,000	30,000	48,000	60,000

*수리(외경연마) X 1.5 *절수 작업시 x 1.2

▶ 초경 베르밀(CR)

날경	10 이하	12 이하	16 이하	20 이하
2날	7,700	8,800	11,000	15,400
4날	8,800	9,900	13,200	19,800

*절수 작업시 x 1.2

▶ 초경 E/M 수리제작(코팅포함)

초경 E/M 수리제작 *4F X 1.2		초경 B/E 수리제작	
4x11L	8,400	R3x12L	10,500
5x13L	8,400	R4x14L	12,600
6x15L	8,400	R5x18L	15,800
8x20L	11,100	R6x22L	18,900
10x22L	13,700	R8x30L	39,900
12x25L	16,800	R10x40L	66,200
14x30L	23,100		
16x30L	31,500		

▶ 초경 B/E 수리제작(흑연용)-코팅포함

R3x20L	R4x25L	R5x30L	R6x30L	R8x30L	R10x40L
13,200	19,500	24,200	26,300	39,900	71,400

▶ 초경 E/M 코팅단가(NACO,ALTIN COAT)

60이하	80이하	100이하	120이하	160이하	200이하	250이하	320이하	350이하	400이하	500이하
1,800	2,200	3,000	4,000	7,500	9,000	13,000	18,000	25,500	31,500	40,000

▶ 초경 E/M 코팅단가(고경도 COAT)

60이하	80이하	100이하	120이하	160이하	200이하	250이하	320이하
2,200	2,700	3,600	4,800	9,000	10,800	15,600	21,600

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◎: 최적 (First choice), ○: 보통 (Alternative choice), △: 제한적 (Limited choice)

End feature 날 형상	Use 용도	# of Flute 날 수	Code Name 제품코드	Tool Description 명칭	Tool Dia 크기	Coating 코팅	Page 페이지		Carbon Steel/Alloy Steel/Tool Steel (Up to 350 HB) 탄소강/합금강 (~HB 350)	Stainless Steel (Up to 240 HB) 스테인리스 (~HB 240)	Cast Iron (Up to 260 HB) 주철 (~HB 260)	Prehardened Steel (Up to 50 HRC) 중저경도강 (~HRC 50)	Hardened Steel (45 to 55 HRC) 고경도강 (HRC 45~55)	Super Hardened Steel (55 to 68 HRC) 초고경도강 (HRC 55~68)	Nickel& Titanium Alloy 니켈 & 티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지&플라스틱	Graphite 흑연
Ball End 볼	For Super Hardened Steels (~HRC68) 초고경도용	2F	2NBH	2날 볼 리브– 초고경도용 2F Necked Ball End for Super Harened Steels	0.2~12	S-HC	27		○	△	○		○	◎					
			2BH	2날 볼–초고경도용 2F Ball End for Super Hardened Steels	0.2~12	S-HC	32		○	△	○		○	◎					
			2BTH	2날 볼–테이퍼 넥 2f Ball Endmill–Tapered Neck	0.5~4	S-HC	34		○	△	○		○	◎					
		3F	3BH	3날 볼–초고경도용 3F Ball End for Super Hardened Steels	1~6	S-HC	38		○	△	○		○	◎					
	For Hardened Steels (~HRC55) 고경도용	2F	2NB	2날 볼 리브 2F Necked Ball End	0.2~12	AlTiSiN	69		○	△	○	○	◎	○	○	△			
