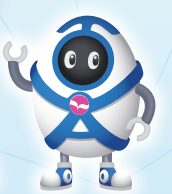
초정밀 가공의
TOWA가 제작한
엔드밀

2024

THE PROFESSIONAL ENDMILLS

엔드밀 총합 카탈로그 End mills general catalog



TOWA

THE PROFESSIONAL ENDMILLS
엔드밀 총합 카탈로그 2024
TOWA

WHAT`S TOWA End Mills?

TOWA는 반도체 제조용 초정밀 금형에 대하여 세계 톱 클래스의 점유율을 가진 리딩 컴퍼니입니다.
그 초정밀 금형 제조 기술은 TOWA가 자체 제작하고 있는「TOWA 엔드밀」에 의해실현되고 있다고 말해도 과언이 아닙니다.
고정밀도 , 내마모성이 뛰어나고 절삭날이날카롭우며 긴 수명인 「 TOWA 엔드밀」.
이 「TOWA 엔드밀」의 우위성은 그 「최대 유저」=「TOWA」임이 증명하고 있습니다.
제조사인 동시에 유저이기도 한 TOWA는 고객별 니즈에 세심하게 부응한 제품을 전달할수 있습니다.
또한「유저」의 입장으로서 가공 조건의 어드바이스에서도 경험을
마음껏 발휘할 수 있습니다.
저희 TOWA는 절삭 공구의 종합 메이커로서, 여러분에게 보다 큰 원가 절감이나
이상적인 금속 가공을 실현해 드릴 수 있도록, 향후도 매진하고 있습니다.

Towa is a World Leader in the manufacturing of Ultra-Precision Molds for the Semiconductor Industry.
It is no exaggeration to state that the manufacturing of TOWA's Ultra-Precision Molds is achieved through the use of TOWA's own "TOWA End Mill".
"TOWA End Mill" is designed for high accuracy, with excellent wear resistance, sharpness and long life. The superiority of the "TOWA End Mill" is continuously shown by its use with their Number One Customer, TOWA!
TOWA, which is both a manufacturer and a user, can deliver products that meet the needs of each customer in detail.
In addition, from the standpoint of the "user", we can fully demonstrate our many years of experience in giving recommendations regarding the part's machining process.
As a comprehensive manufacturer of cutting tools, TOWA will continue to strive for a greater cost performance ratio with efficient metal processing.



사용 시 주의사항

● 절삭날을 맨손으로 직접 만지지 마십시오. 다칠 위험이 있습니다.

●공구를 케이스에서 꺼내거나 기계에 장착할 때는 보호장갑 등을 사용하십시오.

●사용 전에 공구의 흠집, 깨짐 등이 없는 것을 확인하십시오.

●공구에 흠집이나 깨짐 등이 있을 경우, 사용 중 파손되어 파편이 흩날릴 위험이 있습니다.

●사용 전에 공구 사이즈와 가공물 사이즈를 확인하십시오.

●절삭조건표에 적혀있는 수치는 예상 기준치입니다. 가공물이나 기계 성능에 맞추어 절삭조건의 조정이 필요합니다.

●가공 중 공구에 충격적인 부하나 공구의 손상으로 인하여 공구 파편이 흩날릴 위험이 있습니다. 안전커버나 보호안경 등 보호구를 사용하십시오.

●이미 마모가 진행된 상태나 손상된 상태인 공구를 계속해서 사용하면 파손의 원인이 됩니다. 공구를 교환하십시오.

●가공 중 이상한 진동이나 이상음이 발생한 경우는 당장 가공을 중지하십시오.

●절삭유는 용도에 따라서 선택하십시오. 방화 대책을 반드시 시행하십시오.

Attention on Safety

●Do not directly touch the cutting edge. It could cause injury.

●When removing tools from their packaging, ALWAYS use safety covers.

●Make sure there are no scratches or cracks on the tool before use.

●If the tool has scratches or cracks, there is a risk of damage and scattering during use.

●Verify dimensions of tools and workpiece before starting operation.

●It is necessary to adjust cutting conditions according to part shape, and machine/ work holding rigidity.

●As tools may be scattered due to an impact or damage to the tool during machining.
ALWAYS use safety covers and eye protection.

●Continued use of worn or damaged tools may cause damage, please replace the tool.

●If abnormal vibration, sound, etc. occurs during machining, stop machine immediately.

●Select a cutting fluid appropriate to the particular usage. Ensure that you take proper fire-prevention measures.

Global Tool Sales base detail



TOWA Corporation 코어 기술 영업부

〒601-8105 5 Kamichoshi-cho, Kamitoba, Minami-ku, Kyoto-shi, Kyoto
TEL (075) 692-0257 / FAX (075) 692-0276

나가노 영업소 〒380-0823 Nagano Central Building, 8th Floor, 2-12-1 Minae, Nagano City, Nagano Prefecture, Japan
연락은 여기로 ▶ 핵심 기술 영업부 TEL (075) 692-0257 / FAX (075) 692-0276

도쿄 영업소 〒100-0005 Marunouchi Eiraku Building, 26th Floor (xLINK Marunouchi Eiraku Building), 1-4-1 Marunouchi, Chiyoda-ku, Tokyo, Japan
연락처 ▶ 코어 기술 영업부 TEL (075) 692-0257 / FAX (075) 692-0276

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Unit A, 20F, Global Harbor Tower B,
No.1188 North Kaixuan Road, Putuo District,
Shanghai, 200063 P.R.China
TEL (+86) 21-6888-6860 / FAX (+86) 21-5835-5305

TOWA (Taiwan) Co., Ltd

2F, No.3, Lane 216, Gongyuan Road, East District,
Hsinchu 300 Taiwan, R.O.C.
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TOWA 한국 주식회사 천안 사업소

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Chung Cheong Nam Do, 31075, Korea
TEL (+82) 41-521-0900 / FAX (+82) 41-622-8624

TOWA THAI COMPANY LIMITED

No.88, Nimitikul Tower, 2nd Floor,
Soi Rama IX 57/1 (Wiset Suk 2), Rama IX Road,
Suan Luang Sub-district, Suan Luang District,
Bangkok 10250 Thailand
TEL (+66) 2-187-2204 / FAX (+66) 2-187-2207

TOWA Asia-Pacific Pte.Ltd.

2 International Business Park, #07-01/02,
The Strategy Tower One, Singapore 609930
TEL (+65) 6562-0777 / FAX (+65) 6022-0460

TOWA USA Corporation

2503 Spring Ridge Dr. Unit D, Spring Grove,
IL 60081, U.S.A.
TEL (+1) 815-581-0952

TOWA Europe GmbH

Am Wammesknopf 39, 70439 Stuttgart, Germany
TEL (+49) 711-227-24-790

TOWA 주식회사

https://www.towajapan.co.jp



카탈로그 내용은 예고 없이 변경될 수 있는 점 양해 부탁드립니다.
Price & Specification are subject to change without notice

TOWA공구 특징 The Features of TOWA Tool Series

초정밀 금형 제조기술로 탄생한 당사 CBN·초경 엔드밀은
고정밀도·내마모성이 뛰어나며 **긴수명**을 실현할 수 있는 제품입니다.

Originated from ultra-precision mold manufacturing.
High precision, excellent wear resistance, and long life are guaranteed

1

CBN

공구경 공차 : 0~-3μm
Diameter Tolerance: 0~3μm

R절밀도 : ±2μm
R Tolerance: ±2μm

2

초경 엔드밀
Carbide End Mill

공구경 공차 : -4~-7μm
Diameter Tolerance: -4~-7μm

R절밀도 : ±2μm
R Tolerance: ±2μm

3

특수품 대응
Custom-made

형상설계부터 날형 미조정까지
스텝/총형/각종 특수형상
Minor adjustment from
Flute Design to Blade Shape
Stepped/ forming/ various special shape

4

단납기
Quick Delivery

카탈로그품 당일출화
특수품·재연마
7영업일 이내 출하
Custom-made & re-grinding items can be manufactured within 7 workdays

5

제작 로트 없음
No MOQ

1개부터 제작 가능
You can order from 1 piece

※요구하신 공구경에 대하여 엔드밀은
3μm 드릴은 3μm의 공차범위 이내에서
제작 가능
For the requested diameter of tools,
the tolerance of endmill is 3μm & drill is 7μm.

※대응사이즈 Size we can offer
CBN : φ0.1~φ6.0
초경 carbide : φ0.1~φ20.0

※특수 초경 블랭크의 경우는 별도 상담 필요함.
Feel free to ask us when special material needed

※초경 엔드밀의 기재 허용 오차
대상은 Φ6 이하입니다.
Tolerance of Carbide End Mill is below Φ6.

라인업 Product Line-Up

▶CBN 엔드밀 시리즈
CBN End Mill Series

SKD11 · HPM · STAVAX · ASP · HAP (경강 HRC55 이상)
고경도 재료에 대한 우수한 내구성을 실현합니다.
SKD11, HPM, STAVAX, ASP, HAP (Hardened steel ≥HRC50)
Extra long life for high hardness material

▶초경 엔드밀 시리즈
Carbide End Mill Series

ion Depo™ Type U

다양한 고경도 재료에 대응 가능 (최대 HRC70)
High hardness material. Applicable to various material (~HRC70)

ion Depo™ Type A

퀜칭강, 탄소강, 구리, 스테인리스강, 주철 (최대 HRC55)
Carbon Steel, Copper, Stainless Steel, Cast Iron (below HRC50)

CBN 엔드밀 시리즈 CBN End Mill Series

라인업 Line-up



래디우스 Radius
Φ0.1~Φ6.0



볼 Ball
R0.05~R1.5



래핑 래디우스 Lapping Radius
Φ0.4~Φ3.0



래핑 볼 Lapping Ball
R0.2~R1.5

POINT! "래핑 엔드밀" 로 놀란 광택감을!

"Lapping End Mill" realizes a superior surface quality!

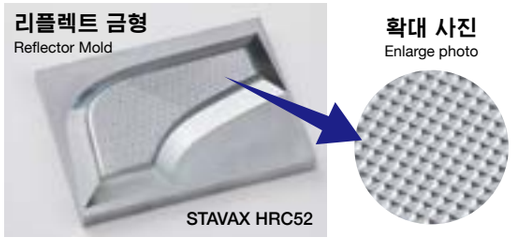
	TOWA CBN 래핑 엔드밀 CBN Lapping ball end mill	TOWA CBN 엔드밀 CBN end mill
면조도 Roughness	 Ra 0.040 μm	 Ra 0.077 μm

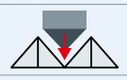
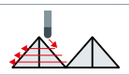
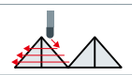
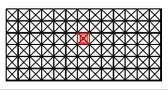
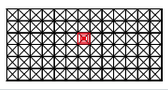


재질 Material	SKD-11개 (HRC63) modified SKD-11(HRC63)
정밀도 Accuracy	형상폭・깊이 2μm Width,Depth 2μm
면조도 Roughness	Ra 0.03μm이하 Under 0.03μmRa
특징 Feature	밀링에 의한 경면가공 Mirror finish by milling

POINT! "특수 날끝 설계"CBN 엔드밀

Special Designed CBN End Mill



공구 Tool	TOWA CBN 테이퍼공구가공 CBN Taper End Mill	일반제품 General Product CBN 볼 엔드밀 CBN Ball End Mill	일반제품 General Product 초경볼 엔드밀 Carbide Ball End Mill
가공방법 Machining method	테이퍼공구가공 Taper grove machining	등고선가공 Contour machining	등고선가공 Contour machining
측면부터본경로 Path (side view)			
상면부터본경로 Path (top view)	1라인에서 홈가공 Grooving with a line 	1형상씩회전 하면서 Make each shape while rotating 	1형상씩회전 하면서 Make each shape while rotating 
가공시간 Machining time	25분 (90%절감)	3시간58분	4시간22분
면조도 Surface roughness	Ra 0.117μm	Ra 0.173μm	Ra 0.382μm
공구마모량 Tool wear	0.5um	1.3um	5.2um
공구원가절감효과 Cost reduction	67% down	22% 증가	기준 Standard

ion Depo™ 초경 엔드밀 시리즈 ion Depo™ Carbide End Mill Series

POINT 1 폭 넓은 대응 범위 다양한 피삭재에 대응 가능 !
Applicable to various materials!

