



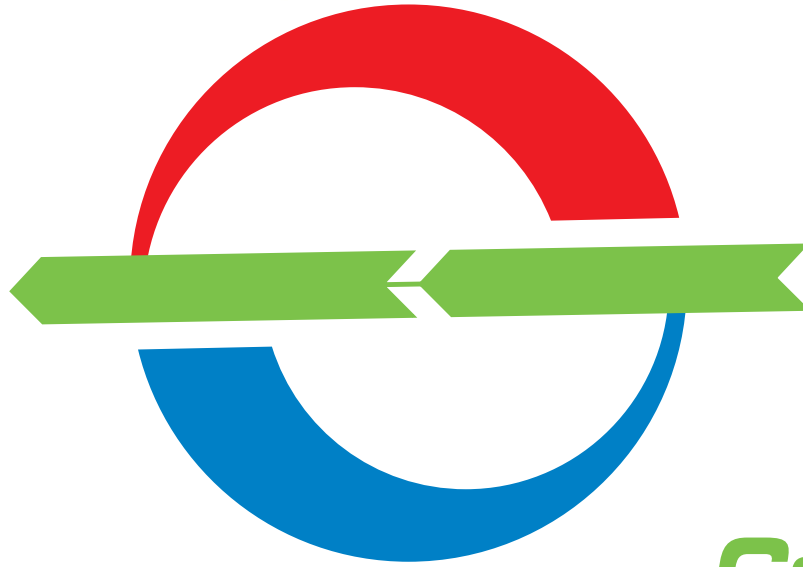
01245 260414 - 250910



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www.smarttoolsuk.com



## Carbide End Mills



High Precision & High Speed Cutting  
Wide range of products

# 12,218

Your specials are our standards.



~ HRc70, for Pre-hardened steel

for Non-ferrous alloy

for Graphite

for A.B.S



for Aluminum

for SUS

for Composite





**FOR CBN**  
**CBN 엔드밀 시리즈**  
**CBN End Mill Series**

**JJseries**  
**고경도용 엔드밀 시리즈**  
**End Mills for Hardened Steels**

**HARDseries**  
**고속가공용 엔드밀 시리즈**  
**High Speed End Mill Series**

**Eseries**  
**강력절삭 엔드밀 시리즈**  
**End Mills for Heavy Cuts**

**Gseries**  
**범용 엔드밀 시리즈**  
**End Mills for General purpose**





**G-TAC**  
 G-TAC코팅 엔드밀 시리즈  
 G-TAC Coated EndMill Series

**HARD series**  
 고이송용 엔드밀 시리즈  
 High Speed End Mill Series

**FOR GRAPHITE**  
 흑연가공용 엔드밀 시리즈  
 EndMills for Graphite

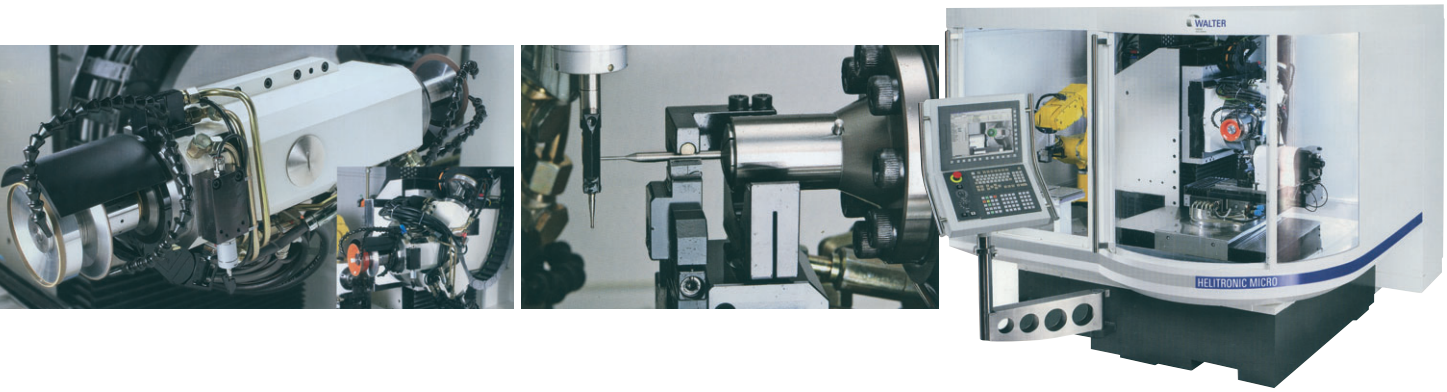
**FOR ALUMINUM**  
 알루미늄 가공용 엔드밀 시리즈  
 EndMills for Aluminum

**FOR SUS**  
 SUS 가공용 엔드밀 시리즈  
 EndMills for SUS

**세계로 수출하는  
 명품 엔드밀**

Globally exporting the outstanding quality

**JJ TOOLS**



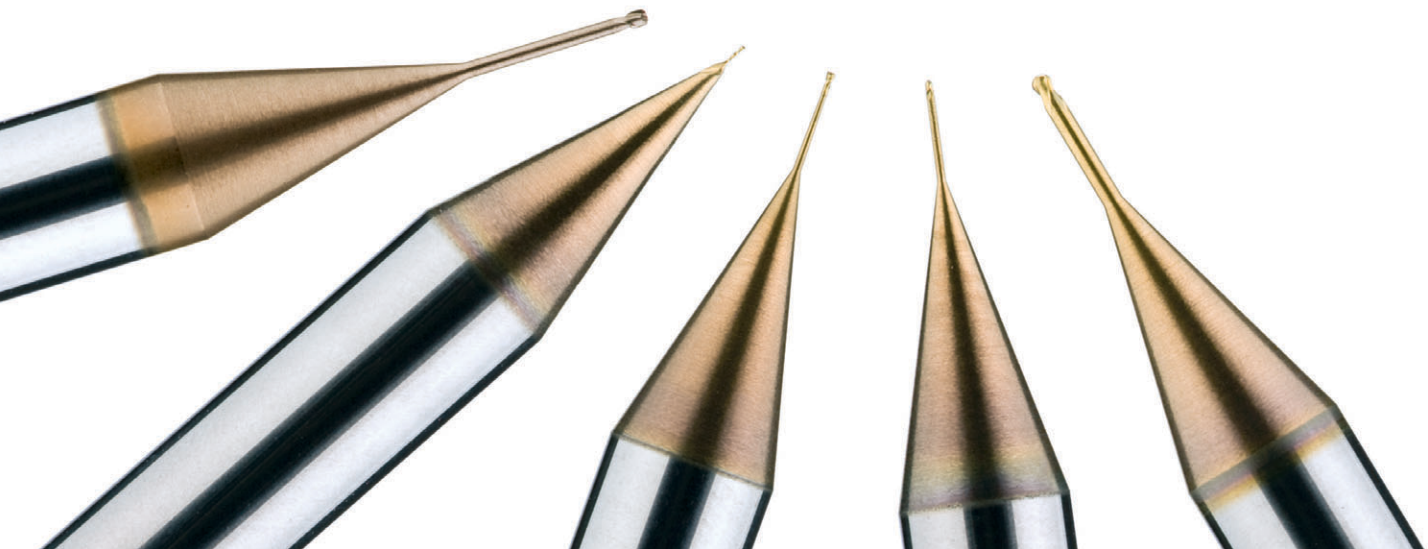
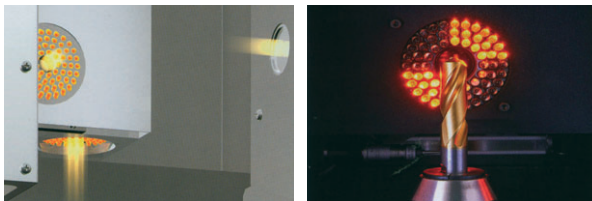
# 최신의 초정밀 장비! 한차원 높은 정밀 공차!

*The Latest Manufacturing Equipments!  
New Precision Tolerance!*

제이제이툴스는 초정밀 공구생산을 위한 세계 최고 수준의 첨단 설비와 우수한 전문 인력을 기반으로 더욱 혁신적인 정밀공차 관리를 함으로서 표준 엔드밀의 제품 수준을 대폭 향상 시켰습니다.

*JJ TOOLS achieved a big quality improvement on its' standard products line by applying very tight tolerance control as well as the world best class manufacturing equipments with very well qualified peoples.*

<b>■ 공구 오차</b> <b>Tolerance</b>	$0.1R \leq R \leq 1R$	$\pm 0.003mm$
	$1R < R \leq 3R$	$\pm 0.005mm$
	$3R < R$	$\pm 0.008mm$





고경도재의 정밀 정삭가공에 적합한  
Optimised for precise machining of high hardness work material

**탁월한 내마모 품질!**  
High Abrasion Resistance!



**FOR CBN**

**CBN 엔드밀 시리즈**  
CBN End Mill series

**HRC72 고경도강의  
경면 사상 가공에 최적!**

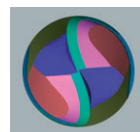
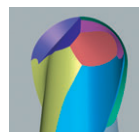
Optimised for mirror face machining of hardened steels (HRC72)!

CBN 시리즈는 고함량의 PCBN을 사용하여 탁월한 내마모성과 최적의 인선부 설계로 뛰어난 절삭력 및 경면 조도를 나타내며, 고경도강(HRC72)의 고속 가공시 최고의 성능을 발휘합니다.

- PCBN endmill for precise finishing ( $\pm 5 \mu\text{m}$ ) of hardened steel (HRC52~72)
- Long tool life by high quality PCBN

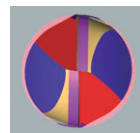
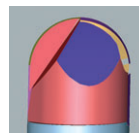
**다양한 인선형상 설계로  
최상의 맞춤품질 확보!**

Various helix design for the best quality!



**Helix 30°**

열처리 금형가공에 최적  
Optimum for hardened -  
mold machining



**Helix 0°**

경면사상 가공에 최적  
Optimum for mirror face  
machining





HRC 52~70

## 고경도재 가공용 JJ 시리즈

JJ series for hardened steels

고경도강(HRC52~70), 프리하든강 계열의 고정밀가공 엔드밀

Endmills for pre-hardened and hardened steel (HRC52~70)

- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine(0.2 $\mu$ m) WC grade.



HRC 50~65

## 고속가공용 HARD 시리즈

HARD series for high speed cutting

고경도강(HRC50~62), 프리하든강 계열의 고정밀가공 엔드밀

Endmills for pre-hardened and hardened steel (HRC50~62)

- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine(0.2 $\mu$ m) WC grade.



HRC ~52

## 강력절삭용 E시리즈

E series for heavy cuts

중저경도강(HRC52이하), 프리하든강 계열, 탄소강, 금형강 등

Endmills for various work materials(~HRC52), pre-hardened steel, carbon steel, mold steel.

- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 넓은 영역의 피삭재 가공에 적합한 형상으로 설계 하였습니다.
- 경제적인 가격으로 가공 생산비 절감을 극대화합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



HRC ~52

## 다양한 피삭가공, 범용 G시리즈

G series for general purpose

중저경도강(HRC52이하), 프리하든강 계열, 탄소강, 금형강 등

Endmills for various work materials(~HRC52), pre-hardened steel, carbon steel, mold steel.

- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.





탁월한 내마모성의  
High abrasion resistance

# DIAMOND 코팅!

Coating



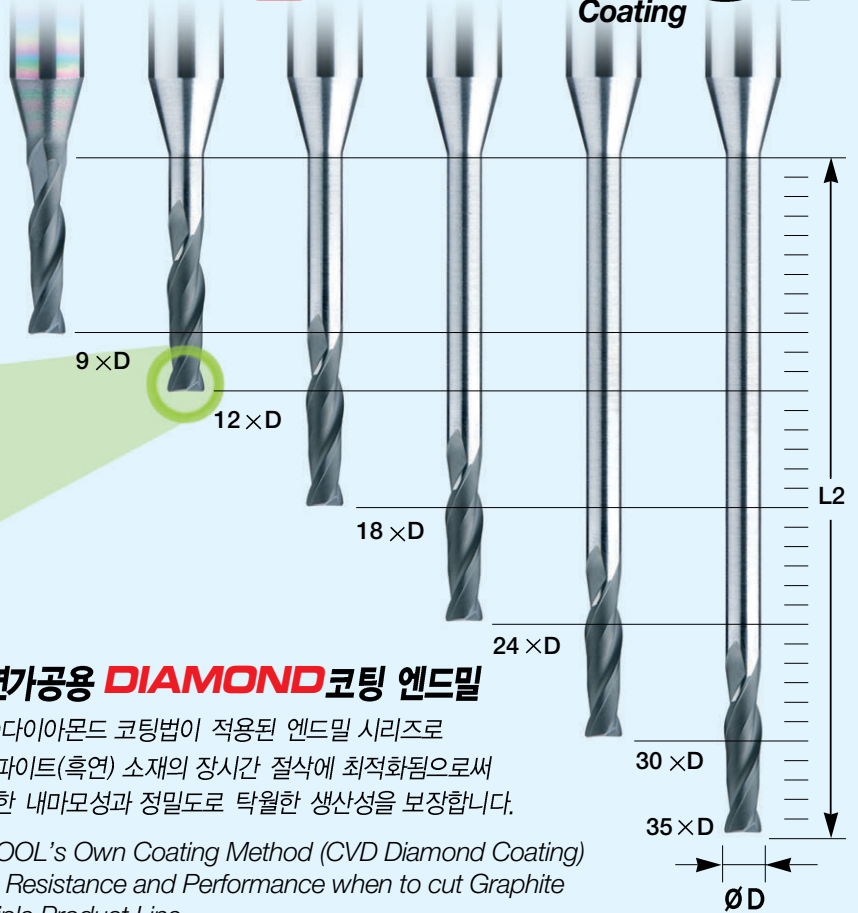
- CR** R0.02  
R0.05  
R0.1  
R0.15  
R0.2  
R0.3  
R0.5

- 2DBE**  
**3DBE**  
**4DBE**  
**2&3DEM**  
**4&6DEM**  
**2DCR**  
**4DCR**

## 흑연가공용 DIAMOND 코팅 엔드밀

CVD다이아몬드 코팅법이 적용된 엔드밀 시리즈로  
그라파이트(흑연) 소재의 장시간 절삭에 최적화됨으로써  
우수한 내마모성과 정밀도로 탁월한 생산성을 보장합니다.

JJ TOOL's Own Coating Method (CVD Diamond Coating)  
High Resistance and Performance when to cut Graphite  
Multiple Product Line



**FOR GRAPHITE**

# 다이아몬드 코팅 시리즈

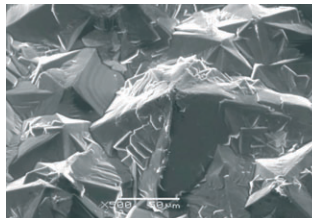
## DIAMOND Coated End Mills for Graphite

CVD 다이아몬드는 바인더(활성계면제)가 없는 순수결정체로서  
단결정 다이아몬드와 동일한 특성을 나타내며, 변형 없는  
코팅의 우수함으로 강력한 절삭력과 공구수명이 향상됩니다.

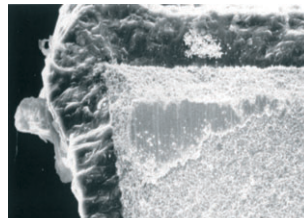
CVD diamond is a binderless- pure crystal, delivering identical  
properties of single diamond crystal. JJ TOOLS is applying  
the latest CVD coating technology which has no residual  
stress at the interface for extending tool life.

PROPERTY	CVD Diamond	Mono Diamond	PCD	K10
열전도율(W/m · K) Thermal conductivity	~ 1000	2,000	560	110
경도(Gpa) Hardness	80 ~ 100	50 ~ 100	50	18
표면 조밀도(MPa · m <sup>1/2</sup> ) Toughness	5 ~ 6	3.4	8 ~ 9	10.5
인장력(Gpa) Tensile strength	400 ~ 800	1,000~3,000	1,260	-
압축 강도(Gpa) Compressive strength	16.0	9.0	7.6	6.1
항절력(Gpa) TRS	1.3	2.9	1.2	2.4

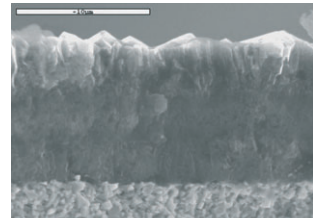
### ■ 다이아몬드 결정 SEM 사진 SEM Images of Diamond crystal



다이아몬드 표면 입자 확대  
Diamond surface image



다이아몬드 단면 확대  
Diamond cross section image



다이아몬드 단면 확대  
Diamond cross section image



고경도재 고속가공의  
High speed machining hardened steels

# 절대 강자!

Super End Mill

초경 코너R 인서트 대비

**2배 이상의 성능 실현!**

경도 HRc65이하소재의 황삭, 중삭 가공시

**More 2 times** performance than  
corner Insert end mills!

코너R 마모시

**6회 이상의 재연삭 가능!**

Guarantee **more 6 times** Re-grinding!



**HARD series**

고속·고이송 가공에 최적화된

## 고이송 CUTTER

The best of high speed cutting

## 우주항공 및 자동차 분야의 복합신소재 가공을 선도하는

Leading tools for machining of composite materials

**FOR COMPOSITE**

## 복합소재용 엔드밀

For Composite Materials

강화플라스틱(CFRP, GFRP), 동 및 동합금, 유리/탄소섬유 등  
비철, 비금속 계열의 다양한 복합소재 전용 엔드밀

Endmills for CFRP, GFRP, copper, copper alloy, glass/carbon  
fiber, nonferrous and non-metallic materials.

- 다양한 복합소재 가공영역에 뛰어난 성능을 발휘
- 코팅피막에 경도가 높아 내마모성이 우수
- 마찰계수가 낮은 다이아몬드 코팅을 적용하여 흡착현상을 최소화
- Outstanding performance in machining of various composite materials.
- Excellent wear resistance by applying high hardness coating layer.
- Minimize built up edge by low friction diamond coating.



230, 270도의 인선으로

230°, 270° degree ball shape

광범위한 3D가공에 최적 !

Optimized for wide range 3D machining

**HARD series**

**3D가공용 구형엔드밀**

Spherical End Mills for 3D Machining

고경도강(HRc50~65), 프리하트강 계열의 고정밀가공

Endmills for pre-hardened and hardened steel(HRc50~65)

- 230, 270도 구형의 인선으로 광범위한 3D 가공에 적합
- 유효장을 직선 및 테이퍼 설계하여 목부파손 및 떨림을 최소화
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능 발휘
- 230°, 270° degree ball shape for wide range 3D machining.
- Minimize chattering and fracturing by taper and straight designed flute.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.

강력한 채터링 방지 설계로 **진동을 최소화 !**

Strong design for protection against chattering !

칩배출이 뛰어난

Excellent Chip Control

**FOR SUS**

**SUS가공용 엔드밀**

End Mills for SUS

합금강, SUS계열, Ti/Ni계 합금, 인코넬 등 난삭재 전용

End Mills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.

- 강력한 채터링방지 설계로 엔드밀의 진동을 최소화하였습니다.
- 깊은 포켓으로 칩배출이 원활하며 피삭재 면조도가 우수
- 42° 헬릭스 형상으로 설계하여 고속, 고이송 가공에 최적
- 항절력이 높은 미립자 초경합금을 채택하여 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- Strong design for protection against chattering.
- Excellent work surface finish by deep chip pocket.
- 42° degree helix design for high speed, feed condition.
- Minimize fracturing at high feed by high TRS fine WC grade.



# 탁월한 피삭재의 경면조도 !

Ultra fine surface after machining

코팅피막이 우수한 Tetrabond TAC

**G-TAC**

## G-TAC 코팅 엔드밀

Tetrabond TAC Coated End Mills

알루미늄 및 알루미늄 합금, 동 및 동합금, 강화프라스틱 (CFRP, GFRP), 유리/탄소섬유 등 비철, 비금속 피삭재 전용

End Mills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, GFRP, glass/carbon fiber, nonferrous and non-metallic materials.

- 코팅 피막에 경도가 높고 마찰계수가 낮은 SUPER TAC코팅을 적용해 내마모성이 우수하며 피삭재 표면조도가 월등히 우수함
- 고정밀 공차 적용으로 초정밀가공에 적합
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화하였습니다.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine(0.5  $\mu$ m) WC grade.

# 인선부의 고광면 설계를 한층 업그레이드한 R-TAC코팅으로 구현 !

Applied RTAC coating for excellent surface finish !

FOR ALU<sub>min</sub>ium

## AL가공용 엔드밀

End Mills for Aluminum

알루미늄 및 알루미늄 합금 등 비철, 비금속 피삭재 전용

Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.

- 날부 인선을 고광면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- RTAC코팅 처리하여, 기존 비코팅 엔드밀 대비 2배이상 공구수명이 증가하였습니다.
- 다양한 날장(S, L, ExI, Et) 선택으로 맞춤 가공이 가능합니다.
- 2중 인선과 홈포켓의 깊게 설계로 흡착현상을 최소화하였습니다.
- 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Applied fine WC grade for excellent surface finish.
- With RTAC coating, the tool life improved more than two times over conventional uncoated endmills.
- Various flute length design for covering wide range application.
- Minimize built up edge by double edge and deep pocket design.
- Minimize fracturing by high TRS fine(0.5  $\mu$ m) WC grade.



CUSTOM MADE

# 절삭가공 최적의 맞춤!

Optimal Custom-made Cutting!

고객요청에 즉시 대응하는  
Respond quickly to customer requests

## JJ 테이퍼 넥 볼 엔드밀

JJ Taper neck ball endmill - 3JJTBS

# 3JJTBS

Freely ~ 자유자재로 ~

최고 2일안에 납품 가능! Within a 2 days!

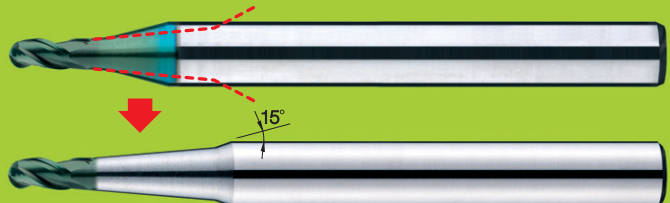
깊은 홈의 가공 방식이 다양해지고 빈번해진 요즘 흐름에 발맞추어, 주문제작으로 고객요청에 빠르게 대응하는 맞춤형 엔드밀입니다. 고객주문에 맞춰, 자사 재고품의 각도 및 유효길이를 재조정 가공합니다.

In accordance with the recent trend of frequent deep hole machining, It is an order to make system responding to customer' quick delivery request. (within a 2 days)

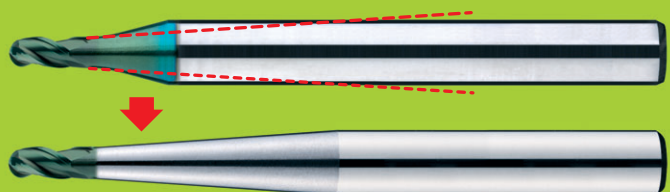
In accordance with the customer order, readjust the angle and effective length of own stock

재고품의 각도 · 유효길이를 고객이 주문하면 추가 가공  
Readjust the angle and effective length of own stock

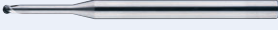



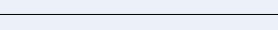





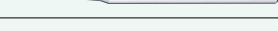
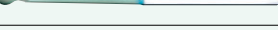

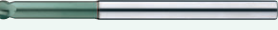


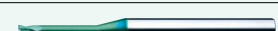
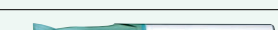
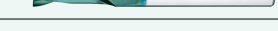
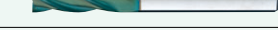
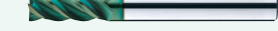




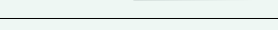
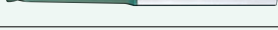
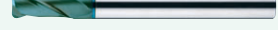



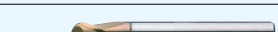
A 타입 가공예  
A Type Example



B 타입 가공예  
B Type Example



# Carbide End Mills INDEX

시리즈 Series	특징 Hardness	주문 번호 EDP. NO	형상 Appearance	날 수 Flutes	분류 Type	쪽 Page	
<b>FOR CBN</b> Cubic Boron Nitride	고경도 고정밀 정삭 가공 HRc 50~72	2BCBN		2F	CBN 리브 볼 CBN Rib Ball End Mills	01	
		2SBCBN		2F	CBN 직선날 리브 볼 CBN Straight Rib Ball End Mills	02	
		2ECBN		2F	CBN 리브 엔드밀 CBN Rib End Mills	03	
		2CCBN		2F	CBN 리브 코너 레디우스 CBN Rib Corner Radius	04	
		2SCCBN		2F	CBN 직선날 리브 코너 레디우스 CBN Straight Rib Corner Radius	06	
		4SCCBN		4F	CBN 직선날 리브 코너 레디우스 CBN Straight Rib Corner Radius	07	
<b>JJ series</b> 고경도용	고경도 고속 가공 HRc 52~70	2JJRB		2F	제이제이 리브 볼 JJ Rib Ball End Mills	08	
		3JJRB <i>New</i>		3F	제이제이 리브 볼 JJ Rib Ball End Mills	11	
		2JJTB		2F	제이제이 테이퍼 넥 볼 Taper Neck Ball End Mills	12	
		3JJTBS <i>New</i>		3F	소비자 맞춤 테이퍼 넥 볼 Taper Neck Ball End Mills	16	
		2JJSP		2F	3D 230° 가공용 구형 엔드밀 End Mills for 3D Cut 230°	17	
		4JJSP		4F	3D 230° 가공용 구형 엔드밀 End Mills for 3D Cut 230°	18	
		4JJSPM		4F	3D 270° 가공용 구형 엔드밀 End Mills for 3D Cut 270°	19	
		2JJSB		2F	제이제이 짧은 길이 볼 JJ Short Length Ball End Mills	20	
		2JJB		2F	제이제이 볼 JJ Ball End Mills	21	
	고경도 고속 가공 HRc 52~65	2JJRE		2F	제이제이 리브 엔드밀 JJ Rib End Mills	22	
		4JJRE		4F	제이제이 리브 엔드밀 JJ Rib End Mills	24	
		2JJE		2F	제이제이 엔드밀 JJ End Mills	25	
		4JJE		4F	제이제이 엔드밀 JJ End Mills	26	
		4JJHE		4F	제이제이 45° 헬릭스 엔드밀 JJ 45° Helix End Mills	27	
		고경도 고속 가공 HRc 52~70	6&8JJHE		6&8	제이제이 45° 헬릭스 엔드밀 JJ 45° Helix End Mills	28
			2JJCR		2F	제이제이 리브 코너 레디우스 JJ Rib Corner Radius	29
	2JJTC			2F	테이퍼 넥 코너 레디우스 Taper Neck Corner Radius	33	
	4JJCR			4F	제이제이 리브 코너 레디우스 JJ Rib Corner Radius	35	
	4JJTC			4F	테이퍼 넥 코너 레디우스 Taper Neck Corner Radius	38	
	2JJC			2F	제이제이 코너 레디우스 JJ Corner Radius	39	
	4JJC			4F	제이제이 코너 레디우스 JJ Corner Radius	41	
4&6JJRC			4&6	고이송 코너 레디우스 커터 High Speed Radius Cutter	43		
<b>HARD series</b> 고속 가공용	고경도 고속 가공 HRc 50~62	2HRB		2F	리브 볼 Rib Ball End Mills	44	
		2PHCB		2F	초정밀 표준길이 볼 Ultra Precision Ball End Mills	47	
		2HSB		2F	짧은 길이 볼 Short Length Ball End Mills	48	
		2HCB		2F	표준 길이 볼 Standard Length Ball End Mills	49	

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EDP. Number and Specifications are can be changed without notification for quality improvement.






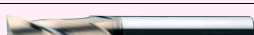




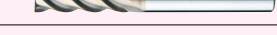
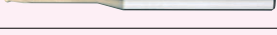







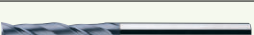




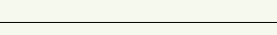

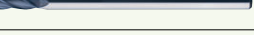
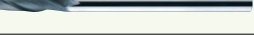





# Carbide End Mills INDEX

시리즈 Series	특징 Hardness	주문 번호 EDP. NO	형상 Appearance	날수 Flutes	분류 Type	쪽 Page
<b>HARD series</b> 고속 가공용	고경도 고속 가공 HRc 50~65	3HCB		3F	표준 길이 볼 Standard Length Ball End Mills	51
		4HCB		4F	표준 길이 볼 Standard Length Ball End Mills	51
	고경도 고속 가공 HRc 50~60	2HRE		2F	리브 엔드밀 Rib End Mills	52
		4HRE		4F	리브 엔드밀 Rib End Mills	54
		2HSE		2F	짧은 길이 엔드밀 Short Length End Mills	55
		2HCE		2F	표준 길이 엔드밀 Standard Length End Mills	56
	HRc ~55	2LEM		2F	긴 길이 엔드밀 Long Length End Mills	58
	고경도 고속 가공 HRc 50~60	4HSE		4F	짧은 길이 엔드밀 Short Length End Mills	59
		4HCE		4F	표준 길이 엔드밀 Standard Length End Mills	60
	HRc ~55	4LEM		4F	긴 길이 엔드밀 Long Length End Mills	61
	고경도 고속 가공 HRc 50~62	4HEM		4F	45° 헬릭스 엔드밀 45° Helix End Mills	62
		6&8HEM		6&8	45° 헬릭스 엔드밀 45° Helix End Mills	63
		2CRE		2F	리브 코너 레디우스 Rib Corner Radius	64
		4CRE		4F	리브 코너 레디우스 Rib Corner Radius	68
		2NCR		2F	코너 레디우스 Corner Radius End Mills	72
		4NCR		4F	코너 레디우스 Corner Radius End Mills	74
		4CRL		4F	45° 헬릭스 코너 레디우스 롱 45° Helix Radius Long	76
		6CRL		6F	45° 헬릭스 코너 레디우스 롱 45° Helix Radius Long	77
	고속 가공 고이송 커터 HRc 50~62	4RCU		4F	고이송 코너 레디우스 커터 High Speed Radius Cutter	78
		6RCU		6F	고이송 코너 레디우스 커터 High Speed Radius Cutter	79
고경도·일반강 황삭 가공 HRc ~50	3&4ROU		3&4	라핑 엔드밀 Roughing End Mills	80	
	3&4HROU		3&4	45° 헬릭스 파인피치형 라핑 45° Helix Fine Pitch Roughing	81	
<b>E series</b> 강력절삭용	중저경도강 탄소강 금형강 등 HRc ~52	2HRBE <i>New</i>		2F	강력절삭용 리브 볼 Rib Ball End Mills for Heavy Cuts	82
		2HCBE <i>New</i>		2F	강력절삭용 볼 Ball End Mills for Heavy Cuts	84
		2HCEE <i>New</i>		2F	강력절삭용 엔드밀 End Mills for Heavy Cuts	85
		4HCEE <i>New</i>		4F	강력절삭용 엔드밀 End Mills for Heavy Cuts	86
		4HEME <i>New</i>		4F	강력절삭용 45° 헬릭스 45° Helix End Mills for Heavy Cuts	87
	중저경도강 SUS·Ti/N계 인코넬 등 HRc ~52	3NSE <i>New</i>		3F	강력절삭용 엔드밀 End Mills for Heavy Cuts	88
		4NSE <i>New</i>		4F	강력절삭용 엔드밀 End Mills for Heavy Cuts	89
	중저경도강 탄소강 금형강 등 HRc ~52	2NCRE <i>New</i>		2F	강력절삭용 코너 레디우스 Corner Radius End Mills for Heavy Cuts	90
		4NCRE <i>New</i>		4F	강력절삭용 코너 레디우스 Corner Radius End Mills for Heavy Cuts	91
		4RCUE <i>New</i>		4F	강력절삭용 고이송 코너 레디우스 커터 High Speed Radius Cutter for Heavy Cuts	92











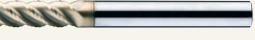









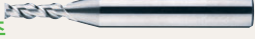

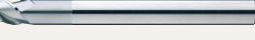






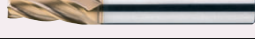

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# Carbide End Mills INDEX

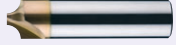








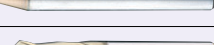
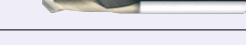



















시리즈 Series	특징 Hardness	주문 번호 EDP. NO	형상 Appearance	날 수 Flutes	분류 Type	쪽 Page	
<b>G series</b> 범용	프리하든강 탄소강 금형강 HRc ~52	2HRBG		2F	리브 볼 Rib Ball End Mills	93	
		2HSBG		2F	짧은 길이 볼 Short Length Ball End Mills	95	
		2HCBG		2F	표준 길이 볼 Standard Length Ball End Mills	96	
		2HREG		2F	리브 엔드밀 Rib End Mills	97	
		4HREG		4F	리브 엔드밀 Rib End Mills	99	
		2HCEG		2F	표준 길이 엔드밀 Standard Length End Mills	100	
		2LEMG		2F	긴 길이 엔드밀 Long Length End Mills	101	
		4HCEG		4F	표준 길이 엔드밀 Standard Length End Mills	102	
		4LEMG		4F	긴 길이 엔드밀 Long Length End Mills	103	
		4HEMG		4F	45° 헬릭스 엔드밀 45° Helix End Mills	104	
		2CREG		2F	리브 코너 레디우스 Rib Corner Radius	105	
		4CREG		4F	리브 코너 레디우스 Rib Corner Radius	108	
		2NCRG		2F	코너 레디우스 Corner Radius End Mills	111	
		4NCRG		4F	코너 레디우스 Corner Radius End Mills	113	
		고경도·일반강 황삭 가공 HRc ~50	3&4ROUG		3&4	라핑 엔드밀 Roughing End Mills	115
			3&4HROUG		3&4	45° 헬릭스 파인피치형 라핑 45° Helix Fine Pitch Roughing	116
<b>FOR GRAPHITE</b> 흑연 가공용	프리하든강 일반강 비철·비금속 HRc ~48	2GBE		2F	롱 샹크 볼 Long Shank Ball End Mills	117	
		2TGB		2F	테이퍼 넥 볼 Taper Neck Ball End Mills	118	
		2GEM		2F	롱 샹크 엔드밀 Long Shank End Mills	119	
		4GEM		4F	롱 샹크 엔드밀 Long Shank End Mills	120	
	HRc ~50	6GEM		6F	45° 헬릭스 롱 샹크 엔드밀 45° Helix Long Shank End Mills	121	
	흑연 강화플라스틱 탄소섬유 등 비금속	2DBE		2F	다이아몬드 코팅 볼 Diamond Coated Ball End Mills	122	
		3DBE		3F	다이아몬드 코팅 볼 Diamond Coated Ball End Mills	124	
		3TBD		3F	다이아몬드 코팅 테이퍼 넥 볼 Diamond Coated Taper Neck Ball	125	
		4DBE		4F	다이아몬드 코팅 볼 Diamond Coated Ball End Mills	126	
		2DEM		2F	다이아몬드 코팅 엔드밀 Diamond Coated End Mills	127	
3DEM			3F	다이아몬드 코팅 엔드밀 Diamond Coated End Mills	128		
4&6DEM			4&6	다이아몬드 코팅 엔드밀 Diamond Coated End Mills	129		
2DCR			2F	다이아몬드 코팅 코너 레디우스 Diamond Coated Radius	130		
4DCR		4F	다이아몬드 코팅 코너 레디우스 Diamond Coated Radius	132			
<b>FOR COMPOSITE</b> 복합소재 가공용	강화플라스틱 동·동합금 유리/탄소섬유 비철·비금속의 복합소재	2CPB		2F	복합소재용 볼 Ball End Mills for Composite	133	
		8~12CPE		8~12	복합소재용 정삭 엔드밀 Finishing End Mills for Composite	133	
		3&4&6CPR		3&4&6	복합소재용 라우터 Router for Composite	134	

# Carbide End Mills INDEX

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	<b>FOR COPPER</b> 동 가공용	동·동합금 알루미늄 합금 비철합금	2COB		2F	45° 헬릭스 리브 볼 45° Helix Rib Ball End Mills
2COR				2F	리브 코너 레디우스 Rib Corner Radius	146
3COR				3F	45° 헬릭스 리브 코너 레디우스 45° Helix Rib Radius	148
<b>G-TAC</b> Diamond Like Carbon	알루미늄 알루미늄 합금 동·동합금 강화플라스틱 (CFRP, GFRP) 비철·비금속	2DRB		2F	G-TAC코팅 리브 볼 T-DLC Coated Rib Ball End Mills	149
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		2ALE <i>New</i> 코팅시리즈		2F	45° 헬릭스 엔드밀 45° Helix End Mills	157
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	3ARC			3F	세미 피니싱 & 라핑 레디우스 Semi Finishing & Roughing Radius	163
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임펠라 가공	3TBIC		3F	임펠라 가공용 테이퍼 볼 Taper Ball End Mills for Impeller	165	
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		2CTE		2F	테이퍼 엔드밀 Taper End Mills	168
		4CTE		4F	테이퍼 엔드밀 Taper End Mills	170
		4RTE		4F	리브 테이퍼 엔드밀 Rib Taper End Mills	171

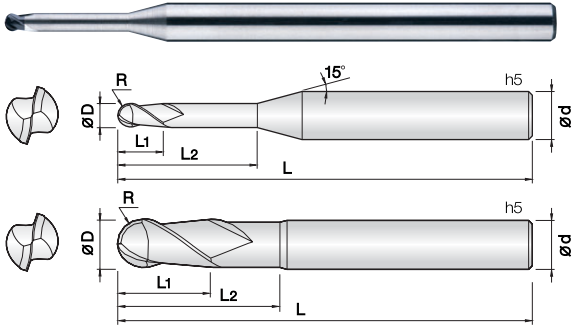
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EDP. Number and Specifications are can be changed without notification for quality improvement.

# Carbide End Mills INDEX

시리즈 Series	특징 Hardness	주문 번호 EDP. NO	형상 Appearance	날 수 Flutes	분류 Type	쪽 Page
<b>GENERAL PURPOSE</b> 범용	고경도 일반강 다가능 가공 HRc ~50	2CRC		2F	코너 역R 커터 Corner Rounding Cutter	172
		4CRC		4F	코너 역R 커터 Corner Rounding Cutter	173
		1STE		1F	직선날 테이퍼 엔드밀 Straight Flute Taper End Mills	174
		2STE		2F	직선날 테이퍼 엔드밀 Straight Flute Taper End Mills	175
		4STE		4F	직선날 테이퍼 엔드밀 Straight Flute Taper End Mills	176
		2CHA		2F	90° 면취 커터 90° Chamfering Cutter	177
		3CHA		3F	90° 면취 커터 90° Chamfering Cutter	177
		2CEN		2F	센터링 엔드밀 Centering End Mills	178
		2CENE <i>New</i>		2F	소경 면취 엔드밀 Miniature Chamfering End Mills	179
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		3TRC <i>New</i>		3F	T 더블R 커터 T Double Corner Rounding Cutter	185
		4&6TDA		4&6	T 더블앵글 커터 T Double Angular Cutter	186
		3&4THC <i>New</i>		3&4	나사 홈 가공용 커터 Thread Milling Cutter	187
		4&6TAC		4&6	T 앵글 커터 T Angular Cutter	188
		<b>FOR A.B.S</b> ABS수지, 비금속가공용	아크릴 ABS 목업 알루미늄 등 비철·비금속	2MRB		2F
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3MRE				3F	범용 마이크로 리브 엔드밀 Micro Rib End Mills	198
2MLE				2F	마이크로 롱 엔드밀 Micro Long End Mills	199
2MEM				2F	범용 엔드밀 End Mills	201
3MEM				3F	범용 엔드밀 End Mills	202
4MEM				4F	범용 엔드밀 End Mills	203

■ 상기 제품의 주문번호 및 사양은 품질개선을 위해 예고없이 변경될 수 있습니다.  
EDP. Number and Specifications are can be changed without notification for quality improvement.





0.1 ~ 1.25R 1.5 ~ 2R 3R

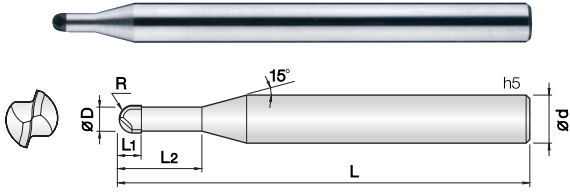
- 고경도강 (HRC50~72)의 고정밀 ( $\pm 5\mu\text{m}$ ) 정삭가공용 엔드밀
- 고함량의 PCBN을 적용하여 장시간 가공이 가능합니다.
- 날부인선의 조도가 뛰어나 경면가공에 적합합니다.
- 다양한 유효장을 적용함으로써 최상의 작업이 가능합니다.
- 오일미스트 사용을 권장하며, RPM 2만~5만 범위의 고속가공을 추천합니다.
- **PCBN ENDMILL for precise finishing ( $\pm 5\mu\text{m}$ ) of hardened steel (HRC50~72)**
- Long tool life by high content PCBN.
- Excellent surface finish.
- Various flute length for optimum performance.
- Recommend high speed (20,000~50,000RPM) with oil-mist.
- C.B.N (Cubic Boron Nitride)

D Size	D Tolerance
$\phi 0.2 \sim 6$	+0 ~ -0.01mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2BCBN 002 002 S04	0.1R X 0.2	0.2	-	48	4		2BCBN 015 040 S04	0.75R X 1.5	1	4	48	4	
2BCBN 002 004 S04	0.1R X 0.2	0.4	-	48	4		2BCBN 015 060 S04	0.75R X 1.5	1	6	48	4	
2BCBN 003 003 S04	0.15R X 0.3	0.3	-	48	4		2BCBN 015 080 S04	0.75R X 1.5	1	8	48	4	
2BCBN 003 005 S04	0.15R X 0.3	0.5	-	48	4		2BCBN 015 100 S04	0.75R X 1.5	1	10	48	4	
2BCBN 004 015 S04	0.2R X 0.4	0.3	1.5	48	4		2BCBN 015 120 S04	0.75R X 1.5	1	12	48	4	
2BCBN 004 020 S04	0.2R X 0.4	0.3	2	48	4		2BCBN 015 140 S04	0.75R X 1.5	1	14	48	4	
2BCBN 004 030 S04	0.2R X 0.4	0.3	3	48	4		2BCBN 015 160 S04	0.75R X 1.5	1	16	48	4	
2BCBN 004 040 S04	0.2R X 0.4	0.3	4	48	4		2BCBN 015 180 S04	0.75R X 1.5	1	18	48	4	
2BCBN 004 050 S04	0.2R X 0.4	0.3	5	48	4		2BCBN 020 040 S04	1R X 2	1.2	4	50	4	
2BCBN 004 060 S04	0.2R X 0.4	0.3	6	48	4		2BCBN 020 060 S04	1R X 2	1.2	6	50	4	
2BCBN 005 015 S04	0.25R X 0.5	0.4	1.5	48	4		2BCBN 020 080 S04	1R X 2	1.2	8	50	4	
2BCBN 005 020 S04	0.25R X 0.5	0.4	2	48	4		2BCBN 020 100 S04	1R X 2	1.2	10	50	4	
2BCBN 005 030 S04	0.25R X 0.5	0.4	3	48	4		2BCBN 020 120 S04	1R X 2	1.2	12	50	4	
2BCBN 005 040 S04	0.25R X 0.5	0.4	4	48	4		2BCBN 020 140 S04	1R X 2	1.2	14	50	4	
2BCBN 005 050 S04	0.25R X 0.5	0.4	5	48	4		2BCBN 020 160 S04	1R X 2	1.2	16	50	4	
2BCBN 005 060 S04	0.25R X 0.5	0.4	6	48	4		2BCBN 020 180 S04	1R X 2	1.2	18	50	4	
2BCBN 005 080 S04	0.25R X 0.5	0.4	8	48	4		2BCBN 025 060 S06	1.25R X 2.5	1.6	6	66	6	
2BCBN 006 015 S04	0.3R X 0.6	0.5	1.5	48	4		2BCBN 025 100 S06	1.25R X 2.5	1.6	10	66	6	
2BCBN 006 020 S04	0.3R X 0.6	0.5	2	48	4		2BCBN 025 160 S06	1.25R X 2.5	1.6	16	66	6	
2BCBN 006 030 S04	0.3R X 0.6	0.5	3	48	4		2BCBN 025 200 S06	1.25R X 2.5	1.6	20	66	6	
2BCBN 006 040 S04	0.3R X 0.6	0.5	4	48	4		2BCBN 030 060 S06	1.5R X 3	1.8	6	66	6	
2BCBN 006 050 S04	0.3R X 0.6	0.5	5	48	4		2BCBN 030 080 S06	1.5R X 3	1.8	8	66	6	
2BCBN 006 060 S04	0.3R X 0.6	0.5	6	48	4		2BCBN 030 100 S06	1.5R X 3	1.8	10	66	6	
2BCBN 006 080 S04	0.3R X 0.6	0.5	8	48	4		2BCBN 030 120 S06	1.5R X 3	1.8	12	66	6	
2BCBN 006 100 S04	0.3R X 0.6	0.5	10	48	4		2BCBN 030 160 S06	1.5R X 3	1.8	16	66	6	
2BCBN 007 020 S04	0.35R X 0.7	0.5	2	48	4		2BCBN 030 200 S06	1.5R X 3	1.8	20	66	6	
2BCBN 007 040 S04	0.35R X 0.7	0.5	4	48	4		2BCBN 040 060 S06	2R X 4	2.4	6	66	6	
2BCBN 008 020 S04	0.4R X 0.8	0.6	2	48	4		2BCBN 040 080 S06	2R X 4	2.4	8	66	6	
2BCBN 008 040 S04	0.4R X 0.8	0.6	4	48	4		2BCBN 040 100 S06	2R X 4	2.4	10	66	6	
2BCBN 008 060 S04	0.4R X 0.8	0.6	6	48	4		2BCBN 040 120 S06	2R X 4	2.4	12	66	6	
2BCBN 008 080 S04	0.4R X 0.8	0.6	8	48	4		2BCBN 040 160 S06	2R X 4	2.4	16	66	6	
2BCBN 008 100 S04	0.4R X 0.8	0.6	10	48	4		2BCBN 040 200 S06	2R X 4	2.4	20	66	6	
2BCBN 009 020 S04	0.45R X 0.9	0.6	2	48	4		2BCBN 060 035 S06	3R X 6	3.5	-	83	6	
2BCBN 009 040 S04	0.45R X 0.9	0.6	4	48	4		2BCBN 060 100 S06	3R X 6	3.5	10	83	6	
2BCBN 010 025 S04	0.5R X 1	0.7	2.5	48	4		2BCBN 060 200 S06	3R X 6	3.5	20	83	6	
2BCBN 010 040 S04	0.5R X 1	0.7	4	48	4								
2BCBN 010 050 S04	0.5R X 1	0.7	5	48	4								
2BCBN 010 060 S04	0.5R X 1	0.7	6	48	4								
2BCBN 010 080 S04	0.5R X 1	0.7	8	48	4								
2BCBN 010 100 S04	0.5R X 1	0.7	10	48	4								
2BCBN 010 120 S04	0.5R X 1	0.7	12	48	4								
2BCBN 010 160 S04	0.5R X 1	0.7	16	48	4								
2BCBN 012 040 S04	0.6R X 1.2	0.8	4	48	4								
2BCBN 012 060 S04	0.6R X 1.2	0.8	6	48	4								
2BCBN 012 080 S04	0.6R X 1.2	0.8	8	48	4								
2BCBN 012 100 S04	0.6R X 1.2	0.8	10	48	4								
2BCBN 012 120 S04	0.6R X 1.2	0.8	12	48	4								
2BCBN 012 160 S04	0.6R X 1.2	0.8	16	48	4								

## 2날CBN 고속가공용 직선날 리브 볼 엔드밀



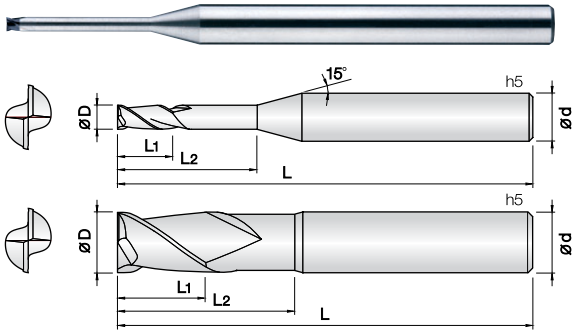
- 고경도강(HRc50~72)의 고정밀(±5μm) 정삭가공용 엔드밀
- 고함량의 PCBN을 적용하여 장시간 가공이 가능합니다.
- 날부 스트레이트 타입 형상으로 치핑을 더욱 최소화 하였습니다.
- 날부인선의 조도가 뛰어나 경면가공에 적합합니다.
- 다양한 유효장을 적용함으로써 최상의 작업이 가능합니다.
- 오일미스트 사용을 권장하며, RPM 2만~5만 범위의 고속가공을 추천합니다.
- **PCBN ENDMILL for precise finishing(±5 μm) of hardened steel (HRc50~72)**
- Long tool life by high content PCBN.
- Straight type Design for Minimizing edge chipping.
- Excellent surface finish.
- Various flute length for optimum performance.
- Recommend high speed(20,000~50,000RPM) with oil-mist.
- C.B.N (Cubic Boron Nitride)



D Size	D Tolerance
∅0.2 ~ 6	+0 ~ -0.01mm

단위 : mm

Order Number	날경 Diameter R×D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤홅크 Shank Dia d	비고												
2SBCBN 002 002 S04	0.1R X 0.2	0.2	-	48	4													
2SBCBN 002 004 S04	0.1R X 0.2	0.4	-	48	4													
2SBCBN 003 003 S04	0.15R X 0.3	0.3	-	48	4													
2SBCBN 003 005 S04	0.15R X 0.3	0.5	-	48	4													
2SBCBN 004 015 S04	0.2R X 0.4	0.3	1.5	48	4													
2SBCBN 005 015 S04	0.25R X 0.5	0.4	1.5	48	4													
2SBCBN 005 020 S04	0.25R X 0.5	0.4	2	48	4													
2SBCBN 006 015 S04	0.3R X 0.6	0.5	1.5	48	4													
2SBCBN 006 020 S04	0.3R X 0.6	0.5	2	48	4													
2SBCBN 006 030 S04	0.3R X 0.6	0.5	3	48	4													
2SBCBN 006 040 S04	0.3R X 0.6	0.5	4	48	4													
2SBCBN 007 020 S04	0.35R X 0.7	0.5	2	48	4													
2SBCBN 008 020 S04	0.4R X 0.8	0.6	2	48	4													
2SBCBN 008 030 S04	0.4R X 0.8	0.6	3	48	4													
2SBCBN 008 040 S04	0.4R X 0.8	0.6	4	48	4													
2SBCBN 009 020 S04	0.45R X 0.9	0.6	2	48	4													
2SBCBN 010 025 S04	0.5R X 1	0.7	2.5	48	4													
2SBCBN 010 040 S04	0.5R X 1	0.7	4	48	4													
2SBCBN 010 050 S04	0.5R X 1	0.7	5	48	4													
2SBCBN 010 060 S04	0.5R X 1	0.7	6	48	4													
2SBCBN 012 040 S04	0.6R X 1.2	0.8	4	48	4													
2SBCBN 015 040 S04	0.75R X 1.5	1	4	48	4													
2SBCBN 015 060 S04	0.75R X 1.5	1	6	48	4													
2SBCBN 015 080 S04	0.75R X 1.5	1	8	48	4													
2SBCBN 015 100 S04	0.75R X 1.5	1	10	48	4													
2SBCBN 020 040 S04	1R X 2	1.2	4	50	4													
2SBCBN 020 060 S04	1R X 2	1.2	6	50	4													
2SBCBN 020 080 S04	1R X 2	1.2	8	50	4													
2SBCBN 020 100 S04	1R X 2	1.2	10	50	4													
2SBCBN 020 120 S04	1R X 2	1.2	12	50	4													
2SBCBN 025 060 S06	1.25R X 2.5	1.6	6	66	6													
2SBCBN 030 060 S06	1.5R X 3	1.8	6	66	6													
2SBCBN 030 080 S06	1.5R X 3	1.8	8	66	6													
2SBCBN 030 100 S06	1.5R X 3	1.8	10	66	6													
2SBCBN 030 120 S06	1.5R X 3	1.8	12	66	6													
2SBCBN 030 160 S06	1.5R X 3	1.8	16	66	6													
2SBCBN 030 200 S06	1.5R X 3	1.8	20	66	6													
2SBCBN 040 060 S06	2R X 4	2.4	6	66	6													
2SBCBN 040 080 S06	2R X 4	2.4	8	66	6													
2SBCBN 040 100 S06	2R X 4	2.4	10	66	6													
2SBCBN 040 120 S06	2R X 4	2.4	12	66	6													
2SBCBN 040 160 S06	2R X 4	2.4	16	66	6													
2SBCBN 040 200 S06	2R X 4	2.4	20	66	6													
2SBCBN 060 035 S06	3R X 6	3.5	-	83	6													
2SBCBN 060 100 S06	3R X 6	3.5	10	83	6													



- 고경도강(HRc50~72)의 고정밀( $\pm 5\mu\text{m}$ ) 정삭가공용 엔드밀
- 고힘량의 PCBN을 적용하여 장시간 가공이 가능합니다.
- 날부인선의 조도가 뛰어나 경면가공에 적합합니다.
- 다양한 유효장을 적용함으로써 최상의 작업이 가능합니다.
- 오일미스트 사용을 권장하며, RPM 2만~5만 범위의 고속가공을 추천합니다.
- **PCBN ENDMILL for precise finishing( $\pm 5\mu\text{m}$ ) of hardened steel (HRc50~72)**
- Long tool life by high content PCBN.
- Excellent surface finish.
- Various flute length for optimum performance.
- Recommend high speed(20,000~50,000RPM) with oil-mist.
- C.B.N (Cubic Boron Nitride)



ø0.2 ~ ø6

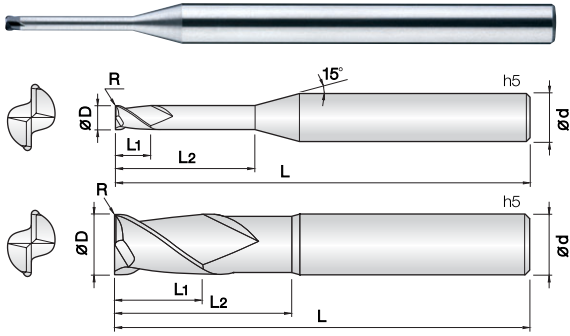
Shield Edge

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

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2ECBN 002 002 S04	0.2	0.2	-	48	4		2ECBN 012 060 S04	1.2	0.7	6	48	4	
2ECBN 002 004 S04	0.2	0.4	-	48	4		2ECBN 012 080 S04	1.2	0.7	8	48	4	
2ECBN 003 003 S04	0.3	0.3	-	48	4		2ECBN 012 100 S04	1.2	0.7	10	48	4	
2ECBN 003 005 S04	0.3	0.5	-	48	4		2ECBN 012 120 S04	1.2	0.7	12	48	4	
2ECBN 004 015 S04	0.4	0.3	1.5	48	4		2ECBN 012 160 S04	1.2	0.7	16	48	4	
2ECBN 004 020 S04	0.4	0.3	2	48	4		2ECBN 015 030 S04	1.5	0.8	3	48	4	
2ECBN 004 030 S04	0.4	0.3	3	48	4		2ECBN 015 060 S04	1.5	0.8	6	48	4	
2ECBN 004 040 S04	0.4	0.3	4	48	4		2ECBN 015 080 S04	1.5	0.8	8	48	4	
2ECBN 004 050 S04	0.4	0.3	5	48	4		2ECBN 015 100 S04	1.5	0.8	10	48	4	
2ECBN 004 060 S04	0.4	0.3	6	48	4		2ECBN 015 120 S04	1.5	0.8	12	48	4	
2ECBN 005 015 S04	0.5	0.4	1.5	48	4		2ECBN 015 140 S04	1.5	0.8	14	48	4	
2ECBN 005 020 S04	0.5	0.4	2	48	4		2ECBN 015 160 S04	1.5	0.8	16	48	4	
2ECBN 005 030 S04	0.5	0.4	3	48	4		2ECBN 015 180 S04	1.5	0.8	18	48	4	
2ECBN 005 040 S04	0.5	0.4	4	48	4		2ECBN 020 030 S04	2	0.9	3	50	4	
2ECBN 005 050 S04	0.5	0.4	5	48	4		2ECBN 020 060 S04	2	0.9	6	50	4	
2ECBN 005 060 S04	0.5	0.4	6	48	4		2ECBN 020 080 S04	2	0.9	8	50	4	
2ECBN 005 080 S04	0.5	0.4	8	48	4		2ECBN 020 100 S04	2	0.9	10	50	4	
2ECBN 006 015 S04	0.6	0.5	1.5	48	4		2ECBN 020 120 S04	2	0.9	12	50	4	
2ECBN 006 020 S04	0.6	0.5	2	48	4		2ECBN 020 140 S04	2	0.9	14	50	4	
2ECBN 006 030 S04	0.6	0.5	3	48	4		2ECBN 020 160 S04	2	0.9	16	50	4	
2ECBN 006 040 S04	0.6	0.5	4	48	4		2ECBN 020 180 S04	2	0.9	18	50	4	
2ECBN 006 060 S04	0.6	0.5	6	48	4		2ECBN 025 060 S06	2.5	1.2	6	66	6	
2ECBN 006 080 S04	0.6	0.5	8	48	4		2ECBN 025 100 S06	2.5	1.2	10	66	6	
2ECBN 006 100 S04	0.6	0.5	10	48	4		2ECBN 025 160 S06	2.5	1.2	16	66	6	
2ECBN 007 025 S04	0.7	0.5	2.5	48	4		2ECBN 025 200 S06	2.5	1.2	20	66	6	
2ECBN 007 040 S04	0.7	0.5	4	48	4		2ECBN 030 060 S06	3	1.2	6	66	6	
2ECBN 007 060 S04	0.7	0.5	6	48	4		2ECBN 030 080 S06	3	1.2	8	66	6	
2ECBN 008 025 S04	0.8	0.6	2.5	48	4		2ECBN 030 100 S06	3	1.2	10	66	6	
2ECBN 008 040 S04	0.8	0.6	4	48	4		2ECBN 030 120 S06	3	1.2	12	66	6	
2ECBN 008 060 S04	0.8	0.6	6	48	4		2ECBN 030 160 S06	3	1.2	16	66	6	
2ECBN 008 080 S04	0.8	0.6	8	48	4		2ECBN 030 200 S06	3	1.2	20	66	6	
2ECBN 008 100 S04	0.8	0.6	10	48	4		2ECBN 040 060 S06	4	1.5	6	66	6	
2ECBN 009 025 S04	0.9	0.6	2.5	48	4		2ECBN 040 080 S06	4	1.5	8	66	6	
2ECBN 009 040 S04	0.9	0.6	4	48	4		2ECBN 040 100 S06	4	1.5	10	66	6	
2ECBN 009 060 S04	0.9	0.6	6	48	4		2ECBN 040 120 S06	4	1.5	12	66	6	
2ECBN 009 080 S04	0.9	0.6	8	48	4		2ECBN 040 160 S06	4	1.5	16	66	6	
2ECBN 009 100 S04	0.9	0.6	10	48	4		2ECBN 040 200 S06	4	1.5	20	66	6	
2ECBN 010 025 S04	1	0.7	2.5	48	4		2ECBN 060 030 S06	6	3	-	83	6	
2ECBN 010 040 S04	1	0.7	4	48	4		2ECBN 060 100 S06	6	3	10	83	6	
2ECBN 010 050 S04	1	0.7	5	48	4		2ECBN 060 200 S06	6	3	20	83	6	
2ECBN 010 060 S04	1	0.7	6	48	4								
2ECBN 010 080 S04	1	0.7	8	48	4								
2ECBN 010 100 S04	1	0.7	10	48	4								
2ECBN 010 120 S04	1	0.7	12	48	4								
2ECBN 010 140 S04	1	0.7	14	48	4								
2ECBN 010 160 S04	1	0.7	16	48	4								
2ECBN 012 030 S04	1.2	0.7	3	48	4								
2ECBN 012 040 S04	1.2	0.7	4	48	4								





- 고경도강(HRc50~72)의 고정밀(±5µm) 정삭가공용 엔드밀
- 고함량의 PCBN을 적용하여 장시간 가공이 가능합니다.
- 날부인선의 조도가 뛰어나 경면가공에 적합합니다.
- 다양한 유효장을 적용함으로써 최상의 작업이 가능합니다.
- 오일미스트 사용을 권장하며, RPM 2만~5만 범위의 고속가공을 추천합니다.
- **PCBN ENDMILL for precise finishing(±5µm) of hardened steel (HRc50~72)**
- Long tool life by high content PCBN.
- Excellent surface finish.
- Various flute length for optimum performance.
- Recommend high speed(20,000~50,000RPM) with oil-mist.
- C.B.N (Cubic Boron Nitride)



R0.02 ~ 1

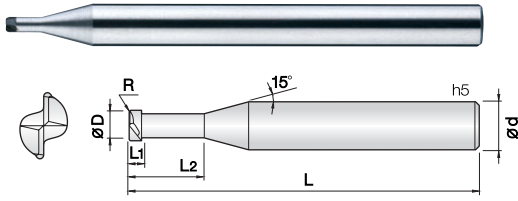
D Size	D Tolerance
Ø0.4 ~ 6	+0 ~ -0.01mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2CCBN 004 0002 015	0.4 X R0.02	0.3	1.5	48	4		2CCBN 010 002 025	1 X R0.2	0.7	2.5	48	4	
2CCBN 004 0002 020	0.4 X R0.02	0.3	2	48	4		2CCBN 010 002 040	1 X R0.2	0.7	4	48	4	
2CCBN 004 0005 015	0.4 X R0.05	0.3	1.5	48	4		2CCBN 010 002 060	1 X R0.2	0.7	6	48	4	
2CCBN 004 0005 020	0.4 X R0.05	0.3	2	48	4		2CCBN 010 002 080	1 X R0.2	0.7	8	48	4	
2CCBN 004 001 015	0.4 X R0.1	0.3	1.5	48	4		2CCBN 010 002 100	1 X R0.2	0.7	10	48	4	
2CCBN 004 001 020	0.4 X R0.1	0.3	2	48	4		2CCBN 010 003 025	1 X R0.3	0.7	2.5	48	4	
2CCBN 005 0005 015	0.5 X R0.05	0.4	1.5	48	4		2CCBN 010 003 040	1 X R0.3	0.7	4	48	4	
2CCBN 005 0005 020	0.5 X R0.05	0.4	2	48	4		2CCBN 010 003 060	1 X R0.3	0.7	6	48	4	
2CCBN 005 0005 030	0.5 X R0.05	0.4	3	48	4		2CCBN 010 003 080	1 X R0.3	0.7	8	48	4	
2CCBN 005 0005 040	0.5 X R0.05	0.4	4	48	4		2CCBN 010 003 100	1 X R0.3	0.7	10	48	4	
2CCBN 005 0005 050	0.5 X R0.05	0.4	5	48	4		2CCBN 012 001 030	1.2 X R0.1	0.7	3	48	4	
2CCBN 005 001 015	0.5 X R0.1	0.4	1.5	48	4		2CCBN 012 001 040	1.2 X R0.1	0.7	4	48	4	
2CCBN 005 001 020	0.5 X R0.1	0.4	2	48	4		2CCBN 012 001 060	1.2 X R0.1	0.7	6	48	4	
2CCBN 005 001 030	0.5 X R0.1	0.4	3	48	4		2CCBN 012 001 080	1.2 X R0.1	0.7	8	48	4	
2CCBN 005 001 040	0.5 X R0.1	0.4	4	48	4		2CCBN 012 001 100	1.2 X R0.1	0.7	10	48	4	
2CCBN 005 001 050	0.5 X R0.1	0.4	5	48	4		2CCBN 012 002 030	1.2 X R0.2	0.7	3	48	4	
2CCBN 006 0005 020	0.6 X R0.05	0.5	2	48	4		2CCBN 012 002 040	1.2 X R0.2	0.7	4	48	4	
2CCBN 006 0005 030	0.6 X R0.05	0.5	3	48	4		2CCBN 012 002 060	1.2 X R0.2	0.7	6	48	4	
2CCBN 006 0005 040	0.6 X R0.05	0.5	4	48	4		2CCBN 012 002 080	1.2 X R0.2	0.7	8	48	4	
2CCBN 006 0005 060	0.6 X R0.05	0.5	6	48	4		2CCBN 012 002 100	1.2 X R0.2	0.7	10	48	4	
2CCBN 006 001 020	0.6 X R0.1	0.5	2	48	4		2CCBN 012 003 030	1.2 X R0.3	0.7	3	48	4	
2CCBN 006 001 030	0.6 X R0.1	0.5	3	48	4		2CCBN 012 003 040	1.2 X R0.3	0.7	4	48	4	
2CCBN 006 001 040	0.6 X R0.1	0.5	4	48	4		2CCBN 012 003 060	1.2 X R0.3	0.7	6	48	4	
2CCBN 006 001 060	0.6 X R0.1	0.5	6	48	4		2CCBN 012 003 080	1.2 X R0.3	0.7	8	48	4	
2CCBN 007 001 025	0.7 X R0.1	0.5	2.5	48	4		2CCBN 012 003 100	1.2 X R0.3	0.7	10	48	4	
2CCBN 007 001 040	0.7 X R0.1	0.5	4	48	4		2CCBN 015 0002 030	1.5 X R0.02	0.8	3	48	4	
2CCBN 007 001 060	0.7 X R0.1	0.5	6	48	4		2CCBN 015 0002 040	1.5 X R0.02	0.8	4	48	4	
2CCBN 008 001 025	0.8 X R0.1	0.6	2.5	48	4		2CCBN 015 0002 060	1.5 X R0.02	0.8	6	48	4	
2CCBN 008 001 040	0.8 X R0.1	0.6	4	48	4		2CCBN 015 0002 080	1.5 X R0.02	0.8	8	48	4	
2CCBN 008 001 060	0.8 X R0.1	0.6	6	48	4		2CCBN 015 0002 100	1.5 X R0.02	0.8	10	48	4	
2CCBN 008 002 025	0.8 X R0.2	0.6	2.5	48	4		2CCBN 015 0005 030	1.5 X R0.05	0.8	3	48	4	
2CCBN 008 002 040	0.8 X R0.2	0.6	4	48	4		2CCBN 015 0005 040	1.5 X R0.05	0.8	4	48	4	
2CCBN 008 002 060	0.8 X R0.2	0.6	6	48	4		2CCBN 015 0005 060	1.5 X R0.05	0.8	6	48	4	
2CCBN 010 0002 025	1 X R0.02	0.7	2.5	48	4		2CCBN 015 0005 080	1.5 X R0.05	0.8	8	48	4	
2CCBN 010 0002 040	1 X R0.02	0.7	4	48	4		2CCBN 015 0005 100	1.5 X R0.05	0.8	10	48	4	
2CCBN 010 0002 060	1 X R0.02	0.7	6	48	4		2CCBN 015 001 030	1.5 X R0.1	0.8	3	48	4	
2CCBN 010 0002 080	1 X R0.02	0.7	8	48	4		2CCBN 015 001 040	1.5 X R0.1	0.8	4	48	4	
2CCBN 010 0002 100	1 X R0.02	0.7	10	48	4		2CCBN 015 001 060	1.5 X R0.1	0.8	6	48	4	
2CCBN 010 0005 025	1 X R0.05	0.7	2.5	48	4		2CCBN 015 001 080	1.5 X R0.1	0.8	8	48	4	
2CCBN 010 0005 040	1 X R0.05	0.7	4	48	4		2CCBN 015 001 100	1.5 X R0.1	0.8	10	48	4	
2CCBN 010 0005 060	1 X R0.05	0.7	6	48	4		2CCBN 015 002 030	1.5 X R0.2	0.8	3	48	4	
2CCBN 010 0005 080	1 X R0.05	0.7	8	48	4		2CCBN 015 002 040	1.5 X R0.2	0.8	4	48	4	
2CCBN 010 0005 100	1 X R0.05	0.7	10	48	4		2CCBN 015 002 060	1.5 X R0.2	0.8	6	48	4	
2CCBN 010 001 025	1 X R0.1	0.7	2.5	48	4		2CCBN 015 002 080	1.5 X R0.2	0.8	8	48	4	
2CCBN 010 001 040	1 X R0.1	0.7	4	48	4		2CCBN 015 002 100	1.5 X R0.2	0.8	10	48	4	
2CCBN 010 001 060	1 X R0.1	0.7	6	48	4		2CCBN 015 003 030	1.5 X R0.3	0.8	3	48	4	
2CCBN 010 001 080	1 X R0.1	0.7	8	48	4		2CCBN 015 003 040	1.5 X R0.3	0.8	4	48	4	
2CCBN 010 001 100	1 X R0.1	0.7	10	48	4		2CCBN 015 003 060	1.5 X R0.3	0.8	6	48	4	

단위 : mm

Order Number	날경 D×R	날장 L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 D×R	날장 L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2CCBN 015 003 080	1.5 X R0.3	0.8	8	48	4		2CCBN 040 005 100	4 X R0.5	1.5	10	66	6	
2CCBN 015 003 100	1.5 X R0.3	0.8	10	48	4		2CCBN 040 005 160	4 X R0.5	1.5	16	66	6	
2CCBN 020 0002 030	2 X R0.02	0.9	3	50	4		2CCBN 040 010 060	4 X R1	1.5	6	66	6	
2CCBN 020 0002 060	2 X R0.02	0.9	6	50	4		2CCBN 040 010 100	4 X R1	1.5	10	66	6	
2CCBN 020 0002 080	2 X R0.02	0.9	8	50	4		2CCBN 040 010 160	4 X R1	1.5	16	66	6	
2CCBN 020 0002 100	2 X R0.02	0.9	10	50	4		2CCBN 060 003 030	6 X R0.3	3	-	83	6	
2CCBN 020 0005 030	2 X R0.05	0.9	3	50	4		2CCBN 060 003 150	6 X R0.3	3	15	83	6	
2CCBN 020 0005 060	2 X R0.05	0.9	6	50	4		2CCBN 060 005 030	6 X R0.5	3	-	83	6	
2CCBN 020 0005 080	2 X R0.05	0.9	8	50	4		2CCBN 060 005 150	6 X R0.5	3	15	83	6	
2CCBN 020 0005 100	2 X R0.05	0.9	10	50	4		2CCBN 060 010 030	6 X R1	3	-	83	6	
2CCBN 020 001 030	2 X R0.1	0.9	3	50	4		2CCBN 060 010 150	6 X R1	3	15	83	6	
2CCBN 020 001 060	2 X R0.1	0.9	6	50	4								
2CCBN 020 001 080	2 X R0.1	0.9	8	50	4								
2CCBN 020 001 100	2 X R0.1	0.9	10	50	4								
2CCBN 020 002 030	2 X R0.2	0.9	3	50	4								
2CCBN 020 002 060	2 X R0.2	0.9	6	50	4								
2CCBN 020 002 080	2 X R0.2	0.9	8	50	4								
2CCBN 020 002 100	2 X R0.2	0.9	10	50	4								
2CCBN 020 003 030	2 X R0.3	0.9	3	50	4								
2CCBN 020 003 060	2 X R0.3	0.9	6	50	4								
2CCBN 020 003 080	2 X R0.3	0.9	8	50	4								
2CCBN 020 003 100	2 X R0.3	0.9	10	50	4								
2CCBN 020 005 030	2 X R0.5	0.9	3	50	4								
2CCBN 020 005 060	2 X R0.5	0.9	6	50	4								
2CCBN 020 005 080	2 X R0.5	0.9	8	50	4								
2CCBN 020 005 100	2 X R0.5	0.9	10	50	4								
2CCBN 025 001 060	2.5 X R0.1	1.2	6	66	6								
2CCBN 025 001 100	2.5 X R0.1	1.2	10	66	6								
2CCBN 025 002 060	2.5 X R0.2	1.2	6	66	6								
2CCBN 025 002 100	2.5 X R0.2	1.2	10	66	6								
2CCBN 025 003 060	2.5 X R0.3	1.2	6	66	6								
2CCBN 025 003 100	2.5 X R0.3	1.2	10	66	6								
2CCBN 030 001 060	3 X R0.1	1.2	6	66	6								
2CCBN 030 001 100	3 X R0.1	1.2	10	66	6								
2CCBN 030 001 160	3 X R0.1	1.2	16	66	6								
2CCBN 030 001 200	3 X R0.1	1.2	20	66	6								
2CCBN 030 002 060	3 X R0.2	1.2	6	66	6								
2CCBN 030 002 100	3 X R0.2	1.2	10	66	6								
2CCBN 030 002 160	3 X R0.2	1.2	16	66	6								
2CCBN 030 002 200	3 X R0.2	1.2	20	66	6								
2CCBN 030 003 060	3 X R0.3	1.2	6	66	6								
2CCBN 030 003 100	3 X R0.3	1.2	10	66	6								
2CCBN 030 003 160	3 X R0.3	1.2	16	66	6								
2CCBN 030 003 200	3 X R0.3	1.2	20	66	6								
2CCBN 030 005 060	3 X R0.5	1.2	6	66	6								
2CCBN 030 005 100	3 X R0.5	1.2	10	66	6								
2CCBN 030 005 160	3 X R0.5	1.2	16	66	6								
2CCBN 030 005 200	3 X R0.5	1.2	20	66	6								
2CCBN 030 010 060	3 X R1	1.2	6	66	6								
2CCBN 030 010 100	3 X R1	1.2	10	66	6								
2CCBN 030 010 160	3 X R1	1.2	16	66	6								
2CCBN 030 010 200	3 X R1	1.2	20	66	6								
2CCBN 040 001 060	4 X R0.1	1.5	6	66	6								
2CCBN 040 001 100	4 X R0.1	1.5	10	66	6								
2CCBN 040 001 160	4 X R0.1	1.5	16	66	6								
2CCBN 040 002 060	4 X R0.2	1.5	6	66	6								
2CCBN 040 002 100	4 X R0.2	1.5	10	66	6								
2CCBN 040 002 160	4 X R0.2	1.5	16	66	6								
2CCBN 040 003 060	4 X R0.3	1.5	6	66	6								
2CCBN 040 003 100	4 X R0.3	1.5	10	66	6								
2CCBN 040 003 160	4 X R0.3	1.5	16	66	6								
2CCBN 040 005 060	4 X R0.5	1.5	6	66	6								



- 고경도강(HRc50~72)의 고정밀(±5μm) 정삭가공용 엔드밀
- 고풍량의 PCBN을 적용하여 장시간 가공이 가능합니다.
- 날부 스트레이트 타입 형상으로 치핑을 더욱 최소화 하였습니다.
- 날부인선의 조도가 뛰어나 경면가공에 적합합니다.
- 다양한 유효장을 적용함으로써 최상의 작업이 가능합니다.
- 오일미스트 사용을 권장하며, RPM 2만~5만 범위의 고속가공을 추천합니다.
- **PCBN ENDMILL for precise finishing(±5μm) of hardened steel (HRc50~72)**
- Long tool life by high content PCBN.
- Straight type Design for Minimizing edge chipping.
- Excellent surface finish.
- Various flute length for optimum performance.
- Recommend high speed(20,000~50,000RPM) with oil-mist.
- C.B.N (Cubic Boron Nitride)



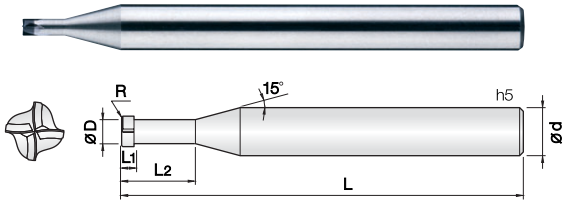
R0.02 ~ 1

D Size	D Tolerance
∅0.4 ~ 6	+0 ~ -0.01mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2SCCBN 004 0002 015	0.4 X R0.02	0.3	1.5	48	4		2SCCBN 030 002 060	3 X R0.2	1.2	6	66	6	
2SCCBN 004 0005 015	0.4 X R0.05	0.3	1.5	48	4		2SCCBN 030 002 100	3 X R0.2	1.2	10	66	6	
2SCCBN 004 001 015	0.4 X R0.1	0.3	1.5	48	4		2SCCBN 030 003 060	3 X R0.3	1.2	6	66	6	
2SCCBN 005 0005 015	0.5 X R0.05	0.4	1.5	48	4		2SCCBN 030 003 100	3 X R0.3	1.2	10	66	6	
2SCCBN 005 001 015	0.5 X R0.1	0.4	1.5	48	4		2SCCBN 030 005 060	3 X R0.5	1.2	6	66	6	
2SCCBN 006 0005 020	0.6 X R0.05	0.5	2	48	4		2SCCBN 030 005 100	3 X R0.5	1.2	10	66	6	
2SCCBN 006 001 020	0.6 X R0.1	0.5	2	48	4		2SCCBN 030 005 160	3 X R0.5	1.2	16	66	6	
2SCCBN 008 001 020	0.8 X R0.1	0.6	2	48	4		2SCCBN 030 010 060	3 X R1	1.2	6	66	6	
2SCCBN 008 002 020	0.8 X R0.2	0.6	2	48	4		2SCCBN 030 010 100	3 X R1	1.2	10	66	6	
2SCCBN 010 0002 025	1 X R0.02	0.7	2.5	48	4		2SCCBN 030 010 160	3 X R1	1.2	16	66	6	
2SCCBN 010 0002 040	1 X R0.02	0.7	4	48	4		2SCCBN 040 001 060	4 X R0.1	1.5	6	66	6	
2SCCBN 010 0005 025	1 X R0.05	0.7	2.5	48	4		2SCCBN 040 001 100	4 X R0.1	1.5	10	66	6	
2SCCBN 010 0005 040	1 X R0.05	0.7	4	48	4		2SCCBN 040 001 160	4 X R0.1	1.5	16	66	6	
2SCCBN 010 001 025	1 X R0.1	0.7	2.5	48	4		2SCCBN 040 002 060	4 X R0.2	1.5	6	66	6	
2SCCBN 010 001 040	1 X R0.1	0.7	4	48	4		2SCCBN 040 002 100	4 X R0.2	1.5	10	66	6	
2SCCBN 010 002 025	1 X R0.2	0.7	2.5	48	4		2SCCBN 040 002 160	4 X R0.2	1.5	16	66	6	
2SCCBN 010 002 040	1 X R0.2	0.7	4	48	4		2SCCBN 040 003 060	4 X R0.3	1.5	6	66	6	
2SCCBN 010 003 025	1 X R0.3	0.7	2.5	48	4		2SCCBN 040 003 100	4 X R0.3	1.5	10	66	6	
2SCCBN 010 003 040	1 X R0.3	0.7	4	48	4		2SCCBN 040 003 160	4 X R0.3	1.5	16	66	6	
2SCCBN 015 0002 030	1.5 X R0.02	0.8	3	48	4		2SCCBN 040 005 060	4 X R0.5	1.5	6	66	6	
2SCCBN 015 0002 040	1.5 X R0.02	0.8	4	48	4		2SCCBN 040 005 100	4 X R0.5	1.5	10	66	6	
2SCCBN 015 0005 030	1.5 X R0.05	0.8	3	48	4		2SCCBN 040 005 160	4 X R0.5	1.5	16	66	6	
2SCCBN 015 0005 040	1.5 X R0.05	0.8	4	48	4		2SCCBN 040 010 060	4 X R1	1.5	6	66	6	
2SCCBN 015 001 030	1.5 X R0.1	0.8	3	48	4		2SCCBN 040 010 100	4 X R1	1.5	10	66	6	
2SCCBN 015 001 040	1.5 X R0.1	0.8	4	48	4		2SCCBN 040 010 160	4 X R1	1.5	16	66	6	
2SCCBN 015 002 030	1.5 X R0.2	0.8	3	48	4		2SCCBN 060 003 030	6 X R0.3	3	-	83	6	
2SCCBN 015 002 040	1.5 X R0.2	0.8	4	48	4		2SCCBN 060 003 150	6 X R0.3	3	15	83	6	
2SCCBN 015 003 030	1.5 X R0.3	0.8	3	48	4		2SCCBN 060 005 030	6 X R0.5	3	-	83	6	
2SCCBN 015 003 040	1.5 X R0.3	0.8	4	48	4		2SCCBN 060 005 150	6 X R0.5	3	15	83	6	
2SCCBN 020 0002 030	2 X R0.02	0.9	3	50	4		2SCCBN 060 010 030	6 X R1	3	-	83	6	
2SCCBN 020 0002 060	2 X R0.02	0.9	6	50	4		2SCCBN 060 010 150	6 X R1	3	15	83	6	
2SCCBN 020 0005 030	2 X R0.05	0.9	3	50	4								
2SCCBN 020 0005 060	2 X R0.05	0.9	6	50	4								
2SCCBN 020 001 030	2 X R0.1	0.9	3	50	4								
2SCCBN 020 001 060	2 X R0.1	0.9	6	50	4								
2SCCBN 020 002 030	2 X R0.2	0.9	3	50	4								
2SCCBN 020 002 060	2 X R0.2	0.9	6	50	4								
2SCCBN 020 003 030	2 X R0.3	0.9	3	50	4								
2SCCBN 020 003 060	2 X R0.3	0.9	6	50	4								
2SCCBN 020 005 030	2 X R0.5	0.9	3	50	4								
2SCCBN 020 005 060	2 X R0.5	0.9	6	50	4								
2SCCBN 025 001 060	2.5 X R0.1	1.2	6	66	6								
2SCCBN 025 002 060	2.5 X R0.2	1.2	6	66	6								
2SCCBN 025 003 060	2.5 X R0.3	1.2	6	66	6								
2SCCBN 030 001 060	3 X R0.1	1.2	6	66	6								
2SCCBN 030 001 100	3 X R0.1	1.2	10	66	6								





- 고경도강(HRc50~72)의 고정밀( $\pm 5\mu\text{m}$ ) 정삭가공용 엔드밀
- 고품질의 PCBN을 적용하여 장시간 가공이 가능합니다.
- 날부 스트레이트 타입 형상으로 치핑을 더욱 최소화 하였습니다.
- 날부인선의 조도가 뛰어나 경면가공에 적합합니다.
- 다양한 유효장을 적용함으로써 최상의 작업이 가능합니다.
- 오일미스트 사용을 권장하며, RPM 2만~5만 범위의 고속가공을 추천합니다.
- **PCBN ENDMILL for precise finishing( $\pm 5\mu\text{m}$ ) of hardened steel (HRc50~72)**
- Long tool life by high content PCBN.
- Straight type Design for Minimizing edge chipping.
- Excellent surface finish.
- Various flute length for optimum performance.
- Recommend high speed(20,000~50,000RPM) with oil-mist.
- C.B.N (Cubic Boron Nitride)

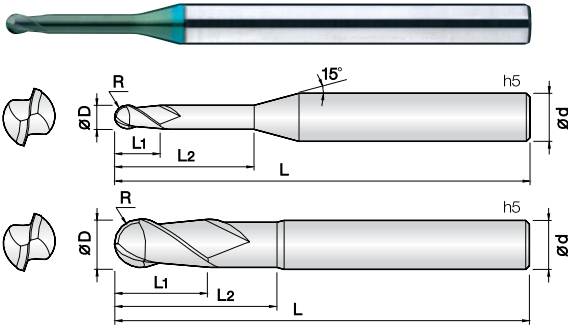


R0.1 ~ 1

D Size	D Tolerance
ø0.8 ~ 6	+0 ~ -0.01mm

단위 : mm

Order Number	날경 D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4SCCBN 008 001 025	0.8 X R0.1	0.6	2.5	48	4		4SCCBN 030 003 100	3 X R0.3	1.2	10	66	6	
4SCCBN 008 002 025	0.8 X R0.2	0.6	2.5	48	4		4SCCBN 030 005 060	3 X R0.5	1.2	6	66	6	
4SCCBN 010 0002 025	1 X R0.02	0.7	2.5	48	4		4SCCBN 030 005 100	3 X R0.5	1.2	10	66	6	
4SCCBN 010 0002 040	1 X R0.02	0.7	4	48	4		4SCCBN 030 005 160	3 X R0.5	1.2	16	66	6	
4SCCBN 010 0005 025	1 X R0.05	0.7	2.5	48	4		4SCCBN 030 010 060	3 X R1	1.2	6	66	6	
4SCCBN 010 0005 040	1 X R0.05	0.7	4	48	4		4SCCBN 030 010 100	3 X R1	1.2	10	66	6	
4SCCBN 010 001 025	1 X R0.1	0.7	2.5	48	4		4SCCBN 030 010 160	3 X R1	1.2	16	66	6	
4SCCBN 010 001 040	1 X R0.1	0.7	4	48	4		4SCCBN 040 001 060	4 X R0.1	1.5	6	66	6	
4SCCBN 010 002 025	1 X R0.2	0.7	2.5	48	4		4SCCBN 040 001 100	4 X R0.1	1.5	10	66	6	
4SCCBN 010 002 040	1 X R0.2	0.7	4	48	4		4SCCBN 040 001 160	4 X R0.1	1.5	16	66	6	
4SCCBN 010 003 025	1 X R0.3	0.7	2.5	48	4		4SCCBN 040 002 060	4 X R0.2	1.5	6	66	6	
4SCCBN 010 003 040	1 X R0.3	0.7	4	48	4		4SCCBN 040 002 100	4 X R0.2	1.5	10	66	6	
4SCCBN 015 0002 030	1.5 X R0.02	0.8	3	48	4		4SCCBN 040 002 160	4 X R0.2	1.5	16	66	6	
4SCCBN 015 0002 040	1.5 X R0.02	0.8	4	48	4		4SCCBN 040 003 060	4 X R0.3	1.5	6	66	6	
4SCCBN 015 0005 030	1.5 X R0.05	0.8	3	48	4		4SCCBN 040 003 100	4 X R0.3	1.5	10	66	6	
4SCCBN 015 0005 040	1.5 X R0.05	0.8	4	48	4		4SCCBN 040 003 160	4 X R0.3	1.5	16	66	6	
4SCCBN 015 001 030	1.5 X R0.1	0.8	3	48	4		4SCCBN 040 005 060	4 X R0.5	1.5	6	66	6	
4SCCBN 015 001 040	1.5 X R0.1	0.8	4	48	4		4SCCBN 040 005 100	4 X R0.5	1.5	10	66	6	
4SCCBN 015 002 030	1.5 X R0.2	0.8	3	48	4		4SCCBN 040 005 160	4 X R0.5	1.5	16	66	6	
4SCCBN 015 002 040	1.5 X R0.2	0.8	4	48	4		4SCCBN 040 010 060	4 X R1	1.5	6	66	6	
4SCCBN 015 003 030	1.5 X R0.3	0.8	3	48	4		4SCCBN 040 010 100	4 X R1	1.5	10	66	6	
4SCCBN 015 003 040	1.5 X R0.3	0.8	4	48	4		4SCCBN 040 010 160	4 X R1	1.5	16	66	6	
4SCCBN 020 0002 030	2 X R0.02	0.9	3	50	4		4SCCBN 060 003 030	6 X R0.3	3	-	83	6	
4SCCBN 020 0002 040	2 X R0.02	0.9	4	50	4		4SCCBN 060 003 150	6 X R0.3	3	15	83	6	
4SCCBN 020 0002 060	2 X R0.02	0.9	6	50	4		4SCCBN 060 005 030	6 X R0.5	3	-	83	6	
4SCCBN 020 0005 030	2 X R0.05	0.9	3	50	4		4SCCBN 060 005 150	6 X R0.5	3	15	83	6	
4SCCBN 020 0005 040	2 X R0.05	0.9	4	50	4		4SCCBN 060 010 030	6 X R1	3	-	83	6	
4SCCBN 020 0005 060	2 X R0.05	0.9	6	50	4		4SCCBN 060 010 150	6 X R1	3	15	83	6	
4SCCBN 020 001 030	2 X R0.1	0.9	3	50	4								
4SCCBN 020 001 040	2 X R0.1	0.9	4	50	4								
4SCCBN 020 001 060	2 X R0.1	0.9	6	50	4								
4SCCBN 020 002 030	2 X R0.2	0.9	3	50	4								
4SCCBN 020 002 040	2 X R0.2	0.9	4	50	4								
4SCCBN 020 002 060	2 X R0.2	0.9	6	50	4								
4SCCBN 020 003 030	2 X R0.3	0.9	3	50	4								
4SCCBN 020 003 040	2 X R0.3	0.9	4	50	4								
4SCCBN 020 003 060	2 X R0.3	0.9	6	50	4								
4SCCBN 020 005 030	2 X R0.5	0.9	3	50	4								
4SCCBN 020 005 040	2 X R0.5	0.9	4	50	4								
4SCCBN 020 005 060	2 X R0.5	0.9	6	50	4								
4SCCBN 025 001 060	2.5 X R0.1	1.2	6	66	6								
4SCCBN 025 002 060	2.5 X R0.2	1.2	6	66	6								
4SCCBN 025 003 060	2.5 X R0.3	1.2	6	66	6								
4SCCBN 030 001 060	3 X R0.1	1.2	6	66	6								
4SCCBN 030 001 100	3 X R0.1	1.2	10	66	6								
4SCCBN 030 002 060	3 X R0.2	1.2	6	66	6								
4SCCBN 030 002 100	3 X R0.2	1.2	10	66	6								
4SCCBN 030 003 060	3 X R0.3	1.2	6	66	6								



- 고경도강(HRC52~70), 프리하드강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRC52~70)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJRB 001 003 S04	0.05R X 0.1	0.3	-	40	4		2JJRB 006 020 S04	0.3R X 0.6	0.6	2	45	4	
2JJRB 001 005 S04	0.05R X 0.1	0.5	-	40	4		2JJRB 006 020 S06	0.3R X 0.6	0.6	2	50	6	
2JJRB 002 005 S04	0.1R X 0.2	0.2	0.5	40	4		2JJRB 006 030 S04	0.3R X 0.6	0.6	3	45	4	
2JJRB 002 010 S04	0.1R X 0.2	0.2	1	40	4		2JJRB 006 030 S06	0.3R X 0.6	0.6	3	50	6	
2JJRB 002 015 S04	0.1R X 0.2	0.2	1.5	40	4		2JJRB 006 040 S04	0.3R X 0.6	0.6	4	45	4	
2JJRB 002 020 S04	0.1R X 0.2	0.2	2	40	4		2JJRB 006 040 S06	0.3R X 0.6	0.6	4	50	6	
2JJRB 002 025 S04	0.1R X 0.2	0.2	2.5	40	4		2JJRB 006 050 S04	0.3R X 0.6	0.6	5	45	4	
2JJRB 002 030 S04	0.1R X 0.2	0.2	3	40	4		2JJRB 006 050 S06	0.3R X 0.6	0.6	5	50	6	
2JJRB 003 010 S04	0.15R X 0.3	0.3	1	40	4		2JJRB 006 060 S04	0.3R X 0.6	0.6	6	45	4	
2JJRB 003 015 S04	0.15R X 0.3	0.3	1.5	40	4		2JJRB 006 060 S06	0.3R X 0.6	0.6	6	50	6	
2JJRB 003 020 S04	0.15R X 0.3	0.3	2	40	4		2JJRB 006 080 S04	0.3R X 0.6	0.6	8	45	4	
2JJRB 003 025 S04	0.15R X 0.3	0.3	2.5	40	4		2JJRB 006 080 S06	0.3R X 0.6	0.6	8	50	6	
2JJRB 003 030 S04	0.15R X 0.3	0.3	3	40	4		2JJRB 006 100 S04	0.3R X 0.6	0.6	10	45	4	
2JJRB 003 035 S04	0.15R X 0.3	0.3	3.5	40	4		2JJRB 006 120 S04	0.3R X 0.6	0.6	12	45	4	
2JJRB 003 040 S04	0.15R X 0.3	0.3	4	40	4		2JJRB 006 140 S04	0.3R X 0.6	0.6	14	45	4	
2JJRB 003 050 S04	0.15R X 0.3	0.3	5	40	4		2JJRB 007 020 S04	0.35R X 0.7	0.7	2	45	4	
2JJRB 004 010 S04	0.2R X 0.4	0.4	1	40	4		2JJRB 007 040 S04	0.35R X 0.7	0.7	4	45	4	
2JJRB 004 015 S04	0.2R X 0.4	0.4	1.5	40	4		2JJRB 007 060 S04	0.35R X 0.7	0.7	6	45	4	
2JJRB 004 020 S04	0.2R X 0.4	0.4	2	40	4		2JJRB 007 080 S04	0.35R X 0.7	0.7	8	45	4	
2JJRB 004 025 S04	0.2R X 0.4	0.4	2.5	40	4		2JJRB 007 100 S04	0.35R X 0.7	0.7	10	45	4	
2JJRB 004 030 S04	0.2R X 0.4	0.4	3	40	4		2JJRB 007 120 S04	0.35R X 0.7	0.7	12	45	4	
2JJRB 004 035 S04	0.2R X 0.4	0.4	3.5	40	4		2JJRB 008 020 S04	0.4R X 0.8	0.8	2	45	4	
2JJRB 004 040 S04	0.2R X 0.4	0.4	4	40	4		2JJRB 008 020 S06	0.4R X 0.8	0.8	2	50	6	
2JJRB 004 045 S04	0.2R X 0.4	0.4	4.5	40	4		2JJRB 008 030 S04	0.4R X 0.8	0.8	3	45	4	
2JJRB 004 050 S04	0.2R X 0.4	0.4	5	40	4		2JJRB 008 030 S06	0.4R X 0.8	0.8	3	50	6	
2JJRB 004 060 S04	0.2R X 0.4	0.4	6	40	4		2JJRB 008 040 S04	0.4R X 0.8	0.8	4	45	4	
2JJRB 004 080 S04	0.2R X 0.4	0.4	8	40	4		2JJRB 008 040 S06	0.4R X 0.8	0.8	4	50	6	
2JJRB 005 010 S04	0.25R X 0.5	0.5	1	45	4		2JJRB 008 050 S04	0.4R X 0.8	0.8	5	45	4	
2JJRB 005 010 S06	0.25R X 0.5	0.5	1	50	6		2JJRB 008 050 S06	0.4R X 0.8	0.8	5	50	6	
2JJRB 005 015 S04	0.25R X 0.5	0.5	1.5	45	4		2JJRB 008 060 S04	0.4R X 0.8	0.8	6	45	4	
2JJRB 005 020 S04	0.25R X 0.5	0.5	2	45	4		2JJRB 008 060 S06	0.4R X 0.8	0.8	6	50	6	
2JJRB 005 020 S06	0.25R X 0.5	0.5	2	50	6		2JJRB 008 080 S04	0.4R X 0.8	0.8	8	45	4	
2JJRB 005 025 S04	0.25R X 0.5	0.5	2.5	45	4		2JJRB 008 080 S06	0.4R X 0.8	0.8	8	50	6	
2JJRB 005 030 S04	0.25R X 0.5	0.5	3	45	4		2JJRB 008 100 S04	0.4R X 0.8	0.8	10	45	4	
2JJRB 005 030 S06	0.25R X 0.5	0.5	3	50	6		2JJRB 008 120 S04	0.4R X 0.8	0.8	12	45	4	
2JJRB 005 035 S04	0.25R X 0.5	0.5	3.5	45	4		2JJRB 009 040 S04	0.45R X 0.9	0.9	4	45	4	
2JJRB 005 040 S04	0.25R X 0.5	0.5	4	45	4		2JJRB 009 060 S04	0.45R X 0.9	0.9	6	45	4	
2JJRB 005 040 S06	0.25R X 0.5	0.5	4	50	6		2JJRB 009 080 S04	0.45R X 0.9	0.9	8	45	4	
2JJRB 005 045 S04	0.25R X 0.5	0.5	4.5	45	4		2JJRB 009 100 S04	0.45R X 0.9	0.9	10	50	4	
2JJRB 005 050 S04	0.25R X 0.5	0.5	5	45	4		2JJRB 009 120 S04	0.45R X 0.9	0.9	12	50	4	
2JJRB 005 050 S06	0.25R X 0.5	0.5	5	50	6		2JJRB 010 020 S04	0.5R X 1	1	2	45	4	
2JJRB 005 060 S04	0.25R X 0.5	0.5	6	45	4		2JJRB 010 020 S06	0.5R X 1	1	2	50	6	
2JJRB 005 060 S06	0.25R X 0.5	0.5	6	50	6		2JJRB 010 030 S04	0.5R X 1	1	3	45	4	
2JJRB 005 080 S04	0.25R X 0.5	0.5	8	45	4		2JJRB 010 030 S06	0.5R X 1	1	3	50	6	
2JJRB 005 100 S04	0.25R X 0.5	0.5	10	45	4		2JJRB 010 040 S04	0.5R X 1	1	4	45	4	
2JJRB 005 120 S04	0.25R X 0.5	0.5	12	45	4		2JJRB 010 040 S06	0.5R X 1	1	4	50	6	
2JJRB 006 010 S04	0.3R X 0.6	0.6	1	45	4		2JJRB 010 050 S04	0.5R X 1	1	5	45	4	
2JJRB 006 010 S06	0.3R X 0.6	0.6	1	50	6		2JJRB 010 050 S06	0.5R X 1	1	5	50	6	

단위 : mm

Order Number	날경 Diameter R×D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R×D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJRB 010 060 S04	0.5R X 1	1	6	45	4		2JJRB 015 200 S04	0.75R X 1.5	1.5	20	50	4	
2JJRB 010 060 S06	0.5R X 1	1	6	50	6		2JJRB 015 220 S04	0.75R X 1.5	1.5	22	60	4	
2JJRB 010 080 S04	0.5R X 1	1	8	45	4		2JJRB 015 250 S04	0.75R X 1.5	1.5	25	60	4	
2JJRB 010 080 S06	0.5R X 1	1	8	50	6		2JJRB 015 300 S04	0.75R X 1.5	1.5	30	70	4	
2JJRB 010 100 S04	0.5R X 1	1	10	50	4		2JJRB 016 060 S04	0.8R X 1.6	1.6	6	45	4	
2JJRB 010 100 S06	0.5R X 1	1	10	50	6		2JJRB 016 080 S04	0.8R X 1.6	1.6	8	45	4	
2JJRB 010 120 S04	0.5R X 1	1	12	50	4		2JJRB 016 120 S04	0.8R X 1.6	1.6	12	50	4	
2JJRB 010 120 S06	0.5R X 1	1	12	50	6		2JJRB 016 160 S04	0.8R X 1.6	1.6	16	50	4	
2JJRB 010 140 S04	0.5R X 1	1	14	50	4		2JJRB 016 200 S04	0.8R X 1.6	1.6	20	50	4	
2JJRB 010 160 S04	0.5R X 1	1	16	50	4		2JJRB 018 060 S04	0.9R X 1.8	1.8	6	50	4	
2JJRB 010 180 S04	0.5R X 1	1	18	50	4		2JJRB 018 080 S04	0.9R X 1.8	1.8	8	50	4	
2JJRB 010 200 S04	0.5R X 1	1	20	50	4		2JJRB 018 120 S04	0.9R X 1.8	1.8	12	50	4	
2JJRB 010 220 S04	0.5R X 1	1	22	60	4		2JJRB 018 160 S04	0.9R X 1.8	1.8	16	50	4	
2JJRB 010 250 S04	0.5R X 1	1	25	60	4		2JJRB 018 200 S04	0.9R X 1.8	1.8	20	50	4	
2JJRB 012 040 S04	0.6R X 1.2	1.2	4	45	4		2JJRB 020 040 S04	1R X 2	2	4	45	4	
2JJRB 012 040 S06	0.6R X 1.2	1.2	4	50	6		2JJRB 020 040 S06	1R X 2	2	4	50	6	
2JJRB 012 060 S04	0.6R X 1.2	1.2	6	45	4		2JJRB 020 060 S04	1R X 2	2	6	45	4	
2JJRB 012 060 S06	0.6R X 1.2	1.2	6	50	6		2JJRB 020 060 S06	1R X 2	2	6	50	6	
2JJRB 012 080 S04	0.6R X 1.2	1.2	8	45	4		2JJRB 020 080 S04	1R X 2	2	8	45	4	
2JJRB 012 080 S06	0.6R X 1.2	1.2	8	50	6		2JJRB 020 080 S06	1R X 2	2	8	50	6	
2JJRB 012 100 S04	0.6R X 1.2	1.2	10	50	4		2JJRB 020 100 S04	1R X 2	2	10	50	4	
2JJRB 012 100 S06	0.6R X 1.2	1.2	10	50	6		2JJRB 020 100 S06	1R X 2	2	10	50	6	
2JJRB 012 120 S04	0.6R X 1.2	1.2	12	50	4		2JJRB 020 120 S04	1R X 2	2	12	50	4	
2JJRB 012 120 S06	0.6R X 1.2	1.2	12	50	6		2JJRB 020 120 S06	1R X 2	2	12	50	6	
2JJRB 012 160 S04	0.6R X 1.2	1.2	16	50	4		2JJRB 020 140 S04	1R X 2	2	14	50	4	
2JJRB 012 200 S04	0.6R X 1.2	1.2	20	50	4		2JJRB 020 140 S06	1R X 2	2	14	50	6	
2JJRB 012 240 S04	0.6R X 1.2	1.2	24	60	4		2JJRB 020 160 S04	1R X 2	2	16	50	4	
2JJRB 014 060 S04	0.7R X 1.4	1.4	6	45	4		2JJRB 020 160 S06	1R X 2	2	16	60	6	
2JJRB 014 080 S04	0.7R X 1.4	1.4	8	45	4		2JJRB 020 180 S04	1R X 2	2	18	50	4	
2JJRB 014 120 S04	0.7R X 1.4	1.4	12	50	4		2JJRB 020 180 S06	1R X 2	2	18	60	6	
2JJRB 014 160 S04	0.7R X 1.4	1.4	16	50	4		2JJRB 020 200 S04	1R X 2	2	20	50	4	
2JJRB 015 030 S04	0.75R X 1.5	1.5	3	45	4		2JJRB 020 200 S06	1R X 2	2	20	60	6	
2JJRB 015 030 S06	0.75R X 1.5	1.5	3	50	6		2JJRB 020 220 S04	1R X 2	2	22	60	4	
2JJRB 015 040 S04	0.75R X 1.5	1.5	4	45	4		2JJRB 020 250 S04	1R X 2	2	25	60	4	
2JJRB 015 040 S06	0.75R X 1.5	1.5	4	50	6		2JJRB 020 300 S04	1R X 2	2	30	60	4	
2JJRB 015 060 S04	0.75R X 1.5	1.5	6	45	4		2JJRB 025 080 S04	1.25R X 2.5	2.5	8	45	4	
2JJRB 015 060 S06	0.75R X 1.5	1.5	6	50	6		2JJRB 025 080 S06	1.25R X 2.5	2.5	8	50	6	
2JJRB 015 080 S04	0.75R X 1.5	1.5	8	45	4		2JJRB 025 100 S04	1.25R X 2.5	2.5	10	50	4	
2JJRB 015 080 S06	0.75R X 1.5	1.5	8	50	6		2JJRB 025 100 S06	1.25R X 2.5	2.5	10	50	6	
2JJRB 015 100 S04	0.75R X 1.5	1.5	10	50	4		New 2JJRB 025 120 S04	1.25R X 2.5	2.5	12	50	4	
2JJRB 015 100 S06	0.75R X 1.5	1.5	10	50	6		New 2JJRB 025 120 S06	1.25R X 2.5	2.5	12	50	6	
2JJRB 015 120 S04	0.75R X 1.5	1.5	12	50	4		2JJRB 025 160 S04	1.25R X 2.5	2.5	16	50	4	
2JJRB 015 120 S06	0.75R X 1.5	1.5	12	50	6		2JJRB 025 160 S06	1.25R X 2.5	2.5	16	60	6	
2JJRB 015 140 S04	0.75R X 1.5	1.5	14	50	4		2JJRB 025 200 S04	1.25R X 2.5	2.5	20	60	4	
2JJRB 015 140 S06	0.75R X 1.5	1.5	14	50	6		2JJRB 025 200 S06	1.25R X 2.5	2.5	20	60	6	
2JJRB 015 160 S04	0.75R X 1.5	1.5	16	50	4		2JJRB 025 250 S04	1.25R X 2.5	2.5	25	60	4	
2JJRB 015 160 S06	0.75R X 1.5	1.5	16	60	6		2JJRB 025 300 S04	1.25R X 2.5	2.5	30	70	4	
2JJRB 015 180 S04	0.75R X 1.5	1.5	18	50	4		2JJRB 030 060 S06	1.5R X 3	3	6	50	6	



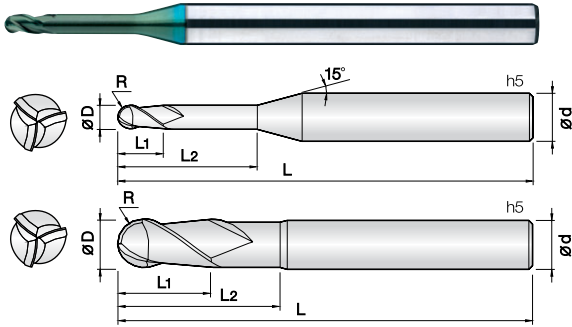


단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고										
2JJRB 030 080 S06	1.5R X 3	3	8	50	6											
2JJRB 030 100 S06	1.5R X 3	3	10	50	6											
2JJRB 030 120 S06	1.5R X 3	3	12	50	6											
2JJRB 030 160 S06	1.5R X 3	3	16	60	6											
2JJRB 030 200 S06	1.5R X 3	3	20	60	6											
2JJRB 030 250 S06	1.5R X 3	3	25	65	6											
2JJRB 030 300 S06	1.5R X 3	3	30	70	6											
2JJRB 030 350 S06	1.5R X 3	3	35	75	6											
2JJRB 030 400 S06	1.5R X 3	3	40	80	6											
2JJRB 030 450 S06	1.5R X 3	3	45	90	6											
New 2JJRB 030 500 S06	1.5R X 3	3	50	100	6											
2JJRB 035 100 S06	1.75R X 3.5	3.5	10	50	6											
2JJRB 035 150 S06	1.75R X 3.5	3.5	15	60	6											
2JJRB 035 200 S06	1.75R X 3.5	3.5	20	60	6											
2JJRB 035 250 S06	1.75R X 3.5	3.5	25	65	6											
2JJRB 035 300 S06	1.75R X 3.5	3.5	30	70	6											
2JJRB 035 350 S06	1.75R X 3.5	3.5	35	75	6											
2JJRB 035 400 S06	1.75R X 3.5	3.5	40	80	6											
2JJRB 040 080 S06	2R X 4	4	8	50	6											
2JJRB 040 100 S06	2R X 4	4	10	50	6											
2JJRB 040 120 S06	2R X 4	4	12	50	6											
2JJRB 040 160 S06	2R X 4	4	16	60	6											
2JJRB 040 200 S06	2R X 4	4	20	60	6											
2JJRB 040 250 S06	2R X 4	4	25	65	6											
2JJRB 040 300 S06	2R X 4	4	30	70	6											
2JJRB 040 350 S06	2R X 4	4	35	75	6											
2JJRB 040 400 S06	2R X 4	4	40	80	6											
2JJRB 040 450 S06	2R X 4	4	45	90	6											
New 2JJRB 040 500 S06	2R X 4	4	50	100	6											
2JJRB 050 160 S06	2.5R X 5	6	16	60	6											
2JJRB 050 200 S06	2.5R X 5	6	20	60	6											
2JJRB 050 250 S06	2.5R X 5	6	25	70	6											
2JJRB 050 300 S06	2.5R X 5	6	30	75	6											
2JJRB 050 400 S06	2.5R X 5	6	40	80	6											
2JJRB 050 450 S06	2.5R X 5	6	45	90	6											
New 2JJRB 050 500 S06	2.5R X 5	6	50	100	6											
2JJRB 060 150 S06	3R X 6	10	15	55	6											
New 2JJRB 060 300 100	3R X 6	10	30	100	6											
New 2JJRB 060 500 120	3R X 6	10	50	120	6											
2JJRB 080 250 060	4R X 8	12	25	60	8											
New 2JJRB 080 300 100	4R X 8	12	30	100	8											
New 2JJRB 080 600 120	4R X 8	12	60	120	8											
2JJRB 100 300 070	5R X 10	16	30	70	10											
New 2JJRB 100 450 100	5R X 10	16	45	100	10											
New 2JJRB 100 600 130	5R X 10	16	60	130	10											
2JJRB 120 300 075	6R X 12	18	30	75	12											
New 2JJRB 120 500 110	6R X 12	18	50	110	12											
New 2JJRB 120 600 130	6R X 12	18	60	130	12											

## 3날 고경도재 가공용 제이제이 리브 볼 엔드밀

JJ series



- 고경도강(HRc52~70), 프리하든강 계열의 고정밀가공 엔드밀
- 고함량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~70)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

3

UWC  
초미립자

TISIN-S  
Coating

R  
 $\pm 0.005$

R  
 $\pm 0.007$

R  
 $\pm 0.01$

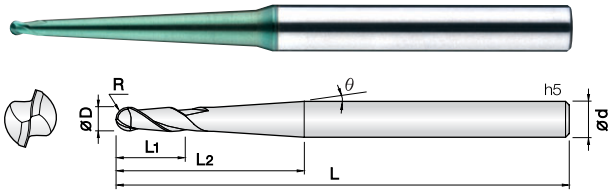
30°  
Helix Angle

0.5 ~ 1.25R
1.5 ~ 3R
4 ~ 6R

D Size	D Tolerance
$\phi 1 \sim 5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
3JJRB 010 040 S04	0.5R X 1	1.2	4	50	4		3JJRB 120 350 075	6R X 12	18	35	75	12	
3JJRB 010 060 S04	0.5R X 1	1.2	6	50	4		3JJRB 120 600 110	6R X 12	18	60	110	12	
3JJRB 010 080 S04	0.5R X 1	1.2	8	50	4								
3JJRB 010 100 S04	0.5R X 1	1.2	10	50	4								
3JJRB 010 120 S04	0.5R X 1	1.2	12	50	4								
3JJRB 010 160 S04	0.5R X 1	1.2	16	50	4								
3JJRB 015 060 S04	0.75R X 1.5	1.8	6	50	4								
3JJRB 015 080 S04	0.75R X 1.5	1.8	8	50	4								
3JJRB 015 100 S04	0.75R X 1.5	1.8	10	50	4								
3JJRB 015 120 S04	0.75R X 1.5	1.8	12	50	4								
3JJRB 015 160 S04	0.75R X 1.5	1.8	16	50	4								
3JJRB 015 200 S04	0.75R X 1.5	1.8	20	60	4								
3JJRB 020 080 S04	1R X 2	2.4	8	50	4								
3JJRB 020 100 S04	1R X 2	2.4	10	50	4								
3JJRB 020 120 S04	1R X 2	2.4	12	50	4								
3JJRB 020 160 S04	1R X 2	2.4	16	50	4								
3JJRB 020 200 S04	1R X 2	2.4	20	60	4								
3JJRB 020 250 S04	1R X 2	2.4	25	70	4								
3JJRB 025 080 S04	1.25R X 2.5	3	8	50	4								
3JJRB 025 100 S04	1.25R X 2.5	3	10	50	4								
3JJRB 025 120 S04	1.25R X 2.5	3	12	50	4								
3JJRB 025 160 S04	1.25R X 2.5	3	16	50	4								
3JJRB 025 200 S04	1.25R X 2.5	3	20	60	4								
3JJRB 025 250 S04	1.25R X 2.5	3	25	70	4								
3JJRB 030 120 S06	1.5R X 3	3.6	12	60	6								
3JJRB 030 160 S06	1.5R X 3	3.6	16	60	6								
3JJRB 030 200 S06	1.5R X 3	3.6	20	65	6								
3JJRB 030 250 S06	1.5R X 3	3.6	25	70	6								
3JJRB 030 300 S06	1.5R X 3	3.6	30	75	6								
3JJRB 030 400 S06	1.5R X 3	3.6	40	90	6								
3JJRB 030 500 S06	1.5R X 3	3.6	50	100	6								
3JJRB 040 160 S06	2R X 4	4.8	16	60	6								
3JJRB 040 200 S06	2R X 4	4.8	20	65	6								
3JJRB 040 250 S06	2R X 4	4.8	25	70	6								
3JJRB 040 300 S06	2R X 4	4.8	30	75	6								
3JJRB 040 400 S06	2R X 4	4.8	40	90	6								
3JJRB 040 500 S06	2R X 4	4.8	50	100	6								
3JJRB 040 600 S06	2R X 4	4.8	60	110	6								
3JJRB 050 300 S06	2.5R X 5	6	30	75	6								
3JJRB 050 400 S06	2.5R X 5	6	40	90	6								
3JJRB 050 500 S06	2.5R X 5	6	50	100	6								
3JJRB 050 600 S06	2.5R X 5	6	60	110	6								
3JJRB 060 200 060	3R X 6	9	20	60	6								
3JJRB 060 300 090	3R X 6	9	30	90	6								
3JJRB 080 250 060	4R X 8	12	25	60	8								
3JJRB 080 400 100	4R X 8	12	40	100	8								
3JJRB 100 300 070	5R X 10	15	30	70	10								
3JJRB 100 500 110	5R X 10	15	50	110	10								



- 고경도강(HRC52~70), 프리하든강 계열의 고정밀가공 엔드밀
- 고품질 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 유효장을 테이퍼 설계하여 깊은 홈 작업시 목부파손 및 떨림을 최소화 하였습니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRC52~70)
- Good wear resistance by high quality Si-based PVD coating.
- Minimize chattering and fracturing by taper designed flute.
- High precise edge tolerance.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



0.1 ~ 2.5R 3 ~ 6R

D Size	D Tolerance
φ0.2 ~ 5	+0 ~ -0.01mm
φ6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJTB 002 003 015	0.1R X 0.2	0°30'	0.2	1.5	40	4		2JJTB 004 020 020	0.2R X 0.4	2°	0.4	2	40	4	
2JJTB 002 003 020	0.1R X 0.2	0°30'	0.2	2	40	4		2JJTB 004 020 030	0.2R X 0.4	2°	0.4	3	40	4	
2JJTB 002 010 015	0.1R X 0.2	1°	0.2	1.5	40	4		2JJTB 004 020 040	0.2R X 0.4	2°	0.4	4	40	4	
2JJTB 002 010 020	0.1R X 0.2	1°	0.2	2	40	4		2JJTB 004 020 050	0.2R X 0.4	2°	0.4	5	40	4	
2JJTB 002 010 025	0.1R X 0.2	1°	0.2	2.5	40	4		2JJTB 004 020 060	0.2R X 0.4	2°	0.4	6	40	4	
2JJTB 002 013 015	0.1R X 0.2	1°30'	0.2	1.5	40	4		2JJTB 005 003 040	0.25R X 0.5	0°30'	0.5	4	45	4	
2JJTB 002 013 020	0.1R X 0.2	1°30'	0.2	2	40	4		2JJTB 005 003 060	0.25R X 0.5	0°30'	0.5	6	45	4	
2JJTB 002 013 025	0.1R X 0.2	1°30'	0.2	2.5	40	4		2JJTB 005 010 040	0.25R X 0.5	1°	0.5	4	45	4	
2JJTB 002 020 015	0.1R X 0.2	2°	0.2	1.5	40	4		2JJTB 005 010 060	0.25R X 0.5	1°	0.5	6	45	4	
2JJTB 002 020 020	0.1R X 0.2	2°	0.2	2	40	4		2JJTB 005 010 080	0.25R X 0.5	1°	0.5	8	45	4	
2JJTB 002 020 025	0.1R X 0.2	2°	0.2	2.5	40	4		2JJTB 005 010 100	0.25R X 0.5	1°	0.5	10	45	4	
2JJTB 002 030 015	0.1R X 0.2	3°	0.2	1.5	40	4		2JJTB 005 013 040	0.25R X 0.5	1°30'	0.5	4	45	4	
2JJTB 002 030 020	0.1R X 0.2	3°	0.2	2	40	4		2JJTB 005 013 060	0.25R X 0.5	1°30'	0.5	6	45	4	
2JJTB 002 030 025	0.1R X 0.2	3°	0.2	2.5	40	4		2JJTB 005 013 080	0.25R X 0.5	1°30'	0.5	8	45	4	
2JJTB 002 050 020	0.1R X 0.2	5°	0.2	2	40	4		2JJTB 005 013 100	0.25R X 0.5	1°30'	0.5	10	45	4	
2JJTB 003 003 030	0.15R X 0.3	0°30'	0.3	3	40	4		2JJTB 005 020 040	0.25R X 0.5	2°	0.5	4	45	4	
2JJTB 003 010 020	0.15R X 0.3	1°	0.3	2	40	4		2JJTB 005 020 060	0.25R X 0.5	2°	0.5	6	45	4	
2JJTB 003 010 030	0.15R X 0.3	1°	0.3	3	40	4		2JJTB 005 020 080	0.25R X 0.5	2°	0.5	8	45	4	
2JJTB 003 010 040	0.15R X 0.3	1°	0.3	4	40	4		2JJTB 005 020 100	0.25R X 0.5	2°	0.5	10	45	4	
2JJTB 003 010 050	0.15R X 0.3	1°	0.3	5	40	4		2JJTB 005 030 080	0.25R X 0.5	3°	0.5	8	45	4	
2JJTB 003 013 020	0.15R X 0.3	1°30'	0.3	2	40	4		2JJTB 005 030 120	0.25R X 0.5	3°	0.5	12	50	4	
2JJTB 003 013 030	0.15R X 0.3	1°30'	0.3	3	40	4		New 2JJTB 005 030 200	0.25R X 0.5	3°	0.5	20	60	4	
2JJTB 003 013 040	0.15R X 0.3	1°30'	0.3	4	40	4		2JJTB 006 003 040	0.3R X 0.6	0°30'	0.6	4	45	4	
2JJTB 003 013 050	0.15R X 0.3	1°30'	0.3	5	40	4		2JJTB 006 003 060	0.3R X 0.6	0°30'	0.6	6	45	4	
2JJTB 003 020 020	0.15R X 0.3	2°	0.3	2	40	4		2JJTB 006 003 080	0.3R X 0.6	0°30'	0.6	8	45	4	
2JJTB 003 020 030	0.15R X 0.3	2°	0.3	3	40	4		2JJTB 006 010 040	0.3R X 0.6	1°	0.6	4	45	4	
2JJTB 003 020 040	0.15R X 0.3	2°	0.3	4	40	4		2JJTB 006 010 060	0.3R X 0.6	1°	0.6	6	45	4	
2JJTB 003 020 050	0.15R X 0.3	2°	0.3	5	40	4		2JJTB 006 010 080	0.3R X 0.6	1°	0.6	8	45	4	
2JJTB 003 030 020	0.15R X 0.3	3°	0.3	2	40	4		2JJTB 006 010 100	0.3R X 0.6	1°	0.6	10	45	4	
2JJTB 003 030 030	0.15R X 0.3	3°	0.3	3	40	4		2JJTB 006 010 120	0.3R X 0.6	1°	0.6	12	50	4	
2JJTB 003 030 040	0.15R X 0.3	3°	0.3	4	40	4		2JJTB 006 010 150	0.3R X 0.6	1°	0.6	15	50	4	
2JJTB 003 030 050	0.15R X 0.3	3°	0.3	5	40	4		New 2JJTB 006 010 200	0.3R X 0.6	1°	0.6	20	60	4	
2JJTB 003 050 050	0.15R X 0.3	5°	0.3	5	40	4		2JJTB 006 013 040	0.3R X 0.6	1°30'	0.6	4	45	4	
2JJTB 004 003 020	0.2R X 0.4	0°30'	0.4	2	40	4		2JJTB 006 013 060	0.3R X 0.6	1°30'	0.6	6	45	4	
2JJTB 004 003 030	0.2R X 0.4	0°30'	0.4	3	40	4		2JJTB 006 013 080	0.3R X 0.6	1°30'	0.6	8	45	4	
2JJTB 004 003 040	0.2R X 0.4	0°30'	0.4	4	40	4		2JJTB 006 013 100	0.3R X 0.6	1°30'	0.6	10	45	4	
2JJTB 004 003 050	0.2R X 0.4	0°30'	0.4	5	40	4		2JJTB 006 013 120	0.3R X 0.6	1°30'	0.6	12	50	4	
2JJTB 004 003 060	0.2R X 0.4	0°30'	0.4	6	40	4		New 2JJTB 006 013 150	0.3R X 0.6	1°30'	0.6	15	50	4	
2JJTB 004 010 020	0.2R X 0.4	1°	0.4	2	40	4		New 2JJTB 006 013 200	0.3R X 0.6	1°30'	0.6	20	60	4	
2JJTB 004 010 030	0.2R X 0.4	1°	0.4	3	40	4		2JJTB 006 020 060	0.3R X 0.6	2°	0.6	6	45	4	
2JJTB 004 010 040	0.2R X 0.4	1°	0.4	4	40	4		2JJTB 006 020 080	0.3R X 0.6	2°	0.6	8	45	4	
2JJTB 004 010 050	0.2R X 0.4	1°	0.4	5	40	4		2JJTB 006 020 100	0.3R X 0.6	2°	0.6	10	45	4	
2JJTB 004 010 060	0.2R X 0.4	1°	0.4	6	40	4		New 2JJTB 006 020 150	0.3R X 0.6	2°	0.6	15	50	4	
2JJTB 004 013 020	0.2R X 0.4	1°30'	0.4	2	40	4		New 2JJTB 006 020 200	0.3R X 0.6	2°	0.6	20	60	4	
2JJTB 004 013 030	0.2R X 0.4	1°30'	0.4	3	40	4		2JJTB 006 030 130	0.3R X 0.6	3°	0.6	13	50	4	
2JJTB 004 013 040	0.2R X 0.4	1°30'	0.4	4	40	4		New 2JJTB 006 030 200	0.3R X 0.6	3°	0.6	20	60	4	
2JJTB 004 013 050	0.2R X 0.4	1°30'	0.4	5	40	4		2JJTB 008 003 040	0.4R X 0.8	0°30'	0.8	4	45	4	
2JJTB 004 013 060	0.2R X 0.4	1°30'	0.4	6	40	4		2JJTB 008 003 060	0.4R X 0.8	0°30'	0.8	6	45	4	





Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJTB 008 003 080	0.4R X 0.8	0°30	0.8	8	45	4		2JJTB 010 013 250	0.5R X 1	1°30	1	25	60	4	
2JJTB 008 003 100	0.4R X 0.8	0°30	0.8	10	45	4		2JJTB 010 013 300	0.5R X 1	1°30	1	30	70	4	
2JJTB 008 003 120	0.4R X 0.8	0°30	0.8	12	50	4		New 2JJTB 010 013 350	0.5R X 1	1°30	1	35	80	4	
New 2JJTB 008 003 150	0.4R X 0.8	0°30	0.8	15	50	4		New 2JJTB 010 013 400	0.5R X 1	1°30	1	40	80	4	
New 2JJTB 008 003 200	0.4R X 0.8	0°30	0.8	20	60	4		2JJTB 010 020 150	0.5R X 1	2°	1	15	50	4	
2JJTB 008 010 040	0.4R X 0.8	1°	0.8	4	45	4		2JJTB 010 020 200	0.5R X 1	2°	1	20	50	4	
2JJTB 008 010 060	0.4R X 0.8	1°	0.8	6	45	4		2JJTB 010 020 250	0.5R X 1	2°	1	25	60	4	
2JJTB 008 010 080	0.4R X 0.8	1°	0.8	8	45	4		2JJTB 010 020 300	0.5R X 1	2°	1	30	70	4	
2JJTB 008 010 100	0.4R X 0.8	1°	0.8	10	45	4		New 2JJTB 010 020 400	0.5R X 1	2°	1	40	80	4	
2JJTB 008 010 120	0.4R X 0.8	1°	0.8	12	50	4		2JJTB 010 030 200	0.5R X 1	3°	1	20	50	4	
2JJTB 008 010 160	0.4R X 0.8	1°	0.8	16	50	4		2JJTB 010 030 300	0.5R X 1	3°	1	30	70	6	
New 2JJTB 008 010 200	0.4R X 0.8	1°	0.8	20	60	4		2JJTB 010 030 400	0.5R X 1	3°	1	40	80	6	
2JJTB 008 013 040	0.4R X 0.8	1°30	0.8	4	45	4		New 2JJTB 010 030 500	0.5R X 1	3°	1	50	90	6	
2JJTB 008 013 060	0.4R X 0.8	1°30	0.8	6	45	4		2JJTB 010 050 230	0.5R X 1	5°	1	23	60	6	
2JJTB 008 013 080	0.4R X 0.8	1°30	0.8	8	45	4		2JJTB 012 003 080	0.6R X 1.2	0°30	1.2	8	50	4	
2JJTB 008 013 100	0.4R X 0.8	1°30	0.8	10	45	4		2JJTB 012 003 120	0.6R X 1.2	0°30	1.2	12	50	4	
2JJTB 008 013 120	0.4R X 0.8	1°30	0.8	12	50	4		2JJTB 012 003 180	0.6R X 1.2	0°30	1.2	18	50	4	
2JJTB 008 013 160	0.4R X 0.8	1°30	0.8	16	50	4		2JJTB 012 003 240	0.6R X 1.2	0°30	1.2	24	60	4	
New 2JJTB 008 013 200	0.4R X 0.8	1°30	0.8	20	60	4		2JJTB 012 010 080	0.6R X 1.2	1°	1.2	8	50	4	
2JJTB 008 020 080	0.4R X 0.8	2°	0.8	8	50	4		2JJTB 012 010 120	0.6R X 1.2	1°	1.2	12	50	4	
2JJTB 008 020 100	0.4R X 0.8	2°	0.8	10	50	4		2JJTB 012 010 180	0.6R X 1.2	1°	1.2	18	50	4	
2JJTB 008 020 120	0.4R X 0.8	2°	0.8	12	50	4		2JJTB 012 010 240	0.6R X 1.2	1°	1.2	24	60	4	
2JJTB 008 020 160	0.4R X 0.8	2°	0.8	16	50	4		2JJTB 012 013 080	0.6R X 1.2	1°30	1.2	8	50	4	
New 2JJTB 008 020 200	0.4R X 0.8	2°	0.8	20	60	4		2JJTB 012 013 120	0.6R X 1.2	1°30	1.2	12	50	4	
2JJTB 008 030 080	0.4R X 0.8	3°	0.8	8	50	4		2JJTB 012 013 180	0.6R X 1.2	1°30	1.2	18	50	4	
2JJTB 008 030 120	0.4R X 0.8	3°	0.8	12	50	4		2JJTB 012 013 240	0.6R X 1.2	1°30	1.2	24	60	4	
2JJTB 008 030 160	0.4R X 0.8	3°	0.8	16	50	4		2JJTB 012 020 080	0.6R X 1.2	2°	1.2	8	50	4	
New 2JJTB 008 030 200	0.4R X 0.8	3°	0.8	20	60	4		2JJTB 012 020 120	0.6R X 1.2	2°	1.2	12	50	4	
2JJTB 010 003 060	0.5R X 1	0°30	1	6	50	4		2JJTB 012 020 180	0.6R X 1.2	2°	1.2	18	50	4	
2JJTB 010 003 080	0.5R X 1	0°30	1	8	50	4		2JJTB 012 020 240	0.6R X 1.2	2°	1.2	24	60	4	
2JJTB 010 003 100	0.5R X 1	0°30	1	10	50	4		2JJTB 015 003 080	0.75R X 1.5	0°30	1.5	8	50	4	
2JJTB 010 003 150	0.5R X 1	0°30	1	15	50	4		2JJTB 015 003 100	0.75R X 1.5	0°30	1.5	10	50	4	
2JJTB 010 003 200	0.5R X 1	0°30	1	20	60	4		2JJTB 015 003 120	0.75R X 1.5	0°30	1.5	12	50	4	
2JJTB 010 003 250	0.5R X 1	0°30	1	25	60	4		2JJTB 015 003 150	0.75R X 1.5	0°30	1.5	15	50	4	
2JJTB 010 003 300	0.5R X 1	0°30	1	30	70	4		2JJTB 015 003 200	0.75R X 1.5	0°30	1.5	20	60	4	
2JJTB 010 010 060	0.5R X 1	1°	1	6	50	4		2JJTB 015 003 300	0.75R X 1.5	0°30	1.5	30	70	4	
2JJTB 010 010 080	0.5R X 1	1°	1	8	50	4		New 2JJTB 015 003 400	0.75R X 1.5	0°30	1.5	40	80	4	
2JJTB 010 010 100	0.5R X 1	1°	1	10	50	4		2JJTB 015 010 080	0.75R X 1.5	1°	1.5	8	50	4	
2JJTB 010 010 150	0.5R X 1	1°	1	15	50	4		2JJTB 015 010 100	0.75R X 1.5	1°	1.5	10	50	4	
2JJTB 010 010 200	0.5R X 1	1°	1	20	50	4		2JJTB 015 010 120	0.75R X 1.5	1°	1.5	12	50	4	
2JJTB 010 010 250	0.5R X 1	1°	1	25	60	4		2JJTB 015 010 150	0.75R X 1.5	1°	1.5	15	50	4	
2JJTB 010 010 300	0.5R X 1	1°	1	30	70	4		2JJTB 015 010 200	0.75R X 1.5	1°	1.5	20	60	4	
2JJTB 010 010 350	0.5R X 1	1°	1	35	75	4		2JJTB 015 010 250	0.75R X 1.5	1°	1.5	25	60	4	
2JJTB 010 013 060	0.5R X 1	1°30	1	6	50	4		2JJTB 015 010 300	0.75R X 1.5	1°	1.5	30	70	4	
2JJTB 010 013 080	0.5R X 1	1°30	1	8	50	4		New 2JJTB 015 010 400	0.75R X 1.5	1°	1.5	40	80	4	
2JJTB 010 013 100	0.5R X 1	1°30	1	10	50	4		New 2JJTB 015 010 500	0.75R X 1.5	1°	1.5	50	90	4	
2JJTB 010 013 150	0.5R X 1	1°30	1	15	50	4		2JJTB 015 013 080	0.75R X 1.5	1°30	1.5	8	50	4	
2JJTB 010 013 200	0.5R X 1	1°30	1	20	50	4		2JJTB 015 013 100	0.75R X 1.5	1°30	1.5	10	50	4	



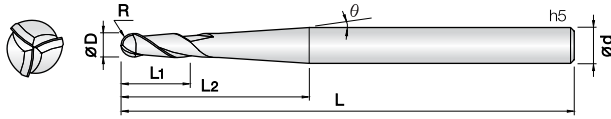
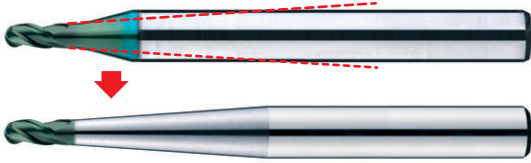
Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2JJTB 015 013 120	0.75R X 1.5	1°30'	1.5	12	50	4		2JJTB 020 050 250	1R X 2	5°	2	25	60	6	
2JJTB 015 013 150	0.75R X 1.5	1°30'	1.5	15	50	4		2JJTB 020 050 380	1R X 2	5°	2	38	80	8	
2JJTB 015 013 200	0.75R X 1.5	1°30'	1.5	20	60	4		2JJTB 030 003 160	1.5R X 3	0°30'	3	16	60	6	
2JJTB 015 013 250	0.75R X 1.5	1°30'	1.5	25	60	4		2JJTB 030 003 200	1.5R X 3	0°30'	3	20	65	6	
2JJTB 015 013 300	0.75R X 1.5	1°30'	1.5	30	70	4		2JJTB 030 003 300	1.5R X 3	0°30'	3	30	70	6	
New 2JJTB 015 013 400	0.75R X 1.5	1°30'	1.5	40	80	4		2JJTB 030 003 400	1.5R X 3	0°30'	3	40	80	6	
New 2JJTB 015 013 500	0.75R X 1.5	1°30'	1.5	50	90	4		2JJTB 030 003 500	1.5R X 3	0°30'	3	50	90	6	
2JJTB 015 020 100	0.75R X 1.5	2°	1.5	10	50	4		New 2JJTB 030 003 600	1.5R X 3	0°30'	3	60	100	6	
2JJTB 015 020 150	0.75R X 1.5	2°	1.5	15	50	4		2JJTB 030 010 160	1.5R X 3	1°	3	16	60	6	
2JJTB 015 020 200	0.75R X 1.5	2°	1.5	20	60	4		2JJTB 030 010 200	1.5R X 3	1°	3	20	65	6	
2JJTB 015 020 300	0.75R X 1.5	2°	1.5	30	70	4		2JJTB 030 010 300	1.5R X 3	1°	3	30	70	6	
New 2JJTB 015 020 400	0.75R X 1.5	2°	1.5	40	80	6		2JJTB 030 010 400	1.5R X 3	1°	3	40	80	6	
New 2JJTB 015 020 500	0.75R X 1.5	2°	1.5	50	90	6		2JJTB 030 010 500	1.5R X 3	1°	3	50	90	6	
2JJTB 015 030 420	0.75R X 1.5	3°	1.5	42	80	6		New 2JJTB 030 010 600	1.5R X 3	1°	3	60	100	6	
2JJTB 015 050 250	0.75R X 1.5	5°	1.5	25	70	6		New 2JJTB 030 010 700	1.5R X 3	1°	3	70	110	6	
2JJTB 020 003 080	1R X 2	0°30'	2	8	50	4		2JJTB 030 013 160	1.5R X 3	1°30'	3	16	60	6	
2JJTB 020 003 120	1R X 2	0°30'	2	12	50	4		2JJTB 030 013 200	1.5R X 3	1°30'	3	20	65	6	
2JJTB 020 003 160	1R X 2	0°30'	2	16	50	4		2JJTB 030 013 300	1.5R X 3	1°30'	3	30	70	6	
2JJTB 020 003 200	1R X 2	0°30'	2	20	60	4		2JJTB 030 013 400	1.5R X 3	1°30'	3	40	80	6	
2JJTB 020 003 300	1R X 2	0°30'	2	30	70	4		2JJTB 030 013 500	1.5R X 3	1°30'	3	50	90	6	
2JJTB 020 003 400	1R X 2	0°30'	2	40	80	4		New 2JJTB 030 013 600	1.5R X 3	1°30'	3	60	100	6	
New 2JJTB 020 003 500	1R X 2	0°30'	2	50	90	4		New 2JJTB 030 013 700	1.5R X 3	1°30'	3	70	120	8	
2JJTB 020 010 080	1R X 2	1°	2	8	50	4		2JJTB 030 020 160	1.5R X 3	2°	3	16	60	6	
2JJTB 020 010 120	1R X 2	1°	2	12	50	4		2JJTB 030 020 200	1.5R X 3	2°	3	20	65	6	
2JJTB 020 010 160	1R X 2	1°	2	16	50	4		2JJTB 030 020 300	1.5R X 3	2°	3	30	70	6	
2JJTB 020 010 200	1R X 2	1°	2	20	60	4		2JJTB 030 020 480	1.5R X 3	2°	3	48	90	6	
2JJTB 020 010 250	1R X 2	1°	2	25	60	4		New 2JJTB 030 020 600	1.5R X 3	2°	3	60	110	8	
2JJTB 020 010 300	1R X 2	1°	2	30	70	4		New 2JJTB 030 020 700	1.5R X 3	2°	3	70	120	8	
2JJTB 020 010 350	1R X 2	1°	2	35	75	4		2JJTB 030 030 300	1.5R X 3	3°	3	30	70	6	
2JJTB 020 010 400	1R X 2	1°	2	40	80	4		2JJTB 030 030 500	1.5R X 3	3°	3	50	90	8	
2JJTB 020 010 500	1R X 2	1°	2	50	90	4		New 2JJTB 030 030 700	1.5R X 3	3°	3	70	120	10	
New 2JJTB 020 010 600	1R X 2	1°	2	60	100	6		2JJTB 030 050 330	1.5R X 3	5°	3	33	90	6	
2JJTB 020 013 080	1R X 2	1°30'	2	8	50	4		2JJTB 040 003 600	2R X 4	0°30'	4	60	100	6	
2JJTB 020 013 120	1R X 2	1°30'	2	12	50	4		New 2JJTB 040 003 700	2R X 4	0°30'	4	70	110	6	
2JJTB 020 013 160	1R X 2	1°30'	2	16	50	4		New 2JJTB 040 003 900	2R X 4	0°30'	4	90	130	6	
2JJTB 020 013 200	1R X 2	1°30'	2	20	60	4		2JJTB 040 010 500	2R X 4	1°	4	50	90	6	
2JJTB 020 013 250	1R X 2	1°30'	2	25	60	4		2JJTB 040 010 600	2R X 4	1°	4	60	100	6	
2JJTB 020 013 300	1R X 2	1°30'	2	30	70	4		New 2JJTB 040 010 700	2R X 4	1°	4	70	120	8	
2JJTB 020 013 350	1R X 2	1°30'	2	35	75	6		New 2JJTB 040 010 900	2R X 4	1°	4	90	150	8	
2JJTB 020 013 400	1R X 2	1°30'	2	40	80	6		2JJTB 040 013 450	2R X 4	1°30'	4	45	90	6	
2JJTB 020 013 500	1R X 2	1°30'	2	50	90	6		2JJTB 040 013 600	2R X 4	1°30'	4	60	110	8	
New 2JJTB 020 013 600	1R X 2	1°30'	2	60	100	6		New 2JJTB 040 013 700	2R X 4	1°30'	4	70	120	8	
2JJTB 020 020 300	1R X 2	2°	2	30	70	6		2JJTB 040 030 250	2R X 4	3°	4	25	70	6	
2JJTB 020 020 400	1R X 2	2°	2	40	80	6		New 2JJTB 040 030 420	2R X 4	3°	4	42	100	8	
2JJTB 020 020 500	1R X 2	2°	2	50	90	6		2JJTB 040 050 290	2R X 4	5°	4	29	90	8	
2JJTB 020 030 300	1R X 2	3°	2	30	70	6		New 2JJTB 050 010 400	2.5R X 5	1°	5	40	90	8	
2JJTB 020 030 400	1R X 2	3°	2	40	80	6		New 2JJTB 050 010 600	2.5R X 5	1°	5	60	110	8	
New 2JJTB 020 030 500	1R X 2	3°	2	50	90	6		New 2JJTB 050 010 900	2.5R X 5	1°	5	90	150	8	



단위 : mm

Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJTB 050 013 400	2.5R X 5	1°30'	5	40	90	8									
2JJTB 050 013 600	2.5R X 5	1°30'	5	60	110	8									
New 2JJTB 050 013 900	2.5R X 5	1°30'	5	90	150	10									
2JJTB 050 030 400	2.5R X 5	3°	5	40	90	8									
New 2JJTB 060 010 400	3R X 6	1°	9	40	90	8									
New 2JJTB 060 010 500	3R X 6	1°	9	50	100	8									
New 2JJTB 060 010 600	3R X 6	1°	9	60	110	8									
New 2JJTB 060 010 700	3R X 6	1°	9	70	120	10									
New 2JJTB 060 010 800	3R X 6	1°	9	80	130	10									
New 2JJTB 060 010 1000	3R X 6	1°	9	100	150	10									
2JJTB 060 013 490	3R X 6	1°30'	9	49	110	8									
New 2JJTB 060 013 850	3R X 6	1°30'	9	85	150	10									
2JJTB 060 020 600	3R X 6	2°	9	60	110	10									
New 2JJTB 060 020 900	3R X 6	2°	9	90	150	12									
2JJTB 060 030 290	3R X 6	3°	9	29	90	8									
2JJTB 060 050 320	3R X 6	5°	9	32	110	10									
New 2JJTB 080 010 500	4R X 8	1°	12	50	100	10									
New 2JJTB 080 010 600	4R X 8	1°	12	60	110	10									
New 2JJTB 080 010 800	4R X 8	1°	12	80	130	12									
New 2JJTB 080 010 1000	4R X 8	1°	12	100	150	12									
2JJTB 080 013 520	4R X 8	1°30'	12	52	110	10									
New 2JJTB 080 013 890	4R X 8	1°30'	12	89	150	12									
2JJTB 080 030 330	4R X 8	3°	12	33	100	10									
New 2JJTB 100 010 600	5R X 10	1°	18	60	130	12									
New 2JJTB 100 010 750	5R X 10	1°	18	75	110	12									
2JJTB 100 013 540	5R X 10	1°30'	18	54	130	12									
2JJTB 100 030 370	5R X 10	3°	18	37	110	12									
2JJTB 120 013 850	6R X 12	1°30'	22	85	160	16									
2JJTB 120 030 630	6R X 12	3°	22	63	130	16									



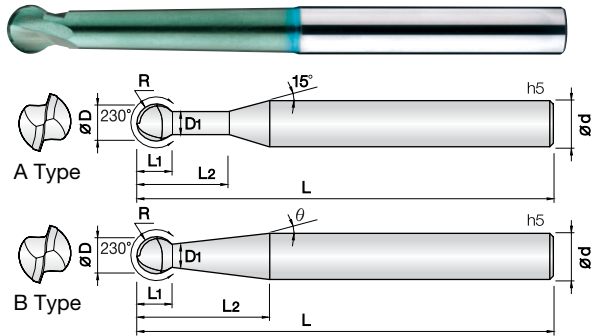


- 고경도강(HRc52~70), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 깊은 홀 가공이 빈번해진 추세에 맞춰, 고객 요구에 발빠르게 대응하는 맞춤제작 방식입니다. (최고 2일안에 납품 가능)
- 고객주문에 맞춰, 자사 재고품의 각도 및 유효길이를 재조정 가공합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel (HRc52~70)
- Good wear resistance by high quality Si-based PVD coating.
- In accordance with the recent trend of frequent deep hole machining, It is an order to make system responding to customer' quick delivery request. (within a 2 days)
- In accordance with the customer order, readjust the angle and effective length of own stock
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

단위 : mm

Order Number	날경 Diameter R x D	각도 Angle $\theta$	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
3JJTBS 010 060 S04	0.5R X 1	30°	1	Request the required effective length directly	60	4	
3JJTBS 010 080 S04	0.5R X 1		1		80	4	
3JJTBS 010 090 S06	0.5R X 1		1		90	6	
3JJTBS 015 060 S04	0.75R X 1.5		1.5		60	4	
3JJTBS 015 080 S04	0.75R X 1.5		1.5		80	4	
3JJTBS 015 090 S06	0.75R X 1.5		1.5		90	6	
3JJTBS 020 070 S04	1R X 2		2		70	4	
3JJTBS 020 090 S04	1R X 2		2		90	4	
3JJTBS 020 090 S06	1R X 2		2		90	6	
3JJTBS 030 080 S06	1.5R X 3		3		80	6	
3JJTBS 030 100 S06	1.5R X 3	3	100	6			
3JJTBS 030 110 S08	1.5R X 3	3	110	8			
3JJTBS 040 080 S06	2R X 4	Request the required angle directly	5	Request the required effective length directly	80	6	
3JJTBS 040 110 S06	2R X 4		5		110	6	
3JJTBS 040 120 S08	2R X 4		5		120	8	
3JJTBS 050 090 S08	2.5R X 5		7		90	8	
3JJTBS 050 120 S08	2.5R X 5		7		120	8	
3JJTBS 060 110 S08	3R X 6		9		110	8	
3JJTBS 060 150 S10	3R X 6		9		150	10	
3JJTBS 080 120 S10	4R X 8		12		120	10	
3JJTBS 080 160 S12	4R X 8		12		160	12	
3JJTBS 100 120 S12	5R X 10		15		120	12	
3JJTBS 100 160 S12	5R X 10	15	160	12			
3JJTBS 120 160 S16	6R X 12	18	160	16			
3JJTBS 120 200 S16	6R X 12	18	200	16			

**2날 제이제이 3D 230도 가공용 구형 엔드밀**



- 고경도강(HRC52~70), 프리하든강 계열의 고정밀가공 엔드밀
- 고품질 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 230도 구형의 인선으로 광범위한 3D 가공이 가능합니다.
- 유효장을 직선 및 테이퍼 설계하여 다양한 상황에 맞춰 목부파손 및 떨림을 최소화 하였습니다.
- 초미립자 초경합금( $0.2\mu\text{m}$ )을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel (HRC52~70)
- Good wear resistance by high quality Si-based PVD coating.
- 230° degree ball shape for wide range 3D machining.
- Minimize chattering and fracturing by taper and straight designed flute.
- Outstanding performance at high speed machining by ultra fine ( $0.2\mu\text{m}$ ) WC grade.

0.5 ~ 2.5R    3 ~ 6R

D Size	D Tolerance
$\varnothing 1 \sim 5$	+0 ~ -0.01mm
$\varnothing 6 \sim 12$	-0.005 ~ -0.015mm

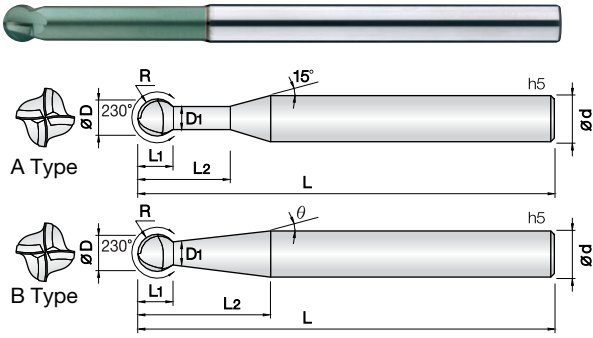
단위 : mm

Order Number	날경 Diameter $R \times D$	목경 Neck Diameter $D_1$	날장 Length of cut $L_1$	유효장 Effective Length $L_2$	각도 Angle $\theta$	전장 Overall Length $L$	타입 Type	샙크 Shank Dia $d$	비고
2JJSP 010 040 S06	0.5R X 1	0.91	0.7	4	0°	60	A	6	
2JJSP 010 060 S06	0.5R X 1	0.91	0.7	6	0°	60	A	6	
2JJSP 010 013 200	0.5R X 1	0.91	0.7	20	1°30'	80	B	6	
2JJSP 015 060 S06	0.75R X 1.5	1.36	1	6	0°	60	A	6	
2JJSP 015 080 S06	0.75R X 1.5	1.36	1	8	0°	60	A	6	
2JJSP 015 013 200	0.75R X 1.5	1.36	1	20	1°30'	80	B	6	
2JJSP 020 060 S06	1R X 2	1.8	1.4	6	0°	60	A	6	
2JJSP 020 100 S06	1R X 2	1.8	1.4	10	0°	60	A	6	
2JJSP 020 013 200	1R X 2	1.8	1.4	20	1°30'	80	B	6	
2JJSP 030 100 S06	1.5R X 3	2.7	2.1	10	0°	70	A	6	
2JJSP 030 150 S06	1.5R X 3	2.7	2.1	15	0°	70	A	6	
2JJSP 030 013 300	1.5R X 3	2.7	2.1	30	1°30'	80	B	6	
2JJSP 040 120 S06	2R X 4	3.6	2.8	12	0°	70	A	6	
2JJSP 040 200 S06	2R X 4	3.6	2.8	20	0°	70	A	6	
2JJSP 040 030 250	2R X 4	3.6	2.8	25	3°	80	B	6	
2JJSP 050 010 400	2.5R X 5	4.5	3.5	40	1°	90	B	6	
2JJSP 060 150 S06	3R X 6	5.4	4.2	15	0°	90	A	6	
2JJSP 060 300 S06	3R X 6	5.4	4.2	30	0°	90	A	6	
2JJSP 060 010 210	3R X 6	5.4	4.2	21	1°	100	B	6	
2JJSP 080 010 280	4R X 8	7.2	5.7	28	1°	100	B	8	
2JJSP 100 010 350	5R X 10	9	7.1	35	1°	110	B	10	
2JJSP 120 010 420	6R X 12	10.8	8.5	42	1°	120	B	12	



4 Flutes JJ Spherical End Mills for 3D Cut 230°

## 4날 제이제이 3D 230도 가공용 구형 엔드밀



- **고경도강(HRc52~70), 프리하든강 계열의 고정밀가공 엔드밀**
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 230도 구형의 인선으로 광범위한 3D 가공이 가능합니다.
- 유효장을 직선 및 테이퍼 설계하여 다양한 상황에 맞춰 목부파손 및 떨림을 최소화 하였습니다.
- 초미립자 초경합금(0.2µm)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc52~70)**
- Good wear resistance by high quality Si-based PVD coating.
- 230°degree ball shape for wide range 3D machining.
- Minimize chattering and fracturing by taper and straight designed flute.
- Outstanding performance at high speed machining by ultra fine (0.2 µm) WC grade.

4

UWC  
초미립자

TISIN-S  
Coating

R  
±0.005

R  
±0.01

15°  
Helix Angle

0.5 ~ 2.5R
3 ~ 6R

D Size	D Tolerance
φ1 ~ 5	+0 ~ -0.01mm
φ6 ~ 12	-0.005 ~ -0.015mm

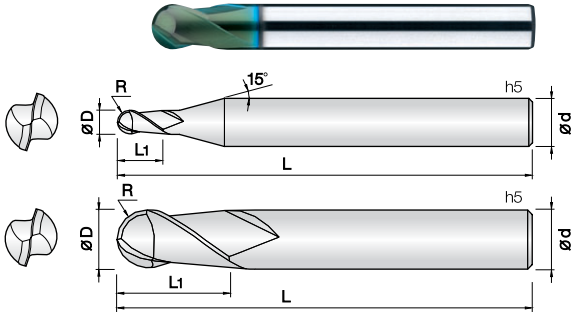
단위 : mm

Order Number	날경 Diameter R × D	목경 Neck Diameter D1	날장 Length of cut L1	유효장 Effective Length L2	각도 Angle θ	전장 Overall Length L	타입 Type	샤홅크 Shank Dia d	비고
4JJSP 010 040 S06	0.5R X 1	0.91	0.7	4	0°	60	A	6	
4JJSP 010 060 S06	0.5R X 1	0.91	0.7	6	0°	60	A	6	
4JJSP 010 013 200	0.5R X 1	0.91	0.7	20	1°30'	80	B	6	
4JJSP 015 060 S06	0.75R X 1.5	1.36	1	6	0°	60	A	6	
4JJSP 015 080 S06	0.75R X 1.5	1.36	1	8	0°	60	A	6	
4JJSP 015 013 200	0.75R X 1.5	1.36	1	20	1°30'	80	B	6	
4JJSP 020 060 S06	1R X 2	1.8	1.4	6	0°	60	A	6	
4JJSP 020 100 S06	1R X 2	1.8	1.4	10	0°	60	A	6	
4JJSP 020 013 200	1R X 2	1.8	1.4	20	1°30'	80	B	6	
4JJSP 030 100 S06	1.5R X 3	2.7	2.1	10	0°	70	A	6	
4JJSP 030 150 S06	1.5R X 3	2.7	2.1	15	0°	70	A	6	
4JJSP 030 013 300	1.5R X 3	2.7	2.1	30	1°30'	80	B	6	
4JJSP 040120 S06	2R X 4	3.6	2.8	12	0°	70	A	6	
4JJSP 040 200 S06	2R X 4	3.6	2.8	20	0°	70	A	6	
4JJSP 040 030 250	2R X 4	3.6	2.8	25	3°	80	B	6	
4JJSP 050 010 400	2.5R X 5	4.5	3.5	40	1°	90	B	6	
4JJSP 060 150 S06	3R X 6	5.4	4.2	15	0°	90	A	6	
4JJSP 060 300 S06	3R X 6	5.4	4.2	30	0°	90	A	6	
4JJSP 060 010 210	3R X 6	5.4	4.2	21	1°	100	B	6	
4JJSP 080 010 280	4R X 8	7.2	5.7	28	1°	100	B	8	
4JJSP 100 010 350	5R X 10	9	7.1	35	1°	110	B	10	
4JJSP 120 010 420	6R X 12	10.8	8.5	42	1°	120	B	12	





## 2날 고경도재 가공용 제이제이 짧은 길이 볼 엔드밀



- 고경도강(HRc52~70), 프리하드강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 짧은 전장을 채택하여 열박음척 사용이 용이합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel (HRc52~70)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Short overall length for easy use with shrinking chuck
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

2

**UWC**  
초미립자

**TISIN-S**  
Coating

**R**  
±0.005

**R**  
±0.01

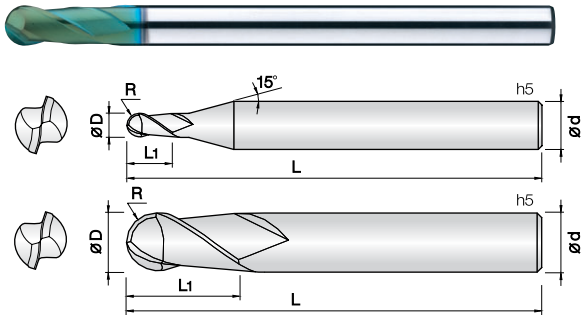
**30°**  
Helix Angle

0.05 ~ 2.5R    3 ~ 6R

D Size	D Tolerance
∅0.1 ~ 0.15	+0 ~ -0.005mm
∅0.2 ~ 5	+0 ~ -0.01mm
∅6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R × D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2JJSB 001 001 S04	0.05R X 0.1	0.1	40	4		2JJSB 120 120 060	6R X 12	12	60	12	
2JJSB 001 0015 S04	0.05R X 0.1	0.15	40	4		2JJSB 120 150 060	6R X 12	15	60	12	
2JJSB 0015 0015 S04	0.075R X 0.15	0.15	40	4							
2JJSB 0015 002 S04	0.075R X 0.15	0.2	40	4							
2JJSB 002 002 S04	0.1R X 0.2	0.2	40	4							
2JJSB 002 003 S04	0.1R X 0.2	0.3	40	4							
2JJSB 003 003 S04	0.15R X 0.3	0.3	40	4							
2JJSB 003 0045 S04	0.15R X 0.3	0.45	40	4							
2JJSB 004 004 S04	0.2R X 0.4	0.4	40	4							
2JJSB 004 006 S04	0.2R X 0.4	0.6	40	4							
2JJSB 005 005 S04	0.25R X 0.5	0.5	40	4							
2JJSB 005 0075 S04	0.25R X 0.5	0.75	40	4							
2JJSB 006 006 S04	0.3R X 0.6	0.6	40	4							
2JJSB 006 009 S04	0.3R X 0.6	0.9	40	4							
2JJSB 007 007 S04	0.35R X 0.7	0.7	40	4							
2JJSB 007 010 S04	0.35R X 0.7	1	40	4							
2JJSB 008 008 S04	0.4R X 0.8	0.8	40	4							
2JJSB 008 012 S04	0.4R X 0.8	1.2	40	4							
2JJSB 009 009 S04	0.45R X 0.9	0.9	40	4							
2JJSB 009 013 S04	0.45R X 0.9	1.3	40	4							
2JJSB 010 010 S04	0.5R X 1	1	40	4							
2JJSB 010 010 S06	0.5R X 1	1	40	6							
2JJSB 010 015 S04	0.5R X 1	1.5	40	4							
2JJSB 010 015 S06	0.5R X 1	1.5	40	6							
2JJSB 015 015 S04	0.75R X 1.5	1.5	40	4							
2JJSB 015 015 S06	0.75R X 1.5	1.5	40	6							
2JJSB 015 023 S04	0.75R X 1.5	2.3	40	4							
2JJSB 015 023 S06	0.75R X 1.5	2.3	40	6							
2JJSB 020 020 S04	1R X 2	2	45	4							
2JJSB 020 020 S06	1R X 2	2	45	6							
2JJSB 020 030 S04	1R X 2	3	45	4							
2JJSB 020 030 S06	1R X 2	3	45	6							
2JJSB 030 030 S04	1.5R X 3	3	45	4							
2JJSB 030 030 S06	1.5R X 3	3	45	6							
2JJSB 030 045 S04	1.5R X 3	4.5	45	4							
2JJSB 030 045 S06	1.5R X 3	4.5	45	6							
2JJSB 040 040 S04	2R X 4	4	45	4							
2JJSB 040 040 S06	2R X 4	4	45	6							
2JJSB 040 060 S04	2R X 4	6	45	4							
2JJSB 040 060 S06	2R X 4	6	45	6							
2JJSB 050 050 S06	2.5R X 5	5	50	6							
2JJSB 050 075 S06	2.5R X 5	7.5	50	6							
2JJSB 060 060 050	3R X 6	6	50	6							
2JJSB 060 080 055	3R X 6	8	55	6							
2JJSB 080 080 050	4R X 8	8	50	8							
2JJSB 080 110 060	4R X 8	11	60	8							
2JJSB 100 100 060	5R X 10	10	60	10							
2JJSB 100 130 060	5R X 10	13	60	10							



- 고경도강(HRC52~70), 프리하든강 계열의 고속가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRC52~70)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.