			2BS	2날 볼 쇼트 2F Ball End–Short	0.5~12	AlTiSiN	74		○	△	○	○	◎	○	○	△			
			2BR	2날 볼 표준 2F Ball End–Regular	0.2~20	AlTiSiN	75		○	△	○	○	◎	○	○	△			
			2TB	2날 테이퍼 볼 2F Tapered Ball End	0.5~3	AlTiSiN	77		○	△	○	○	◎	○	○	△			
	For multipurpose (~HRC52) 복합소재용	2F	2BRHR	2날 볼–복합소재용 2F Ball End–Regular for Multipurpose	1~12	HR	117		○	◎	○	◎	◎	○	◎	○			
		4F	4BRHR	4날 볼–복합소재용 4F Ball End–Regular for Multipurpose	2~12	HR	118		○	◎	○	◎	◎	○	◎	○			
	Economic Series (~HRC50) 이코노믹 시리즈	2F	2BRE	2날 볼–이코노믹 2F Ball End–Economic	0.2~20	AlTiCrSiN	125		◎	△	◎	◎	○		○	△			
			2BTE	2날 볼–테이퍼 넥–이코노믹 2f Ball Endmill–Tapered Neck–Tapered Neck	1~10	AlTiCrSiN	126		◎	△	◎	◎	○		○	△			
	For Coppo 구리 가공용	2F	2NBC	2날 볼 리브–동 가공용 2F Necked Ball End for Copper	0.2~6	AlTiN	167		△		△					△	◎	△	
	For Synthetic Material 수지, 비철 가공용	2F	2BY	2날 볼–수지 비철 가공용 2F Ball End for Synthetic Materials	0.3~12	Uncoated	171										△	◎	△
	For Graphite 흑연용	2F	2BG	2날 볼–흑연 가공용 2F Ball End for Graphite	0.5~12	AlTiN	155		△		△					△	△	△	◎
		2F	2BD	2날 볼–다이아몬드 코팅 2F Ball End–Diamond Coating	0.5~12	Diamond	158											△	◎
		4F	4BD	4날 볼 – 다이아몬드 코팅 4F Ball End–Diamond Coating	1.5~12	Diamond	161											△	◎
Corner Radius 코너 R	For Super Hardened Steels (~HRC68) 초고경도용	2F	2NCH	2날 코너 R 리브–초고경도용 2F Necked Corner Radius for Super Hardened Steels	0.2~12	S-HC	39		○	△	○		○	◎					
			2CLH	2날 코너 R 롱–초고경도용 2F Corner Radius Long for Super Hardened Steels	0.8~12	S-HC	48		○	△	○		○	◎					
		4F	4NCH	4날 코너 R 리브–초고경도용 4F Necked Corner Raduus for Hardened Steels	1~12	S-HC	50		○	△	○		○	◎					
			4CLH	4날 코너 R 롱–초고경도용 4F Corner Radius Long for Super Hardened Steels	1.5~12	S-HC	55		○	△	○		○	◎					
	For Hardened Steels (~HRC55) 고경도용	2F	2NC	2날 코너 R 리브 2F Necked Corner Radius	0.2~12	AlTiSiN	79		○	△	○	○	◎	○	○	△			
			2CL	2날 코너 R 롱 2F Corner Radius–Long	0.8~12	AlTiSiN	87		○	△	○	○	◎	○	○	△			
			2CT	2날 테이퍼 코너 R 2F Tapered Corner Radius	0.3~3	AlTiSiN	89		○	△	○	○	◎	○	○	△			