POINT 2 긴수명 Long Life 이온 프레이팅 방식의 다양한 코팅으로 최적 제품을 제안
Propose the best Coating based on ion plating method

ion Depo™ Type U

고경도강 제일 추상!! Recommended for High Hardness materials!!

고경도강 올마이티로 대응 (~HRC70)
Applicable to various high hardness materials (~HRC70)

고경도강 High Hardness Steel

ion Depo™ Type A

AlCrN계 코팅 용착 방지 에 최적(~ HRC55)
AlCrN Coating Available to welding prevention (~HRC55)

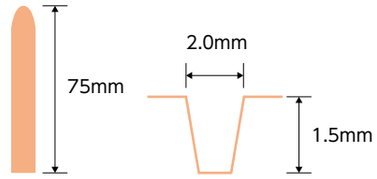
탄소강 Carbon Steel
프리하든강 Pre-hardened Steel
동 Copper
난삭재 hard to cut materials
주철 Cast Iron
연성 주철 Ductile Cast Iron
스테인리스강 Stainless Steel

ion Depo type U 가공 평가 Performance review

특징 Features

- TOWA의 독자적인 코팅 기술을 통해 HRC60 이상의 고경도 가공에서도 긴 수명을 실현
  TOWA's proprietary coating technology ensures long tool life even for high-hardness machining above HRC60.
- 독특한 기술로 다층 코팅의 접착력을 높여, 박리와 탈락을 효과적으로 방지
  With our unique technology, the adhesion of multi-layer coatings is enhanced, preventing peeling and detachment.

단일 절삭 거리:12m
Cutting Distance per Runner



평가 내용 Evaluation criteria

가공기 Machine	HS430L
회전수[min-1] Spindle[min-1]	16,000
이송속도[mm/min] Feed[mm/min]	800
공구 Tool	Φ1.5R0.3-4날 4flute
Z 방향스텝 Z depth	0.02
냉각방식 Coolant	오일미스트냉각 Oil Mist
절삭방향 Cutting Direction	하향절삭가공 Down Cut



가공 실적 Performance review

절삭 재료 material : STAVAX (HRC53)


(72M) 마모량 amount of wear:0.006

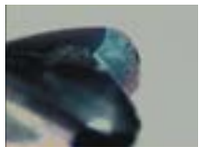

(72M) 마모량 amount of wear:0.056

절삭 재료 material : YXM27 (HRC63)


(36M) 마모량 amount of wear:0.005


(36M) 마모량 amount of wear:0.043

절삭 재료 material : HAP72 (HRC69)


(24M) 마모량 amount of wear:0.004


(48M) 마모량 amount of wear:0.008


(72M) 마모량 amount of wear:0.017

ion Depo™ 초경 엔드밀 시리즈 ion Depo™ Carbide End Mill Series

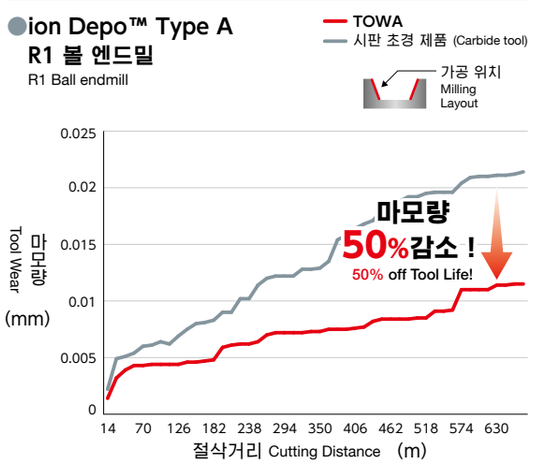
ion Depo type A 가공 평가 Performance review

특징 Features

- ●TOWA 고유의 코팅 기술을 통해 다양한 가공 재료에 적용 가능
  TOWA's proprietary coating technology ensures wide Range of material.
- ● AlCrN 계 코팅, 융착 방지에 최적화 (~HRC55)
  AlCrN Coating Available to welding prevention (~HRC55)

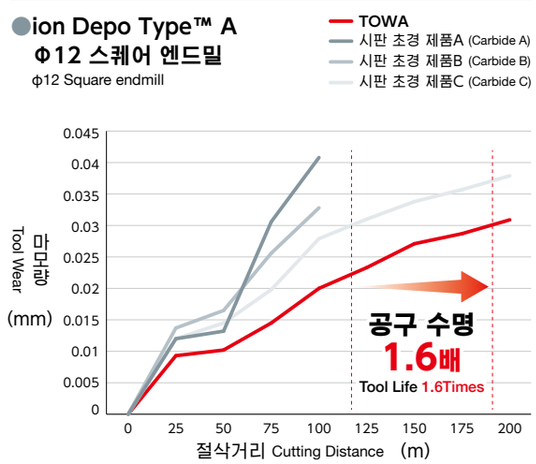
■프리하드 스틸 (HRC40) 정밀 가공 평가
Pre-hardened Steel (HRC40) Finish Processing

●ion Depo™ Type A
R1 볼 엔드밀
R1 Ball endmill



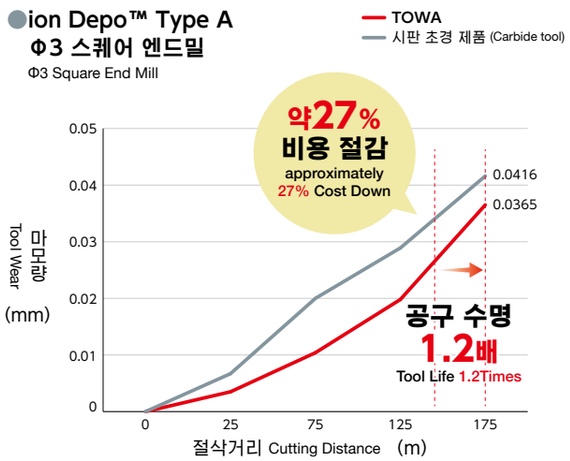
■프리하드 스틸 (HRC40) 측면 조 가공 평가
Pre-hardened Steel (HRC40) Side Rough Processing

●ion Depo Type™ A
Φ12 스퀘어 엔드밀
ϕ12 Square endmill



■S50C 재질 측벽 가공 평가 S50C Material Side Processing

●ion Depo™ Type A
Φ3 스퀘어 엔드밀
Φ3 Square End Mill



가공기 Machine	OKK HM40
회전수[min⁻¹] Spindle[min⁻¹]	8,000
이송 속도[mm/min] Feed[mm/min]	700
절삭 방향 Cutting Direction	하향 절삭 가공 Down Cut
기타 정보[mm] Rd[mm]	0.3
깊이[mm] Ad[mm]	1.0
냉각 방식 Coolant	수용성쿨런트 Water-soluble

목적별 검색 방법 Search

「 피삭재 」로 찾기 P007
Search from Shape

「 시리즈 」로 찾기 P009
Search from Diameter

아이콘 보는 방법 Icon Guide

코팅 Coating

- ion A — ion Depo Type A Coating
- ion U — ion Depo Type U Coating
- BANCERA — BANCERA Coating ★Ordered product
- Non — Non Coating

소재 Material

- CBN — CBN (입방정질화붕소) Cubic Boron Nitride
- super MG — 초미립자 초경합금 Super Micro Grain Carbide

날 수 Number of Flutes

- 날 수 2 — 2 날 2Flutes
- 날 수 3 — 3 날 3Flutes
- 날 수 4 — 4 날 4Flutes
- 날 수 6 — 6 날 6Flutes
- 날 수 2·4 — 2 날 • 4 날 2Flutes·4Flutes
- 날 수 2~4 — 2 날 • 3 날 • 4 날 2Flutes·3Flutes·4Flutes
- 날 수 2~6 — 2 날 • 3 날 • 4 날 • 6 날 2Flutes·3Flutes·4Flutes·6Flutes