2

UWC  
초미립자

TISIN-S  
Coating

R  
±0.005

R  
±0.01

30°  
Helix Angle

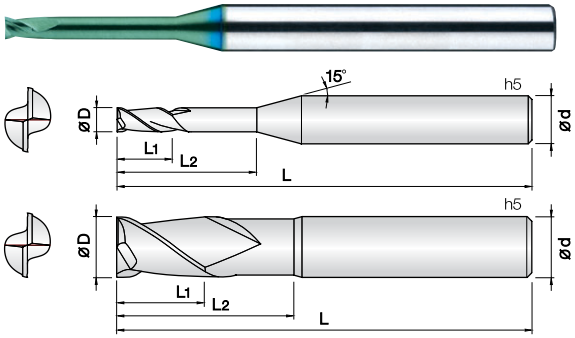
0.05 ~ 2.5R    3 ~ 6R

D Size	D Tolerance
$\phi$ 0.1 ~ 0.15	+0 ~ -0.005mm
$\phi$ 0.2 ~ 5	+0 ~ -0.01mm
$\phi$ 6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고					
2JJB 001 002 S04	0.05R X 0.1	0.2	40	4						
2JJB 0015 003 S04	0.075R X 0.15	0.3	40	4						
2JJB 002 004 S04	0.1R X 0.2	0.4	40	4						
2JJB 003 006 S04	0.15R X 0.3	0.6	40	4						
2JJB 004 008 S04	0.2R X 0.4	0.8	40	4						
2JJB 005 010 S04	0.25R X 0.5	1	45	4						
2JJB 006 012 S04	0.3R X 0.6	1.2	45	4						
2JJB 007 015 S04	0.35R X 0.7	1.5	45	4						
2JJB 008 020 S04	0.4R X 0.8	2	45	4						
2JJB 009 020 S04	0.45R X 0.9	2	45	4						
2JJB 010 025 S04	0.5R X 1	2.5	50	4						
2JJB 010 025 S06	0.5R X 1	2.5	50	6						
2JJB 010 025 070	0.5R X 1	2.5	70	6						
2JJB 012 030 S04	0.6R X 1.2	3	50	4						
2JJB 015 040 S04	0.75R X 1.5	4	50	4						
2JJB 015 040 S06	0.75R X 1.5	4	50	6						
2JJB 015 040 070	0.75R X 1.5	4	70	6						
2JJB 020 050 S04	1R X 2	5	50	4						
2JJB 020 050 S06	1R X 2	5	50	6						
2JJB 020 050 075	1R X 2	5	75	6						
2JJB 025 060 S04	1.25R X 2.5	6	50	4						
2JJB 025 060 S06	1.25R X 2.5	6	75	6						
2JJB 030 080 S04	1.5R X 3	8	50	4						
2JJB 030 080 S06	1.5R X 3	8	60	6						
2JJB 030 080 080	1.5R X 3	8	80	6						
2JJB 035 080 S06	1.75R X 3.5	8	60	6						
2JJB 040 080 S04	2R X 4	8	60	4						
2JJB 040 080 080	2R X 4	8	80	4						
2JJB 040 080 S06	2R X 4	8	70	6						
2JJB 040 080 090	2R X 4	8	90	6						
New 2JJB 045 080 S06	2.25R X 4.5	8	70	6						
2JJB 050 100 S06	2.5R X 5	10	75	6						
New 2JJB 055 100 S06	2.75R X 5.5	10	75	6						
2JJB 060 100 060	3R X 6	10	60	6						
New 2JJB 060 120 080	3R X 6	12	80	6						
2JJB 060 120 090	3R X 6	12	90	6						
New 2JJB 070 140 S08	3.5R X 7	14	80	8						
2JJB 080 120 060	4R X 8	12	60	8						
New 2JJB 080 140 090	4R X 8	14	90	8						
2JJB 080 140 100	4R X 8	14	100	8						
2JJB 100 150 070	5R X 10	15	70	10						
2JJB 100 180 100	5R X 10	18	100	10						
2JJB 120 180 075	6R X 12	18	75	12						
2JJB 120 220 110	6R X 12	22	110	12						





- **고경도강(HRC52~65), 프리하든강 계열의 고정밀가공 엔드밀**
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRC52~65)**
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6	-0.01 ~ -0.025mm

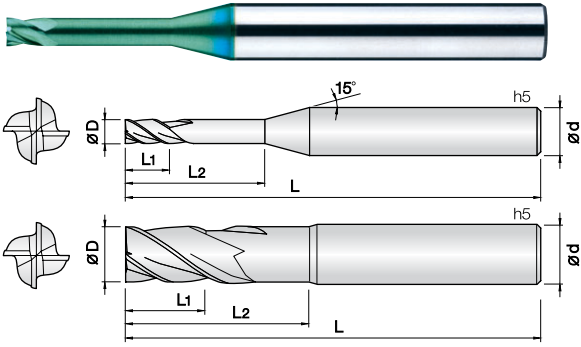
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJRE 001 003 S04	0.1	0.3	-	40	4		2JJRE 008 030 S04	0.8	0.8	3	40	4	
2JJRE 001 005 S04	0.1	0.5	-	40	4		2JJRE 008 040 S04	0.8	0.8	4	40	4	
2JJRE 002 005 S04	0.2	0.2	0.5	40	4		2JJRE 008 050 S04	0.8	0.8	5	40	4	
2JJRE 002 010 S04	0.2	0.2	1	40	4		2JJRE 008 060 S04	0.8	0.8	6	40	4	
2JJRE 002 015 S04	0.2	0.2	1.5	40	4		2JJRE 008 080 S04	0.8	0.8	8	45	4	
2JJRE 002 020 S04	0.2	0.2	2	40	4		2JJRE 008 100 S04	0.8	0.8	10	45	4	
2JJRE 002 025 S04	0.2	0.2	2.5	40	4		2JJRE 008 120 S04	0.8	0.8	12	45	4	
2JJRE 002 030 S04	0.2	0.2	3	40	4		2JJRE 009 040 S04	0.9	0.9	4	40	4	
2JJRE 003 010 S04	0.3	0.3	1	40	4		2JJRE 009 060 S04	0.9	0.9	6	40	4	
2JJRE 003 015 S04	0.3	0.3	1.5	40	4		2JJRE 009 080 S04	0.9	0.9	8	45	4	
2JJRE 003 020 S04	0.3	0.3	2	40	4		2JJRE 009 100 S04	0.9	0.9	10	45	4	
2JJRE 003 025 S04	0.3	0.3	2.5	40	4		2JJRE 010 020 S04	1	1	2	45	4	
2JJRE 003 030 S04	0.3	0.3	3	40	4		2JJRE 010 030 S04	1	1	3	45	4	
2JJRE 003 035 S04	0.3	0.3	3.5	40	4		2JJRE 010 040 S04	1	1	4	45	4	
2JJRE 003 040 S04	0.3	0.3	4	40	4		2JJRE 010 050 S04	1	1	5	45	4	
2JJRE 004 010 S04	0.4	0.4	1	40	4		2JJRE 010 060 S04	1	1	6	45	4	
2JJRE 004 015 S04	0.4	0.4	1.5	40	4		2JJRE 010 080 S04	1	1	8	45	4	
2JJRE 004 020 S04	0.4	0.4	2	40	4		2JJRE 010 100 S04	1	1	10	45	4	
2JJRE 004 025 S04	0.4	0.4	2.5	40	4		2JJRE 010 120 S04	1	1	12	50	4	
2JJRE 004 030 S04	0.4	0.4	3	40	4		2JJRE 010 140 S04	1	1	14	50	4	
2JJRE 004 035 S04	0.4	0.4	3.5	40	4		2JJRE 010 160 S04	1	1	16	50	4	
2JJRE 004 040 S04	0.4	0.4	4	40	4		2JJRE 010 180 S04	1	1	18	50	4	
2JJRE 004 050 S04	0.4	0.4	5	40	4		2JJRE 010 200 S04	1	1	20	50	4	
2JJRE 004 060 S04	0.4	0.4	6	40	4		2JJRE 010 220 S04	1	1	22	60	4	
2JJRE 004 080 S04	0.4	0.5	8	40	4		2JJRE 010 250 S04	1	1	25	60	4	
2JJRE 005 010 S04	0.5	0.5	1	40	4		2JJRE 012 040 S04	1.2	1.2	4	45	4	
2JJRE 005 020 S04	0.5	0.5	2	40	4		2JJRE 012 060 S04	1.2	1.2	6	45	4	
2JJRE 005 030 S04	0.5	0.5	3	40	4		2JJRE 012 080 S04	1.2	1.2	8	45	4	
2JJRE 005 040 S04	0.5	0.5	4	40	4		2JJRE 012 100 S04	1.2	1.2	10	45	4	
2JJRE 005 050 S04	0.5	0.5	5	40	4		2JJRE 012 120 S04	1.2	1.2	12	50	4	
2JJRE 005 060 S04	0.5	0.5	6	40	4		2JJRE 012 160 S04	1.2	1.2	16	50	4	
2JJRE 005 080 S04	0.5	0.5	8	45	4		2JJRE 012 200 S04	1.2	1.2	20	50	4	
2JJRE 005 100 S04	0.5	0.6	10	45	4		2JJRE 012 250 S04	1.2	1.2	25	60	4	
2JJRE 006 010 S04	0.6	0.6	1	40	4		2JJRE 014 080 S04	1.4	1.4	8	45	4	
2JJRE 006 020 S04	0.6	0.6	2	40	4		2JJRE 014 100 S04	1.4	1.4	10	45	4	
2JJRE 006 030 S04	0.6	0.6	3	40	4		2JJRE 014 140 S04	1.4	1.4	14	50	4	
2JJRE 006 040 S04	0.6	0.6	4	40	4		2JJRE 014 160 S04	1.4	1.4	16	50	4	
2JJRE 006 050 S04	0.6	0.6	5	40	4		2JJRE 014 200 S04	1.4	1.4	20	50	4	
2JJRE 006 060 S04	0.6	0.6	6	40	4		2JJRE 015 040 S04	1.5	1.5	4	45	4	
2JJRE 006 080 S04	0.6	0.6	8	45	4		2JJRE 015 060 S04	1.5	1.5	6	45	4	
2JJRE 006 100 S04	0.6	0.7	10	45	4		2JJRE 015 080 S04	1.5	1.5	8	45	4	
2JJRE 007 020 S04	0.7	0.7	2	40	4		2JJRE 015 100 S04	1.5	1.5	10	50	4	
2JJRE 007 040 S04	0.7	0.7	4	40	4		2JJRE 015 120 S04	1.5	1.5	12	50	4	
2JJRE 007 060 S04	0.7	0.7	6	40	4		2JJRE 015 140 S04	1.5	1.5	14	50	4	
2JJRE 007 080 S04	0.7	0.7	8	45	4		2JJRE 015 160 S04	1.5	1.5	16	50	4	
2JJRE 007 100 S04	0.7	0.7	10	45	4		2JJRE 015 180 S04	1.5	1.5	18	50	4	
2JJRE 008 010 S04	0.8	0.8	1	40	4		2JJRE 015 200 S04	1.5	1.5	20	50	4	
2JJRE 008 020 S04	0.8	0.8	2	40	4		2JJRE 015 220 S04	1.5	1.5	22	60	4	

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJRE 015 250 S04	1.5	1.5	25	60	4		2JJRE 040 350 S06	4	4	35	75	6	
2JJRE 016 060 S04	1.6	1.6	6	45	4		2JJRE 040 400 S06	4	4	40	80	6	
2JJRE 016 100 S04	1.6	1.6	10	50	4		2JJRE 040 450 S06	4	4	45	90	6	
2JJRE 016 140 S04	1.6	1.6	14	50	4		2JJRE 040 500 S06	4	4	50	100	6	
2JJRE 016 180 S04	1.6	1.6	18	50	4		2JJRE 050 160 S06	5	6	16	60	6	
2JJRE 018 100 S04	1.8	1.8	10	50	4		2JJRE 050 200 S06	5	6	20	60	6	
2JJRE 018 140 S04	1.8	1.8	14	50	4		2JJRE 050 250 S06	5	6	25	65	6	
2JJRE 018 180 S04	1.8	1.8	18	50	4		2JJRE 050 300 S06	5	6	30	70	6	
2JJRE 020 060 S04	2	2	6	45	4		2JJRE 050 350 S06	5	6	35	75	6	
2JJRE 020 080 S04	2	2	8	45	4		2JJRE 050 400 S06	5	6	40	80	6	
2JJRE 020 100 S04	2	2	10	50	4		2JJRE 050 500 S06	5	6	50	100	6	
2JJRE 020 120 S04	2	2	12	50	4		2JJRE 060 200 S06	6	10	20	60	6	
2JJRE 020 140 S04	2	2	14	50	4		2JJRE 060 300 S06	6	10	30	75	6	
2JJRE 020 160 S04	2	2	16	50	4		2JJRE 060 400 S06	6	10	40	80	6	
2JJRE 020 180 S04	2	2	18	50	4		2JJRE 060 500 S06	6	10	50	90	6	
2JJRE 020 200 S04	2	2	20	50	4		2JJRE 060 600 S06	6	10	60	110	6	
2JJRE 020 220 S04	2	2	22	60	4								
2JJRE 020 250 S04	2	2	25	60	4								
2JJRE 020 300 S04	2	2	30	60	4								
2JJRE 020 350 S04	2	2	35	70	4								
2JJRE 020 400 S04	2	2	40	80	4								
2JJRE 025 100 S04	2.5	2.5	10	50	4								
2JJRE 025 120 S04	2.5	2.5	12	50	4								
2JJRE 025 160 S04	2.5	2.5	16	50	4								
2JJRE 025 200 S04	2.5	2.5	20	50	4								
2JJRE 025 250 S04	2.5	2.5	25	60	4								
2JJRE 025 300 S04	2.5	2.5	30	70	4								
2JJRE 025 350 S04	2.5	2.5	35	70	4								
2JJRE 025 400 S04	2.5	2.5	40	80	4								
2JJRE 030 060 S06	3	3	6	45	6								
2JJRE 030 080 S06	3	3	8	45	6								
2JJRE 030 100 S06	3	3	10	50	6								
2JJRE 030 120 S06	3	3	12	50	6								
2JJRE 030 160 S06	3	3	16	55	6								
2JJRE 030 200 S06	3	3	20	60	6								
2JJRE 030 250 S06	3	3	25	65	6								
2JJRE 030 300 S06	3	3	30	70	6								
2JJRE 030 350 S06	3	3	35	75	6								
2JJRE 030 400 S06	3	3	40	80	6								
2JJRE 030 450 S06	3	3	45	90	6								
2JJRE 030 500 S06	3	3	50	100	6								
2JJRE 040 080 S06	4	4	8	50	6								
2JJRE 040 100 S06	4	4	10	50	6								
2JJRE 040 120 S06	4	4	12	50	6								
2JJRE 040 160 S06	4	4	16	55	6								
2JJRE 040 200 S06	4	4	20	60	6								
2JJRE 040 250 S06	4	4	25	65	6								
2JJRE 040 300 S06	4	4	30	70	6								

### 4날 고경도재 가공용 제이제이 리브 엔드밀



- 고경도강(HRc52~65), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel (HRc52~65)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

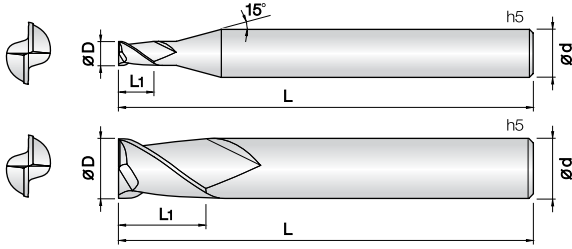


D Size	D Tolerance
$\phi$ 0.8 ~ 5	+0 ~ -0.01mm
$\phi$ 6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4JJRE 008 010 S04	0.8	0.8	1	40	4		4JJRE 030 250 S06	3	3	25	65	6	
4JJRE 008 020 S04	0.8	0.8	2	40	4		4JJRE 030 300 S06	3	3	30	70	6	
4JJRE 008 030 S04	0.8	0.8	3	40	4		4JJRE 040 060 S06	4	4	6	50	6	
4JJRE 008 040 S04	0.8	0.8	4	40	4		4JJRE 040 080 S06	4	4	8	50	6	
4JJRE 008 050 S04	0.8	0.8	5	40	4		4JJRE 040 100 S06	4	4	10	50	6	
4JJRE 008 060 S04	0.8	0.8	6	40	4		4JJRE 040 120 S06	4	4	12	50	6	
4JJRE 008 080 S04	0.8	0.8	8	40	4		4JJRE 040 160 S06	4	4	16	55	6	
4JJRE 010 020 S04	1	1	2	45	4		4JJRE 040 200 S06	4	4	20	60	6	
4JJRE 010 030 S04	1	1	3	45	4		4JJRE 040 250 S06	4	4	25	65	6	
4JJRE 010 040 S04	1	1	4	45	4		4JJRE 040 300 S06	4	4	30	70	6	
4JJRE 010 060 S04	1	1	6	45	4		4JJRE 040 400 S06	4	4	40	80	6	
4JJRE 010 080 S04	1	1	8	45	4		4JJRE 050 160 S06	5	5	16	60	6	
4JJRE 010 100 S04	1	1	10	50	4		4JJRE 050 200 S06	5	5	20	60	6	
4JJRE 010 120 S04	1	1	12	50	4		4JJRE 050 250 S06	5	5	25	65	6	
4JJRE 010 140 S04	1	1	14	50	4		4JJRE 050 300 S06	5	5	30	70	6	
4JJRE 010 160 S04	1	1	16	50	4		4JJRE 050 400 S06	5	5	40	80	6	
4JJRE 012 040 S04	1.2	1.2	4	45	4		4JJRE 060 200 S06	6	6	20	60	6	
4JJRE 012 060 S04	1.2	1.2	6	45	4		4JJRE 060 300 S06	6	6	30	75	6	
4JJRE 012 080 S04	1.2	1.2	8	45	4		4JJRE 060 400 S06	6	6	40	80	6	
4JJRE 012 100 S04	1.2	1.2	10	50	4		4JJRE 060 500 S06	6	6	50	90	6	
4JJRE 012 120 S04	1.2	1.2	12	50	4		New 4JJRE 080 250 S08	8	12	25	65	8	
4JJRE 012 160 S04	1.2	1.2	16	50	4		New 4JJRE 080 400 S08	8	12	40	100	8	
4JJRE 015 040 S04	1.5	1.5	4	45	4		New 4JJRE 080 500 S08	8	12	50	110	8	
4JJRE 015 060 S04	1.5	1.5	6	45	4		New 4JJRE 100 300 S10	10	15	30	70	10	
4JJRE 015 080 S04	1.5	1.5	8	45	4		New 4JJRE 100 500 S10	10	15	50	100	10	
4JJRE 015 100 S04	1.5	1.5	10	50	4		New 4JJRE 100 600 S10	10	15	60	120	10	
4JJRE 015 120 S04	1.5	1.5	12	50	4		New 4JJRE 120 400 S12	12	18	40	80	12	
4JJRE 015 160 S04	1.5	1.5	16	50	4		New 4JJRE 120 600 S12	12	18	60	110	12	
4JJRE 020 040 S04	2	2	4	45	4		New 4JJRE 120 700 S12	12	18	70	130	12	
4JJRE 020 060 S04	2	2	6	45	4								
4JJRE 020 080 S04	2	2	8	45	4								
4JJRE 020 100 S04	2	2	10	50	4								
4JJRE 020 120 S04	2	2	12	50	4								
4JJRE 020 140 S04	2	2	14	50	4								
4JJRE 020 160 S04	2	2	16	50	4								
4JJRE 020 180 S04	2	2	18	50	4								
4JJRE 020 200 S04	2	2	20	50	4								
4JJRE 025 100 S04	2.5	2.5	10	50	4								
4JJRE 025 120 S04	2.5	2.5	12	50	4								
4JJRE 025 160 S04	2.5	2.5	16	50	4								
4JJRE 025 200 S04	2.5	2.5	20	50	4								
4JJRE 025 250 S04	2.5	2.5	25	60	4								
4JJRE 030 060 S06	3	3	6	45	6								
4JJRE 030 080 S06	3	3	8	45	6								
4JJRE 030 100 S06	3	3	10	50	6								
4JJRE 030 120 S06	3	3	12	50	6								
4JJRE 030 160 S06	3	3	16	55	6								
4JJRE 030 200 S06	3	3	20	60	6								





- 고경도강(HRc52~65), 프리하트강 계열의 고속가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 국내최초 날경 0.05mm 제품부터 생산합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~65)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Produce down to 0.05mm in diameter endmills at the first time in Korea.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

2

UWC  
초미립자

TISIN-S  
Coating

D  
+0 -0.005

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

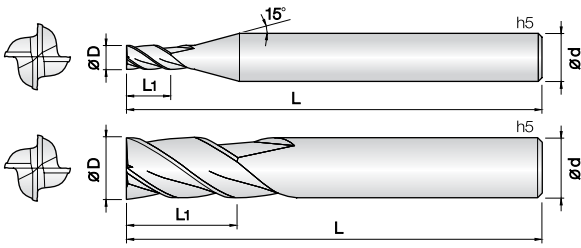
30°  
Helix Angle

Shield Edge

D Size	D Tolerance
ø0.03 ~ 0.15	+0 ~ -0.005mm
ø0.2 ~ 5.5	+0 ~ -0.01mm
ø6 ~ 12	-0.001 ~ -0.025mm
ø14 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
New 2JJE 0003 00045 S04	0.03	0.045	40	4		2JJE 029 080 S04	2.9	8	45	4	
New 2JJE 0004 0006 S04	0.04	0.06	40	4		2JJE 030 080 S04	3	8	45	4	
2JJE 0005 0008 S04	0.05	0.08	40	4		2JJE 030 080 S06	3	8	45	6	
2JJE 0006 001 S04	0.06	0.1	40	4		2JJE 035 100 S06	3.5	10	45	6	
2JJE 0007 0012 S04	0.07	0.12	40	4		2JJE 040 100 S04	4	10	45	4	
2JJE 0008 0015 S04	0.08	0.15	40	4		2JJE 040 110 S06	4	11	45	6	
2JJE 0009 0017 S04	0.09	0.17	40	4		2JJE 045 110 S06	4.5	11	45	6	
2JJE 001 002 S04	0.1	0.2	40	4		2JJE 050 130 S06	5	13	50	6	
2JJE 0015 003 S04	0.15	0.3	40	4		2JJE 055 130 S06	5.5	13	50	6	
2JJE 002 004 S04	0.2	0.4	40	4		2JJE 060 130 S06	6	13	50	6	
2JJE 0025 005 S04	0.25	0.5	40	4		2JJE 065 160 S08	6.5	16	60	8	
2JJE 003 006 S04	0.3	0.6	40	4		2JJE 070 160 S08	7	16	60	8	
2JJE 0035 007 S04	0.35	0.7	40	4		2JJE 075 160 S08	7.5	16	60	8	
2JJE 004 008 S04	0.4	0.8	40	4		2JJE 080 190 S08	8	19	60	8	
2JJE 0045 009 S04	0.45	0.9	40	4		2JJE 085 190 S10	8.5	19	70	10	
2JJE 005 010 S04	0.5	1	40	4		2JJE 090 190 S10	9	19	70	10	
2JJE 0055 011 S04	0.55	1.1	40	4		2JJE 095 190 S10	9.5	19	70	10	
2JJE 006 012 S04	0.6	1.2	40	4		2JJE 100 220 S10	10	22	70	10	
2JJE 0065 013 S04	0.65	1.3	40	4		2JJE 105 220 S12	10.5	22	75	12	
2JJE 007 014 S04	0.7	1.4	40	4		2JJE 110 220 S12	11	22	75	12	
2JJE 0075 015 S04	0.75	1.5	40	4		2JJE 115 220 S12	11.5	22	75	12	
2JJE 008 016 S04	0.8	1.6	40	4		2JJE 120 260 S12	12	26	75	12	
2JJE 0085 017 S04	0.85	1.7	40	4		2JJE 140 260 S14	14	26	80	14	
2JJE 009 020 S04	0.9	2	40	4		2JJE 140 260 S16	14	26	90	16	
2JJE 0095 020 S04	0.95	2	40	4		2JJE 160 350 S16	16	35	100	16	
2JJE 010 025 S04	1	2.5	40	4		2JJE 180 350 S18	18	35	100	18	
2JJE 010 025 S06	1	2.5	40	6		2JJE 200 400 S20	20	40	100	20	
2JJE 011 027 S04	1.1	2.7	40	4							
2JJE 012 030 S04	1.2	3	40	4							
2JJE 013 032 S04	1.3	3.2	40	4							
2JJE 014 035 S04	1.4	3.5	40	4							
2JJE 015 040 S04	1.5	4	40	4							
2JJE 015 040 S06	1.5	4	40	6							
2JJE 016 040 S04	1.6	4	40	4							
2JJE 017 042 S04	1.7	4.2	40	4							
2JJE 018 045 S04	1.8	4.5	40	4							
2JJE 019 050 S04	1.9	5	40	4							
2JJE 020 060 S04	2	6	40	4							
2JJE 020 060 S06	2	6	40	6							
2JJE 021 060 S04	2.1	6	40	4							
2JJE 022 060 S04	2.2	6	40	4							
2JJE 023 060 S04	2.3	6	40	4							
2JJE 024 080 S04	2.4	8	45	4							
2JJE 025 080 S04	2.5	8	45	4							
2JJE 025 080 S06	2.5	8	45	6							
2JJE 026 080 S04	2.6	8	45	4							
2JJE 027 080 S04	2.7	8	45	4							
2JJE 028 080 S04	2.8	8	45	4							



- 고정도강(HRc52~65), 프리하든강 계열의 고속가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel (HRc52~65)**
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.

4

UWC  
초미립자

TISIN-S  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

30°  
Helix Angle

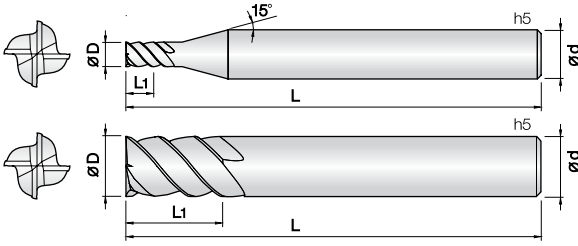
Shield Edge

D Size	D Tolerance
Ø0.5 ~ 5.5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø14 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤희 Shank Dia d	비고									
New 4JJE 005 010 S04	0.5	1	40	4										
4JJE 006 012 S04	0.6	1.2	40	4										
New 4JJE 007 014 S04	0.7	1.4	40	4										
4JJE 008 016 S04	0.8	1.6	40	4										
New 4JJE 009 018 S04	0.9	1.8	40	4										
4JJE 010 025 S04	1	2.5	40	4										
4JJE 010 025 S06	1	2.5	40	6										
4JJE 012 030 S04	1.2	3	40	4										
4JJE 015 040 S04	1.5	4	40	4										
4JJE 015 040 S06	1.5	4	40	6										
4JJE 020 060 S04	2	6	40	4										
4JJE 020 060 S06	2	6	40	6										
4JJE 025 080 S04	2.5	8	45	4										
4JJE 025 080 S06	2.5	8	45	6										
4JJE 030 080 S04	3	8	45	4										
4JJE 030 080 S06	3	8	45	6										
4JJE 035 100 S06	3.5	10	45	6										
4JJE 040 110 S04	4	11	45	4										
4JJE 040 110 S06	4	11	45	6										
4JJE 045 110 S06	4.5	11	45	6										
4JJE 050 130 S06	5	13	50	6										
4JJE 055 130 S06	5.5	13	50	6										
4JJE 060 130 S06	6	13	50	6										
4JJE 080 190 S08	8	19	60	8										
4JJE 100 220 S10	10	22	70	10										
4JJE 120 260 S12	12	26	75	12										
New 4JJE 140 300 S14	14	30	90	14										
New 4JJE 160 350 S16	16	35	100	16										
New 4JJE 200 400 S20	20	40	100	20										

## 4날 고정도재 가공용 제이제이 45° 헬릭스 엔드밀



- 고정도강(HRc52~65), 프리하드강 계열의 고속가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 45° 헬릭스 형상으로 설계하여 고속, 고이송 가공에 적합합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel (HRc52~65)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.

4

UWC  
초미립자

TISIN-S  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

45°  
Helix Angle

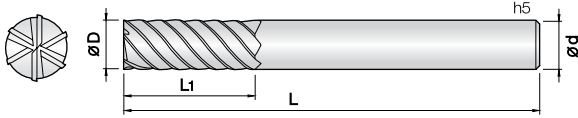
Shield Edge

D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4JJHE 010 015 S06	1	1.5	40	6		New 4JJHE 140 350 S14	14	35	90	14	
4JJHE 010 025 S06	1	2.5	40	6		New 4JJHE 140 550 S14	14	55	110	14	
4JJHE 010 035 S06	1	3.5	40	6		4JJHE 160 350 S16	16	35	90	16	
New 4JJHE 010 050 S06	1	5	45	6		4JJHE 160 500 S16	16	50	110	16	
New 4JJHE 015 040 S06	1.5	4	40	6		New 4JJHE 160 700 S16	16	70	130	16	
New 4JJHE 015 060 S06	1.5	6	40	6		New 4JJHE 180 380 S18	18	38	100	18	
New 4JJHE 015 080 S06	1.5	8	40	6		New 4JJHE 200 400 S20	20	40	100	20	
4JJHE 020 030 S06	2	3	40	6		New 4JJHE 200 550 S20	20	55	120	20	
4JJHE 020 050 S06	2	5	40	6		New 4JJHE 200 750 S20	20	75	150	20	
4JJHE 020 080 S06	2	8	40	6							
New 4JJHE 020 100 S06	2	10	45	6							
4JJHE 025 060 S06	2.5	6	45	6							
4JJHE 025 080 S06	2.5	8	45	6							
New 4JJHE 025 100 S06	2.5	10	50	6							
4JJHE 030 060 S06	3	6	45	6							
4JJHE 030 080 S06	3	8	45	6							
4JJHE 030 120 S06	3	12	50	6							
New 4JJHE 030 150 S06	3	15	50	6							
New 4JJHE 035 080 S06	3.5	8	45	6							
4JJHE 040 080 S06	4	8	45	6							
4JJHE 040 110 S06	4	11	45	6							
4JJHE 040 150 S06	4	15	55	6							
New 4JJHE 040 200 S06	4	20	60	6							
New 4JJHE 045 110 S06	4.5	11	50	6							
4JJHE 050 100 S06	5	10	50	6							
4JJHE 050 130 S06	5	13	50	6							
4JJHE 050 200 S06	5	20	60	6							
New 4JJHE 050 250 S06	5	25	70	6							
New 4JJHE 050 300 S06	5	30	75	6							
4JJHE 060 130 S06	6	13	50	6							
4JJHE 060 150 S06	6	15	55	6							
4JJHE 060 200 S06	6	20	60	6							
New 4JJHE 060 250 S06	6	25	70	6							
New 4JJHE 060 300 S06	6	30	75	6							
New 4JJHE 070 160 S08	7	16	60	8							
4JJHE 080 200 S08	8	20	60	8							
4JJHE 080 250 S08	8	25	70	8							
New 4JJHE 080 300 S08	8	30	80	8							
New 4JJHE 080 400 S08	8	40	90	8							
New 4JJHE 090 220 S10	9	22	70	10							
4JJHE 100 220 S10	10	22	70	10							
4JJHE 100 300 S10	10	30	80	10							
New 4JJHE 100 400 S10	10	40	90	10							
New 4JJHE 100 500 S10	10	50	100	10							
4JJHE 120 260 S12	12	26	75	12							
4JJHE 120 350 S12	12	35	90	12							
New 4JJHE 120 500 S12	12	50	100	12							
New 4JJHE 120 600 S12	12	60	110	12							

## 6&8날 고경도재 가공용 제이제이45° 헬릭스 엔드밀



- 고경도강(HRc52~70), 프리하든강 계열의 고속가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 균일한 런아웃과 고정밀 공차 적용으로 초정밀가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 45° 헬릭스 형상으로 설계하여 고속, 고이송 가공에 적합합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~70)
- Good wear resistance by high quality Si-based PVD coating.
- Precise run-out and tolerance for finish machining.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

6

8

UWC  
초미립자

TISIN-S  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

45°  
Helix Angle

Shield Edge

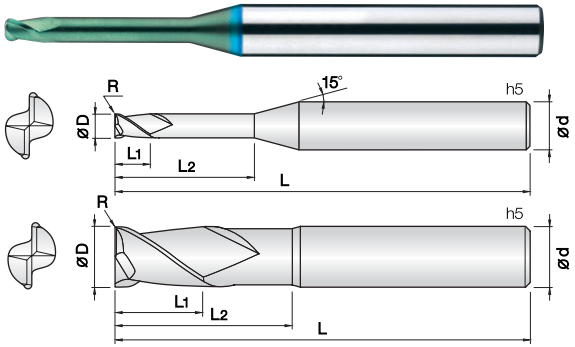
D Size	D Tolerance
ø3 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø14 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
6JJHE 030 100 S06	3	10	50	6		6JJHE 200 1200 S20	20	120	180	20	
6JJHE 030 150 S06	3	15	50	6		8JJHE 250 1000 S25	25	100	160	25	
New 6JJHE 030 200 S06	3	20	60	6		8JJHE 250 1300 S25	25	130	200	25	
6JJHE 040 120 S06	4	12	50	6							
6JJHE 040 160 S06	4	16	50	6							
New 6JJHE 040 200 S06	4	20	60	6							
6JJHE 050 150 S06	5	15	50	6							
6JJHE 050 200 S06	5	20	60	6							
New 6JJHE 050 250 S06	5	25	60	6							
6JJHE 060 150 S06	6	15	50	6							
6JJHE 060 200 S06	6	20	60	6							
6JJHE 060 250 S06	6	25	65	6							
6JJHE 060 300 S06	6	30	70	6							
6JJHE 060 350 S06	6	35	75	6							
New 6JJHE 060 400 S06	6	40	80	6							
6JJHE 080 200 S08	8	20	60	8							
6JJHE 080 250 S08	8	25	65	8							
6JJHE 080 300 S08	8	30	75	8							
6JJHE 080 350 S08	8	35	80	8							
6JJHE 080 400 S08	8	40	90	8							
6JJHE 080 450 S08	8	45	100	8							
6JJHE 080 500 S08	8	50	100	8							
6JJHE 100 250 S10	10	25	70	10							
6JJHE 100 350 S10	10	35	90	10							
6JJHE 100 450 S10	10	45	100	10							
6JJHE 100 500 S10	10	50	100	10							
6JJHE 100 600 S10	10	60	110	10							
6JJHE 120 300 S12	12	30	80	12							
6JJHE 120 400 S12	12	40	90	12							
6JJHE 120 500 S12	12	50	100	12							
6JJHE 120 600 S12	12	60	110	12							
6JJHE 120 700 S12	12	70	120	12							
New 6JJHE 140 350 S14	14	35	90	14							
New 6JJHE 140 550 S14	14	55	110	14							
6JJHE 160 350 S16	16	35	90	16							
6JJHE 160 500 S16	16	50	110	16							
6JJHE 160 650 S16	16	65	120	16							
6JJHE 160 800 S16	16	80	150	16							
6JJHE 160 900 S16	16	90	160	16							
6JJHE 160 1000 S16	16	100	160	16							
New 6JJHE 180 400 S18	18	40	100	18							
New 6JJHE 180 650 S18	18	65	120	18							
6JJHE 200 450 S20	20	45	100	20							
6JJHE 200 600 S20	20	60	120	20							
6JJHE 200 800 S20	20	80	150	20							
6JJHE 200 900 S20	20	90	160	20							
6JJHE 200 1000 S20	20	100	160	20							
6JJHE 200 1100 S20	20	110	170	20							



## 2날 고경도재 가공용 제이제이 리브 코너 레디우스 엔드밀



- 고경도강(HRc52~70), 프리하드강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel (HRc52~70)**
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and flute length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



R0.02 ~ 0.5 R1 ~ 1.5 R2 ~ 3

D Size	D Tolerance
∅0.2 ~ 5	+0 ~ -0.01mm
∅6 ~ 12	-0.005 ~ -0.015mm
∅16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2JJCR 002 0002 005	0.2 X R0.02	0.2	0.5	40	4		2JJCR 005 001 060	0.5 X R0.1	0.5	6	45	4	
2JJCR 002 0002 010	0.2 X R0.02	0.2	1	40	4		2JJCR 006 0002 020	0.6 X R0.02	0.6	2	45	4	
2JJCR 002 0002 015	0.2 X R0.02	0.2	1.5	40	4		2JJCR 006 0002 030	0.6 X R0.02	0.6	3	45	4	
2JJCR 002 0005 005	0.2 X R0.05	0.2	0.5	40	4		2JJCR 006 0002 040	0.6 X R0.02	0.6	4	45	4	
2JJCR 002 0005 010	0.2 X R0.05	0.2	1	40	4		2JJCR 006 0002 060	0.6 X R0.02	0.6	6	45	4	
2JJCR 002 0005 015	0.2 X R0.05	0.2	1.5	40	4		2JJCR 006 0002 080	0.6 X R0.02	0.6	8	45	4	
2JJCR 003 0002 010	0.3 X R0.02	0.3	1	40	4		New 2JJCR 006 0002 100	0.6 X R0.02	0.6	10	45	4	
2JJCR 003 0002 020	0.3 X R0.02	0.3	2	40	4		2JJCR 006 0005 020	0.6 X R0.05	0.6	2	45	4	
2JJCR 003 0002 030	0.3 X R0.02	0.3	3	40	4		2JJCR 006 0005 030	0.6 X R0.05	0.6	3	45	4	
2JJCR 003 0005 010	0.3 X R0.05	0.3	1	40	4		2JJCR 006 0005 040	0.6 X R0.05	0.6	4	45	4	
2JJCR 003 0005 020	0.3 X R0.05	0.3	2	40	4		2JJCR 006 0005 060	0.6 X R0.05	0.6	6	45	4	
2JJCR 003 0005 030	0.3 X R0.05	0.3	3	40	4		2JJCR 006 0005 080	0.6 X R0.05	0.6	8	45	4	
2JJCR 004 0002 010	0.4 X R0.02	0.4	1	40	4		New 2JJCR 006 0005 100	0.6 X R0.05	0.6	10	45	4	
2JJCR 004 0002 020	0.4 X R0.02	0.4	2	40	4		2JJCR 006 001 020	0.6 X R0.1	0.6	2	45	4	
2JJCR 004 0002 030	0.4 X R0.02	0.4	3	40	4		2JJCR 006 001 030	0.6 X R0.1	0.6	3	45	4	
2JJCR 004 0002 040	0.4 X R0.02	0.4	4	40	4		2JJCR 006 001 040	0.6 X R0.1	0.6	4	45	4	
2JJCR 004 0005 010	0.4 X R0.05	0.4	1	40	4		2JJCR 006 001 060	0.6 X R0.1	0.6	6	45	4	
2JJCR 004 0005 020	0.4 X R0.05	0.4	2	40	4		2JJCR 006 001 080	0.6 X R0.1	0.6	8	45	4	
2JJCR 004 0005 030	0.4 X R0.05	0.4	3	40	4		New 2JJCR 006 001 100	0.6 X R0.1	0.6	10	45	4	
2JJCR 004 0005 040	0.4 X R0.05	0.4	4	40	4		2JJCR 007 001 020	0.7 X R0.1	0.7	2	45	4	
2JJCR 004 001 010	0.4 X R0.1	0.4	1	40	4		2JJCR 007 001 040	0.7 X R0.1	0.7	4	45	4	
2JJCR 004 001 015	0.4 X R0.1	0.4	1.5	40	4		2JJCR 007 001 060	0.7 X R0.1	0.7	6	45	4	
2JJCR 004 001 020	0.4 X R0.1	0.4	2	40	4		2JJCR 008 0002 020	0.8 X R0.02	0.8	2	45	4	
2JJCR 004 001 030	0.4 X R0.1	0.4	3	40	4		2JJCR 008 0002 040	0.8 X R0.02	0.8	4	45	4	
2JJCR 004 001 040	0.4 X R0.1	0.4	4	40	4		2JJCR 008 0002 060	0.8 X R0.02	0.8	6	45	4	
2JJCR 005 0002 010	0.5 X R0.02	0.5	1	45	4		2JJCR 008 0002 080	0.8 X R0.02	0.8	8	45	4	
2JJCR 005 0002 015	0.5 X R0.02	0.5	1.5	45	4		New 2JJCR 008 0002 100	0.8 X R0.02	0.8	10	45	4	
2JJCR 005 0002 020	0.5 X R0.02	0.5	2	45	4		2JJCR 008 0005 020	0.8 X R0.05	0.8	2	45	4	
2JJCR 005 0002 025	0.5 X R0.02	0.5	2.5	45	4		2JJCR 008 0005 040	0.8 X R0.05	0.8	4	45	4	
2JJCR 005 0002 030	0.5 X R0.02	0.5	3	45	4		2JJCR 008 0005 060	0.8 X R0.05	0.8	6	45	4	
2JJCR 005 0002 040	0.5 X R0.02	0.5	4	45	4		2JJCR 008 0005 080	0.8 X R0.05	0.8	8	45	4	
2JJCR 005 0002 050	0.5 X R0.02	0.5	5	45	4		New 2JJCR 008 0005 100	0.8 X R0.05	0.8	10	45	4	
2JJCR 005 0002 060	0.5 X R0.02	0.5	6	45	4		2JJCR 008 001 020	0.8 X R0.1	0.8	2	45	4	
2JJCR 005 0005 010	0.5 X R0.05	0.5	1	45	4		2JJCR 008 001 040	0.8 X R0.1	0.8	4	45	4	
2JJCR 005 0005 015	0.5 X R0.05	0.5	1.5	45	4		2JJCR 008 001 060	0.8 X R0.1	0.8	6	45	4	
2JJCR 005 0005 020	0.5 X R0.05	0.5	2	45	4		2JJCR 008 001 080	0.8 X R0.1	0.8	8	45	4	
2JJCR 005 0005 025	0.5 X R0.05	0.5	2.5	45	4		New 2JJCR 008 001 100	0.8 X R0.1	0.8	10	45	4	
2JJCR 005 0005 030	0.5 X R0.05	0.5	3	45	4		2JJCR 008 002 020	0.8 X R0.2	0.8	2	45	4	
2JJCR 005 0005 040	0.5 X R0.05	0.5	4	45	4		2JJCR 008 002 040	0.8 X R0.2	0.8	4	45	4	
2JJCR 005 0005 050	0.5 X R0.05	0.5	5	45	4		2JJCR 008 002 060	0.8 X R0.2	0.8	6	45	4	
2JJCR 005 0005 060	0.5 X R0.05	0.5	6	45	4		2JJCR 008 002 080	0.8 X R0.2	0.8	8	45	4	
2JJCR 005 001 010	0.5 X R0.1	0.5	1	45	4		New 2JJCR 008 002 100	0.8 X R0.2	0.8	10	45	4	
2JJCR 005 001 015	0.5 X R0.1	0.5	1.5	45	4		2JJCR 010 0002 040	1 X R0.02	1	4	45	4	
2JJCR 005 001 020	0.5 X R0.1	0.5	2	45	4		2JJCR 010 0002 060	1 X R0.02	1	6	45	4	
2JJCR 005 001 025	0.5 X R0.1	0.5	2.5	45	4		2JJCR 010 0002 080	1 X R0.02	1	8	45	4	
2JJCR 005 001 030	0.5 X R0.1	0.5	3	45	4		2JJCR 010 0002 100	1 X R0.02	1	10	50	4	
2JJCR 005 001 040	0.5 X R0.1	0.5	4	45	4		2JJCR 010 0002 120	1 X R0.02	1	12	50	4	
2JJCR 005 001 050	0.5 X R0.1	0.5	5	45	4		2JJCR 010 0002 160	1 X R0.02	1	16	50	4	

단위 : mm

Order Number	날경 Diameter D × R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D × R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJCR 010 0002 200	1 X R0.02	1	20	50	4		2JJCR 012 003 200	1.2 X R0.3	1.2	20	50	4	
2JJCR 010 0005 040	1 X R0.05	1	4	45	4		2JJCR 015 0002 040	1.5 X R0.02	1.5	4	45	4	
2JJCR 010 0005 060	1 X R0.05	1	6	45	4		2JJCR 015 0002 060	1.5 X R0.02	1.5	6	45	4	
2JJCR 010 0005 080	1 X R0.05	1	8	45	4		2JJCR 015 0002 080	1.5 X R0.02	1.5	8	45	4	
2JJCR 010 0005 100	1 X R0.05	1	10	50	4		2JJCR 015 0002 100	1.5 X R0.02	1.5	10	50	4	
2JJCR 010 0005 120	1 X R0.05	1	12	50	4		2JJCR 015 0002 120	1.5 X R0.02	1.5	12	50	4	
2JJCR 010 0005 160	1 X R0.05	1	16	50	4		2JJCR 015 0002 160	1.5 X R0.02	1.5	16	50	4	
2JJCR 010 0005 200	1 X R0.05	1	20	50	4		2JJCR 015 0002 200	1.5 X R0.02	1.5	20	50	4	
2JJCR 010 001 040	1 X R0.1	1	4	45	4		2JJCR 015 0005 040	1.5 X R0.05	1.5	4	45	4	
2JJCR 010 001 060	1 X R0.1	1	6	45	4		2JJCR 015 0005 060	1.5 X R0.05	1.5	6	45	4	
2JJCR 010 001 080	1 X R0.1	1	8	45	4		2JJCR 015 0005 080	1.5 X R0.05	1.5	8	45	4	
2JJCR 010 001 100	1 X R0.1	1	10	50	4		2JJCR 015 0005 100	1.5 X R0.05	1.5	10	50	4	
2JJCR 010 001 120	1 X R0.1	1	12	50	4		2JJCR 015 0005 120	1.5 X R0.05	1.5	12	50	4	
2JJCR 010 001 160	1 X R0.1	1	16	50	4		2JJCR 015 0005 160	1.5 X R0.05	1.5	16	50	4	
2JJCR 010 001 200	1 X R0.1	1	20	50	4		2JJCR 015 0005 200	1.5 X R0.05	1.5	20	50	4	
2JJCR 010 002 040	1 X R0.2	1	4	45	4		2JJCR 015 001 040	1.5 X R0.1	1.5	4	45	4	
2JJCR 010 002 060	1 X R0.2	1	6	45	4		2JJCR 015 001 060	1.5 X R0.1	1.5	6	45	4	
2JJCR 010 002 080	1 X R0.2	1	8	45	4		2JJCR 015 001 080	1.5 X R0.1	1.5	8	45	4	
2JJCR 010 002 100	1 X R0.2	1	10	50	4		2JJCR 015 001 100	1.5 X R0.1	1.5	10	50	4	
2JJCR 010 002 120	1 X R0.2	1	12	50	4		2JJCR 015 001 120	1.5 X R0.1	1.5	12	50	4	
2JJCR 010 002 160	1 X R0.2	1	16	50	4		2JJCR 015 001 160	1.5 X R0.1	1.5	16	50	4	
2JJCR 010 002 200	1 X R0.2	1	20	50	4		2JJCR 015 001 200	1.5 X R0.1	1.5	20	50	4	
2JJCR 010 003 040	1 X R0.3	1	4	45	4		2JJCR 015 002 040	1.5 X R0.2	1.5	4	45	4	
2JJCR 010 003 060	1 X R0.3	1	6	45	4		2JJCR 015 002 060	1.5 X R0.2	1.5	6	45	4	
2JJCR 010 003 080	1 X R0.3	1	8	45	4		2JJCR 015 002 080	1.5 X R0.2	1.5	8	45	4	
2JJCR 010 003 100	1 X R0.3	1	10	50	4		2JJCR 015 002 100	1.5 X R0.2	1.5	10	50	4	
2JJCR 010 003 120	1 X R0.3	1	12	50	4		2JJCR 015 002 120	1.5 X R0.2	1.5	12	50	4	
2JJCR 010 003 160	1 X R0.3	1	16	50	4		2JJCR 015 002 160	1.5 X R0.2	1.5	16	50	4	
2JJCR 010 003 200	1 X R0.3	1	20	50	4		2JJCR 015 002 200	1.5 X R0.2	1.5	20	50	4	
2JJCR 012 0002 040	1.2 X R0.02	1.2	4	45	4		2JJCR 015 003 040	1.5 X R0.3	1.5	4	45	4	
2JJCR 012 0002 060	1.2 X R0.02	1.2	6	45	4		2JJCR 015 003 060	1.5 X R0.3	1.5	6	45	4	
2JJCR 012 0002 080	1.2 X R0.02	1.2	8	45	4		2JJCR 015 003 080	1.5 X R0.3	1.5	8	45	4	
2JJCR 012 0002 100	1.2 X R0.02	1.2	10	50	4		2JJCR 015 003 100	1.5 X R0.3	1.5	10	50	4	
2JJCR 012 0002 120	1.2 X R0.02	1.2	12	50	4		2JJCR 015 003 120	1.5 X R0.3	1.5	12	50	4	
2JJCR 012 0002 160	1.2 X R0.02	1.2	16	50	4		2JJCR 015 003 160	1.5 X R0.3	1.5	16	50	4	
2JJCR 012 0002 200	1.2 X R0.02	1.2	20	50	4		2JJCR 015 003 200	1.5 X R0.3	1.5	20	50	4	
2JJCR 012 0005 040	1.2 X R0.05	1.2	4	45	4		2JJCR 015 005 040	1.5 X R0.5	1.5	4	45	4	
2JJCR 012 0005 060	1.2 X R0.05	1.2	6	45	4		2JJCR 015 005 060	1.5 X R0.5	1.5	6	45	4	
2JJCR 012 0005 080	1.2 X R0.05	1.2	8	45	4		2JJCR 015 005 080	1.5 X R0.5	1.5	8	45	4	
2JJCR 012 0005 100	1.2 X R0.05	1.2	10	50	4		2JJCR 015 005 100	1.5 X R0.5	1.5	10	50	4	
2JJCR 012 0005 120	1.2 X R0.05	1.2	12	50	4		2JJCR 015 005 120	1.5 X R0.5	1.5	12	50	4	
2JJCR 012 0005 160	1.2 X R0.05	1.2	16	50	4		2JJCR 015 005 160	1.5 X R0.5	1.5	16	50	4	
2JJCR 012 0005 200	1.2 X R0.05	1.2	20	50	4		2JJCR 015 005 200	1.5 X R0.5	1.5	20	50	4	
2JJCR 012 001 040	1.2 X R0.1	1.2	4	45	4		2JJCR 020 0002 060	2 X R0.02	2	6	45	4	
2JJCR 012 001 060	1.2 X R0.1	1.2	6	45	4		2JJCR 020 0002 080	2 X R0.02	2	8	45	4	
2JJCR 012 001 080	1.2 X R0.1	1.2	8	45	4		2JJCR 020 0002 100	2 X R0.02	2	10	50	4	
2JJCR 012 001 100	1.2 X R0.1	1.2	10	50	4		2JJCR 020 0002 120	2 X R0.02	2	12	50	4	
2JJCR 012 001 120	1.2 X R0.1	1.2	12	50	4		2JJCR 020 0002 160	2 X R0.02	2	16	50	4	
2JJCR 012 001 160	1.2 X R0.1	1.2	16	50	4		2JJCR 020 0002 200	2 X R0.02	2	20	50	4	
2JJCR 012 001 200	1.2 X R0.1	1.2	20	50	4		2JJCR 020 0002 250	2 X R0.02	2	25	60	4	
2JJCR 012 002 040	1.2 X R0.2	1.2	4	45	4		2JJCR 020 0005 060	2 X R0.05	2	6	45	4	
2JJCR 012 002 060	1.2 X R0.2	1.2	6	45	4		2JJCR 020 0005 080	2 X R0.05	2	8	45	4	
2JJCR 012 002 080	1.2 X R0.2	1.2	8	45	4		2JJCR 020 0005 100	2 X R0.05	2	10	50	4	
2JJCR 012 002 100	1.2 X R0.2	1.2	10	50	4		2JJCR 020 0005 120	2 X R0.05	2	12	50	4	
2JJCR 012 002 120	1.2 X R0.2	1.2	12	50	4		2JJCR 020 0005 160	2 X R0.05	2	16	50	4	
2JJCR 012 002 160	1.2 X R0.2	1.2	16	50	4		2JJCR 020 0005 200	2 X R0.05	2	20	50	4	
2JJCR 012 002 200	1.2 X R0.2	1.2	20	50	4		2JJCR 020 0005 250	2 X R0.05	2	25	60	4	
2JJCR 012 003 040	1.2 X R0.3	1.2	4	45	4		2JJCR 020 001 060	2 X R0.1	2	6	45	4	
2JJCR 012 003 060	1.2 X R0.3	1.2	6	45	4		2JJCR 020 001 080	2 X R0.1	2	8	45	4	
2JJCR 012 003 080	1.2 X R0.3	1.2	8	45	4		2JJCR 020 001 100	2 X R0.1	2	10	50	4	
2JJCR 012 003 100	1.2 X R0.3	1.2	10	50	4		2JJCR 020 001 120	2 X R0.1	2	12	50	4	
2JJCR 012 003 120	1.2 X R0.3	1.2	12	50	4		2JJCR 020 001 160	2 X R0.1	2	16	50	4	
2JJCR 012 003 160	1.2 X R0.3	1.2	16	50	4		2JJCR 020 001 200	2 X R0.1	2	20	50	4	

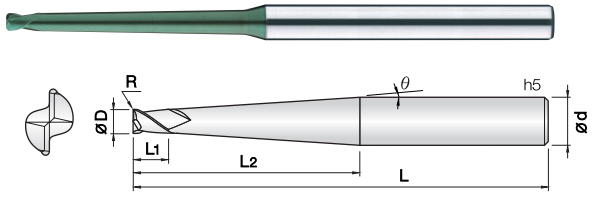
단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJCR 020 001 250	2 X R0.1	2	25	60	4		2JJCR 030 003 400	3 X R0.3	3	40	80	6	
New 2JJCR 020 001 300	2 X R0.1	2	30	70	4		2JJCR 030 005 100	3 X R0.5	3	10	50	6	
2JJCR 020 002 060	2 X R0.2	2	6	45	4		2JJCR 030 005 120	3 X R0.5	3	12	50	6	
2JJCR 020 002 080	2 X R0.2	2	8	45	4		2JJCR 030 005 160	3 X R0.5	3	16	55	6	
2JJCR 020 002 100	2 X R0.2	2	10	50	4		2JJCR 030 005 200	3 X R0.5	3	20	60	6	
2JJCR 020 002 120	2 X R0.2	2	12	50	4		2JJCR 030 005 250	3 X R0.5	3	25	65	6	
2JJCR 020 002 160	2 X R0.2	2	16	50	4		2JJCR 030 005 300	3 X R0.5	3	30	70	6	
2JJCR 020 002 200	2 X R0.2	2	20	50	4		2JJCR 030 005 350	3 X R0.5	3	35	75	6	
2JJCR 020 002 250	2 X R0.2	2	25	60	4		2JJCR 030 005 400	3 X R0.5	3	40	80	6	
New 2JJCR 020 002 300	2 X R0.2	2	30	70	4		2JJCR 030 010 100	3 X R1	3	10	50	6	
2JJCR 020 003 060	2 X R0.3	2	6	45	4		2JJCR 030 010 120	3 X R1	3	12	50	6	
2JJCR 020 003 080	2 X R0.3	2	8	45	4		2JJCR 030 010 160	3 X R1	3	16	55	6	
2JJCR 020 003 100	2 X R0.3	2	10	50	4		2JJCR 030 010 200	3 X R1	3	20	60	6	
2JJCR 020 003 120	2 X R0.3	2	12	50	4		2JJCR 030 010 250	3 X R1	3	25	65	6	
2JJCR 020 003 160	2 X R0.3	2	16	50	4		2JJCR 030 010 300	3 X R1	3	30	70	6	
2JJCR 020 003 200	2 X R0.3	2	20	50	4		2JJCR 030 010 350	3 X R1	3	35	75	6	
2JJCR 020 003 250	2 X R0.3	2	25	60	4		2JJCR 030 010 400	3 X R1	3	40	80	6	
New 2JJCR 020 003 300	2 X R0.3	2	30	70	4		2JJCR 040 001 120	4 X R0.1	4	12	50	6	
2JJCR 020 005 060	2 X R0.5	2	6	45	4		2JJCR 040 001 160	4 X R0.1	4	16	55	6	
2JJCR 020 005 080	2 X R0.5	2	8	45	4		2JJCR 040 001 200	4 X R0.1	4	20	60	6	
2JJCR 020 005 100	2 X R0.5	2	10	50	4		2JJCR 040 001 250	4 X R0.1	4	25	65	6	
2JJCR 020 005 120	2 X R0.5	2	12	50	4		2JJCR 040 001 300	4 X R0.1	4	30	70	6	
2JJCR 020 005 160	2 X R0.5	2	16	50	4		2JJCR 040 001 350	4 X R0.1	4	35	75	6	
2JJCR 020 005 200	2 X R0.5	2	20	50	4		2JJCR 040 001 400	4 X R0.1	4	40	80	6	
2JJCR 020 005 250	2 X R0.5	2	25	60	4		2JJCR 040 002 120	4 X R0.2	4	12	50	6	
New 2JJCR 020 005 300	2 X R0.5	2	30	70	4		2JJCR 040 002 160	4 X R0.2	4	16	55	6	
2JJCR 025 001 100	2.5 X R0.1	2.5	10	50	4		2JJCR 040 002 200	4 X R0.2	4	20	60	6	
2JJCR 025 001 160	2.5 X R0.1	2.5	16	50	4		2JJCR 040 002 250	4 X R0.2	4	25	65	6	
2JJCR 025 001 200	2.5 X R0.1	2.5	20	50	4		2JJCR 040 002 300	4 X R0.2	4	30	70	6	
New 2JJCR 025 001 250	2.5 X R0.1	2.5	25	60	4		2JJCR 040 002 350	4 X R0.2	4	35	75	6	
New 2JJCR 025 001 300	2.5 X R0.1	2.5	30	70	4		2JJCR 040 002 400	4 X R0.2	4	40	80	6	
2JJCR 025 002 100	2.5 X R0.2	2.5	10	50	4		2JJCR 040 003 120	4 X R0.3	4	12	50	6	
2JJCR 025 002 160	2.5 X R0.2	2.5	16	50	4		2JJCR 040 003 160	4 X R0.3	4	16	55	6	
2JJCR 025 002 200	2.5 X R0.2	2.5	20	50	4		2JJCR 040 003 200	4 X R0.3	4	20	60	6	
2JJCR 025 003 100	2.5 X R0.3	2.5	10	50	4		2JJCR 040 003 250	4 X R0.3	4	25	65	6	
2JJCR 025 003 160	2.5 X R0.3	2.5	16	50	4		2JJCR 040 003 300	4 X R0.3	4	30	70	6	
2JJCR 025 003 200	2.5 X R0.3	2.5	20	50	4		2JJCR 040 003 350	4 X R0.3	4	35	75	6	
2JJCR 025 005 100	2.5 X R0.5	2.5	10	50	4		2JJCR 040 003 400	4 X R0.3	4	40	80	6	
2JJCR 025 005 160	2.5 X R0.5	2.5	16	50	4		2JJCR 040 005 120	4 X R0.5	4	12	50	6	
2JJCR 025 005 200	2.5 X R0.5	2.5	20	50	4		2JJCR 040 005 160	4 X R0.5	4	16	55	6	
2JJCR 030 001 100	3 X R0.1	3	10	50	6		2JJCR 040 005 200	4 X R0.5	4	20	60	6	
2JJCR 030 001 120	3 X R0.1	3	12	50	6		2JJCR 040 005 250	4 X R0.5	4	25	65	6	
2JJCR 030 001 160	3 X R0.1	3	16	55	6		2JJCR 040 005 300	4 X R0.5	4	30	70	6	
2JJCR 030 001 200	3 X R0.1	3	20	60	6		2JJCR 040 005 350	4 X R0.5	4	35	75	6	
2JJCR 030 001 250	3 X R0.1	3	25	65	6		2JJCR 040 005 400	4 X R0.5	4	40	80	6	
2JJCR 030 001 300	3 X R0.1	3	30	70	6		2JJCR 040 010 120	4 X R1	4	12	50	6	
2JJCR 030 001 350	3 X R0.1	3	35	75	6		2JJCR 040 010 160	4 X R1	4	16	55	6	
2JJCR 030 001 400	3 X R0.1	3	40	80	6		2JJCR 040 010 200	4 X R1	4	20	60	6	
2JJCR 030 002 100	3 X R0.2	3	10	50	6		2JJCR 040 010 250	4 X R1	4	25	65	6	
2JJCR 030 002 120	3 X R0.2	3	12	50	6		2JJCR 040 010 300	4 X R1	4	30	70	6	
2JJCR 030 002 160	3 X R0.2	3	16	55	6		2JJCR 040 010 350	4 X R1	4	35	75	6	
2JJCR 030 002 200	3 X R0.2	3	20	60	6		2JJCR 040 010 400	4 X R1	4	40	80	6	
2JJCR 030 002 250	3 X R0.2	3	25	65	6		2JJCR 050 002 150	5 X R0.2	6	15	60	6	
2JJCR 030 002 300	3 X R0.2	3	30	70	6		2JJCR 050 002 250	5 X R0.2	6	25	70	6	
2JJCR 030 002 350	3 X R0.2	3	35	75	6		2JJCR 050 002 300	5 X R0.2	6	30	70	6	
2JJCR 030 002 400	3 X R0.2	3	40	80	6		2JJCR 050 002 400	5 X R0.2	6	40	80	6	
2JJCR 030 003 100	3 X R0.3	3	10	50	6		2JJCR 050 005 150	5 X R0.5	6	15	60	6	
2JJCR 030 003 120	3 X R0.3	3	12	50	6		2JJCR 050 005 250	5 X R0.5	6	25	70	6	
2JJCR 030 003 160	3 X R0.3	3	16	55	6		2JJCR 050 005 300	5 X R0.5	6	30	70	6	
2JJCR 030 003 200	3 X R0.3	3	20	60	6		2JJCR 050 005 400	5 X R0.5	6	40	80	6	
2JJCR 030 003 250	3 X R0.3	3	25	65	6		2JJCR 050 010 150	5 X R1	6	15	60	6	
2JJCR 030 003 300	3 X R0.3	3	30	70	6		2JJCR 050 010 250	5 X R1	6	25	70	6	
2JJCR 030 003 350	3 X R0.3	3	35	75	6		2JJCR 050 010 300	5 X R1	6	30	70	6	

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고										
2JJCR 050 010 400	5 X R1	6	40	80	6											
2JJCR 060 001 200	6 X R0.1	7	20	60	6											
2JJCR 060 001 400	6 X R0.1	7	40	80	6											
2JJCR 060 002 200	6 X R0.2	7	20	60	6											
2JJCR 060 002 400	6 X R0.2	7	40	80	6											
2JJCR 060 003 200	6 X R0.3	7	20	60	6											
2JJCR 060 003 400	6 X R0.3	7	40	80	6											
2JJCR 060 005 200	6 X R0.5	7	20	60	6											
2JJCR 060 005 400	6 X R0.5	7	40	80	6											
2JJCR 060 010 200	6 X R1	7	20	60	6											
2JJCR 060 010 400	6 X R1	7	40	80	6											
2JJCR 060 015 200	6 X R1.5	7	20	60	6											
2JJCR 060 015 400	6 X R1.5	7	40	80	6											
2JJCR 080 002 220	8 X R0.2	9	22	65	8											
2JJCR 080 003 220	8 X R0.3	9	22	65	8											
2JJCR 080 005 220	8 X R0.5	9	22	65	8											
2JJCR 080 010 220	8 X R1	9	22	65	8											
2JJCR 080 015 220	8 X R1.5	9	22	65	8											
2JJCR 100 002 240	10 X R0.2	11	24	70	10											
2JJCR 100 003 240	10 X R0.3	11	24	70	10											
2JJCR 100 005 240	10 X R0.5	11	24	70	10											
2JJCR 100 010 240	10 X R1	11	24	70	10											
2JJCR 100 015 240	10 X R1.5	11	24	70	10											
2JJCR 100 020 240	10 X R2	11	24	70	10											
2JJCR 120 002 260	12 X R0.2	13	26	80	12											
2JJCR 120 003 260	12 X R0.3	13	26	80	12											
2JJCR 120 005 260	12 X R0.5	13	26	80	12											
2JJCR 120 010 260	12 X R1	13	26	80	12											
2JJCR 120 015 260	12 X R1.5	13	26	80	12											
2JJCR 120 020 260	12 X R2	13	26	80	12											
2JJCR 120 030 260	12 X R3	13	26	80	12											
2JJCR 160 005 110	16 X R0.5	20	35	110	16											
2JJCR 160 010 110	16 X R1	20	35	110	16											





- 고경도강(HRc52~70), 프리하든강 계열의 고정밀가공 엔드밀
- 고함량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 유효장을 테이퍼 설계하여 깊은 홈 작업시 목부파손 및 떨림을 최소화 하였습니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~70)
- Good wear resistance by high quality Si-based PVD coating.
- Minimize chattering and fracturing by taper designed flute.
- Designed for minimizing edge chipping by corner R shape.
- High precise edge tolerance.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

2

UWC  
초미립자

TISIN  
Coating

R  
±0.005

R  
±0.01

30°  
Helix Angle

R0.1 ~ 0.5      R1

D Size	D Tolerance
$\phi 1 \sim 4$	+0 ~ -0.01mm

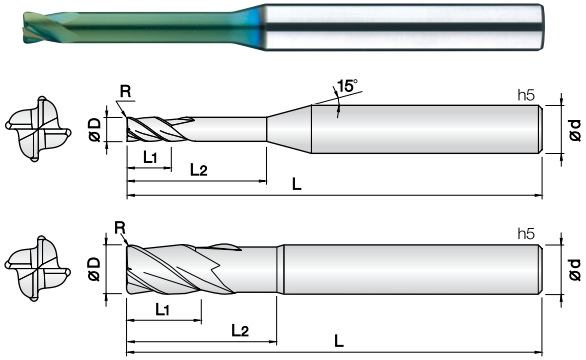
단위 : mm

Order Number	날경 D x R	각도 $\theta$	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 D x R	각도 $\theta$	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2JJTC 010 001 0601	1 X R0.1	1°	1	6	50	4		2JJTC 020 003 1601	2 X R0.3	1°	2	16	50	4	
2JJTC 010 001 1001	1 X R0.1	1°	1	10	50	4		2JJTC 020 003 2001	2 X R0.3	1°	2	20	60	4	
2JJTC 010 001 1501	1 X R0.1	1°	1	15	50	4		2JJTC 020 003 2501	2 X R0.3	1°	2	25	60	4	
2JJTC 010 001 2001	1 X R0.1	1°	1	20	60	4		2JJTC 020 003 3001	2 X R0.3	1°	2	30	70	4	
2JJTC 010 001 2501	1 X R0.1	1°	1	25	60	4		2JJTC 020 003 3501	2 X R0.3	1°	2	35	75	4	
2JJTC 010 001 3001	1 X R0.1	1°	1	30	70	4		2JJTC 020 003 4001	2 X R0.3	1°	2	40	80	4	
2JJTC 010 001 3501	1 X R0.1	1°	1	35	75	4		2JJTC 020 003 5001	2 X R0.3	1°	2	50	90	4	
2JJTC 010 002 0601	1 X R0.2	1°	1	6	50	4		2JJTC 020 005 1201	2 X R0.5	1°	2	12	50	4	
2JJTC 010 002 1001	1 X R0.2	1°	1	10	50	4		2JJTC 020 005 1601	2 X R0.5	1°	2	16	50	4	
2JJTC 010 002 1501	1 X R0.2	1°	1	15	50	4		2JJTC 020 005 2001	2 X R0.5	1°	2	20	60	4	
2JJTC 010 002 2001	1 X R0.2	1°	1	20	60	4		2JJTC 020 005 2501	2 X R0.5	1°	2	25	60	4	
2JJTC 010 002 2501	1 X R0.2	1°	1	25	60	4		2JJTC 020 005 3001	2 X R0.5	1°	2	30	70	4	
2JJTC 010 002 3001	1 X R0.2	1°	1	30	70	4		2JJTC 020 005 3501	2 X R0.5	1°	2	35	75	4	
2JJTC 010 002 3501	1 X R0.2	1°	1	35	75	4		2JJTC 020 005 4001	2 X R0.5	1°	2	40	80	4	
2JJTC 010 003 0601	1 X R0.3	1°	1	6	50	4		2JJTC 020 005 5001	2 X R0.5	1°	2	50	90	4	
2JJTC 010 003 1001	1 X R0.3	1°	1	10	50	4		2JJTC 030 002 2001	3 X R0.2	1°	3	20	60	6	
2JJTC 010 003 1501	1 X R0.3	1°	1	15	50	4		2JJTC 030 002 3001	3 X R0.2	1°	3	30	70	6	
2JJTC 010 003 2001	1 X R0.3	1°	1	20	60	4		2JJTC 030 002 4001	3 X R0.2	1°	3	40	80	6	
2JJTC 010 003 2501	1 X R0.3	1°	1	25	60	4		2JJTC 030 002 5001	3 X R0.2	1°	3	50	90	6	
2JJTC 010 003 3001	1 X R0.3	1°	1	30	70	4		2JJTC 030 002 6001	3 X R0.2	1°	3	60	100	6	
2JJTC 010 003 3501	1 X R0.3	1°	1	35	75	4		2JJTC 030 003 2001	3 X R0.3	1°	3	20	60	6	
2JJTC 015 002 1001	1.5 X R0.2	1°	1.5	10	50	4		2JJTC 030 003 3001	3 X R0.3	1°	3	30	70	6	
2JJTC 015 002 1501	1.5 X R0.2	1°	1.5	15	50	4		2JJTC 030 003 4001	3 X R0.3	1°	3	40	80	6	
2JJTC 015 002 2001	1.5 X R0.2	1°	1.5	20	60	4		2JJTC 030 003 5001	3 X R0.3	1°	3	50	90	6	
2JJTC 015 002 2501	1.5 X R0.2	1°	1.5	25	60	4		2JJTC 030 003 6001	3 X R0.3	1°	3	60	100	6	
2JJTC 015 002 3001	1.5 X R0.2	1°	1.5	30	70	4		2JJTC 030 005 2001	3 X R0.5	1°	3	20	60	6	
2JJTC 015 002 3501	1.5 X R0.2	1°	1.5	35	75	4		2JJTC 030 005 3001	3 X R0.5	1°	3	30	70	6	
2JJTC 015 003 1001	1.5 X R0.3	1°	1.5	10	50	4		2JJTC 030 005 4001	3 X R0.5	1°	3	40	80	6	
2JJTC 015 003 1501	1.5 X R0.3	1°	1.5	15	50	4		2JJTC 030 005 5001	3 X R0.5	1°	3	50	90	6	
2JJTC 015 003 2001	1.5 X R0.3	1°	1.5	20	60	4		2JJTC 030 005 6001	3 X R0.5	1°	3	60	100	6	
2JJTC 015 003 2501	1.5 X R0.3	1°	1.5	25	60	4		2JJTC 030 010 2001	3 X R1	1°	3	20	60	6	
2JJTC 015 003 3001	1.5 X R0.3	1°	1.5	30	70	4		2JJTC 030 010 3001	3 X R1	1°	3	30	70	6	
2JJTC 015 003 3501	1.5 X R0.3	1°	1.5	35	75	4		2JJTC 030 010 4001	3 X R1	1°	3	40	80	6	
2JJTC 015 005 1001	1.5 X R0.5	1°	1.5	10	50	4		2JJTC 030 010 5001	3 X R1	1°	3	50	90	6	
2JJTC 015 005 1501	1.5 X R0.5	1°	1.5	15	50	4		2JJTC 030 010 6001	3 X R1	1°	3	60	100	6	
2JJTC 015 005 2001	1.5 X R0.5	1°	1.5	20	60	4		2JJTC 040 002 2001	4 X R0.2	1°	4	20	60	6	
2JJTC 015 005 2501	1.5 X R0.5	1°	1.5	25	60	4		2JJTC 040 002 3001	4 X R0.2	1°	4	30	70	6	
2JJTC 015 005 3001	1.5 X R0.5	1°	1.5	30	70	4		2JJTC 040 002 4001	4 X R0.2	1°	4	40	80	6	
2JJTC 015 005 3501	1.5 X R0.5	1°	1.5	35	75	4		2JJTC 040 002 5001	4 X R0.2	1°	4	50	90	6	
2JJTC 020 002 1201	2 X R0.2	1°	2	12	50	4		2JJTC 040 002 6001	4 X R0.2	1°	4	60	100	6	
2JJTC 020 002 1601	2 X R0.2	1°	2	16	50	4		2JJTC 040 003 2001	4 X R0.3	1°	4	20	60	6	
2JJTC 020 002 2001	2 X R0.2	1°	2	20	60	4		2JJTC 040 003 3001	4 X R0.3	1°	4	30	70	6	
2JJTC 020 002 2501	2 X R0.2	1°	2	25	60	4		2JJTC 040 003 4001	4 X R0.3	1°	4	40	80	6	
2JJTC 020 002 3001	2 X R0.2	1°	2	30	70	4		2JJTC 040 003 5001	4 X R0.3	1°	4	50	90	6	
2JJTC 020 002 3501	2 X R0.2	1°	2	35	75	4		2JJTC 040 003 6001	4 X R0.3	1°	4	60	100	6	
2JJTC 020 002 4001	2 X R0.2	1°	2	40	80	4		2JJTC 040 005 2001	4 X R0.5	1°	4	20	60	6	
2JJTC 020 002 5001	2 X R0.2	1°	2	50	90	4		2JJTC 040 005 3001	4 X R0.5	1°	4	30	70	6	
2JJTC 020 003 1201	2 X R0.3	1°	2	12	50	4		2JJTC 040 005 4001	4 X R0.5	1°	4	40	80	6	



### 4날 고정도재 가공용 제이제이 리브 코너 레디우스 엔드밀

JJ series



- 고정도강(HRc52~70), 프리하드강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel (HRc52~70)**
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and flute length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

4

UWC  
초미립자

TISIN-S  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

30°  
Helix Angle

R0.02 ~ 0.5    R1 ~ 1.5    R2 ~ 3

D Size	D Tolerance
ø0.5 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
New 4JJCR 005 0005 020	0.5 X R0.05	0.5	2	45	4		4JJCR 010 0005 100	1 X R0.05	1	10	50	4	
New 4JJCR 005 0005 040	0.5 X R0.05	0.5	4	45	4		4JJCR 010 0005 120	1 X R0.05	1	12	50	4	
New 4JJCR 005 0005 060	0.5 X R0.05	0.5	6	45	4		4JJCR 010 001 040	1 X R0.1	1	4	45	4	
New 4JJCR 005 0005 080	0.5 X R0.05	0.5	8	45	4		4JJCR 010 001 060	1 X R0.1	1	6	45	4	
New 4JJCR 005 001 020	0.5 X R0.1	0.5	2	45	4		4JJCR 010 001 080	1 X R0.1	1	8	45	4	
New 4JJCR 005 001 040	0.5 X R0.1	0.5	4	45	4		4JJCR 010 001 100	1 X R0.1	1	10	50	4	
New 4JJCR 005 001 060	0.5 X R0.1	0.5	6	45	4		4JJCR 010 001 120	1 X R0.1	1	12	50	4	
New 4JJCR 005 001 080	0.5 X R0.1	0.5	8	45	4		4JJCR 010 002 040	1 X R0.2	1	4	45	4	
New 4JJCR 006 0005 020	0.6 X R0.05	0.6	2	45	4		4JJCR 010 002 060	1 X R0.2	1	6	45	4	
New 4JJCR 006 0005 040	0.6 X R0.05	0.6	4	45	4		4JJCR 010 002 080	1 X R0.2	1	8	45	4	
New 4JJCR 006 0005 060	0.6 X R0.05	0.6	6	45	4		4JJCR 010 002 100	1 X R0.2	1	10	50	4	
New 4JJCR 006 0005 080	0.6 X R0.05	0.6	8	45	4		4JJCR 010 002 120	1 X R0.2	1	12	50	4	
New 4JJCR 006 001 020	0.6 X R0.1	0.6	2	45	4		4JJCR 010 003 040	1 X R0.3	1	4	45	4	
New 4JJCR 006 001 040	0.6 X R0.1	0.6	4	45	4		4JJCR 010 003 060	1 X R0.3	1	6	45	4	
New 4JJCR 006 001 060	0.6 X R0.1	0.6	6	45	4		4JJCR 010 003 080	1 X R0.3	1	8	45	4	
New 4JJCR 006 001 080	0.6 X R0.1	0.6	8	45	4		4JJCR 010 003 100	1 X R0.3	1	10	50	4	
New 4JJCR 007 0005 020	0.7 X R0.05	0.7	2	45	4		4JJCR 010 003 120	1 X R0.3	1	12	50	4	
New 4JJCR 007 0005 040	0.7 X R0.05	0.7	4	45	4		4JJCR 012 0002 040	1.2 X R0.02	1.2	4	45	4	
New 4JJCR 007 0005 060	0.7 X R0.05	0.7	6	45	4		4JJCR 012 0002 060	1.2 X R0.02	1.2	6	45	4	
New 4JJCR 007 0005 080	0.7 X R0.05	0.7	8	45	4		4JJCR 012 0002 080	1.2 X R0.02	1.2	8	45	4	
New 4JJCR 007 001 020	0.7 X R0.1	0.7	2	45	4		4JJCR 012 0002 100	1.2 X R0.02	1.2	10	50	4	
New 4JJCR 007 001 040	0.7 X R0.1	0.7	4	45	4		4JJCR 012 0002 120	1.2 X R0.02	1.2	12	50	4	
New 4JJCR 007 001 060	0.7 X R0.1	0.7	6	45	4		4JJCR 012 0005 040	1.2 X R0.05	1.2	4	45	4	
New 4JJCR 007 001 080	0.7 X R0.1	0.7	8	45	4		4JJCR 012 0005 060	1.2 X R0.05	1.2	6	45	4	
4JJCR 008 0002 020	0.8 X R0.02	0.8	2	45	4		4JJCR 012 0005 080	1.2 X R0.05	1.2	8	45	4	
4JJCR 008 0002 040	0.8 X R0.02	0.8	4	45	4		4JJCR 012 0005 100	1.2 X R0.05	1.2	10	50	4	
4JJCR 008 0002 060	0.8 X R0.02	0.8	6	45	4		4JJCR 012 0005 120	1.2 X R0.05	1.2	12	50	4	
4JJCR 008 0002 080	0.8 X R0.02	0.8	8	45	4		4JJCR 012 001 040	1.2 X R0.1	1.2	4	45	4	
4JJCR 008 0002 100	0.8 X R0.02	0.8	10	45	4		4JJCR 012 001 060	1.2 X R0.1	1.2	6	45	4	
4JJCR 008 0005 020	0.8 X R0.05	0.8	2	45	4		4JJCR 012 001 080	1.2 X R0.1	1.2	8	45	4	
4JJCR 008 0005 040	0.8 X R0.05	0.8	4	45	4		4JJCR 012 001 100	1.2 X R0.1	1.2	10	50	4	
4JJCR 008 0005 060	0.8 X R0.05	0.8	6	45	4		4JJCR 012 001 120	1.2 X R0.1	1.2	12	50	4	
4JJCR 008 0005 080	0.8 X R0.05	0.8	8	45	4		4JJCR 012 002 040	1.2 X R0.2	1.2	4	45	4	
4JJCR 008 0005 100	0.8 X R0.05	0.8	10	45	4		4JJCR 012 002 060	1.2 X R0.2	1.2	6	45	4	
4JJCR 008 001 020	0.8 X R0.1	0.8	2	45	4		4JJCR 012 002 080	1.2 X R0.2	1.2	8	45	4	
4JJCR 008 001 040	0.8 X R0.1	0.8	4	45	4		4JJCR 012 002 100	1.2 X R0.2	1.2	10	50	4	
4JJCR 008 001 060	0.8 X R0.1	0.8	6	45	4		4JJCR 012 002 120	1.2 X R0.2	1.2	12	50	4	
4JJCR 008 001 080	0.8 X R0.1	0.8	8	45	4		4JJCR 012 003 040	1.2 X R0.3	1.2	4	45	4	
4JJCR 008 001 100	0.8 X R0.1	0.8	10	45	4		4JJCR 012 003 060	1.2 X R0.3	1.2	6	45	4	
New 4JJCR 008 001 120	0.8 X R0.1	0.8	12	50	4		4JJCR 012 003 080	1.2 X R0.3	1.2	8	45	4	
4JJCR 010 0002 040	1 X R0.02	1	4	45	4		4JJCR 012 003 100	1.2 X R0.3	1.2	10	50	4	
4JJCR 010 0002 060	1 X R0.02	1	6	45	4		4JJCR 012 003 120	1.2 X R0.3	1.2	12	50	4	
4JJCR 010 0002 080	1 X R0.02	1	8	45	4		4JJCR 015 0002 060	1.5XR0.02	1.5	6	45	4	
4JJCR 010 0002 100	1 X R0.02	1	10	50	4		4JJCR 015 0002 080	1.5XR0.02	1.5	8	45	4	
4JJCR 010 0002 120	1 X R0.02	1	12	50	4		4JJCR 015 0002 100	1.5XR0.02	1.5	10	50	4	
4JJCR 010 0005 040	1 X R0.05	1	4	45	4		4JJCR 015 0002 120	1.5XR0.02	1.5	12	50	4	
4JJCR 010 0005 060	1 X R0.05	1	6	45	4		4JJCR 015 0002 160	1.5XR0.02	1.5	16	50	4	
4JJCR 010 0005 080	1 X R0.05	1	8	45	4		4JJCR 015 0005 060	1.5XR0.05	1.5	6	45	4	

단위 : mm

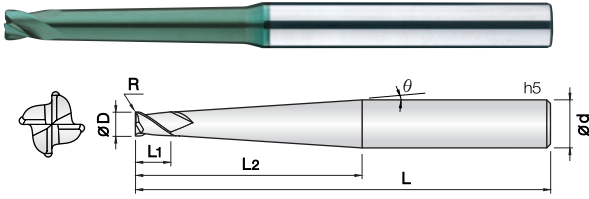
Order Number	날경 D x R	날장 L1	유효장 L2	전장 L	샙크 Dia d	비고	Order Number	날경 D x R	날장 L1	유효장 L2	전장 L	샙크 Dia d	비고
4JJCR 015 0005 080	1.5XR0.05	1.5	8	45	4		4JJCR 020 005 120	2 X R0.5	2	12	50	4	
4JJCR 015 0005 100	1.5XR0.05	1.5	10	50	4		4JJCR 020 005 160	2 X R0.5	2	16	50	4	
4JJCR 015 0005 120	1.5XR0.05	1.5	12	50	4		4JJCR 020 005 200	2 X R0.5	2	20	50	4	
4JJCR 015 0005 160	1.5XR0.05	1.5	16	50	4		4JJCR 020 005 250	2 X R0.5	2	25	60	4	
4JJCR 015 001 060	1.5 X R0.1	1.5	6	45	4		4JJCR 025 001 100	2.5 X R0.1	2.5	10	50	4	
4JJCR 015 001 080	1.5 X R0.1	1.5	8	45	4		4JJCR 025 001 160	2.5 X R0.1	2.5	16	50	4	
4JJCR 015 001 100	1.5 X R0.1	1.5	10	50	4		4JJCR 025 001 200	2.5 X R0.1	2.5	20	50	4	
4JJCR 015 001 120	1.5 X R0.1	1.5	12	50	4		4JJCR 025 001 250	2.5 X R0.1	2.5	25	60	4	
4JJCR 015 001 160	1.5 X R0.1	1.5	16	50	4		4JJCR 025 002 100	2.5 X R0.2	2.5	10	50	4	
4JJCR 015 002 060	1.5 X R0.2	1.5	6	45	4		4JJCR 025 002 160	2.5 X R0.2	2.5	16	50	4	
4JJCR 015 002 080	1.5 X R0.2	1.5	8	45	4		4JJCR 025 002 200	2.5 X R0.2	2.5	20	50	4	
4JJCR 015 002 100	1.5 X R0.2	1.5	10	50	4		4JJCR 025 002 250	2.5 X R0.2	2.5	25	60	4	
4JJCR 015 002 120	1.5 X R0.2	1.5	12	50	4		4JJCR 025 003 100	2.5 X R0.3	2.5	10	50	4	
4JJCR 015 002 160	1.5 X R0.2	1.5	16	50	4		4JJCR 025 003 160	2.5 X R0.3	2.5	16	50	4	
4JJCR 015 003 060	1.5 X R0.3	1.5	6	45	4		4JJCR 025 003 200	2.5 X R0.3	2.5	20	50	4	
4JJCR 015 003 080	1.5 X R0.3	1.5	8	45	4		4JJCR 025 003 250	2.5 X R0.3	2.5	25	60	4	
4JJCR 015 003 100	1.5 X R0.3	1.5	10	50	4		4JJCR 025 005 100	2.5 X R0.5	2.5	10	50	4	
4JJCR 015 003 120	1.5 X R0.3	1.5	12	50	4		4JJCR 025 005 160	2.5 X R0.5	2.5	16	50	4	
4JJCR 015 003 160	1.5 X R0.3	1.5	16	50	4		4JJCR 025 005 200	2.5 X R0.5	2.5	20	50	4	
4JJCR 015 005 060	1.5 X R0.5	1.5	6	45	4		4JJCR 025 005 250	2.5 X R0.5	2.5	25	60	4	
4JJCR 015 005 080	1.5 X R0.5	1.5	8	45	4		4JJCR 030 001 100	3 X R0.1	3	10	50	6	
4JJCR 015 005 100	1.5 X R0.5	1.5	10	50	4		4JJCR 030 001 120	3 X R0.1	3	12	50	6	
4JJCR 015 005 120	1.5 X R0.5	1.5	12	50	4		4JJCR 030 001 160	3 X R0.1	3	16	55	6	
4JJCR 015 005 160	1.5 X R0.5	1.5	16	50	4		4JJCR 030 001 200	3 X R0.1	3	20	60	6	
4JJCR 020 0002 060	2 X R0.02	2	6	45	4		4JJCR 030 001 250	3 X R0.1	3	25	65	6	
4JJCR 020 0002 080	2 X R0.02	2	8	45	4		4JJCR 030 001 300	3 X R0.1	3	30	70	6	
4JJCR 020 0002 100	2 X R0.02	2	10	50	4		4JJCR 030 001 350	3 X R0.1	3	35	75	6	
4JJCR 020 0002 120	2 X R0.02	2	12	50	4		4JJCR 030 002 100	3 X R0.2	3	10	50	6	
4JJCR 020 0002 160	2 X R0.02	2	16	50	4		4JJCR 030 002 120	3 X R0.2	3	12	50	6	
4JJCR 020 0002 200	2 X R0.02	2	20	50	4		4JJCR 030 002 160	3 X R0.2	3	16	55	6	
4JJCR 020 0002 250	2 X R0.02	2	25	60	4		4JJCR 030 002 200	3 X R0.2	3	20	60	6	
4JJCR 020 0005 060	2 X R0.05	2	6	45	4		4JJCR 030 002 250	3 X R0.2	3	25	65	6	
4JJCR 020 0005 080	2 X R0.05	2	8	45	4		4JJCR 030 002 300	3 X R0.2	3	30	70	6	
4JJCR 020 0005 100	2 X R0.05	2	10	50	4		4JJCR 030 002 350	3 X R0.2	3	35	75	6	
4JJCR 020 0005 120	2 X R0.05	2	12	50	4		<b>New</b> 4JJCR 030 002 400	3 X R0.2	3	40	80	6	
4JJCR 020 0005 160	2 X R0.05	2	16	50	4		4JJCR 030 003 100	3 X R0.3	3	10	50	6	
4JJCR 020 0005 200	2 X R0.05	2	20	50	4		4JJCR 030 003 120	3 X R0.3	3	12	50	6	
4JJCR 020 0005 250	2 X R0.05	2	25	60	4		4JJCR 030 003 160	3 X R0.3	3	16	55	6	
4JJCR 020 001 060	2 X R0.1	2	6	45	4		4JJCR 030 003 200	3 X R0.3	3	20	60	6	
4JJCR 020 001 080	2 X R0.1	2	8	45	4		4JJCR 030 003 250	3 X R0.3	3	25	65	6	
4JJCR 020 001 100	2 X R0.1	2	10	50	4		4JJCR 030 003 300	3 X R0.3	3	30	70	6	
4JJCR 020 001 120	2 X R0.1	2	12	50	4		4JJCR 030 003 350	3 X R0.3	3	35	75	6	
4JJCR 020 001 160	2 X R0.1	2	16	50	4		<b>New</b> 4JJCR 030 003 400	3 X R0.3	3	40	80	6	
4JJCR 020 001 200	2 X R0.1	2	20	50	4		4JJCR 030 005 100	3 X R0.5	3	10	50	6	
4JJCR 020 001 250	2 X R0.1	2	25	60	4		4JJCR 030 005 120	3 X R0.5	3	12	50	6	
4JJCR 020 002 060	2 X R0.2	2	6	45	4		4JJCR 030 005 160	3 X R0.5	3	16	55	6	
4JJCR 020 002 080	2 X R0.2	2	8	45	4		4JJCR 030 005 200	3 X R0.5	3	20	60	6	
4JJCR 020 002 100	2 X R0.2	2	10	50	4		4JJCR 030 005 250	3 X R0.5	3	25	65	6	
4JJCR 020 002 120	2 X R0.2	2	12	50	4		4JJCR 030 005 300	3 X R0.5	3	30	70	6	
4JJCR 020 002 160	2 X R0.2	2	16	50	4		4JJCR 030 005 350	3 X R0.5	3	35	75	6	
4JJCR 020 002 200	2 X R0.2	2	20	50	4		<b>New</b> 4JJCR 030 005 400	3 X R0.5	3	40	80	6	
4JJCR 020 002 250	2 X R0.2	2	25	60	4		4JJCR 030 010 100	3 X R1	3	10	50	6	
4JJCR 020 003 060	2 X R0.3	2	6	45	4		4JJCR 030 010 120	3 X R1	3	12	50	6	
4JJCR 020 003 080	2 X R0.3	2	8	45	4		4JJCR 030 010 160	3 X R1	3	16	55	6	
4JJCR 020 003 100	2 X R0.3	2	10	50	4		4JJCR 030 010 200	3 X R1	3	20	60	6	
4JJCR 020 003 120	2 X R0.3	2	12	50	4		4JJCR 030 010 250	3 X R1	3	25	65	6	
4JJCR 020 003 160	2 X R0.3	2	16	50	4		4JJCR 030 010 300	3 X R1	3	30	70	6	
4JJCR 020 003 200	2 X R0.3	2	20	50	4		4JJCR 030 010 350	3 X R1	3	35	75	6	
4JJCR 020 003 250	2 X R0.3	2	25	60	4		<b>New</b> 4JJCR 030 010 400	3 X R1	3	40	80	6	
4JJCR 020 005 060	2 X R0.5	2	6	45	4		4JJCR 040 001 130	4 X R0.1	4	13	55	6	
4JJCR 020 005 080	2 X R0.5	2	8	45	4		4JJCR 040 001 160	4 X R0.1	4	16	55	6	
4JJCR 020 005 100	2 X R0.5	2	10	50	4		4JJCR 040 001 200	4 X R0.1	4	20	60	6	



단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4JJCR 040 001 250	4 X R0.1	4	25	65	6		New 4JJCR 060 005 500	6 X R0.5	7	50	100	6	
4JJCR 040 001 300	4 X R0.1	4	30	70	6		4JJCR 060 010 200	6 X R1	7	20	60	6	
4JJCR 040 001 350	4 X R0.1	4	35	75	6		4JJCR 060 010 400	6 X R1	7	40	80	6	
4JJCR 040 001 400	4 X R0.1	4	40	80	6		New 4JJCR 060 010 500	6 X R1	7	50	100	6	
4JJCR 040 002 130	4 X R0.2	4	13	55	6		4JJCR 060 015 200	6 X R1.5	7	20	60	6	
4JJCR 040 002 160	4 X R0.2	4	16	55	6		4JJCR 060 015 400	6 X R1.5	7	40	80	6	
4JJCR 040 002 200	4 X R0.2	4	20	60	6		New 4JJCR 080 002 220	8 X R0.2	9	22	65	8	
4JJCR 040 002 250	4 X R0.2	4	25	65	6		New 4JJCR 080 002 400	8 X R0.2	9	40	100	8	
4JJCR 040 002 300	4 X R0.2	4	30	70	6		4JJCR 080 003 220	8 X R0.3	9	22	65	8	
4JJCR 040 002 350	4 X R0.2	4	35	75	6		New 4JJCR 080 003 400	8 X R0.3	9	40	100	8	
4JJCR 040 002 400	4 X R0.2	4	40	80	6		4JJCR 080 005 220	8 X R0.5	9	22	65	8	
New 4JJCR 040 002 450	4 X R0.2	4	45	90	6		4JJCR 080 005 400	8 X R0.5	9	40	100	8	
New 4JJCR 040 002 500	4 X R0.2	4	50	100	6		New 4JJCR 080 005 500	8 X R0.5	9	50	120	8	
4JJCR 040 003 130	4 X R0.3	4	13	55	6		4JJCR 080 010 220	8 X R1	9	22	65	8	
4JJCR 040 003 160	4 X R0.3	4	16	55	6		4JJCR 080 010 400	8 X R1	9	40	100	8	
4JJCR 040 003 200	4 X R0.3	4	20	60	6		New 4JJCR 080 010 500	8 X R1	9	50	120	8	
4JJCR 040 003 250	4 X R0.3	4	25	65	6		4JJCR 080 015 220	8 X R1.5	9	22	65	8	
4JJCR 040 003 300	4 X R0.3	4	30	70	6		New 4JJCR 080 015 400	8 X R1.5	9	40	100	8	
4JJCR 040 003 350	4 X R0.3	4	35	75	6		4JJCR 080 020 220	8 X R2	9	22	65	8	
4JJCR 040 003 400	4 X R0.3	4	40	80	6		New 4JJCR 080 020 400	8 X R2	9	40	100	8	
New 4JJCR 040 003 450	4 X R0.3	4	45	90	6		New 4JJCR 080 020 500	8 X R2	9	50	120	8	
New 4JJCR 040 003 500	4 X R0.3	4	50	100	6		New 4JJCR 100 002 240	10 X R0.2	11	24	70	10	
4JJCR 040 005 130	4 X R0.5	4	13	55	6		New 4JJCR 100 002 400	10 X R0.2	11	40	100	10	
4JJCR 040 005 160	4 X R0.5	4	16	55	6		4JJCR 100 003 240	10 X R0.3	11	24	70	10	
4JJCR 040 005 200	4 X R0.5	4	20	60	6		New 4JJCR 100 003 400	10 X R0.3	11	40	100	10	
4JJCR 040 005 250	4 X R0.5	4	25	65	6		4JJCR 100 005 240	10 X R0.5	11	24	70	10	
4JJCR 040 005 300	4 X R0.5	4	30	70	6		4JJCR 100 005 400	10 X R0.5	11	40	100	10	
4JJCR 040 005 350	4 X R0.5	4	35	75	6		New 4JJCR 100 005 500	10 X R0.5	11	50	120	10	
4JJCR 040 005 400	4 X R0.5	4	40	80	6		4JJCR 100 010 240	10 X R1	11	24	70	10	
New 4JJCR 040 005 450	4 X R0.5	4	45	90	6		4JJCR 100 010 400	10 X R1	11	40	100	10	
New 4JJCR 040 005 500	4 X R0.5	4	50	100	6		New 4JJCR 100 010 500	10 X R1	11	50	120	10	
4JJCR 040 010 130	4 X R1	4	13	55	6		4JJCR 100 015 240	10 X R1.5	11	24	70	10	
4JJCR 040 010 160	4 X R1	4	16	55	6		New 4JJCR 100 015 400	10 X R1.5	11	40	100	10	
4JJCR 040 010 200	4 X R1	4	20	60	6		4JJCR 100 020 240	10 X R2	11	24	70	10	
4JJCR 040 010 250	4 X R1	4	25	65	6		New 4JJCR 100 020 400	10 X R2	11	40	100	10	
4JJCR 040 010 300	4 X R1	4	30	70	6		New 4JJCR 100 020 500	10 X R2	11	50	120	10	
4JJCR 040 010 350	4 X R1	4	35	75	6		4JJCR 100 025 240	10 X R2.5	11	24	70	10	
4JJCR 040 010 400	4 X R1	4	40	80	6		4JJCR 120 003 260	12 X R0.3	13	26	80	12	
New 4JJCR 040 010 450	4 X R1	4	45	90	6		4JJCR 120 005 260	12 X R0.5	13	26	80	12	
New 4JJCR 040 010 500	4 X R1	4	50	100	6		4JJCR 120 005 400	12 X R0.5	13	40	110	12	
4JJCR 050 001 160	5 X R0.1	5	16	60	6		New 4JJCR 120 005 600	12 X R0.5	13	60	130	12	
4JJCR 050 001 300	5 X R0.1	5	30	70	6		4JJCR 120 010 260	12 X R1	13	26	80	12	
4JJCR 050 002 160	5 X R0.2	5	16	60	6		4JJCR 120 010 400	12 X R1	13	40	110	12	
4JJCR 050 002 300	5 X R0.2	5	30	70	6		New 4JJCR 120 010 600	12 X R1	13	60	130	12	
4JJCR 050 003 160	5 X R0.3	5	16	60	6		4JJCR 120 015 260	12 X R1.5	13	26	80	12	
4JJCR 050 003 300	5 X R0.3	5	30	70	6		4JJCR 120 020 260	12 X R2	13	26	80	12	
4JJCR 050 005 160	5 X R0.5	5	16	60	6		New 4JJCR 120 020 400	12 X R2	13	40	110	12	
4JJCR 050 005 300	5 X R0.5	5	30	70	6		4JJCR 120 030 260	12 X R3	13	26	80	12	
New 4JJCR 050 005 400	5 X R0.5	5	40	80	6								
New 4JJCR 050 005 500	5 X R0.5	5	50	100	6								
4JJCR 050 010 160	5 X R1	5	16	60	6								
4JJCR 050 010 300	5 X R1	5	30	70	6								
New 4JJCR 050 010 400	5 X R1	5	40	80	6								
New 4JJCR 050 010 500	5 X R1	5	50	100	6								
4JJCR 060 001 200	6 X R0.1	7	20	60	6								
4JJCR 060 001 400	6 X R0.1	7	40	80	6								
4JJCR 060 002 200	6 X R0.2	7	20	60	6								
4JJCR 060 002 400	6 X R0.2	7	40	80	6								
4JJCR 060 003 200	6 X R0.3	7	20	60	6								
4JJCR 060 003 400	6 X R0.3	7	40	80	6								
4JJCR 060 005 200	6 X R0.5	7	20	60	6								
4JJCR 060 005 400	6 X R0.5	7	40	80	6								

## 4날 고정도재 가공용 제이제이 테이퍼 넥 코너 레디우스 엔드밀



- 고정도강(HRC52~70), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 유효장을 테이퍼 설계하여 깊은 홈 작업시 목부파손 및 떨림을 최소화 하였습니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRC52~70)
- Good wear resistance by high quality Si-based PVD coating.
- Minimize chattering and fracturing by taper designed flute.
- Designed for minimizing edge chipping by corner R shape.
- High precise edge tolerance.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

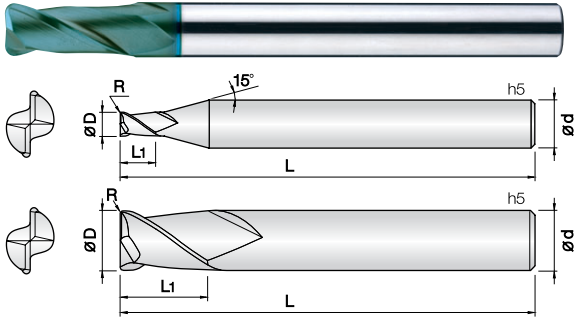


R0.1 ~ 0.5

D Size	D Tolerance
Ø1 ~ 4	+0 ~ -0.01mm

단위 : mm

Order Number	날경 D×R	각도 θ	날장 L1	유효장 L2	전장 L	샙크 Dia d	비고	Order Number	날경 D×R	각도 θ	날장 L1	유효장 L2	전장 L	샙크 Dia d	비고
4JJTC 010 001 0601	1 X R0.1	1°	1	6	50	4		4JJTC 020 005 3001	2 X R0.5	1°	2	30	70	4	
4JJTC 010 001 1001	1 X R0.1	1°	1	10	50	4		4JJTC 020 005 3501	2 X R0.5	1°	2	35	75	4	
4JJTC 010 001 1501	1 X R0.1	1°	1	15	50	4		4JJTC 020 005 4001	2 X R0.5	1°	2	40	80	4	
4JJTC 010 001 2001	1 X R0.1	1°	1	20	60	4		4JJTC 020 005 5001	2 X R0.5	1°	2	50	90	4	
4JJTC 010 001 2501	1 X R0.1	1°	1	25	60	4		4JJTC 030 002 2001	3 X R0.2	1°	3	20	60	6	
4JJTC 010 001 3001	1 X R0.1	1°	1	30	70	4		4JJTC 030 002 3001	3 X R0.2	1°	3	30	70	6	
4JJTC 010 001 3501	1 X R0.1	1°	1	35	75	4		4JJTC 030 002 4001	3 X R0.2	1°	3	40	80	6	
4JJTC 010 002 0601	1 X R0.2	1°	1	6	50	4		4JJTC 030 002 5001	3 X R0.2	1°	3	50	90	6	
4JJTC 010 002 1001	1 X R0.2	1°	1	10	50	4		4JJTC 030 002 6001	3 X R0.2	1°	3	60	100	6	
4JJTC 010 002 1501	1 X R0.2	1°	1	15	50	4		New 4JJTC 030 003 4001	3 X R0.3	1°	3	40	80	6	
4JJTC 010 002 2001	1 X R0.2	1°	1	20	60	4		New 4JJTC 030 003 5001	3 X R0.3	1°	3	50	90	6	
4JJTC 010 002 2501	1 X R0.2	1°	1	25	60	4		New 4JJTC 030 003 6001	3 X R0.3	1°	3	60	100	6	
4JJTC 010 002 3001	1 X R0.2	1°	1	30	70	4		4JJTC 030 005 2001	3 X R0.5	1°	3	20	60	6	
4JJTC 010 002 3501	1 X R0.2	1°	1	35	75	4		4JJTC 030 005 3001	3 X R0.5	1°	3	30	70	6	
New 4JJTC 010 003 1001	1 X R0.3	1°	1	10	50	4		4JJTC 030 005 4001	3 X R0.5	1°	3	40	80	6	
New 4JJTC 010 003 1501	1 X R0.3	1°	1	15	50	4		4JJTC 030 005 5001	3 X R0.5	1°	3	50	90	6	
New 4JJTC 010 003 2001	1 X R0.3	1°	1	20	60	4		4JJTC 030 005 6001	3 X R0.5	1°	3	60	100	6	
New 4JJTC 010 003 2501	1 X R0.3	1°	1	25	60	4		4JJTC 040 002 2001	4 X R0.2	1°	4	20	60	6	
4JJTC 015 002 1001	1.5 X R0.2	1°	1.5	10	50	4		4JJTC 040 002 3001	4 X R0.2	1°	4	30	70	6	
4JJTC 015 002 1501	1.5 X R0.2	1°	1.5	15	50	4		4JJTC 040 002 4001	4 X R0.2	1°	4	40	80	6	
4JJTC 015 002 2001	1.5 X R0.2	1°	1.5	20	60	4		4JJTC 040 002 5001	4 X R0.2	1°	4	50	90	6	
4JJTC 015 002 2501	1.5 X R0.2	1°	1.5	25	60	4		4JJTC 040 002 6001	4 X R0.2	1°	4	60	100	6	
4JJTC 015 002 3001	1.5 X R0.2	1°	1.5	30	70	4		New 4JJTC 040 003 4001	4 X R0.3	1°	4	40	80	6	
4JJTC 015 002 3501	1.5 X R0.2	1°	1.5	35	75	4		New 4JJTC 040 003 5001	4 X R0.3	1°	4	50	90	6	
New 4JJTC 015 003 1501	1.5 X R0.3	1°	1.5	15	50	4		New 4JJTC 040 003 6001	4 X R0.3	1°	4	60	100	6	
New 4JJTC 015 003 2001	1.5 X R0.3	1°	1.5	20	60	4		4JJTC 040 005 2001	4 X R0.5	1°	4	20	60	6	
New 4JJTC 015 003 2501	1.5 X R0.3	1°	1.5	25	60	4		4JJTC 040 005 3001	4 X R0.5	1°	4	30	70	6	
4JJTC 015 005 1001	1.5 X R0.5	1°	1.5	10	50	4		4JJTC 040 005 4001	4 X R0.5	1°	4	40	80	6	
4JJTC 015 005 1501	1.5 X R0.5	1°	1.5	15	50	4		4JJTC 040 005 5001	4 X R0.5	1°	4	50	90	6	
4JJTC 015 005 2001	1.5 X R0.5	1°	1.5	20	60	4		4JJTC 040 005 6001	4 X R0.5	1°	4	60	100	6	
4JJTC 015 005 2501	1.5 X R0.5	1°	1.5	25	60	4									
4JJTC 015 005 3001	1.5 X R0.5	1°	1.5	30	70	4									
4JJTC 015 005 3501	1.5 X R0.5	1°	1.5	35	75	4									
4JJTC 020 002 1201	2 X R0.2	1°	2	12	50	4									
4JJTC 020 002 1601	2 X R0.2	1°	2	16	50	4									
4JJTC 020 002 2001	2 X R0.2	1°	2	20	60	4									
4JJTC 020 002 2501	2 X R0.2	1°	2	25	60	4									
4JJTC 020 002 3001	2 X R0.2	1°	2	30	70	4									
4JJTC 020 002 3501	2 X R0.2	1°	2	35	75	4									
4JJTC 020 002 4001	2 X R0.2	1°	2	40	80	4									
4JJTC 020 002 5001	2 X R0.2	1°	2	50	90	4									
New 4JJTC 020 003 2001	2 X R0.3	1°	2	20	60	4									
New 4JJTC 020 003 3001	2 X R0.3	1°	2	30	70	4									
New 4JJTC 020 003 4001	2 X R0.3	1°	2	40	80	4									
4JJTC 020 005 1201	2 X R0.5	1°	2	12	50	4									
4JJTC 020 005 1601	2 X R0.5	1°	2	16	50	4									
4JJTC 020 005 2001	2 X R0.5	1°	2	20	60	4									
4JJTC 020 005 2501	2 X R0.5	1°	2	25	60	4									



- 고경도강(HRc52~70), 프리하든강 계열의 고속가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc52~70)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

2

UWC  
초미립자

TISIN-S  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

30°  
Helix Angle

R0.02 ~ 0.5    R1 ~ 1.5    R2 ~ 5

D Size	D Tolerance
ø0.2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고
2JJC 002 0002 S04	0.2 X R0.02	0.4	45	4		2JJC 025 003 S04	2.5 X R0.3	6	50	4	
2JJC 002 0005 S04	0.2 X R0.05	0.4	45	4		2JJC 025 005 S04	2.5 X R0.5	6	50	4	
2JJC 003 0002 S04	0.3 X R0.02	0.6	45	4		2JJC 030 001 S06	3 X R0.1	8	60	6	
2JJC 003 0005 S04	0.3 X R0.05	0.6	45	4		2JJC 030 002 S06	3 X R0.2	8	60	6	
2JJC 003 001 S04	0.3 X R0.1	0.6	45	4		2JJC 030 003 S06	3 X R0.3	8	60	6	
2JJC 004 0002 S04	0.4 X R0.02	0.8	45	4		2JJC 030 005 S06	3 X R0.5	8	60	6	
2JJC 004 0005 S04	0.4 X R0.05	0.8	45	4		2JJC 030 010 S06	3 X R1	8	60	6	
2JJC 004 001 S04	0.4 X R0.1	0.8	45	4		2JJC 040 001 S04	4 X R0.1	9	60	4	
2JJC 005 0002 S04	0.5 X R0.02	1	45	4		2JJC 040 001 S06	4 X R0.1	10	70	6	
2JJC 005 0005 S04	0.5 X R0.05	1	45	4		2JJC 040 002 S04	4 X R0.2	9	60	4	
2JJC 005 001 S04	0.5 X R0.1	1	45	4		2JJC 040 002 S06	4 X R0.2	10	70	6	
2JJC 006 0002 S04	0.6 X R0.02	1.2	45	4		2JJC 040 003 S04	4 X R0.3	9	60	4	
2JJC 006 0005 S04	0.6 X R0.05	1.2	45	4		2JJC 040 003 S06	4 X R0.3	10	70	6	
2JJC 006 001 S04	0.6 X R0.1	1.2	45	4		2JJC 040 005 S04	4 X R0.5	9	60	4	
2JJC 006 002 S04	0.6 X R0.2	1.2	45	4		2JJC 040 005 S06	4 X R0.5	10	70	6	
2JJC 007 0005 S04	0.7 X R0.05	1.4	45	4		2JJC 040 010 S04	4 X R1	9	60	4	
2JJC 007 001 S04	0.7 X R0.1	1.4	45	4		2JJC 040 010 S06	4 X R1	10	70	6	
2JJC 007 002 S04	0.7 X R0.2	1.4	45	4		2JJC 050 001 S06	5 X R0.1	13	75	6	
2JJC 008 0002 S04	0.8 X R0.02	1.6	45	4		2JJC 050 002 S06	5 X R0.2	13	75	6	
2JJC 008 0005 S04	0.8 X R0.05	1.6	45	4		2JJC 050 003 S06	5 X R0.3	13	75	6	
2JJC 008 001 S04	0.8 X R0.1	1.6	45	4		2JJC 050 005 S06	5 X R0.5	13	75	6	
2JJC 008 002 S04	0.8 X R0.2	1.6	45	4		2JJC 050 010 S06	5 X R1	13	75	6	
2JJC 009 0005 S04	0.9 X R0.05	1.8	45	4		2JJC 060 001 060	6 X R0.1	11	60	6	
2JJC 009 001 S04	0.9 X R0.1	1.8	45	4		2JJC 060 001 090	6 X R0.1	13	90	6	
2JJC 010 0002 S04	1 X R0.02	2.5	45	4		2JJC 060 002 060	6 X R0.2	11	60	6	
2JJC 010 0005 S04	1 X R0.05	2.5	45	4		2JJC 060 002 090	6 X R0.2	13	90	6	
2JJC 010 001 S04	1 X R0.1	2.5	45	4		2JJC 060 003 060	6 X R0.3	11	60	6	
2JJC 010 002 S04	1 X R0.2	2.5	45	4		2JJC 060 003 090	6 X R0.3	13	90	6	
2JJC 010 003 S04	1 X R0.3	2.5	45	4		2JJC 060 005 060	6 X R0.5	11	60	6	
2JJC 012 0002 S04	1.2 X R0.02	3.2	45	4		2JJC 060 005 090	6 X R0.5	13	90	6	
2JJC 012 0005 S04	1.2 X R0.05	3.2	45	4		New 2JJC 060 005 110	6 X R0.5	13	110	6	
2JJC 012 001 S04	1.2 X R0.1	3.2	45	4		2JJC 060 010 060	6 X R1	11	60	6	
2JJC 012 002 S04	1.2 X R0.2	3.2	45	4		2JJC 060 010 090	6 X R1	13	90	6	
2JJC 012 003 S04	1.2 X R0.3	3.2	45	4		New 2JJC 060 010 110	6 X R1	13	110	6	
2JJC 015 0002 S04	1.5 X R0.02	4	45	4		2JJC 060 015 060	6 X R1.5	11	60	6	
2JJC 015 0005 S04	1.5 X R0.05	4	45	4		2JJC 060 015 090	6 X R1.5	13	90	6	
2JJC 015 001 S04	1.5 X R0.1	4	45	4		2JJC 060 020 060	6 X R2	11	60	6	
2JJC 015 002 S04	1.5 X R0.2	4	45	4		2JJC 060 020 090	6 X R2	13	90	6	
2JJC 015 003 S04	1.5 X R0.3	4	45	4		2JJC 060 025 090	6 X R2.5	13	90	6	
2JJC 015 005 S04	1.5 X R0.5	4	45	4		2JJC 080 001 070	8 X R0.1	16	70	8	
2JJC 020 0002 S04	2 X R0.02	6	45	4		2JJC 080 001 100	8 X R0.1	19	100	8	
2JJC 020 0005 S04	2 X R0.05	6	45	4		2JJC 080 002 070	8 X R0.2	16	70	8	
2JJC 020 001 S04	2 X R0.1	6	45	4		2JJC 080 002 100	8 X R0.2	19	100	8	
2JJC 020 002 S04	2 X R0.2	6	45	4		2JJC 080 003 070	8 X R0.3	16	70	8	
2JJC 020 003 S04	2 X R0.3	6	45	4		2JJC 080 003 100	8 X R0.3	19	100	8	
2JJC 020 005 S04	2 X R0.5	6	45	4		2JJC 080 005 070	8 X R0.5	16	70	8	
2JJC 025 001 S04	2.5 X R0.1	6	50	4		2JJC 080 005 100	8 X R0.5	19	100	8	
2JJC 025 002 S04	2.5 X R0.2	6	50	4		New 2JJC 080 005 120	8 X R0.5	19	120	8	

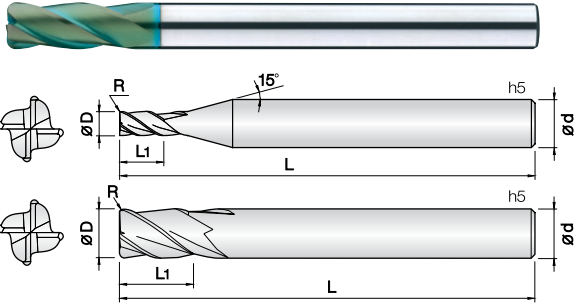


단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2JJC 080 010 070	8 X R1	16	70	8		2JJC 120 040 110	12 X R4	26	110	12	
2JJC 080 010 100	8 X R1	19	100	8		2JJC 120 050 110	12 X R5	26	110	12	
New 2JJC 080 010 120	8 X R1	19	120	8							
2JJC 080 015 070	8 X R1.5	16	70	8							
2JJC 080 015 100	8 X R1.5	19	100	8							
2JJC 080 020 070	8 X R2	16	70	8							
2JJC 080 020 100	8 X R2	19	100	8							
2JJC 080 025 100	8 X R2.5	19	100	8							
2JJC 080 030 100	8 X R3	19	100	8							
2JJC 080 035 100	8 X R3.5	19	100	8							
2JJC 100 001 075	10 X R0.1	19	75	10							
2JJC 100 001 100	10 X R0.1	22	100	10							
2JJC 100 002 075	10 X R0.2	19	75	10							
2JJC 100 002 100	10 X R0.2	22	100	10							
2JJC 100 003 075	10 X R0.3	19	75	10							
2JJC 100 003 100	10 X R0.3	22	100	10							
2JJC 100 005 075	10 X R0.5	19	75	10							
2JJC 100 005 100	10 X R0.5	22	100	10							
New 2JJC 100 005 120	10 X R0.5	22	120	10							
2JJC 100 010 075	10 X R1	19	75	10							
2JJC 100 010 100	10 X R1	22	100	10							
New 2JJC 100 010 120	10 X R1	22	120	10							
2JJC 100 015 075	10 X R1.5	19	75	10							
2JJC 100 015 100	10 X R1.5	22	100	10							
2JJC 100 020 075	10 X R2	19	75	10							
2JJC 100 020 100	10 X R2	22	100	10							
2JJC 100 025 100	10 X R2.5	22	100	10							
2JJC 100 030 100	10 X R3	22	100	10							
2JJC 100 040 100	10 X R4	22	100	10							
2JJC 120 001 080	12 X R0.1	22	80	12							
2JJC 120 001 110	12 X R0.1	26	110	12							
2JJC 120 002 080	12 X R0.2	22	80	12							
2JJC 120 002 110	12 X R0.2	26	110	12							
2JJC 120 003 080	12 X R0.3	22	80	12							
2JJC 120 003 110	12 X R0.3	26	110	12							
2JJC 120 005 080	12 X R0.5	22	80	12							
2JJC 120 005 110	12 X R0.5	26	110	12							
New 2JJC 120 005 130	12 X R0.5	26	130	12							
2JJC 120 010 080	12 X R1	22	80	12							
2JJC 120 010 110	12 X R1	26	110	12							
New 2JJC 120 010 130	12 X R1	26	130	12							
2JJC 120 015 080	12 X R1.5	22	80	12							
2JJC 120 015 110	12 X R1.5	26	110	12							
2JJC 120 020 080	12 X R2	22	80	12							
2JJC 120 020 110	12 X R2	26	110	12							
New 2JJC 120 020 130	12 X R2	26	130	12							
2JJC 120 025 110	12 X R2.5	26	110	12							
2JJC 120 030 110	12 X R3	26	110	12							



## 4날 고경도재 가공용 제이제이 코너 레디우스 엔드밀



- 고경도강(HRC52~70), 프리하드강 계열의 고속가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRC52~70)
- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.

4

UWC  
초미립자

TISIN-S  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

30°  
Helix Angle

R0.05 ~ 0.5    R1 ~ 1.5    R2 ~ 3

D Size	D Tolerance
∅0.5 ~ 5	+0 ~ -0.01mm
∅6 ~ 16	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
New 4JJC 005 0005 S04	0.5 X R0.05	1	45	4		4JJC 045 005 S06	4.5 X R0.5	11	75	6	
New 4JJC 005 001 S04	0.5 X R0.1	1	45	4		4JJC 050 001 S06	5 X R0.1	13	75	6	
New 4JJC 006 0005 S04	0.6 X R0.05	1.2	45	4		4JJC 050 002 S06	5 X R0.2	13	75	6	
New 4JJC 006 001 S04	0.6 X R0.1	1.2	45	4		4JJC 050 003 S06	5 X R0.3	13	75	6	
New 4JJC 007 0005 S04	0.7 X R0.05	1.4	45	4		4JJC 050 005 S06	5 X R0.5	13	75	6	
New 4JJC 007 001 S04	0.7 X R0.1	1.4	45	4		4JJC 050 010 S06	5 X R1	13	75	6	
New 4JJC 008 0005 S04	0.8 X R0.05	1.6	45	4		4JJC 060 0005 055	6 X R0.05	11	55	6	
New 4JJC 008 001 S04	0.8 X R0.1	1.6	45	4		4JJC 060 0005 080	6 X R0.05	13	80	6	
New 4JJC 009 0005 S04	0.9 X R0.05	1.8	45	4		4JJC 060 001 055	6 X R0.1	11	55	6	
New 4JJC 009 001 S04	0.9 X R0.1	1.8	45	4		4JJC 060 001 080	6 X R0.1	13	80	6	
4JJC 010 0005 S04	1 X R0.05	2.5	45	4		4JJC 060 002 055	6 X R0.2	11	55	6	
4JJC 010 001 S04	1 X R0.1	2.5	45	4		4JJC 060 002 080	6 X R0.2	13	80	6	
4JJC 010 002 S04	1 X R0.2	2.5	45	4		New 4JJC 060 002 100	6 X R0.2	13	100	6	
4JJC 010 003 S04	1 X R0.3	2.5	45	4		New 4JJC 060 002 120	6 X R0.2	13	120	6	
4JJC 015 0005 S04	1.5 X R0.05	4	45	4		4JJC 060 003 055	6 X R0.3	11	55	6	
4JJC 015 001 S04	1.5 X R0.1	4	45	4		4JJC 060 003 080	6 X R0.3	13	80	6	
4JJC 015 002 S04	1.5 X R0.2	4	45	4		New 4JJC 060 003 100	6 X R0.3	13	100	6	
4JJC 015 003 S04	1.5 X R0.3	4	45	4		New 4JJC 060 003 120	6 X R0.3	13	120	6	
4JJC 015 005 S04	1.5 X R0.5	4	45	4		4JJC 060 005 055	6 X R0.5	11	55	6	
4JJC 020 0005 S04	2 X R0.05	6	45	4		4JJC 060 005 080	6 X R0.5	13	80	6	
4JJC 020 001 S04	2 X R0.1	6	45	4		New 4JJC 060 005 100	6 X R0.5	13	100	6	
4JJC 020 002 S04	2 X R0.2	6	45	4		New 4JJC 060 005 120	6 X R0.5	13	120	6	
4JJC 020 003 S04	2 X R0.3	6	45	4		4JJC 060 010 055	6 X R1	11	55	6	
4JJC 020 005 S04	2 X R0.5	6	45	4		4JJC 060 010 080	6 X R1	13	80	6	
4JJC 025 001 S04	2.5 X R0.1	6	50	4		New 4JJC 060 010 100	6 X R1	13	100	6	
4JJC 025 002 S04	2.5 X R0.2	6	50	4		New 4JJC 060 010 120	6 X R1	13	120	6	
4JJC 025 003 S04	2.5 X R0.3	6	50	4		4JJC 060 015 055	6 X R1.5	11	55	6	
4JJC 025 005 S04	2.5 X R0.5	6	50	4		4JJC 060 015 080	6 X R1.5	13	80	6	
4JJC 030 001 S06	3 X R0.1	8	60	6		4JJC 060 020 055	6 X R2	11	55	6	
4JJC 030 002 S06	3 X R0.2	8	60	6		4JJC 060 020 080	6 X R2	13	80	6	
4JJC 030 003 S06	3 X R0.3	8	60	6		New 4JJC 080 002 060	8 X R0.2	16	60	8	
4JJC 030 005 S06	3 X R0.5	8	60	6		New 4JJC 080 002 090	8 X R0.2	19	90	8	
4JJC 030 010 S06	3 X R1	8	60	6		4JJC 080 003 060	8 X R0.3	16	60	8	
4JJC 035 001 S06	3.5 X R0.1	9	70	6		4JJC 080 003 090	8 X R0.3	19	90	8	
4JJC 035 002 S06	3.5 X R0.2	9	70	6		4JJC 080 005 060	8 X R0.5	16	60	8	
4JJC 035 003 S06	3.5 X R0.3	9	70	6		4JJC 080 005 090	8 X R0.5	19	90	8	
4JJC 035 005 S06	3.5 X R0.5	9	70	6		New 4JJC 080 005 110	8 X R0.5	19	110	8	
4JJC 040 001 S04	4 X R0.1	9	60	4		New 4JJC 080 005 150	8 X R0.5	19	150	8	
4JJC 040 001 S06	4 X R0.1	10	70	6		4JJC 080 010 060	8 X R1	16	60	8	
4JJC 040 002 S04	4 X R0.2	9	60	4		4JJC 080 010 090	8 X R1	19	90	8	
4JJC 040 002 S06	4 X R0.2	10	70	6		New 4JJC 080 010 110	8 X R1	19	110	8	
4JJC 040 003 S04	4 X R0.3	9	60	4		New 4JJC 080 010 150	8 X R1	19	150	8	
4JJC 040 003 S06	4 X R0.3	10	70	6		4JJC 080 015 060	8 X R1.5	16	60	8	
4JJC 040 005 S04	4 X R0.5	9	60	4		4JJC 080 015 090	8 X R1.5	19	90	8	
4JJC 040 005 S06	4 X R0.5	10	70	6		4JJC 080 020 060	8 X R2	16	60	8	
4JJC 040 010 S04	4 X R1	9	60	4		4JJC 080 020 090	8 X R2	19	90	8	
4JJC 040 010 S06	4 X R1	10	70	6		New 4JJC 100 002 070	10 X R0.2	19	70	10	
4JJC 045 002 S06	4.5 X R0.2	11	75	6		New 4JJC 100 002 100	10 X R0.2	22	100	10	

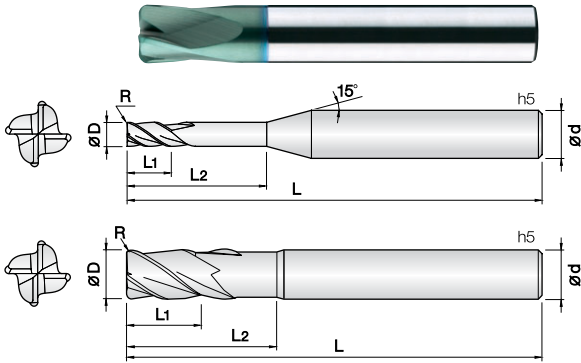


단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고						
4JJC 100 003 070	10 X R0.3	19	70	10							
4JJC 100 003 100	10 X R0.3	22	100	10							
4JJC 100 005 070	10 X R0.5	19	70	10							
4JJC 100 005 100	10 X R0.5	22	100	10							
New 4JJC 100 005 120	10 X R0.5	22	120	10							
New 4JJC 100 005 150	10 X R0.5	22	150	10							
4JJC 100 010 070	10 X R1	19	70	10							
4JJC 100 010 100	10 X R1	22	100	10							
New 4JJC 100 010 120	10 X R1	22	120	10							
New 4JJC 100 010 150	10 X R1	22	150	10							
4JJC 100 015 070	10 X R1.5	19	70	10							
4JJC 100 015 100	10 X R1.5	22	100	10							
4JJC 100 020 070	10 X R2	19	70	10							
4JJC 100 020 100	10 X R2	22	100	10							
New 4JJC 100 020 120	10 X R2	22	120	10							
New 4JJC 100 020 150	10 X R2	22	150	10							
4JJC 100 025 070	10 X R2.5	19	70	10							
4JJC 100 025 100	10 X R2.5	22	100	10							
New 4JJC 120 002 075	12 X R0.2	22	75	12							
New 4JJC 120 002 110	12 X R0.2	26	110	12							
4JJC 120 003 075	12 X R0.3	22	75	12							
4JJC 120 003 110	12 X R0.3	26	110	12							
4JJC 120 005 075	12 X R0.5	22	75	12							
4JJC 120 005 110	12 X R0.5	26	110	12							
New 4JJC 120 005 130	12 X R0.5	26	130	12							
New 4JJC 120 005 160	12 X R0.5	26	160	12							
4JJC 120 010 075	12 X R1	22	75	12							
4JJC 120 010 110	12 X R1	26	110	12							
New 4JJC 120 010 130	12 X R1	26	130	12							
New 4JJC 120 010 160	12 X R1	26	160	12							
4JJC 120 015 075	12 X R1.5	22	75	12							
4JJC 120 015 110	12 X R1.5	26	110	12							
4JJC 120 020 075	12 X R2	22	75	12							
4JJC 120 020 110	12 X R2	26	110	12							
New 4JJC 120 020 130	12 X R2	26	130	12							
New 4JJC 120 020 160	12 X R2	26	160	12							
4JJC 120 025 075	12 X R2.5	22	75	12							
4JJC 120 025 110	12 X R2.5	26	110	12							
4JJC 120 030 075	12 X R3	22	75	12							
4JJC 120 030 110	12 X R3	26	110	12							
New 4JJC 160 005 110	16 X R0.5	32	110	16							
New 4JJC 160 010 110	16 X R1	32	110	16							

## 4날 고정도재 가공용 제이제이 코너레디우스커터

JJ series



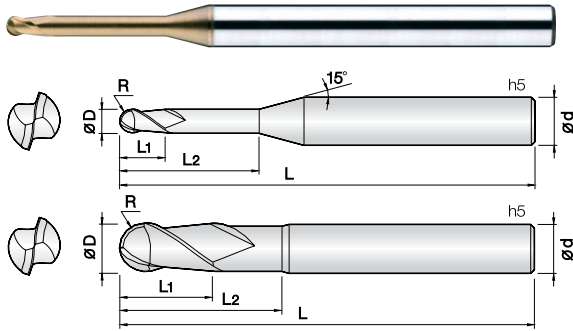
- 고정도강(HRc52~70), 프리하든강 계열의 고정밀가공 엔드밀
- 고품량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 저속 RPM에서 고이송 작업이 가능 하도록 설계하였습니다.
- 중삭 및 황삭 가공시 작업 효율이 극대화 됩니다.
- 항절력이 높은 초미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel(HRc52~70)
- Good wear resistance by high quality Si-based PVD coating.
- Designed for low speed with high feed condition.
- Suitable for heavy duty and roughing application.
- Minimize fracturing at high feed by high TRS ultra fine WC grade.



D Size	D Tolerance
1 ~ 5 $\phi$	+0 ~ -0.01mm
6 ~ 12 $\phi$	-0.005 ~ -0.015mm
16 $\phi$	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4JJRC 010 002 025	1 X R0.2	1	2.5	50	4		6JJRC 060 005 060	6 X R0.5	12	60	6	
4JJRC 015 005 040	1.5 X R0.5	1.5	4	50	4		6JJRC 060 010 060	6 X R1	12	60	6	
4JJRC 020 005 060	2 X R0.5	2	6	50	6		6JJRC 080 005 060	8 X R0.5	16	60	8	
4JJRC 030 005 080	3 X R0.5	3	8	50	6		6JJRC 080 010 060	8 X R1	16	60	8	
4JJRC 040 005 120	4 X R0.5	4	12	60	6		6JJRC 080 020 060	8 X R2	16	60	8	
4JJRC 040 005 160	4 X R0.5	4	16	60	6		6JJRC 100 005 070	10 X R0.5	20	70	10	
4JJRC 040 010 120	4 X R1	4	12	60	6		6JJRC 100 010 070	10 X R1	20	70	10	
4JJRC 040 010 160	4 X R1	4	16	60	6		6JJRC 100 020 070	10 X R2	20	70	10	
4JJRC 050 005 150	5 X R0.5	5	15	60	6		6JJRC 120 005 080	12 X R0.5	25	80	12	
4JJRC 050 010 150	5 X R1	5	15	60	6		6JJRC 120 010 080	12 X R1	25	80	12	
4JJRC 060 003 150	6 X R0.3	6	15	60	6		6JJRC 120 020 080	12 X R2	25	80	12	
4JJRC 060 005 150	6 X R0.5	6	15	60	6		6JJRC 160 005 100	16 X R0.5	30	100	16	
4JJRC 060 010 150	6 X R1	6	15	60	6		6JJRC 160 010 100	16 X R1	30	100	16	
4JJRC 060 015 150	6 X R1.5	6	15	60	6							
4JJRC 080 003 160	8 X R0.3	8	16	60	8							
4JJRC 080 005 160	8 X R0.5	8	16	60	8							
4JJRC 080 005 200	8 X R0.5	8	20	80	8							
4JJRC 080 005 300	8 X R0.5	8	30	110	8							
4JJRC 080 010 160	8 X R1	8	16	60	8							
4JJRC 080 010 200	8 X R1	8	20	80	8							
4JJRC 080 010 300	8 X R1	8	30	110	8							
4JJRC 080 020 160	8 X R2	8	16	60	8							
4JJRC 080 020 200	8 X R2	8	20	80	8							
4JJRC 080 020 300	8 X R2	8	30	110	8							
4JJRC 100 003 200	10 X R0.3	10	20	70	10							
4JJRC 100 005 200	10 X R0.5	10	20	70	10							
4JJRC 100 005 250	10 X R0.5	10	25	90	10							
4JJRC 100 005 300	10 X R0.5	10	30	120	10							
4JJRC 100 010 200	10 X R1	10	20	70	10							
4JJRC 100 010 250	10 X R1	10	25	90	10							
4JJRC 100 010 300	10 X R1	10	30	120	10							
4JJRC 100 020 200	10 X R2	10	20	70	10							
4JJRC 100 020 250	10 X R2	10	25	90	10							
4JJRC 100 020 300	10 X R2	10	30	120	10							
4JJRC 120 005 250	12 X R0.5	12	25	80	12							
4JJRC 120 005 300	12 X R0.5	12	30	100	12							
4JJRC 120 005 350	12 X R0.5	12	35	130	12							
4JJRC 120 010 250	12 X R1	12	25	80	12							
4JJRC 120 010 300	12 X R1	12	30	100	12							
4JJRC 120 010 350	12 X R1	12	35	130	12							
4JJRC 120 020 250	12 X R2	12	25	80	12							
4JJRC 120 020 300	12 X R2	12	30	100	12							
4JJRC 120 020 350	12 X R2	12	35	130	12							
4JJRC 120 030 250	12 X R3	12	25	80	12							
4JJRC 160 010 300	16 X R1	16	30	110	16							
4JJRC 160 010 400	16 X R1	16	40	160	16							
4JJRC 160 020 300	16 X R2	16	30	110	16							
4JJRC 160 020 400	16 X R2	16	40	160	16							



- 고경도강(HRC50~62), 프리하드강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRC50~62)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



0.05 ~ 2.5R 3 ~ 6R

D Size	D Tolerance
∅0.1	+0 ~ -0.005mm
∅0.2 ~ 5	+0 ~ -0.01mm
∅6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRB 001 003 S04	0.05R X 0.1	0.3	-	40	4		2HRB 006 080 S04	0.3R X 0.6	0.6	8	45	4	
2HRB 001 005 S04	0.05R X 0.1	0.5	-	40	4		2HRB 006 100 S04	0.3R X 0.6	0.6	10	45	4	
2HRB 002 005 S04	0.1R X 0.2	0.2	0.5	40	4		2HRB 006 120 S04	0.3R X 0.6	0.6	12	45	4	
2HRB 002 010 S04	0.1R X 0.2	0.2	1	40	4		2HRB 006 140 S04	0.3R X 0.6	0.6	14	45	4	
2HRB 002 015 S04	0.1R X 0.2	0.2	1.5	40	4		2HRB 006 160 S04	0.3R X 0.6	0.6	16	45	4	
2HRB 002 020 S04	0.1R X 0.2	0.2	2	40	4		2HRB 007 020 S04	0.35R X 0.7	0.7	2	45	4	
2HRB 002 025 S04	0.1R X 0.2	0.2	2.5	40	4		2HRB 007 040 S04	0.35R X 0.7	0.7	4	45	4	
2HRB 002 030 S04	0.1R X 0.2	0.2	3	40	4		2HRB 007 060 S04	0.35R X 0.7	0.7	6	45	4	
2HRB 003 010 S04	0.15R X 0.3	0.3	1	40	4		2HRB 007 080 S04	0.35R X 0.7	0.7	8	45	4	
2HRB 003 015 S04	0.15R X 0.3	0.3	1.5	40	4		2HRB 007 100 S04	0.35R X 0.7	0.7	10	45	4	
2HRB 003 020 S04	0.15R X 0.3	0.3	2	40	4		2HRB 007 120 S04	0.35R X 0.7	0.7	12	45	4	
2HRB 003 025 S04	0.15R X 0.3	0.3	2.5	40	4		2HRB 008 020 S04	0.4R X 0.8	0.8	2	45	4	
2HRB 003 030 S04	0.15R X 0.3	0.3	3	40	4		2HRB 008 030 S04	0.4R X 0.8	0.8	3	45	4	
2HRB 003 035 S04	0.15R X 0.3	0.3	3.5	40	4		2HRB 008 040 S04	0.4R X 0.8	0.8	4	45	4	
2HRB 003 040 S04	0.15R X 0.3	0.3	4	40	4		2HRB 008 050 S04	0.4R X 0.8	0.8	5	45	4	
2HRB 003 050 S04	0.15R X 0.3	0.3	5	40	4		2HRB 008 060 S04	0.4R X 0.8	0.8	6	45	4	
2HRB 004 010 S04	0.2R X 0.4	0.4	1	40	4		2HRB 008 080 S04	0.4R X 0.8	0.8	8	45	4	
2HRB 004 015 S04	0.2R X 0.4	0.4	1.5	40	4		2HRB 008 100 S04	0.4R X 0.8	0.8	10	45	4	
2HRB 004 020 S04	0.2R X 0.4	0.4	2	40	4		2HRB 008 120 S04	0.4R X 0.8	0.8	12	45	4	
2HRB 004 025 S04	0.2R X 0.4	0.4	2.5	40	4		2HRB 008 140 S04	0.4R X 0.8	0.8	14	45	4	
2HRB 004 030 S04	0.2R X 0.4	0.4	3	40	4		2HRB 008 160 S04	0.4R X 0.8	0.8	16	45	4	
2HRB 004 035 S04	0.2R X 0.4	0.4	3.5	40	4		2HRB 009 040 S04	0.45R X 0.9	0.9	4	45	4	
2HRB 004 040 S04	0.2R X 0.4	0.4	4	40	4		2HRB 010 020 S04	0.5R X 1	1	2	45	4	
2HRB 004 045 S04	0.2R X 0.4	0.4	4.5	40	4		2HRB 010 020 S06	0.5R X 1	1	2	50	6	
2HRB 004 050 S04	0.2R X 0.4	0.4	5	40	4		2HRB 010 030 S04	0.5R X 1	1	3	45	4	
2HRB 004 060 S04	0.2R X 0.4	0.4	6	40	4		2HRB 010 030 S06	0.5R X 1	1	3	50	6	
2HRB 004 080 S04	0.2R X 0.4	0.4	8	40	4		2HRB 010 040 S04	0.5R X 1	1	4	45	4	
2HRB 004 100 S04	0.2R X 0.4	0.4	10	40	4		2HRB 010 040 S06	0.5R X 1	1	4	50	6	
2HRB 005 010 S04	0.25R X 0.5	0.5	1	45	4		2HRB 010 050 S04	0.5R X 1	1	5	45	4	
2HRB 005 015 S04	0.25R X 0.5	0.5	1.5	45	4		2HRB 010 050 S06	0.5R X 1	1	5	50	6	
2HRB 005 020 S04	0.25R X 0.5	0.5	2	45	4		2HRB 010 060 S04	0.5R X 1	1	6	45	4	
2HRB 005 025 S04	0.25R X 0.5	0.5	2.5	45	4		2HRB 010 060 S06	0.5R X 1	1	6	50	6	
2HRB 005 030 S04	0.25R X 0.5	0.5	3	45	4		2HRB 010 080 S04	0.5R X 1	1	8	45	4	
2HRB 005 035 S04	0.25R X 0.5	0.5	3.5	45	4		2HRB 010 080 S06	0.5R X 1	1	8	50	6	
2HRB 005 040 S04	0.25R X 0.5	0.5	4	45	4		2HRB 010 100 S04	0.5R X 1	1	10	50	4	
2HRB 005 045 S04	0.25R X 0.5	0.5	4.5	45	4		2HRB 010 100 S06	0.5R X 1	1	10	50	6	
2HRB 005 050 S04	0.25R X 0.5	0.5	5	45	4		2HRB 010 120 S04	0.5R X 1	1	12	50	4	
2HRB 005 060 S04	0.25R X 0.5	0.5	6	45	4		2HRB 010 120 S06	0.5R X 1	1	12	50	6	
2HRB 005 080 S04	0.25R X 0.5	0.5	8	45	4		2HRB 010 140 S04	0.5R X 1	1	14	50	4	
2HRB 005 100 S04	0.25R X 0.5	0.5	10	45	4		2HRB 010 140 S06	0.5R X 1	1	14	50	6	
2HRB 005 120 S04	0.25R X 0.5	0.5	12	45	4		2HRB 010 160 S04	0.5R X 1	1	16	50	4	
2HRB 005 140 S04	0.25R X 0.5	0.5	14	45	4		2HRB 010 160 S06	0.5R X 1	1	16	60	6	
2HRB 006 010 S04	0.3R X 0.6	0.6	1	45	4		2HRB 010 180 S04	0.5R X 1	1	18	50	4	
2HRB 006 020 S04	0.3R X 0.6	0.6	2	45	4		2HRB 010 180 S06	0.5R X 1	1	18	60	6	
2HRB 006 030 S04	0.3R X 0.6	0.6	3	45	4		2HRB 010 200 S04	0.5R X 1	1	20	50	4	
2HRB 006 040 S04	0.3R X 0.6	0.6	4	45	4		2HRB 010 200 S06	0.5R X 1	1	20	60	6	
2HRB 006 050 S04	0.3R X 0.6	0.6	5	45	4		2HRB 010 220 S04	0.5R X 1	1	22	60	4	
2HRB 006 060 S04	0.3R X 0.6	0.6	6	45	4		2HRB 010 220 S06	0.5R X 1	1	22	65	6	



단위 : mm

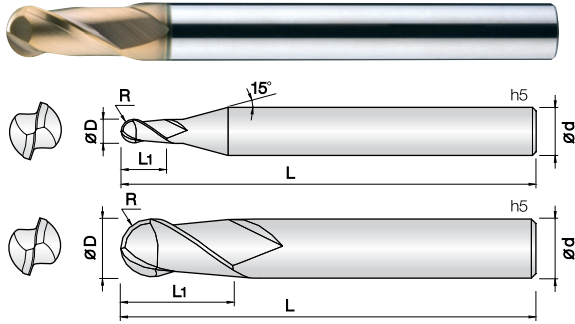
Order Number	날경 Diameter R×D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R×D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRB 010 250 S04	0.5R X 1	1	25	60	4		2HRB 015 350 S04	0.75R X 1.5	1.5	35	70	4	
2HRB 010 300 S04	0.5R X 1	1	30	70	4		2HRB 015 400 S04	0.75R X 1.5	1.5	40	80	4	
2HRB 012 040 S04	0.6R X 1.2	1.2	4	45	4		2HRB 016 060 S04	0.8R X 1.6	1.6	6	45	4	
2HRB 012 040 S06	0.6R X 1.2	1.2	4	50	6		2HRB 016 080 S04	0.8R X 1.6	1.6	8	45	4	
2HRB 012 060 S04	0.6R X 1.2	1.2	6	45	4		2HRB 016 120 S04	0.8R X 1.6	1.6	12	50	4	
2HRB 012 060 S06	0.6R X 1.2	1.2	6	50	6		2HRB 016 160 S04	0.8R X 1.6	1.6	16	50	4	
2HRB 012 080 S04	0.6R X 1.2	1.2	8	45	4		2HRB 016 200 S04	0.8R X 1.6	1.6	20	50	4	
2HRB 012 080 S06	0.6R X 1.2	1.2	8	50	6		2HRB 018 060 S04	0.9R X 1.8	1.8	6	45	4	
2HRB 012 100 S04	0.6R X 1.2	1.2	10	50	4		2HRB 018 080 S04	0.9R X 1.8	1.8	8	45	4	
2HRB 012 100 S06	0.6R X 1.2	1.2	10	50	6		2HRB 018 120 S04	0.9R X 1.8	1.8	12	50	4	
2HRB 012 120 S04	0.6R X 1.2	1.2	12	50	4		2HRB 018 160 S04	0.9R X 1.8	1.8	16	50	4	
2HRB 012 120 S06	0.6R X 1.2	1.2	12	50	6		2HRB 018 200 S04	0.9R X 1.8	1.8	20	50	4	
2HRB 012 160 S04	0.6R X 1.2	1.2	16	50	4		2HRB 020 040 S04	1R X 2	2	4	45	4	
2HRB 012 160 S06	0.6R X 1.2	1.2	16	60	6		2HRB 020 040 S06	1R X 2	2	4	50	6	
2HRB 012 200 S04	0.6R X 1.2	1.2	20	50	4		2HRB 020 060 S04	1R X 2	2	6	45	4	
2HRB 012 200 S06	0.6R X 1.2	1.2	20	60	6		2HRB 020 060 S06	1R X 2	2	6	50	6	
2HRB 012 240 S04	0.6R X 1.2	1.2	24	60	4		2HRB 020 080 S04	1R X 2	2	8	45	4	
2HRB 012 240 S06	0.6R X 1.2	1.2	24	65	6		2HRB 020 080 S06	1R X 2	2	8	50	6	
2HRB 014 060 S04	0.7R X 1.4	1.4	6	45	4		2HRB 020 100 S04	1R X 2	2	10	50	4	
2HRB 014 080 S04	0.7R X 1.4	1.4	8	45	4		2HRB 020 100 S06	1R X 2	2	10	50	6	
2HRB 014 120 S04	0.7R X 1.4	1.4	12	50	4		2HRB 020 120 S04	1R X 2	2	12	50	4	
2HRB 014 160 S04	0.7R X 1.4	1.4	16	50	4		2HRB 020 120 S06	1R X 2	2	12	50	6	
2HRB 015 030 S04	0.75R X 1.5	1.5	3	45	4		2HRB 020 140 S04	1R X 2	2	14	50	4	
2HRB 015 030 S06	0.75R X 1.5	1.5	3	50	6		2HRB 020 140 S06	1R X 2	2	14	50	6	
2HRB 015 040 S04	0.75R X 1.5	1.5	4	45	4		2HRB 020 160 S04	1R X 2	2	16	50	4	
2HRB 015 040 S06	0.75R X 1.5	1.5	4	50	6		2HRB 020 160 S06	1R X 2	2	16	60	6	
2HRB 015 060 S04	0.75R X 1.5	1.5	6	45	4		2HRB 020 180 S04	1R X 2	2	18	50	4	
2HRB 015 060 S06	0.75R X 1.5	1.5	6	50	6		2HRB 020 180 S06	1R X 2	2	18	60	6	
2HRB 015 080 S04	0.75R X 1.5	1.5	8	45	4		2HRB 020 200 S04	1R X 2	2	20	50	4	
2HRB 015 080 S06	0.75R X 1.5	1.5	8	50	6		2HRB 020 200 S06	1R X 2	2	20	60	6	
2HRB 015 100 S04	0.75R X 1.5	1.5	10	50	4		2HRB 020 220 S04	1R X 2	2	22	60	4	
2HRB 015 100 S06	0.75R X 1.5	1.5	10	50	6		2HRB 020 220 S06	1R X 2	2	22	65	6	
2HRB 015 120 S04	0.75R X 1.5	1.5	12	50	4		2HRB 020 250 S04	1R X 2	2	25	60	4	
2HRB 015 120 S06	0.75R X 1.5	1.5	12	50	6		2HRB 020 250 S06	1R X 2	2	25	65	6	
2HRB 015 140 S04	0.75R X 1.5	1.5	14	50	4		2HRB 020 300 S04	1R X 2	2	30	70	4	
2HRB 015 140 S06	0.75R X 1.5	1.5	14	50	6		2HRB 020 300 S06	1R X 2	2	30	70	6	
2HRB 015 160 S04	0.75R X 1.5	1.5	16	50	4		2HRB 020 350 S04	1R X 2	2	35	70	4	
2HRB 015 160 S06	0.75R X 1.5	1.5	16	60	6		2HRB 020 350 S06	1R X 2	2	35	75	6	
2HRB 015 180 S04	0.75R X 1.5	1.5	18	50	4		2HRB 020 400 S04	1R X 2	2	40	80	4	
2HRB 015 180 S06	0.75R X 1.5	1.5	18	60	6		2HRB 020 400 S06	1R X 2	2	40	80	6	
2HRB 015 200 S04	0.75R X 1.5	1.5	20	50	4		2HRB 020 450 S04	1R X 2	2	45	80	4	
2HRB 015 200 S06	0.75R X 1.5	1.5	20	60	6		2HRB 020 500 S04	1R X 2	2	50	90	4	
2HRB 015 220 S04	0.75R X 1.5	1.5	22	60	4		2HRB 025 080 S04	1.25R X 2.5	2.5	8	45	4	
2HRB 015 220 S06	0.75R X 1.5	1.5	22	65	6		2HRB 025 080 S06	1.25R X 2.5	2.5	8	50	6	
2HRB 015 250 S04	0.75R X 1.5	1.5	25	60	4		2HRB 025 100 S04	1.25R X 2.5	2.5	10	50	4	
2HRB 015 250 S06	0.75R X 1.5	1.5	25	65	6		2HRB 025 100 S06	1.25R X 2.5	2.5	10	50	6	
2HRB 015 300 S04	0.75R X 1.5	1.5	30	70	4		2HRB 025 120 S04	1.25R X 2.5	2.5	12	50	4	
2HRB 015 300 S06	0.75R X 1.5	1.5	30	70	6		2HRB 025 120 S06	1.25R X 2.5	2.5	12	50	6	

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRB 025 160 S04	1.25R X 2.5	2.5	16	50	4		2HRB 060 300 S06	3R X 6	10	30	110	6	
2HRB 025 160 S06	1.25R X 2.5	2.5	16	60	6		2HRB 080 250 060	4R X 8	12	25	60	8	
2HRB 025 200 S04	1.25R X 2.5	2.5	20	60	4		2HRB 080 300 100	4R X 8	12	30	100	8	
2HRB 025 250 S04	1.25R X 2.5	2.5	25	60	4		2HRB 100 300 070	5R X 10	16	30	70	10	
2HRB 025 300 S04	1.25R X 2.5	2.5	30	70	4		2HRB 100 350 100	5R X 10	16	35	100	10	
2HRB 025 350 S04	1.25R X 2.5	2.5	35	70	4		2HRB 120 300 075	6R X 12	18	30	75	12	
2HRB 025 400 S04	1.25R X 2.5	2.5	40	80	4		2HRB 120 400 110	6R X 12	18	40	110	12	
2HRB 030 060 S06	1.5R X 3	3	6	50	6								
2HRB 030 080 S06	1.5R X 3	3	8	50	6								
2HRB 030 100 S06	1.5R X 3	3	10	50	6								
2HRB 030 120 S06	1.5R X 3	3	12	50	6								
2HRB 030 160 S06	1.5R X 3	3	16	60	6								
2HRB 030 200 S06	1.5R X 3	3	20	60	6								
2HRB 030 250 S06	1.5R X 3	3	25	65	6								
2HRB 030 300 S06	1.5R X 3	3	30	70	6								
2HRB 030 350 S06	1.5R X 3	3	35	75	6								
2HRB 030 400 S06	1.5R X 3	3	40	80	6								
2HRB 030 450 S06	1.5R X 3	3	45	90	6								
2HRB 030 500 S06	1.5R X 3	3	50	100	6								
2HRB 030 600 S06	1.5R X 3	3	60	100	6								
2HRB 030 650 S06	1.5R X 3	3	65	110	6								
2HRB 030 700 S06	1.5R X 3	3	70	110	6								
2HRB 040 080 S06	2R X 4	4	8	50	6								
2HRB 040 100 S06	2R X 4	4	10	50	6								
2HRB 040 120 S06	2R X 4	4	12	50	6								
2HRB 040 160 S06	2R X 4	4	16	60	6								
2HRB 040 200 S06	2R X 4	4	20	60	6								
2HRB 040 250 S06	2R X 4	4	25	65	6								
2HRB 040 300 S06	2R X 4	4	30	70	6								
2HRB 040 350 S06	2R X 4	4	35	75	6								
2HRB 040 400 S06	2R X 4	4	40	80	6								
2HRB 040 450 S06	2R X 4	4	45	90	6								
2HRB 040 500 S06	2R X 4	4	50	100	6								
2HRB 040 550 S06	2R X 4	4	55	100	6								
2HRB 040 600 S06	2R X 4	4	60	100	6								
2HRB 040 650 S06	2R X 4	4	65	110	6								
2HRB 040 700 S06	2R X 4	4	70	110	6								
2HRB 050 160 S06	2.5R X 5	6	16	60	6								
2HRB 050 200 S06	2.5R X 5	6	20	60	6								
2HRB 050 250 S06	2.5R X 5	6	25	70	6								
2HRB 050 300 S06	2.5R X 5	6	30	75	6								
2HRB 050 400 S06	2.5R X 5	6	40	80	6								
2HRB 050 450 S06	2.5R X 5	6	45	90	6								
2HRB 050 500 S06	2.5R X 5	6	50	100	6								
2HRB 050 600 S06	2.5R X 5	6	60	100	6								
2HRB 050 650 S06	2.5R X 5	6	65	110	6								
2HRB 050 700 S06	2.5R X 5	6	70	110	6								
2HRB 060 150 S06	3R X 6	10	15	55	6								

### 2날 초정밀 표준 길이 볼 엔드밀

HARD series



- 고경도강(HRc50~62), 프리하든강 계열의 고정밀( $\pm 2\mu\text{m}$ ) 가공용
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금( $0.2\mu\text{m}$ )을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for precise cutting( $\pm 2\mu\text{m}$ ) of pre-hardened steel (HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine ( $0.2\mu\text{m}$ ) WC grade.

2

UWC  
초미립자

TISIN  
Coating

R  
 $\pm 0.002$

R  
 $\pm 0.003$

R  
 $\pm 0.005$

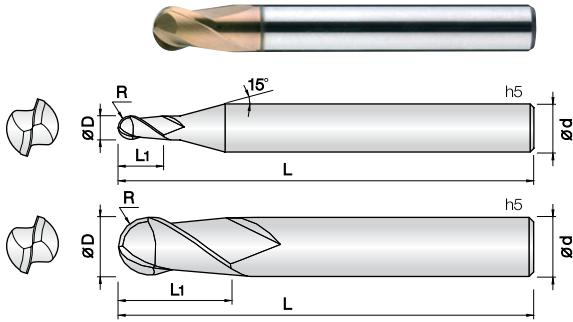
30°  
Helix Angle

0.1 ~ 1R
1.25 ~ 2R
2.5 ~ 6R

D Size	D Tolerance
$\varnothing 0.2 \sim 5$	+0 ~ -0.01mm
$\varnothing 6 \sim 12$	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2PHCB 002 004 S04	0.1R X 0.2	0.4	40	4	
2PHCB 003 006 S04	0.15R X 0.3	0.6	40	4	
2PHCB 004 008 S04	0.2R X 0.4	0.8	40	4	
2PHCB 005 010 S04	0.25R X 0.5	1	45	4	
2PHCB 006 012 S04	0.3R X 0.6	1.2	45	4	
2PHCB 007 015 S04	0.35R X 0.7	1.5	45	4	
2PHCB 008 020 S04	0.4R X 0.8	2	45	4	
2PHCB 009 020 S04	0.45R X 0.9	2	45	4	
2PHCB 010 025 S04	0.5R X 1	2.5	50	4	
2PHCB 010 025 S06	0.5R X 1	2.5	50	6	
2PHCB 012 030 S04	0.6R X 1.2	3	50	4	
2PHCB 015 040 S04	0.75R X 1.5	4	50	4	
2PHCB 015 040 S06	0.75R X 1.5	4	50	6	
2PHCB 020 050 S04	1R X 2	5	50	4	
2PHCB 020 050 S06	1R X 2	5	50	6	
2PHCB 025 060 S04	1.25R X 2.5	6	50	4	
2PHCB 030 080 S04	1.5R X 3	8	50	4	
2PHCB 030 080 S06	1.5R X 3	8	60	6	
2PHCB 035 080 S06	1.75R X 3.5	8	60	6	
2PHCB 040 080 S04	2R X 4	8	60	4	
2PHCB 040 080 S06	2R X 4	8	70	6	
2PHCB 045 080 S06	2.25R X 4.5	8	70	6	
2PHCB 050 100 S06	2.5R X 5	10	75	6	
2PHCB 055 100 S06	2.75R X 5.5	10	75	6	
2PHCB 060 120 080	3R X 6	12	80	6	
2PHCB 070 140 S08	3.5R X 7	14	80	8	
2PHCB 080 140 090	4R X 8	14	90	8	
2PHCB 100 180 100	5R X 10	18	100	10	
2PHCB 120 220 110	6R X 12	22	110	12	



- **고경도강(HRc50~62), 프리하든강 계열의 고정밀가공 엔드밀**
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 짧은 전장을 채택하여 열박음척 사용이 용이합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Short overall length for easy use with shrinking chuck
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.