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End feature 날 형상	Use 용도	# of Flute 날 수	Code Name 제품코드	Tool Description 명칭	Tool Dia 크기	Coating 코팅	Page 페이지		Carbon Steel/Alloy Steel/Tool Steel (Up to 350 HB) 탄소강/합금강 (~HB 350)	Stainless Steel (Up to 240 HB) 스테인리스 (~HB 240)	Cast Iron (Up to 260 HB) 주철 (~HB 260)	Prehardened Steel (Up to 50 HRC) 중저경도강 (~HRC 50)	Hardened Steel (45 to 55 HRC) 고경도강 (HRC 45~55)	Super Hardened Steel (55 to 68 HRC) 초고경도강 (HRC 55~68)	Nickel& Titanium Alloy 니켈 & 티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지&플라스틱	Graphite 흑연
Corner Radius 코너 R	For Hardened Steels (~HRC55) 고경도용	4F	4NC	4날 코너 R 리브 4F Necked Corner Radius	1~12	AlTiSiN	91		○	△	○	○	◎	○	○	△			
			4CL	4날 코너 R 롱 4F Corner Radius–Long	1.5~12	AlTiSiN	97		○	△	○	○	◎	○	○	△			
			4CF	4날 코너 R–고이송용 4F Corner Radius for High Feed Rate	6~12	AlTiSiN	99		○	△	○	○	◎	○	○	△			
			4CHF	4날 코너 R–고이송용 H/X12° 4F Corner Radius for High Feed Rate H/X12°	5~12	AlTiSiN	100		○	△	○	○	◎	○	○	△			
	For multipurpose (~HRC55) 복합소재용	4F	4CLHR	4날 코너 R 롱–복합소재용 4F Corner Radius–Long for Multipurpose	6~12	HR	119		○	◎	○	◎	◎	○	◎	○			
			4CHFHR	4날 코너 R–고이송용–복합소재용 4F Corner Radius for High Feed Rate for Multipurpose	6~12	HR	120		○	◎	○	◎	◎	○	◎	○			
		6F	6CLHR	6날 코너 R 롱–복합소재용 6F Corner Radius–Long for Multipurpose	6~12	HR	121		○	◎	○	◎	◎	○	◎	○			
	Economic Series (~HRC50) 이코노믹 시리즈	2F	2CLE	2날 코너 R 롱–이코노믹 2F Corner Radius–Long–Economic	1~12	AlTiCrSiN	127		◎	△	◎	◎	○		○	△			
		4F	4CLE	4날 코너 R 롱–이코노믹 4F Corner Radius–Long–Economic	1.5~16	AlTiCrSiN	129		◎	△	◎	◎	○		○	△			
	For Aluminum 알루미늄 가공용	3F	3CA	3날 코너 R–알루미늄 가공용 3F Corner Radius End for Aluminum	3~16	Uncoated	141									△	◎	△	
	For Coppor 구리 가공용	2F	2NCC	2날 코너 R 리브–동 가공용 2F Necked Corner Radius for Copper	0.2~6	AlTiN	168		△		△					△	◎	△	
	For Stainless steel 스테인리스 강 가공용	4F	4CSN	4날 코너 R–SUS 4F Corner Radius for Ctainless Steel	1~12	ALNOVA	149		○	◎	○				◎	○	○	△	
			4CST	4날 코너 R–SUS 4F Corner Radius for Ctainless Steel	1~12	AlTiN	151		○	◎	○				◎	○	○	△	
	For Graphite 흑연용	2F	2CD	2날 코너 R–다이아몬드 코팅 2F Corner Radius–Diamond Coating	0.5~4	Diamond	163											△	◎
		4F	4CD	4날 코너 R–다이아몬드 코팅 4F Corner Radius–Diamond Coating	2~12	Diamond	164											△	◎
	For Roughing 황삭용	5,6F	5,6TROHR	5,6날 트로코이달 엔드밀–복합소재용 5,6F Trochoidal End for Multipurpose	6~20	HR	137		○	◎	○	◎	◎	○	◎	○			
Square End 평	For Super Hardened Steels (~HRC68) 초고경도용	2F	2NSH	2날 평 리브–초고경도용 2F Necked Square End for Super Hardened Steels	0.1~8	S-HC	57		○	△	○		○	◎					
			2SH	2날 평–초고경도용 2F Square End for Super Hardened Steels	0.2~12	S-HC	62		○	△	○		○	◎					
		4F	4SH	4날 평–초고경도용 4F Square End for Super Hardened Steels	1~12	S-HC	64		○	△	○		○	◎					
			4SHH	4날 평–초고경도용 H/X45° 4F Square End for Super Hardened Steels H/X45°	1~20	S-HC	65		○	△	○		○	◎					
		6F	6SH	6날 평–초고경도용 6F Square Endmill for Super Hardened Steel	6~20	S-HC	67		○	△	○		○	◎					
	For Hardened Steels (~HRC55) 고경도용	2F	2NS	2날 평 리브 2F Necked Square End	0.1~8	AlTiSiN	101		○	△	○	○	◎	○	○	△			
			2SR	2날 평 표준 2F Square End–Regular	0.2~20	AlTiSiN	106		○	△	○	○	◎	○	○	△			
			2SL	2날 평 롱 2F Square End–Long	1~20	AlTiSiN	108		○	△	○	○	◎	○	○	△			
		4F	4NS	4날 평 리브 4F Necked Square End	1~6	AlTiSiN	109		○	△	○	○	◎	○	○	△			
			4SR	4날 평 표준 4F Square End–Regular	1~20	AlTiSiN	111		○	△	○	○	◎	○	○	△			