헬릭스각 Helix Angle

- 헬릭스각 0° — Angle 0°
- 헬릭스각 30° — Angle 30°

목각 Neck Taper Angle

- 목각 15° — Angle 15°
- 목각 11° — Angle 11°

생크경 공차
Shank Diameter Tolerance

- Shank 0/-0.005 — Tolerance 0/-0.005
- Shank h4 — Tolerance h4 ϕ4 ϕ6

사진 Photo	제품명 Product Name	형번 Model	사이즈 Size	소재 Material	코팅 Coating	날수 Number of Flute	헬릭스각 Helix Angle	가공 형상 Processes Shape					
								측면 가공 Side Milling	홈 가공 Slot Milling	평면 가공 Face Milling	곡면 가공 3D Milling	드릴 가공 Drilling	
스퀘어 엔드밀 Square End Mill													
ion Depo Type A													
	초경 스퀘어 엔드밀 Carbide Square End Mill	IAS	Φ0.1~20.0	Carbide	ion Depo A	2	30	◎	◎	◎			
	초경 스퀘어 엔드밀 Carbide Square End Mill	IAS	Φ1.0~20.0	Carbide	ion Depo A	4	30	◎		◎			
	초경 롱 넥 스퀘어 엔드밀 Carbide Long Neck Square End Mill	IALS	Φ0.1~6.0	Carbide	ion Depo A	2	30	◎	◎	◎			
ion Depo Type U													
	초경 스퀘어 엔드밀 Carbide Square End Mill	IUS	Φ0.1~6.0	Carbide	ion Depo U	2	30	◎	◎	◎			
	초경 스퀘어 엔드밀 Carbide Square End Mill	IUS	Φ1.0~20.0	Carbide	ion Depo U	4	30	◎		◎			
	초경 스퀘어 엔드밀 Carbide Square End Mill	IUS	Φ5.0~20.0	Carbide	ion Depo U	6	30	◎		◎			
	초경 롱 넥 스퀘어 엔드밀 Carbide Long Neck Square End Mill	IULS	Φ0.1~6.0	Carbide	ion Depo U	2	30	◎	◎	◎			
	초경 롱 넥 스퀘어 엔드밀 Carbide Long Neck Square End Mill	IULS	Φ1.0~6.0	Carbide	ion Depo U	4	30	◎		◎			
래디우스 엔드밀 Radius End Mill													
CBN													
	CBN 래디우스 엔드밀 CBN Radius End Mill	CBNLR	Φ0.1~3.0	CBN	Non-coat/ BANCERA	2	0	◎	◎	◎			
	CBN 래디우스 엔드밀 CBN Radius End Mill	CBNLR	Φ0.6~0.8	CBN	Non-coat/ BANCERA	3	0	◎		◎			
	CBN 래디우스 엔드밀 CBN Radius End Mill	CBNLR	Φ1.0~6.0	CBN	Non-coat/ BANCERA	4	0	◎		◎			
	CBN 래핑 래디우스 엔드밀 CBN Lapping Radius End Mill	LAPCBNLR	Φ0.4~3.0	CBN	Non-coat/ BANCERA	2	0		◎	◎	◎		
ion Depo Type A													
	초경 래디우스 엔드밀 Carbide Radius End Mill	IAR	Φ1.0~6.0	Carbide	ion Depo A	2	30	◎	◎	◎			
	초경 래디우스 엔드밀 Carbide Radius End Mill	IAR	Φ1.0~20.0	Carbide	ion Depo A	4	30	◎		◎			
	초경 롱 넥 래디우스 엔드밀 Carbide Long Neck Radius End Mill	IALR	Φ0.4~6.0	Carbide	ion Depo A	2	30	◎	◎	◎			
	초경 롱 넥 래디우스 엔드밀 Carbide Long Neck Radius End Mill	IALR	Φ1.0~6.0	Carbide	ion Depo A	4	30	◎		◎			
ion Depo Type U													
	초경 래디우스 엔드밀 Carbide Radius End Mill	IUR	Φ3.0~12.0	Carbide	ion Depo U	4	30	◎		◎			
	초경 래디우스 엔드밀 Carbide Radius End Mill	IUR	Φ5.0~12.0	Carbide	ion Depo U	6	30	◎		◎			
	초경 롱 넥 래디우스 엔드밀 Carbide Long Neck Radius End Mill	IULR	Φ0.2~0.8	Carbide	ion Depo U	2	30	◎	◎	◎			
	초경 롱 넥 래디우스 엔드밀 Carbide Long Neck Radius End Mill	IULR	Φ0.6~0.8	Carbide	ion Depo U	3	30	◎		◎			
	초경 롱 넥 래디우스 엔드밀 Carbide Long Neck Radius End Mill	IULR	Φ1.0~6.0	Carbide	ion Depo U	4	30	◎		◎			
볼 엔드밀 Ball End Mill													
CBN													
	CBN 볼 엔드밀 CBN Ball End Mill	CBNLB	Φ0.1~3.0	CBN	Non-coat/ BANCERA	2	0				◎		
	CBN 래핑 볼 엔드밀 CBN Lapping Ball End Mill	LAPCBNLB	Φ0.4~3.0	CBN	Non-coat/ BANCERA	2	0				◎		
ion Depo Type A													
	초경볼 엔드밀 Carbide Ball End Mill	IAB	Φ0.3~20.0	Carbide	ion Depo A	2	30				◎		
	초경 롱 넥 볼 엔드밀 Carbide Long Neck Ball End Mill	IALB	Φ0.3~6.0	Carbide	ion Depo A	2	30				◎		
ion Depo Type U													
	초경볼 엔드밀 Carbide Ball End Mill	IUB	Φ0.1~20.0	Carbide	ion Depo U	2	30				◎		
	초경 롱 넥 볼 엔드밀 Carbide Long Neck Ball End Mill	IULB	Φ0.1~6.0	Carbide	ion Depo U	2	30				◎		

최적◎Recommended 적용○Suggested

절삭 재료 Work Material															
P	P	P	H				M	K	N	N	O	O	S	S	
탄소강 Carbon Steel	합금강 Alloy Steel	프리하든강 Prehardened Steel	고경도강 Hardened Steel				스테인리스강 Stainless Steel	주철 Cast Iron 연성(주철) Ductile Cast Iron	알루미늄 합금 Aluminium Alloy	구리 합금 Copper Alloy 텅스텐-구리 Copper Tungsten	흑연 Graphite	수지 Resin	티타늄 합금 Titanium Alloy	내열 합금 Heat Resistant Alloy etc	페이지 Page
			~50HRC	~55HRC	~62HRC	~70HRC									
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	73
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	95
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	103
			○	◎	◎	○							○		171
			○	◎	◎	○							○		175
			○	◎	◎	○							○		179
			○	◎	◎	○							○		183
			○	◎	◎	○							○		189
			○	◎	◎	◎									51
			○	◎	◎	◎									59
			○	◎	◎	◎									61
			○	◎	◎	◎									69
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	111
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	119
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	127
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	139
			○	◎	◎	○							○		193
			○	◎	◎	○							○		197
			○	◎	◎	○							○		201
			○	◎	◎	○							○		205
			○	◎	◎	○							○		207
			○	◎	◎	◎									65
			○	◎	◎	◎									71
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	151
◎	◎	◎	◎	○			◎	◎	○	○		○	◎	○	155
			○	◎	◎	○							○		215
			○	◎	◎	○							○		217

CBN엔드밀/래디우스 CBN EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
CBNLR-2-0.1xR0.02xL0.2	0.1	0.02	0.2	0.04	4	50	52
CBNLR-2-0.1xR0.02xL0.3	0.1	0.02	0.3	0.04	4	50	52
CBNLR-2-0.1xR0.02xL0.5	0.1	0.02	0.5	0.04	4	50	52
CBNLR-2-0.1xR0.03xL0.2	0.1	0.03	0.2	0.04	4	50	52
CBNLR-2-0.1xR0.03xL0.3	0.1	0.03	0.3	0.04	4	50	52
CBNLR-2-0.1xR0.03xL0.5	0.1	0.03	0.5	0.04	4	50	52
CBNLR-2-0.15xR0.02xL0.2	0.15	0.02	0.2	0.06	4	50	52
CBNLR-2-0.15xR0.02xL0.3	0.15	0.02	0.3	0.06	4	50	52
CBNLR-2-0.15xR0.02xL0.5	0.15	0.02	0.5	0.06	4	50	52
CBNLR-2-0.15xR0.03xL0.2	0.15	0.03	0.2	0.06	4	50	52
CBNLR-2-0.15xR0.03xL0.3	0.15	0.03	0.3	0.06	4	50	52
CBNLR-2-0.15xR0.03xL0.5	0.15	0.03	0.5	0.06	4	50	52
CBNLR-2-0.2xR0.02xL0.3	0.2	0.02	0.3	0.08	4	50	52
CBNLR-2-0.2xR0.02xL0.5	0.2	0.02	0.5	0.08	4	50	52
CBNLR-2-0.2xR0.02xL1.0	0.2	0.02	1.0	0.08	4	50	52
CBNLR-2-0.2xR0.03xL0.3	0.2	0.03	0.3	0.08	4	50	52
CBNLR-2-0.2xR0.03xL0.5	0.2	0.03	0.5	0.08	4	50	52
CBNLR-2-0.2xR0.03xL1.0	0.2	0.03	1.0	0.08	4	50	52
CBNLR-2-0.2xR0.05xL0.3	0.2	0.05	0.3	0.08	4	50	52
CBNLR-2-0.2xR0.05xL0.5	0.2	0.05	0.5	0.08	4	50	52
CBNLR-2-0.2xR0.05xL1.0	0.2	0.05	1.0	0.08	4	50	52
CBNLR-2-0.3xR0.02xL0.5	0.3	0.02	0.5	0.13	4	50	52
CBNLR-2-0.3xR0.02xL0.75	0.3	0.02	0.75	0.13	4	50	52
CBNLR-2-0.3xR0.02xL1.0	0.3	0.02	1.0	0.13	4	50	52
CBNLR-2-0.3xR0.02xL1.5	0.3	0.02	1.5	0.13	4	50	52
CBNLR-2-0.3xR0.02xL2.0	0.3	0.02	2.0	0.13	4	50	52
CBNLR-2-0.3xR0.03xL0.5	0.3	0.03	0.5	0.13	4	50	52
CBNLR-2-0.3xR0.03xL0.75	0.3	0.03	0.75	0.13	4	50	52
CBNLR-2-0.3xR0.03xL1.0	0.3	0.03	1.0	0.13	4	50	52
CBNLR-2-0.3xR0.03xL1.5	0.3	0.03	1.5	0.13	4	50	52
CBNLR-2-0.3xR0.03xL2.0	0.3	0.03	2.0	0.13	4	50	52
CBNLR-2-0.3xR0.05xL0.5	0.3	0.05	0.5	0.13	4	50	52
CBNLR-2-0.3xR0.05xL0.75	0.3	0.05	0.75	0.13	4	50	52
CBNLR-2-0.3xR0.05xL1.0	0.3	0.05	1.0	0.13	4	50	52
CBNLR-2-0.3xR0.05xL1.5	0.3	0.05	1.5	0.13	4	50	52
CBNLR-2-0.3xR0.05xL2.0	0.3	0.05	2.0	0.13	4	50	52
CBNLR-2-0.4xR0.02xL0.5	0.4	0.02	0.5	0.24	4	50	52
CBNLR-2-0.4xR0.02xL1.0	0.4	0.02	1.0	0.24	4	50	52
CBNLR-2-0.4xR0.02xL1.5	0.4	0.02	1.5	0.24	4	50	52
CBNLR-2-0.4xR0.02xL2.0	0.4	0.02	2.0	0.24	4	50	52
CBNLR-2-0.4xR0.03xL0.5	0.4	0.03	0.5	0.24	4	50	52
CBNLR-2-0.4xR0.03xL1.0	0.4	0.03	1.0	0.24	4	50	52
CBNLR-2-0.4xR0.03xL1.5	0.4	0.03	1.5	0.24	4	50	52
CBNLR-2-0.4xR0.03xL2.0	0.4	0.03	2.0	0.24	4	50	52
CBNLR-2-0.4xR0.05xL0.5	0.4	0.05	0.5	0.24	4	50	52
CBNLR-2-0.4xR0.05xL1.0	0.4	0.05	1.0	0.24	4	50	53
CBNLR-2-0.4xR0.05xL1.5	0.4	0.05	1.5	0.24	4	50	53
CBNLR-2-0.4xR0.05xL2.0	0.4	0.05	2.0	0.24	4	50	53
CBNLR-2-0.4xR0.1xL0.5	0.4	0.1	0.5	0.24	4	50	53
CBNLR-2-0.4xR0.1xL1.0	0.4	0.1	1.0	0.24	4	50	53
LAPCBNLR-2-0.4xR0.1xL1.2	0.4	0.1	1.2	0.3	4	50	69
CBNLR-2-0.4xR0.1xL1.5	0.4	0.1	1.5	0.24	4	50	53