0.05 ~ 2.5R 3R ~ 6R

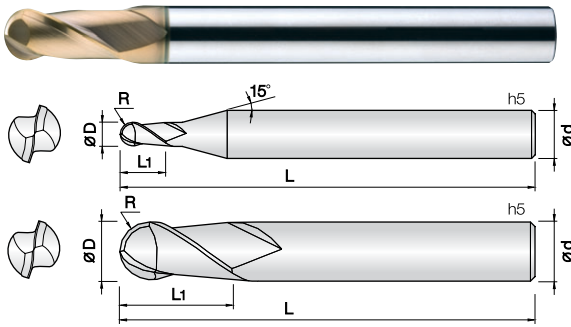
D Size	D Tolerance
Ø0.1 ~ 0.15	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2HSB 001 001 S04	0.05R X 0.1	0.1	40	4		2HSB 120 120 060	6R X 12	12	60	12	
2HSB 001 001 S04	0.05R X 0.1	0.15	40	4		2HSB 120 120 070	6R X 12	12	70	12	
2HSB 001 5001 S04	0.075R X 0.15	0.15	40	4							
2HSB 001 5002 S04	0.075R X 0.15	0.2	40	4							
2HSB 002 002 S04	0.1R X 0.2	0.2	40	4							
2HSB 002 003 S04	0.1R X 0.2	0.3	40	4							
2HSB 003 003 S04	0.15R X 0.3	0.3	40	4							
2HSB 003 0045 S04	0.15R X 0.3	0.45	40	4							
2HSB 004 004 S04	0.2R X 0.4	0.4	40	4							
2HSB 004 006 S04	0.2R X 0.4	0.6	40	4							
2HSB 005 005 S04	0.25R X 0.5	0.5	40	4							
2HSB 005 0075 S04	0.25R X 0.5	0.75	40	4							
2HSB 006 006 S04	0.3R X 0.6	0.6	40	4							
2HSB 006 009 S04	0.3R X 0.6	0.9	40	4							
2HSB 007 007 S04	0.35R X 0.7	0.7	40	4							
2HSB 007 010 S04	0.35R X 0.7	1	40	4							
2HSB 008 008 S04	0.4R X 0.8	0.8	40	4							
2HSB 008 012 S04	0.4R X 0.8	1.2	40	4							
2HSB 009 009 S04	0.45R X 0.9	0.9	40	4							
2HSB 009 013 S04	0.45R X 0.9	1.3	40	4							
2HSB 010 010 S04	0.5R X 1	1	40	4							
2HSB 010 010 S06	0.5R X 1	1	40	6							
2HSB 010 015 S04	0.5R X 1	1.5	40	4							
2HSB 010 015 S06	0.5R X 1	1.5	40	6							
2HSB 015 015 S04	0.75R X 1.5	1.5	40	4							
2HSB 015 015 S06	0.75R X 1.5	1.5	40	6							
2HSB 015 023 S04	0.75R X 1.5	2.3	40	4							
2HSB 015 023 S06	0.75R X 1.5	2.3	40	6							
2HSB 020 020 S04	1R X 2	2	45	4							
2HSB 020 020 S06	1R X 2	2	45	6							
2HSB 020 030 S04	1R X 2	3	45	4							
2HSB 020 030 S06	1R X 2	3	45	6							
2HSB 030 030 S04	1.5R X 3	3	45	4							
2HSB 030 030 S06	1.5R X 3	3	45	6							
2HSB 030 045 S04	1.5R X 3	4.5	45	4							
2HSB 030 045 S06	1.5R X 3	4.5	45	6							
2HSB 040 040 S04	2R X 4	4	45	4							
2HSB 040 040 S06	2R X 4	4	45	6							
2HSB 040 060 S04	2R X 4	6	45	4							
2HSB 040 060 S06	2R X 4	6	45	6							
2HSB 050 050 S06	2.5R X 5	5	50	6							
2HSB 050 075 S06	2.5R X 5	7.5	50	6							
2HSB 060 060 050	3R X 6	6	50	6							
2HSB 060 060 060	3R X 6	6	60	6							
2HSB 080 080 050	4R X 8	8	50	8							
2HSB 080 080 060	4R X 8	8	60	8							
2HSB 100 100 060	5R X 10	10	60	10							
2HSB 100 100 070	5R X 10	10	70	10							



### 2날 고속가공용 표준 길이 볼 엔드밀



HARD series

- **고경도강(HRc50~62), 프리하드강 계열의 고속가공 엔드밀**
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



0.03 ~ 2.93R    3 ~ 6R    6.5 ~ 10R

D Size	D Tolerance
Ø0.06 ~ 0.19	+0 ~ -0.005mm
Ø0.2 ~ 5.8	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø13 ~ 20	-0.01 ~ -0.02mm

단위 : mm

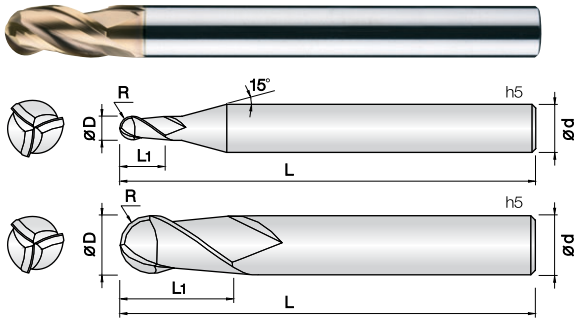
Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고
2HCB 0006 001 S04	0.03R X 0.06	0.1	40	4		2HCB 030 080 S06	1.5R X 3	8	60	6	
2HCB 0007 0012 S04	0.035R X 0.07	0.12	40	4		2HCB 030 080 080	1.5R X 3	8	80	6	
2HCB 0008 0015 S04	0.04R X 0.08	0.15	40	4		2HCB 030 080 100	1.5R X 3	8	100	6	
2HCB 0009 0017 S04	0.045R X 0.09	0.17	40	4		2HCB 032 080 S04	1.6R X 3.2	8	60	4	
2HCB 001 002 S04	0.05R X 0.1	0.2	40	4		2HCB 034 080 S04	1.7R X 3.4	8	60	4	
2HCB 0015 003 S04	0.075R X 0.15	0.3	40	4		2HCB 035 080 S06	1.75R X 3.5	8	60	6	
2HCB 002 004 S04	0.1R X 0.2	0.4	40	4		2HCB 036 090 S04	1.8R X 3.6	9	60	4	
2HCB 003 006 S04	0.15R X 0.3	0.6	40	4		2HCB 038 090 S04	1.9R X 3.8	9	60	4	
2HCB 004 008 S04	0.2R X 0.4	0.8	40	4		2HCB 040 080 060	2R X 4	8	60	4	
2HCB 005 010 S04	0.25R X 0.5	1	45	4		2HCB 040 080 080	2R X 4	8	80	4	
2HCB 006 012 S04	0.3R X 0.6	1.2	45	4		2HCB 040 080 S06	2R X 4	8	70	6	
2HCB 007 015 S04	0.35R X 0.7	1.5	45	4		2HCB 040 080 090	2R X 4	8	90	6	
2HCB 008 020 S04	0.4R X 0.8	2	45	4		2HCB 040 080 120	2R X 4	8	120	6	
2HCB 009 020 S04	0.45R X 0.9	2	45	4		2HCB 042 100 S06	2.1R X 4.2	10	70	6	
2HCB 010 025 S03	0.5R X 1	2.5	50	3		2HCB 044 100 S06	2.2R X 4.4	10	70	6	
2HCB 010 025 S04	0.5R X 1	2.5	50	4		2HCB 045 080 S06	2.25R X 4.5	8	70	6	
2HCB 010 025 S06	0.5R X 1	2.5	50	6		2HCB 046 100 S06	2.3R X 4.6	10	70	6	
2HCB 010 025 070	0.5R X 1	2.5	70	6		2HCB 048 110 S06	2.4R X 4.8	11	70	6	
2HCB 010 025 100	0.5R X 1	2.5	100	6		2HCB 050 080 S05	2.5R X 5	8	80	5	
2HCB 011 027 S04	0.55R X 1.1	2.7	50	4		2HCB 050 100 S06	2.5R X 5	10	75	6	
2HCB 012 030 S03	0.6R X 1.2	3	50	3		2HCB 052 120 S06	2.6R X 5.2	12	75	6	
2HCB 012 030 S04	0.6R X 1.2	3	50	4		2HCB 054 120 S06	2.7R X 5.4	12	75	6	
2HCB 013 032 S04	0.65R X 1.3	3.2	50	4		2HCB 055 100 S06	2.75R X 5.5	10	75	6	
2HCB 014 035 S04	0.7R X 1.4	3.5	50	4		2HCB 056 120 S06	2.8R X 5.6	12	75	6	
2HCB 015 040 S03	0.75R X 1.5	4	50	3		2HCB 058 120 S06	2.9R X 5.8	12	75	6	
2HCB 015 040 S04	0.75R X 1.5	4	50	4		2HCB 060 100 060	3R X 6	10	60	6	
2HCB 015 040 S06	0.75R X 1.5	4	50	6		2HCB 060 120 080	3R X 6	12	80	6	
2HCB 015 040 070	0.75R X 1.5	4	70	6		2HCB 060 120 100	3R X 6	12	100	6	
2HCB 015 040 100	0.75R X 1.5	4	100	6		2HCB 060 120 120	3R X 6	12	120	6	
2HCB 016 040 S04	0.8R X 1.6	4	50	4		2HCB 060 120 150	3R X 6	12	150	6	
2HCB 017 042 S04	0.85R X 1.7	4.2	50	4		2HCB 070 140 S08	3.5R X 7	14	80	8	
2HCB 018 045 S04	0.9R X 1.8	4.5	50	4		2HCB 080 140 090	4R X 8	14	90	8	
2HCB 019 047 S04	0.95R X 1.9	4.7	50	4		2HCB 080 140 110	4R X 8	14	110	8	
2HCB 020 050 S03	1R X 2	5	50	3		2HCB 080 140 150	4R X 8	14	150	8	
2HCB 020 050 S04	1R X 2	5	50	4		2HCB 090 160 S10	4.5R X 9	16	100	10	
2HCB 020 050 S06	1R X 2	5	50	6		2HCB 100 180 100	5R X 10	18	100	10	
2HCB 020 050 075	1R X 2	5	75	6		2HCB 100 180 120	5R X 10	18	120	10	
2HCB 020 050 100	1R X 2	5	100	6		2HCB 100 180 150	5R X 10	18	150	10	
2HCB 022 055 S04	1.1R X 2.2	5.5	50	4		2HCB 100 180 180	5R X 10	18	180	10	
2HCB 024 060 S04	1.2R X 2.4	6	50	4		2HCB 110 200 S12	5.5R X 11	20	110	12	
2HCB 025 060 S03	1.25R X 2.5	6	50	3		2HCB 120 220 110	6R X 12	22	110	12	
2HCB 025 060 S04	1.25R X 2.5	6	50	4		2HCB 120 220 130	6R X 12	22	130	12	
2HCB 025 060 S06	1.25R X 2.5	6	75	6		2HCB 120 220 150	6R X 12	22	150	12	
2HCB 025 060 100	1.25R X 2.5	6	100	6		2HCB 120 220 200	6R X 12	22	200	12	
2HCB 026 060 S04	1.3R X 2.6	6	50	4		2HCB 130 240 S14	6.5R X 13	24	110	14	
2HCB 028 070 S04	1.4R X 2.8	7	50	4		2HCB 140 240 S14	7R X 14	24	110	14	
2HCB 030 080 S03	1.5R X 3	8	60	3		2HCB 160 300 130	8R X 16	30	130	16	
2HCB 030 080 S04	1.5R X 3	8	50	4		2HCB 160 300 160	8R X 16	30	160	16	



# 3HCB

3 Flutes High Speed Standard Length Ball End Mills

## 3날 고속가공용 표준 길이 볼 엔드밀



- 고경도강(HRc50~65), 프리하든강 계열의 고속가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 3날 볼타입 적용으로 고속, 고이송 작업이 가능합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel (HRc50~65)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- High speed, feed applicable by 3 flute ball edge.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm

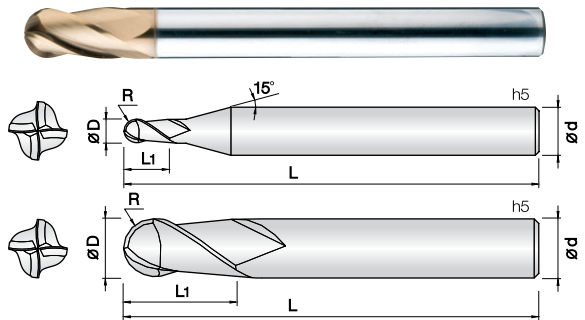
단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고
New 3HCB 010 250 S04	0.5R X 1	2.5	50	4		3HCB 120 220 S12	6R X 12	22	110	12	
New 3HCB 015 040 S04	0.75R X 1.5	4	50	4							
3HCB 020 050 S06	1R X 2	5	50	6							
3HCB 030 080 S06	1.5R X 3	8	65	6							
3HCB 040 080 S04	2R X 4	8	60	4							
3HCB 040 080 S06	2R X 4	8	70	6							
3HCB 050 100 S06	2.5R X 5	10	75	6							
3HCB 060 120 S06	3R X 6	12	80	6							
3HCB 080 140 S08	4R X 8	14	90	8							
3HCB 100 180 S10	5R X 10	18	100	10							

# 4HCB

4 Flutes High Speed Standard Length Ball End Mills

## 4날 고속가공용 표준 길이 볼 엔드밀



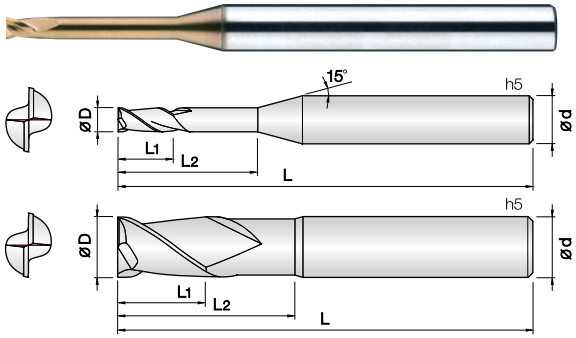
- 고경도강(HRc50~65), 프리하든강 계열의 고속가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 4날 볼타입 적용으로 고속, 고이송 작업이 가능합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel (HRc50~65)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- High speed, feed applicable by 4 flute ball edge.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16 ~ 20	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고
4HCB 010 025 S06	0.5R X 1	2.5	50	6		4HCB 120 220 S12	6R X 12	22	110	12	
4HCB 015 040 S06	0.75R X 1.5	4	50	6		4HCB 160 300 S16	8R X 16	30	130	16	
4HCB 020 050 S06	1R X 2	5	50	6		4HCB 200 400 S20	10R X 20	40	160	20	
4HCB 030 080 S06	1.5R X 3	8	60	6							
4HCB 040 080 S04	2R X 4	8	60	4							
4HCB 040 080 S06	2R X 4	8	70	6							
4HCB 050 100 S06	2.5R X 5	10	80	6							
4HCB 060 120 S06	3R X 6	12	90	6							
4HCB 080 140 S08	4R X 8	14	100	8							
4HCB 100 180 S10	5R X 10	18	100	10							



- **고경도강(HRc50~60), 프리하든강 계열의 고정밀가공 엔드밀**
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc50~60)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRE 001 003 S04	0.1	0.3	-	40	4		2HRE 007 020 S04	0.7	0.7	2	40	4	
2HRE 001 005 S04	0.1	0.5	-	40	4		2HRE 007 040 S04	0.7	0.7	4	40	4	
2HRE 002 005 S04	0.2	0.2	0.5	40	4		2HRE 007 060 S04	0.7	0.7	6	40	4	
2HRE 002 010 S04	0.2	0.2	1	40	4		2HRE 007 080 S04	0.7	0.7	8	40	4	
2HRE 002 015 S04	0.2	0.2	1.5	40	4		2HRE 007 100 S04	0.7	0.7	10	40	4	
2HRE 002 020 S04	0.2	0.2	2	40	4		2HRE 007 120 S04	0.7	0.7	12	45	4	
2HRE 002 025 S04	0.2	0.2	2.5	40	4		2HRE 008 020 S04	0.8	0.8	2	40	4	
2HRE 002 030 S04	0.2	0.2	3	40	4		2HRE 008 030 S04	0.8	0.8	3	40	4	
2HRE 003 010 S04	0.3	0.3	1	40	4		2HRE 008 040 S04	0.8	0.8	4	40	4	
2HRE 003 015 S04	0.3	0.3	1.5	40	4		2HRE 008 050 S04	0.8	0.8	5	40	4	
2HRE 003 020 S04	0.3	0.3	2	40	4		2HRE 008 060 S04	0.8	0.8	6	40	4	
2HRE 003 025 S04	0.3	0.3	2.5	40	4		2HRE 008 080 S04	0.8	0.8	8	40	4	
2HRE 003 030 S04	0.3	0.3	3	40	4		2HRE 008100 S04	0.8	0.8	10	40	4	
2HRE 003 035 S04	0.3	0.3	3.5	40	4		2HRE 008120 S04	0.8	0.8	12	45	4	
2HRE 003 040 S04	0.3	0.3	4	40	4		2HRE 008140 S04	0.8	0.8	14	45	4	
2HRE 003 050 S04	0.3	0.3	5	40	4		2HRE 009 060 S04	0.9	0.9	6	40	4	
2HRE 004 010 S04	0.4	0.4	1	40	4		2HRE 009 080 S04	0.9	0.9	8	40	4	
2HRE 004 015 S04	0.4	0.4	1.5	40	4		2HRE 009 100 S04	0.9	0.9	10	40	4	
2HRE 004 020 S04	0.4	0.4	2	40	4		2HRE 010 020 S04	1	1	2	45	4	
2HRE 004 025 S04	0.4	0.4	2.5	40	4		2HRE 010 030 S04	1	1	3	45	4	
2HRE 004 030 S04	0.4	0.4	3	40	4		2HRE 010 040 S04	1	1	4	45	4	
2HRE 004 035 S04	0.4	0.4	3.5	40	4		2HRE 010 050 S04	1	1	5	45	4	
2HRE 004 040 S04	0.4	0.4	4	40	4		2HRE 010 060 S04	1	1	6	45	4	
2HRE 004 050 S04	0.4	0.4	5	40	4		2HRE 010 080 S04	1	1	8	45	4	
2HRE 004 060 S04	0.4	0.4	6	40	4		2HRE 010 100 S04	1	1	10	45	4	
2HRE 004 080 S04	0.4	0.4	8	40	4		2HRE 010 120 S04	1	1	12	45	4	
2HRE 004 100 S04	0.4	0.4	10	40	4		2HRE 010 140 S04	1	1	14	45	4	
2HRE 005 010 S04	0.5	0.5	1	40	4		2HRE 010 160 S04	1	1	16	50	4	
2HRE 005 020 S04	0.5	0.5	2	40	4		2HRE 010 180 S04	1	1	18	50	4	
2HRE 005 030 S04	0.5	0.5	3	40	4		2HRE 010 200 S04	1	1	20	50	4	
2HRE 005 040 S04	0.5	0.5	4	40	4		2HRE 010 250 S04	1	1	25	60	4	
2HRE 005 050 S04	0.5	0.5	5	40	4		2HRE 010 300 S04	1	1	30	70	4	
2HRE 005 060 S04	0.5	0.5	6	40	4		2HRE 012 040 S04	1.2	1.2	4	45	4	
2HRE 005 080 S04	0.5	0.5	8	40	4		2HRE 012 060 S04	1.2	1.2	6	45	4	
2HRE 005 100 S04	0.5	0.5	10	40	4		2HRE 012 080 S04	1.2	1.2	8	45	4	
2HRE 005 120 S04	0.5	0.5	12	45	4		2HRE 012 100 S04	1.2	1.2	10	45	4	
2HRE 005 140 S04	0.5	0.5	14	45	4		2HRE 012 120 S04	1.2	1.2	12	45	4	
2HRE 006 010 S04	0.6	0.6	1	40	4		2HRE 012 160 S04	1.2	1.2	16	50	4	
2HRE 006 020 S04	0.6	0.6	2	40	4		2HRE 012 200 S04	1.2	1.2	20	50	4	
2HRE 006 030 S04	0.6	0.6	3	40	4		2HRE 012 250 S04	1.2	1.2	25	60	4	
2HRE 006 040 S04	0.6	0.6	4	40	4		2HRE 012 300 S04	1.2	1.2	30	70	4	
2HRE 006 050 S04	0.6	0.6	5	40	4		2HRE 014 060 S04	1.4	1.4	6	45	4	
2HRE 006 060 S04	0.6	0.6	6	40	4		2HRE 014 080 S04	1.4	1.4	8	45	4	
2HRE 006 080 S04	0.6	0.6	8	40	4		2HRE 014 100 S04	1.4	1.4	10	45	4	
2HRE 006 100 S04	0.6	0.6	10	40	4		2HRE 014 140 S04	1.4	1.4	14	45	4	
2HRE 006 120 S04	0.6	0.6	12	45	4		2HRE 014 160 S04	1.4	1.4	16	50	4	
2HRE 006 140 S04	0.6	0.6	14	45	4		2HRE 014 200 S04	1.4	1.4	20	50	4	
2HRE 006 160 S04	0.6	0.6	16	45	4		2HRE 015 040 S04	1.5	1.5	4	45	4	

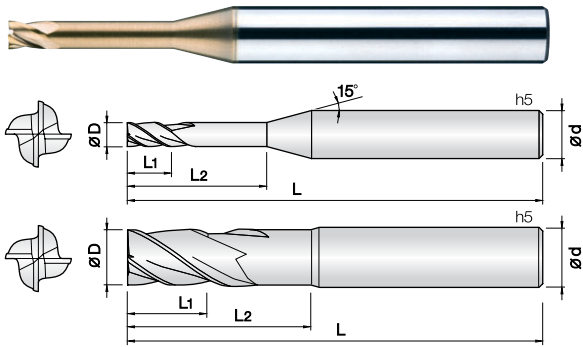


단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRE 015 060 S04	1.5	1.5	6	45	4		2HRE 030 250 S06	3	3	25	65	6	
2HRE 015 080 S04	1.5	1.5	8	45	4		2HRE 030 300 S06	3	3	30	70	6	
2HRE 015 100 S04	1.5	1.5	10	45	4		2HRE 030 350 S06	3	3	35	75	6	
2HRE 015 120 S04	1.5	1.5	12	45	4		2HRE 030 400 S06	3	3	40	80	6	
2HRE 015 140 S04	1.5	1.5	14	50	4		2HRE 030 450 S06	3	3	45	90	6	
2HRE 015 160 S04	1.5	1.5	16	50	4		2HRE 030 500 S06	3	3	50	100	6	
2HRE 015 180 S04	1.5	1.5	18	50	4		2HRE 030 600 S06	3	3	60	100	6	
2HRE 015 200 S04	1.5	1.5	20	50	4		2HRE 040 080 S06	4	4	8	50	6	
2HRE 015 250 S04	1.5	1.5	25	60	4		2HRE 040 100 S06	4	4	10	50	6	
2HRE 015 300 S04	1.5	1.5	30	70	4		2HRE 040 120 S06	4	4	12	50	6	
2HRE 016 100 S04	1.6	1.6	10	45	4		2HRE 040 160 S06	4	4	16	55	6	
2HRE 016 140 S04	1.6	1.6	14	45	4		2HRE 040 200 S06	4	4	20	60	6	
2HRE 016 180 S04	1.6	1.6	18	60	4		2HRE 040 250 S06	4	4	25	65	6	
2HRE 018 100 S04	1.8	1.8	10	45	4		2HRE 040 300 S06	4	4	30	70	6	
2HRE 018 140 S04	1.8	1.8	14	45	4		2HRE 040 350 S06	4	4	35	75	6	
2HRE 018 180 S04	1.8	1.8	18	50	4		2HRE 040 400 S06	4	4	40	80	6	
2HRE 020 040 S04	2	2	4	45	4		2HRE 040 450 S06	4	4	45	90	6	
2HRE 020 060 S04	2	2	6	45	4		2HRE 040 500 S06	4	4	50	100	6	
2HRE 020 080 S04	2	2	8	45	4		2HRE 040 550 S06	4	4	55	100	6	
2HRE 020 100 S04	2	2	10	45	4		2HRE 040 600 S06	4	4	60	100	6	
2HRE 020 120 S04	2	2	12	45	4		2HRE 050 160 S06	5	6	16	55	6	
2HRE 020 140 S04	2	2	14	45	4		2HRE 050 200 S06	5	6	20	60	6	
2HRE 020 160 S04	2	2	16	50	4		2HRE 050 250 S06	5	6	25	65	6	
2HRE 020 180 S04	2	2	18	50	4		2HRE 050 300 S06	5	6	30	70	6	
2HRE 020 200 S04	2	2	20	50	4		2HRE 050 350 S06	5	6	35	75	6	
2HRE 020 220 S04	2	2	22	60	4		2HRE 050 400 S06	5	6	40	80	6	
2HRE 020 250 S04	2	2	25	60	4		2HRE 050 500 S06	5	6	50	100	6	
2HRE 020 300 S04	2	2	30	60	4		2HRE 050 600 S06	5	6	60	100	6	
2HRE 020 350 S04	2	2	35	70	4		2HRE 060 200 S06	6	10	20	60	6	
2HRE 020 400 S04	2	2	40	80	4		2HRE 060 300 S06	6	10	30	75	6	
2HRE 020 450 S04	2	2	45	80	4		2HRE 060 400 S06	6	10	40	80	6	
2HRE 020 500 S04	2	2	50	90	4		2HRE 060 500 S06	6	10	50	90	6	
2HRE 025 080 S04	2.5	2.5	8	45	4		2HRE 060 600 S06	6	10	60	110	6	
2HRE 025 100 S04	2.5	2.5	10	45	4		2HRE 080 200 S08	8	12	20	65	8	
2HRE 025 120 S04	2.5	2.5	12	45	4		2HRE 080 300 S08	8	12	30	80	8	
2HRE 025 160 S04	2.5	2.5	16	50	4		2HRE 080 400 S08	8	12	40	100	8	
2HRE 025 200 S04	2.5	2.5	20	50	4		2HRE 100 250 S10	10	15	25	70	10	
2HRE 025 250 S04	2.5	2.5	25	60	4		2HRE 100 350 S10	10	15	35	80	10	
2HRE 025 300 S04	2.5	2.5	30	70	4		2HRE 100 450 S10	10	15	45	100	10	
2HRE 025 350 S04	2.5	2.5	35	70	4		2HRE 120 300 S12	12	18	30	80	12	
2HRE 025 400 S04	2.5	2.5	40	80	4		2HRE 120 400 S12	12	18	40	100	12	
2HRE 025 500 S04	2.5	2.5	50	90	4		2HRE 120 500 S12	12	18	50	120	12	
2HRE 030 060 S06	3	3	6	45	6								
2HRE 030 080 S06	3	3	8	45	6								
2HRE 030 100 S06	3	3	10	45	6								
2HRE 030 120 S06	3	3	12	50	6								
2HRE 030 160 S06	3	3	16	55	6								
2HRE 030 200 S06	3	3	20	60	6								

# 4HRE 4 Flutes High Speed Rib End Mills

## 4날 고속가공용 리브 엔드밀



- 고경도강(HRc50~60), 프리하든강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc50~60)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.



D Size	D Tolerance
$\phi 0.8 \sim 5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.01 ~ -0.025mm

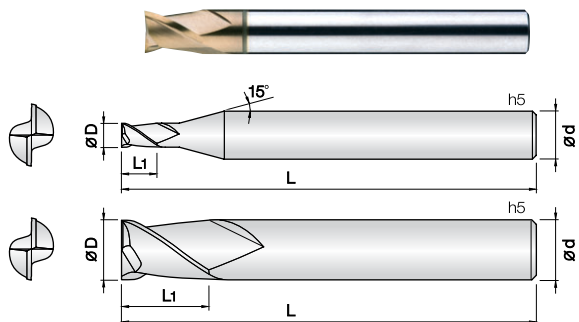
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4HRE 008 020 S04	0.8	0.8	2	45	4		4HRE 025 120 S04	2.5	2.5	12	45	4	
4HRE 008 040 S04	0.8	0.8	4	45	4		4HRE 025 160 S04	2.5	2.5	16	50	4	
4HRE 008 060 S04	0.8	0.8	6	45	4		4HRE 025 200 S04	2.5	2.5	20	50	4	
4HRE 008 080 S04	0.8	0.8	8	45	4		4HRE 025 250 S04	2.5	2.5	25	60	4	
4HRE 008 100 S04	0.8	0.8	10	45	4		4HRE 025 300 S04	2.5	2.5	30	70	4	
4HRE 008 120 S04	0.8	0.8	12	45	4		4HRE 030 060 S06	3	3	6	45	6	
4HRE 008 160 S04	0.8	0.8	16	50	4		4HRE 030 080 S06	3	3	8	45	6	
4HRE 009 020 S04	0.9	0.9	2	45	4		4HRE 030 100 S06	3	3	10	45	6	
4HRE 009 060 S04	0.9	0.9	6	45	4		4HRE 030 120 S06	3	3	12	50	6	
4HRE 009 080 S04	0.9	0.9	8	45	4		4HRE 030 160 S06	3	3	16	55	6	
4HRE 009 100 S04	0.9	0.9	10	45	4		4HRE 030 200 S06	3	3	20	60	6	
4HRE 010 020 S04	1	1	2	45	4		4HRE 030 250 S06	3	3	25	65	6	
4HRE 010 030 S04	1	1	3	45	4		4HRE 030 300 S06	3	3	30	70	6	
4HRE 010 040 S04	1	1	4	45	4		4HRE 030 350 S06	3	3	35	75	6	
4HRE 010 060 S04	1	1	6	45	4		4HRE 030 400 S06	3	3	40	80	6	
4HRE 010 080 S04	1	1	8	45	4		4HRE 040 060 S06	4	4	6	50	6	
4HRE 010 100 S04	1	1	10	45	4		4HRE 040 080 S06	4	4	8	50	6	
4HRE 010 120 S04	1	1	12	45	4		4HRE 040 100 S06	4	4	10	50	6	
4HRE 010 140 S04	1	1	14	50	4		4HRE 040 120 S06	4	4	12	50	6	
4HRE 010 160 S04	1	1	16	50	4		4HRE 040 160 S06	4	4	16	55	6	
4HRE 010 200 S04	1	1	20	50	4		4HRE 040 200 S06	4	4	20	60	6	
4HRE 010 250 S04	1	1	25	60	4		4HRE 040 250 S06	4	4	25	65	6	
4HRE 012 040 S04	1.2	1.2	4	45	4		4HRE 040 300 S06	4	4	30	70	6	
4HRE 012 060 S04	1.2	1.2	6	45	4		4HRE 040 400 S06	4	4	40	80	6	
4HRE 012 080 S04	1.2	1.2	8	45	4		4HRE 040 450 S06	4	4	45	90	6	
4HRE 012 100 S04	1.2	1.2	10	45	4		4HRE 040 500 S06	4	4	50	100	6	
4HRE 012 120 S04	1.2	1.2	12	45	4		4HRE 050 160 S06	5	5	16	55	6	
4HRE 012 160 S04	1.2	1.2	16	50	4		4HRE 050 200 S06	5	5	20	60	6	
4HRE 015 040 S04	1.5	1.5	4	45	4		4HRE 050 250 S06	5	5	25	65	6	
4HRE 015 060 S04	1.5	1.5	6	45	4		4HRE 050 300 S06	5	5	30	70	6	
4HRE 015 080 S04	1.5	1.5	8	45	4		4HRE 050 400 S06	5	5	40	80	6	
4HRE 015 100 S04	1.5	1.5	10	45	4		4HRE 050 500 S06	5	5	50	100	6	
4HRE 015 120 S04	1.5	1.5	12	45	4		4HRE 060 200 S06	6	6	20	60	6	
4HRE 015 160 S04	1.5	1.5	16	50	4		4HRE 060 300 S06	6	6	30	75	6	
4HRE 015 200 S04	1.5	1.5	20	50	4		4HRE 060 400 S06	6	6	40	80	6	
4HRE 015 250 S04	1.5	1.5	25	60	4		4HRE 060 500 S06	6	6	50	90	6	
4HRE 020 040 S04	2	2	4	45	4		4HRE 080 200 S08	8	10	20	65	8	
4HRE 020 060 S04	2	2	6	45	4		4HRE 080 300 S08	8	10	30	80	8	
4HRE 020 080 S04	2	2	8	45	4		4HRE 080 400 S08	8	10	40	100	8	
4HRE 020 100 S04	2	2	10	45	4		4HRE 100 250 S10	10	15	25	70	10	
4HRE 020 120 S04	2	2	12	45	4		4HRE 100 350 S10	10	15	35	90	10	
4HRE 020 140 S04	2	2	14	50	4		4HRE 100 450 S10	10	15	45	110	10	
4HRE 020 160 S04	2	2	16	50	4		4HRE 120 300 S12	12	18	30	80	12	
4HRE 020 180 S04	2	2	18	50	4		4HRE 120 400 S12	12	18	40	100	12	
4HRE 020 200 S04	2	2	20	50	4		4HRE 120 500 S12	12	18	50	120	12	
4HRE 020 250 S04	2	2	25	60	4								
4HRE 020 300 S04	2	2	30	70	4								
4HRE 025 100 S04	2.5	2.5	10	45	4								

# 2HSE 2 Flutes High Speed Short Length End Mills

## 2날 고속가공용 짧은 길이 엔드밀

HARD series



- 고정도강(HRc50~60), 프리하트강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 짧은 전장을 채택하여 열박음척 사용이 용이합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.

- Endmills for pre-hardened and hardened steel(HRc50~60)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Short overall length for easy use with shrinking chuck.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

2

WC

미립자

TISIN

Coating

D

+0 -0.005

D

+0 -0.01

D

-0.01 -0.025

30°

Helix Angle

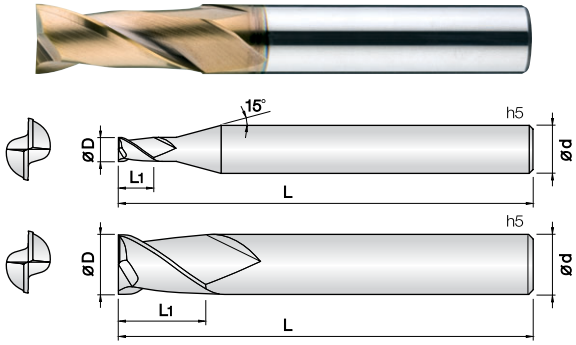
φ0.1    φ0.2 ~ 5    φ6 ~ 12

Shield Edge

D Size	D Tolerance
φ0.1	+0 ~ -0.005mm
φ0.2 ~ 5	+0 ~ -0.01mm
φ6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고						
2HSE 001 001 S04	0.1	0.1	40	4							
2HSE 002 002 S04	0.2	0.2	40	4							
2HSE 003 003 S04	0.3	0.3	40	4							
2HSE 004 004 S04	0.4	0.4	40	4							
2HSE 005 005 S04	0.5	0.5	40	4							
2HSE 006 006 S04	0.6	0.6	40	4							
2HSE 007 007 S04	0.7	0.7	40	4							
2HSE 008 008 S04	0.8	0.8	40	4							
2HSE 009 009 S04	0.9	0.9	40	4							
2HSE 010 010 S04	1	1	40	4							
2HSE 012 012 S04	1.2	1.2	40	4							
2HSE 015 015 S04	1.5	1.5	40	4							
2HSE 020 020 S04	2	2	40	4							
2HSE 030 030 S04	3	3	40	4							
2HSE 040 040 S04	4	4	40	4							
2HSE 050 050 S06	5	5	45	6							
2HSE 060 060 S06	6	6	45	6							
2HSE 080 080 S08	8	8	50	8							
2HSE 100 100 S10	10	10	60	10							
2HSE 120 120 S12	12	12	65	12							



- 고경도강(HRC50~60), 프리하든강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보장하여 날부치핑을 최소화 하였습니다.
- 국내최초 날경 0.05mm 제품부터 생산합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화함.
- Endmills for pre-hardened and hardened steel(HRC50~60)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Produce down to 0.05mm in diameter endmills at the first time in Korea.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

2

WC  
미립자

TISIN  
Coating

D  
+0 -0.005

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

30°  
Helix Angle

Shield Edge

D Size	D Tolerance
$\varnothing 0.05 \sim 0.15$	+0 ~ -0.005mm
$\varnothing 0.2 \sim 5.9$	+0 ~ -0.01mm
$\varnothing 6 \sim 12$	-0.01 ~ -0.025mm
$\varnothing 13 \sim 20$	-0.015 ~ -0.03mm

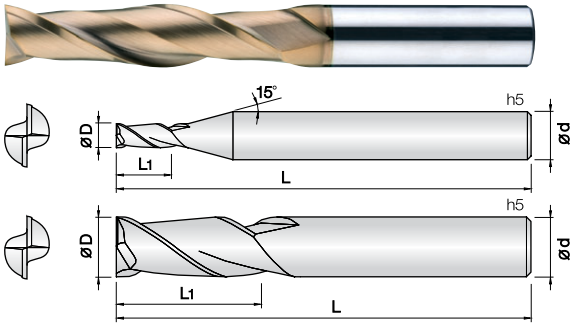
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2HCE 0005 0008 S04	0.05	0.08	40	4		2HCE 017 042 S04	1.7	4.2	40	4	
2HCE 0006 001 S04	0.06	0.1	40	4		2HCE 0175 042 S04	1.75	4.2	40	4	
2HCE 0007 0012 S04	0.07	0.12	40	4		2HCE 018 045 S04	1.8	4.5	40	4	
2HCE 0008 0015 S04	0.08	0.15	40	4		2HCE 0185 045 S04	1.85	4.5	40	4	
2HCE 0009 0017 S04	0.09	0.17	40	4		2HCE 019 050 S04	1.9	5	40	4	
2HCE 0010 002 S04	0.1	0.2	40	4		2HCE 0195 050 S04	1.95	5	40	4	
2HCE 0015 003 S04	0.15	0.3	40	4		2HCE 020 060 S03	2	6	40	3	
2HCE 002 004 S04	0.2	0.4	40	4		2HCE 020 060 S04	2	6	40	4	
2HCE 0025 005 S04	0.25	0.5	40	4		2HCE 020 060 S06	2	6	40	6	
2HCE 003 006 S04	0.3	0.6	40	4		2HCE 020 060 060	2	6	60	6	
2HCE 0035 007 S04	0.35	0.7	40	4		2HCE 021 060 S04	2.1	6	40	4	
2HCE 004 008 S04	0.4	0.8	40	4		2HCE 022 060 S04	2.2	6	40	4	
2HCE 0045 009 S04	0.45	0.9	40	4		2HCE 023 060 S04	2.3	6	40	4	
2HCE 005 010 S03	0.5	1	40	3		2HCE 024 080 S04	2.4	8	45	4	
2HCE 005 010 S04	0.5	1	40	4		2HCE 025 080 S03	2.5	8	45	3	
2HCE 0055 011 S04	0.55	1.1	40	4		2HCE 025 080 S04	2.5	8	45	4	
2HCE 006 012 S03	0.6	1.2	40	3		2HCE 025 080 S06	2.5	8	45	6	
2HCE 006 012 S04	0.6	1.2	40	4		2HCE 025 080 070	2.5	8	70	6	
2HCE 0065 013 S04	0.65	1.3	40	4		2HCE 026 080 S04	2.6	8	45	4	
2HCE 007 014 S04	0.7	1.4	40	4		2HCE 027 080 S04	2.7	8	45	4	
2HCE 0075 015 S04	0.75	1.5	40	4		2HCE 028 080 S04	2.8	8	45	4	
2HCE 008 016 S03	0.8	1.6	40	3		2HCE 029 080 S04	2.9	8	45	4	
2HCE 008 016 S04	0.8	1.6	40	4		2HCE 030 080 S03	3	8	45	3	
2HCE 0085 017 S04	0.85	1.7	40	4		2HCE 030 080 S04	3	8	45	4	
2HCE 009 020 S04	0.9	2	40	4		2HCE 030 080 S06	3	8	45	6	
2HCE 0095 020 S04	0.95	2	40	4		2HCE 030 080 070	3	8	70	6	
2HCE 010 025 S03	1	2.5	40	3		2HCE 031 080 S06	3.1	8	45	6	
2HCE 010 025 S04	1	2.5	40	4		2HCE 032 080 S06	3.2	8	45	6	
2HCE 010 025 S06	1	2.5	40	6		2HCE 033 080 S06	3.3	8	45	6	
2HCE 010 025 060	1	2.5	60	6		2HCE 034 080 S06	3.4	8	45	6	
2HCE 0105 025 S04	1.05	2.5	40	4		2HCE 035 100 S06	3.5	10	45	6	
2HCE 011 027 S04	1.1	2.7	40	4		2HCE 036 100 S06	3.6	10	45	6	
2HCE 0115 025 S04	1.15	2.5	40	4		2HCE 037 100 S06	3.7	10	45	6	
2HCE 012 030 S03	1.2	3	40	3		2HCE 038 100 S06	3.8	10	45	6	
2HCE 012 030 S04	1.2	3	40	4		2HCE 039 100 S06	3.9	10	45	6	
2HCE 012 030 060	1.2	3	60	6		2HCE 040 100 S04	4	10	45	4	
2HCE 0125 030 S04	1.25	3	40	4		2HCE 040 110 S06	4	11	45	6	
2HCE 013 032 S04	1.3	3.2	40	4		2HCE 040 110 070	4	11	70	6	
2HCE 0135 032 S04	1.35	3.2	40	4		2HCE 041 110 S06	4.1	11	45	6	
2HCE 014 035 S04	1.4	3.5	40	4		2HCE 042 110 S06	4.2	11	45	6	
2HCE 0145 035 S04	1.45	3.5	40	4		2HCE 043 110 S06	4.3	11	45	6	
2HCE 015 040 S03	1.5	4	40	3		2HCE 044 110 S06	4.4	11	45	6	
2HCE 015 040 S04	1.5	4	40	4		2HCE 045 110 S06	4.5	11	45	6	
2HCE 015 040 S06	1.5	4	40	6		2HCE 046 110 S06	4.6	11	45	6	
2HCE 015 040 060	1.5	4	60	6		2HCE 047 110 S06	4.7	11	45	6	
2HCE 0155 040 S04	1.55	4	40	4		2HCE 048 110 S06	4.8	11	45	6	
2HCE 016 040 S04	1.6	4	40	4		2HCE 049 110 S06	4.9	11	45	6	
2HCE 0165 040 S04	1.65	4	40	4		2HCE 050 130 S06	5	13	50	6	



단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤희크 Shank Dia d	비고					
2HCE 050 130 080	5	13	80	6						
2HCE 051 130 S06	5.1	13	50	6						
2HCE 052 130 S06	5.2	13	50	6						
2HCE 053 130 S06	5.3	13	50	6						
2HCE 054 130 S06	5.4	13	50	6						
2HCE 055 130 S06	5.5	13	50	6						
2HCE 056 130 S06	5.6	13	50	6						
2HCE 057 130 S06	5.7	13	50	6						
2HCE 058 130 S06	5.8	13	50	6						
2HCE 059 130 S06	5.9	13	50	6						
2HCE 060 130 S06	6	13	50	6						
2HCE 060 130 080	6	13	80	6						
2HCE 061 150 S08	6.1	15	70	8						
2HCE 062 150 S08	6.2	15	70	8						
2HCE 063 150 S08	6.3	15	70	8						
2HCE 064 150 S08	6.4	15	70	8						
2HCE 065 160 S08	6.5	16	60	8						
2HCE 070 160 S08	7	16	60	8						
2HCE 075 160 S08	7.5	16	60	8						
2HCE 080 190 S08	8	19	60	8						
2HCE 085 190 S10	8.5	19	70	10						
2HCE 090 190 S10	9	19	70	10						
2HCE 095 190 S10	9.5	19	70	10						
2HCE 100 220 S10	10	22	70	10						
2HCE 105 220 S12	10.5	22	75	12						
2HCE 110 220 S12	11	22	75	12						
2HCE 115 220 S12	11.5	22	75	12						
2HCE 120 260 S12	12	26	75	12						
2HCE 130 260 S14	13	26	80	14						
2HCE 140 260 S14	14	26	80	14						
2HCE 140 260 S16	14	26	90	16						
2HCE 150 350 S16	15	35	100	16						
2HCE 160 350 S16	16	35	100	16						
2HCE 170 350 S18	17	35	100	18						
2HCE 180 350 S18	18	35	100	18						
2HCE 200 400 S20	20	40	100	20						



- HRc55이하의 고경도강, 프리하드강, 공구강, 주철등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 균일한 런아웃 공차관리로 공구의 성능을 향상시켰습니다.
- 다양한 날길이와 전장을 채택, 다양한 작업에 효율성을 극대화 하였습니다.
- 코너부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- Endmill for various work materials, hardened steel(HRc~55), pre-hardened steel, tool steel and cast iron
- Good wear resistance by Si-based PVD coating.
- Improve tool performance by even run-out and tolerance control.
- Various flute and overall length design for covering wide range applications as well as high efficiency machining.
- Minimize edge chipping by improving corner strength.



D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø14 ~ 25	-0.015 ~ -0.03mm

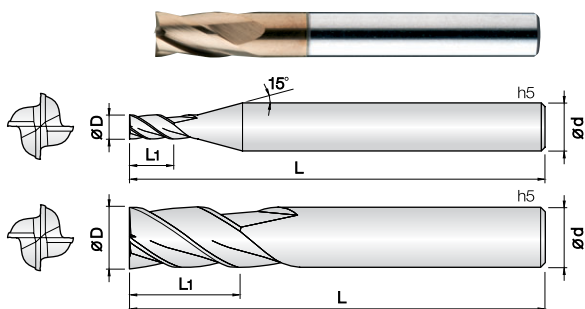
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤프트 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤프트 Shank Dia d	비고
2LEM 010 030 S06	1	3	60	6		2LEM 100 350 S10	10	35	90	10	
2LEM 010 050 S06	1	5	60	6		2LEM 100 400 S10	10	40	90	10	
2LEM 010 070 S06	1	7	60	6		2LEM 100 450 S10	10	45	100	10	
2LEM 010 100 S06	1	10	60	6		2LEM 100 500 S10	10	50	100	10	
2LEM 010 120 S06	1	12	60	6		2LEM 100 550 S10	10	55	110	10	
2LEM 010 150 S06	1	15	60	6		2LEM 100 600 S10	10	60	110	10	
2LEM 015 060 S06	1.5	6	60	6		2LEM 100 650 S10	10	65	120	10	
2LEM 015 075 S06	1.5	7.5	60	6		2LEM 100 700 S10	10	70	120	10	
2LEM 015 100 S06	1.5	10	60	6		2LEM 120 300 S12	12	30	90	12	
2LEM 015 150 S06	1.5	15	60	6		2LEM 120 350 110	12	35	110	12	
2LEM 015 200 S06	1.5	20	60	6		2LEM 120 400 S12	12	40	100	12	
2LEM 020 060 S06	2	6	60	6		2LEM 120 450 S12	12	45	100	12	
2LEM 020 100 S06	2	10	60	6		2LEM 120 500 S12	12	50	100	12	
2LEM 020 150 S06	2	15	60	6		2LEM 120 550 S12	12	55	110	12	
2LEM 020 200 S06	2	20	60	6		2LEM 120 600 S12	12	60	110	12	
2LEM 030 120 S06	3	12	70	6		2LEM 120 700 S12	12	70	130	12	
2LEM 030 150 S06	3	15	70	6		2LEM 120 800 S12	12	80	130	12	
2LEM 030 200 S06	3	20	70	6		2LEM 140 500 S14	14	50	110	14	
2LEM 030 250 S06	3	25	70	6		2LEM 160 400 160	16	40	160	16	
2LEM 030 300 S06	3	30	70	6		2LEM 160 550 S16	16	55	120	16	
2LEM 040 150 S06	4	15	70	6		2LEM 160 700 S16	16	70	130	16	
2LEM 040 200 S06	4	20	70	6		2LEM 160 800 S16	16	80	160	16	
2LEM 040 300 S06	4	30	75	6		2LEM 160 1000 S16	16	100	160	16	
2LEM 040 350 S06	4	35	75	6		2LEM 200 500 160	20	50	160	20	
2LEM 040 400 S06	4	40	80	6		2LEM 200 600 S20	20	60	130	20	
2LEM 050 200 S06	5	20	80	6		2LEM 200 1000 S20	20	100	200	20	
2LEM 050 250 S06	5	25	70	6		2LEM 250 750 S25	25	75	160	25	
2LEM 050 300 S06	5	30	75	6							
2LEM 050 400 S06	5	40	80	6							
2LEM 060 200 S06	6	20	75	6							
2LEM 060 200 100	6	20	100	6							
2LEM 060 250 S06	6	25	75	6							
2LEM 060 300 S06	6	30	80	6							
2LEM 060 350 S06	6	35	80	6							
2LEM 060 400 S06	6	40	90	6							
New 2LEM 060 450 S06	6	45	90	6							
New 2LEM 060 500 S06	6	50	100	6							
2LEM 080 250 S08	8	25	75	8							
2LEM 080 250 100	8	25	100	8							
2LEM 080 300 S08	8	30	80	8							
2LEM 080 350 S08	8	35	80	8							
2LEM 080 400 S08	8	40	90	8							
2LEM 080 450 S08	8	45	100	8							
2LEM 080 500 S08	8	50	100	8							
2LEM 080 550 S08	8	55	100	8							
New 2LEM 080 600 S08	8	60	110	8							
2LEM 100 300 S10	10	30	80	10							
2LEM 100 300 110	10	30	110	10							

# 4HSE 4 Flutes High Speed Short Length End Mills

## 4날 고속가공용 짧은 길이 엔드밀

HARD series



- 고정도강(HRc50~60), 프리하드강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 짧은 날장의 채택으로 강력절삭에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 짧은 전장을 채택하여 열박음척 사용이 용이합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel(HRc50~60)
- Good wear resistance by Si-based PVD coating.
- Optimum for heavy condition by short flute design.
- Reinforced edge design for preventing edge chipping.
- Short overall length for easy use with shrinking chuck.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

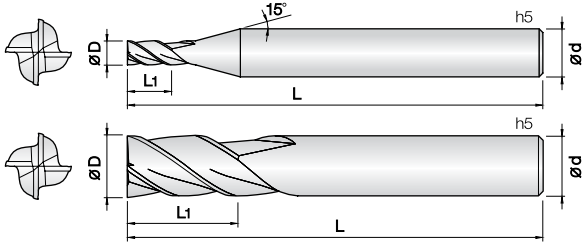
4 WC 미립자 TISIN Coating +D +0 -0.01 -0.01 -0.025 -0.015 -0.03 30° Helix Angle Shield Edge

D Size	D Tolerance
ø0.5 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤프트 Shank Dia d	비고				
4HSE 005 0075 S04	0.5	0.75	40	4					
4HSE 006 009 S04	0.6	0.9	40	4					
4HSE 008 012 S04	0.8	1.2	40	4					
4HSE 010 015 S04	1	1.5	40	4					
4HSE 012 020 S04	1.2	2	40	4					
4HSE 015 022 S04	1.5	2.2	40	4					
4HSE 020 035 S04	2	3.5	40	4					
4HSE 020 035 S06	2	3.5	40	6					
4HSE 030 045 S04	3	4.5	40	4					
4HSE 030 045 S06	3	4.5	40	6					
4HSE 040 060 S04	4	6	40	4					
4HSE 040 060 S06	4	6	40	6					
4HSE 050 075 S06	5	7.5	45	6					
4HSE 060 090 S06	6	9	45	6					
4HSE 080 120 S08	8	12	55	8					
4HSE 100 150 S10	10	15	60	10					
4HSE 120 180 S12	12	18	65	12					
4HSE 160 240 S16	16	24	75	16					

## 4날 고속가공용 표준 길이 엔드밀



- 고경도강(HRc50~60), 프리하든강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel(HRc50~60)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

4

WC  
미립자

TISIN  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

30°  
Helix Angle

Shield Edge

D Size	D Tolerance
ø0.5 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø13 ~ 20	-0.015 ~ -0.03mm

단위 : mm

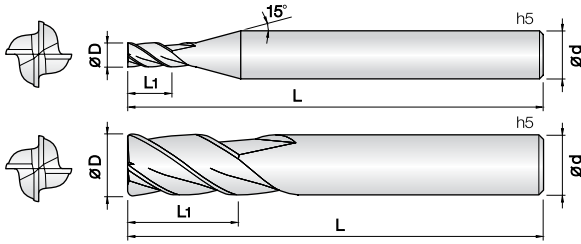
Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4HCE 005 010 S04	0.5	1	40	4		4HCE 070 160 S08	7	16	60	8	
4HCE 006 012 S04	0.6	1.2	40	4		4HCE 075 160 S08	7.5	16	60	8	
4HCE 007 014 S04	0.7	1.4	40	4		4HCE 080 190 S08	8	19	60	8	
4HCE 008 020 S04	0.8	2	40	4		4HCE 085 190 S10	8.5	19	70	10	
4HCE 009 018 S04	0.9	1.8	40	4		4HCE 090 190 S10	9	19	70	10	
4HCE 010 025 S03	1	2.5	40	3		4HCE 095 190 S10	9.5	19	70	10	
4HCE 010 025 S04	1	2.5	40	4		4HCE 100 220 S10	10	22	70	10	
4HCE 010 025 S06	1	2.5	40	6		4HCE 105 220 S12	10.5	22	75	12	
4HCE 010 025 060	1	2.5	60	6		4HCE 110 220 S12	11	22	75	12	
4HCE 010 025 080	1	2.5	80	6		4HCE 115 220 S12	11.5	22	75	12	
4HCE 012 030 S03	1.2	3	40	3		4HCE 120 260 S12	12	26	75	12	
4HCE 012 030 S04	1.2	3	40	4		4HCE 130 260 S14	13	26	80	14	
4HCE 012 030 S06	1.2	3	40	6		4HCE 140 260 S14	14	26	80	14	
4HCE 012 030 060	1.2	3	60	6		4HCE 140 260 S16	14	26	90	16	
4HCE 015 040 S03	1.5	4	40	3		4HCE 150 350 S16	15	35	100	16	
4HCE 015 040 S04	1.5	4	40	4		4HCE 160 350 S16	16	35	100	16	
4HCE 015 040 S06	1.5	4	40	6		4HCE 170 350 S18	17	35	100	18	
4HCE 015 040 060	1.5	4	60	6		4HCE 180 350 S18	18	35	100	18	
4HCE 015 040 080	1.5	4	80	6		4HCE 200 400 S20	20	40	100	20	
4HCE 020 060 S03	2	6	40	3							
4HCE 020 060 S04	2	6	40	4							
4HCE 020 060 S06	2	6	40	6							
4HCE 020 060 060	2	6	60	6							
4HCE 020 060 100	2	6	100	6							
4HCE 025 080 S03	2.5	8	45	3							
4HCE 025 080 S04	2.5	8	45	4							
4HCE 025 080 S06	2.5	8	45	6							
4HCE 025 080 070	2.5	8	70	6							
4HCE 025 080 100	2.5	8	100	6							
4HCE 030 080 S03	3	8	45	3							
4HCE 030 080 S04	3	8	45	4							
4HCE 030 080 S06	3	8	45	6							
4HCE 030 080 070	3	8	70	6							
4HCE 030 080 100	3	8	100	6							
4HCE 035 100 S06	3.5	10	45	6							
4HCE 040 110 S04	4	11	45	4							
4HCE 040 110 S06	4	11	45	6							
4HCE 040 110 070	4	11	70	6							
4HCE 040 110 100	4	11	100	6							
4HCE 045 110 S06	4.5	11	45	6							
4HCE 050 130 S06	5	13	50	6							
4HCE 050 130 080	5	13	80	6							
4HCE 050 130 100	5	13	100	6							
4HCE 055 130 S06	5.5	13	50	6							
4HCE 060 130 S06	6	13	50	6							
4HCE 060 130 080	6	13	80	6							
4HCE 060 130 100	6	13	100	6							
4HCE 065 160 S08	6.5	16	60	8							



# 4LEM 4Flutes Long Length End Mills

## 4날 긴 길이 엔드밀

HARD series



- HRC55이하의 고경도강, 프리하드강, 공구강, 주철등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 균일한 런아웃 공차관리로 공구의 성능을 향상시켰습니다.
- 다양한 날길이와 전장을 채택, 다양한 작업에 효율성을 극대화 하였습니다.
- 코너부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- Endmill for various work materials, hardened steel(HRC~55), pre-hardened steel, tool steel and cast iron
- Good wear resistance by Si-based PVD coating.
- Improve tool performance by even run-out and tolerance control.
- Various flute and overall length design for covering wide range applications as well as high efficiency machining.
- Minimize edge chipping by improving corner strength.

4

WC  
미립자

TISIN  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

30°  
Helix Angle

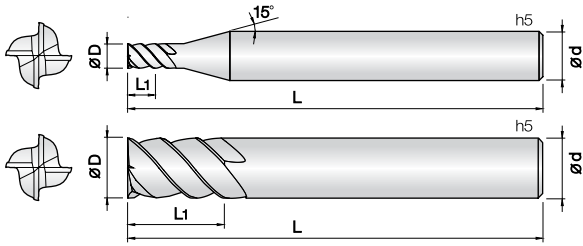
Shield Edge

D Size	D Tolerance
ø0.5 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø14 ~ 25	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
New 4LEM 005 015 S04	0.5	1.5	40	4		4LEM 080 450 S08	8	45	100	8	
New 4LEM 006 018 S04	0.6	1.8	40	4		4LEM 080 500 S08	8	50	100	8	
New 4LEM 008 024 S04	0.8	2.4	40	4		4LEM 080 550 S08	8	55	100	8	
4LEM 010 030 S06	1	3	60	6		New 4LEM 080 600 S08	8	60	110	8	
4LEM 010 050 S06	1	5	60	6		4LEM 100 300 S10	10	30	80	10	
4LEM 010 070 S06	1	7	60	6		4LEM 100 300 110	10	30	110	10	
New 4LEM 010 100 S06	1	10	60	6		4LEM 100 350 S10	10	35	90	10	
New 4LEM 010 120 S06	1	12	60	6		4LEM 100 400 S10	10	40	90	10	
4LEM 015 060 S06	1.5	6	60	6		4LEM 100 450 S10	10	45	100	10	
4LEM 015 080 S06	1.5	8	60	6		4LEM 100 500 S10	10	50	100	10	
4LEM 015 100 S06	1.5	10	60	6		4LEM 100 550 S10	10	55	100	10	
New 4LEM 015 120 S06	1.5	12	60	6		4LEM 100 600 S10	10	60	110	10	
New 4LEM 015 150 S06	1.5	15	60	6		4LEM 100 650 S10	10	65	120	10	
4LEM 020 080 S06	2	8	60	6		4LEM 100 700 S10	10	70	120	10	
4LEM 020 100 S06	2	10	60	6		4LEM 120 300 S12	12	30	90	12	
4LEM 020 120 S06	2	12	60	6		4LEM 120 350 110	12	35	110	12	
4LEM 020 150 S06	2	15	60	6		4LEM 120 400 S12	12	40	100	12	
4LEM 030 100 S06	3	10	70	6		4LEM 120 450 S12	12	45	100	12	
4LEM 030 150 S06	3	15	70	6		4LEM 120 500 S12	12	50	100	12	
4LEM 030 200 S06	3	20	70	6		4LEM 120 550 S12	12	55	110	12	
4LEM 030 250 S06	3	25	70	6		4LEM 120 600 S12	12	60	110	12	
4LEM 030 300 S06	3	30	70	6		4LEM 120 700 S12	12	70	130	12	
4LEM 040 120 S06	4	12	70	6		4LEM 120 800 S12	12	80	130	12	
4LEM 040 150 S04	4	15	70	4		4LEM 140 500 S14	14	50	110	14	
4LEM 040 150 S06	4	15	70	6		4LEM 160 400 160	16	40	160	16	
4LEM 040 200 S04	4	20	70	4		4LEM 160 550 S16	16	55	120	16	
4LEM 040 200 S06	4	20	70	6		4LEM 160 700 S16	16	70	130	16	
4LEM 040 250 S06	4	25	70	6		4LEM 160 900 S16	16	90	150	16	
4LEM 040 300 S06	4	30	75	6		4LEM 160 1000 S16	16	100	160	16	
4LEM 040 350 S06	4	35	75	6		4LEM 200 500 160	20	50	160	20	
4LEM 040 400 S06	4	40	80	6		4LEM 200 600 S20	20	60	130	20	
4LEM 050 200 S06	5	20	70	6		4LEM 200 800 S20	20	80	160	20	
4LEM 050 250 S06	5	25	75	6		4LEM 200 1000 S20	20	100	200	20	
4LEM 050 300 S06	5	30	80	6		4LEM 250 750 S25	25	75	160	25	
4LEM 050 400 S06	5	40	80	6							
4LEM 060 200 S06	6	20	75	6							
4LEM 060 200 100	6	20	100	6							
4LEM 060 250 S06	6	25	75	6							
4LEM 060 300 S06	6	30	80	6							
4LEM 060 350 S06	6	35	80	6							
4LEM 060 400 S06	6	40	90	6							
New 4LEM 060 450 S06	6	45	90	6							
New 4LEM 060 500 S06	6	50	100	6							
4LEM 080 250 S08	8	25	75	8							
4LEM 080 250 100	8	25	100	8							
4LEM 080 300 S08	8	30	80	8							
4LEM 080 350 S08	8	35	90	8							
4LEM 080 400 S08	8	40	90	8							

### 4날 고속가공용 45° 헬릭스 엔드밀



- 고경도강(HRc50~62), 프리하든강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 45° 헬릭스 형상으로 설계하여 고속,고이송 가공에 적합합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel (HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.

4

UWC  
초미립자

TISIN  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

45°  
Helix Angle

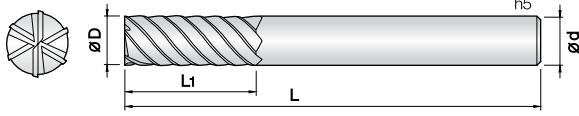
Shield Edge

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø14 ~ 25	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고								
4HEM 010 025 S06	1	2.5	40	6									
4HEM 010 035 S06	1	3.5	40	6									
4HEM 010 050 S06	1	5	45	6									
4HEM 012 030 S06	1.2	3	40	6									
4HEM 015 040 S06	1.5	4	40	6									
4HEM 015 060 S06	1.5	6	40	6									
4HEM 015 080 S06	1.5	8	45	6									
4HEM 020 050 S06	2	5	40	6									
4HEM 020 080 S06	2	8	45	6									
4HEM 020 100 S06	2	10	50	6									
4HEM 030 080 S06	3	8	45	6									
4HEM 030 120 S06	3	12	50	6									
4HEM 030 150 S06	3	15	55	6									
4HEM 040 110 S06	4	11	45	6									
4HEM 040 160 S06	4	16	55	6									
4HEM 040 200 S06	4	20	60	6									
4HEM 050 130 S06	5	13	50	6									
4HEM 050 180 S06	5	18	60	6									
4HEM 050 250 S06	5	25	70	6									
4HEM 060 130 S06	6	13	50	6									
4HEM 060 200 S06	6	20	60	6									
4HEM 060 250 S06	6	25	70	6									
4HEM 080 200 S08	8	20	60	8									
4HEM 080 250 S08	8	25	70	8									
4HEM 080 300 S08	8	30	75	8									
4HEM 080 400 S08	8	40	90	8									
4HEM 100 220 S10	10	22	70	10									
4HEM 100 300 S10	10	30	80	10									
4HEM 100 400 S10	10	40	90	10									
4HEM 100 500 S10	10	50	100	10									
4HEM 120 260 S12	12	26	75	12									
4HEM 120 400 S12	12	40	90	12									
4HEM 120 500 S12	12	50	100	12									
4HEM 120 600 S12	12	60	110	12									
4HEM 140 300 S14	14	30	80	14									
4HEM 140 500 S14	14	50	110	14									
4HEM 160 350 S16	16	35	90	16									
4HEM 160 500 S16	16	50	110	16									
4HEM 160 650 S16	16	65	120	16									
4HEM 200 400 S20	20	40	100	20									
4HEM 200 500 S20	20	50	110	20									
4HEM 200 700 S20	20	70	130	20									
4HEM 250 800 S25	25	80	160	25									

### 6&8날 고속가공용 45° 헬릭스 엔드밀



HARD series

- 고경도강(HRc50~62), 프리하드강 계열의 고경도가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 균일한 런아웃과 고정밀 공차 적용으로 초정밀가공에 적합합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 45° 헬릭스 형상으로 설계하여 고속,고이송 가공에 적합합니다.
- 초미립자 초경합금(0.2μm)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- Precise run-out and tolerance for finish machining.
- Reinforced edge design for preventing edge chipping.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2 μm) WC grade.

6

8

UWC  
초미립자

TISIN  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

45°  
Helix Angle

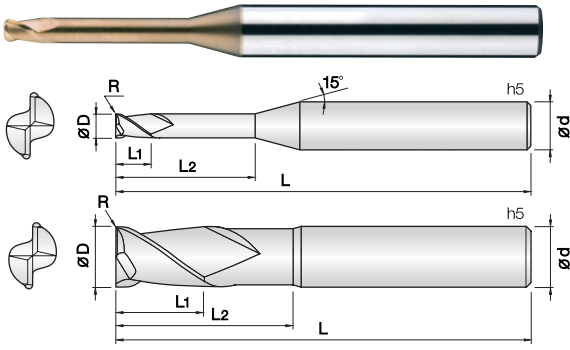
Shield Edge

D Size	D Tolerance
Ø3 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 25	-0.015 ~ -0.03mm

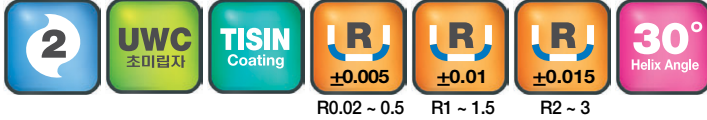
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고					
6HEM 030 100 S06	3	10	50	6						
6HEM 030 150 S06	3	15	50	6						
6HEM 040 120 S06	4	12	50	6						
6HEM 040 160 S06	4	16	50	6						
6HEM 050 150 S06	5	15	50	6						
6HEM 050 200 S06	5	20	60	6						
6HEM 060 150 S06	6	15	50	6						
6HEM 060 200 S06	6	20	60	6						
6HEM 060 250 S06	6	25	65	6						
6HEM 060 300 S06	6	30	70	6						
6HEM 060 350 S06	6	35	75	6						
6HEM 080 200 S08	8	20	60	8						
6HEM 080 250 S08	8	25	65	8						
6HEM 080 300 S08	8	30	75	8						
6HEM 080 350 S08	8	35	80	8						
6HEM 080 400 S08	8	40	90	8						
6HEM 080 450 S08	8	45	100	8						
6HEM 080 500 S08	8	50	100	8						
6HEM 100 250 S10	10	25	70	10						
6HEM 100 350 S10	10	35	90	10						
6HEM 100 450 S10	10	45	100	10						
6HEM 100 500 S10	10	50	100	10						
6HEM 100 600 S10	10	60	110	10						
6HEM 120 300 S12	12	30	80	12						
6HEM 120 400 S12	12	40	90	12						
6HEM 120 500 S12	12	50	100	12						
6HEM 120 600 S12	12	60	110	12						
6HEM 120 700 S12	12	70	120	12						
6HEM 160 350 S16	16	35	90	16						
6HEM 160 500 S16	16	50	110	16						
6HEM 160 650 S16	16	65	120	16						
6HEM 160 800 S16	16	80	150	16						
6HEM 160 900 S16	16	90	160	16						
6HEM 160 1000 S16	16	100	160	16						
6HEM 200 450 S20	20	45	100	20						
6HEM 200 600 S20	20	60	120	20						
6HEM 200 800 S20	20	80	150	20						
6HEM 200 900 S20	20	90	160	20						
6HEM 200 1000 S20	20	100	160	20						
6HEM 200 1100 S20	20	110	170	20						
6HEM 200 1200 S20	20	120	180	20						
8HEM 250 1000 S25	25	100	160	25						
8HEM 250 1250 S25	25	125	200	25						

## 2날 리브코너 레디우스 엔드밀



- 고경도강(HRc50~62), 프리하든강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel (HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and flute length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.



D Size	D Tolerance
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2CRE 002 0002 010	0.2 X R0.02	0.2	1	40	4		2CRE 006 0002 040	0.6 X R0.02	0.6	4	45	4	
2CRE 002 0002 015	0.2 X R0.02	0.2	1.5	40	4		2CRE 006 0002 060	0.6 X R0.02	0.6	6	45	4	
2CRE 002 0005 010	0.2 X R0.05	0.2	1	40	4		2CRE 006 0002 080	0.6 X R0.02	0.6	8	45	4	
2CRE 002 0005 015	0.2 X R0.05	0.2	1.5	40	4		2CRE 006 0002 100	0.6 X R0.02	0.6	10	50	4	
2CRE 003 0005 010	0.3 X R0.05	0.3	1	40	4		2CRE 006 0005 020	0.6 X R0.05	0.6	2	45	4	
2CRE 003 0005 020	0.3 X R0.05	0.3	2	40	4		2CRE 006 0005 030	0.6 X R0.05	0.6	3	45	4	
2CRE 003 0005 030	0.3 X R0.05	0.3	3	40	4		2CRE 006 0005 040	0.6 X R0.05	0.6	4	45	4	
2CRE 004 0005 010	0.4 X R0.05	0.4	1	40	4		2CRE 006 0005 060	0.6 X R0.05	0.6	6	45	4	
2CRE 004 0005 020	0.4 X R0.05	0.4	2	40	4		2CRE 006 0005 080	0.6 X R0.05	0.6	8	45	4	
2CRE 004 0005 030	0.4 X R0.05	0.4	3	40	4		2CRE 006 0005 100	0.6 X R0.05	0.6	10	50	4	
2CRE 004 0005 040	0.4 X R0.05	0.4	4	40	4		2CRE 006 001 020	0.6 X R0.1	0.6	2	45	4	
2CRE 004 001 010	0.4 X R0.1	0.4	1	40	4		2CRE 006 001 030	0.6 X R0.1	0.6	3	45	4	
2CRE 004 001 015	0.4 X R0.1	0.4	1.5	40	4		2CRE 006 001 040	0.6 X R0.1	0.6	4	45	4	
2CRE 004 001 020	0.4 X R0.1	0.4	2	40	4		2CRE 006 001 060	0.6 X R0.1	0.6	6	45	4	
2CRE 004 001 030	0.4 X R0.1	0.4	3	40	4		2CRE 006 001 080	0.6 X R0.1	0.6	8	45	4	
2CRE 004 001 040	0.4 X R0.1	0.4	4	40	4		2CRE 006 001 100	0.6 X R0.1	0.6	10	50	4	
2CRE 005 0002 010	0.5 X R0.02	0.5	1	45	4		2CRE 007 001 020	0.7 X R0.1	0.7	2	45	4	
2CRE 005 0002 015	0.5 X R0.02	0.5	1.5	45	4		2CRE 007 001 040	0.7 X R0.1	0.7	4	45	4	
2CRE 005 0002 020	0.5 X R0.02	0.5	2	45	4		2CRE 007 001 060	0.7 X R0.1	0.7	6	45	4	
2CRE 005 0002 025	0.5 X R0.02	0.5	2.5	45	4		2CRE 008 0002 020	0.8 X R0.02	0.8	2	45	4	
2CRE 005 0002 030	0.5 X R0.02	0.5	3	45	4		2CRE 008 0002 040	0.8 X R0.02	0.8	4	45	4	
2CRE 005 0002 040	0.5 X R0.02	0.5	4	45	4		2CRE 008 0002 060	0.8 X R0.02	0.8	6	45	4	
2CRE 005 0002 050	0.5 X R0.02	0.5	5	45	4		2CRE 008 0002 080	0.8 X R0.02	0.8	8	45	4	
2CRE 005 0002 060	0.5 X R0.02	0.5	6	45	4		2CRE 008 0002 100	0.8 X R0.02	0.8	10	50	4	
2CRE 005 0002 080	0.5 X R0.02	0.5	8	45	4		2CRE 008 0005 020	0.8 X R0.05	0.8	2	45	4	
2CRE 005 0002 100	0.5 X R0.02	0.5	10	50	4		2CRE 008 0005 040	0.8 X R0.05	0.8	4	45	4	
2CRE 005 0005 010	0.5 X R0.05	0.5	1	45	4		2CRE 008 0005 060	0.8 X R0.05	0.8	6	45	4	
2CRE 005 0005 015	0.5 X R0.05	0.5	1.5	45	4		2CRE 008 0005 080	0.8 X R0.05	0.8	8	45	4	
2CRE 005 0005 020	0.5 X R0.05	0.5	2	45	4		2CRE 008 0005 100	0.8 X R0.05	0.8	10	50	4	
2CRE 005 0005 025	0.5 X R0.05	0.5	2.5	45	4		2CRE 008 001 020	0.8 X R0.1	0.8	2	45	4	
2CRE 005 0005 030	0.5 X R0.05	0.5	3	45	4		2CRE 008 001 040	0.8 X R0.1	0.8	4	45	4	
2CRE 005 0005 040	0.5 X R0.05	0.5	4	45	4		2CRE 008 001 060	0.8 X R0.1	0.8	6	45	4	
2CRE 005 0005 050	0.5 X R0.05	0.5	5	45	4		2CRE 008 001 080	0.8 X R0.1	0.8	8	45	4	
2CRE 005 0005 060	0.5 X R0.05	0.5	6	45	4		2CRE 008 001 100	0.8 X R0.1	0.8	10	50	4	
2CRE 005 0005 080	0.5 X R0.05	0.5	8	45	4		2CRE 008 002 020	0.8 X R0.2	0.8	2	45	4	
2CRE 005 0005 100	0.5 X R0.05	0.5	10	50	4		2CRE 008 002 040	0.8 X R0.2	0.8	4	45	4	
2CRE 005 001 010	0.5 X R0.1	0.5	1	45	4		2CRE 008 002 060	0.8 X R0.2	0.8	6	45	4	
2CRE 005 001 015	0.5 X R0.1	0.5	1.5	45	4		2CRE 008 002 080	0.8 X R0.2	0.8	8	45	4	
2CRE 005 001 020	0.5 X R0.1	0.5	2	45	4		2CRE 008 002 100	0.8 X R0.2	0.8	10	50	4	
2CRE 005 001 025	0.5 X R0.1	0.5	2.5	45	4		2CRE 010 0005 040	1 X R0.05	1	4	45	4	
2CRE 005 001 030	0.5 X R0.1	0.5	3	45	4		2CRE 010 0005 060	1 X R0.05	1	6	45	4	
2CRE 005 001 040	0.5 X R0.1	0.5	4	45	4		2CRE 010 0005 080	1 X R0.05	1	8	45	4	
2CRE 005 001 050	0.5 X R0.1	0.5	5	45	4		2CRE 010 0005 100	1 X R0.05	1	10	50	4	
2CRE 005 001 060	0.5 X R0.1	0.5	6	45	4		2CRE 010 0005 120	1 X R0.05	1	12	50	4	
2CRE 005 001 080	0.5 X R0.1	0.5	8	45	4		2CRE 010 0005 160	1 X R0.05	1	16	50	4	
2CRE 005 001 100	0.5 X R0.1	0.5	10	50	4		2CRE 010 0005 200	1 X R0.05	1	20	50	4	
2CRE 006 0002 020	0.6 X R0.02	0.6	2	45	4		2CRE 010 0005 220	1 X R0.05	1	22	60	4	
2CRE 006 0002 030	0.6 X R0.02	0.6	3	45	4		2CRE 010 0005 250	1 X R0.05	1	25	60	4	



단위 : mm

HARD series

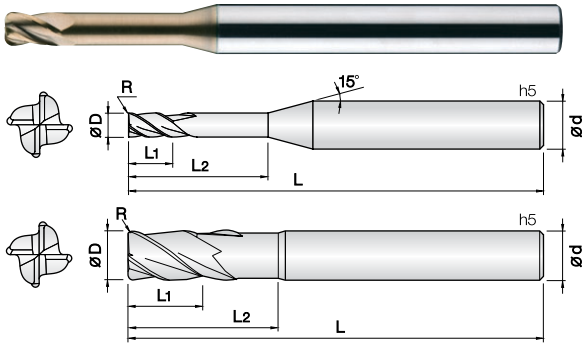
Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2CRE 010 001 040	1 X R0.1	1	4	45	4		2CRE 015 002 200	1.5 X R0.2	1.5	20	50	4	
2CRE 010 001 060	1 X R0.1	1	6	45	4		2CRE 015 002 220	1.5 X R0.2	1.5	22	60	4	
2CRE 010 001 080	1 X R0.1	1	8	45	4		2CRE 015 002 250	1.5 X R0.2	1.5	25	60	4	
2CRE 010 001 100	1 X R0.1	1	10	50	4		2CRE 015 003 040	1.5 X R0.3	1.5	4	45	4	
2CRE 010 001 120	1 X R0.1	1	12	50	4		2CRE 015 003 060	1.5 X R0.3	1.5	6	45	4	
2CRE 010 001 160	1 X R0.1	1	16	50	4		2CRE 015 003 080	1.5 X R0.3	1.5	8	45	4	
2CRE 010 001 200	1 X R0.1	1	20	50	4		2CRE 015 003 100	1.5 X R0.3	1.5	10	50	4	
2CRE 010 001 220	1 X R0.1	1	22	60	4		2CRE 015 003 120	1.5 X R0.3	1.5	12	50	4	
2CRE 010 001 250	1 X R0.1	1	25	60	4		2CRE 015 003 160	1.5 X R0.3	1.5	16	50	4	
2CRE 010 002 040	1 X R0.2	1	4	45	4		2CRE 015 003 200	1.5 X R0.3	1.5	20	50	4	
2CRE 010 002 060	1 X R0.2	1	6	45	4		2CRE 015 003 220	1.5 X R0.3	1.5	22	60	4	
2CRE 010 002 080	1 X R0.2	1	8	45	4		2CRE 015 003 250	1.5 X R0.3	1.5	25	60	4	
2CRE 010 002 100	1 X R0.2	1	10	50	4		2CRE 015 005 040	1.5 X R0.5	1.5	4	45	4	
2CRE 010 002 120	1 X R0.2	1	12	50	4		2CRE 015 005 060	1.5 X R0.5	1.5	6	45	4	
2CRE 010 002 160	1 X R0.2	1	16	50	4		2CRE 015 005 080	1.5 X R0.5	1.5	8	45	4	
2CRE 010 002 200	1 X R0.2	1	20	50	4		2CRE 015 005 100	1.5 X R0.5	1.5	10	50	4	
2CRE 010 002 220	1 X R0.2	1	22	60	4		2CRE 015 005 120	1.5 X R0.5	1.5	12	50	4	
2CRE 010 002 250	1 X R0.2	1	25	60	4		2CRE 015 005 160	1.5 X R0.5	1.5	16	50	4	
2CRE 010 003 040	1 X R0.3	1	4	45	4		2CRE 015 005 200	1.5 X R0.5	1.5	20	50	4	
2CRE 010 003 060	1 X R0.3	1	6	45	4		2CRE 015 005 220	1.5 X R0.5	1.5	22	60	4	
2CRE 010 003 080	1 X R0.3	1	8	45	4		2CRE 015 005 250	1.5 X R0.5	1.5	25	60	4	
2CRE 010 003 100	1 X R0.3	1	10	50	4		2CRE 020 001 060	2 X R0.1	2	6	45	4	
2CRE 010 003 120	1 X R0.3	1	12	50	4		2CRE 020 001 080	2 X R0.1	2	8	45	4	
2CRE 010 003 160	1 X R0.3	1	16	50	4		2CRE 020 001 100	2 X R0.1	2	10	50	4	
2CRE 010 003 200	1 X R0.3	1	20	50	4		2CRE 020 001 120	2 X R0.1	2	12	50	4	
2CRE 010 003 220	1 X R0.3	1	22	60	4		2CRE 020 001 160	2 X R0.1	2	16	50	4	
2CRE 010 003 250	1 X R0.3	1	25	60	4		2CRE 020 001 200	2 X R0.1	2	20	50	4	
2CRE 012 001 040	1.2 X R0.1	1.2	4	45	4		2CRE 020 001 250	2 X R0.1	2	25	60	4	
2CRE 012 001 060	1.2 X R0.1	1.2	6	45	4		2CRE 020 001 300	2 X R0.1	2	30	70	4	
2CRE 012 001 080	1.2 X R0.1	1.2	8	45	4		2CRE 020 002 060	2 X R0.2	2	6	45	4	
2CRE 012 001 100	1.2 X R0.1	1.2	10	50	4		2CRE 020 002 080	2 X R0.2	2	8	45	4	
2CRE 012 001 120	1.2 X R0.1	1.2	12	50	4		2CRE 020 002 100	2 X R0.2	2	10	50	4	
2CRE 012 001 160	1.2 X R0.1	1.2	16	50	4		2CRE 020 002 120	2 X R0.2	2	12	50	4	
2CRE 012 001 200	1.2 X R0.1	1.2	20	50	4		2CRE 020 002 160	2 X R0.2	2	16	50	4	
2CRE 012 002 040	1.2 X R0.2	1.2	4	45	4		2CRE 020 002 200	2 X R0.2	2	20	50	4	
2CRE 012 002 060	1.2 X R0.2	1.2	6	45	4		2CRE 020 002 250	2 X R0.2	2	25	60	4	
2CRE 012 002 080	1.2 X R0.2	1.2	8	45	4		2CRE 020 002 300	2 X R0.2	2	30	70	4	
2CRE 012 002 100	1.2 X R0.2	1.2	10	50	4		2CRE 020 003 060	2 X R0.3	2	6	45	4	
2CRE 012 002 120	1.2 X R0.2	1.2	12	50	4		2CRE 020 003 080	2 X R0.3	2	8	45	4	
2CRE 012 002 160	1.2 X R0.2	1.2	16	50	4		2CRE 020 003 100	2 X R0.3	2	10	50	4	
2CRE 012 002 200	1.2 X R0.2	1.2	20	50	4		2CRE 020 003 120	2 X R0.3	2	12	50	4	
2CRE 012 003 040	1.2 X R0.3	1.2	4	45	4		2CRE 020 003 160	2 X R0.3	2	16	50	4	
2CRE 012 003 060	1.2 X R0.3	1.2	6	45	4		2CRE 020 003 200	2 X R0.3	2	20	50	4	
2CRE 012 003 080	1.2 X R0.3	1.2	8	45	4		2CRE 020 003 250	2 X R0.3	2	25	60	4	
2CRE 012 003 100	1.2 X R0.3	1.2	10	50	4		2CRE 020 003 300	2 X R0.3	2	30	70	4	
2CRE 012 003 120	1.2 X R0.3	1.2	12	50	4		2CRE 020 005 060	2 X R0.5	2	6	45	4	
2CRE 012 003 160	1.2 X R0.3	1.2	16	50	4		2CRE 020 005 080	2 X R0.5	2	8	45	4	
2CRE 012 003 200	1.2 X R0.3	1.2	20	50	4		2CRE 020 005 100	2 X R0.5	2	10	50	4	
2CRE 015 001 040	1.5 X R0.1	1.5	4	45	4		2CRE 020 005 120	2 X R0.5	2	12	50	4	
2CRE 015 001 060	1.5 X R0.1	1.5	6	45	4		2CRE 020 005 160	2 X R0.5	2	16	50	4	
2CRE 015 001 080	1.5 X R0.1	1.5	8	45	4		2CRE 020 005 200	2 X R0.5	2	20	50	4	
2CRE 015 001 100	1.5 X R0.1	1.5	10	50	4		2CRE 020 005 250	2 X R0.5	2	25	60	4	
2CRE 015 001 120	1.5 X R0.1	1.5	12	50	4		2CRE 020 005 300	2 X R0.5	2	30	70	4	
2CRE 015 001 160	1.5 X R0.1	1.5	16	50	4		2CRE 025 001 100	2.5 X R0.1	2.5	10	50	4	
2CRE 015 001 200	1.5 X R0.1	1.5	20	50	4		2CRE 025 001 160	2.5 X R0.1	2.5	16	50	4	
2CRE 015 001 220	1.5 X R0.1	1.5	22	60	4		2CRE 025 001 200	2.5 X R0.1	2.5	20	50	4	
2CRE 015 001 250	1.5 X R0.1	1.5	25	60	4		2CRE 025 001 250	2.5 X R0.1	2.5	25	60	4	
2CRE 015 002 040	1.5 X R0.2	1.5	4	45	4		2CRE 025 001 300	2.5 X R0.1	2.5	30	70	4	
2CRE 015 002 060	1.5 X R0.2	1.5	6	45	4		2CRE 025 002 100	2.5 X R0.2	2.5	10	50	4	
2CRE 015 002 080	1.5 X R0.2	1.5	8	45	4		2CRE 025 002 160	2.5 X R0.2	2.5	16	50	4	
2CRE 015 002 100	1.5 X R0.2	1.5	10	50	4		2CRE 025 002 200	2.5 X R0.2	2.5	20	50	4	
2CRE 015 002 120	1.5 X R0.2	1.5	12	50	4		2CRE 025 002 250	2.5 X R0.2	2.5	25	60	4	
2CRE 015 002 160	1.5 X R0.2	1.5	16	50	4		2CRE 025 002 300	2.5 X R0.2	2.5	30	70	4	

단위 : mm

Order Number	날경 Diameter D × R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D × R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2CRE 025 003 100	2.5 X R0.3	2.5	10	50	4		2CRE 040 002 120	4 X R0.2	4	12	55	6	
2CRE 025 003 160	2.5 X R0.3	2.5	16	50	4		2CRE 040 002 160	4 X R0.2	4	16	55	6	
2CRE 025 003 200	2.5 X R0.3	2.5	20	50	4		2CRE 040 002 200	4 X R0.2	4	20	60	6	
2CRE 025 003 250	2.5 X R0.3	2.5	25	60	4		2CRE 040 002 250	4 X R0.2	4	25	65	6	
2CRE 025 003 300	2.5 X R0.3	2.5	30	70	4		2CRE 040 002 300	4 X R0.2	4	30	70	6	
2CRE 025 005 100	2.5 X R0.5	2.5	10	50	4		2CRE 040 002 350	4 X R0.2	4	35	75	6	
2CRE 025 005 160	2.5 X R0.5	2.5	16	50	4		2CRE 040 002 400	4 X R0.2	4	40	80	6	
2CRE 025 005 200	2.5 X R0.5	2.5	20	50	4		2CRE 040 002 450	4 X R0.2	4	45	90	6	
2CRE 025 005 250	2.5 X R0.5	2.5	25	60	4		2CRE 040 002 500	4 X R0.2	4	50	100	6	
2CRE 025 005 300	2.5 X R0.5	2.5	30	70	4		2CRE 040 003 050	4 X R0.3	4	12	50	4	
2CRE 030 001 100	3 X R0.1	3	10	50	6		2CRE 040 003 070	4 X R0.3	4	20	70	4	
2CRE 030 001 120	3 X R0.1	3	12	55	6		2CRE 040 003 120	4 X R0.3	4	12	55	6	
2CRE 030 001 160	3 X R0.1	3	16	55	6		2CRE 040 003 160	4 X R0.3	4	16	55	6	
2CRE 030 001 200	3 X R0.1	3	20	60	6		2CRE 040 003 200	4 X R0.3	4	20	60	6	
2CRE 030 001 250	3 X R0.1	3	25	65	6		2CRE 040 003 250	4 X R0.3	4	25	65	6	
2CRE 030 001 300	3 X R0.1	3	30	70	6		2CRE 040 003 300	4 X R0.3	4	30	70	6	
2CRE 030 001 350	3 X R0.1	3	35	75	6		2CRE 040 003 350	4 X R0.3	4	35	75	6	
2CRE 030 001 400	3 X R0.1	3	40	80	6		2CRE 040 003 400	4 X R0.3	4	40	80	6	
2CRE 030 002 100	3 X R0.2	3	10	50	6		2CRE 040 003 450	4 X R0.3	4	45	90	6	
2CRE 030 002 120	3 X R0.2	3	12	55	6		2CRE 040 003 500	4 X R0.3	4	50	100	6	
2CRE 030 002 160	3 X R0.2	3	16	55	6		2CRE 040 005 050	4 X R0.5	4	12	50	4	
2CRE 030 002 200	3 X R0.2	3	20	60	6		2CRE 040 005 070	4 X R0.5	4	20	70	4	
2CRE 030 002 250	3 X R0.2	3	25	65	6		2CRE 040 005 120	4 X R0.5	4	12	55	6	
2CRE 030 002 300	3 X R0.2	3	30	70	6		2CRE 040 005 160	4 X R0.5	4	16	55	6	
2CRE 030 002 350	3 X R0.2	3	35	75	6		2CRE 040 005 200	4 X R0.5	4	20	60	6	
2CRE 030 002 400	3 X R0.2	3	40	80	6		2CRE 040 005 250	4 X R0.5	4	25	65	6	
2CRE 030 003 100	3 X R0.3	3	10	50	6		2CRE 040 005 300	4 X R0.5	4	30	70	6	
2CRE 030 003 120	3 X R0.3	3	12	55	6		2CRE 040 005 350	4 X R0.5	4	35	75	6	
2CRE 030 003 160	3 X R0.3	3	16	55	6		2CRE 040 005 400	4 X R0.5	4	40	80	6	
2CRE 030 003 200	3 X R0.3	3	20	60	6		2CRE 040 005 450	4 X R0.5	4	45	90	6	
2CRE 030 003 250	3 X R0.3	3	25	65	6		2CRE 040 005 500	4 X R0.5	4	50	100	6	
2CRE 030 003 300	3 X R0.3	3	30	70	6		2CRE 040 010 050	4 X R1	4	12	50	4	
2CRE 030 003 350	3 X R0.3	3	35	75	6		2CRE 040 010 070	4 X R1	4	20	70	4	
2CRE 030 003 400	3 X R0.3	3	40	80	6		2CRE 040 010 120	4 X R1	4	12	55	6	
2CRE 030 005 100	3 X R0.5	3	10	50	6		2CRE 040 010 160	4 X R1	4	16	55	6	
2CRE 030 005 120	3 X R0.5	3	12	55	6		2CRE 040 010 200	4 X R1	4	20	60	6	
2CRE 030 005 160	3 X R0.5	3	16	55	6		2CRE 040 010 250	4 X R1	4	25	65	6	
2CRE 030 005 200	3 X R0.5	3	20	60	6		2CRE 040 010 300	4 X R1	4	30	70	6	
2CRE 030 005 250	3 X R0.5	3	25	65	6		2CRE 040 010 350	4 X R1	4	35	75	6	
2CRE 030 005 300	3 X R0.5	3	30	70	6		2CRE 040 010 400	4 X R1	4	40	80	6	
2CRE 030 005 350	3 X R0.5	3	35	75	6		2CRE 040 010 450	4 X R1	4	45	90	6	
2CRE 030 005 400	3 X R0.5	3	40	80	6		2CRE 040 010 500	4 X R1	4	50	100	6	
2CRE 030 010 100	3 X R1	3	10	50	6		2CRE 050 002 150	5 X R0.2	6	15	60	6	
2CRE 030 010 120	3 X R1	3	12	55	6		2CRE 050 002 250	5 X R0.2	6	25	70	6	
2CRE 030 010 160	3 X R1	3	16	55	6		2CRE 050 002 300	5 X R0.2	6	30	70	6	
2CRE 030 010 200	3 X R1	3	20	60	6		2CRE 050 002 400	5 X R0.2	6	40	80	6	
2CRE 030 010 250	3 X R1	3	25	65	6		2CRE 050 002 500	5 X R0.2	6	50	100	6	
2CRE 030 010 300	3 X R1	3	30	70	6		2CRE 050 005 150	5 X R0.5	6	15	60	6	
2CRE 030 010 350	3 X R1	3	35	75	6		2CRE 050 005 250	5 X R0.5	6	25	70	6	
2CRE 030 010 400	3 X R1	3	40	80	6		2CRE 050 005 300	5 X R0.5	6	30	70	6	
2CRE 040 001 050	4 X R0.1	4	12	50	4		2CRE 050 005 400	5 X R0.5	6	40	80	6	
2CRE 040 001 070	4 X R0.1	4	20	70	4		2CRE 050 005 500	5 X R0.5	6	50	100	6	
2CRE 040 001 120	4 X R0.1	4	12	55	6		2CRE 050 010 150	5 X R1	6	15	60	6	
2CRE 040 001 160	4 X R0.1	4	16	55	6		2CRE 050 010 250	5 X R1	6	25	70	6	
2CRE 040 001 200	4 X R0.1	4	20	60	6		2CRE 050 010 300	5 X R1	6	30	70	6	
2CRE 040 001 250	4 X R0.1	4	25	65	6		2CRE 050 010 400	5 X R1	6	40	80	6	
2CRE 040 001 300	4 X R0.1	4	30	70	6		2CRE 050 010 500	5 X R1	6	50	100	6	
2CRE 040 001 350	4 X R0.1	4	35	75	6		2CRE 060 001 200	6 X R0.1	7	20	60	6	
2CRE 040 001 400	4 X R0.1	4	40	80	6		2CRE 060 001 400	6 X R0.1	7	40	90	6	
2CRE 040 001 450	4 X R0.1	4	45	90	6		2CRE 060 002 200	6 X R0.2	7	20	60	6	
2CRE 040 001 500	4 X R0.1	4	50	100	6		2CRE 060 002 400	6 X R0.2	7	40	90	6	
2CRE 040 002 050	4 X R0.2	4	12	50	4		2CRE 060 003 200	6 X R0.3	7	20	60	6	
2CRE 040 002 070	4 X R0.2	4	20	70	4		2CRE 060 003 400	6 X R0.3	7	40	90	6	



## 4날 리브코너 레디우스 엔드밀



- 고경도강(HRc50~62), 프리하든강 계열의 고정밀가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel (HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and flute length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



D Size	D Tolerance
$\varnothing 0.8 \sim 5$	+0 ~ -0.01mm
$\varnothing 6 \sim 12$	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4CRE 008 0002 020	0.8 X R0.02	0.8	2	45	4		4CRE 010 003 160	1 X R0.3	1	16	50	4	
4CRE 008 0002 040	0.8 X R0.02	0.8	4	45	4		4CRE 010 003 200	1 X R0.3	1	20	50	4	
4CRE 008 0002 060	0.8 X R0.02	0.8	6	45	4		4CRE 012 0002 040	1.2 X R0.02	1.2	4	45	4	
4CRE 008 0002 080	0.8 X R0.02	0.8	8	45	4		4CRE 012 0002 060	1.2 X R0.02	1.2	6	45	4	
4CRE 008 0002 100	0.8 X R0.02	0.8	10	45	4		4CRE 012 0002 080	1.2 X R0.02	1.2	8	45	4	
4CRE 008 0005 020	0.8 X R0.05	0.8	2	45	4		4CRE 012 0002 100	1.2 X R0.02	1.2	10	50	4	
4CRE 008 0005 040	0.8 X R0.05	0.8	4	45	4		4CRE 012 0002 120	1.2 X R0.02	1.2	12	50	4	
4CRE 008 0005 060	0.8 X R0.05	0.8	6	45	4		4CRE 012 0002 160	1.2 X R0.02	1.2	16	50	4	
4CRE 008 0005 080	0.8 X R0.05	0.8	8	45	4		4CRE 012 0002 200	1.2 X R0.02	1.2	20	50	4	
4CRE 008 0005 100	0.8 X R0.05	0.8	10	45	4		4CRE 012 0005 040	1.2 X R0.05	1.2	4	45	4	
4CRE 008 001 020	0.8 X R0.1	0.8	2	45	4		4CRE 012 0005 060	1.2 X R0.05	1.2	6	45	4	
4CRE 008 001 040	0.8 X R0.1	0.8	4	45	4		4CRE 012 0005 080	1.2 X R0.05	1.2	8	45	4	
4CRE 008 001 060	0.8 X R0.1	0.8	6	45	4		4CRE 012 0005 100	1.2 X R0.05	1.2	10	50	4	
4CRE 008 001 080	0.8 X R0.1	0.8	8	45	4		4CRE 012 0005 120	1.2 X R0.05	1.2	12	50	4	
4CRE 008 001 100	0.8 X R0.1	0.8	10	45	4		4CRE 012 0005 160	1.2 X R0.05	1.2	16	50	4	
4CRE 010 0002 040	1 X R0.02	1	4	45	4		4CRE 012 0005 200	1.2 X R0.05	1.2	20	50	4	
4CRE 010 0002 060	1 X R0.02	1	6	45	4		4CRE 012 001 040	1.2 X R0.1	1.2	4	45	4	
4CRE 010 0002 080	1 X R0.02	1	8	45	4		4CRE 012 001 060	1.2 X R0.1	1.2	6	45	4	
4CRE 010 0002 100	1 X R0.02	1	10	50	4		4CRE 012 001 080	1.2 X R0.1	1.2	8	45	4	
4CRE 010 0002 120	1 X R0.02	1	12	50	4		4CRE 012 001 100	1.2 X R0.1	1.2	10	50	4	
4CRE 010 0002 160	1 X R0.02	1	16	50	4		4CRE 012 001 120	1.2 X R0.1	1.2	12	50	4	
4CRE 010 0002 200	1 X R0.02	1	20	50	4		4CRE 012 001 160	1.2 X R0.1	1.2	16	50	4	
4CRE 010 0005 040	1 X R0.05	1	4	45	4		4CRE 012 001 200	1.2 X R0.1	1.2	20	50	4	
4CRE 010 0005 060	1 X R0.05	1	6	45	4		4CRE 012 002 040	1.2 X R0.2	1.2	4	45	4	
4CRE 010 0005 080	1 X R0.05	1	8	45	4		4CRE 012 002 060	1.2 X R0.2	1.2	6	45	4	
4CRE 010 0005 100	1 X R0.05	1	10	50	4		4CRE 012 002 080	1.2 X R0.2	1.2	8	45	4	
4CRE 010 0005 120	1 X R0.05	1	12	50	4		4CRE 012 002 100	1.2 X R0.2	1.2	10	50	4	
4CRE 010 0005 160	1 X R0.05	1	16	50	4		4CRE 012 002 120	1.2 X R0.2	1.2	12	50	4	
4CRE 010 0005 200	1 X R0.05	1	20	50	4		4CRE 012 002 160	1.2 X R0.2	1.2	16	50	4	
4CRE 010 001 040	1 X R0.1	1	4	45	4		4CRE 012 002 200	1.2 X R0.2	1.2	20	50	4	
4CRE 010 001 060	1 X R0.1	1	6	45	4		4CRE 012 003 040	1.2 X R0.3	1.2	4	45	4	
4CRE 010 001 080	1 X R0.1	1	8	45	4		4CRE 012 003 060	1.2 X R0.3	1.2	6	45	4	
4CRE 010 001 100	1 X R0.1	1	10	50	4		4CRE 012 003 080	1.2 X R0.3	1.2	8	45	4	
4CRE 010 001 120	1 X R0.1	1	12	50	4		4CRE 012 003 100	1.2 X R0.3	1.2	10	50	4	
4CRE 010 001 160	1 X R0.1	1	16	50	4		4CRE 012 003 120	1.2 X R0.3	1.2	12	50	4	
4CRE 010 001 200	1 X R0.1	1	20	50	4		4CRE 012 003 160	1.2 X R0.3	1.2	16	50	4	
4CRE 010 002 040	1 X R0.2	1	4	45	4		4CRE 012 003 200	1.2 X R0.3	1.2	20	50	4	
4CRE 010 002 060	1 X R0.2	1	6	45	4		4CRE 015 0002 060	1.5 X R0.02	1.5	6	45	4	
4CRE 010 002 080	1 X R0.2	1	8	45	4		4CRE 015 0002 080	1.5 X R0.02	1.5	8	45	4	
4CRE 010 002 100	1 X R0.2	1	10	50	4		4CRE 015 0002 100	1.5 X R0.02	1.5	10	50	4	
4CRE 010 002 120	1 X R0.2	1	12	50	4		4CRE 015 0002 120	1.5 X R0.02	1.5	12	50	4	
4CRE 010 002 160	1 X R0.2	1	16	50	4		4CRE 015 0002 160	1.5 X R0.02	1.5	16	50	4	
4CRE 010 002 200	1 X R0.2	1	20	50	4		4CRE 015 0002 200	1.5 X R0.02	1.5	20	50	4	
4CRE 010 003 040	1 X R0.3	1	4	45	4		4CRE 015 0002 220	1.5 X R0.02	1.5	22	60	4	
4CRE 010 003 060	1 X R0.3	1	6	45	4		4CRE 015 0002 250	1.5 X R0.02	1.5	25	60	4	
4CRE 010 003 080	1 X R0.3	1	8	45	4		4CRE 015 0005 060	1.5 X R0.05	1.5	6	45	4	
4CRE 010 003 100	1 X R0.3	1	10	50	4		4CRE 015 0005 080	1.5 X R0.05	1.5	8	45	4	
4CRE 010 003 120	1 X R0.3	1	12	50	4		4CRE 015 0005 100	1.5 X R0.05	1.5	10	50	4	



단위 : mm

HARD series

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4CRE 015 0005 120	1.5 X R0.05	1.5	12	50	4		4CRE 020 001 100	2 X R0.1	2	10	50	4	
4CRE 015 0005 160	1.5 X R0.05	1.5	16	50	4		4CRE 020 001 120	2 X R0.1	2	12	50	4	
4CRE 015 0005 200	1.5 X R0.05	1.5	20	50	4		4CRE 020 001 140	2 X R0.1	2	14	50	4	
4CRE 015 0005 220	1.5 X R0.05	1.5	22	60	4		4CRE 020 001 160	2 X R0.1	2	16	50	4	
4CRE 015 0005 250	1.5 X R0.05	1.5	25	60	4		4CRE 020 001 180	2 X R0.1	2	18	50	4	
4CRE 015 001 060	1.5 X R0.1	1.5	6	45	4		4CRE 020 001 200	2 X R0.1	2	20	50	4	
4CRE 015 001 080	1.5 X R0.1	1.5	8	45	4		4CRE 020 001 220	2 X R0.1	2	22	60	4	
4CRE 015 001 100	1.5 X R0.1	1.5	10	50	4		4CRE 020 001 250	2 X R0.1	2	25	60	4	
4CRE 015 001 120	1.5 X R0.1	1.5	12	50	4		4CRE 020 001 300	2 X R0.1	2	30	70	4	
4CRE 015 001 160	1.5 X R0.1	1.5	16	50	4		4CRE 020 001 350	2 X R0.1	2	35	70	4	
4CRE 015 001 200	1.5 X R0.1	1.5	20	50	4		4CRE 020 002 060	2 X R0.2	2	6	45	4	
4CRE 015 001 220	1.5 X R0.1	1.5	22	60	4		4CRE 020 002 080	2 X R0.2	2	8	45	4	
4CRE 015 001 250	1.5 X R0.1	1.5	25	60	4		4CRE 020 002 100	2 X R0.2	2	10	50	4	
4CRE 015 002 060	1.5 X R0.2	1.5	6	45	4		4CRE 020 002 120	2 X R0.2	2	12	50	4	
4CRE 015 002 080	1.5 X R0.2	1.5	8	45	4		4CRE 020 002 140	2 X R0.2	2	14	50	4	
4CRE 015 002 100	1.5 X R0.2	1.5	10	50	4		4CRE 020 002 160	2 X R0.2	2	16	50	4	
4CRE 015 002 120	1.5 X R0.2	1.5	12	50	4		4CRE 020 002 180	2 X R0.2	2	18	50	4	
4CRE 015 002 160	1.5 X R0.2	1.5	16	50	4		4CRE 020 002 200	2 X R0.2	2	20	50	4	
4CRE 015 002 200	1.5 X R0.2	1.5	20	50	4		4CRE 020 002 220	2 X R0.2	2	22	60	4	
4CRE 015 002 220	1.5 X R0.2	1.5	22	60	4		4CRE 020 002 250	2 X R0.2	2	25	60	4	
4CRE 015 002 250	1.5 X R0.2	1.5	25	60	4		4CRE 020 002 300	2 X R0.2	2	30	70	4	
4CRE 015 003 060	1.5 X R0.3	1.5	6	45	4		4CRE 020 002 350	2 X R0.2	2	35	70	4	
4CRE 015 003 080	1.5 X R0.3	1.5	8	45	4		4CRE 020 003 060	2 X R0.3	2	6	45	4	
4CRE 015 003 100	1.5 X R0.3	1.5	10	50	4		4CRE 020 003080	2 X R0.3	2	8	45	4	
4CRE 015 003 120	1.5 X R0.3	1.5	12	50	4		4CRE 020 003 100	2 X R0.3	2	10	50	4	
4CRE 015 003 160	1.5 X R0.3	1.5	16	50	4		4CRE 020 003 120	2 X R0.3	2	12	50	4	
4CRE 015 003 200	1.5 X R0.3	1.5	20	50	4		4CRE 020 003 140	2 X R0.3	2	14	50	4	
4CRE 015 003 220	1.5 X R0.3	1.5	22	60	4		4CRE 020 003 160	2 X R0.3	2	16	50	4	
4CRE 015 003 250	1.5 X R0.3	1.5	25	60	4		4CRE 020 003 180	2 X R0.3	2	18	50	4	
4CRE 015 005 060	1.5 X R0.5	1.5	6	45	4		4CRE 020 003 200	2 X R0.3	2	20	50	4	
4CRE 015 005 080	1.5 X R0.5	1.5	8	45	4		4CRE 020 003 220	2 X R0.3	2	22	60	4	
4CRE 015 005 100	1.5 X R0.5	1.5	10	50	4		4CRE 020 003 250	2 X R0.3	2	25	60	4	
4CRE 015 005 120	1.5 X R0.5	1.5	12	50	4		4CRE 020 003 300	2 X R0.3	2	30	70	4	
4CRE 015 005 160	1.5 X R0.5	1.5	16	50	4		4CRE 020 003 350	2 X R0.3	2	35	70	4	
4CRE 015 005 200	1.5 X R0.5	1.5	20	50	4		4CRE 020 005 060	2 X R0.5	2	6	45	4	
4CRE 015 005 220	1.5 X R0.5	1.5	22	60	4		4CRE 020 005 080	2 X R0.5	2	8	45	4	
4CRE 015 005 250	1.5 X R0.5	1.5	25	60	4		4CRE 020 005 100	2 X R0.5	2	10	50	4	
4CRE 020 0002 060	2 X R0.02	2	6	45	4		4CRE 020 005 120	2 X R0.5	2	12	50	4	
4CRE 020 0002 080	2 X R0.02	2	8	45	4		4CRE 020 005 140	2 X R0.5	2	14	50	4	
4CRE 020 0002 100	2 X R0.02	2	10	50	4		4CRE 020 005 160	2 X R0.5	2	16	50	4	
4CRE 020 0002 120	2 X R0.02	2	12	50	4		4CRE 020 005 180	2 X R0.5	2	18	50	4	
4CRE 020 0002 140	2 X R0.02	2	14	50	4		4CRE 020 005 200	2 X R0.5	2	20	50	4	
4CRE 020 0002 160	2 X R0.02	2	16	50	4		4CRE 020 005 220	2 X R0.5	2	22	60	4	
4CRE 020 0002 180	2 X R0.02	2	18	50	4		4CRE 020 005 250	2 X R0.5	2	25	60	4	
4CRE 020 0002 200	2 X R0.02	2	20	50	4		4CRE 020 005 300	2 X R0.5	2	30	70	4	
4CRE 020 0002 220	2 X R0.02	2	22	60	4		4CRE 020 005 350	2 X R0.5	2	35	70	4	
4CRE 020 0002 250	2 X R0.02	2	25	60	4		4CRE 025 001 100	2.5 X R0.1	2.5	10	50	4	
4CRE 020 0002 300	2 X R0.02	2	30	70	4		4CRE 025 001 120	2.5 X R0.1	2.5	12	50	4	
4CRE 020 0002 350	2 X R0.02	2	35	70	4		4CRE 025 001 160	2.5 X R0.1	2.5	16	50	4	
4CRE 020 0005 060	2 X R0.05	2	6	45	4		4CRE 025 001 200	2.5 X R0.1	2.5	20	50	4	
4CRE 020 0005 080	2 X R0.05	2	8	45	4		4CRE 025 001 250	2.5 X R0.1	2.5	25	60	4	
4CRE 020 0005 100	2 X R0.05	2	10	50	4		4CRE 025 001 300	2.5 X R0.1	2.5	30	70	4	
4CRE 020 0005 120	2 X R0.05	2	12	50	4		4CRE 025 002 100	2.5 X R0.2	2.5	10	50	4	
4CRE 020 0005 140	2 X R0.05	2	14	50	4		4CRE 025 002 120	2.5 X R0.2	2.5	12	50	4	
4CRE 020 0005 160	2 X R0.05	2	16	50	4		4CRE 025 002 160	2.5 X R0.2	2.5	16	50	4	
4CRE 020 0005 180	2 X R0.05	2	18	50	4		4CRE 025 002 200	2.5 X R0.2	2.5	20	50	4	
4CRE 020 0005 200	2 X R0.05	2	20	50	4		4CRE 025 002 250	2.5 X R0.2	2.5	25	60	4	
4CRE 020 0005 220	2 X R0.05	2	22	60	4		4CRE 025 002 300	2.5 X R0.2	2.5	30	70	4	
4CRE 020 0005 250	2 X R0.05	2	25	60	4		4CRE 025 003 100	2.5 X R0.3	2.5	10	50	4	
4CRE 020 0005 300	2 X R0.05	2	30	70	4		4CRE 025 003 120	2.5 X R0.3	2.5	12	50	4	
4CRE 020 0005 350	2 X R0.05	2	35	70	4		4CRE 025 003 160	2.5 X R0.3	2.5	16	50	4	
4CRE 020 001 060	2 X R0.1	2	6	45	4		4CRE 025 003 200	2.5 X R0.3	2.5	20	50	4	
4CRE 020 001 080	2 X R0.1	2	8	45	4		4CRE 025 003 250	2.5 X R0.3	2.5	25	60	4	

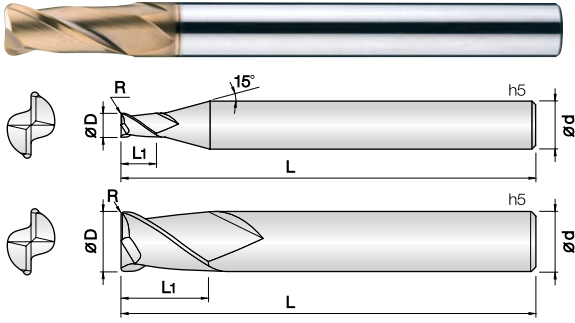
단위 : mm

Order Number	날경 Diameter D × R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D × R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4CRE 025 003 300	2.5 X R0.3	2.5	30	70	4		4CRE 040 002 050	4 X R0.2	4	12	50	4	
4CRE 025 005 100	2.5 X R0.5	2.5	10	50	4		4CRE 040 002 070	4 X R0.2	4	20	70	4	
4CRE 025 005 120	2.5 X R0.5	2.5	12	50	4		4CRE 040 002 130	4 X R0.2	4	13	55	6	
4CRE 025 005 160	2.5 X R0.5	2.5	16	50	4		4CRE 040 002 160	4 X R0.2	4	16	55	6	
4CRE 025 005 200	2.5 X R0.5	2.5	20	50	4		4CRE 040 002 200	4 X R0.2	4	20	60	6	
4CRE 025 005 250	2.5 X R0.5	2.5	25	60	4		4CRE 040 002 250	4 X R0.2	4	25	65	6	
4CRE 025 005 300	2.5 X R0.5	2.5	30	70	4		4CRE 040 002 300	4 X R0.2	4	30	70	6	
4CRE 030 001 100	3 X R0.1	3	10	50	6		4CRE 040 002 350	4 X R0.2	4	35	75	6	
New 4CRE 030 001 120	3 X R0.1	3	12	50	6		4CRE 040 002 400	4 X R0.2	4	40	80	6	
4CRE 030 001 160	3 X R0.1	3	16	55	6		4CRE 040 002 450	4 X R0.2	4	45	90	6	
4CRE 030 001 200	3 X R0.1	3	20	60	6		4CRE 040 002 500	4 X R0.2	4	50	100	6	
4CRE 030 001 250	3 X R0.1	3	25	65	6		4CRE 040 003 050	4 X R0.3	4	12	50	4	
4CRE 030 001 300	3 X R0.1	3	30	70	6		4CRE 040 003 070	4 X R0.3	4	20	70	4	
4CRE 030 001 350	3 X R0.1	3	35	75	6		4CRE 040 003 130	4 X R0.3	4	13	55	6	
4CRE 030 001 400	3 X R0.1	3	40	80	6		4CRE 040 003 160	4 X R0.3	4	16	55	6	
4CRE 030 001 500	3 X R0.1	3	50	100	6		4CRE 040 003 200	4 X R0.3	4	20	60	6	
4CRE 030 002 100	3 X R0.2	3	10	50	6		4CRE 040 003 250	4 X R0.3	4	25	65	6	
New 4CRE 030 002 120	3 X R0.2	3	12	50	6		4CRE 040 003 300	4 X R0.3	4	30	70	6	
4CRE 030 002 160	3 X R0.2	3	16	55	6		4CRE 040 003 350	4 X R0.3	4	35	75	6	
4CRE 030 002 200	3 X R0.2	3	20	60	6		4CRE 040 003 400	4 X R0.3	4	40	80	6	
4CRE 030 002 250	3 X R0.2	3	25	65	6		4CRE 040 003 450	4 X R0.3	4	45	90	6	
4CRE 030 002 300	3 X R0.2	3	30	70	6		4CRE 040 003 500	4 X R0.3	4	50	100	6	
4CRE 030 002 350	3 X R0.2	3	35	75	6		4CRE 040 005 050	4 X R0.5	4	12	50	4	
4CRE 030 002 400	3 X R0.2	3	40	80	6		4CRE 040 005 070	4 X R0.5	4	20	70	4	
4CRE 030 002 500	3 X R0.2	3	50	100	6		4CRE 040 005 130	4 X R0.5	4	13	55	6	
4CRE 030 003 100	3 X R0.3	3	10	50	6		4CRE 040 005 160	4 X R0.5	4	16	55	6	
New 4CRE 030 003 120	3 X R0.3	3	12	50	6		4CRE 040 005 200	4 X R0.5	4	20	60	6	
4CRE 030 003 160	3 X R0.3	3	16	55	6		4CRE 040 005 250	4 X R0.5	4	25	65	6	
4CRE 030 003 200	3 X R0.3	3	20	60	6		4CRE 040 005 300	4 X R0.5	4	30	70	6	
4CRE 030 003 250	3 X R0.3	3	25	65	6		4CRE 040 005 350	4 X R0.5	4	35	75	6	
4CRE 030 003 300	3 X R0.3	3	30	70	6		4CRE 040 005 400	4 X R0.5	4	40	80	6	
4CRE 030 003 350	3 X R0.3	3	35	75	6		4CRE 040 005 450	4 X R0.5	4	45	90	6	
4CRE 030 003 400	3 X R0.3	3	40	80	6		4CRE 040 005 500	4 X R0.5	4	50	100	6	
4CRE 030 003 500	3 X R0.3	3	50	100	6		4CRE 040 010 050	4 X R1	4	12	50	4	
4CRE 030 005 100	3 X R0.5	3	10	50	6		4CRE 040 010 070	4 X R1	4	20	70	4	
New 4CRE 030 005 120	3 X R0.5	3	12	50	6		4CRE 040 010 130	4 X R1	4	13	55	6	
4CRE 030 005 160	3 X R0.5	3	16	55	6		4CRE 040 010 160	4 X R1	4	16	55	6	
4CRE 030 005 200	3 X R0.5	3	20	60	6		4CRE 040 010 200	4 X R1	4	20	60	6	
4CRE 030 005 250	3 X R0.5	3	25	65	6		4CRE 040 010 250	4 X R1	4	25	65	6	
4CRE 030 005 300	3 X R0.5	3	30	70	6		4CRE 040 010 300	4 X R1	4	30	70	6	
4CRE 030 005 350	3 X R0.5	3	35	75	6		4CRE 040 010 350	4 X R1	4	35	75	6	
4CRE 030 005 400	3 X R0.5	3	40	80	6		4CRE 040 010 400	4 X R1	4	40	80	6	
4CRE 030 005 500	3 X R0.5	3	50	100	6		4CRE 040 010 450	4 X R1	4	45	90	6	
4CRE 030 010 100	3 X R1	3	10	50	6		4CRE 040 010 500	4 X R1	4	50	100	6	
New 4CRE 030 010 120	3 X R1	3	12	50	6		4CRE 050 001 160	5 X R0.1	5	16	60	6	
4CRE 030 010 160	3 X R1	3	16	55	6		4CRE 050 001 300	5 X R0.1	5	30	70	6	
4CRE 030 010 200	3 X R1	3	20	60	6		4CRE 050 001 400	5 X R0.1	5	40	80	6	
4CRE 030 010 250	3 X R1	3	25	65	6		4CRE 050 001 500	5 X R0.1	5	50	100	6	
4CRE 030 010 300	3 X R1	3	30	70	6		4CRE 050 002 160	5 X R0.2	5	16	60	6	
4CRE 030 010 350	3 X R1	3	35	75	6		4CRE 050 002 300	5 X R0.2	5	30	70	6	
4CRE 030 010 400	3 X R1	3	40	80	6		4CRE 050 002 400	5 X R0.2	5	40	80	6	
4CRE 030 010 500	3 X R1	3	50	100	6		4CRE 050 002 500	5 X R0.2	5	50	100	6	
4CRE 040 001 050	4 X R0.1	4	12	50	4		4CRE 050 003 160	5 X R0.3	5	16	60	6	
4CRE 040 001 070	4 X R0.1	4	20	70	4		4CRE 050 003 300	5 X R0.3	5	30	70	6	
4CRE 040 001 130	4 X R0.1	4	13	55	6		4CRE 050 003 400	5 X R0.3	5	40	80	6	
4CRE 040 001 160	4 X R0.1	4	16	55	6		4CRE 050 003 500	5 X R0.3	5	50	100	6	
4CRE 040 001 200	4 X R0.1	4	20	60	6		4CRE 050 005 160	5 X R0.5	5	16	60	6	
4CRE 040 001 250	4 X R0.1	4	25	65	6		4CRE 050 005 300	5 X R0.5	5	30	70	6	
4CRE 040 001 300	4 X R0.1	4	30	70	6		4CRE 050 005 400	5 X R0.5	5	40	80	6	
4CRE 040 001 350	4 X R0.1	4	35	75	6		4CRE 050 005 500	5 X R0.5	5	50	100	6	
4CRE 040 001 400	4 X R0.1	4	40	80	6		4CRE 050 010 160	5 X R1	5	16	60	6	
4CRE 040 001 450	4 X R0.1	4	45	90	6		4CRE 050 010 300	5 X R1	5	30	70	6	
4CRE 040 001 500	4 X R0.1	4	50	100	6		4CRE 050 010 400	5 X R1	5	40	80	6	

단위 : mm

HARD series

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤희크 Shank Dia d	비고									
4CRE 050 010 500	5 X R1	5	50	100	6										
4CRE 060 001 200	6 X R0.1	7	20	60	6										
4CRE 060 001 400	6 X R0.1	7	40	80	6										
4CRE 060 001 500	6 X R0.1	7	50	100	6										
4CRE 060 002 200	6 X R0.2	7	20	60	6										
4CRE 060 002 400	6 X R0.2	7	40	80	6										
4CRE 060 002 500	6 X R0.2	7	50	100	6										
4CRE 060 003 200	6 X R0.3	7	20	60	6										
4CRE 060 003 400	6 X R0.3	7	40	80	6										
4CRE 060 003 500	6 X R0.3	7	50	100	6										
4CRE 060 005 200	6 X R0.5	7	20	60	6										
4CRE 060 005 400	6 X R0.5	7	40	80	6										
4CRE 060 005 500	6 X R0.5	7	50	100	6										
4CRE 060 010 200	6 X R1	7	20	60	6										
4CRE 060 010 400	6 X R1	7	40	80	6										
4CRE 060 010 500	6 X R1	7	50	100	6										
4CRE 060 015 200	6 X R1.5	7	20	60	6										
4CRE 060 015 400	6 X R1.5	7	40	80	6										
4CRE 060 015 500	6 X R1.5	7	50	100	6										
4CRE 080 002 220	8 X R0.2	9	22	65	8										
4CRE 080 003 220	8 X R0.3	9	22	65	8										
4CRE 080 005 220	8 X R0.5	9	22	65	8										
4CRE 080 005 400	8 X R0.5	9	40	100	8										
4CRE 080 010 220	8 X R1	9	22	65	8										
4CRE 080 010 400	8 X R1	9	40	100	8										
4CRE 080 015 220	8 X R1.5	9	22	65	8										
4CRE 080 015400	8 X R1.5	9	40	100	8										
4CRE 080 020 220	8 X R2	9	22	65	8										
4CRE 100 002 240	10 X R0.2	11	24	70	10										
4CRE 100 003 240	10 X R0.3	11	24	70	10										
4CRE 100 005 240	10 X R0.5	11	24	70	10										
4CRE 100 005 400	10 X R0.5	11	40	100	10										
4CRE 100 010 240	10 X R1	11	24	70	10										
4CRE 100 010 400	10 X R1	11	40	100	10										
4CRE 100 015 240	10 X R1.5	11	24	70	10										
4CRE 100 015 400	10 X R1.5	11	40	100	10										
4CRE 100 020 240	10 X R2	11	24	70	10										
4CRE 100 025 240	10 X R2.5	11	24	70	10										
4CRE 120 003 260	12 X R0.3	13	26	80	12										
4CRE 120 005 260	12 X R0.5	13	26	80	12										
4CRE 120 005 400	12 X R0.5	13	40	110	12										
4CRE 120 010 260	12 X R1	13	26	80	12										
4CRE 120 010 400	12 X R1	13	40	110	12										
4CRE 120 015 260	12 X R1.5	13	26	80	12										
4CRE 120 015 400	12 X R1.5	13	40	110	12										
4CRE 120 020 260	12 X R2	13	26	80	12										
4CRE 120 030 260	12 X R3	13	26	80	12										



- 고경도강(HRc50~62), 프리하든강 계열의 고속가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc50~62)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2 $\mu$ m) WC grade.



D Size	D Tolerance
ø0.2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

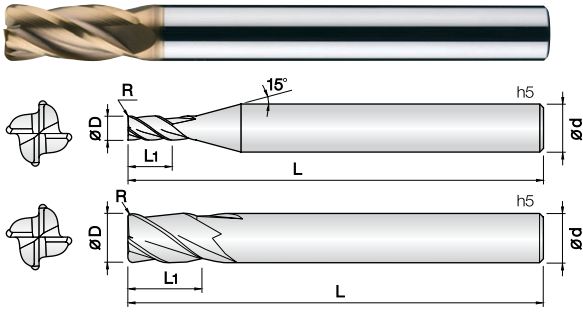
Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2NCR 002 0002 S04	0.2 X R0.02	0.6	45	4		2NCR 025 0005 S04	2.5 X R0.05	6	50	4	
2NCR 002 0005 S04	0.2 X R0.05	0.6	45	4		2NCR 025 001 S04	2.5 X R0.1	6	50	4	
2NCR 003 0002 S04	0.3 X R0.02	0.6	45	4		2NCR 025 002 S04	2.5 X R0.2	6	50	4	
2NCR 003 0005 S04	0.3 X R0.05	0.6	45	4		2NCR 025 003 S04	2.5 X R0.3	6	50	4	
2NCR 003 001 S04	0.3 X R0.1	0.6	45	4		2NCR 025 004 S04	2.5 X R0.4	6	50	4	
2NCR 004 0002 S04	0.4 X R0.02	0.8	45	4		2NCR 025 005 S04	2.5 X R0.5	6	50	4	
2NCR 004 0005 S04	0.4 X R0.05	0.8	45	4		2NCR 030 0005 S06	3 X R0.05	8	60	6	
2NCR 004 001 S04	0.4 X R0.1	0.8	45	4		2NCR 030 001 S06	3 X R0.1	8	60	6	
2NCR 005 0002 S04	0.5 X R0.02	1	45	4		2NCR 030 002 S06	3 X R0.2	8	60	6	
2NCR 005 0005 S04	0.5 X R0.05	1	45	4		2NCR 030 003 S06	3 X R0.3	8	60	6	
2NCR 005 001 S04	0.5 X R0.1	1	45	4		2NCR 030 004 S06	3 X R0.4	8	60	6	
2NCR 006 0002 S04	0.6 X R0.02	1.2	45	4		2NCR 030 005 S06	3 X R0.5	8	60	6	
2NCR 006 0005 S04	0.6 X R0.05	1.2	45	4		2NCR 030 010 S06	3 X R1	8	60	6	
2NCR 006 001 S04	0.6 X R0.1	1.2	45	4		2NCR 035 001 S06	3.5 X R0.1	9	70	6	
2NCR 006 002 S04	0.6 X R0.2	1.2	45	4		2NCR 035 002 S06	3.5 X R0.2	9	70	6	
2NCR 007 0005 S04	0.7 X R0.05	1.4	45	4		2NCR 035 003 S06	3.5 X R0.3	9	70	6	
2NCR 007 001 S04	0.7 X R0.1	1.4	45	4		2NCR 035 005 S06	3.5 X R0.5	9	70	6	
2NCR 007 002 S04	0.7 X R0.2	1.4	45	4		2NCR 040 0005 060	4 X R0.05	9	60	4	
2NCR 008 0002 S04	0.8 X R0.02	1.6	45	4		2NCR 040 0005 080	4 X R0.05	9	80	4	
2NCR 008 0005 S04	0.8 X R0.05	1.6	45	4		2NCR 040 0005 S06	4 X R0.05	9	70	6	
2NCR 008 001 S04	0.8 X R0.1	1.6	45	4		2NCR 040 001 060	4 X R0.1	9	60	4	
2NCR 008 002 S04	0.8 X R0.2	1.6	45	4		2NCR 040 001 080	4 X R0.1	9	80	4	
2NCR 009 0005 S04	0.9 X R0.05	1.8	45	4		2NCR 040 001 S06	4 X R0.1	10	70	6	
2NCR 009 001 S04	0.9 X R0.1	1.8	45	4		2NCR 040 002 060	4 X R0.2	9	60	4	
2NCR 010 0002 S04	1 X R0.02	2.5	45	4		2NCR 040 002 080	4 X R0.2	9	80	4	
2NCR 010 0005 S04	1 X R0.05	2.5	45	4		2NCR 040 002 S06	4 X R0.2	10	70	6	
2NCR 010 001 S04	1 X R0.1	2.5	45	4		2NCR 040 003 060	4 X R0.3	9	60	4	
2NCR 010 002 S04	1 X R0.2	2.5	45	4		2NCR 040 003 080	4 X R0.3	9	80	4	
2NCR 010 003 S04	1 X R0.3	2.5	45	4		2NCR 040 003 S06	4 X R0.3	10	70	6	
2NCR 010 004 S04	1 X R0.4	2.5	45	4		2NCR 040 004 060	4 X R0.4	9	60	4	
2NCR 012 0005 S04	1.2 X R0.05	3.2	45	4		2NCR 040 004 080	4 X R0.4	9	80	4	
2NCR 012 001 S04	1.2 X R0.1	3.2	45	4		2NCR 040 004 S06	4 X R0.4	10	70	6	
2NCR 012 002 S04	1.2 X R0.2	3.2	45	4		2NCR 040 005 060	4 X R0.5	9	60	4	
2NCR 012 003 S04	1.2 X R0.3	3.2	45	4		2NCR 040 005 080	4 X R0.5	9	80	4	
2NCR 015 0002 S04	1.5 X R0.02	4	45	4		2NCR 040 005 S06	4 X R0.5	10	70	6	
2NCR 015 0005 S04	1.5 X R0.05	4	45	4		2NCR 040 010 060	4 X R1	9	60	4	
2NCR 015 001 S04	1.5 X R0.1	4	45	4		2NCR 040 010 080	4 X R1	9	80	4	
2NCR 015 002 S04	1.5 X R0.2	4	45	4		2NCR 040 010 S06	4 X R1	10	70	6	
2NCR 015 003 S04	1.5 X R0.3	4	45	4		2NCR 045 001 S06	4.5 X R0.1	11	75	6	
2NCR 015 004 S04	1.5 X R0.4	4	45	4		2NCR 045 002 S06	4.5 X R0.2	11	75	6	
2NCR 015 005 S04	1.5 X R0.5	4	45	4		2NCR 045 003 S06	4.5 X R0.3	11	75	6	
2NCR 020 0002 S04	2 X R0.02	6	45	4		2NCR 045 005 S06	4.5 X R0.5	11	75	6	
2NCR 020 0005 S04	2 X R0.05	6	45	4		2NCR 045 010 S06	4.5 X R1	11	75	6	
2NCR 020 001 S04	2 X R0.1	6	45	4		2NCR 050001 S06	5 X R0.1	13	75	6	
2NCR 020 002 S04	2 X R0.2	6	45	4		2NCR 050 002 S06	5 X R0.2	13	75	6	
2NCR 020 003 S04	2 X R0.3	6	45	4		2NCR 050 003 S06	5 X R0.3	13	75	6	
2NCR 020 004 S04	2 X R0.4	6	45	4		2NCR 050 004 S06	5 X R0.4	13	75	6	
2NCR 020 005 S04	2 X R0.5	6	45	4		2NCR 050 005 S06	5 X R0.5	13	75	6	



단위 : mm

Order Number	날경 D×R	날장 L1	전장 L	샙크 Dia d	비고	Order Number	날경 D×R	날장 L1	전장 L	샙크 Dia d	비고
2NCR 050 010 S06	5 X R1	13	75	6		2NCR 100 010 075	10 X R1	19	75	10	
2NCR 060 0005 060	6 X R0.05	11	60	6		2NCR 100 010 100	10 X R1	22	100	10	
2NCR 060 0005 090	6 X R0.05	13	90	6		2NCR 100 010 130	10 X R1	22	130	10	
2NCR 060 001 060	6 X R0.1	11	60	6		2NCR 100 015 075	10 X R1.5	19	75	10	
2NCR 060 001 090	6 X R0.1	13	90	6		2NCR 100 015 100	10 X R1.5	22	100	10	
2NCR 060 002 060	6 X R0.2	11	60	6		2NCR 100 015 130	10 X R1.5	22	130	10	
2NCR 060 002 090	6 X R0.2	13	90	6		2NCR 100 020 075	10 X R2	19	75	10	
2NCR 060 003 060	6 X R0.3	11	60	6		2NCR 100 020 100	10 X R2	22	100	10	
2NCR 060 003 090	6 X R0.3	13	90	6		2NCR 100 025 100	10 X R2.5	22	100	10	
2NCR 060 004 060	6 X R0.4	11	60	6		2NCR 100 030 100	10 X R3	22	100	10	
2NCR 060 004 090	6 X R0.4	13	90	6		2NCR 100 040 100	10 X R4	22	100	10	
2NCR 060 005 060	6 X R0.5	11	60	6		2NCR 120 001 080	12 X R0.1	22	80	12	
2NCR 060 005 090	6 X R0.5	13	90	6		2NCR 120 001 110	12 X R0.1	26	110	12	
2NCR 060 010 060	6 X R1	11	60	6		2NCR 120 002 080	12 X R0.2	22	80	12	
2NCR 060 010 090	6 X R1	13	90	6		2NCR 120 002 110	12 X R0.2	26	110	12	
2NCR 060 015 060	6 X R1.5	11	60	6		2NCR 120 003 080	12 X R0.3	22	80	12	
2NCR 060 015 090	6 X R1.5	13	90	6		2NCR 120 003 110	12 X R0.3	26	110	12	
2NCR 060 020 060	6 X R2	11	60	6		2NCR 120 005 080	12 X R0.5	22	80	12	
2NCR 060 020 090	6 X R2	13	90	6		2NCR 120 005 110	12 X R0.5	26	110	12	
2NCR 060 025 090	6 X R2.5	13	90	6		2NCR 120 005 130	12 X R0.5	26	130	12	
2NCR 080 001 070	8 X R0.1	16	70	8		2NCR 120 010 080	12 X R1	22	80	12	
2NCR 080 001 100	8 X R0.1	19	100	8		2NCR 120 010 110	12 X R1	26	110	12	
2NCR 080 002 070	8 X R0.2	16	70	8		2NCR 120 010 130	12 X R1	26	130	12	
2NCR 080 002 100	8 X R0.2	19	100	8		2NCR 120 015 080	12 X R1.5	22	80	12	
2NCR 080 003 070	8 X R0.3	16	70	8		2NCR 120 015 110	12 X R1.5	26	110	12	
2NCR 080 003 100	8 X R0.3	19	100	8		2NCR 120 015 130	12 X R1.5	26	130	12	
2NCR 080 005 070	8 X R0.5	16	70	8		2NCR 120 020 080	12 X R2	22	80	12	
2NCR 080 005 100	8 X R0.5	19	100	8		2NCR 120 020 110	12 X R2	26	110	12	
2NCR 080 005 120	8 X R0.5	19	120	8		2NCR 120 020 130	12 X R2	26	130	12	
2NCR 080 010 070	8 X R1	16	70	8		2NCR 120 025 110	12 X R2.5	26	110	12	
2NCR 080 010 100	8 X R1	19	100	8		2NCR 120 030 110	12 X R3	26	110	12	
2NCR 080 010 120	8 X R1	19	120	8		2NCR 120 040 110	12 X R4	26	110	12	
2NCR 080 015 070	8 X R1.5	16	70	8		2NCR 120 050 110	12 X R5	26	110	12	
2NCR 080 015 100	8 X R1.5	19	100	8							
2NCR 080 020 070	8 X R2	16	70	8							
2NCR 080 020 100	8 X R2	19	100	8							
2NCR 080 025 100	8 X R2.5	19	100	8							
2NCR 080 030 100	8 X R3	19	100	8							
2NCR 080 035 100	8 X R3.5	19	100	8							
2NCR 100 001 075	10 X R0.1	19	75	10							
2NCR 100 001 100	10 X R0.1	22	100	10							
2NCR 100 002 075	10 X R0.2	19	75	10							
2NCR 100 002 100	10 X R0.2	22	100	10							
2NCR 100 003 075	10 X R0.3	19	75	10							
2NCR 100 003 100	10 X R0.3	22	100	10							
2NCR 100 005 075	10 X R0.5	19	75	10							
2NCR 100 005 100	10 X R0.5	22	100	10							
2NCR 100 005 130	10 X R0.5	22	130	10							

### 4날 코너레디우스 엔드밀



- 고경도강(HRc50~62), 프리하든강 계열의 고속가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc50~62)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.



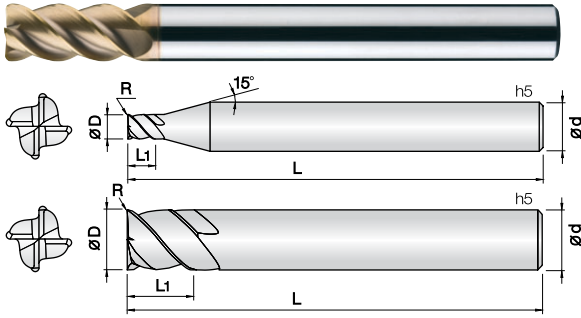
D Size	D Tolerance
$\varnothing 1 \sim 5$	+0 ~ -0.01mm
$\varnothing 6 \sim 12$	-0.005 ~ -0.015mm
$\varnothing 16 \sim 20$	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4NCR 010 0002 S04	1 X R0.02	2.5	45	4		4NCR 040 004 060	4 X R0.4	9	60	4	
4NCR 010 0005 S04	1 X R0.05	2.5	45	4		4NCR 040 004 080	4 X R0.4	9	80	4	
4NCR 010 001 S04	1 X R0.1	2.5	45	4		4NCR 040 004 S06	4 X R0.4	10	70	6	
4NCR 010 002 S04	1 X R0.2	2.5	45	4		4NCR 040 005 060	4 X R0.5	9	60	4	
4NCR 010 003 S04	1 X R0.3	2.5	45	4		4NCR 040 005 080	4 X R0.5	9	80	4	
4NCR 012 0002 S04	1.2 X R0.02	4	45	4		4NCR 040 005 S06	4 X R0.5	10	70	6	
4NCR 012 0005 S04	1.2 X R0.05	4	45	4		4NCR 040 010 060	4 X R1	9	60	4	
4NCR 012 001 S04	1.2 X R0.1	4	45	4		4NCR 040 010 080	4 X R1	9	80	4	
4NCR 012 002 S04	1.2 X R0.2	4	45	4		4NCR 040 010 S06	4 X R1	10	70	6	
4NCR 012 003 S04	1.2 X R0.3	4	45	4		4NCR 050 0005 S06	5 X R0.05	13	75	6	
4NCR 015 0002 S04	1.5 X R0.02	4	45	4		4NCR 050 001 S06	5 X R0.1	13	75	6	
4NCR 015 0005 S04	1.5 X R0.05	4	45	4		4NCR 050 002 S06	5 X R0.2	13	75	6	
4NCR 015 001 S04	1.5 X R0.1	4	45	4		4NCR 050 003 S06	5 X R0.3	13	75	6	
4NCR 015 002 S04	1.5 X R0.2	4	45	4		4NCR 050 004 S06	5 X R0.4	13	75	6	
4NCR 015 003 S04	1.5 X R0.3	4	45	4		4NCR 050 005 S06	5 X R0.5	13	75	6	
4NCR 015 004 S04	1.5 X R0.4	4	45	4		4NCR 050 010 S06	5 X R1	13	75	6	
4NCR 015 005 S04	1.5 X R0.5	4	45	4		4NCR 060 0005 080	6 X R0.05	13	80	6	
4NCR 020 0002 S04	2 X R0.02	6	45	4		4NCR 060 001 060	6 X R0.1	11	60	6	
4NCR 020 0005 S04	2 X R0.05	6	45	4		4NCR 060 001 080	6 X R0.1	13	80	6	
4NCR 020 001 S04	2 X R0.1	6	45	4		4NCR 060 002 060	6 X R0.2	11	60	6	
4NCR 020 002 S04	2 X R0.2	6	45	4		4NCR 060 002 080	6 X R0.2	13	80	6	
4NCR 020 003 S04	2 X R0.3	6	45	4		4NCR 060 003 060	6 X R0.3	11	60	6	
4NCR 020 004 S04	2 X R0.4	6	45	4		4NCR 060 003 080	6 X R0.3	13	80	6	
4NCR 020 005 S04	2 X R0.5	6	45	4		4NCR 060 004 080	6 X R0.4	13	80	6	
4NCR 025 0005 S04	2.5 X R0.05	6	50	4		4NCR 060 005 060	6 X R0.5	11	60	6	
4NCR 025 001 S04	2.5 X R0.1	6	50	4		4NCR 060 005 080	6 X R0.5	13	80	6	
4NCR 025 002 S04	2.5 X R0.2	6	50	4		4NCR 060 010 060	6 X R1	11	60	6	
4NCR 025 003 S04	2.5 X R0.3	6	50	4		4NCR 060 010 080	6 X R1	13	80	6	
4NCR 025 005 S04	2.5 X R0.5	6	50	4		4NCR 060 015 060	6 X R1.5	11	60	6	
4NCR 030 0005 S06	3 X R0.05	8	60	6		4NCR 060 015 080	6 X R1.5	13	80	6	
4NCR 030 001 S06	3 X R0.1	8	60	6		4NCR 060 020 060	6 X R2	11	60	6	
4NCR 030 002 S06	3 X R0.2	8	60	6		4NCR 060 020 080	6 X R2	13	80	6	
4NCR 030 003 S06	3 X R0.3	8	60	6		4NCR 080 001 070	8 X R0.1	16	70	8	
4NCR 030 004 S06	3 X R0.4	8	60	6		4NCR 080 001 090	8 X R0.1	19	90	8	
4NCR 030 005 S06	3 X R0.5	8	60	6		4NCR 080 002 070	8 X R0.2	16	70	8	
4NCR 030 010 S06	3 X R1	8	60	6		4NCR 080 002 090	8 X R0.2	19	90	8	
4NCR 040 0005 060	4 X R0.05	9	60	4		4NCR 080 003 070	8 X R0.3	16	70	8	
4NCR 040 0005 080	4 X R0.05	9	80	4		4NCR 080 003 090	8 X R0.3	19	90	8	
4NCR 040 0005 S06	4 X R0.05	10	70	6		4NCR 080 005 070	8 X R0.5	16	70	8	
4NCR 040 001 060	4 X R0.1	9	60	4		4NCR 080 005 090	8 X R0.5	19	90	8	
4NCR 040 001 080	4 X R0.1	9	80	4		4NCR 080 005 110	8 X R0.5	19	110	8	
4NCR 040 001 S06	4 X R0.1	10	70	6		4NCR 080 010 070	8 X R1	16	70	8	
4NCR 040 002 060	4 X R0.2	9	60	4		4NCR 080 010 090	8 X R1	19	90	8	
4NCR 040 002 080	4 X R0.2	9	80	4		4NCR 080 010 110	8 X R1	19	110	8	
4NCR 040 002 S06	4 X R0.2	10	70	6		4NCR 080 015 070	8 X R1.5	16	70	8	
4NCR 040 003 060	4 X R0.3	9	60	4		4NCR 080 015 090	8 X R1.5	19	90	8	
4NCR 040 003 080	4 X R0.3	9	80	4		4NCR 080 015 110	8 X R1.5	19	110	8	
4NCR 040 003 S06	4 X R0.3	10	70	6		4NCR 080 020 070	8 X R2	16	70	8	

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4NCR 080 020 090	8 X R2	19	90	8		4NCR 120 030 130	12 X R3	26	130	12	
4NCR 080 020 110	8 X R2	19	110	8		4NCR 120 035 110	12 X R3.5	26	110	12	
4NCR 080 025 090	8 X R2.5	19	90	8		4NCR 120 040 110	12 X R4	26	110	12	
4NCR 100 001 075	10 X R0.1	19	75	10		4NCR 160 005 110	16 X R0.5	32	110	16	
4NCR 100 001 100	10 X R0.1	22	100	10		4NCR 160 005 160	16 X R0.5	32	160	16	
4NCR 100 002 075	10 X R0.2	19	75	10		4NCR 160 010 110	16 X R1	32	110	16	
4NCR 100 002 100	10 X R0.2	22	100	10		4NCR 160 010 160	16 X R1	32	160	16	
New 4NCR 100 002 120	10 X R0.2	22	120	10		4NCR 160 015 110	16 X R1.5	32	110	16	
4NCR 100 003 075	10 X R0.3	19	75	10		4NCR 160 020 110	16 X R2	32	110	16	
4NCR 100 003 100	10 X R0.3	22	100	10		4NCR 160 030 110	16 X R3	32	110	16	
4NCR 100 005 075	10 X R0.5	19	75	10		4NCR 200 005 160	20 X R0.5	38	160	20	
4NCR 100 005 100	10 X R0.5	22	100	10		4NCR 200 010 160	20 X R1	38	160	20	
4NCR 100 005 120	10 X R0.5	22	120	10		4NCR 200 015 160	20 X R1.5	38	160	20	
4NCR 100 010 075	10 X R1	19	75	10		4NCR 200 020 160	20 X R2	38	160	20	
4NCR 100 010 100	10 X R1	22	100	10							
4NCR 100 010 120	10 X R1	22	120	10							
4NCR 100 015 075	10 X R1.5	19	75	10							
4NCR 100 015 100	10 X R1.5	22	100	10							
4NCR 100 015 120	10 X R1.5	22	120	10							
4NCR 100 020 075	10 X R2	19	75	10							
4NCR 100 020 100	10 X R2	22	100	10							
4NCR 100 020 120	10 X R2	22	120	10							
4NCR 100 025 075	10 X R2.5	19	75	10							
4NCR 100 025 100	10 X R2.5	22	100	10							
4NCR 100 025 120	10 X R2.5	22	120	10							
4NCR 100 030 100	10 X R3	22	100	10							
4NCR 120 002 080	12 X R0.2	22	80	12							
4NCR 120 002 110	12 X R0.2	26	110	12							
New 4NCR 120 002 130	12 X R0.2	26	130	12							
4NCR 120 003 080	12 X R0.3	22	80	12							
4NCR 120 003 110	12 X R0.3	26	110	12							
4NCR 120 005 080	12 X R0.5	22	80	12							
4NCR 120 005 110	12 X R0.5	26	110	12							
4NCR 120 005 130	12 X R0.5	26	130	12							
4NCR 120 010 080	12 X R1	22	80	12							
4NCR 120 010 110	12 X R1	26	110	12							
4NCR 120 010 130	12 X R1	26	130	12							
4NCR 120 015 080	12 X R1.5	22	80	12							
4NCR 120 015 110	12 X R1.5	26	110	12							
4NCR 120 015 130	12 X R1.5	26	130	12							
4NCR 120 020 080	12 X R2	22	80	12							
4NCR 120 020 110	12 X R2	26	110	12							
4NCR 120 020 130	12 X R2	26	130	12							
4NCR 120 025 080	12 X R2.5	22	80	12							
4NCR 120 025 110	12 X R2.5	26	110	12							
4NCR 120 025 130	12 X R2.5	26	130	12							
4NCR 120 030 080	12 X R3	22	80	12							
4NCR 120 030 110	12 X R3	26	110	12							



- 고경도강(HRc50~62), 프리하드강 계열의 고속가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 45° 헬릭스 형상으로 설계하여 고속, 고이송 가공에 적합합니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc50~62)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- 45° degree helix design for high speed, feed condition.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.



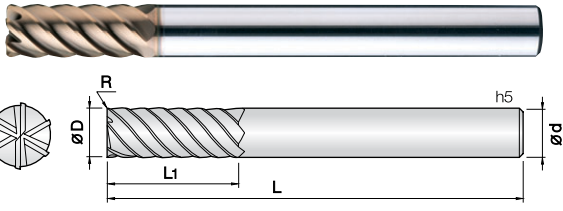
D Size	D Tolerance
ø1 ~ 4	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16 ~ 20	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4CRL 010 0005 S06	1 X R0.05	2	50	6		4CRL 100 015 S10	10 X R1.5	20	100	10	
4CRL 010 001 S06	1 X R0.1	2	50	6		4CRL 100 020 S10	10 X R2	20	100	10	
4CRL 010 002 S06	1 X R0.2	2	50	6		4CRL 120 003 S12	12 X R0.3	24	110	12	
4CRL 010 003 S06	1 X R0.3	2	50	6		4CRL 120 005 S12	12 X R0.5	24	110	12	
4CRL 012 0005 S06	1.2 X R0.05	2.5	50	6		4CRL 120 010 S12	12 X R1	24	110	12	
4CRL 012 001 S06	1.2 X R0.1	2.5	50	6		4CRL 120 015 S12	12 X R1.5	24	110	12	
4CRL 012 002 S06	1.2 X R0.2	2.5	50	6		4CRL 120 020 S12	12 X R2	24	110	12	
4CRL 012 003 S06	1.2 X R0.3	2.5	50	6		4CRL 120 030 S12	12 X R3	24	110	12	
4CRL 015 0005 S06	1.5 X R0.05	3	50	6		4CRL 160 005 S16	16 X R0.5	32	120	16	
4CRL 015 001 S06	1.5 X R0.1	3	50	6		4CRL 160 010 S16	16 X R1	32	120	16	
4CRL 015 002 S06	1.5 X R0.2	3	50	6		4CRL 160 020 S16	16 X R2	32	120	16	
4CRL 015 003 S06	1.5 X R0.3	3	50	6		4CRL 160 030 S16	16 X R3	32	120	16	
4CRL 015 005 S06	1.5 X R0.5	3	50	6		4CRL 200 005 S20	20 X R0.5	38	130	20	
4CRL 020 001 S06	2 X R0.1	5	50	6		4CRL 200 010 S20	20 X R1	38	130	20	
4CRL 020 002 S06	2 X R0.2	5	50	6		4CRL 200 020 S20	20 X R2	38	130	20	
4CRL 020 003 S06	2 X R0.3	5	50	6		4CRL 200 030 S20	20 X R3	38	130	20	
4CRL 020 005 S06	2 X R0.5	5	50	6		4CRL 200 040 S20	20 X R4	38	130	20	
4CRL 025 001 S06	2.5 X R0.1	6	60	6		4CRL 200 050 S20	20 X R5	38	130	20	
4CRL 025 002 S06	2.5 X R0.2	6	60	6							
4CRL 025 003 S06	2.5 X R0.3	6	60	6							
4CRL 025 005 S06	2.5 X R0.5	6	60	6							
4CRL 030 001 S06	3 X R0.1	6	70	6							
4CRL 030 002 S06	3 X R0.2	6	70	6							
4CRL 030 003 S06	3 X R0.3	6	70	6							
4CRL 030 005 S06	3 X R0.5	6	70	6							
4CRL 030 010 S06	3 X R1	6	70	6							
4CRL 040 001 S06	4 X R0.1	8	70	6							
4CRL 040 002 S06	4 X R0.2	8	70	6							
4CRL 040 003 S06	4 X R0.3	8	70	6							
4CRL 040 005 S06	4 X R0.5	8	70	6							
4CRL 040 010 S06	4 X R1	8	70	6							
4CRL 060 001 S06	6 X R0.1	12	90	6							
4CRL 060 002 S06	6 X R0.2	12	90	6							
4CRL 060 003 S06	6 X R0.3	12	90	6							
4CRL 060 005 S06	6 X R0.5	12	90	6							
4CRL 060 010 S06	6 X R1	12	90	6							
4CRL 060 015 S06	6 X R1.5	12	90	6							
4CRL 060 020 S06	6 X R2	12	90	6							
4CRL 080 002 S08	8 X R0.2	16	90	8							
4CRL 080 003 S08	8 X R0.3	16	90	8							
4CRL 080 005 S08	8 X R0.5	16	90	8							
4CRL 080 010 S08	8 X R1	16	90	8							
4CRL 080 015 S08	8 X R1.5	16	90	8							
4CRL 080 020 S08	8 X R2	16	90	8							
4CRL 100 002 S10	10 X R0.2	20	100	10							
4CRL 100 003 S10	10 X R0.3	20	100	10							
4CRL 100 005 S10	10 X R0.5	20	100	10							
4CRL 100 010 S10	10 X R1	20	100	10							



## 6날 45° 헬릭스 코너레이디우스 롱 엔드밀



- 고경도강(HRc50~62), 프리하든강 계열의 고속가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 45° 헬릭스 형상으로 설계하여 고속, 고이송 가공에 적합합니다.
- 축삭가공, 코너부, 무구배면 가공시 가공물의 표면조도가 뛰어나며, 인선날 길이 증가로 내마모성이 더욱 좋아집니다.
- 초미립자 초경합금(0.2 $\mu$ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- Endmills for pre-hardened and hardened steel(HRc50~62)
- Good wear resistance by Si-based PVD coating.
- 45° degree helix design for high speed, feed condition.
- Improved wear resistance with longer edge and excellent work surface finish in various machining applications.
- Outstanding performance at high speed machining by ultra fine (0.2  $\mu$ m) WC grade.

6

UWC  
초미립자

TISIN  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

45°  
Helix Angle

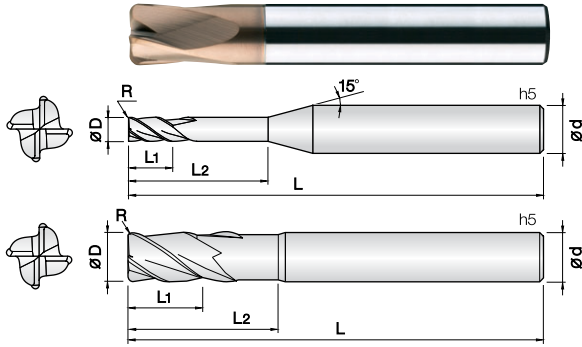
R0.2 ~ 0.5
R1 ~ 1.5
R2

D Size	D Tolerance
Ø5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고					
6CRL 050 002 060	5 X R0.2	13	60	6						
6CRL 050 003 060	5 X R0.3	13	60	6						
6CRL 050 005 060	5 X R0.5	13	60	6						
6CRL 050 010 060	5 X R1	13	60	6						
6CRL 060 002 060	6 X R0.2	15	60	6						
6CRL 060 002 080	6 X R0.2	15	80	6						
6CRL 060 003 060	6 X R0.3	15	60	6						
6CRL 060 003 080	6 X R0.3	15	80	6						
6CRL 060 005 060	6 X R0.5	15	60	6						
6CRL 060 005 080	6 X R0.5	15	80	6						
6CRL 060 010 060	6 X R1	15	60	6						
6CRL 060 010 080	6 X R1	15	80	6						
6CRL 080 003 070	8 X R0.3	20	70	8						
6CRL 080 003 090	8 X R0.3	20	90	8						
6CRL 080 005 070	8 X R0.5	20	70	8						
6CRL 080 005 090	8 X R0.5	20	90	8						
6CRL 080 010 070	8 X R1	20	70	8						
6CRL 080 010 090	8 X R1	20	90	8						
6CRL 080 015 070	8 X R1.5	20	70	8						
6CRL 100 003 075	10 X R0.3	25	75	10						
6CRL 100 003 100	10 X R0.3	25	100	10						
6CRL 100 005 075	10 X R0.5	25	75	10						
6CRL 100 005 100	10 X R0.5	25	100	10						
6CRL 100 010 075	10 X R1	25	75	10						
6CRL 100 010 100	10 X R1	25	100	10						
6CRL 100 020 075	10 X R2	25	75	10						
6CRL 120 003 080	12 X R0.3	30	80	12						
6CRL 120 003 110	12 X R0.3	30	110	12						
6CRL 120 005 080	12 X R0.5	30	80	12						
6CRL 120 005 110	12 X R0.5	30	110	12						
6CRL 120 010 080	12 X R1	30	80	12						
6CRL 120 010 110	12 X R1	30	110	12						
6CRL 120 020 080	12 X R2	30	80	12						
6CRL 160 005 110	16 X R0.5	50	110	16						
6CRL 160 010 110	16 X R1	50	110	16						
6CRL 160 020 110	16 X R2	50	110	16						

## 4날고이송 코너레디우스 커터



- 고경도강(HRc50~62), 프리하든강 계열의 고이송 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 저속 RPM에서 고이송 작업이 가능 하도록 설계하였습니다.
- 중삭 및 황삭 가공시 작업 효율이 극대화 됩니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.

• Cutter for pre-hardened and hardened steel (HRc50~62)

- Good wear resistance by Si-based PVD coating.
- Designed for low speed with high feed condition.
- Suitable for heavy duty and roughing application.
- Minimize fracturing at high feed by high TRS fine WC grade.

4

WC  
미립자

TISIN  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

15°  
Helix Angle

R0.2 ~ 0.5
R1 ~ 1.5
R2 ~ 3

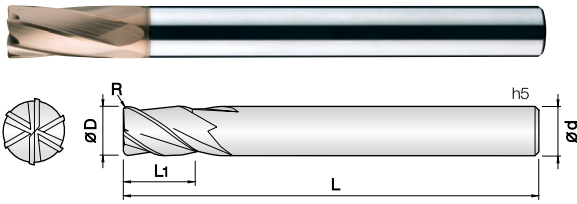
D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고												
4RCU 010 002 025	1 X R0.2	1	2.5	50	4													
4RCU 015 005 040	1.5 X R0.5	1.5	4	50	4													
4RCU 020 005 060	2 X R0.5	2	6	50	6													
4RCU 030 005 080	3 X R0.5	3	8	50	6													
4RCU 040 005 120	4 X R0.5	4	12	60	6													
4RCU 040 005 160	4 X R0.5	4	16	60	6													
4RCU 040 010 120	4 X R1	4	12	60	6													
4RCU 040 010 160	4 X R1	4	16	60	6													
4RCU 050 005 150	5 X R0.5	5	15	60	6													
4RCU 050 010 150	5 X R1	5	15	60	6													
4RCU 060 003 150	6 X R0.3	6	15	60	6													
4RCU 060 005 150	6 X R0.5	6	15	60	6													
4RCU 060 010 150	6 X R1	6	15	60	6													
4RCU 060 015 150	6 X R1.5	6	15	60	6													
4RCU 080 003 160	8 X R0.3	8	16	60	8													
4RCU 080 005 160	8 X R0.5	8	16	60	8													
4RCU 080 005 200	8 X R0.5	8	20	80	8													
4RCU 080 005 300	8 X R0.5	8	30	110	8													
4RCU 080 010 160	8 X R1	8	16	60	8													
4RCU 080 010 200	8 X R1	8	20	80	8													
4RCU 080 010 300	8 X R1	8	30	110	8													
4RCU 080 020 160	8 X R2	8	16	60	8													
4RCU 080 020 200	8 X R2	8	20	80	8													
4RCU 080 020 300	8 X R2	8	30	110	8													
4RCU 100 003 200	10 X R0.3	10	20	70	10													
4RCU 100 005 200	10 X R0.5	10	20	70	10													
4RCU 100 005 250	10 X R0.5	10	25	90	10													
4RCU 100 005 300	10 X R0.5	10	30	120	10													
4RCU 100 010 200	10 X R1	10	20	70	10													
4RCU 100 010 250	10 X R1	10	25	90	10													
4RCU 100 010 300	10 X R1	10	30	120	10													
4RCU 100 020 200	10 X R2	10	20	70	10													
4RCU 100 020 250	10 X R2	10	25	90	10													
4RCU 100 020 300	10 X R2	10	30	120	10													
4RCU 120 005 250	12 X R0.5	12	25	80	12													
4RCU 120 005 300	12 X R0.5	12	30	100	12													
4RCU 120 005 350	12 X R0.5	12	35	130	12													
4RCU 120 010 250	12 X R1	12	25	80	12													
4RCU 120 010 300	12 X R1	12	30	100	12													
4RCU 120 010 350	12 X R1	12	35	130	12													
4RCU 120 020 250	12 X R2	12	25	80	12													
4RCU 120 020 300	12 X R2	12	30	100	12													
4RCU 120 020 350	12 X R2	12	35	130	12													
4RCU 120 030 250	12 X R3	12	25	80	12													
4RCU 160 010 300	16 X R1	16	30	110	16													
4RCU 160 010 400	16 X R1	16	40	160	16													
4RCU 160 020 300	16 X R2	16	30	110	16													
4RCU 160 020 400	16 X R2	16	40	160	16													

# 6RCU 6 Flutes High Speed Corner Radius Cutter

## 6날고이송 코너레디우스 커터



HARD series

- 고경도강(HRc50~62), 프리하든강 계열의 고이송 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 저속 RPM에서 고이송 작업이 가능 하도록 설계하였습니다.
- 중삭 및 황삭 가공시 작업 효율이 극대화 됩니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- **Cutter for pre-hardened and hardened steel(HRc50~62)**
- Good wear resistance by Si-based PVD coating.
- Designed for low speed with high feed condition.
- Suitable for heavy duty and roughing application.
- Minimize fracturing at high feed by high TRS fine WC grade.

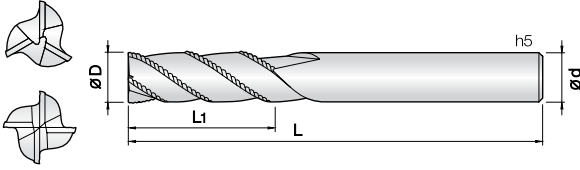


D Size	D Tolerance
∅6 ~ 12	-0.005 ~ -0.015mm
∅16 ~ 20	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고										
6RCU 060 005 060	6 X R0.5	12	60	6											
6RCU 060 005 080	6 X R0.5	12	80	6											
6RCU 060 010 060	6 X R1	12	60	6											
6RCU 060 010 080	6 X R1	12	80	6											
6RCU 080 005 060	8 X R0.5	16	60	8											
6RCU 080 005 090	8 X R0.5	16	90	8											
6RCU 080 010 060	8 X R1	16	60	8											
6RCU 080 010 090	8 X R1	16	90	8											
6RCU 080 020 060	8 X R2	16	60	8											
6RCU 080 020 090	8 X R2	16	90	8											
6RCU 100 005 070	10 X R0.5	20	70	10											
6RCU 100 005 100	10 X R0.5	20	100	10											
6RCU 100 010 070	10 X R1	20	70	10											
6RCU 100 010 100	10 X R1	20	100	10											
6RCU 100 020 070	10 X R2	20	70	10											
6RCU 100 020 100	10 X R2	20	100	10											
6RCU 120 005 080	12 X R0.5	25	80	12											
6RCU 120 005 110	12 X R0.5	25	110	12											
6RCU 120 010 080	12 X R1	25	80	12											
6RCU 120 010 110	12 X R1	25	110	12											
6RCU 120 020 080	12 X R2	25	80	12											
6RCU 120 020 110	12 X R2	25	110	12											
6RCU 160 005 160	16 X R0.5	35	160	16											
6RCU 160 005 200	16 X R0.5	35	200	16											
6RCU 160 010 160	16 X R1	35	160	16											
6RCU 160 010 200	16 X R1	35	200	16											
6RCU 160 015 160	16 X R1.5	35	160	16											
6RCU 160 015 200	16 X R1.5	35	200	16											
6RCU 160 020 160	16 X R2	35	160	16											
6RCU 160 020 200	16 X R2	35	200	16											
6RCU 200 005 150	20 X R0.5	40	150	20											
6RCU 200 005 200	20 X R0.5	40	200	20											
6RCU 200 010 150	20 X R1	40	150	20											
6RCU 200 010 200	20 X R1	40	200	20											
6RCU 200 015 150	20 X R1.5	40	150	20											
6RCU 200 015 200	20 X R1.5	40	200	20											
6RCU 200 020 150	20 X R2	40	150	20											
6RCU 200 020 200	20 X R2	40	200	20											

### 3&4날 라핑 엔드밀



#### • 공구강, 합금강 및 고경도 일반강 황삭가공 엔드밀

- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 뛰어난 칩배출력으로 가공시간을 단축하였습니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.

#### • Roughing Endmills for tool steel, alloy steel

- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Reduce machining time by excellent chip control.
- Minimize fracturing at high feed by high TRS fine WC grade.