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End feature 날 형상	Use 용도	# of Flute 날 수	Code Name 제품코드	Tool Description 명칭	Tool Dia 크기	Coating 코팅	Page 페이지		Carbon Steel/Alloy Steel/Tool Steel (Up to 350 HB) 탄소강/합금강 (~HB 350)	Stainless Steel (Up to 240 HB) 스테인리스 (~HB 240)	Cast Iron (Up to 260 HB) 주철 (~HB 260)	Prehardened Steel (Up to 50 HRC) 중저경도강 (~HRC 50)	Hardened Steel (45 to 55 HRC) 고경도강 (HRC 45~55)	Super Hardened Steel (55 to 68 HRC) 초고경도강 (HRC 55~68)	Nickel& Titanium Alloy 니켈 & 티타늄 합금	Copper Alloy 동 합금	Aluminum Alloy 알루미늄 합금	Resin & Plastics 수지&플라스틱	Graphite 흑연
Square End 평	For Hardened Steels (~HRC55) 고경도용	4F	4SL	4날 평 롱 4F Square End–Long	2~20	AlTiSiN	113		○	△	○	○	◎	○	○	△			
			4TE	4날 테이퍼 엔드밀 4F Tapered End Mill	0.7~1	AlTiSiN	114		○	△	○	○	◎	○	○	△			
		6F	6SR	6날 평 표준 6F Square End–Regular	6~20	AlTiSiN	115		○	△	○	○	◎	○	○	△			
	For multipurpose (~HRC55) 복합소재용	4F	4SRHR	4날 평–복합소재용 4F Square End–Regular for Multipurpose	3~12	HR	122		○	◎	○	◎	◎	○	◎	○			
	Economic Series (~HRC50) 이코노믹 시리즈	2F	2SRE	2날 평–이코노믹 2F Square End–Economic	0.2~20	AlTiCrSiN	131		◎	△	◎	◎	○		○	△			
			2SLE	2날 평 롱–이코노믹 2F Square End–Long–Econimic	1~20	AlTiCrSiN	132		◎	△	◎	◎	○		○	△			
		4F	4SRE	4날 평–이코노믹 4F Square End–Economic	1~20	AlTiCrSiN	133		◎	△	◎	◎	○		○	△			
			4SLE	4날 평 롱–이코노믹 4F Square End–Long–Economic	2~20	AlTiCrSiN	134		◎	△	◎	◎	○		○	△			
	For Aluminum 알루미늄 가공용	2F	2SA	2날 평–알루미늄 가공용 2F Square End for Aluminum	1~12	Uncoated	142									△	◎	△	
		3F	3SA	3날 평–알루미늄 가공용 3F Square End for Aluminum	1~20	Uncoated	143									△	◎	△	
	For Synthetic Material 수지, 비철 가공용	2F	2SY	2날 평–수지 비철 가공용 2F Square End for Synthetic Materials	0.3~12	Uncoated	173										△	◎	△
	For Stainless steel 스테인리스 강 가공용	4F	4SSN	4날 평–SUS 4F Square for Stainless Steel	1~12	ALNOVA	147		○	◎	○				◎	○	○	△	
			4SST	4날 평–SUS 4F Square for Stainless Steel	1~12	AlTiN	148		○	◎	○				◎	○	○	△	
	For Graphite 흑연용	2F	2SG	2날 평–흑연 가공용 2F Square End for Graphie	0.5~12	AlTiN	157		△		△					△	△	△	◎
	For Roughing 황삭용	4F	4SRR	4날 평–중절삭용 4F Square Roughing End	6~12	AlTiCrSiN	138		◎	△	◎	◎	○		○	△			
	Specials–Custom Made 스페셜 엔드밀	1F	1FE	1날 엔드밀 1F End Mill	0.2~6	Uncoated	178		△	△	△					△	◎	◎	
Speical 범용	Specials– Custom Made 스페셜 엔드밀	2F	2EBTHR	2날 조각 볼–테이퍼–복합소재용 2F Engraving Ball–Tapered for Multipurpose	0.2~1	HR	177		○	◎	○	◎	◎	○	◎	○			
			2NCD	2날 NC 드릴 2F NC Drill	3~12	Uncoated	179		△	△	△					△	○	◎	
			2NCDHR	2날 NC 드릴–복합소재용 2F NC Drill for Multipurpose	4~12	HR	180		○	◎	○	◎	◎	○	◎	○			
			2CRR	2날 역 R 2F Corner Rounding R	1~12	Uncoated	181		△	△	△					△	○	◎	
			2CRRC	2날 역 R–C 2F Corner Rounding R–C	1~12	AlTiN	182		◎		◎		◎		○	○	◎	◎	
			2CE	2F Centering 2날 센터링	3~12	Uncoated	183		△	△	△					△	○	◎	
			2TC	2날 T 커터 2F T Slot Cutter	3~12	Uncoated	184		△	△	△					△	○	◎	
		4F	4RTC	4날 라운드 T 커터 4F Round T Slot Cutter	6~10	Uncoated	185		△	△	△					△	○	◎	
		4F	4TRCC	4날 라운드 T 커터–C 4F Round T Slot Cutter–C	6~10	AlTiN	186		◎		◎		◎		○	○	◎	◎	