CBN엔드밀/래디우스 CBN EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
CBNLR-2-0.4xR0.1xL2.0	0.4	0.1	2.0	0.24	4	50	53
CBNLR-2-0.5xR0.02xL0.5	0.5	0.02	0.5	0.3	4	50	53
CBNLR-2-0.5xR0.02xL1.0	0.5	0.02	1.0	0.3	4	50	53
CBNLR-2-0.5xR0.02xL1.5	0.5	0.02	1.5	0.3	4	50	53
CBNLR-2-0.5xR0.02xL2.5	0.5	0.02	2.5	0.3	4	50	53
CBNLR-2-0.5xR0.03xL0.5	0.5	0.03	0.5	0.3	4	50	53
CBNLR-2-0.5xR0.03xL1.0	0.5	0.03	1.0	0.3	4	50	53
CBNLR-2-0.5xR0.03xL1.5	0.5	0.03	1.5	0.3	4	50	53
CBNLR-2-0.5xR0.03xL2.5	0.5	0.03	2.5	0.3	4	50	53
CBNLR-2-0.5xR0.05xL0.5	0.5	0.05	0.5	0.3	4	50	53
CBNLR-2-0.5xR0.05xL1.0	0.5	0.05	1.0	0.3	4	50	53
CBNLR-2-0.5xR0.05xL1.5	0.5	0.05	1.5	0.3	4	50	53
CBNLR-2-0.5xR0.05xL2.5	0.5	0.05	2.5	0.3	4	50	53
CBNLR-2-0.5xR0.1xL0.5	0.5	0.1	0.5	0.3	4	50	53
CBNLR-2-0.5xR0.1xL1.0	0.5	0.1	1.0	0.3	4	50	53
CBNLR-2-0.5xR0.1xL1.5	0.5	0.1	1.5	0.3	4	50	53
LAPCBNLR-2-0.5xR0.1xL1.5	0.5	0.1	1.5	0.38	4	50	69
CBNLR-2-0.5xR0.1xL2.5	0.5	0.1	2.5	0.3	4	50	53
CBNLR-2-0.6xR0.02xL0.5	0.6	0.02	0.5	0.3	4	50	53
CBNLR-3-0.6xR0.02xL0.5	0.6	0.02	0.5	0.3	4	50	59
CBNLR-2-0.6xR0.02xL1.0	0.6	0.02	1.0	0.3	4	50	53
CBNLR-3-0.6xR0.02xL1.0	0.6	0.02	1.0	0.3	4	50	59
CBNLR-2-0.6xR0.02xL1.5	0.6	0.02	1.5	0.3	4	50	53
CBNLR-3-0.6xR0.02xL1.5	0.6	0.02	1.5	0.3	4	50	59
CBNLR-3-0.6xR0.02xL2.0	0.6	0.02	2.0	0.3	4	50	59
CBNLR-2-0.6xR0.02xL2.5	0.6	0.02	2.5	0.3	4	50	53
CBNLR-3-0.6xR0.02xL2.5	0.6	0.02	2.5	0.3	4	50	59
CBNLR-2-0.6xR0.03xL0.5	0.6	0.03	0.5	0.3	4	50	53
CBNLR-2-0.6xR0.03xL1.0	0.6	0.03	1.0	0.3	4	50	53
CBNLR-2-0.6xR0.03xL1.5	0.6	0.03	1.5	0.3	4	50	53
CBNLR-2-0.6xR0.03xL2.5	0.6	0.03	2.5	0.3	4	50	53
CBNLR-2-0.6xR0.05xL0.5	0.6	0.05	0.5	0.3	4	50	53
CBNLR-3-0.6xR0.05xL0.5	0.6	0.05	0.5	0.3	4	50	59
CBNLR-2-0.6xR0.05xL1.0	0.6	0.05	1.0	0.3	4	50	53
CBNLR-3-0.6xR0.05xL1.0	0.6	0.05	1.0	0.3	4	50	59
CBNLR-2-0.6xR0.05xL1.5	0.6	0.05	1.5	0.3	4	50	53
CBNLR-3-0.6xR0.05xL1.5	0.6	0.05	1.5	0.3	4	50	59
CBNLR-3-0.6xR0.05xL2.0	0.6	0.05	2.0	0.3	4	50	59
CBNLR-2-0.6xR0.05xL2.5	0.6	0.05	2.5	0.3	4	50	53
CBNLR-3-0.6xR0.05xL2.5	0.6	0.05	2.5	0.3	4	50	59
CBNLR-2-0.6xR0.1xL0.5	0.6	0.1	0.5	0.3	4	50	53
CBNLR-3-0.6xR0.1xL0.5	0.6	0.1	0.5	0.3	4	50	59
CBNLR-2-0.6xR0.1xL1.0	0.6	0.1	1.0	0.3	4	50	53
CBNLR-3-0.6xR0.1xL1.0	0.6	0.1	1.0	0.3	4	50	59
CBNLR-2-0.6xR0.1xL1.5	0.6	0.1	1.5	0.3	4	50	53
CBNLR-3-0.6xR0.1xL1.5	0.6	0.1	1.5	0.3	4	50	59
LAPCBNLR-2-0.6xR0.1xL1.5	0.6	0.1	1.5	0.5	4	50	69
CBNLR-3-0.6xR0.1xL2.0	0.6	0.1	2.0	0.3	4	50	59
CBNLR-2-0.6xR0.1xL2.5	0.6	0.1	2.5	0.3	4	50	53
CBNLR-3-0.6xR0.1xL2.5	0.6	0.1	2.5	0.3	4	50	59
LAPCBNLR-2-0.6xR0.2xL1.5	0.6	0.2	1.5	0.5	4	50	69
CBNLR-2-0.8xR0.02xL1.5	0.8	0.02	1.5	0.56	4	50	53

CBN엔드밀/래디우스 CBN EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
CBNLR-3-0.8xR0.02xL1.5	0.8	0.02	1.5	0.56	4	50	59
CBNLR-2-0.8xR0.02xL2.5	0.8	0.02	2.5	0.56	4	50	53
CBNLR-3-0.8xR0.02xL2.5	0.8	0.02	2.5	0.56	4	50	59
CBNLR-2-0.8xR0.02xL5.0	0.8	0.02	5.0	0.56	4	50	53
CBNLR-3-0.8xR0.02xL5.0	0.8	0.02	5.0	0.56	4	50	59
CBNLR-2-0.8xR0.03xL1.5	0.8	0.03	1.5	0.56	4	50	53
CBNLR-2-0.8xR0.03xL2.5	0.8	0.03	2.5	0.56	4	50	53
CBNLR-2-0.8xR0.03xL5.0	0.8	0.03	5.0	0.56	4	50	53
CBNLR-2-0.8xR0.05xL1.5	0.8	0.05	1.5	0.56	4	50	54
CBNLR-3-0.8xR0.05xL1.5	0.8	0.05	1.5	0.56	4	50	59
CBNLR-2-0.8xR0.05xL2.5	0.8	0.05	2.5	0.56	4	50	54
CBNLR-3-0.8xR0.05xL2.5	0.8	0.05	2.5	0.56	4	50	59
CBNLR-2-0.8xR0.05xL5.0	0.8	0.05	5.0	0.56	4	50	54
CBNLR-3-0.8xR0.05xL5.0	0.8	0.05	5.0	0.56	4	50	59
CBNLR-2-0.8xR0.1xL1.5	0.8	0.1	1.5	0.56	4	50	54
CBNLR-3-0.8xR0.1xL1.5	0.8	0.1	1.5	0.56	4	50	59
CBNLR-2-0.8xR0.1xL2.5	0.8	0.1	2.5	0.56	4	50	54
CBNLR-3-0.8xR0.1xL2.5	0.8	0.1	2.5	0.56	4	50	59
CBNLR-2-0.8xR0.1xL5.0	0.8	0.1	5.0	0.56	4	50	54
CBNLR-3-0.8xR0.1xL5.0	0.8	0.1	5.0	0.56	4	50	59
CBNLR-2-1.0xR0.02xL1.0	1.0	0.02	1.0	0.7	4	50	54
CBNLR-4-1.0xR0.02xL1.0	1.0	0.02	1.0	0.7	4	50	61
CBNLR-2-1.0xR0.02xL2.0	1.0	0.02	2.0	0.7	4	50	54
CBNLR-4-1.0xR0.02xL2.0	1.0	0.02	2.0	0.7	4	50	61
CBNLR-2-1.0xR0.02xL3.0	1.0	0.02	3.0	0.7	4	50	54
CBNLR-4-1.0xR0.02xL3.0	1.0	0.02	3.0	0.7	4	50	61
CBNLR-2-1.0xR0.02xL5.0	1.0	0.02	5.0	0.7	4	50	54
CBNLR-4-1.0xR0.02xL5.0	1.0	0.02	5.0	0.7	4	50	61
CBNLR-2-1.0xR0.03xL1.0	1.0	0.03	1.0	0.7	4	50	54
CBNLR-2-1.0xR0.03xL2.0	1.0	0.03	2.0	0.7	4	50	54
CBNLR-2-1.0xR0.03xL3.0	1.0	0.03	3.0	0.7	4	50	54
CBNLR-2-1.0xR0.03xL5.0	1.0	0.03	5.0	0.7	4	50	54
CBNLR-2-1.0xR0.05xL1.0	1.0	0.05	1.0	0.7	4	50	54
CBNLR-4-1.0xR0.05xL1.0	1.0	0.05	1.0	0.7	4	50	61
CBNLR-2-1.0xR0.05xL2.0	1.0	0.05	2.0	0.7	4	50	54
CBNLR-4-1.0xR0.05xL2.0	1.0	0.05	2.0	0.7	4	50	61
CBNLR-2-1.0xR0.05xL3.0	1.0	0.05	3.0	0.7	4	50	54
CBNLR-4-1.0xR0.05xL3.0	1.0	0.05	3.0	0.7	4	50	61
CBNLR-2-1.0xR0.05xL5.0	1.0	0.05	5.0	0.7	4	50	54
CBNLR-4-1.0xR0.05xL5.0	1.0	0.05	5.0	0.7	4	50	61
CBNLR-2-1.0xR0.05xL10.0	1.0	0.05	10.0	0.7	4	50	54
CBNLR-4-1.0xR0.05xL10.0	1.0	0.05	10.0	0.7	4	50	61
CBNLR-2-1.0xR0.1xL1.0	1.0	0.1	1.0	0.7	4	50	54
CBNLR-4-1.0xR0.1xL1.0	1.0	0.1	1.0	0.7	4	50	61
CBNLR-2-1.0xR0.1xL2.0	1.0	0.1	2.0	0.7	4	50	54
CBNLR-4-1.0xR0.1xL2.0	1.0	0.1	2.0	0.7	4	50	61
LAPCBNLR-2-1.0xR0.1xL2.0	1.0	0.1	2.0	0.7	4	50	69
CBNLR-2-1.0xR0.1xL3.0	1.0	0.1	3.0	0.7	4	50	54
CBNLR-4-1.0xR0.1xL3.0	1.0	0.1	3.0	0.7	4	50	61
CBNLR-4-1.0xR0.1xL4.0	1.0	0.1	4.0	0.7	4	50	61
CBNLR-2-1.0xR0.1xL5.0	1.0	0.1	5.0	0.7	4	50	54
CBNLR-4-1.0xR0.1xL5.0	1.0	0.1	5.0	0.7	4	50	61