HARD series



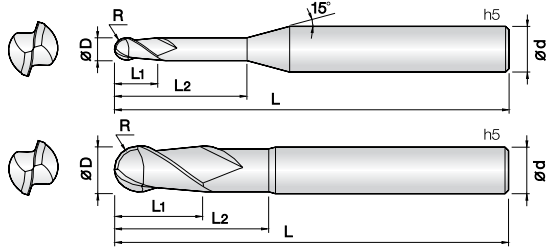
D Size	D Tolerance
ø4 ~ 9	-0.02 ~ -0.04mm
ø10 ~ 20	-0.02 ~ -0.05mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤프트 Shank Dia d	비고										
3ROU 040 100 S06	4	10	50	6											
3ROU 050 130 S06	5	13	50	6											
3ROU 060 100 050	6	10	50	6											
3ROU 060 150 055	6	15	55	6											
3ROU 060 200 060	6	20	60	6											
3ROU 070 180 S08	7	18	65	8											
3ROU 080 120 060	8	12	60	8											
3ROU 080 190 065	8	19	65	8											
3ROU 080 250 070	8	25	70	8											
4ROU 090 220 S10	9	22	70	10											
4ROU 100 150 070	10	15	70	10											
4ROU 100 220 070	10	22	70	10											
4ROU 100 300 080	10	30	80	10											
4ROU 110 270 S12	11	27	80	12											
4ROU 120 200 075	12	20	75	12											
4ROU 120 260 080	12	26	80	12											
4ROU 120 350 090	12	35	90	12											
4ROU 160 320 090	16	32	90	16											
4ROU 160 400 100	16	40	100	16											
4ROU 200 380 110	20	38	110	20											
4ROU 200 500 110	20	50	110	20											







- 중저경도강(HRC52이하), 프리하드강 계열, 탄소강, 금형강등 다양한 피삭재 가공 엔드밀
- 고탄량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 넓은 영역의 피삭재 가공에 적합한 형상으로 설계 하였습니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화하였습니다.
- Endmills for various work materials(~HRC52), pre-hardened steel, carbon steel, mold steel.
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

2

UWC  
초미립자

BLUE  
Coating

R  
±0.005

R  
±0.01

30°  
Helix Angle

0.1 ~ 2.5R    3 ~ 6R

D Size	D Tolerance
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

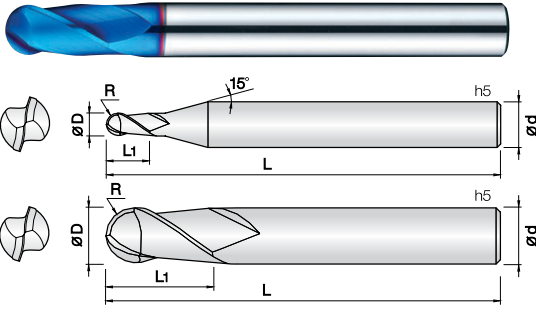
단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRBE 002 005 S04	0.1R X 0.2	0.2	0.5	40	4		2HRBE 008 120 S04	0.4R X 0.8	0.8	12	45	4	
2HRBE 002 010 S04	0.1R X 0.2	0.2	1	40	4		2HRBE 009 040 S04	0.45R X 0.9	0.9	4	45	4	
2HRBE 002 015 S04	0.1R X 0.2	0.2	1.5	40	4		2HRBE 009 060 S04	0.45R X 0.9	0.9	6	45	4	
2HRBE 002 020 S04	0.1R X 0.2	0.2	2	40	4		2HRBE 009 080 S04	0.45R X 0.9	0.9	8	45	4	
2HRBE 003 010 S04	0.15R X 0.3	0.3	1	40	4		2HRBE 009 100 S04	0.45R X 0.9	0.9	10	50	4	
2HRBE 003 015 S04	0.15R X 0.3	0.3	1.5	40	4		2HRBE 010 020 S04	0.5R X 1	1	2	45	4	
2HRBE 003 020 S04	0.15R X 0.3	0.3	2	40	4		2HRBE 010 030 S04	0.5R X 1	1	3	45	4	
2HRBE 003 030 S04	0.15R X 0.3	0.3	3	40	4		2HRBE 010 040 S04	0.5R X 1	1	4	45	4	
2HRBE 003 040 S04	0.15R X 0.3	0.3	4	40	4		2HRBE 010 050 S04	0.5R X 1	1	5	45	4	
2HRBE 004 010 S04	0.2R X 0.4	0.4	1	40	4		2HRBE 010 060 S04	0.5R X 1	1	6	45	4	
2HRBE 004 020 S04	0.2R X 0.4	0.4	2	40	4		2HRBE 010 080 S04	0.5R X 1	1	8	45	4	
2HRBE 004 030 S04	0.2R X 0.4	0.4	3	40	4		2HRBE 010 100 S04	0.5R X 1	1	10	50	4	
2HRBE 004 040 S04	0.2R X 0.4	0.4	4	40	4		2HRBE 010 120 S04	0.5R X 1	1	12	50	4	
2HRBE 004 050 S04	0.2R X 0.4	0.4	5	40	4		2HRBE 010 140 S04	0.5R X 1	1	14	50	4	
2HRBE 004 060 S04	0.2R X 0.4	0.4	6	40	4		2HRBE 010 160 S04	0.5R X 1	1	16	50	4	
2HRBE 004 080 S04	0.2R X 0.4	0.4	8	40	4		2HRBE 010 180 S04	0.5R X 1	1	18	50	4	
2HRBE 005 010 S04	0.25R X 0.5	0.5	1	45	4		2HRBE 010 200 S04	0.5R X 1	1	20	50	4	
2HRBE 005 020 S04	0.25R X 0.5	0.5	2	45	4		2HRBE 010 220 S04	0.5R X 1	1	22	60	4	
2HRBE 005 030 S04	0.25R X 0.5	0.5	3	45	4		2HRBE 010 250 S04	0.5R X 1	1	25	60	4	
2HRBE 005 040 S04	0.25R X 0.5	0.5	4	45	4		2HRBE 012 040 S04	0.6R X 1.2	1.2	4	45	4	
2HRBE 005 050 S04	0.25R X 0.5	0.5	5	45	4		2HRBE 012 060 S04	0.6R X 1.2	1.2	6	45	4	
2HRBE 005 060 S04	0.25R X 0.5	0.5	6	45	4		2HRBE 012 080 S04	0.6R X 1.2	1.2	8	45	4	
2HRBE 005 080 S04	0.25R X 0.5	0.5	8	45	4		2HRBE 012 100 S04	0.6R X 1.2	1.2	10	50	4	
2HRBE 005 100 S04	0.25R X 0.5	0.5	10	45	4		2HRBE 012 120 S04	0.6R X 1.2	1.2	12	50	4	
2HRBE 005 120 S04	0.25R X 0.5	0.5	12	45	4		2HRBE 012 160 S04	0.6R X 1.2	1.2	16	50	4	
2HRBE 006 010 S04	0.3R X 0.6	0.6	1	45	4		2HRBE 012 200 S04	0.6R X 1.2	1.2	20	50	4	
2HRBE 006 020 S04	0.3R X 0.6	0.6	2	45	4		2HRBE 012 240 S04	0.6R X 1.2	1.2	24	60	4	
2HRBE 006 030 S04	0.3R X 0.6	0.6	3	45	4		2HRBE 014 060 S04	0.7R X 1.4	1.4	6	45	4	
2HRBE 006 040 S04	0.3R X 0.6	0.6	4	45	4		2HRBE 014 080 S04	0.7R X 1.4	1.4	8	45	4	
2HRBE 006 050 S04	0.3R X 0.6	0.6	5	45	4		2HRBE 014 120 S04	0.7R X 1.4	1.4	12	50	4	
2HRBE 006 060 S04	0.3R X 0.6	0.6	6	45	4		2HRBE 014 160 S04	0.7R X 1.4	1.4	16	50	4	
2HRBE 006 080 S04	0.3R X 0.6	0.6	8	45	4		2HRBE 015 030 S04	0.75R X 1.5	1.5	3	45	4	
2HRBE 006 100 S04	0.3R X 0.6	0.6	10	45	4		2HRBE 015 040 S04	0.75R X 1.5	1.5	4	45	4	
2HRBE 006 120 S04	0.3R X 0.6	0.6	12	45	4		2HRBE 015 060 S04	0.75R X 1.5	1.5	6	45	4	
2HRBE 006 140 S04	0.3R X 0.6	0.6	14	45	4		2HRBE 015 080 S04	0.75R X 1.5	1.5	8	45	4	
2HRBE 007 020 S04	0.35R X 0.7	0.7	2	45	4		2HRBE 015 100 S04	0.75R X 1.5	1.5	10	50	4	
2HRBE 007 040 S04	0.35R X 0.7	0.7	4	45	4		2HRBE 015 120 S04	0.75R X 1.5	1.5	12	50	4	
2HRBE 007 060 S04	0.35R X 0.7	0.7	6	45	4		2HRBE 015 140 S04	0.75R X 1.5	1.5	14	50	4	
2HRBE 007 080 S04	0.35R X 0.7	0.7	8	45	4		2HRBE 015 160 S04	0.75R X 1.5	1.5	16	50	4	
2HRBE 007 100 S04	0.35R X 0.7	0.7	10	45	4		2HRBE 015 180 S04	0.75R X 1.5	1.5	18	50	4	
2HRBE 007 120 S04	0.35R X 0.7	0.7	12	45	4		2HRBE 015 200 S04	0.75R X 1.5	1.5	20	50	4	
2HRBE 008 020 S04	0.4R X 0.8	0.8	2	45	4		2HRBE 015 220 S04	0.75R X 1.5	1.5	22	60	4	
2HRBE 008 030 S04	0.4R X 0.8	0.8	3	45	4		2HRBE 015 250 S04	0.75R X 1.5	1.5	25	60	4	
2HRBE 008 040 S04	0.4R X 0.8	0.8	4	45	4		2HRBE 015 300 S04	0.75R X 1.5	1.5	30	70	4	
2HRBE 008 050 S04	0.4R X 0.8	0.8	5	45	4		2HRBE 016 060 S04	0.8R X 1.6	1.6	6	45	4	
2HRBE 008 060 S04	0.4R X 0.8	0.8	6	45	4		2HRBE 016 080 S04	0.8R X 1.6	1.6	8	45	4	
2HRBE 008 080 S04	0.4R X 0.8	0.8	8	45	4		2HRBE 016 120 S04	0.8R X 1.6	1.6	12	50	4	
2HRBE 008 100 S04	0.4R X 0.8	0.8	10	45	4		2HRBE 016 160 S04	0.8R X 1.6	1.6	16	50	4	

E series

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRBE 016 200 S04	0.8R X 1.6	1.6	20	50	4		2HRBE 050 250 S06	2.5R X 5	6	25	70	6	
2HRBE 018 060 S04	0.9R X 1.8	1.8	6	45	4		2HRBE 050 300 S06	2.5R X 5	6	30	75	6	
2HRBE 018 080 S04	0.9R X 1.8	1.8	8	45	4		2HRBE 050 400 S06	2.5R X 5	6	40	80	6	
2HRBE 018 120 S04	0.9R X 1.8	1.8	12	50	4		2HRBE 050 500 S06	2.5R X 5	6	50	90	6	
2HRBE 018 160 S04	0.9R X 1.8	1.8	16	50	4		2HRBE 060 150 S06	3R X 6	10	15	55	6	
2HRBE 018 200 S04	0.9R X 1.8	1.8	20	50	4		2HRBE 080 250 060	4R X 8	12	25	60	8	
2HRBE 020 040 S04	1R X 2	2	4	45	4		2HRBE 100 300 070	5R X 10	16	30	70	10	
2HRBE 020 060 S04	1R X 2	2	6	45	4		2HRBE 120 300 075	6R X 12	18	30	75	12	
2HRBE 020 080 S04	1R X 2	2	8	45	4								
2HRBE 020 100 S04	1R X 2	2	10	50	4								
2HRBE 020 120 S04	1R X 2	2	12	50	4								
2HRBE 020 140 S04	1R X 2	2	14	50	4								
2HRBE 020 160 S04	1R X 2	2	16	50	4								
2HRBE 020 180 S04	1R X 2	2	18	50	4								
2HRBE 020 200 S04	1R X 2	2	20	50	4								
2HRBE 020 220 S04	1R X 2	2	22	60	4								
2HRBE 020 250 S04	1R X 2	2	25	60	4								
2HRBE 020 300 S04	1R X 2	2	30	60	4								
2HRBE 025 080 S04	1.25R X 2.5	2.5	8	45	4								
2HRBE 025 100 S04	1.25R X 2.5	2.5	10	50	4								
2HRBE 025 120 S04	1.25R X 2.5	2.5	12	50	4								
2HRBE 025 160 S04	1.25R X 2.5	2.5	16	50	4								
2HRBE 025 200 S04	1.25R X 2.5	2.5	20	60	4								
2HRBE 025 250 S04	1.25R X 2.5	2.5	25	60	4								
2HRBE 025 300 S04	1.25R X 2.5	2.5	30	70	4								
2HRBE 030 060 S06	1.5R X 3	3	6	50	6								
2HRBE 030 080 S06	1.5R X 3	3	8	50	6								
2HRBE 030 100 S06	1.5R X 3	3	10	50	6								
2HRBE 030 120 S06	1.5R X 3	3	12	50	6								
2HRBE 030 160 S06	1.5R X 3	3	16	60	6								
2HRBE 030 200 S06	1.5R X 3	3	20	60	6								
2HRBE 030 250 S06	1.5R X 3	3	25	65	6								
2HRBE 030 300 S06	1.5R X 3	3	30	70	6								
2HRBE 030 350 S06	1.5R X 3	3	35	75	6								
2HRBE 030 400 S06	1.5R X 3	3	40	80	6								
2HRBE 030 450 S06	1.5R X 3	3	45	90	6								
2HRBE 040 080 S06	2R X 4	4	8	50	6								
2HRBE 040 100 S06	2R X 4	4	10	50	6								
2HRBE 040 120 S06	2R X 4	4	12	50	6								
2HRBE 040 160 S06	2R X 4	4	16	60	6								
2HRBE 040 200 S06	2R X 4	4	20	60	6								
2HRBE 040 250 S06	2R X 4	4	25	65	6								
2HRBE 040 300 S06	2R X 4	4	30	70	6								
2HRBE 040 350 S06	2R X 4	4	35	75	6								
2HRBE 040 400 S06	2R X 4	4	40	80	6								
2HRBE 040 450 S06	2R X 4	4	45	90	6								
2HRBE 050 160 S06	2.5R X 5	6	16	60	6								
2HRBE 050 200 S06	2.5R X 5	6	20	60	6								



- 중저경도강(HRC52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공 엔드밀
- 고함량 실리콘계 코팅(Si)처리하여 내마모성이 우수합니다.
- 넓은 영역의 피삭재 가공에 적합한 형상으로 설계 하였습니다.
- 경제적인 가격으로 가공 생산비 절감을 극대화합니다.
- 항절삭력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials(~HRC52), prehardened steel, carbon steel, mold steel.**
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

2

WC  
미립자

BLUE  
Coating

R  
 $\pm 0.005$

R  
 $\pm 0.01$

R  
 $\pm 0.015$

30°  
Helix Angle

0.1 ~ 2.5R
3 ~ 6R
8R

D Size	D Tolerance
$\phi 0.2 \sim 5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.005 ~ -0.015mm
$\phi 16$	-0.01 ~ -0.02mm

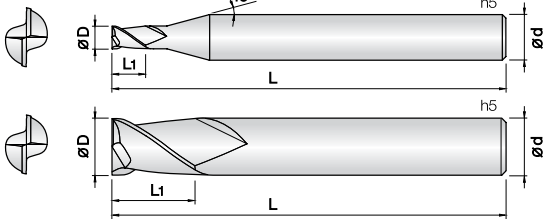
단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고													
2HCBE 002 004 S04	0.1R X 0.2	0.4	40	4														
2HCBE 003 006 S04	0.15R X 0.3	0.6	40	4														
2HCBE 004 008 S04	0.2R X 0.4	0.8	40	4														
2HCBE 005 010 S04	0.25R X 0.5	1	45	4														
2HCBE 006 012 S04	0.3R X 0.6	1.2	45	4														
2HCBE 007 014 S04	0.35R X 0.7	1.4	45	4														
2HCBE 008 016 S04	0.4R X 0.8	1.6	45	4														
2HCBE 009 018 S04	0.45R X 0.9	1.8	45	4														
2HCBE 010 025 S04	0.5R X 1	2.5	50	4														
2HCBE 010 025 S06	0.5R X 1	2.5	50	6														
2HCBE 012 030 S04	0.6R X 1.2	3	50	4														
2HCBE 015 040 S04	0.75R X 1.5	4	50	4														
2HCBE 015 040 S06	0.75R X 1.5	4	50	6														
2HCBE 020 050 S04	1R X 2	5	50	4														
2HCBE 020 050 S06	1R X 2	5	50	6														
2HCBE 025 050 S04	1.25R X 2.5	5	50	4														
2HCBE 025 050 S06	1.25R X 2.5	5	50	6														
2HCBE 030 060 S04	1.5R X 3	6	50	4														
2HCBE 030 060 S06	1.5R X 3	6	50	6														
2HCBE 030 060 060	1.5R X 3	6	60	6														
2HCBE 040 080 S04	2R X 4	8	50	4														
2HCBE 040 080 080	2R X 4	8	80	4														
2HCBE 040 080 S06	2R X 4	8	50	6														
2HCBE 040 080 070	2R X 4	8	70	6														
2HCBE 050 100 S06	2.5R X 5	10	50	6														
2HCBE 050 120 S06	2.5R X 5	12	80	6														
2HCBE 060 100 050	3R X 6	10	50	6														
2HCBE 060 100 060	3R X 6	10	60	6														
2HCBE 060 120 080	3R X 6	12	80	6														
2HCBE 060 120 100	3R X 6	12	100	6														
2HCBE 080 120 060	4R X 8	12	60	8														
2HCBE 080 140 080	4R X 8	14	80	8														
2HCBE 080 140 100	4R X 8	14	100	8														
2HCBE 100 150 075	5R X 10	15	75	10														
2HCBE 100 180 100	5R X 10	18	100	10														
2HCBE 120 180 080	6R X 12	18	80	12														
2HCBE 120 220 110	6R X 12	22	110	12														
2HCBE 160 300 110	8R X 16	30	110	16														

E series



## 2날 강력 절삭용 표준 길이 엔드밀



- 중저경도강(HRC52이하), 프리하트강 계열, 탄소강, 금형강 등 다양한 피삭재 가공 엔드밀
- 고함량 실리콘계 코팅(Si)처리하여 내마모성이 우수합니다.
- 넓은 영역의 피삭재 가공에 적합한 형상으로 설계 하였습니다.
- 경제적인 가격으로 가공 생산비 절감을 극대화합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for various work materials(~HRC52), prehardened steel, carbon steel, mold steel.
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

E series

2

WC  
미립자

BLUE  
Coating

|D|  
+0 -0.01

|D|  
-0.01 -0.025

|D|  
-0.015 -0.03

30°  
Helix Angle

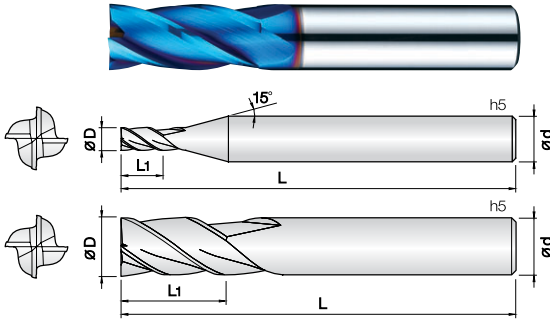
Shield Edge

D Size	D Tolerance
$\phi 0.2 \sim 5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.01 ~ -0.025mm
$\phi 16$	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샹크 Dia d	비고															
2HCEE 002 004 S04	0.2	0.4	40	4																
2HCEE 003 006 S04	0.3	0.6	40	4																
2HCEE 004 008 S04	0.4	0.8	40	4																
2HCEE 005 010 S04	0.5	1	40	4																
2HCEE 006 012 S04	0.6	1.2	40	4																
2HCEE 007 014 S04	0.7	1.4	40	4																
2HCEE 008 016 S04	0.8	1.6	40	4																
2HCEE 009 018 S04	0.9	1.8	40	4																
2HCEE 010 025 S04	1	2.5	45	4																
2HCEE 012 030 S04	1.2	3	45	4																
2HCEE 015 040 S04	1.5	4	45	4																
2HCEE 020 060 S04	2	6	45	4																
2HCEE 025 080 S04	2.5	8	45	4																
2HCEE 030 080 S04	3	8	50	4																
2HCEE 030 080 S06	3	8	50	6																
2HCEE 040 110 S04	4	11	50	4																
2HCEE 040 110 S06	4	11	50	6																
2HCEE 050 130 S06	5	13	50	6																
2HCEE 060 130 050	6	13	50	6																
2HCEE 060 160 055	6	16	55	6																
2HCEE 080 200 060	8	20	60	8																
2HCEE 080 240 070	8	24	70	8																
2HCEE 100 220 070	10	22	70	10																
2HCEE 100 250 075	10	25	75	10																
2HCEE 120 260 075	12	26	75	12																
2HCEE 120 300 080	12	30	80	12																
2HCEE 160 400 090	16	40	90	16																

### 4날 강력 절삭용 표준 길이 엔드밀



- 중저경도강(HRC52이하), 프리하트강 계열, 탄소강, 금형강 등 다양한 피삭재 가공 엔드밀
- 고함량 실리콘계 코팅(Si)처리하여 내마모성이 우수합니다.
- 넓은 영역의 피삭재 가공에 적합한 형상으로 설계 하였습니다.
- 경제적인 가격으로 가공 생산비 절감을 극대화합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu\text{m}$ )을 채택, 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials(~HRC52), prehardened steel, carbon steel, mold steel.**
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5 $\mu\text{m}$ ) WC grade.

4

**WC**  
미립자

**BLUE**  
Coating

**D**  
+0 -0.01

**D**  
-0.01 -0.025

**D**  
-0.015 -0.03

**30°**  
Helix Angle

Shield Edge

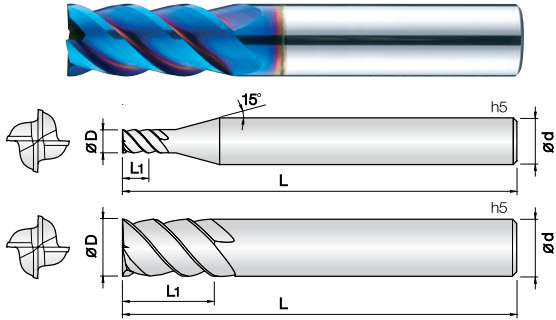
φ1~φ5
φ6~φ12
φ16

D Size	D Tolerance
φ1 ~ 5	+0 ~ -0.01mm
φ6 ~ 12	-0.01 ~ -0.025mm
φ16	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고								
4HCEE 010 025 S04	1	2.5	45	4									
4HCEE 015 040 S04	1.5	4	45	4									
4HCEE 020 060 S04	2	6	45	4									
4HCEE 025 080 S04	2.5	8	45	4									
4HCEE 030 080 S04	3	8	50	4									
4HCEE 030 080 S06	3	8	50	6									
4HCEE 040 110 S04	4	11	50	4									
4HCEE 040 110 S06	4	11	50	6									
4HCEE 050 130 S06	5	13	50	6									
4HCEE 060 130 050	6	13	50	6									
4HCEE 060 160 055	6	16	55	6									
4HCEE 080 200 060	8	20	60	8									
4HCEE 080 240 070	8	24	70	8									
4HCEE 100 220 070	10	22	70	10									
4HCEE 100 250 075	10	25	75	10									
4HCEE 120 260 075	12	26	75	12									
4HCEE 120 300 080	12	30	80	12									
4HCEE 160 400 090	16	40	90	16									

## 4날 고속·강력 절삭용 45° 헬릭스 엔드밀



- 중저경도강(HRC52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공 엔드밀
- 고품량 실리콘계 코팅(Si)처리하여 내마모성이 우수합니다.
- 넓은 영역의 피삭재 가공에 적합한 형상으로 설계 하였습니다.
- 45° 헬릭스 형상으로 설계하여 고속,고이송 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials(~HRC52), prehardened steel, carbon steel, mold steel.**
- Good wear resistance by high quality Si-based PVD coating.
- Suitable shape is designed for tooling in wide areas.
- 45° degree helix design for high speed, feed condition.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

4

WC  
미립자

BLUE  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

45°  
Helix Angle

Shield Edge

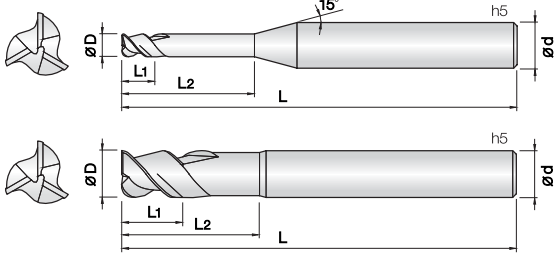
$\varnothing 1 \sim \varnothing 5$ 
 $\varnothing 6 \sim \varnothing 12$ 
 $\varnothing 14 \sim \varnothing 16$

D Size	D Tolerance
$\varnothing 1 \sim 5$	+0 ~ -0.01mm
$\varnothing 6 \sim 12$	-0.01 ~ -0.025mm
$\varnothing 14 \sim 16$	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고														
4HEME 010 025 S04	1	2.5	40	4															
4HEME 010 035 S04	1	3.5	40	4															
4HEME 012 030 S04	1.2	3	40	4															
4HEME 015 040 S04	1.5	4	40	4															
4HEME 015 060 S04	1.5	6	40	4															
4HEME 020 050 S04	2	5	40	4															
4HEME 020 080 S04	2	8	45	4															
4HEME 030 080 S06	3	8	45	6															
4HEME 030 120 S06	3	12	50	6															
4HEME 040 110 S06	4	11	45	6															
4HEME 040 160 S06	4	16	55	6															
4HEME 050 130 S06	5	13	50	6															
4HEME 050 180 S06	5	18	60	6															
4HEME 060 130 S06	6	13	50	6															
4HEME 060 200 S06	6	20	60	6															
4HEME 080 200 S08	8	20	60	8															
4HEME 080 250 S08	8	25	70	8															
4HEME 080 300 S08	8	30	75	8															
4HEME 100 220 S10	10	22	70	10															
4HEME 100 300 S10	10	30	80	10															
4HEME 100 400 S10	10	40	90	10															
4HEME 120 260 S12	12	26	75	12															
4HEME 120 400 S12	12	40	90	12															
4HEME 120 500 S12	12	50	100	12															
4HEME 140 300 S14	14	30	80	14															
4HEME 140 500 S14	14	50	110	14															
4HEME 160 350 S16	16	35	90	16															
4HEME 160 500 S16	16	50	110	16															

## 3날 강력 절삭용 엔드밀



- 중저경도강(HRC52이하), 프리하든강 계열, 탄소강, 금형강, SUS계열, Ti/Ni계 합금, 인코넬 등 다양한 피삭재 가공 엔드밀
- 고함량 실리콘계 코팅(Si)처리하여 내마모성이 우수합니다.
- 3날 적용 및 깊은 포켓으로 칩배출이 원활하며, 피삭재 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금(0.5μm)을 채택, 엔드밀의 파손을 최소화 하였습니다.

- Endmills for various work materials(~HRC52), pre-hardened steel, carbon steel, mold steel, SUS, Ti/Ni-base alloy, Inconel.**
- Good wear resistance by high quality Si-based PVD coating.
- Excellent work surface finish by 3 flute and deep chip pocket.
- Minimize fracturing by high TRS fine(0.5μm) WC grade.

3

WC  
미립자

BLUE  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

45°  
Helix Angle

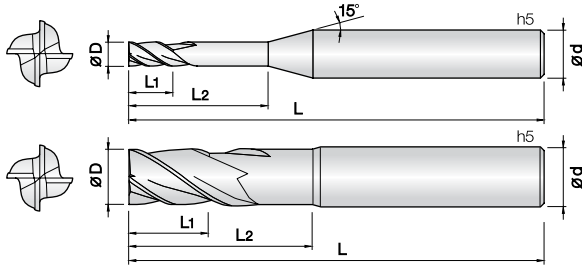
Shield Edge

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤홙크 Shank Dia d	비고
3NSE 010 025 S04	1	2.5	45	4	
3NSE 012 030 S04	1.2	3	45	4	
3NSE 015 040 S04	1.5	4	45	4	
3NSE 020 060 S04	2	6	45	4	
3NSE 030 080 S06	3	8	45	6	
3NSE 040 110 S06	4	11	50	6	
3NSE 050 130 S06	5	13	50	6	
3NSE 060 130 S06	6	13	55	6	
3NSE 080 190 S08	8	19	60	8	
3NSE 100 220 S10	10	22	70	10	
3NSE 120 260 S12	12	26	80	12	





- 중저경도강(HRC52이하), 프리하든강 계열, 탄소강, 금형강, SUS계열, Ti/Ni계 합금, 인코넬 등 다양한 피삭재 가공 엔드밀
- 고품량 실리코계 코팅(Si)처리하여 내마모성이 우수합니다.
- 강력한 체터링방지 설계로 엔드밀의 진동을 최소화하였습니다
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for various work materials(~HRC52), pre-hardened steel, carbon steel, mold steel, SUS, Ti/Ni-base alloy, Inconel.
- Good wear resistance by high quality Si-based PVD coating.
- Minimize chattering by unequal flute spacing design.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

E series

4

WC  
미립자

BLUE  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015-0.03

42°  
Helix Angle

Shield Edge

다중분할

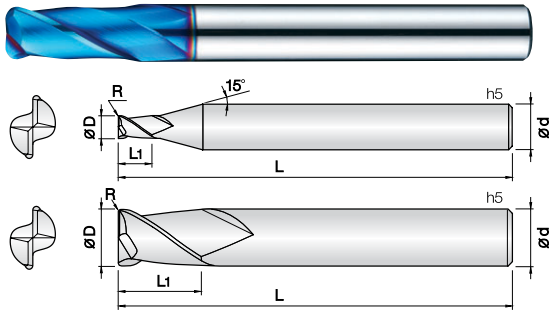
ø1~ø5   ø6~ø12   ø16~ø20   Shield Edge   Multi-Flute

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤희 Shank Dia d	비고									
4NSE 010 025 S04	1	2.5	-	45	4										
4NSE 010 040 S04	1	2.5	4	45	4										
4NSE 012 030 S04	1.2	3	-	45	4										
4NSE 012 050 S04	1.2	3	5	45	4										
4NSE 015 040 S04	1.5	4	-	45	4										
4NSE 015 060 S04	1.5	4	6	45	4										
4NSE 020 060 S04	2	6	-	45	4										
4NSE 020 100 S04	2	6	10	45	4										
4NSE 025 070 S04	2.5	7	-	45	4										
4NSE 025 100 S04	2.5	7	10	45	4										
4NSE 030 080 S06	3	8	-	50	6										
4NSE 030 100 S06	3	10	-	50	6										
4NSE 030 120 S06	3	8	12	50	6										
4NSE 040 100 S06	4	10	-	50	6										
4NSE 040 120 S06	4	12	-	50	6										
4NSE 040 160 S06	4	10	16	50	6										
4NSE 050 120 S06	5	12	-	55	6										
4NSE 050 160 S06	5	16	-	55	6										
4NSE 050 200 S06	5	12	20	55	6										
4NSE 060 130 S06	6	13	-	55	6										
4NSE 060 180 S06	6	18	-	55	6										
4NSE 060 210 055	6	13	21	55	6										
4NSE 080 200 S08	8	20	-	60	8										
4NSE 080 250 S08	8	25	-	70	8										
4NSE 080 270 070	8	20	27	70	8										
4NSE 100 220 S10	10	22	-	70	10										
4NSE 100 300 S10	10	30	-	75	10										
4NSE 100 320 075	10	22	32	75	10										
4NSE 120 260 S12	12	26	-	75	12										
4NSE 120 300 S12	12	30	-	80	12										
4NSE 120 380 080	12	26	38	80	12										
4NSE 160 450 S16	16	35	45	90	16										
4NSE 200 520 S20	20	40	52	100	20										

## 2날 강력 절삭용 코너 레디우스 엔드밀



- 중저경도강(HRC52이하), 프리하든강 계열, 탄소강, 금형강 등 가공
- 고품량 실리콘계 코팅(Si)처리하여 내마모성이 우수합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 경제적인 가격으로 가공 생산비 절감을 극대화합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.
- Good wear resistance by high quality Si-based PVD coating.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

2

WC  
미립자

BLUE  
Coating

R  
 $\pm 0.005$

R  
 $\pm 0.01$

R  
 $\pm 0.015$

D  
 $+0-0.01$

D  
 $-0.005-0.015$

30°  
Helix Angle

0.1 ~ 0.5R
1 ~ 1.5R
2R
 $\phi 1 \sim \phi 5$ 
 $\phi 6 \sim \phi 12$

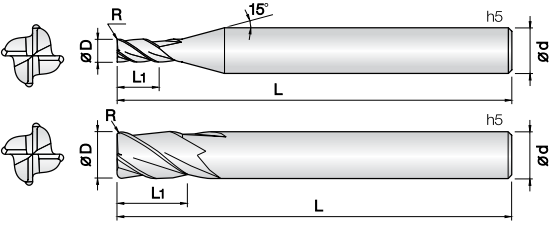
D Size	D Tolerance
$\phi 1 \sim 5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2NCRE 010 001 S04	1 X R0.1	3	50	4		2NCRE 120 020 110	12 X R2	26	110	12	
2NCRE 010 002 S04	1 X R0.2	3	50	4							
2NCRE 010 003 S04	1 X R0.3	3	50	4							
2NCRE 015 001 S04	1.5 X R0.1	4	50	4							
2NCRE 015 002 S04	1.5 X R0.2	4	50	4							
2NCRE 015 003 S04	1.5 X R0.3	4	50	4							
2NCRE 015 005 S04	1.5 X R0.5	4	50	4							
2NCRE 020 001 S04	2 X R0.1	6	50	4							
2NCRE 020 002 S04	2 X R0.2	6	50	4							
2NCRE 020 003 S04	2 X R0.3	6	50	4							
2NCRE 020 005 S04	2 X R0.5	6	50	4							
2NCRE 025 001 S04	2.5 X R0.1	6	50	4							
2NCRE 025 002 S04	2.5 X R0.2	6	50	4							
2NCRE 025 003 S04	2.5 X R0.3	6	50	4							
2NCRE 025 005 S04	2.5 X R0.5	6	50	4							
2NCRE 030 001 S06	3 X R0.1	8	60	6							
2NCRE 030 002 S06	3 X R0.2	8	60	6							
2NCRE 030 003 S06	3 X R0.3	8	60	6							
2NCRE 030 005 S06	3 X R0.5	8	60	6							
2NCRE 030 010 S06	3 X R1	8	60	6							
2NCRE 040 001 S04	4 X R0.1	10	50	4							
2NCRE 040 001 S06	4 X R0.1	10	70	6							
2NCRE 040 002 S04	4 X R0.2	10	50	4							
2NCRE 040 002 S06	4 X R0.2	10	70	6							
2NCRE 040 003 S04	4 X R0.3	10	50	4							
2NCRE 040 003 S06	4 X R0.3	10	70	6							
2NCRE 040 005 S04	4 X R0.5	10	50	4							
2NCRE 040 005 S06	4 X R0.5	10	70	6							
2NCRE 040 010 S04	4 X R1	10	50	4							
2NCRE 040 010 S06	4 X R1	10	70	6							
2NCRE 050 001 S06	5 X R0.1	13	75	6							
2NCRE 050 002 S06	5 X R0.2	13	75	6							
2NCRE 050 003 S06	5 X R0.3	13	75	6							
2NCRE 050 005 S06	5 X R0.5	13	75	6							
2NCRE 050 010 S06	5 X R1	13	75	6							
2NCRE 060 002 080	6 X R0.2	13	80	6							
2NCRE 060 003 080	6 X R0.3	13	80	6							
2NCRE 060 005 080	6 X R0.5	13	80	6							
2NCRE 060 010 080	6 X R1	13	80	6							
2NCRE 080 003 090	8 X R0.3	19	90	8							
2NCRE 080 005 090	8 X R0.5	19	90	8							
2NCRE 080 010 090	8 X R1	19	90	8							
2NCRE 100 003 100	10 X R0.3	22	100	10							
2NCRE 100 005 100	10 X R0.5	22	100	10							
2NCRE 100 010 100	10 X R1	22	100	10							
2NCRE 120 003 110	12 X R0.3	26	110	12							
2NCRE 120 005 110	12 X R0.5	26	110	12							
2NCRE 120 010 110	12 X R1	26	110	12							

E series

## 4날 강력 절삭용 코너 레디우스 엔드밀



- 중저경도강(HRC52이하), 프리하드강 계열, 탄소강, 금형강 등 가공
- 고품량 실리콘계 코팅(Si)처리하여 내마모성이 우수합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 경제적인 가격으로 가공 생산비 절감을 극대화합니다.
- 항절력이 높은 미립자 초경합금(0.5µm)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials(~HRC52), pre-hardened steel, carbon steel, mold steel.**
- Good wear resistance by high quality Si-based PVD coating.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Maximize the manufacturing cost saving with low price of products.
- Minimize fracturing by high TRS fine(0.5µm) WC grade.

4

WC  
미립자

BLUE  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

D  
+0-0.01

D  
-0.005-0.015

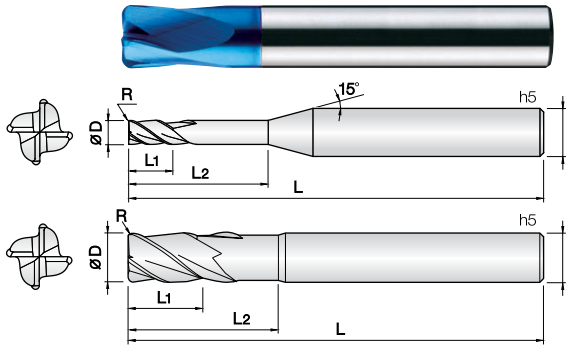
30°  
Helix Angle

D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 D x R	날장 L1	전장 L	생크 Shank Dia d	비고	Order Number	날경 D x R	날장 L1	전장 L	생크 Shank Dia d	비고
4NCRE 010 001 S04	1 X R0.1	3	50	4		4NCRE 050 002 075	5 X R0.2	13	75	6	
4NCRE 010 002 S04	1 X R0.2	3	50	4		4NCRE 050 003 S06	5 X R0.3	10	50	6	
4NCRE 010 003 S04	1 X R0.3	3	50	4		4NCRE 050 003 075	5 X R0.3	13	75	6	
4NCRE 015 001 S04	1.5 X R0.1	4	50	4		4NCRE 050 005 S06	5 X R0.5	10	50	6	
4NCRE 015 002 S04	1.5 X R0.2	4	50	4		4NCRE 050 005 075	5 X R0.5	13	75	6	
4NCRE 015 003 S04	1.5 X R0.3	4	50	4		4NCRE 050 010 S06	5 X R1	10	50	6	
4NCRE 015 005 S04	1.5 X R0.5	4	50	4		4NCRE 050 010 075	5 X R1	13	75	6	
4NCRE 020 001 S04	2 X R0.1	6	50	4		4NCRE 060 001 050	6 X R0.1	10	50	6	
4NCRE 020 002 S04	2 X R0.2	6	50	4		4NCRE 060 001 080	6 X R0.1	13	80	6	
4NCRE 020 003 S04	2 X R0.3	6	50	4		4NCRE 060 002 050	6 X R0.2	10	50	6	
4NCRE 020 005 S04	2 X R0.5	6	50	4		4NCRE 060 002 080	6 X R0.2	13	80	6	
4NCRE 025 001 S04	2.5 X R0.1	6	50	4		4NCRE 060 003 050	6 X R0.3	10	50	6	
4NCRE 025 002 S04	2.5 X R0.2	6	50	4		4NCRE 060 003 080	6 X R0.3	13	80	6	
4NCRE 025 003 S04	2.5 X R0.3	6	50	4		4NCRE 060 005 050	6 X R0.5	10	50	6	
4NCRE 025 005 S04	2.5 X R0.5	6	50	4		4NCRE 060 005 080	6 X R0.5	13	80	6	
4NCRE 030 001 S04	3 X R0.1	8	50	4		4NCRE 060 010 050	6 X R1	10	50	6	
4NCRE 030 001 S06	3 X R0.1	8	50	6		4NCRE 060 010 080	6 X R1	13	80	6	
4NCRE 030 001 060	3 X R0.1	8	60	6		4NCRE 080 002 060	8 X R0.2	16	60	8	
4NCRE 030 002 S04	3 X R0.2	8	50	4		4NCRE 080 002 090	8 X R0.2	19	90	8	
4NCRE 030 002 S06	3 X R0.2	8	50	6		4NCRE 080 003 060	8 X R0.3	16	60	8	
4NCRE 030 002 060	3 X R0.2	8	60	6		4NCRE 080 003 090	8 X R0.3	19	90	8	
4NCRE 030 003 S04	3 X R0.3	8	50	4		4NCRE 080 005 060	8 X R0.5	16	60	8	
4NCRE 030 003 S06	3 X R0.3	8	50	6		4NCRE 080 005 090	8 X R0.5	19	90	8	
4NCRE 030 003 060	3 X R0.3	8	60	6		4NCRE 080 010 060	8 X R1	16	60	8	
4NCRE 030 005 S04	3 X R0.5	8	50	4		4NCRE 080 010 090	8 X R1	19	90	8	
4NCRE 030 005 S06	3 X R0.5	8	50	6		4NCRE 080 020 060	8 X R2	16	60	8	
4NCRE 030 005 060	3 X R0.5	8	60	6		4NCRE 080 020 090	8 X R2	19	90	8	
4NCRE 030 010 S04	3 X R1	8	50	4		4NCRE 100 002 075	10 X R0.2	18	75	10	
4NCRE 030 010 S06	3 X R1	8	50	6		4NCRE 100 002 100	10 X R0.2	22	100	10	
4NCRE 030 010 060	3 X R1	8	60	6		4NCRE 100 003 075	10 X R0.3	18	75	10	
4NCRE 040 001 S04	4 X R0.1	10	50	4		4NCRE 100 003 100	10 X R0.3	22	100	10	
4NCRE 040 001 S06	4 X R0.1	10	50	6		4NCRE 100 005 075	10 X R0.5	18	75	10	
4NCRE 040 001 070	4 X R0.1	10	70	6		4NCRE 100 005 100	10 X R0.5	22	100	10	
4NCRE 040 002 S04	4 X R0.2	10	50	4		4NCRE 100 010 075	10 X R1	18	75	10	
4NCRE 040 002 S06	4 X R0.2	10	50	6		4NCRE 100 010 100	10 X R1	22	100	10	
4NCRE 040 002 070	4 X R0.2	10	70	6		4NCRE 100 020 075	10 X R2	18	75	10	
4NCRE 040 003 S04	4 X R0.3	10	50	4		4NCRE 100 020 100	10 X R2	22	100	10	
4NCRE 040 003 S06	4 X R0.3	10	50	6		4NCRE 120 002 075	12 X R0.2	22	75	12	
4NCRE 040 003 070	4 X R0.3	10	70	6		4NCRE 120 002 110	12 X R0.2	26	110	12	
4NCRE 040 005 S04	4 X R0.5	10	50	4		4NCRE 120 003 075	12 X R0.3	22	75	12	
4NCRE 040 005 S06	4 X R0.5	10	50	6		4NCRE 120 003 110	12 X R0.3	26	110	12	
4NCRE 040 005 070	4 X R0.5	10	70	6		4NCRE 120 005 075	12 X R0.5	22	75	12	
4NCRE 040 010 S04	4 X R1	10	50	4		4NCRE 120 005 110	12 X R0.5	26	110	12	
4NCRE 040 010 S06	4 X R1	10	50	6		4NCRE 120 010 075	12 X R1	22	75	12	
4NCRE 040 010 070	4 X R1	10	70	6		4NCRE 120 010 110	12 X R1	26	110	12	
4NCRE 050 001 S06	5 X R0.1	10	50	6		4NCRE 120 020 075	12 X R2	22	75	12	
4NCRE 050 001 075	5 X R0.1	13	75	6		4NCRE 120 020 110	12 X R2	26	110	12	
4NCRE 050 002 S06	5 X R0.2	10	50	6							

## 4날 강력 절삭용 고이송 코너 레디우스 커터



- 중저경도강(HRC52이하), 프리하든강 계열, 탄소강, 금형강 등 가공
- 고풍량 실리콘계 코팅(Si)처리하여 내마모성이 우수합니다.
- 저속 RPM에서 고이송 작업이 가능 하도록 설계하였습니다.
- 중삭 및 황삭 가공시 작업 효율이 극대화 됩니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials(-HRC52), pre-hardened steel, carbon steel, mold steel.**
- Good wear resistance by high quality Si-based PVD coating.
- Designed for low speed with high feed condition.
- Suitable for heavy duty and roughing application.
- Minimize fracturing at high feed by high TRS ultra fine WC grade.

4

WC  
미립자

BLUE  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

D  
+0-0.01

D  
-0.005-0.015

15°  
Helix Angle

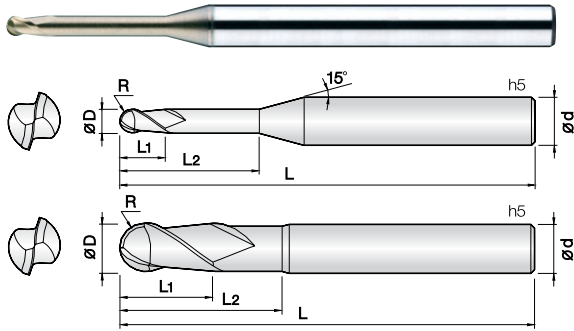
0.2 ~ 0.5R    1 ~ 1.5R    2 ~ 3R    Ø1~Ø5    Ø6~Ø12

D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고								
4RCUE 010 002 025	1 X R0.2	0.75	2.5	50	4									
4RCUE 015 005 040	1.5 X R0.5	1.2	4	50	4									
4RCUE 020 005 060	2 X R0.5	1.5	6	50	6									
4RCUE 030 005 080	3 X R0.5	2.3	8	50	6									
4RCUE 040 005 120	4 X R0.5	3	12	60	6									
4RCUE 040 005 160	4 X R0.5	3	16	60	6									
4RCUE 040 010 120	4 X R1	3	12	60	6									
4RCUE 040 010 160	4 X R1	3	16	60	6									
4RCUE 050 005 150	5 X R0.5	4	15	60	6									
4RCUE 050 010 150	5 X R1	4	15	60	6									
4RCUE 060 005 150	6 X R0.5	4.5	15	60	6									
4RCUE 060 005 250	6 X R0.5	4.5	25	80	6									
4RCUE 060 010 150	6 X R1	4.5	15	60	6									
4RCUE 060 010 250	6 X R1	4.5	25	80	6									
4RCUE 060 015 150	6 X R1.5	4.5	15	60	6									
4RCUE 060 015 250	6 X R1.5	4.5	25	80	6									
4RCUE 080 005 200	8 X R0.5	6	20	60	8									
4RCUE 080 005 300	8 X R0.5	6	30	90	8									
4RCUE 080 010 200	8 X R1	6	20	60	8									
4RCUE 080 010 300	8 X R1	6	30	90	8									
4RCUE 080 020 200	8 X R2	6	20	60	8									
4RCUE 080 020 300	8 X R2	6	30	90	8									
4RCUE 100 005 250	10 X R0.5	7.5	25	70	10									
4RCUE 100 005 400	10 X R0.5	7.5	40	100	10									
4RCUE 100 010 250	10 X R1	7.5	25	70	10									
4RCUE 100 010 400	10 X R1	7.5	40	100	10									
4RCUE 100 020 250	10 X R2	7.5	25	70	10									
4RCUE 100 020 400	10 X R2	7.5	40	100	10									
4RCUE 120 005 300	12 X R0.5	9	30	80	12									
4RCUE 120 005 400	12 X R0.5	9	40	100	12									
4RCUE 120 010 300	12 X R1	9	30	80	12									
4RCUE 120 010 400	12 X R1	9	40	100	12									
4RCUE 120 020 300	12 X R2	9	30	80	12									
4RCUE 120 020 400	12 X R2	9	40	100	12									
4RCUE 120 030 300	12 X R3	9	30	80	12									





• 중저경도강(HRc52이하), 프리하드강 계열, 탄소강, 금형강 등 다양한 피삭재 가공

• JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.

• 고정밀 공차 적용으로 초정밀 가공에 적합합니다.

• 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.

• Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.

• Optimum for various work materials by JCRO coating.

• High precise edge tolerance.

• Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



D Size	D Tolerance
Ø0.1	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRBG 001 003 S04	0.05R X 0.1	0.3	-	40	4		2HRBG 008 060 S04	0.4R X 0.8	0.9	6	45	4	
2HRBG 001 005 S04	0.05R X 0.1	0.5	-	40	4		2HRBG 008 080 S04	0.4R X 0.8	0.9	8	45	4	
2HRBG 002 005 S04	0.1R X 0.2	0.2	0.5	40	4		2HRBG 008 100 S04	0.4R X 0.8	0.9	10	45	4	
2HRBG 002 010 S04	0.1R X 0.2	0.2	1	40	4		2HRBG 008 120 S04	0.4R X 0.8	0.9	12	45	4	
2HRBG 002 015 S04	0.1R X 0.2	0.2	1.5	40	4		2HRBG 008 140 S04	0.4R X 0.8	0.9	14	45	4	
2HRBG 002 020 S04	0.1R X 0.2	0.2	2	40	4		2HRBG 008 160 S04	0.4R X 0.8	0.9	16	45	4	
2HRBG 003 010 S04	0.15R X 0.3	0.3	1	40	4		2HRBG 009 040 S04	0.45R X 0.9	1	4	45	4	
2HRBG 003 015 S04	0.15R X 0.3	0.3	1.5	40	4		2HRBG 010 020 S04	0.5R X 1	1.2	2	45	4	
2HRBG 003 020 S04	0.15R X 0.3	0.3	2	40	4		2HRBG 010 020 S06	0.5R X 1	1.2	2	45	6	
2HRBG 003 030 S04	0.15R X 0.3	0.3	3	40	4		2HRBG 010 030 S04	0.5R X 1	1.2	3	45	4	
2HRBG 003 040 S04	0.15R X 0.3	0.3	4	40	4		2HRBG 010 030 S06	0.5R X 1	1.2	3	45	6	
2HRBG 003 050 S04	0.15R X 0.3	0.3	5	40	4		2HRBG 010 040 S04	0.5R X 1	1.2	4	45	4	
2HRBG 004 010 S04	0.2R X 0.4	0.5	1	40	4		2HRBG 010 040 S06	0.5R X 1	1.2	4	45	6	
2HRBG 004 020 S04	0.2R X 0.4	0.5	2	40	4		2HRBG 010 050 S04	0.5R X 1	1.2	5	45	4	
2HRBG 004 030 S04	0.2R X 0.4	0.5	3	40	4		2HRBG 010 050 S06	0.5R X 1	1.2	5	45	6	
2HRBG 004040 S04	0.2R X 0.4	0.5	4	40	4		2HRBG 010 060 S04	0.5R X 1	1.2	6	45	4	
2HRBG 004 050 S04	0.2R X 0.4	0.5	5	40	4		2HRBG 010 060 S06	0.5R X 1	1.2	6	45	6	
2HRBG 004 060 S04	0.2R X 0.4	0.5	6	40	4		2HRBG 010 080 S04	0.5R X 1	1.2	8	45	4	
2HRBG 004 080 S04	0.2R X 0.4	0.5	8	40	4		2HRBG 010 080 S06	0.5R X 1	1.2	8	45	6	
2HRBG 004 100 S04	0.2R X 0.4	0.5	10	40	4		2HRBG 010 100 S04	0.5R X 1	1.2	10	50	4	
2HRBG 005 010 S04	0.25R X 0.5	0.6	1	45	4		2HRBG 010 100 S06	0.5R X 1	1.2	10	50	6	
2HRBG 005 020 S04	0.25R X 0.5	0.6	2	45	4		2HRBG 010 120 S04	0.5R X 1	1.2	12	50	4	
2HRBG 005 030 S04	0.25R X 0.5	0.6	3	45	4		2HRBG 010 120 S06	0.5R X 1	1.2	12	50	6	
2HRBG 005 040 S04	0.25R X 0.5	0.6	4	45	4		2HRBG 010 140 S04	0.5R X 1	1.2	14	50	4	
2HRBG 005 050 S04	0.25R X 0.5	0.6	5	45	4		2HRBG 010 140 S06	0.5R X 1	1.2	14	50	6	
2HRBG 005 060 S04	0.25R X 0.5	0.6	6	45	4		2HRBG 010 160 S04	0.5R X 1	1.2	16	50	4	
2HRBG 005 080 S04	0.25R X 0.5	0.6	8	45	4		2HRBG 010 160 S06	0.5R X 1	1.2	16	55	6	
2HRBG 005 100 S04	0.25R X 0.5	0.6	10	45	4		2HRBG 010 180 S04	0.5R X 1	1.2	18	50	4	
2HRBG 005 120 S04	0.25R X 0.5	0.6	12	45	4		2HRBG 010 180 S06	0.5R X 1	1.2	18	60	6	
2HRBG 005 140 S04	0.25R X 0.5	0.6	14	45	4		2HRBG 010 200 S04	0.5R X 1	1.2	20	50	4	
2HRBG 006 010 S04	0.3R X 0.6	0.7	1	45	4		2HRBG 010 200 S06	0.5R X 1	1.2	20	60	6	
2HRBG 006 020 S04	0.3R X 0.6	0.7	2	45	4		2HRBG 010 220 S04	0.5R X 1	1.2	22	60	4	
2HRBG 006 030 S04	0.3R X 0.6	0.7	3	45	4		2HRBG 010 220 S06	0.5R X 1	1.2	22	65	6	
2HRBG 006 040 S04	0.3R X 0.6	0.7	4	45	4		2HRBG 010 250 S04	0.5R X 1	1.2	25	60	4	
2HRBG 006 050 S04	0.3R X 0.6	0.7	5	45	4		2HRBG 012 040 S04	0.6R X 1.2	1.4	4	45	4	
2HRBG 006 060 S04	0.3R X 0.6	0.7	6	45	4		2HRBG 012 040 S06	0.6R X 1.2	1.4	4	45	6	
2HRBG 006 080 S04	0.3R X 0.6	0.7	8	45	4		2HRBG 012 060 S04	0.6R X 1.2	1.4	6	45	4	
2HRBG 006 100 S04	0.3R X 0.6	0.7	10	45	4		2HRBG 012 060 S06	0.6R X 1.2	1.4	6	45	6	
2HRBG 006 120 S04	0.3R X 0.6	0.7	12	45	4		2HRBG 012 080 S04	0.6R X 1.2	1.4	8	45	4	
2HRBG 006 140 S04	0.3R X 0.6	0.7	14	45	4		2HRBG 012 080 S06	0.6R X 1.2	1.4	8	45	6	
2HRBG 006 160 S04	0.3R X 0.6	0.7	16	45	4		2HRBG 012 100 S04	0.6R X 1.2	1.4	10	50	4	
2HRBG 007 020 S04	0.35R X 0.7	0.8	2	45	4		2HRBG 012 100 S06	0.6R X 1.2	1.4	10	50	6	
2HRBG 007 040 S04	0.35R X 0.7	0.8	4	45	4		2HRBG 012 120 S04	0.6R X 1.2	1.4	12	50	4	
2HRBG 007 080 S04	0.35R X 0.7	0.8	8	45	4		2HRBG 012 120 S06	0.6R X 1.2	1.4	12	50	6	
2HRBG 007 100 S04	0.35R X 0.7	0.8	10	45	4		2HRBG 012 160 S04	0.6R X 1.2	1.4	16	50	4	
2HRBG 007 120 S04	0.35R X 0.7	0.8	12	45	4		2HRBG 012 160 S06	0.6R X 1.2	1.4	16	55	6	
2HRBG 008 020 S04	0.4R X 0.8	0.9	2	45	4		2HRBG 012 200 S04	0.6R X 1.2	1.4	20	50	4	
2HRBG 008 040 S04	0.4R X 0.8	0.9	4	45	4		2HRBG 012 200 S06	0.6R X 1.2	1.4	20	60	6	

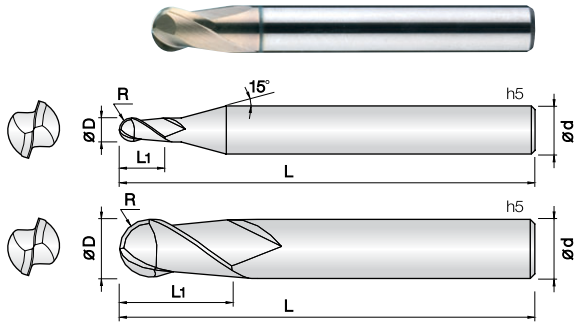


단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRBG 012 240 S04	0.6R X 1.2	1.4	24	60	4		2HRBG 020 250 S04	1R X 2	2.4	25	60	4	
2HRBG 012 240 S06	0.6R X 1.2	1.4	24	65	6		2HRBG 020 250 S06	1R X 2	2.4	25	65	6	
2HRBG 014 060 S04	0.7R X 1.4	1.6	6	45	4		2HRBG 020 300 S04	1R X 2	2.4	30	70	4	
2HRBG 014 080 S04	0.7R X 1.4	1.6	8	45	4		2HRBG 020 300 S06	1R X 2	2.4	30	70	6	
2HRBG 014 120 S04	0.7R X 1.4	1.6	12	50	4		2HRBG 020 350 S04	1R X 2	2.4	35	70	4	
2HRBG 014 160 S04	0.7R X 1.4	1.6	16	50	4		2HRBG 020 350 S06	1R X 2	2.4	35	75	6	
2HRBG 015 030 S04	0.75R X 1.5	1.8	3	45	4		2HRBG 020 400 S04	1R X 2	2.4	40	80	4	
2HRBG 015 030 S06	0.75R X 1.5	1.8	3	45	6		2HRBG 020 400 S06	1R X 2	2.4	40	80	6	
2HRBG 015 040 S04	0.75R X 1.5	1.8	4	45	4		2HRBG 020 450 S04	1R X 2	2.4	45	80	4	
2HRBG 015 040 S06	0.75R X 1.5	1.8	4	45	6		2HRBG 025 080 S04	1.25R X 2.5	3	8	45	4	
2HRBG 015 060 S04	0.75R X 1.5	1.8	6	45	4		2HRBG 025 100 S04	1.25R X 2.5	3	10	50	4	
2HRBG 015 060 S06	0.75R X 1.5	1.8	6	45	6		2HRBG 025 160 S04	1.25R X 2.5	3	16	50	4	
2HRBG 015 080 S04	0.75R X 1.5	1.8	8	45	4		2HRBG 025 200 S04	1.25R X 2.5	3	20	50	4	
2HRBG 015 080 S06	0.75R X 1.5	1.8	8	45	6		2HRBG 025 250 S04	1.25R X 2.5	3	25	60	4	
2HRBG 015 100 S04	0.75R X 1.5	1.8	10	50	4		2HRBG 025 300 S04	1.25R X 2.5	3	30	70	4	
2HRBG 015 100 S06	0.75R X 1.5	1.8	10	50	6		2HRBG 025 350 S04	1.25R X 2.5	3	35	70	4	
2HRBG 015 120 S04	0.75R X 1.5	1.8	12	50	4		2HRBG 030 060 S06	1.5R X 3	3.6	6	45	6	
2HRBG 015 120 S06	0.75R X 1.5	1.8	12	50	6		2HRBG 030 080 S06	1.5R X 3	3.6	8	45	6	
2HRBG 015 140 S04	0.75R X 1.5	1.8	14	50	4		2HRBG 030 100 S06	1.5R X 3	3.6	10	50	6	
2HRBG 015 140 S06	0.75R X 1.5	1.8	14	50	6		2HRBG 030 120 S06	1.5R X 3	3.6	12	50	6	
2HRBG 015 160 S04	0.75R X 1.5	1.8	16	50	4		2HRBG 030 160 S06	1.5R X 3	3.6	16	55	6	
2HRBG 015 160 S06	0.75R X 1.5	1.8	16	55	6		2HRBG 030 200 S06	1.5R X 3	3.6	20	60	6	
2HRBG 015 180 S04	0.75R X 1.5	1.8	18	50	4		2HRBG 030 250 S06	1.5R X 3	3.6	25	65	6	
2HRBG 015 180 S06	0.75R X 1.5	1.8	18	60	6		2HRBG 030 300 S06	1.5R X 3	3.6	30	70	6	
2HRBG 015 200 S04	0.75R X 1.5	1.8	20	50	4		2HRBG 030 350 S06	1.5R X 3	3.6	35	75	6	
2HRBG 015 200 S06	0.75R X 1.5	1.8	20	60	6		2HRBG 030 400 S06	1.5R X 3	3.6	40	80	6	
2HRBG 015 220 S04	0.75R X 1.5	1.8	22	60	4		2HRBG 030 450 S06	1.5R X 3	3.6	45	90	6	
2HRBG 015 220 S06	0.75R X 1.5	1.8	22	65	6		2HRBG 030 500 S06	1.5R X 3	3.6	50	100	6	
2HRBG 015 250 S04	0.75R X 1.5	1.8	25	60	4		2HRBG 030 600 S06	1.5R X 3	3.6	60	100	6	
2HRBG 015 250 S06	0.75R X 1.5	1.8	25	65	6		2HRBG 040 080 S06	2R X 4	4.8	8	45	6	
2HRBG 015 300 S04	0.75R X 1.5	1.8	30	70	4		2HRBG 040 100 S06	2R X 4	4.8	10	50	6	
2HRBG 015 300 S06	0.75R X 1.5	1.8	30	70	6		2HRBG 040 120 S06	2R X 4	4.8	12	50	6	
2HRBG 015 350 S04	0.75R X 1.5	1.8	35	70	4		2HRBG 040 160 S06	2R X 4	4.8	16	55	6	
2HRBG 016 060 S04	0.8R X 1.6	1.9	6	45	4		2HRBG 040 200 S06	2R X 4	4.8	20	60	6	
2HRBG 016 080 S04	0.8R X 1.6	1.9	8	45	4		2HRBG 040 250 S06	2R X 4	4.8	25	65	6	
2HRBG 016 120 S04	0.8R X 1.6	1.9	12	50	4		2HRBG 040 300 S06	2R X 4	4.8	30	70	6	
2HRBG 016 160 S04	0.8R X 1.6	1.9	16	50	4		2HRBG 040 350 S06	2R X 4	4.8	35	75	6	
2HRBG 016 200 S04	0.8R X 1.6	1.9	20	50	4		2HRBG 040 400 S06	2R X 4	4.8	40	80	6	
2HRBG 018 060 S04	0.9R X 1.8	2.1	6	45	4		2HRBG 040 450 S06	2R X 4	4.8	45	90	6	
2HRBG 018 080 S04	0.9R X 1.8	2.1	8	45	4		2HRBG 040 500 S06	2R X 4	4.8	50	100	6	
2HRBG 018 120 S04	0.9R X 1.8	2.1	12	50	4		2HRBG 040 550 S06	2R X 4	4.8	55	100	6	
2HRBG 018 160 S04	0.9R X 1.8	2.1	16	50	4		2HRBG 040 600 S06	2R X 4	4.8	60	100	6	
2HRBG 018 200 S04	0.9R X 1.8	2.1	20	50	4		2HRBG 050 150 S06	2.5R X 5	6	15	55	6	
2HRBG 020 040 S04	1R X 2	2.4	4	45	4		2HRBG 050 200 S06	2.5R X 5	6	20	60	6	
2HRBG 020 040 S06	1R X 2	2.4	4	45	6		2HRBG 050 250 S06	2.5R X 5	6	25	70	6	
2HRBG 020 060 S04	1R X 2	2.4	6	45	4		2HRBG 050 300 S06	2.5R X 5	6	30	75	6	
2HRBG 020 060 S06	1R X 2	2.4	6	45	6		2HRBG 050 400 S06	2.5R X 5	6	40	80	6	
2HRBG 020 080 S04	1R X 2	2.4	8	45	4		2HRBG 050 450 S06	2.5R X 5	6	45	90	6	
2HRBG 020 080 S06	1R X 2	2.4	8	45	6		2HRBG 050 500 S06	2.5R X 5	6	50	100	6	
2HRBG 020 100 S04	1R X 2	2.4	10	50	4		2HRBG 050 600 S06	2.5R X 5	6	60	100	6	
2HRBG 020 100 S06	1R X 2	2.4	10	50	6		2HRBG 060 150 S06	3R X 6	10	15	55	6	
2HRBG 020 120 S04	1R X 2	2.4	12	50	4		2HRBG 060 300 S06	3R X 6	10	30	110	6	
2HRBG 020 120 S06	1R X 2	2.4	12	50	6		2HRBG 080 250 060	4R X 8	12	25	60	8	
2HRBG 020 140 S04	1R X 2	2.4	14	50	4		2HRBG 080 300 100	4R X 8	12	30	100	8	
2HRBG 020 140 S06	1R X 2	2.4	14	50	6		2HRBG 100 300 070	5R X 10	16	30	70	10	
2HRBG 020 160 S04	1R X 2	2.4	16	50	4		2HRBG 100 350 100	5R X 10	16	35	100	10	
2HRBG 020 160 S06	1R X 2	2.4	16	55	6		2HRBG 120 300 075	6R X 12	18	30	75	12	
2HRBG 020 180 S04	1R X 2	2.4	18	50	4		2HRBG 120 400 110	6R X 12	18	40	110	12	
2HRBG 020 180 S06	1R X 2	2.4	18	60	6								
2HRBG 020 200 S04	1R X 2	2.4	20	50	4								
2HRBG 020 200 S06	1R X 2	2.4	20	60	6								
2HRBG 020 220 S04	1R X 2	2.4	22	60	4								
2HRBG 020 220 S06	1R X 2	2.4	22	65	6								

G series

## 2날 범용 짧은 길이 볼 엔드밀



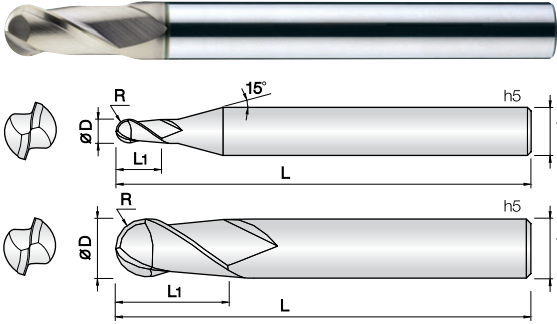
- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공
  - JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
  - 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
  - 짧은 전장을 채택하여 열박음척 사용이 용이합니다.
  - 항절력이 높은 미립자 초경합금(0.5µm)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.
  - Optimum for various work materials by JCRO coating.
  - High precise edge tolerance.
  - Short overall length for easy use with shrinking chuck
  - Minimize fracturing by high TRS fine(0.5 µm) WC grade.



D Size	D Tolerance
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R×D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고
2HSBG 002 002 S04	0.1R X 0.2	0.2	40	4	
2HSBG 003 003 S04	0.15R X 0.3	0.3	40	4	
2HSBG 004 004 S04	0.2R X 0.4	0.4	40	4	
2HSBG 005 005 S04	0.25R X 0.5	0.5	40	4	
2HSBG 006 006 S04	0.3R X 0.6	0.6	40	4	
2HSBG 007 007 S04	0.35R X 0.7	0.7	40	4	
2HSBG 008 008 S04	0.4R X 0.8	0.8	40	4	
2HSBG 009 009 S04	0.45R X 0.9	0.9	40	4	
2HSBG 010 010 S04	0.5R X 1	1	40	4	
2HSBG 010 010 S06	0.5R X 1	1	40	6	
2HSBG 015 015 S04	0.75R X 1.5	1.5	40	4	
2HSBG 015 015 S06	0.75R X 1.5	1.5	40	6	
2HSBG 020 020 S04	1R X 2	2	45	4	
2HSBG 020 020 S06	1R X 2	2	45	6	
2HSBG 030 030 S04	1.5R X 3	3	45	4	
2HSBG 030 030 S06	1.5R X 3	3	45	6	
2HSBG 040 040 S04	2R X 4	4	45	4	
2HSBG 040 040 S06	2R X 4	4	45	6	
2HSBG 050 050 S06	2.5R X 5	5	50	6	
2HSBG 060 060 050	3R X 6	6	50	6	
2HSBG 060 060 060	3R X 6	6	60	6	
2HSBG 080 080 050	4R X 8	8	50	8	
2HSBG 080 080 060	4R X 8	8	60	8	
2HSBG 100 100 060	5R X 10	10	60	10	
2HSBG 100 100 070	5R X 10	10	70	10	
2HSBG 120 120 060	6R X 12	12	60	12	
2HSBG 120 120 070	6R X 12	12	70	12	



- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

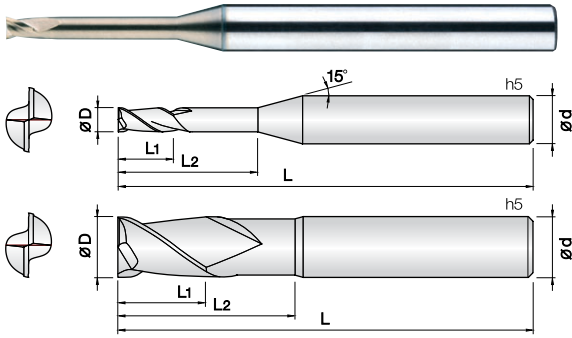


D Size	D Tolerance
∅0.2 ~ 5	+0 ~ -0.01mm
∅6 ~ 12	-0.005 ~ -0.015mm
∅16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2HCBG 001 002 S04	0.05R X 0.1	0.2	40	4		2HCBG 080 140 090	4R X 8	14	90	8	
2HCBG 0015 003 S04	0.075R X 0.15	0.3	40	4		2HCBG 080 140 110	4R X 8	14	110	8	
2HCBG 002 004 S04	0.1R X 0.2	0.4	40	4		2HCBG 080 140 150	4R X 8	14	150	8	
2HCBG 003 006 S04	0.15R X 0.3	0.6	40	4		2HCBG 090 160 S10	4.5R X 9	16	100	10	
2HCBG 004 008 S04	0.2R X 0.4	0.8	40	4		2HCBG 100 150 070	5R X 10	15	70	10	
2HCBG 005 010 S04	0.25R X 0.5	1	45	4		2HCBG 100 180 100	5R X 10	18	100	10	
2HCBG 006 012 S04	0.3R X 0.6	1.2	45	4		2HCBG 100 180 120	5R X 10	18	120	10	
2HCBG 007 015 S04	0.35R X 0.7	1.5	45	4		2HCBG 100 180 150	5R X 10	18	150	10	
2HCBG 008 020 S04	0.4R X 0.8	2	45	4		2HCBG 100 180 180	5R X 10	18	180	10	
2HCBG 009 020 S04	0.45R X 0.9	2	45	4		2HCBG 110 200 S12	5.5R X 11	20	110	12	
2HCBG 010 025 S04	0.5R X 1	2.5	50	4		2HCBG 120 180 070	6R X 12	18	70	12	
2HCBG 010 025 S06	0.5R X 1	2.5	50	6		2HCBG 120 220 110	6R X 12	22	110	12	
2HCBG 010 025 070	0.5R X 1	2.5	70	6		2HCBG 120 220 130	6R X 12	22	130	12	
2HCBG 010 025 100	0.5R X 1	2.5	100	6		2HCBG 120 220 150	6R X 12	22	150	12	
2HCBG 012 030 S04	0.6R X 1.2	3	50	4		2HCBG 120 220 200	6R X 12	22	200	12	
2HCBG 015 040 S04	0.75R X 1.5	4	50	4		2HCBG 130 240 S14	6.5R X 13	24	110	14	
2HCBG 015 040 S06	0.75R X 1.5	4	50	6		2HCBG 140 240 S14	7R X 14	24	110	14	
2HCBG 015 040 070	0.75R X 1.5	4	70	6		2HCBG 160 300 130	8R X 16	30	130	16	
2HCBG 015 040 100	0.75R X 1.5	4	100	6		2HCBG 160 300 160	8R X 16	30	160	16	
2HCBG 020 050 S04	1R X 2	5	50	4		2HCBG 160 300 200	8R X 16	30	200	16	
2HCBG 020 050 S06	1R X 2	5	50	6		2HCBG 200 380 160	10R X 20	38	160	20	
2HCBG 020 050 075	1R X 2	5	75	6		2HCBG 200 380 200	10R X 20	38	200	20	
2HCBG 020 050 100	1R X 2	5	100	6							
2HCBG 025 060 S04	1.25R X 2.5	6	50	4							
2HCBG 025 060 S06	1.25R X 2.5	6	60	6							
2HCBG 025 060 075	1.25R X 2.5	6	75	6							
2HCBG 025 060 100	1.25R X 2.5	6	100	6							
2HCBG 030 080 S03	1.5R X 3	8	60	3							
2HCBG 030 080 S04	1.5R X 3	8	50	4							
2HCBG 030 080 S06	1.5R X 3	8	60	6							
2HCBG 030 080 080	1.5R X 3	8	80	6							
2HCBG 030 080 100	1.5R X 3	8	100	6							
2HCBG 035 080 S06	1.75R X 3.5	8	60	6							
2HCBG 040 080 060	2R X 4	8	60	4							
2HCBG 040 080 080	2R X 4	8	80	4							
2HCBG 040 080 S06	2R X 4	8	70	6							
2HCBG 040 080 090	2R X 4	8	90	6							
2HCBG 040 080 120	2R X 4	8	120	6							
2HCBG 045 080 S06	2.25R X 4.5	8	70	6							
2HCBG 050 080 S05	2.5R X 5	8	80	5							
2HCBG 050 100 S06	2.5R X 5	10	75	6							
2HCBG 055 100 S06	2.75R X 5.5	10	75	6							
2HCBG 060 100 060	3R X 6	10	60	6							
2HCBG 060 120 080	3R X 6	12	80	6							
2HCBG 060 120 100	3R X 6	12	100	6							
2HCBG 060 120 120	3R X 6	12	120	6							
2HCBG 070 140 S08	3.5R X 7	14	80	8							
2HCBG 080 120 060	4R X 8	12	60	8							





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- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
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- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
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- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



D Size	D Tolerance
ø0.1	+0 ~ -0.05mm
ø0.2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm

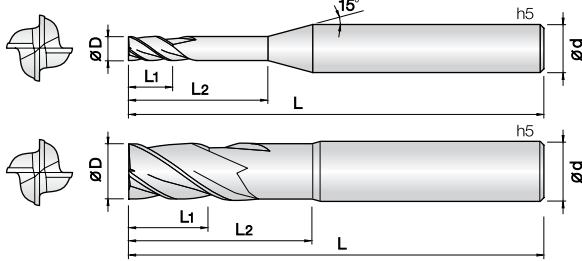
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고
2HREG 001 003 S04	0.1	0.3	-	40	4		2HREG 008 080 S04	0.8	0.9	8	45	4	
2HREG 001 005 S04	0.1	0.5	-	40	4		2HREG 008 100 S04	0.8	0.9	10	45	4	
2HREG 002 005 S04	0.2	0.3	0.5	40	4		2HREG 008 120 S04	0.8	0.9	12	45	4	
2HREG 002 010 S04	0.2	0.2	1	40	4		2HREG 008 140 S04	0.8	0.9	14	45	4	
2HREG 002 015 S04	0.2	0.2	1.5	40	4		2HREG 009 060 S04	0.9	1	6	45	4	
2HREG 002 020 S04	0.2	0.2	2	40	4		2HREG 009 080 S04	0.9	1	8	45	4	
2HREG 003 010 S04	0.3	0.3	1	40	4		2HREG 009 100 S04	0.9	1	10	45	4	
2HREG 003 015 S04	0.3	0.3	1.5	40	4		2HREG 010 020 S04	1	1.2	2	45	4	
2HREG 003 020 S04	0.3	0.3	2	40	4		2HREG 010 030 S04	1	1.2	3	45	4	
2HREG 003 030 S04	0.3	0.3	3	40	4		2HREG 010 040 S04	1	1.2	4	45	4	
2HREG 003 040 S04	0.3	0.3	4	40	4		2HREG 010 050 S04	1	1.2	5	45	4	
2HREG 003 050 S04	0.3	0.3	5	40	4		2HREG 010 060 S04	1	1.2	6	45	4	
2HREG 004 010 S04	0.4	0.5	1	40	4		2HREG 010 080 S04	1	1.2	8	45	4	
2HREG 004 020 S04	0.4	0.5	2	40	4		2HREG 010 100 S04	1	1.2	10	50	4	
2HREG 004 030 S04	0.4	0.5	3	40	4		2HREG 010 120 S04	1	1.2	12	50	4	
2HREG 004 040 S04	0.4	0.5	4	40	4		2HREG 010 140 S04	1	1.2	14	50	4	
2HREG 004 050 S04	0.4	0.5	5	40	4		2HREG 010 160 S04	1	1.2	16	50	4	
2HREG 004 060 S04	0.4	0.5	6	40	4		2HREG 010 180 S04	1	1.2	18	50	4	
2HREG 004 080 S04	0.4	0.5	8	40	4		2HREG 010 200 S04	1	1.2	20	50	4	
2HREG 004 100 S04	0.4	0.5	10	40	4		2HREG 010 250 S04	1	1.2	25	60	4	
2HREG 005 020 S04	0.5	0.6	2	45	4		2HREG 010 300 S04	1	1.2	30	70	4	
2HREG 005 030 S04	0.5	0.6	3	45	4		2HREG 012 040 S04	1.2	1.4	4	45	4	
2HREG 005 040 S04	0.5	0.6	4	45	4		2HREG 012 060 S04	1.2	1.4	6	45	4	
2HREG 005 050 S04	0.5	0.6	5	45	4		2HREG 012 080 S04	1.2	1.4	8	45	4	
2HREG 005 060 S04	0.5	0.6	6	45	4		2HREG 012 100 S04	1.2	1.4	10	50	4	
2HREG 005 080 S04	0.5	0.6	8	45	4		2HREG 012 120 S04	1.2	1.4	12	50	4	
2HREG 005 100 S04	0.5	0.6	10	45	4		2HREG 012 160 S04	1.2	1.4	16	50	4	
2HREG 005 120 S04	0.5	0.6	12	45	4		2HREG 012 200 S04	1.2	1.4	20	50	4	
2HREG 005 140 S04	0.5	0.6	14	45	4		2HREG 012 250 S04	1.2	1.4	25	60	4	
2HREG 006 020 S04	0.6	0.7	2	45	4		2HREG 012 300 S04	1.2	1.4	30	70	4	
2HREG 006 030 S04	0.6	0.7	3	45	4		2HREG 014 060 S04	1.4	1.6	6	45	4	
2HREG 006 040 S04	0.6	0.7	4	45	4		2HREG 014 080 S04	1.4	1.6	8	45	4	
2HREG 006 050 S04	0.6	0.7	5	45	4		2HREG 014 100 S04	1.4	1.6	10	50	4	
2HREG 006 060 S04	0.6	0.7	6	45	4		2HREG 014 140 S04	1.4	1.6	14	50	4	
2HREG 006 080 S04	0.6	0.7	8	45	4		2HREG 014 160 S04	1.4	1.6	16	50	4	
2HREG 006 100 S04	0.6	0.7	10	45	4		2HREG 014 200 S04	1.4	1.6	20	50	4	
2HREG 006 120 S04	0.6	0.7	12	45	4		2HREG 015 040 S04	1.5	1.8	4	45	4	
2HREG 006 140 S04	0.6	0.7	14	45	4		2HREG 015 060 S04	1.5	1.8	6	45	4	
2HREG 006 160 S04	0.6	0.7	16	45	4		2HREG 015 080 S04	1.5	1.8	8	45	4	
2HREG 007 020 S04	0.7	0.8	2	45	4		2HREG 015 100 S04	1.5	1.8	10	50	4	
2HREG 007 040 S04	0.7	0.8	4	45	4		2HREG 015 120 S04	1.5	1.8	12	50	4	
2HREG 007 060 S04	0.7	0.8	6	45	4		2HREG 015 140 S04	1.5	1.8	14	50	4	
2HREG 007 080 S04	0.7	0.8	8	45	4		2HREG 015 160 S04	1.5	1.8	16	50	4	
2HREG 007 100 S04	0.7	0.8	10	45	4		2HREG 015 180 S04	1.5	1.8	18	50	4	
2HREG 007 120 S04	0.7	0.8	12	45	4		2HREG 015 200 S04	1.5	1.8	20	50	4	
2HREG 008 020 S04	0.8	0.9	2	45	4		2HREG 015 250 S04	1.5	1.8	25	60	4	
2HREG 008 040 S04	0.8	0.9	4	45	4		2HREG 015 300 S04	1.5	1.8	30	70	4	
2HREG 008 060 S04	0.8	0.9	6	45	4		2HREG 016 100 S04	1.6	1.9	10	50	4	

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HREG 016 140 S04	1.6	1.9	14	50	4		2HREG 040 200 S06	4	4.8	20	60	6	
2HREG 016 180 S04	1.6	1.9	18	50	4		2HREG 040 250 S06	4	4.8	25	65	6	
2HREG 018 100 S04	1.8	2.1	10	50	4		2HREG 040 300 S06	4	4.8	30	70	6	
2HREG 018 140 S04	1.8	2.1	14	50	4		2HREG 040 350 S06	4	4.8	35	75	6	
2HREG 018 180 S04	1.8	2.1	18	50	4		2HREG 040 400 S06	4	4.8	40	80	6	
2HREG 020 040 S04	2	2.4	4	45	4		2HREG 040 450 S06	4	4.8	45	90	6	
2HREG 020 060 S04	2	2.4	6	45	4		2HREG 040 500 S06	4	4.8	50	100	6	
2HREG 020 080 S04	2	2.4	8	45	4		2HREG 040 550 S06	4	4.8	55	100	6	
2HREG 020 100 S04	2	2.4	10	50	4		2HREG 040 600 S06	4	4.8	60	100	6	
2HREG 020 120 S04	2	2.4	12	50	4		2HREG 050 150 S06	5	6	15	55	6	
2HREG 020 140 S04	2	2.4	14	50	4		2HREG 050 200 S06	5	6	20	60	6	
2HREG 020 160 S04	2	2.4	16	50	4		2HREG 050 250 S06	5	6	25	70	6	
2HREG 020 180 S04	2	2.4	18	50	4		2HREG 050 300 S06	5	6	30	75	6	
2HREG 020 200 S04	2	2.4	20	50	4		2HREG 050 350 S06	5	6	35	75	6	
2HREG 020 220 S04	2	2.4	22	60	4		2HREG 050 400 S06	5	6	40	80	6	
2HREG 020 250 S04	2	2.4	25	60	4		2HREG 050 500 S06	5	6	50	100	6	
2HREG 020 300 S04	2	2.4	30	70	4		2HREG 050 600 S06	5	6	60	100	6	
2HREG 020 350 S04	2	2.4	35	70	4		2HREG 060 200 S06	6	10	20	60	6	
2HREG 020 400 S04	2	2.4	40	80	4		2HREG 060 300 S06	6	10	30	75	6	
2HREG 020 450 S04	2	2.4	45	80	4		2HREG 060 400 S06	6	10	40	80	6	
2HREG 020 500 S04	2	2.4	50	90	4		2HREG 060 500 S06	6	10	50	90	6	
2HREG 025 080 S04	2.5	3	8	45	4		2HREG 060 600 S06	6	10	60	110	6	
2HREG 025 100 S04	2.5	3	10	50	4		2HREG 080 200 S08	8	12	20	65	8	
2HREG 025 120 S04	2.5	3	12	50	4		2HREG 080 300 S08	8	12	30	80	8	
2HREG 025 160 S04	2.5	3	16	50	4		2HREG 080 400 S08	8	12	40	100	8	
2HREG 025 200 S04	2.5	3	20	50	4		2HREG 100 250 S10	10	15	25	70	10	
2HREG 025 250 S04	2.5	3	25	60	4		2HREG 100 350 S10	10	15	35	80	10	
2HREG 025 300 S04	2.5	3	30	70	4		2HREG 100 450 S10	10	15	45	100	10	
2HREG 025 350 S04	2.5	3	35	70	4		2HREG 120 300 S12	12	18	30	80	12	
2HREG 025 400 S04	2.5	3	40	80	4		2HREG 120 400 S12	12	18	40	100	12	
2HREG 025 500 S04	2.5	3	50	90	4		2HREG 120 500 S12	12	18	50	120	12	
2HREG 030 060 S06	3	3.6	6	45	6								
2HREG 030 080 S06	3	3.6	8	45	6								
2HREG 030 100 S06	3	3.6	10	50	6								
2HREG 030 120 S06	3	3.6	12	50	6								
2HREG 030 160 S06	3	3.6	16	55	6								
2HREG 030 200 S06	3	3.6	20	60	6								
2HREG 030 250 S06	3	3.6	25	65	6								
2HREG 030 300 S06	3	3.6	30	70	6								
2HREG 030 350 S06	3	3.6	35	75	6								
2HREG 030 400 S06	3	3.6	40	80	6								
2HREG 030 450 S06	3	3.6	45	90	6								
2HREG 030 500 S06	3	3.6	50	100	6								
2HREG 030 600 S06	3	3.6	60	100	6								
2HREG 040 080 S06	4	4.8	8	45	6								
2HREG 040 100 S06	4	4.8	10	50	6								
2HREG 040 120 S06	4	4.8	12	50	6								
2HREG 040 160 S06	4	4.8	16	55	6								

## 4날 범용 리브 엔드밀



• 중저경도강(HRc52이하), 프리하드강 계열, 탄소강, 금형강 등 다양한 피삭재 가공

- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.

• Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.

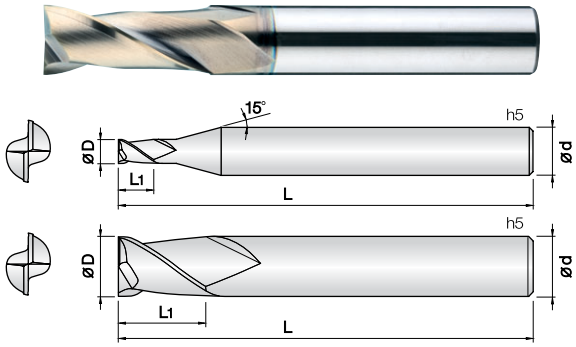
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



D Size	D Tolerance
$\phi 0.8 \sim 5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고
4HREG 008 020 S04	0.8	0.9	2	45	4		4HREG 030 160 S06	3	3.6	16	55	6	
4HREG 008 040 S04	0.8	0.9	4	45	4		4HREG 030 200 S06	3	3.6	20	60	6	
4HREG 008 060 S04	0.8	0.9	6	45	4		4HREG 030 250 S06	3	3.6	25	65	6	
4HREG 008 080 S04	0.8	0.9	8	45	4		4HREG 030 300 S06	3	3.6	30	70	6	
4HREG 008 100 S04	0.8	0.9	10	45	4		4HREG 030 350 S06	3	3.6	35	75	6	
4HREG 008 120 S04	0.8	0.9	12	45	4		4HREG 030 400 S06	3	3.6	40	80	6	
4HREG 008 160 S04	0.8	0.9	16	45	4		4HREG 040 100 S06	4	4.8	10	50	6	
4HREG 009 020 S04	0.9	1	2	45	4		4HREG 040 120 S06	4	4.8	12	50	6	
4HREG 009 060 S04	0.9	1	6	45	4		4HREG 040 160 S06	4	4.8	16	55	6	
4HREG 009 080 S04	0.9	1	8	45	4		4HREG 040 200 S06	4	4.8	20	60	6	
4HREG 009 100 S04	0.9	1	10	45	4		4HREG 040 250 S06	4	4.8	25	65	6	
4HREG 010 030 S04	1	1.2	3	45	4		4HREG 040 300 S06	4	4.8	30	70	6	
4HREG 010 040 S04	1	1.2	4	45	4		4HREG 040 400 S06	4	4.8	40	80	6	
4HREG 010 060 S04	1	1.2	6	45	4		4HREG 040 450 S06	4	4.8	45	90	6	
4HREG 010 080 S04	1	1.2	8	45	4		4HREG 040 500 S06	4	4.8	50	100	6	
4HREG 010 100 S04	1	1.2	10	50	4		4HREG 050 150 S06	5	6	15	55	6	
4HREG 010 120 S04	1	1.2	12	50	4		4HREG 050 200 S06	5	6	20	60	6	
4HREG 010 160 S04	1	1.2	16	50	4		4HREG 050 250 S06	5	6	25	65	6	
4HREG 010 200 S04	1	1.2	20	50	4		4HREG 050 300 S06	5	6	30	70	6	
4HREG 010 250 S04	1	1.2	25	60	4		4HREG 050 400 S06	5	6	40	80	6	
4HREG 012 060 S04	1.2	1.4	6	45	4		4HREG 050 500 S06	5	6	50	100	6	
4HREG 012 080 S04	1.2	1.4	8	45	4		4HREG 060 200 S06	6	10	20	60	6	
4HREG 012 100 S04	1.2	1.4	10	50	4		4HREG 060 300 S06	6	10	30	75	6	
4HREG 012 120 S04	1.2	1.4	12	50	4		4HREG 060 400 S06	6	10	40	80	6	
4HREG 012 160 S04	1.2	1.4	16	50	4		4HREG 060 500 S06	6	10	50	90	6	
4HREG 015 060 S04	1.5	1.8	6	45	4		4HREG 080 200 S08	8	12	20	65	8	
4HREG 015 080 S04	1.5	1.8	8	45	4		4HREG 080 300 S08	8	12	30	80	8	
4HREG 015 100 S04	1.5	1.8	10	50	4		4HREG 080 400 S08	8	12	40	100	8	
4HREG 015 120 S04	1.5	1.8	12	50	4		4HREG 100 250 S10	10	15	25	70	10	
4HREG 015 160 S04	1.5	1.8	16	50	4		4HREG 100 350 S10	10	15	35	90	10	
4HREG 015 200 S04	1.5	1.8	20	50	4		4HREG 100 450 S10	10	15	45	110	10	
4HREG 015 250 S04	1.5	1.8	25	60	4		4HREG 120 300 S12	12	18	30	80	12	
4HREG 020 060 S04	2	2.4	6	45	4		4HREG 120 400 S12	12	18	40	100	12	
4HREG 020 080 S04	2	2.4	8	45	4		4HREG 120 500 S12	12	18	50	120	12	
4HREG 020 100 S04	2	2.4	10	50	4								
4HREG 020 120 S04	2	2.4	12	50	4								
4HREG 020 160 S04	2	2.4	16	50	4								
4HREG 020 200 S04	2	2.4	20	50	4								
4HREG 020 250 S04	2	2.4	25	60	4								
4HREG 020 300 S04	2	2.4	30	70	4								
4HREG 025 100 S04	2.5	3	10	50	4								
4HREG 025 120 S04	2.5	3	12	50	4								
4HREG 025 160 S04	2.5	3	16	50	4								
4HREG 025 200 S04	2.5	3	20	50	4								
4HREG 025 250 S04	2.5	3	25	60	4								
4HREG 025 300 S04	2.5	3	30	70	4								
4HREG 030 100 S06	3	3.6	10	50	6								
4HREG 030 120 S06	3	3.6	12	50	6								



- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

2

WC  
미립자

JCRO  
Coating

D  
+0 -0.005

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

35°  
Helix Angle

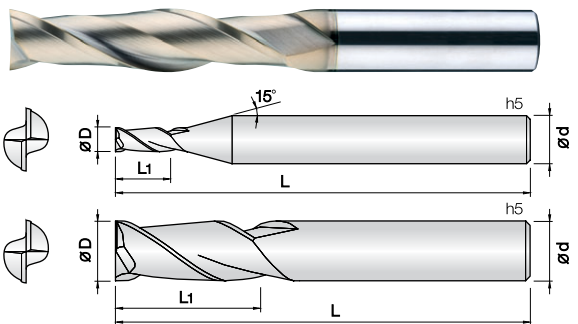
Shield Edge

D Size	D Tolerance
ø0.1 ~ 0.15	+0 ~ -0.005mm
ø0.2 ~ 5.5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø14 ~ 20	-0.015 ~ -0.03mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2HCEG 001 002 S04	0.1	0.2	40	4		2HCEG 025 080 S06	2.5	8	45	6	
2HCEG 0015 003 S04	0.15	0.3	40	4		2HCEG 025 080 070	2.5	8	70	6	
2HCEG 002 004 S04	0.2	0.4	40	4		2HCEG 026 080 S04	2.6	8	45	4	
2HCEG 0025 005 S04	0.25	0.5	40	4		2HCEG 027 080 S04	2.7	8	45	4	
2HCEG 003 006 S04	0.3	0.6	40	4		2HCEG 028 080 S04	2.8	8	45	4	
2HCEG 0035 007 S04	0.35	0.7	40	4		2HCEG 029 080 S04	2.9	8	45	4	
2HCEG 004 008 S04	0.4	0.8	40	4		2HCEG 030 030 S04	3	3	40	4	
2HCEG 0045 009 S04	0.45	0.9	40	4		2HCEG 030 080 S04	3	8	45	4	
2HCEG 005 010 S04	0.5	1	40	4		2HCEG 030 080 S06	3	8	45	6	
2HCEG 0055 011 S04	0.55	1.1	40	4		2HCEG 030 080 070	3	8	70	6	
2HCEG 006 012 S04	0.6	1.2	40	4		2HCEG 035 100 S06	3.5	10	45	6	
2HCEG 0065 013 S04	0.65	1.3	40	4		2HCEG 040 040 S04	4	4	40	4	
2HCEG 007 014 S04	0.7	1.4	40	4		2HCEG 040 100 S04	4	10	45	4	
2HCEG 0075 015 S04	0.75	1.5	40	4		2HCEG 040 110 S06	4	11	45	6	
2HCEG 008 016 S04	0.8	1.6	40	4		2HCEG 040 110 070	4	11	70	6	
2HCEG 0085 017 S04	0.85	1.7	40	4		2HCEG 045 110 S06	4.5	11	45	6	
2HCEG 009 020 S04	0.9	2	40	4		2HCEG 050 130 S06	5	13	50	6	
2HCEG 0095 020 S04	0.95	2	40	4		2HCEG 050 130 080	5	13	80	6	
2HCEG 010 010 S04	1	1	40	4		2HCEG 055 130 S06	5.5	13	50	6	
2HCEG 010 025 S04	1	2.5	40	4		2HCEG 060 060 S06	6	6	45	6	
2HCEG 010 025 S06	1	2.5	40	6		2HCEG 060 130 S06	6	13	50	6	
2HCEG 010 025 060	1	2.5	60	6		2HCEG 060 130 080	6	13	80	6	
2HCEG 010 040 S06	1	4	50	6		2HCEG 060 150 S06	6	15	60	6	
2HCEG 011 027 S04	1.1	2.7	40	4		2HCEG 065 160 S08	6.5	16	60	8	
2HCEG 012 012 S04	1.2	1.2	40	4		2HCEG 070 160 S08	7	16	60	8	
2HCEG 012 030 S04	1.2	3	40	4		2HCEG 075 160 S08	7.5	16	60	8	
2HCEG 012 030 S06	1.2	3	40	6		2HCEG 080 080 S08	8	8	50	8	
2HCEG 012 030 060	1.2	3	60	6		2HCEG 080 190 S08	8	19	60	8	
2HCEG 012 060 S06	1.2	6	50	6		2HCEG 080 200 S08	8	20	70	8	
2HCEG 013 032 S04	1.3	3.2	40	4		2HCEG 085 190 S10	8.5	19	70	10	
2HCEG 014 035 S04	1.4	3.5	40	4		2HCEG 090 190 S10	9	19	70	10	
2HCEG 015 015 S04	1.5	1.5	40	4		2HCEG 095 190 S10	9.5	19	70	10	
2HCEG 015 040 S04	1.5	4	40	4		2HCEG 100 100 S10	10	10	60	10	
2HCEG 015 040 S06	1.5	4	40	6		2HCEG 100 220 S10	10	22	70	10	
2HCEG 015 040 060	1.5	4	60	6		2HCEG 100 250 S10	10	25	75	10	
2HCEG 016 040 S04	1.6	4	40	4		2HCEG 105 220 S12	10.5	22	75	12	
2HCEG 017 042 S04	1.7	4.2	40	4		2HCEG 110 220 S12	11	22	75	12	
2HCEG 018 045 S04	1.8	4.5	40	4		2HCEG 115 220 S12	11.5	22	75	12	
2HCEG 019 050 S04	1.9	5	40	4		2HCEG 120 120 S12	12	12	65	12	
2HCEG 020 020 S04	2	2	40	4		2HCEG 120 260 S12	12	26	75	12	
2HCEG 020 060 S04	2	6	40	4		2HCEG 120 300 S12	12	30	80	12	
2HCEG 020 060 S06	2	6	40	6		2HCEG 140 260 S14	14	26	80	14	
2HCEG 020 060 060	2	6	60	6		2HCEG 140 260 S16	14	26	85	16	
2HCEG 021 060 S04	2.1	6	40	4		2HCEG 160 350 S16	16	35	100	16	
2HCEG 022 060 S04	2.2	6	40	4		2HCEG 160 400 S16	16	40	100	16	
2HCEG 023 060 S04	2.3	6	40	4		2HCEG 180 350 S18	18	35	100	18	
2HCEG 024 080 S04	2.4	8	45	4		2HCEG 200 400 S20	20	40	100	20	
2HCEG 025 080 S04	2.5	8	45	4		2HCEG 200 500 S20	20	50	110	20	

단위 : mm





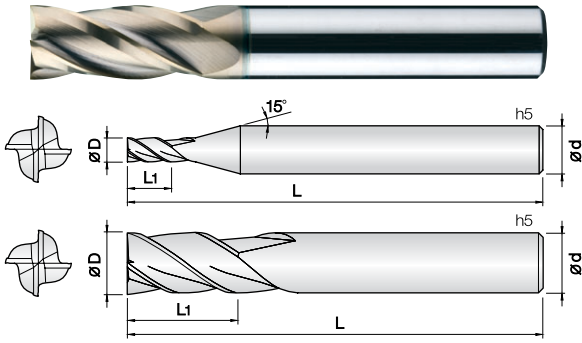
- 중저경도강(HRC52이하), 프리하드강 계열, 탄소강, 금형강 등 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 균일한 런아웃 공차관리로 공구의 성능을 향상시켰습니다.
- 다양한 날길이와 전장을 채택, 다양한 작업에 효율성을 극대화 하였습니다.
- 코너부 강성을 보강하여 날부치평을 최소화 하였습니다.
- **Endmills for various work materials(~HRC52), pre-hardened steel, carbon steel, mold steel.**
- Optimum for various work materials by JCRO coating.
- Improve tool performance by even run-out and tolerance control.
- Various flute and overall length design for covering wide range applications as well as high efficiency machining.
- Minimize edge chipping by improving corner strength.



D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø14 ~ 25	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2LEMG 010 030 S06	1	3	60	6		2LEMG 160 400 160	16	40	160	16	
2LEMG 010 050 S06	1	5	60	6		2LEMG 160 550 S16	16	55	120	16	
2LEMG 010 070 S06	1	7	60	6		2LEMG 160 700 S16	16	70	130	16	
2LEMG 010 100 S06	1	10	60	6		2LEMG 160 800 S16	16	80	160	16	
2LEMG 010 150 S06	1	15	60	6		2LEMG 200 500 160	20	50	160	20	
2LEMG 015 060 S06	1.5	6	60	6		2LEMG 200 600 S20	20	60	130	20	
2LEMG 015 075 S06	1.5	7.5	60	6		2LEMG 200 1000 S20	20	100	200	20	
2LEMG 015 100 S06	1.5	10	60	6		2LEMG 250 750 S25	25	75	160	25	
2LEMG 015 150 S06	1.5	15	60	6							
2LEMG 015 200 S06	1.5	20	60	6							
2LEMG 020 060 S06	2	6	60	6							
2LEMG 020 100 S06	2	10	60	6							
2LEMG 020 150 S06	2	15	60	6							
2LEMG 020 200 S06	2	20	60	6							
2LEMG 030 120 S06	3	12	70	6							
2LEMG 030 150 S06	3	15	70	6							
2LEMG 030 200 S06	3	20	70	6							
2LEMG 030 250 S06	3	25	70	6							
2LEMG 030 300 S06	3	30	70	6							
2LEMG 040 150 S06	4	15	70	6							
2LEMG 040 200 S06	4	20	70	6							
2LEMG 040 300 S06	4	30	75	6							
2LEMG 050 200 S06	5	20	70	6							
2LEMG 050 250 S06	5	25	75	6							
2LEMG 050 300 S06	5	30	80	6							
2LEMG 060 200 S06	6	20	75	6							
2LEMG 060 200 100	6	20	100	6							
2LEMG 060 250 S06	6	25	75	6							
2LEMG 060 300 S06	6	30	80	6							
2LEMG 080 250 S08	8	25	75	8							
2LEMG 080 250 100	8	25	100	8							
2LEMG 080 300 S08	8	30	80	8							
2LEMG 080 350 S08	8	35	80	8							
2LEMG 080 400 S08	8	40	90	8							
2LEMG 080 500 S08	8	50	100	8							
2LEMG 100 300 S10	10	30	80	10							
2LEMG 100 300 110	10	30	110	10							
2LEMG 100 350 S10	10	35	90	10							
2LEMG 100 400 S10	10	40	90	10							
2LEMG 100 500 S10	10	50	100	10							
2LEMG 100 600 S10	10	60	110	10							
2LEMG 120 300 S12	12	30	90	12							
2LEMG 120 350 110	12	35	110	12							
2LEMG 120 400 S12	12	40	100	12							
2LEMG 120 500 S12	12	50	100	12							
2LEMG 120 600 S12	12	60	110	12							
2LEMG 120 700 S12	12	70	130	12							
2LEMG 140 500 S14	14	50	110	14							



- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.**
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

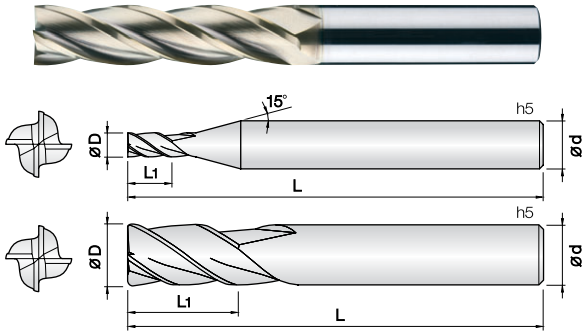


D Size	D Tolerance
ø0.8 ~ 5.5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø14 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4HCEG 008 020 S04	0.8	2	40	4		4HCEG 070 160 S08	7	16	60	8	
4HCEG 010 010 S04	1	1	40	4		4HCEG 075 160 S08	7.5	16	60	8	
4HCEG 010 025 S04	1	2.5	40	4		4HCEG 080 080 S08	8	8	50	8	
4HCEG 010 025 S06	1	2.5	40	6		4HCEG 080 190 S08	8	19	60	8	
4HCEG 010 025 060	1	2.5	60	6		4HCEG 080 200 S08	8	20	70	8	
4HCEG 010 025 080	1	2.5	80	6		4HCEG 085 190 S10	8.5	19	70	10	
4HCEG 010 040 S06	1	4	50	6		4HCEG 090 190 S10	9	19	70	10	
4HCEG 012 012 S04	1.2	1.2	40	4		4HCEG 095 190 S10	9.5	19	70	10	
4HCEG 012 030 S04	1.2	3	40	4		4HCEG 100 100 S10	10	10	60	10	
4HCEG 012 030 S06	1.2	3	40	6		4HCEG 100 220 S10	10	22	70	10	
4HCEG 012 030 060	1.2	3	60	6		4HCEG 100 250 S10	10	25	75	10	
4HCEG 012 060 S06	1.5	6	50	6		4HCEG 105 220 S12	10.5	22	75	12	
4HCEG 015 015 S04	1.5	1.5	40	4		4HCEG 110 220 S12	11	22	75	12	
4HCEG 015 040 S04	1.5	4	40	4		4HCEG 115 220 S12	11.5	22	75	12	
4HCEG 015 040 S06	1.5	4	40	6		4HCEG 120 120 S12	12	12	65	12	
4HCEG 015 040 060	1.5	4	60	6		4HCEG 120 260 S12	12	26	75	12	
4HCEG 015 040 080	1.5	4	80	6		4HCEG 120 300 S12	12	30	80	12	
4HCEG 020 020 S04	2	2	40	4		4HCEG 140 260 S14	14	26	80	14	
4HCEG 020 060 S04	2	6	40	4		4HCEG 140 260 S16	14	26	85	16	
4HCEG 020 060 S06	2	6	40	6		4HCEG 160 350 S16	16	35	100	16	
4HCEG 020 060 060	2	6	60	6		4HCEG 160 400 S16	16	40	100	16	
4HCEG 020 060 100	2	6	100	6		4HCEG 180 350 S18	18	35	100	18	
4HCEG 025 080 S04	2.5	8	45	4		4HCEG 200 400 S20	20	40	100	20	
4HCEG 025 080 S06	2.5	8	45	6		4HCEG 200 450 S20	20	45	100	20	
4HCEG 025 080 070	2.5	8	70	6							
4HCEG 025 080 100	2.5	8	100	6							
4HCEG 030 080 S03	3	8	45	3							
4HCEG 030 080 S04	3	8	45	4							
4HCEG 030 080 S06	3	8	45	6							
4HCEG 030 080 070	3	8	70	6							
4HCEG 030 080 100	3	8	100	6							
4HCEG 035 100 S06	3.5	10	45	6							
4HCEG 040 040 S04	4	4	40	4							
4HCEG 040 110 S04	4	11	45	4							
4HCEG 040 110 S06	4	11	45	6							
4HCEG 040 110 070	4	11	70	6							
4HCEG 040 110 100	4	11	100	6							
4HCEG 045 110 S06	4.5	11	45	6							
4HCEG 050 130 S06	5	13	50	6							
4HCEG 050 130 080	5	13	80	6							
4HCEG 050 130 100	5	13	100	6							
4HCEG 055 130 S06	5.5	13	50	6							
4HCEG 060 060 S06	6	6	45	6							
4HCEG 060 130 S06	6	13	50	6							
4HCEG 060 130 080	6	13	80	6							
4HCEG 060 130 100	6	13	100	6							
4HCEG 060 150 S06	6	15	60	6							
4HCEG 065 160 S08	6.5	16	60	8							

## 4날 범용 긴 길이 엔드밀



- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 균일한 런아웃 공차관리로 공구의 성능을 향상시켰습니다.
- 다양한 날길이와 전장을 채택, 다양한 작업에 효율성을 극대화 하였습니다.
- 코너부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- **Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.**
- Optimum for various work materials by JCRO coating.
- Improve tool performance by even run-out and tolerance control.
- Various flute and overall length design for covering wide range applications as well as high efficiency machining.
- Minimize edge chipping by improving corner strength.

4

WC  
미립자

JCRO  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

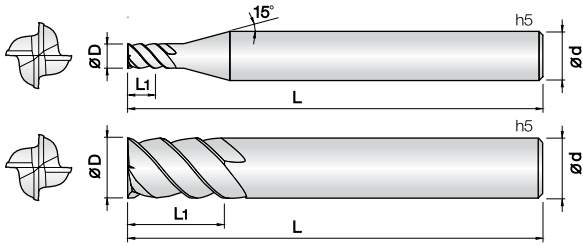
35°  
Helix Angle

Shield Edge

D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø14 ~ 25	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
4LEMG 010 030 S06	1	3	60	6		4LEMG 200 500 160	20	50	160	20	
4LEMG 010 050 S06	1	5	60	6		4LEMG 200 600 S20	20	60	130	20	
4LEMG 015 060 S06	1.5	6	60	6		4LEMG 200 1000 S20	20	100	200	20	
4LEMG 015 080 S06	1.5	8	60	6		4LEMG 250 750 S25	25	75	160	25	
4LEMG 020 080 S06	2	8	60	6							
4LEMG 020 100 S06	2	10	60	6							
4LEMG 030 100 S06	3	10	70	6							
4LEMG 030 150 S06	3	15	70	6							
4LEMG 030 200 S06	3	20	70	6							
4LEMG 030 250 S06	3	25	70	6							
4LEMG 040 120 S06	4	12	70	6							
4LEMG 040 150 S04	4	15	70	4							
4LEMG 040 150 S06	4	15	70	6							
4LEMG 040 200 S04	4	20	70	4							
4LEMG 040 200 S06	4	20	70	6							
4LEMG 040 250 S06	4	25	70	6							
4LEMG 040 300 S06	4	30	75	6							
4LEMG 050 200 S06	5	20	70	6							
4LEMG 050 250 S06	5	25	75	6							
4LEMG 050 300 S06	5	30	80	6							
4LEMG 060 200 S06	6	20	75	6							
4LEMG 060 200 100	6	20	100	6							
4LEMG 060 250 S06	6	25	75	6							
4LEMG 060 300 S06	6	30	80	6							
4LEMG 060 350 S06	6	35	80	6							
4LEMG 080 250 S08	8	25	75	8							
4LEMG 080 250 100	8	25	100	8							
4LEMG 080 300 S08	8	30	80	8							
4LEMG 080 350 S08	8	35	90	8							
4LEMG 080 400 S08	8	40	90	8							
4LEMG 080 450 S08	8	45	100	8							
4LEMG 100 300 S10	10	30	80	10							
4LEMG 100 300 110	10	30	110	10							
4LEMG 100 350 S10	10	35	90	10							
4LEMG 100 400 S10	10	40	90	10							
4LEMG 100 500 S10	10	50	100	10							
4LEMG 100 600 S10	10	60	110	10							
4LEMG 120 300 S12	12	30	90	12							
4LEMG 120 350 110	12	35	110	12							
4LEMG 120 400 S12	12	40	100	12							
4LEMG 120 500 S12	12	50	100	12							
4LEMG 120 600 S12	12	60	110	12							
4LEMG 120 700 S12	12	70	130	12							
4LEMG 140 500 S14	14	50	110	14							
4LEMG 160 400 160	16	40	160	16							
4LEMG 160 550 S16	16	55	120	16							
4LEMG 160 700 S16	16	70	130	16							
New 4LEMG 180 800 160	18	80	160	18							



- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 다양한 피삭재 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 45° 헬릭스 형상으로 설계하여 고속, 고이송 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.**
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- 45° degree helix design for high speed, feed condition.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



ø1 ~ 5

ø6 ~ 12

ø16 ~ 20

Shield Edge

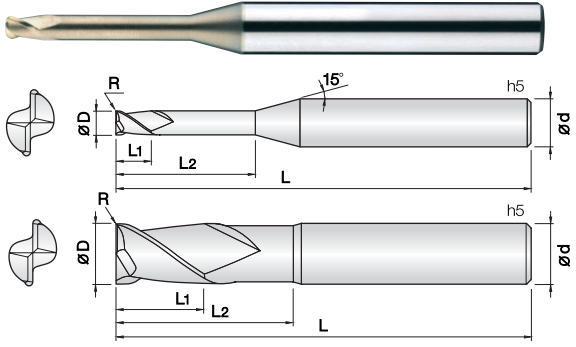
D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샤프트 Shank Dia d	비고								
4HEMG 010 025 S06	1	2.5	40	6									
4HEMG 010 035 S06	1	3.5	40	6									
4HEMG 015 040 S06	1.5	4	40	6									
4HEMG 015 060 S06	1.5	6	40	6									
4HEMG 020 050 S06	2	5	40	6									
4HEMG 020 080 S06	2	8	45	6									
4HEMG 030 080 S06	3	8	45	6									
4HEMG 030 120 S06	3	12	50	6									
4HEMG 040 110 S06	4	11	45	6									
4HEMG 040 160 S06	4	16	55	6									
4HEMG 050 130 S06	5	13	50	6									
4HEMG 050 180 S06	5	18	60	6									
4HEMG 060 130 S06	6	13	50	6									
4HEMG 060 200 S06	6	20	60	6									
4HEMG 080 200 S08	8	20	60	8									
4HEMG 080 250 S08	8	25	70	8									
4HEMG 100 220 S10	10	22	70	10									
4HEMG 100 300 S10	10	30	80	10									
4HEMG 120 260 S12	12	26	75	12									
4HEMG 120 400 S12	12	40	90	12									
4HEMG 120 500 S12	12	50	100	12									
4HEMG 160 350 S16	16	35	90	16									
4HEMG 160 500 S16	16	50	110	16									
4HEMG 200 400 S20	20	40	100	20									
4HEMG 200 500 S20	20	50	110	20									



### 2날 범용 리브코너 레디우스 엔드밀



- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화
- Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and flute length for wide range application.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



D Size	D Tolerance
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

단위 : mm

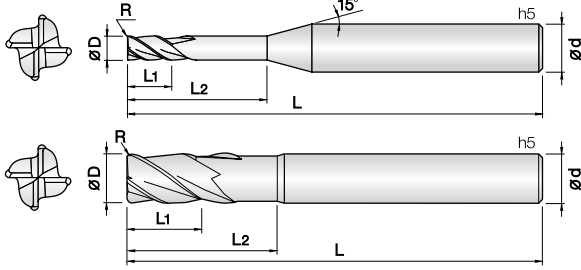
Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고
2CREG 002 0002 010	0.2 X R0.02	0.2	1	40	4		2CREG 008 001 080	0.8 X R0.1	0.9	8	45	4	
2CREG 002 0002 015	0.2 X R0.02	0.2	1.5	40	4		2CREG 008 002 020	0.8 X R0.2	0.9	2	45	4	
2CREG 002 0005 010	0.2 X R0.05	0.2	1	40	4		2CREG 008 002 040	0.8 X R0.2	0.9	4	45	4	
2CREG 002 0005 015	0.2 X R0.05	0.2	1.5	40	4		2CREG 008 002 060	0.8 X R0.2	0.9	6	45	4	
2CREG 003 0005 010	0.3 X R0.05	0.3	1	40	4		2CREG 008 002 080	0.8 X R0.2	0.9	8	45	4	
2CREG 003 0005 020	0.3 X R0.05	0.3	2	40	4		2CREG 010 001 040	1 X R0.1	1.2	4	45	4	
2CREG 003 0005 030	0.3 X R0.05	0.3	3	40	4		2CREG 010 001 060	1 X R0.1	1.2	6	45	4	
2CREG 004 0005 010	0.4 X R0.05	0.5	1	40	4		2CREG 010 001 080	1 X R0.1	1.2	8	45	4	
2CREG 004 0005 020	0.4 X R0.05	0.5	2	40	4		2CREG 010 001 100	1 X R0.1	1.2	10	50	4	
2CREG 004 0005 030	0.4 X R0.05	0.5	3	40	4		2CREG 010 001 120	1 X R0.1	1.2	12	50	4	
2CREG 004 0005 040	0.4 X R0.05	0.5	4	40	4		2CREG 010 001 160	1 X R0.1	1.2	16	50	4	
2CREG 004 001 010	0.4 X R0.1	0.5	1	40	4		2CREG 010 001 200	1 X R0.1	1.2	20	50	4	
2CREG 004 001 015	0.4 X R0.1	0.5	1.5	40	4		2CREG 010 002 040	1 X R0.2	1.2	4	45	4	
2CREG 004 001 020	0.4 X R0.1	0.5	2	40	4		2CREG 010 002 060	1 X R0.2	1.2	6	45	4	
2CREG 004 001 030	0.4 X R0.1	0.5	3	40	4		2CREG 010 002 080	1 X R0.2	1.2	8	45	4	
2CREG 004 001 040	0.4 X R0.1	0.5	4	40	4		2CREG 010 002 100	1 X R0.2	1.2	10	50	4	
2CREG 005 0005 010	0.5 X R0.05	0.6	1	45	4		2CREG 010 002 120	1 X R0.2	1.2	12	50	4	
2CREG 005 0005 015	0.5 X R0.05	0.6	1.5	45	4		2CREG 010 002 160	1 X R0.2	1.2	16	50	4	
2CREG 005 0005 020	0.5 X R0.05	0.6	2	45	4		2CREG 010 002 200	1 X R0.2	1.2	20	50	4	
2CREG 005 0005 025	0.5 X R0.05	0.6	2.5	45	4		2CREG 010 003 040	1 X R0.3	1.2	4	45	4	
2CREG 005 0005 030	0.5 X R0.05	0.6	3	45	4		2CREG 010 003 060	1 X R0.3	1.2	6	45	4	
2CREG 005 0005 040	0.5 X R0.05	0.6	4	45	4		2CREG 010 003 080	1 X R0.3	1.2	8	45	4	
2CREG 005 0005 050	0.5 X R0.05	0.6	5	45	4		2CREG 010 003 100	1 X R0.3	1.2	10	50	4	
2CREG 005 0005 060	0.5 X R0.05	0.6	6	45	4		2CREG 010 003 120	1 X R0.3	1.2	12	50	4	
2CREG 005 001 010	0.5 X R0.1	0.6	1	45	4		2CREG 010 003 160	1 X R0.3	1.2	16	50	4	
2CREG 005 001 015	0.5 X R0.1	0.6	1.5	45	4		2CREG 010 003 200	1 X R0.3	1.2	20	50	4	
2CREG 005 001 020	0.5 X R0.1	0.6	2	45	4		2CREG 012 001 040	1.2 X R0.1	1.4	4	45	4	
2CREG 005 001 025	0.5 X R0.1	0.6	2.5	45	4		2CREG 012 001 060	1.2 X R0.1	1.4	6	45	4	
2CREG 005 001 030	0.5 X R0.1	0.6	3	45	4		2CREG 012 001 080	1.2 X R0.1	1.4	8	45	4	
2CREG 005 001 040	0.5 X R0.1	0.6	4	45	4		2CREG 012 001 100	1.2 X R0.1	1.4	10	50	4	
2CREG 005 001 050	0.5 X R0.1	0.6	5	45	4		2CREG 012 001 120	1.2 X R0.1	1.4	12	50	4	
2CREG 005 001 060	0.5 X R0.1	0.6	6	45	4		2CREG 012 001 160	1.2 X R0.1	1.4	16	50	4	
2CREG 006 0005 020	0.6 X R0.05	0.7	2	45	4		2CREG 012 001 200	1.2 X R0.1	1.4	20	50	4	
2CREG 006 0005 030	0.6 X R0.05	0.7	3	45	4		2CREG 012 002 040	1.2 X R0.2	1.4	4	45	4	
2CREG 006 0005 040	0.6 X R0.05	0.7	4	45	4		2CREG 012 002 060	1.2 X R0.2	1.4	6	45	4	
2CREG 006 0005 060	0.6 X R0.05	0.7	6	45	4		2CREG 012 002 080	1.2 X R0.2	1.4	8	45	4	
2CREG 006 0005 080	0.6 X R0.05	0.7	8	45	4		2CREG 012 002 100	1.2 X R0.2	1.4	10	50	4	
2CREG 006 001 020	0.6 X R0.1	0.7	2	45	4		2CREG 012 002 120	1.2 X R0.2	1.4	12	50	4	
2CREG 006 001 030	0.6 X R0.1	0.7	3	45	4		2CREG 012 002 160	1.2 X R0.2	1.4	16	50	4	
2CREG 006 001 040	0.6 X R0.1	0.7	4	45	4		2CREG 012 002 200	1.2 X R0.2	1.4	20	50	4	
2CREG 006 001 060	0.6 X R0.1	0.7	6	45	4		2CREG 012 003 040	1.2 X R0.3	1.4	4	45	4	
2CREG 006 001 080	0.6 X R0.1	0.7	8	45	4		2CREG 012 003 060	1.2 X R0.3	1.4	6	45	4	
2CREG 007 001 020	0.7 X R0.1	0.8	2	45	4		2CREG 012 003 080	1.2 X R0.3	1.4	8	45	4	
2CREG 007 001 040	0.7 X R0.1	0.8	4	45	4		2CREG 012 003 100	1.2 X R0.3	1.4	10	50	4	
2CREG 007 001 060	0.7 X R0.1	0.8	6	45	4		2CREG 012 003 120	1.2 X R0.3	1.4	12	50	4	
2CREG 008 001 020	0.8 X R0.1	0.9	2	45	4		2CREG 012 003 160	1.2 X R0.3	1.4	16	50	4	
2CREG 008 001 040	0.8 X R0.1	0.9	4	45	4		2CREG 012 003 200	1.2 X R0.3	1.4	20	50	4	
2CREG 008 001 060	0.8 X R0.1	0.9	6	45	4		2CREG 015 001 040	1.5 X R0.1	1.8	4	45	4	

단위 : mm

Order Number	날경 D × R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 D × R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2CREG 015 001 060	1.5 X R0.1	1.8	6	45	4		2CREG 020 005 160	2 X R0.5	2.4	16	50	4	
2CREG 015 001 080	1.5 X R0.1	1.8	8	45	4		2CREG 020 005 200	2 X R0.5	2.4	20	50	4	
2CREG 015 001 100	1.5 X R0.1	1.8	10	50	4		2CREG 020 005 250	2 X R0.5	2.4	25	60	4	
2CREG 015 001 120	1.5 X R0.1	1.8	12	50	4		2CREG 020 005 300	2 X R0.5	2.4	30	70	4	
2CREG 015 001 160	1.5 X R0.1	1.8	16	50	4		2CREG 025 001 100	2.5 X R0.1	3	10	50	4	
2CREG 015 001 200	1.5 X R0.1	1.8	20	50	4		2CREG 025 001 160	2.5 X R0.1	3	16	50	4	
2CREG 015 001 220	1.5 X R0.1	1.8	22	60	4		2CREG 025 001 200	2.5 X R0.1	3	20	50	4	
2CREG 015 001 250	1.5 X R0.1	1.8	25	60	4		2CREG 025 001 250	2.5 X R0.1	3	25	60	4	
2CREG 015 002 040	1.5 X R0.2	1.8	4	45	4		2CREG 025 001 300	2.5 X R0.1	3	30	70	4	
2CREG 015 002 060	1.5 X R0.2	1.8	6	45	4		2CREG 025 002 100	2.5 X R0.2	3	10	50	4	
2CREG 015 002 080	1.5 X R0.2	1.8	8	45	4		2CREG 025 002 160	2.5 X R0.2	3	16	50	4	
2CREG 015 002 100	1.5 X R0.2	1.8	10	50	4		2CREG 025 002 200	2.5 X R0.2	3	20	50	4	
2CREG 015 002 120	1.5 X R0.2	1.8	12	50	4		2CREG 025 002 250	2.5 X R0.2	3	25	60	4	
2CREG 015 002 160	1.5 X R0.2	1.8	16	50	4		2CREG 025 002 300	2.5 X R0.2	3	30	70	4	
2CREG 015 002 200	1.5 X R0.2	1.8	20	50	4		2CREG 025 003 100	2.5 X R0.3	3	10	50	4	
2CREG 015 002 220	1.5 X R0.2	1.8	22	60	4		2CREG 025 003 160	2.5 X R0.3	3	16	50	4	
2CREG 015 002 250	1.5 X R0.2	1.8	25	60	4		2CREG 025 003 200	2.5 X R0.3	3	20	50	4	
2CREG 015 003 040	1.5 X R0.3	1.8	4	45	4		2CREG 025 003 250	2.5 X R0.3	3	25	60	4	
2CREG 015 003 060	1.5 X R0.3	1.8	6	45	4		2CREG 025 003 300	2.5 X R0.3	3	30	70	4	
2CREG 015 003 080	1.5 X R0.3	1.8	8	45	4		2CREG 025 005 100	2.5 X R0.5	3	10	50	4	
2CREG 015 003 100	1.5 X R0.3	1.8	10	50	4		2CREG 025 005 160	2.5 X R0.5	3	16	50	4	
2CREG 015 003 120	1.5 X R0.3	1.8	12	50	4		2CREG 025 005 200	2.5 X R0.5	3	20	50	4	
2CREG 015 003 160	1.5 X R0.3	1.8	16	50	4		2CREG 025 005 250	2.5 X R0.5	3	25	60	4	
2CREG 015 003 200	1.5 X R0.3	1.8	20	50	4		2CREG 025 005 300	2.5 X R0.5	3	30	70	4	
2CREG 015 003 220	1.5 X R0.3	1.8	22	60	4		2CREG 030 001 100	3 X R0.1	3.6	10	50	6	
2CREG 015 003 250	1.5 X R0.3	1.8	25	60	4		2CREG 030 001 120	3 X R0.1	3.6	12	50	6	
2CREG 015 005 040	1.5 X R0.5	1.8	4	45	4		2CREG 030 001 160	3 X R0.1	3.6	16	55	6	
2CREG 015 005 060	1.5 X R0.5	1.8	6	45	4		2CREG 030 001 200	3 X R0.1	3.6	20	60	6	
2CREG 015 005 080	1.5 X R0.5	1.8	8	45	4		2CREG 030 001 250	3 X R0.1	3.6	25	65	6	
2CREG 015 005 100	1.5 X R0.5	1.8	10	50	4		2CREG 030 001 300	3 X R0.1	3.6	30	70	6	
2CREG 015 005 120	1.5 X R0.5	1.8	12	50	4		2CREG 030 001 350	3 X R0.1	3.6	35	75	6	
2CREG 015 005 160	1.5 X R0.5	1.8	16	50	4		2CREG 030 001 400	3 X R0.1	3.6	40	80	6	
2CREG 015 005 200	1.5 X R0.5	1.8	20	50	4		2CREG 030 002 100	3 X R0.2	3.6	10	50	6	
2CREG 015 005 220	1.5 X R0.5	1.8	22	60	4		2CREG 030 002 120	3 X R0.2	3.6	12	50	6	
2CREG 015 005 250	1.5 X R0.5	1.8	25	60	4		2CREG 030 002 160	3 X R0.2	3.6	16	55	6	
2CREG 020 001 060	2 X R0.1	2.4	6	45	4		2CREG 030 002 200	3 X R0.2	3.6	20	60	6	
2CREG 020 001 080	2 X R0.1	2.4	8	45	4		2CREG 030 002 250	3 X R0.2	3.6	25	65	6	
2CREG 020 001 100	2 X R0.1	2.4	10	50	4		2CREG 030 002 300	3 X R0.2	3.6	30	70	6	
2CREG 020 001 120	2 X R0.1	2.4	12	50	4		2CREG 030 002 350	3 X R0.2	3.6	35	75	6	
2CREG 020 001 160	2 X R0.1	2.4	16	50	4		2CREG 030 002 400	3 X R0.2	3.6	40	80	6	
2CREG 020 001 200	2 X R0.1	2.4	20	50	4		2CREG 030 003 100	3 X R0.3	3.6	10	50	6	
2CREG 020 001 250	2 X R0.1	2.4	25	60	4		2CREG 030 003 120	3 X R0.3	3.6	12	50	6	
2CREG 020 001 300	2 X R0.1	2.4	30	70	4		2CREG 030 003 160	3 X R0.3	3.6	16	55	6	
2CREG 020 002 060	2 X R0.2	2.4	6	45	4		2CREG 030 003 200	3 X R0.3	3.6	20	60	6	
2CREG 020 002 080	2 X R0.2	2.4	8	45	4		2CREG 030 003 250	3 X R0.3	3.6	25	65	6	
2CREG 020 002 100	2 X R0.2	2.4	10	50	4		2CREG 030 003 300	3 X R0.3	3.6	30	70	6	
2CREG 020 002 120	2 X R0.2	2.4	12	50	4		2CREG 030 003 350	3 X R0.3	3.6	35	75	6	
2CREG 020 002 160	2 X R0.2	2.4	16	50	4		2CREG 030 003 400	3 X R0.3	3.6	40	80	6	
2CREG 020 002 200	2 X R0.2	2.4	20	50	4		2CREG 030 005 100	3 X R0.5	3.6	10	50	6	
2CREG 020 002 250	2 X R0.2	2.4	25	60	4		2CREG 030 005 120	3 X R0.5	3.6	12	50	6	
2CREG 020 002 300	2 X R0.2	2.4	30	70	4		2CREG 030 005 160	3 X R0.5	3.6	16	55	6	
2CREG 020 003 060	2 X R0.3	2.4	6	45	4		2CREG 030 005 200	3 X R0.5	3.6	20	60	6	
2CREG 020 003 080	2 X R0.3	2.4	8	45	4		2CREG 030 005 250	3 X R0.5	3.6	25	65	6	
2CREG 020 003 100	2 X R0.3	2.4	10	50	4		2CREG 030 005 300	3 X R0.5	3.6	30	70	6	
2CREG 020 003 120	2 X R0.3	2.4	12	50	4		2CREG 030 005 350	3 X R0.5	3.6	35	75	6	
2CREG 020 003 160	2 X R0.3	2.4	16	50	4		2CREG 030 005 400	3 X R0.5	3.6	40	80	6	
2CREG 020 003 200	2 X R0.3	2.4	20	50	4		2CREG 030 010 100	3 X R1	3.6	10	50	6	
2CREG 020 003 250	2 X R0.3	2.4	25	60	4		2CREG 030 010 120	3 X R1	3.6	12	50	6	
2CREG 020 003 300	2 X R0.3	2.4	30	70	4		2CREG 030 010 160	3 X R1	3.6	16	55	6	
2CREG 020 005 060	2 X R0.5	2.4	6	45	4		2CREG 030 010 200	3 X R1	3.6	20	60	6	
2CREG 020 005 080	2 X R0.5	2.4	8	45	4		2CREG 030 010 250	3 X R1	3.6	25	65	6	
2CREG 020 005 100	2 X R0.5	2.4	10	50	4		2CREG 030 010 300	3 X R1	3.6	30	70	6	
2CREG 020 005 120	2 X R0.5	2.4	12	50	4		2CREG 030 010 350	3 X R1	3.6	35	75	6	

단위 : mm

Order Number	날경 D×R	날장 L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 D×R	날장 L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2CREG 030 010 400	3 X R1	3.6	40	80	6		2CREG 050 005 300	5 X R0.5	6	30	70	6	
2CREG 040 001 050	4 X R0.1	4.8	12	50	4		2CREG 050 005 400	5 X R0.5	6	40	80	6	
2CREG 040 001 070	4 X R0.1	4.8	20	70	4		2CREG 050 005 500	5 X R0.5	6	50	100	6	
2CREG 040 001 120	4 X R0.1	4.8	12	50	6		2CREG 050 010 150	5 X R1	6	15	55	6	
2CREG 040 001 160	4 X R0.1	4.8	16	55	6		2CREG 050 010 250	5 X R1	6	25	70	6	
2CREG 040 001 200	4 X R0.1	4.8	20	60	6		2CREG 050 010 300	5 X R1	6	30	70	6	
2CREG 040 001 250	4 X R0.1	4.8	25	65	6		2CREG 050 010 400	5 X R1	6	40	80	6	
2CREG 040 001 300	4 X R0.1	4.8	30	70	6		2CREG 050 010 500	5 X R1	6	50	100	6	
2CREG 040 001 350	4 X R0.1	4.8	35	75	6		2CREG 060 001 200	6 X R0.1	7	20	60	6	
2CREG 040 001 400	4 X R0.1	4.8	40	80	6		2CREG 060 001 400	6 X R0.1	7	40	90	6	
2CREG 040 001 450	4 X R0.1	4.8	45	90	6		2CREG 060 002 200	6 X R0.2	7	20	60	6	
2CREG 040 001 500	4 X R0.1	4.8	50	100	6		2CREG 060 002 400	6 X R0.2	7	40	90	6	
2CREG 040 002 050	4 X R0.2	4.8	12	50	4		2CREG 060 003 200	6 X R0.3	7	20	60	6	
2CREG 040 002 070	4 X R0.2	4.8	20	70	4		2CREG 060 003 400	6 X R0.3	7	40	90	6	
2CREG 040 002 120	4 X R0.2	4.8	12	50	6		2CREG 060 005 200	6 X R0.5	7	20	60	6	
2CREG 040 002 160	4 X R0.2	4.8	16	55	6		2CREG 060 005 400	6 X R0.5	7	40	90	6	
2CREG 040 002 200	4 X R0.2	4.8	20	60	6		2CREG 060 010 200	6 X R1	7	20	60	6	
2CREG 040 002 250	4 X R0.2	4.8	25	65	6		2CREG 060 010 400	6 X R1	7	40	90	6	
2CREG 040 002 300	4 X R0.2	4.8	30	70	6		2CREG 060 015 200	6 X R1.5	7	20	60	6	
2CREG 040 002 350	4 X R0.2	4.8	35	75	6		2CREG 060 015 400	6 X R1.5	7	40	90	6	
2CREG 040 002 400	4 X R0.2	4.8	40	80	6		2CREG 080 002 220	8 X R0.2	9	22	65	8	
2CREG 040 002 450	4 X R0.2	4.8	45	90	6		2CREG 080 002 400	8 X R0.2	9	40	100	8	
2CREG 040 002 500	4 X R0.2	4.8	50	100	6		2CREG 080 003 220	8 X R0.3	9	22	65	8	
2CREG 040 003 050	4 X R0.3	4.8	12	50	4		2CREG 080 003 400	8 X R0.3	9	40	100	8	
2CREG 040 003 070	4 X R0.3	4.8	20	70	4		2CREG 080 005 220	8 X R0.5	9	22	65	8	
2CREG 040 003 120	4 X R0.3	4.8	12	50	6		2CREG 080 005 400	8 X R0.5	9	40	100	8	
2CREG 040 003 160	4 X R0.3	4.8	16	55	6		2CREG 080 010 220	8 X R1	9	22	65	8	
2CREG 040 003 200	4 X R0.3	4.8	20	60	6		2CREG 080 010 400	8 X R1	9	40	100	8	
2CREG 040 003 250	4 X R0.3	4.8	25	65	6		2CREG 080 015 220	8 X R1.5	9	22	65	8	
2CREG 040 003 300	4 X R0.3	4.8	30	70	6		2CREG 080 015 400	8 X R1.5	9	40	100	8	
2CREG 040 003 350	4 X R0.3	4.8	35	75	6		2CREG 100 002 240	10 X R0.2	11	24	70	10	
2CREG 040 003 400	4 X R0.3	4.8	40	80	6		2CREG 100 002 450	10 X R0.2	11	45	100	10	
2CREG 040 003 450	4 X R0.3	4.8	45	90	6		2CREG 100 003 240	10 X R0.3	11	24	70	10	
2CREG 040 003 500	4 X R0.3	4.8	50	100	6		2CREG 100 003 450	10 X R0.3	11	45	100	10	
2CREG 040 005 050	4 X R0.5	4.8	12	50	4		2CREG 100 005 240	10 X R0.5	11	24	70	10	
2CREG 040 005 070	4 X R0.5	4.8	20	70	4		2CREG 100 005 450	10 X R0.5	11	45	100	10	
2CREG 040 005 120	4 X R0.5	4.8	12	50	6		2CREG 100 010 240	10 X R1	11	24	70	10	
2CREG 040 005 160	4 X R0.5	4.8	16	55	6		2CREG 100 010 450	10 X R1	11	45	100	10	
2CREG 040 005 200	4 X R0.5	4.8	20	60	6		2CREG 100 015 240	10 X R1.5	11	24	70	10	
2CREG 040 005 250	4 X R0.5	4.8	25	65	6		2CREG 100 015 450	10 X R1.5	11	45	100	10	
2CREG 040 005 300	4 X R0.5	4.8	30	70	6		2CREG 100 020 240	10 X R2	11	24	70	10	
2CREG 040 005 350	4 X R0.5	4.8	35	75	6		2CREG 100 020 450	10 X R2	11	45	100	10	
2CREG 040 005 400	4 X R0.5	4.8	40	80	6		2CREG 120 002 260	12 X R0.2	13	26	80	12	
2CREG 040 005 450	4 X R0.5	4.8	45	90	6		2CREG 120 002 500	12 X R0.2	13	50	110	12	
2CREG 040 005 500	4 X R0.5	4.8	50	100	6		2CREG 120 003 260	12 X R0.3	13	26	80	12	
2CREG 040 010 050	4 X R1	4.8	12	50	4		2CREG 120 003 500	12 X R0.3	13	50	110	12	
2CREG 040 010 070	4 X R1	4.8	20	70	4		2CREG 120 005 260	12 X R0.5	13	26	80	12	
2CREG 040 010 120	4 X R1	4.8	12	50	6		2CREG 120 005 500	12 X R0.5	13	50	110	12	
2CREG 040 010 160	4 X R1	4.8	16	55	6		2CREG 120 010 260	12 X R1	13	26	80	12	
2CREG 040 010 200	4 X R1	4.8	20	60	6		2CREG 120 010 500	12 X R1	13	50	110	12	
2CREG 040 010 250	4 X R1	4.8	25	65	6		2CREG 120 015 260	12 X R1.5	13	26	80	12	
2CREG 040 010 300	4 X R1	4.8	30	70	6		2CREG 120 015 500	12 X R1.5	13	50	110	12	
2CREG 040 010 350	4 X R1	4.8	35	75	6		2CREG 120 020 260	12 X R2	13	26	80	12	
2CREG 040 010 400	4 X R1	4.8	40	80	6		2CREG 120 020 500	12 X R2	13	50	110	12	
2CREG 040 010 450	4 X R1	4.8	45	90	6		2CREG 120 030 260	12 X R3	13	26	80	12	
2CREG 040 010 500	4 X R1	4.8	50	100	6		2CREG 120 030 500	12 X R3	13	50	110	12	
2CREG 050 002 150	5 X R0.2	6	15	55	6		2CREG 160 005 110	16 X R0.5	20	35	110	16	
2CREG 050 002 250	5 X R0.2	6	25	70	6		2CREG 160 005 160	16 X R0.5	20	35	160	16	
2CREG 050 002 300	5 X R0.2	6	30	70	6		2CREG 160 010 110	16 X R1	20	35	110	16	
2CREG 050 002 400	5 X R0.2	6	40	80	6		2CREG 160 010 160	16 X R1	20	35	160	16	
2CREG 050 002 500	5 X R0.2	6	50	100	6								
2CREG 050 005 150	5 X R0.5	6	15	55	6								
2CREG 050 005 250	5 X R0.5	6	25	70	6								



- 중저경도강(HRc52이하), 프리하드강 계열, 탄소강, 금형강 등 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화
- Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.
- Optimum for various work materials by JCROcoating.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and flute length for wide range application.
- High precise edge tolerance.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

4

WC  
미립자

JCRO  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

35°  
Helix Angle

R0.05 ~ 0.5    R1 ~ 1.5    R2 ~ 3

D Size	D Tolerance
$\phi 1 \sim 5$	+0 ~ -0.01mm
$\phi 6 \sim 12$	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4CREG 010 0005 040	1 X R0.05	1.2	4	45	4		4CREG 012 003 200	1.2 X R0.3	1.4	20	50	4	
4CREG 010 0005 060	1 X R0.05	1.2	6	45	4		4CREG 015 001 060	1.5 X R0.1	1.8	6	45	4	
4CREG 010 0005 080	1 X R0.05	1.2	8	45	4		4CREG 015 001 080	1.5 X R0.1	1.8	8	45	4	
4CREG 010 0005 100	1 X R0.05	1.2	10	50	4		4CREG 015 001 100	1.5 X R0.1	1.8	10	50	4	
4CREG 010 0005 120	1 X R0.05	1.2	12	50	4		4CREG 015 001 120	1.5 X R0.1	1.8	12	50	4	
4CREG 010 0005 160	1 X R0.05	1.2	16	50	4		4CREG 015 001 160	1.5 X R0.1	1.8	16	50	4	
4CREG 010 0005 200	1 X R0.05	1.2	20	50	4		4CREG 015 001 200	1.5 X R0.1	1.8	20	50	4	
4CREG 010 001 040	1 X R0.1	1.2	4	45	4		4CREG 015 001 220	1.5 X R0.1	1.8	22	60	4	
4CREG 010 001 060	1 X R0.1	1.2	6	45	4		4CREG 015 001 250	1.5 X R0.1	1.8	25	60	4	
4CREG 010 001 080	1 X R0.1	1.2	8	45	4		4CREG 015 002 060	1.5 X R0.2	1.8	6	45	4	
4CREG 010 001 100	1 X R0.1	1.2	10	50	4		4CREG 015 002 080	1.5 X R0.2	1.8	8	45	4	
4CREG 010 001 120	1 X R0.1	1.2	12	50	4		4CREG 015 002 100	1.5 X R0.2	1.8	10	50	4	
4CREG 010 001 160	1 X R0.1	1.2	16	50	4		4CREG 015 002 120	1.5 X R0.2	1.8	12	50	4	
4CREG 010 001 200	1 X R0.1	1.2	20	50	4		4CREG 015 002 160	1.5 X R0.2	1.8	16	50	4	
4CREG 010 002 040	1 X R0.2	1.2	4	45	4		4CREG 015 002 200	1.5 X R0.2	1.8	20	50	4	
4CREG 010 002 060	1 X R0.2	1.2	6	45	4		4CREG 015 002 220	1.5 X R0.2	1.8	22	60	4	
4CREG 010 002 080	1 X R0.2	1.2	8	45	4		4CREG 015 002 250	1.5 X R0.2	1.8	25	60	4	
4CREG 010 002 100	1 X R0.2	1.2	10	50	4		4CREG 015 003 060	1.5 X R0.3	1.8	6	45	4	
4CREG 010 002 120	1 X R0.2	1.2	12	50	4		4CREG 015 003 080	1.5 X R0.3	1.8	8	45	4	
4CREG 010 002 160	1 X R0.2	1.2	16	50	4		4CREG 015 003 100	1.5 X R0.3	1.8	10	50	4	
4CREG 010 002 200	1 X R0.2	1.2	20	50	4		4CREG 015 003 120	1.5 X R0.3	1.8	12	50	4	
4CREG 010 003 040	1 X R0.3	1.2	4	45	4		4CREG 015 003 160	1.5 X R0.3	1.8	16	50	4	
4CREG 010 003 060	1 X R0.3	1.2	6	45	4		4CREG 015 003 200	1.5 X R0.3	1.8	20	50	4	
4CREG 010 003 080	1 X R0.3	1.2	8	45	4		4CREG 015 003 220	1.5 X R0.3	1.8	22	60	4	
4CREG 010 003 100	1 X R0.3	1.2	10	50	4		4CREG 015 003 250	1.5 X R0.3	1.8	25	60	4	
4CREG 010 003 120	1 X R0.3	1.2	12	50	4		4CREG 015 005 060	1.5 X R0.5	1.8	6	45	4	
4CREG 010 003 160	1 X R0.3	1.2	16	50	4		4CREG 015 005 080	1.5 X R0.5	1.8	8	45	4	
4CREG 010 003 200	1 X R0.3	1.2	20	50	4		4CREG 015 005 100	1.5 X R0.5	1.8	10	50	4	
4CREG 012 001 040	1.2 X R0.1	1.4	4	45	4		4CREG 015 005 120	1.5 X R0.5	1.8	12	50	4	
4CREG 012 001 060	1.2 X R0.1	1.4	6	45	4		4CREG 015 005 160	1.5 X R0.5	1.8	16	50	4	
4CREG 012 001 080	1.2 X R0.1	1.4	8	45	4		4CREG 015 005 200	1.5 X R0.5	1.8	20	50	4	
4CREG 012 001 100	1.2 X R0.1	1.4	10	50	4		4CREG 015 005 220	1.5 X R0.5	1.8	22	60	4	
4CREG 012 001 120	1.2 X R0.1	1.4	12	50	4		4CREG 015 005 250	1.5 X R0.5	1.8	25	60	4	
4CREG 012 001 160	1.2 X R0.1	1.4	16	50	4		4CREG 020 001 060	2 X R0.1	2.4	6	45	4	
4CREG 012 001 200	1.2 X R0.1	1.4	20	50	4		4CREG 020 001 080	2 X R0.1	2.4	8	45	4	
4CREG 012 002 040	1.2 X R0.2	1.4	4	45	4		4CREG 020 001 100	2 X R0.1	2.4	10	50	4	
4CREG 012 002 060	1.2 X R0.2	1.4	6	45	4		4CREG 020 001 120	2 X R0.1	2.4	12	50	4	
4CREG 012 002 080	1.2 X R0.2	1.4	8	45	4		4CREG 020 001 160	2 X R0.1	2.4	16	50	4	
4CREG 012 002 100	1.2 X R0.2	1.4	10	50	4		4CREG 020 001 200	2 X R0.1	2.4	20	50	4	
4CREG 012 002 120	1.2 X R0.2	1.4	12	50	4		4CREG 020 001 250	2 X R0.1	2.4	25	60	4	
4CREG 012 002 160	1.2 X R0.2	1.4	16	50	4		4CREG 020 001 300	2 X R0.1	2.4	30	70	4	
4CREG 012 002 200	1.2 X R0.2	1.4	20	50	4		4CREG 020 001 350	2 X R0.1	2.4	35	70	4	
4CREG 012 003 040	1.2 X R0.3	1.4	4	45	4		4CREG 020 002 060	2 X R0.2	2.4	6	45	4	
4CREG 012 003 060	1.2 X R0.3	1.4	6	45	4		4CREG 020 002 080	2 X R0.2	2.4	8	45	4	
4CREG 012 003 080	1.2 X R0.3	1.4	8	45	4		4CREG 020 002 100	2 X R0.2	2.4	10	50	4	
4CREG 012 003 100	1.2 X R0.3	1.4	10	50	4		4CREG 020 002 120	2 X R0.2	2.4	12	50	4	
4CREG 012 003 120	1.2 X R0.3	1.4	12	50	4		4CREG 020 002 160	2 X R0.2	2.4	16	50	4	
4CREG 012 003 160	1.2 X R0.3	1.4	16	50	4		4CREG 020 002 200	2 X R0.2	2.4	20	50	4	



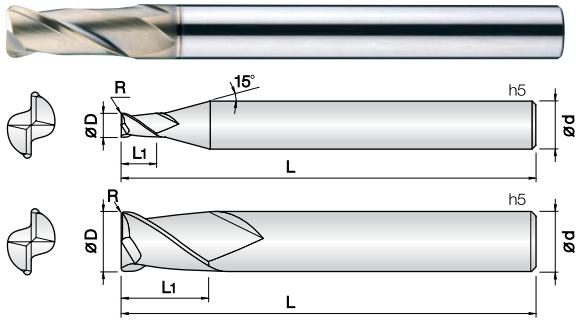
단위 : mm

Order Number	날경 D×R	날장 L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 D×R	날장 L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4CREG 020 002 250	2 X R0.2	2.4	25	60	4		4CREG 030 003 400	3 X R0.3	3.6	40	80	6	
4CREG 020 002 300	2 X R0.2	2.4	30	70	4		4CREG 030 003 500	3 X R0.3	3.6	50	100	6	
4CREG 020 002 350	2 X R0.2	2.4	35	70	4		4CREG 030 005 100	3 X R0.5	3.6	10	50	6	
4CREG 020 003 060	2 X R0.3	2.4	6	45	4		4CREG 030 005 160	3 X R0.5	3.6	16	55	6	
4CREG 020 003 080	2 X R0.3	2.4	8	45	4		4CREG 030 005 200	3 X R0.5	3.6	20	60	6	
4CREG 020 003 100	2 X R0.3	2.4	10	50	4		4CREG 030 005 250	3 X R0.5	3.6	25	65	6	
4CREG 020 003 120	2 X R0.3	2.4	12	50	4		4CREG 030 005 300	3 X R0.5	3.6	30	70	6	
4CREG 020 003 160	2 X R0.3	2.4	16	50	4		4CREG 030 005 350	3 X R0.5	3.6	35	75	6	
4CREG 020 003 200	2 X R0.3	2.4	20	50	4		4CREG 030 005 400	3 X R0.5	3.6	40	80	6	
4CREG 020 003 250	2 X R0.3	2.4	25	60	4		4CREG 030 005 500	3 X R0.5	3.6	50	100	6	
4CREG 020 003 300	2 X R0.3	2.4	30	70	4		4CREG 030 010 100	3 X R1	3.6	10	50	6	
4CREG 020 003 350	2 X R0.3	2.4	35	70	4		4CREG 030 010 160	3 X R1	3.6	16	55	6	
4CREG 020 005 060	2 X R0.5	2.4	6	45	4		4CREG 030 010 200	3 X R1	3.6	20	60	6	
4CREG 020 005 080	2 X R0.5	2.4	8	45	4		4CREG 030 010 250	3 X R1	3.6	25	65	6	
4CREG 020 005 100	2 X R0.5	2.4	10	50	4		4CREG 030 010 300	3 X R1	3.6	30	70	6	
4CREG 020 005 120	2 X R0.5	2.4	12	50	4		4CREG 030 010 350	3 X R1	3.6	35	75	6	
4CREG 020 005 160	2 X R0.5	2.4	16	50	4		4CREG 030 010 400	3 X R1	3.6	40	80	6	
4CREG 020 005 200	2 X R0.5	2.4	20	50	4		4CREG 030 010 500	3 X R1	3.6	50	100	6	
4CREG 020 005 250	2 X R0.5	2.4	25	60	4		4CREG 040 001 050	4 X R0.1	4.8	12	50	4	
4CREG 020 005 300	2 X R0.5	2.4	30	70	4		4CREG 040 001 070	4 X R0.1	4.8	20	70	4	
4CREG 020 005 350	2 X R0.5	2.4	35	70	4		4CREG 040 001 120	4 X R0.1	4.8	12	50	6	
4CREG 025 001 100	2.5 X R0.1	3	10	50	4		4CREG 040 001 160	4 X R0.1	4.8	16	55	6	
4CREG 025 001 160	2.5 X R0.1	3	16	50	4		4CREG 040 001 200	4 X R0.1	4.8	20	60	6	
4CREG 025 001 200	2.5 X R0.1	3	20	50	4		4CREG 040 001 250	4 X R0.1	4.8	25	65	6	
4CREG 025 001 250	2.5 X R0.1	3	25	60	4		4CREG 040 001 300	4 X R0.1	4.8	30	70	6	
4CREG 025 001 300	2.5 X R0.1	3	30	70	4		4CREG 040 001 350	4 X R0.1	4.8	35	75	6	
4CREG 025 002 100	2.5 X R0.2	3	10	50	4		4CREG 040 001 400	4 X R0.1	4.8	40	80	6	
4CREG 025 002 160	2.5 X R0.2	3	16	50	4		4CREG 040 001 450	4 X R0.1	4.8	45	90	6	
4CREG 025 002 200	2.5 X R0.2	3	20	50	4		4CREG 040 001 500	4 X R0.1	4.8	50	100	6	
4CREG 025 002 250	2.5 X R0.2	3	25	60	4		4CREG 040 002 050	4 X R0.2	4.8	12	50	4	
4CREG 025 002 300	2.5 X R0.2	3	30	70	4		4CREG 040 002 070	4 X R0.2	4.8	20	70	4	
4CREG 025 003 100	2.5 X R0.3	3	10	50	4		4CREG 040 002 120	4 X R0.2	4.8	12	50	6	
4CREG 025 003 160	2.5 X R0.3	3	16	50	4		4CREG 040 002 160	4 X R0.2	4.8	16	55	6	
4CREG 025 003 200	2.5 X R0.3	3	20	50	4		4CREG 040 002 200	4 X R0.2	4.8	20	60	6	
4CREG 025 003 250	2.5 X R0.3	3	25	60	4		4CREG 040 002 250	4 X R0.2	4.8	25	65	6	
4CREG 025 003 300	2.5 X R0.3	3	30	70	4		4CREG 040 002 300	4 X R0.2	4.8	30	70	6	
4CREG 025 005 100	2.5 X R0.5	3	10	50	4		4CREG 040 002 350	4 X R0.2	4.8	35	75	6	
4CREG 025 005 160	2.5 X R0.5	3	16	50	4		4CREG 040 002 400	4 X R0.2	4.8	40	80	6	
4CREG 025 005 200	2.5 X R0.5	3	20	50	4		4CREG 040 002 450	4 X R0.2	4.8	45	90	6	
4CREG 025 005 250	2.5 X R0.5	3	25	60	4		4CREG 040 002 500	4 X R0.2	4.8	50	100	6	
4CREG 025 005 300	2.5 X R0.5	3	30	70	4		4CREG 040 003 050	4 X R0.3	4.8	12	50	4	
4CREG 030 001 100	3 X R0.1	3.6	10	50	6		4CREG 040 003 070	4 X R0.3	4.8	20	70	4	
4CREG 030 001 160	3 X R0.1	3.6	16	55	6		4CREG 040 003 120	4 X R0.3	4.8	12	50	6	
4CREG 030 001 200	3 X R0.1	3.6	20	60	6		4CREG 040 003 160	4 X R0.3	4.8	16	55	6	
4CREG 030 001 250	3 X R0.1	3.6	25	65	6		4CREG 040 003 200	4 X R0.3	4.8	20	60	6	
4CREG 030 001 300	3 X R0.1	3.6	30	70	6		4CREG 040 003 250	4 X R0.3	4.8	25	65	6	
4CREG 030 001 350	3 X R0.1	3.6	35	75	6		4CREG 040 003 300	4 X R0.3	4.8	30	70	6	
4CREG 030 001 400	3 X R0.1	3.6	40	80	6		4CREG 040 003 350	4 X R0.3	4.8	35	75	6	
4CREG 030 001 500	3 X R0.1	3.6	50	100	6		4CREG 040 003 400	4 X R0.3	4.8	40	80	6	
4CREG 030 002 100	3 X R0.2	3.6	10	50	6		4CREG 040 003 450	4 X R0.3	4.8	45	90	6	
4CREG 030 002 160	3 X R0.2	3.6	16	55	6		4CREG 040 003 500	4 X R0.3	4.8	50	100	6	
4CREG 030 002 200	3 X R0.2	3.6	20	60	6		4CREG 040 005 050	4 X R0.5	4.8	12	50	4	
4CREG 030 002 250	3 X R0.2	3.6	25	65	6		4CREG 040 005 070	4 X R0.5	4.8	20	70	4	
4CREG 030 002 300	3 X R0.2	3.6	30	70	6		4CREG 040 005 120	4 X R0.5	4.8	12	50	6	
4CREG 030 002 350	3 X R0.2	3.6	35	75	6		4CREG 040 005 160	4 X R0.5	4.8	16	55	6	
4CREG 030 002 400	3 X R0.2	3.6	40	80	6		4CREG 040 005 200	4 X R0.5	4.8	20	60	6	
4CREG 030 002 500	3 X R0.2	3.6	50	100	6		4CREG 040 005 250	4 X R0.5	4.8	25	65	6	
4CREG 030 003 100	3 X R0.3	3.6	10	50	6		4CREG 040 005 300	4 X R0.5	4.8	30	70	6	
4CREG 030 003 160	3 X R0.3	3.6	16	55	6		4CREG 040 005 350	4 X R0.5	4.8	35	75	6	
4CREG 030 003 200	3 X R0.3	3.6	20	60	6		4CREG 040 005 400	4 X R0.5	4.8	40	80	6	
4CREG 030 003 250	3 X R0.3	3.6	25	65	6		4CREG 040 005 450	4 X R0.5	4.8	45	90	6	
4CREG 030 003 300	3 X R0.3	3.6	30	70	6		4CREG 040 005 500	4 X R0.5	4.8	50	100	6	
4CREG 030 003 350	3 X R0.3	3.6	35	75	6		4CREG 040 010 050	4 X R1	4.8	12	50	4	



단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4CREG 040 010 070	4 X R1	4.8	20	70	4		4CREG 100 015 240	10 X R1.5	11	24	70	10	
4CREG 040 010 120	4 X R1	4.8	12	50	6		4CREG 100 015 400	10 X R1.5	11	40	100	10	
4CREG 040 010 160	4 X R1	4.8	16	55	6		4CREG 100 020 240	10 X R2	11	24	70	10	
4CREG 040 010 200	4 X R1	4.8	20	60	6		4CREG 100 025 240	10 X R2.5	11	24	70	10	
4CREG 040 010 250	4 X R1	4.8	25	65	6		4CREG 120 003 260	12 X R0.3	13	26	80	12	
4CREG 040 010 300	4 X R1	4.8	30	70	6		4CREG 120 005 260	12 X R0.5	13	26	80	12	
4CREG 040 010 350	4 X R1	4.8	35	75	6		4CREG 120 005 400	12 X R0.5	13	40	110	12	
4CREG 040 010 400	4 X R1	4.8	40	80	6		4CREG 120 010 260	12 X R1	13	26	80	12	
4CREG 040 010 450	4 X R1	4.8	45	90	6		4CREG 120 010 400	12 X R1	13	40	110	12	
4CREG 040 010 500	4 X R1	4.8	50	100	6		4CREG 120 015 260	12 X R1.5	13	26	80	12	
4CREG 050 001 150	5 X R0.1	6	15	55	6		4CREG 120 015 400	12 X R1.5	13	40	110	12	
4CREG 050 001 300	5 X R0.1	6	30	70	6		4CREG 120 020 260	12 X R2	13	26	80	12	
4CREG 050 001 400	5 X R0.1	6	40	80	6		4CREG 120 030 260	12 X R3	13	26	80	12	
4CREG 050 001 500	5 X R0.1	6	50	100	6								
4CREG 050 002 150	5 X R0.2	6	15	55	6								
4CREG 050 002 300	5 X R0.2	6	30	70	6								
4CREG 050 002 400	5 X R0.2	6	40	80	6								
4CREG 050 002 500	5 X R0.2	6	50	100	6								
4CREG 050 003 150	5 X R0.3	6	15	55	6								
4CREG 050 003 300	5 X R0.3	6	30	70	6								
4CREG 050 003 400	5 X R0.3	6	40	80	6								
4CREG 050 003 500	5 X R0.3	6	50	100	6								
4CREG 050 005 150	5 X R0.5	6	15	55	6								
4CREG 050 005 300	5 X R0.5	6	30	70	6								
4CREG 050 005 400	5 X R0.5	6	40	80	6								
4CREG 050 005 500	5 X R0.5	6	50	100	6								
4CREG 050 010 150	5 X R1	6	15	55	6								
4CREG 050 010 300	5 X R1	6	30	70	6								
4CREG 050 010 400	5 X R1	6	40	80	6								
4CREG 050 010 500	5 X R1	6	50	100	6								
4CREG 060 001 200	6 X R0.1	7	20	60	6								
4CREG 060 001 400	6 X R0.1	7	40	80	6								
4CREG 060 001 500	6 X R0.1	7	50	100	6								
4CREG 060 002 200	6 X R0.2	7	20	60	6								
4CREG 060 002 400	6 X R0.2	7	40	80	6								
4CREG 060 002 500	6 X R0.2	7	50	100	6								
4CREG 060 003 200	6 X R0.3	7	20	60	6								
4CREG 060 003 400	6 X R0.3	7	40	80	6								
4CREG 060 003 500	6 X R0.3	7	50	100	6								
4CREG 060 005 200	6 X R0.5	7	20	60	6								
4CREG 060 005 400	6 X R0.5	7	40	80	6								
4CREG 060 005 500	6 X R0.5	7	50	100	6								
4CREG 060 010 200	6 X R1	7	20	60	6								
4CREG 060 010 400	6 X R1	7	40	80	6								
4CREG 060 010 500	6 X R1	7	50	100	6								
4CREG 060 015 200	6 X R1.5	7	20	60	6								
4CREG 060 015 400	6 X R1.5	7	40	80	6								
4CREG 060 015 500	6 X R1.5	7	50	100	6								
4CREG 080 002 220	8 X R0.2	9	22	65	8								
4CREG 080 003 220	8 X R0.3	9	22	65	8								
4CREG 080 005 220	8 X R0.5	9	22	65	8								
4CREG 080 005 400	8 X R0.5	9	40	100	8								
4CREG 080 010 220	8 X R1	9	22	65	8								
4CREG 080 010 400	8 X R1	9	40	100	8								
4CREG 080 015 220	8 X R1.5	9	22	65	8								
4CREG 080 015400	8 X R1.5	9	40	100	8								
4CREG 080 020 220	8 X R2	9	22	65	8								
4CREG 100 002 240	10 X R0.2	11	24	70	10								
4CREG 100 003 240	10 X R0.3	11	24	70	10								
4CREG 100 005 240	10 X R0.5	11	24	70	10								
4CREG 100 005 400	10 X R0.5	11	40	100	10								
4CREG 100 010 240	10 X R1	11	24	70	10								
4CREG 100 010 400	10 X R1	11	40	100	10								



- 중저경도강(HRC52이하), 프리하트강 계열, 탄소강, 금형강 등 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화
- **Endmills for various work materials(~HRC52), pre-hardened steel, carbon steel, mold steel.**
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Minimize fracturing by high TRS fine(0.5  $\mu$ m) WC grade.



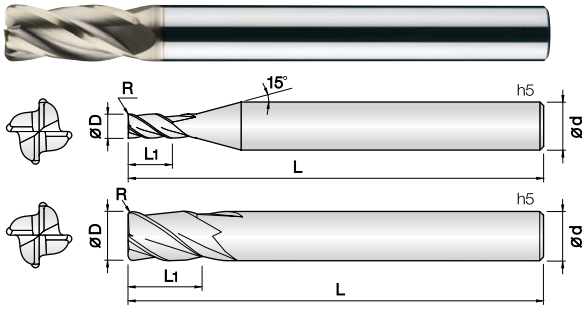
D Size	D Tolerance
Ø0.4 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
2NCRG 004 0005 S04	0.4 X R0.05	0.8	45	4		2NCRG 040 005 080	4 X R0.5	9	80	4	
2NCRG 004 001 S04	0.4 X R0.1	0.8	45	4		2NCRG 040 005 S06	4 X R0.5	10	70	6	
2NCRG 005 0005 S04	0.5 X R0.05	1	45	4		2NCRG 040 010 060	4 X R1	9	60	4	
2NCRG 005 001 S04	0.5 X R0.1	1	45	4		2NCRG 040 010 080	4 X R1	9	80	4	
2NCRG 006 0005 S04	0.6 X R0.05	1.2	45	4		2NCRG 040 010 S06	4 X R1	10	70	6	
2NCRG 006 001 S04	0.6 X R0.1	1.2	45	4		2NCRG 050 001 S06	5 X R0.1	13	75	6	
2NCRG 006 002 S04	0.6 X R0.2	1.2	45	4		2NCRG 050 002 S06	5 X R0.2	13	75	6	
2NCRG 007 0005 S04	0.7 X R0.05	1.4	45	4		2NCRG 050 003 S06	5 X R0.3	13	75	6	
2NCRG 007 001 S04	0.7 X R0.1	1.4	45	4		2NCRG 050 005 S06	5 X R0.5	13	75	6	
2NCRG 007 002 S04	0.7 X R0.2	1.4	45	4		2NCRG 050 010 S06	5 X R1	13	75	6	
2NCRG 008 0005 S04	0.8 X R0.05	1.6	45	4		2NCRG 060 001 060	6 X R0.1	11	60	6	
2NCRG 008 001 S04	0.8 X R0.1	1.6	45	4		2NCRG 060 001 090	6 X R0.1	13	90	6	
2NCRG 008 002 S04	0.8 X R0.2	1.6	45	4		2NCRG 060 002 060	6 X R0.2	11	60	6	
2NCRG 009 0005 S04	0.9 X R0.05	1.8	45	4		2NCRG 060 002 090	6 X R0.2	13	90	6	
2NCRG 009 001 S04	0.9 X R0.1	1.8	45	4		2NCRG 060 003 060	6 X R0.3	11	60	6	
2NCRG 010 001 S04	1 X R0.1	2.5	45	4		2NCRG 060 003 090	6 X R0.3	13	90	6	
2NCRG 010 002 S04	1 X R0.2	2.5	45	4		2NCRG 060 005 060	6 X R0.5	11	60	6	
2NCRG 010 003 S04	1 X R0.3	2.5	45	4		2NCRG 060 005 090	6 X R0.5	13	90	6	
2NCRG 012 001 S04	1.2 X R0.1	3.2	45	4		2NCRG 060 010 060	6 X R1	11	60	6	
2NCRG 012 002 S04	1.2 X R0.2	3.2	45	4		2NCRG 060 010 090	6 X R1	13	90	6	
2NCRG 012 003 S04	1.2 X R0.3	3.2	45	4		2NCRG 060 015 060	6 X R1.5	11	60	6	
2NCRG 015 001 S04	1.5 X R0.1	4	45	4		2NCRG 060 015 090	6 X R1.5	13	90	6	
2NCRG 015 002 S04	1.5 X R0.2	4	45	4		2NCRG 060 020 060	6 X R2	11	60	6	
2NCRG 015 003 S04	1.5 X R0.3	4	45	4		2NCRG 060 020 090	6 X R2	13	90	6	
2NCRG 015 005 S04	1.5 X R0.5	4	45	4		2NCRG 060 025 090	6 X R2.5	13	90	6	
2NCRG 020 001 S04	2 X R0.1	6	45	4		2NCRG 080 001 070	8 X R0.1	16	70	8	
2NCRG 020 002 S04	2 X R0.2	6	45	4		2NCRG 080 001 100	8 X R0.1	19	100	8	
2NCRG 020 003 S04	2 X R0.3	6	45	4		2NCRG 080 002 070	8 X R0.2	16	70	8	
2NCRG 020 005 S04	2 X R0.5	6	45	4		2NCRG 080 002 100	8 X R0.2	19	100	8	
2NCRG 025 001 S04	2.5 X R0.1	6	50	4		2NCRG 080 003 070	8 X R0.3	16	70	8	
2NCRG 025 002 S04	2.5 X R0.2	6	50	4		2NCRG 080 003 100	8 X R0.3	19	100	8	
2NCRG 025 003 S04	2.5 X R0.3	6	50	4		2NCRG 080 005 070	8 X R0.5	16	70	8	
2NCRG 025 005 S04	2.5 X R0.5	6	50	4		2NCRG 080 005 100	8 X R0.5	19	100	8	
2NCRG 030 001 S06	3 X R0.1	8	60	6		2NCRG 080 005 120	8 X R0.5	19	120	8	
2NCRG 030 002 S06	3 X R0.2	8	60	6		2NCRG 080 010 070	8 X R1	16	70	8	
2NCRG 030 003 S06	3 X R0.3	8	60	6		2NCRG 080 010 100	8 X R1	19	100	8	
2NCRG 030 005 S06	3 X R0.5	8	60	6		2NCRG 080 010 120	8 X R1	19	120	8	
2NCRG 030 010 S06	3 X R1	8	60	6		2NCRG 080 015 070	8 X R1.5	16	70	8	
2NCRG 040 001 060	4 X R0.1	9	60	4		2NCRG 080 015 100	8 X R1.5	19	100	8	
2NCRG 040 001 080	4 X R0.1	9	80	4		2NCRG 080 020 070	8 X R2	16	70	8	
2NCRG 040 001 S06	4 X R0.1	10	70	6		2NCRG 080 020 100	8 X R2	19	100	8	
2NCRG 040 002 060	4 X R0.2	9	60	4		2NCRG 080 025 100	8 X R2.5	19	100	8	
2NCRG 040 002 080	4 X R0.2	9	80	4		2NCRG 080 030 100	8 X R3	19	100	8	
2NCRG 040 002 S06	4 X R0.2	10	70	6		2NCRG 080 035 100	8 X R3.5	19	100	8	
2NCRG 040 003 060	4 X R0.3	9	60	4		2NCRG 100 001 075	10 X R0.1	19	75	10	
2NCRG 040 003 080	4 X R0.3	9	80	4		2NCRG 100 001 100	10 X R0.1	22	100	10	
2NCRG 040 003 S06	4 X R0.3	10	70	6		2NCRG 100 002 075	10 X R0.2	19	75	10	
2NCRG 040 005 060	4 X R0.5	9	60	4		2NCRG 100 002 100	10 X R0.2	22	100	10	



## 4날 범용 코너 레디우스 엔드밀



- 중저경도강(HRc52이하), 프리하든강 계열, 탄소강, 금형강 등 가공
- JCRO 코팅 처리하여 넓은 영역의 피삭재 가공에 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너 R 형상을 날부치핑이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화
- **Endmills for various work materials(~HRc52), pre-hardened steel, carbon steel, mold steel.**
- Optimum for various work materials by JCRO coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and overall length for wide range application.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
4NCRG 010 0005 S04	1 X R0.05	2.5	45	4		4NCRG 060 003 080	6 X R0.3	13	80	6	
4NCRG 010 001 S04	1 X R0.1	2.5	45	4		4NCRG 060 005 060	6 X R0.5	11	60	6	
4NCRG 010 002 S04	1 X R0.2	2.5	45	4		4NCRG 060 005 080	6 X R0.5	13	80	6	
4NCRG 010 003 S04	1 X R0.3	2.5	45	4		4NCRG 060 010 060	6 X R1	11	60	6	
4NCRG 015 0005 S04	1.5 X R0.05	4	45	4		4NCRG 060 010 080	6 X R1	13	80	6	
4NCRG 015 001 S04	1.5 X R0.1	4	45	4		4NCRG 060 015 060	6 X R1.5	11	60	6	
4NCRG 015 002 S04	1.5 X R0.2	4	45	4		4NCRG 060 015 080	6 X R1.5	13	80	6	
4NCRG 015 003 S04	1.5 X R0.3	4	45	4		4NCRG 060 020 060	6 X R2	11	60	6	
4NCRG 015 005 S04	1.5 X R0.5	4	45	4		4NCRG 060 020 080	6 X R2	13	80	6	
4NCRG 020 0005 S04	2 X R0.05	6	45	4		4NCRG 080 001 070	8 X R0.1	16	70	8	
4NCRG 020 001 S04	2 X R0.1	6	45	4		4NCRG 080 001 090	8 X R0.1	19	90	8	
4NCRG 020 002 S04	2 X R0.2	6	45	4		4NCRG 080 002 070	8 X R0.2	16	70	8	
4NCRG 020 003 S04	2 X R0.3	6	45	4		4NCRG 080 002 090	8 X R0.2	19	90	8	
4NCRG 020 005 S04	2 X R0.5	6	45	4		4NCRG 080 003 070	8 X R0.3	16	70	8	
4NCRG 025 001 S04	2.5 X R0.1	6	50	4		4NCRG 080 003 090	8 X R0.3	19	90	8	
4NCRG 025 002 S04	2.5 X R0.2	6	50	4		4NCRG 080 005 070	8 X R0.5	16	70	8	
4NCRG 025 003 S04	2.5 X R0.3	6	50	4		4NCRG 080 005 090	8 X R0.5	19	90	8	
4NCRG 025 005 S04	2.5 X R0.5	6	50	4		4NCRG 080 005 110	8 X R0.5	19	110	8	
4NCRG 030 001 S06	3 X R0.1	8	60	6		4NCRG 080 010 070	8 X R1	16	70	8	
4NCRG 030 002 S06	3 X R0.2	8	60	6		4NCRG 080 010 090	8 X R1	19	90	8	
4NCRG 030 003 S06	3 X R0.3	8	60	6		4NCRG 080 010 110	8 X R1	19	110	8	
4NCRG 030 005 S06	3 X R0.5	8	60	6		4NCRG 080 015 070	8 X R1.5	16	70	8	
4NCRG 030 010 S06	3 X R1	8	60	6		4NCRG 080 015 090	8 X R1.5	19	90	8	
4NCRG 040 001 060	4 X R0.1	9	60	4		4NCRG 080 015 110	8 X R1.5	19	110	8	
4NCRG 040 001 080	4 X R0.1	9	80	4		4NCRG 080 020 070	8 X R2	16	70	8	
4NCRG 040 001 S06	4 X R0.1	10	70	6		4NCRG 080 020 090	8 X R2	19	90	8	
4NCRG 040 002 060	4 X R0.2	9	60	4		4NCRG 080 020 110	8 X R2	19	110	8	
4NCRG 040 002 080	4 X R0.2	9	80	4		4NCRG 080 025 090	8 X R2.5	19	90	8	
4NCRG 040 002 S06	4 X R0.2	10	70	6		4NCRG 100 001 075	10 X R0.1	19	75	10	
4NCRG 040 003 060	4 X R0.3	9	60	4		4NCRG 100 001 100	10 X R0.1	22	100	10	
4NCRG 040 003 080	4 X R0.3	9	80	4		4NCRG 100 002 075	10 X R0.2	19	75	10	
4NCRG 040 003 S06	4 X R0.3	10	70	6		4NCRG 100 002 100	10 X R0.2	22	100	10	
4NCRG 040 005 060	4 X R0.5	9	60	4		4NCRG 100 003 075	10 X R0.3	19	75	10	
4NCRG 040 005 080	4 X R0.5	9	80	4		4NCRG 100 003 100	10 X R0.3	22	100	10	
4NCRG 040 005 S06	4 X R0.5	10	70	6		4NCRG 100 005 075	10 X R0.5	19	75	10	
4NCRG 040 010 060	4 X R1	9	60	4		4NCRG 100 005 100	10 X R0.5	22	100	10	
4NCRG 040 010 080	4 X R1	9	80	4		4NCRG 100 005 120	10 X R0.5	22	120	10	
4NCRG 040 010 S06	4 X R1	10	70	6		4NCRG 100 010 075	10 X R1	19	75	10	
4NCRG 050 001 S06	5 X R0.1	13	75	6		4NCRG 100 010 100	10 X R1	22	100	10	
4NCRG 050 002 S06	5 X R0.2	13	75	6		4NCRG 100 010 120	10 X R1	22	120	10	
4NCRG 050 003 S06	5 X R0.3	13	75	6		4NCRG 100 015 075	10 X R1.5	19	75	10	
4NCRG 050 005 S06	5 X R0.5	13	75	6		4NCRG 100 015 100	10 X R1.5	22	100	10	
4NCRG 050 010 S06	5 X R1	13	75	6		4NCRG 100 015 120	10 X R1.5	22	120	10	
4NCRG 060 001 060	6 X R0.1	11	60	6		4NCRG 100 020 075	10 X R2	19	75	10	
4NCRG 060 001 080	6 X R0.1	13	80	6		4NCRG 100 020 100	10 X R2	22	100	10	
4NCRG 060 002 060	6 X R0.2	11	60	6		4NCRG 100 020 120	10 X R2	22	120	10	
4NCRG 060 002 080	6 X R0.2	13	80	6		4NCRG 100 025 075	10 X R2.5	19	75	10	
4NCRG 060 003 060	6 X R0.3	11	60	6		4NCRG 100 025 100	10 X R2.5	22	100	10	

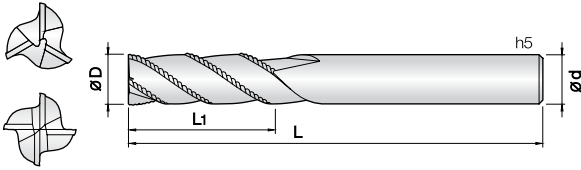


단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고					
4NCRG 100 025 120	10 X R2.5	22	120	10						
4NCRG 100 030 100	10 X R3	22	100	10						
4NCRG 120 002 080	12 X R0.2	22	80	12						
4NCRG 120 002 110	12 X R0.2	26	110	12						
4NCRG 120 003 080	12 X R0.3	22	80	12						
4NCRG 120 003 110	12 X R0.3	26	110	12						
4NCRG 120 005 080	12 X R0.5	22	80	12						
4NCRG 120 005 110	12 X R0.5	26	110	12						
4NCRG 120 005 130	12 X R0.5	26	130	12						
4NCRG 120 010 080	12 X R1	22	80	12						
4NCRG 120 010 110	12 X R1	26	110	12						
4NCRG 120 010 130	12 X R1	26	130	12						
4NCRG 120 015 080	12 X R1.5	22	80	12						
4NCRG 120 015 110	12 X R1.5	26	110	12						
4NCRG 120 015 130	12 X R1.5	26	130	12						
4NCRG 120 020 080	12 X R2	22	80	12						
4NCRG 120 020 110	12 X R2	26	110	12						
4NCRG 120 020 130	12 X R2	26	130	12						
4NCRG 120 025 080	12 X R2.5	22	80	12						
4NCRG 120 025 110	12 X R2.5	26	110	12						
4NCRG 120 025 130	12 X R2.5	26	130	12						
4NCRG 120 030 080	12 X R3	22	80	12						
4NCRG 120 030 110	12 X R3	26	110	12						
4NCRG 120 030 130	12 X R3	26	130	12						
4NCRG 120 035 110	12 X R3.5	26	110	12						
4NCRG 120 040 110	12 X R4	26	110	12						
4NCRG 160 005 110	16 X R0.5	35	110	16						
4NCRG 160 005 160	16 X R0.5	35	160	16						
4NCRG 160 010 110	16 X R1	35	110	16						
4NCRG 160 010 160	16 X R1	35	160	16						

G series

### 3&4날 범용 라핑 엔드밀



- 공구강, 합금강 및 고경도 일반강 황삭가공 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 뛰어난 칩배출력으로 가공시간을 단축하였습니다.
- 고속가공으로 작업의 효율성을 극대화합니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 엔드밀의 파손을 최소화함.
- **Roughing Endmills for tool steel, alloy steel**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Reduce machining time by excellent chip control.
- Maximize work efficiency by high speed machining.
- Minimize fracturing at high feed by high TRS fine WC grade.