CBN엔드밀/래디우스 CBN EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
CBNLR-2-1.0xR0.1xL10.0	1.0	0.1	10.0	0.7	4	50	54
CBNLR-4-1.0xR0.1xL10.0	1.0	0.1	10.0	0.7	4	50	61
CBNLR-2-1.0xR0.2xL1.0	1.0	0.2	1.0	0.7	4	50	54
CBNLR-4-1.0xR0.2xL1.0	1.0	0.2	1.0	0.7	4	50	61
CBNLR-2-1.0xR0.2xL2.0	1.0	0.2	2.0	0.7	4	50	54
CBNLR-4-1.0xR0.2xL2.0	1.0	0.2	2.0	0.7	4	50	61
LAPCBNLR-2-1.0xR0.2xL2.0	1.0	0.2	2.0	0.7	4	50	69
CBNLR-2-1.0xR0.2xL3.0	1.0	0.2	3.0	0.7	4	50	54
CBNLR-4-1.0xR0.2xL3.0	1.0	0.2	3.0	0.7	4	50	61
CBNLR-2-1.0xR0.2xL5.0	1.0	0.2	5.0	0.7	4	50	54
CBNLR-4-1.0xR0.2xL5.0	1.0	0.2	5.0	0.7	4	50	61
LAPCBNLR-2-1.0xR0.3xL2.0	1.0	0.3	2.0	0.7	4	50	69
CBNLR-4-1.5xR0.02xL2.0	1.5	0.02	2.0	1.0	4	50	61
CBNLR-2-1.5xR0.02xL2.0	1.5	0.02	2.0	1.0	4	50	54
CBNLR-4-1.5xR0.02xL3.0	1.5	0.02	3.0	1.0	4	50	61
CBNLR-2-1.5xR0.02xL3.0	1.5	0.02	3.0	1.0	4	50	54
CBNLR-2-1.5xR0.02xL4.5	1.5	0.02	4.5	1.0	4	50	54
CBNLR-4-1.5xR0.02xL4.5	1.5	0.02	4.5	1.0	4	50	61
CBNLR-2-1.5xR0.02xL7.5	1.5	0.02	7.5	1.0	4	50	54
CBNLR-4-1.5xR0.02xL7.5	1.5	0.02	7.5	1.0	4	50	61
CBNLR-2-1.5xR0.03xL2.0	1.5	0.03	2.0	1.0	4	50	54
CBNLR-2-1.5xR0.03xL3.0	1.5	0.03	3.0	1.0	4	50	54
CBNLR-2-1.5xR0.03xL4.5	1.5	0.03	4.5	1.0	4	50	54
CBNLR-2-1.5xR0.03xL7.5	1.5	0.03	7.5	1.0	4	50	54
CBNLR-4-1.5xR0.05xL2.0	1.5	0.05	2.0	1.0	4	50	61
CBNLR-2-1.5xR0.05xL2.0	1.5	0.05	2.0	1.0	4	50	54
CBNLR-4-1.5xR0.05xL3.0	1.5	0.05	3.0	1.0	4	50	62
CBNLR-2-1.5xR0.05xL3.0	1.5	0.05	3.0	1.0	4	50	54
CBNLR-2-1.5xR0.05xL4.5	1.5	0.05	4.5	1.0	4	50	54
CBNLR-4-1.5xR0.05xL4.5	1.5	0.05	4.5	1.0	4	50	62
CBNLR-2-1.5xR0.05xL5.0	1.5	0.05	5.0	1.0	4	50	54
CBNLR-4-1.5xR0.05xL5.0	1.5	0.05	5.0	1.5	4	50	62
CBNLR-2-1.5xR0.05xL7.5	1.5	0.05	7.5	1.0	4	50	54
CBNLR-4-1.5xR0.05xL7.5	1.5	0.05	7.5	1.0	4	50	62
CBNLR-2-1.5xR0.05xL10.0	1.5	0.05	10.0	1.0	4	50	54
CBNLR-4-1.5xR0.05xL10.0	1.5	0.05	10.0	1.0	4	50	62
CBNLR-4-1.5xR0.1xL2.0	1.5	0.1	2.0	1.0	4	50	62
CBNLR-2-1.5xR0.1xL2.0	1.5	0.1	2.0	1.0	4	50	54
CBNLR-4-1.5xR0.1xL3.0	1.5	0.1	3.0	1.0	4	50	62
LAPCBNLR-2-1.5xR0.1xL3.0	1.5	0.1	3.0	1.0	4	50	69
CBNLR-2-1.5xR0.1xL3.0	1.5	0.1	3.0	1.0	4	50	54
CBNLR-2-1.5xR0.1xL4.5	1.5	0.1	4.5	1.0	4	50	54
CBNLR-4-1.5xR0.1xL4.5	1.5	0.1	4.5	1.0	4	50	62
CBNLR-2-1.5xR0.1xL5.0	1.5	0.1	5.0	1.0	4	50	55
CBNLR-4-1.5xR0.1xL5.0	1.5	0.1	5.0	1.0	4	50	62
CBNLR-2-1.5xR0.1xL7.5	1.5	0.1	7.5	1.0	4	50	55
CBNLR-4-1.5xR0.1xL7.5	1.5	0.1	7.5	1.0	4	50	62
CBNLR-2-1.5xR0.1xL10.0	1.5	0.1	10.0	1.0	4	50	55
CBNLR-4-1.5xR0.1xL10.0	1.5	0.1	10.0	1.0	4	50	62
CBNLR-4-1.5xR0.2xL2.0	1.5	0.2	2.0	1.0	4	50	62
CBNLR-2-1.5xR0.2xL2.0	1.5	0.2	2.0	1.0	4	50	55
CBNLR-4-1.5xR0.2xL3.0	1.5	0.2	3.0	1.0	4	50	62

CBN엔드밀/래디우스 CBN EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
LAPCBNLR-2-1.5xR0.2xL3.0	1.5	0.2	3.0	1.0	4	50	69
CBNLR-2-1.5xR0.2xL3.0	1.5	0.2	3.0	1.0	4	50	55
CBNLR-2-1.5xR0.2xL4.5	1.5	0.2	4.5	1.0	4	50	55
CBNLR-4-1.5xR0.2xL4.5	1.5	0.2	4.5	1.0	4	50	62
CBNLR-2-1.5xR0.2xL7.5	1.5	0.2	7.5	1.0	4	50	55
CBNLR-4-1.5xR0.2xL7.5	1.5	0.2	7.5	1.0	4	50	62
CBNLR-2-1.5xR0.3xL2.0	1.5	0.3	2.0	1.0	4	50	55
LAPCBNLR-2-1.5xR0.3xL3.0	1.5	0.3	3.0	1.0	4	50	69
CBNLR-2-1.5xR0.3xL3.0	1.5	0.3	3.0	1.0	4	50	55
CBNLR-4-1.5xR0.3xL3.0	1.5	0.3	3.0	1.0	4	50	62
CBNLR-2-1.5xR0.3xL4.5	1.5	0.3	4.5	1.0	4	50	55
CBNLR-2-1.5xR0.3xL7.5	1.5	0.3	7.5	1.0	4	50	55
CBNLR-2-2.0xR0.02xL3.0	2.0	0.02	3.0	1.2	4	50	55
CBNLR-4-2.0xR0.02xL3.0	2.0	0.02	3.0	1.2	4	50	62
CBNLR-2-2.0xR0.02xL4.0	2.0	0.02	4.0	1.2	4	50	55
CBNLR-4-2.0xR0.02xL4.0	2.0	0.02	4.0	1.2	4	50	62
CBNLR-2-2.0xR0.02xL6.0	2.0	0.02	6.0	1.2	4	50	55
CBNLR-4-2.0xR0.02xL6.0	2.0	0.02	6.0	1.2	4	50	62
CBNLR-2-2.0xR0.02xL10.0	2.0	0.02	10.0	1.2	4	50	55
CBNLR-2-2.0xR0.03xL3.0	2.0	0.03	3.0	1.2	4	50	55
CBNLR-2-2.0xR0.03xL4.0	2.0	0.03	4.0	1.2	4	50	55
CBNLR-2-2.0xR0.03xL6.0	2.0	0.03	6.0	1.2	4	50	55
CBNLR-2-2.0xR0.03xL10.0	2.0	0.03	10.0	1.2	4	50	55
CBNLR-2-2.0xR0.05xL3.0	2.0	0.05	3.0	1.2	4	50	55
CBNLR-4-2.0xR0.05xL3.0	2.0	0.05	3.0	1.2	4	50	62
CBNLR-2-2.0xR0.05xL4.0	2.0	0.05	4.0	1.2	4	50	55
CBNLR-4-2.0xR0.05xL4.0	2.0	0.05	4.0	1.2	4	50	62
CBNLR-2-2.0xR0.05xL5.0	2.0	0.05	5.0	1.2	4	50	55
CBNLR-4-2.0xR0.05xL5.0	2.0	0.05	5.0	1.2	4	50	62
CBNLR-2-2.0xR0.05xL6.0	2.0	0.05	6.0	1.2	4	50	55
CBNLR-4-2.0xR0.05xL6.0	2.0	0.05	6.0	1.2	4	50	62
CBNLR-4-2.0xR0.05xL10.0	2.0	0.05	10.0	1.2	4	50	62
CBNLR-2-2.0xR0.05xL10.0	2.0	0.05	10.0	1.2	4	50	55
CBNLR-2-2.0xR0.05xL15.0	2.0	0.05	15.0	1.2	4	50	55
CBNLR-4-2.0xR0.05xL15.0	2.0	0.05	15.0	1.2	4	50	62
CBNLR-2-2.0xR0.1xL3.0	2.0	0.1	3.0	1.2	4	50	55
CBNLR-4-2.0xR0.1xL3.0	2.0	0.1	3.0	1.2	4	50	62
CBNLR-2-2.0xR0.1xL4.0	2.0	0.1	4.0	1.2	4	50	55
CBNLR-4-2.0xR0.1xL4.0	2.0	0.1	4.0	1.2	4	50	62
CBNLR-2-2.0xR0.1xL5.0	2.0	0.1	5.0	1.2	4	50	55
LAPCBNLR-2-2.0xR0.1xL5.0	2.0	0.1	5.0	1.2	4	50	69
CBNLR-4-2.0xR0.1xL5.0	2.0	0.1	5.0	1.2	4	50	62
CBNLR-2-2.0xR0.1xL6.0	2.0	0.1	6.0	1.2	4	50	55
CBNLR-4-2.0xR0.1xL6.0	2.0	0.1	6.0	1.2	4	50	62
CBNLR-2-2.0xR0.1xL10.0	2.0	0.1	10.0	1.2	4	50	55
CBNLR-4-2.0xR0.1xL10.0	2.0	0.1	10.0	1.2	4	50	62
CBNLR-2-2.0xR0.1xL15.0	2.0	0.1	15.0	1.2	4	50	55
CBNLR-4-2.0xR0.1xL15.0	2.0	0.1	15.0	1.2	4	50	62
CBNLR-2-2.0xR0.2xL3.0	2.0	0.2	3.0	1.2	4	50	55
CBNLR-4-2.0xR0.2xL3.0	2.0	0.2	3.0	1.2	4	50	62
CBNLR-2-2.0xR0.2xL4.0	2.0	0.2	4.0	1.2	4	50	55
CBNLR-4-2.0xR0.2xL4.0	2.0	0.2	4.0	1.2	4	50	62

CBN엔드밀/래디우스 CBN EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
CBNLR-2-2.0xR0.2xL5.0	2.0	0.2	5.0	1.2	4	50	55
LAPCBNLR-2-2.0xR0.2xL5.0	2.0	0.2	5.0	1.2	4	50	69
CBNLR-4-2.0xR0.2xL5.0	2.0	0.2	5.0	1.2	4	50	62
CBNLR-2-2.0xR0.2xL6.0	2.0	0.2	6.0	1.2	4	50	55
CBNLR-4-2.0xR0.2xL6.0	2.0	0.2	6.0	1.2	4	50	62
CBNLR-4-2.0xR0.2xL10.0	2.0	0.2	10.0	1.2	4	50	62
CBNLR-2-2.0xR0.3xL3.0	2.0	0.3	3.0	1.2	4	50	55
CBNLR-2-2.0xR0.3xL4.0	2.0	0.3	4.0	1.2	4	50	55
CBNLR-2-2.0xR0.3xL5.0	2.0	0.3	5.0	1.2	4	50	55
LAPCBNLR-2-2.0xR0.3xL5.0	2.0	0.3	5.0	1.2	4	50	69
CBNLR-4-2.0xR0.3xL5.0	2.0	0.3	5.0	1.2	4	50	62
CBNLR-2-2.0xR0.3xL6.0	2.0	0.3	6.0	1.2	4	50	55
CBNLR-2-2.0xR0.3xL10.0	2.0	0.3	10.0	1.2	4	50	55
CBNLR-4-2.0xR0.3xL10.0	2.0	0.3	10.0	1.2	4	50	62
CBNLR-2-2.0xR0.5xL3.0	2.0	0.5	3.0	1.2	4	50	55
CBNLR-2-2.0xR0.5xL4.0	2.0	0.5	4.0	1.2	4	50	55
CBNLR-2-2.0xR0.5xL6.0	2.0	0.5	6.0	1.2	4	50	55
CBNLR-2-2.0xR0.5xL10.0	2.0	0.5	10.0	1.2	4	50	55
CBNLR-2-3.0xR0.05xL5.0	3.0	0.05	5.0	2.0	6	50	55
CBNLR-4-3.0xR0.05xL5.0	3.0	0.05	5.0	2.0	6	50	62
CBNLR-4-3.0xR0.05xL6.0	3.0	0.05	6.0	2.0	6	50	62
CBNLR-4-3.0xR0.05xL9.0	3.0	0.05	9.0	2.0	6	50	62
CBNLR-2-3.0xR0.05xL10.0	3.0	0.05	10.0	2.0	6	50	56
CBNLR-4-3.0xR0.05xL10.0	3.0	0.05	10.0	2.0	6	50	62
CBNLR-4-3.0xR0.05xL12.0	3.0	0.05	12.0	2.0	6	50	62
CBNLR-2-3.0xR0.05xL15.0	3.0	0.05	15.0	2.0	6	50	56
CBNLR-4-3.0xR0.05xL15.0	3.0	0.05	15.0	2.0	6	50	62
LAPCBNLR-2-3.0xR0.1xL5.0	3.0	0.1	5.0	2.0	6	50	69
CBNLR-2-3.0xR0.1xL5.0	3.0	0.1	5.0	2.0	6	50	56
CBNLR-4-3.0xR0.1xL5.0	3.0	0.1	5.0	2.0	6	50	62
CBNLR-4-3.0xR0.1xL6.0	3.0	0.1	6.0	2.0	6	50	63
CBNLR-4-3.0xR0.1xL9.0	3.0	0.1	9.0	2.0	6	50	63
CBNLR-2-3.0xR0.1xL10.0	3.0	0.1	10.0	2.0	6	50	56
CBNLR-4-3.0xR0.1xL10.0	3.0	0.1	10.0	2.0	6	50	63
CBNLR-4-3.0xR0.1xL12.0	3.0	0.1	12.0	2.0	6	50	63
CBNLR-2-3.0xR0.1xL15.0	3.0	0.1	15.0	2.0	6	50	56
CBNLR-4-3.0xR0.1xL15.0	3.0	0.1	15.0	2.0	6	50	63
LAPCBNLR-2-3.0xR0.2xL5.0	3.0	0.2	5.0	2.0	6	50	69
CBNLR-2-3.0xR0.2xL5.0	3.0	0.2	5.0	2.0	6	50	56
CBNLR-4-3.0xR0.2xL5.0	3.0	0.2	5.0	2.0	6	50	63
CBNLR-4-3.0xR0.2xL6.0	3.0	0.2	6.0	2.0	6	50	63
CBNLR-4-3.0xR0.2xL9.0	3.0	0.2	9.0	2.0	6	50	63
CBNLR-4-3.0xR0.2xL12.0	3.0	0.2	12.0	2.0	6	50	63
CBNLR-4-3.0xR0.2xL15.0	3.0	0.2	15.0	2.0	6	50	63
LAPCBNLR-2-3.0xR0.3xL5.0	3.0	0.3	5.0	2.0	6	50	69
CBNLR-2-3.0xR0.3xL5.0	3.0	0.3	5.0	2.0	6	50	56
CBNLR-4-3.0xR0.3xL5.0	3.0	0.3	5.0	2.0	6	50	63
CBNLR-4-3.0xR0.3xL10.0	3.0	0.3	10.0	2.0	6	50	63
CBNLR-4-4.0xR0.05xL15.0	4.0	0.05	15.0	2.0	6	50	63
CBNLR-4-4.0xR0.1xL10.0	4.0	0.1	10.0	2.0	6	50	63
CBNLR-4-4.0xR0.1xL15.0	4.0	0.1	15.0	2.0	6	50	63
CBNLR-4-4.0xR0.3xL10.0	4.0	0.3	10.0	2.0	6	50	63

CBN엔드밀/래디우스 CBN EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
CBNLR-4-4.0xR0.3xL15.0	4.0	0.3	15.0	2.0	6	50	63
CBNLR-4-4.0xR0.5xL15.0	4.0	0.5	15.0	2.0	6	50	63
CBNLR-4-5.0xR0.05xL15.0	5.0	0.05	15.0	2.0	6	50	63
CBNLR-4-5.0xR0.1xL15.0	5.0	0.1	15.0	2.0	6	50	63
CBNLR-4-5.0xR0.3xL15.0	5.0	0.3	15.0	2.0	6	50	63
CBNLR-4-5.0xR0.5xL15.0	5.0	0.5	15.0	2.0	6	50	63
CBNLR-4-6.0xR0.05xL15.0	6.0	0.05	15.0	2.0	6	50	63
CBNLR-4-6.0xR0.1xL10.0	6.0	0.1	10.0	2.0	6	50	63
CBNLR-4-6.0xR0.1xL15.0	6.0	0.1	15.0	2.0	6	50	63
CBNLR-4-6.0xR0.3xL10.0	6.0	0.3	10.0	2.0	6	50	63
CBNLR-4-6.0xR0.3xL15.0	6.0	0.3	15.0	2.0	6	50	63
CBNLR-4-6.0xR0.5xL15.0	6.0	0.5	15.0	2.0	6	50	63

CBN엔드밀/볼 CBN EndMills/Ball

코드No. Code No.	볼 반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
CBNLB-2-0.1xR0.05xL0.2	0.05	0.2	0.04	0.1	4	50	65
CBNLB-2-0.1xR0.05xL0.3	0.05	0.3	0.04	0.1	4	50	65
CBNLB-2-0.1xR0.05xL0.5	0.05	0.5	0.04	0.1	4	50	65
CBNLB-2-0.15xR0.075xL0.45	0.075	0.45	0.12	0.15	4	50	65
CBNLB-2-0.15xR0.075xL0.75	0.075	0.75	0.12	0.15	4	50	65
CBNLB-2-0.2xR0.1xL0.3	0.1	0.3	0.15	0.2	4	50	65
CBNLB-2-0.2xR0.1xL0.5	0.1	0.5	0.15	0.2	4	50	65
CBNLB-2-0.2xR0.1xL0.6	0.1	0.6	0.15	0.2	4	50	65
CBNLB-2-0.2xR0.1xL1.0	0.1	1.0	0.15	0.2	4	50	65
CBNLB-2-0.3xR0.15xL0.3	0.15	0.3	0.23	0.3	4	50	65
CBNLB-2-0.3xR0.15xL0.5	0.15	0.5	0.23	0.3	4	50	65
CBNLB-2-0.3xR0.15xL0.75	0.15	0.75	0.23	0.3	4	50	65
CBNLB-2-0.4xR0.2xL0.5	0.2	0.5	0.3	0.4	4	50	65
CBNLB-2-0.4xR0.2xL0.75	0.2	0.75	0.3	0.4	4	50	65
CBNLB-2-0.4xR0.2xL1.0	0.2	1.0	0.3	0.4	4	50	65
LAPCBNLB-2-0.4xR0.2xL1.0	0.2	1.0	0.3	0.4	4	50	71
CBNLB-2-0.4xR0.2xL1.2	0.2	1.2	0.3	0.4	4	50	65
CBNLB-2-0.4xR0.2xL2.0	0.2	2.0	0.3	0.4	4	50	65
CBNLB-2-0.4xR0.2xL3.0	0.2	3.0	0.3	0.4	4	50	65
CBNLB-2-0.5xR0.25xL1.0	0.25	1.0	0.38	0.5	4	50	65
CBNLB-2-0.5xR0.25xL1.5	0.25	1.5	0.38	0.5	4	50	65
CBNLB-2-0.5xR0.25xL2.5	0.25	2.5	0.38	0.5	4	50	65
CBNLB-2-0.5xR0.25xL3.5	0.25	3.5	0.38	0.5	4	50	65
CBNLB-2-0.6xR0.3xL1.2	0.3	1.2	0.5	0.6	4	50	65
CBNLB-2-0.6xR0.3xL1.5	0.3	1.5	0.5	0.6	4	50	65
LAPCBNLB-2-0.6xR0.3xL1.5	0.3	1.5	0.5	0.6	4	50	71
CBNLB-2-0.6xR0.3xL3.0	0.3	3.0	0.5	0.6	4	50	66
CBNLB-2-0.6xR0.3xL4.0	0.3	4.0	0.5	0.6	4	50	66
CBNLB-2-0.6xR0.3xL5.0	0.3	5.0	0.5	0.6	4	50	66
CBNLB-2-0.6xR0.3xL6.0	0.3	6.0	0.5	0.6	4	50	66
CBNLB-2-0.8xR0.4xL1.6	0.4	1.6	0.6	0.8	4	50	66
CBNLB-2-0.8xR0.4xL2.0	0.4	2.0	0.6	0.8	4	50	66
CBNLB-2-0.8xR0.4xL4.0	0.4	4.0	0.6	0.8	4	50	66
CBNLB-2-0.8xR0.4xL6.0	0.4	6.0	0.6	0.8	4	50	66
LAPCBNLB-2-1.0xR0.5xL2.0	0.5	2.0	0.7	1.0	4	50	71
CBNLB-2-1.0xR0.5xL2.0	0.5	2.0	0.7	1.0	4	50	66
CBNLB-2-1.0xR0.5xL2.5	0.5	2.5	0.7	1.0	4	50	66
CBNLB-2-1.0xR0.5xL3.0	0.5	3.0	0.7	1.0	4	50	66
CBNLB-2-1.0xR0.5xL4.0	0.5	4.0	0.7	1.0	4	50	66
CBNLB-2-1.0xR0.5xL5.0	0.5	5.0	0.7	1.0	4	50	66
CBNLB-2-1.0xR0.5xL6.0	0.5	6.0	0.7	1.0	4	50	66
CBNLB-2-1.0xR0.5xL8.0	0.5	8.0	0.7	1.0	4	50	66
CBNLB-2-1.0xR0.5xL10.0	0.5	10.0	0.7	1.0	4	50	66
CBNLB-2-1.2xR0.6xL2.4	0.6	2.4	0.8	1.2	4	50	66
CBNLB-2-1.2xR0.6xL3.0	0.6	3.0	0.8	1.2	4	50	66
CBNLB-2-1.2xR0.6xL6.0	0.6	6.0	0.8	1.2	4	50	66
CBNLB-2-1.5xR0.75xL3.0	0.75	3.0	1.0	1.5	4	50	66
LAPCBNLB-2-1.5xR0.75xL3.0	0.75	3.0	1.0	1.5	4	50	71
CBNLB-2-1.5xR0.75xL3.8	0.75	3.8	1.0	1.5	4	50	66
CBNLB-2-1.5xR0.75xL5.0	0.75	5.0	1.0	1.5	4	50	66
LAPCBNLB-2-1.5xR0.75xL5.0	0.75	5.0	1.0	1.5	4	50	71
CBNLB-2-1.5xR0.75xL7.5	0.75	7.5	1.0	1.5	4	50	66