3

4

WC  
미립자

JCRO  
Coating

|D|  
-0.02 -0.04

|D|  
-0.02 -0.05

35°  
Helix Angle

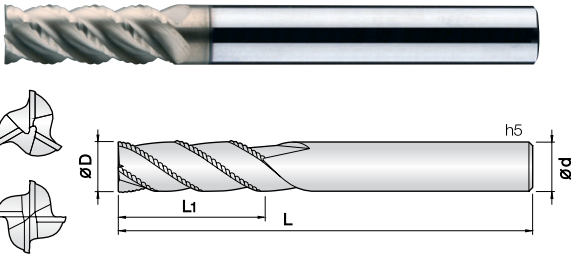
Shield Edge

D Size	D Tolerance
ø4 ~ 9	0.02~ -0.04mm
ø10 ~ 20	0.02~ -0.05mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
3ROUG 040 100 S06	4	10	50	6	
3ROUG 050 130 S06	5	13	50	6	
3ROUG 060 100 050	6	10	50	6	
3ROUG 060 150 055	6	15	55	6	
3ROUG 060 200 060	6	20	60	6	
3ROUG 070 180 S08	7	18	65	8	
3ROUG 080 120 060	8	12	60	8	
3ROUG 080 190 065	8	19	65	8	
3ROUG 080 250 070	8	25	70	8	
4ROUG 090 220 S10	9	22	70	10	
4ROUG 100 150 070	10	15	70	10	
4ROUG 100 220 070	10	22	70	10	
4ROUG 100 300 080	10	30	80	10	
4ROUG 110 270 S12	11	27	80	12	
4ROUG 120 200 075	12	20	75	12	
4ROUG 120 260 080	12	26	80	12	
4ROUG 120 350 090	12	35	90	12	
4ROUG 160 320 090	16	32	90	16	
4ROUG 160 400 100	16	40	100	16	
4ROUG 200 380 110	20	38	110	20	
4ROUG 200 500 110	20	50	110	20	

## 3&4날 범용 45° 헬릭스 파인피치형 리핑 엔드밀



- 합금강, SUS계열, 인코넬, 일반구조강 등 다양한 난삭재의 황삭가공
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 45° 헬릭스 적용으로 절삭 저항이 감소되어 장시간 가공에 적합합니다.
- 파인피치 형상 채택으로 고속, 황삭가공 작업에 적합합니다.
- **Roughing Endmills for hard to cut materials, alloy steel, SUS, Inconel and structural steel.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Long tool life with low cutting force by 45° degree helix design.
- Fine pitch shape design for high speed roughing application.

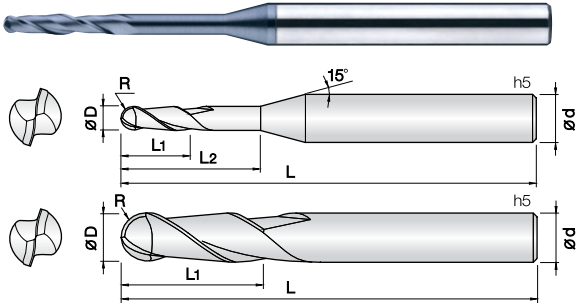


D Size	D Tolerance
ø4 ~ 9	0.02~ -0.04mm
ø10 ~ 20	0.02~ -0.05mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고														
3HROUG 040 100 S06	4	10	50	6															
3HROUG 050 130 S06	5	13	50	6															
3HROUG 060 100 050	6	10	50	6															
3HROUG 060 160 055	6	16	55	6															
3HROUG 060 200 060	6	20	60	6															
3HROUG 070 180 S08	7	18	65	8															
3HROUG 080 120 060	8	12	60	8															
3HROUG 080 190 065	8	19	65	8															
3HROUG 080 250 070	8	25	70	8															
4HROUG 090 220 S10	9	22	70	10															
4HROUG 100 150 070	10	15	70	10															
4HROUG 100 220 070	10	22	70	10															
4HROUG 100 300 080	10	30	80	10															
4HROUG 110 270 S12	11	27	80	12															
4HROUG 120 200 075	12	20	75	12															
4HROUG 120 250 080	12	25	80	12															
4HROUG 120 350 090	12	35	90	12															
4HROUG 160 320 090	16	32	90	16															
4HROUG 160 400 110	16	40	110	16															
4HROUG 200 380 110	20	38	110	20															
4HROUG 200 500 120	20	50	120	20															

## 2날 긴 길이 볼 엔드밀 & 흑연가공용 볼 엔드밀



- 그래파이트(흑연), HRC48 이하의 고경도강, 프리하든강, 공구강, 주철등 다양한 피삭재 가공
- ALTiN 코팅을 적용하여 절삭저항이 적으며, 내마모성이 우수합니다.
- 긴날장으로 설계하여, 깊은 측벽가공이 많은 흑연 가공에 가장 적합합니다.
- 미립자 초경합금을 채택하여 다양한 비철합금 및 목업의 피삭재 영역에 적용이 가능합니다.
- Endmill for various work materials, graphite, hardened steel(HRC~48), pre-hardened steel, tool steel and cast iron.
- Excellent performance with low cutting force by ALTiN coating.
- Long flute length optimized for deep-side wall machining of graphite.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.

2

WC  
미립자

ALTiN  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

30°  
Helix Angle

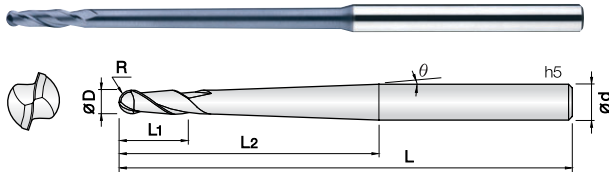
D Size	D Tolerance
Ø0.5 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16 ~ 25	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2GBE 005 020 S04	0.25R X 0.5	2	-	50	4		2GBE 050 250 100	2.5R X 5	25	-	100	5	
2GBE 005 050 S04	0.25R X 0.5	2	5	50	4		2GBE 050 250 130	2.5R X 5	25	-	130	5	
2GBE 010 050 S04	0.5R X 1	5	-	60	4		2GBE 050 250 S06	2.5R X 5	25	-	90	6	
2GBE 010 050 S06	0.5R X 1	5	-	60	6		2GBE 050 500 S06	2.5R X 5	25	50	110	6	
2GBE 010 100 S04	0.5R X 1	5	10	60	4		2GBE 060 250 110	3R X 6	25	-	110	6	
2GBE 010 100 S06	0.5R X 1	5	10	60	6		2GBE 060 300 150	3R X 6	30	-	150	6	
2GBE 010 150 S04	0.5R X 1	5	15	60	4		2GBE 060 300 200	3R X 6	30	-	200	6	
2GBE 010 200 S04	0.5R X 1	5	20	60	4		2GBE 060 300 220	3R X 6	30	-	220	6	
2GBE 010 250 S04	0.5R X 1	5	25	70	4		2GBE 080 350 110	4R X 8	35	-	110	8	
2GBE 010 300 S04	0.5R X 1	5	30	80	4		2GBE 080 400 150	4R X 8	40	-	150	8	
2GBE 010 350 S04	0.5R X 1	5	35	80	4		2GBE 080 400 200	4R X 8	40	-	200	8	
2GBE 010 400 S04	0.5R X 1	5	40	90	4		2GBE 080 400 220	4R X 8	40	-	220	8	
2GBE 015 080 S06	0.75R X 1.5	8	-	60	6		2GBE 100 400 120	5R X 10	40	-	120	10	
2GBE 015 100 S04	0.75R X 1.5	8	10	60	4		2GBE 100 450 150	5R X 10	45	-	150	10	
2GBE 015 150 S04	0.75R X 1.5	8	15	60	4		2GBE 100 450 200	5R X 10	45	-	200	10	
2GBE 015 150 S06	0.75R X 1.5	8	15	60	6		2GBE 100 450 230	5R X 10	45	-	230	10	
2GBE 015 200 S04	0.75R X 1.5	8	20	60	4		2GBE 120 500 130	6R X 12	50	-	130	12	
2GBE 015 250 S04	0.75R X 1.5	8	25	70	4		2GBE 120 500 150	6R X 12	50	-	150	12	
2GBE 015 300 S04	0.75R X 1.5	8	30	80	4		2GBE 120 550 200	6R X 12	55	-	200	12	
2GBE 015 350 S04	0.75R X 1.5	8	35	80	4		2GBE 120 550 250	6R X 12	55	-	250	12	
2GBE 015 400 S04	0.75R X 1.5	8	40	90	4		2GBE 160 600 160	8R X 16	60	-	160	16	
2GBE 020 100 S04	1R X 2	10	-	60	4		2GBE 160 650 200	8R X 16	65	-	200	16	
2GBE 020 100 S06	1R X 2	10	-	70	6		2GBE 160 650 250	8R X 16	65	-	250	16	
2GBE 020 150 S04	1R X 2	10	15	60	4		2GBE 160 700 320	8R X 16	70	-	320	16	
2GBE 020 200 S04	1R X 2	10	20	60	4		2GBE 200 700 160	10R X 20	70	-	160	20	
2GBE 020 200 S06	1R X 2	10	20	70	6		2GBE 200 750 200	10R X 20	75	-	200	20	
2GBE 020 250 S04	1R X 2	10	25	70	4		2GBE 200 750 250	10R X 20	75	-	250	20	
2GBE 020 300 S04	1R X 2	10	30	80	4		2GBE 200 900 320	10R X 20	90	-	320	20	
2GBE 020 350 S04	1R X 2	10	35	80	4		2GBE 250 1000 250	12.5R X 25	100	-	250	25	
2GBE 020 400 S04	1R X 2	10	40	90	4								
2GBE 020 500 S04	1R X 2	10	50	100	4								
2GBE 020 600 S04	1R X 2	10	60	100	4								
2GBE 025 200 S04	1.25R X 2.5	10	20	70	4								
2GBE 030 150 100	1.5R X 3	15	-	100	3								
2GBE 030 150 S06	1.5R X 3	15	-	70	6								
2GBE 030 200 S04	1.5R X 3	15	20	70	4								
2GBE 030 300 S04	1.5R X 3	15	30	80	4								
2GBE 030 300 S06	1.5R X 3	15	30	75	6								
2GBE 030 400 S04	1.5R X 3	15	40	90	4								
2GBE 030 400 S06	1.5R X 3	15	40	90	6								
2GBE 030 500 S04	1.5R X 3	15	50	100	4								
2GBE 030 600 S04	1.5R X 3	15	60	100	4								
2GBE 040 200 080	2R X 4	20	-	80	4								
2GBE 040 200 100	2R X 4	20	-	100	4								
2GBE 040 200 130	2R X 4	20	-	130	4								
2GBE 040 200 S06	2R X 4	20	-	75	6								
2GBE 040 350 S06	2R X 4	20	35	90	6								
2GBE 040 450 S06	2R X 4	20	45	100	6								

FOR GRAPHITE





- 그래파이트(흑연), HRC48 이하의 고경도강, 프리하튼강, 공구강, 주철등 다양한 피삭재 가공
- ALTiN 코팅을 적용하여 절삭저항이 적으며, 내마모성이 우수합니다.
- 긴날장으로 설계하여, 깊은 측벽가공이 많은 흑연 가공에 가장 적합합니다.
- 미립자 초경합금을 채택하여 다양한 비철합금 및 목업의 피삭재 영역에 적용이 가능합니다.
- Endmill for various work materials, graphite, hardened steel(HRC~48), pre-hardened steel, tool steel and cast iron.
- Excellent performance with low cutting force by ALTiN coating.
- Long flute length optimized for deep-side wall machining of graphite.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.



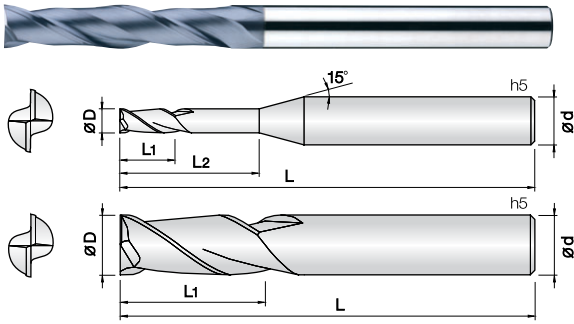
D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R × D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고											
2TGB 010 003 200	0.5R X 1	0°30'	4	20	60	4												
2TGB 010 003 300	0.5R X 1	0°30'	4	30	75	4												
2TGB 010 003 400	0.5R X 1	0°30'	4	40	90	4												
2TGB 010 010 250	0.5R X 1	1°	4	25	60	4												
2TGB 010 010 350	0.5R X 1	1°	4	35	75	4												
2TGB 010 010 500	0.5R X 1	1°	4	50	100	4												
2TGB 015 003 300	0.75R X 1.5	0°30'	6	30	75	4												
2TGB 015 003 400	0.75R X 1.5	0°30'	6	40	80	4												
2TGB 015 003 500	0.75R X 1.5	0°30'	6	50	100	4												
2TGB 015 010 300	0.75R X 1.5	1°	6	30	75	4												
2TGB 015 010 500	0.75R X 1.5	1°	6	50	100	4												
2TGB 015 010 600	0.75R X 1.5	1°	6	60	100	4												
2TGB 020 003 400	1R X 2	0°30'	8	40	90	4												
2TGB 020 003 500	1R X 2	0°30'	8	50	100	4												
2TGB 020 003 700	1R X 2	0°30'	8	70	130	4												
2TGB 020 010 600	1R X 2	1°	8	60	110	6												
2TGB 020 010 900	1R X 2	1°	8	90	150	6												
2TGB 030 003 700	1.5R X 3	0°30'	10	70	120	6												
2TGB 030 010 900	1.5R X 3	1°	10	90	150	6												
2TGB 040 003 700	2R X 4	0°30'	14	70	120	6												
2TGB 040 010 800	2R X 4	1°	14	80	150	6												
2TGB 050 003 800	2.5R X 5	0°30'	16	80	130	6												
2TGB 060 003 1000	3R X 6	0°30'	16	100	150	8												
2TGB 060 010 1000	3R X 6	1°	16	100	150	10												
2TGB 080 010 1000	4R X 8	1°	20	100	150	12												
2TGB 100 010 830	5R X 10	1°	25	83	200	12												
2TGB 120 010 1100	6R X 12	1°	30	110	200	16												

FOR GRAPHITE

## 2날 롱 샹크 엔드밀 & 흑연가공용 롱 샹크 엔드밀



- 흑연, HRc48이하의 고경도강, 프리하든강, 공구강, 주철 등 가공
- ALTiN 코팅을 적용하여 절삭저항이 적으며, 내마모성이 우수합니다.
- 긴날장으로 설계하여, 깊은 측벽가공이 많은 흑연 가공에 가장 적합합니다.
- 미립자 초경합금을 채택, HRc48이하의 다양한 합금강의 피삭재 영역에 적용이 가능합니다.
- Endmill for various work materials, graphite, hardened steel(HRc~48), pre-hardened steel, tool steel and cast iron.
- Excellent performance with low cutting force by ALTiN coating.
- Long flute length optimized for deep-side wall machining of graphite.
- Applied fine WC grade optimized for various alloy steels applications, below HRc48.

2

WC  
미립자

ALTiN  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

30°  
Helix Angle

Shield Edge

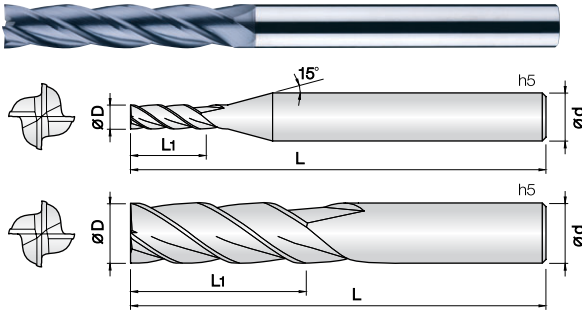
D Size	D Tolerance
Ø0.5 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샹크 Shank Dia d	비고												
2GEM 005 020 S04	0.5	2	-	50	4													
2GEM 010 050 S04	1	5	-	60	4													
2GEM 010 100 S04	1	5	10	60	4													
2GEM 010 100 S06	1	5	10	60	6													
2GEM 010 150 S04	1	5	15	60	4													
2GEM 010 200 S04	1	5	20	60	4													
2GEM 010 250 S04	1	5	25	70	4													
2GEM 015 100 S04	1.5	10	-	60	4													
2GEM 015 150 S04	1.5	8	15	60	4													
2GEM 015 200 S04	1.5	8	20	60	4													
2GEM 015 200 S06	1.5	8	20	60	6													
2GEM 015 250 S04	1.5	8	25	70	4													
2GEM 020 100 S04	2	10	-	60	4													
2GEM 020 150 S04	2	10	15	60	4													
2GEM 020 200 S04	2	10	20	60	4													
2GEM 020 200 S06	2	10	20	60	6													
2GEM 020 250 S04	2	10	25	70	4													
2GEM 020 300 S04	2	10	30	80	4													
2GEM 030 150 S04	3	15	-	70	4													
2GEM 030 250 S04	3	15	25	75	4													
2GEM 030 300 S06	3	15	30	75	6													
2GEM 040 200 100	4	20	-	100	4													
2GEM 040 400 S06	4	20	40	100	6													
2GEM 050 250 100	5	25	-	100	5													
2GEM 060 300 110	6	30	-	110	6													
2GEM 060 300 150	6	30	-	150	6													
2GEM 080 400 150	8	40	-	150	8													
2GEM 100 450 150	10	45	-	150	10													
2GEM 100 500 200	10	50	-	200	10													
2GEM 120 600 150	12	60	-	150	12													
2GEM 120 600 200	12	60	-	200	12													
2GEM 160 600 130	16	60	-	130	16													
2GEM 160 700 160	16	70	-	160	16													
2GEM 160 700 200	16	70	-	200	16													
2GEM 200 800 160	20	80	-	160	20													
2GEM 200 900 200	20	90	-	200	20													
2GEM 200 1200 320	20	120	-	320	20													

FOR GRAPHITE

## 4날 롱샹크 엔드밀 & 흑연가공용 롱샹크 엔드밀



- 흑연, HRc48이하의 고경도강, 프리하든강, 공구강, 주철 등 가공
- ALTiN 코팅을 적용하여 절삭저항이 적으며, 내마모성이 우수합니다.
- 긴날장으로 설계하여, 깊은 측벽가공이 많은 흑연 가공에 가장 적합합니다.
- 미립자 초경합금을 채택, HRc48이하의 다양한 합금강의 피삭재 영역에 적용이 가능합니다.
- Endmill for various work materials, graphite, hardened steel(HRc~48), pre-hardened steel, tool steel and cast iron.
- Excellent performance with low cutting force by ALTiN coating.
- Long flute length optimized for deep-side wall machining of graphite.
- Applied fine WC grade optimized for various alloy steels applications, below HRc48.

4  
 미립자

ALTiN  
 Coating

D  
 +0 -0.01

D  
 -0.01 -0.025

D  
 -0.015 -0.03

30°  
 Helix Angle

ø3 ~ 5
ø6 ~ 12
ø16 ~ 20
Shield Edge

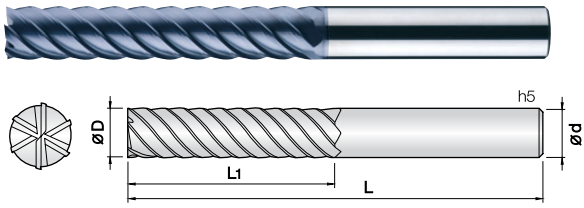
D Size	D Tolerance
ø3 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샹크 Dia d	비고
4GEM 030 100 S06	3	10	100	6	
4GEM 030 150 S06	3	15	100	6	
4GEM 040 150 S06	4	15	100	6	
4GEM 040 200 100	4	20	100	4	
4GEM 040 200 S06	4	20	100	6	
4GEM 050 200 S06	5	20	100	6	
4GEM 060 300 110	6	30	110	6	
4GEM 060 300 150	6	30	150	6	
4GEM 080 400 150	8	40	150	8	
4GEM 080 400 200	8	40	200	8	
4GEM 100 500 150	10	50	150	10	
4GEM 100 500 200	10	50	200	10	
4GEM 120 600 150	12	60	150	12	
4GEM 120 600 200	12	60	200	12	
4GEM 160 700 160	16	70	160	16	
4GEM 160 800 200	16	80	200	16	
4GEM 200 750 160	20	75	160	20	
4GEM 200 900 200	20	90	200	20	
4GEM 200 1000 320	20	100	320	20	

FOR GRAPHITE

## 6날 45° 헬릭스 엔드밀 & 흑연가공용 롱 섀크 엔드밀



- 흑연, HRc50이하의 고경도강, 프리하든강, 공구강, 주철 등 가공
- ALTiN 코팅을 적용하여 절삭저항이 적으며, 내마모성이 우수합니다.
- 긴날장으로 설계하여, 깊은 측벽가공이 많은 흑연 가공에 가장 적합합니다.
- 미립자 초경합금을 채택, HRc50이하의 다양한 합금강의 피삭재 영역에 적용이 가능합니다.
- **Endmill for various work materials, graphite, hardened steel(HRc~50), pre-hardened steel, tool steel and cast iron.**
- Excellent performance with low cutting force by ALTiN coating.
- Long flute length optimized for deep-side wall machining of graphite.
- Applied fine WC grade optimized for various alloy steels applications, below HRc50.

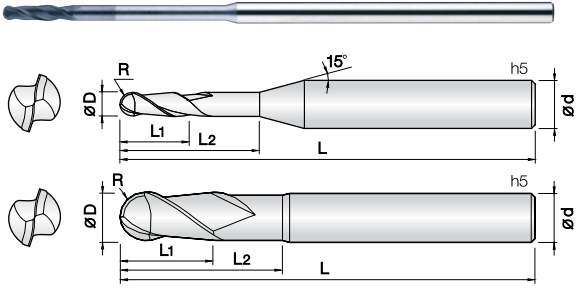
<b>6</b> 미립자	<b>WC</b> 미립자	<b>ALTiN</b> Coating	<b> D </b> -0.01 -0.025 Ø6 ~ 12	<b> D </b> -0.015 -0.03 Ø6 ~ 20	<b>45°</b> Helix Angle	
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D Size	D Tolerance
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샥크 Dia d	비고				
6GEM 060 300 110	6	30	110	6					
6GEM 080 400 110	8	40	110	8					
6GEM 100 500 120	10	50	120	10					
6GEM 100 500 150	10	50	150	10					
6GEM 120 600 130	12	60	130	12					
6GEM 120 600 160	12	60	160	12					
6GEM 160 900 160	16	90	160	16					
6GEM 160 900 200	16	90	200	16					
6GEM 160 900 250	16	90	250	16					
6GEM 200 1000 200	20	100	200	20					
6GEM 200 1000 250	20	100	250	20					
6GEM 200 1000 320	20	100	320	20					

FOR GRAPHITE



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



0.1 ~ 6R

D Size	D Tolerance
Ø.2 ~ 12	+0 ~ -0.02mm

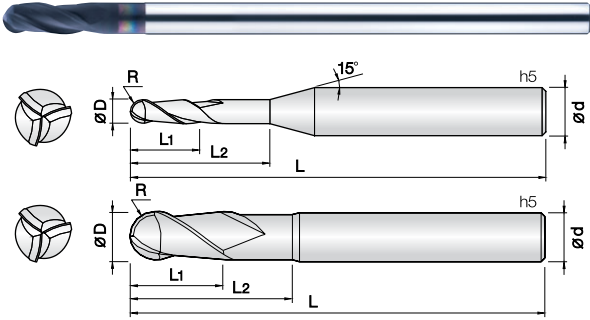
단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2DBE 002 010 S04	0.1R X 0.2	1	-	45	4		2DBE 010 400 S04	0.5R X 1	3	40	80	4	
2DBE 003 012 S04	0.15R X 0.3	1.2	-	45	4		New 2DBE 010 500 S04	0.5R X 1	3	50	80	4	
2DBE 003 020 S04	0.15R X 0.3	1.2	2	45	4		2DBE 015 050 S04	0.75R X 1.5	5	-	60	4	
2DBE 004 015 S04	0.2R X 0.4	1.5	-	45	4		2DBE 015 080 S04	0.75R X 1.5	5	8	80	4	
2DBE 004 020 S04	0.2R X 0.4	1.5	2	45	4		2DBE 015 100 S04	0.75R X 1.5	5	10	80	4	
2DBE 004 030 S04	0.2R X 0.4	1.5	3	45	4		2DBE 015 120 S04	0.75R X 1.5	5	12	80	4	
2DBE 004 040 S04	0.2R X 0.4	1.5	4	45	4		2DBE 015 150 S04	0.75R X 1.5	5	15	80	4	
2DBE 004 050 S04	0.2R X 0.4	1.5	5	45	4		2DBE 015 180 S04	0.75R X 1.5	5	18	80	4	
New 2DBE 004 080 S04	0.2R X 0.4	1.5	8	45	4		2DBE 015 200 S04	0.75R X 1.5	5	20	80	4	
New 2DBE 004 100 S04	0.2R X 0.4	1.5	10	45	4		2DBE 015 250 S04	0.75R X 1.5	5	25	80	4	
2DBE 005 020 S04	0.25R X 0.5	2	-	45	4		2DBE 015 300 S04	0.75R X 1.5	5	30	80	4	
2DBE 005 030 S04	0.25R X 0.5	2	3	45	4		2DBE 015 350 S04	0.75R X 1.5	5	35	80	4	
2DBE 005 040 S04	0.25R X 0.5	2	4	45	4		2DBE 015 400 S04	0.75R X 1.5	5	40	80	4	
2DBE 005 050 S04	0.25R X 0.5	2	5	45	4		2DBE 020 060 S04	1R X 2	6	-	60	4	
2DBE 005 060 S04	0.25R X 0.5	2	6	45	4		2DBE 020 100 S04	1R X 2	6	10	80	4	
2DBE 005 080 S04	0.25R X 0.5	2	8	45	4		2DBE 020 150 S04	1R X 2	6	15	80	4	
New 2DBE 005 100 S04	0.25R X 0.5	2	10	45	4		2DBE 020 200 S04	1R X 2	6	20	80	4	
New 2DBE 005 120 S04	0.25R X 0.5	2	12	45	4		2DBE 020 250 S04	1R X 2	6	25	80	4	
2DBE 006 020 S04	0.3R X 0.6	2	-	45	4		2DBE 020 300 S04	1R X 2	6	30	80	4	
2DBE 006 030 S04	0.3R X 0.6	2	3	45	4		2DBE 020 350 S04	1R X 2	6	35	80	4	
2DBE 006 040 S04	0.3R X 0.6	2	4	45	4		2DBE 020 400 S04	1R X 2	6	40	100	4	
2DBE 006 050 S04	0.3R X 0.6	2	5	45	4		2DBE 020 450 S04	1R X 2	6	45	100	4	
2DBE 006 060 S04	0.3R X 0.6	2	6	45	4		2DBE 020 500 S04	1R X 2	6	50	100	4	
2DBE 006 080 S04	0.3R X 0.6	2	8	45	4		2DBE 020 600 S04	1R X 2	6	60	100	4	
2DBE 006 100 S04	0.3R X 0.6	2	10	45	4		New 2DBE 020 700 S04	1R X 2	6	70	100	4	
2DBE 006 120 S04	0.3R X 0.6	2	12	45	4		2DBE 030 150 100	1.5R X 3	8	15	100	3	
New 2DBE 006 150 S04	0.3R X 0.6	2	15	45	4		2DBE 030 080 S04	1.5R X 3	8	-	60	4	
New 2DBE 006 200 S04	0.3R X 0.6	2	20	45	4		2DBE 030 150 S04	1.5R X 3	8	15	100	4	
2DBE 008 030 S04	0.4R X 0.8	3	-	45	4		2DBE 030 200 S04	1.5R X 3	8	20	100	4	
2DBE 008 040 S04	0.4R X 0.8	3	4	45	4		2DBE 030 250 S04	1.5R X 3	8	25	100	4	
2DBE 008 050 S04	0.4R X 0.8	3	5	45	4		2DBE 030 300 S04	1.5R X 3	8	30	100	4	
2DBE 008 060 S04	0.4R X 0.8	3	6	45	4		2DBE 030 350 S04	1.5R X 3	8	35	100	4	
2DBE 008 080 S04	0.4R X 0.8	3	8	45	4		2DBE 030 400 S04	1.5R X 3	8	40	100	4	
2DBE 008 100 S04	0.4R X 0.8	3	10	45	4		2DBE 030 500 S04	1.5R X 3	8	50	100	4	
2DBE 008 150 S04	0.4R X 0.8	3	15	45	4		2DBE 030 600 S04	1.5R X 3	8	60	100	4	
2DBE 008 200 S04	0.4R X 0.8	3	20	45	4		New 2DBE 030 700 S04	1.5R X 3	8	70	100	4	
2DBE 010 030 S04	0.5R X 1	3	-	60	4		New 2DBE 040 040 060	2R X 4	4	-	60	4	
2DBE 010 040 S04	0.5R X 1	3	4	60	4		2DBE 040 160 060	2R X 4	16	-	60	4	
2DBE 010 050 S04	0.5R X 1	3	5	60	4		2DBE 040 160 080	2R X 4	16	-	80	4	
2DBE 010 060 S04	0.5R X 1	3	6	60	4		2DBE 040 300 080	2R X 4	16	30	80	4	
2DBE 010 080 S04	0.5R X 1	3	8	60	4		2DBE 040 160 100	2R X 4	16	-	100	4	
2DBE 010 100 S04	0.5R X 1	3	10	60	4		2DBE 040 400 100	2R X 4	16	40	100	4	
2DBE 010 120 S04	0.5R X 1	3	12	60	4		2DBE 040 160 130	2R X 4	16	-	130	4	
2DBE 010 150 S04	0.5R X 1	3	15	60	4		2DBE 040 400 130	2R X 4	16	40	130	4	
2DBE 010 200 S04	0.5R X 1	3	20	60	4		2DBE 040 160 150	2R X 4	16	-	150	4	
2DBE 010 250 S04	0.5R X 1	3	25	80	4		2DBE 040 500 150	2R X 4	16	50	150	4	
2DBE 010 300 S04	0.5R X 1	3	30	80	4		New 2DBE 050 160 110	2.5R X 5	16	-	110	5	
New 2DBE 010 350 S04	0.5R X 1	3	35	80	4								

FOR GRAPHITE







- 그래파이트(흑연), 강화플라스틱, 탄소섬유 등 비철,비금속 계열의 다양한 피삭재 전용 엔드밀
- CVD 순수 다이아몬드 코팅을 적용하여 내마모성이 우수합니다.
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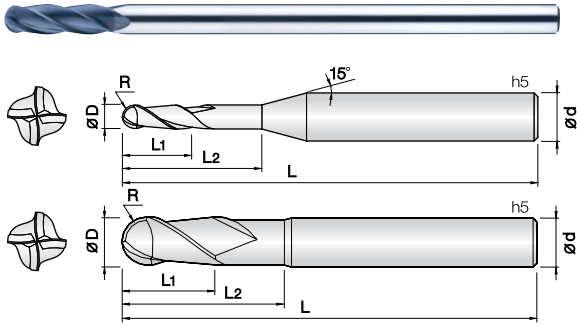
0.5 ~ 6R

D Size	D Tolerance
Ø1 ~ 12	+0 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
3DBE 010 030 S04	0.5R X 1	3	-	60	4		3DBE 060 400 110	3R X 6	16	40	110	6	
3DBE 010 050 S04	0.5R X 1	3	5	60	4		3DBE 060 300 150	3R X 6	16	30	150	6	
3DBE 010 100 S04	0.5R X 1	3	10	60	4		3DBE 060 500 150	3R X 6	16	50	150	6	
3DBE 010 150 S04	0.5R X 1	3	15	60	4		3DBE 060 500 180	3R X 6	16	50	180	6	
3DBE 010 200 S04	0.5R X 1	3	20	60	4		3DBE 080 400 110	4R X 8	20	40	110	8	
New 3DBE 010 250 S04	0.5R X 1	3	25	80	4		3DBE 080 500 150	4R X 8	20	50	150	8	
New 3DBE 010 300 S04	0.5R X 1	3	30	80	4		3DBE 100 400 110	5R X 10	22	40	110	10	
New 3DBE 010 350 S04	0.5R X 1	3	35	80	4		3DBE 100 600 160	5R X 10	22	60	160	10	
New 3DBE 010 400 S04	0.5R X 1	3	40	80	4		3DBE 120 500 110	6R X 12	25	50	110	12	
New 3DBE 010 450 S04	0.5R X 1	3	45	80	4		3DBE 120 500 160	6R X 12	25	50	160	12	
New 3DBE 010 500 S04	0.5R X 1	3	50	80	4		3DBE 120 600 200	6R X 12	25	60	200	12	
3DBE 015 050 S04	0.75R X 1.5	5	-	60	4								
3DBE 015 100 S04	0.75R X 1.5	5	10	80	4								
3DBE 015 150 S04	0.75R X 1.5	5	15	80	4								
3DBE 015 200 S04	0.75R X 1.5	5	20	80	4								
New 3DBE 015 250 S04	0.75R X 1.5	8	25	80	4								
New 3DBE 015 300 S04	0.75R X 1.5	8	30	80	4								
New 3DBE 015 350 S04	0.75R X 1.5	8	35	80	4								
New 3DBE 015 400 S04	0.75R X 1.5	8	40	80	4								
New 3DBE 015 450 S04	0.75R X 1.5	8	45	80	4								
New 3DBE 015 500 S04	0.75R X 1.5	8	50	80	4								
3DBE 020 060 S04	1R X 2	6	-	60	4								
3DBE 020 100 S04	1R X 2	6	10	80	4								
3DBE 020 150 S04	1R X 2	6	15	80	4								
3DBE 020 200 S04	1R X 2	6	20	80	4								
3DBE 020 250 S04	1R X 2	6	25	80	4								
3DBE 020 300 S04	1R X 2	6	30	80	4								
3DBE 020 350 S04	1R X 2	6	35	80	4								
3DBE 020 400 S04	1R X 2	6	40	100	4								
New 3DBE 020 500 S04	1R X 2	6	50	100	4								
New 3DBE 020 600 S04	1R X 2	6	60	100	4								
New 3DBE 020 700 S04	1R X 2	6	70	100	4								
3DBE 030 150 100	1.5R X 3	8	15	100	3								
3DBE 030 080 S04	1.5R X 3	8	-	60	4								
3DBE 030 150 S04	1.5R X 3	8	15	100	4								
3DBE 030 200 S04	1.5R X 3	8	20	100	4								
3DBE 030 300 S04	1.5R X 3	8	30	100	4								
3DBE 030 400 S04	1.5R X 3	8	40	100	4								
3DBE 030 500 S04	1.5R X 3	8	50	100	4								
3DBE 040 160 080	2R X 4	16	-	80	4								
3DBE 040 300 080	2R X 4	16	30	80	4								
3DBE 040 160 100	2R X 4	16	-	100	4								
3DBE 040 400 100	2R X 4	16	40	100	4								
3DBE 040 160 130	2R X 4	16	-	130	4								
3DBE 040 400 130	2R X 4	16	40	130	4								
New 3DBE 050 160 110	2.5R X 5	16	-	110	5								
New 3DBE 050 400 110	2.5R X 5	16	40	110	5								
3DBE 060 250 110	3R X 6	16	25	110	6								





- 그래파이트(흑연), 강화플라스틱, 탄소섬유 등 비철,비금속 계열의 다양한 피삭재 전용 엔드밀
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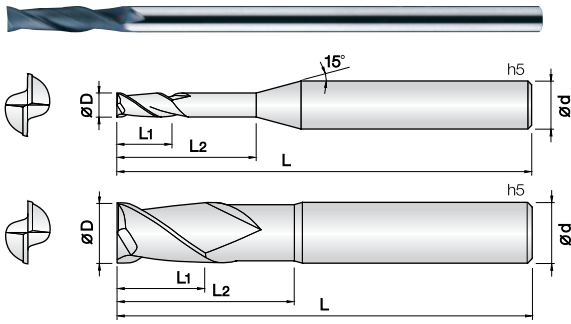
D Size	D Tolerance
Ø1 ~ 12	+0 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4DBE 010 030 S04	0.5R X 1	3	-	60	4		4DBE 100 350 080	5R X 10	22	35	80	10	
4DBE 010 050 S04	0.5R X 1	3	5	60	4		4DBE 100 350 110	5R X 10	22	35	110	10	
4DBE 010 100 S04	0.5R X 1	3	10	60	4		4DBE 100 400 160	5R X 10	22	40	160	10	
4DBE 010 150 S04	0.5R X 1	3	15	60	4		4DBE 100 500 200	5R X 10	22	50	200	10	
4DBE 010 200 S04	0.5R X 1	3	20	60	4		4DBE 120 500 110	6R X 12	25	50	110	12	
4DBE 010 250 S04	0.5R X 1	3	25	60	4		4DBE 120 500 160	6R X 12	25	50	160	12	
New 4DBE 010 300 S04	0.5R X 1	4.5	30	80	4		4DBE 120 600 200	6R X 12	25	60	200	12	
New 4DBE 010 350 S04	0.5R X 1	4.5	35	80	4								
New 4DBE 010 400 S04	0.5R X 1	4.5	40	80	4								
New 4DBE 010 450 S04	0.5R X 1	4.5	45	80	4								
New 4DBE 010 500 S04	0.5R X 1	4.5	50	80	4								
4DBE 015 045 S04	0.75R X 1.5	4.5	-	60	4								
4DBE 015 100 S04	0.75R X 1.5	4.5	10	60	4								
4DBE 015 150 S04	0.75R X 1.5	4.5	15	60	4								
4DBE 015 200 S04	0.75R X 1.5	4.5	20	60	4								
4DBE 015 250 S04	0.75R X 1.5	4.5	25	60	4								
New 4DBE 015 300 S04	0.75R X 1.5	4.5	30	80	4								
New 4DBE 015 350 S04	0.75R X 1.5	4.5	35	80	4								
New 4DBE 015 400 S04	0.75R X 1.5	4.5	40	80	4								
New 4DBE 015 450 S04	0.75R X 1.5	4.5	45	80	4								
New 4DBE 015 500 S04	0.75R X 1.5	4.5	50	80	4								
4DBE 020 060 S04	1R X 2	6	-	60	4								
4DBE 020 100 S04	1R X 2	6	10	80	4								
4DBE 020 200 S04	1R X 2	6	20	80	4								
4DBE 020 300 S04	1R X 2	6	30	80	4								
4DBE 020 400 S04	1R X 2	6	40	80	4								
New 4DBE 020 500 S04	1R X 2	6	50	100	4								
New 4DBE 020 600 S04	1R X 2	6	60	100	4								
New 4DBE 020 700 S04	1R X 2	6	70	100	4								
4DBE 030 080 S04	1.5R X 3	8	-	60	4								
4DBE 030 150 S04	1.5R X 3	8	15	100	4								
4DBE 030 200 S04	1.5R X 3	8	20	100	4								
4DBE 030 300 S04	1.5R X 3	8	30	100	4								
4DBE 030 400 S04	1.5R X 3	8	40	100	4								
4DBE 030 500 S04	1.5R X 3	8	50	100	4								
New 4DBE 030 600 S04	1.5R X 3	8	60	100	4								
New 4DBE 030 700 S04	1.5R X 3	8	70	100	4								
4DBE 040 160 060	2R X 4	16	-	60	4								
4DBE 040 160 080	2R X 4	16	-	80	4								
4DBE 040 160 100	2R X 4	16	-	100	4								
4DBE 040 160 130	2R X 4	16	-	130	4								
4DBE 060 250 080	3R X 6	16	25	80	6								
4DBE 060 250 110	3R X 6	16	25	110	6								
4DBE 060 300 150	3R X 6	16	30	150	6								
4DBE 080 300 080	4R X 8	20	30	80	8								
4DBE 080 300 110	4R X 8	20	30	110	8								
4DBE 080 350 150	4R X 8	20	35	150	8								
4DBE 080 400 200	4R X 8	20	40	200	8								

FOR GRAPHITE

## 2날 흑연가공용 다이아몬드 코팅 엔드밀



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

2

WC  
미립자

DIA.  
Coating

DI  
+0 -0.02

30°  
Helix Angle

Shield Edge

ø0.2~ø12

D Size	D Tolerance
ø0.2 ~ 12	+0 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2DEM 002 004 S04	0.2	0.4	-	45	4		2DEM 030 400 S04	3	12	40	80	4	
2DEM 003 006 S04	0.3	0.6	-	45	4		New 2DEM 030 500 S04	3	12	50	80	4	
New 2DEM 003 020 S04	0.3	0.6	2	45	4		2DEM 040 120 S06	4	12	-	50	6	
New 2DEM 003 040 S04	0.3	0.6	4	45	4		2DEM 040 160 080	4	16	-	80	4	
2DEM 004 008 S04	0.4	0.8	-	45	4		2DEM 050 150 S06	5	15	-	60	6	
New 2DEM 004 020 S04	0.4	0.8	2	45	4		2DEM 050 200 S06	5	20	-	110	6	
New 2DEM 004 040 S04	0.4	0.8	4	45	4		2DEM 060 180 S06	6	18	-	60	6	
2DEM 005 010 S04	0.5	1	-	45	4		2DEM 060 250 110	6	25	-	110	6	
New 2DEM 005 030 S04	0.5	1	3	45	4		2DEM 060 250 150	6	25	-	150	6	
New 2DEM 005 050 S04	0.5	1	5	45	4		2DEM 080 240 S08	8	24	-	70	8	
2DEM 006 012 S04	0.6	1.2	-	45	4		2DEM 080 400 150	8	25	40	150	8	
New 2DEM 006 030 S04	0.6	1.2	3	45	4		2DEM 100 250 S10	10	25	-	80	10	
New 2DEM 006 050 S04	0.6	1.2	5	45	4		2DEM 100 500 160	10	25	50	160	10	
2DEM 007 015 S04	0.7	1.5	-	45	4		2DEM 120 250 S12	12	25	-	80	12	
New 2DEM 007 040 S04	0.7	1.5	4	45	4		2DEM 120 600 160	12	25	60	160	12	
New 2DEM 007 060 S04	0.7	1.5	6	45	4								
New 2DEM 007 080 S04	0.7	1.5	8	45	4								
2DEM 008 020 S04	0.8	2	-	45	4								
2DEM 009 025 S04	0.9	2.5	-	45	4								
2DEM 010 030 S04	1	3	-	60	4								
2DEM 010 032 S04	1	3.2	-	45	4								
2DEM 010 050 S04	1	3	5	60	4								
2DEM 010 100 S04	1	3	10	60	4								
2DEM 010 150 S04	1	3	15	60	4								
2DEM 010 200 S04	1	3	20	60	4								
2DEM 010 250 S04	1	3	25	60	4								
New 2DEM 010 300 S04	1	3	30	60	4								
2DEM 015 060 S04	1.5	6	-	60	4								
2DEM 015 100 S04	1.5	6	10	60	4								
2DEM 015 150 S04	1.5	6	15	60	4								
2DEM 015 200 S04	1.5	6	20	60	4								
2DEM 015 250 S04	1.5	6	25	60	4								
New 2DEM 015 300 S04	1.5	6	30	60	4								
2DEM 020 060 S04	2	6	-	45	4								
2DEM 020 080 S04	2	8	-	80	4								
2DEM 020 120 S04	2	8	12	80	4								
2DEM 020 150 S04	2	8	15	80	4								
2DEM 020 200 S04	2	8	20	80	4								
2DEM 020 250 S04	2	8	25	80	4								
2DEM 020 300 S04	2	8	30	80	4								
2DEM 020 400 S04	2	8	40	80	4								
New 2DEM 020 450 S04	2	8	45	80	4								
New 2DEM 020 500 S04	2	8	50	80	4								
2DEM 030 090 S06	3	9	-	50	6								
2DEM 030 120 S04	3	12	-	80	4								
2DEM 030 200 S04	3	12	20	80	4								
2DEM 030 250 S04	3	12	25	80	4								
2DEM 030 300 S04	3	12	30	80	4								

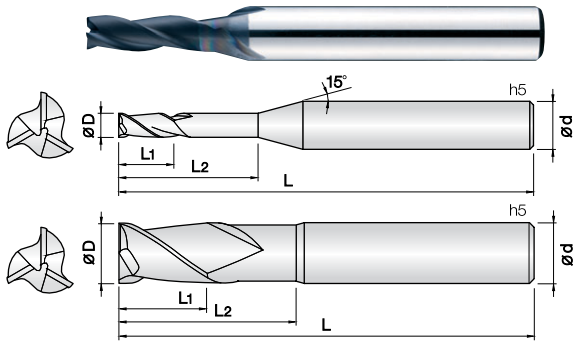
FOR GRAPHITE





3 Flutes Diamond Coated End Mills for Graphite

### 3날 흑연가공용 다이아몬드 코팅 엔드밀



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

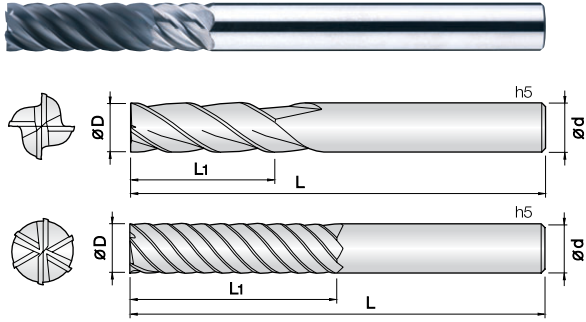
D Size	D Tolerance
Ø1 ~ 12	+0 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
3DEM 010 030 S04	1	3	-	45	4								
New 3DEM 010 050 S04	1	3	5	45	4								
New 3DEM 010 100 S04	1	3	10	45	4								
New 3DEM 010 150 S04	1	3	15	45	4								
3DEM 015 060 S04	1.5	6	-	60	4								
New 3DEM 015 100 S04	1.5	6	10	60	4								
New 3DEM 015 150 S04	1.5	6	15	60	4								
New 3DEM 015 200 S04	1.5	6	20	60	4								
3DEM 020 060 S04	2	6	-	45	4								
3DEM 020 100 S04	2	10	10	60	4								
New 3DEM 020 150 S04	2	10	15	60	4								
New 3DEM 020 200 S04	2	10	20	60	4								
New 3DEM 020 250 S04	2	10	25	60	4								
3DEM 030 090 S06	3	9	9	50	6								
3DEM 030 150 S03	3	15	-	60	3								
3DEM 030 150 S04	3	15	-	60	4								
New 3DEM 030 200 S04	3	15	20	60	4								
New 3DEM 030 250 S04	3	15	25	60	4								
3DEM 040 120 S06	4	12	-	50	6								
3DEM 040 200 080	4	20	-	80	6								
3DEM 060 180 060	6	18	-	60	6								
3DEM 060 250 110	6	25	-	110	6								
3DEM 060 250 150	6	25	-	150	6								
3DEM 080 240 070	8	24	-	70	8								
3DEM 080 350 110	8	35	-	110	8								
3DEM 080 350 150	8	35	-	150	8								
3DEM 100 250 080	10	25	-	80	10								
3DEM 100 400 110	10	40	-	110	10								
3DEM 100 500 160	10	50	-	160	10								
3DEM 120 250 080	12	25	-	80	12								
3DEM 120 450 110	12	45	-	110	12								
3DEM 120 550 160	12	55	-	160	12								

FOR GRAPHITE

## 4&6날 흑연가공용 다이아몬드 코팅 엔드밀



- 그래파이트(흑연), 강화플라스틱, 탄소섬유 등 비철,비금속 계열의 다양한 피삭재 전용 엔드밀
- CVD 순수 다이아몬드 코팅을 적용하여 내마모성이 우수합니다.
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- **Endmills for Graphite, reinforced plastic, carbon fiber, Non-ferrous and non-metallic materials.**
- Excellent wear resistance by applying qualified CVD diamond coating.
- Wide range products prepared for various work shape and excellent performance.

4

6

WC  
미립자

DIA.  
Coating

DI  
+0 -0.02

30°  
Helix Angle

45°  
Helix Angle

Shield Edge

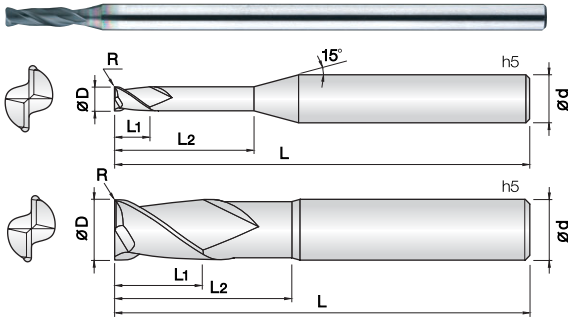
<math>\varnothing 2 \sim \varnothing 16</math>
4F
6F

D Size	D Tolerance
$\varnothing 2 \sim 16$	+0 ~ -0.02mm

단위 : mm

Order Number	날경	날장	전장	샙크	비고	Order Number	날경	날장	전장	샙크	비고
	Diameter D	Length of cut L1	Overall Length L	Shank Dia d			Diameter D	Length of cut L1	Overall Length L	Shank Dia d	
4DEM 020 060 S04	2	6	45	4		6DEM 100 400 110	10	40	110	10	
4DEM 020 100 S04	2	10	60	4		6DEM 100 400 160	10	40	160	10	
4DEM 030 090 S06	3	9	50	6		6DEM 120 450 110	12	45	110	12	
4DEM 030 150 S03	3	15	60	3		6DEM 120 450 160	12	45	160	12	
4DEM 030 150 S04	3	15	60	4		6DEM 160 500 110	16	50	110	16	
4DEM 040 120 S06	4	12	50	6		6DEM 160 500 160	16	50	160	16	
4DEM 040 200 080	4	20	80	4		6DEM 160 500 200	16	50	200	16	
New 4DEM 040 200 100	4	20	100	4							
4DEM 060 180 060	6	18	60	6							
4DEM 060 250 110	6	25	110	6							
4DEM 060 250 150	6	25	150	6							
4DEM 080 240 070	8	24	70	8							
4DEM 080 350 110	8	35	110	8							
4DEM 080 350 150	8	35	150	8							
4DEM 100 250 080	10	25	80	10							
4DEM 100 400 110	10	40	110	10							
4DEM 100 500 160	10	50	160	10							
4DEM 120 250 080	12	25	80	12							
4DEM 120 450 110	12	45	110	12							
4DEM 120 550 160	12	55	160	12							

FOR GRAPHITE



- 그래파이트(흑연), 강화플라스틱, 탄소섬유 등 비철,비금속 계열의 다양한 피삭재 전용 엔드밀
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- Wide range products prepared for various work shape and excellent performance.



R0.02 ~ 1

D Size	D Tolerance
Ø0.2 ~ 6	+0 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고
2DCR 002 0002 015	0.2 X R0.02	0.5	1.5	60	4		2DCR 015 001 150	1.5 X R0.1	3	15	60	4	
2DCR 003 0002 015	0.3 X R0.02	0.6	1.5	60	4		2DCR 015 001 200	1.5 X R0.1	3	20	60	4	
2DCR 003 0002 030	0.3 X R0.02	0.6	3	60	4		2DCR 015 0015 030	1.5 X R0.15	3	-	60	4	
2DCR 003 0002 045	0.3 X R0.02	0.6	4.5	60	4		2DCR 015 0015 050	1.5 X R0.15	3	5	60	4	
2DCR 003 0002 060	0.3 X R0.02	0.6	6	60	4		2DCR 015 0015 100	1.5 X R0.15	3	10	60	4	
2DCR 004 0002 020	0.4 X R0.02	0.8	2	60	4		2DCR 015 0015 150	1.5 X R0.15	3	15	60	4	
2DCR 004 0002 040	0.4 X R0.02	0.8	4	60	4		2DCR 015 0015 200	1.5 X R0.15	3	20	60	4	
2DCR 004 0002 060	0.4 X R0.02	0.8	6	60	4		2DCR 015 002 030	1.5 X R0.2	3	-	60	4	
2DCR 004 0002 080	0.4 X R0.02	0.8	8	60	4		2DCR 015 002 050	1.5 X R0.2	3	5	60	4	
2DCR 005 0005 010	0.5 X R0.05	1	-	60	4		2DCR 015 002 100	1.5 X R0.2	3	10	60	4	
2DCR 005 0005 025	0.5 X R0.05	1	2.5	60	4		2DCR 015 002 150	1.5 X R0.2	3	15	60	4	
2DCR 005 0005 035	0.5 X R0.05	1	3.5	60	4		2DCR 015 002 200	1.5 X R0.2	3	20	60	4	
2DCR 005 0005 050	0.5 X R0.05	1	5	60	4		2DCR 015 003 030	1.5 X R0.3	3	-	60	4	
2DCR 005 0005 075	0.5 X R0.05	1	7.5	60	4		2DCR 015 003 050	1.5 X R0.3	3	5	60	4	
2DCR 005 0005 100	0.5 X R0.05	1	10	60	4		2DCR 015 003 100	1.5 X R0.3	3	10	60	4	
2DCR 006 0005 012	0.6 X R0.05	1.2	-	60	4		2DCR 015 003 150	1.5 X R0.3	3	15	60	4	
2DCR 006 0005 030	0.6 X R0.05	1.2	3	60	4		2DCR 015 003 200	1.5 X R0.3	3	20	60	4	
2DCR 006 0005 060	0.6 X R0.05	1.2	6	60	4		2DCR 020 0005 035	2 X R0.05	3.5	-	60	4	
2DCR 006 0005 090	0.6 X R0.05	1.2	9	60	4		2DCR 020 0005 060	2 X R0.05	3.5	6	60	4	
2DCR 006 0005 120	0.6 X R0.05	1.2	12	60	4		2DCR 020 0005 120	2 X R0.05	3.5	12	60	4	
2DCR 008 0005 016	0.8 X R0.05	1.6	-	60	4		2DCR 020 0005 180	2 X R0.05	3.5	18	60	4	
2DCR 008 0005 040	0.8 X R0.05	1.6	4	60	4		2DCR 020 0005 250	2 X R0.05	3.5	25	60	4	
2DCR 008 0005 080	0.8 X R0.05	1.6	8	60	4		2DCR 020 0005 300	2 X R0.05	3.5	30	60	4	
2DCR 008 0005 100	0.8 X R0.05	1.6	10	60	4		2DCR 020 002 035	2 X R0.2	3.5	-	60	4	
2DCR 008 0005 160	0.8 X R0.05	1.6	16	60	4		2DCR 020 002 060	2 X R0.2	3.5	6	60	4	
2DCR 010 0005 020	1 X R0.05	2	-	60	4		2DCR 020 002 120	2 X R0.2	3.5	12	60	4	
2DCR 010 0005 050	1 X R0.05	2	5	60	4		2DCR 020 002 180	2 X R0.2	3.5	18	60	4	
2DCR 010 0005 100	1 X R0.05	2	10	60	4		2DCR 020 002 250	2 X R0.2	3.5	25	60	4	
2DCR 010 0005 150	1 X R0.05	2	15	60	4		2DCR 020 002 300	2 X R0.2	3.5	30	60	4	
2DCR 010 0005 200	1 X R0.05	2	20	60	4		2DCR 020 003 035	2 X R0.3	3.5	-	60	4	
2DCR 010 001 020	1 X R0.1	2	-	60	4		2DCR 020 003 060	2 X R0.3	3.5	6	60	4	
2DCR 010 001 050	1 X R0.1	2	5	60	4		2DCR 020 003 120	2 X R0.3	3.5	12	60	4	
2DCR 010 001 100	1 X R0.1	2	10	60	4		2DCR 020 003 180	2 X R0.3	3.5	18	60	4	
2DCR 010 001 150	1 X R0.1	2	15	60	4		2DCR 020 003 250	2 X R0.3	3.5	25	60	4	
2DCR 010 001 200	1 X R0.1	2	20	60	4		2DCR 020 003 300	2 X R0.3	3.5	30	60	4	
2DCR 010 002 020	1 X R0.2	2	-	60	4		2DCR 020 005 035	2 X R0.5	3.5	-	60	4	
2DCR 010 002 050	1 X R0.2	2	5	60	4		2DCR 020 005 060	2 X R0.5	3.5	6	60	4	
2DCR 010 002 100	1 X R0.2	2	10	60	4		2DCR 020 005 120	2 X R0.5	3.5	12	60	4	
2DCR 010 002 150	1 X R0.2	2	15	60	4		2DCR 020 005 180	2 X R0.5	3.5	18	60	4	
2DCR 010 002 200	1 X R0.2	2	20	60	4		2DCR 020 005 250	2 X R0.5	3.5	25	60	4	
2DCR 015 0005 030	1.5 X R0.05	3	-	60	4		2DCR 020 005 300	2 X R0.5	3.5	30	60	4	
2DCR 015 0005 050	1.5 X R0.05	3	5	60	4		2DCR 030 0005 040	3 X R0.05	4	-	80	4	
2DCR 015 0005 100	1.5 X R0.05	3	10	60	4		2DCR 030 0005 100	3 X R0.05	4	10	80	4	
2DCR 015 0005 150	1.5 X R0.05	3	15	60	4		2DCR 030 0005 200	3 X R0.05	4	20	80	4	
2DCR 015 0005 200	1.5 X R0.05	3	20	60	4		2DCR 030 0005 300	3 X R0.05	4	30	80	4	
2DCR 015 001 030	1.5 X R0.1	3	-	60	4		2DCR 030 0005 400	3 X R0.05	4	40	80	4	
2DCR 015 001 050	1.5 X R0.1	3	5	60	4		2DCR 030 002 040	3 X R0.2	4	-	80	4	
2DCR 015 001 100	1.5 X R0.1	3	10	60	4		2DCR 030 002 100	3 X R0.2	4	10	80	4	

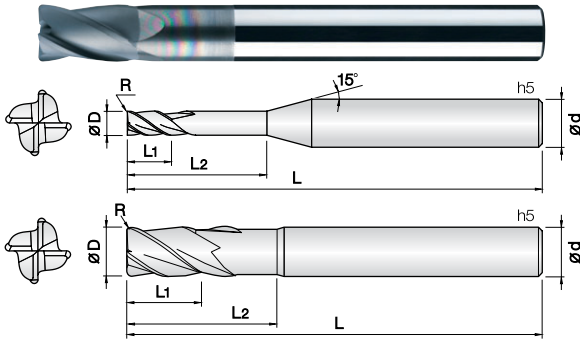
FOR GRAPHITE

단위 : mm

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

FOR GRAPHITE

## 4날 흑연가공용다이아몬드 코팅 코너 레디우스 엔드밀



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



R0.05 ~ 1

D Size	D Tolerance
Ø0.2 ~ 6	+0 ~ -0.02mm

단위 : mm

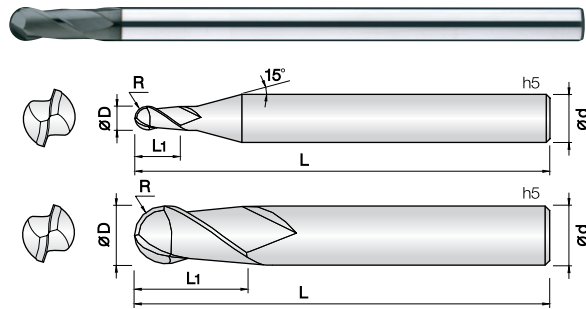
Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
4DCR 020 0005 035	2 X R0.05	3.5	-	60	4		4DCR 030 010 400	3 X R1	4	40	80	4	
4DCR 020 0005 060	2 X R0.05	3.5	6	60	4		4DCR 040 003 100	4 X R0.3	6	20	100	4	
4DCR 020 0005 120	2 X R0.05	3.5	12	60	4		4DCR 040 005 100	4 X R0.5	6	20	100	4	
4DCR 020 0005 180	2 X R0.05	3.5	18	60	4		4DCR 040 010 100	4 X R1	6	20	100	4	
4DCR 020 0005 250	2 X R0.05	3.5	25	60	4		4DCR 060 003 110	6 X R0.3	9	25	110	6	
4DCR 020 0005 300	2 X R0.05	3.5	30	60	4		4DCR 060 005 110	6 X R0.5	9	25	110	6	
4DCR 020 002 035	2 X R0.2	3.5	-	60	4		4DCR 060 005 150	6 X R0.5	9	30	150	6	
4DCR 020 002 060	2 X R0.2	3.5	6	60	4		4DCR 060 010 110	6 X R1	9	25	110	6	
4DCR 020 002 120	2 X R0.2	3.5	12	60	4		4DCR 060 010 150	6 X R1	9	30	150	6	
4DCR 020 002 180	2 X R0.2	3.5	18	60	4		4DCR 080 003 110	8 X R0.3	12	30	110	8	
4DCR 020 002 250	2 X R0.2	3.5	25	60	4		4DCR 080 005 110	8 X R0.5	12	30	110	8	
4DCR 020 002 300	2 X R0.2	3.5	30	60	4		4DCR 080 005 150	8 X R0.5	12	40	150	8	
4DCR 020 003 035	2 X R0.3	3.5	-	60	4		4DCR 080 010 110	8 X R1	12	30	110	8	
4DCR 020 003 060	2 X R0.3	3.5	6	60	4		4DCR 080 010 150	8 X R1	12	40	150	8	
4DCR 020 003 120	2 X R0.3	3.5	12	60	4		4DCR 100 005 110	10 X R0.5	15	35	110	10	
4DCR 020 003 180	2 X R0.3	3.5	18	60	4		4DCR 100 005 160	10 X R0.5	15	45	160	10	
4DCR 020 003 250	2 X R0.3	3.5	25	60	4		4DCR 100 010 110	10 X R1	15	35	110	10	
4DCR 020 003 300	2 X R0.3	3.5	30	60	4		4DCR 100 010 160	10 X R1	15	45	160	10	
4DCR 020 005 035	2 X R0.5	3.5	-	60	4		4DCR 120 005 110	12 X R0.5	18	40	110	12	
4DCR 020 005 060	2 X R0.5	3.5	6	60	4		4DCR 120 005 160	12 X R0.5	18	45	160	12	
4DCR 020 005 120	2 X R0.5	3.5	12	60	4		4DCR 120 010 110	12 X R1	18	40	110	12	
4DCR 020 005 180	2 X R0.5	3.5	18	60	4		4DCR 120 010 160	12 X R1	18	45	160	12	
4DCR 020 005 250	2 X R0.5	3.5	25	60	4								
4DCR 020 005 300	2 X R0.5	3.5	30	60	4								
4DCR 030 0005 040	3 X R0.05	4	-	80	4								
4DCR 030 0005 100	3 X R0.05	4	10	80	4								
4DCR 030 0005 200	3 X R0.05	4	20	80	4								
4DCR 030 0005 300	3 X R0.05	4	30	80	4								
4DCR 030 0005 400	3 X R0.05	4	40	80	4								
4DCR 030 002 040	3 X R0.2	4	-	80	4								
4DCR 030 002 100	3 X R0.2	4	10	80	4								
4DCR 030 002 200	3 X R0.2	4	20	80	4								
4DCR 030 002 300	3 X R0.2	4	30	80	4								
4DCR 030 002 400	3 X R0.2	4	40	80	4								
4DCR 030 003 040	3 X R0.3	4	-	80	4								
4DCR 030 003 100	3 X R0.3	4	10	80	4								
4DCR 030 003 200	3 X R0.3	4	20	80	4								
4DCR 030 003 300	3 X R0.3	4	30	80	4								
4DCR 030 003 400	3 X R0.3	4	40	80	4								
4DCR 030 005 040	3 X R0.5	4	-	80	4								
4DCR 030 005 100	3 X R0.5	4	10	80	4								
4DCR 030 005 200	3 X R0.5	4	20	80	4								
4DCR 030 005 300	3 X R0.5	4	30	80	4								
4DCR 030 005 400	3 X R0.5	4	40	80	4								
4DCR 030 010 040	3 X R1	4	-	80	4								
4DCR 030 010 100	3 X R1	4	10	80	4								
4DCR 030 010 200	3 X R1	4	20	80	4								
4DCR 030 010 300	3 X R1	4	30	80	4								

FOR GRAPHITE



# 2CPB 2 Flutes Ball End Mills for Composite

## 2날복합소재 가공용 볼엔드밀



- 강화플라스틱(CFRP,GFRP), 유리/탄소섬유 등 비철 비금속 계열의 다양한 복합소재 전용 라우터
- 다양한 복합소재 가공영역에 뛰어난 성능을 발휘합니다.
- 코팅피막에 경도가 높아 내마모성이 우수합니다.
- 마찰계수가 낮은 다이아몬드 코팅을 적용하여 흡착현상을 최소화하였습니다.
- **Endmills for CFRP, GFRP, glass/carbon fiber, nonferrous and non-metallic materials.**
- Outstanding performance in machining of various composite materials.
- Excellent wear resistance by applying high hardness coating layer.
- Minimize built up edge by low friction diamond coating technology.

2 WC 미립자 NANO DIA. Coating R ±0.005 R ±0.01 30° Helix Angle

0.25 ~ 0.5R    0.75 ~ 6R

D Size	D Tolerance
Ø0.5 ~ 1	+0 ~ -0.01mm
Ø1.5 ~ 12	-0.005 ~ -0.02mm

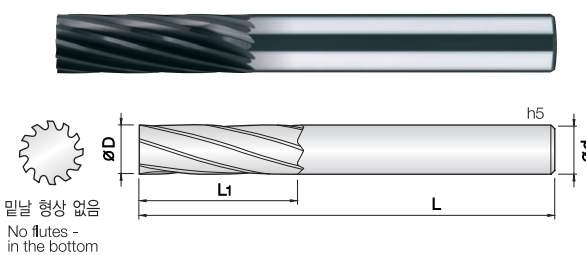
단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2CPB 005 010 S04	0.25R X 0.5	1	50	4		2CPB 060 120 080	3R X 6	12	80	6	
2CPB 006 012 S04	0.3R X 0.6	1.2	50	4		2CPB 060 120 110	3R X 6	12	110	6	
2CPB 008 020 S04	0.4R X 0.8	2	50	4		2CPB 080 140 080	4R X 8	14	80	8	
2CPB 010 025 S04	0.5R X 1	2.5	50	4		2CPB 080 140 110	4R X 8	14	110	8	
2CPB 015 040 S04	0.75R X 1.5	4	50	4		2CPB 100 180 080	5R X 10	18	80	10	
2CPB 020 050 S04	1R X 2	5	50	4		2CPB 100 180 110	5R X 10	18	110	10	
2CPB 025 060 S04	1.25R X 2.5	6	50	4		2CPB 120 220 080	6R X 12	22	80	12	
2CPB 030 080 S06	1.5R X 3	8	60	6		2CPB 120 220 110	6R X 12	22	110	12	
2CPB 040 080 S06	2R X 4	8	70	6							
2CPB 050 100 S06	2.5R X 5	10	80	6							

FOR COMPOSITE

# 8~12CPE 8~12 Flutes Finishing End Mills for Composite

## 8~12날복합소재 가공용 정삭엔드밀



- 강화플라스틱(CFRP,GFRP), 유리/탄소섬유, 그래파이트(흑연) 등 비철 비금속 계열의 다양한 복합소재 전용 엔드밀
- 다양한 복합소재의 정삭가공시 뛰어난 성능을 발휘합니다.
- 코팅피막에 경도가 높아 내마모성이 우수합니다.
- 마찰계수가 낮은 다이아몬드 코팅을 적용하여 흡착현상을 최소화하였습니다.
- **Endmills for CFRP, GFRP, glass/carbon fiber, graphite, nonferrous and non-metallic materials.**
- Outstanding performance in finishing of various composite materials.
- Excellent wear resistance by applying high hardness coating layer.
- Minimize built up edge by low friction diamond coating technology.

8 ~ 12 WC 미립자 NANO DIA. Coating LDI -0.01 ~ -0.025 15° Helix Angle

Ø6 ~ Ø12

D Size	D Tolerance
Ø6 ~ 12	-0.01 ~ -0.025mm

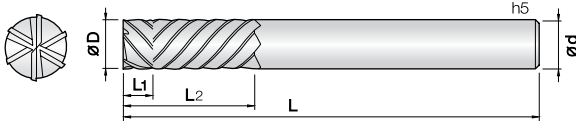
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고					
8CPE 060 180 080	6	18	80	6						
10CPE 080 240 080	8	24	80	8						
12CPE 100 300 100	10	30	100	10						
12CPE 120 360 100	12	36	100	12						

# 3&4&6CPR

3-6 Flutes Compression Router for Composite

## 3~6날 복합소재 가공용 라우터



- 강화플라스틱(CFRP, GFRP), 유리/탄소 섬유, 그래파이트(흑연) 등 비철 비금속 계열의 다양한 복합소재 전용 라우터
- 측벽가공시 공작물의 떠올림 현상이 없습니다.
- 피삭재에 버가 발생하지 않습니다.
- 코팅피막의 경도가 높아 내마모성이 우수합니다.
- 마찰계수가 낮은 다이아몬드 코팅을 적용하여 흡착현상을 최소화하였습니다.
- Router for CFRP, GFRP, glass/carbon fiber, graphite, nonferrous and non-metallic materials.
- No up-moving work material at wall cutting.
- No burr in work materials.
- Excellent wear resistance by applying high hardness coating layer.
- Minimize built up edge by low friction diamond coating technology.

3 4 6 WC 미립자 GTAC Coating NANO DIA. Coating ID 30° Helix Angle Shield Edge

D Size	D Tolerance
Ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	날장 Length of cut L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	날장 Length of cut L2	전장 Overall Length L	샙크 Shank Dia d	비고
<b>GTAC 코팅</b> GTAC Coating							<b>다이아코팅</b> DIA Coating						
3CPR 060 200 S06	6	5	20	70	6		4CPR 060 200 S06	6	5	20	70	6	
3CPR 080 250 S08	8	5	25	80	8		6CPR 080 250 S08	8	5	25	80	8	
3CPR 100 270 S10	10	6	27	80	10		6CPR 100 270 S10	10	6	27	80	10	
3CPR 120 300 S12	12	6	30	80	12		6CPR 120 300 S12	12	6	30	80	12	

# 6~16CPO

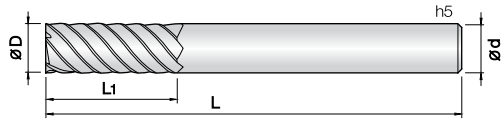
6~16 Flutes Router for Composite

## 6~16날 복합소재 가공용 라우터

A Type



B Type



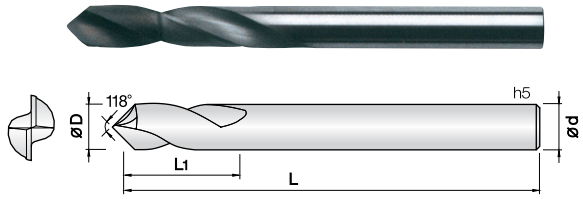
- 강화플라스틱(CFRP, GFRP), 유리/탄소 섬유, 그래파이트(흑연) 등 비철 비금속 계열의 다양한 복합소재 전용 라우터
- 다양한 복합소재의 황삭가공시 뛰어난 성능을 발휘합니다
- A type은 밑날의 수가 많아 슬로팅 작업에 최적입니다.
- B type은 밑날이 2날로서 수직 및 수평가공시 탁월한 성능을 발휘합니다.
- 코팅피막의 경도가 높아 내마모성이 우수합니다.
- 마찰계수가 낮은 다이아몬드 코팅을 적용하여 흡착현상을 최소화하였습니다.
- Router for CFRP, GFRP, glass/carbon fiber, graphite, nonferrous and non-metallic materials.
- Outstanding performance in roughing of various composite materials.
- A type has many bottom edges and optimized for slotting.
- B type has two bottom edges and excellent performance in vertical, horizontal machining.
- Excellent wear resistance by applying high hardness coating layer.
- Minimize built up edge by low friction diamond coating technology.

6 ~ 16 WC 미립자 NANO DIA. Coating ID ID 30° Helix Angle Shield Edge

D Size	D Tolerance
Ø4 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	타입 Type	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	타입 Type	샙크 Shank Dia d	비고
New 6CPOA 020 070 S04	2	7	40	A	4		10CPOA 060 200 S06	6	20	70	A	6	
New 6CPOB 020 070 S04	2	7	40	B	4		10CPOB 060 200 S06	6	20	70	B	6	
New 6CPOA 030 120 S04	3	12	50	A	4		12CPOA 080 250 S08	8	25	80	A	8	
New 6CPOB 030 120 S04	3	12	50	B	4		12CPOB 080 250 S08	8	25	80	B	8	
8CPOA 040 160 S04	4	16	60	A	4		14CPOA 100 270 S10	10	27	80	A	10	
8CPOB 040 160 S04	4	16	60	B	4		14CPOB 100 270 S10	10	27	80	B	10	
10CPOA 050 200 S06	5	20	60	A	6		16CPOA 120 300 S12	12	30	80	A	12	
10CPOB 050 200 S06	5	20	60	B	6		16CPOB 120 300 S12	12	30	80	B	12	



- 강화플라스틱(CFRP,GFRP), 유리/탄소섬유, 동 및 동합금, 그래파이트 등 비철 비금속 계열의 다양한 복합소재 전용 엔드밀
- 다양한 복합소재 가공영역에 뛰어난 성능을 발휘합니다.
- 코팅피막에 경도가 높아 내마모성이 우수합니다.
- 마찰계수가 낮은 다이아몬드 코팅을 적용하여 흡착현상을 최소화하였습니다.
- **Endmills for CFRP,GFRP, glass/carbon fiber, copper, copper alloy, graphite nonferrous and non-metallic materials.**
- Outstanding performance in machining of various composite materials.
- Excellent wear resistance by applying high hardness coating layer.
- Minimize built up edge by low friction diamond coating technology.

2

WC  
미립자

NANO  
DIA.  
Coating

DI  
+0 -0.01

DI  
-0.005 -0.015

20°  
Helix Angle

ø2~ø5.5    ø6~ø12

D Size	D Tolerance
ø2 ~ 5.5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm

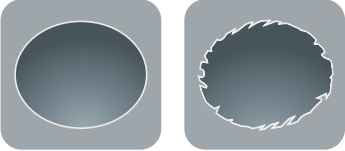
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2DDCA 020 160 S04	2	16	60	4							
2DDCA 023 180 S04	2.3	18	60	4							
2DDCA 025 200 S04	2.5 X M3	20	60	4							
2DDCA 030 220 S04	3	22	60	4							
2DDCA 033 230 S04	3.3 X M4	23	60	4							
2DDCA 035 270 S04	3.5	27	60	4							
2DDCA 040 300 S04	4	30	60	4							
2DDCA 042 300 S06	4.2 X M5	30	80	6							
2DDCA 045 330 S06	4.5	33	80	6							
2DDCA 050 360 S06	5 X M6	36	80	6							
2DDCA 055 380 S06	5.5	38	80	6							
2DDCA 060 380 S06	6	38	80	6							
2DDCA 065 450 S08	6.5	45	90	8							
2DDCA 068 450 S08	6.8 X M8	45	90	8							
2DDCA 070 450 S08	7	45	90	8							
2DDCA 075 480 S08	7.5	48	90	8							
2DDCA 080 480 S08	8	48	90	8							
2DDCA 085 510 S10	8.5 X M10	51	110	10							
2DDCA 090 540 S10	9	54	110	10							
2DDCA 095 540 S10	9.5	54	110	10							
2DDCA 100 600 S10	10	60	110	10							
2DDCA 103 600 S12	10.3 X M12	60	110	12							
2DDCA 105 600 S12	10.5	60	110	12							
2DDCA 110 650 S12	11	65	110	12							
2DDCA 115 650 S12	11.5	65	110	12							
2DDCA 120 700 S12	12	70	120	12							

### JJTOOLS drills benefit (특장점)

버 발생을 최소화한 공구 설계  
Minimize burr by the best drill design

### Machining Sample

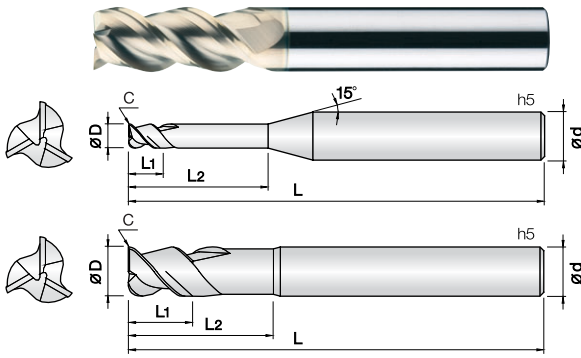


2DDCA type    Other manufacturer

FOR COMPOSITE



## 3날 45°헬릭스 SUS가공용 엔드밀



- 합금강, SUS계열, Ti/Ni계 합금, 인코넬 등 난삭재 가공 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며 내마모성 또한 향상됩니다
- 3날 적용 및 깊은 포켓으로 칩배출이 원활하며, 피삭재 면조도가 우수합니다.
- 45° 헬릭스 형상으로 설계하여 고속, 고이송 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화
- **Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Excellent work surface finish by 3 flute and deep chip pocket.
- 45° degree helix design for high speed, feed condition.
- Minimize fracturing at high feed by high TRS fine WC grade.

3

WC  
미립자

JCRO  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

45°  
Helix Angle

Shield Edge

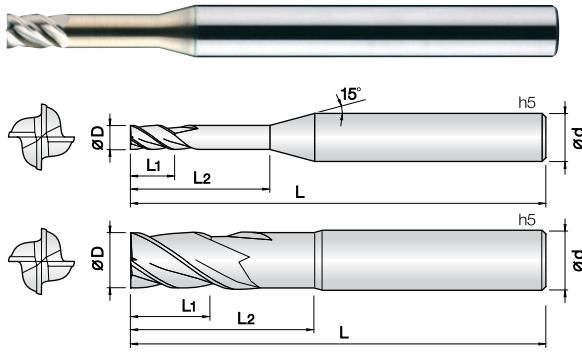
D Size	D Tolerance
Ø0.5 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
New 3SUE 005 010 S04	0.5	1	-	45	4		3SUE 160 360 S16	16	36	-	100	16	
New 3SUE 005 020 S04	0.5	1	2	45	4		3SUE 160 450 S16	16	36	45	100	16	
New 3SUE 005 030 S04	0.5	1	3	45	4		3SUE 200 550 S20	20	38	55	110	20	
New 3SUE 005 040 S04	0.5	1	4	45	4								
New 3SUE 006 012 S04	0.6	1.2	-	45	4								
New 3SUE 006 030 S04	0.6	1.2	3	45	4								
New 3SUE 006 050 S04	0.6	1.2	5	45	4								
New 3SUE 007 014 S04	0.7	1.4	-	45	4								
New 3SUE 007 030 S04	0.7	1.4	3	45	4								
3SUE 008 020 S04	0.8	2	-	45	4								
3SUE 008 040 S06	0.8	2	4	45	6								
New 3SUE 008 060 S06	0.8	2	6	45	6								
3SUE 010 025 S04	1	2.5	-	45	4								
3SUE 010 025 S06	1	2.5	-	45	6								
3SUE 010 040 S06	1	2.5	4	45	6								
New 3SUE 010 060 S06	1	2.5	6	45	6								
New 3SUE 010 080 S06	1	2.5	8	45	6								
3SUE 012 030 S04	1.2	3	-	45	4								
3SUE 012 030 S06	1.2	3	-	45	6								
3SUE 012 060 S06	1.2	3	6	45	6								
New 3SUE 012 080 S06	1.2	3	8	45	6								
3SUE 015 040 S04	1.5	4	-	45	4								
3SUE 015 040 S06	1.5	4	-	45	6								
3SUE 015 060 S06	1.5	4	6	45	6								
New 3SUE 015 080 S06	1.5	4	8	45	6								
New 3SUE 015 100 S06	1.5	4	10	45	6								
3SUE 020 050 S04	2	5	-	45	4								
3SUE 020 050 S06	2	5	-	45	6								
3SUE 020 080 S06	2	5	8	45	6								
New 3SUE 020 100 S06	2	5	10	50	6								
New 3SUE 020 120 S06	2	5	12	50	6								
3SUE 030 080 S04	3	8	-	45	4								
3SUE 030 080 S06	3	8	-	45	6								
3SUE 030 150 S06	3	8	15	45	6								
New 3SUE 030 200 S06	3	8	20	60	6								
3SUE 040 100 S04	4	10	-	50	4								
3SUE 040 100 S06	4	10	-	50	6								
3SUE 040 150 S06	4	10	15	50	6								
New 3SUE 040 200 S06	4	10	20	60	6								
3SUE 050 120 S06	5	12	-	50	6								
3SUE 060 120 S06	6	12	-	60	6								
3SUE 060 200 S06	6	12	20	60	6								
3SUE 080 190 S08	8	19	-	60	8								
3SUE 080 260 S08	8	19	26	60	8								
3SUE 100 220 S10	10	22	-	70	10								
3SUE 100 320 S10	10	22	32	70	10								
3SUE 120 260 S12	12	26	-	80	12								
3SUE 120 380 S12	12	26	38	80	12								

FOR SUS





- 합금강, SUS계열, Ti/Ni계 합금, 인코넬 등 난삭재 가공 엔드밀
- J-CRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 강력한 채터링방지 설계로 엔드밀의 진동을 최소화하였습니다.
- 4날 적용과 깊은 포켓으로 칩배출이 원활하며, 피삭재 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화
- **Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize chattering by unequal flute spacing design.
- Excellent work surface finish by 4 flute and deep chip pocket.
- Minimize fracturing at high feed by high TRS fine WC grade.

4

WC  
미립자

JCRO  
Coating

ID  
+0 -0.01

ID  
-0.01 -0.025

ID  
-0.015 -0.03

42°  
Helix Angle

Shield Edge

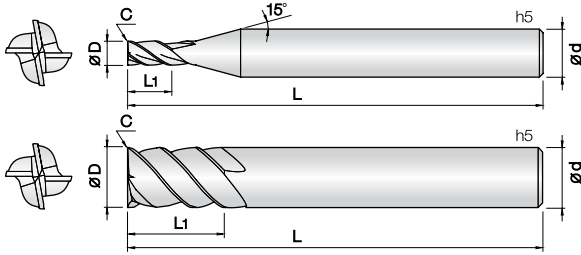
D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고
4SURE 010 030 S04	1	1.5	3	50	4								
4SURE 010 050 S04	1	1.5	5	50	4								
4SURE 015 045 S04	1.5	2.5	4.5	50	4								
4SURE 015 060 S04	1.5	2.5	6	50	4								
4SURE 015 080 S04	1.5	2.5	8	50	4								
4SURE 020 060 S04	2	3	6	50	4								
4SURE 020 080 S04	2	3	8	50	4								
4SURE 020 100 S04	2	3	10	50	4								
4SURE 020 120 S04	2	3	12	50	4								
4SURE 025 075 S04	2.5	4	7.5	50	4								
4SURE 025 100 S04	2.5	4	10	50	4								
4SURE 025 120 S04	2.5	4	12	50	4								
4SURE 030 090 S06	3	4.5	9	60	6								
4SURE 030 120 S06	3	4.5	12	60	6								
4SURE 030 160 S06	3	4.5	16	60	6								
4SURE 030 200 S06	3	4.5	20	60	6								
4SURE 040 120 S06	4	6	12	60	6								
4SURE 040 160 S06	4	6	16	60	6								
4SURE 040 200 S06	4	6	20	60	6								
4SURE 040 250 S06	4	6	25	65	6								
4SURE 050 150 S06	5	7.5	15	60	6								
4SURE 050 180 100	5	7.5	18	100	6								
4SURE 050 200 S06	5	7.5	20	60	6								
4SURE 050 250 S06	5	7.5	25	65	6								
4SURE 050 300 S06	5	7.5	30	70	6								
4SURE 060 200 S06	6	9	20	60	6								
4SURE 060 250 100	6	9	25	100	6								
4SURE 060 300 S06	6	9	30	70	6								
4SURE 080 250 S08	8	12	25	70	8								
4SURE 080 350 110	8	12	35	110	8								
4SURE 080 400 S08	8	12	40	80	8								
4SURE 100 300 S10	10	15	30	80	10								
4SURE 100 400 120	10	15	40	120	10								
4SURE 100 500 S10	10	15	50	100	10								
4SURE 120 360 S12	12	18	36	90	12								
4SURE 120 500 130	12	18	50	130	12								
4SURE 120 600 S12	12	18	60	110	12								
4SURE 160 480 S16	16	24	48	110	16								
4SURE 160 700 150	16	24	70	150	16								
4SURE 160 800 S16	16	24	80	130	16								
4SURE 200 600 130	20	30	60	130	20								
4SURE 200 1000 160	20	30	100	160	20								

FOR SUS

### 4날 SUS가공용 엔드밀



- 합금강, SUS계열, Ti/Ni계 합금, 인코넬 등 난삭재 가공 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 강력한 채터링방지 설계로 엔드밀의 진동을 최소화하였습니다.
- 4날 적용과 깊은 포켓으로 칩배출이 원활하며, 피삭재 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화
- **Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize chattering by unequal flute spacing design.
- Excellent work surface finish by 4 flute and deep chip pocket.
- Minimize fracturing at high feed by high TRS fine WC grade.

4

WC  
미립자

JCRO  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

42°  
Helix Angle

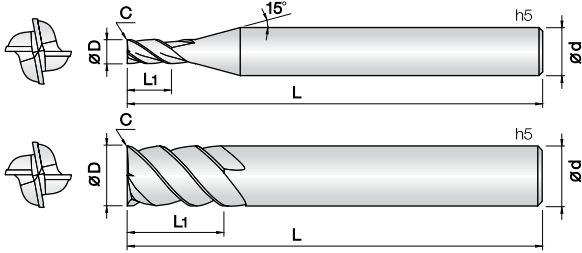
C Cutting

D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

FOR SUS

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
4SUE 010 015 S04	1	1.5	50	4		4SUE 080 240 S08	8	24	70	8	
4SUE 010 025 S04	1	2.5	50	4		4SUE 080 300 S08	8	30	80	8	
4SUE 010 035 S04	1	3.5	50	4		New 4SUE 080 400 S08	8	40	90	8	
New 4SUE 010 050 S04	1	5	50	4		New 4SUE 080 500 S08	8	50	100	8	
4SUE 015 025 S04	1.5	2.5	50	4		4SUE 090 140 S10	9	14	80	10	
4SUE 015 040 S04	1.5	4	50	4		4SUE 090 220 S10	9	22	80	10	
4SUE 015 055 S04	1.5	5.5	50	4		4SUE 090 270 S10	9	27	80	10	
New 4SUE 015 070 S04	1.5	7	50	4		4SUE 100 150 S10	10	15	80	10	
4SUE 020 030 S04	2	3	50	4		4SUE 100 250 S10	10	25	80	10	
4SUE 020 060 S04	2	6	50	4		4SUE 100 300 S10	10	30	80	10	
4SUE 020 080 S04	2	8	50	4		4SUE 100 400 S10	10	40	90	10	
New 4SUE 020 100 S04	2	10	50	4		4SUE 100 500 S10	10	50	100	10	
New 4SUE 020 120 S04	2	12	50	4		New 4SUE 100 600 S10	10	60	110	10	
4SUE 025 035 S04	2.5	3.5	50	4		4SUE 110 170 S12	11	17	90	12	
4SUE 025 080 S04	2.5	8	50	4		4SUE 110 220 S12	11	22	90	12	
New 4SUE 025 100 S04	2.5	10	50	4		4SUE 110 330 S12	11	33	90	12	
New 4SUE 025 120 S04	2.5	12	50	4		4SUE 120 180 S12	12	18	90	12	
4SUE 030 045 S06	3	4.5	60	6		4SUE 120 300 S12	12	30	90	12	
4SUE 030 100 S06	3	10	60	6		4SUE 120 360 S12	12	36	90	12	
4SUE 030 120 S06	3	12	60	6		4SUE 120 500 S12	12	50	100	12	
New 4SUE 030 150 S06	3	15	60	6		4SUE 120 600 S12	12	60	110	12	
New 4SUE 030 200 S06	3	20	70	6		New 4SUE 120 700 S12	12	70	120	12	
New 4SUE 035 055 S06	3.5	5.5	60	6		4SUE 160 240 S16	16	24	100	16	
New 4SUE 035 100 S06	3.5	10	60	6		4SUE 160 350 S16	16	35	100	16	
New 4SUE 035 150 S06	3.5	15	60	6		4SUE 160 500 S16	16	50	110	16	
4SUE 040 060 S06	4	6	60	6		New 4SUE 160 700 S16	16	70	130	16	
4SUE 040 120 S06	4	12	60	6		New 4SUE 160 900 S16	16	90	150	16	
4SUE 040 160 S06	4	16	60	6		4SUE 200 300 S20	20	30	100	20	
New 4SUE 040 200 S06	4	20	70	6		4SUE 200 400 S20	20	40	100	20	
New 4SUE 040 250 S06	4	25	70	6		4SUE 200 600 S20	20	60	120	20	
New 4SUE 045 070 S06	4.5	7	60	6		New 4SUE 200 800 S20	20	80	150	20	
New 4SUE 045 130 S06	4.5	13	60	6		New 4SUE 200 1000 S20	20	100	160	20	
New 4SUE 045 180 S06	4.5	18	60	6							
4SUE 050 075 S06	5	7.5	60	6							
4SUE 050 150 S06	5	15	60	6							
4SUE 050 200 S06	5	20	70	6							
New 4SUE 050 250 S06	5	25	70	6							
4SUE 060 090 S06	6	9	60	6							
4SUE 060 150 S06	6	15	60	6							
4SUE 060 180 S06	6	18	65	6							
4SUE 060 250 S06	6	25	70	6							
New 4SUE 060 300 S06	6	30	70	6							
New 4SUE 060 400 S06	6	40	80	6							
4SUE 070 110 S08	7	11	70	8							
4SUE 070 180 S08	7	18	70	8							
4SUE 070 210 S08	7	21	70	8							
4SUE 080 120 S08	8	12	70	8							
4SUE 080 200 S08	8	20	70	8							



- 합금강, SUS계열, Ti/N계 합금, 인코넬 등 난삭재 가공 엔드밀
- JCRO 코팅 처리하여 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 부등분할 밑날방식과 가변 헬릭스 인선설계로 엔드밀의 진동을 최소화하였습니다.
- A타입은 엔드밀의 치핑을 최소화, B타입은 칩배출을 극대화 하였습니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화
- **Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize chattering during cutting application by unequal index of flute and helix angle to the endmill edge.
- Type A minimizes chipping, Type B maximizes chip emmissins.
- Minimize fracturing at high feed by high TRS fine WC grade.



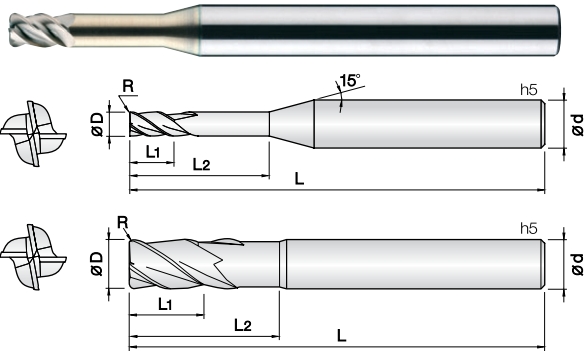
D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16 ~ 20	-0.015 ~ -0.03mm

단위 : mm

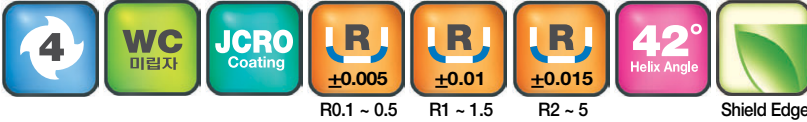
Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	면취타입 Chamfer type Type	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	면취타입 Chamfer type Type	전장 Overall Length L	샙크 Shank Dia d	비고
4SUVA 010 025 S04	1	2.5	-	A	50	4									
4SUVB 010 025 S04	1	2.5	-	B	50	4									
4SUVA 010 060 S04	1	2.5	6	A	50	4									
4SUVA 015 040 S04	1.5	4	-	A	50	4									
4SUVB 015 040 S04	1.5	4	-	B	50	4									
4SUVA 015 100 S04	1.5	4	10	A	50	4									
4SUVA 020 050 S04	2	5	-	A	50	4									
4SUVB 020 050 S04	2	5	-	B	50	4									
4SUVA 020 120 S04	2	5	12	A	50	4									
4SUVA 030 080 S06	3	8	-	A	60	6									
4SUVB 030 080 S06	3	8	-	B	60	6									
4SUVA 030 180 S06	3	8	18	A	60	6									
4SUVA 040 110 S06	4	11	-	A	60	6									
4SUVB 040 110 S06	4	11	-	B	60	6									
4SUVA 040 210 S06	4	11	21	A	60	6									
4SUVA 050 130 S06	5	13	-	A	60	6									
4SUVB 050 130 S06	5	13	-	B	60	6									
4SUVA 050 210 S06	5	13	21	A	60	6									
4SUVA 060 130 S06	6	13	-	A	60	6									
4SUVB 060 130 S06	6	13	-	B	60	6									
4SUVA 060 210 S06	6	13	21	A	60	6									
4SUVA 080 190 S08	8	19	-	A	60	8									
4SUVB 080 190 S08	8	19	-	B	60	8									
4SUVA 080 270 S08	8	19	27	A	60	8									
4SUVA 100 220 S10	10	22	-	A	70	10									
4SUVB 100 220 S10	10	22	-	B	70	10									
4SUVA 100 320 S10	10	22	32	A	70	10									
4SUVA 120 260 S12	12	26	-	A	80	12									
4SUVB 120 260 S12	12	26	-	B	80	12									
4SUVA 120 380 S12	12	26	38	A	80	12									
4SUVA 160 320 S16	16	32	-	A	90	16									
4SUVB 160 320 S16	16	32	-	B	90	16									
4SUVA 160 450 S16	16	32	45	A	90	16									
4SUVA 200 380 S20	20	38	-	A	100	20									
4SUVB 200 380 S20	20	38	-	B	100	20									
4SUVA 200 550 S20	20	38	55	A	110	20									

FOR SUS

## 4날 SUS가공용 리브 코너 레디우스 엔드밀



- 합금강, SUS계열, Ti/Ni계 합금, 인코넬 등 난삭재 가공 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 강력한 채터링방지 설계로 엔드밀의 진동을 최소화하였습니다.
- 4날 적용과 깊은 포켓으로 칩배출이 원활하며, 피삭재 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화
- **Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize chattering by unequal flute spacing design.
- Excellent work surface finish by 4 flute and deep chip pocket.
- Minimize fracturing at high feed by high TRS fine WC grade.



D Size	D Tolerance
ø1 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16 ~ 20	-0.01 ~ -0.02mm

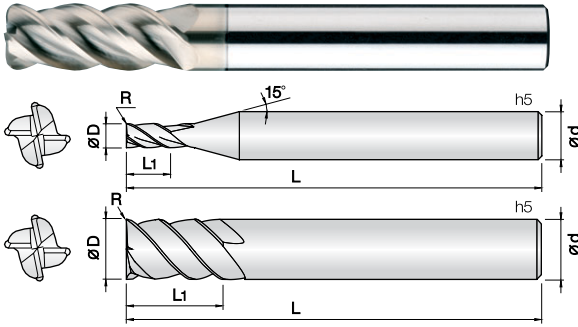
단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고
4SUCR 010 001 050	1 X R0.1	1.5	5	60	4		4SUCR 200 015 1000	20 X R1.5	30	100	150	20	
4SUCR 020 001 100	2 X R0.1	3	10	60	4		4SUCR 200 020 1000	20 X R2	30	100	150	20	
4SUCR 020 002 100	2 X R0.2	3	10	60	4		4SUCR 200 030 1000	20 X R3	30	100	150	20	
4SUCR 030 002 150	3 X R0.2	4.5	15	65	6		4SUCR 200 050 1000	20 X R5	30	100	150	20	
4SUCR 030 005 150	3 X R0.5	4.5	15	65	6								
4SUCR 040 002 200	4 X R0.2	6	20	70	6								
4SUCR 040 005 200	4 X R0.5	6	20	70	6								
4SUCR 040 010 200	4 X R1	6	20	70	6								
4SUCR 050 002 250	5 X R0.2	7.5	25	70	6								
4SUCR 050 005 250	5 X R0.5	7.5	25	70	6								
4SUCR 050 010 250	5 X R1	7.5	25	70	6								
4SUCR 060 003 300	6 X R0.3	9	30	70	6								
4SUCR 060 005 300	6 X R0.5	9	30	70	6								
4SUCR 060 010 300	6 X R1	9	30	70	6								
4SUCR 060 015 300	6 X R1.5	9	30	70	6								
4SUCR 070 003 350	7 X R0.3	10	35	80	8								
4SUCR 070 005 350	7 X R0.5	10	35	80	8								
4SUCR 070 010 350	7 X R1	10	35	80	8								
4SUCR 080 003 400	8 X R0.3	12	40	80	8								
4SUCR 080 005 400	8 X R0.5	12	40	80	8								
4SUCR 080 010 400	8 X R1	12	40	80	8								
4SUCR 080 015 400	8 X R1.5	12	40	80	8								
4SUCR 080 020 400	8 X R2	12	40	80	8								
4SUCR 090 003 450	9 X R0.3	13	45	90	10								
4SUCR 090 005 450	9 X R0.5	13	45	90	10								
4SUCR 090 010 450	9 X R1	13	45	90	10								
4SUCR 100 003 500	10 X R0.3	15	50	100	10								
4SUCR 100 005 500	10 X R0.5	15	50	100	10								
4SUCR 100 010 500	10 X R1	15	50	100	10								
4SUCR 100 015 500	10 X R1.5	15	50	100	10								
4SUCR 100 020 500	10 X R2	15	50	100	10								
4SUCR 110 003 550	11 X R0.3	16	55	100	12								
4SUCR 110 005 550	11 X R0.5	16	55	100	12								
4SUCR 110 010 550	11 X R1	16	55	100	12								
4SUCR 120 003 600	12 X R0.3	18	60	110	12								
4SUCR 120 005 600	12 X R0.5	18	60	110	12								
4SUCR 120 010 600	12 X R1	18	60	110	12								
4SUCR 120 015 600	12 X R1.5	18	60	110	12								
4SUCR 120 020 600	12 X R2	18	60	110	12								
4SUCR 120 025 600	12 X R2.5	18	60	110	12								
4SUCR 120 030 600	12 X R3	18	60	110	12								
4SUCR 160 005 800	16 X R0.5	24	80	130	16								
4SUCR 160 010 800	16 X R1	24	80	130	16								
4SUCR 160 015 800	16 X R1.5	24	80	130	16								
4SUCR 160 020 800	16 X R2	24	80	130	16								
4SUCR 160 030 800	16 X R3	24	80	130	16								
4SUCR 200 005 1000	20 X R0.5	30	100	150	20								
4SUCR 200 010 1000	20 X R1	30	100	150	20								

FOR SUS



## 4날 SUS가공용 코너 레디우스 엔드밀



- 합금강, SUS계열, Ti/Ni계 합금, 인코넬 등 난삭재 가공 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 강력한 채터링방지 설계로 엔드밀의 진동을 최소화하였습니다.
- 코너R부 적용으로 밑날 치핑을 방지 하였습니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화
- **Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Strong design for protection against chattering..
- Preventing bottom edge chipping by corner R.
- Minimize fracturing at high feed by high TRS fine WC grade.



D Size	D Tolerance
ø1 ~ 5.5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm
ø16 ~ 20	-0.01 ~ -0.02mm

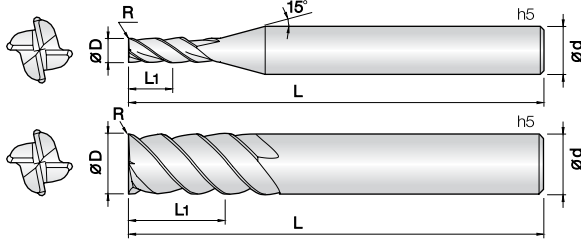
단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
4SUC 010 001 S04	1 X R0.1	2.5	50	4		4SUC 080 003 S08	8 X R0.3	20	80	8	
4SUC 010 002 S04	1 X R0.2	2.5	50	4		4SUC 080 005 070	8 X R0.5	16	70	8	
4SUC 012 001 S04	1.2 X R0.1	3	50	4		4SUC 080 005 S08	8 X R0.5	20	80	8	
4SUC 012 002 S04	1.2 X R0.2	3	50	4		4SUC 080 010 070	8 X R1	16	70	8	
4SUC 015 001 S04	1.5 X R0.1	4	50	4		4SUC 080 010 S08	8 X R1	20	80	8	
4SUC 015 002 S04	1.5 X R0.2	4	50	4		New 4SUC 080 015 S08	8 X R1.5	20	80	8	
4SUC 015 003 S04	1.5 X R0.3	4	50	4		New 4SUC 080 020 S08	8 X R2	20	80	8	
4SUC 020 001 S04	2 X R0.1	6	50	4		4SUC 085 003 S10	8.5 X R0.3	22	80	10	
4SUC 020 002 S04	2 X R0.2	6	50	4		4SUC 090 003 S10	9 X R0.3	25	80	10	
4SUC 020 003 S04	2 X R0.3	6	50	4		4SUC 100 003 070	10 X R0.3	20	70	10	
4SUC 020 005 S04	2 X R0.5	6	50	4		4SUC 100 003 S10	10 X R0.3	25	80	10	
4SUC 025 001 S04	2.5 X R0.1	7	50	4		4SUC 100 005 070	10 X R0.5	20	70	10	
4SUC 025 002 S04	2.5 X R0.2	7	50	4		4SUC 100 005 S10	10 X R0.5	25	80	10	
4SUC 025 003 S04	2.5 X R0.3	7	50	4		4SUC 100 010 070	10 X R1	20	70	10	
4SUC 030 001 S06	3 X R0.1	10	60	6		4SUC 100 010 S10	10 X R1	25	80	10	
4SUC 030 002 055	3 X R0.2	6	55	6		4SUC 100 015 070	10 X R1.5	20	70	10	
4SUC 030 002 S06	3 X R0.2	10	60	6		4SUC 100 015 S10	10 X R1.5	25	80	10	
4SUC 030 003 S06	3 X R0.3	10	60	6		4SUC 100 020 070	10 X R2	20	70	10	
4SUC 030 005 055	3 X R0.5	6	55	6		4SUC 100 020 S10	10 X R2	25	80	10	
4SUC 030 005 S06	3 X R0.5	10	60	6		4SUC 100 025 070	10 X R2.5	20	70	10	
4SUC 035 002 S06	3.5 X R0.2	10	60	6		4SUC 100 025 S10	10 X R2.5	25	80	10	
4SUC 040 001 S06	4 X R0.1	12	60	6		4SUC 100 030 070	10 X R3	20	70	10	
4SUC 040 002 055	4 X R0.2	8	55	6		4SUC 100 030 S10	10 X R3	25	80	10	
4SUC 040 002 S06	4 X R0.2	12	60	6		New 4SUC 110 005 S12	11 X R0.5	27	90	12	
4SUC 040 003 S06	4 X R0.3	12	60	6		New 4SUC 110 010 S12	11 X R1	27	90	12	
4SUC 040 005 055	4 X R0.5	8	55	6		4SUC 120 003 080	12 X R0.3	24	80	12	
4SUC 040 005 S06	4 X R0.5	12	60	6		4SUC 120 003 S12	12 X R0.3	30	100	12	
4SUC 040 010 S06	4 X R1	12	60	6		4SUC 120 005 080	12 X R0.5	24	80	12	
4SUC 045 002 S06	4.5 X R0.2	14	60	6		4SUC 120 005 S12	12 X R0.5	30	100	12	
4SUC 050 002 055	5 X R0.2	10	55	6		4SUC 120 010 080	12 X R1	24	80	12	
4SUC 050 002 S06	5 X R0.2	15	60	6		4SUC 120 010 S12	12 X R1	30	100	12	
4SUC 050 003 S06	5 X R0.3	15	60	6		4SUC 120 015 080	12 X R1.5	24	80	12	
4SUC 050 005 055	5 X R0.5	10	55	6		4SUC 120 015 S12	12 X R1.5	30	100	12	
4SUC 050 005 S06	5 X R0.5	15	60	6		4SUC 120 020 080	12 X R2	24	80	12	
4SUC 050 010 S06	5 X R1	15	60	6		4SUC 120 020 S12	12 X R2	30	100	12	
4SUC 055 002 S06	5.5 X R0.2	15	60	6		4SUC 120 025 S12	12 X R2.5	30	100	12	
4SUC 060 003 055	6 X R0.3	12	55	6		4SUC 120 030 080	12 X R3	24	80	12	
4SUC 060 003 S06	6 X R0.3	15	60	6		4SUC 120 030 S12	12 X R3	30	100	12	
4SUC 060 005 055	6 X R0.5	12	55	6		New 4SUC 140 005 S14	14 X R0.5	35	100	14	
4SUC 060 005 S06	6 X R0.5	15	60	6		New 4SUC 140 010 S14	14 X R1	35	100	14	
4SUC 060 010 055	6 X R1	12	55	6		4SUC 160 005 100	16 X R0.5	32	100	16	
4SUC 060 010 S06	6 X R1	15	60	6		4SUC 160 005 S16	16 X R0.5	42	110	16	
New 4SUC 060 015 S06	6 X R1.5	15	60	6		4SUC 160 010 100	16 X R1	32	100	16	
4SUC 065 003 S08	6.5 X R0.3	18	60	8		4SUC 160 010 S16	16 X R1	42	110	16	
4SUC 070 003 S08	7 X R0.3	20	80	8		New 4SUC180 005 S18	18 X R0.5	45	110	18	
New 4SUC 070 005 S08	7 X R0.5	20	80	8		New 4SUC180 010 S18	18 X R1	45	110	18	
New 4SUC 070 010 S08	7 X R1	20	80	8		4SUC 200 005 S20	20 X R0.5	48	110	20	
4SUC 080 003 070	8 X R0.3	16	70	8		4SUC 200 010 S20	20 X R1	48	110	20	

FOR SUS



## 4날 SUS가공용 긴길이 코너 레디우스 엔드밀



- 합금강, SUS계열, Ti/Ni계 합금, 인코넬 등 난삭재 가공 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 강력한 채터링방지 설계로 엔드밀의 진동을 최소화하였습니다.
- 코너R부 적용으로 밑날 치핑을 방지 하였습니다.
- 항절력이 높은 미립자 초경합금을 채택하여, 고이송 작업시 엔드밀의 파손을 최소화
- **Endmills for alloy steel, SUS, Ti/Ni base alloy, Inconel and hard to cut materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Strong design for protection against chattering..
- Preventing bottom edge chipping by corner R.
- Minimize fracturing at high feed by high TRS fine WC grade.



R0.3 ~ 0.5 R1 ~ 1.5 R2 ~ 3

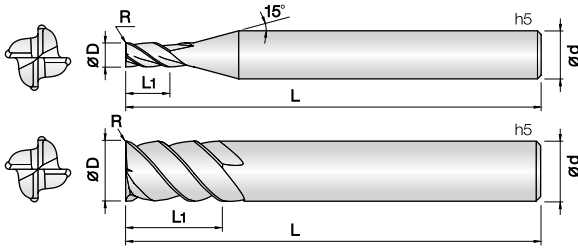
D Size	D Tolerance
ø6 ~ 12	-0.005 ~ -0.015mm
ø16 ~ 20	-0.01 ~ -0.02mm

단위 : mm

FOR SUS

Order Number	날경 Diameter D × R	날장 Length of cut L1	전장 Overall Length L	샥크 Shank Dia d	비고	Order Number	날경 Diameter D × R	날장 Length of cut L1	전장 Overall Length L	샥크 Shank Dia d	비고
4LSUC 060 003 070	6 X R0.3	30	70	6							
4LSUC 060 005 070	6 X R0.5	30	70	6							
4LSUC 060 010 070	6 X R1	30	70	6							
4LSUC 060 015 070	6 X R1.5	30	70	6							
4LSUC 080 003 080	8 X R0.3	40	80	8							
4LSUC 080 005 080	8 X R0.5	40	80	8							
4LSUC 080 010 080	8 X R1	40	80	8							
4LSUC 080 015 080	8 X R1.5	40	80	8							
4LSUC 080 020 080	8 X R2	40	80	8							
4LSUC 100 003 100	10 X R0.3	50	100	10							
4LSUC 100 005 100	10 X R0.5	50	100	10							
4LSUC 100 010 100	10 X R1	50	100	10							
4LSUC 100 015 100	10 X R1.5	50	100	10							
4LSUC 100 020 100	10 X R2	50	100	10							
4LSUC 120 003 120	12 X R0.3	60	120	12							
4LSUC 120 005 120	12 X R0.5	60	120	12							
4LSUC 120 010 120	12 X R1	60	120	12							
4LSUC 120 015 120	12 X R1.5	60	120	12							
4LSUC 120 020 120	12 X R2	60	120	12							
4LSUC 120 025 120	12 X R2.5	60	120	12							
4LSUC 120 030 120	12 X R3	60	120	12							
4LSUC 160 005 130	16 X R0.5	80	130	16							
4LSUC 160 010 130	16 X R1	80	130	16							
4LSUC 160 015 130	16 X R1.5	80	130	16							
4LSUC 160 020 130	16 X R2	80	130	16							
4LSUC 160 030 130	16 X R3	80	130	16							
4LSUC 200 005 160	20 X R0.5	100	160	20							
4LSUC 200 010 160	20 X R1	100	160	20							
4LSUC 200 015 160	20 X R1.5	100	160	20							
4LSUC 200 020 160	20 X R2	100	160	20							
4LSUC 200 030 160	20 X R3	100	160	20							

## 3&4&5날 45° 헬릭스 SUS리핑 코어엔드밀



- 합금강, SUS계열, 인코넬, 일반구조강 등 다양한 난삭재 황삭가공
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 45° 헬릭스 적용으로 절삭 저항이 감소 되어 장시간 가공에 적합합니다.
- 파인피치 형상 채택으로 고속, 황삭가공 작업에 적합합니다.
- Alloy steel, SUS, Inconel, Mild Steels and various hard-to-cut material for roughing
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- 45 helix Design for minimizing cutting resistance and long time process.
- High speed and roughing work applicable by fine pitch flute.

3

4

5

WC  
미립자

JCRO  
Coating

DI  
-0.02 -0.04  
Ø3~Ø9

DI  
-0.02 -0.05  
Ø10~Ø20

45°  
Helix Angle

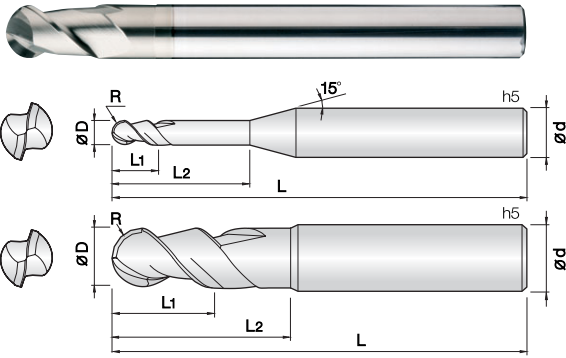
D Size	D Tolerance
Ø3 ~ 9	-0.02 ~ -0.04mm
Ø10 ~ 20	-0.02 ~ -0.05mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고												
3SUR 030 002 S06	3 X R0.2	8	-	50	6													
3SUR 040 002 S06	4 X R0.2	10	-	50	6													
4SUR 050 002 S06	5 X R0.2	13	-	50	6													
4SUR 060 002 200	6 X R0.2	10	20	60	6													
4SUR 060 002 S06	6 X R0.2	13	-	60	6													
4SUR 060 005 S06	6 X R0.5	13	-	60	6													
4SUR 070 002 S08	7X R0.2	18	-	70	8													
4SUR 080 002 250	8X R0.2	12	25	70	8													
4SUR 080 002 S08	8X R0.2	19	-	70	8													
4SUR 080 010 S08	8 X R1	19	-	70	8													
4SUR 090 003 S10	9 X R0.3	20	-	70	10													
4SUR 100 003 300	10 X R0.3	15	30	75	10													
4SUR 100 003 S10	10 X R0.3	22	-	75	10													
4SUR 100 010 S10	10 X R1	22	-	75	10													
4SUR 110 003 S12	11 X R0.3	25	-	80	12													
4SUR 120 003 350	12 X R0.3	20	35	80	12													
4SUR 120 003 S12	12 X R0.3	26	-	80	12													
4SUR 120 010 S12	12 X R1	26	-	80	12													
5SUR 140 005 S16	14 X R0.5	28	-	90	16													
5SUR 160 005 100	16 X R0.5	32	-	100	16													
5SUR 160 005 110	16 X R0.5	42	-	110	16													
5SUR 160 015 100	16 X R1.5	32	-	100	16													
5SUR 160 015 110	16 X R1.5	42	-	110	16													
5SUR 200 005 100	20 X R0.5	38	-	100	20													
5SUR 200 005 110	20 X R0.5	45	-	110	20													
5SUR 200 020 100	20 X R2	38	-	100	20													
5SUR 200 020 110	20 X R2	45	-	110	20													

FOR SUS

## 2날 45° 헬릭스 동가공 전용 리브볼 엔드밀



- 동 및 동합금, 알루미늄 합금, 비철합금 가공용 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 피삭재의 면조도가 향상됩니다.
- 45° 헬릭스 형상과 깊은 포켓으로 설계하여 칩배출이 우수하며, 고속, 고이송 가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화함.
- **Endmills for copper, copper alloy, nonferrous and non-metallic materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- High speed, feed applicable by 45° degree helix and deep chip pocket design
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

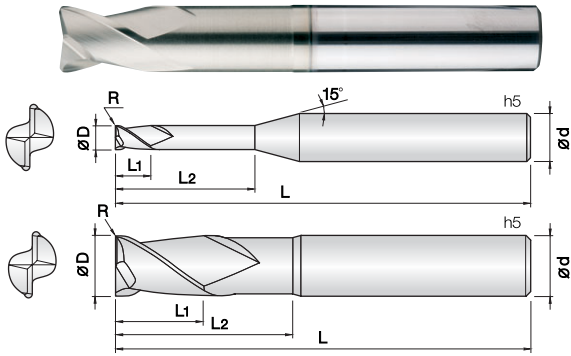


D Size	D Tolerance
Ø0.5 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2COB 005 010 S04	0.25R X 0.5	0.7	1	45	4		2COB 025 120 S06	1.25R X 2.5	4	12	60	6	
2COB 005 020 S04	0.25R X 0.5	0.7	2	45	4		2COB 025 160 S06	1.25R X 2.5	4	16	60	6	
2COB 005 030 S04	0.25R X 0.5	0.7	3	45	4		2COB 025 200 S06	1.25R X 2.5	4	20	60	6	
2COB 005 040 S04	0.25R X 0.5	0.7	4	45	4		2COB 030 080 S06	1.5R X 3	4.5	8	60	6	
2COB 005 050 S04	0.25R X 0.5	0.7	5	45	4		2COB 030 120 S06	1.5R X 3	4.5	12	60	6	
2COB 005 060 S04	0.25R X 0.5	0.7	6	45	4		2COB 030 160 S06	1.5R X 3	4.5	16	60	6	
2COB 006 020 S04	0.3R X 0.6	0.9	2	45	4		2COB 030 200 S06	1.5R X 3	4.5	20	60	6	
2COB 006 030 S04	0.3R X 0.6	0.9	3	45	4		2COB 030 250 S06	1.5R X 3	4.5	25	70	6	
2COB 006 040 S04	0.3R X 0.6	0.9	4	45	4		2COB 030 300 S06	1.5R X 3	4.5	30	70	6	
2COB 006 050 S04	0.3R X 0.6	0.9	5	45	4		2COB 030 400 S06	1.5R X 3	4.5	40	80	6	
2COB 006 060 S04	0.3R X 0.6	0.9	6	45	4		2COB 040 100 S06	2R X 4	6	10	60	6	
2COB 006 080 S04	0.3R X 0.6	0.9	8	45	4		2COB 040 160 S06	2R X 4	6	16	60	6	
2COB 006 100 S04	0.3R X 0.6	0.9	10	45	4		2COB 040 200 S06	2R X 4	6	20	60	6	
2COB 008 020 S04	0.4R X 0.8	1.2	2	45	4		2COB 040 250 S06	2R X 4	6	25	70	6	
2COB 008 030 S04	0.4R X 0.8	1.2	3	45	4		2COB 040 300 S06	2R X 4	6	30	70	6	
2COB 008 040 S04	0.4R X 0.8	1.2	4	45	4		2COB 040 400 S06	2R X 4	6	40	80	6	
2COB 008 060 S04	0.4R X 0.8	1.2	6	45	4		2COB 050 160 S06	2.5R X 5	8	16	80	6	
2COB 008 080 S04	0.4R X 0.8	1.2	8	45	4		2COB 050 200 S06	2.5R X 5	8	20	80	6	
2COB 008 100 S04	0.4R X 0.8	1.2	10	45	4		2COB 050 250 S06	2.5R X 5	8	25	80	6	
2COB 008 120 S04	0.4R X 0.8	1.2	12	45	4		2COB 060 150 S06	3R X 6	9	15	90	6	
2COB 010 030 S04	0.5R X 1	1.5	3	50	4		2COB 060 300 S06	3R X 6	9	30	90	6	
2COB 010 050 S04	0.5R X 1	1.5	5	50	4		2COB 060 400 S06	3R X 6	9	40	90	6	
2COB 010 080 S04	0.5R X 1	1.5	8	50	4		2COB 080 200 S08	4R X 8	12	20	100	8	
2COB 010 100 S04	0.5R X 1	1.5	10	50	4		2COB 100 250 S10	5R X 10	15	25	100	10	
2COB 010 120 S04	0.5R X 1	1.5	12	50	4		2COB 120 300 S12	6R X 12	18	30	110	12	
2COB 010 160 S04	0.5R X 1	1.5	16	50	4		2COB 160 600 S16	8R X 16	30	60	160	16	
2COB 010 200 S04	0.5R X 1	1.5	20	50	4								
2COB 012 030 S04	0.6R X 1.2	1.8	3	50	4								
2COB 012 040 S04	0.6R X 1.2	1.8	4	50	4								
2COB 012 060 S04	0.6R X 1.2	1.8	6	50	4								
2COB 012 080 S04	0.6R X 1.2	1.8	8	50	4								
2COB 012 100 S04	0.6R X 1.2	1.8	10	50	4								
2COB 012 120 S04	0.6R X 1.2	1.8	12	50	4								
2COB 015 050 S04	0.75R X 1.5	2	5	50	4								
2COB 015 080 S04	0.75R X 1.5	2	8	50	4								
2COB 015 100 S04	0.75R X 1.5	2	10	50	4								
2COB 015 120 S04	0.75R X 1.5	2	12	50	4								
2COB 015 160 S04	0.75R X 1.5	2	16	50	4								
2COB 015 200 S04	0.75R X 1.5	2	20	50	4								
2COB 020 050 S06	1R X 2	3	5	50	6								
2COB 020 080 S06	1R X 2	3	8	50	6								
2COB 020 100 S06	1R X 2	3	10	50	6								
2COB 020 120 S06	1R X 2	3	12	60	6								
2COB 020 160 S06	1R X 2	3	16	60	6								
2COB 020 200 S06	1R X 2	3	20	60	6								
2COB 020 250 S06	1R X 2	3	25	65	6								
2COB 025 060 S06	1.25R X 2.5	4	6	50	6								
2COB 025 100 S06	1.25R X 2.5	4	10	50	6								

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R0.1 ~ 0.5 R1 ~ 1.5

- 동 및 동합금, 알루미늄 합금, 비철합금 가공용 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며 피삭재의 면조도가 향상됩니다.
- 깊은 포켓으로 설계하여 칩배출이 원활합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화
- **Endmills for copper, copper alloy, nonferrous and non-metallic materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Smooth chip outflow by deep chip pocket.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

D Size	D Tolerance
Ø1 ~ 4	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2COR 010 001 040	1 X R0.1	1.5	4	50	4		2COR 020 001 160	2 X R0.1	3	16	50	64	
2COR 010 001 060	1 X R0.1	1.5	6	50	4		2COR 020 001 200	2 X R0.1	3	20	50	4	
2COR 010 001 080	1 X R0.1	1.5	8	50	4		2COR 020 001 250	2 X R0.1	3	25	60	4	
2COR 010 001 100	1 X R0.1	1.5	10	50	4		2COR 020 002 060	2 X R0.2	3	6	50	4	
2COR 010 001 120	1 X R0.1	1.5	12	50	4		2COR 020 002 100	2 X R0.2	3	10	50	4	
2COR 010 001 160	1 X R0.1	1.5	16	50	4		2COR 020 002 120	2 X R0.2	3	12	50	4	
2COR 010 001 200	1 X R0.1	1.5	20	50	4		2COR 020 002 160	2 X R0.2	3	16	50	4	
2COR 010 002 040	1 X R0.2	1.5	4	50	4		2COR 020 002 200	2 X R0.2	3	20	50	4	
2COR 010 002 060	1 X R0.2	1.5	6	50	4		2COR 020 002 250	2 X R0.2	3	25	60	4	
2COR 010 002 080	1 X R0.2	1.5	8	50	4		2COR 020 003 060	2 X R0.3	3	6	50	4	
2COR 010 002 100	1 X R0.2	1.5	10	50	4		2COR 020 003 100	2 X R0.3	3	10	50	4	
2COR 010 002 120	1 X R0.2	1.5	12	50	4		2COR 020 003 120	2 X R0.3	3	12	50	4	
2COR 010 002 160	1 X R0.2	1.5	16	50	4		2COR 020 003 160	2 X R0.3	3	16	50	4	
2COR 010 002 200	1 X R0.2	1.5	20	50	4		2COR 020 003 200	2 X R0.3	3	20	50	4	
2COR 010 003 040	1 X R0.3	1.5	4	50	4		2COR 020 003 250	2 X R0.3	3	25	60	4	
2COR 010 003 060	1 X R0.3	1.5	6	50	4		2COR 020 005 060	2 X R0.5	3	6	50	4	
2COR 010 003 080	1 X R0.3	1.5	8	50	4		2COR 020 005 100	2 X R0.5	3	10	50	4	
2COR 010 003 100	1 X R0.3	1.5	10	50	4		2COR 020 005 120	2 X R0.5	3	12	50	4	
2COR 010 003 120	1 X R0.3	1.5	12	50	4		2COR 020 005 140	2 X R0.5	3	14	50	4	
2COR 010 003 160	1 X R0.3	1.5	16	50	4		2COR 020 005 160	2 X R0.5	3	16	50	4	
2COR 010 003 200	1 X R0.3	1.5	20	50	4		2COR 020 005 200	2 X R0.5	3	20	50	4	
2COR 015 001 060	1.5 X R0.1	2	6	50	4		2COR 020 005 250	2 X R0.5	3	25	60	4	
2COR 015 001 100	1.5 X R0.1	2	10	50	4		2COR 025 001 060	2.5 X R0.1	3.5	6	50	4	
2COR 015 001 120	1.5 X R0.1	2	12	50	4		2COR 025 001 100	2.5 X R0.1	3.5	10	50	4	
2COR 015 001 160	1.5 X R0.1	2	16	50	4		2COR 025 001 120	2.5 X R0.1	3.5	12	50	4	
2COR 015 001 200	1.5 X R0.1	2	20	50	4		2COR 025 001 160	2.5 X R0.1	3.5	16	50	4	
2COR 015 001 250	1.5 X R0.1	2	25	60	4		2COR 025 001 200	2.5 X R0.1	3.5	20	50	4	
2COR 015 002 060	1.5 X R0.2	2	6	50	4		2COR 025 001 250	2.5 X R0.1	3.5	25	60	4	
2COR 015 002 100	1.5 X R0.2	2	10	50	4		2COR 025 002 060	2.5 X R0.2	3.5	6	50	4	
2COR 015 002 120	1.5 X R0.2	2	12	50	4		2COR 025 002 100	2.5 X R0.2	3.5	10	50	4	
2COR 015 002 160	1.5 X R0.2	2	16	50	4		2COR 025 002 120	2.5 X R0.2	3.5	12	50	4	
2COR 015 002 200	1.5 X R0.2	2	20	50	4		2COR 025 002 160	2.5 X R0.2	3.5	16	50	4	
2COR 015 002 250	1.5 X R0.2	2	25	60	4		2COR 025 002 200	2.5 X R0.2	3.5	20	50	4	
2COR 015 003 060	1.5 X R0.3	2	6	50	4		2COR 025 002 250	2.5 X R0.2	3.5	25	60	4	
2COR 015 003 100	1.5 X R0.3	2	10	50	4		2COR 025 003 060	2.5 X R0.3	3.5	6	50	4	
2COR 015 003 120	1.5 X R0.3	2	12	50	4		2COR 025 003 100	2.5 X R0.3	3.5	10	50	4	
2COR 015 003 160	1.5 X R0.3	2	16	50	4		2COR 025 003 120	2.5 X R0.3	3.5	12	50	4	
2COR 015 003 200	1.5 X R0.3	2	20	50	4		2COR 025 003 160	2.5 X R0.3	3.5	16	50	4	
2COR 015 003 250	1.5 X R0.3	2	25	60	4		2COR 025 003 200	2.5 X R0.3	3.5	20	50	4	
2COR 015 005 060	1.5 X R0.5	2	6	50	4		2COR 025 003 250	2.5 X R0.3	3.5	25	60	4	
2COR 015 005 100	1.5 X R0.5	2	10	50	4		2COR 025 005 060	2.5 X R0.5	3.5	6	50	4	
2COR 015 005 120	1.5 X R0.5	2	12	50	4		2COR 025 005 100	2.5 X R0.5	3.5	10	50	4	
2COR 015 005 160	1.5 X R0.5	2	16	50	4		2COR 025 005 120	2.5 X R0.5	3.5	12	50	4	
2COR 015 005 200	1.5 X R0.5	2	20	50	4		2COR 025 005 160	2.5 X R0.5	3.5	16	50	4	
2COR 015 005 250	1.5 X R0.5	2	25	60	4		2COR 025 005 200	2.5 X R0.5	3.5	20	50	4	
2COR 020 001 060	2 X R0.1	3	6	50	4		2COR 025 005 250	2.5 X R0.5	3.5	25	60	4	
2COR 020 001 100	2 X R0.1	3	10	50	4		2COR 030 001 100	3 X R0.1	4	10	55	6	
2COR 020 001 120	2 X R0.1	3	12	50	4		2COR 030 001 120	3 X R0.1	4	12	55	6	

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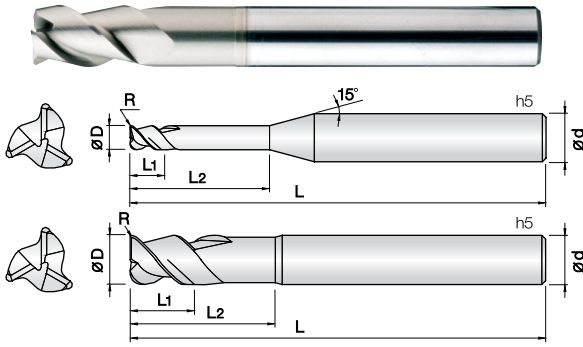
단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2COR 030 001 160	3 X R0.1	4	16	55	6		2COR 040 003 120	4 X R0.3	5	12	55	6	
2COR 030 001 200	3 X R0.1	4	20	60	6		2COR 040 003 160	4 X R0.3	5	16	55	6	
2COR 030 001 250	3 X R0.1	4	25	65	6		2COR 040 003 200	4 X R0.3	5	20	60	6	
2COR 030 001 300	3 X R0.1	4	30	70	6		2COR 040 003 300	4 X R0.3	5	30	70	6	
2COR 030 001 350	3 X R0.1	4	35	75	6		2COR 040 003 400	4 X R0.3	5	40	80	6	
2COR 030 001 400	3 X R0.1	4	40	80	6		2COR 040 005 120	4 X R0.5	5	12	55	6	
2COR 030 002 100	3 X R0.2	4	10	55	6		2COR 040 005 160	4 X R0.5	5	16	55	6	
2COR 030 002 120	3 X R0.2	4	12	55	6		2COR 040 005 200	4 X R0.5	5	20	60	6	
2COR 030 002 160	3 X R0.2	4	16	55	6		2COR 040 005 300	4 X R0.5	5	30	70	6	
2COR 030 002 200	3 X R0.2	4	20	60	6		2COR 040 005 400	4 X R0.5	5	40	80	6	
2COR 030 002 250	3 X R0.2	4	25	65	6		2COR 040 010 120	4 X R1	5	12	55	6	
2COR 030 002 300	3 X R0.2	4	30	70	6		2COR 040 010 160	4 X R1	5	16	55	6	
2COR 030 002 350	3 X R0.2	4	35	75	6		2COR 040 010 200	4 X R1	5	20	60	6	
2COR 030 002 400	3 X R0.2	4	40	80	6		2COR 040 010 300	4 X R1	5	30	70	6	
2COR 030 003 100	3 X R0.3	4	10	55	6		2COR 040 010 400	4 X R1	5	40	80	6	
2COR 030 003 120	3 X R0.3	4	12	55	6		2COR 060 001 200	6 X R0.1	7	20	60	6	
2COR 030 003 160	3 X R0.3	4	16	55	6		2COR 060 002 200	6 X R0.2	7	20	60	6	
2COR 030 003 200	3 X R0.3	4	20	60	6		2COR 060 003 200	6 X R0.3	7	20	60	6	
2COR 030 003 250	3 X R0.3	4	25	65	6		2COR 060 005 200	6 X R0.5	7	20	60	6	
2COR 030 003 300	3 X R0.3	4	30	70	6		2COR 060 010 200	6 X R1	7	20	60	6	
2COR 030 003 350	3 X R0.3	4	35	75	6		2COR 060 015 200	6 X R1.5	7	20	60	6	
2COR 030 003 400	3 X R0.3	4	40	80	6		2COR 080 005 250	8 X R0.5	9	25	65	8	
2COR 030 005 100	3 X R0.5	4	10	55	6		2COR 080 010 250	8 X R1	9	25	65	8	
2COR 030 005 120	3 X R0.5	4	12	55	6		2COR 080 015 250	8 X R1.5	9	25	65	8	
2COR 030 005 160	3 X R0.5	4	16	55	6		2COR 100 005 320	10 X R0.5	11	32	70	10	
2COR 030 005 200	3 X R0.5	4	20	60	6		2COR 100 010 320	10 X R1	11	32	70	10	
2COR 030 005 250	3 X R0.5	4	25	65	6		2COR 100 015 320	10 X R1.5	11	32	70	10	
2COR 030 005 300	3 X R0.5	4	30	70	6		2COR 120 005 380	12 X R0.5	12	38	80	12	
2COR 030 005 350	3 X R0.5	4	35	75	6		2COR 120 010 380	12 X R1	12	38	80	12	
2COR 030 005 400	3 X R0.5	4	40	80	6		2COR 120 015 380	12 X R1.5	12	38	80	12	
2COR 030 010 100	3 X R1	4	10	55	6								
2COR 030 010 120	3 X R1	4	12	55	6								
2COR 030 010 160	3 X R1	4	16	55	6								
2COR 030 010 200	3 X R1	4	20	60	6								
2COR 030 010 250	3 X R1	4	25	65	6								
2COR 030 010 300	3 X R1	4	30	70	6								
2COR 030 010 350	3 X R1	4	35	75	6								
2COR 030 010 400	3 X R1	4	40	80	6								
2COR 040 001 120	4 X R0.1	5	12	55	6								
2COR 040 001 160	4 X R0.1	5	16	55	6								
2COR 040 001 200	4 X R0.1	5	20	60	6								
2COR 040 001 300	4 X R0.1	5	30	70	6								
2COR 040 001 400	4 X R0.1	5	40	80	6								
2COR 040 002 120	4 X R0.2	5	12	55	6								
2COR 040 002 160	4 X R0.2	5	16	55	6								
2COR 040 002 200	4 X R0.2	5	20	60	6								
2COR 040 002 300	4 X R0.2	5	30	70	6								
2COR 040 002 400	4 X R0.2	5	40	80	6								

FOR COPPER



## 3날 45° 헬릭스 동가공용 리브 코너 레디우스 엔드밀



- 동 및 동합금, 알루미늄 합금, 비철합금 가공용 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 피삭재의 면조도가 향상됩니다.
- 3날 45° 헬릭스 형상과 깊은 포켓으로 설계하여 칩배출이 원활하며, 고속, 고이송 작업에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화
- **Endmills for copper, copper alloy, nonferrous and non-metallic materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- High speed, feed applicable by 3 flute 45° degree helix and deep chip pocket design.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

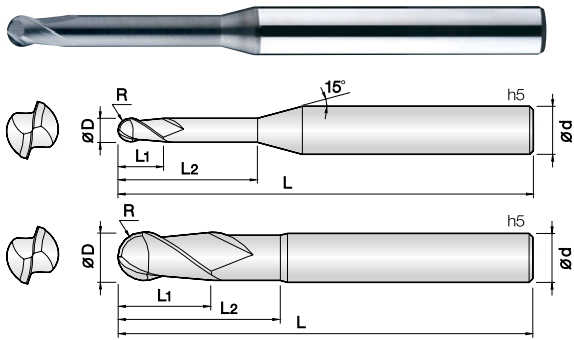


D Size	D Tolerance
Ø1 ~ 4	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
3COR 010 001 030	1 X R0.1	1.5	3	45	4		3COR 060 005 300	6 X R0.5	9	30	70	6	
3COR 010 001 060	1 X R0.1	1.5	6	45	4		3COR 060 010 200	6 X R1	9	20	55	6	
3COR 010 001 100	1 X R0.1	1.5	10	45	4		3COR 060 010 300	6 X R1	9	30	70	6	
3COR 010 002 030	1 X R0.2	1.5	3	45	4		3COR 080 003 S08	8 X R0.3	12	25	65	8	
3COR 010 002 060	1 X R0.2	1.5	6	45	4		3COR 080 005 S08	8 X R0.5	12	25	65	8	
3COR 010 002 100	1 X R0.2	1.5	10	45	4		3COR 080 010 S08	8 X R1	12	25	65	8	
3COR 015 001 050	1.5 X R0.1	2	5	45	4		3COR 100 005 S10	10 X R0.5	15	30	70	10	
3COR 015 001 080	1.5 X R0.1	2	8	45	4		3COR 100 010 S10	10 X R1	15	30	70	10	
3COR 015 001 120	1.5 X R0.1	2	12	45	4		3COR 120 005 S12	12 X R0.5	20	35	80	12	
3COR 015 002 050	1.5 X R0.2	2	5	45	4		3COR 120 010 S12	12 X R1	20	35	80	12	
3COR 015 002 080	1.5 X R0.2	2	8	45	4								
3COR 015 002 120	1.5 X R0.2	2	12	45	4								
3COR 020 001 060	2 X R0.1	3	6	45	4								
3COR 020 001 100	2 X R0.1	3	10	45	4								
3COR 020 001 140	2 X R0.1	3	14	45	4								
3COR 020 002 060	2 X R0.2	3	6	45	4								
3COR 020 002 100	2 X R0.2	3	10	45	4								
3COR 020 002 140	2 X R0.2	3	14	45	4								
3COR 025 001 080	2.5 X R0.1	3.5	8	45	4								
3COR 025 001 120	2.5 X R0.1	3.5	12	45	4								
3COR 025 001 160	2.5 X R0.1	3.5	16	45	4								
3COR 025 002 080	2.5 X R0.2	3.5	8	45	4								
3COR 025 002 120	2.5 X R0.2	3.5	12	45	4								
3COR 025 002 160	2.5 X R0.2	3.5	16	45	4								
3COR 025 005 080	2.5 X R0.5	3.5	8	45	4								
3COR 025 005 120	2.5 X R0.5	3.5	12	45	4								
3COR 025 005 160	2.5 X R0.5	3.5	16	45	4								
3COR 030 002 100	3 X R0.2	4	10	50	4								
3COR 030 002 160	3 X R0.2	4	16	50	4								
3COR 030 002 200	3 X R0.2	4	20	50	4								
3COR 030 003 100	3 X R0.3	4	10	50	4								
3COR 030 003 160	3 X R0.3	4	16	50	4								
3COR 030 003 200	3 X R0.3	4	20	50	4								
3COR 030 005 100	3 X R0.5	4	10	50	4								
3COR 030 005 160	3 X R0.5	4	16	50	4								
3COR 030 005 200	3 X R0.5	4	20	50	4								
3COR 040 002 120	4 X R0.2	6	12	50	4								
3COR 040 002 160	4 X R0.2	6	16	50	4								
3COR 040 002 200	4 X R0.2	6	20	50	4								
3COR 040 003 120	4 X R0.3	6	12	50	4								
3COR 040 003 160	4 X R0.3	6	16	50	4								
3COR 040 003 200	4 X R0.3	6	20	50	4								
3COR 040 005 120	4 X R0.5	6	12	50	4								
3COR 040 005 160	4 X R0.5	6	16	50	4								
3COR 040 005 200	4 X R0.5	6	20	50	4								
3COR 060 003 200	6 X R0.3	9	20	55	6								
3COR 060 003 300	6 X R0.3	9	30	70	6								
3COR 060 005 200	6 X R0.5	9	20	55	6								

## 2날 비철가공용 G-TAC코팅리브볼엔드밀



- 알루미늄 및 알루미늄 합금, 동 및 동합금, 강화플라스틱(CFRP), 유리/탄소섬유 등 비철 비금속 계열의 다양한 피삭재 전용 엔드밀
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 고정밀 공차 적용으로 초정밀가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화
- Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize fracturing by high TRS fine(0.5  $\mu$ m) WC grade.
- High precise edge tolerance.



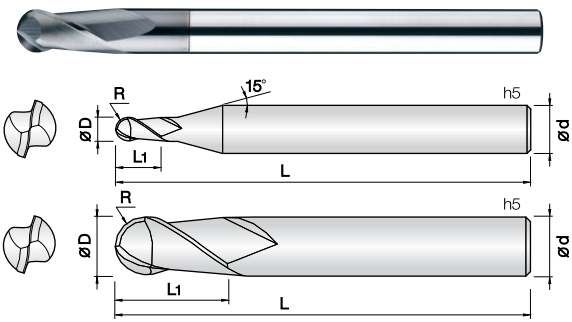
D Size	D Tolerance
Ø0.1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2DRB 001 003 S04	0.05R X 0.1	0.3	-	45	4		2DRB 020 300 S04	1R X 2	3	30	70	4	
2DRB 002 005 S04	0.1R X 0.2	0.5	-	45	4		2DRB 030 120 S06	1.5R X 3	4	12	50	6	
2DRB 002 010 S04	0.1R X 0.2	0.2	1	45	4		2DRB 030 160 S06	1.5R X 3	4	16	60	6	
2DRB 002 015 S04	0.1R X 0.2	0.2	1.5	45	4		2DRB 030 200 S06	1.5R X 3	4	20	60	6	
2DRB 002 020 S04	0.1R X 0.2	0.2	2	45	4		2DRB 030 250 S06	1.5R X 3	4	25	65	6	
2DRB 003 010 S04	0.15R X 0.3	0.3	1	45	4		2DRB 030 300 S06	1.5R X 3	4	30	70	6	
2DRB 003 015 S04	0.15R X 0.3	0.3	1.5	45	4		2DRB 030 400 S06	1.5R X 3	4	40	80	6	
2DRB 003 020 S04	0.15R X 0.3	0.3	2	45	4		2DRB 040 120 S06	2R X 4	5	12	50	6	
2DRB 004 010 S04	0.2R X 0.4	0.4	1	45	4		2DRB 040 160 S06	2R X 4	5	16	60	6	
2DRB 004 020 S04	0.2R X 0.4	0.4	2	45	4		2DRB 040 200 S06	2R X 4	5	20	60	6	
2DRB 004 030 S04	0.2R X 0.4	0.4	3	45	4		2DRB 040 250 S06	2R X 4	5	25	65	6	
2DRB 004 040 S04	0.2R X 0.4	0.4	4	45	4		2DRB 040 300 S06	2R X 4	5	30	70	6	
2DRB 004 050 S04	0.2R X 0.4	0.4	5	45	4		2DRB 050 200 S06	2.5R X 5	6	20	60	6	
2DRB 005 020 S04	0.25R X 0.5	0.5	2	45	4		2DRB 050 400 S06	2.5R X 5	6	40	80	6	
2DRB 005 040 S04	0.25R X 0.5	0.5	4	45	4		2DRB 060 200 S06	3R X 6	8	20	60	6	
2DRB 005 060 S04	0.25R X 0.5	0.5	6	45	4		2DRB 060 300 S06	3R X 6	8	30	90	6	
2DRB 005 080 S04	0.25R X 0.5	0.5	8	45	4		2DRB 080 200 S08	4R X 8	10	20	70	8	
2DRB 005 100 S04	0.25R X 0.5	0.5	10	45	4		2DRB 100 250 S10	5R X 10	12	25	80	10	
2DRB 006 020 S04	0.3R X 0.6	0.6	2	45	4		2DRB 120 250 S12	6R X 12	14	25	80	12	
2DRB 006 040 S04	0.3R X 0.6	0.6	4	45	4								
2DRB 006 060 S04	0.3R X 0.6	0.6	6	45	4								
2DRB 006 080 S04	0.3R X 0.6	0.6	8	45	4								
2DRB 006 100 S04	0.3R X 0.6	0.6	10	45	4								
2DRB 008 020 S04	0.4R X 0.8	0.8	2	45	4								
2DRB 008 040 S04	0.4R X 0.8	0.8	4	45	4								
2DRB 008 060 S04	0.4R X 0.8	0.8	6	45	4								
2DRB 008 080 S04	0.4R X 0.8	0.8	8	45	4								
2DRB 008 100 S04	0.4R X 0.8	0.8	10	45	4								
2DRB 008 120 S04	0.4R X 0.8	0.8	12	45	4								
2DRB 010 040 S04	0.5R X 1	1	4	45	4								
2DRB 010 060 S04	0.5R X 1	1	6	45	4								
2DRB 010 080 S04	0.5R X 1	1	8	45	4								
2DRB 010 100 S04	0.5R X 1	1	10	45	4								
2DRB 010 120 S04	0.5R X 1	1	12	45	4								
2DRB 010 160 S04	0.5R X 1	1	16	50	4								
2DRB 015 060 S04	0.75R X 1.5	1.5	6	45	4								
2DRB 015 080 S04	0.75R X 1.5	1.5	8	45	4								
2DRB 015 100 S04	0.75R X 1.5	1.5	10	45	4								
2DRB 015 120 S04	0.75R X 1.5	1.5	12	45	4								
2DRB 015 160 S04	0.75R X 1.5	1.5	16	50	4								
2DRB 015 200 S04	0.75R X 1.5	1.5	20	50	4								
2DRB 020 060 S04	1R X 2	3	6	45	4								
2DRB 020 080 S04	1R X 2	3	8	45	4								
2DRB 020 100 S04	1R X 2	3	10	45	4								
2DRB 020 120 S04	1R X 2	3	12	45	4								
2DRB 020 160 S04	1R X 2	3	16	50	4								
2DRB 020 200 S04	1R X 2	3	20	50	4								
2DRB 020 250 S04	1R X 2	3	25	60	4								

G-TAC

## 2날 비철 가공용 G-TAC코팅볼 엔드밀



- 알루미늄 및 알루미늄 합금, 동 및 동합금, 강화플라스틱(CFRP), 유리/탄소섬유 등 비철 비금속 계열의 다양한 피삭재 전용 엔드밀
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 고정밀 공차 적용으로 초정밀가공에 적합합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu\text{m}$ )을 채택, 엔드밀의 파손을 최소화
- Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.**
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize fracturing by high TRS fine(0.5  $\mu\text{m}$ ) WC grade.
- High precise edge tolerance.



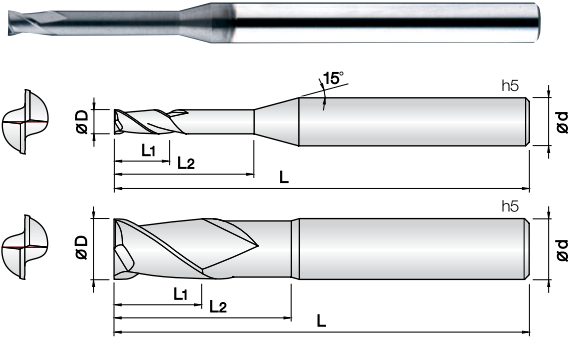
D Size	D Tolerance
ø2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	전장 Overall Length L	샤프크 Shank Dia d	비고								
2DLB 002 004 S04	0.1R X 0.2	0.4	45	4									
2DLB 003 006 S04	0.15R X 0.3	0.6	45	4									
2DLB 004 008 S04	0.2R X 0.4	0.8	45	4									
2DLB 005 010 S04	0.25R X 0.5	1	45	4									
2DLB 006 012 S04	0.3R X 0.6	1.2	45	4									
2DLB 008 020 S04	0.4R X 0.8	2	50	4									
2DLB 010 025 S04	0.5R X 1	2.5	50	4									
2DLB 012 030 S04	0.6R X 1.2	3	50	4									
2DLB 015 040 S04	0.75R X 1.5	4	50	4									
2DLB 020 050 S04	1R X 2	5	50	4									
2DLB 025 060 S04	1.25R X 2.5	6	50	4									
2DLB 030 080 S06	1.5R X 3	8	60	6									
2DLB 040 080 S06	2R X 4	8	70	6									
2DLB 050 100 S06	2.5R X 5	10	80	6									
2DLB 060 120 090	3R X 6	12	90	6									
2DLB 080 140 100	4R X 8	14	100	8									
2DLB 100 180 100	5R X 10	18	100	10									
2DLB 120 220 110	6R X 12	22	110	12									

G-TAC

## 2날 비철가공용 G-TAC코팅 리브 엔드밀



- 알루미늄 및 알루미늄 합금, 동 및 동합금, 강화플라스틱(CFRP), 유리/탄소섬유 등 비철 비금속 계열의 다양한 피삭재 전용 엔드밀
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 고정밀 공차 적용으로 초정밀가공에 적합합니다.
- Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Reinforced edge design for preventing edge chipping.
- High precise edge tolerance.

2

WC  
미립자

GTAC  
Coating

D  
+0 -0.005

D  
+0 -0.01

D  
-0.01 -0.025

30°  
Helix Angle

Sharp Edge

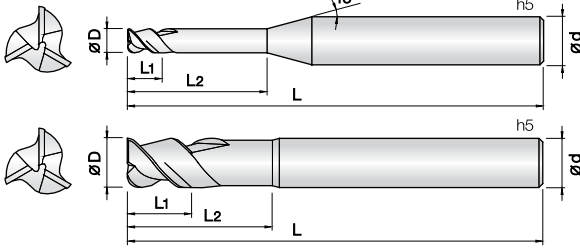
D Size	D Tolerance
ø0.1	+0 ~ -0.005mm
ø0.2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2DRE 001 003 S04	0.1	0.3	-	45	4		2DRE 030 120 S06	3	4.5	12	50	6	
2DRE 001 005 S04	0.1	0.5	-	45	4		2DRE 030 160 S06	3	4.5	16	60	6	
2DRE 002 005 S04	0.2	0.5	-	45	4		2DRE 030 200 S06	3	4.5	20	60	6	
2DRE 002 010 S04	0.2	0.3	1	45	4		2DRE 030 250 S06	3	4.5	25	65	6	
2DRE 002 015 S04	0.2	0.3	1.5	45	4		2DRE 030 300 S06	3	4.5	30	70	6	
2DRE 002 020 S04	0.2	0.3	2	45	4		2DRE 030 400 S06	3	4.5	40	80	6	
2DRE 003 010 S04	0.3	0.5	1	45	4		2DRE 040 120 S06	4	6	12	50	6	
2DRE 003 015 S04	0.3	0.5	1.5	45	4		2DRE 040 160 S06	4	6	16	60	6	
2DRE 003 020 S04	0.3	0.5	2	45	4		2DRE 040 200 S06	4	6	20	60	6	
2DRE 004 010 S04	0.4	0.6	1	45	4		2DRE 040 250 S06	4	6	25	65	6	
2DRE 004 020 S04	0.4	0.6	2	45	4		2DRE 040 300 S06	4	6	30	70	6	
2DRE 004 030 S04	0.4	0.6	3	45	4		2DRE 040 400 S06	4	6	40	80	6	
2DRE 004 040 S04	0.4	0.6	4	45	4		2DRE 050 200 S06	5	6	20	60	6	
2DRE 004 050 S04	0.4	0.6	5	45	4		2DRE 050 400 S06	5	6	40	80	6	
2DRE 005 020 S04	0.5	0.7	2	45	4		2DRE 060 200 S06	6	8	20	60	6	
2DRE 005 040 S04	0.5	0.7	4	45	4		2DRE 060 300 S06	6	8	30	90	6	
2DRE 005 060 S04	0.5	0.7	6	45	4		2DRE 080 200 S08	8	12	20	70	8	
2DRE 005 080 S04	0.5	0.7	8	45	4		2DRE 100 250 S10	10	15	25	80	10	
2DRE 005 100 S04	0.5	0.7	10	45	4		2DRE 120 300 S12	12	18	30	80	12	
2DRE 006 020 S04	0.6	0.9	2	45	4								
2DRE 006 040 S04	0.6	0.9	4	45	4								
2DRE 006 060 S04	0.6	0.9	6	45	4								
2DRE 006 080 S04	0.6	0.9	8	45	4								
2DRE 006 100 S04	0.6	0.9	10	45	4								
2DRE 008 020 S04	0.8	1.2	2	45	4								
2DRE 008 040 S04	0.8	1.2	4	45	4								
2DRE 008 060 S04	0.8	1.2	6	45	4								
2DRE 008 080 S04	0.8	1.2	8	45	4								
2DRE 008 100 S04	0.8	1.2	10	45	4								
2DRE 008 120 S04	0.8	1.2	12	45	4								
2DRE 010 040 S04	1	1.5	4	45	4								
2DRE 010 060 S04	1	1.5	6	45	4								
2DRE 010 080 S04	1	1.5	8	45	4								
2DRE 010 100 S04	1	1.5	10	45	4								
2DRE 010 120 S04	1	1.5	12	45	4								
2DRE 010 160 S04	1	1.5	16	50	4								
2DRE 015 060 S04	1.5	2.3	6	45	4								
2DRE 015 080 S04	1.5	2.3	8	45	4								
2DRE 015 100 S04	1.5	2.3	10	45	4								
2DRE 015 120 S04	1.5	2.3	12	45	4								
2DRE 015 160 S04	1.5	2.3	16	50	4								
2DRE 015 200 S04	1.5	2.3	20	50	4								
2DRE 020 060 S04	2	3	6	45	4								
2DRE 020 080 S04	2	3	8	45	4								
2DRE 020 100 S04	2	3	10	45	4								
2DRE 020 120 S04	2	3	12	45	4								
2DRE 020 160 S04	2	3	16	50	4								
2DRE 020 200 S04	2	3	20	50	4								

G-TAC

## 3날 45° 헬릭스 비철 가공용 G-TAC코팅 리브 엔드밀



- 알루미늄 및 알루미늄 합금, 동 및 동합금, 강화플라스틱(CFRP), 유리/탄소섬유 등 비철 비금속 계열의 다양한 피삭재 전용 엔드밀
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 3날 45° 헬릭스 형상과 깊은 포켓으로 설계하여 칩배출이 원활하며, 고속, 고이송 작업에 적합합니다.
- Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- High speed, feed applicable by 3 flute 45° degree helix and deep chip pocket design.

3

WC  
미립자

GTAC  
Coating

|D|  
+0 -0.01

|D|  
-0.01 -0.025

45°  
Helix Angle

Sharp Edge

D Size	D Tolerance
Ø0.1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

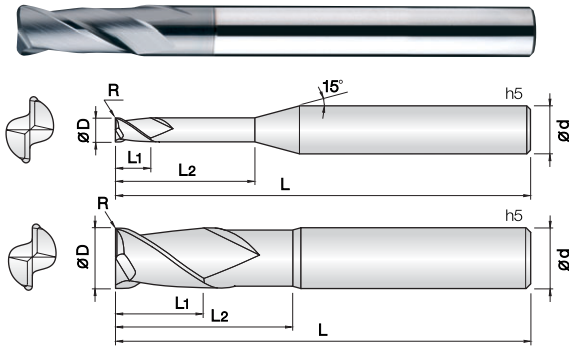
단위: mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고											
3DRE 010 030 S04	1	2	3	50	4												
3DRE 015 045 S04	1.5	3	4.5	50	4												
3DRE 020 060 S04	2	4	6	50	4												
3DRE 025 075 S04	2.5	5	7.5	50	4												
3DRE 030 090 S06	3	6	9	60	6												
3DRE 040 120 S06	4	9	12	60	6												
3DRE 050 150 S06	5	10	15	70	6												
3DRE 060 180 S06	6	12	18	70	6												
3DRE 080 240 S08	8	16	24	80	8												
3DRE 100 300 S10	10	20	30	90	10												
3DRE 120 360 S12	12	24	36	100	12												

G-TAC







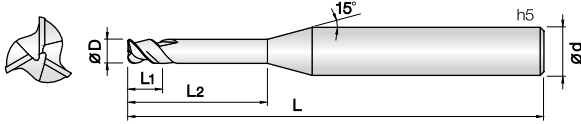
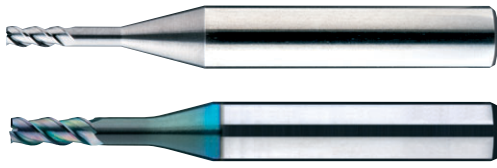
- 알루미늄 및 알루미늄 합금, 동 및 동합금, 강화플라스틱(CFRP), 유리/탄소섬유 등 비철 비금속 계열의 다양한 피삭재 전용 엔드밀
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 안정적인 고정밀 공차 적용으로 초정밀가공에 적합합니다.
- **Endmills for Aluminum, Aluminum alloy, copper, copper alloy, CFRP, glass/carbon fiber, nonferrous and non-metallic materials.**
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Reinforced edge design for preventing edge chipping.
- High precise edge tolerance.