CBN엔드밀/볼 CBN EndMills/Ball

코드No. Code No.	볼 반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
CBNLB-2-1.5xR0.75xL10.0	0.75	10.0	1.0	1.5	4	50	66
LAPCBNLB-2-1.5xR0.75xL10.0	0.75	10.0	1.0	1.5	4	50	71
CBNLB-2-1.5xR0.75xL15.0	0.75	15.0	1.0	1.5	4	50	66
CBNLB-2-2.0xR1.0xL4.0	1.0	4.0	1.2	2.0	4	50	66
CBNLB-2-2.0xR1.0xL5.0	1.0	5.0	1.2	2.0	4	50	66
LAPCBNLB-2-2.0xR1.0xL5.0	1.0	5.0	2.0	2.0	4	50	71
CBNLB-2-2.0xR1.0xL6.0	1.0	6.0	1.2	2.0	4	50	66
CBNLB-2-2.0xR1.0xL8.0	1.0	8.0	1.2	2.0	4	50	66
CBNLB-2-2.0xR1.0xL10.0	1.0	10.0	1.2	2.0	4	50	66
LAPCBNLB-2-2.0xR1.0xL10.0	1.0	10.0	2.0	2.0	4	50	71
CBNLB-2-2.0xR1.0xL14.0	1.0	14.0	1.2	2.0	4	50	66
LAPCBNLB-2-2.0xR1.0xL15.0	1.0	15.0	2.0	2.0	4	50	71
CBNLB-2-2.0xR1.0xL15.0	1.0	15.0	1.2	2.0	4	50	66
CBNLB-2-2.0xR1.0xL20.0	1.0	20.0	1.2	2.0	4	50	66
LAPCBNLB-2-3.0xR1.5xL5.0	1.5	5.0	2.0	3.0	6	50	71
CBNLB-2-3.0xR1.5xL5.0	1.5	5.0	2.0	3.0	6	50	66
CBNLB-2-3.0xR1.5xL6.0	1.5	6.0	2.0	3.0	6	50	66
CBNLB-2-3.0xR1.5xL9.0	1.5	9.0	2.0	3.0	6	50	66
LAPCBNLB-2-3.0xR1.5xL10.0	1.5	10.0	2.0	3.0	6	50	71
CBNLB-2-3.0xR1.5xL10.0	1.5	10.0	2.0	3.0	6	50	66
LAPCBNLB-2-3.0xR1.5xL15.0	1.5	15.0	2.0	3.0	6	50	71
CBNLB-2-3.0xR1.5xL15.0	1.5	15.0	2.0	3.0	6	50	66

초경 엔드밀/스퀘어 Carbide EndMills/Square

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAS-2-0.1x0.15	0.1	—	0.15	—	4	50	74
IUS-2-0.1x0.15	0.1	—	0.15	—	4	50	172
IULS-2-0.1xL0.3	0.1	0.3	0.1	—	4	50	183
IALS-2-0.1xL0.3	0.1	0.3	0.1	—	4	50	103
IULS-2-0.1xL0.5	0.1	0.5	0.1	—	4	50	183
IALS-2-0.1xL1.0	0.1	1.0	0.1	—	4	50	103
IULS-2-0.15xL0.3	0.15	0.3	0.12	—	4	50	183
IULS-2-0.15xL0.5	0.15	0.5	0.12	—	4	50	183
IUS-2-0.2x0.4	0.2	—	0.4	—	4	50	172
IAS-2-0.2x0.4	0.2	—	0.4	—	4	50	74
IALS-2-0.2xL0.5	0.2	0.5	0.15	—	4	50	103
IULS-2-0.2xL0.5	0.2	0.5	0.15	—	4	50	183
IULS-2-0.2xL0.75	0.2	0.75	0.15	—	4	50	183
IALS-2-0.2xL1.0	0.2	1.0	0.15	—	4	50	103
IULS-2-0.2xL1.0	0.2	1.0	0.15	—	4	50	183
IAS-2-0.3x0.3	0.3	—	0.3	—	4	50	74
IUS-2-0.3x0.6	0.3	—	0.6	—	4	50	172
IAS-2-0.3x0.6	0.3	—	0.6	—	4	50	74
IULS-2-0.3xL1.0	0.3	1.0	0.25	—	4	50	183
IALS-2-0.3xL1.5	0.3	1.5	0.25	—	4	50	103
IULS-2-0.3xL1.5	0.3	1.5	0.25	—	4	50	183
IULS-2-0.3xL2.0	0.3	2.0	0.25	—	4	50	183
IULS-2-0.3xL2.5	0.3	2.5	0.25	—	4	50	183
IALS-2-0.3xL3.0	0.3	3.0	0.25	—	4	50	103
IULS-2-0.3xL3.0	0.3	3.0	0.25	—	4	50	183
IAS-2-0.4x0.6	0.4	—	0.6	—	4	50	74
IUS-2-0.4x0.8	0.4	—	0.8	—	4	50	172
IAS-2-0.4x0.8	0.4	—	0.8	—	4	50	74
IULS-2-0.4xL1.0	0.4	1.0	0.3	—	4	50	183
IALS-2-0.4xL1.5	0.4	1.5	0.3	—	4	50	103
IULS-2-0.4xL1.5	0.4	1.5	0.3	—	4	50	183
IULS-2-0.4xL2.0	0.4	2.0	0.3	—	4	50	183
IULS-2-0.4xL2.5	0.4	2.5	0.3	—	4	50	183
IALS-2-0.4xL3.0	0.4	3.0	0.3	—	4	50	103
IULS-2-0.4xL3.0	0.4	3.0	0.3	—	4	50	183
IAS-2-0.5x0.8	0.5	—	0.8	—	4	50	74
IUS-2-0.5x1.0	0.5	—	1.0	—	4	50	172
IAS-2-0.5x1.25	0.5	—	1.25	—	4	50	74
IAS-2-0.5x2.0	0.5	—	2.0	—	4	50	74
IULS-2-0.5xL1.0	0.5	1.0	0.4	—	4	50	183
IULS-2-0.5xL1.5	0.5	1.5	0.4	—	4	50	183
IALS-2-0.5xL2.0	0.5	2.0	0.4	—	4	50	103
IULS-2-0.5xL2.0	0.5	2.0	0.4	—	4	50	183
IULS-2-0.5xL2.5	0.5	2.5	0.4	—	4	50	183
IULS-2-0.5xL3.0	0.5	3.0	0.4	—	4	50	183
IULS-2-0.5xL3.5	0.5	3.5	0.4	—	4	50	183
IALS-2-0.5xL4.0	0.5	4.0	0.4	—	4	50	103
IULS-2-0.5xL4.0	0.5	4.0	0.4	—	4	50	183
IAS-2-0.6x1.0	0.6	—	1.0	—	4	50	74
IUS-2-0.6x1.2	0.6	—	1.2	—	4	50	172
IAS-2-0.6x1.5	0.6	—	1.5	—	4	50	74
IAS-2-0.6x2.4	0.6	—	2.4	—	4	50	74

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALS-2-0.6xL1.5	0.6	1.5	0.5	—	4	50	103
IULS-2-0.6xL1.5	0.6	1.5	0.5	—	4	50	184
IULS-2-0.6xL2.0	0.6	2.0	0.5	—	4	50	184
IULS-2-0.6xL3.0	0.6	3.0	0.5	—	4	50	184
IULS-2-0.6xL4.0	0.6	4.0	0.5	—	4	50	184
IULS-2-0.6xL5.0	0.6	5.0	0.5	—	4	50	184
IULS-2-0.6xL6.0	0.6	6.0	0.5	—	4	50	184
IUS-2-0.7x1.4	0.7	—	1.4	—	4	50	172
IAS-2-0.7x1.8	0.7	—	1.8	—	4	50	74
IULS-2-0.7xL2.0	0.7	2.0	0.55	—	4	50	184
IULS-2-0.7xL4.0	0.7	4.0	0.55	—	4	50	184
IULS-2-0.7xL6.0	0.7	6.0	0.55	—	4	50	184
IAS-2-0.8x1.2	0.8	—	1.2	—	4	50	74
IUS-2-0.8x1.6	0.8	—	1.6	—	4	50	172
IAS-2-0.8x2.0	0.8	—	2.0	—	4	50	74
IAS-2-0.8x3.2	0.8	—	3.2	—	4	50	74
IULS-2-0.8xL3.0	0.8	3.0	0.65	—	4	50	184
IALS-2-0.8xL4.0	0.8	4.0	0.65	—	4	50	103
IULS-2-0.8xL4.0	0.8	4.0	0.65	—	4	50	184
IULS-2-0.8xL5.0	0.8	5.0	0.65	—	4	50	184
IULS-2-0.8xL6.0	0.8	6.0	0.65	—	4	50	184
IALS-2-0.8xL8.0	0.8	8.0	0.65	—	4	50	103
IULS-2-0.8xL8.0	0.8	8.0	0.65	—	4	50	184
IUS-2-0.9x1.8	0.9	—	1.8	—	4	50	172
IAS-2-0.9x2.0	0.9	—	2.0	—	4	50	74
IAS-2-1.0x1.5	1.0	—	1.5	—	4	50	74
IUS-4-1.0x2.0	1.0	—	2.0	—	4	50	175
IUS-2-1.0x2.0	1.0	—	2.0	—	4	50	172
IAS-2-1.0x2.5	1.0	—	2.5	—	4	50	74
IAS-4-1.0x2.5	1.0	—	2.5	—	4	50	95
IAS-2-1.0x4.0	1.0	—	4.0	—	4	50	74
IAS-4-1.0x4.0	1.0	—	4.0	—	4	50	95
IALS-2-1.0xL2.0	1.0	2.0	0.8	—	4	50	103
IULS-2-1.0xL2.0	1.0	2.0	0.8	—	4	50	184
IULS-2-1.0xL3.0	1.0	3.0	0.8	—	4	50	184
IALS-2-1.0xL4.0	1.0	4.0	0.8	—	4	50	103
IULS-2-1.0xL4.0	1.0	4.0	0.8	—	4	50	184
IULS-4-1.0xL4.0	1.0	4.0	0.8	—	4	50	189
IULS-2-1.0xL5.0	1.0	5.0	0.8	—	4	50	184
IALS-2-1.0xL6.0	1.0	6.0	0.8	—	4	50	103
IULS-2-1.0xL6.0	1.0	6.0	0.8	—	4	50	184
IULS-4-1.0xL6.0	1.0	6.0	0.8	—	4	50	189
IULS-2-1.0xL7.0	1.0	7.0	0.8	—	4	50	184
IALS-2-1.0xL8.0	1.0	8.0	0.8	—	4	50	103
IULS-2-1.0xL8.0	1.0	8.0	0.8	—	4	50	184
IULS-4-1.0xL8.0	1.0	8.0	0.8	—	4	50	189
IULS-2-1.0xL9.0	1.0	9.0	0.8	—	4	50	184
IALS-2-1.0xL10.0	1.0	10.0	0.8	—	4	50	103
IULS-2-1.0xL10.0	1.0	10.0	0.8	—	4	50	184
IULS-4-1.0xL10.0	1.0	10.0	0.8	—	4	50	189
IALS-2-1.0xL12.0	1.0	12.0	0.8	—	4	50	103
IULS-2-1.0xL12.0	1.0	12.0	0.8	—	4	50	184