D Size	D Tolerance
Ø1 ~ 4	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2DLC 010 001 040	1 X R0.1	1.5	4	45	4		2DLC 040 005 250	4 X R0.5	6	25	65	6	
2DLC 010 001 060	1 X R0.1	1.5	6	45	4		2DLC 040 005 300	4 X R0.5	6	30	70	6	
2DLC 010 001 080	1 X R0.1	1.5	8	45	4		2DLC 040 010 120	4 X R1	6	12	50	6	
2DLC 010 001 100	1 X R0.1	1.5	10	45	4		2DLC 040 010 160	4 X R1	6	16	60	6	
2DLC 010 002 040	1 X R0.2	1.5	4	45	4		2DLC 040 010 200	4 X R1	6	20	60	6	
2DLC 010 002 060	1 X R0.2	1.5	6	45	4		2DLC 040 010 250	4 X R1	6	25	65	6	
2DLC 010 002 080	1 X R0.2	1.5	8	45	4		2DLC 040 010 300	4 X R1	6	30	70	6	
2DLC 010 002 100	1 X R0.2	1.5	10	45	4		2DLC 060 003 200	6 X R0.3	9	20	60	6	
2DLC 015 001 060	1.5 X R0.1	2.3	6	45	4		2DLC 060 005 200	6 X R0.5	9	20	60	6	
2DLC 015 001 080	1.5 X R0.1	2.3	8	45	4		2DLC 060 010 200	6 X R1	9	20	60	6	
2DLC 015 001 100	1.5 X R0.1	2.3	10	45	4		2DLC 080 003 250	8 X R0.3	12	25	65	8	
2DLC 015 001 120	1.5 X R0.1	2.3	12	50	4		2DLC 080 005 250	8 X R0.5	12	25	65	8	
2DLC 015 002 060	1.5 X R0.2	2.3	6	45	4		2DLC 080 010 250	8 X R1	12	25	65	8	
2DLC 015 002 080	1.5 X R0.2	2.3	8	45	4		2DLC 100 005 300	10 X R0.5	15	30	70	10	
2DLC 015 002 100	1.5 X R0.2	2.3	10	45	4		2DLC 100 010 300	10 X R1	15	30	70	10	
2DLC 015 002 120	1.5 X R0.2	2.3	12	50	4		2DLC 120 005 320	12 X R0.5	18	32	80	12	
2DLC 020 002 080	2 X R0.2	3	8	45	4		2DLC 120 010 320	12 X R1	18	32	80	12	
2DLC 020 002 100	2 X R0.2	3	10	45	4								
2DLC 020 002 120	2 X R0.2	3	12	50	4								
2DLC 020 002 160	2 X R0.2	3	16	50	4								
2DLC 020 005 080	2 X R0.5	3	8	45	4								
2DLC 020 005 100	2 X R0.5	3	10	45	4								
2DLC 020 005 120	2 X R0.5	3	12	50	4								
2DLC 020 005 160	2 X R0.5	3	16	50	4								
2DLC 030 002 100	3 X R0.2	4.5	10	50	6								
2DLC 030 002 120	3 X R0.2	4.5	12	50	6								
2DLC 030 002 160	3 X R0.2	4.5	16	60	6								
2DLC 030 002 200	3 X R0.2	4.5	20	60	6								
2DLC 030 002 250	3 X R0.2	4.5	25	65	6								
2DLC 030 002 300	3 X R0.2	4.5	30	70	6								
2DLC 030 003 100	3 X R0.3	4.5	10	50	6								
2DLC 030 003 120	3 X R0.3	4.5	12	50	6								
2DLC 030 003 160	3 X R0.3	4.5	16	60	6								
2DLC 030 003 200	3 X R0.3	4.5	20	60	6								
2DLC 030 003 250	3 X R0.3	4.5	25	65	6								
2DLC 030 003 300	3 X R0.3	4.5	30	70	6								
2DLC 030 005 100	3 X R0.5	4.5	10	50	6								
2DLC 030 005 120	3 X R0.5	4.5	12	50	6								
2DLC 030 005 160	3 X R0.5	4.5	16	60	6								
2DLC 030 005 200	3 X R0.5	4.5	20	60	6								
2DLC 030 005 250	3 X R0.5	4.5	25	65	6								
2DLC 030 005 300	3 X R0.5	4.5	30	70	6								
2DLC 040 002 120	4 X R0.2	6	12	50	6								
2DLC 040 002 160	4 X R0.2	6	16	60	6								
2DLC 040 002 200	4 X R0.2	6	20	60	6								
2DLC 040 005 120	4 X R0.5	6	12	50	6								
2DLC 040 005 160	4 X R0.5	6	16	60	6								
2DLC 040 005 200	4 X R0.5	6	20	60	6								

### 3날 45° 헬릭스 알루미늄 전용 리브 엔드밀



3

WC  
미립자

RTAC  
Coating

IDI  
+0 -0.01

45°  
Helix Angle

Shield Edge

ø0.8~ø12

- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 날부인선을 고풍면 설계하여 절삭시 피삭재의 표면조도가 우수합니다
- 다양한 작업에 맞추어 짧은 날장에 유효장을 적용하였습니다.
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 2중 인선과 홈포켓을 깊게 설계하여 흡착현상을 최소화 하였습니다.
- **Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.**
- Applied fine WC grade for excellent surface finish.
- Applied short flute length for various applications.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.

D Size	D Tolerance
ø0.8 ~ 12	+0 ~ -0.01mm

단위 : mm

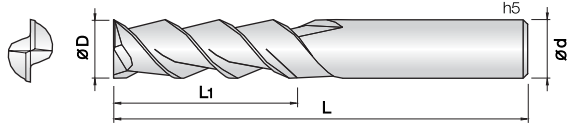
Order Number		날경	날장	유효장	전장	샙크	비고	
		Diameter	Length of cut	Effective Length	Overall Length	Shank Dia	비코팅	코팅
		D	L1	L2	L	d	Non coated	Coated
							비코팅	코팅
3ALR 008 016 S04	New 3ALRC 008 016 S04	0.8	1.6	-	50	4		
3ALR 008 030 S04	New 3ALRC 008 030 S04	0.8	1.6	3	50	4		
3ALR 008 040 S04	New 3ALRC 008 040 S04	0.8	1.6	4	50	4		
3ALR 008 050 S04	New 3ALRC 008 050 S04	0.8	1.6	5	50	4		
3ALR 008 060 S04	New 3ALRC 008 060 S04	0.8	1.6	6	50	4		
3ALR 008 080 S04	New 3ALRC 008 080 S04	0.8	1.6	8	50	4		
3ALR 008 100 S04	New 3ALRC 008 100 S04	0.8	1.6	10	50	4		
3ALR 008 120 S04	New 3ALRC 008 120 S04	0.8	1.6	12	50	4		
3ALR 010 020 S06	New 3ALRC 010 020 S06	1	2	-	60	6		
3ALR 010 040 S06	New 3ALRC 010 040 S06	1	2	4	60	6		
3ALR 010 060 S06	New 3ALRC 010 060 S06	1	2	6	60	6		
3ALR 010 080 S06	New 3ALRC 010 080 S06	1	2	8	60	6		
3ALR 010 100 S06	New 3ALRC 010 100 S06	1	2	10	60	6		
3ALR 010 120 S06	New 3ALRC 010 120 S06	1	2	12	60	6		
3ALR 010 140 S06	New 3ALRC 010 140 S06	1	2	14	60	6		
New 3ALR 010 160 S06	New 3ALRC 010 160 S06	1	2	16	60	6		
3ALR 015 030 S06	New 3ALRC 015 030 S06	1.5	3	-	60	6		
3ALR 015 060 S06	New 3ALRC 015 060 S06	1.5	3	6	60	6		
3ALR 015 080 S06	New 3ALRC 015 080 S06	1.5	3	8	60	6		
3ALR 015 100 S06	New 3ALRC 015 100 S06	1.5	3	10	60	6		
3ALR 015 120 S06	New 3ALRC 015 120 S06	1.5	3	12	60	6		
3ALR 015 140 S06	New 3ALRC 015 140 S06	1.5	3	14	60	6		
3ALR 015 160 S06	New 3ALRC 015 160 S06	1.5	3	16	60	6		
New 3ALR 015 180 S06	New 3ALRC 015 180 S06	1.5	3	18	60	6		
New 3ALR 015 200 S06	New 3ALRC 015 200 S06	1.5	3	20	60	6		
3ALR 020 040 S06	New 3ALRC 020 040 S06	2	4	-	60	6		
3ALR 020 080 S06	New 3ALRC 020 080 S06	2	4	8	60	6		
3ALR 020 100 S06	New 3ALRC 020 100 S06	2	4	10	60	6		
3ALR 020 120 S06	New 3ALRC 020 120 S06	2	4	12	60	6		
3ALR 020 140 S06	New 3ALRC 020 140 S06	2	4	14	60	6		
3ALR 020 160 S06	New 3ALRC 020 160 S06	2	4	16	60	6		
3ALR 020 200 S06	New 3ALRC 020 200 S06	2	4	20	60	6		
New 3ALR 020 220 S06	New 3ALRC 020 220 S06	2	4	22	60	6		
New 3ALR 020 250 S06	New 3ALRC 020 250 S06	2	4	25	65	6		
3ALR 025 050 S06	New 3ALRC 025 050 S06	2.5	5	-	60	6		
3ALR 025 100 S06	New 3ALRC 025 100 S06	2.5	5	10	60	6		
3ALR 025 150 S06	New 3ALRC 025 150 S06	2.5	5	15	60	6		
3ALR 025 200 S06	New 3ALRC 025 200 S06	2.5	5	20	60	6		
3ALR 025 250 S06	New 3ALRC 025 250 S06	2.5	5	25	60	6		
New 3ALR 025 300 S06	New 3ALRC 025 300 S06	2.5	5	30	70	6		
3ALR 030 060 S06	New 3ALRC 030 060 S06	3	6	-	60	6		
3ALR 030 100 S06	New 3ALRC 030 100 S06	3	6	10	60	6		
3ALR 030 150 S06	New 3ALRC 030 150 S06	3	6	15	60	6		
3ALR 030 200 S06	New 3ALRC 030 200 S06	3	6	20	70	6		
3ALR 030 250 S06	New 3ALRC 030 250 S06	3	6	25	70	6		
3ALR 030 300 S06	New 3ALRC 030 300 S06	3	6	30	80	6		
New 3ALR 030 350 S06	New 3ALRC 030 350 S06	3	6	35	80	6		
New 3ALR 030 400 S06	New 3ALRC 030 400 S06	3	6	40	90	6		

FOR ALUMINUM

단위 : mm

Order Number		날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤홅크 Shank Dia d	비고			
비코팅 Non coated	코팅 Coated						비코팅 Non coated	코팅 Coated		
	3ALR 040 080 S06	New	3ALRC 040 080 S06	4	8	-	70	6		
	3ALR 040 100 S06	New	3ALRC 040 100 S06	4	8	10	70	6		
	3ALR 040 150 S06	New	3ALRC 040 150 S06	4	8	15	70	6		
	3ALR 040 200 S06	New	3ALRC 040 200 S06	4	8	20	70	6		
	3ALR 040 250 S06	New	3ALRC 040 250 S06	4	8	25	70	6		
	3ALR 040 300 S06	New	3ALRC 040 300 S06	4	8	30	80	6		
New	3ALR 040 350 S06	New	3ALRC 040 350 S06	4	8	35	80	6		
New	3ALR 040 400 S06	New	3ALRC 040 400 S06	4	8	40	90	6		
	3ALR 050 100 S06	New	3ALRC 050 100 S06	5	10	-	80	6		
	3ALR 050 200 S06	New	3ALRC 050 200 S06	5	10	20	80	6		
	3ALR 050 300 S06	New	3ALRC 050 300 S06	5	10	30	80	6		
New	3ALR 050 400 S06	New	3ALRC 050 400 S06	5	10	40	90	6		
New	3ALR 050 500 S06	New	3ALRC 050 500 S06	5	10	50	100	6		
	3ALR 060 200 S06	New	3ALRC 060 200 S06	6	12	20	80	6		
	3ALR 060 400 S06	New	3ALRC 060 400 S06	6	12	40	80	6		
New	3ALR 060 600 110	New	3ALRC 060 600 110	6	12	60	110	6		
	3ALR 080 400 S08	New	3ALRC 080 400 S08	8	16	40	100	8		
New	3ALR 080 600 110	New	3ALRC 080 600 110	8	16	60	110	8		
	3ALR 100 500 S10	New	3ALRC 100 500 S10	10	20	50	110	10		
New	3ALR 100 700 120	New	3ALRC 100 700 120	10	20	70	120	10		
	3ALR 120 500 S12	New	3ALRC 120 500 S12	12	24	50	110	12		
New	3ALR 120 700 130	New	3ALRC 120 700 130	12	24	70	130	12		

## 2날 45°헬릭스 알루미늄 전용 엔드밀



∅0.5~∅20

Shield Edge

- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 날부 인선을 고품면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- 다양한 날장(S, L, ExL, Exc) 선택으로 맞춤 가공이 가능합니다.
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 2중 인선과 홈포켓을 깊게 설계하여 흠착현상을 최소화 하였습니다.
- Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.
- Applied fine WC grade for excellent surface finish.
- Various flute length design for covering wide range application.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.

D Size	D Tolerance
∅0.5 ~ 20	+0 ~ -0.01mm

단위 : mm

Order Number		날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	
비코팅 Non coated	코팅 Coated					비코팅 Non coated	코팅 Coated
2ALE 005 005 S04	New 2ALEC 005 005 S04	0.5	0.5	38	4		
2ALE 005 010 S04	New 2ALEC 005 010 S04	0.5	1	38	4		
2ALE 005 015 S04	New 2ALEC 005 015 S04	0.5	1.5	38	4		
2ALE 005 020 S04	New 2ALEC 005 020 S04	0.5	2	38	4		
2ALE 006 006 S04	New 2ALEC 006 006 S04	0.6	0.6	38	4		
2ALE 006 012 S04	New 2ALEC 006 012 S04	0.6	1.2	38	4		
2ALE 006 020 S04	New 2ALEC 006 020 S04	0.6	2	38	4		
2ALE 007 007 S04	New 2ALEC 007 007 S04	0.7	0.7	38	4		
2ALE 007 014 S04	New 2ALEC 007 014 S04	0.7	1.4	38	4		
2ALE 007 020 S04	New 2ALEC 007 020 S04	0.7	2	38	4		
2ALE 008 008 S04	New 2ALEC 008 008 S04	0.8	0.8	38	4		
2ALE 008 016 S04	New 2ALEC 008 016 S04	0.8	1.6	38	4		
2ALE 008 020 S04	New 2ALEC 008 020 S04	0.8	2	38	4		
2ALE 009 009 S04	New 2ALEC 009 009 S04	0.9	0.9	38	4		
2ALE 009 018 S04	New 2ALEC 009 018 S04	0.9	1.8	38	4		
2ALE 009 025 S04	New 2ALEC 009 025 S04	0.9	2.5	38	4		
2ALE 010 015 S04	New 2ALEC 010 015 S04	1	1.5	40	4		
2ALE 010 015 S06	New 2ALEC 010 015 S06	1	1.5	40	6		
2ALE 010 025 S04	New 2ALEC 010 025 S04	1	2.5	40	4		
2ALE 010 025 S06	New 2ALEC 010 025 S06	1	2.5	40	6		
2ALE 010 035 S04	New 2ALEC 010 035 S04	1	3.5	40	4		
2ALE 010 035 S06	New 2ALEC 010 035 S06	1	3.5	40	6		
2ALE 010 050 S06	New 2ALEC 010 050 S06	1	5	45	6		
2ALE 010 060 S06	New 2ALEC 010 060 S06	1	6	45	6		
New 2ALE 010 080 S06	New 2ALEC 010 080 S06	1	8	45	6		
New 2ALE 010 100 S06	New 2ALEC 010 100 S06	1	10	45	6		
2ALE 012 030 S06	New 2ALEC 012 030 S06	1.2	3	40	6		
2ALE 012 040 S06	New 2ALEC 012 040 S06	1.2	4	40	6		
2ALE 012 060 S06	New 2ALEC 012 060 S06	1.2	6	40	6		
2ALE 015 040 S06	New 2ALEC 015 040 S06	1.5	4	40	6		
2ALE 015 060 S06	New 2ALEC 015 060 S06	1.5	6	40	6		
2ALE 015 080 S06	New 2ALEC 015 080 S06	1.5	8	45	6		
2ALE 015 100 S06	New 2ALEC 015 100 S06	1.5	10	50	6		
2ALE 015 120 S06	New 2ALEC 015 120 S06	1.5	12	50	6		
New 2ALE 015 150 S06	New 2ALEC 015 150 S06	1.5	15	55	6		
2ALE 020 050 S06	New 2ALEC 020 050 S06	2	5	45	6		
2ALE 020 070 S06	New 2ALEC 020 070 S06	2	7	45	6		
2ALE 020 100 S06	New 2ALEC 020 100 S06	2	10	50	6		
2ALE 020 120 S06	New 2ALEC 020 120 S06	2	12	50	6		
2ALE 020 140 S06	New 2ALEC 020 140 S06	2	14	50	6		
2ALE 020 160 S06	New 2ALEC 020 160 S06	2	16	60	6		
2ALE 025 080 S06	New 2ALEC 025 080 S06	2.5	8	45	6		
2ALE 025 120 S06	New 2ALEC 025 120 S06	2.5	12	50	6		
2ALE 025 150 S06	New 2ALEC 025 150 S06	2.5	15	60	6		
2ALE 030 080 S06	New 2ALEC 030 080 S06	3	8	45	6		
2ALE 030 100 S06	New 2ALEC 030 100 S06	3	10	45	6		
2ALE 030 120 S06	New 2ALEC 030 120 S06	3	12	50	6		
2ALE 030 150 S06	New 2ALEC 030 150 S06	3	15	50	6		

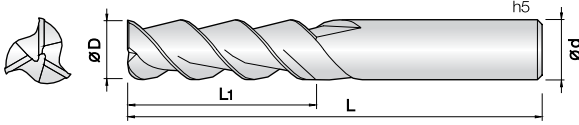
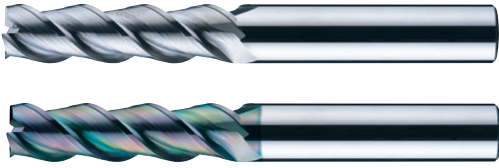


단위 : mm

Order Number		날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	
비코팅 Non coated	코팅 Coated					비코팅 Non coated	코팅 Coated
2ALE 030 200 S06	New 2ALEC 030 200 S06	3	20	60	6		
2ALE 030 250 S06	New 2ALEC 030 250 S06	3	25	65	6		
2ALE 035 100 S06	New 2ALEC 035 100 S06	3.5	10	45	6		
2ALE 035 150 S06	New 2ALEC 035 150 S06	3.5	15	50	6		
2ALE 040 120 S06	New 2ALEC 040 120 S06	4	12	50	6		
2ALE 040 150 S06	New 2ALEC 040 150 S06	4	15	55	6		
2ALE 040 180 S06	New 2ALEC 040 180 S06	4	18	55	6		
2ALE 040 250 S06	New 2ALEC 040 250 S06	4	25	65	6		
2ALE 040 300 S06	New 2ALEC 040 300 S06	4	30	70	6		
2ALE 045 120 S06	New 2ALEC 045 120 S06	4.5	12	50	6		
2ALE 045 180 S06	New 2ALEC 045 180 S06	4.5	18	55	6		
2ALE 050 150 S06	New 2ALEC 050 150 S06	5	15	50	6		
2ALE 050 200 S06	New 2ALEC 050 200 S06	5	20	60	6		
2ALE 050 250 S06	New 2ALEC 050 250 S06	5	25	65	6		
2ALE 050 300 S06	New 2ALEC 050 300 S06	5	30	70	6		
2ALE 055 150 S06	New 2ALEC 055 150 S06	5.5	15	50	6		
2ALE 060 150 S06	New 2ALEC 060 150 S06	6	15	50	6		
2ALE 060 200 S06	New 2ALEC 060 200 S06	6	20	60	6		
2ALE 060 250 S06	New 2ALEC 060 250 S06	6	25	65	6		
2ALE 060 300 S06	New 2ALEC 060 300 S06	6	30	70	6		
2ALE 060 350 S06	New 2ALEC 060 350 S06	6	35	75	6		
2ALE 060 400 S06	New 2ALEC 060 400 S06	6	40	80	6		
2ALE 070 200 S08	New 2ALEC 070 200 S08	7	20	60	8		
2ALE 070 300 S08	New 2ALEC 070 300 S08	7	30	70	8		
2ALE 080 200 S08	New 2ALEC 080 200 S08	8	20	60	8		
2ALE 080 250 S08	New 2ALEC 080 250 S08	8	25	65	8		
2ALE 080 300 S08	New 2ALEC 080 300 S08	8	30	70	8		
2ALE 080 400 S08	New 2ALEC 080 400 S08	8	40	80	8		
2ALE 080 450 S08	New 2ALEC 080 450 S08	8	45	90	8		
2ALE 100 250 S10	New 2ALEC 100 250 S10	10	25	70	10		
2ALE 100 300 S10	New 2ALEC 100 300 S10	10	30	75	10		
2ALE 100 350 S10	New 2ALEC 100 350 S10	10	35	80	10		
2ALE 100 450 S10	New 2ALEC 100 450 S10	10	45	90	10		
2ALE 100 500 S10	New 2ALEC 100 500 S10	10	50	100	10		
2ALE 120 300 S12	New 2ALEC 120 300 S12	12	30	75	12		
2ALE 120 350 S12	New 2ALEC 120 350 S12	12	35	80	12		
2ALE 120 400 S12	New 2ALEC 120 400 S12	12	40	90	12		
2ALE 120 450 S12	New 2ALEC 120 450 S12	12	45	100	12		
2ALE 120 500 S12	New 2ALEC 120 500 S12	12	50	100	12		
2ALE 120 600 S12	New 2ALEC 120 600 S12	12	60	110	12		
2ALE 140 300 S14	New 2ALEC 140 300 S14	14	30	80	14		
2ALE 160 400 S16	New 2ALEC 160 400 S16	16	40	90	16		
2ALE 160 550 S16	New 2ALEC 160 550 S16	16	55	110	16		
2ALE 160 700 S16	New 2ALEC 160 700 S16	16	70	120	16		
2ALE 200 450 S20	New 2ALEC 200 450 S20	20	45	100	20		
2ALE 200 650 S20	New 2ALEC 200 650 S20	20	65	120	20		
2ALE 200 800 S20	New 2ALEC 200 800 S20	20	80	135	20		

FOR ALUMINUM

## 3날 45° 헬릭스 알루미늄 전용 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 전용 엔드밀
- 날부 인선을 고광면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- 다양한 날장(S, L, Exl, Etc) 선택으로 맞춤 가공이 가능합니다.
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 2중 인선과 흡포켓을 깊게 설계하여 흡착현상을 최소화 하였습니다.
- Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.
- Applied fine WC grade for excellent surface finish.
- Various flute length design for covering wide range application.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- Minimize built up edge by double edge and deep pocket design.

D Size	D Tolerance
ø1 ~ 20	+0 ~ -0.01mm

단위 : mm

Order Number		날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	
비코팅 Non coated	코팅 Coated					비코팅 Non coated	코팅 Coated
3ALE 010 015 S06	New 3ALEC 010 015 S06	1	1.5	40	6		
3ALE 010 030 S06	New 3ALEC 010 030 S06	1	3	40	6		
3ALE 010 050 S06	New 3ALEC 010 050 S06	1	5	45	6		
New 3ALE 010 060 S06	New 3ALEC 010 060 S06	1	6	45	6		
New 3ALE 010 080 S06	New 3ALEC 010 080 S06	1	8	45	6		
New 3ALE 010 100 S06	New 3ALEC 010 100 S06	1	10	45	6		
3ALE 012 030 S06	New 3ALEC 012 030 S06	1.2	3	40	6		
3ALE 012 040 S06	New 3ALEC 012 040 S06	1.2	4	40	6		
3ALE 012 060 S06	New 3ALEC 012 060 S06	1.2	6	40	6		
3ALE 015 025 S06	New 3ALEC 015 025 S06	1.5	2.5	40	6		
3ALE 015 040 S06	New 3ALEC 015 040 S06	1.5	4	40	6		
3ALE 015 060 S06	New 3ALEC 015 060 S06	1.5	6	45	6		
3ALE 015 080 S06	New 3ALEC 015 080 S06	1.5	8	45	6		
3ALE 015 100 S06	New 3ALEC 015 100 S06	1.5	10	50	6		
3ALE 015 120 S06	New 3ALEC 015 120 S06	1.5	12	50	6		
New 3ALE 015 150 S06	New 3ALEC 015 150 S06	1.5	15	50	6		
3ALE 020 030 S06	New 3ALEC 020 030 S06	2	3	45	6		
3ALE 020 050 S06	New 3ALEC 020 050 S06	2	5	45	6		
3ALE 020 070 S06	New 3ALEC 020 070 S06	2	7	45	6		
3ALE 020 100 S06	New 3ALEC 020 100 S06	2	10	50	6		
3ALE 020 120 S06	New 3ALEC 020 120 S06	2	12	50	6		
3ALE 020 140 S06	New 3ALEC 020 140 S06	2	14	60	6		
3ALE 020 160 S06	New 3ALEC 020 160 S06	2	16	60	6		
New 3ALE 020 180 S06	New 3ALEC 020 180 S06	2	18	60	6		
New 3ALE 020 200 S06	New 3ALEC 020 200 S06	2	20	60	6		
3ALE 025 040 S06	New 3ALEC 025 040 S06	2.5	4	45	6		
3ALE 025 080 S06	New 3ALEC 025 080 S06	2.5	8	45	6		
3ALE 025 120 S06	New 3ALEC 025 120 S06	2.5	12	50	6		
3ALE 025 150 S06	New 3ALEC 025 150 S06	2.5	15	60	6		
3ALE 030 045 S06	New 3ALEC 030 045 S06	3	4.5	45	6		
3ALE 030 080 S06	New 3ALEC 030 080 S06	3	8	45	6		
3ALE 030 120 S06	New 3ALEC 030 120 S06	3	12	50	6		
3ALE 030 150 S06	New 3ALEC 030 150 S06	3	15	50	6		
3ALE 030 200 S06	New 3ALEC 030 200 S06	3	20	55	6		
3ALE 030 250 S06	New 3ALEC 030 250 S06	3	25	60	6		
3ALE 030 300 S06	New 3ALEC 030 300 S06	3	30	65	6		
3ALE 035 055 S06	New 3ALEC 035 055 S06	3.5	5.5	45	6		
3ALE 035 100 S06	New 3ALEC 035 100 S06	3.5	10	45	6		
3ALE 035 150 S06	New 3ALEC 035 150 S06	3.5	15	50	6		
New 3ALE 035 200 S06	New 3ALEC 035 200 S06	3.5	20	55	6		
New 3ALE 035 250 S06	New 3ALEC 035 250 S06	3.5	25	60	6		
New 3ALE 035 300 S06	New 3ALEC 035 300 S06	3.5	30	65	6		
3ALE 040 060 S06	New 3ALEC 040 060 S06	4	6	45	6		
3ALE 040 110 S06	New 3ALEC 040 110 S06	4	11	45	6		
3ALE 040 160 S06	New 3ALEC 040 160 S06	4	16	50	6		
3ALE 040 200 S06	New 3ALEC 040 200 S06	4	20	55	6		
3ALE 040 250 S06	New 3ALEC 040 250 S06	4	25	60	6		
3ALE 040 300 S06	New 3ALEC 040 300 S06	4	30	65	6		



단위 : mm

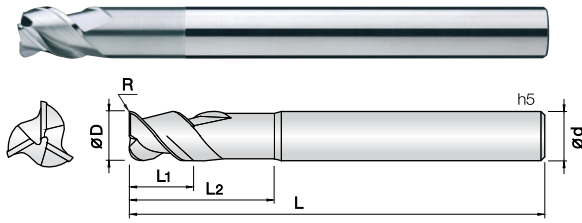
Order Number		날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고			
비코팅 Non coated	코팅 Coated					비코팅 Non coated	코팅 Coated		
	3ALE 045 120 S06	New	3ALEC 045 120 S06	4.5	12	50	6		
	3ALE 045 180 S06	New	3ALEC 045 180 S06	4.5	18	55	6		
New	3ALE 045 250 S06	New	3ALEC 045 250 S06	4.5	25	60	6		
New	3ALE 045 300 S06	New	3ALEC 045 300 S06	4.5	30	65	6		
	3ALE 050 075 S06	New	3ALEC 050 075 S06	5	7.5	50	6		
	3ALE 050 130 S06	New	3ALEC 050 130 S06	5	13	50	6		
	3ALE 050 200 S06	New	3ALEC 050 200 S06	5	20	55	6		
	3ALE 050 250 S06	New	3ALEC 050 250 S06	5	25	60	6		
	3ALE 050 300 S06	New	3ALEC 050 300 S06	5	30	65	6		
New	3ALE 050 350 S06	New	3ALEC 050 350 S06	5	35	70	6		
New	3ALE 050 400 S06	New	3ALEC 050 400 S06	5	40	75	6		
	3ALE 055 150 S06	New	3ALEC 055 150 S06	5.5	15	50	6		
New	3ALE 055 200 S06	New	3ALEC 055 200 S06	5.5	20	55	6		
New	3ALE 055 250 S06	New	3ALEC 055 250 S06	5.5	25	60	6		
	3ALE 060 090 050	New	3ALEC 060 090 050	6	9	50	6		
	3ALE 060 150 050	New	3ALEC 060 150 050	6	15	50	6		
	3ALE 060 200 055	New	3ALEC 060 200 055	6	20	55	6		
	3ALE 060 250 060	New	3ALEC 060 250 060	6	25	60	6		
	3ALE 060 300 070	New	3ALEC 060 300 070	6	30	70	6		
	3ALE 060 350 070	New	3ALEC 060 350 070	6	35	70	6		
	3ALE 060 400 075	New	3ALEC 060 400 075	6	40	75	6		
New	3ALE 060 450 080	New	3ALEC 060 450 080	6	45	80	6		
New	3ALE 060 500 090	New	3ALEC 060 500 090	6	50	90	6		
New	3ALE 070 200 060	New	3ALEC 070 200 060	7	20	60	8		
New	3ALE 070 300 075	New	3ALEC 070 300 075	7	30	75	8		
New	3ALE 070 400 090	New	3ALEC 070 400 090	7	40	90	8		
	3ALE 080 120 060	New	3ALEC 080 120 060	8	12	60	8		
	3ALE 080 200 060	New	3ALEC 080 200 060	8	20	60	8		
	3ALE 080 250 065	New	3ALEC 080 250 065	8	25	65	8		
	3ALE 080 300 070	New	3ALEC 080 300 070	8	30	70	8		
	3ALE 080 350 075	New	3ALEC 080 350 075	8	35	75	8		
	3ALE 080 400 080	New	3ALEC 080 400 080	8	40	80	8		
	3ALE 080 450 090	New	3ALEC 080 450 090	8	45	90	8		
	3ALE 080 500 090	New	3ALEC 080 500 090	8	50	90	8		
	3ALE 080 550 100	New	3ALEC 080 550 100	8	55	100	8		
	3ALE 080 600 110	New	3ALEC 080 600 110	8	60	110	8		
New	3ALE 080 700 120	New	3ALEC 080 700 120	8	70	120	8		
	3ALE 100 150 070	New	3ALEC 100 150 070	10	15	70	10		
	3ALE 100 250 070	New	3ALEC 100 250 070	10	25	70	10		
	3ALE 100 300 075	New	3ALEC 100 300 075	10	30	75	10		
	3ALE 100 350 080	New	3ALEC 100 350 080	10	35	80	10		
	3ALE 100 400 090	New	3ALEC 100 400 090	10	40	90	10		
	3ALE 100 450 090	New	3ALEC 100 450 090	10	45	90	10		
	3ALE 100 500 100	New	3ALEC 100 500 100	10	50	100	10		
	3ALE 100 550 100	New	3ALEC 100 550 100	10	55	100	10		
	3ALE 100 600 110	New	3ALEC 100 600 110	10	60	110	10		
	3ALE 100 650 110	New	3ALEC 100 650 110	10	65	110	10		
	3ALE 100 700 120	New	3ALEC 100 700 120	10	70	120	10		

FOR ALUMINUM

단위 : mm

Order Number		날경 Diameter	날장 Length of cut L1	전장 Overall Length L	샤희크 Shank Dia d	비고	
비코팅 Non coated	코팅 Coated	D	L1	L	d	비코팅 Non coated	코팅 Coated
New 3ALE 100 800 130	New 3ALEC 100 800 130	10	80	130	10		
3ALE 120 180 075	New 3ALEC 120 180 075	12	18	75	12		
3ALE 120 260 075	New 3ALEC 120 260 075	12	26	75	12		
3ALE 120 350 080	New 3ALEC 120 350 080	12	35	80	12		
3ALE 120 400 090	New 3ALEC 120 400 090	12	40	90	12		
3ALE 120 450 090	New 3ALEC 120 450 090	12	45	90	12		
3ALE 120 500 100	New 3ALEC 120 500 100	12	50	100	12		
3ALE 120 550 100	New 3ALEC 120 550 100	12	55	100	12		
3ALE 120 650 110	New 3ALEC 120 650 110	12	65	110	12		
3ALE 120 700 120	New 3ALEC 120 700 120	12	70	120	12		
New 3ALE 120 800 130	New 3ALEC 120 800 130	12	80	130	12		
3ALE 140 300 080	New 3ALEC 140 300 080	14	30	80	14		
3ALE 140 450 110	New 3ALEC 140 450 110	14	45	110	14		
3ALE 160 300 090	New 3ALEC 160 300 090	16	30	90	16		
3ALE 160 500 110	New 3ALEC 160 500 110	16	50	110	16		
3ALE 160 650 120	New 3ALEC 160 650 120	16	65	120	16		
3ALE 160 800 130	New 3ALEC 160 800 130	16	80	130	16		
New 3ALE 160 1000 160	New 3ALEC 160 1000 160	16	100	160	16		
3ALE 200 500 100	New 3ALEC 200 500 100	20	50	100	20		
3ALE 200 750 130	New 3ALEC 200 750 130	20	75	130	20		
3ALE 200 1000 160	New 3ALEC 200 1000 160	20	100	160	20		
3ALE 200 1300 200	New 3ALEC 200 1300 200	20	130	200	20		
New 3ALE 200 1500 220	New 3ALEC 200 1500 220	20	150	220	20		

## 3날 45° 헬릭스 알루미늄 전용 코너 레디우스 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열 가공 엔드밀
- 날부 인선을 고광면 설계하여 절삭시 피삭재의 표면조도가 우수합니다.
- 2중 인선과 홀포켓을 깊게 설계하여 흡착현상을 최소화 하였습니다.
- 코팅피막에 경도가 높고 마찰계수가 낮은 Tetrabond TAC코팅을 적용하여 내마모성이 우수하며, 피삭재의 표면조도가 월등히 우수합니다.
- 3날 45° 헬릭스 형상과 짧은 날장으로 설계, 고속 고이송 작업에 적합합니다.
- **Endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.**
- Applied fine WC grade for excellent surface finish.
- Minimize built up edge by double edge and deep pocket design.
- Tetrabond TAC coating provides excellent work surface finish by high hardness and low friction.
- High speed, feed applicable by 3 flute 45° degree helix and short flute design.



D Size	D Tolerance
Ø6 ~ 20	+0 ~ -0.015mm

단위 : mm

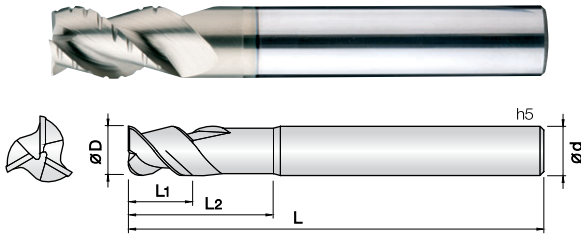
Order Number		날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프트 Shank Dia d	비고	
비코팅 Non coated	코팅 Coated						비코팅 Non coated	코팅 Coated
3ALC 060 005 050	3ALCC 060 005 050	6 X R0.5	15	-	50	6		
3ALC 060 005 070	3ALCC 060 005 070	6 X R0.5	7	20	70	6		
3ALC 060 010 050	3ALCC 060 010 050	6 X R1	15	-	50	6		
3ALC 060 010 070	3ALCC 060 010 070	6 X R1	7	20	70	6		
3ALC 080 005 060	3ALCC 080 005 060	8 X R0.5	20	-	60	8		
3ALC 080 005 080	3ALCC 080 005 080	8 X R0.5	9	25	80	8		
3ALC 080 010 060	3ALCC 080 010 060	8 X R1	20	-	60	8		
3ALC 080 010 080	3ALCC 080 010 080	8 X R1	9	25	80	8		
3ALC 080 020 060	3ALCC 080 020 060	8 X R2	20	-	60	8		
3ALC 080 020 080	3ALCC 080 020 080	8 X R2	9	25	80	8		
3ALC 080 025 080	3ALCC 080 025 080	8 X R2.5	9	25	80	8		
New 3ALC 100 005 070	New 3ALCC 100 005 070	10 X R0.5	25	-	70	10		
New 3ALC 100 005 100	New 3ALCC 100 005 100	10 X R0.5	11	30	100	10		
3ALC 100 010 070	3ALCC 100 010 070	10 X R1	25	-	70	10		
3ALC 100 010 100	3ALCC 100 010 100	10 X R1	11	30	100	10		
3ALC 100 015 070	3ALCC 100 015 070	10 X R1.5	25	-	70	10		
3ALC 100 015 100	3ALCC 100 015 100	10 X R1.5	11	30	100	10		
3ALC 100 020 070	3ALCC 100 020 070	10 X R2	25	-	70	10		
3ALC 100 020 100	3ALCC 100 020 100	10 X R2	11	30	100	10		
3ALC 100 025 100	3ALCC 100 025 100	10 X R2.5	11	30	100	10		
New 3ALC 120 005 075	New 3ALCC 120 005 075	12 X R0.5	30	-	75	12		
New 3ALC 120 005 110	New 3ALCC 120 005 110	12 X R0.5	13	36	110	12		
3ALC 120 010 075	3ALCC 120 010 075	12 X R1	30	-	75	12		
3ALC 120 010 110	3ALCC 120 010 110	12 X R1	13	36	110	12		
3ALC 120 015 110	3ALCC 120 015 110	12 X R1.5	13	36	110	12		
3ALC 120 020 075	3ALCC 120 020 075	12 X R2	30	-	75	12		
3ALC 120 020 110	3ALCC 120 020 110	12 X R2	13	36	110	12		
3ALC 120 025 110	3ALCC 120 025 110	12 X R2.5	13	36	110	12		
3ALC 120 030 075	3ALCC 120 030 075	12 X R3	30	-	75	12		
3ALC 120 030 110	3ALCC 120 030 110	12 X R3	13	36	110	12		
3ALC 120 040 075	3ALCC 120 040 075	12 X R4	30	-	75	12		
3ALC 120 040 110	3ALCC 120 040 110	12 X R4	13	36	110	12		
New 3ALC 160 005 130	New 3ALCC 160 005 130	16 X R0.5	17	50	130	16		
3ALC 160 010 090	3ALCC 160 010 090	16 X R1	35	-	90	16		
3ALC 160 010 130	3ALCC 160 010 130	16 X R1	17	50	130	16		
3ALC 160 020 090	3ALCC 160 020 090	16 X R2	35	-	90	16		
3ALC 160 020 130	3ALCC 160 020 130	16 X R2	17	50	130	16		
3ALC 160 025 130	3ALCC 160 025 130	16 X R2.5	17	50	130	16		
3ALC 160 030 090	3ALCC 160 030 090	16 X R3	35	-	90	16		
3ALC 160 030 130	3ALCC 160 030 130	16 X R3	17	50	130	16		
3ALC 160 040 090	3ALCC 160 040 090	16 X R4	35	-	90	16		
3ALC 160 040 130	3ALCC 160 040 130	16 X R4	17	50	130	16		
3ALC 160 050 090	3ALCC 160 050 090	16 X R5	35	-	90	16		
New 3ALC 200 010 150	New 3ALCC 200 010 150	20 X R1	21	60	150	20		
3ALC 200 020 150	3ALCC 200 020 150	20 X R2	21	60	150	20		
3ALC 200 025 150	3ALCC 200 025 150	20 X R2.5	21	60	150	20		
3ALC 200 030 150	3ALCC 200 030 150	20 X R3	21	60	150	20		
3ALC 200 040 150	3ALCC 200 040 150	20 X R4	21	60	150	20		



# 3ARE

3 Flutes Semi-Finishing & Roughing End Mills for Aluminum

## 3날 알루미늄 세미 피니싱 & 라핑 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열의 고속 중삭 및 황삭
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 칩 브레이커와 홈포켓을 깊게 설계하여 흡착현상을 최소화하며, 중삭 및 황삭의 고속 작업시 우수한 성능을 보입니다.
- 일반 알루미늄 라핑과 다르게 피삭재의 가공면이 깨끗합니다.
- **High speed semi finishing and roughing endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize built up edge by chip braker and deep pocket design.
- Good surface integrity differently from competitor's AL roughing endmills.



D Size	D Tolerance
ø6 ~ 8	-0.02 ~ -0.04mm
ø10 ~ 20	-0.02 ~ -0.05mm

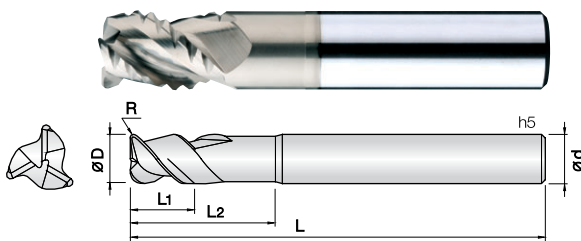
단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
3ARE 060 150 S06	6	10	15	50	6		3ARE 160 500 S16	16	35	50	120	16	
3ARE 060 200 S06	6	15	20	70	6		3ARE 200 500 S20	20	35	50	110	20	
3ARE 080 200 S08	8	15	20	60	8		3ARE 200 600 S20	20	45	60	120	20	
3ARE 080 250 S08	8	20	25	80	8								
3ARE 100 250 S10	10	18	25	70	10								
3ARE 100 300 S10	10	23	30	90	10								
3ARE 120 300 S12	12	20	30	80	12								
3ARE 120 400 S12	12	30	40	100	12								
3ARE 160 350 S16	16	25	35	110	16								

# 3ARC

3 Flutes Semi-Finishing & Roughing Corner Radius End Mills for Aluminum

## 3날 알루미늄 세미 피니싱 & 라핑 코너 레디우스 엔드밀



- 알루미늄, 알루미늄 합금 등 비철 비금속 계열의 고속 중삭 및 황삭
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 칩 브레이커와 홈포켓을 깊게 설계하여 흡착현상을 최소화하며, 중삭 및 황삭의 고속 작업시 우수한 성능을 보입니다.
- 일반 알루미늄 라핑과 다르게 피삭재의 가공면이 깨끗합니다.
- **High speed semi finishing and roughing endmills for Aluminum, AL alloy, non-ferrous and non-metallic materials.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize built up edge by chip braker and deep pocket design.
- Good surface integrity differently from competitor's AL roughing endmills.



Size	D Tolerance
ø6 ~ 20	+0 ~ -0.015mm

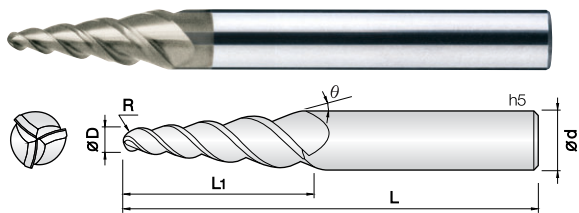
단위 : mm

Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D x R	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
3ARC 060 005 S06	6 X R0.5	9	15	65	6		3ARC 160 010 S16	16 X R1	25	35	110	16	
3ARC 060 010 S06	6 X R1	9	15	65	6		3ARC 160 020 S16	16 X R2	25	35	110	16	
3ARC 080 005 S08	8 X R0.5	12	20	70	8		3ARC 160 030 S16	16 X R3	25	35	110	16	
3ARC 080 010 S08	8 X R1	12	20	70	8		3ARC 200 020 S20	20 X R2	30	50	110	20	
3ARC 100 010 S10	10 X R1	15	25	75	10		3ARC 200 030 S20	20 X R3	30	50	110	20	
3ARC 100 020 S10	10 X R2	15	25	75	10								
3ARC 120 010 S12	12 X R1	20	30	80	12								
3ARC 120 020 S12	12 X R2	20	30	80	12								
3ARC 120 030 S12	12 X R3	20	30	80	12								

FOR ALUMINUM



### 3날 임펠라 가공용 테이퍼 볼 엔드밀



- 프리하드강, 일반강, 주물, 비철합금 가공 엔드밀
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 공구의 교체없이 밀면과 경사면의 정삭,황삭 가공이 동시에 가능합니다.
- 임펠라, 브리스크, 타이어 프로파일, 터빈날 등 3축과 5축의 편측각이 있는 부품 가공에 적합합니다.
- **Pre-hardened steel, Cast iron, Non-metallic materials**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Suitable for special components with 3 axes and 5 axes sector such as impellers, blisks, tire profiles, turbine blades.
- Available for simultaneous machining of roughing and finishing with only one tool.



Size	D Tolerance
Ø4 ~ 6	+0.01 ~ -0.01mm

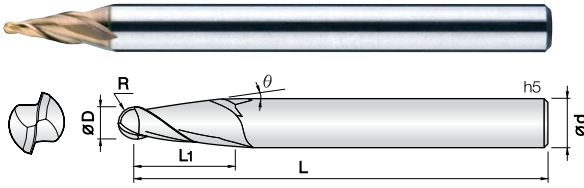
단위 : mm

Order Number	날경 Diameter R x D	각도 Angle θ	날장 Length of cut L1	전장 Overall Length L	샹크 Shank Dia d	비고
3TBIC 010 010 120	R0.5 X 1	1°	12	50	6	
3TBIC 010 010 200	R0.5 X 1	1°	20	60	6	
3TBIC 010 020 150	R0.5 X 1	2°	15	55	6	
3TBIC 010 020 200	R0.5 X 1	2°	20	60	6	
3TBIC 010 030 150	R0.5 X 1	3°	15	55	6	
3TBIC 010 030 200	R0.5 X 1	3°	20	60	6	
3TBIC 010 040 200	R0.5 X 1	4°	20	60	6	
3TBIC 010 050 200	R0.5 X 1	5°	20	60	6	
3TBIC 010 060 200	R0.5 X 1	6°	20	60	6	
3TBIC 010 070 200	R0.5 X 1	7°	20	60	6	
3TBIC 010 080 180	R0.5 X 1	8°	18	60	6	
3TBIC 020 010 120	R1 X 2	1°	12	50	6	
3TBIC 020 010 200	R1 X 2	1°	20	60	6	
3TBIC 020 020 150	R1 X 2	2°	15	55	6	
3TBIC 020 020 200	R1 X 2	2°	20	60	6	
3TBIC 020 030 150	R1 X 2	3°	15	55	6	
3TBIC 020 030 200	R1 X 2	3°	20	60	6	
3TBIC 020 030 300	R1 X 2	3°	30	70	6	
3TBIC 020 040 200	R1 X 2	4°	20	60	6	
3TBIC 020 050 200	R1 X 2	5°	20	60	6	
3TBIC 020 050 300	R1 X 2	5°	30	75	8	
3TBIC 020 060 190	R1 X 2	6°	19	60	6	
3TBIC 020 060 290	R1 X 2	6°	29	75	8	
3TBIC 020 070 160	R1 X 2	7°	16	60	6	
3TBIC 020 070 250	R1 X 2	7°	25	70	8	
3TBIC 020 080 150	R1 X 2	8°	15	60	6	
3TBIC 020 080 220	R1 X 2	8°	22	70	8	
3TBIC 030 010 200	R1.5 X 3	1°	20	60	6	
3TBIC 030 010 320	R1.5 X 3	1°	32	75	6	
3TBIC 030 020 200	R1.5 X 3	2°	20	60	6	
3TBIC 030 030 200	R1.5 X 3	3°	20	60	6	
3TBIC 030 030 300	R1.5 X 3	3°	30	70	6	
3TBIC 030 030 390	R1.5 X 3	3°	39	80	8	
3TBIC 030 040 200	R1.5 X 3	4°	20	65	6	
3TBIC 030 050 180	R1.5 X 3	5°	18	60	6	
3TBIC 030 050 300	R1.5 X 3	5°	30	75	8	
3TBIC 030 060 150	R1.5 X 3	6°	15	60	6	
3TBIC 030 060 250	R1.5 X 3	6°	25	70	8	
3TBIC 030 070 190	R1.5 X 3	7°	19	70	8	
3TBIC 030 070 300	R1.5 X 3	7°	30	80	10	
3TBIC 030 080 190	R1.5 X 3	8°	19	70	8	
3TBIC 030 080 260	R1.5 X 3	8°	26	75	10	
3TBIC 040 010 200	R2 X 4	1°	20	60	6	
3TBIC 040 010 320	R2 X 4	1°	32	75	6	
3TBIC 040 020 200	R2 X 4	2°	20	60	6	
3TBIC 040 020 300	R2 X 4	2°	30	70	6	
3TBIC 040 030 210	R2 X 4	3°	21	70	6	
3TBIC 040 030 320	R2 X 4	3°	32	80	8	

TAPER



## 2날 고속가공용 테이퍼 볼 엔드밀



- 고경도강(HRc50이상), 프리하든강 계열의 고정밀 가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel(HRc50~)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



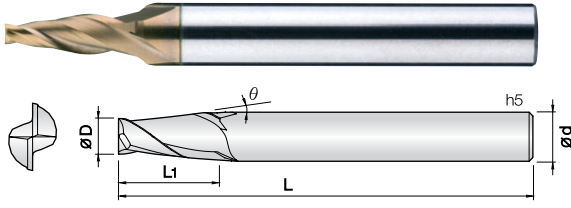
D Size	D Tolerance
Ø0.4 ~ 3	-0.01 ~ -0.025mm
Ø3 ~ 6	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter R x D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고	Order Number	날경 Diameter R x D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고
2CTB 004 020 030	0.2R X 0.4	2°	3	40	4		2CTB 020 070 080	1R X 2	7°	8	45	4	
2CTB 004 030 030	0.2R X 0.4	3°	3	40	4		2CTB 030 003 120	1.5RX3	0°30'	12	60	6	
2CTB 004 040 030	0.2R X 0.4	4°	3	40	4		2CTB 030 010 120	1.5RX3	1°	12	60	6	
2CTB 004 050 030	0.2R X 0.4	5°	3	40	4		2CTB 030 013 120	1.5RX3	1°30'	12	60	6	
2CTB 004 070 030	0.2R X 0.4	7°	3	40	4		2CTB 030 020 120	1.5RX3	2°	12	60	6	
2CTB 004 100 030	0.2R X 0.4	10°	3	40	4		2CTB 030 030 120	1.5RX3	3°	12	60	6	
2CTB 005 020 030	0.25R X 0.5	2°	3	40	4		2CTB 030 040 120	1.5RX3	4°	12	60	6	
2CTB 005 030 030	0.25R X 0.5	3°	3	40	4		2CTB 030 050 120	1.5RX3	5°	12	60	6	
2CTB 005 040 035	0.25R X 0.5	4°	3.5	40	4		2CTB 030 070 120	1.5RX3	7°	12	60	6	
2CTB 005 050 035	0.25R X 0.5	5°	3.5	40	4		2CTB 040 003 160	2RX4	0°30'	16	70	8	
2CTB 005 070 035	0.25R X 0.5	7°	3.5	40	4		2CTB 040 010 160	2RX4	1°	16	70	8	
2CTB 005 100 035	0.25R X 0.5	10°	3.5	40	4		2CTB 040 013 160	2RX4	1°30'	16	70	8	
2CTB 006 020 030	0.3R X 0.6	2°	3	40	4		2CTB 040 020 160	2RX4	2°	16	70	8	
2CTB 006 030 030	0.3R X 0.6	3°	3	40	4		2CTB 040 030 160	2RX4	3°	16	70	8	
2CTB 006 040 035	0.3R X 0.6	4°	3.5	40	4		2CTB 040 040 160	2RX4	4°	16	70	8	
2CTB 006 050 035	0.3R X 0.6	5°	3.5	40	4		2CTB 040 050 160	2RX4	5°	16	70	8	
2CTB 006 070 035	0.3R X 0.6	7°	3.5	40	4		2CTB 040 070 160	2RX4	7°	16	70	8	
2CTB 006 100 035	0.3R X 0.6	10°	3.5	40	4		2CTB 050 003 200	2.5RX5	0°30'	20	75	8	
2CTB 008 020 030	0.4R X 0.8	2°	3	40	4		2CTB 050 010 200	2.5RX5	1°	20	75	8	
2CTB 008 030 030	0.4R X 0.8	3°	3	40	4		2CTB 050 013 200	2.5RX5	1°30'	20	75	8	
2CTB 008 040 040	0.4R X 0.8	4°	4	40	4		2CTB 050 020 200	2.5RX5	2°	20	75	8	
2CTB 008 050 040	0.4R X 0.8	5°	4	40	4		2CTB 050 030 200	2.5RX5	3°	20	75	8	
2CTB 008 070 040	0.4R X 0.8	7°	4	40	4		2CTB 050 040 200	2.5RX5	4°	20	75	8	
2CTB 008 100 040	0.4R X 0.8	10°	4	40	4		2CTB 050 050 200	2.5RX5	5°	20	80	10	
2CTB 010 003 030	0.5R X 1	0°30'	3	40	4		2CTB 050 070 200	2.5RX5	7°	20	80	10	
2CTB 010 010 030	0.5R X 1	1°	3	40	4		2CTB 060 003 240	3RX6	0°30'	24	80	10	
2CTB 010 013 040	0.5R X 1	1°30'	4	40	4		2CTB 060 010 240	3RX6	1°	24	80	10	
2CTB 010 020 040	0.5R X 1	2°	4	40	4		2CTB 060 013 240	3RX6	1°30'	24	80	10	
2CTB 010 030 040	0.5R X 1	3°	4	40	4		2CTB 060 020 240	3RX6	2°	24	80	10	
2CTB 010 040 060	0.5R X 1	4°	6	45	4		2CTB 060 030 240	3RX6	3°	24	80	10	
2CTB 010 050 060	0.5R X 1	5°	6	45	4		2CTB 060 040 240	3RX6	4°	24	80	10	
2CTB 010 070 060	0.5R X 1	7°	6	45	4		2CTB 060 050 240	3RX6	5°	24	90	12	
2CTB 010 100 060	0.5R X 1	10°	6	45	4		2CTB 060 070 240	3RX6	7°	24	90	12	
2CTB 015 003 060	0.75R X 1.5	0°30'	6	45	4								
2CTB 015 010 060	0.75R X 1.5	1°	6	45	4								
2CTB 015 013 060	0.75R X 1.5	1°30'	6	45	4								
2CTB 015 020 060	0.75R X 1.5	2°	6	45	4								
2CTB 015 030 060	0.75R X 1.5	3°	6	45	4								
2CTB 015 040 060	0.75R X 1.5	4°	6	45	4								
2CTB 015 050 060	0.75R X 1.5	5°	6	45	4								
2CTB 015 070 060	0.75R X 1.5	7°	6	45	4								
2CTB 020 003 080	1R X 2	0°30'	8	45	4								
2CTB 020 010 080	1R X 2	1°	8	45	4								
2CTB 020 013 080	1R X 2	1°30'	8	45	4								
2CTB 020 020 080	1R X 2	2°	8	45	4								
2CTB 020 030 080	1R X 2	3°	8	45	4								
2CTB 020 040 080	1R X 2	4°	8	45	4								
2CTB 020 050 080	1R X 2	5°	8	45	4								

TAPER





- 고경도강(HRc50이상), 프리하든강 계열의 고정밀 가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금( $0.5\mu\text{m}$ )을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel(HRc50~)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Minimize fracturing by high TRS fine( $0.5\mu\text{m}$ ) WC grade.



D Size	D Tolerance
$\varnothing 0.3 \sim 4$	+0 ~ -0.01mm
$\varnothing 6 \sim 8$	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2CTE 003 003 012	0.3	0°30	1.2	40	4		2CTE 010 010 040	1	1°	4	45	4	
2CTE 003 010 012	0.3	1°	1.2	40	4		2CTE 010 013 040	1	1°30	4	45	4	
2CTE 003 013 012	0.3	1°30	1.2	40	4		2CTE 010 020 040	1	2°	4	45	4	
2CTE 003 020 012	0.3	2°	1.2	40	4		2CTE 010 030 040	1	3°	4	45	4	
2CTE 003 030 012	0.3	3°	1.2	40	4		2CTE 010 050 040	1	5°	4	45	4	
2CTE 003 050 012	0.3	5°	1.2	40	4		2CTE 010 070 040	1	7°	4	45	4	
2CTE 003 070 015	0.3	7°	1.5	40	4		2CTE 010 100 040	1	10°	4	45	4	
2CTE 003 100 015	0.3	10°	1.5	40	4		2CTE 015 003 050	1.5	0°30	5	45	4	
2CTE 004 003 016	0.4	0°30	1.6	40	4		2CTE 015 010 050	1.5	1°	5	45	4	
2CTE 004 010 016	0.4	1°	1.6	40	4		2CTE 015 013 060	1.5	1°30	6	45	4	
2CTE 004 013 016	0.4	1°30	1.6	40	4		2CTE 015 020 070	1.5	2°	7	45	4	
2CTE 004 020 016	0.4	2°	1.6	40	4		2CTE 015 030 080	1.5	3°	8	45	4	
2CTE 004 030 016	0.4	3°	1.6	40	4		2CTE 015 050 100	1.5	5°	10	50	4	
2CTE 004 050 016	0.4	5°	1.6	40	4		2CTE 015 070 100	1.5	7°	10	50	4	
2CTE 004 070 020	0.4	7°	2	40	4		2CTE 015 100 100	1.5	10°	10	50	6	
2CTE 004 100 020	0.4	10°	2	40	4		2CTE 020 003 060	2	0°30	6	45	4	
2CTE 005 003 020	0.5	0°30	2	40	4		2CTE 020 010 060	2	1°	6	45	4	
2CTE 005 010 020	0.5	1°	2	40	4		2CTE 020 013 060	2	1°30	6	45	4	
2CTE 005 013 020	0.5	1°30	2	40	4		2CTE 020 020 080	2	2°	8	45	4	
2CTE 005 020 020	0.5	2°	2	40	4		2CTE 020 030 100	2	3°	10	50	4	
2CTE 005 030 020	0.5	3°	2	40	4		2CTE 020 050 100	2	5°	10	50	4	
2CTE 005 050 020	0.5	5°	2	40	4		2CTE 020 070 100	2	7°	10	50	6	
2CTE 005 070 025	0.5	7°	2.5	40	4		2CTE 020 100 110	2	10°	11	50	6	
2CTE 005 100 025	0.5	10°	2.5	40	4		2CTE 025 003 080	2.5	0°30	8	45	6	
2CTE 006 003 020	0.6	0°30	2	40	4		2CTE 025 010 100	2.5	1°	10	50	6	
2CTE 006 010 020	0.6	1°	2	40	4		2CTE 025 013 100	2.5	1°30	10	50	6	
2CTE 006 013 020	0.6	1°30	2	40	4		2CTE 025 020 120	2.5	2°	12	50	6	
2CTE 006 020 020	0.6	2°	2	40	4		2CTE 025 030 120	2.5	3°	12	50	6	
2CTE 006 030 020	0.6	3°	2	40	4		2CTE 025 050 120	2.5	5°	12	50	6	
2CTE 006 050 020	0.6	5°	2	40	4		2CTE 025 070 120	2.5	7°	12	50	6	
2CTE 006 070 025	0.6	7°	2.5	40	4		2CTE 025 100 100	2.5	10°	10	50	6	
2CTE 006 100 025	0.6	10°	2.5	40	4		2CTE 030 003 120	3	0°30	12	50	6	
2CTE 007 010 025	0.7	1°	2.5	40	4		2CTE 030 010 120	3	1°	12	50	6	
2CTE 007 013 025	0.7	1°30	2.5	40	4		2CTE 030 013 120	3	1°30	12	50	6	
2CTE 007 020 025	0.7	2°	2.5	40	4		2CTE 030 020 120	3	2°	12	50	6	
2CTE 007 030 025	0.7	3°	2.5	40	4		2CTE 030 030 120	3	3°	12	50	6	
2CTE 007 050 025	0.7	5°	2.5	40	4		2CTE 030 050 120	3	5°	12	50	6	
2CTE 007 070 030	0.7	7°	3	40	4		2CTE 030 070 120	3	7°	12	50	6	
2CTE 007 100 030	0.7	10°	3	40	4		2CTE 030 100 080	3	10°	8	50	6	
2CTE 008 003 030	0.8	0°30	3	40	4		2CTE 040 003 150	4	0°30	15	60	6	
2CTE 008 010 030	0.8	1°	3	40	4		2CTE 040 010 150	4	1°	15	60	6	
2CTE 008 013 030	0.8	1°30	3	40	4		2CTE 040 013 150	4	1°30	15	60	6	
2CTE 008 020 030	0.8	2°	3	40	4		2CTE 040 020 150	4	2°	15	60	6	
2CTE 008 030 030	0.8	3°	3	40	4		2CTE 040 030 180	4	3°	18	60	6	
2CTE 008 050 030	0.8	5°	3	40	4		2CTE 040 050 230	4	5°	23	65	8	
2CTE 008 070 030	0.8	7°	3	40	4		2CTE 060 003 200	6	0°30	20	65	8	
2CTE 008 100 030	0.8	10°	3	40	4		2CTE 060 010 200	6	1°	20	65	8	
2CTE 010 003 040	1	0°30	4	45	4		2CTE 060 013 200	6	1°30	20	65	8	

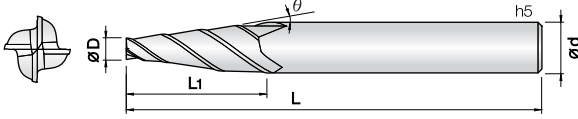
TAPER

단위 : mm

Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고								
2CTE 060 020 200	6	2°	20	65	8									
2CTE 060 030 190	6	3°	19	65	8									
2CTE 060 050 230	6	5°	23	75	10									
2CTE 060 070 240	6	7°	24	75	12									
2CTE 060 100 170	6	10°	17	75	12									
2CTE 070 003 250	7	0°30	25	70	8									
2CTE 070 010 250	7	1°	25	70	8									
2CTE 070 013 250	7	1°30	25	70	10									
2CTE 070 030 280	7	3°	28	80	10									
2CTE 070 050 280	7	5°	28	80	12									
2CTE 080 003 320	8	0°30	32	90	10									
2CTE 080 010 350	8	1°	35	90	10									
2CTE 080 013 350	8	1°30	35	90	10									
2CTE 080 020 280	8	2°	28	75	10									
2CTE 080 030 350	8	3°	35	90	12									
2CTE 080 050 450	8	5°	45	100	16									
2CTE 080 070 320	8	7°	32	90	16									
2CTE 080 100 340	8	10°	34	100	20									

TAPER

## 4날 고속가공용 테이퍼 엔드밀



- 고경도강(HRc50이상), 프리하든강 계열의 고정밀 가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.
- Endmills for pre-hardened and hardened steel(HRc50~)
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Minimize fracturing by high TRS fine(0.5  $\mu$ m) WC grade.

4

WC  
미립자

TISIN  
Coating

D  
+0 -0.01

D  
-0.01 -0.025

30°  
Helix Angle

Shield Edge

ø0.3 ~ ø5    ø6 ~ ø10

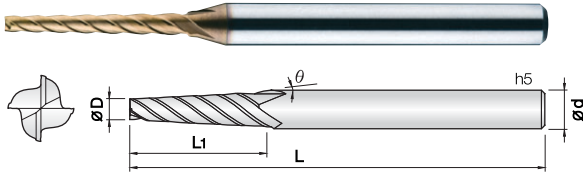
D Size	D Tolerance
ø0.3 ~ 5	+0 ~ -0.01mm
ø6 ~ 8	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고								
4CTE 030 003 110	3	0° 30'	11	50	6									
4CTE 030 010 110	3	1°	11	50	6									
4CTE 030 013 110	3	1° 30'	11	50	6									
4CTE 030 020 150	3	2°	15	60	6									
4CTE 030 023 150	3	2° 30'	15	60	6									
4CTE 030 030 150	3	3°	15	60	6									
4CTE 030 050 150	3	5°	15	60	6									
4CTE 030 070 120	3	7°	12	60	6									
4CTE 040 003 150	4	0° 30'	15	60	6									
4CTE 040 010 150	4	1°	15	60	6									
4CTE 040 013 150	4	1° 30'	15	60	6									
4CTE 040 020 180	4	2°	18	60	6									
4CTE 040 023 180	4	2° 30'	18	60	6									
4CTE 040 030 180	4	3°	18	60	6									
4CTE 040 050 230	4	5°	23	65	8									
4CTE 040 070 250	4	7°	25	75	10									
4CTE 050 003 180	5	0° 30'	18	60	6									
4CTE 050 010 180	5	1°	18	60	6									
4CTE 050 013 180	5	1° 30'	18	60	6									
4CTE 050 020 150	5	2°	15	60	6									
4CTE 050 023 200	5	2° 30'	20	65	8									
4CTE 050 030 210	5	3°	21	65	8									
4CTE 050 050 280	5	5°	28	80	10									
4CTE 050 070 280	5	7°	28	80	12									
4CTE 060 003 200	6	0° 30'	20	65	8									
4CTE 060 010 200	6	1°	20	65	8									
4CTE 060 013 200	6	1° 30'	20	65	8									
4CTE 060 020 200	6	2°	20	65	8									
4CTE 060 023 200	6	2° 30'	20	65	8									
4CTE 060 030 260	6	3°	26	75	10									
4CTE 060 050 230	6	5°	23	75	10									
4CTE 060 070 240	6	7°	24	80	12									
4CTE 080 003 250	8	0° 30'	25	75	10									
4CTE 080 010 250	8	1°	25	75	10									
4CTE 080 013 250	8	1° 30'	25	75	10									
4CTE 080 020 250	8	2°	25	75	10									
4CTE 080 023 230	8	2° 30'	23	75	10									
4CTE 080 030 300	8	3°	30	80	12									
4CTE 080 050 230	8	5°	23	85	12									
4CTE 100 003 300	10	0° 30'	30	80	12									
4CTE 100 010 300	10	1°	30	80	12									
4CTE 100 013 300	10	1° 30'	30	80	12									
4CTE 100 020 280	10	2°	28	80	12									
4CTE 100 030 400	10	3°	40	100	16									
4CTE 100 050 340	10	5°	34	100	16									

TAPER

## 4날 고속가공용 리브테이퍼 엔드밀



- 고경도강(HRc50이상), 프리하든강 계열의 고속가공 엔드밀
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 밑날2날 형상과 옆날4날 형상으로 깊은 홈 가공시 적합합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.

- Endmills for pre-hardened and hardened steel (HRc50~)
- Good wear resistance by Si-based PVD coating.
- Optimum for deep grooving by 2bottom edge with 4flutes.
- High precise edge tolerance.
- Very nice work surface finish.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.

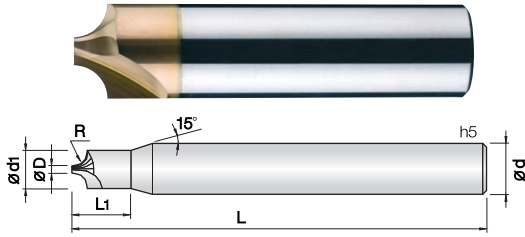


D Size	D Tolerance
ø0.5 ~ 2.5	+0 ~ -0.01mm

단위 : mm

Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
4RTE 005 030 040	0.5	0° 30'	4	45	4		4RTE 012 030 160	1.2	0° 30'	16	50	4	
4RTE 005 030 060	0.5	0° 30'	6	45	4		4RTE 012 045 080	1.2	0° 45'	8	45	4	
4RTE 005 045 040	0.5	0° 45'	4	45	4		4RTE 012 045 100	1.2	0° 45'	10	45	4	
4RTE 005 045 060	0.5	0° 45'	6	45	4		4RTE 012 045 120	1.2	0° 45'	12	45	4	
4RTE 005 100 040	0.5	1°	4	45	4		4RTE 012 045 160	1.2	0° 45'	16	50	4	
4RTE 005 100 060	0.5	1°	6	45	4		4RTE 012 100 080	1.2	1°	8	45	4	
4RTE 006 030 040	0.6	0° 30'	4	45	4		4RTE 012 100 100	1.2	1°	10	45	4	
4RTE 006 030 060	0.6	0° 30'	6	45	4		4RTE 012 100 120	1.2	1°	12	45	4	
4RTE 006 045 040	0.6	0° 45'	4	45	4		4RTE 012 100 160	1.2	1°	16	50	4	
4RTE 006 045 060	0.6	0° 45'	6	45	4		4RTE 015 030 060	1.5	0° 30'	6	45	4	
4RTE 006 100 040	0.6	1°	4	45	4		4RTE 015 030 100	1.5	0° 30'	10	45	4	
4RTE 006 100 060	0.6	1°	6	45	4		4RTE 015 030 160	1.5	0° 30'	16	50	4	
4RTE 007 030 060	0.7	0° 30'	6	45	4		4RTE 015 030 200	1.5	0° 30'	20	60	4	
4RTE 007 030 080	0.7	0° 30'	8	45	4		4RTE 015 100 060	1.5	1°	6	45	4	
4RTE 007 045 060	0.7	0° 45'	6	45	4		4RTE 015 100 100	1.5	1°	10	45	4	
4RTE 007 045 080	0.7	0° 45'	8	45	4		4RTE 015 100 160	1.5	1°	16	50	4	
4RTE 007 100 060	0.7	1°	6	45	4		4RTE 015 100 200	1.5	1°	20	60	4	
4RTE 007 100 080	0.7	1°	8	45	4		4RTE 015 100 250	1.5	1°	25	60	4	
4RTE 008 030 060	0.8	0° 30'	6	45	4		4RTE 015 130 060	1.5	1° 30'	6	45	4	
4RTE 008 030 080	0.8	0° 30'	8	45	4		4RTE 015 130 100	1.5	1° 30'	10	45	4	
4RTE 008 030 100	0.8	0° 30'	10	45	4		4RTE 015 130 160	1.5	1° 30'	16	50	4	
4RTE 008 045 060	0.8	0° 45'	6	45	4		4RTE 015 130 200	1.5	1° 30'	20	60	4	
4RTE 008 045 080	0.8	0° 45'	8	45	4		4RTE 015 130 250	1.5	1° 30'	25	60	4	
4RTE 008 045 100	0.8	0° 45'	10	45	4		4RTE 020 030 100	2	0° 30'	10	45	4	
4RTE 008 100 060	0.8	1°	6	45	4		4RTE 020 030 160	2	0° 30'	16	50	4	
4RTE 008 100 080	0.8	1°	8	45	4		4RTE 020 030 200	2	0° 30'	20	60	4	
4RTE 008 100 100	0.8	1°	10	45	4		4RTE 020 030 250	2	0° 30'	25	60	4	
4RTE 009 030 060	0.9	0° 30'	6	45	4		4RTE 020 100 100	2	1°	10	45	4	
4RTE 009 030 080	0.9	0° 30'	8	45	4		4RTE 020 100 160	2	1°	16	50	4	
4RTE 009 030 100	0.9	0° 30'	10	45	4		4RTE 020 100 200	2	1°	20	60	4	
4RTE 009 045 060	0.9	0° 45'	6	45	4		4RTE 020 100 250	2	1°	25	60	4	
4RTE 009 045 080	0.9	0° 45'	8	45	4		4RTE 020 130 100	2	1° 30'	10	45	4	
4RTE 009 045 100	0.9	0° 45'	10	45	4		4RTE 020 130 160	2	1° 30'	16	50	4	
4RTE 009 100 060	0.9	1°	6	45	4		4RTE 020 130 200	2	1° 30'	20	60	4	
4RTE 009 100 080	0.9	1°	8	45	4		4RTE 020 130 250	2	1° 30'	25	60	4	
4RTE 009 100 100	0.9	1°	10	45	4		4RTE 025 030 100	2.5	0° 30'	10	45	4	
4RTE 010 030 080	1	0° 30'	8	45	4		4RTE 025 030 160	2.5	0° 30'	16	50	4	
4RTE 010 030 100	1	0° 30'	10	45	4		4RTE 025 030 200	2.5	0° 30'	20	60	4	
4RTE 010 030 120	1	0° 30'	12	45	4		4RTE 025 030 250	2.5	0° 30'	25	60	4	
4RTE 010 045 080	1	0° 45'	8	45	4		4RTE 025 100 100	2.5	1°	10	45	4	
4RTE 010 045 100	1	0° 45'	10	45	4		4RTE 025 100 160	2.5	1°	16	50	4	
4RTE 010 045 120	1	0° 45'	12	45	4		4RTE 025 100 200	2.5	1°	20	60	4	
4RTE 010 100 080	1	1°	8	45	4		4RTE 025 100 250	2.5	1°	25	60	4	
4RTE 010 100 100	1	1°	10	45	4		4RTE 025 130 100	2.5	1° 30'	10	45	4	
4RTE 010 100 120	1	1°	12	45	4		4RTE 025 130 160	2.5	1° 30'	16	50	4	
4RTE 012 030 080	1.2	0° 30'	8	45	4		4RTE 025 130 200	2.5	1° 30'	20	60	4	
4RTE 012 030 100	1.2	0° 30'	10	45	4		4RTE 025 130 250	2.5	1° 30'	25	60	4	
4RTE 012 030 120	1.2	0° 30'	12	45	4								

TAPER



- HRc52이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금(0.5 $\mu$ m)을 채택, 엔드밀의 파손을 최소화 하였습니다.

- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Minimize fracturing by high TRS fine(0.5 $\mu$ m) WC grade.



0.1 ~ 2.5R    3 ~ 8R

D Size	D Tolerance
Ø0.5 ~ 0.9	+0 ~ -0.01mm
Ø1.4 ~ 5.9	+0 ~ -0.02mm

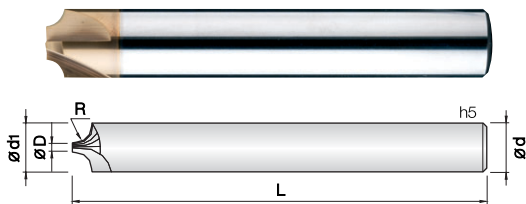
단위 : mm

Order Number	선단경 Diameter D x R	외경 Length of cut d1	유효장 Effective Length L2	전장 Overall Length L	샤홅크 Shank Dia d	비고
2CRC 005 001 S04	0.5 X R0.1	0.8	2.5	45	4	
2CRC 005 0015 S04	0.5 X R0.15	0.9	2.5	45	4	
2CRC 005 002 S04	0.5 X R0.2	1	2.5	45	4	
2CRC 005 0025 S04	0.5 X R0.25	1.1	2.5	45	4	
2CRC 005 003 S04	0.5 X R0.3	1.2	2.5	45	4	
2CRC 005 0035 S04	0.5 X R0.35	1.3	2.5	45	4	
2CRC 005 004 S04	0.5 X R0.4	1.4	2.5	45	4	
2CRC 005 0045 S04	0.5 X R0.45	1.5	2.5	45	4	
2CRC 005 005 S04	0.5 X R0.5	1.6	2.5	45	4	
2CRC 009 005 S04	0.9 X R0.5	2	3	45	4	
2CRC 049 005 S06	4.9 X R0.5	6	-	50	6	
2CRC 005 0055 S04	0.5 X R0.55	1.7	3	45	4	
2CRC 005 006 S04	0.5 X R0.6	1.8	3	45	4	
2CRC 005 0065 S04	0.5 X R0.65	1.9	3	45	4	
2CRC 005 007 S04	0.5 X R0.7	2	3	45	4	
2CRC 009 0075 S04	0.9 X R0.75	2.5	4	45	4	
2CRC 009 008 S04	0.9 X R0.8	2.6	4	45	4	
2CRC 009 0085 S04	0.9 X R0.85	2.7	4	45	4	
2CRC 009 009 S04	0.9 X R0.9	2.8	4	45	4	
2CRC 009 0095 S04	0.9 X R0.95	2.9	4	45	4	
2CRC 009 010 S06	0.9 X R1	3	5	50	6	
2CRC 039 010 S06	3.9 X R1	6	-	50	6	
2CRC 059 010 S08	5.9 X R1	8	-	60	8	
2CRC 009 0125 S06	0.9 X R1.25	3.5	5	50	6	
2CRC 034 0125 S06	3.4 X R1.25	6	-	50	6	
2CRC 014 015 S06	1.4 X R1.5	4.5	8	50	6	
2CRC 049 015 S08	4.9 X R1.5	8	-	60	8	
2CRC 014 020 S06	1.4 X R2	5.5	10	50	6	
2CRC 039 020 S08	3.9 X R2	8	-	60	8	
2CRC 019 025 S08	1.9 X R2.5	7	13	60	8	
2CRC 019 030 S08	1.9 X R3	8	-	60	8	
2CRC 019 035 S10	1.9 X R3.5	9	13	70	10	
2CRC 019 040 S10	1.9 X R4	10	-	70	10	
2CRC 019 045 S12	1.9 X R4.5	11	13	80	12	
2CRC 019 050 S12	1.9 X R5	12	-	80	12	
2CRC 039 060 S16	3.9 X R6	16	-	90	16	
2CRC 059 070 S20	5.9 X R7	20	-	90	20	
2CRC 039 080 S20	3.9 X R8	20	-	90	20	



# 4CRC 4 Flutes Corner Rounding Cutter

## 4날코너역R 커터



- HRc52이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 항절력이 높은 미립자 초경합금을 채택, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Minimize fracturing at high feed by high TRS fine WC grade.



0.5 ~ 2.5R    3 ~ 6R

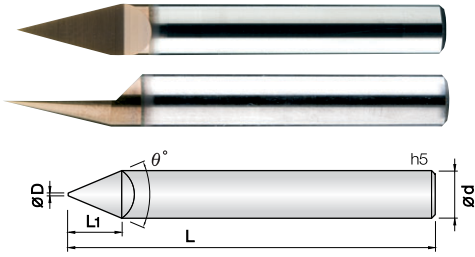
D Size	D Tolerance
Ø1.4 ~ 5.9	+0 ~ -0.02mm

단위 : mm

Order Number	선단경 Diameter D x R	외경 Length of cut d1	전장 Overall Length L	샥크 Dia d	비고					
4CRC 029 005 S04	2.9 X R0.5	4	50	4						
4CRC 024 0075 S04	2.4 X R0.75	4	50	4						
4CRC 019 010 S04	1.9 X R1	4	50	4						
4CRC 044 005 S06	4.4 X R0.5	6	50	6						
4CRC 044 0075 S06	4.4 X R0.75	6	50	6						
4CRC 039 010 S06	3.9 X R1	6	50	6						
4CRC 059 010 S08	5.9 X R1	8	60	8						
4CRC 049 015 S08	4.9 X R1.5	8	60	8						
4CRC 039 020 S08	3.9 X R2	8	60	8						
4CRC 059 020 S10	5.9 X R2	10	70	10						
4CRC 049 025 S10	4.9 X R2.5	10	70	10						
4CRC 039 030 S10	3.9 X R3	10	70	10						
4CRC 059 030 S12	5.9 X R3	12	75	12						
4CRC 039 040 S12	3.9 X R4	12	75	12						
4CRC 059 050 S16	5.9 X R5	16	80	16						
4CRC 039 060 S16	3.9 X R6	16	80	16						

GENERAL PURPOSE

### 1날 직선 날 테이퍼 엔드밀



- HRC50이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 직선날 타입 1날을 적용하여 조각 NC 작업에 적합합니다.
- 다양한 날경의 적용으로 조각 작업시 효율성을 최대화 하였습니다.
- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- Good wear resistance by Si-based PVD coating.
- Optimum for NC engraving by straight type one edge.
- Maximize engraving efficiency by various edge diameter.

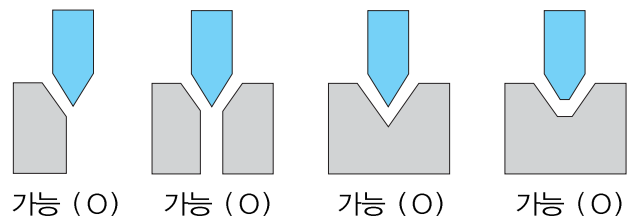


D Size	D Tolerance
∅0	+0.05 ~ -0mm
∅0.1 ~ 0.2	+0 ~ -0.02mm

단위 : mm

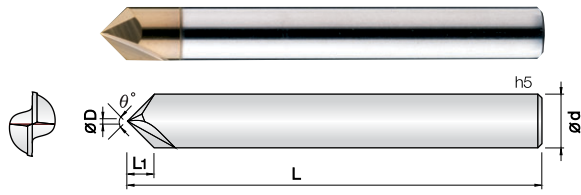
Order Number	날경 Diameter D	각도 Angle θ	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	각도 Angle θ	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
1STE 000 200 S04	0	20°	5	40	4		1STE 002 300 S06	0.2	30°	5	50	6	
1STE 000 300 S04	0	30°	5	40	4		New 1STE 002 900 S06	0.2	90°	2.9	50	6	
New 1STE 000 900 S04	0	90°	2	40	4		New 1STE 002 1200 S06	0.2	120°	1.67	50	6	
1STE 000 200 S06	0	20°	5	50	6								
1STE 000 300 S06	0	30°	5	50	6								
New 1STE 000 900 S06	0	90°	3	50	6								
New 1STE 000 1200 S06	0	120°	1.73	50	6								
New 1STE 0005 200 S04	0.05	20°	5	40	4								
New 1STE 0005 300 S04	0.05	30°	5	40	4								
New 1STE 0005 900 S04	0.05	90°	1.97	40	4								
New 1STE 0005 200 S06	0.05	20°	5	50	6								
New 1STE 0005 300 S06	0.05	30°	5	50	6								
New 1STE 0005 900 S06	0.05	90°	2.97	50	6								
New 1STE 0005 1200 S06	0.05	120°	1.71	50	6								
1STE 001 200 S04	0.1	20°	5	40	4								
1STE 001 300 S04	0.1	30°	5	40	4								
New 1STE 001 900 S04	0.1	90°	1.95	40	4								
1STE 001 200 S06	0.1	20°	5	50	6								
1STE 001 300 S06	0.1	30°	5	50	6								
New 1STE 001 900 S06	0.1	90°	2.95	50	6								
New 1STE 001 1200 S06	0.1	120°	1.7	50	6								
1STE 0015 200 S04	0.15	20°	5	40	4								
1STE 0015 300 S04	0.15	30°	5	40	4								
New 1STE 0015 900 S04	0.15	90°	1.92	40	4								
1STE 0015 200 S06	0.15	20°	5	50	6								
1STE 0015 300 S06	0.15	30°	5	50	6								
New 1STE 0015 900 S06	0.15	90°	2.92	50	6								
New 1STE 0015 1200 S06	0.15	120°	1.68	50	6								
1STE 002 200 S04	0.2	20°	5	40	4								
1STE 002 300 S04	0.2	30°	5	40	4								
New 1STE 002 900 S04	0.2	90°	1.9	40	4								
1STE 002 200 S06	0.2	20°	5	50	6								

#### ■ 가공 형상에 따른 절삭가능 여부 Available Cutting Shape



# 2STE 2 Flutes Straight Flute Taper End Mills

## 2날 직선날 테이퍼 엔드밀



- HRC50이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 직선날 타입 2날을 적용하여 조각NC 작업, 피삭재 모서리 면취, 센터링 작업에 적합합니다.
- 코팅과 비코팅으로 구분하여 수지, 아크릴 등의 가공도 가능합니다.
- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- Good wear resistance by Si-based PVD coating.
- Optimum for NC engraving, chamfering and centering with straight 2flutes.
- Resin, plastic machining applicable with coated or non coated endmill.



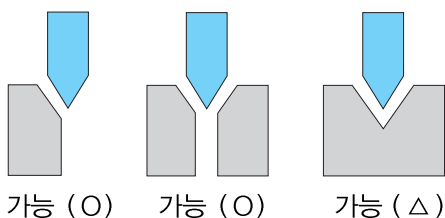
D Size	D Tolerance
∅	+0.05~ -0mm

단위 : mm

Order Number		날경	각도	날장	전장	샤프트	비고	
비코팅 Non coated	코팅 Coated	Diameter	Angle	Length of cut	Overall Length	Shank Dia	비코팅 Non coated	코팅 Coated
		D	θ	L1	L	d		
2STE 000 300 S03	2STEC 000 300 S03	0	30°	5.5	60	3		
2STE 000 600 S03	2STEC 000 600 S03	0	60°	2.5	60	3		
2STE 000 900 S03	2STEC 000 900 S03	0	90°	1.5	60	3		
	New 2STEC 000 900 080	0	90°	1.5	80	3		
New 2STE 000 1200 S03	New 2STEC 000 1200 S03	0	120°	0.86	60	3		
2STE 000 300 S04	2STEC 000 300 S04	0	30°	7.4	60	4		
2STE 000 600 S04	2STEC 000 600 S04	0	60°	3.4	60	4		
2STE 000 900 S04	2STEC 000 900 S04	0	90°	2	60	4		
	New 2STEC 000 900 100	0	90°	2	100	4		
New 2STE 000 1200 S04	New 2STEC 000 1200 S04	0	120°	1.15	60	4		
2STE 000 300 S06	2STEC 000 300 S06	0	30°	11.1	60	6		
2STE 000 600 S06	2STEC 000 600 S06	0	60°	5.1	60	6		
2STE 000 900 S06	2STEC 000 900 S06	0	90°	3	60	6		
	New 2STEC 000 900 110	0	90°	3	110	6		
New 2STE 000 1200 S06	New 2STEC 000 1200 S06	0	120°	1.73	60	6		
2STE 000 600 S08	2STEC 000 600 S08	0	60°	6.9	65	8		
2STE 000 900 S08	2STEC 000 900 S08	0	90°	4	65	8		
	New 2STEC 000 900 120	0	90°	4	120	8		
New 2STE 000 1200 S08	New 2STEC 000 1200 S08	0	120°	2.3	65	8		
2STE 000 600 S10	2STEC 000 600 S10	0	60°	8.6	70	10		
2STE 000 900 S10	2STEC 000 900 S10	0	90°	5	70	10		
	New 2STEC 000 900 150	0	90°	5	150	10		
New 2STE 000 1200 S10	New 2STEC 000 1200 S10	0	120°	2.88	70	10		
2STE 000 600 S12	2STEC 000 600 S12	0	60°	10.3	75	12		
2STE 000 900 S12	2STEC 000 900 S12	0	90°	6	75	12		
	New 2STEC 000 900 160	0	90°	6	160	12		
New 2STE 000 1200 S12	New 2STEC 000 1200 S12	0	120°	3.46	75	12		

### 가공 형상에 따른 절삭가능 여부

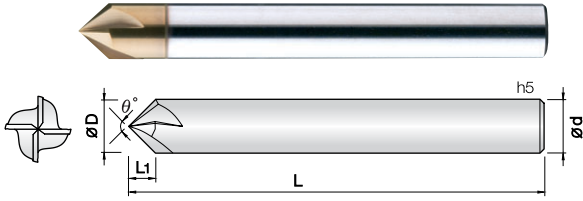
Available Cutting Shape



GENERAL PURPOSE



# 4날 직선날 테이퍼 엔드밀



- **Hrc52이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공**
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 직선날 타입 4날을 적용하여 피삭재 모서리 면취 작업에 최고의 성능을 발휘합니다.
- 항절력이 높은 미립자 초경합금을 채택, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- Good wear resistance by Si-based PVD coating.
- Optimum for chamfering with straight 4flutes.
- Minimize fracturing at high feed by high TRS fine WC grade.

D Size	D Tolerance
∅0	+0.05~ -0mm

∅0

단위 : mm

Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
4STE 000 600 S03	0	60°	2.5	50	3	
4STE 000 900 S03	0	90°	1.5	50	3	
4STE 000 600 S04	0	60°	3.4	50	4	
4STE 000 900 S04	0	90°	2	50	4	
4STE 000 600 S06	0	60°	5.1	60	6	
4STE 000 900 S06	0	90°	3	60	6	
4STE 000 600 S08	0	60°	6.9	65	8	
4STE 000 900 S08	0	90°	4	65	8	
4STE 000 600 S10	0	60°	8.6	75	10	
4STE 000 900 S10	0	90°	5	75	10	
4STE 000 600 S12	0	60°	10.3	80	12	
4STE 000 900 S12	0	90°	6	80	12	

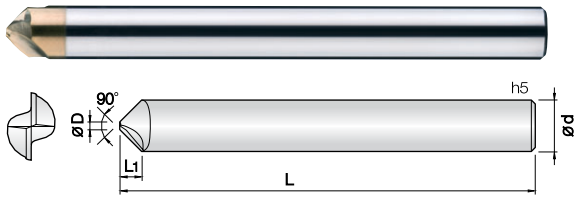
### 가공 형상에 따른 절삭가능 여부 Available Cutting Shape

가능 (O)      가능 (O)      불가능 (X)

GENERAL PURPOSE

# 2CHA 2 Flutes 90° Chamfering Cutter

## 2날 90°면취커터



- HRC50이하의 고경도강, 프리하트강, 공구강, 주철 등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 헬릭스 타입 2날을 적용하여 모서리 면취 가공시 절삭력이 좋으며, 피삭재의 조도가 우수합니다.
- 항절력이 높은 미립자 초경합금을 채택, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- Good wear resistance by Si-based PVD coating.
- Applied helix 2flutes design for better performance in corner chamfering.
- Minimize fracturing at high feed by high TRS fine WC grade.



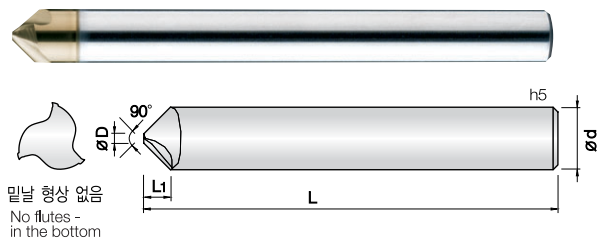
D Size	D Tolerance
Ø0.8 ~ 1	+0 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
2CHA 008 900 011	0.8	90°	1.1	50	3	
2CHA 008 900 016	0.8	90°	1.6	50	4	
2CHA 010 900 025	1	90°	2.5	60	6	
2CHA 010 900 035	1	90°	3.5	70	8	
2CHA 010 900 045	1	90°	4.5	80	10	
2CHA 010 900 055	1	90°	5.5	90	12	

# 3CHA 3 Flutes 90° Chamfering Cutter

## 3날 90°면취커터



- HRC50이하의 고경도강, 프리하트강, 공구강, 주철 등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 헬릭스 타입 3날을 적용하여 모서리 면취 가공시 절삭력이 좋으며, 피삭재의 조도가 우수합니다.
- 항절력이 높은 미립자 초경합금을 채택, 고이송 작업시 엔드밀의 파손을 최소화 하였습니다.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- Good wear resistance by Si-based PVD coating.
- Applied helix 3flutes design for better performance in corner chamfering.
- Minimize fracturing at high feed by high TRS fine WC grade.



D Size	D Tolerance
Ø0.8 ~ 2	+0 ~ -0.02mm

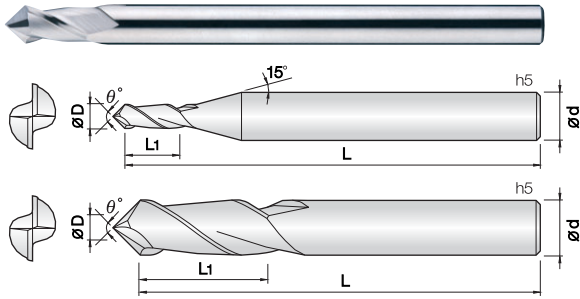
단위 : mm

Order Number	날경 Diameter D	각도 Angle $\theta$	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
3CHA 008 900 011	0.8	90°	1.1	50	3	
3CHA 008 900 016	0.8	90°	1.6	50	4	
3CHA 010 900 025	1	90°	2.5	60	6	
3CHA 010 900 035	1	90°	3.5	65	8	
3CHA 020 900 045	2	90°	4.5	75	10	
3CHA 020 900 055	2	90°	5.5	80	12	



# 2GEN 2 Flutes Centering End Mills

## 2날 센터링 엔드밀



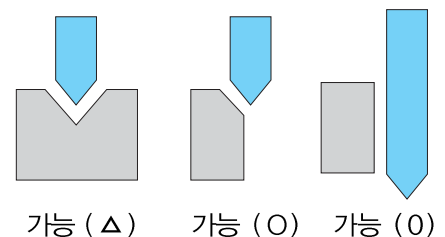
- 비코팅 : 아크릴, ABS, 알류미늄 등 비철, 비금속 피삭재 가공
- 코팅 : 프리하든강, 일반강, 주철 비철합금 가공엔드밀
- 센터링 작업이 가능하며, 모서리 면취와 측면절삭을 동시에 가공할 수 있는 다기능 엔드밀입니다.
- 미립자 초경합금을 채택하여 다양한 비철합금 및 목업의 피삭재 영역에 적용 가능합니다.
- JCRO 코팅과 비코팅을 구분하여 HRc500이하의 고경도강, 프리하든강, 주철 등 다양한 피삭재 가공이 가능합니다.
- Non coating : Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Coating : Pre-hardened steel, Cast iron, Non-metallic materials
- Multi function endmill for corner chamfering, side wall and centering.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.

단위 : mm

Order Number		날경 Diameter D	각도 Angle θ	날장 Length of cut L1	전장 Overall Length L	샤프트 Shank Dia d	비고	
비코팅 Non coated	코팅 Coated						비코팅 Non coated	코팅 Coated
2CEN 003 600 S03	2CENC 003 600 S03	0.3	60°	0.6	45	3		
2CEN 003 900 S03	2CENC 003 900 S03	0.3	90°	0.6	45	3		
2CEN 005 600 S03	2CENC 005 600 S03	0.5	60°	1	50	3		
2CEN 005 900 S03	2CENC 005 900 S03	0.5	90°	1	50	3		
2CEN 008 600 S03	2CENC 008 600 S03	0.8	60°	1.6	50	3		
2CEN 008 900 S03	2CENC 008 900 S03	0.8	90°	1.6	50	3		
2CEN 010 600 S03	2CENC 010 600 S03	1	60°	2	50	3		
2CEN 010 900 S03	2CENC 010 900 S03	1	90°	2	50	3		
2CEN 020 600 S03	2CENC 020 600 S03	2	60°	4	50	3		
2CEN 020 900 S03	2CENC 020 900 S03	2	90°	4	50	3		
2CEN 030 600 S03	2CENC 030 600 S03	3	60°	6	50	3		
2CEN 030 900 S03	2CENC 030 900 S03	3	90°	6	50	3		
2CEN 030 600 S06	2CENC 030 600 S06	3	60°	6	50	6		
2CEN 030 900 S06	2CENC 030 900 S06	3	90°	6	50	6		
2CEN 040 600 S06	2CENC 040 600 S06	4	60°	8	50	6		
2CEN 040 900 S06	2CENC 040 900 S06	4	90°	8	50	6		
2CEN 050 600 S06	2CENC 050 600 S06	5	60°	10	50	6		
2CEN 050 900 S06	2CENC 050 900 S06	5	90°	10	50	6		
2CEN 060 600 S06	2CENC 060 600 S06	6	60°	12	60	6		
2CEN 060 900 S06	2CENC 060 900 S06	6	90°	12	60	6		
2CEN 080 600 S08	2CENC 080 600 S08	8	60°	16	70	8		
2CEN 080 900 S08	2CENC 080 900 S08	8	90°	16	70	8		
2CEN 100 600 S10	2CENC 100 600 S10	10	60°	18	70	10		
2CEN 100 900 S10	2CENC 100 900 S10	10	90°	18	70	10		
2CEN 120 600 S12	2CENC 120 600 S12	12	60°	20	75	12		
2CEN 120 900 S12	2CENC 120 900 S12	12	90°	20	75	12		
2CEN 140 600 S14	2CENC 140 600 S14	14	60°	26	80	14		
2CEN 140 900 S14	2CENC 140 900 S14	14	90°	26	80	14		
2CEN 160 600 S16	2CENC 160 600 S16	16	60°	32	100	16		
2CEN 160 900 S16	2CENC 160 900 S16	16	90°	32	100	16		

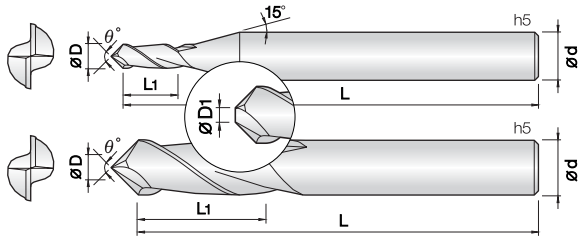
### 가공 형상에 따른 절삭가능 여부

Available Cutting Shape



GENERAL PURPOSE

## 2날 소경면취 엔드밀



- 코팅 : 프리하든강, 일반강, 주물 비철합금 가공 엔드밀
- 센터링 작업이 가능하며, 모서리 면취와 측면절삭을 동시에 가공할 수 있는 다기능 엔드밀입니다.
- 미립자 초경합금을 채택, 다양한 비철합금 및 목업의 피삭재 영역에 적용가능
- JCRO코팅을 적용하여 HRc500이하의 고경도강, 프리하든강, 주철 등 다양한 피삭재 가공이 가능합니다.
- Coating : Pre-hardened steel, Cast iron, Non-metallic materials
- Multi function endmill for corner chamfering, side wall and centering.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron. (HRc ~50)

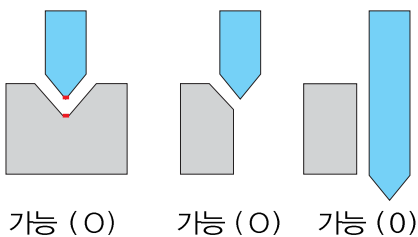


D Size	D Tolerance
ø0.5 ~ 3	+0 ~ -0.01mm

단위 : mm

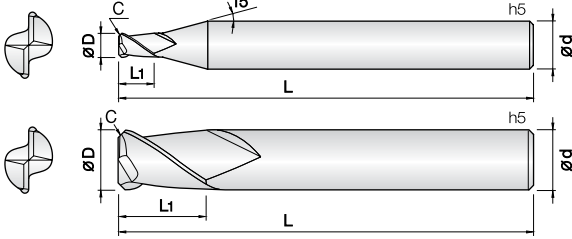
Order Number	날경 Diameter D	선단경 Front Diameter D1	각도 Angle $\theta$	유효장 Effective Length L1	전장 Overall Length L	샙크 Shank Dia d	비고
2CENE 005 0005 090	0.5	0.05	90°	1	40	3	
2CENE 006 0005 090	0.6	0.05	90°	1.2	40	3	
2CENE 007 0005 090	0.7	0.05	90°	1.4	40	3	
2CENE 008 0005 090	0.8	0.05	90°	1.6	40	3	
2CENE 010 0005 090	1	0.05	90°	2	40	3	
2CENE 010 001 090	1	0.1	90°	2	40	3	
2CENE 010 001 120	1	0.1	120°	2	40	3	
2CENE 012 001 090	1.2	0.1	90°	2.4	40	3	
2CENE 015 001 090	1.5	0.1	90°	3	40	3	
2CENE 015 001 120	1.5	0.1	120°	3	40	3	
2CENE 020 001 090	2	0.1	90°	4	40	3	
2CENE 020 002 090	2	0.2	90°	4	40	3	
2CENE 020 002 120	2	0.2	120°	4	40	3	
2CENE 025 002 090	2.5	0.2	90°	5	40	3	
2CENE 030 002 090	3	0.2	90°	6	40	3	
2CENE 030 002 120	3	0.2	120°	6	40	3	

### 가공 형상에 따른 절삭가능 여부 Available Cutting Shape



GENERAL PURPOSE

## 2날 코너45도 면취 엔드밀



- 프리하드강, 일반강, 주물 비철합금 가공엔드밀
- 모서리 면취와 측면절삭을 동시에 가공할 수 있는 다기능 엔드밀 입니다.
- 엔드밀의 인선을 면취설계하여 엔드밀의 치핑을 최소화 하였습니다.
- JCRO코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 다양한 피삭재 가공이 가능합니다.
- **Pre-hardened steel, Cast iron, Non-metallic materials**
- Multi function endmill for corner chamfering, side wall.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Endmills for various work materials.

2

WC  
미립자

JCRO  
Coating

|D|  
+0 -0.01

|D|  
-0.01 -0.025

30°  
Helix Angle

Ø1~Ø5      Ø6~Ø12

D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

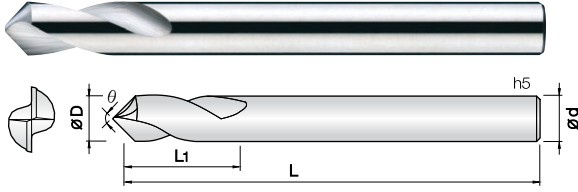
Order Number	날경 Diameter D	면취량 Chamfer C	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
2CCMC 010 0002 S04	1	0.02	2.5	45	4	
2CCMC 010 0005 S04	1	0.05	2.5	45	4	
2CCMC 010 001 S04	1	0.1	2.5	45	4	
2CCMC 010 002 S04	1	0.2	2.5	45	4	
2CCMC 010 003 S04	1	0.3	2.5	45	4	
2CCMC 015 0005 S04	1.5	0.05	4	45	4	
2CCMC 015 001 S04	1.5	0.1	4	45	4	
2CCMC 015 002 S04	1.5	0.2	4	45	4	
2CCMC 015 003 S04	1.5	0.3	4	45	4	
2CCMC 015 005 S04	1.5	0.5	4	45	4	
2CCMC 020 0005 S04	2	0.05	6	45	4	
2CCMC 020 001 S04	2	0.1	6	45	4	
2CCMC 020 002 S04	2	0.2	6	45	4	
2CCMC 020 003 S04	2	0.3	6	45	4	
2CCMC 020 004 S04	2	0.4	6	45	4	
2CCMC 020 005 S04	2	0.5	6	45	4	
2CCMC 030 0005 S06	3	0.05	8	50	6	
2CCMC 030 001 S06	3	0.1	8	50	6	
2CCMC 030 002 S06	3	0.2	8	50	6	
2CCMC 030 003 S06	3	0.3	8	50	6	
2CCMC 030 005 S06	3	0.5	8	50	6	
2CCMC 030 010 S06	3	1	8	50	6	
2CCMC 040 0005 S06	4	0.05	11	50	6	
2CCMC 040 001 S06	4	0.1	11	50	6	
2CCMC 040 002 S06	4	0.2	11	50	6	
2CCMC 040 003 S06	4	0.3	11	50	6	
2CCMC 040 005 S06	4	0.5	11	50	6	
2CCMC 040 010 S06	4	1	11	50	6	
2CCMC 040 015 S06	4	1.5	11	50	6	
2CCMC 050 001 S06	5	0.1	13	60	6	
2CCMC 050 002 S06	5	0.2	13	60	6	
2CCMC 050 005 S06	5	0.5	13	60	6	
2CCMC 050 010 S06	5	1	13	60	6	
2CCMC 050 015 S06	5	1.5	13	60	6	
2CCMC 050 020 S06	5	2	13	60	6	
2CCMC 060 0005 S06	6	0.05	13	60	6	
2CCMC 060 001 S06	6	0.1	13	60	6	
2CCMC 060 002 S06	6	0.2	13	60	6	
2CCMC 060 003 S06	6	0.3	13	60	6	
2CCMC 060 005 S06	6	0.5	13	60	6	
2CCMC 060 010 S06	6	1	13	60	6	
2CCMC 060 015 S06	6	1.5	13	60	6	
2CCMC 060 020 S06	6	2	13	60	6	
2CCMC 060 025 S06	6	2.5	13	60	6	
2CCMC 080 001 S08	8	0.1	19	70	8	
2CCMC 080 002 S08	8	0.2	19	70	8	
2CCMC 080 005 S08	8	0.5	19	70	8	
2CCMC 080 010 S08	8	1	19	70	8	



Order Number	날경 Diameter D	면취량 Chamfer C	날장 Length of cut L1	전장 Overall Length L	셱크 Shank Dia d	비고
2CCMC 080 015 S08	8	1.5	19	70	8	
2CCMC 080 020 S08	8	2	19	70	8	
2CCMC 080 025 S08	8	2.5	19	70	8	
2CCMC 080 030 S08	8	3	19	70	8	
2CCMC 100 001 S10	10	0.1	22	75	10	
2CCMC 100 002 S10	10	0.2	22	75	10	
2CCMC 100 005 S10	10	0.5	22	75	10	
2CCMC 100 010 S10	10	1	22	75	10	
2CCMC 100 015 S10	10	1.5	22	75	10	
2CCMC 100 020 S10	10	2	22	75	10	
2CCMC 100 030 S10	10	3	22	75	10	
2CCMC 100 040 S10	10	4	22	75	10	
2CCMC 120 001 S12	12	0.1	26	80	12	
2CCMC 120 002 S12	12	0.2	26	80	12	
2CCMC 120 005 S12	12	0.5	26	80	12	
2CCMC 120 010 S12	12	1	26	80	12	
2CCMC 120 015 S12	12	1.5	26	80	12	
2CCMC 120 020 S12	12	2	26	80	12	
2CCMC 120 030 S12	12	3	26	80	12	
2CCMC 120 040 S12	12	4	26	80	12	
2CCMC 120 050 S12	12	5	26	80	12	

# 2SPO 2 Flutes NC Spotting Drill

## 2날 NC 스폿팅 드릴



- HRc50이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 헬릭스 타입 2날을 적용하여 센터링 작업에 적합합니다.
- 코팅과 비코팅으로 구분하여 수지, 아크릴 등의 가공도 가능합니다.
- 미립자 초경합금을 채택하여 다양한 비철합금 및 목업의 피삭재 영역에 적용 가능합니다.
- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- Good wear resistance by Si-based PVD coating.
- Optimum for centering with helix 2flutes.
- Resin, plastic machining applicable with coated or non coated endmill.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.



D Size	D Tolerance
ø2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16	-0.015 ~ -0.03mm

단위 : mm

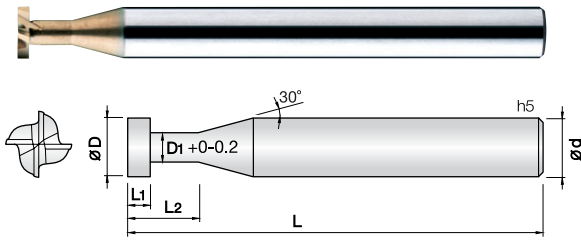
Order Number		날경 Diameter D	각도 Angle θ	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	
비코팅 Non coated	코팅 Coated						비코팅 Non coated	코팅 Coated
New 2SPO 003 090 040	New 2SPOC 003 090 040	0.3	90°	0.9	40	3		
New 2SPO 005 090 040	New 2SPOC 005 090 040	0.5	90°	1.5	40	3		
New 2SPO 008 090 040	New 2SPOC 008 090 040	0.8	90°	2.4	40	3		
2SPO 010 090 050	2SPOC 010 090 050	1	90°	3	50	3		
	New 2SPOC 010 090 080	1	90°	3	80	3		
2SPO 010 120 050	2SPOC 010 120 050	1	120°	3	50	3		
New 2SPO 015 090 050	New 2SPOC 015 090 050	1.5	90°	4.5	50	3		
2SPO 020 090 050	2SPOC 020 090 050	2	90°	6	50	3		
	New 2SPOC 020 090 080	2	90°	6	80	3		
2SPO 020 120 050	2SPOC 020 120 050	2	120°	6	50	3		
2SPO 030 090 050	2SPOC 030 090 050	3	90°	10	50	3		
2SPO 030 120 050	2SPOC 030 120 050	3	120°	10	50	3		
2SPO 030 090 100	2SPOC 030 090 100	3	90°	10	100	3		
2SPO 030 120 100	2SPOC 030 120 100	3	120°	10	100	3		
2SPO 040 090 050	2SPOC 040 090 050	4	90°	12	50	4		
2SPO 040 120 050	2SPOC 040 120 050	4	120°	12	50	4		
2SPO 040 090 100	2SPOC 040 090 100	4	90°	12	100	4		
2SPO 040 120 100	2SPOC 040 120 100	4	120°	12	100	4		
2SPO 060 090 070	2SPOC 060 090 070	6	90°	15	70	6		
2SPO 060 120 070	2SPOC 060 120 070	6	120°	15	70	6		
2SPO 060 090 110	2SPOC 060 090 110	6	90°	15	110	6		
	New 2SPOC 060 090 150	6	90°	15	150	6		
2SPO 060 120 110	2SPOC 060 120 110	6	120°	15	110	6		
2SPO 080 090 080	2SPOC 080 090 080	8	90°	25	80	8		
	New 2SPOC 080 090 150	8	90°	25	150	8		
2SPO 080 120 080	2SPOC 080 120 080	8	120°	25	80	8		
2SPO 100 090 090	2SPOC 100 090 090	10	90°	25	90	10		
2SPO 100 120 090	2SPOC 100 120 090	10	120°	25	90	10		
2SPO 100 090 150	2SPOC 100 090 150	10	90°	25	150	10		
2SPO 100 120 150	2SPOC 100 120 150	10	120°	25	150	10		
2SPO 120 090 090	2SPOC 120 090 090	12	90°	30	90	12		
2SPO 120 120 090	2SPOC 120 120 090	12	120°	30	90	12		
2SPO 120 090 150	2SPOC 120 090 150	12	90°	30	150	12		
2SPO 120 120 150	2SPOC 120 120 150	12	120°	30	150	12		
2SPO 160 090 110	2SPOC 160 090 110	16	90°	35	110	16		
2SPO 160 120 110	2SPOC 160 120 110	16	120°	35	110	16		

GENERAL PURPOSE



# 4TES 4 Flutes T-Slot Cutter

## 4날 T 커터



- HRc50이하의 고경도강, 프리하트강, 공구강, 주철 등 피삭재 가공
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 4날을 적용하여 인선부 치핑을 최소화 하였습니다.
- 다양한 형상과 유효장으로 공작물 간섭을 최소화하여 작업효율이 향상됩니다.
- 코팅과 비코팅으로 구분하여 수지, 아크릴 등의 가공도 가능합니다.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying 4flutes design.
- Various shapes and length provides optimum efficiency.
- Resin, plastic machining applicable with coated or non coated endmill.

**4**  
미립자

**WC**  
미립자

**JCRO**  
Coating

**D**  
 $+0 -0.02$

**D**  
 $-0.01 -0.03$

**L1**  
 $\pm 0.03$

**L1**  
 $\pm 0.05$

**15°**  
Helix Angle

Size	D Tolerance
Ø2 ~ 5	+0 ~ -0.02mm
Ø6 ~ 10	-0.01 ~ -0.03mm

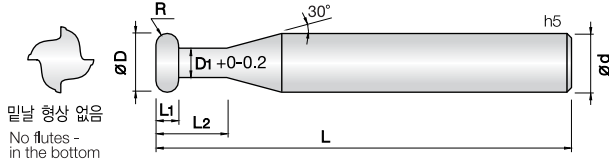
단위 : mm

Order Number		날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	목부경 Neck Diameter D1	전장 Overall Length L	샙크 Shank Dia d	비고	
								비코팅 Non coated	코팅 Coated
4TES 020 003 040	4TESC 020 003 040	2	0.3	4	1	50	6		
4TES 020 005 040	4TESC 020 005 040	2	0.5	4	1	50	6		
4TES 030 003 045	4TESC 030 003 045	3	0.3	4.5	1.5	50	6		
4TES 030 005 045	4TESC 030 005 045	3	0.5	4.5	1.5	50	6		
4TES 030 010 045	4TESC 030 010 045	3	1	4.5	1.5	50	6		
4TES 040 003 050	4TESC 040 003 050	4	0.3	5	2	50	6		
4TES 040 005 050	4TESC 040 005 050	4	0.5	5	2	50	6		
4TES 040 010 050	4TESC 040 010 050	4	1	5	2	50	6		
4TES 050 005 045	4TESC 050 005 045	5	0.5	4.5	2.5	50	6		
4TES 050 010 050	4TESC 050 010 050	5	1	5	2.5	50	6		
4TES 050 015 055	4TESC 050 015 055	5	1.5	5.5	2.5	50	6		
4TES 050 020 060	4TESC 050 020 060	5	2	6	2.5	50	6		
4TES 060 005 045	4TESC 060 005 045	6	0.5	4.5	3	60	6		
4TES 060 010 050	4TESC 060 010 050	6	1	5	3	60	6		
4TES 060 015 055	4TESC 060 015 055	6	1.5	5.5	3	60	6		
4TES 060 020 060	4TESC 060 020 060	6	2	6	3	60	6		
4TES 080 005 045	4TESC 080 005 045	8	0.5	4.5	4	60	8		
4TES 080 010 050	4TESC 080 010 050	8	1	5	4	60	8		
4TES 080 015 055	4TESC 080 015 055	8	1.5	5.5	4	60	8		
4TES 080 020 060	4TESC 080 020 060	8	2	6	4	60	8		
4TES 080 030 070	4TESC 080 030 070	8	3	7	4	60	8		
4TES 100 010 070	4TESC 100 010 070	10	1	7	5	70	10		
4TES 100 020 080	4TESC 100 020 080	10	2	8	5	70	10		
4TES 100 030 090	4TESC 100 030 090	10	3	9	5	70	10		

GENERAL PURPOSE

# 4TRS 4 Flutes T-R Slot Cutter

## 4날 T-R 커터



- HRc50이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- JCRO 코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 직선날 타입 4날을 적용하여 인선부 치핑을 최소화 하였습니다.
- 다양한 형상과 유효장으로 공작물 간섭을 최소화하여 작업효율이 향상됩니다.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying straight 4flutes design.
- Various shapes and length provides optimum efficiency.

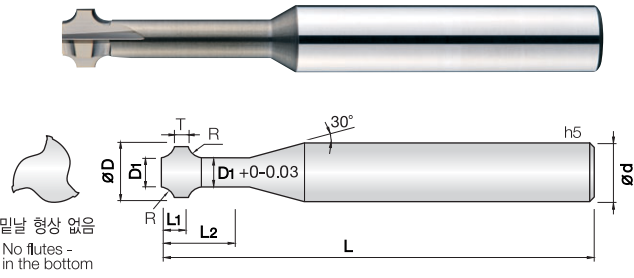
			0.5R~3R	ø5	ø6 ~ 12	

D Size	D Tolerance
ø5 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D×R	날장 Length of cut L1	유효장 Effective Length L2	목부경 Neck Diameter D1	전장 Overall Length L	샙크 Shank Dia d	비고
New 4TRS 050 010 045	5 X 0.5R	1	4.5	2.5	50	6	
New 4TRS 050 010 070	5 X 0.5R	1	7	2.5	50	6	
4TRS 050 020 055	5 X 1R	2	5.5	2.5	50	6	
New 4TRS 060 010 050	6 X 0.5R	1	5	3	50	6	
New 4TRS 060 010 080	6 X 0.5R	1	8	3	50	6	
4TRS 060 015 055	6 X 0.75R	1.5	5.5	3	50	6	
4TRS 060 020 060	6 X 1R	2	6	3	50	6	
New 4TRS 060 020 100	6 X 1R	2	10	3	50	6	
4TRS 080 020 070	8 X 1R	2	7	4	60	8	
New 4TRS 080 020 130	8 X 1R	2	13	4	60	8	
4TRS 080 030 080	8 X 1.5R	3	8	4	60	8	
4TRS 100 040 100	10 X 2R	4	10	4.5	70	10	
New 4TRS 100 040 160	10 X 2R	4	16	4.5	70	10	
4TRS 120 060 150	12 X 3R	6	15	5	75	12	
New 4TRS 120 060 210	12 X 3R	6	21	5	75	12	

# 3날 T-더블R 커터



- HRc50이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- JCRO코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 직선날 타입 3날을 적용하여 인선부 칩핑을 최소화 하였습니다.
- 다양한 형상과 유효장으로 공작물 간섭을 최소화하여 작업효율이 향상됩니다.
- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying straight 3flutes design.
- Various shapes and length provides optimum efficiency.

3

WC  
미립자

JCRO  
Coating

R  
±0.02

D  
+0 -0.03

0°  
Helix Angle

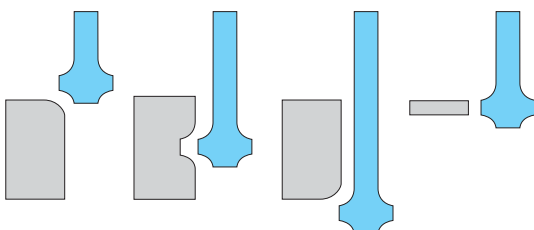
0.2R~3R    Ø1.9~Ø12

D Size	D Tolerance
Ø1.9 ~ 12	0 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D x R	선단경 Front Diameter D1	두께 Thickness T	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샹크 Shank Dia d	비고
3TRC 019 002 080	1.9 X R0.2	1.45	0.9	1.45	8	60	4	
3TRC 024 003 090	2.4 X R0.3	1.75	1.2	1.95	9	60	4	
3TRC 026 004 100	2.6 X R0.4	1.75	1.5	2.5	10	60	4	
3TRC 029 005 120	2.9 X R0.5	1.85	1.8	3	12	60	4	
3TRC 049 005 150	4.9 X R0.5	3.8	2	3.3	15	80	6	
3TRC 068 010 200	6.8 X R1	4.7	2.2	4.3	20	80	8	
3TRC 079 015 250	7.9 X R1.5	4.7	2.5	5.8	25	80	8	
3TRC 099 020 300	9.9 X R2	5.8	2.8	6.8	30	80	10	
3TRC 119 030 350	11.9 X R3	5.8	3	8.8	35	80	12	

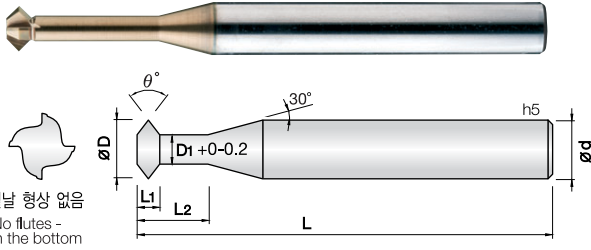
### 가공 형상에 따른 절삭가능 여부 Available Cutting Shape



가능 (O)    가능 (O)    가능 (O)    가능 (O)

GENERAL PURPOSE

## 4&6날 T-더블앵글 커터



- HRC50이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- JCRO코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 직선날 타입 4날을 적용하여 인선부 치핑을 최소화 하였습니다.
- 다양한 형상과 유효장으로 공작물 간섭을 최소화하여 작업효율이 향상됩니다.
- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying straight 4flutes design.
- Various shapes and length provides optimum efficiency.

4

6

WC  
미립자

JCRO  
Coating

D  
+0 -0.02

D  
-0.01 -0.03

L1  
±0.03

L1  
±0.05

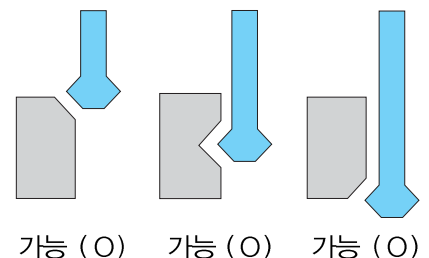
0°  
Helix Angle

D Size	D Tolerance
ø1.5 ~ 5	+0 ~ -0.02mm
ø6 ~ 12	-0.01 ~ -0.03mm

단위 : mm

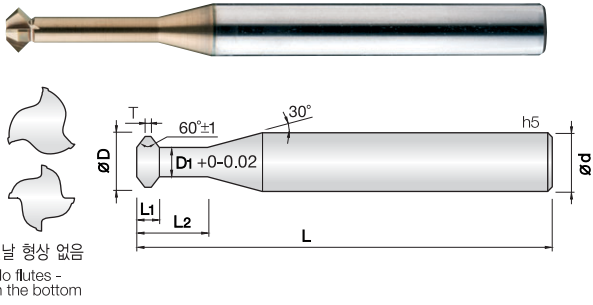
Order Number	날경 Diameter D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	목부경 Neck Diameter D1	전장 Overall Length L	샙크 Shank Dia d	비고
4TDA 015 600 030	1.5	60°	0.43	3	0.75	45	4	
4TDA 015 900 030	1.5	90°	0.75	3	0.75	45	4	
4TDA 020 600 050	2	60°	0.57	5	1	50	4	
4TDA 020 900 050	2	90°	1	5	1	50	4	
4TDA 025 600 060	2.5	60°	0.75	6	1.2	50	4	
4TDA 025 900 060	2.5	90°	1.3	6	1.2	50	4	
4TDA 030 600 075	3	60°	0.86	7.5	1.5	50	4	
New 4TDA 030 600 120	3	60°	0.86	12	1.5	50	4	
4TDA 030 900 075	3	90°	1.5	7.5	1.5	50	4	
New 4TDA 030 900 120	3	90°	1.5	12	1.5	50	4	
4TDA 040 600 100	4	60°	1.15	10	2	50	4	
New 4TDA 040 600 160	4	60°	1.15	16	2	50	4	
4TDA 040 900 100	4	90°	2	10	2	50	4	
New 4TDA 040 900 160	4	90°	2	16	2	50	4	
4TDA 050 600 125	5	60°	1.44	12.5	2.5	60	6	
New 4TDA 050 600 200	5	60°	1.44	20	2.5	60	6	
4TDA 050 900 125	5	90°	2.4	12.5	2.5	60	6	
New 4TDA 050 900 200	5	90°	2.4	20	2.5	60	6	
4TDA 060 600 150	6	60°	1.73	15	3	60	6	
New 4TDA 060 600 250	6	60°	1.73	25	3	60	6	
4TDA 060 900 150	6	90°	2.8	15	3	60	6	
New 4TDA 060 900 250	6	90°	2.8	25	3	60	6	
6TDA 080 600 200	8	60°	2.3	20	4	70	8	
New 6TDA 080 600 280	8	60°	2.3	28	4	70	8	
6TDA 080 900 200	8	90°	3.8	20	4	70	8	
New 6TDA 080 900 280	8	90°	3.8	28	4	70	8	
6TDA 100 600 250	10	60°	2.8	25	5	75	10	
New 6TDA 100 600 350	10	60°	2.8	35	5	75	10	
6TDA 100 900 250	10	90°	4.8	25	6	80	10	
New 6TDA 100 900 350	10	90°	4.8	35	6	80	10	
6TDA 120 600 300	12	60°	3.4	30	6	80	12	
New 6TDA 120 600 420	12	60°	3.4	42	6	80	12	
6TDA 120 900 300	12	90°	5.8	30	6	80	12	
New 6TDA 120 900 420	12	90°	5.8	42	6	80	12	

### 가공 형상에 따른 절삭가능 여부 Available Cutting Shape



GENERAL PURPOSE

## 3&4날 나사 홈 가공용 커터



- HRc50이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- JCRO코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 나사홈 가공에 적합한 직선날 형상을 설계하여, 나사홈 가공시의 인선부 치핑을 최소화 하였습니다.
- 다양한 형상과 유효장으로 공작물 간섭을 최소화하여 작업효율이 향상됩니다.
- Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping and fracturing by applying straight flutes design which is appropriate to screw groove cutting.
- Various shapes and length provides optimum efficiency.

3

4

Ø0.57~Ø8    Ø0.01~Ø0.09

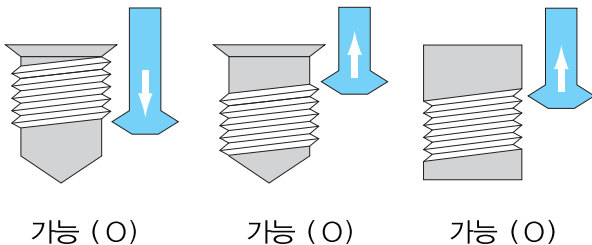
D Size	D Tolerance
Ø5 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	두께 Thickness T	날장 Length of cut L1	유효장 Effective Length L2	목부경 Neck Diameter D1	전장 Overall Length L	생크 Shank Dia d	비고
3THC 0057 025 M008	0.57	0.01	0.16	2.5	0.3	40	4	
3THC 0065 028 M009	0.65	0.01	0.18	2.8	0.35	40	4	
3THC 007 030 M01	0.7	0.015	0.19	3	0.4	40	4	
3THC 009 036 M012	0.9	0.015	0.2	3.6	0.57	40	4	
3THC 0105 045 M014	1.05	0.02	0.24	4.5	0.66	40	4	
3THC 012 050 M016	1.2	0.02	0.28	5	0.75	40	4	
4THC 015 060 M02	1.5	0.025	0.31	6	1	45	4	
4THC 019 070 M025	1.9	0.025	0.34	7	1.35	45	4	
4THC 023 090 M03	2.3	0.03	0.43	9	1.6	65	6	
4THC 031 120 M04	3.1	0.04	0.56	12	2.2	65	6	
4THC 040 150 M05	4	0.05	0.62	15	3	65	6	
4THC 048 180 M06	4.8	0.07	0.79	18	3.55	75	6	
4THC 065 230 M08	6.5	0.08	0.94	23	5	80	8	
4THC 079 260 M10	7.9	0.09	1.13	26	6.1	80	8	

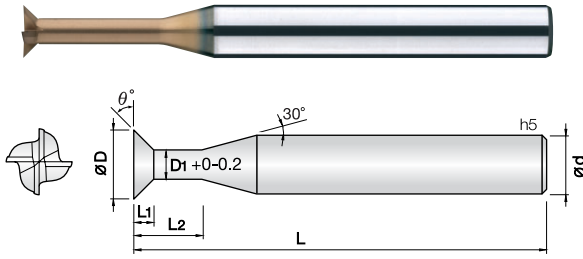
### 가공 형상에 따른 절삭가능 여부

Available Cutting Shape



GENERAL PURPOSE





- HRc50이하의 고경도강, 프리하든강, 공구강, 주철 등 피삭재 가공
- JCRO코팅 처리하여 다양한 피삭재 가공시 인선부에 스트레스가 적으며, 내마모성 또한 향상됩니다.
- 직선날 타입 4날을 적용하여 인선부 치핑을 최소화 하였습니다.
- 다양한 형상과 유효장으로 공작물 간섭을 최소화하여 작업효율이 향상됩니다.
- **Endmills for various work materials, hardened steel, pre-hardened steel, tool steel and cast iron.**
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Minimize edge chipping by applying straight 4flutes design.
- Various shapes and length provides optimum efficiency.

4

6

WC  
미립자

JCRO  
Coating

D  
+0 -0.02

D  
-0.01 -0.03

L1  
±0.03

L1  
±0.05

0°  
Helix Angle

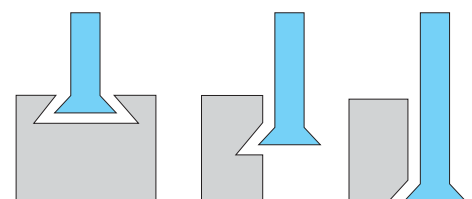
ø1.5~ø5   ø6~ø12   ø1.5~ø5   ø6~12

D Size	D Tolerance
ø1.5 ~ 5	+0 ~ -0.02mm
ø6 ~ 12	-0.01 ~ -0.03mm

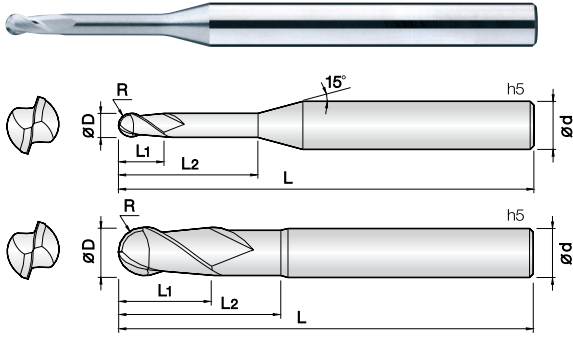
단위 : mm

Order Number	날경 Diameter D	각도 Angle θ	날장 Length of cut L1	유효장 Effective Length L2	목부경 Neck Diameter D1	전장 Overall Length L	샙크 Shank Dia d	비고
4TAC 015 300 030	1.5	30°	0.21	3	0.75	45	4	
4TAC 015 450 030	1.5	45°	0.37	3	0.75	45	4	
4TAC 020 300 050	2	30°	0.28	5	1	50	4	
4TAC 020 450 050	2	45°	0.5	5	1	50	4	
4TAC 025 300 060	2.5	30°	0.37	6	1.2	50	4	
4TAC 025 450 060	2.5	45°	0.65	6	1.2	50	4	
4TAC 030 300 075	3	30°	0.43	7.5	1.5	50	4	
New 4TAC 030 300 120	3	30°	0.43	12	1.5	50	4	
4TAC 030 450 075	3	45°	0.75	7.5	1.5	50	4	
New 4TAC 030 450 120	3	45°	0.75	12	1.5	50	4	
4TAC 040 300 100	4	30°	0.57	10	2	50	4	
New 4TAC 040 300 160	4	30°	0.57	16	2	50	4	
4TAC 040 450 100	4	45°	1	10	2	50	4	
New 4TAC 040 450 160	4	45°	1	16	2	50	4	
4TAC 050 300 125	5	30°	0.72	12.5	2.5	60	6	
4TAC 050 450 125	5	45°	1.25	12.5	2.5	60	6	
4TAC 060 300 150	6	30°	0.86	15	3	60	6	
New 4TAC 060 300 240	6	30°	0.86	24	3	60	6	
4TAC 060 450 150	6	45°	1.5	15	3	60	6	
New 4TAC 060 450 240	6	45°	1.5	24	3	60	6	
6TAC 080 300 200	8	30°	1.15	20	4	70	8	
New 6TAC 080 300 280	8	30°	1.15	28	4	70	8	
6TAC 080 450 200	8	45°	2	20	4	70	8	
New 6TAC 080 450 280	8	45°	2	28	4	70	8	
6TAC 100 300 250	10	30°	1.44	25	5	75	10	
New 6TAC 100 300 350	10	30°	1.44	35	5	75	10	
6TAC 100 450 250	10	45°	2.5	25	5	75	10	
New 6TAC 100 450 350	10	45°	2.5	35	5	75	10	
6TAC 120 300 300	12	30°	1.73	30	6	80	12	
New 6TAC 120 300 420	12	30°	1.73	42	6	80	12	
6TAC 120 450 300	12	45°	3	30	6	80	12	
New 6TAC 120 450 420	12	45°	3	42	6	80	12	

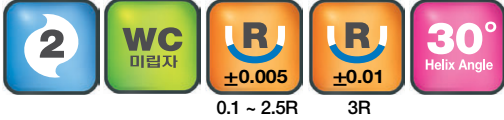
■ 가공 형상에 따른 절삭가능 여부  
Available Cutting Shape



가능 (O)      가능 (O)      가능 (O)



- 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 가공
- 짧은 날장 채택으로 떨림을 최소화 하였습니다
- 고속, 고이송 작업시 짧은 날장을 채택하여 공구의 강성이 우수합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Minimize chattering by short flute design.
- Excellent tool rigidity by short flute design at high speed, feed machining.
- Reinforced edge design for preventing edge chipping.
- Excellent wear resistance by applying fine WC grade.



0.1 ~ 2.5R

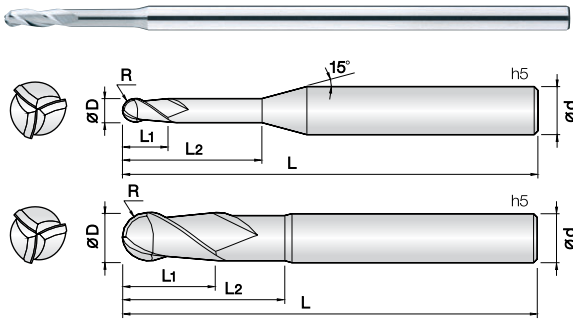
3R

D Size	D Tolerance
ø6 ~ 5	+0 ~ -0.01mm
ø6	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2MRB 002 005 S04	0.1R X 0.2	0.3	0.5	40	4		2MRB 014 100 S04	0.7R X 1.4	2.8	10	50	4	
2MRB 002 010 S04	0.1R X 0.2	0.3	1	40	4		2MRB 014 160 S04	0.7R X 1.4	2.8	16	50	4	
2MRB 002 015 S04	0.1R X 0.2	0.3	1.5	40	4		2MRB 015 060 S04	0.75R X 1.5	3	6	50	4	
2MRB 002 020 S04	0.1R X 0.2	0.3	2	40	4		2MRB 015 100 S04	0.75R X 1.5	3	10	50	4	
2MRB 003 010 S04	0.15R X 0.3	0.45	1	40	4		2MRB 015 140 S04	0.75R X 1.5	3	14	50	4	
2MRB 003 020 S04	0.15R X 0.3	0.45	2	40	4		2MRB 015 160 S04	0.75R X 1.5	3	16	50	4	
2MRB 003 030 S04	0.15R X 0.3	0.45	3	40	4		2MRB 015 200 S04	0.75R X 1.5	3	20	60	4	
2MRB 003 050 S04	0.15R X 0.3	0.45	5	40	4		2MRB 015 250 S04	0.75R X 1.5	3	25	60	4	
2MRB 004 020 S04	0.2R X 0.4	0.6	2	40	4		2MRB 015 300 S04	0.75R X 1.5	3	30	70	4	
2MRB 004 030 S04	0.2R X 0.4	0.6	3	40	4		2MRB 016 060 S04	0.8R X 1.6	3.2	6	50	4	
2MRB 004 040 S04	0.2R X 0.4	0.6	4	40	4		2MRB 020 080 S04	1R X 2	4	8	50	4	
2MRB 004 050 S04	0.2R X 0.4	0.6	5	40	4		2MRB 020 100 S04	1R X 2	4	10	50	4	
2MRB 004 060 S04	0.2R X 0.4	0.6	6	40	4		2MRB 020 120 S04	1R X 2	4	12	50	4	
2MRB 005 020 S04	0.25R X 0.5	1	2	45	4		2MRB 020 140 S04	1R X 2	4	14	50	4	
2MRB 005 040 S04	0.25R X 0.5	1	4	45	4		2MRB 020 160 S04	1R X 2	4	16	50	4	
2MRB 005 060 S04	0.25R X 0.5	1	6	45	4		2MRB 020 180 S04	1R X 2	4	18	50	4	
2MRB 005 080 S04	0.25R X 0.5	1	8	45	4		2MRB 020 200 S04	1R X 2	4	20	60	4	
2MRB 005 100 S04	0.25R X 0.5	1	10	45	4		2MRB 020 250 S04	1R X 2	4	25	60	4	
2MRB 006 020 S04	0.3R X 0.6	1.2	2	45	4		2MRB 020 300 S04	1R X 2	4	30	70	4	
2MRB 006 040 S04	0.3R X 0.6	1.2	4	45	4		2MRB 020 350 S04	1R X 2	4	35	80	4	
2MRB 006 060 S04	0.3R X 0.6	1.2	6	45	4		2MRB 020 400 S04	1R X 2	4	40	80	4	
2MRB 006 080 S04	0.3R X 0.6	1.2	8	45	4		2MRB 025 120 S04	1.25R X 2.5	5	12	60	4	
2MRB 006 100 S04	0.3R X 0.6	1.2	10	45	4		2MRB 025 200 S04	1.25R X 2.5	5	20	60	4	
2MRB 007 040 S04	0.35R X 0.7	1.4	4	45	4		2MRB 030 080 S06	1.5R X 3	6	8	70	6	
2MRB 007 060 S04	0.35R X 0.7	1.4	6	45	4		2MRB 030 120 S06	1.5R X 3	6	12	70	6	
2MRB 007 080 S04	0.35R X 0.7	1.4	8	45	4		2MRB 030 160 S06	1.5R X 3	6	16	70	6	
2MRB 007 100 S04	0.35R X 0.7	1.4	10	45	4		2MRB 030 200 S06	1.5R X 3	6	20	70	6	
2MRB 008 040 S04	0.4R X 0.8	1.6	4	45	4		2MRB 030 250 S06	1.5R X 3	6	25	70	6	
2MRB 008 060 S04	0.4R X 0.8	1.6	6	45	4		2MRB 030 300 S06	1.5R X 3	6	30	80	6	
2MRB 008 080 S04	0.4R X 0.8	1.6	8	45	4		2MRB 030 400 S06	1.5R X 3	6	40	90	6	
2MRB 008 100 S04	0.4R X 0.8	1.6	10	45	4		2MRB 030 450 S06	1.5R X 3	6	45	90	6	
2MRB 008 120 S04	0.4R X 0.8	1.6	12	45	4		2MRB 040 120 S06	2R X 4	8	12	70	6	
2MRB 009 060 S04	0.45R X 0.9	1.8	6	45	4		2MRB 040 160 S06	2R X 4	8	16	70	6	
2MRB 009 100 S04	0.45R X 0.9	1.8	10	45	4		2MRB 040 200 S06	2R X 4	8	20	70	6	
2MRB 009 120 S04	0.45R X 0.9	1.8	12	45	4		2MRB 040 250 S06	2R X 4	8	25	70	6	
2MRB 010 060 S04	0.5R X 1	2	6	50	4		2MRB 040 300 S06	2R X 4	8	30	70	6	
2MRB 010 080 S04	0.5R X 1	2	8	50	4		2MRB 040 350 S06	2R X 4	8	35	80	6	
2MRB 010 100 S04	0.5R X 1	2	10	50	4		2MRB 040 400 S06	2R X 4	8	40	80	6	
2MRB 010 120 S04	0.5R X 1	2	12	50	4		2MRB 040 500 S06	2R X 4	8	50	100	6	
2MRB 010 160 S04	0.5R X 1	2	16	50	4		2MRB 050 160 S06	2.5R X 5	10	16	80	6	
2MRB 010 200 S04	0.5R X 1	2	20	60	4		2MRB 050 250 S06	2.5R X 5	10	25	80	6	
2MRB 010 250 S04	0.5R X 1	2	25	60	4		2MRB 050 350 S06	2.5R X 5	10	35	80	6	
2MRB 012 060 S04	0.6R X 1.2	2.4	6	50	4		2MRB 060 250 S06	3R X 6	12	25	80	6	
2MRB 012 080 S04	0.6R X 1.2	2.4	8	50	4		2MRB 060 350 S06	3R X 6	12	35	80	6	
2MRB 012 100 S04	0.6R X 1.2	2.4	10	50	4		2MRB 060 500 S06	3R X 6	12	50	120	6	
2MRB 012 120 S04	0.6R X 1.2	2.4	12	50	4		2MRB 060 600 S06	3R X 6	12	60	120	6	
2MRB 012 160 S04	0.6R X 1.2	2.4	16	50	4								
2MRB 014 060 S04	0.7R X 1.4	2.8	6	50	4								

## 3날 범용 마이크로 리브 볼 엔드밀



<b>3</b> 미립자	<b>WC</b> 미립자	<b>R</b> ±0.005	<b>R</b> ±0.01	<b>R</b> ±0.015	<b>30°</b> Helix Angle
		0.5 ~ 2R	3 ~ 6R	8R	

- 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 파삭재 가공
- 짧은 날장 채택으로 떨림을 최소화 하였습니다
- 고속, 고이송 작업시 짧은 날장을 채택하여 공구의 강성이 우수합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.

### • Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.

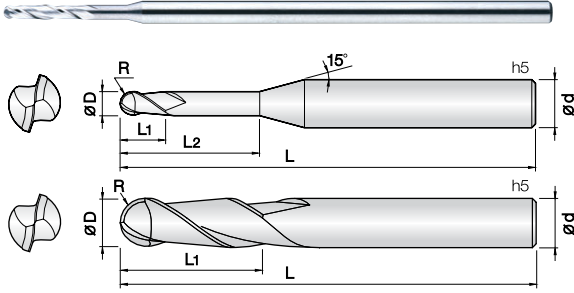
- Minimize chattering by short flute design.
- Optimum for high speed, feed condition by short flute design.
- Reinforced edge design for preventing edge chipping.
- Excellent wear resistance by applying fine WC grade.

D Size	D Tolerance
Ø1 ~ 4	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고															
3MRB 010 050 S04	0.5R X 1	3	5	70	4																
3MRB 010 100 S04	0.5R X 1	3	10	70	4																
3MRB 010 150 S04	0.5R X 1	3	15	70	4																
3MRB 010 200 S04	0.5R X 1	3	20	70	4																
3MRB 010 250 S04	0.5R X 1	3	25	70	4																
3MRB 015 100 S04	0.75R X 1.5	4.5	10	70	4																
3MRB 015 150 S04	0.75R X 1.5	4.5	15	70	4																
3MRB 015 200 S04	0.75R X 1.5	4.5	20	70	4																
3MRB 015 250 S04	0.75R X 1.5	4.5	25	70	4																
3MRB 015 300 S04	0.75R X 1.5	4.5	30	70	4																
3MRB 020 100 S04	1R X 2	6	10	70	4																
3MRB 020 150 S04	1R X 2	6	15	70	4																
3MRB 020 200 S04	1R X 2	6	20	70	4																
3MRB 020 250 S04	1R X 2	6	25	70	4																
3MRB 020 300 S04	1R X 2	6	30	70	4																
3MRB 030 200 080	1.5R X 3	15	20	80	3																
3MRB 030 200 S04	1.5R X 3	9	20	80	4																
3MRB 030 300 100	1.5R X 3	15	30	100	3																
3MRB 030 300 S04	1.5R X 3	9	30	80	4																
3MRB 040 200 080	2R X 4	12	20	80	4																
3MRB 040 300 100	2R X 4	12	30	100	4																
3MRB 060 300 100	3R X 6	18	30	100	6																
3MRB 060 400 150	3R X 6	18	40	150	6																
3MRB 080 400 120	4R X 8	24	40	120	8																
3MRB 080 500 150	4R X 8	24	50	150	8																
3MRB 100 500 120	5R X 10	30	50	120	10																
3MRB 100 600 150	5R X 10	30	60	150	10																
3MRB 120 600 150	6R X 12	36	60	150	12																
3MRB 160 700 160	8R X 16	54	70	160	16																

## 2날 ABS수지 가공용 마이크로 롱볼 엔드밀



- 아크릴, ABS, 목업, 알루미늄 등 비철,비고속 피삭재 전용 엔드밀
- 균일한 런아웃 공차관리로 떨림을 최소화 하였습니다.
- 깊은 피삭재 가공시 긴 날장을 채택하여 가공이 용이하며, 칩배출이 좋습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Minimize chattering by even run-out and tolerance control.
- Long flute helps chip control in deep groove machining.
- Excellent wear resistance by applying fine WC grade.



D Size	D Tolerance
Ø2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm
Ø16	-0.01 ~ -0.02mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2MLB 002 010 S03	0.1R X 0.2	0.4	-	40	3		2MLB 010 250 S04	0.5R X 1	5	25	80	4	
2MLB 002 015 S03	0.1R X 0.2	0.4	1.5	40	3		2MLB 010 300 S03	0.5R X 1	5	30	80	3	
2MLB 002 020 S03	0.1R X 0.2	0.4	2	40	3		2MLB 010 300 S04	0.5R X 1	5	30	80	4	
2MLB 003 010 S03	0.15R X 0.3	1	-	45	3		2MLB 010 350 S04	0.5R X 1	5	35	100	4	
2MLB 003 015 S03	0.15R X 0.3	1	1.5	45	3		2MLB 010 400 S04	0.5R X 1	5	40	100	4	
2MLB 003 018 S03	0.15R X 0.3	1.8	-	45	3		2MLB 015 100 S03	0.75R X 1.5	10	-	80	3	
2MLB 003 020 S03	0.15R X 0.3	1	2	45	3		2MLB 015 100 S04	0.75R X 1.5	10	-	80	4	
2MLB 003 025 S03	0.15R X 0.3	1	2.5	45	3		2MLB 015 150 S03	0.75R X 1.5	10	15	80	3	
2MLB 003 030 S03	0.15R X 0.3	1	3	45	3		2MLB 015 150 S04	0.75R X 1.5	10	15	80	4	
2MLB 003 040 S03	0.15R X 0.3	1	4	45	3		2MLB 015 200 S03	0.75R X 1.5	10	20	80	3	
2MLB 004 012 S03	0.2R X 0.4	1.2	-	45	3		2MLB 015 200 S04	0.75R X 1.5	10	20	80	4	
2MLB 004 020 S03	0.2R X 0.4	2	-	45	3		2MLB 015 250 S03	0.75R X 1.5	10	25	80	3	
2MLB 004 030 S03	0.2R X 0.4	1.2	3	45	3		2MLB 015 250 S04	0.75R X 1.5	10	25	80	4	
2MLB 004 040 S03	0.2R X 0.4	1.2	4	45	3		2MLB 015 300 S03	0.75R X 1.5	10	30	80	3	
2MLB 004 050 S03	0.2R X 0.4	1.2	5	45	3		2MLB 015 300 S04	0.75R X 1.5	10	30	80	4	
2MLB 005 015 S03	0.25R X 0.5	1.5	-	50	3		2MLB 015 350 S04	0.75R X 1.5	10	35	100	4	
2MLB 005 020 S03	0.25R X 0.5	2	-	50	3		2MLB 015 400 S04	0.75R X 1.5	10	40	100	4	
2MLB 005 030 S03	0.25R X 0.5	1.5	3	50	3		2MLB 020 100 S03	1R X 2	10	-	80	3	
2MLB 005 040 S03	0.25R X 0.5	1.5	4	50	3		2MLB 020 100 S04	1R X 2	10	-	80	4	
2MLB 005 050 S03	0.25R X 0.5	1.5	5	50	3		2MLB 020 150 S03	1R X 2	10	15	80	3	
2MLB 005 060 S03	0.25R X 0.5	1.5	6	50	3		2MLB 020 150 S04	1R X 2	10	15	80	4	
2MLB 005 080 S03	0.25R X 0.5	1.5	8	50	3		2MLB 020 200 S03	1R X 2	10	20	80	3	
2MLB 005 100 S03	0.25R X 0.5	1.5	10	50	3		2MLB 020 200 S04	1R X 2	10	20	80	4	
2MLB 006 030 S03	0.3R X 0.6	3	-	50	3		2MLB 020 250 S03	1R X 2	10	25	80	3	
2MLB 006 060 S03	0.3R X 0.6	3	6	50	3		2MLB 020 250 S04	1R X 2	10	25	80	4	
2MLB 006 080 S03	0.3R X 0.6	3	8	50	3		2MLB 020 300 S03	1R X 2	10	30	80	3	
2MLB 006 100 S03	0.3R X 0.6	3	10	50	3		2MLB 020 300 S04	1R X 2	10	30	80	4	
2MLB 007 030 S03	0.35R X 0.7	3	-	50	3		2MLB 020 350 S03	1R X 2	10	35	80	3	
2MLB 007 070 S03	0.35R X 0.7	3	7	50	3		2MLB 020 350 S04	1R X 2	10	35	100	4	
2MLB 007 100 S03	0.35R X 0.7	3	10	50	3		2MLB 020 400 S03	1R X 2	10	40	80	3	
2MLB 007 120 S03	0.35R X 0.7	3	12	50	3		2MLB 020 400 S04	1R X 2	10	40	100	4	
2MLB 008 040 S03	0.4R X 0.8	4	-	50	3		2MLB 025 100 S03	1.25R X 2.5	10	-	80	3	
2MLB 008 080 S03	0.4R X 0.8	4	8	50	3		2MLB 025 150 S03	1.25R X 2.5	15	-	80	3	
2MLB 008 100 S03	0.4R X 0.8	4	10	50	3		2MLB 025 200 S03	1.25R X 2.5	15	20	80	3	
2MLB 008 120 S03	0.4R X 0.8	4	12	50	3		2MLB 030 100 060	1.5R X 3	10	-	60	3	
2MLB 009 040 S03	0.45R X 0.9	4	-	50	3		2MLB 030 200 080	1.5R X 3	20	-	80	3	
2MLB 009 060 S03	0.45R X 0.9	4	6	50	3		2MLB 030 200 100	1.5R X 3	20	-	100	3	
2MLB 009 080 S03	0.45R X 0.9	4	8	50	3		2MLB 030 200 120	1.5R X 3	20	-	120	3	
2MLB 009 100 S03	0.45R X 0.9	4	10	50	3		2MLB 030 150 S06	1.5R X 3	15	-	100	6	
2MLB 010 050 S03	0.5R X 1	5	-	80	3		2MLB 030 200 S06	1.5R X 3	15	20	100	6	
2MLB 010 050 S04	0.5R X 1	5	-	80	4		2MLB 030 250 S06	1.5R X 3	15	25	100	6	
2MLB 010 100 S03	0.5R X 1	5	10	80	3		2MLB 030 300 S06	1.5R X 3	15	30	100	6	
2MLB 010 100 S04	0.5R X 1	5	10	80	4		2MLB 030 400 S06	1.5R X 3	15	40	100	6	
2MLB 010 150 S03	0.5R X 1	5	15	80	3		2MLB 040 200 080	2R X 4	20	-	80	4	
2MLB 010 150 S04	0.5R X 1	5	15	80	4		2MLB 040 200 100	2R X 4	20	-	100	4	
2MLB 010 200 S03	0.5R X 1	5	20	80	3		2MLB 040 200 130	2R X 4	20	-	130	4	
2MLB 010 200 S04	0.5R X 1	5	20	80	4		2MLB 040 200 S06	2R X 4	20	-	100	6	
2MLB 010 250 S03	0.5R X 1	5	25	80	3		2MLB 040 250 S06	2R X 4	20	25	100	6	

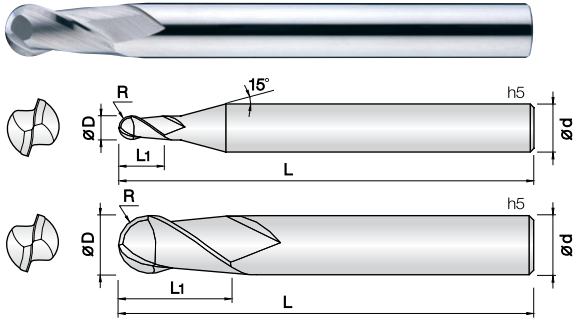


### 2날 ABS수지 가공용 마이크로 롱볼 엔드밀

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고									
2MLB 040 300 S06	2R X 4	20	30	100	6										
2MLB 040 400 S06	2R X 4	20	40	120	6										
2MLB 040 500 S06	2R X 4	20	50	120	6										
2MLB 050 300 100	2.5R X 5	30	-	100	5										
2MLB 050 300 120	2.5R X 5	30	-	120	5										
2MLB 060 300 080	3R X 6	30	-	80	6										
2MLB 060 400 100	3R X 6	40	-	100	6										
2MLB 060 400 120	3R X 6	40	-	120	6										
2MLB 060 400 150	3R X 6	40	-	150	6										
2MLB 080 450 120	4R X 8	45	-	120	8										
2MLB 080 450 150	4R X 8	45	-	150	8										
2MLB 100 500 120	5R X 10	50	-	120	10										
2MLB 100 500 150	5R X 10	50	-	150	10										
2MLB 120 550 130	6R X 12	55	-	130	12										
2MLB 120 550 150	6R X 12	55	-	150	12										
2MLB 160 700 160	8R X 16	70	-	160	16										





- 일반강, 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 가공
- 균일한 런아웃 공차관리로 떨림을 최소화하였습니다.
- 날부 인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- Endmills for Mild steel, Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Minimize chattering by even run-out and tolerance control.
- Very nice work surface finish.
- Excellent wear resistance by applying fine WC grade.

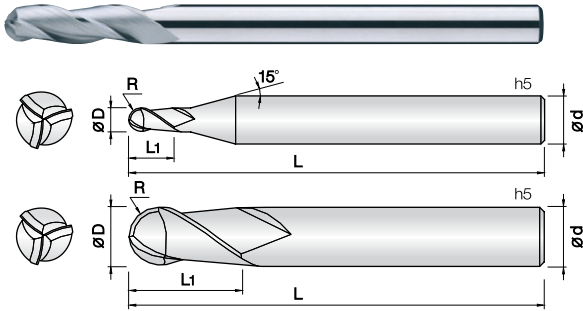


0.05 ~ 2.5R    3 ~ 6R

D Size	D Tolerance
Ø0.1 ~ 0.15	+0 ~ -0.005mm
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R x D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고														
2MBE 001 002 S03	0.05R X 0.1	0.2	38	3															
2MBE 0015 003 S03	0.075R X 0.15	0.3	38	3															
2MBE 002 004 S03	0.1R X 0.2	0.4	38	3															
2MBE 003 006 S03	0.15R X 0.3	0.6	38	3															
2MBE 004 008 S03	0.2R X 0.4	0.8	38	3															
2MBE 005 010 S03	0.25R X 0.5	1	38	3															
2MBE 006 012 S03	0.3R X 0.6	1.2	38	3															
2MBE 007 014 S03	0.35R X 0.7	1.4	38	3															
2MBE 008 016 S03	0.4R X 0.8	1.6	38	3															
2MBE 009 018 S03	0.45R X 0.9	1.8	38	3															
2MBE 010 025 S03	0.5R X 1	2.5	50	3															
2MBE 010 025 S06	0.5R X 1	2.5	50	6															
2MBE 010 025 100	0.5R X 1	2.5	100	6															
2MBE 011 025 S03	0.55R X 1.1	2.5	50	3															
2MBE 012 030 S03	0.6R X 1.2	3	50	3															
2MBE 015 040 S03	0.75R X 1.5	4	50	3															
2MBE 015 040 100	0.75R X 1.5	4	100	6															
2MBE 020 050 S03	1R X 2	5	50	3															
2MBE 020 050 S06	1R X 2	5	50	6															
2MBE 020 050 100	1R X 2	5	100	6															
2MBE 025 060 S03	1.25R X 2.5	6	50	3															
2MBE 025 060 100	1.25R X 2.5	6	100	6															
2MBE 030 080 S03	1.5R X 3	8	60	3															
2MBE 030 080 S06	1.5R X 3	8	60	6															
2MBE 030 080 100	1.5R X 3	8	100	6															
2MBE 035 080 S06	1.75R X 3.5	8	65	6															
2MBE 040 080 S06	2R X 4	8	65	6															
2MBE 040 080 120	2R X 4	8	120	6															
2MBE 050 120 S06	2.5R X 5	12	75	6															
2MBE 060 120 080	3R X 6	12	80	6															
2MBE 060 120 100	3RX 6	12	100	6															
2MBE 080 140 090	4R X 8	14	90	8															
2MBE 080 140 110	4RX 8	14	110	8															
2MBE 100 180 100	5R X 10	18	100	10															
2MBE 100 180 120	5RX 10	18	120	10															
2MBE 120 220 110	6R X 12	22	110	12															
2MBE 120 220 130	6RX 12	22	130	12															



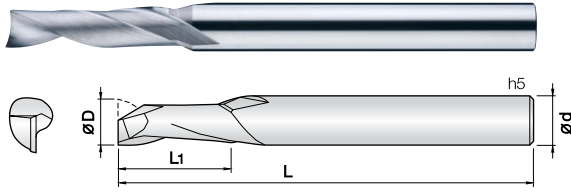
- 일반강, 아크릴, ABS, 목업, 알루미늄 등 비철,비금속 피삭재 가공
- 균일한 런아웃 공차관리로 떨림을 최소화하였습니다.
- 날부 인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- Endmills for Mild steel, Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Minimize chattering by even run-out and tolerance control.
- Very nice work surface finish.
- Excellent wear resistance by applying fine WC grade.



D Size	D Tolerance
ø0.3 ~ 4	+0 ~ -0.01mm
ø6	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고
3MBE 003 008 S04	0.15R X 0.3	0.8	40	4	
3MBE 003 012 S04	0.15R X 0.3	1.2	40	4	
3MBE 004 010 S04	0.2R X 0.4	1	40	4	
3MBE 004 015 S04	0.2R X 0.4	1.5	40	4	
3MBE 005 013 S04	0.25R X 0.5	1.3	45	4	
3MBE 005 020 S04	0.25R X 0.5	2	45	4	
3MBE 006 015 S04	0.3R X 0.6	1.5	45	4	
3MBE 006 024 S04	0.3R X 0.6	2.4	45	4	
3MBE 007 018 S04	0.35R X 0.7	1.8	45	4	
3MBE 007 028 S04	0.35R X 0.7	2.8	45	4	
3MBE 008 020 S04	0.4R X 0.8	2	45	4	
3MBE 008 032 S04	0.4R X 0.8	3.2	45	4	
3MBE 009 025 S04	0.45R X 0.9	2.5	50	4	
3MBE 009 036 S04	0.45R X 0.9	3.6	50	4	
3MBE 010 025 S04	0.5R X 1	2.5	50	4	
3MBE 010 040 S04	0.5R X 1	4	50	4	
3MBE 010 060 S04	0.5R X 1	6	60	4	
3MBE 012 030 S04	0.6R X 1.2	3	50	4	
3MBE 012 050 S04	0.6R X 1.2	5	50	4	
3MBE 012 070 S04	0.6R X 1.2	7	60	4	
3MBE 015 040 S04	0.75R X 1.5	4	50	4	
3MBE 015 060 S04	0.75R X 1.5	6	50	4	
3MBE 015 090 S04	0.75R X 1.5	9	60	4	
3MBE 020 050 S04	1R X 2	5	50	4	
3MBE 020 080 S04	1R X 2	8	50	4	
3MBE 020 100 S04	1R X 2	10	60	4	
3MBE 025 060 S04	1.25R X 2.5	6	50	4	
3MBE 025 100 S04	1.25R X 2.5	10	60	4	
3MBE 025 150 S04	1.25R X 2.5	15	70	4	
3MBE 030 080 S04	1.5R X 3	8	50	4	
3MBE 030 120 S04	1.5R X 3	12	60	4	
3MBE 030 150 S04	1.5R X 3	15	80	4	
3MBE 040 100 S04	2R X 4	10	60	4	
3MBE 040 150 S04	2R X 4	15	80	4	
3MBE 060 200 S06	3R X 6	20	80	6	
3MBE 060 300 S06	3R X 6	30	110	6	



- 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 가공용 엔드밀
- 헬릭스 1날 타입으로 칩 배출이 우수하여 비철, 비금속 피삭재의 절단작업 및 측벽 작업에 적합합니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Excellent chip removing by a helix flute design. Optimum for cut-off and wall machining.
- Excellent wear resistance by applying fine WC grade.

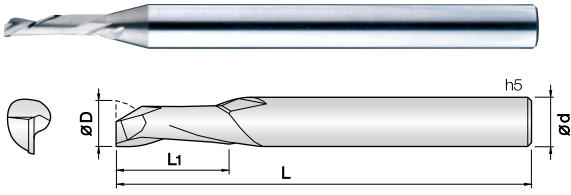


D Size	D Tolerance
Ø0.2 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Shank Dia d	비고
1MEM 002 004 S04	0.2	0.4	40	4		1MEM 050 250 S06	5	25	60	6	
1MEM 002 005 S04	0.2	0.5	40	4		New 1MEM 050 300 S06	5	30	75	6	
1MEM 003 006 S04	0.3	0.6	40	4		1MEM 060 150 S06	6	15	60	6	
1MEM 003 009 S04	0.3	0.9	40	4		1MEM 060 200 S06	6	20	60	6	
1MEM 004 008 S04	0.4	0.8	40	4		1MEM 060 250 S06	6	25	60	6	
1MEM 004 012 S04	0.4	1.2	40	4		1MEM 060 300 S06	6	30	70	6	
1MEM 005 010 S04	0.5	1	40	4		New 1MEM 060 410 S06	6	41	90	6	
1MEM 005 015 S04	0.5	1.5	40	4		1MEM 080 190 S08	8	19	70	8	
1MEM 006 012 S04	0.6	1.2	40	4		1MEM 080 250 S08	8	25	75	8	
1MEM 006 018 S04	0.6	1.8	40	4		1MEM 080 300 S08	8	30	80	8	
1MEM 007 014 S04	0.7	1.4	40	4		New 1MEM 080 410 S08	8	41	90	8	
1MEM 007 021 S04	0.7	2.1	40	4		1MEM 100 220 S10	10	22	75	10	
1MEM 008 016 S04	0.8	1.6	40	4		1MEM 100 300 S10	10	30	80	10	
1MEM 008 024 S04	0.8	2.4	40	4		New 1MEM 100 410 S10	10	41	100	10	
1MEM 009 018 S04	0.9	1.8	40	4		1MEM 120 260 S12	12	26	75	12	
1MEM 009 027 S04	0.9	2.7	40	4		1MEM 120 350 S12	12	35	90	12	
1MEM 010 025 S06	1	2.5	45	6		New 1MEM 120 510 S12	12	51	110	12	
1MEM 010 030 S06	1	3	45	6							
1MEM 010 035 S06	1	3.5	45	6							
1MEM 010 045 S06	1	4.5	45	6							
1MEM 010 060 S06	1	6	50	6							
1MEM 010 070 S06	1	7	50	6							
1MEM 012 030 S06	1.2	3	45	6							
1MEM 012 050 S06	1.2	5	45	6							
1MEM 012 060 S06	1.2	6	50	6							
1MEM 015 040 S06	1.5	4	45	6							
1MEM 015 060 S06	1.5	6	50	6							
1MEM 015 080 S06	1.5	8	50	6							
1MEM 015 100 S06	1.5	10	50	6							
New 1MEM 015 120 S06	1.5	12	50	6							
1MEM 020 060 S06	2	6	50	6							
1MEM 020 080 S06	2	8	50	6							
1MEM 020 100 S06	2	10	50	6							
1MEM 020 120 S06	2	12	50	6							
1MEM 020 140 S06	2	14	55	6							
New 1MEM 020 160 S06	2	16	60	6							
1MEM 030 080 S06	3	8	50	6							
1MEM 030 120 S06	3	12	50	6							
1MEM 030 150 S06	3	15	50	6							
1MEM 030 200 S06	3	20	60	6							
New 1MEM 030 250 S06	3	25	70	6							
1MEM 040 100 S06	4	10	50	6							
1MEM 040 150 S06	4	15	50	6							
1MEM 040 200 S06	4	20	60	6							
1MEM 040 250 S06	4	25	70	6							
New 1MEM 040 300 S06	4	30	75	6							
1MEM 050 130 S06	5	13	60	6							
1MEM 050 200 S06	5	20	60	6							

### 1날 역날엔드밀



- 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 가공용 엔드밀
- 역 헬릭스 타입으로 칩 배출이 아래 방향으로 배출되어, 작업시 피삭재가 떠오르는 현상이 없습니다.
- 피삭재에 상면 버가 발생하지 않습니다.
- 피삭재의 정착이 불안정한 경우 적합합니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- **Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.**
- Downward chip direction by reverse helix design helps chip control.
- No burr in work materials.
- Optimum for unstable work clamping.
- Excellent wear resistance by applying fine WC grade.

1

WC

미립자

D

+0 -0.01

D

-0.01 -0.025

30°

Helix Angle

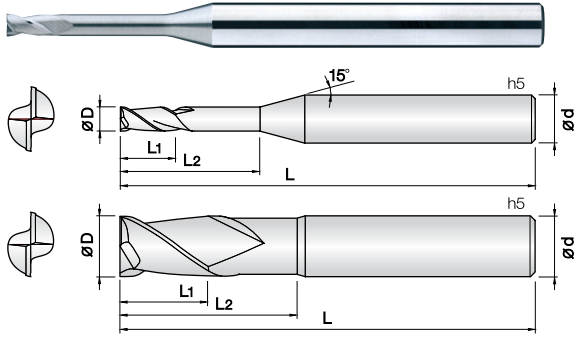
S

Sharp Edge

D Size	D Tolerance
ø0.5 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고										
1REM 005 010 S04	0.5	1	45	4											
1REM 005 015 S04	0.5	1.5	45	4											
1REM 005 020 S04	0.5	2	45	4											
1REM 006 012 S04	0.6	1.2	45	4											
1REM 006 018 S04	0.6	1.8	45	4											
1REM 006 025 S04	0.6	2.5	45	4											
1REM 007 014 S04	0.7	1.4	45	4											
1REM 007 021 S04	0.7	2.1	45	4											
1REM 008 016 S04	0.8	1.6	45	4											
1REM 008 024 S04	0.8	2.4	45	4											
1REM 008 030 S04	0.8	3	45	4											
1REM 009 018 S04	0.9	1.8	45	4											
1REM 010 030 S06	1	3	50	6											
1REM 010 040 S06	1	4	50	6											
1REM 010 050 S06	1	5	50	6											
1REM 010 060 S06	1	6	60	6											
1REM 012 040 S06	1.2	4	50	6											
1REM 012 060 S06	1.2	6	50	6											
1REM 015 040 S06	1.5	4	50	6											
1REM 015 060 S06	1.5	6	50	6											
1REM 015 080 S06	1.5	8	50	6											
1REM 020 060 S06	2	6	60	6											
1REM 020 080 S06	2	8	60	6											
1REM 020 100 S06	2	10	60	6											
1REM 020 120 S06	2	12	60	6											
1REM 025 060 S06	2.5	6	60	6											
1REM 025 080 S06	2.5	8	60	6											
1REM 025 100 S06	2.5	10	60	6											
1REM 030 080 S06	3	8	60	6											
1REM 030 120 S06	3	12	65	6											
1REM 030 160 S06	3	16	70	6											
1REM 040 120 S06	4	12	65	6											
1REM 040 160 S06	4	16	70	6											
1REM 040 200 S06	4	20	70	6											
1REM 050 150 S06	5	15	70	6											
1REM 050 220 S06	5	22	75	6											
1REM 060 270 S06	6	27	75	6											
1REM 080 260 S08	8	26	80	8											
1REM 080 320 S08	8	32	90	8											
1REM 100 300 S10	10	30	90	10											
1REM 120 350 S12	12	35	100	12											



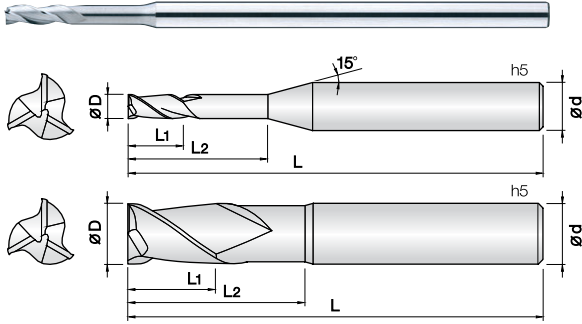
- 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 가공
- 짧은 날장 채택으로 떨림을 최소화 하였습니다
- 고속, 고이송 작업시 짧은 날장을 채택하여 공구의 강성이 우수합니다.
- 인선부 강성을 보강하여 날부치평을 최소화 하였습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Minimize chattering by short flute design.
- Excellent tool rigidity by short flute design at high speed, feed machining.
- Reinforced edge design for preventing edge chipping.
- Excellent wear resistance by applying fine WC grade.

D Size	D Tolerance
∅0.2 ~ 5	+0 ~ -0.01mm
∅6	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2MRE 002 005 S04	0.2	0.3	0.5	40	4		2MRE 014 100 S04	1.4	2.8	10	50	4	
2MRE 002 010 S04	0.2	0.3	1	40	4		2MRE 014 160 S04	1.4	2.8	16	50	4	
2MRE 002 015 S04	0.2	0.3	1.5	40	4		2MRE 015 060 S04	1.5	3	6	50	4	
2MRE 002 020 S04	0.2	0.3	2	40	4		2MRE 015 100 S04	1.5	3	10	50	4	
2MRE 003 010 S04	0.3	0.45	1	40	4		2MRE 015 140 S04	1.5	3	14	50	4	
2MRE 003 020 S04	0.3	0.45	2	40	4		2MRE 015 160 S04	1.5	3	16	50	4	
2MRE 003 030 S04	0.3	0.45	3	40	4		2MRE 015 200 S04	1.5	3	20	60	4	
2MRE 003 050 S04	0.3	0.45	5	40	4		2MRE 015 250 S04	1.5	3	25	60	4	
2MRE 004 020 S04	0.4	0.6	2	40	4		2MRE 015 300 S04	1.5	3	30	70	4	
2MRE 004 030 S04	0.4	0.6	3	40	4		2MRE 016 060 S04	1.6	3.2	6	50	4	
2MRE 004 040 S04	0.4	0.6	4	40	4		2MRE 020 080 S04	2	4	8	50	4	
2MRE 004 050 S04	0.4	0.6	5	40	4		2MRE 020 100 S04	2	4	10	50	4	
2MRE 004 060 S04	0.4	0.6	6	40	4		2MRE 020 120 S04	2	4	12	50	4	
2MRE 005 020 S04	0.5	1	2	45	4		2MRE 020 140 S04	2	4	14	50	4	
2MRE 005 040 S04	0.5	1	4	45	4		2MRE 020 160 S04	2	4	16	50	4	
2MRE 005 060 S04	0.5	1	6	45	4		2MRE 020 180 S04	2	4	18	50	4	
2MRE 005 080 S04	0.5	1	8	45	4		2MRE 020 200 S04	2	4	20	60	4	
2MRE 005 100 S04	0.5	1	10	45	4		2MRE 020 250 S04	2	4	25	60	4	
2MRE 006 020 S04	0.6	1.2	2	45	4		2MRE 020 300 S04	2	4	30	70	4	
2MRE 006 040 S04	0.6	1.2	4	45	4		2MRE 020 350 S04	2	4	35	80	4	
2MRE 006 060 S04	0.6	1.2	6	45	4		2MRE 020 400 S04	2	4	40	80	4	
2MRE 006 080 S04	0.6	1.2	8	45	4		2MRE 025 120 S04	2.5	5	12	60	4	
2MRE 006 100 S04	0.6	1.2	10	45	4		2MRE 025 200 S04	2.5	5	20	60	4	
2MRE 007 040 S04	0.7	1.4	4	45	4		2MRE 030 080 S06	3	6	8	70	6	
2MRE 007 060 S04	0.7	1.4	6	45	4		2MRE 030 120 S06	3	6	12	70	6	
2MRE 007 080 S04	0.7	1.4	8	45	4		2MRE 030 160 S06	3	6	16	70	6	
2MRE 007 100 S04	0.7	1.4	10	45	4		2MRE 030 200 S06	3	6	20	70	6	
2MRE 008 040 S04	0.8	1.6	4	45	4		2MRE 030 250 S06	3	6	25	70	6	
2MRE 008 060 S04	0.8	1.6	6	45	4		2MRE 030 300 S06	3	6	30	80	6	
2MRE 008 080 S04	0.8	1.6	8	45	4		2MRE 030 400 S06	3	6	40	90	6	
2MRE 008 100 S04	0.8	1.6	10	45	4		2MRE 030 450 S06	3	6	45	90	6	
2MRE 008 120 S04	0.8	1.6	12	45	4		2MRE 040 120 S06	4	8	12	70	6	
2MRE 009 060 S04	0.9	1.8	6	45	4		2MRE 040 160 S06	4	8	16	70	6	
2MRE 009 100 S04	0.9	1.8	10	45	4		2MRE 040 200 S06	4	8	20	70	6	
2MRE 009 120 S04	0.9	1.8	12	45	4		2MRE 040 250 S06	4	8	25	70	6	
2MRE 010 060 S04	1	2	6	50	4		2MRE 040 300 S06	4	8	30	70	6	
2MRE 010 080 S04	1	2	8	50	4		2MRE 040 350 S06	4	8	35	80	6	
2MRE 010 100 S04	1	2	10	50	4		2MRE 040 400 S06	4	8	40	80	6	
2MRE 010 120 S04	1	2	12	50	4		2MRE 040 500 S06	4	8	50	100	6	
2MRE 010 160 S04	1	2	16	50	4		2MRE 050 160 S06	5	10	16	80	6	
2MRE 010 200 S04	1	2	20	60	4		2MRE 050 250 S06	5	10	25	80	6	
2MRE 010 250 S04	1	2	25	60	4		2MRE 050 350 S06	5	10	35	80	6	
2MRE 012 060 S04	1.2	2.4	6	50	4		2MRE 060 250 S06	6	12	25	80	6	
2MRE 012 080 S04	1.2	2.4	8	50	4		2MRE 060 350 S06	6	12	35	80	6	
2MRE 012 100 S04	1.2	2.4	10	50	4		2MRE 060 500 S06	6	12	50	120	6	
2MRE 012 120 S04	1.2	2.4	12	50	4		2MRE 060 600 S06	6	12	60	120	6	
2MRE 012 160 S04	1.2	2.4	16	50	4								
2MRE 014 060 S04	1.4	2.8	6	50	4								





- 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 가공
- 짧은 날장 채택으로 떨림을 최소화 하였습니다
- 고속, 고이송 작업시 짧은 날장을 채택하여 공구의 강성이 우수합니다.
- 인선부 강성을 보강하여 날부치핑을 최소화 하였습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Minimize chatter by short flute design.
- Excellent tool rigidity by short flute design at high speed, feed machining.
- Reinforced edge design for preventing edge chipping.
- Excellent wear resistance by applying fine WC grade.

3

WC  
미립자

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

30°  
Helix Angle

Sharp Edge

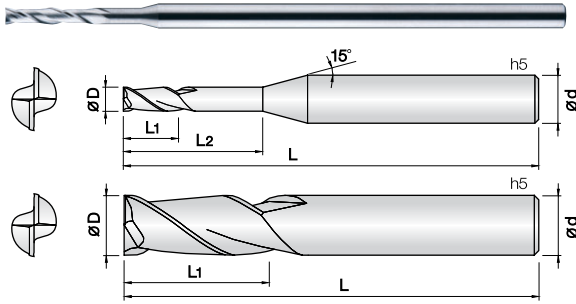
Ø1 ~ 4
Ø6 ~ 12
Ø16

D Size	D Tolerance
Ø1 ~ 4	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm
Ø16	-0.015 ~ -0.03mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샤프크 Shank Dia d	비고														
3MRE 010 050 S04	1	3	5	70	4															
3MRE 010 100 S04	1	3	10	70	4															
3MRE 010 150 S04	1	3	15	70	4															
3MRE 010 200 S04	1	3	20	70	4															
3MRE 010 250 S04	1	3	25	70	4															
3MRE 015 100 S04	1.5	4.5	10	70	4															
3MRE 015 150 S04	1.5	4.5	15	70	4															
3MRE 015 200 S04	1.5	4.5	20	70	4															
3MRE 015 250 S04	1.5	4.5	25	70	4															
3MRE 015 300 S04	1.5	4.5	30	70	4															
3MRE 020 100 S04	2	6	10	70	4															
3MRE 020 150 S04	2	6	15	70	4															
3MRE 020 200 S04	2	6	20	70	4															
3MRE 020 250 S04	2	6	25	70	4															
3MRE 020 300 S04	2	6	30	70	4															
3MRE 030 200 080	3	15	20	80	3															
3MRE 030 200 S04	3	9	20	80	4															
3MRE 030 300 100	3	15	30	100	3															
3MRE 030 300 S04	3	9	30	80	4															
3MRE 040 200 080	4	12	20	80	4															
3MRE 040 300 100	4	12	30	100	4															
3MRE 060 300 100	6	18	30	100	6															
3MRE 060 400 150	6	18	40	150	6															
3MRE 080 400 120	8	24	40	120	8															
3MRE 080 500 150	8	24	50	150	8															
3MRE 100 500 120	10	30	50	120	10															
3MRE 100 600 150	10	30	60	150	10															
3MRE 120 600 150	12	36	60	150	12															
3MRE 160 700 160	16	54	70	160	16															

## 2날 ABS수지가공용 마이크로 롱 엔드밀



- 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 전용 엔드밀
- 균일한 런아웃 공차관리로 떨림을 최소화 하였습니다.
- 깊은 피삭재 가공시 긴 날장을 채택하여 가공이 용이하며, 칩배출이 좋습니다.
- 인선부 강성을 보강하여 날부 치핑을 최소화 하였습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- **Endmills for Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.**
- Minimize chattering by even run-out and tolerance control.
- Long flute helps chip control in deep groove machining.
- Reinforced edge design for preventing edge chipping.
- Excellent wear resistance by applying fine WC grade.

2

WC  
미립자

D  
+0 -0.01

D  
-0.01 -0.025

D  
-0.015 -0.03

30°  
Helix Angle

Sharp Edge

D Size	D Tolerance
ø0.2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm
ø16	-0.015 ~ -0.03mm

단위 : mm

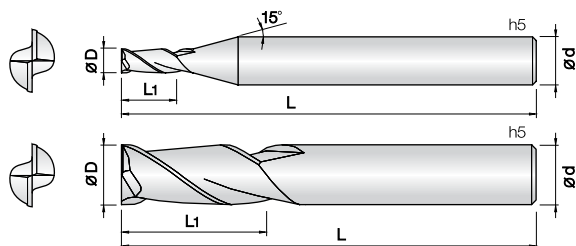
Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2MLE 002 010 S03	0.2	0.4	1	40	3		2MLE 010 250 S04	1	5	25	80	4	
2MLE 002 015 S03	0.2	0.4	1.5	40	3		2MLE 010 300 S03	1	5	30	80	3	
2MLE 002 020 S03	0.2	0.4	2	40	3		2MLE 010 300 S04	1	5	30	80	4	
2MLE 003 010 S03	0.3	1	-	45	3		2MLE 010 350 S04	1	5	35	100	4	
2MLE 003 015 S03	0.3	1	1.5	45	3		2MLE 010 400 S04	1	5	40	100	4	
2MLE 003 018 S03	0.3	1.8	-	45	3		2MLE 015 100 S03	1.5	10	-	80	3	
2MLE 003 020 S03	0.3	1	2	45	3		2MLE 015 100 S04	1.5	10	-	80	4	
2MLE 003 025 S03	0.3	1	2.5	45	3		2MLE 015 150 S03	1.5	10	15	80	3	
2MLE 003 030 S03	0.3	1	3	45	3		2MLE 015 150 S04	1.5	10	15	80	4	
2MLE 003 040 S03	0.3	1	4	45	3		2MLE 015 200 S03	1.5	10	20	80	3	
2MLE 004 012 S03	0.4	1.2	-	45	3		2MLE 015 200 S04	1.5	10	20	80	4	
2MLE 004 020 S03	0.4	2	-	45	3		2MLE 015 250 S03	1.5	10	25	80	3	
2MLE 004 030 S03	0.4	1.2	3	45	3		2MLE 015 250 S04	1.5	10	25	80	4	
2MLE 004 040 S03	0.4	1.2	4	45	3		2MLE 015 300 S03	1.5	10	30	80	3	
2MLE 004 050 S03	0.4	1.2	5	45	3		2MLE 015 300 S04	1.5	10	30	80	4	
2MLE 005 015 S03	0.5	1.5	-	50	3		2MLE 015 350 S04	1.5	10	35	100	4	
2MLE 005 020 S03	0.5	2	-	50	3		2MLE 015 400 S04	1.5	10	40	100	4	
2MLE 005 030 S03	0.5	1.5	3	50	3		2MLE 020 100 S03	2	10	-	80	3	
2MLE 005 040 S03	0.5	1.5	4	50	3		2MLE 020 100 S04	2	10	-	80	4	
2MLE 005 050 S03	0.5	1.5	5	50	3		2MLE 020 150 S03	2	10	15	80	3	
2MLE 005 060 S03	0.5	1.5	6	50	3		2MLE 020 150 S04	2	10	15	80	4	
2MLE 005 080 S03	0.5	1.5	8	50	3		2MLE 020 200 S03	2	10	20	80	3	
2MLE 005 100 S03	0.5	1.5	10	50	3		2MLE 020 200 S04	2	10	20	80	4	
2MLE 006 030 S03	0.6	3	-	50	3		2MLE 020 250 S03	2	10	25	80	3	
2MLE 006 060 S03	0.6	3	6	50	3		2MLE 020 250 S04	2	10	25	80	4	
2MLE 006 080 S03	0.6	3	8	50	3		2MLE 020 300 S03	2	10	30	80	3	
2MLE 006 100 S03	0.6	3	10	50	3		2MLE 020 300 S04	2	10	30	80	4	
2MLE 007 030 S03	0.7	3	-	50	3		2MLE 020 350 S03	2	10	35	80	3	
2MLE 007 070 S03	0.7	3	7	50	3		2MLE 020 350 S04	2	10	35	100	4	
2MLE 007 100 S03	0.7	3	10	50	3		2MLE 020 400 S03	2	10	40	80	3	
2MLE 007 120 S03	0.7	3	12	50	3		2MLE 020 400 S04	2	10	40	100	4	
2MLE 008 040 S03	0.8	4	-	50	3		2MLE 025 100 S03	2.5	10	-	80	3	
2MLE 008 080 S03	0.8	4	8	50	3		2MLE 025 150 S03	2.5	15	-	80	3	
2MLE 008 100 S03	0.8	4	10	50	3		2MLE 025 200 S03	2.5	15	20	80	3	
2MLE 008 120 S03	0.8	4	12	50	3		2MLE 030 100 060	3	10	-	60	3	
2MLE 009 040 S03	0.9	4	-	50	3		2MLE 030 200 080	3	20	-	80	3	
2MLE 009 060 S03	0.9	4	6	50	3		2MLE 030 200 100	3	20	-	100	3	
2MLE 009 080 S03	0.9	4	8	50	3		2MLE 030 200 120	3	20	-	120	3	
2MLE 009 100 S03	0.9	4	10	50	3		2MLE 030 150 S06	3	15	-	100	6	
2MLE 010 050 S03	1	5	-	80	3		2MLE 030 200 S06	3	15	20	100	6	
2MLE 010 050 S04	1	5	-	80	4		2MLE 030 250 S06	3	15	25	100	6	
2MLE 010 100 S03	1	5	10	80	3		2MLE 030 300 S06	3	15	30	100	6	
2MLE 010 100 S04	1	5	10	80	4		2MLE 040 200 080	4	20	-	80	4	
2MLE 010 150 S03	1	5	15	80	3		2MLE 040 200 100	4	20	-	100	4	
2MLE 010 150 S04	1	5	15	80	4		2MLE 040 200 130	4	20	-	130	4	
2MLE 010 200 S03	1	5	20	80	3		2MLE 040 200 S06	4	20	-	100	6	
2MLE 010 200 S04	1	5	20	80	4		2MLE 040 250 S06	4	20	25	100	6	
2MLE 010 250 S03	1	5	25	80	3		2MLE 040 300 S06	4	20	30	100	6	

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고													
2MLE 040 400 S06	4	20	40	120	6														
2MLE 050 200 S06	5	20	-	100	6														
2MLE 050 300 100	5	30	-	100	5														
2MLE 050 300 120	5	30	-	120	5														
2MLE 060 250 080	6	25	-	80	6														
2MLE 060 300 080	6	30	-	80	6														
2MLE 060 400 100	6	40	-	100	6														
2MLE 060 400 120	6	40	-	120	6														
2MLE 060 400 150	6	40	-	150	6														
2MLE 080 300 080	8	30	-	80	8														
2MLE 080 350 090	8	35	-	90	8														
2MLE 080 400 100	8	40	-	100	8														
2MLE 080 450 120	8	45	-	120	8														
2MLE 080 450 150	8	45	-	150	8														
2MLE 100 300 080	10	30	-	80	10														
2MLE 100 350 090	10	35	-	90	10														
2MLE 100 400 100	10	40	-	100	10														
2MLE 100 500 120	10	50	-	120	10														
2MLE 100 500 150	10	50	-	150	10														
2MLE 120 300 090	12	30	-	90	12														
2MLE 120 400 100	12	40	-	100	12														
2MLE 120 500 110	12	50	-	110	12														
2MLE 120 550 130	12	55	-	130	12														
2MLE 120 550 150	12	55	-	150	12														
2MLE 160 700 160	16	70	-	160	16														

# 2MEM 2 Flutes End Mills

## 2날 범용 엔드밀



- 일반강, 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 가공
- 인선부 강성을 보강하여 날부 치핑을 최소화 하였습니다.
- 균일한 런아웃 공차관리로 공구의 성능을 향상시켰습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- Endmills for Mild steel, Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.
- Reinforced edge design for preventing edge chipping.
- Improve tool performance by even run-out and tolerance control.
- Excellent wear resistance by applying fine WC grade.

2

WC  
미립자

D  
+0 -0.005

D  
+0 -0.01

D  
-0.01 -0.025

30°  
Helix Angle

Sharp Edge

ø0.1 ~ 0.15    ø0.2 ~ 5    ø6 ~ 12

D Size	D Tolerance
ø0.1 ~ 0.15	+0 ~ -0.005mm
ø0.2 ~ 5	+0 ~ -0.01mm
ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	생크 Shank Dia d	비고										
2MEM 001 002 S03	0.1	0.2	40	3											
2MEM 0015 003 S03	0.15	0.3	40	3											
2MEM 002 004 S03	0.2	0.4	40	3											
2MEM 003 006 S03	0.3	0.6	40	3											
2MEM 004 008 S03	0.4	0.8	40	3											
2MEM 005 010 S03	0.5	1	40	3											
2MEM 006 012 S03	0.6	1.2	40	3											
2MEM 007 014 S03	0.7	1.4	40	3											
2MEM 008 016 S03	0.8	1.6	40	3											
2MEM 009 018 S03	0.9	1.8	40	3											
2MEM 010 025 S03	1	2.5	40	3											
2MEM 010 025 S06	1	2.5	40	6											
2MEM 011 025 S03	1.1	2.5	40	3											
2MEM 012 035 S03	1.2	3.5	40	3											
2MEM 013 040 S03	1.3	4	40	3											
2MEM 014 040 S03	1.4	4	40	3											
2MEM 015 040 S03	1.5	4	40	3											
2MEM 015 040 S06	1.5	4	40	6											
2MEM 016 040 S03	1.6	4	40	3											
2MEM 017 050 S03	1.7	5	40	3											
2MEM 018 055 S03	1.8	5.5	40	3											
2MEM 019 060 S03	1.9	6	40	3											
2MEM 020 060 S03	2	6	40	3											
2MEM 020 060 S06	2	6	40	6											
2MEM 025 080 S03	2.5	8	40	3											
New 2MEM 025 080 S06	2.5	8	40	6											
2MEM 030 080 S03	3	8	45	3											
2MEM 030 080 S06	3	8	45	6											
2MEM 035 100 S06	3.5	10	45	6											
2MEM 040 110 S06	4	11	45	6											
2MEM 045 110 S06	4.5	11	45	6											
2MEM 050 130 S06	5	13	50	6											
2MEM 060 130 S06	6	13	50	6											
2MEM 070 160 S08	7	16	60	8											
2MEM 080 190 S08	8	19	60	8											
2MEM 090 190 S10	9	19	70	10											
2MEM 100 220 S10	10	22	70	10											
2MEM 120 260 S12	12	26	75	12											

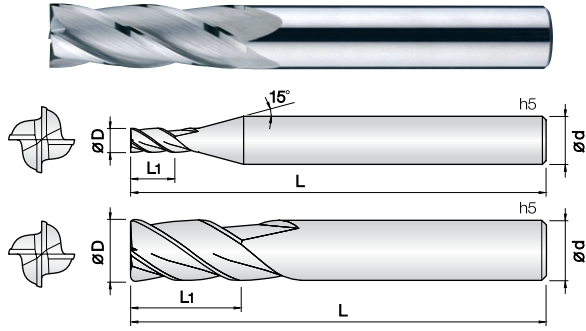
FOR A.B.S





# 4MEM 4 Flutes End Mills

## 4날 범용 엔드밀



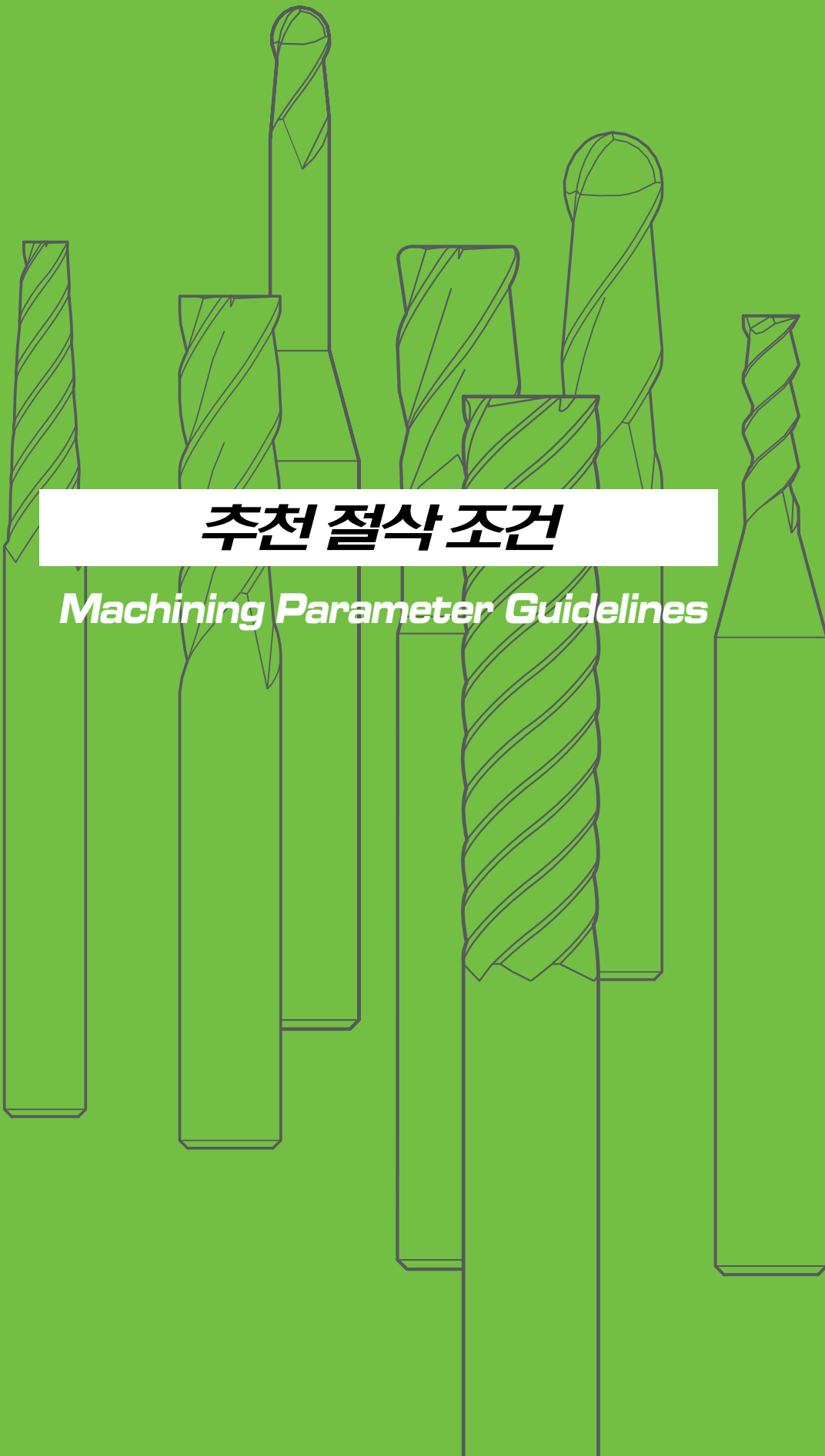
- 일반강, 아크릴, ABS, 목업, 알루미늄 등 비철, 비금속 피삭재 가공
- 인선부 강성을 보강하여 날부 치핑을 최소화 하였습니다.
- 균일한 런아웃 공차관리로 떨림을 최소화 하였습니다.
- 미립자 초경합금을 채택하여 내마모성이 좋습니다.
- **Endmills for Mild steel, Acryl, A.B.S, Aluminum, non-ferrous and non-metallic materials.**
- Reinforced edge design for preventing edge chipping.
- Minimize chattering by even run-out and tolerance control.
- Excellent wear resistance by applying fine WC grade.



D Size	D Tolerance
Ø1 ~ 5	+0 ~ -0.01mm
Ø6 ~ 12	-0.01 ~ -0.025mm

단위 : mm

Order Number	날경 Diameter D	날장 Length of cut L1	전장 Overall Length L	샙크 Dia d	비고						
4MEM 010 025 S04	1	2.5	40	4							
4MEM 010 040 S04	1	4	45	4							
4MEM 015 040 S04	1.5	4	40	4							
4MEM 015 060 S04	1.5	6	45	4							
4MEM 020 050 S04	2	5	40	4							
4MEM 020 080 S04	2	8	45	4							
4MEM 025 080 S04	2.5	8	45	4							
4MEM 025 100 S04	2.5	10	50	4							
4MEM 030 080 S06	3	8	45	6							
4MEM 030 120 S06	3	12	50	6							
4MEM 040 110 S06	4	11	45	6							
4MEM 040 160 S06	4	16	55	6							
4MEM 050 130 S06	5	13	50	6							
4MEM 050 200 S06	5	20	60	6							
4MEM 060 130 S06	6	13	50	6							
4MEM 060 240 S06	6	24	70	6							
4MEM 080 200 S08	8	20	60	8							
4MEM 080 320 S08	8	32	80	8							
4MEM 100 220 S10	10	22	70	10							
4MEM 100 400 S10	10	40	100	10							
4MEM 120 260 S12	12	26	75	12							
4MEM 120 480 S12	12	48	100	12							



## **추천 절삭조건**

*Machining Parameter Guidelines*

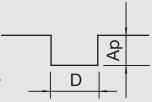
피삭재 Material		고경도강/ 프리하든강 Prehardened Steels / Hardened Steels NAK / SKD61				고경도강 Hardened Steels STAVX / SKD61				고경도강 Hardened Steels SKD11 / YXR7 / SKH51			
경도 Hardness		30HRC ~ 45HRC				45HRC ~ 55HRC				55HRC ~ 68HRC			
반경 Radius	유효장/날장 Effective Length Length of cut	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R 0.1	0.2	50,000	326	0.005	0.005	50,000	216	0.004	0.004	50,000	120	0.003	0.003
"	0.5	50,000	308	0.004	0.004	50,000	198	0.003	0.003	50,000	110	0.002	0.003
R 0.15	0.3	50,000	800	0.006	0.010	50,000	520	0.004	0.005	50,000	410	0.003	0.005
"	0.5	50,000	720	0.006	0.010	50,000	450	0.003	0.005	50,000	390	0.003	0.005
"	1	50,000	650	0.006	0.010	50,000	410	0.003	0.005	50,000	350	0.003	0.004
R 0.2	0.3	50,000	1,120	0.010	0.010	50,000	750	0.005	0.006	50,000	650	0.005	0.005
"	1	50,000	1,050	0.010	0.010	50,000	710	0.005	0.005	50,000	600	0.005	0.005
"	3	50,000	540	0.005	0.005	50,000	360	0.003	0.003	50,000	310	0.002	0.003
R 0.25	0.4	50,000	1,420	0.010	0.020	50,000	1,210	0.050	0.010	50,000	1,030	0.005	0.001
"	1	50,000	1,290	0.010	0.015	50,000	1,100	0.005	0.010	50,000	980	0.005	0.010
"	3	50,000	1,090	0.010	0.015	50,000	850	0.005	0.010	50,000	730	0.005	0.010
R 0.3	0.5	50,000	2,300	0.020	0.020	50,000	1,890	0.015	0.015	50,000	1,520	0.010	0.010
"	1	50,000	2,180	0.020	0.020	50,000	1,760	0.010	0.010	50,000	1,490	0.010	0.010
"	3	40,000	1,300	0.015	0.020	40,000	1,060	0.010	0.010	40,000	870	0.010	0.010
"	5	30,000	650	0.015	0.050	30,000	590	0.010	0.010	30,000	390	0.005	0.005
R 0.4	0.6	50,000	2,600	0.020	0.030	50,000	1,980	0.020	0.020	50,000	1,720	0.010	0.020
"	2	40,000	2,100	0.015	0.020	40,000	1,450	0.015	0.015	40,000	1,210	0.010	0.010
"	4	30,000	1,540	0.015	0.015	30,000	940	0.010	0.015	30,000	840	0.010	0.010
"	8	24,000	970	0.010	0.010	24,000	650	0.005	0.010	24,000	470	0.005	0.005
R 0.5	1.5	40,000	2,560	0.030	0.040	40,000	1,980	0.020	0.030	40,000	1,590	0.020	0.020
"	3	30,000	2,100	0.030	0.030	30,000	1,650	0.020	0.030	30,000	1,240	0.020	0.020
"	5	30,000	1,700	0.030	0.030	30,000	1,360	0.015	0.020	30,000	1,080	0.010	0.015
"	10	16,000	780	0.015	0.015	16,000	620	0.010	0.015	16,000	500	0.010	0.010
R 0.75	2	40,000	2,300	0.040	0.040	40,000	1,920	0.030	0.030	40,000	1,530	0.020	0.030
"	4	30,000	2,010	0.030	0.030	30,000	1,600	0.025	0.025	30,000	1,280	0.020	0.020
"	8	30,000	1,700	0.030	0.030	30,000	1,360	0.020	0.030	30,000	1,080	0.010	0.010
R 1	2	40,000	3,310	0.050	0.050	40,000	2,640	0.040	0.040	40,000	2,110	0.030	0.040
"	6	40,000	3,020	0.030	0.040	40,000	2,410	0.030	0.030	40,000	1,930	0.020	0.030
"	10	24,000	1,210	0.020	0.030	24,000	970	0.010	0.030	24,000	770	0.010	0.020
"	14	16,000	920	0.010	0.020	16,000	780	0.010	0.010	16,000	630	0.010	0.010
R 1.5	3	40,000	2,500	0.030	0.040	40,000	2,000	0.030	0.030	40,000	1,600	0.020	0.030
"	6	32,000	2,100	0.030	0.030	32,000	1,680	0.020	0.030	32,000	1,340	0.020	0.030
"	10	21,000	1,700	0.020	0.030	21,000	1,360	0.020	0.020	21,000	1,080	0.010	0.020
"	16	16,000	1,100	0.020	0.030	16,000	880	0.010	0.020	16,000	700	0.010	0.010
R 2	4	40,000	2,100	0.030	0.040	40,000	1,680	0.030	0.030	40,000	1,340	0.020	0.030
"	10	21,000	1,620	0.020	0.030	21,000	1,290	0.020	0.020	21,000	1,030	0.010	0.020
"	16	16,000	1,060	0.010	0.020	21,000	840	0.010	0.020	16,000	670	0.010	0.010
R 3		16,000~ 50,000	960~ 8000	0.050	0.060	13,000~ 50,000	780~ 6,000	0.050	0.060	11,000~ 50,000	540~ 4,000	0.050	0.060
절임량 Depth of Cut													

피삭재 Material		고경도강/ 프리하든강 Prehardened Steels / Hardened Steels NAK / SKD61				고경도강 Hardened Steels STAVX / SKD61				고경도강 Hardened Steels SKD11 / YXR7 / SKH51			
경도 Hardness		30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 68HRc			
외경 Outside Diameter	유효장/날장 Effective Length Length of cut	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
0.2mm	0.2	50,000	211	0.005	0.005	50,000	140	0.004	0.004	50,000	78	0.003	0.003
"	0.5	50,000	200	0.004	0.004	50,000	130	0.003	0.003	50,000	71	0.002	0.003
0.3mm	0.3	50,000	520	0.006	0.010	50,000	290	0.004	0.005	50,000	260	0.003	0.005
"	0.5	50,000	460	0.006	0.010	50,000	270	0.003	0.005	50,000	250	0.003	0.005
"	1	50,000	422	0.006	0.010	50,000	260	0.003	0.005	50,000	220	0.003	0.004
0.4mm	0.3	50,000	840	0.010	0.010	50,000	490	0.005	0.006	50,000	430	0.005	0.005
"	1	50,000	690	0.010	0.010	50,000	470	0.005	0.005	50,000	420	0.005	0.005
"	2	50,000	370	0.005	0.005	50,000	240	0.003	0.003	50,000	209	0.002	0.003
0.5mm	0.4	50,000	940	0.010	0.020	50,000	810	0.050	0.010	50,000	732	0.005	0.010
"	1	50,000	850	0.010	0.015	50,000	560	0.005	0.010	50,000	523	0.005	0.010
"	3	50,000	560	0.010	0.015	50,000	530	0.005	0.010	50,000	504	0.005	0.010
0.8mm	0.6	50,000	1,530	0.020	0.020	50,000	1,254	0.015	0.015	50,000	1,083	0.010	0.010
"	2	50,000	1,440	0.020	0.020	50,000	1,169	0.010	0.010	50,000	1,064	0.010	0.010
"	4	40,000	860	0.015	0.020	40,000	703	0.010	0.010	40,000	620	0.010	0.010
"	6	30,000	440	0.015	0.050	30,000	390	0.010	0.010	30,000	280	0.005	0.005
1mm	0.7	50,000	1,730	0.020	0.030	50,000	1,311	0.020	0.020	50,000	1,230	0.010	0.020
"	2	40,000	1,390	0.015	0.200	40,000	960	0.015	0.015	40,000	870	0.010	0.010
"	4	30,000	1,030	0.015	0.015	30,000	620	0.010	0.015	30,000	600	0.010	0.010
"	8	24,000	650	0.010	0.010	24,000	440	0.005	0.010	24,000	340	0.005	0.005
1.5mm	0.8	40,000	1,700	0.030	0.040	40,000	1,090	0.020	0.030	40,000	1,130	0.020	0.020
"	2	30,000	1,400	0.030	0.030	30,000	1,100	0.020	0.030	30,000	880	0.020	0.020
"	4	30,000	1,130	0.030	0.030	30,000	900	0.015	0.020	30,000	770	0.010	0.015
"	8	16,000	520	0.015	0.015	16,000	410	0.010	0.015	16,000	350	0.010	0.010
2mm	2	40,000	1,530	0.040	0.040	40,000	1,270	0.030	0.030	40,000	1,090	0.020	0.030
"	4	30,000	1,330	0.030	0.030	30,000	1,060	0.025	0.025	30,000	910	0.020	0.020
"	8	30,000	1,130	0.030	0.030	30,000	900	0.020	0.030	30,000	770	0.010	0.010
2.5mm	1.2	40,000	2,200	0.050	0.050	40,000	1,760	0.040	0.040	40,000	1,500	0.030	0.040
"	4	40,000	1,540	0.030	0.040	40,000	1,240	0.030	0.030	40,000	1,150	0.020	0.030
"	10	24,000	810	0.020	0.030	24,000	650	0.010	0.030	24,000	260	0.010	0.020
3mm	6	40,000	1,400	0.030	0.030	40,000	1,120	0.020	0.030	40,000	960	0.020	0.030
"	10	21,000	1,130	0.020	0.030	21,000	900	0.020	0.020	21,000	770	0.010	0.020
"	16	16,000	730	0.020	0.030	16,000	590	0.010	0.020	16,000	500	0.010	0.010
4mm	6	40,000	1,430	0.030	0.040	40,000	1,120	0.030	0.030	40,000	1,040	0.020	0.030
"	10	21,000	1,080	0.020	0.030	21,000	850	0.020	0.020	21,000	740	0.010	0.020
"	16	16,000	700	0.010	0.020	21,000	560	0.010	0.020	16,000	470	0.010	0.010
6mm		16,000~ 50,000	740~ 6000	0.050	0.060	13,000~ 50,000	590~ 4,000	0.050	0.060	11,000~ 50,000	390~ 3,000	0.050	0.060

**절입량**  
Depth of Cut

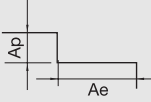
Slotting

- Ap : Axial Depth
- D : Outside Diameter



Side Milling

- Ap : Axial Depth
- Ae : Radial Depth



피삭재 Material		고경도강/ 프리하드강 Prehardened Steels / Hardened Steels NAK / SKD61				고경도강 Hardened Steels STAVX / SKD61				고경도강 Hardened Steels SKD11 / YXR7 / SKH51			
경도 Hardness		30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 68HRc			
외경 Outside Diameter	유효장/날장 Effective Length Length of cut	RPM	FEED	Ap Ae		RPM	FEED	Ap Ae		RPM	FEED	Ap Ae	
				Axial Depth	Radial Depth			Axial Depth	Radial Depth			Axial Depth	Radial Depth
0.4mm	0.3	50,000	890	0.010	0.010	50,000	520	0.005	0.006	50,000	450	0.005	0.005
"	1	50,000	730	0.010	0.010	50,000	500	0.005	0.005	50,000	430	0.005	0.005
"	2	50,000	390	0.005	0.005	50,000	250	0.003	0.003	50,000	220	0.002	0.003
0.5mm	0.4	50,000	990	0.010	0.020	50,000	850	0.005	0.010	50,000	770	0.005	0.010
"	1	50,000	900	0.010	0.015	50,000	590	0.005	0.010	50,000	550	0.005	0.010
"	3	50,000	630	0.010	0.015	50,000	560	0.005	0.010	50,000	530	0.005	0.010
0.8mm	0.6	50,000	1,610	0.020	0.020	50,000	1,320	0.015	0.015	50,000	1,140	0.010	0.010
"	2	50,000	1,520	0.020	0.020	50,000	1,230	0.010	0.010	50,000	1,120	0.010	0.010
"	4	40,000	910	0.015	0.020	40,000	740	0.010	0.010	40,000	650	0.010	0.010
"	6	30,000	460	0.015	0.050	30,000	410	0.010	0.010	30,000	290	0.005	0.005
1mm	0.7	50,000	1,820	0.020	0.030	50,000	1,380	0.020	0.020	50,000	1,290	0.010	0.020
"	2	40,000	1,470	0.015	0.200	40,000	1,010	0.015	0.015	40,000	910	0.010	0.010
"	4	30,000	1,080	0.015	0.015	30,000	660	0.010	0.015	30,000	630	0.010	0.010
"	8	24,000	680	0.010	0.010	24,000	460	0.005	0.010	24,000	360	0.005	0.005
1.5mm	0.8	40,000	1,790	0.030	0.040	40,000	1,150	0.020	0.030	40,000	1,190	0.020	0.020
"	2	30,000	1,470	0.030	0.030	30,000	1,160	0.020	0.030	30,000	930	0.020	0.020
"	4	30,000	1,190	0.030	0.030	30,000	950	0.015	0.020	30,000	810	0.010	0.015
"	8	16,000	550	0.015	0.015	16,000	430	0.010	0.015	16,000	370	0.010	0.010
2mm	2	40,000	1,610	0.040	0.040	40,000	1,340	0.030	0.030	40,000	1,150	0.020	0.030
"	4	30,000	1,400	0.030	0.030	30,000	1,120	0.025	0.025	30,000	960	0.020	0.020
"	8	30,000	1,190	0.030	0.030	30,000	950	0.020	0.030	30,000	810	0.010	0.010
2.5mm	1.2	40,000	2,317	0.050	0.050	40,000	1,850	0.040	0.040	40,000	1,580	0.030	0.040
"	4	40,000	1,620	0.030	0.040	40,000	1,300	0.030	0.030	40,000	1,210	0.020	0.030
"	10	24,000	850	0.020	0.030	24,000	680	0.010	0.030	24,000	280	0.010	0.020
3mm	6	40,000	1,470	0.030	0.030	40,000	1,180	0.020	0.030	40,000	1,010	0.020	0.030
"	10	21,000	1,190	0.020	0.030	21,000	950	0.020	0.020	21,000	810	0.010	0.020
"	16	16,000	770	0.020	0.030	16,000	620	0.010	0.020	16,000	530	0.010	0.010
4mm	6	40,000	1,510	0.030	0.040	40,000	1,180	0.030	0.030	40,000	1,100	0.020	0.030
"	10	21,000	1,140	0.020	0.030	21,000	900	0.020	0.020	21,000	780	0.010	0.020
"	16	16,000	740	0.010	0.020	21,000	590	0.010	0.020	16,000	500	0.010	0.010
6mm		16,000~ 50,000	740~ 6000	0.050	0.060	13,000~ 50,000	590~ 4,000	0.050	0.060	11,000~ 50,000	390~ 3,000	0.050	0.060

<b>절입량</b> Depth of Cut	• Ap : Axial Depth • Ae : Radial Depth	
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- 4날 사용시 Feed 20% 증가, 절입량 5% 감소 하세요.      • For 4Flute, increase 20% Feed rate & decrease 5% depth of cut.



파삭재 Material		동/탄소강 Copper / Carbon Steels Cu / S45C / S50C			고경도강/프리아이든강 Prehardened Steels / Hardened Steels NAK / SKD			고경도강 Hardened Steels SKD / SKT			고경도강 Hardened Steels SKD / SKT		
경도 Hardness		30HRC~45HRC			30HRC~45HRC			45HRC~55HRC			55HRC ~ 68HRC		
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth
R0.1	1.5	42,000	630	0.007	28,350	431	0.005	27,300	326	0.005	27,300	252	0.004
"	2	32,550	368	0.005	22,575	252	0.004	21,000	200	0.003	21,000	179	0.003
R0.15	2	34,650	641	0.008	23,310	399	0.006	21,525	336	0.005	21,525	294	0.004
"	3	32,550	494	0.003	22,050	326	0.002	19,950	242	0.002	19,950	189	0.001
R0.2	3	42,000	1,155	0.016	28,350	788	0.013	26,250	672	0.011	26,250	473	0.008
"	6	25,200	525	0.004	17,850	326	0.003	16,800	294	0.003	16,800	252	0.002
R0.25	4	34,650	1,187	0.019	28,350	861	0.015	24,675	630	0.013	24,675	609	0.011
"	8	21,525	609	0.006	17,850	431	0.005	15,750	368	0.004	15,750	326	0.003
R0.3	4	43,050	2,142	0.032	31,500	1,418	0.022	23,625	788	0.021	23,625	704	0.016
"	8	26,775	998	0.016	22,050	735	0.013	16,800	515	0.011	16,800	410	0.008
"	12	2,625	893	0.008	22,575	714	0.006	14,700	399	0.005	13,650	336	0.004
R0.4	4	43,050	2,310	0.037	29,400	1,470	0.028	24,150	861	0.026	24,150	714	0.016
"	8	26,775	1,365	0.021	18,900	945	0.016	15,750	630	0.016	15,750	578	0.011
"	12	26,775	1,050	0.016	16,275	525	0.013	12,600	462	0.011	12,600	420	0.007
R0.5	8	26,250	2,100	0.047	17,850	1,365	0.037	17,850	1,050	0.032	16,800	861	0.026
"	15	17,850	1,103	0.023	12,600	767	0.019	11,550	683	0.017	11,550	525	0.013
"	25	15,750	945	0.014	10,500	683	0.011	9,450	567	0.008	9,450	462	0.008
"	35	9,450	609	0.008	6,300	399	0.006	6,300	378	0.005	6,300	273	0.004
R0.75	10	18,900	2,205	0.063	12,600	1,470	0.042	12,600	1,155	0.037	12,600	893	0.032
"	20	13,650	1,260	0.032	9,450	945	0.021	9,450	735	0.016	9,450	630	0.014
"	30	9,450	893	0.016	7,350	651	0.013	7,350	546	0.011	7,350	504	0.011
R1	12	15,750	2,468	0.084	11,550	1,785	0.068	11,025	1,428	0.059	11,025	1,124	0.048
"	20	10,500	1,470	0.063	8,400	1,050	0.053	9,450	1,050	0.047	9,450	924	0.037
"	30	9,450	1,260	0.047	7,350	840	0.037	7,350	819	0.032	7,350	672	0.026
"	40	9,450	1,260	0.037	7,035	819	0.032	6,300	735	0.026	6,300	609	0.021
R1.5	20	10,500	2,310	0.095	8,400	1,365	0.074	7,350	1,260	0.063	7,350	1,155	0.053
"	30	9,450	1,890	0.079	7,350	1,103	0.063	6,300	1,050	0.053	6,300	924	0.044
"	40	7,875	1,470	0.063	5,250	924	0.053	5,355	840	0.042	5,355	735	0.037
"	50	7,875	1,365	0.042	5,250	840	0.032	5,355	788	0.026	5,355	683	0.024
R2	40	6,300	1,260	0.085	3,675	630	0.068	3,360	557	0.053	3,360	525	0.045
"	60	4,200	767	0.063	3,150	473	0.047	2,940	420	0.042	2,940	368	0.033
R3	29	9,450	2,205	0.147	7,350	1,103	0.105	6,300	998	0.084	6,300	893	0.061
"	49	4,725	1,470	0.074	4,095	735	0.063	3,570	683	0.053	3,570	578	0.042
R4	33	9,345	2,310	0.189	7,350	1,155	0.147	6,300	1,050	0.105	6,300	840	0.086
"	52	4,515	1,365	0.095	3,360	683	0.084	3,045	578	0.068	3,045	473	0.042
R5	37	5,775	1,785	0.194	3,675	893	0.168	3,570	735	0.126	3,570	630	0.084
"	54	4,200	998	0.093	3,150	504	0.068	2,940	420	0.053	2,940	336	0.034
R6	63	3,990	735	0.126	2,940	368	0.086	2,625	326	0.063	2,625	231	0.047
"	85	2,940	336	0.063	1,995	168	0.032	1,575	158	0.016	1,575	105	0.011
Milling Amount	Roughing	Ae ≤ 0.1D			Ae ≤ 0.1D			Ae ≤ 0.08D			Ae ≤ 0.06D		
	Finishing	Ae = Vf/n											

**절입량**  
Depth of Cut

- Ap : Axial Depth
- Ae : Radial Depth
- D : Outside Diameter
- n : Speed
- Vf : Feed

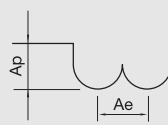
- 에어브로 또는 콜런트 미스트 사용을 추천합니다. 단, 동 가공에는 습식 콜런트를 추천합니다.
- 스테인레스강, 초내열합금 가공에는 유성 절삭유가 최적입니다.
- 이 절삭 조건표는 절삭 조건의 참고 수치입니다. 실제 가공시에는 가공 형상, 가공 목적, 적용 기계 등에 따라 조건을 조정하십시오.
- 적용 기계의 회전속도가 부족한 경우에는 회전속도와 이송속도를 같은 비율로 줄여서 적용합니다.
- 이송속도 및 축방향의 절입깊이는 리브차과 테이퍼각에 따라 고려하시고, 절삭상황에 맞추어 조정하십시오.
- 칩을 잘 제거하고 가공시의 발열과 발화에 주의하십시오.
- Recommend air blow or oil mist. When milling copper water soluble or oil is recommended.
- These parameters are for reference only. In operation, we recommend fine adjustments to those parameters according to the milling shape, milling strategy and machine conditions.
- Where the parameters exceed the machine's maximum spindle speed, the RPM and feedrate should be reduced proportionally.
- The Neck length and Taper angle may also affect the parameters used, depending on the operating conditions.
- Remove chips to prevent heat generation and ignition.

피삭재 Material		고경도강/ 프리하어강 Prehardened Steels / Hardened Steels NAK / STAVAX				고경도강 Hardened Steels SKD11				고경도강 Hardened Steels HAP10				고경도강 Hardened Steels HAP72			
경도 Hardness		~ 55Hrc				55Hrc ~ 62Hrc				62Hrc ~ 66Hrc				66Hrc ~ 70Hrc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.1	0.5	60,000	200	0.003	0.005	60,000	200	0.002	0.003	60,000	130	0.002	0.003	45,000	65	0.002	0.003
"	1	60,000	200	0.003	0.005	60,000	200	0.002	0.003	60,000	130	0.002	0.003	45,000	65	0.002	0.003
"	1.5	60,000	130	0.002	0.003	48,000	80	0.001	0.002	48,000	65	0.001	0.002	36,000	30	0.001	0.002
"	2	60,000	90	0.001	0.002	48,000	50	0.001	0.001	48,000	40	0.001	0.001	36,000	20	0.001	0.001
R0.15	1	60,000	350	0.006	0.008	45,000	310	0.004	0.007	43,500	180	0.003	0.005	32,500	90	0.003	0.005
"	1.5	60,000	350	0.006	0.008	45,000	310	0.004	0.007	43,500	180	0.003	0.005	32,500	90	0.003	0.005
"	2	60,000	210	0.004	0.007	45,000	190	0.003	0.005	43,500	110	0.002	0.004	32,500	55	0.002	0.004
"	3	42,500	140	0.002	0.004	32,000	80	0.002	0.004	32,000	65	0.001	0.002	24,000	30	0.001	0.002
R0.2	1	50,000	500	0.010	0.020	37,500	420	0.007	0.012	35,000	240	0.005	0.008	26,250	120	0.005	0.008
"	2	50,000	500	0.010	0.020	37,500	420	0.007	0.012	35,000	240	0.005	0.008	26,250	120	0.005	0.008
"	3	40,000	250	0.005	0.008	31,900	210	0.004	0.008	30,500	160	0.003	0.005	22,800	80	0.002	0.005
"	4	32,000	180	0.003	0.005	25,500	150	0.002	0.004	24,300	120	0.002	0.004	18,200	60	0.002	0.004
R0.25	1	44,000	650	0.015	0.040	33,000	530	0.010	0.020	30,000	300	0.007	0.010	22,500	150	0.007	0.010
"	2	44,000	650	0.015	0.040	33,000	530	0.010	0.020	30,000	300	0.007	0.010	22,500	150	0.007	0.010
"	3	40,000	500	0.010	0.020	31,000	400	0.007	0.010	28,550	230	0.005	0.008	21,400	115	0.005	0.008
"	4	32,700	180	0.005	0.015	27,150	150	0.003	0.008	25,650	100	0.002	0.005	19,900	50	0.002	0.005
"	5	27,000	135	0.003	0.008	24,200	110	0.002	0.005	23,500	75	0.002	0.004	17,600	35	0.002	0.004
"	6	21,350	90	0.002	0.005	21,300	75	0.001	0.003	21,300	50	0.001	0.002	16,000	25	0.001	0.002
"	8	15,900	60	0.001	0.003	15,900	40	0.001	0.002	15,900	25	0.001	0.002	11,950	12	0.001	0.002
R0.3	1	40,000	1,400	0.045	0.150	30,000	1,500	0.030	0.130	26,500	1,000	0.015	0.090	20,000	500	0.015	0.090
"	2	40,000	1,100	0.030	0.130	30,000	1,200	0.020	0.100	26,500	800	0.010	0.075	20,000	400	0.010	0.075
"	3	40,000	800	0.020	0.100	30,000	800	0.015	0.090	26,500	520	0.008	0.065	20,000	260	0.008	0.065
"	4	40,000	500	0.015	0.090	30,000	500	0.010	0.075	26,500	340	0.006	0.050	20,000	170	0.006	0.050
"	5	32,000	400	0.010	0.075	25,000	390	0.007	0.050	23,000	260	0.005	0.040	18,000	130	0.005	0.040
"	6	24,000	300	0.007	0.060	21,000	320	0.005	0.040	19,500	210	0.004	0.030	15,000	105	0.004	0.030
"	8	16,000	200	0.005	0.050	16,000	240	0.003	0.020	16,000	160	0.003	0.020	12,000	80	0.003	0.020
"	10	14,900	175	0.003	0.020	14,900	175	0.002	0.015	14,900	115	0.002	0.015	11,100	55	0.002	0.015
"	12	13,800	150	0.002	0.015	13,800	110	0.001	0.010	13,800	70	0.001	0.010	10,350	35	0.001	0.010
R0.4	2	35,000	1,600	0.060	0.210	27,000	1,600	0.040	0.170	23,500	1,000	0.020	0.120	17,500	500	0.020	0.120
"	4	35,000	1,200	0.040	0.170	27,000	1,200	0.025	0.135	23,500	600	0.012	0.095	17,500	300	0.012	0.095
"	6	28,000	600	0.020	0.120	23,000	600	0.012	0.095	20,500	400	0.006	0.065	15,500	200	0.006	0.065
"	8	19,500	330	0.012	0.095	18,000	375	0.007	0.070	17,000	285	0.005	0.060	12,750	140	0.005	0.060
"	10	15,000	260	0.010	0.085	14,700	340	0.005	0.060	14,650	225	0.004	0.050	11,000	110	0.004	0.050
R0.5	2	30,000	1,750	0.200	0.400	24,000	2,000	0.100	0.300	21,000	1,750	0.050	0.200	16,000	875	0.050	0.200
"	3	30,000	1,750	0.100	0.300	24,000	2,000	0.050	0.200	21,000	1,750	0.030	0.170	16,000	875	0.030	0.170
"	4	30,000	1,750	0.100	0.300	24,000	2,000	0.050	0.200	21,000	1,750	0.030	0.170	16,000	875	0.030	0.170
"	5	30,000	1,750	0.100	0.300	24,000	2,000	0.050	0.200	21,000	1,750	0.030	0.170	16,000	875	0.030	0.170
"	6	30,000	1,150	0.060	0.230	21,500	1,250	0.030	0.170	19,700	1,050	0.025	0.150	14,500	525	0.025	0.150
"	8	18,500	480	0.025	0.150	18,500	580	0.015	0.120	18,400	480	0.015	0.120	13,800	240	0.015	0.120
"	10	14,800	360	0.018	0.130	14,800	430	0.010	0.090	14,700	360	0.010	0.090	11,100	180	0.010	0.090
"	12	14,150	320	0.015	0.120	13,400	380	0.008	0.080	13,300	290	0.008	0.080	9,950	140	0.008	0.080
"	14	13,500	280	0.012	0.100	12,000	350	0.007	0.080	12,000	220	0.007	0.080	9,000	110	0.007	0.080
"	16	12,750	240	0.008	0.080	10,500	250	0.005	0.045	10,500	160	0.005	0.045	7,850	80	0.005	0.045
"	18	12,350	220	0.006	0.065	9,750	200	0.004	0.035	9,750	130	0.004	0.035	7,300	85	0.004	0.035
"	20	12,000	200	0.005	0.030	9,000	150	0.003	0.020	9,000	100	0.003	0.020	6,750	50	0.003	0.020
"	22	12,000	150	0.003	0.020	9,000	110	0.002	0.012	9,000	75	0.002	0.012	6,750	35	0.002	0.012
R0.6	6	30,000	2,000	0.120	0.360	20,000	2,000	0.060	0.240	17,500	1,750	0.036	0.200	13,100	875	0.036	0.200
"	8	20,200	800	0.050	0.230	16,600	900	0.025	0.170	15,850	750	0.025	0.170	11,900	375	0.025	0.170
"	10	15,500	480	0.030	0.180	15,500	580	0.015	0.130	15,350	480	0.015	0.130	11,500	240	0.015	0.130
R0.7	8	25,200	1,300	0.080	0.320	15,350	1,250	0.040	0.230	14,050	1,050	0.030	0.200	10,550	525	0.030	0.200
R0.75	3	30,000	2,450	0.250	0.550	1,700	2,000	0.120	0.400	15,000	1,750	0.060	0.290	11,250	875	0.060	0.290
"	4	30,000	2,450	0.250	0.550	17,000	2,000	0.120	0.400	15,000	1,750	0.060	0.290	11,250	875	0.060	0.290
"	6	30,000	2,450	0.150	0.450	17,000	2,000	0.070	0.310	15,000	1,750	0.040	0.240	11,250	875	0.040	0.240
"	8	23,500	1,300	0.100	0.370	15,000	1,250	0.045	0.250	14,000	1,050	0.030	0.210	10,500	525	0.030	0.210
"	10	23,500	1,300	0.100	0.370	15,000	1,250	0.045	0.250	14,000	1,050	0.030	0.210	10,500	525	0.030	0.210
"	12	13,100	480	0.030	0.210	13,000	580	0.020	0.170	13,000	480	0.020	0.170	9,750	240	0.020	0.170
"	14	11,200	400	0.025	0.190	10,900	485	0.015	0.145	10,900	385	0.015	0.145	8,200	190	0.015	0.145
"	16	9,350	320	0.020	0.170	8,850	390	0.012	0.130	8,800	290	0.012	0.130	6,600	145	0.012	0.130
"	20	9,000	280	0.018	0.160	8,000	350	0.010	0.120	8,000	220	0.010	0.120	6,000	110	0.010	0.120
절임량 Depth of Cut	• Ap : Axial Depth • Ae : Radial Depth • D : Outside Diameter • n : Speed • Vf : Feed																

파삭재 Material		고경도강 / 프리하드강 Prehardened Steels / Hardened Steels NAK / STAVAX				고경도강 Hardened Steels SKD11				고경도강 Hardened Steels HAP10				고경도강 Hardened Steels HAP72			
경도 Hardness		~ 55HRc				55HRc ~ 62HRc				62HRc ~ 66HRc				66HRc ~ 70HRc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.8	8	30,000	2,500	0.160	0.480	17,500	2,100	0.080	0.320	15,300	1,800	0.050	0.275	11,500	900	0.050	0.275
"	12	13,500	500	0.040	0.245	13,500	600	0.024	0.190	13,400	490	0.024	0.190	10,050	245	0.025	0.190
"	16	10,800	375	0.030	0.210	10,800	450	0.016	0.150	10,700	370	0.016	0.150	8,000	185	0.016	0.150
R1	4	28,000	2,900	0.300	0.700	14,000	2,100	0.150	0.500	12,250	1,800	0.080	0.350	9,200	900	0.080	0.350
"	6	28,000	2,900	0.200	0.600	14,000	2,100	0.100	0.400	12,250	1,800	0.060	0.300	9,200	900	0.060	0.300
"	8	28,000	2,900	0.200	0.600	14,000	2,100	0.100	0.400	12,250	1,800	0.060	0.300	9,200	900	0.060	0.300
"	10	28,000	2,900	0.200	0.600	14,000	2,100	0.100	0.400	12,250	1,800	0.060	0.300	9,200	900	0.060	0.300
"	12	19,500	1,350	0.120	0.450	12,400	1,350	0.060	0.340	11,500	1,100	0.045	0.270	8,650	550	0.045	0.270
"	14	19,500	1,350	0.120	0.450	12,400	1,350	0.060	0.340	11,500	1,100	0.045	0.270	8,650	550	0.045	0.270
"	16	10,800	500	0.050	0.300	10,800	600	0.030	0.240	10,700	490	0.030	0.240	8,000	245	0.030	0.240
"	18	9,700	435	0.040	0.280	9,700	520	0.025	0.220	9,650	430	0.025	0.220	7,250	215	0.025	0.220
"	20	8,650	375	0.035	0.250	8,650	450	0.020	0.190	8,560	370	0.020	0.190	6,400	185	0.020	0.190
"	22	8,450	350	0.032	0.245	8,200	440	0.018	0.180	8,200	330	0.018	0.180	6,150	165	0.018	0.180
"	25	8,250	320	0.030	0.240	7,800	440	0.016	0.160	7,800	290	0.016	0.160	5,850	145	0.016	0.160
"	30	7,850	280	0.024	0.200	7,000	350	0.014	0.160	7,000	220	0.014	0.160	5,250	110	0.014	0.160
R1.25	20	9,600	520	0.060	0.380	9,600	630	0.040	0.310	9,600	510	0.040	0.310	7,200	255	0.040	0.310
R1.5	6	21,000	3,000	0.400	1.000	10,500	2,200	0.200	0.700	9,200	1,900	0.120	0.550	6,900	950	0.120	0.550
"	8	21,000	3,000	0.400	1.000	10,500	2,200	0.200	0.700	9,200	1,900	0.120	0.550	6,900	950	0.120	0.550
"	10	21,000	3,000	0.300	0.900	10,500	2,200	0.150	0.650	9,200	1,900	0.100	0.500	6,900	950	0.100	0.500
"	12	21,000	3,000	0.300	0.900	10,500	2,200	0.150	0.650	9,200	1,900	0.100	0.500	6,900	950	0.100	0.500
"	16	21,000	3,000	0.300	0.900	10,500	2,200	0.150	0.650	9,200	1,900	0.100	0.500	6,900	950	0.100	0.500
"	20	14,500	1,360	0.180	0.700	9,250	1,400	0.100	0.500	8,600	1,150	0.075	0.450	6,450	575	0.075	0.450
"	25	8,000	520	0.007	0.450	8,000	630	0.050	0.380	8,000	510	0.050	0.380	6,000	255	0.050	0.380
"	30	5,750	375	0.050	0.380	5,750	450	0.030	0.290	5,700	370	0.030	0.290	4,275	185	0.030	0.290
"	35	5,550	335	0.045	0.360	5,350	440	0.025	0.270	5,350	310	0.025	0.270	4,000	155	0.025	0.270
"	40	5,350	300	0.040	0.340	4,900	390	0.200	0.240	4,950	250	0.020	0.240	3,700	125	0.020	0.240
R2	8	18,000	3,200	0.500	1.300	9,000	2,300	0.250	0.950	7,900	2,000	0.150	0.750	5,900	1,000	0.150	0.750
"	10	18,000	3,200	0.500	1.300	9,000	2,300	0.250	0.950	7,900	2,000	0.150	0.750	5,900	1,000	0.150	0.750
"	12	18,000	3,200	0.400	1.200	9,000	2,300	0.200	0.850	7,900	2,000	0.130	0.700	5,900	1,000	0.130	0.700
"	16	18,000	3,200	0.400	1.200	9,000	2,300	0.200	0.850	7,900	2,000	0.130	0.700	5,900	1,000	0.130	0.700
"	20	18,000	3,200	0.400	1.200	9,000	2,300	0.200	0.850	7,900	2,000	0.130	0.700	5,900	1,000	0.130	0.700
"	25	12,500	1,500	0.250	0.950	8,000	1,450	0.130	0.700	7,450	1,250	0.090	0.550	5,600	625	0.090	0.550
"	30	7,000	550	0.100	0.600	7,000	660	0.060	0.450	7,000	540	0.060	0.450	5,250	270	0.060	0.450
"	35	6,000	520	0.090	0.590	6,000	630	0.055	0.430	6,000	510	0.055	0.430	4,500	255	0.055	0.430
"	40	4,300	375	0.065	0.500	4,300	450	0.040	0.390	4,300	370	0.040	0.390	3,200	185	0.040	0.390
R2.5	20	14,400	3,200	0.500	1.500	7,200	2,300	0.250	1.050	6,350	2,000	0.160	0.880	4,750	1,000	0.160	0.880
"	30	10,000	1,500	0.310	1.200	6,400	1,450	0.160	0.880	6,200	1,250	0.110	0.730	4,650	625	0.110	0.730
"	40	6,000	570	0.125	0.780	6,000	690	0.080	0.625	6,000	570	0.080	0.625	4,500	285	0.080	0.625
"	15	13,000	3,500	0.600	1.800	6,500	2,500	0.300	1.300	5,700	2,200	0.200	1.000	4,300	1,100	0.200	1.000
"	25	9,500	3,000	0.700	2.100	5,200	2,200	0.400	1.700	4,500	1,900	0.250	1.350	3,400	950	0.250	1.350
"	30	7,500	2,500	0.800	2.500	4,300	2,000	0.500	2.100	3,750	1,750	0.300	1.700	2,800	875	0.300	1.700
"	30	6,200	2,000	0.900	3.000	3,600	1,750	0.600	2.600	3,150	1,500	0.350	2.000	2,350	750	0.350	2.000

절입량  
Depth of Cut

- Ap : Axial Depth
- Ae : Radial Depth
- D : Outside Diameter
- n : Speed
- Vf : Feed



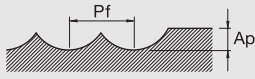
- 상기 절삭조건외의 참고는 수치치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 콜러트 사용을 추천, 동가공시 습식 콜러트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm 이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet coolant for copper
- The tolerance of below Ø1 is below 5µm.

# 2JJSP/4JJSP/4JJSPM

4JJSP/4JJSPM은 아래 수치의 20% Up 적용  
Apply 20% up values of below condition for 4JJSP/4JJSPM • RPM : rev./min • Feed : mm/min

파삭재 Material	합금강/ 공구강 Alloy Steels / Tool Steels SCM / SKT / SKS / SKD	고경도강/프라이하드강 Hardened Steels / Prehardened Steels SKT / SKD / NAK55 / HPM11	스테인레스강/고경도강 Stainless Steels / Hardened Steels SUS304 / SKD	고경도강 Hardened Steels	고경도강 Hardened Steels
경도 Hardness	~ 30HRc	30 ~ 38HRc	38 ~ 45HRc	45 ~ 55HRc	55 ~ 60HRc
반경 Radius	RPM FEED	RPM FEED	RPM FEED	RPM FEED	RPM FEED
R0.5	25,600 680	25,600 680	25,600 680	25,600 680	25,600 610
R0.75	22,000 850	22,000 850	22,000 850	22,000 850	22,000 750
R1	19,200 1,080	19,200 1,080	19,200 1,080	19,200 1,080	17,600 960
R2	12,400 1,440	11,200 1,240	10,800 1,160	10,000 1,080	8,800 920
R3	8,400 1,480	7,600 1,360	7,200 1,280	6,800 1,200	5,900 1,040
R4	6,400 1,120	5,700 1,000	5,500 960	5,100 880	4,400 790
R5	5,100 880	4,600 800	4,400 784	4,000 720	3,600 640
R6	4,800 840	3,800 670	3,640 640	3,400 600	3,000 540

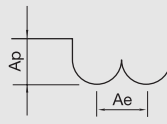
절입량 Depth of Cut	Ap	Pf		Ap	Pf
	0.05D	0.1D		0.02D	0.1D

# 2JJSB/2JJB

• RPM : rev./min • Feed : mm/min

파삭재 Material	고경도강/프라이하드강 Prehardened Steels / Hardened Steels NAK / STAVAX	고경도강 Hardened Steels SKD11	고경도강 Hardened Steels HAP10	고경도강 Hardened Steels HAP72
경도 Hardness	~ 55HRc	55HRc ~ 62HRc	62HRc ~ 65HRc	65HRc ~ 68HRc
반경 Radius	RPM FEED Ap Axial Depth Ae Radial Depth	RPM FEED Ap Axial Depth Ae Radial Depth	RPM FEED Ap Axial Depth Ae Radial Depth	RPM FEED Ap Axial Depth Ae Radial Depth
R0.05	60,000 150 0.002 0.004	60,000 150 0.002 0.003	60,000 100 0.001 0.0012	52,500 30 0.001 0.002
R0.1	60,000 180 0.003 0.005	60,000 180 0.002 0.003	60,000 120 0.002 0.003	45,000 60 0.002 0.003
R0.15	60,000 350 0.006 0.008	45,000 310 0.004 0.007	43,500 180 0.003 0.005	32,500 90 0.003 0.005
R0.2	50,000 500 0.01 0.02	37,500 420 0.007 0.012	35,000 240 0.005 0.008	26,250 120 0.005 0.008
R0.25	44,000 650 0.015 0.04	33,000 530 0.010 0.02	30,000 300 0.007 0.01	22,500 150 0.007 0.01
R0.3	40,000 1,100 0.03 0.13	30,000 1,200 0.02 0.1	26,500 800 0.01 0.075	20,000 400 0.01 0.075
R0.4	35,000 1,600 0.06 0.21	27,000 1,600 0.04 0.17	23,500 1,000 0.02 0.12	17,500 500 0.02 0.12
R0.5	30,000 1,750 0.2 0.4	24,000 2,000 0.1 0.3	21,000 1,750 0.05 0.2	16,000 875 0.05 0.2
R0.6	30,000 2,000 0.23 0.45	21,000 2,000 0.1 0.3	18,000 1,750 0.05 0.2	14,500 875 0.05 0.2
R0.75	30,000 2,450 0.25 0.55	17,000 2,000 0.12 0.4	15,000 1,750 0.06 0.29	11,250 875 0.06 0.29
R1	28,000 2,900 0.3 0.7	14,000 2,100 0.15 0.5	12,250 1,800 0.08 0.35	9,200 900 0.08 0.35
R1.25	24,500 2,950 0.35 0.85	12,250 2,150 0.17 0.6	10,700 1,850 0.1 0.45	8,050 925 0.1 0.45
R1.5	21,000 3,000 0.4 1	10,500 2,200 0.2 0.7	9,200 1,900 0.12 0.55	6,900 950 0.12 0.55
R2	18,000 3,200 0.5 1.3	9,000 2,300 0.25 0.95	7,900 2,000 0.15 0.75	5,900 1,000 0.15 0.75
R2.5	15,600 3,500 0.5 1.5	7,800 2,500 0.25 1.05	6,800 2,100 0.15 0.85	5,100 1,050 0.15 0.85
R3	13,000 3,500 0.6 1.8	6,500 2,500 0.3 1.3	5,700 2,200 0.2 1	4,300 1,100 0.2 1
R4	9,500 3,000 0.7 2.1	5,200 2,200 0.4 1.7	4,500 1,900 0.25 1.35	3,400 950 0.25 1.35
R5	7,500 2,500 0.8 2.5	4,300 2,000 0.5 2.1	3,750 1,750 0.3 1.7	2,800 875 0.3 1.7
R6	6,200 2,000 0.9 3	3,600 1,750 0.6 2.6	3,150 1,500 0.35 2	2,350 750 0.35 2

절입량 Depth of Cut	Ap	Ae	
	• Ap : Axial Depth	• Ae : Radial Depth	
	• D : Outside Diameter	• n : Speed	
	• Vf : Feed		

- 상기 절삭조건외의 참고는 수치입, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 쿨런트 사용을 추천, 동가공시 습식 쿨런트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의

- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet collant for copper
- The tolerance of below Ø1 is below 5µm.

홈절삭 Slotting

파삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.1mm	45,000	100	40,000	90	33,000	50	33,000	40	26,400	30
0.2mm	45,000	115	40,000	95	33,000	60	33,000	45	20,000	35
0.3mm	45,000	140	40,000	115	33,000	70	25,000	50	20,000	40
0.4mm	45,000	180	40,000	140	33,000	90	25,000	55	20,000	60
0.5mm	45,000	280	40,000	220	33,000	140	25,000	85	20,000	75
0.6mm	45,000	360	40,000	285	30,000	160	25,000	105	15,200	80
0.8mm	40,000	440	30,000	295	25,000	185	19,000	110	14,000	90
0.9mm	39,000	520	27,800	330	22,700	205	17,500	125	12,500	85
1mm	38,000	570	25,500	360	20,500	215	16,000	135	12,500	85
2mm	26,000	680	17,500	420	14,500	260	11,000	160	9,500	115
3mm	17,300	680	11,500	420	9,500	260	7,500	160	6,400	115
4mm	13,200	700	8,800	440	7,200	270	5,600	170	4,750	118
5mm	12,500	805	8,300	500	6,400	285	5,100	180	4,450	132
6mm	10,350	770	6,900	480	5,300	280	4,200	180	3,700	130
8mm	7,800	720	5,200	445	4,000	255	3,200	165	2,800	120
10mm	6,150	680	4,100	415	3,200	240	2,550	155	2,200	112
12mm	5,250	680	3,500	415	2,650	240	2,100	155	1,860	112
16mm	4,340	610	2,600	360	1,840	180	1,800	100	1,460	100
18mm	4,340	610	2,600	360	1,840	180	1,800	100	1,460	100
20mm	3,650	570	2,100	300	1,460	180	1,400	100	1,100	100

절입량  
Depth of Cut

절입량  
Depth of Cut

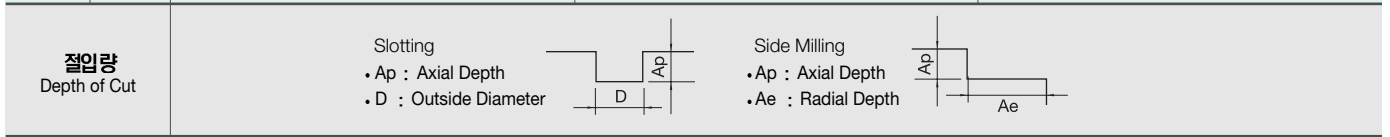
측면절삭 Side Cutting

파삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	38,000	820	25,500	510	20,500	310	16,000	190	12,500	125
2mm	26,000	970	17,500	600	14,500	370	11,000	230	9,500	165
3mm	17,300	970	11,500	600	9,500	370	7,500	230	6,400	165
4mm	13,200	1,000	8,800	625	7,200	385	5,600	240	4,750	170
5mm	12,500	1,150	8,300	710	6,400	410	5,100	260	4,450	190
6mm	10,350	1,100	6,900	690	5,300	400	4,200	255	3,700	185
8mm	7,800	1,030	5,200	635	4,000	365	3,200	235	2,800	170
10mm	6,150	970	4,100	590	3,200	340	2,550	220	2,200	160
12mm	5,250	970	3,500	590	2,650	340	2,100	220	1,860	160
16mm	4,340	880	2,600	530	1,840	300	1,800	190	1,800	190
18mm	4,340	880	2,600	530	1,840	300	1,800	190	1,800	190
20mm	3,650	800	2,100	500	1,460	295	1,400	180	1,400	180

절입량  
Depth of Cut

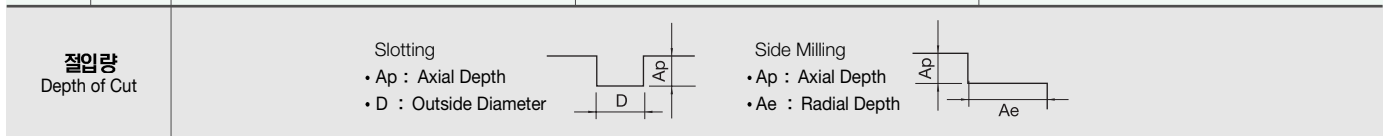


파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels SK / SCM / SUS			고경도강 / 프리하든강 Prehardened Steels / Hardened Steels NAK / SKD		
경도 Hardness		35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 65HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap
0.1mm	0.3	48,600	345	0.006	42,750	255	0.006	40,050	206	0.006
"	0.5	48,600	346	0.004	42,750	255	0.004	40,050	206	0.004
0.2mm	0.5	38,250	403	0.020	33,750	301	0.020	31,500	242	0.020
"	1	38,250	403	0.014	33,750	301	0.014	31,500	242	0.014
"	1.5	34,425	362	0.008	30,375	271	0.008	28,350	218	0.008
0.3mm	1	34,000	358	0.021	30,000	267	0.021	28,000	215	0.021
"	1.5	34,000	358	0.021	30,000	267	0.021	28,000	215	0.021
"	2	30,600	322	0.012	27,000	241	0.012	25,200	194	0.012
"	3	30,600	322	0.008	27,000	241	0.008	25,200	194	0.008
0.4mm	1	27,200	446	0.040	24,000	333	0.040	22,400	268	0.040
"	2	27,200	446	0.028	24,000	333	0.028	22,400	268	0.028
"	3	24,480	401	0.016	21,600	299	0.016	20,160	241	0.016
"	4	24,480	401	0.010	21,600	299	0.010	20,160	241	0.010
"	5	21,760	260	0.010	19,200	230	0.010	17,920	181	0.010
"	6	21,760	260	0.006	19,200	230	0.006	17,920	181	0.006
0.5mm	1	27,200	446	0.050	24,000	333	0.050	22,400	268	0.050
"	2	27,200	446	0.035	24,000	333	0.035	22,400	268	0.035
"	3	24,480	401	0.020	21,600	299	0.020	20,160	241	0.020
"	4	24,480	401	0.020	21,600	299	0.020	20,160	241	0.020
"	5	24,480	401	0.013	21,600	299	0.013	20,160	241	0.013
"	6	21,760	260	0.013	19,200	230	0.013	17,920	181	0.013
"	8	21,760	247	0.008	19,200	194	0.008	17,920	147	0.008
0.6mm	2	27,200	636	0.042	24,000	475	0.042	22,400	383	0.042
"	4	24,480	573	0.024	21,600	428	0.024	20,160	345	0.024
"	6	24,480	573	0.015	21,600	428	0.015	20,160	345	0.015
"	8	21,760	372	0.015	19,200	328	0.015	17,920	258	0.015
"	10	21,760	372	0.009	19,200	328	0.009	17,920	258	0.009
0.7mm	2	27,200	636	0.070	24,000	475	0.070	22,400	383	0.070
"	4	24,480	573	0.049	21,600	428	0.049	20,160	345	0.049
"	6	24,480	573	0.018	21,600	428	0.018	20,160	345	0.018
"	8	21,760	372	0.018	19,200	328	0.018	17,920	258	0.018
"	10	21,760	372	0.018	19,200	328	0.018	17,920	258	0.018
0.8mm	4	27,200	636	0.056	24,000	475	0.056	22,400	383	0.056
"	6	24,480	573	0.032	21,600	428	0.032	20,160	345	0.032
"	8	24,480	573	0.020	21,600	428	0.020	20,160	345	0.020
"	10	21,760	372	0.020	19,200	328	0.020	17,920	258	0.020
"	12	21,760	372	0.012	19,200	328	0.012	17,920	258	0.012
0.9mm	6	24,480	573	0.036	21,600	428	0.036	20,160	345	0.036
"	8	24,480	573	0.023	21,600	428	0.023	20,160	345	0.023
"	10	21,760	372	0.023	19,200	328	0.023	17,920	258	0.023
1mm	4	24,480	936	0.100	21,600	699	0.100	20,160	563	0.100
"	6	22,032	773	0.040	19,440	577	0.040	18,144	465	0.040
"	8	22,032	773	0.040	19,440	577	0.040	18,144	465	0.040
"	10	22,032	773	0.025	19,440	577	0.025	18,144	465	0.025
"	12	19,584	502	0.025	17,280	443	0.025	16,128	348	0.025
"	14	19,584	502	0.025	17,280	443	0.025	16,128	348	0.025
"	16	19,584	476	0.015	17,280	373	0.015	16,128	283	0.015
1.2mm	6	21,760	764	0.084	19,200	570	0.084	17,920	460	0.084
"	8	19,584	687	0.048	17,280	513	0.048	16,128	414	0.048
"	10	19,584	687	0.030	17,280	513	0.030	16,128	414	0.030
"	12	19,584	687	0.030	17,280	513	0.030	16,128	414	0.030
"	16	17,408	611	0.020	15,360	456	0.020	14,336	368	0.020
1.4mm	8	19,040	668	0.100	16,800	499	0.100	15,680	402	0.100
"	10	17,136	601	0.056	15,120	449	0.056	14,112	362	0.056
"	14	17,136	601	0.035	15,120	449	0.035	14,112	362	0.035
"	16	15,232	391	0.035	13,440	345	0.035	12,544	271	0.035



- Recommend airflow or oil mist cutting fluids.
- Remove chips to prevent heat generation and ignition.
- When the parameters exceed the machine's maximum spindle speed, decrease both spindle speed and feed rate by the same proportion.
- To avoid damaging the precision tip point non-contact measuring should be used.

파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels SK / SCM / SUS			고경도강/프리아이든강 Prehardened Steels / Hardened Steels NAK / SKD		
경도 Hardness		35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 65HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap
1.5mm	6	19,040	668	0.110	16,800	499	0.110	15,680	402	0.110
"	8	19,040	668	0.110	16,800	499	0.110	15,680	402	0.110
"	10	17,136	601	0.060	15,120	449	0.060	14,112	362	0.060
"	12	17,136	601	0.060	15,120	449	0.060	14,112	362	0.060
"	14	17,136	601	0.060	15,120	449	0.060	14,112	362	0.060
"	16	15,232	391	0.038	13,440	345	0.038	12,544	271	0.038
"	18	15,232	391	0.038	13,440	345	0.038	12,544	271	0.038
"	20	15,232	391	0.038	13,440	345	0.038	12,544	271	0.038
"	25	11,424	278	0.023	10,080	218	0.023	9,408	165	0.023
1.6mm	10	15,912	621	0.040	14,040	463	0.040	13,104	373	0.040
"	14	15,912	621	0.040	14,040	463	0.040	13,104	373	0.040
"	18	15,912	621	0.040	14,040	463	0.040	13,104	373	0.040
1.8mm	10	15,912	621	0.072	14,040	463	0.072	13,104	373	0.072
"	14	15,912	621	0.072	14,040	463	0.072	13,104	373	0.072
"	18	15,912	621	0.072	14,040	463	0.072	13,104	373	0.072
2mm	6	14,280	668	0.200	12,600	499	0.200	11,760	402	0.200
"	8	14,280	668	0.140	12,600	499	0.140	11,760	402	0.140
"	10	14,280	668	0.140	12,600	499	0.140	11,760	402	0.140
"	12	12,852	601	0.080	11,340	449	0.080	10,584	362	0.080
"	14	12,852	601	0.080	11,340	449	0.080	10,584	362	0.080
"	16	12,852	601	0.080	11,340	449	0.080	10,584	362	0.080
"	18	12,852	601	0.050	11,340	449	0.050	10,584	362	0.050
"	20	12,852	601	0.050	11,340	449	0.050	10,584	362	0.050
"	25	11,424	391	0.050	10,080	345	0.050	9,408	271	0.050
"	30	11,424	391	0.030	10,080	345	0.030	9,408	271	0.030
2.5mm	12	12,240	716	0.180	10,800	535	0.180	10,080	431	0.180
"	16	11,116	644	0.100	9,720	388	0.100	9,072	388	0.100
"	20	11,116	644	0.100	9,720	481	0.100	9,072	388	0.100
3mm	12	10,880	636	0.210	9,600	475	0.210	8,960	383	0.210
"	16	9,792	573	0.120	8,640	428	0.120	8,064	345	0.120
"	20	9,792	573	0.12	8,640	428	0.12	8,064	345	0.12
"	25	9,792	573	0.08	8,640	428	0.08	8,064	345	0.08
"	30	9,792	573	0.08	8,640	428	0.08	8,064	345	0.08
"	40	8,704	509	0.05	7,680	380	0.05	7,168	307	0.05
4mm	12	8,000	1,358	0.4	7,050	902	0.4	6,580	727	0.4
"	16	8,000	1,358	0.4	7,050	902	0.4	6,580	727	0.4
"	20	7,800	1,200	0.3	6,800	800	0.3	6,200	720	0.3
"	25	7,800	1,200	0.3	6,800	800	0.3	6,200	720	0.3
"	30	7,800	1,200	0.3	6,800	800	0.3	6,200	720	0.3
"	35	7,600	1,150	0.2	6,700	780	0.2	6,000	700	0.2
"	40	7,600	1,150	0.2	6,700	780	0.2	6,000	700	0.2
"	45	7,600	1,150	0.2	6,700	780	0.2	6,000	700	0.2
"	50	7,600	1,150	0.2	6,700	780	0.2	6,000	700	0.2
5mm	16	7,400	1,060	0.1	6,600	760	0.4	5,900	680	0.4
"	20	7,400	1,060	0.1	6,600	760	0.4	5,900	680	0.4
"	25	7,400	1,060	0.1	6,600	760	0.3	5,900	680	0.3
"	30	7,200	1,000	0.09	6,200	740	0.2	5,800	650	0.2
"	35	7,200	1,000	0.09	6,200	740	0.2	5,800	650	0.2
"	40	7,000	980	0.09	6,000	700	0.2	5,600	620	0.2
"	50	7,000	980	0.09	6,000	700	0.2	5,600	620	0.2
6mm	20	6,800	950	0.08	5,800	680	0.1	5,400	600	0.1
"	30	6,800	950	0.08	5,800	680	0.1	5,400	600	0.1
"	40	6,800	950	0.08	5,800	680	0.1	5,400	600	0.1
"	50	6,500	900	0.05	5,600	650	0.09	5,000	560	0.09
"	60	6,500	900	0.05	5,600	650	0.09	5,000	560	0.09



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파삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 70HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	38,000	1,050	25,500	710	20,500	430	16,000	270	12,500	175
2mm	26,000	1,250	17,500	840	14,500	520	11,000	320	9,500	230
3mm	17,300	1,250	11,500	840	9,500	520	7,500	320	6,400	230
4mm	13,200	1,300	8,800	880	7,200	540	335	4,750	4,750	240
5mm	12,500	1,500	8,300	1,000	6,400	580	5,100	370	4,450	270
6mm	10,350	1,400	6,900	950	5,300	560	4,200	350	3,700	260
8mm	7,800	1,350	5,200	900	4,000	520	3,200	330	2,800	240
10mm	6,150	1,260	4,100	840	3,200	480	2,550	310	2,200	220
12mm	5,250	1,260	3,500	840	2,650	480	2,100	300	1,860	220

절입량  
Depth of Cut

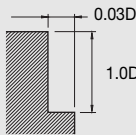
# 6JJHE

파삭재 Material	고경도강 Hardened Steels			고경도강 Hardened Steels		
	SKD11			SKS / SKH		
경도 Hardness	55HRc ~ 62HRc			62HRc ~ 68HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
3mm	16,000	1,900	0.1	11,000	1,200	0.05
4mm	12,000	2,200	0.1	8,000	1,300	0.05
5mm	10,000	2,500	0.1	6,000	1,500	0.05
6mm	8,000	2,900	0.2	5,300	1,800	0.1
8mm	6,000	2,900	0.2	4,000	1,800	0.1
10mm	4,800	2,900	0.3	3,200	1,800	0.2
12mm	4,000	2,400	0.3	2,700	1,500	0.2
16mm	3,000	1,800	0.5	2,000	1,100	0.3
20mm	2,400	1,400	0.5	1,600	880	0.3
25mm	2,000	1,000	0.5	1,000	700	0.4

절입량  
Depth of Cut

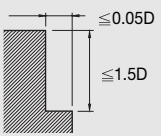
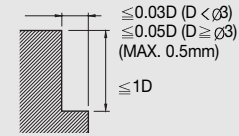
파삭재 Material	고경도강 Hardened Steels			
	45HRc ~ 50HRc		50HRc ~ 55HRc	
경도 Hardness				
외경 Outside Diameter	RPM	FEED	RPM	FEED
1mm	38,000	1,050	25,500	710
2mm	26,000	1,250	17,500	840
3mm	17,300	1,250	11,500	840
4mm	13,200	1,300	8,800	880
5mm	12,500	1,500	8,300	1,000
6mm	10,350	1,400	6,900	950
7mm	9,000	1,380	5,200	900
8mm	7,800	1,350	4,100	840
9mm	6,150	1,260	3,500	840
10mm	5,250	1,260	2,800	800
11mm	4,300	1,150	2,500	800
12mm	4,300	1,150	2,300	760
14mm	3,500	1,050	2,100	760
16mm	3,500	1,050	2,000	700
18mm	2,800	1,000	2,000	700
20mm	2,600	980	1,800	650

절입량 Depth of Cut	
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파삭재 Material	고경도강 Hardened Steels SKD11			고경도강 Hardened Steels SKS / SKH		
	55HRc ~ 62HRc			62HRc ~ 68HRc		
경도 Hardness						
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
1mm	40,000	800	0.03	32,000	500	0.02
1.5mm	40,000	900	0.04	32,000	550	0.02
2mm	24,000	1,000	0.05	16,000	600	0.05
3mm	38,400	4,560	0.1	19,200	2,280	0.05
4mm	28,800	5,280	0.1	14,400	2,640	0.05
5mm	24,000	6,000	0.1	12,000	3,000	0.05
6mm	19,200	6,960	0.2	9,600	3,480	0.1
8mm	14,400	6,960	0.2	7,200	3,480	0.1
10mm	11,520	6,960	0.3	5,760	3,480	0.2
12mm	9,600	5,760	0.3	4,800	2,880	0.2
16mm	7,200	4,320	0.5	3,600	2,160	0.3
20mm	5,760	3,480	0.5	2,880	1,680	0.3

절입량 Depth of Cut		
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## 홈절삭 Slotting

피삭재 Material	고경도강/프리하드강 Prehardened Steels / Hardened Steels		고경도강 Hardened Steels					
	STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	40,000	155	33,000	105	25,000	60	25,000	60
0.5mm	40,000	175	33,000	110	25,000	65	20,000	40
0.6mm	40,000	225	30,000	125	25,000	85	20,000	50
0.8mm	30,000	235	25,000	145	19,000	90	16,000	55
1mm	25,500	288	20,500	172	16,000	108	12,500	70
2mm	17,500	336	14,500	208	11,000	128	9,500	92
3mm	11,500	336	9,500	208	7,500	128	6,400	92
4mm	8,800	352	7,200	216	5,600	136	4,750	94
5mm	8,300	400	6,400	228	5,100	144	4,450	105
6mm	6,900	384	5,300	224	4,200	144	3,700	104
8mm	5,200	356	4,000	204	3,200	132	2,800	96
10mm	4,100	332	3,200	192	2,550	124	2,200	90
12mm	3,500	332	2,650	192	2,100	124	1,860	90

1.0D  
0.05D

1.0D  
0.02D

## 측면절삭 Side Cutting

피삭재 Material	고경도강/프리하드강 Prehardened Steels / Hardened Steels		고경도강 Hardened Steels					
	STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	40,000	110	33,000	70	25,000	40	25,000	40
0.5mm	40,000	125	33,000	80	25,000	45	20,000	30
0.6mm	40,000	160	30,000	90	25,000	60	20,000	35
0.8mm	30,000	165	25,000	100	19,000	65	16,000	40
1mm	25,500	408	20,500	248	16,000	152	12,500	100
2mm	17,500	480	14,500	296	11,000	184	9,500	132
3mm	11,500	480	9,500	296	7,500	184	6,400	132
4mm	8,800	500	7,200	308	5,600	192	4,750	136
5mm	8,300	568	6,400	328	5,100	208	4,450	152
6mm	6,900	552	5,300	320	4,200	204	3,700	148
8mm	5,200	508	4,000	292	3,200	188	2,800	136
10mm	4,100	472	3,200	272	2,550	176	2,200	128
12mm	3,500	472	2,650	272	2,100	176	1,860	128

0.03D  
1.0D



## 측면절삭 Side Cutting

피삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels		고경도강 Hardened Steels					
	STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	40,000	580	33,000	350	25,000	240	20,000	150
0.5mm	40,000	600	33,000	365	25,000	245	20,000	140
0.6mm	40,000	650	30,000	380	25,000	250	20,000	150
0.8mm	30,000	660	25,500	400	19,000	260	16,000	155
1mm	25,500	710	20,500	430	16,000	270	12,500	175
2mm	17,500	840	14,500	520	11,000	320	9,500	230
3mm	11,500	840	9,500	520	7,500	320	6,400	230
4mm	8,800	880	7,200	540	5,600	335	4,750	240
5mm	8,300	1,000	6,400	580	5,100	370	4,450	270
6mm	6,900	950	5,300	560	4,200	350	3,700	260
8mm	5,200	900	4,000	520	3,200	330	2,800	240
10mm	4,100	840	3,200	480	2,550	310	2,200	220
12mm	3,500	840	2,650	480	2,100	300	1,860	220

절입량  
Depth of Cut

## 측면절삭 Side Cutting

피삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	38,000	840	25,500	568	20,500	344	16,000	216	12,500	140
2mm	26,000	1,000	17,500	672	14,500	416	11,000	256	9,500	184
3mm	17,300	1,000	11,500	672	9,500	416	7,500	256	6,400	184
4mm	13,200	1,040	8,800	704	7,200	432	5,600	268	4,750	192
5mm	12,500	1,200	8,300	800	6,400	464	5,100	296	4,450	216
6mm	10,350	1,120	6,900	760	5,300	448	4,200	280	3,700	208
8mm	7,800	1,080	5,200	720	4,000	416	3,200	264	2,800	192
10mm	6,150	1,008	4,100	672	3,200	384	2,550	248	2,200	176
12mm	5,250	1,008	3,500	672	2,650	384	2,100	240	1,860	176

절입량  
Depth of Cut

홀절삭 Slotting

피삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	45,000	100	45,000	100	45,000	100	45,000	100	45,000	100
0.5mm	45,000	115	45,000	115	45,000	115	45,000	115	45,000	115
0.6mm	45,000	140	45,000	140	45,000	140	45,000	140	45,000	140
0.8mm	45,000	180	45,000	180	45,000	180	45,000	180	45,000	180
1mm	45,000	280	45,000	280	45,000	280	45,000	280	45,000	280
2mm	45,000	360	45,000	360	45,000	360	45,000	360	45,000	360
3mm	40,000	440	40,000	440	40,000	440	40,000	440	40,000	440
4mm	39,000	520	39,000	520	39,000	520	39,000	520	39,000	520
5mm	38,000	570	38,000	570	38,000	570	38,000	570	38,000	570
6mm	26,000	680	26,000	680	26,000	680	26,000	680	26,000	680
8mm	17,300	680	17,300	680	17,300	680	17,300	680	17,300	680
10mm	13,200	700	13,200	700	13,200	700	13,200	700	13,200	700
12mm	12,500	805	12,500	805	12,500	805	12,500	805	12,500	805

1.0D  
0.05D

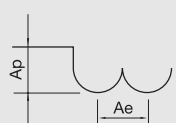
1.0D  
0.02D

측면절삭 Side Cutting

피삭재 Material	고경도강/프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels					
	NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11		SKD11 / SKS / SKH51	
경도 Hardness	40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc		65HRc ~ 68HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	45,000	120	40,000	110	33,000	70	25,000	40	25,000	40
0.5mm	45,000	160	40,000	125	33,000	80	25,000	45	20,000	30
0.6mm	45,000	200	40,000	160	30,000	90	25,000	60	20,000	35
0.8mm	40,000	245	30,000	165	25,000	100	19,000	65	16,000	40
1mm	38,000	656	25,500	408	20,500	248	16,000	152	12,500	100
2mm	26,000	776	17,500	480	14,500	296	11,000	184	9,500	132
3mm	17,300	776	11,500	480	9,500	296	7,500	184	6,400	132
4mm	13,200	800	8,800	500	7,200	308	5,600	192	4,750	136
5mm	12,500	920	8,300	568	6,400	328	5,100	208	4,450	152
6mm	10,350	880	6,900	552	5,300	320	4,200	204	3,700	148
8mm	7,800	824	5,200	508	4,000	292	3,200	188	2,800	136
10mm	6,150	776	4,100	472	3,200	272	2,550	176	2,200	128
12mm	5,250	776	3,500	472	2,650	272	2,100	176	1,860	128

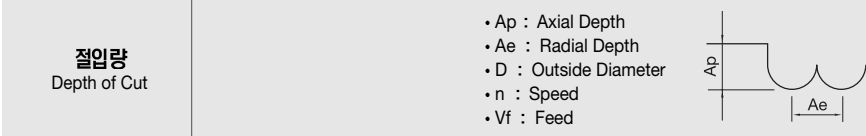
0.03D  
1.0D

파삭재 Material		동 Copper				고경도강/ 프리하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels				고경도강 Hardened Steels			
										SKD / SKT				SKD / SKT			
경도 Hardness						30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 65HRc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.05	0.3	50,000	85	0.004	0.004	45,000	70	0.004	0.004	45,000	50	0.002	0.002	45,000	40	0.002	0.002
"	0.5	50,000	75	0.004	0.004	45,000	60	0.002	0.002	45,000	30	0.002	0.002	45,000	30	0.002	0.002
R0.1	0.5	50,000	492	0.010	0.010	45,000	396	0.006	0.007	45,000	260	0.006	0.006	45,000	220	0.005	0.006
"	1	50,000	432	0.007	0.008	45,000	372	0.004	0.005	45,000	276	0.004	0.004	45,000	200	0.004	0.004
"	1.5	50,000	360	0.006	0.006	42,000	276	0.003	0.004	42,000	216	0.003	0.004	42,000	180	0.003	0.003
R0.15	1	50,000	744	0.012	0.013	45,000	552	0.010	0.010	38,000	420	0.090	0.010	38,000	348	0.007	0.009
"	3	48,000	528	0.008	0.009	40,800	360	0.006	0.007	33,600	264	0.005	0.005	33,600	216	0.004	0.005
"	5	39,600	336	0.004	0.005	28,800	216	0.003	0.003	24,000	168	0.003	0.003	21,600	120	0.002	0.002
R0.2	1	61,200	1,020	0.021	0.034	54,000	768	0.016	0.022	39,600	516	0.013	0.022	39,600	432	0.011	0.021
"	3	55,200	768	0.015	0.016	44,400	480	0.010	0.010	32,400	312	0.009	0.010	32,400	264	0.008	0.010
"	5	39,600	468	0.008	0.016	30,000	372	0.008	0.010	26,400	288	0.006	0.010	26,400	228	0.004	0.005
R0.25	1	63,600	1,560	0.026	0.047	45,600	960	0.020	0.033	33,600	636	0.014	0.032	33,600	312	0.007	0.020
"	5	52,800	1,032	0.012	0.014	34,800	552	0.008	0.008	31,200	444	0.007	0.010	31,200	216	0.006	0.009
"	10	38,400	528	0.008	0.016	28,800	456	0.007	0.010	28,800	372	0.005	0.010	27,600	216	0.005	0.009
R0.3	1	63,600	1,956	0.030	0.140	39,600	960	0.022	0.091	27,600	600	0.019	0.091	26,400	516	0.014	0.091
"	5	50,400	1,104	0.014	0.068	28,800	504	0.012	0.043	26,400	396	0.008	0.042	26,400	336	0.007	0.040
"	10	31,200	540	0.006	0.032	24,000	360	0.005	0.020	22,800	312	0.004	0.020	22,800	240	0.003	0.018
R0.4	2	61,200	2,280	0.054	0.160	34,800	816	0.045	0.100	27,600	552	0.038	0.100	26,400	456	0.030	0.100
"	6	51,600	1,452	0.035	0.100	28,800	636	0.028	0.068	21,600	420	0.020	0.068	21,600	348	0.015	0.065
"	10	22,800	672	0.022	0.080	2,040	468	0.020	0.050	19,200	408	0.015	0.050	16,800	336	0.010	0.050
R0.5	2	50,400	2,160	0.068	0.320	33,600	900	0.052	0.220	21,600	540	0.040	0.220	18,000	540	0.008	0.140
"	5	50,400	2,160	0.068	0.320	33,600	900	0.052	0.220	21,600	540	0.040	0.220	18,000	540	0.008	0.140
"	10	30,000	1,164	0.024	0.086	16,320	600	0.020	0.056	15,000	456	0.014	0.056	13,680	312	0.008	0.050
"	16	17,640	720	0.018	0.086	13,680	480	0.016	0.056	12,360	384	0.012	0.056	11,520	252	0.005	0.030
R0.75	3	31,200	2,400	0.167	0.320	21,600	1,152	0.120	0.210	12,960	672	0.100	0.210	12,000	600	0.090	0.210
"	10	26,400	1,680	0.100	0.220	14,760	780	0.080	0.170	9,720	480	0.062	0.170	9,720	456	0.050	0.160
"	18	12,120	624	0.030	0.160	12,120	504	0.022	0.110	9,600	432	0.020	0.110	9,600	408	0.012	0.110
"	30	9,840	516	0.014	0.080	9,840	456	0.012	0.050	9,480	420	0.010	0.050	9,480	396	0.010	0.050
R1	4	26,400	2,448	0.220	0.520	21,000	1,392	0.180	0.350	14,640	1,080	0.140	0.350	14,640	900	0.120	0.350
"	10	26,400	2,256	0.180	0.350	21,000	1,224	0.140	0.230	14,640	972	0.110	0.230	14,640	792	0.090	0.230
"	20	15,960	1,164	0.090	0.165	15,960	600	0.060	0.110	12,720	600	0.055	0.110	12,720	492	0.035	0.110
"	30	10,200	636	0.025	0.070	10,200	480	0.020	0.050	10,200	480	0.015	0.050	10,200	384	0.015	0.045
R1.5	6	16,800	3,240	0.250	0.500	14,400	1,824	0.200	0.340	9,840	1,320	0.160	0.320	6,480	732	0.160	0.320
"	10	16,800	3,240	0.250	0.500	14,400	1,824	0.200	0.340	9,840	1,320	0.160	0.320	6,480	732	0.160	0.300
"	20	14,040	2,244	0.200	0.450	12,360	1,476	0.145	0.320	8,520	1,128	0.120	0.310	5,760	660	0.080	0.300
"	30	10,920	1,620	0.120	0.220	9,360	816	0.100	0.150	8,520	816	0.080	0.150	5,760	384	0.070	0.300
R2	8	12,600	3,012	0.350	0.850	10,440	1,752	0.290	0.550	7,200	1,332	0.220	0.500	7,200	1,056	0.150	0.500
"	20	12,600	3,012	0.350	0.850	10,440	1,752	0.290	0.550	7,200	1,332	0.220	0.500	7,200	1,056	0.150	0.500
"	30	11,160	2,040	0.250	0.500	8,880	1,380	0.200	0.320	6,600	1,056	0.150	0.300	6,600	816	0.130	0.300
"	40	8,160	1,464	0.150	0.500	7,200	1,056	0.132	0.320	6,600	1,056	0.100	0.300	6,600	816	0.090	0.300
R2.5	15	10,800	2,880	0.380	0.800	8,400	1,500	0.300	0.700	6,000	1,140	0.220	0.700	6,000	900	0.200	0.650
"	25	10,800	2,400	0.380	0.800	8,400	1,380	0.300	0.550	6,000	1,080	0.220	0.550	6,000	816	0.200	0.500
"	40	9,360	1,320	0.250	0.800	6,720	840	0.200	0.550	4,920	660	0.150	0.550	4,920	504	0.130	0.500
R3	15	8,400	2,676	0.500	1.000	8,160	1,764	0.420	0.800	5,760	1,320	0.300	0.800	4,440	864	0.300	0.800
"	30	8,400	1,812	0.380	0.900	7,200	1,680	0.300	0.650	5,040	1,176	0.220	0.650	4,440	792	0.220	0.600
R4	25	8,160	1,764	0.410	1.000	7,200	1,176	0.350	0.750	4,920	912	0.180	0.600	4,560	732	0.200	0.630
"	30	7,680	1,680	0.380	1.000	6,960	1,128	0.300	0.750	4,800	864	0.160	0.600	4,320	720	0.200	0.600
R5	30	6,240	1,344	0.560	1.200	5,880	1,128	0.370	0.900	4,800	852	0.200	0.670	4,200	708	0.200	0.650
"	35	6,000	1,296	0.500	1.000	5,400	1,080	0.350	0.850	4,560	816	0.150	0.600	3,840	648	0.200	0.600
R6	30	5,160	1,104	0.650	1.400	4,800	984	0.420	0.900	4,320	828	0.250	0.600	3,600	600	0.250	0.600
"	40	4,920	1,080	0.600	1.200	4,560	960	0.400	0.850	4,080	780	0.200	0.600	3,600	600	0.200	0.600

<p><b>절입량</b> Depth of Cut</p>	<ul style="list-style-type: none"> <li>• Ap : Axial Depth</li> <li>• Ae : Radial Depth</li> <li>• D : Outside Diameter</li> <li>• n : Speed</li> <li>• Vf : Feed</li> </ul> 
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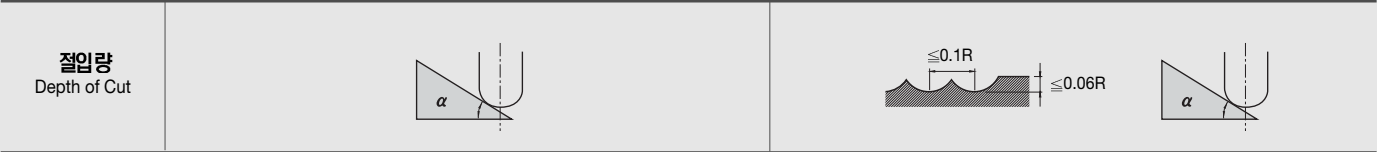
- 상기 절삭조건외의 참고는 수치입, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 콜러트 사용을 추천, 동가공시 습식 콜러트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm 이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet coolant for copper
- The tolerance of below Ø1 is below 5µm.

파삭재 Material		동 Copper				고경도강/ 프리하든강 Prehardened Steels / Hardened Steels NAK / SKD				고경도강 Hardened Steels SKD / SKT				고경도강 Hardened Steels SKD / SKT			
경도 Hardness						30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 65HRc			
반경 Radius	날장 Cutting Length	RPM	FEED	Ae Radial Depth	Ap Axial Depth	RPM	FEED	Ae Radial Depth	Ap Axial Depth	RPM	FEED	Ae Radial Depth	Ap Axial Depth	RPM	FEED	Ae Radial Depth	Ap Axial Depth
R0.05	0.2	40,000	300	0.010	0.050	40,000	300	0.005	0.040	30,000	200	0.004	0.040	X	X	X	X
R0.1	0.2	54,000	430	0.012	0.008	54,000	630	0.020	0.060	44,300	450	0.040	0.012	30,000	300	0.023	0.008
"	0.4	54,000	430	0.007	0.008	54,000	430	0.020	0.051	44,300	345	0.016	0.040	32,800	260	0.010	0.023
R0.15	0.3	54,000	720	0.020	0.013	54,000	750	0.030	0.090	44,300	600	0.024	0.072	32,800	450	0.015	0.042
"	0.6	54,000	720	0.012	0.013	54,000	715	0.030	0.075	44,300	575	0.024	0.060	32,800	430	0.015	0.035
R0.2	0.4	54,000	870	0.028	0.016	54,000	1,000	0.040	0.120	44,300	800	0.032	0.096	32,800	600	0.020	0.056
"	0.8	54,000	870	0.016	0.016	54,000	880	0.040	0.105	44,300	700	0.032	0.084	32,800	525	0.020	0.049
R0.25	0.5	56,000	1,250	0.035	0.022	53,000	1,250	0.050	0.150	43,500	1,000	0.040	0.120	32,200	750	0.025	0.070
"	1	56,000	1,250	0.021	0.022	50,000	1,000	0.050	0.125	41,350	800	0.040	0.100	30,600	600	0.025	0.058
R0.3	0.6	58,000	1,510	0.042	0.026	52,000	1,380	0.060	0.180	42,650	1,100	0.048	0.144	31,500	825	0.030	0.084
"	1.2	58,000	1,510	0.025	0.026	48,500	1,020	0.060	0.155	40,500	810	0.048	0.124	30,000	610	0.030	0.072
R0.4	0.8	52,000	1,870	0.056	0.036	48,000	1,500	0.080	0.240	39,500	1,200	0.064	0.192	29,250	900	0.040	0.112
"	2	52,000	1,870	0.033	0.036	45,000	1,085	0.080	0.200	37,500	870	0.064	0.160	27,800	650	0.040	0.093
R0.5	1	41,000	1,660	0.063	0.040	45,000	1,560	0.100	0.300	36,900	1,250	0.080	0.240	27,300	940	0.050	0.140
"	2.5	41,000	1,660	0.022	0.040	40,000	1,000	0.100	0.200	31,500	800	0.080	0.160	23,000	600	0.050	0.090
R0.6	3	34,000	1,740	0.072	0.051	40,100	1,550	0.120	0.360	32,800	1,250	0.096	0.288	24,400	940	0.060	0.168
R0.75	1.5	27,000	1,830	0.087	0.068	35,000	1,600	0.150	0.450	28,700	1,280	0.120	0.360	21,500	960	0.075	0.210
"	4	27,000	1,830	0.052	0.068	34,000	1,000	0.150	0.325	26,000	800	0.120	0.260	19,250	600	0.075	0.152
R1	2	20,000	1,780	0.112	0.089	30,000	1,850	0.200	0.600	24,600	1,480	0.160	0.480	18,250	1,110	0.100	0.280
"	5	20,000	1,780	0.067	0.089	26,500	1,350	0.200	0.435	22,000	1,080	0.160	0.348	16,250	810	0.100	0.203
R1.25	6	16,000	1,840	0.067	0.115	25,500	1,600	0.250	0.542	21,000	1,280	0.200	0.430	15,500	960	0.125	0.251
R1.5	3	13,000	2,220	0.197	0.171	25,500	2,520	0.300	0.957	21,000	2,050	0.240	0.766	15,500	1,530	0.150	0.447
"	8	13,000	2,220	0.100	0.171	25,500	2,350	0.300	0.765	21,000	1,880	0.240	0.612	15,500	1,410	0.150	0.357
R2	4	10,000	2,080	0.266	0.208	21,000	2,450	0.400	1.380	17,300	1,960	0.320	1.100	12,800	1,470	0.200	0.644
"	8	10,000	2,080	0.134	0.208	21,000	2,350	0.400	1.020	17,300	1,880	0.320	0.816	12,800	1,410	0.200	0.476
R2.5	5	8,300	1,990	0.215	0.240	18,000	2,560	0.500	1.660	14,800	2,050	0.400	1.330	11,000	1,530	0.250	0.770
"	10	8,300	1,990	0.180	0.240	18,000	2,300	0.500	1.275	14,800	1,840	0.400	1.020	11,000	1,380	0.250	0.595
R3	6	6,900	1,940	0.290	0.281	16,000	2,700	0.600	2.340	13,000	2,160	0.480	1.870	9,600	1,620	0.300	1.090
"	12	6,900	1,940	0.230	0.281	16,000	2,400	0.600	1.530	13,000	1,920	0.480	1.225	9,600	1,440	0.300	0.715
R4	8	5,720	1,000	0.400	0.175	12,500	2,300	0.800	3.100	10,250	1,840	0.640	2.480	7,600	1,380	0.400	1.446
"	14	5,720	1,000	0.400	0.175	12,500	2,000	0.800	2.050	10,250	1,600	0.640	1.640	7,600	1,200	0.400	0.957
R5	10	4,550	700	0.500	0.154	10,500	2,200	1.000	3.750	8,650	1,780	0.800	3.000	6,400	1,340	0.500	1.750
"	18	4,550	700	0.500	0.154	10,500	1,700	1.000	2.550	8,650	1,360	0.800	2.040	6,400	1,020	0.500	1.190
R6	12	3,770	600	0.600	0.159	9,000	1,850	1.200	4.420	7,380	1,480	0.960	3.540	5,450	1,110	0.600	2.060
"	22	3,770	600	0.600	0.159	9,000	1,600	1.200	3.050	7,380	1,280	0.960	2.440	5,450	960	0.600	1.423
R8	30	2,200	460	0.115	0.450	6,800	1,630	3.870	1.120	4,900	1,100	2.350	0.790	4,000	810	1.742	0.500
R10	38	2,000	470	0.100	0.400	6,200	1,450	4.120	1.100	3,900	1,100	2.530	0.840	3,100	800	1.866	0.520



- 상기 절삭조건에 참고는 수치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 콜러트 사용을 추천, 동가공시 습식 콜러트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
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- 칩 제거 주의 및 가공시 발열, 발화에 주의
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet collant for copper
- The tolerance of below Ø1 is below 5µm.

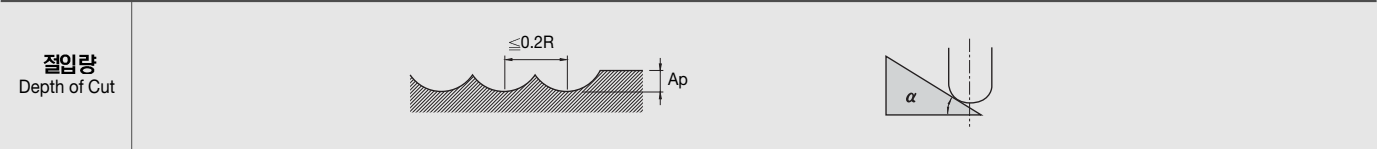
		황삭 가공 for Roughing								정삭 가공 for Finishing							
피삭재 Material	합금강/ 공구강/ 프리하트강 Alloy Steels/ Tool Steels/ Prehardened Steels SKD61 / NAK				고경도강 Hardened Steels SKD61				합금강/ 공구강/ 프리하트강 Alloy Steels/ Tool Steels/ Prehardened Steels SKD61 / NAK				고경도강 Hardened Steels SKD61				
	경도 Hardness	~ 45HRc				45 ~ 55HRc				~ 45HRc				45 ~ 55HRc			
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	
R1	32,000	3,000	25,000	1,170	18,000	1,440	16,000	640	32,000	3,200	32,000	1,500	25,000	2,000	20,000	800	
R1.5	27,000	3,350	19,700	1,320	14,000	1,600	12,000	690	28,750	4,100	26,000	1,750	21,000	2,350	16,500	900	
R2	18,500	3,700	14,500	1,460	11,000	1,760	9,200	740	25,500	5,000	20,000	2,000	17,000	2,700	13,000	1,000	
R2.5	15,700	3,850	12,250	1,480	9,350	1,840	7,800	770	22,750	5,550	17,500	2,100	15,000	2,950	11,500	1,100	
R3	13,000	4,000	10,000	1,500	7,700	1,920	6,400	800	20,000	6,100	15,000	2,200	13,000	3,200	10,000	1,200	
R4	10,000	5,000	8,000	2,000	6,000	2,300	4,800	920	15,000	7,500	11,000	2,700	10,000	3,800	7,500	1,400	
R5	8,000	5,000	6,500	2,000	4,800	2,200	3,800	870	12,000	7,500	9,000	2,700	8,000	3,700	6,000	1,400	
R6	6,600	4,600	5,300	1,800	4,000	2,100	3,200	840	10,000	7,000	7,500	2,500	6,600	3,500	5,000	1,300	



- $\alpha$  는 공작물 표면의 경사각입니다.
- 만약 절입깊이가 얕다면, RPM과 FEED Rate는 감소하여 사용하십시오.
- 피삭재의 흔들림이 심하고 기계의 강성이 낮은 경우나, chatter링 또는 소음이 발생하는 경우 RPM과 FEED비율을 낮춰주세요.
- $\alpha$  is the inclination angle of the machined surface.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

# 4HCB

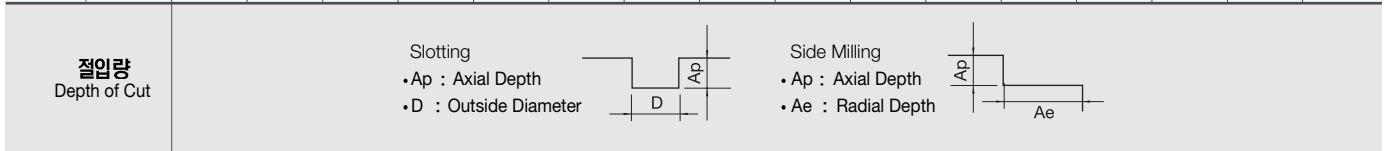
측면절삭 Side Cutting																
피삭재 Material	고경도강 Hardened Steels SKD61					고경도강 Hardened Steels SKD11					고경도강 Hardened Steels SKS / SKH					
	경도 Hardness	45 ~ 55HRc					55 ~ 62HRc					62 ~ 68HRc				
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	
	RPM	FEED	RPM	FEED		RPM	FEED	RPM	FEED		RPM	FEED	RPM	FEED		
R1.5	40,000	12,000	32,000	5,600	0.13	32,000	7,700	19,000	2,900	0.12	16,000	4,200	11,000	1,100	0.07	
R2	32,000	11,000	24,000	4,700	0.15	24,000	6,200	14,000	2,500	0.13	12,000	3,100	8,000	1,000	0.08	
R2.5	25,000	9,000	19,000	3,800	0.2	19,000	5,300	12,000	2,200	0.15	9,600	2,700	6,000	780	0.08	
R3	21,000	8,400	15,000	3,400	0.25	16,000	4,800	9,600	2,000	0.2	8,000	2,300	5,000	780	0.09	
R4	16,000	6,400	12,000	2,600	0.3	12,000	3,600	7,200	1,600	0.2	6,000	1,900	4,000	620	0.09	
R5	13,000	5,200	9,600	2,200	0.5	10,000	3,200	5,800	1,300	0.2	4,800	1,500	3,000	550	0.1	
R6	9,000	3,600	7,200	1,700	0.5	7,000	2,200	4,300	940	0.3	3,600	1,100	2,200	400	0.1	



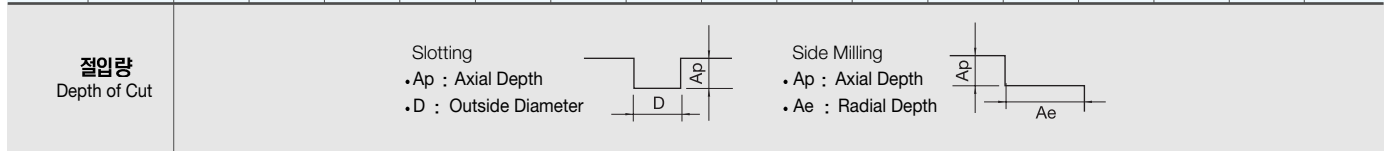
- $\alpha$  는 공작물 표면의 경사각입니다.
- 만약 절입깊이가 얕다면, RPM과 FEED Rate는 감소하여 사용하십시오.
- 피삭재의 흔들림이 심하고 기계의 강성이 낮은 경우나, chatter링 또는 소음이 발생하는 경우 RPM과 FEED비율을 낮춰주세요.
- $\alpha$  is the inclination angle of the machined surface.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.



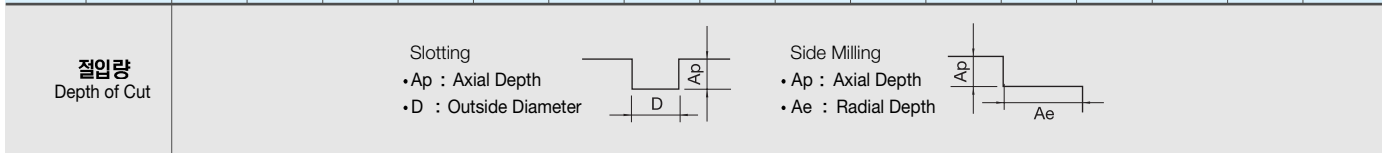
파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels SK / SCM / SUS			고경도강/ 프리하든강 Prehardened Steels / Hardened Steels NAK / SKD			고경도강 Hardened Steels SKD / SKT			고경도강 Hardened Steels SKD / SKT			Ae Milling amount for side Milling
경도 Hardness		(S45C/S50C) ~225HB			225 ~ 325HB			35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 60HRc			Ae
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
0.1mm	0.3	30,000	30	0.004	30,000	15	0.004	30,000	16	0.002							X
"	0.5	28,000	28	0.004	28,000	14	0.004	28,000	14	0.002			0.001			X	X
0.2mm	0.5	56,000	340	0.006	56,000	310	0.005	56,000	270	0.003	44,800	180	0.002	15,000	10	0.001	0.160
"	1	50,900	290	0.005	50,900	260	0.005	50,900	230	0.004	40,800	160	0.003	-	-	-	0.020
"	1.5	48,200	250	0.003	48,200	230	0.003	48,200	200	0.002	38,500	140	0.002	-	-	-	0.006
0.3mm	1	60,000	560	0.009	60,000	500	0.008	60,000	400	0.006	52,100	330	0.004	14,600	14	0.003	0.101
"	1.5	50,800	460	0.008	50,800	410	0.007	50,800	360	0.005	42,700	260	0.004	14,600	13	0.003	0.057
"	2	41,500	350	0.006	41,500	320	0.005	41,500	280	0.004	33,200	190	0.003	14,600	12	0.002	0.013
"	3	31,900	240	0.002	31,900	220	0.002	31,900	190	0.001	25,500	130	0.001	14,600	10	0.001	0.004
"	4	26,200	170	0.001	26,200	160	0.001	26,200	140	0.001	20,900	100	0.001	14,600	9	0.001	0.003
"	5	20,400	100	0.001	20,400	90	0.001	20,400	80	0.001	16,300	60	0.001	-	-	-	-
0.4mm	1	52,700	660	0.012	57,700	640	0.010	48,100	470	0.008	38,500	320	0.005	14,300	17	0.003	0.054
"	5	38,500	380	0.003	34,200	300	0.003	30,100	240	0.002	24,100	160	0.001	14,300	14	0.001	0.003
"	10	33,700	260	0.001	27,300	190	0.001	24,600	150	0.001	19,700	100	0.001	14,300	11	0.001	0.001
0.5mm	2	56,800	900	0.020	54,000	760	0.016	40,600	510	0.014	32,500	350	0.010	14,000	20	0.005	0.098
"	3	44,200	660	0.080	39,900	530	0.090	32,200	370	0.008	25,700	260	0.006	14,000	19	0.004	0.016
"	4	40,600	580	0.009	36,100	460	0.008	29,700	330	0.008	23,700	230	0.005	14,000	18	0.003	0.012
"	5	37,000	500	0.080	32,300	390	0.008	27,200	290	0.006	21,700	200	0.004	14,000	17	0.003	0.008
"	6	33,400	420	0.005	28,500	320	0.005	24,700	250	0.003	19,700	170	0.002	14,000	16	0.001	0.004
"	8	29,100	320	0.002	24,100	240	0.002	21,600	190	0.001	17,400	130	0.001	14,000	14	0.001	0.002
"	10	26,100	250	0.001	21,200	180	0.001	19,600	150	0.001	15,600	100	0.001	14,000	12	0.001	0.001
"	14	21,500	120	0.001	16,700	80	0.001	16,300	70	0.001	13,000	50	0.001	-	-	-	-
0.6mm	2	63,600	1,240	0.025	53,300	930	0.020	39,100	600	0.016	31,300	410	0.011	12,000	23	0.006	0.203
"	3	52,500	990	0.018	44,000	740	0.016	33,500	500	0.013	26,800	340	0.009	12,000	22	0.005	0.114
"	4	41,300	740	0.012	34,700	550	0.011	27,900	390	0.009	22,300	270	0.006	12,000	21	0.003	0.025
"	5	36,700	630	0.010	30,900	470	0.009	25,500	340	0.007	20,400	240	0.005	12,000	20	0.003	0.017
"	6	32,100	520	0.007	27,000	390	0.006	23,000	290	0.005	18,400	200	0.003	12,000	19	0.002	0.008
"	8	26,800	390	0.004	22,600	300	0.004	20,000	230	0.003	16,000	160	0.002	12,000	17	0.001	0.003
"	10	23,400	30	0.002	19,700	230	0.002	17,900	180	0.002	14,300	130	0.001	12,000	15	0.001	0.002
"	12	20,900	240	0.002	17,600	180	0.001	16,400	150	0.001	13,100	100	0.001	12,000	13	0.001	0.001
"	16	16,200	100	0.001	13,700	80	0.001	13,500	70	0.001	10,800	50	0.001	-	-	-	-
0.7mm	2	59,800	1,380	0.030	50,200	1,040	0.027	36,100	660	0.021	28,800	430	0.015	10,000	24	0.010	0.038
"	4	38,900	840	0.017	32,700	630	0.015	25,800	440	0.012	20,600	290	0.009	10,000	22	0.006	0.047
"	6	30,200	600	0.010	25,400	450	0.009	21,200	330	0.007	16,900	230	0.005	10,000	20	0.003	0.014
"	8	25,300	460	0.006	21,300	350	0.005	18,400	260	0.004	14,700	190	0.003	10,000	18	0.002	0.006
"	10	22,000	360	0.004	18,500	270	0.003	16,500	220	0.003	13,200	160	0.002	10,000	16	0.001	0.003
0.8mm	2	41,200	1,050	0.033	34,500	460	0.029	26,200	530	0.023	21,000	370	0.016	8,000	21	0.012	0.108
"	4	37,100	930	0.027	31,100	700	0.024	24,100	480	0.019	19,300	330	0.013	8,000	20	0.010	0.080
"	6	28,800	680	0.015	24,200	510	0.013	19,800	370	0.010	15,800	250	0.007	8,000	18	0.005	0.024
"	8	24,100	520	0.009	20,300	390	0.008	17,200	300	0.006	13,800	200	0.004	8,000	16	0.003	0.010
"	10	21,000	420	0.006	17,700	320	0.005	15,500	240	0.004	12,400	170	0.003	8,000	14	0.002	0.005
"	12	18,700	340	0.004	15,800	260	0.003	14,100	200	0.003	11,300	140	0.002	8,000	12	0.001	0.003
"	14	15,600	230	0.002	13,200	180	0.002	12,300	150	0.001	980	100	0.001	-	-	-	0.001
0.9mm	6	27,600	790	0.019	23,000	590	0.017	18,500	420	0.013	14,800	290	0.010	7,200	18	0.007	0.038
"	8	23,000	600	0.012	19,300	450	0.011	16,100	330	0.008	12,900	230	0.006	7,200	16	0.004	0.016
"	10	20,000	470	0.008	16,800	360	0.007	14,500	270	0.005	11,600	190	0.004	7,200	14	0.002	0.008
1mm	2	37,900	1,340	0.048	31,500	990	0.043	23,400	6,500	0.034	18,700	440	0.024	6,500	15	0.011	0.263
"	3	37,900	1,340	0.048	31,500	990	0.043	23,400	6,500	0.034	18,700	440	0.024	6,500	15	0.011	0.263
"	4	34,100	1,170	0.040	28,400	870	0.036	21,500	580	0.028	17,200	400	0.020	6,500	15	0.010	0.195
"	5	30,300	1,000	0.032	25,300	750	0.029	19,600	510	0.022	15,700	360	0.016	6,500	15	0.009	0.013
"	6	26,500	850	0.023	22,100	630	0.021	17,600	440	0.016	14,100	310	0.012	6,500	14	0.007	0.058
"	8	22,100	660	0.014	18,600	490	0.013	15,300	360	0.010	12,300	250	0.007	6,500	13	0.004	0.024
"	10	19,200	530	0.010	16,200	400	0.009	13,800	300	0.007	11,000	210	0.005	6,500	12	0.003	0.013
"	12	17,200	440	0.007	14,500	330	0.006	12,600	250	0.005	10,100	170	0.003	6,500	11	0.002	0.007
"	14	15,600	360	0.005	13,200	270	0.004	11,700	210	0.003	9,400	150	0.002	650	10	0.001	0.005
"	16	14,300	300	0.004	12,100	230	0.003	11,000	180	0.003	8,800	130	0.002	-	-	-	0.003
"	20	12,500	200	0.003	10,600	160	0.003	9,800	130	0.002	7,900	90	0.001	-	-	-	0.001
"	25	10,800	120	0.003	9,200	90	0.002	8,800	80	0.002	7,100	50	0.001	-	-	-	0.001
"	30	9,700	50	0.002	8,200	40	0.002	8,100	30	0.001	6,500	30	0.001	-	-	-	-



파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels			고경도강/ 프리하든강 Prehardened Steels / Hardened Steels			고경도강 Hardened Steels			고경도강 Hardened Steels			Ae Milling amount for side Milling
		(S45C/S50C) ~225HB			225 ~ 325HB			35HRC ~ 45HRC			45HRC ~ 55HRC			55HRC ~ 60HRC			
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
1.2mm	4	28,900	1,180	0.050	24,100	870	0.047	18,300	580	0.036	14,500	400	0.026	9,600	34	0.015	0.189
"	6	24,800	970	0.037	20,700	720	0.034	16,100	490	0.026	12,800	340	0.019	9,600	22	0.011	0.120
"	8	20,700	760	0.024	17,300	570	0.021	13,900	400	0.016	11,100	280	0.012	9,600	10	0.007	0.051
"	10	18,000	620	0.016	15,100	470	0.014	12,400	340	0.011	9,900	230	0.008	-	-	-	0.026
"	12	16,100	520	0.011	13,500	390	0.010	11,400	290	0.008	9,100	200	0.005	-	-	-	0.015
"	16	13,400	380	0.006	11,300	290	0.005	9,800	220	0.004	7,900	150	0.003	-	-	-	0.006
"	20	11,700	280	0.004	9,900	210	0.004	8,800	170	0.003	7,000	120	0.002	-	-	-	0.003
"	25	10,800	120	0.003	9,200	90	0.002	8,800	80	0.002	7,100	50	0.001	-	-	-	0.001
"	30	9,700	50	0.002	8,200	40	0.002	8,100	30	0.001	6,500	30	0.001	-	-	-	-
1.4mm	6	23,300	1,070	0.052	19,400	800	0.047	14,800	540	0.060	11,900	370	0.026	9,600	44	0.015	0.222
"	8	19,500	850	0.035	16,300	640	0.032	12,900	440	0.025	10,300	310	0.018	9,600	18	0.010	0.094
"	10	16,900	710	0.025	14,200	530	0.022	11,500	380	0.017	9,200	260	0.012	-	-	-	0.048
"	14	13,700	510	0.013	11,500	390	0.012	9,700	290	0.009	7,800	200	0.007	-	-	-	0.018
"	16	12,600	450	0.010	10,600	340	0.009	9,100	250	0.007	7,300	180	0.005	-	-	-	0.012
"	20	10,300	300	0.006	8,700	230	0.005	7,800	180	0.004	6,200	120	0.003	-	-	-	0.005
1.5mm	4	26,600	1,340	0.073	22,100	1,000	0.065	16,300	640	0.051	13,000	440	0.036	9,600	95	0.020	0.462
"	6	22,800	1,120	0.057	19,000	840	0.051	14,400	550	0.040	11,500	380	0.028	9,600	60	0.016	0.293
"	8	19,000	900	0.041	15,900	670	0.037	12,500	460	0.029	10,000	320	0.020	9,600	25	0.012	0.124
"	10	16,600	750	0.030	13,800	560	0.027	11,200	390	0.021	8,900	270	0.015	9,600	13	0.009	0.063
"	12	14,800	630	0.023	12,400	470	0.020	10,200	340	0.016	8,200	240	0.011	-	-	-	0.037
"	14	13,400	550	0.017	11,200	410	0.016	9,500	300	0.012	7,600	210	0.009	-	-	-	0.023
"	16	12,300	480	0.013	10,300	360	0.012	8,900	270	0.009	7,100	190	0.007	-	-	-	0.015
"	18	11,500	420	0.011	9,600	310	0.010	8,400	240	0.007	6,700	170	0.005	-	-	-	0.011
"	20	10,700	370	0.009	9,000	280	0.008	7,900	220	0.006	6,300	150	0.004	-	-	-	0.008
"	25	9,300	270	0.005	7,800	200	0.005	7,100	160	0.004	5,700	110	0.003	-	-	-	0.004
"	30	8,300	200	0.004	7,000	150	0.004	6,500	120	0.003	5,200	90	0.002	-	-	-	0.002
1.6mm	10	16,100	780	0.035	13,500	580	0.032	10,800	410	0.025	8,600	280	0.018	9,600	15	0.010	0.082
"	14	13,000	580	0.020	10,900	430	0.018	9,100	320	0.014	7,300	220	0.010	-	-	-	0.030
"	18	11,100	450	0.013	9,300	340	0.012	8,000	260	0.009	6,400	180	0.006	-	-	-	0.014
2.0mm	4	23,000	1,500	0.070	20,000	1,200	0.060	14,000	750	0.052	12,000	500	0.040	9,600	230	0.022	0.966
"	6	20,300	1,350	0.064	17,400	1,030	0.058	12,500	650	0.045	10,000	450	0.032	9,600	211	0.019	0.926
"	8	17,000	1,090	0.054	14,500	830	0.048	10,800	540	0.038	8,700	380	0.027	9,600	89	0.016	0.391
"	10	14,800	920	0.045	12,600	700	0.040	9,700	470	0.031	7,800	330	0.022	9,600	45	0.013	0.200
"	12	13,200	790	0.037	11,200	600	0.034	8,900	420	0.026	7,100	290	0.019	9,600	56	0.011	0.116
"	14	12,000	700	0.031	10,200	530	0.028	8,200	370	0.022	6,600	260	0.016	9,600	16	0.009	0.073
"	16	11,100	620	0.026	9,400	470	0.024	7,700	340	0.018	6,100	230	0.013	9,600	11	0.007	0.049
"	18	10,300	550	0.022	8,700	420	0.020	7,200	310	0.015	5,800	210	0.011	-	-	-	0.034
"	20	9,600	500	0.018	8,100	380	0.016	6,900	280	0.013	5,500	190	0.009	-	-	-	0.025
"	22	8,700	420	0.014	7,500	320	0.014	6,500	250	0.010	5,200	170	0.008	-	-	-	0.018
"	25	8,400	390	0.012	7,100	290	0.011	6,200	230	0.008	4,900	160	0.006	-	-	-	0.013
"	30	7,500	310	0.008	6,300	230	0.007	5,600	180	0.005	4,500	130	0.004	-	-	-	0.007
2.5mm	8	15,000	1,340	0.077	12,800	1,020	0.069	9,600	670	0.054	7,700	460	0.039	9,600	227	0.023	0.954
"	10	13,100	1,140	0.068	11,100	860	0.061	8,600	590	0.048	6,900	400	0.034	9,600	116	0.020	0.488
"	12	11,800	1,000	0.060	10,000	750	0.054	7,900	520	0.042	6,300	360	0.030	9,600	67	0.018	0.283
"	16	9,900	790	0.045	8,400	590	0.040	6,800	430	0.031	5,500	290	0.022	9,600	28	0.013	0.119
"	20	8,700	650	0.033	7,300	490	0.030	6,100	360	0.023	4,900	250	0.017	9,600	14	0.010	0.061
"	25	7,600	520	0.022	6,400	390	0.019	5,500	300	0.015	4,400	210	0.011	-	-	-	0.031
"	30	6,800	430	0.014	5,700	320	0.012	5,000	250	0.010	4,000	1,700	0.007	-	-	-	0.018
"	35	6,200	380	0.009	5,200	280	0.008	4,800	190	0.007	3,800	1,400	0.005	-	-	-	0.012
"	40	5,700	290	0.005	4,800	220	0.004	4,400	170	0.003	3,500	120	0.002	-	-	-	0.008
"	50	5,000	190	0.001	4,200	140	0.001	3,900	120	0.001	3,100	80	0.001	-	-	-	0.004



파삭재 Material		탄소강 Carbon Steels			합금강 Alloy Steels SK / SCM / SUS			고경도강/ 프리하든강 Prehardened Steels / Hardened Steels NAK / SKD			고경도강 Hardened Steels SKD / SKT			고경도강 Hardened Steels SKD / SKT			Ae Milling amount for side Milling
경도 Hardness		(S45C/S50C) ~225HB			225 ~ 325HB			35HRc ~ 45HRc			45HRc ~ 55HRc			55HRc ~ 60HRc			
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
3mm	6	13,200	1,470	0.103	10,900	1,080	0.093	8,000	700	0.072	6,400	480	0.052	8,000	435	0.031	1.978
"	10	11,600	1,270	0.092	9,600	930	0.083	7,200	620	0.064	5,800	430	0.046	8,000	222	0.027	1.013
"	12	10,500	1,110	0.081	8,700	830	0.073	6,700	560	0.057	5,300	380	0.041	8,000	128	0.024	0.586
"	16	8,900	900	0.064	7,400	670	0.058	5,900	470	0.045	4,700	320	0.032	8,000	54	0.019	0.247
"	20	7,800	750	0.050	6,600	560	0.045	5,300	400	0.035	4,300	280	0.025	8,000	27	0.015	0.127
"	25	6,900	620	0.036	5,800	460	0.032	4,800	340	0.025	3,900	230	0.018	8,000	14	0.010	0.065
"	30	6,200	520	0.026	5,200	390	0.023	4,500	290	0.018	3,600	200	0.013	8,000	10	0.007	0.038
"	35	5,700	440	0.018	4,800	330	0.016	4,200	250	0.013	3,300	170	0.009	-	-	-	0.024
"	40	5,300	370	0.013	4,500	280	0.012	3,900	220	0.009	3,100	150	0.006	-	-	-	0.016
"	45	5,000	330	0.008	4,200	230	0.008	3,700	180	0.006	2,900	130	0.005	-	-	-	0.012
"	50	4,700	270	0.006	3,900	200	0.005	3,600	160	0.004	2,800	110	0.003	-	-	-	0.008
"	60	4,500	250	0.003	3,600	180	0.003	3,200	130	0.003	2,500	90	0.002	-	-	-	0.005
4mm	8	10,000	1,600	0.014	8,800	1,100	0.014	6,800	770	0.093	5,300	500	0.070	6,000	450	0.050	1.990
"	10	9,200	1,400	0.012	8,000	1,000	0.012	5,900	690	0.085	4,700	460	0.066	6,000	420	0.040	1.960
"	12	8,500	1,280	0.012	7,100	950	0.011	5,100	600	0.078	4,100	410	0.056	6,000	388	0.033	1.852
"	16	7,200	1,050	0.093	6,000	770	0.084	4,400	510	0.065	3,600	350	0.046	6,000	164	0.027	0.781
"	20	6,300	880	0.077	5,200	650	0.069	4,000	440	0.054	3,200	300	0.038	6,000	84	0.022	0.400
"	25	5,600	750	0.061	4,600	540	0.055	3,600	380	0.042	2,900	260	0.030	6,000	43	0.018	0.205
"	30	5,000	630	0.048	4,100	460	0.043	3,300	330	0.033	2,600	230	0.024	6,000	24	0.014	0.119
"	35	4,600	540	0.038	3,800	400	0.034	3,100	290	0.026	2,500	200	0.019	6,000	15	0.011	0.075
"	40	4,200	470	0.030	3,500	350	0.027	2,900	250	0.021	2,300	180	0.015	6,000	10	0.009	0.050
"	45	3,900	410	0.023	3,300	300	0.021	2,700	230	0.016	2,200	160	0.012	-	-	-	0.035
"	50	3,700	360	0.018	3,100	270	0.016	2,600	200	0.013	2,100	140	0.009	-	-	-	0.026
"	55	3,500	320	0.015	2,950	250	0.015	2,500	180	0.010	2,000	130	0.007	-	-	-	0.020
"	60	3,300	280	0.011	2,800	210	0.010	2,400	160	0.008	1,900	110	0.006	-	-	-	0.015
5mm	16	6,000	1,140	0.127	5,100	860	0.114	3,500	520	0.089	2,800	360	0.064	4,800	457	0.038	1.907
"	20	5,300	980	0.121	4,400	730	0.109	3,100	440	0.085	2,500	310	0.061	4,800	234	0.036	0.977
"	25	4,600	820	0.109	3,800	600	0.099	2,800	390	0.077	2,200	270	0.055	4,800	120	0.033	0.500
"	30	4,200	710	0.094	3,400	510	0.085	2,500	340	0.066	2,000	230	0.047	4,800	69	0.028	0.289
"	35	3,800	620	0.077	3,100	450	0.069	2,300	300	0.054	1,900	210	0.038	4,800	43	0.022	0.182
"	40	3,500	540	0.060	2,800	390	0.054	2,200	270	0.042	1,700	180	0.030	4,800	29	0.018	0.122
"	50	3,100	430	0.031	2,400	300	0.028	1,900	210	0.022	1,500	150	0.016	4,800	15	0.009	0.063
"	60	2,800	350	0.013	2,100	240	0.012	1,800	170	0.009	1,400	120	0.007	4,800	10	0.004	0.036
6mm	20	4,200	960	0.126	3,800	780	0.114	2,600	470	0.088	2,100	330	0.063	4,000	607	0.037	2.025
"	30	3,400	730	0.109	2,800	540	0.099	2,000	340	0.077	1,600	240	0.055	4,000	180	0.033	0.600
"	40	3,000	600	0.083	2,300	410	0.074	1,700	260	0.058	1,300	170	0.041	4,000	75	0.024	0.253
"	50	2,600	480	0.054	1,900	310	0.049	1,500	220	0.038	1,200	160	0.027	4,000	38	0.016	0.130
"	60	2,400	410	0.031	1,700	260	0.028	1,300	170	0.022	1,000	120	0.016	4,000	22	0.009	0.075
8mm	20	3,200	910	0.180	2,800	710	0.160	2,300	450	0.130	1,700	330	0.090	3,400	580	0.050	1.600
"	40	2,600	600	0.120	2,000	410	0.100	1,500	250	0.800	1,100	160	0.060	3,400	84	0.035	0.200
"	25	2,900	890	0.200	2,700	680	0.180	2,100	430	0.130	1,500	310	0.080	3,200	540	0.050	1.760
"	45	2,200	580	0.140	2,000	400	0.120	1,300	220	0.700	900	150	0.050	3,200	76	0.030	0.240
"	30	2,500	710	0.220	2,300	580	0.200	2,000	400	0.140	1,400	280	0.080	3,000	540	0.050	1.840
"	50	1,900	420	0.160	1,700	350	0.130	1,500	200	0.800	800	140	0.050	3,000	72	0.030	0.280



- 에어브로, 절삭유, 오일 미스트 등의 쿨런트를 사용하십시오. 단, 동 가공에는 수용성, 또는 유성 절삭유를 추천합니다.
- 칩을 잘 제거하고 가공시의 발열과 발화에 주의하십시오
- 이 절삭 조건표는 절삭 조건의 참고 수치입니다. 실제 가공시에는 가공 형상, 가공 목적, 적용 기계 등에 따라 조건을 조정하십시오.
- 기계의 회전수가 부족할 때는 속도와 이송 속도를 같은 비율로 조절하십시오.
- 날 끝이 정밀하게 연삭되어 있습니다. 파손을 피하기 위해 선단 검출은 신중하게 하고, 가능하면 비접촉 방식으로 측정하십시오.
- Recommend airblow or oil mist cutting fluids.
- Remove chips to prevent heat generation and ignition.
- When the parameters exceed the machine's maximum spindle speed, decrease both spindle speed and feed rate by the same proportion.
- To avoid damaging the precision tip point non-contact measuring should be used.

파삭재 Material	합금강/내열강 Alloy Steels / Heat Resistant Steels		고경도강/프라이하든강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels			
			NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11	
경도 Hardness	30HRc ~ 40HRc		40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	48,000	1,480	38,000	1,050	25,500	710	20,500	430	16,000	270
2mm	33,300	1,750	26,000	1,250	17,500	840	14,500	520	11,000	320
3mm	21,800	1,750	17,300	1,250	11,500	840	9,500	520	7,500	320
4mm	16,700	1,800	13,200	1,300	8,800	880	7,200	540	335	4,750
5mm	15,700	2,000	12,500	1,500	8,300	1,000	6,400	580	5,100	370
6mm	13,100	1,950	10,350	1,400	6,900	950	5,300	560	4,200	350
8mm	9,880	1,880	7,800	1,350	5,200	900	4,000	520	3,200	330
10mm	7,800	1,750	6,150	1,260	4,100	840	3,200	480	2,550	310
12mm	6,650	1,750	5,250	1,260	3,500	840	2,650	480	2,100	300

절입량  
Depth of Cut

파삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels		고경도강/프라이하든강 Hardened Steels / Prehardened Steels		스테인레스강 Stainless Steels		고경도강 Hardened Steels	
	S45C / S50C / SK / SCM		NAK / SKD		SUS304 / SUS316		SKD61	
경도 Hardness	~ 30HRc		30 ~ 45HRc				45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	13,000	60 (60)	9,000	35 (35)	6,500 (6,500)	20 (20)	5,700	20 (15)
1.5mm	10,000	60 (60)	6,000	45 (45)	5,000 (4,500)	35 (35)	4,500	25 (15)
2mm	6,400	60 (60)	4,800	45 (45)	3,500 (3,500)	30 (30)	3,000	25 (15)
3mm	4,200	65 (60)	3,400	55 (55)	2,600 (2,600)	40 (40)	2,100	30 (20)
4mm	3,400	80 (60)	2,700	65 (30)	2,100 (1,600)	50 (20)	1,700	35 (20)
5mm	2,900	100 (60)	2,300	80 (40)	1,800 (1,350)	60 (25)	1,500	40 (20)
6mm	2,500	120 (60)	2,000	100 (50)	1,500 (1,100)	75 (30)	1,300	50 (25)
8mm	1,900	130 (60)	1,500	100 (50)	1,200 (900)	85 (35)	1,000	50 (25)
10mm	1,600	130 (60)	1,300	100 (50)	950 (710)	75 (30)	800	50 (25)
12mm	1,300	120 (60)	1,100	90 (45)	800 (600)	60 (25)	670	40 (20)
16mm	1,000	80 (40)	820	65 (30)	600 (450)	45 (20)	500	30 (15)
20mm	800	65 (30)	650	50 (25)	480 (360)	40 (15)	400	25 (13)
25mm	650	50 (25)	520	40 (20)	380 (280)	30 (12)	320	20 (10)

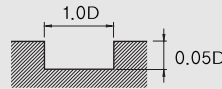
절입량  
Depth of Cut

- 팔호안의 수치는 홈 가공시 회전속도, 이송속도 기준입니다.
- 오스테나이트계 스테인레스강 절삭에는 수용성 절삭유제의 사용이 특히 효과적입니다.
- 절입이 작은경우, 회전속도와 이송속도를 더욱 올릴수 있습니다.
- 기계나 가공물 장착의 강성이 없는경우나 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- When cutting austenitic stainless steels, the use of water-soluble cutting fluid is effective.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- When drilling, please set the feed rate at 1/3 or below the values above.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

## 홈절삭 Slotting

파삭재 Material	합금강/내열강 Alloy Steels/ Heat Resistant Steels		고경도강/프라이하드강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels			
			NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11	
경도 Hardness	30HRc ~ 40HRc		40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.1mm	50,000	100	45,000	100	40,000	90	33,000	50	33,000	40
0.2mm	50,000	130	45,000	115	40,000	95	33,000	60	33,000	45
0.3mm	50,000	190	45,000	140	40,000	115	33,000	70	25,000	50
0.4mm	50,000	235	45,000	180	40,000	140	33,000	90	25,000	55
0.5mm	50,000	370	45,000	280	40,000	220	33,000	140	25,000	85
0.6mm	50,000	470	45,000	360	40,000	285	30,000	160	25,000	105
0.8mm	50,000	600	40,000	440	30,000	295	25,000	185	19,000	110
0.9mm	49,000	655	39,000	520	27,800	330	22,700	205	17,500	125
1mm	48,000	750	38,000	570	25,500	360	20,500	215	16,000	135
2mm	33,300	850	26,000	680	17,500	420	14,500	260	11,000	160
3mm	21,800	850	17,300	680	11,500	420	9,500	260	7,500	160
4mm	16,700	880	13,200	700	8,800	440	7,200	270	5,600	170
5mm	15,700	1,000	12,500	805	8,300	500	6,400	285	5,100	180
6mm	13,100	950	10,350	770	6,900	480	5,300	280	4,200	180
8mm	9,880	930	7,800	720	5,200	445	4,000	255	3,200	165
10mm	7,800	850	6,150	680	4,100	415	3,200	240	2,550	155
12mm	6,650	850	5,250	680	3,500	415	2,650	240	2,100	155
16mm	5,540	780	4,340	610	2,600	360	1,840	180	1,800	100
18mm	5,540	780	4,340	610	2,600	360	1,840	180	1,800	100
20mm	4,640	720	3,650	570	2,100	300	1,460	180	1,400	100

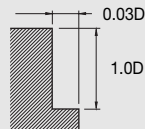
절입량  
Depth of Cut



## 측면절삭 Side Cutting

파삭재 Material	합금강/내열강 Alloy Steels/ Heat Resistant Steels		고경도강/프라이하드강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels			
			NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11	
경도 Hardness	30HRc ~ 40HRc		40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	50,000	100	45,000	100	40,000	90	33,000	50	33,000	40
2mm	50,000	130	45,000	115	40,000	95	33,000	60	33,000	45
3mm	50,000	190	45,000	140	40,000	115	33,000	70	25,000	50
4mm	50,000	235	45,000	180	40,000	140	33,000	90	25,000	55
5mm	50,000	370	45,000	280	40,000	220	33,000	140	25,000	85
6mm	50,000	470	45,000	360	40,000	285	30,000	160	25,000	105
8mm	50,000	600	40,000	440	30,000	295	25,000	185	19,000	110
10mm	49,000	655	39,000	520	27,800	330	22,700	205	17,500	125
12mm	48,000	750	38,000	570	25,500	360	20,500	215	16,000	135
16mm	33,300	850	26,000	680	17,500	420	14,500	260	11,000	160
18mm	21,800	850	17,300	680	11,500	420	9,500	260	7,500	160
20mm	16,700	880	13,200	700	8,800	440	7,200	270	5,600	170

절입량  
Depth of Cut





# 4HSE/4HCE

4HSE는 아래 수치의 20% Up 적용  
Apply 20% up values of below condition for 4HSE

RPM : rev./min • Feed : mm/min

파삭재 Material	합금강/내열강 Alloy Steels/ Heat Resistant Steels		고경도강 Hardened Steels NAK / SKD	
	경도 Hardness 30HRc ~ 40HRc		40 ~ 50HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED
1mm	48,000	1,480	38,000	1,050
2mm	33,300	1,750	26,000	1,250
3mm	21,800	1,750	17,300	1,250
4mm	16,700	1,800	13,200	1,300
5mm	15,700	2,000	12,500	1,500
6mm	13,100	1,950	10,350	1,400
7mm	11,000	1,900	9,000	1,380
8mm	9,880	1,880	7,800	1,350
9mm	7,800	1,750	6,150	1,260
10mm	6,650	1,750	5,250	1,260
11mm	5,600	1,680	4,300	1,150
12mm	5,600	1,680	4,300	1,150
14mm	4,650	1,600	3,500	1,050
16mm	4,650	1,600	3,500	1,050
18mm	3,750	1,560	2,800	1,000
20mm	3,500	1,460	2,600	980

**절입량**  
Milling Amount of  
Side Milling

# 4LEM

RPM : rev./min • Feed : mm/min

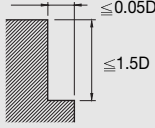
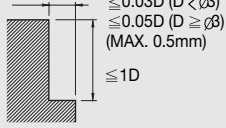
파삭재 Material	탄소강 Carbon Steels S50 / SCM		고경도강/ 프리하든강 Hardened Steels/ Prehardened Steels NAK / SKD61		스테인레스강 Stainless Steels SUS304 / SUS316		고경도강 Hardened Steels SKD61	
	경도 Hardness ~ 30HRc		30 ~ 45HRc		45 ~ 55HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	6,800	85	5,800	85	4,800	55	4,000	25
1.5mm	6,000	90	5,000	90	4,100	60	3,400	30
2mm	5,000	100	4,000	86	3,200	65	2,800	40
3mm	4,200	110	3,400	95	2,600	70	2,100	50
4mm	3,400	140	2,700	110	2,100	85	1,700	60
5mm	2,900	170	2,300	140	1,800	100	1,500	70
6mm	2,500	200	2,000	170	1,500	130	1,300	85
8mm	1,900	220	1,500	170	1,200	150	1,000	85
10mm	1,600	220	1,300	170	950	130	800	85
12mm	1,300	170	1,100	150	800	100	670	70
16mm	1,000	140	820	110	600	80	500	50
20mm	800	110	650	85	480	70	400	40
25mm	650	85	520	70	380	50	320	35

**절입량**  
Depth of Cut

- 오스테나이트계 스테인레스강 절삭에는 수용성 절삭유제의 사용이 특히 효과적입니다.
- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴수 있습니다.
- 기계나 가공물 장치의 강성이 없는경우나 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- When cutting austenitic stainless steels, the use of water-soluble cutting fluid is effective.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- When drilling, please set the feed rate at 1/3 or below the values above.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

파삭재 Material	고경도강 Hardened Steels SKD61			고경도강 Hardened Steels SKD11		
	45HRc ~ 55HRc			55HRc ~ 62HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
1mm	40,000	1,200	0.05	40,000	800	0.03
1.5mm	40,000	1,500	0.05	40,000	900	0.04
2mm	40,000	2,000	0.1	24,000	1,000	0.05
3mm	38,400	4,560	0.2	19,200	2,280	0.1
4mm	28,800	5,280	0.2	14,400	2,640	0.1
5mm	24,000	6,000	0.2	12,000	3,000	0.1
6mm	19,200	6,960	0.3	9,600	3,480	0.2
8mm	14,400	6,960	0.4	7,200	3,480	0.2
10mm	11,520	6,960	0.5	5,760	3,480	0.3
12mm	9,600	5,760	0.6	4,800	2,880	0.3
16mm	7,200	4,320	0.8	3,600	2,160	0.5
20mm	5,760	3,480	1	2,880	1,680	0.5

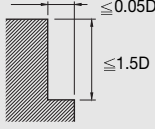
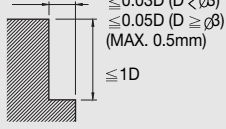
  

절입량 Depth of Cut	SKD61		SKD11	
	≤ 0.05D	≤ 1.5D	≤ 0.03D (D < ϕ8) ≤ 0.05D (D ≥ ϕ8) (MAX. 0.5mm)	≤ 1D
				

# 6&8HEM

파삭재 Material	고경도강 Hardened Steels SKD61			고경도강 Hardened Steels SKD11		
	45HRc ~ 55HRc			55HRc ~ 62HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
3mm	32,000	3,800	0.2	16,000	1,900	0.1
4mm	24,000	4,400	0.2	12,000	2,200	0.1
5mm	20,000	5,000	0.2	10,000	2,500	0.1
6mm	16,000	5,800	0.3	8,000	2,900	0.2
8mm	12,000	5,800	0.4	6,000	2,900	0.2
10mm	9,600	5,800	0.5	4,800	2,900	0.3
12mm	8,000	4,800	0.6	4,000	2,400	0.3
16mm	6,000	3,600	0.8	3,000	1,800	0.5
20mm	4,800	2,900	1	2,400	1,400	0.5
25mm	3,000	2,000	1	2,000	1,000	0.5

절입량 Depth of Cut	SKD61		SKD11	
	≤ 0.05D	≤ 1.5D	≤ 0.03D (D < ϕ8) ≤ 0.05D (D ≥ ϕ8) (MAX. 0.5mm)	≤ 1D
				

파삭재 Material		동 Copper				고경도강/ 프리하든강 Prehardened Steels / Hardened Steels NAK / SKD				고경도강 Hardened Steels SKD / SKT				고경도강 Hardened Steels SKD / SKT			
경도 Hardness						30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 65HRc			
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
0.2mm	1mm	50,000	196	0.264	0.020	50,000	196	0.006	0.020	34,500	150	0.004	0.020	14,950	24	0.001	0.015
"	1.5	50,000	173	0.017	0.010	50,000	173	0.005	0.010	26,450	104	0.003	0.010	11,730	20	0.001	0.007
0.3mm	1	50,000	483	0.029	0.020	50,000	495	0.007	0.020	34,500	345	0.005	0.015	21,505	34	0.004	0.015
"	3	50,000	207	0.029	0.015	50,000	219	0.006	0.015	24,150	81	0.003	0.010	14,605	20	0.002	0.010
0.4mm	1	47,150	598	0.047	0.062	50,000	495	0.013	0.070	39,675	368	0.011	0.070	23,575	39	0.004	0.070
"	3	33,350	449	0.026	0.053	26,450	380	0.008	0.026	26,450	276	0.007	0.026	15,755	29	0.003	0.026
0.5mm	1	48,300	1,334	0.079	0.114	48,300	1,116	0.033	0.119	39,100	840	0.029	0.119	24,150	92	0.013	0.119
"	3	31,050	748	0.056	0.088	31,050	621	0.022	0.110	25,415	460	0.020	0.110	15,755	51	0.008	0.110
"	5	25,760	552	0.026	0.044	25,760	459	0.011	0.010	20,700	345	0.010	0.010	12,995	38	0.004	0.010
0.6mm	2	27,945	598	0.111	0.158	27,945	495	0.010	0.214	23,000	380	0.010	0.214	14,835	42	0.004	0.214
"	6	16,445	288	0.035	0.044	16,445	242	0.003	0.010	13,570	184	0.003	0.010	8,740	21	0.001	0.010
0.8mm	4	17,250	529	0.129	0.194	17,020	437	0.014	0.114	14,720	345	0.015	0.114	9,890	40	0.007	0.114
"	8	12,650	299	0.029	0.098	12,650	264	0.005	0.088	10,695	184	0.004	0.088	7,475	20	0.002	0.088
1mm	4	13,800	955	0.196	0.396	13,800	805	0.029	0.264	11,730	655	0.034	0.264	8,280	78	0.017	0.264
"	10	8,625	380	0.047	0.308	8,625	311	0.011	0.123	7,475	264	0.013	0.123	5,290	31	0.006	0.123
"	16	6,900	230	0.018	0.220	6,900	184	0.004	0.026	5,980	161	0.005	0.026	4,255	19	0.002	0.026
1.2mm	6	9,200	690	0.182	0.457	9,200	575	0.018	0.088	8,165	483	0.015	0.088	6,095	59	0.011	0.088
"	12	6,670	437	0.053	0.396	6,670	368	0.007	0.070	5,980	299	0.008	0.070	4,370	37	0.004	0.070
1.5mm	4	12,880	1,265	0.293	0.660	12,880	1,070	0.044	0.440	11,730	920	0.059	0.440	8,970	121	0.032	0.440
"	10	8,280	874	0.147	0.554	8,280	736	0.031	0.282	7,590	633	0.041	0.282	5,865	83	0.022	0.282
"	20	5,865	472	0.041	0.352	5,865	403	0.005	0.106	5,405	345	0.006	0.106	4,140	45	0.003	0.106
2mm	6	12,535	1,185	0.314	0.836	12,535	1,001	0.042	0.792	11,730	909	0.059	0.792	9,430	130	0.035	0.792
"	12	9,200	955	0.182	0.704	9,200	805	0.030	0.440	8,280	725	0.043	0.440	6,785	105	0.025	0.440
"	20	6,900	748	0.091	0.651	6,900	633	0.017	0.194	6,440	564	0.023	0.194	5,175	82	0.014	0.194
"	30	5,865	655	0.049	0.440	5,865	541	0.005	0.132	5,405	495	0.005	0.132	4,255	68	0.002	0.132
2.5mm	10	10,350	1,185	0.331	0.836	10,350	1,001	0.051	0.528	9,775	943	0.073	0.528	8,165	151	0.047	0.528
"	30	6,210	529	0.067	0.616	6,210	437	0.011	0.176	5,865	414	0.016	0.176	4,830	65	0.010	0.176
3mm	12	10,350	1,564	0.381	0.831	10,350	1,127	0.103	0.616	9,775	874	0.103	0.655	8,740	196	0.073	0.655
"	20	8,165	1,024	0.254	0.762	8,165	863	0.071	0.567	7,705	667	0.071	0.567	6,900	147	0.043	0.567
"	30	6,900	850	0.137	0.674	6,900	702	0.049	0.371	6,325	541	0.049	0.371	5,865	115	0.028	0.352
4mm	12	8,740	1,265	0.401	1.525	8,740	1,058	0.081	1.124	7,360	920	0.117	1.124	6,210	210	0.083	1.124
"	20	6,785	1,150	0.375	1.325	6,785	978	0.053	0.880	5,750	840	0.078	0.880	4,830	194	0.057	0.880
"	30	5,750	897	0.196	1.210	5,750	748	0.028	0.671	4,715	656	0.041	0.671	4,025	149	0.030	0.708
"	45	4,715	437	0.096	1.118	4,715	368	0.007	0.326	4,025	322	0.010	0.326	3,450	75	0.007	0.326
5mm	15	7,705	2,047	0.697	2.277	7,705	1,702	0.106	1.346	5,520	1,139	0.150	1.346	4,600	342	0.110	1.346
"	30	5,290	978	0.342	1.760	5,290	817	0.053	1.035	3,795	541	0.075	1.035	3,220	164	0.055	1.035
6mm	20	5,980	1,380	0.600	2.194	5,980	1,219	0.476	1.356	3,565	1,035	0.186	1.356	3,105	393	0.145	1.356
"	40	4,600	1,150	0.565	2.049	4,600	909	0.410	1.304	2,645	759	0.164	1.304	2,300	304	0.123	1.304
8mm	22	5,520	1,265	0.528	2.542	5,520	1,081	0.419	1.518	3,220	909	0.164	1.518	2,760	346	0.128	1.518
"	40	4,140	965	0.497	2.277	4,140	805	0.361	1.323	2,415	667	0.144	1.323	1,955	268	0.108	1.323
10mm	24	4,600	1,035	0.449	2.887	4,485	920	0.356	1.645	2,760	771	0.139	1.645	2,300	294	0.108	1.645
"	45	3,450	817	0.423	2.438	3,450	679	0.307	1.334	1,955	564	0.122	1.334	1,725	228	0.092	1.334
12mm	26	3,795	874	0.377	3.013	3,795	771	0.299	2.024	2,300	644	0.117	2.024	1,955	247	0.091	2.024
"	50	2,875	690	0.355	2.415	2,875	575	0.258	1.403	1,725	483	0.103	1.403	1,380	191	0.077	1.403
16mm	35	2,990	702	0.302	2.921	2,990	610	0.239	2.162	1,725	518	0.094	2.162	1,610	198	0.073	2.162

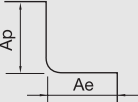
**측면 절삭**  
Milling amount of side milling

- Ap : Axial Depth
- Ae : Radial Depth

피삭재 Material		고경도강/프리하드강 Prehardened Steels / Hardened Steels NAK / SKD				고경도강 Hardened Steels SKD / SKT			
경도 Hardness		30HRC ~ 45HRC				45HRC ~ 55HRC			
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
1mm	4	13,455	1,265	0.038	0.264	11,730	1,046	0.030	0.238
"	10	8,625	495	0.011	0.123	7,475	495	0.009	0.098
1.2mm	4	12,880	1,380	0.031	0.440	11,730	1,070	0.023	0.293
"	10	8,855	782	0.017	0.176	7,130	587	0.009	0.147
1.5mm	6	11,385	1,265	0.040	0.475	10,350	1,150	0.037	0.435
"	12	8,280	817	0.028	0.317	7,590	759	0.025	0.290
2mm	6	12,650	1,265	0.063	0.633	11,730	1,173	0.059	0.713
"	12	8,970	1,012	0.045	0.396	8,280	943	0.043	0.396
2.5mm	10	10,580	1,380	0.065	0.528	9,775	1,150	0.065	0.528
"	20	7,590	1,150	0.047	0.264	7,360	655	0.030	0.220
3mm	10	11,040	2,070	0.094	0.684	10,235	2,070	0.059	0.684
"	20	8,165	1,495	0.057	0.567	7,705	1,495	0.035	0.567
4mm	13	9,085	1,576	0.105	1.150	7,590	1,530	0.082	1.150
"	20	7,130	1,380	0.069	0.920	5,980	1,288	0.054	0.920
"	30	6,325	1,104	0.043	0.745	5,290	1,058	0.033	0.745
6mm	20	5,635	1,691	0.176	2.305	3,335	978	0.176	1.281
"	40	2,875	782	0.098	1.320	1,610	460	0.098	0.733
8mm	22	4,600	1,840	0.212	2.921	2,760	782	0.212	1.518
10mm	24	3,680	2,013	0.242	3.140	2,185	621	0.253	1.645
12mm	26	2,875	2,070	0.265	3.105	1,725	495	0.276	1.714

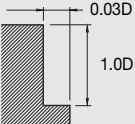
**측면 절삭**  
Milling amount of side milling

- Ap : Axial Depth
- Ae : Radial Depth



측면 절삭 Side Milling																			
피삭재 Material	합금강 Alloy Steels SKD				고경도강 Prehardened Steels CENA1, NAK80				고경도강 Hardened Steels SKD61-SKT4				고경도강 Hardened Steels SKD11-SKH51						
	경도 Hardness				25HRC ~ 35HRC				35HRC ~ 45HRC				45HRC ~ 55HRC				55HRC ~ 65HRC		
외경 Outside Diameter	High Speed		General		High Speed		General		High Speed		General		High Speed		General				
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED			
6mm	13,000	4,910	6,400	2,420	13,000	4,390	5,300	1,250	11,000	3,270	4,200	870	8,000	2,160	3,200	600			
8mm	10,000	5,040	4,800	2,420	10,000	4,500	4,000	1,260	8,000	3,170	3,200	890	6,000	2,160	2,400	600			
10mm	8,000	4,840	3,800	2,300	8,000	4,320	3,200	1,210	6,400	3,040	2,500	830	4,800	2,070	1,900	570			
12mm	6,600	4,440	3,200	2,150	6,600	3,960	2,700	1,130	5,300	2,800	2,100	780	4,000	1,920	1,600	540			
16mm	5,000	4,200	2,400	2,070	5,000	3,750	2,000	1,080	4,000	2,640	1,600	760	3,000	1,800	1,200	520			

**절입량**  
Depth of Cut



- 가능한 가공성이 좋은 기계를 사용하십시오.
- 피삭재와 절삭형상을 위한 적절한 쿨란트를 사용하십시오.
- 이 조건들은 일반적인 조건들입니다. 실제 가공에서는 사용 기계와 피삭재 상태에 따라 절삭조건을 조정하십시오.
- 가능한 RPM이 추천조건 보다 작을 때에는 FEED값도 동일한 비율로 낮추어 사용하십시오.
- Use a highly rigid and accurate machine as possible.
- Use the appropriate coolant for the work material and machining shape.
- These condions are for general guidance: in actual machining conditoinis adjust the parameters according to your actual machine and work-piece conditions.
- If the rpm available is lower than that recmmended please reduce the feed rate to the same ratio.

## 홈절삭 Slotting

피삭재 Material	합금강/내열강 Alloy Steels / Heat Resistant Steels		고경도강/프라이하드강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels			
			NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11	
경도 Hardness	30HRc ~ 40HRc		40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	50,000	250	45,000	200	40,000	155	33,000	105	25,000	60
0.5mm	50,000	295	45,000	225	40,000	175	33,000	110	25,000	65
0.6mm	50,000	375	45,000	285	40,000	225	30,000	125	25,000	85
0.8mm	50,000	480	45,000	350	30,000	235	25,000	145	19,000	90
1mm	48,000	600	38,000	456	25,500	288	20,500	172	16,000	108
2mm	33,300	680	26,000	544	17,500	336	14,500	208	11,000	128
3mm	21,800	680	17,300	544	11,500	336	9,500	208	7,500	128
4mm	16,700	704	13,200	560	8,800	352	7,200	216	5,600	136
5mm	15,700	800	12,500	644	8,300	400	6,400	228	5,100	144
6mm	13,100	760	10,350	616	6,900	384	5,300	224	4,200	144
8mm	9,880	744	7,800	576	5,200	356	4,000	204	3,200	132
10mm	7,800	680	6,150	544	4,100	332	3,200	192	2,550	124
12mm	6,650	680	5,250	544	3,500	332	2,650	192	2,100	124

절입량  
Depth of Cut

절입량  
Depth of Cut

## 측면절삭 Side Cutting

피삭재 Material	합금강/내열강 Alloy Steels / Heat Resistant Steels		고경도강/프라이하드강 Prehardened Steels / Hardened Steels				고경도강 Hardened Steels			
			NAK / SKD		STAVX / SKD / SKT		SKD11 / SKD61		SKD / SKD11	
경도 Hardness	30HRc ~ 40HRc		40HRc ~ 50HRc		50HRc ~ 55HRc		55HRc ~ 60HRc		60HRc ~ 65HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.4mm	50,000	185	45,000	120	40,000	110	33,000	70	25,000	40
0.5mm	50,000	205	45,000	160	40,000	125	33,000	80	25,000	45
0.6mm	50,000	265	45,000	200	40,000	160	30,000	90	25,000	60
0.8mm	50,000	335	40,000	245	30,000	165	25,000	100	19,000	65
1mm	48,000	840	38,000	656	25,500	408	20,500	248	16,000	152
2mm	33,300	960	26,000	776	17,500	480	14,500	296	11,000	184
3mm	21,800	960	17,300	776	11,500	480	9,500	296	7,500	184
4mm	16,700	1,000	13,200	800	8,800	500	7,200	308	5,600	192
5mm	15,700	1,160	12,500	920	8,300	568	6,400	328	5,100	208
6mm	13,100	1,080	10,350	880	6,900	552	5,300	320	4,200	204
8mm	9,880	1,056	7,800	824	5,200	508	4,000	292	3,200	188
10mm	7,800	960	6,150	776	4,100	472	3,200	272	2,550	176
12mm	6,650	960	5,250	776	3,500	472	2,650	272	2,100	176

절입량  
Depth of Cut



## 홈절삭 Slotting

피삭재 Material	합금강 Alloy Steels SKD61 / SKD11				합금강 Alloy Steels SCM440				고경도강 Hardened Steels NAK80				고경도강 Hardened Steels SKD61~SKT4			
	경도 Hardness 200~250HB				25HRc ~ 35HRc				35HRc ~ 45HRc				45HRc ~ 55HRc			
외경 Outside Diameter	High Speed		General		High Speed		General		High Speed		General		High Speed		General	
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3mm	8,500	820	6,400	490	-	-	6,400	440	-	-	5,800	360	-	-	5,300	240
4mm	6,400	920	4,800	550	-	-	4,800	500	-	-	4,400	410	-	-	4,000	280
6mm	4,200	1,010	3,200	610	-	-	3,200	550	-	-	2,900	450	-	-	2,700	310
8mm	3,200	1,090	2,400	650	-	-	2,400	590	-	-	2,200	480	-	-	2,000	330
10mm	2,500	950	1,900	580	-	-	1,900	520	-	-	1,800	440	-	-	1,600	290
12mm	2,100	880	1,600	540	-	-	1,600	480	-	-	1,500	400	-	-	1,300	260

## 측면절삭 Side Cutting

피삭재 Material	합금강 Alloy Steels SKD61 / SKD11				합금강 Alloy Steels SCM440				고경도강 Hardened Steels NAK80				고경도강 Hardened Steels SKD61~SKT4			
	경도 Hardness 200~250HB				25HRc ~ 35HRc				35HRc ~ 45HRc				45HRc ~ 55HRc			
외경 Outside Diameter	High Speed		General		High Speed		General		High Speed		General		High Speed		General	
	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3mm	16,000	1,800	9,600	860	14,000	1,400	9,600	770	12,000	1,100	8,500	610	11,000	860	7,400	460
4mm	12,000	1,900	7,200	920	10,000	1,400	7,200	830	8,800	1,100	6,400	660	8,000	900	5,600	500
6mm	8,000	2,200	4,800	1,080	6,900	1,700	4,800	970	5,800	1,300	5,100	720	5,300	1,040	3,700	580
8mm	6,000	2,400	3,600	1,150	5,200	1,900	3,600	1,040	4,400	1,400	4,200	750	4,000	1,120	2,800	630
10mm	4,800	2,200	2,900	1,070	4,100	1,700	2,900	960	3,500	1,300	2,500	740	3,200	1,030	2,200	570
12mm	4,000	2,100	2,400	1,000	3,500	1,600	2,400	900	2,900	1,200	2,100	700	2,700	980	1,900	550

- 가능한 가공성이 좋은 기계를 사용하십시오.
- 피삭재와 절삭형상을 위한 적절한 쿨런트를 사용하십시오.
- 이 조건들은 일반적인 조건들입니다. 실제 가공에서는 사용 기계와 피삭재 상태에 따라 절삭조건을 조정하십시오.
- 가능한 RPM이 추천조건 보다 작을 때에는 FEED값도 동일한 비율로 낮추어 사용하십시오.
- Use a highly rigid and accurate machine as possible.
- Use the appropriate coolant for the work material and machining shape.
- These conditions are for general guidance: in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
- If the rpm available is lower than that recommended please reduce the feed rate to the same ratio.

피삭재 Material		합금강 Alloy Steels S50C / FC 250 / SCM				합금강/공구강 Alloy Steels/ Tool Steels SKD61 / SK / NAK				고경도강 Hardened Steels SKD61				고경도강 Hardened Steels SKD11			
경도 Hardness		~ 30HRc				30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 62HRc			
외경 Outside Diameter	반경 Radius	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
1mm	R0.2	45,000	7,000	0.05	0.05	42,000	7,800	0.03	0.05	35,000	6,800	0.02	0.05	25,000	2,600	0.02	0.05
1.5mm	R0.5	40,000	9,000	0.06	0.06	40,000	8,000	0.04	0.06	30,000	7,000	0.03	0.06	21,000	2,800	0.02	0.06
2mm	R0.5	33,000	10,000	0.08	0.80	27,000	8,400	0.05	0.08	24,000	7,500	0.04	0.80	16,000	3,000	0.03	0.80
3mm	R0.5	22,000	11,000	0.12	1.20	18,000	9,000	0.08	1.20	16,000	8,500	0.06	1.20	11,000	3,300	0.05	1.20
4mm	R0.5	19,000	1,300	0.17	1.70	16,000	10,000	0.13	1.70	13,000	10,000	0.09	1.70	900	4,000	0.08	1.70
"	R1.0	17,000	12,000	0.15	1.50	14,000	9,500	0.12	1.50	12,000	8,800	0.08	1.50	8,000	3,500	0.07	1.50
5mm	R0.5	15,000	14,000	0.23	2.30	12,000	12,000	0.17	2.30	11,000	10,000	0.12	2.30	7,300	4,300	0.09	2.30
"	R1.0	13,000	13,000	0.20	2.00	11,000	11,000	0.15	2.00	9,600	9,500	0.10	2.00	6,400	3,800	0.08	2.00
6mm	R0.3	13,310	15,730	0.30	2.95	10,900	13,200	0.18	2.95	10,000	13,000	0.12	2.95	6,500	4,600	0.12	2.95
"	R0.5	12,980	15,340	0.29	2.85	10,600	13,000	0.17	2.85	9,500	12,000	0.11	2.85	6,300	4,500	0.11	2.85
"	R1.0	12,600	12,600	0.28	2.80	12,654	12,600	0.17	2.80	9,000	11,000	0.11	2.80	5,800	4,100	0.11	2.80
"	R1.5	11,000	13,000	0.25	2.50	9,000	11,000	0.15	2.50	8,000	9,600	0.10	2.50	5,300	3,800	0.10	2.50
8mm	R0.3	9,800	17,500	0.35	3.54	8,400	13,500	0.24	3.54	7,300	15,000	0.18	3.54	4,700	4,484	0.15	3.54
"	R0.5	8,800	16,500	0.34	3.42	8,200	13,000	0.23	3.42	7,100	13,000	0.17	3.42	4,600	4,370	0.15	3.42
"	R1.0	8,400	15,000	0.34	3.36	8,000	12,000	0.22	3.36	6,700	11,000	0.17	3.36	4,520	4,294	0.15	3.36
"	R2.0	8,200	13,000	0.30	3.00	7,000	11,000	0.20	3.00	6,000	9,600	0.15	3.00	4,000	3,800	0.13	3.00
10mm	R0.3	7,670	15,340	0.35	5.31	6,490	12,980	0.24	5.31	5,664	11,210	0.18	5.31	3,776	4,484	0.15	5.31
"	R0.5	7,475	14,950	0.34	5.13	6,325	12,650	0.23	5.13	5,520	10,925	0.17	5.13	3,680	4,370	0.15	5.13
"	R1.0	7,280	14,560	0.34	5.04	6,160	12,320	0.22	5.04	5,376	10,640	0.17	5.04	3,584	4,256	0.15	5.04
"	R2.0	6,500	13,000	0.30	4.50	5,500	11,000	0.20	4.50	4,800	9,500	0.15	4.50	3,200	3,800	0.13	4.50
12mm	R0.5	7,000	1,500	0.53	5.31	5,428	11,800	0.35	5.31	4,838	10,620	0.30	5.31	3,186	4,130	0.24	5.31
"	R1.0	6,400	14,000	0.51	5.13	5,290	11,500	0.34	5.13	4,715	10,350	0.29	5.13	3,105	4,025	0.23	5.13
"	R2.0	6,000	12,500	0.50	5.04	5,152	11,200	0.34	5.04	4,592	10,080	0.28	5.04	3,024	3,920	0.22	5.04
"	R3.0	5,500	12,000	0.45	4.50	4,600	10,000	0.30	4.50	4,100	9,000	0.25	4.50	2,700	3,500	0.20	4.50
16mm	R1.0	4,838	11,800	0.42	7.32	4,012	10,384	0.25	7.10	3,540	9,204	0.22	7.15	2,360	3,776	0.13	7.35
"	R2.0	4,100	10,000	0.45	7.50	3,400	8,800	0.30	7.50	3,000	7,800	0.25	7.50	2,000	3,200	0.20	7.50

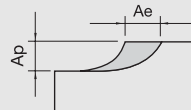
**절입량**  
Depth of Cut

- 상기 절삭조건은 코너 가공시 사용합니다.
- 상기 절삭조건은 Overhang 길이가 5D이하인 경우에 적용됩니다. Overhang 길이가 긴 경우, RPM이나 FEED도 동일 비율로 낮춰주세요.
- 절입깊이가 얇은 경우, RPM과 FEED를 증가해주세요.
- 원활한 칩배출을 위하여 에어브로나 오일 미스트를 추천합니다.
- 몰드 같은 프로파일 가공을 위한 가공방법과 절입깊이 등의 절삭조건은 피삭재에 따라 다르게 사용하세요. 피삭재의 코너부위 작업시 FEED를 줄여 작업해주세요.
- Z축 작업시, 가공 경사 각도를 2도로 설정해주시고 FEED를 50%까지 줄여주세요..
- The above table shows cutting conditions when machining with the corner radius cutting edge.
- This table shows the cutting conditions with less than 5D overhang length. In the case of longer overhangs, the revolution and the feed rate should be reduced proportionately.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- Air blow or oil mist is recommended for good chip evacuation.
- For profile machining such as mould, machining conditions may differ considerably depending on the workpiece geometry, machining methods and depth of cut. Reduce the feed rate especially when machining the corner sections of a workpiece.
- When machining inclinations in the Z direction, set the inclination angle at 2° and reduce the feed rate by 50%.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

■ Coefficients respective of tool overhang

Type	Overhang	Revolution	Feed rate	Depth of Cut ap
Straight	L/D ≤ 5	100%	100%	100%
	L/D = 6	90%	80%	80%
	L/D = 7	80%	70%	70%
Taper neck	L/D = 6	100%	100%	100%
	L/D = 8	90%	80%	80%
	L/D ≥ 10	80%	70%	70%

피삭재 Material		합금강 Alloy Steels S50C / FC 250 / SCM				합금강/공구강 Alloy Steels/ Tool Steels SKD61 / SK / NAK				고경도강 Hardened Steels SKD61				고경도강 Hardened Steels SKD11			
경도 Hardness		~ 30HRc				30HRc ~ 45HRc				45HRc ~ 55HRc				55HRc ~ 62HRc			
외경 Outside Diameter	반경 Radius	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
1mm	R0.2	45,000	7,700	0.05	0.05	42,000	8,580	0.03	0.05	35,000	7,480	0.02	0.05	25,000	2,860	0.02	0.05
1.5mm	R0.5	40,000	9,900	0.06	0.06	40,000	8,800	0.04	0.06	30,000	7,700	0.03	0.60	21,000	3,080	0.02	0.06
2mm	R0.5	33,000	11,000	0.08	0.80	27,000	9,240	0.05	0.08	24,000	8,250	0.04	0.80	16,000	3,300	0.03	0.80
3mm	R0.5	22,000	12,100	0.12	1.20	18,000	9,900	0.08	1.20	16,000	9,350	0.06	1.20	11,000	3,630	0.05	1.20
4mm	R0.5	19,000	1,430	0.17	1.70	16,000	11,000	0.13	1.70	13,000	11,000	0.09	1.70	900	4,400	0.08	1.70
"	R1.0	17,000	13,200	0.15	1.50	14,000	10,450	0.12	1.50	12,000	9,680	0.08	1.50	8,000	3,850	0.07	1.50
5mm	R0.5	15,000	15,400	0.23	2.30	12,000	13,200	0.17	2.30	11,000	11,000	0.12	2.30	7,300	4,730	0.09	2.30
"	R1.0	13,000	14,300	0.20	2.00	11,000	12,100	0.15	2.00	9,600	10,450	0.10	2.00	6,400	4,180	0.08	2.00
6mm	R0.3	13,310	17,303	0.30	2.95	10,900	14,520	0.18	2.95	10,000	14,300	0.12	2.95	6,500	5,060	0.12	2.95
"	R0.5	12,980	16,874	0.29	2.85	10,600	14,300	0.17	2.85	9,500	13,200	0.11	2.85	6,300	4,950	0.11	2.85
"	R1.0	12,600	13,860	0.28	2.80	12,654	13,860	0.17	2.80	9,000	12,100	0.11	2.80	5,800	4,510	0.11	2.80
"	R1.5	11,000	14,300	0.25	2.50	9,000	12,100	0.15	2.50	8,000	10,560	0.10	2.50	5,300	4,180	0.10	2.50
8mm	R0.3	9,800	19,250	0.35	3.54	8,400	14,850	0.24	3.54	7,300	16,500	0.18	3.54	4,700	4,932	0.15	3.54
"	R0.5	8,800	18,150	0.34	3.42	8,200	14,300	0.23	3.42	7,100	14,300	0.17	3.42	4,600	4,807	0.15	3.42
"	R1.0	8,400	16,500	0.34	3.36	8,000	13,200	0.22	3.36	6,700	12,100	0.17	3.36	4,520	4,723	0.15	3.36
"	R2.0	8,200	14,300	0.30	3.00	7,000	12,100	0.20	3.00	6,000	10,560	0.15	3.00	4,000	4,180	0.13	3.00
10mm	R0.3	7,670	16,874	0.35	5.31	6,490	14,278	0.24	5.31	5,664	12,331	0.18	5.31	3,776	4,932	0.15	5.31
"	R0.5	7,475	16,445	0.34	5.13	6,325	13,915	0.23	5.13	5,520	12,018	0.17	5.13	3,680	4,807	0.15	5.13
"	R1.0	7,280	16,016	0.34	5.04	6,160	13,552	0.22	5.04	5,376	11,704	0.17	5.04	3,584	4,682	0.15	5.04
"	R2.0	6,500	14,300	0.30	4.50	5,500	12,100	0.20	4.50	4,800	10,450	0.15	4.50	3,200	4,180	0.13	4.50
12mm	R0.5	7,000	1,650	0.53	5.31	5,428	12,980	0.35	5.31	4,838	11,682	0.30	5.31	3,186	4,543	0.24	5.31
"	R1.0	6,400	15,400	0.51	5.13	5,290	12,650	0.34	5.13	4,715	11,385	0.29	5.13	3,105	4,428	0.23	5.13
"	R2.0	6,000	13,750	0.50	5.04	5,152	12,320	0.34	5.04	4,592	11,088	0.28	5.04	3,024	4,312	0.22	5.04
"	R3.0	5,500	13,200	0.45	4.50	4,600	11,000	0.30	4.50	4,100	9,900	0.25	4.50	2,700	3,850	0.20	4.50
16mm	R1.0	4,838	12,980	0.42	7.32	4,012	11,422	0.25	7.10	3,540	10,124	0.22	7.15	2,360	4,154	0.13	7.35
"	R2.0	4,100	11,000	0.45	7.50	3,400	9,680	0.30	7.50	3,000	8,580	0.25	7.50	2,000	3,520	0.20	7.50



- 상기 절삭조건은 코너 가공시 사용합니다.
- 상기 절삭조건은 Overhang 길이가 5D이하인 경우에 적용됩니다. Overhang 길이가 긴 경우, RPM이나 FEED도 동일 비율로 낮춰주세요.
- 절입깊이가 얇은 경우, RPM과 FEED를 증가해주세요.
- 원활한 칩배출을 위하여 에어브로나 오일 미스트를 추천합니다.
- 몰드 같은 프로파일 가공을 위한 가공방법과 절입깊이 등의 절삭조건은 피삭재에 따라 다르게 사용하세요. 피삭재의 코너부위 작업시 FEED를 줄여 작업해주세요.
- Z축 작업시, 가공 경사 각도를 2도로 설정해주시고 FEED를 50%까지 줄여주세요..
- The above table shows cutting conditions when machining with the corner radius cutting edge.
- This table shows the cutting conditions with less than 5D overhang length. In the case of longer overhangs, the revolution and the feed rate should be reduced proportionately.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- Air blow or oil mist is recommended for good chip evacuation.
- For profile machining such as mould, machining conditions may differ considerably depending on the workpiece geometry, machining methods and depth of cut. Reduce the feed rate especially when machining the corner sections of a workpiece.
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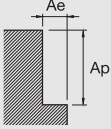
### ■ Coefficients respective of tool overhang

Type	Overhang	Revolution	Feed rate	Depth of Cut ap
Straight	L/D ≤ 5	100%	100%	100%
	L/D = 6	90%	80%	80%
	L/D = 7	80%	70%	70%
Taper neck	L/D = 6	100%	100%	100%
	L/D = 8	90%	80%	80%
	L/D ≥ 10	80%	70%	70%

## 측면 절삭 Side Cutting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels SS400 / S55C	합금강/공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD	공구강/프리하든강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1	공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD				
경도 Hardness	~750N/mm <sup>2</sup>		~ 30HRc	30 ~ 38HRc	38 ~ 45HRc			
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	5,000	510	4,200	260	3,600	180	2,800	130
5mm	5,000	510	4,200	270	3,200	200	2,400	150
6mm	4,200	510	3,600	290	2,800	220	2,100	170
8mm	3,200	510	2,700	330	2,100	250	1,600	190
10mm	2,600	510	2,200	345	1,600	260	1,300	210
12mm	2,100	510	1,800	360	1,400	270	1,100	215
16mm	1,600	510	1,400	385	1,000	290	800	220
20mm	1,300	480	1,100	375	800	280	640	210

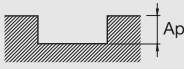
  

절입량 Depth of Cut	<table border="1"> <tr><td>Ap</td><td>Ae</td></tr> <tr><td>1.5D</td><td>0.4D</td></tr> </table>		Ap	Ae	1.5D	0.4D		<table border="1"> <tr><td>Ap</td><td>Aa</td></tr> <tr><td>1.5D</td><td>0.3D</td></tr> </table>		Ap	Aa	1.5D	0.3D
	Ap	Ae											
1.5D	0.4D												
Ap	Aa												
1.5D	0.3D												

## 홈절삭 Slotting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels SS400 / S55C	합금강/공구강 Alloy Steels/ Tool Steels SCM / SKT / SKD	공구강/프리하든강 Tool Steels/ Prehardened Steels SKD / SKT / NAK55 / HPM1	공구강/ 스테인레스강 Tool Steels/ Stainless Steels SUS304 / SKD				
경도 Hardness	~750N/mm <sup>2</sup>		~ 30HRc	30 ~ 38HRc	38 ~ 45HRc			
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,000	430	3,800	200	2,800	140	2,400	110
5mm	4,000	430	3,400	220	2,500	160	2,200	130
6mm	3,600	430	3,000	240	2,300	185	1,900	150
8mm	2,700	430	2,200	270	1,800	210	1,400	180
10mm	2,200	430	1,800	290	1,400	220	1,200	185
12mm	1,800	430	1,500	300	1,200	230	960	190
16mm	1,400	430	1,100	310	900	250	720	200
20mm	1,100	410	900	310	700	240	560	185

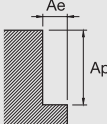
절입량 Depth of Cut	<table border="1"> <tr><td>Ap : 0.75D</td></tr> <tr><td>ApMax=12mm</td></tr> </table>		Ap : 0.75D	ApMax=12mm		<table border="1"> <tr><td>Ap : 0.5D</td></tr> </table>		Ap : 0.5D
	Ap : 0.75D							
ApMax=12mm								
Ap : 0.5D								

## 측면 절삭 Side Cutting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels		합금강/공구강 Alloy Steels/ Tool Steels		공구강/프리하드강 Tool Steels/ Prehardened Steels		공구강/ 스테인레스강 Tool Steels/ Stainless Steels	
	SS400 / S55C		SCM / SKT / SKD		SKD / SKT / NAK55 / HPM1		SUS304 / SKD	
경도 Hardness	~750N/mm <sup>2</sup>		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	5,800	600	4,800	300	4,100	200	3,200	150
5mm	5,800	600	4,800	310	3,700	230	2,800	170
6mm	4,800	600	4,200	330	3,200	250	2,400	200
8mm	3,700	600	3,100	380	2,400	290	1,800	220
10mm	3,000	600	2,500	400	1,800	300	1,500	250
12mm	2,400	600	2,100	410	1,600	310	1,300	250
16mm	1,850	600	1,600	440	1,200	330	1,000	250
20mm	1,500	550	1,300	430	900	320	750	240

절입량 Depth of Cut	Ap		Ae	
	1.5D	0.4D	1.5D	0.3D




## 홈절삭 Slotting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels		합금강/공구강 Alloy Steels/ Tool Steels		공구강/프리하드강 Tool Steels/ Prehardened Steels		공구강/ 스테인레스강 Tool Steels/ Stainless Steels	
	SS400 / S55C		SCM / SKT / SKD		SKD / SKT / NAK55 / HPM1		SUS304 / SKD	
경도 Hardness	~750N/mm <sup>2</sup>		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,600	500	4,400	230	3,200	160	2,800	130
5mm	4,600	500	4,000	250	2,900	180	2,500	150
6mm	4,100	500	3,500	280	2,700	210	2,200	170
8mm	3,100	500	2,500	310	2,100	240	1,700	210
10mm	2,500	500	2,100	330	1,600	250	1,300	210
12mm	2,100	500	1,700	350	1,400	270	1,100	220
16mm	1,600	500	1,300	360	1,000	290	800	230
20mm	1,300	480	1,000	360	800	270	650	210

절입량 Depth of Cut	Ap : 0.75D ApMax=12mm		Ap : 0.5D	
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파삭재 Material		동 Copper				프라이하든강/열처리강 Prehardened Steels / Hardened Steels				열처리강 Hardened Steels			
						NAK / SKD				SKD / SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
	<b>0.5</b>	54,000	430	0.010	0.010	48,000	350	0.006	0.007	48,000	280	0.006	0.007
<b>R0.1</b>	<b>1</b>	54,000	380	0.008	0.008	48,000	330	0.005	0.005	48,000	250	0.005	0.005
	<b>1.5</b>	47,000	320	0.006	0.006	47,000	250	0.004	0.004	47,000	200	0.004	0.004
	<b>2</b>	42,000	290	0.004	0.004	42,000	200	0.003	0.003	42,000	200	0.003	0.003
<b>R0.15</b>	<b>1.5</b>	54,000	640	0.014	0.015	48,000	480	0.010	0.010	41,000	370	0.009	0.010
	<b>2</b>	49,000	530	0.011	0.011	43,000	370	0.008	0.008	37,000	270	0.008	0.008
	<b>3</b>	43,000	460	0.009	0.010	38,000	320	0.007	0.006	32,000	240	0.006	0.006
	<b>4</b>	37,000	300	0.004	0.006	28,000	200	0.003	0.004	24,000	160	0.003	0.004
	<b>5</b>	31,000	200	0.002	0.004	26,000	125	0.001	0.003	18,000	110	0.002	0.003
<b>R0.2</b>	<b>1</b>	54,000	870	0.023	0.036	48,000	660	0.018	0.024	37,000	450	0.015	0.024
	<b>2</b>	54,000	790	0.022	0.036	48,000	590	0.018	0.024	37,000	400	0.015	0.020
	<b>3</b>	50,000	660	0.017	0.018	41,000	420	0.012	0.012	31,000	280	0.011	0.012
	<b>4</b>	50,000	640	0.012	0.018	38,000	400	0.009	0.012	30,000	270	0.009	0.012
	<b>5</b>	37,000	410	0.009	0.018	29,000	330	0.008	0.012	26,000	260	0.007	0.012
	<b>6</b>	37,000	360	0.006	0.010	29,000	260	0.005	0.006	26,000	200	0.004	0.006
	<b>8</b>	27,000	200	0.003	0.006	27,000	170	0.003	0.003	23,000	150	0.002	0.003
	<b>10</b>	20,000	110	0.002	0.004	25,000	110	0.002	0.002	20,000	110	0.001	0.002
<b>R0.25</b>	<b>1</b>	57,000	1,380	0.029	0.054	42,000	830	0.023	0.036	32,000	550	0.018	0.036
	<b>2</b>	57,000	1,250	0.028	0.054	42,000	750	0.022	0.036	32,000	500	0.018	0.036
	<b>3</b>	55,000	1,010	0.021	0.036	38,000	580	0.017	0.024	31,000	400	0.014	0.024
	<b>4</b>	55,000	1,010	0.021	0.036	38,000	580	0.017	0.024	31,000	400	0.014	0.024
	<b>5</b>	48,000	800	0.016	0.018	33,000	480	0.012	0.012	30,000	390	0.009	0.012
	<b>6</b>	36,000	610	0.009	0.018	28,000	400	0.008	0.012	27,000	330	0.005	0.012
	<b>8</b>	36,000	590	0.009	0.018	28,000	400	0.008	0.012	27,000	330	0.005	0.012
	<b>10</b>	36,000	460	0.009	0.018	28,000	400	0.008	0.012	27,000	330	0.005	0.012
	<b>12</b>	24,000	280	0.004	0.010	26,000	280	0.004	0.006	24,000	280	0.002	0.006
	<b>14</b>	16,000	170	0.001	0.006	24,000	200	0.002	0.003	21,000	240	0.001	0.003
<b>R0.3</b>	<b>1</b>	57,000	1,670	0.035	0.144	37,000	840	0.027	0.096	27,000	540	0.023	0.096
	<b>2</b>	57,000	1,540	0.034	0.144	37,000	770	0.027	0.096	27,000	500	0.021	0.096
	<b>3</b>	57,000	1,540	0.034	0.144	37,000	770	0.027	0.096	27,000	500	0.021	0.096
	<b>4</b>	54,000	1,130	0.026	0.108	35,000	600	0.020	0.072	26,000	380	0.016	0.072
	<b>5</b>	46,000	960	0.019	0.072	28,000	460	0.016	0.048	26,000	370	0.012	0.048
	<b>6</b>	46,000	960	0.019	0.072	28,000	460	0.016	0.048	26,000	370	0.012	0.048
	<b>8</b>	30,000	570	0.010	0.054	24,000	400	0.009	0.036	23,000	320	0.006	0.036
	<b>10</b>	30,000	490	0.007	0.036	24,000	330	0.006	0.024	23,000	290	0.004	0.024
	<b>12</b>	30,000	490	0.007	0.036	24,000	330	0.006	0.024	23,000	290	0.004	0.024
	<b>14</b>	20,000	300	0.004	0.027	22,000	300	0.004	0.018	20,000	250	0.002	0.018
<b>R0.35</b>	<b>2</b>	56,000	1,800	0.050	0.162	35,000	740	0.039	0.108	27,000	500	0.031	0.108
	<b>4</b>	54,500	1,500	0.045	0.063	33,000	600	0.035	0.042	26,500	410	0.029	0.096
	<b>8</b>	32,000	800	0.019	0.072	12,215	420	0.020	0.048	22,500	355	0.012	0.048
	<b>10</b>	26,500	540	0.017	0.063	22,500	380	0.014	0.042	21,500	330	0.011	0.042
	<b>12</b>	23,000	420	0.017	0.063	21,500	380	0.012	0.032	21,500	320	0.010	0.042
<b>R0.4</b>	<b>2</b>	55,000	2,060	0.063	0.180	33,000	710	0.050	0.120	27,000	500	0.041	0.120
	<b>4</b>	55,000	1,860	0.063	0.018	31,000	600	0.050	0.012	27,000	440	0.041	0.120
	<b>6</b>	47,000	1,410	0.038	0.108	28,000	570	0.030	0.072	22,000	390	0.024	0.072
	<b>8</b>	34,000	1,040	0.027	0.090	21,000	430	0.021	0.060	22,000	390	0.018	0.060
	<b>10</b>	23,000	600	0.027	0.090	21,000	430	0.021	0.060	20,000	370	0.017	0.060
	<b>12</b>	16,000	350	0.027	0.090	19,000	430	0.018	0.040	20,000	350	0.016	0.060
	<b>14</b>	11,000	200	0.027	0.090	19,000	430	0.015	0.027	20,000	330	0.015	0.060
<b>R0.45</b>	<b>2</b>	50,500	1,900	0.067	0.190	32,000	685	0.054	0.130	24,500	460	0.043	0.180
	<b>3</b>	46,000	2,000	0.072	0.360	32,000	770	0.057	0.240	22,000	480	0.045	0.240
	<b>4</b>	46,000	2,000	0.072	0.360	32,000	770	0.057	0.240	22,000	480	0.045	0.240
	<b>5</b>	46,000	2,000	0.071	0.360	32,000	770	0.057	0.240	22,000	480	0.045	0.240
	<b>6</b>	39,000	1,500	0.071	0.180	26,000	760	0.055	0.120	17,600	480	0.009	0.120
	<b>8</b>	39,000	1,500	0.043	0.180	26,000	760	0.034	0.120	17,600	480	0.027	0.120
	<b>10</b>	29,000	1,110	0.028	0.090	17,600	530	0.024	0.060	16,500	420	0.018	0.060
	<b>12</b>	18,700	660	0.027	0.090	17,600	530	0.024	0.060	16,500	420	0.018	0.060
	<b>14</b>	18,700	640	0.022	0.090	15,400	440	0.018	0.060	14,300	360	0.014	0.060
<b>16</b>	18,700	640	0.022	0.090	15,400	440	0.018	0.060	14,300	360	0.014	0.060	
<b>18</b>	18,700	540	0.017	0.090	14,300	440	0.013	0.060	13,200	360	0.009	0.060	

피삭재 Material		동 Copper				프라이하든강/열처리강 Prehardened Steels / Hardened Steels				열처리강 Hardened Steels			
						NAK / SKD				SKD / SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
R0.5	20	18,700	540	0.017	0.054	14,300	360	0.013	0.036	13,200	300	0.009	0.036
	22	18,700	540	0.017	0.054	14,300	360	0.013	0.036	13,200	300	0.009	0.036
	25	18,700	540	0.016	0.052	14,300	360	0.013	0.030	13,200	300	0.009	0.030
R0.6	4	38,000	2,000	0.085	0.360	26,000	770	0.068	0.240	18,200	480	0.054	0.240
	6	38,000	2,000	0.085	0.360	26,000	770	0.068	0.240	18,200	480	0.054	0.240
	8	32,000	1,490	0.084	0.360	21,000	700	0.067	0.240	15,100	440	0.054	0.240
	10	24,000	1,080	0.036	0.180	16,400	530	0.027	0.120	15,100	420	0.022	0.120
	12	24,000	1,080	0.036	0.180	15,300	530	0.027	0.120	14,100	420	0.022	0.120
	16	15,400	580	0.024	0.144	13,100	460	0.019	0.096	11,900	380	0.016	0.096
	20	15,400	580	0.017	0.090	12,100	380	0.013	0.060	11,000	320	0.009	0.060
R0.7	24	15,400	580	0.010	0.060	11,100	320	0.009	0.040	9,800	290	0.007	0.040
	6	28,000	1,470	0.099	0.270	17,600	680	0.076	0.180	13,600	440	0.063	0.180
	8	28,000	1,470	0.099	0.270	17,600	680	0.079	0.180	13,600	440	0.063	0.180
	12	19,800	1,080	0.042	0.270	13,800	530	0.033	0.180	13,600	420	0.027	0.180
R0.75	16	13,200	620	0.033	0.180	13,100	480	0.027	0.120	11,900	390	0.021	0.120
	3	30,000	2,200	0.171	0.324	21,000	1060	0.137	0.216	14,800	660	0.110	0.216
	4	30,000	2,200	0.171	0.324	21,000	1060	0.137	0.216	14,800	660	0.110	0.216
	6	30,000	1,980	0.147	0.324	21,000	940	0.117	0.216	14,800	580	0.090	0.216
	8	26,000	1,500	0.106	0.270	16,300	700	0.084	0.180	12,100	450	0.069	0.180
	10	26,000	1,500	0.106	0.270	16,300	700	0.084	0.180	12,100	450	0.069	0.180
	12	26,000	1,500	0.106	0.270	16,300	700	0.084	0.180	12,100	450	0.069	0.180
	14	18,700	1,100	0.045	0.180	12,600	530	0.036	0.120	12,100	440	0.027	0.120
	16	12,100	620	0.036	0.180	12,400	480	0.027	0.120	11,600	390	0.022	0.120
	18	12,100	620	0.036	0.180	12,400	480	0.027	0.120	11,600	390	0.022	0.120
	20	12,100	620	0.019	0.090	12,400	480	0.016	0.060	11,600	390	0.012	0.060
	22	12,100	620	0.019	0.090	12,400	480	0.016	0.060	11,000	390	0.012	0.060
	25	11,000	500	0.019	0.090	12,400	440	0.016	0.060	11,000	390	0.012	0.060
	30	10,700	450	0.019	0.090	10,900	400	0.016	0.060	11,000	390	0.012	0.060
35	10,700	410	0.019	0.090	9,000	380	0.016	0.060	11,000	390	0.012	0.060	
R0.8	6	27,040	2,600	0.220	0.580	18,900	1,200	0.180	0.390	1,650	760	0.150	0.390
	8	26,000	1,970	0.157	0.324	18,900	940	0.126	0.216	13,800	580	0.102	0.216
	12	25,000	1,490	0.112	0.180	15,100	700	0.090	0.120	11,500	440	0.072	0.120
	16	17,600	110	0.046	0.144	12,300	530	0.036	0.096	11,400	440	0.030	0.096
	20	11,000	630	0.036	0.090	11,500	480	0.030	0.060	10,900	400	0.024	0.060
R0.9	6	32,000	2,600	0.230	0.021	18,400	1,200	0.185	0.320	18,400	738	0.150	0.320
	8	26,000	1,950	0.165	0.270	16,300	930	0.132	0.240	13,800	570	0.108	0.240
	12	21,000	1,480	0.120	0.270	13,800	700	0.094	0.180	10,300	440	0.077	0.180
	16	15,400	1,080	0.048	0.180	10,800	530	0.039	0.120	9,900	420	0.031	0.120
	20	10,500	630	0.039	0.090	10,200	480	0.031	0.060	9,700	400	0.025	0.060
R1	4	22,000	2,140	0.232	0.540	18,500	12,600	0.185	0.360	13,200	960	0.150	0.360
	6	22,000	2,140	0.232	0.540	18,500	12,600	0.185	0.360	13,200	960	0.150	0.360
	8	22,000	1,920	0.185	0.360	18,500	1,120	0.147	0.240	13,200	870	0.120	0.240
	10	22,000	1,920	0.185	0.360	18,500	1,120	0.147	0.240	13,200	870	0.120	0.240
	12	18,700	1,470	0.166	0.360	16,000	990	0.133	0.240	11,700	780	0.107	0.240
	14	18,700	1,470	0.166	0.360	16,000	990	0.133	0.240	11,700	780	0.107	0.240
	16	18,700	1,470	0.148	0.360	16,000	990	0.118	0.240	11,700	780	0.090	0.240
	18	14,300	1,070	0.093	0.180	14,700	580	0.074	0.120	11,600	580	0.061	0.120
	20	14,300	1,070	0.093	0.180	14,700	580	0.074	0.120	11,600	580	0.061	0.120
	22	9,500	630	0.074	0.180	10,600	450	0.058	0.120	10,200	450	0.045	0.120
	25	9,500	630	0.074	0.180	10,600	450	0.058	0.120	10,200	450	0.045	0.120
	30	9,500	530	0.033	0.090	10,600	450	0.026	0.060	10,200	380	0.021	0.060
	35	9,500	530	0.026	0.090	10,600	380	0.019	0.060	10,200	380	0.017	0.060
R1.25	40	9,500	530	0.026	0.090	10,600	380	0.019	0.060	10,200	380	0.017	0.060
	45	9,500	445	0.011	0.045	10,000	380	0.009	0.030	10,200	320	0.008	0.030
	8	18,400	2,400	0.232	0.360	14,500	1,400	0.185	0.240	9,700	1,080	0.150	0.240
	10	18,400	2,400	0.232	0.360	14,500	1,400	0.185	0.240	9,700	1,080	0.150	0.240
	16	16,100	1,810	0.208	0.360	13,500	1,230	0.166	0.240	8,400	980	0.135	0.240
	20	11,500	1,330	0.116	0.180	10,200	950	0.093	0.120	8,400	980	0.074	0.120
R1.5	25	6,900	770	0.093	0.180	8,400	540	0.074	0.120	8,400	560	0.061	0.120
	30	6,900	770	0.040	0.090	8,400	540	0.033	0.060	8,400	560	0.026	0.060
	35	6,900	770	0.018	0.050	8,400	540	0.015	0.030	8,400	560	0.011	0.030
	6	15,000	2,890	0.278	0.540	12,900	1,680	0.222	0.360	9,200	1,300	0.180	0.360
	8	15,000	2,890	0.278	0.540	12,900	1,680	0.222	0.360	9,200	1,300	0.180	0.360
10	15,000	2,600	0.278	0.540	12,900	1,680	0.222	0.360	9,200	1,300	0.180	0.360	

피삭재 Material		동 Copper				프라이하든강/ 열처리강 Prehardened Steels / Hardened Steels				열처리강 Hardened Steels			
						NAK / SKD				SKD / SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap	Ae	RPM	FEED	Ap	Ae	RPM	FEED	Ap	Ae
				Axial Depth	Radial Depth			Axial Depth	Radial Depth			Axial Depth	Radial Depth
R1.5	12	15,000	2,600	0.278	0.540	12,900	1,510	0.222	0.360	9,200	1,170	0.180	0.360
	16	12,700	1,970	0.029	0.504	11,300	1,330	0.166	0.360	8,100	1,040	0.135	0.360
	20	12,700	1,970	0.029	0.504	11,300	1,330	0.166	0.360	8,100	1,040	0.135	0.360
	25	10,100	1,450	0.139	0.270	8,800	1,040	0.111	0.180	8,100	1,040	0.090	0.180
	30	10,100	1,450	0.139	0.270	8,800	780	0.111	0.180	8,100	780	0.090	0.180
	35	6,600	840	0.073	0.270	7,900	620	0.055	0.180	7,500	650	0.045	0.180
	40	6,600	840	0.073	0.270	7,900	620	0.055	0.180	7,500	520	0.045	0.180
	45	4,500	500	0.040	0.270	6,200	500	0.035	0.100	7,000	450	0.023	0.180
	50	4,300	490	0.040	0.270	6,200	500	0.030	0.090	7,000	350	0.023	0.180
60	3,700	420	0.034	0.360	5,900	450	0.030	0.080	6,000	300	0.020	0.150	
R2	8	11,500	2,710	0.370	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	10	11,500	2,710	0.370	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	12	11,500	2,710	0.390	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	16	11,500	2,710	0.390	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	20	11,500	2,710	0.390	0.900	9,700	1,560	0.297	0.600	6,800	1,210	0.241	0.600
	25	10,300	1,850	0.279	0.540	8,400	1,250	0.223	0.360	6,000	980	0.180	0.360
	30	10,300	1,850	0.279	0.540	8,400	1,250	0.223	0.360	6,000	980	0.180	0.361
	35	7,500	1,360	0.185	0.540	6,600	950	0.148	0.360	6,000	700	0.120	0.360
	40	7,500	1,360	0.185	0.540	6,600	950	0.148	0.360	6,000	700	0.120	0.360
45	5,000	780	0.093	0.360	5,900	470	0.074	0.240	5,600	490	0.060	0.240	
50	5,000	780	0.093	0.360	5,900	470	0.074	0.240	5,600	490	0.060	0.240	
55	4,500	640	0.090	0.330	5,200	375	0.068	0.225	5,400	370	0.050	0.251	
60	4,000	500	0.078	0.300	5,000	280	0.062	0.210	5,200	250	0.040	0.180	
R2.5	15	9,600	2,590	0.406	0.900	7,800	1,350	0.324	0.800	5,600	1,050	0.252	0.800
	20	9,600	2,100	0.406	0.900	7,800	1,240	0.324	0.600	5,600	950	0.252	0.600
	25	9,600	2,100	0.406	0.900	7,800	1,240	0.324	0.600	5,600	950	0.252	0.600
	30	8,200	1,320	0.305	0.900	7,800	760	0.243	0.600	4,800	600	0.197	0.600
	40	7,000	830	0.230	0.900	7,800	470	0.200	0.600	4,300	380	0.154	0.600
	45	5,000	520	0.173	0.900	6,800	290	0.165	0.600	3,900	240	0.120	0.600
R3	50	4,500	330	0.131	0.900	6,800	180	0.135	0.600	3,500	150	0.094	0.600
	60	4,000	300	0.099	0.800	6,800	110	0.112	0.600	3,300	100	0.074	0.600
	15	8,000	2,530	0.555	1.800	7,400	1,670	0.443	1.200	5,200	1,300	0.360	1.200
R4	30	8,000	1,810	0.418	1.080	7,400	1,500	0.334	0.720	4,600	1,170	0.270	0.720
	25	9,000	2,400	0.600	1.500	7,200	1,200	0.500	1.000	5,200	920	0.350	1.000
R5	30	7,700	1,500	0.450	1.200	7,200	740	0.380	0.800	4,500	580	0.300	0.800
	30	7,800	1,300	0.300	0.900	6,800	720	0.230	0.600	4,600	570	0.190	0.570
R6	35	7,125	1,292	0.176	0.513	6,800	902.5	0.140	0.340	5,700	665	0.110	0.340
	30	7,410	1,235	0.285	0.855	6,350	684	0.210	0.570	4,370	541.5	0.181	0.550
40	6,800	1,100	0.260	0.780	6,350	630	0.200	0.520	4,020	500	0.160	0.500	

**절임량**  
Depth of Cut

- Ap : Axial Depth
- Ae : Radial Depth
- D : Outside Diameter
- n : Speed
- Vf : Feed

- 상기 절삭조건외의 참고는 수치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 콜러트 사용을 추천, 동가공시 습식 콜러트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm 이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet coolant for copper
- The tolerance of below Ø1 is below 5µm.

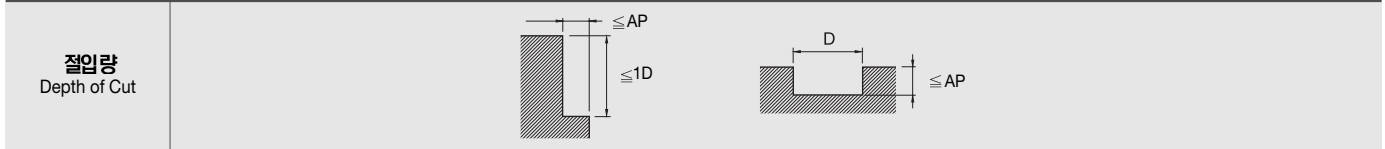
파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
0.1	—	40,000	500	0.001
	0.5	40,000	600	0.004
0.2	1	40,000	400	0.001
	1.5	40,000	200	0.002
	2	40,000	200	0.005
0.3	1	40,000	650	0.007
	1.5	40,000	600	0.005
	2	40,000	550	0.004
	3	40,000	500	0.002
	4	30,000	200	0.001
0.4	5	22,000	150	0.001
	1	40,000	800	0.007
	2	40,000	800	0.007
	3	40,000	800	0.005
	4	40,000	800	0.003
	5	35,000	500	0.002
	6	28,000	350	0.001
0.5	8	20,000	200	0.001
	10	17,000	150	0.001
	2	40,000	950	0.003
	3	40,000	900	0.003
	4	40,000	850	0.003
	5	40,000	800	0.003
	6	40,000	700	0.003
0.6	8	30,000	500	0.002
	10	25,000	400	0.002
	12	20,000	300	0.001
	14	14,000	150	0.001
	2	40,000	950	0.010
	3	40,000	950	0.010
0.7	4	40,000	950	0.010
	5	40,000	950	0.010
	6	40,000	800	0.005
	8	35,000	500	0.004
	10	25,000	450	0.003
	12	20,000	300	0.002
0.8	14	15,000	200	0.001
	16	12,000	150	0.001
	2	40,000	1,000	0.020
	4	40,000	950	0.015
	6	40,000	900	0.010
	8	40,000	700	0.005
0.9	10	30,000	300	0.005
	12	11,000	300	0.005
	14	9,000	200	0.002
	2	40,000	1,200	0.020
	4	40,000	1,100	0.015
	6	40,000	1,100	0.010
1	8	40,000	1,000	0.010
	10	30,000	500	0.010
	12	25,000	400	0.030
	14	20,000	300	0.020
	6	40,000	1,300	0.020
1	8	38,000	1,200	0.010
	10	35,000	1,000	0.010
	2	40,000	1,600	0.040
	3	40,000	1,600	0.040
	4	40,000	1,600	0.040
	5	40,000	1,600	0.040
	6	40,000	1,600	0.040
1	8	40,000	1,600	0.030
	10	38,000	1,300	0.025
	12	30,000	1,000	0.020

파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
1	14	28,000	700	0.015
	16	23,000	600	0.010
	18	19,000	500	0.006
	20	15,000	400	0.005
1.2	25	10,000	200	0.002
	30	8,000	150	0.001
	4	40,000	1,900	0.060
	6	40,000	1,900	0.060
	8	40,000	1,900	0.040
1.4	10	35,000	1,500	0.040
	12	25,000	1,000	0.030
	16	15,000	500	0.02
	20	6,500	150	0.01
	25	6,000	100	0.01
	30	5,500	50	0.01
1.5	6	40,000	1,900	0.060
	8	40,000	1,900	0.040
	10	35,000	1,500	0.040
	14	25,000	1,000	0.030
	16	15,000	500	0.02
	20	6,500	150	0.01
	1.6	4	40,000	2,400
6		40,000	2,400	0.1
8		35,000	2,000	0.08
10		30,000	1,800	0.05
12		28,000	1,300	0.04
14		23,000	1,000	0.03
16		20,000	800	0.02
1.8	18	16,000	700	0.02
	20	15,000	600	0.02
	25	10,000	350	0.008
	30	7,500	300	0.005
	10	30,000	1,800	0.07
	14	25,000	1,500	0.05
2	18	20,000	1,000	0.04
	4	40,000	2,500	0.2
	6	40,000	2,400	0.18
	8	35,000	2,000	0.15
	10	30,000	1,800	0.1
	12	25,000	1,500	0.08
	14	23,000	1,300	0.07
2.5	16	20,000	1,000	0.06
	18	15,000	900	0.05
	20	12,000	800	0.05
	22	10,000	700	0.05
	25	9,000	600	0.04
	30	8,000	500	0.04
	35	6,500	300	0.02
	40	6,000	250	0.01
2.5	45	5,000	200	0.005
	50	4,200	150	0.003
	8	25,000	2,500	0.2
	10	22,000	2,300	0.18
	12	20,000	2,000	0.15
	16	18,000	1,700	0.1
	20	12,000	1,000	0.08
	25	10,000	700	0.07
2.5	30	9,000	600	0.06
	35	8,500	500	0.05

파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
2.5mm	40	8,000	400	0.03
	50	4,000	150	0.15
	6	20,000	2,000	0.3
	8	20,000	2,000	0.3
	10	20,000	1,600	0.25
	12	20,000	1,500	0.18
3mm	16	15,000	1,400	0.15
	20	10,000	800	0.1
	25	8,000	600	0.08
	30	7,000	450	0.06
	35	6,000	300	0.05
	40	5,000	250	0.02
4mm	45	4,500	200	0.01
	50	3,700	150	0.01
	60	3,500	100	0.01
	8	20,000	3,500	0.3
	10	20,000	3,200	0.3
	12	15,000	3,000	0.3
5mm	16	13,000	2,500	0.25
	20	11,000	2,200	0.22
	25	8,000	1,500	0.15
	30	6,400	1,200	0.12
	35	5,000	700	0.08
	40	4,500	400	0.05
6mm	45	3,500	300	0.03
	8	20,000	3,500	0.3
	10	20,000	3,200	0.3
	12	15,000	3,000	0.3
	16	13,000	2,500	0.25
	20	11,000	2,200	0.22
8mm	25	8,000	1,500	0.15
	30	6,400	1,200	0.12
	35	5,000	700	0.08
	40	4,500	400	0.05
	45	3,500	300	0.03
	8	20,000	3,500	0.3
10mm	10	20,000	3,200	0.3
	12	15,000	3,000	0.3
	16	13,000	2,500	0.25
	20	11,000	2,200	0.22
	25	8,000	1,500	0.15
	30	6,400	1,200	0.12
12mm	35	5,000	700	0.08
	40	4,500	400	0.05
	45	3,500	300	0.03
	20	10,000	2,000	0.4
	30	6,000	1,200	0.3
	40	4,200	800	0.2
5mm	50	3,000	300	0.1
	60	2,200	150	0.02
	20	10,000	2,000	0.4
	30	6,000	1,200	0.3
	40	4,000	450	0.05
	50	3,000	300	0.03
6mm	60	2,200	150	0.02
	20	10,000	2,000	0.4
	30	6,000	1,200	0.3
	40	4,200	800	0.2
	50	3,000	300	0.1
	60	1,900	150	0.1
8mm	20	3,200	910	0.18
	30	3,000	800	0.15
	40	2,600	600	0.12
	25	2,900	890	0.20
	35	2,500	700	0.16
	45	2,200	580	0.14
10mm	30	2,500	710	0.22
	40	2,300	500	0.18
	50	1,900	420	0.16

# 4HEMG

파삭재 Material	General Steels			SKD61		
경도 Hardness	~ 45 HRc			45 ~ 55 HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
1mm	40,000	3,000	0.06	32,000	2,400	0.06
1.5mm	40,000	4,500	0.12	32,000	3,600	0.08
2mm	30,000	4,500	0.18	24,000	3,600	0.10
2.5mm	24,000	3,900	0.25	19,000	3,000	0.13
3mm	20,000	3,500	0.30	16,000	2,700	0.15
4mm	15,000	3,000	0.40	12,000	2,400	0.20
5mm	12,000	2,400	0.50	9,000	1,800	0.25
6mm	10,000	2,100	0.60	7,000	1,500	0.30
8mm	8,000	1,500	0.80	5,600	1,100	0.40
10mm	6,400	1,400	1.00	4,500	950	0.50
12mm	5,400	1,200	1.00	3,800	860	0.50
16mm	2,400	550	3.00	1,200	120	0.80
20mm	1,900	480	4.00	1,000	100	1.00



- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴 수 있습니다.
- Ø3 이상의 엔드밀로 홈절삭을 하는 경우에는 회전속도를 상기표의 50~70%, 이송속도를 40~60%까지 내려서 사용하여 주십시오.
- 세로이송으로 사용되는 경우에는 회전속도를 상기표의 1/3이하로 해주십시오.
- 기계나 가공물 장착의 강성이 없는 경우, 떨림이나 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려주십시오.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- When Slotting with end mills with Ø3 or larger, reduce the revolution to 50~70% and the feed rate to 40~60%.
- When drilling, please set the feed rate at 1/3 or below the values above.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.



피삭재 Material		동 Copper				프라이하드강/ 열처리강 Prehardened Steels / Hardened Steels				열처리강 Hardened Steels			
						NAK / SKD				SKD / SKT			
경도 Hardness						30 ~ 45HRc				45 ~ 55HRc			
반경 Radius	유효장 Effective Length	RPM	FEED	Ap Ae		RPM	FEED	Ap Ae		RPM	FEED	Ap Ae	
				Axial Depth	Radial Depth			Axial Depth	Radial Depth			Axial Depth	Radial Depth
R0.05	0.2	40,000	300	Less than 0.010	0.050	40,000	300	Less than 0.005	0.040	30,000	200	Less than 0.004	0.040
R0.075	0.15	50,000	380	0.010	0.030	45,000	500	0.005	0.050	40,000	350	0.004	0.043
R0.1	0.2	54,000	430	0.012	0.008	54,000	630	0.020	0.060	44,300	500	0.016	0.048
	0.4	54,000	430	0.005	0.008	54,000	410	0.020	0.049	44,300	320	0.016	0.038
R0.1.5	0.3	54,000	720	0.020	0.013	54,000	750	0.030	0.090	44,300	600	0.024	0.072
	0.6	54,000	720	0.010	0.013	54,000	700	0.030	0.065	44,300	570	0.020	0.058
R0.2	0.4	54,000	870	0.028	0.016	54,000	1,000	0.040	0.120	44,300	800	0.032	0.096
	0.8	54,000	870	0.014	0.016	54,000	840	0.040	0.100	44,300	650	0.032	0.075
R0.25	0.5	56,000	1,250	0.035	0.022	53,000	1,250	0.050	0.150	43,500	1,000	0.040	0.120
R0.3	0.6	58,000	1,510	0.042	0.026	52,000	1,380	0.060	0.180	42,650	1,100	0.048	0.144
R0.35	0.7	55,000	1,690	0.049	0.031	50,000	1,440	0.070	0.210	41,075	1,150	0.056	0.168
R0.4	0.8	52,000	1,870	0.056	0.036	48,000	1,500	0.080	0.240	39,500	1,200	0.064	0.192
	2	52,000	1,870	0.300	0.036	45,000	1,075	0.080	0.150	35,000	810	0.064	0.100
R0.5	1	41,000	1,660	0.063	0.040	45,000	1,560	0.100	0.300	36,900	1,250	0.080	0.240
	2.5	41,000	1,660	0.022	0.040	40,000	1,000	0.100	0.200	31,500	800	0.080	0.160
R0.6	3	34,000	1,740	0.650	0.400	40,100	1,550	0.100	0.280	32,800	1,250	0.800	0.266
R0.75	1.5	27,000	1,830	0.087	0.068	35,000	1,600	0.150	0.450	28,700	1,280	0.120	0.360
	4	27,000	1,830	0.052	0.068	34,500	1,000	0.145	0.325	26,000	800	0.120	0.260
R1	2	20,000	1,780	0.112	0.089	30,000	1,850	0.200	0.600	24,600	1,480	0.160	0.480
	5	20,000	1,780	0.070	0.091	27,000	1,450	0.200	0.485	22,800	1,100	0.160	0.388
R1.25	6	16,000	1,840	0.067	0.115	25,500	1,600	0.250	0.542	21,000	1,280	0.200	0.430
R1.5	3	13,000	2,220	0.197	0.171	25,500	2,520	0.300	0.957	21,000	2,050	0.240	0.766
	8	13,000	2,220	0.100	0.171	25,500	2,350	0.300	0.765	21,000	18,800	0.240	0.612
R1.75	8	11,500	2,150	0.183	0.190	23,000	2,400	0.350	1.073	19,150	10,380	0.280	0.856
R2	4	10,000	2,080	0.266	0.208	21,000	2,450	0.400	1.380	17,300	1,960	0.320	1.100
	8	10,000	2,080	0.134	0.208	21,000	2,350	0.400	1.020	17,300	1,880	0.320	0.816
R2.5	5	8,300	1,990	0.215	0.240	18,000	2,560	0.500	1.660	14,800	2,050	0.400	1.330
	8	8,300	1,990	0.200	0.240	18,000	2,450	0.500	1.500	14,800	1,960	0.400	1.200
R3	6	6,900	1,940	0.290	0.281	16,000	2,700	0.600	2.340	13,000	2,160	0.480	1.870
	10	6,900	1,940	0.250	0.281	16,000	2,500	0.600	1.800	13,000	2,000	0.480	1.440
R3.5	12	6,900	1,940	0.230	0.281	16,000	2,400	0.600	1.530	13,000	1,920	0.480	1.225
	14	6,310	1,470	0.315	0.228	14,500	2,350	0.700	2.315	11,625	1,880	0.560	1.853
R4	8	5,720	1,000	0.400	0.175	12,500	2,300	0.800	3.100	10,250	1,840	0.640	2.480
	14	5,720	1,000	0.400	0.175	12,500	2,000	0.800	2.050	10,250	1,600	0.640	1.640
R4.5	16	5,135	850	0.450	0.165	11,000	2,100	0.900	2.900	9,450	1,690	0.720	2.320
	10	4,550	700	0.500	0.154	10,500	2,200	1.000	3.750	8,650	1,780	0.800	3.000
R5	15	4,550	700	0.500	0.154	10,500	1,900	1.000	3.000	8,650	1,520	0.800	2.400
	18	4,550	700	0.500	0.154	10,500	1,700	1.000	2.550	8,650	1,360	0.800	2.040
R5.5	20	4,160	650	0.550	0.157	10,000	1,700	1.100	3.075	8,015	1,360	0.880	2.460
R0.6	18	3,770	600	0.600	0.159	9,000	1,700	1.200	3.600	7,380	1,360	0.960	2.880
	22	3,770	600	0.600	0.159	9,000	1,850	1.200	4.420	7,380	1,480	0.960	3.540
R6.5	24	3,728	653	0.549	0.156	9,000	1,825	1.098	3.938	7,193	1,540	0.878	3.152
R7	24	3,686	706	0.498	0.153	7,000	1,800	0.996	3.456	7,007	1,600	0.797	2.765
R8	30	2,985	600	0.413	0.147	7,000	1,700	0.827	3.318	5,675	1,360	0.661	2.654
R10	38	2,429	360	0.276	0.133	7,000	1,600	0.551	3.015	4,617	816	0.441	2.412

**절임량**  
Depth of Cut

- Ap : Axial Depth
- Ae : Radial Depth
- D : Outside Diameter
- n : Speed
- Vf : Feed

- 상기 절삭조건에 참고는 수치임, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망
- 에어브로 혹은 미스트 콜러트 사용을 추천, 동가공시 습식 콜러트 추천
- 스테인레스강, 초내열합금 가공에는 유성 절삭유 추천
- 진동이 적고 강성이 좋은 공작기계 사용 요망, Ø1 이하 사용시 진동 허용 관리 5µm 이내일것
- 칩 제거 주의 및 가공시 발열, 발화에 주의
- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend air blow or oil mist.
- Recommend oil coolant for stainless steels and heat resistant alloys.
- Recommend wet collant for copper
- The tolerance of below Ø1 is below 5µm.

파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
0.8mm	2	40,000	3,000	0.025
	4	40,000	3,000	0.020
	6	38,000	2,800	0.020
	8	36,000	2,400	0.010
	10	30,000	1,500	0.009
	12	20,000	1,000	0.009
0.9mm	16	10,000	500	0.005
	2	40,000	3,000	0.030
	6	40,000	3,000	0.025
	8	38,000	2,800	0.020
1mm	10	36,000	2,400	0.020
	3	40,000	3,000	0.040
	4	40,000	3,000	0.040
	6	38,000	2,800	0.035
	8	36,000	2,400	0.030
	10	30,000	1,500	0.025
1.2mm	12	20,000	1,000	0.020
	16	10,000	500	0.005
	6	40,000	3,000	0.050
	8	38,000	2,800	0.045
	10	36,000	2,400	0.040
	12	20,000	1,200	0.030
1.5mm	16	12,000	600	0.010
	6	40,000	3,200	0.060
	8	38,000	2,600	0.050
	10	35,000	2,500	0.050
	12	32,000	2,400	0.050
	16	16,000	1,100	0.030
2mm	20	10,000	600	0.010
	25	9,000	500	0.009
	6	40,000	4,000	0.100
	8	38,000	3,600	0.090
	10	35,000	3,500	0.080
	12	32,000	3,200	0.070
2.5mm	16	24,000	2,400	0.050
	20	12,000	1,200	0.030
	25	10,000	800	0.020
	30	5,000	500	0.010
	10	32,000	4,000	0.200
	12	28,000	2,500	0.120

파삭재 Material		탄소강 / 주철 / 합금강 Carbon Steels / Cast iron / Alloy Steels S50C / FC250 / SCM / NAK		
경도 Hardness		35 ~ 45HRc		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth
2.5mm	16	23,000	1,800	0.100
	20	20,000	1,500	0.060
	25	9,000	1,100	0.040
	30	2,500	300	0.005
3mm	10	25,000	3,600	0.400
	12	23,000	3,000	0.300
	16	18,000	2,500	0.200
	20	15,000	2,000	0.150
	25	12,000	1,700	0.100
	30	7,000	800	0.050
4mm	35	5,000	300	0.030
	40	4,200	250	0.030
	10	20,000	3,200	1.200
	12	18,000	3,000	1.000
	16	15,000	2,500	1.000
	20	12,000	2,000	0.500
5mm	25	10,000	1,800	0.400
	30	8,000	1,300	0.200
	40	4,200	700	0.080
	45	3,500	550	0.050
	50	2,400	400	0.030
	6mm	15	14,000	2,700
20		12,000	2,300	1.000
25		9,500	1,800	0.500
30		6,400	1,200	0.200
40		5,000	750	0.100
50		3,200	600	0.050
8mm	20	11,000	2,200	1.200
	30	8,000	1,600	0.600
	40	5,400	1,100	0.250
	50	3,200	640	0.150
10mm	20	8,000	1,600	1.600
	30	4,000	800	0.500
	40	4,000	800	0.500
	25	6,400	1,300	2.000
12mm	35	3,200	640	0.600
	45	3,200	640	0.600
	30	6,000	1,200	2.000
12mm	40	3,200	640	0.600
	50	3,200	640	0.600

파삭재 Material	탄소강 / 합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45C		프라이든강 Prehardened Steels NAK / CENA / KP4		스테인레스강 Stainless Steels SUS		고경도강 Hardened Steels SKD / SKT / STAVAX	
	경도 Hardness ~ 35 HRc		35 ~ 45 HRc				45 ~ 55HRc	
강도	~1,100N/mm <sup>2</sup>		1,100~1,500N/mm <sup>2</sup>				1500~2000N/mm <sup>2</sup>	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	13,020	170	9,000	100	8,100	70	7,020	30
1.5mm	12,300	180	8,880	110	7,360	80	5,940	30
2mm	11,560	190	7,560	120	6,300	90	5,040	35
2.5mm	10,300	200	6,620	130	5,480	110	4,320	35
3mm	8,920	210	5,560	140	4,620	120	3,360	40
4mm	7,560	300	4,620	180	3,880	150	2,940	40
5mm	6,300	320	3,780	190	3,160	160	2,320	50
6mm	5,560	350	3,360	220	2,840	180	2,000	55
8mm	4,200	380	2,520	200	2,100	180	1,680	75
10mm	3,260	330	2,000	160	1,680	160	1,360	60
12mm	2,740	280	1,680	130	1,360	130	1,160	55
16mm	2,200	220	1,360	110	1,060	110	900	40
20mm	1,680	170	1,060	80	840	80	680	30

절입량  
Depth of Cut

파삭재 Material	탄소강 Carbon Steels S50 / SCM		합금강 / 공구강 / 프라이든강 Alloy Steels / Prehardened Steels SKD61 / NAK		고경도강 Hardened Steels SKD61	
	경도 Hardness ~ 30HRc		30 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	8,570	45	6,570	40	4,200	15
1.5mm	7,800	50	6,000	45	3,700	20
2mm	6,300	60	5,040	50	3,150	25
3mm	4,410	70	3,570	60	2,200	30
4mm	3,570	85	2,840	70	1,790	35
5mm	3,050	105	2,420	85	1,580	40
6mm	2,630	125	2,100	105	1,370	50
8mm	2,000	135	1,580	105	1,050	50
10mm	1,680	135	1,370	105	840	50
12mm	1,370	105	1,160	95	700	40
16mm	1,160	95	890	75	560	35
20mm	840	70	680	50	420	25
25mm	600	55	510	35	300	15

절입량  
Depth of Cut

파삭재 Material	탄소강 / 합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45C		프라이하든강 Prehardened Steels NAK / CENA / KP4		스테인레스강 Stainless Steels SUS		고경도강 Hardened Steels SKD / SKT / STAVAX	
경도 Hardness	~ 35 HRc		35 ~ 45 HRc				45 ~ 55HRc	
강도	~1100N/mm <sup>2</sup>		1100~1500N/mm <sup>2</sup>				1500~2000N/mm <sup>2</sup>	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2mm	11,560	280	7,560	170	6,300	140	5,040	50
3mm	8,920	320	5,560	200	4,620	170	3,360	60
4mm	7,560	570	4,620	350	3,880	280	2,940	60
5mm	6,300	600	3,780	360	3,160	300	2,320	70
6mm	5,560	660	3,360	410	2,840	330	2,000	80
8mm	4,200	710	2,520	380	2,100	350	1,680	110
10mm	3,260	610	2,000	300	1,680	300	1,360	90
12mm	2,740	520	1,680	250	1,360	240	1,160	80
14mm	2,420	510	1,460	225	1,210	220	960	70
16mm	2,200	410	1,360	200	1,100	200	900	60
18mm	1820	350	1210	180	950	175	820	50
20mm	1,680	320	1,060	160	840	150	680	40

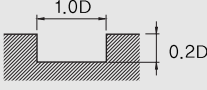
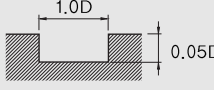
절입량  
Depth of Cut

파삭재 Material	탄소강 Carbon Steels S50 / SCM		합금강 / 공구강 / 프라이하든강 Alloy Steels / Prehardened Steels SKD61 / NAK		고경도강 Hardened Steels SKD61	
경도 Hardness	~ 30HRc		30 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	8,200	85	6,100	65	4,300	30
1.5mm	7,100	95	5,500	75	3,500	40
2mm	6,300	100	5,040	80	3,150	45
3mm	4,410	115	3,570	100	2,200	55
4mm	3,570	140	2,840	115	1,790	60
5mm	3,050	180	2,420	140	1,580	70
6mm	2,630	215	2,100	180	1,370	90
8mm	2,000	230	1,580	180	1,050	90
10mm	1,680	230	1,370	180	840	90
12mm	1,370	180	1,160	160	700	70
16mm	1,160	160	890	125	560	60
20mm	840	115	680	90	420	45
25mm	650	80	790	65	310	30

절입량  
Depth of Cut

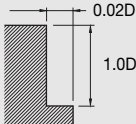
피삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45		프리하든강 Prehardened Steels NAK / CENA / KP4		고경도강 Hardened Steels SKD / SKT / STAVAX	
경도 Hardness	~ 35HRc		35 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.2mm	50,000	170	34,500	75	21,150	45
0.3mm	50,000	200	32,000	85	20,000	50
0.4mm	50,000	200	32,000	85	20,000	50
0.5mm	43,000	220	28,000	95	17,100	60
0.6mm	36,400	250	24,000	110	14,500	65
0.8mm	36,400	250	24,000	110	14,500	65
1mm	33,100	280	21,600	120	13,200	70
1.2mm	30,000	300	18,000	125	12,000	70
1.5mm	26,400	300	16,200	130	10,200	70
2mm	21,600	310	13,800	140	8,640	80
2.5mm	18,000	320	11,400	150	7,320	80
3mm	15,900	330	10,300	160	6,300	80
4mm	12,800	400	8,200	200	5,150	95
5mm	11,000	500	7,000	240	4,560	120
6mm	9,500	600	6,000	300	3,930	140
8mm	7,200	640	4,550	300	3,020	140
10mm	6,000	640	4,000	300	2,420	140
12mm	5,000	500	3,340	270	2,000	120
16mm	3,720	450	2,520	210	1,540	95

절입량 Depth of Cut		
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피삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45		프리하든강 Prehardened Steels NAK / CENA / KP4		고경도강 Hardened Steels SKD / SKT / STAVAX	
경도 Hardness	~ 35HRc		35 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	33,100	360	21,600	260	13,200	140
1.2mm	30,000	65	18,200	265	12,100	140
1.5mm	26,400	370	16,200	270	10,200	140
2mm	21,600	380	13,800	280	8,640	150
2.5mm	18,000	390	11,400	300	7,320	150
3mm	15,900	400	10,300	310	6,300	150
4mm	12,800	500	8,200	360	5,150	160
5mm	11,000	510	7,000	430	4,560	200
6mm	9,500	510	6,000	430	3,930	200
8mm	7,200	550	4,550	430	3,020	200
10mm	6,000	550	400	430	2,420	200
12mm	5,000	430	3,340	380	2,000	160

절입량 Depth of Cut	
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파삭재 Material	General Steels			SKD61		
경도 Hardness	~45 HRc			45~55 HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap
0.1mm	40,000	40	0.001	40,000	40	0.001
0.2mm	40,000	100	0.002	40,000	100	0.002
0.3mm	40,000	200	0.005	40,000	200	0.005
0.4mm	40,000	600	0.010	40,000	600	0.010
0.5mm	40,000	1,000	0.015	40,000	960	0.015
0.6mm	40,000	1,200	0.020	40,000	1,200	0.020
0.7mm	40,000	1,400	0.020	40,000	1,400	0.020
0.8mm	40,000	1,600	0.030	40,000	1,600	0.030
0.9mm	40,000	1,800	0.040	40,000	1,600	0.040
1mm	40,000	2,000	0.060	32,000	1,600	0.060
1.5mm	40,000	3,000	0.120	32,000	1,900	0.080
2mm	30,000	3,000	0.180	24,000	1,900	0.100
2.5mm	24,000	2,600	0.250	19,000	1,600	0.130
3mm	20,000	2,300	0.300	16,000	1,400	0.150
4mm	15,000	2,000	0.400	12,000	1,200	0.200
5mm	12,000	1,600	0.500	9,000	900	0.250
6mm	10,000	1,400	0.600	7,000	700	0.300
8mm	8,000	1,000	0.800	5,600	550	0.400
10mm	6,400	900	1.000	4,500	500	0.500
12mm	5,400	820	1.000	3,800	450	0.500
16mm	2,400	380	3.000	1,200	100	0.800
20mm	1,900	320	4.000	1,000	80	1.000

절입량  
Depth of Cut

- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴 수 있습니다.
- $\varnothing 3$  이상의 엔드밀로 홈절삭을 하는 경우에는 회전속도를 상기표의 50~70%, 이송속도를 40~60%까지 내려서 사용하여 주십시오.
- 세로이송으로 사용되는 경우에는 회전속도를 상기표의 1/3이하로 해주십시오.
- 기계나 가공물 장착의 강성이 없는 경우, 떨림이나 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려주십시오.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- When Slotting with end mills with  $\varnothing 3$  or larger, reduce the revolution to 50~70% and the feed rate to 40~60%.
- When drilling, please set the feed rate at 1/3 or below the values above.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

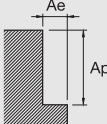
파삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels SCM / SNCM / S45		프라이튼강 Prehardened Steels NAK / CENA / KP4		고경도강 Hardened Steels SKD / SKT / STAVAX	
	~ 35HRc		35 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	27,600	300	18,000	220	11,000	120
1.5mm	22,000	310	13,500	230	8,500	120
2mm	18,000	320	11,560	240	7,200	130
2.5mm	15,000	330	9,500	250	6,100	130
3mm	13,240	340	8,560	260	5,280	130
4mm	10,720	420	6,820	300	4,300	140
5mm	9,160	430	5,800	360	3,800	170
6mm	7,900	430	5,040	360	3,280	170
8mm	6,000	460	3,800	360	2,520	170
10mm	5,040	460	3,280	360	2,020	170
12mm	4,120	360	2,780	320	1,680	140
16mm	3,100	280	2,100	230	1,280	115

절입량  
Depth of Cut

## 측면 절삭 Side Cutting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels		합금강/공구강 Alloy Steels/ Tool Steels		공구강/프리하드강 Tool Steels/ Prehardened Steels		공구강/ 스테인레스강 Tool Steels/ Stainless Steels	
	SS400 / S55C		SCM / SKT / SKD		SKD / SKT / NAK55 / HPM1		SUS304 / SKD	
경도 Hardness	~750N/mm <sup>2</sup>		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	5,000	510	4,200	260	3,600	180	2,800	130
5mm	5,000	510	4,200	270	3,200	200	2,400	150
6mm	4,200	510	3,600	290	2,800	220	2,100	170
8mm	3,200	510	2,700	330	2,100	250	1,600	190
10mm	2,600	510	2,200	345	1,600	260	1,300	210
12mm	2,100	510	1,800	360	1,400	270	1,100	215
16mm	1,600	510	1,400	385	1,000	290	800	220
20mm	1,300	480	1,100	375	800	280	640	210


  

절입량 Depth of Cut	Ap		Ae	
	1.5D	0.4D		
	Ap		Aa	
	1.5D	0.3D		

## 홈절삭 Slotting

파삭재 Material	일반구조강 / 탄소강 Mild Steels/ Carbon Steels		합금강/공구강 Alloy Steels/ Tool Steels		공구강/프리하드강 Tool Steels/ Prehardened Steels		공구강/ 스테인레스강 Tool Steels/ Stainless Steels	
	SS400 / S55C		SCM / SKT / SKD		SKD / SKT / NAK55 / HPM1		SUS304 / SKD	
경도 Hardness	~750N/mm <sup>2</sup>		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,000	430	3,800	200	2,800	140	2,400	110
5mm	4,000	430	3,400	220	2,500	160	2,200	130
6mm	3,600	430	3,000	240	2,300	185	1,900	150
8mm	2,700	430	2,200	270	1,800	210	1,400	180
10mm	2,200	430	1,800	290	1,400	220	1,200	185
12mm	1,800	430	1,500	300	1,200	230	960	190
16mm	1,400	430	1,100	310	900	250	720	200
20mm	1,100	410	900	310	700	240	560	185

절입량 Depth of Cut	Ap : 0.75D ApMax=12mm			
				Ap : 0.5D

## 측면 절삭 Side Cutting

피삭재 Material	일반구조강 / 탄소강 Mild Steels / Carbon Steels SS400 / S55C	합금강 / 공구강 Alloy Steels / Tool Steels SCM / SKT / SKD	공구강 / 프러하든강 Tool Steels / Prehardened Steels SKD / SKT / NAK55 / HPM1	공구강 / 스테인레스강 Tool Steels / Stainless Steels SUS304 / SKD				
경도 Hardness	~750N/mm <sup>2</sup>		~ 30HRc	30 ~ 38HRc	38 ~ 45HRc			
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	5,800	600	4,800	300	4,100	200	3,200	150
5mm	5,800	600	4,800	310	3,700	230	2,800	170
6mm	4,800	600	4,200	330	3,200	250	2,400	200
8mm	3,700	600	3,100	380	2,400	290	1,800	220
10mm	3,000	600	2,500	400	1,800	300	1,500	250
12mm	2,400	600	2,100	410	1,600	310	1,300	250
16mm	1,850	600	1,600	440	1,200	330	1,000	250
20mm	1,500	550	1,300	430	900	320	750	240

절입량  
Depth of Cut

Ap	Ae
1.5D	0.4D

Ap	Aa
1.5D	0.3D

## 홈절삭 Slotting

피삭재 Material	일반구조강 / 탄소강 Mild Steels / Carbon Steels SS400 / S55C	합금강 / 공구강 Alloy Steels / Tool Steels SCM / SKT / SKD	공구강 / 프러하든강 Tool Steels / Prehardened Steels SKD / SKT / NAK55 / HPM1	공구강 / 스테인레스강 Tool Steels / Stainless Steels SUS304 / SKD				
경도 Hardness	~750N/mm <sup>2</sup>		~ 30HRc	30 ~ 38HRc	38 ~ 45HRc			
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,600	500	4,400	230	3,200	160	2,800	130
5mm	4,600	500	4,000	250	2,900	180	2,500	150
6mm	4,100	500	3,500	280	2,700	210	2,200	170
8mm	3,100	500	2,500	310	2,100	240	1,700	210
10mm	2,500	500	2,100	330	1,600	250	1,300	210
12mm	2,100	500	1,700	350	1,400	270	1,100	220
16mm	1,600	500	1,300	360	1,000	290	800	230
20mm	1,300	480	1,000	360	800	270	650	210

절입량  
Depth of Cut

Ap : 0.75D  
ApMax=12mm

Ap : 0.5D

# 2DEM / 4DEM / 6DEM

	2DEM		4DEM		6DEM	
피삭재 Material	흑연 Graphite		흑연 Graphite		흑연 Graphite	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
0.2mm	40,000	100	-	-	-	-
0.4mm	40,000	200	-	-	-	-
0.6mm	40,000	350	-	-	-	-
0.8mm	40,000	550	-	-	-	-
1mm	40,000	700	-	-	-	-
2mm	25,000	800	-	-	-	-
3mm	20,000	800	20,000	1,600	-	-
4mm	18,000	950	18,000	1,900	-	-
5mm	14,000	1,200	14,000	2,400	-	-
6mm	11,000	1,400	11,000	2,800	22,200	8,000
8mm	8,000	1,300	8,000	2,600	16,800	8,000
10mm	6,500	1,200	6,500	2,400	13,400	8,000
12mm	5,500	1,200	5,500	2,400	11,350	6,700
16mm	5,500	1,200	-	-	8,400	5,000

절입량  
Depth of Cut

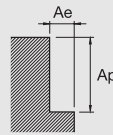
# 2GEM/4GEM/6GEM

• RPM : rev./min • Feed : mm/min

	2GEM		4GEM		6GEM	
파삭재 Material	흑연 Graphite		흑연 Graphite		흑연 Graphite	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1mm	8,000	160	-	-	-	-
2mm	8,000	250	-	-	-	-
3mm	8,000	380	8,000	430	-	-
4mm	8,000	510	8,000	570	-	-
5mm	8,000	640	8,000	720	-	-
6mm	8,000	770	8,000	860	8,000	960
8mm	8,000	1,000	8,000	1,100	8,000	1,300
10mm	8,000	1,250	8,000	1,400	8,000	1,600
12mm	8,000	1,500	7,000	1,400	7,000	1,600
16mm	8,000	1,600	7,000	1,500	7,000	1,800
20mm	8,000	1,600	7,000	1,500	7,000	1,800

절입량 Depth of Cut	Ap	Ae
	1D	0.1D




# 2DBE/3DBE/4DBE

• RPM : rev./min • Feed : mm/min

	2DBE		4DBE	
파삭재 Material	흑연 Graphite		흑연 Graphite	
외경 Outside Diameter	RPM	FEED	RPM	FEED
1mm	16,000	400	20,000	700
2mm	16,000	800	16,000	1,200
3mm	16,000	1,450	16,000	2,000
4mm	16,000	2,100	16,000	3,100
5mm	15,500	2,550	15,000	3,800
6mm	15,000	2,950	15,000	4,400
8mm	13,000	3,000	13,000	4,500
10mm	11,500	3,000	12,000	4,600
12mm	10,700	3,200	10,000	4,700

절입량 Depth of Cut	0.1D	0.2D
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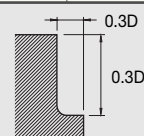
# 2DCR/4DCR

• RPM : rev./min • Feed : mm/min

	2DCR		4DCR	
파삭재 Material	흑연 Graphite		흑연 Graphite	
외경 Outside Diameter	RPM	FEED	RPM	FEED
0.2mm	40,000	100	-	-
0.4mm	40,000	200	-	-
0.5mm	40,000	300	-	-
0.6mm	40,000	400	-	-
0.8mm	40,000	500	-	-
1mm	40,000	900	-	-
2mm	36,000	900	-	-
3mm	32,000	1,300	-	-
4mm	26,000	1,500	40,000	3,500
5mm	24,000	1,100	-	-
6mm	21,000	1,100	40,000	5,600
8mm	-	-	32,000	5,600
10mm	-	-	26,000	5,700
12mm	-	-	21,000	5,500
16mm	-	-	15,800	5,500

절입량 Depth of Cut	0.3D	0.3D
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# 3CPR\_DLC Coating

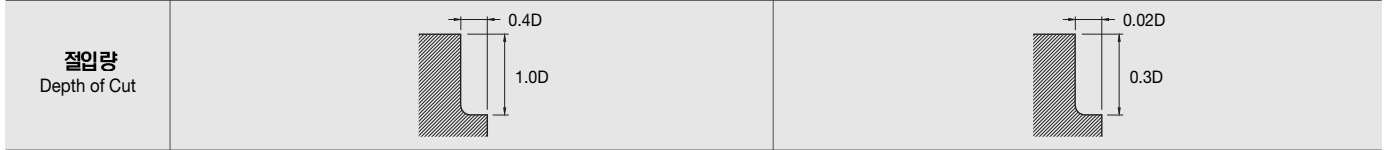
• RPM : rev./min • Feed : mm/min

피삭재 Material	CFRP			
외경 Outside Diameter	RPM	FEED	Vc (m/min)	Fz (mm/rev)
6mm	8,000	600	100~200	0.03~0.12
8mm	6,000	600	100~200	0.04~0.15
10mm	4,800	540	100~200	0.04~0.15
12mm	4,000	540	100~200	0.05~0.17

# 4&6CPR\_DIA Coating

• RPM : rev./min • Feed : mm/min • Vc : m/min • Fz : mm/t

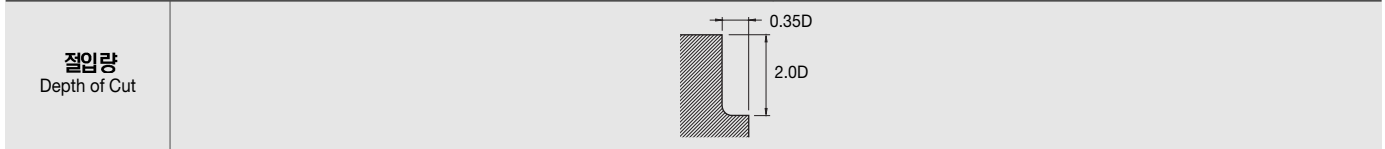
피삭재 Material	CFRP				GFRP				CFRP				GFRP			
	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz	RPM	FEED	Vc	Fz
6mm	7,900	1,100	150	0.035	4,200	430	80	0.025	10,500	1,950	200	0.047	5,300	740	100	0.035
8mm	5,960	1,600	150	0.045	3,200	590	80	0.031	7,970	2,950	200	0.062	3,900	950	100	0.04
10mm	4,750	1,500	150	0.05	2,550	560	80	0.037	6,350	2,930	200	0.077	3,120	850	100	0.045
12mm	3,950	2,060	150	0.06	2,120	725	80	0.043	5,300	3,900	200	0.092	2,600	1,050	100	0.05



# 8 ~ 16CPO

• RPM : rev./min • Feed : mm/min • Vc : m/min • Fz : mm/rev

피삭재 Material	CFRP			GFRP		
	RPM	FEED	Vc (m/min)	RPM	FEED	Vc (m/min)
4mm	15,900	1,400	200	7,900	700	100
5mm	1,300	1,900	200	6,300	950	100
6mm	10,600	2,200	200	5,300	1,000	100
8mm	7,950	2,600	200	3,900	1,300	100
10mm	6300	3050	200	3100	1500	100
12mm	5300	3300	200	2600	1600	100



# 2DDC

• RPM : rev./min • Feed : mm/min

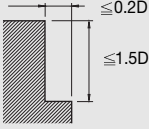
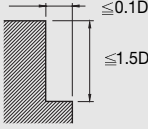
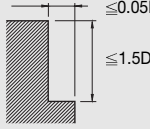
피삭재 Material	CFRP		
	SPEED (m/min)	RPM	Feed (mm/rev)
2mm	100 ~ 150	13,000 ~ 20,000	0.03 ~ 0.07
2.5mm	100 ~ 150	11,000 ~ 16,000	0.03 ~ 0.07
3mm	100 ~ 150	8,000 ~ 12,000	0.03 ~ 0.07
4mm	100 ~ 150	6,500 ~ 9,700	0.03 ~ 0.07
5mm	100 ~ 150	5,300 ~ 8,100	0.03 ~ 0.07
6mm	100 ~ 150	4,000 ~ 6,000	0.03 ~ 0.07
8mm	100 ~ 150	13,000 ~ 20,000	0.03 ~ 0.07
9mm	100 ~ 150	3,500 ~ 5,300	0.03 ~ 0.07
10mm	100 ~ 150	3,500 ~ 4,700	0.03 ~ 0.07
11mm	100 ~ 150	2,900 ~ 4,300	0.03 ~ 0.07
12mm	100 ~ 150	2,700 ~ 3,900	0.03 ~ 0.07



## 측면 절삭 Side Cutting

피삭재 Material	합금강/공구강 Alloy Steels / Tools steel		SUS가공용		고경도강 Hardened Steels	
	SKD61 / SK / NAK		SUS304 / SUS316 / Ti6A		Inconel 718	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2mm	21,000	1,100	14,000	560	4,800	130
3mm	15,000	1,250	10,600	850	4,200	200
4mm	11,000	1,400	8,000	960	3,200	220
5mm	9,600	1,900	6,400	1,000	2,500	250
6mm	8,000	2,200	5,300	1,000	2,100	250
7mm	6,800	1,900	4,500	1,000	1,800	260
8mm	6,000	1,600	4,000	960	1,600	260
9mm	5,300	1,480	3,500	840	1,400	220
10mm	4,800	1,440	3,200	770	1,300	210
11mm	4,400	1,350	2,900	760	1,200	190
12mm	4,000	1,250	2,700	760	1,100	180
16mm	3,000	1,140	2,000	560	800	130
20mm	2,400	860	1,600	510	600	100

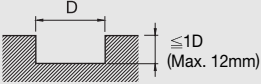
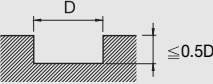
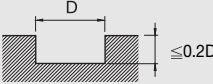
  

절입량 Depth of Cut	합금강/공구강 Alloy Steels / Tools steel		SUS가공용		고경도강 Hardened Steels	
	SKD61 / SK / NAK		SUS304 / SUS316 / Ti6A		Inconel 718	
						

## 홈절삭 Slotting

피삭재 Material	합금강/공구강 Alloy Steels / Tools steel		SUS가공용		고경도강 Hardened Steels	
	SKD61 / SK / NAK		SUS304 / SUS316 / Ti6A		Inconel 718	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
2mm	10,000	400	9,600	310	3,200	80
3mm	6,900	410	7,400	380	2,700	110
4mm	5,600	490	5,600	400	2,000	120
5mm	4,500	630	4,500	410	1,600	130
6mm	3,700	740	3,700	440	1,300	160
7mm	3,200	700	3,200	410	1,100	140
8mm	2,800	670	2,800	390	1,000	130
9mm	2,500	600	2,500	350	900	130
10mm	2,200	530	2,200	350	800	130
11mm	2,000	530	2,000	320	720	120
12mm	1,900	530	1,900	300	660	110
16mm	1,400	390	1,400	280	500	80
20mm	1,100	350	1,100	260	400	60

절입량 Depth of Cut	합금강/공구강 Alloy Steels / Tools steel		SUS가공용		고경도강 Hardened Steels	
	SKD61 / SK / NAK		SUS304 / SUS316 / Ti6A		Inconel 718	
						


파삭재 Material	합금강, 프리하든강						스테인레스스틸 SUS 티타늄					
	S45C, SCM440, SS400, S10C, NAK, PX5, SNCM439						4V, SUS630, SUS631, SUS431, SUS420J2					
	반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth
RPM		FEED	RPM	FEED	RPM			FEED	RPM	FEED		
R1.5	32,000	7,700	21,000	3,200	0.25	0.75	24,000	4,800	16,000	1,900	0.25	
R2	24,000	5,800	16,000	2,800	0.33	1	18,000	4,000	12,000	1,700	0.33	
R2.5	19,000	5,300	12,700	2,600	0.42	1.25	14,400	3,500	9,600	1,500	0.42	
R3	16,000	4,800	10,600	2,100	0.5	1.5	12,000	3,200	8,000	1,400	0.5	
R4	12,000	4,300	8,000	1,900	0.8	2	9,000	3,200	6,000	1,400	0.8	
R5	9,600	4,100	6,400	1,800	1	2.5	7,200	3,000	4,800	1,300	1	
R6	8,000	4,000	5,300	1,800	1.2	3	6,000	3,000	4,000	1,300	1.2	

파삭재 Material	동, 동합금						열처리강						
	Copper						inconel718						
	반경 Radius	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	pf	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth
RPM			FEED	RPM	FEED	RPM			FEED	RPM	FEED		
R1.5	0.75	38,000	9,100	25,000	3,800	0.25	0.75	6,400	640	4,200	340	0.13	0.3
R2	1	29,000	7,000	19,000	3,300	0.33	1	4,800	580	3,200	260	0.17	0.4
R2.5	1.25	23,000	6,400	15,000	3,100	0.42	1.25	3,800	530	2,500	250	0.21	0.5
R3	1.5	19,000	5,700	13,000	2,600	0.5	1.5	3,200	500	2,100	210	0.25	0.6
R4	2	14,000	5,000	9,600	2,300	0.8	2	2,400	430	1,600	190	0.4	0.8
R5	2.5	12,000	5,100	7,700	2,200	1	2.5	2,000	420	1,300	180	0.5	1
R6	3	9,600	4,800	6,400	2,200	1.2	3	1,700	350	1,100	150	0.6	1.2

# 3&4&5SUR

파삭재 Material		
외경 Outside Diameter	RPM	FEED
3mm	4,400	380
4mm	3,800	350
5mm	3,300	350
6mm	3,000	340
7mm	2,700	340
8mm	2,200	340
9mm	2,000	340
10mm	1,750	330
12mm	1,300	330
14mm	5,000	310
16mm	4,800	300
20mm	4,700	210

절입량  
Depth of Cut



Ap  
 $\phi 6 \sim 10 = 0.25 \times D$   
 $\phi 12 \sim 16 = 0.15 \times D$   
 $\phi 18 \sim 20 = 0.1 \times D$

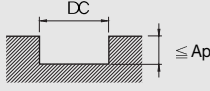
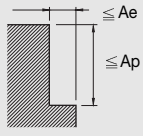
파삭재 Material	탄소강/합금강 Carbon Steels / Alloy Steels SS400 / S50C / SCM	스테인레스강 / 티타늄강 Stainless Steels / Titanium Alloy Steels SUS304 / SUS316 / Ti-6AL-4V	고경도강 Hardened Steels SKD61	초내열합금 / 인코넬 Superhit resistance / Inconel				
경도 Hardness	~ 45HRc		45 ~ 55HRc					
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.8mm (3F)	7,200	80	6,400	60	3,900	30	2,000	10
1mm (3F)	6,400	100	5,600	70	3,500	30	1,700	15
2mm (3F)	5,600	110	4,800	80	2,900	34	1,400	20
3mm (3F)	4,800	200	4,000	90	2,200	45	1,400	25
4mm (3F)	4,000	200	3,300	140	1,800	70	1,200	35
5mm (3F)	3,200	230	2,700	170	1,500	90	1,000	45
6mm (3F)	2,900	250	2,400	180	1,400	90	900	45
8mm (3F)	2,200	270	1,800	190	1,000	100	720	40
10mm (3F)	1,700	260	1,400	190	900	110	600	40
12mm (3F)	1,400	230	1,200	150	700	90	500	35
16mm (3F)	1,000	160	900	120	550	60	360	30
절입량 Depth of Cut								

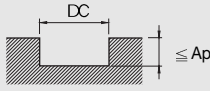
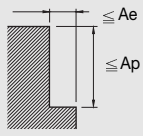
- 상기표는 측면가공기준입니다. 홀가공의 경우, 회전속도는 상기표의 80~100%, 이송속도는 60~80%를 기준으로 하여주십시오.
- In case of slotting, 80~100% of speed and 60~80% of feed on the talbe.

# 2COB

파삭재 Material	Stainless Steels		동 합금 Copper Alloys		Ap Axial Depth
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		
	RPM	FEED	RPM	FEED	
R0.5	40,000	8,000	40,000	3,200	0.06
R0.75	40,000	9,600	40,000	400	0.09
R1	40,000	9,600	39,000	4,700	0.11
R1.5	40,000	12,000	30,000	4,500	0.12
R2	40,000	12,000	27,000	4,300	0.13
R2.5	32,000	11,000	20,000	3,600	0.15
R3	25,000	9,000	16,000	2,900	0.2
R4	21,000	8,400	13,000	2,600	0.25
R5	16,000	6,400	10,000	2,000	0.3
R6	13,000	5,200	8,000	1,700	0.5
R8	9,000	3,600	6,000	1,300	0.5
절입량 Depth of Cut					

- $\alpha$  란 가공면의 경사각입니다.
- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴 수 있습니다.
- 수용성 절삭유제의 사용을 추천합니다.
- 기계나 가공물 장착의 강성이 없는 경우, 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- $\alpha$  is the inclination angle of the machined surface.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- Water-soluble cutting fluid is recommended.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

			홈절삭 Slotting			측면 절삭 Side Cutting			
피삭재 Material			동 / 동 합금 Copper / Copper Alloys			동 / 동 합금 Copper / Copper Alloys			
외경 Outside Diameter	반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ap Radial Depth
1mm	R0.1, R0.2	3	45,000	2,500	0.036	45,000	4,500	0.036	0.2
	R0.1, R0.2	6	40,000	2,000	0.03				
	R0.1, R0.2	10	35,000	1,600	0.025				
1.5mm	R0.1, R0.2	5	23,000	1,800	0.08	50,000	6,000	0.08	0.3
	R0.1, R0.2	8	26,000	1,600	0.06				
	R0.1, R0.2	12	30,000	1,500	0.05				
2mm	R0.1, R0.2	6	35,000	1,800	0.14	45,000	5,000	0.12	0.8
	R0.1, R0.2	10	30,000	1,600	0.12				
	R0.1, R0.2	14	30,000	1,200	0.08				
3mm	R0.2, R0.3	10	30,000	2,200	0.14	40,000	6,500	0.12	1
	R0.2, R0.3	16	20,000	2,000	0.12				
	R0.2, R0.3	20	20,000	2,000	0.12				
	R0.5	10	20,000	2,600	0.14				
	R0.5	16	20,000	2,200	0.12				
4mm	R0.2, R0.3	12	20,000	2,600	0.5	40,000	8,000	0.18	0.12
	R0.2, R0.3	16	15,000	2,400	0.3				
	R0.2, R0.3	20	15,000	2,000	0.25				
	R0.5	12	20,000	2,400	0.5				
	R0.5	16	15,000	2,200	0.25				
6mm	R0.3, R0.5	20	10,000	1,400	0.6	20,000	5,200	0.25	1.2
	R0.3, R0.5	30	10,000	1,200	0.4				
	R1	20	10,000	1,800	0.6				
	R1	30	10,000	1,500	0.4				
8mm	R0.3, R0.5	25	8,000	1,000	0.3	15,000	5,000	0.3	1.5
	R1	25	8,000	1,300	0.3				
10mm	R0.5	30	7,000	1,300	0.3	13,000	7,000	0.2	1.5
	R1	30	7,000	1,500	0.3				
12mm	R0.5	35	6,000	1,100	0.2	10,000	9,000	0.15	2
	R1	35	6,000	1,300	0.2				
절입량 Depth of Cut									

			홈절삭 Slotting			측면 절삭 Side Cutting			
피삭재 Material			동 / 동 합금 Copper / Copper Alloys			동 / 동 합금 Copper / Copper Alloys			
외경 Outside Diameter	반경 Radius	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	Ap Radial Depth
1mm	R0.1, R0.2	3	45,000	2,500	0.036	45,000	4,500	0.036	0.2
"	R0.1, R0.2	6	40,000	2,000	0.03	40,000	3,000	0.03	0.2
"	R0.1, R0.2	10	35,000	1,600	0.025	35,000	2,000	0.025	0.2
1.5mm	R0.1, R0.2	5	32,000	1,800	0.08	50,000	6,000	0.08	0.3
"	R0.1, R0.2	8	30,000	1,600	0.06	45,000	5,500	0.06	0.3
"	R0.1, R0.2	12	30,000	1,500	0.05	40,000	4,500	0.04	0.3
2mm	R0.1, R0.2	6	35,000	1,800	0.14	45,000	5,000	0.12	0.8
"	R0.1, R0.2	10	30,000	1,600	0.12	40,000	4,700	0.1	0.6
"	R0.1, R0.2	14	30,000	1,200	0.08	30,000	3,800	0.06	0.4
2.5mm	R0.1, R0.2	8	32,000	2,000	0.15	40,000	5,300	0.08	0.6
"	R0.1, R0.2	12	30,000	1,900	0.13	38,000	5,300	0.1	0.7
"	R0.1, R0.2	16	30,000	1,600	0.13	38,000	5,100	0.1	0.7
"	R0.5	8	22,000	2,800	0.15	41,000	11,000	0.13	0.8
"	R0.5	12	20,000	2,600	0.14	40,000	10,500	0.12	0.7
"	R0.5	16	20,000	2,500	0.13	40,000	10,200	1.12	0.7
3mm	R0.2, R0.3	10	30,000	2,200	0.14	40,000	6,500	0.12	1
"	R0.2, R0.3	16	20,000	2,000	0.12	35,000	6,000	0.1	0.6
"	R0.2, R0.3	20	20,000	2,000	0.12	35,000	6,000	0.1	0.6
"	R0.5	10	20,000	2,600	0.14	38,000	10,000	0.12	0.8
"	R0.5	16	20,000	2,200	0.12	35,000	8,000	0.1	0.6
"	R0.5	20	20,000	2,200	0.12	35,000	8,000	0.1	0.6
4mm	R0.2, R0.3	12	20,000	2,600	0.5	40,000	8,000	0.18	0.12
"	R0.2, R0.3	16	15,000	2,400	0.3	32,000	5,000	0.16	0.1
"	R0.2, R0.3	20	15,000	2,000	0.25	32,000	5,000	0.15	0.8
"	R0.5	12	20,000	2,400	0.5	35,000	10,000	0.3	0.1
"	R0.5	16	15,000	2,200	0.25	32,000	7,000	0.15	0.8
"	R0.5	20	15,000	2,200	0.25	32,000	7,000	0.15	0.8
6mm	R0.3, R0.5	20	10,000	1,400	0.6	20,000	5,200	0.25	1.2
"	R0.3, R0.5	30	10,000	1,200	0.4	20,000	5,000	0.25	1.2
"	R1	20	10,000	1,800	0.6	20,000	9,000	0.25	1.2
"	R1	30	10,000	1,500	0.4	20,000	7,000	0.25	1.2
8mm	R0.3, R0.5	25	8,000	1,000	0.3	15,000	5,000	0.3	1.5
"	R1	25	8,000	1,300	0.3	15,000	10,000	0.3	1.5
10mm	R0.5	30	7,000	1,300	0.3	13,000	7,000	0.2	1.5
"	R1	30	7,000	1,500	0.3	13,000	12,000	0.2	1.5
12mm	R0.5	35	6,000	1,100	0.2	10,000	9,000	0.15	2
"	R1	35	6,000	1,300	0.2	10,000	15000	0.15	2
절입량 Depth of Cut									



파삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material A7075				알루미늄합금주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting Si1 3%				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100	
	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling	
반경 Radius	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.1	32,000	220	45,000	290	32,000	220	45,000	290	32,000	220	45,000	290
R0.3	32,000	480	45,000	660	32,000	480	45,000	660	32,000	480	45,000	660
R0.5	28,800	760	45,000	1,100	28,800	760	45,000	1,100	28,800	760	45,000	1,100
R0.8	28,800	850	45,000	1,400	28,800	850	45,000	1,400	25,200	850	35,900	1,300
R1	28,600	1,400	45,000	2,000	28,600	1,400	43,000	1,900	21,500	1,000	35,900	1,600
R1.5	19,100	1,400	45,000	3,000	19,100	1,400	28,600	1,900	14,300	1,000	23,900	1,600
R2	14,300	1,400	35,900	3,200	14,300	1,400	21,400	1,900	10,700	1,000	17,900	1,600
R3	9,500	1,400	23,900	3,200	9,500	1,400	14,300	1,900	7,200	1,000	12,000	1,600
R4	7,200	1,800	17,600	4,100	7,200	1,800	10,700	2,400	5,400	1,300	8,900	2,000
R5	5,700	1,600	14,000	3,600	5,700	1,600	8,600	2,200	4,300	1,200	7,200	1,800
R6	4,800	1,500	11,700	3,400	4,800	1,500	7,200	2,000	3,600	1,100	5,900	1,700
	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf
	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.02D	0.05D

절입량  
Depth of Cut

## 2DRE/3DRE

■ 3DRE는 아래 수치의 20% Up 적용  
 ■ Apply 20% up values of below condition for 3DRE

파삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material A7075				알루미늄합금주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting Si1 3%				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100							
	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling							
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED						
0.5mm	28,800	160	45,000	500	28,800	160	45,000	450	28,800	140	45,000	410						
0.6mm	28,800	180	45,000	590	28,800	180	45,000	540	28,800	160	45,000	500						
0.8mm	28,800	200	45,000	770	28,800	200	45,000	720	26,100	180	45,000	590						
1mm	28,800	200	45,000	900	28,800	200	45,000	960	20,700	200	37,800	630						
1.2mm	28,800	210	45,000	1,100	28,800	210	45,000	1,000	17,100	200	32,400	630						
1.5mm	28,800	250	45,000	1,400	28,800	250	45,000	1,100	14,000	200	26,600	630						
2mm	28,800	400	45,000	1,800	28,800	380	45,000	1,100	13,000	200	25,200	680						
2.5mm	22,500	540	43,200	1,900	22,500	540	27,900	1,100	8,600	230	18,000	680						
3mm	18,900	630	36,000	1,900	18,900	630	23,400	1,100	7,200	230	15,300	680						
4mm	14,000	650	29,700	2,000	14,000	650	18,000	1,200	5,400	250	12,600	720						
5mm	11,300	680	27,900	2,500	11,300	680	17,280	1,500	4,300	270	11,300	860						
6mm	9,500	750	23,400	2,500	9,500	750	14,310	1,500	3,600	280	9,500	900						
8mm	7,200	800	17,550	2,600	7,200	800	10,800	1,600	2,600	270	7,100	900						
10mm	5,700	900	13,950	2,900	5,700	900	8,640	1,700	2,100	330	5,700	1,000						
12mm	4,800	950	11,700	2,900	4,800	950	7,200	1,700	1,800	350	4,800	1,000						
	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae	Ap	Ae						
	1.5D	0.1D	0.3D 0.5 ≤ Dc ≤ 0.8 0.5D Ø1 ≤ Dc	1D	0.1D	0.15D	1.5D	0.1D	0.3D 0.5 ≤ Dc ≤ 0.8 0.5D Ø1 ≤ Dc	1D	0.1D	0.15D	1.5D	0.1D	0.3D 0.5 ≤ Dc ≤ 0.8 0.5D Ø1 ≤ Dc	1D	0.05D	0.1D

절입량  
Depth of Cut

파삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material A7075				알루미늄합금주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting SI1 3%				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100	
	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling	
반경 Radius	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.1	28,800	180	40,000	240	28,800	180	36,100	230	28,800	180	31,600	200
R0.3	28,800	350	40,000	490	28,800	350	36,100	480	28,800	350	31,600	420
R0.5	23,400	720	31,500	950	23,400	720	25,200	900	23,400	720	20,700	800
R0.8	23,400	760	35,900	1,120	23,400	760	25,200	1,000	22,500	720	20,700	800
R1	22,500	950	31,500	1,260	22,500	950	25,200	1,100	17,100	720	20,700	800
R1.5	15,300	950	20,700	1,260	15,300	950	16,700	1,100	11,300	720	13,500	800
R2	11,300	950	15,800	1,260	11,300	950	12,600	1,100	8,600	720	10,400	800
R3	9,000	950	13,200	1,260	9,000	950	12,600	1,100	5,900	720	8,900	800
R4	6,400	1,150	11,600	1,260	6,400	1,150	9,800	1,000	4,800	880	6,400	950
R5	5,200	1,050	9,400	1,120	5,200	1,050	7,800	860	3,900	760	5,300	880
R6	4,100	1,000	6,700	950	4,100	1,000	5,400	520	3,000	740	4,600	840
	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf	Ap	Pf
	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.05D	0.1D	0.1D	0.2D	0.02D	0.05D

절입량  
Depth of Cut

파삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material A7075				알루미늄합금주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting SI1 3%				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100	
	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
0.1mm	32,000	35	45,000	120	32,000	35	45,000	120	32,000	35	45,000	100
0.3mm	32,000	60	45,000	300	32,000	60	45,000	300	32,000	60	45,000	210
0.5mm	28,800	90	45,000	500	28,800	90	45,000	500	28,800	90	45,000	390
0.8mm	28,800	120	45,000	700	28,800	130	45,000	700	23,000	110	45,000	500
1mm	28,800	170	45,000	900	28,800	170	45,000	900	20,700	125	37,800	630
1.5mm	28,800	230	40,500	1,100	28,800	230	40,500	1,100	14,000	130	26,700	630
2mm	23,000	270	30,600	1,100	23,000	270	30,600	1,100	10,400	135	21,600	675
3mm	15,300	460	20,700	1,100	15,300	460	20,700	1,100	7,200	200	15,300	675
4mm	11,300	470	15,300	1,100	11,300	470	15,300	1,100	5,400	210	11,700	675
5mm	9,000	490	12,200	1,100	9,000	490	12,200	1,100	4,300	225	9,000	675
6mm	7,700	540	10,000	1,100	7,700	540	10,000	1,100	3,600	225	7,200	675
8mm	6,000	600	8,200	1,200	6,000	600	8,200	1,200	2,600	300	5,900	720
10mm	4,500	650	6,000	1,400	4,500	650	6,000	1,400	2,100	300	4,300	800
12mm	3,100	690	4,500	1,500	3,100	690	4,500	1,500	1,600	320	3,200	850
	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap	Ap Ae	Ap
	1.2D 0.1D	0.3D	1D 0.1D	0.15D	1.2D 0.1D	0.3D	1D 0.1D	0.15D	1D 0.1D	0.3D	1D 0.05D	0.1D

절입량  
Depth of Cut

파삭재 Material	알루미늄 합금재 Aluminum Alloy Expanding Material A7075				알루미늄합금주물 / 다이캐스팅 Aluminum Alloys Casting / Die Casting S11 3%				탄소섬유 / 동합금 Magnesium Alloy / Copper Alloy / CFRP AZ91 / AZ80A / C1100		동합금 Copper Alloy C1100	
	일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling		일반가공 Regular Milling		고속가공 High Speed Milling	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	37,500	220	50,000	1,170	37,400	220	50,000	1,170	27,000	160	49,000	820
1.5mm	37,500	300	50,000	1,430	37,400	300	50,000	1,430	18,000	170	34,700	820
2mm	30,000	350	40,000	1,430	30,000	350	40,000	1,430	13,500	180	28,000	880
3mm	20,000	600	27,000	1,430	20,000	600	27,000	1,430	9,400	260	20,000	880
4mm	15,000	610	20,000	1,430	14,700	610	20,000	1,430	7,000	270	15,200	880
6mm	10,000	700	13,000	1,430	10,000	700	13,000	1,430	4,700	290	9,400	880
8mm	7,800	780	11,000	1,560	7,800	780	10,700	1,560	3,400	390	7,700	940
10mm	5,900	850	7,800	1,820	5,900	850	7,800	1,820	2,700	390	5,600	1,000
12mm	4,000	900	5,900	1,950	4,000	900	5,900	1,950	2,100	410	4,200	1,100
	Ap Ae	Ap Ae	Ap Ae	Ap Ae	Ap Ae	Ap Ae	Ap Ae	Ap Ae	Ap Ae	Ap Ae	Ap Ae	Ap Ae
	1.2D 0.1D	0.3D	1D 0.1D	0.15D	1.2D 0.1D	0.3D	1D 0.1D	0.15D	1D 0.1D	0.3D	1D 0.05D	0.1D

절입량  
Depth of Cut

## 3ALR/3ALE

파삭재 Material	알루미늄 합금 Aluminum Alloys etc.							
	3ALE				3ALR			
외경 Outside Diameter	RPM	FEED			RPM	FEED		
		수직 Vertical	홈절삭 Slotting	측면절삭 Side Milling		수직 Vertical	홈절삭 Slotting	측면절삭 Side Milling
1mm	25,500	130	770	930	30,000	150	900	1,100
2mm	25,500	190	1,530	1,800	30,000	225	1,800	2,150
3mm	18,400	190	1,700	2,000	21,600	225	2,000	2,400
4mm	14,000	255	1,700	2,000	16,200	300	2,000	2,400
5mm	11,000	255	1,700	2,000	13,000	300	2,000	2,400
6mm	9,200	255	1,700	2,000	10,800	300	2,000	2,400
8mm	7,000	255	1,700	2,000	8,100	300	2,000	2,400
10mm	5,500	210	1,700	2,000	6,480	250	2,000	2,400
12mm	4,400	170	1,700	2,000	5,400	200	2,000	2,400
16mm	3,200	130	1,530	1,900	-	-	-	-
20mm	2,000	85	1,360	1,700	-	-	-	-
Milling Amount (mm)		Ap=0.75D	Ap=0.75D	Ap=0.75D/ Ae=0.3D		Ap=0.75D	Ap=0.75D	Ap=0.75D/ Ae=0.3D

절입량  
Depth of Cut

## 3ALC

파삭재 Material	측면 절삭 Side Cutting		홈 절삭 Slotting	
	알루미늄 합금 Aluminum Alloys / A7075 etc.			
외경 Outside Diameter	RPM	FEED	RPM	FEED
6mm	20,000	8,400	20,000	6,600
8mm	18,000	7,500	18,000	5,400
10mm	15,000	6,000	15,000	4,000
12mm	13,000	5,400	13,000	3,200
16mm	10,000	5,400	10,000	3,200
20mm	8,000	5,000	8,000	3,000

절입량  
Depth of Cut

# 3ARE/3ARC

• RPM : rev./min • Feed : mm/min

파삭재 Material	동 Copper		알루미늄 Aluminum	
절삭속도 Speed	80m/min		80 - 150m/min	
외경 Outside Diameter	RPM	FEED	RPM	FEED
6mm	4,200	320	8,000	1,200
8mm	3,200	320	6,000	1,200
10mm	2,600	320	4,800	1,200
12mm	2,100	320	4,000	1,200
16mm	1,600	320	3,000	1,200
20mm	1,300	320	2,400	1,200

절입량 Depth of Cut		
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# 2ALE

• RPM : rev./min • Feed : mm/min

파삭재 Material	알루미늄 합금 Aluminum Alloys / A7075 etc.				알루미늄 합금 주물 Aluminum Alloys / AC4B etc.			
절삭속도 Speed	300m/min		240m/min		240m/min		200m/min	
	측면 가공 Side Milling		홀가공 Solting		측면 가공 Side Milling		홀가공 Solting	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	34,000	500	34,000	400	34,000	400	34,000	300
2mm	34,000	950	32,300	720	32,300	720	27,200	470
3mm	27,200	1,200	21,300	800	21,300	800	18,000	510
4mm	20,400	1,300	16,000	850	16,000	850	14,000	550
5mm	16,200	1,400	13,000	850	13,000	850	11,000	600
6mm	13,600	1,600	11,000	940	11,000	940	9,400	640
8mm	10,200	1,600	8,000	1,000	8,000	1,000	6,800	680
10mm	8,100	1,600	6,500	1,000	6,500	1,000	5,400	680
12mm	6,800	1,600	5,400	1,000	5,400	1,000	4,500	680
16mm	5,100	1,600	4,100	1,000	4,100	1,000	3,400	610
20mm	4,100	1,300	3,200	850	3,200	850	2,700	560

절입량 Depth of Cut				
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# 3ARO

• RPM : rev./min • Feed : mm/min

측면 절삭 Side Cutting				
파삭재 Material	알루미늄 합금 Aluminum Alloys / A7075 etc.		알루미늄 합금 주물 Aluminum Alloys / AC4B etc.	
외경 Outside Diameter	RPM	FEED	RPM	FEED
4mm	30,000	4,200	16,000	1,800
5mm	27,000	4,900	14,400	2,000
6mm	24,300	5,500	11,700	2,100
8mm	18,000	5,400	9,000	2,200
10mm	14,400	5,200	7,200	2,100
12mm	11,700	4,800	5,900	1,900
16mm	9,000	4,600	4,500	1,800
20mm	7,200	4,300	3,600	1,700

절입량 Depth of Cut	
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피삭재 Material	합금강 / 공구강 / 프러하든강 Alloy Steels / Tool Steels / Prehardened Steels S50C / FC250 / SCM / NAK					고경도강 Hardened Steels SKD61				
	경도 Hardness ~ 45HRc					45 ~ 55HRc				
반경 Radius	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth	$\alpha \leq 15^\circ$		$\alpha > 15^\circ$		Ap Axial Depth
	RPM	FEED	RPM	FEED		RPM	FEED	RPM	FEED	
R0.5	40,000	5,600	40,000	3,200	0.06	40,000	5,600	40,000	3,000	0.05
R0.75	40,000	6,500	40,000	4,000	0.09	40,000	6,500	32,000	3,200	0.08
R1	40,000	6,500	39,000	4,700	0.11	40,000	6,500	31,000	3,500	0.11
R1.25	40,000	7,000	30,000	4,500	0.12	36,000	6,500	26,000	3,500	0.12
R1.5	40,000	7,500	27,000	4,300	0.13	32,000	6,000	22,000	3,400	0.13
R2	32,000	7,500	20,000	3,600	0.15	25,000	6,000	16,000	2,700	0.15
R2.5	25,000	6,000	16,000	2,900	0.2	20,000	5,400	13,000	2,300	0.2
R3	21,000	5,800	13,000	2,600	0.25	17,000	4,700	10,000	2,000	0.25
R4	16,000	4,500	10,000	2,000	0.3	13,000	3,600	8,000	1,500	0.3
R5	13,000	3,600	8,000	1,700	0.5	10,000	2,900	6,400	1,200	0.5
R6	9,000	2,500	6,000	1,300	0.5	7,200	2,000	4,800	1,000	0.5

- $\alpha$  란 가공면의 경사각입니다.
- 절입이 작은 경우, 회전속도와 이송속도를 더욱 올릴 수 있습니다.
- 기계나 가공물 장착의 강성이 없는경우, 떨림, 이상음이 발생할 경우에는 상기표의 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.
- $\alpha$  is the inclination angle of the machined surface.
- If the depth of cut is shallow, the revolution and feed rate can be increased.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

# 2CTE

피삭재 Material	일반구조용강/탄소강 Mild Steels / Carbon Steels SS400 / S55C		합금강/공구강 Alloy Steels / Tool Steels SCM / SKT / SKS / SKD		고경도강/프러하든강 Hardened Steels / Prehardened Steels SKT / SKD / NAK55 / HPM1		고경도강/ 스테인레스강 Hardened Steels / Stainless Steels SUS304 / SKD		고경도강 Hardened Steels	
	경도 Hardness ~750HN/mm <sup>2</sup>		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1mm	15,500	155	15,500	130	13,000	90	12,000	90	10,500	40
1.5mm	10,500	155	10,500	130	8,900	90	8,250	90	7,000	40
2mm	7,950	155	7,950	130	6,650	90	6,200	90	5,250	40
2.5mm	6,200	145	6,200	125	5,300	90	4,950	90	4,200	40
3mm	5,150	145	5,150	125	4,450	90	4,100	90	3,500	40
4mm	3,850	145	3,850	125	3,300	90	3,100	85	2,600	40
5mm	3,100	145	3,100	125	2,650	90	2,450	85	2,100	40
6mm	2,600	145	2,600	125	2,200	90	2,050	85	1,750	40
8mm	1,950	145	1,950	125	1,650	90	1,550	85	1,300	40
10mm	1,550	145	1,550	120	1,300	90	1,200	85	1,050	40

Ap	Ae
2.5D	0.02D

- 단단하고 정밀한 기계와 홀더를 사용하십시오.
- 떨림이 발생시 속도와 이송량을 동시에 줄여주십시오.
- 연기발생을 억제하는 적절한 절삭유제를 사용해 주십시오.
- Use a rigid and precise machine and holder.
- When chattering occurs, reduce the speed and feed simultaneously.
- Use a suitable cutting fluid with high smoke retardant properties.



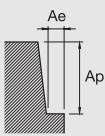
# 4CTE

• RPM : rev./min • Feed : mm/min

파삭재 Material	일반구조용강/탄소강 Mild Steels / Carbon Steels SS400 / S55C		합금강/공구강 Alloy Steels / Tool Steels SCM / SKT / SKS / SKD		고경도강/프리하든강 Hardened Steels / Prehardened Steels SKT / SKD / NAK55 / HPM1		고경도강/스테인레스강 Hardened Steels / Stainless Steels SUS304 / SKD		고경도강 Hardened Steels	
경도 Hardness	~750HN/mm <sup>2</sup>		~ 30HRc		30 ~ 38HRc		38 ~ 45HRc		45 ~ 55HRc	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
3mm	5,300	225	4,450	225	4,450	180	4,100	130	3,500	130
4mm	3,950	245	3,300	245	3,300	195	3,100	150	2,600	150
5mm	3,150	275	2,650	275	2,650	225	2,450	160	2,100	160
6mm	2,200	275	2,200	275	2,200	225	2,050	175	1,750	175
8mm	1,950	270	1,650	270	1,650	225	1,550	190	1,300	190
10mm	1,550	270	1,300	270	1,300	225	1,200	180	1,050	180

**절입량**  
Depth of Cut

Ap	Ae
2.5D	0.02D



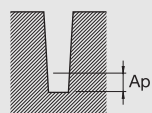
- 단단하고 정밀한 기계와 홀더를 사용하십시오.
- 떨림이 발생시 속도와 이송량을 동시에 줄여주십시오.
- 연기발생을 억제하는 적절한 절삭유제를 사용하십시오.
- Use a rigid and precise machine and holder.
- When chattering occurs, reduce the speed and feed simultaneously.
- Use a suitable cutting fluid with high smoke retardant properties.

# 4RTE

• RPM : rev./min • Feed : mm/min

파삭재 Material	일반구조용강/탄소강 Mild Steels / Carbon Steels SS400 / S55C			합금강/공구강 Alloy Steels / Tool Steels SCM / SKT / SKS / SKD			고경도강/프리하든강 Prehardened Steels / Hardened Steels SKT / SKD / NAK55 / HPM1			고경도강/스테인레스강 Hardened Steels / Stainless Steels SUS304 / SKD			고경도강 Hardened Steels		
경도 Hardness	~750HN/mm <sup>2</sup>			~ 30HRc			30HRc ~ 38HRc			38HRc ~ 45HRc			45HRc ~ 55HRc		
외경 Outside Diameter	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap	RPM	FEED	Ap
0.5mm	31,500	630	0.01~0.025	31,500	565	0.01~0.025	31,500	475	0.01~0.025	31,500	440	0.01~0.025	19,000	250	0.005~0.01
0.6mm	31,500	755	0.012~0.03	31,500	680	0.012~0.03	29,500	530	0.012~0.03	26,500	445	0.012~0.03	15,500	260	0.006~0.012
0.7mm	29,000	940	0.014~0.035	27,000	680	0.014~0.035	25,000	530	0.014~0.035	22,500	445	0.014~0.035	13,500	260	0.007~0.014
0.8mm	25,000	935	0.016~0.004	23,500	680	0.016~0.04	22,000	630	0.016~0.04	19,500	445	0.016~0.04	11,500	260	0.008~0.016
0.9mm	22,500	935	0.018~0.045	21,000	680	0.018~0.045	19,500	530	0.018~0.045	17,500	445	0.018~0.045	10,500	260	0.009~0.018
1mm	20,000	930	0.02~0.05	19,000	680	0.02~0.05	17,500	530	0.02~0.05	15,500	445	0.02~0.05	9,500	260	0.01~0.02
1.2mm	16,500	930	0.024~0.06	15,500	680	0.024~0.06	14,500	530	0.024~0.06	13,000	445	0.024~0.06	7,950	260	0.012~0.024
1.5mm	13,500	930	0.03~0.075	12,500	680	0.03~0.075	11,500	530	0.03~0.075	10,500	445	0.03~0.075	6,350	260	0.015~0.03
2mm	10,000	930	0.04~0.1	9,500	680	0.04~0.1	8,900	530	0.04~0.1	7,950	445	0.04~0.1	4,750	260	0.02~0.04
2.5mm	8,100	930	0.05~0.125	7,600	680	0.05~0.125	7,100	530	0.05~0.125	7,950	445	0.04~0.1	4,750	260	0.02~0.04

**절입량**  
Depth of Cut



- 날 깊이를 얻기 위해서는 순차적으로 하나씩 목부길이를 맞추는 것이 가장 효과적입니다.
- 코너 작업을 할 때, 피드값을 50% 줄이십시오.
- 절삭유를 사용하십시오.
- To achieve flute depth, sequential one neck length at a time is most effective.
- When corner processing, reduce the feed rate by approximately half.
- Use cutting fluid.

# 2CRC

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 Carbon Steels S54C ~ S55C		합금강,공구강 Alloy Steels / Tool Steels SKD / SUS / SCM		열처리강(35 ~ 45Hrc) Hardened Steels NAK / HPM	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED
1.9mm	3,200	60	2,300	50	2,500	40
2.9mm	2,500	60	1,800	50	1,800	40
3.9mm	1,850	60	1,400	50	1,400	40
4.9mm	1,600	60	1,100	50	1,200	40
5.9mm	1,400	60	900	50	1,000	40

파삭재 Material	탄소강 Carbon Steels S54C - S55C		합금강, 공구강 Alloy Steels / Tool Steels SKD / SUS / SCM		열처리강(35 ~ 45Hrc) Hardened Steels NAK / HPM	
	RPM	FEED	RPM	FEED	RPM	FEED
외경 Outside Diameter						
1.9mm	5,940	1,260	4,950	1,050	3,960	840
2.9mm	5,280	1,130	4,400	940	3,520	750
3.9mm	4,700	1,010	3,910	840	3,100	670
4.9mm	4,200	910	3,400	750	2,800	600
5.9mm	3,700	820	3,000	670	2,400	540

# 1STE/2STE/4STE

파삭재 Material	일반구조강 / 탄소강 Mild Steels / Carbon Steels S54C - S55C		합금강 Alloy Steels SKD / SUS / SCM		프리하든강 Prehardened Steels NAK / HPM	
	RPM	FEED	RPM	FEED	RPM	FEED
외경 Outside Diameter						
2mm	3,400 ~ 7,000	70 ~ 100	2,600 ~ 5,200	50 ~ 90	2,000 ~ 4,000	40 ~ 60
3mm	2,700 ~ 5,300	60 ~ 85	2,100 ~ 4,200	45 ~ 70	1,600 ~ 3,200	35 ~ 50
4mm	2,000 ~ 4,000	50 ~ 70	1,600 ~ 3,200	40 ~ 55	1,200 ~ 2,400	30 ~ 40
5mm	1,700 ~ 3,400	45 ~ 60	1,400 ~ 2,600	35 ~ 50	1,000 ~ 2,000	26 ~ 35
6mm	1,300 ~ 2,700	40 ~ 50	1,100 ~ 2,100	30 ~ 40	800 ~ 1,600	22 ~ 30
7mm	1,150 ~ 2,400	35 ~ 45	950 ~ 1,900	28 ~ 37	700 ~ 1,400	21 ~ 28
8mm	1,000 ~ 2,000	30 ~ 40	800 ~ 1,600	26 ~ 34	600 ~ 1,200	20 ~ 25
9mm	900 ~ 1,800	30 ~ 40	700 ~ 1,450	24 ~ 32	550 ~ 1,100	18 ~ 23
10mm	800 ~ 1,600	30 ~ 37	600 ~ 1,300	23 ~ 29	500 ~ 1,000	17 ~ 22
11mm	750 ~ 1,450	30 ~ 37	550 ~ 1,200	22 ~ 28	450 ~ 900	16 ~ 21
12mm	700 ~ 1,300	28 ~ 35	500 ~ 1,100	21 ~ 27	400 ~ 800	16 ~ 20

절입량  
Depth of Cut

Ad : 0.05D이하

# 2CCMC

파삭재 Material	탄소강 S45C - S55C			합금공구강 SCM / SKD			스틸강(35 ~ 40HRC) HPM / NAK			동 Copper			알루미늄 Aluminum		
	RPM	FEED		RPM	FEED		RPM	FEED		RPM	FEED		RPM	FEED	
외경 Outside Diameter		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting
1mm	28,000	230	180	24,500	180	150	17,500	120	100	23,000	150	140	50,000	400	270
1.5mm	18,700	340	180	16,300	180	150	11,700	120	100	13,000	150	140	40,900	400	270
2mm	14,000	360	190	12,300	220	150	8,800	170	130	11,500	150	140	31,800	400	270
3mm	9,300	390	250	8,200	240	170	5,800	170	130	8,000	200	180	21,200	400	270
4mm	7,000	390	260	6,100	240	190	4,400	180	130	6,000	200	180	15,900	500	330
5mm	5,600	470	330	4,900	260	260	3,500	200	150	5,000	200	180	12,700	500	330
6mm	4,700	480	330	4,100	270	210	2,900	200	130	4,000	200	180	10,600	500	330
8mm	3,500	470	330	3,100	270	210	2,200	200	130	3,000	200	180	8,000	600	400
10mm	2,800	480	310	2,500	280	210	1,800	200	110	2,400	200	180	6,400	600	400
12mm	2,300	470	300	2,000	260	200	1,500	200	110	2,000	200	180	5,300	700	470
	Rd	Ad	Ad	Rd	Ad	Ad	Rd	Ad	Ad	Rd	Ad	Ad	Rd	Ad	Ad
날경 (D)	Side Milling	Solting		Side Milling	Solting		Side Milling	Solting		Side Milling	Solting		Side Milling	Solting	
D < 1	≤ 0.05D	≤ 1.5D	≤ 0.02D	≤ 0.05D	≤ 1.5D	≤ 0.02D	≤ 0.05D	≤ 1.5D	≤ 0.02D	≤ 0.1D	≤ 1.5D	≤ 0.1D	≤ 0.2D	≤ 1.5D	≤ 0.2D
1 ≤ D < 3	≤ 0.07D	≤ 1.5D	≤ 0.05D	≤ 0.07D	≤ 1.5D	≤ 0.05D	≤ 0.07D	≤ 1.5D	≤ 0.05D	≤ 0.2D	≤ 1.5D	≤ 0.2D	≤ 0.2D	≤ 1.5D	≤ 0.2D
3 ≤ D < 6	≤ 0.1D	≤ 1.5D	≤ 0.15D	≤ 0.1D	≤ 1.5D	≤ 0.15D	≤ 0.1D	≤ 1.5D	≤ 0.15D	≤ 0.2D	≤ 1.5D	≤ 0.2D	≤ 0.2D	≤ 1.5D	≤ 0.2D
6 ≤ D	0 ≤ .15D	≤ 1.5D	≤ 0.2D	≤ 0.15D	≤ 1.5D	≤ 0.2D	≤ 0.15D	≤ 1.5D	≤ 0.2D	≤ 0.2D	≤ 1.5D	≤ 0.2D	≤ 0.2D	≤ 1.5D	≤ 0.2D

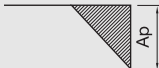
- 사용하는 가공기의 회전속도가 높아지지 않을경우는 피드와 회전속도를 같은 비율로 내려주세요.
- 엔드밀 부착할때는 밑날부분의 진동은 0.01mm이내로 유지해주시시오.
- 측면절삭시 떨림이 생겼을때는 절삭조건을 내려서 사용해주세요.
- If the machine capacity is not enough for high RPM& Feed, please reduce them same rate.
- When you attach Endmill, keep vabrations of botton of cutting-edge under 0.01mm.
- If the rigidity of the machine or the work materials installation is very low, or chattering and noise are generated, reduce the revolution and feed rate proportionately.

# 2CHA

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 Carbon Steels S45C / S50C		합금강 Alloy steels SK / SCM / SUS		프라이하든강 / 열처리강 Prehardened Steels/ Hardened Steels NAK / SCM / SUS	
경도 Hardness	~ 225HB		225 ~ 325HB		30 ~ 45HRC	
절삭속도 Velocity	Vc = 25 ~ 50m/min		Vc = 20 ~ 40m/min		Vc = 15 ~ 40m/min	
Shank Diameter	RPM	FEED	RPM	FEED	RPM	FEED
3mm	2,700 ~ 5,300	59 ~ 86	2,100 ~ 4,200	46 ~ 67	1,600 ~ 3,200	35 ~ 51
4mm	2,000 ~ 4,000	48 ~ 68	1,600 ~ 3,200	38 ~ 54	1,200 ~ 2,400	29 ~ 41
6mm	1,300 ~ 2,700	36 ~ 49	1,100 ~ 2,100	31 ~ 42	800 ~ 1,600	22 ~ 30
8mm	1,000 ~ 2,000	32 ~ 42	800 ~ 1,600	26 ~ 34	600 ~ 1,200	22 ~ 30
10mm	800 ~ 1,600	30 ~ 37	640 ~ 1,300	23 ~ 29	600 ~ 1,200	17 ~ 22
12mm	700 ~ 1,300	28 ~ 35	530 ~ 1,100	21 ~ 27	400 ~ 800	17 ~ 22

절입량 Depth of Cut	Ap : 0.1d	
	Ap : Axial Depth d : Shank diameter	


- 수용성이나 유성 절삭유 추천 • Water Soluble or Oil Cutting fluid is recommended.

# 3CHA

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 Carbon Steels S45C / S50C		합금강 Alloy steels SK / SCM / SUS		프라이하든강 / 열처리강 Prehardened Steels/ Hardened Steels NAK / SCM / SUS	
경도 Hardness	~ 225HB		225 ~ 325HB		30 ~ 45HRC	
절삭속도 Velocity	Vc = 25 ~ 50m/min		Vc = 20 ~ 40m/min		Vc = 15 ~ 40m/min	
Shank Diameter	RPM	FEED	RPM	FEED	RPM	FEED
3mm	2,700 ~ 5,300	47 ~ 69	2,100 ~ 4,200	37 ~ 54	1,600 ~ 3,200	28 ~ 41
4mm	2,000 ~ 4,000	38 ~ 54	1,600 ~ 3,200	30 ~ 43	1,200 ~ 2,400	23 ~ 33
6mm	1,300 ~ 2,700	29 ~ 39	1,100 ~ 2,100	25 ~ 34	800 ~ 1,600	18 ~ 24
8mm	1,000 ~ 2,000	26 ~ 34	800 ~ 1,600	21 ~ 27	600 ~ 1,200	18 ~ 24
10mm	800 ~ 1,600	24 ~ 30	640 ~ 1,300	18 ~ 23	600 ~ 1,200	14 ~ 18
12mm	700 ~ 1,300	22 ~ 28	530 ~ 1,100	17 ~ 22	400 ~ 800	14 ~ 18

절입량 Depth of Cut	Ap : 0.1d	
	Ap : Axial Depth d : Shank diameter	

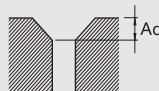
- 수용성이나 유성 절삭유 추천 • Water Soluble or Oil Cutting fluid is recommended.

# 2CEN

• RPM : rev./min • Feed : mm/min

파삭재 Material	일반구조강 / 탄소강 Mild Steels / Carbon Steels SS400 / S55C		합금강 / 공구강 Alloy Steels / Tools Steels SKD / SUS / SCM		프라이하든강 Prehardened Steels HPM / NAK (30~45HRC)		알루미늄 합금 Aluminum Alloys	
외경 Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2mm	1,400	100	800	50	650	40	4,800	280
3mm	1,400	100	800	50	650	40	4,800	280
4mm	1,280	100	690	50	580	40	4,200	280
5mm	1,300	100	640	50	520	40	3,300	280
6mm	1,150	100	600	50	480	40	2,900	280
8mm	1,000	100	530	50	420	40	2,600	280
10mm	850	90	490	40	390	30	2,400	260
12mm	720	90	410	40	310	30	1,900	260
14mm	610	90	340	40	270	30	1,700	240
16mm	550	90	310	40	250	30	1,500	230

절입량 Depth of Cut	Ad : 0.5D~1.0D	
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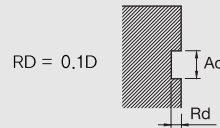
# 4TES/4TRS/4&6TDA/4&6TAC

• RPM : rev./min • Feed : mm/min

## 측면 절삭 Side Cutting

외경 Outside Diameter	일반구조강 / 탄소강 Mild Steels / Carbon Steels		합금강 Alloy Steels		프리하르딩 Prehardened Steels	
	RPM	FEED	RPM	FEED	RPM	FEED
1.5mm	3,050	162	1,890	94	1,530	76
2mm	2,850	149	1,790	88	1,440	70
2.5mm	2,680	135	1,700	83	1,350	65
3mm	2,500	122	1,610	79	1,260	59
4mm	2,150	108	1,430	72	1,080	54
5mm	1,800	95	1,200	65	900	49
6mm	1,430	86	950	58	720	43
8mm	1,070	64	720	43	540	32
10mm	860	52	580	34	430	26
12mm	720	43	480	29	360	22

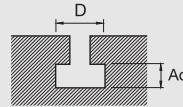
절입량  
Depth of Cut



## 홈절삭 Slotting

외경 Outside Diameter	일반구조강 / 탄소강 Mild Steels / Carbon Steels		합금강 Alloy Steels		프리하르딩 Prehardened Steels	
	RPM	FEED	RPM	FEED	RPM	FEED
1.5mm	3,050	117	1,890	77	1,530	59
2mm	2,850	110	1,790	72	1,440	55
2.5mm	2,680	99	1,700	66	1,350	50
3mm	2,500	92	1,610	60	1,260	45
4mm	2,150	81	1,430	54	1,080	41
5mm	1,800	70	1,200	47	900	35
6mm	1,430	59	950	39	720	30
8mm	1,070	44	720	30	540	22
10mm	860	35	580	23	430	17
12mm	720	30	480	20	360	14

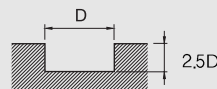
절입량  
Depth of Cut



# 1MEM/1REM

외경 Outside Diameter	아크릴 Acrylic		합금강 Alloy Steels	
	RPM	FEED	RPM	FEED
1mm	32,000	2,000	23,000	1,300
2mm	32,000	2,200	23,000	1,500
3mm	25,000	2,400	18,000	1,700
4mm	20,000	2,400	15,000	1,800
5mm	15,000	2,200	12,000	1,800
6mm	13,500	2,300	10,000	1,800
8mm	10,000	2,400	7,800	1,900
10mm	8,000	2,400	6,000	2,000
12mm	7,000	2,200	5,000	1,900

절입량  
Depth of Cut



# 2MRB / 3MRB

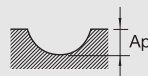
3MRB는 아래 수치의 10% Up 적용  
Apply 10% up values of below condition for 3MRB

• RPM : rev./min • Feed : mm/min

피삭재 Material	Aluminium Alloys			Plastic		
절삭속도 Velocity	Vc = 65 ~ 70m/min			Vc = 40 ~ 45m/min		
반경 Radius	RPM	FEED	Ap	RPM	FEED	Ap
R0.1	35,000	420	0.008~0.01	35,000	1,000	0.05~0.15
R0.2	35,000	560	0.005~0.01	35,000	1,100	0.07~0.2
R0.25	35,000	700	0.003~0.01	28,000	1,200	0.08~0.25
R0.3	35,000	910	0.006~0.03	24,000	1,200	0.1~0.3
R0.4	26,000	940	0.006~0.05	18,000	900	0.13~0.3
R0.5	21,000	970	0.005~0.08	14,000	700	0.17~0.5
R0.6	18,000	1,010	0.04~0.09	12,000	600	0.2~0.6
R0.7	15,000	1,020	0.05~0.1	10,000	500	0.23~0.7
R0.75	14,000	1,010	0.06~0.12	9,500	480	0.25~0.75
R0.8	13,000	1,010	0.08~0.13	9,000	450	0.27~0.8
R0.9	12,000	1,060	0.09~0.15	8,000	400	0.3~0.9
R1	11,000	1,100	0.03~0.21	7,000	350	0.33~1
R1.5	6,900	760	0.03~0.23	4,800	240	0.5~1.5
R2	5,200	690	0.01~0.28	3,600	180	0.6~2
R2.5	4,200	590	0.16~0.31	2,900	150	0.8~2.5
R3	3,500	550	0.22~0.36	2,400	120	1~3

절입량  
Depth of Cut

Slotting  
• Ap : Axial Depth

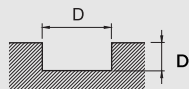


# 2MLE

• RPM : rev./min • Feed : mm/min

피삭재 Material	ABS 수지 / Acrylic	
외경 Outside Diameter	RPM	FEED
0.2mm	50,000	100
0.4mm	50,000	200
0.5mm	50,000	240
0.6mm	40,000	240
0.8mm	30,000	240
1mm	24,000	240
2mm	12,000	240
3mm	8,000	240
4mm	6,000	240
5mm	4,800	240
6mm	4,000	260
8mm	3,000	260
10mm	3,000	260
12mm	2,000	260
16mm	1,400	260

절입량  
Depth of Cut

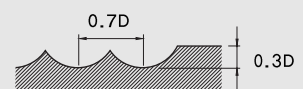


# 2MLB

• RPM : rev./min • Feed : mm/min

피삭재 Material	ABS 수지 / Acrylic	
반경 Radius	RPM	FEED
R0.1	37,000	50
R0.2	37,000	100
R0.3	37,000	140
R0.4	37,000	190
R0.5	32,000	210
R1	16,000	210
R1.5	11,000	210
R2	8,200	210
R2.5	6,000	250
R3	5,500	250
R4	4,100	280
R5	3,200	280
R6	2,700	330
R8	2,200	330

절입량  
Depth of Cut



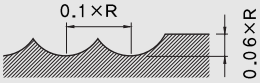
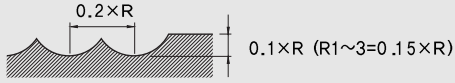
# 2MBE/3MBE

3MBE는 아래 수치의 10% Up 적용  
Apply 10% up values of below condition for 3MBE

• RPM : rev./min • Feed : mm/min

파삭재 Material	탄소강 / 합금강 / 프리하든강 Carbon/ Alloy steels/ Prehardened Steels S50C / SCM / SKD / SUS / HPM / NAK		탄소강 Carbon Steels S50C		합금강 Alloy steels SCM / SKD / SUS		프리하든강 Prehardened Steels HPM / NAK (-45HRc)	
	R < 1				R > 1			
절삭속도 Speed	50m/min		80m/min		70m/min		60m/min	
반경 Radius	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
R0.2	36,000	630	-	-	-	-	-	-
R0.3	24,300	675	-	-	-	-	-	-
R0.4	11,800	780	-	-	-	-	-	-
R0.5	12,000	780	-	-	-	-	-	-
R0.6	10,200	780	-	-	-	-	-	-
R0.75	9,000	780	-	-	-	-	-	-
R1	-	-	11,400	630	10,000	520	8,700	400
R1.5	-	-	7,700	630	6,700	520	5,800	400
R2	-	-	5,800	630	5,000	520	4,300	400
R3	-	-	3,800	630	3,300	520	2,900	400
R4	-	-	2,900	630	2,500	520	2,200	400
R5	-	-	2,300	630	2,000	520	1,700	400
R6	-	-	1,900	630	1,700	520	1,400	400

절입량 Depth of Cut		
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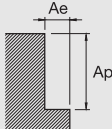
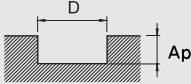
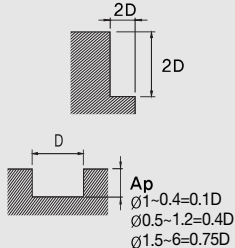
# 2MEM/3MEM

3MEM은 아래 수치의 10% Up 적용  
Apply 10% up values of below condition for 3MEM

• RPM : rev./min • Feed : mm/min

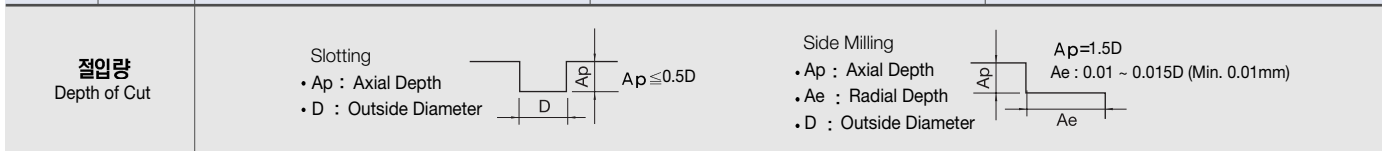
파삭재 Material	탄소강 Carbon Steels S50C			합금강 Alloy steels SCM / SKD / SUS			프리하든강 Prehardened Steels HPM / NAK			알루미늄 Aluminum			동 Copper		
	40~50m/min			35~45m/min			23~35m/min			100~200m/min			60~80m/min		
외경 Outside Diameter	RPM	FEED		RPM	FEED		RPM	FEED		RPM	FEED		RPM	FEED	
		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting		측면가공 Side Milling	홀가공 Solting
1mm	12,900	125	60	11,400	90	30	8,600	70	35	43,000	510	180	20,100	240	90
1.5mm	8,600	125	60	7,700	90	30	5,800	70	35	29,000	580	200	13,400	270	90
2mm	6,500	125	60	5,800	110	35	4,300	80	40	22,000	650	225	10,000	300	110
2.5mm	5,100	150	80	4,600	110	34	3,400	85	45	17,200	680	240	8,000	325	110
3mm	4,300	170	85	3,800	120	40	2,900	90	45	14,300	720	240	6,700	330	120
4mm	3,200	200	100	2,900	120	40	2,200	90	45	10,700	750	240	5,000	350	120
5mm	2,600	210	110	2,300	135	45	1,700	115	60	8,600	775	250	4,000	370	120
6mm	2,200	220	110	1,900	150	50	1,400	125	65	7,200	790	260	3,300	370	120
8mm	1,600	200	100	1,400	145	45	1,100	115	60	5,400	700	230	2,500	320	110
10mm	1,300	180	90	1,200	145	45	900	115	60	4,300	650	220	2,000	300	100
12mm	1,100	170	85	1,000	135	45	700	110	55	3,600	610	200	1,700	290	100

절입량 Depth of Cut		$Ae$ $\varnothing 1 \sim 2.9 = 0.07D$ $\varnothing 3 \sim 6 = 0.15D$		$Ap$ $\varnothing 1 \sim 1.2 = 0.15D$ $\varnothing 1.5 \sim 3.5 = 0.5D$ $\varnothing 4 \sim 6 = 0.75D$	
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피삭재 Material		ABS / MC Nylon			Acrylic / Polyacetal			Polycarbonate		
외경 Outside Diameter	유효장 Effective Length	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth	RPM	FEED	Ap Axial Depth
0.5mm	2	6,000	300	0.20	15,000	300	0.20	9,000	300	0.20
"	4	6,000	300	0.20	15,000	300	0.20	9,000	300	0.20
"	6	6,000	300	0.20	15,000	300	0.20	9,000	300	0.20
0.6mm	4	6,000	340	0.20	14,400	300	0.20	8,800	540	0.20
"	6	6,000	340	0.20	14,400	300	0.20	8,800	540	0.20
0.7mm	4	6,000	380	0.20	13,800	300	0.20	8,600	780	0.20
"	6	6,000	380	0.20	13,800	300	0.20	8,600	780	0.20
0.8mm	6	6,000	420	0.20	13,200	300	0.20	8,400	1,000	0.20
"	8	6,000	420	0.20	12,900	280	0.20	8,200	960	0.20
0.9mm	6	6,000	460	0.20	12,600	300	0.20	8,200	1,300	0.20
"	10	6,000	460	0.20	11,800	260	0.20	7,800	1,000	0.20
1mm	6	6,000	500	0.30	12,000	300	0.30	8,000	1,500	0.30
"	8	6,000	500	0.30	11,500	270	0.30	7,700	1,400	0.30
"	10	6,000	500	0.30	11,000	240	0.30	7,500	1,200	0.30
"	12	6,000	500	0.30	10,400	220	0.30	7,200	1,100	0.30
"	16	6,000	500	0.30	9,300	160	0.30	6,700	830	0.30
"	20	6,000	500	0.30	8,000	90	0.30	6,000	500	0.30
1.2mm	6	6,000	610	0.40	11,700	330	0.40	8,000	1,500	0.40
"	8	6,000	610	0.40	11,200	300	0.40	7,700	1,400	0.40
"	10	6,000	600	0.40	10,700	280	0.40	7,500	1,300	0.40
"	12	6,000	600	0.40	10,200	250	0.40	7,200	1,200	0.40
1.4mm	6	6,000	720	0.40	11,340	360	0.40	8,000	1,600	0.40
"	10	6,000	700	0.40	10,700	310	0.40	7,700	1,400	0.40
"	16	6,000	680	0.40	9,800	230	0.40	7,200	1,000	0.40
1.5mm	6	6,100	780	0.50	11,200	380	0.50	8,000	1,600	0.50
"	10	6,000	760	0.50	10,200	330	0.50	7,500	1,400	0.50
"	14	6,000	730	0.50	9,600	270	0.50	7,000	1,100	0.50
"	16	6,000	730	0.50	8,800	250	0.50	6,700	1,000	0.50
"	20	5,900	700	0.50	7,600	180	0.50	6,100	750	0.50
1.6mm	6	6,100	830	0.80	11,000	390	0.80	8,000	1,600	0.80
2mm	8	6,100	1,000	1.00	10,100	440	1.00	7,900	1,700	1.00
"	10	6,000	980	1.00	9,800	420	1.00	7,700	1,600	1.00
"	12	6,000	970	1.00	9,500	400	1.00	7,500	1,600	1.00
"	14	5,900	950	1.00	9,100	380	1.00	7,300	1,500	1.00
"	16	5,900	930	1.00	8,800	360	1.00	7,100	1,400	1.00
"	18	5,800	920	1.00	8,500	340	1.00	6,900	1,300	1.00
"	20	5,700	890	1.00	8,000	300	1.00	6,500	1,200	1.00
"	25	5,600	850	1.00	7,200	250	1.00	6,000	1,100	1.00
"	30	5,400	800	1.00	6,200	190	1.00	5,400	850	1.00
2.5mm	12	6,000	1,300	1.20	8,600	480	1.20	7,400	1,600	1.20
"	20	5,700	1,100	1.00	6,800	350	1.00	6,200	1,300	1.00
3mm	8	6,200	1,600	1.50	8,700	610	1.50	8,000	1,900	1.50
"	12	6,000	1,500	1.50	8,000	560	1.50	7,500	1,800	1.50
"	16	5,800	1,400	1.50	7,300	510	1.50	7,000	1,700	1.50
"	20	5,600	1,300	1.50	6,400	440	1.50	6,300	1,800	1.50
"	25	5,400	1,200	1.50	5,500	370	1.50	5,600	1,400	1.50
"	30	5,200	1,100	1.50	4,500	290	1.50	4,800	1,200	1.50
"	40	4,800	960	1.50	2,700	160	1.50	3,500	840	1.50
4mm	12	5,000	1,400	2.00	7,000	520	2.00	5,800	1,500	2.00
"	16	4,900	1,400	2.00	6,500	480	2.00	5,500	1,400	2.00
"	18	4,800	1,400	2.00	6,300	470	2.00	5,400	1,400	2.00
"	20	4,800	1,400	2.00	6,000	440	2.00	5,100	1,300	2.00
"	25	4,700	1,300	2.00	5,600	410	2.00	4,900	1,300	2.00
"	30	4,500	1,300	2.00	4,700	340	2.00	4,400	1,100	2.00
"	35	4,300	1,300	2.00	4,200	300	2.00	4,100	1,100	2.00
"	40	4,200	1,300	2.00	3,600	250	2.00	3,600	960	2.00
"	50	3,900	1,200	2.00	2,400	160	2.00	2,900	780	2.00
5mm	16	3,400	1,200	2.50	5,800	470	2.50	4,000	1,200	2.50
"	35	3,200	1,100	2.50	3,900	260	2.50	2,900	910	2.50
6mm	35	2,400	960	3.00	2,600	240	3.00	1,900	760	3.00
"	50	2,200	890	3.00	1,900	170	3.00	1,700	670	3.00
"	60	2,000	800	3.00	1,000	90	3.00	1,500	600	3.00



# 엔드밀 재연삭가격 안내

## 초경 Ball & Radius 엔드밀

• 부등분할: X1.5 • C작업시: X0.9

날 경		6 이하	10 이하	12이하	16이하	20 이하	25 이하
무코팅	2 날	6,100	6,600	7,700	9,900	13,200	16,500
	3, 4, 6 날	8,300	9,400	11,000	12,100	16,500	22,000
TISIN 코팅	2 날	8,300	9,500	10,900	13,400	19,100	20,900
	3, 4, 6 날	10,300	12,500	13,400	15,200	23,800	26,400

## 초경 엔드밀 절단 & 밀날

• 부등분할: X1.1 • 라핑시: X1.1

날 경		6 이하	10 이하	12이하	16이하	20 이하	25 이하
무코팅	2 날	4,200	4,800	6,400	8,500	10,700	13,900
	3, 4, 6 날	5,300	5,900	7,500	10,700	12,300	17,100
TISIN 코팅	2 날	4,800	5,200	7,100	10,100	12,400	15,200
	3, 4, 6 날	5,800	6,300	8,500	12,400	13,800	18,200

## 초경 다이아 절단 & 밀날

날 경		6 이하	10 이하	12이하	16이하	20 이하	25 이하
2 날		9,500	10,750	14,500	19,250	24,250	31,500
3, 4, 6 날		12,000	13,250	17,000	24,250	27,750	38,750

## 초경 Taper 엔드밀 외경연삭

• 30도 미만 제작수리: X2  
• 30도 이상 제작수리: X1.5

생크경 (Ø)	6이하	8이하	10이하	12 이하	16이하	20이하	25이하	32이하
2° 미만	10,900	12,100	13,400	14,600	18,200	24,200	30,300	36,300
2° 이상	10,900	12,100	14,600	17,000	21,800	29,100	33,900	38,800
30° 이상	7,300	8,500	9,700	10,900	13,400	18,200	23,000	30,300

## HSS Taper 엔드밀

• Long : X1.5 • 제작수리: X2 • 역: X2

생크경 (Ø)	16이하	20이하	25 이하	32 이하	35 이하
2° 미만	8,500	9,700	10,900	14,600	18,200
2° 이상	9,700	12,100	14,600	18,200	21,800
30° 이상	7,300	8,500	9,700	12,100	14,600

## 초경 엔드밀 외경연삭

• Long : X1.2 • EX. Long : X1.5

날 경	6이하	12 이하	16 이하	20 이하	25이하	30 이하
2 날	4,900	6,100	8,500	12,100	18,200	25,500
4 날	6,100	7,300	9,700	14,600	21,800	30,300

• 풀수리(흙연삭) : X1.5

## HSS 엔드밀 외경연삭

• Long : X1.5 • EX. Long : X2

날 경	20 이하	30 이하	40 이하	50 이하
2 날	3,700	4,900	8,500	14,600
4 날	4,900	6,100	9,700	18,200

• 풀수리(흙연삭) : X1.5

## 초경 High Helix 엔드밀 외경연삭

• Long : X1.2 • EX. Long : X1.5

날 경	6이하	12이하	16이하	20 이하	25이하	32이하
4 날	11,000	13,200	16,500	19,800	30,800	36,300
6 날	12,100	14,600	18,200	21,800	33,900	40,000

• 풀수리(흙연삭) : X1.5

## HSS Roughing 엔드밀

• Long : X1.5 • EX. Long : X2

날 경	20 이하	30 이하	40 이하	50 이하
-	4,900	6,100	8,500	10,900

## 날붙이(BG) 초경 엔드밀 외경연삭

• Long : X1.5 • EX. Long : X2

날 경	20 이하	30 이하	40 이하	50 이하
2 날	6,100	9,700	12,100	18,200
4 날	7,300	10,900	14,600	24,200

• 풀수리(흙연삭) : X1.5

## HITACHI Ball & Radius 인서트

R × D	R6×12,13	R8×16,17	R10×20,21	R12.5×25,26	R15×30
무코팅	6,600	7,700	8,800	9,900	13,200
TIALN 코팅	11,000	13,200	14,300	15,400	18,700

## 초경 엔드밀 TISIN 코팅 가격

• Long : X1.5 (전장 150L이상)

날 경	6 이하	8 이하	10 이하	12 이하	16 이하	20 이하	25 이하	32이하
-	2,100	2,600	3,500	4,700	8,800	10,500	15,200	21,100

## 초경 엔드밀 JJ 코팅 가격

• Long : X1.5 (전장 150L이상)

날 경	6 이하	8 이하	10 이하	12 이하	16 이하	20 이하	25 이하	32이하
-	2,500	3,100	4,200	5,600	10,500	12,700	18,300	25,400

***Your specials are our standards.***

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