초경 엔드밀/스퀘어 Carbide EndMills/Square

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IUS-2-1.1x2.2	1.1	—	2.2	—	4	50	172
IAS-2-1.1x2.5	1.1	—	2.5	—	4	50	74
IUS-2-1.2x2.4	1.2	—	2.4	—	4	50	172
IAS-2-1.2x3.0	1.2	—	3.0	—	4	50	74
IALS-2-1.2xL4.0	1.2	4.0	1.0	—	4	50	103
IALS-2-1.2xL6.0	1.2	6.0	1.0	—	4	50	103
IULS-2-1.2xL6.0	1.2	6.0	1.0	—	4	50	184
IULS-4-1.2xL6.0	1.2	6.0	1.0	—	4	50	189
IALS-2-1.2xL8.0	1.2	8.0	1.0	—	4	50	103
IULS-2-1.2xL8.0	1.2	8.0	1.0	—	4	50	184
IULS-4-1.2xL8.0	1.2	8.0	1.0	—	4	50	189
IALS-2-1.2xL10.0	1.2	10.0	1.0	—	4	50	103
IULS-2-1.2xL10.0	1.2	10.0	1.0	—	4	50	184
IULS-4-1.2xL10.0	1.2	10.0	1.0	—	4	50	189
IALS-2-1.2xL12.0	1.2	12.0	1.0	—	4	50	103
IULS-2-1.2xL12.0	1.2	12.0	1.0	—	4	50	184
IULS-4-1.2xL12.0	1.2	12.0	1.0	—	4	50	189
IULS-2-1.2xL16.0	1.2	16.0	1.0	—	4	50	184
IUS-2-1.3x2.6	1.3	—	2.6	—	4	50	172
IAS-2-1.3x3.0	1.3	—	3.0	—	4	50	74
IUS-2-1.4x2.8	1.4	—	2.8	—	4	50	172
IAS-2-1.4x3.5	1.4	—	3.5	—	4	50	74
IULS-2-1.4xL6.0	1.4	6.0	1.1	—	4	50	184
IULS-2-1.4xL12.0	1.4	12.0	1.1	—	4	50	184
IAS-2-1.5x2.0	1.5	—	2.0	—	4	50	74
IUS-4-1.5x3.0	1.5	—	3.0	—	4	50	175
IUS-2-1.5x3.0	1.5	—	3.0	—	4	50	172
IAS-2-1.5x4.0	1.5	—	4.0	—	4	50	74
IAS-4-1.5x4.0	1.5	—	4.0	—	4	50	95
IAS-2-1.5x6.0	1.5	—	6.0	—	4	50	74
IAS-4-1.5x6.0	1.5	—	6.0	—	4	50	95
IALS-2-1.5xL4.0	1.5	4.0	1.2	—	4	50	104
IULS-2-1.5xL4.0	1.5	4.0	1.2	—	4	50	184
IALS-2-1.5xL6.0	1.5	6.0	1.2	—	4	50	104
IULS-2-1.5xL6.0	1.5	6.0	1.2	—	4	50	184
IULS-4-1.5xL6.0	1.5	6.0	1.2	—	4	50	189
IALS-2-1.5xL8.0	1.5	8.0	1.2	—	4	50	104
IULS-2-1.5xL8.0	1.5	8.0	1.2	—	4	50	184
IULS-4-1.5xL8.0	1.5	8.0	1.2	—	4	50	189
IALS-2-1.5xL10.0	1.5	10.0	1.2	—	4	50	104
IULS-2-1.5xL10.0	1.5	10.0	1.2	—	4	50	184
IULS-4-1.5xL10.0	1.5	10.0	1.2	—	4	50	189
IALS-2-1.5xL12.0	1.5	12.0	1.2	—	4	50	104
IULS-2-1.5xL12.0	1.5	12.0	1.2	—	4	50	184
IULS-4-1.5xL12.0	1.5	12.0	1.2	—	4	50	189
IALS-2-1.5xL14.0	1.5	14.0	1.2	—	4	50	104
IULS-2-1.5xL14.0	1.5	14.0	1.2	—	4	50	184
IULS-4-1.5xL14.0	1.5	14.0	1.2	—	4	50	189
IALS-2-1.5xL16.0	1.5	16.0	1.2	—	4	50	104
IULS-2-1.5xL16.0	1.5	16.0	1.2	—	4	50	184
IULS-4-1.5xL16.0	1.5	16.0	1.2	—	4	50	189
IUS-2-1.6x3.2	1.6	—	3.2	—	4	50	172

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAS-2-1.6x4.0	1.6	—	4.0	—	4	50	74
IULS-2-1.6xL6.0	1.6	6.0	1.3	—	4	50	184
IULS-2-1.6xL8.0	1.6	8.0	1.3	—	4	50	184
IUS-2-1.7x3.4	1.7	—	3.4	—	4	50	172
IAS-2-1.7x4.5	1.7	—	4.5	—	4	50	74
IUS-2-1.8x3.6	1.8	—	3.6	—	4	50	172
IAS-2-1.8x4.5	1.8	—	4.5	—	4	50	74
IULS-2-1.8xL6.0	1.8	6.0	1.4	—	4	50	184
IULS-4-1.8xL6.0	1.8	6.0	1.4	—	4	50	189
IULS-2-1.8xL8.0	1.8	8.0	1.4	—	4	50	184
IULS-4-1.8xL8.0	1.8	8.0	1.4	—	4	50	189
IULS-2-1.8xL10.0	1.8	10.0	1.4	—	4	50	184
IULS-4-1.8xL10.0	1.8	10.0	1.4	—	4	50	189
IULS-2-1.8xL12.0	1.8	12.0	1.4	—	4	50	184
IULS-4-1.8xL12.0	1.8	12.0	1.4	—	4	50	189
IULS-2-1.8xL14.0	1.8	14.0	1.4	—	4	50	184
IULS-4-1.8xL14.0	1.8	14.0	1.4	—	4	50	189
IULS-2-1.8xL16.0	1.8	16.0	1.4	—	4	50	185
IULS-4-1.8xL16.0	1.8	16.0	1.4	—	4	50	189
IUS-2-1.9x3.8	1.9	—	3.8	—	4	50	172
IAS-2-1.9x5.0	1.9	—	5.0	—	4	50	74
IAS-2-2.0x3.0	2.0	—	3.0	—	4	50	74
IUS-4-2.0x4.0	2.0	—	4.0	—	4	50	175
IUS-2-2.0x4.0	2.0	—	4.0	—	4	50	172
IAS-2-2.0x5.0	2.0	—	5.0	—	4	50	74
IAS-4-2.0x5.0	2.0	—	5.0	—	4	50	95
IAS-2-2.0x8.0	2.0	—	8.0	—	4	50	74
IAS-4-2.0x8.0	2.0	—	8.0	—	4	50	95
IALS-2-2.0xL4.0	2.0	4.0	1.6	—	4	50	104
IULS-2-2.0xL4.0	2.0	4.0	1.6	—	4	50	185
IALS-2-2.0xL6.0	2.0	6.0	1.6	—	4	50	104
IULS-2-2.0xL6.0	2.0	6.0	1.6	—	4	50	185
IULS-4-2.0xL6.0	2.0	6.0	1.6	—	4	50	189
IALS-2-2.0xL8.0	2.0	8.0	1.6	—	4	50	104
IULS-2-2.0xL8.0	2.0	8.0	1.6	—	4	50	185
IULS-4-2.0xL8.0	2.0	8.0	1.6	—	4	50	189
IALS-2-2.0xL10.0	2.0	10.0	1.6	—	4	50	104
IULS-2-2.0xL10.0	2.0	10.0	1.6	—	4	50	185
IULS-4-2.0xL10.0	2.0	10.0	1.6	—	4	50	189
IALS-2-2.0xL12.0	2.0	12.0	1.6	—	4	50	104
IULS-2-2.0xL12.0	2.0	12.0	1.6	—	4	50	185
IULS-4-2.0xL12.0	2.0	12.0	1.6	—	4	50	189
IALS-2-2.0xL14.0	2.0	14.0	1.6	—	4	50	104
IULS-2-2.0xL14.0	2.0	14.0	1.6	—	4	50	185
IULS-4-2.0xL14.0	2.0	14.0	1.6	—	4	50	190
IALS-2-2.0xL15.0	2.0	15.0	1.6	—	4	50	104
IALS-2-2.0xL16.0	2.0	16.0	1.6	—	4	50	104
IULS-2-2.0xL16.0	2.0	16.0	1.6	—	4	50	185
IULS-4-2.0xL16.0	2.0	16.0	1.6	—	4	50	190
IALS-2-2.0xL18.0	2.0	18.0	1.6	—	4	50	104
IULS-2-2.0xL18.0	2.0	18.0	1.6	—	4	50	185
IULS-4-2.0xL18.0	2.0	18.0	1.6	—	4	50	190

초경 엔드밀/스퀘어 Carbide EndMills/Square

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALS-2-2.0xL20.0	2.0	20.0	1.6	—	4	60	104
IULS-2-2.0xL20.0	2.0	20.0	1.6	—	4	60	185
IULS-4-2.0xL20.0	2.0	20.0	1.6	—	4	60	190
IUS-2-2.1x4.2	2.1	—	4.2	—	4	50	172
IAS-2-2.1x5.5	2.1	—	5.5	—	4	50	74
IUS-2-2.2x4.4	2.2	—	4.4	—	4	50	172
IAS-2-2.2x5.5	2.2	—	5.5	—	4	50	74
IUS-2-2.3x4.6	2.3	—	4.6	—	4	50	172
IAS-2-2.3x6.0	2.3	—	6.0	—	4	50	74
IUS-2-2.4x4.8	2.4	—	4.8	—	4	50	172
IAS-2-2.4x6.0	2.4	—	6.0	—	4	50	74
IUS-2-2.5x5.0	2.5	—	5.0	—	4	50	172
IAS-2-2.5x7.0	2.5	—	7.0	—	4	50	74
IAS-4-2.5x7.0	2.5	—	7.0	—	4	50	95
IAS-2-2.5x10.0	2.5	—	10.0	—	4	50	74
IAS-4-2.5x10.0	2.5	—	10.0	—	4	50	95
IULS-2-2.5xL8.0	2.5	8.0	2.0	—	4	50	185
IULS-4-2.5xL8.0	2.5	8.0	2.0	—	4	50	190
IULS-2-2.5xL12.0	2.5	12.0	2.0	—	4	50	185
IULS-4-2.5xL12.0	2.5	12.0	2.0	—	4	50	190
IULS-2-2.5xL16.0	2.5	16.0	2.0	—	4	50	185
IULS-4-2.5xL16.0	2.5	16.0	2.0	—	4	50	190
IULS-2-2.5xL20.0	2.5	20.0	2.0	—	4	50	185
IULS-4-2.5xL20.0	2.5	20.0	2.0	—	4	50	190
IUS-2-2.6x5.2	2.6	—	5.2	—	4	50	172
IAS-2-2.6x7.0	2.6	—	7.0	—	4	50	74
IUS-2-2.7x5.4	2.7	—	5.4	—	4	50	172
IAS-2-2.7x7.0	2.7	—	7.0	—	4	50	74
IUS-2-2.8x5.6	2.8	—	5.6	—	4	50	172
IAS-2-2.8x7.0	2.8	—	7.0	—	4	50	74
IUS-2-2.9x5.8	2.9	—	5.8	—	4	50	172
IAS-2-2.9x8.0	2.9	—	8.0	—	4	50	74
IAS-2-3.0x5.0	3.0	—	5.0	—	4	50	74
IUS-4-3.0x6.0	3.0	—	6.0	—	4	50	175
IUS-2-3.0x6.0	3.0	—	6.0	—	4	50	172
IAS-4-3.0x8.0	3.0	—	8.0	—	4	50	95
IAS-2-3.0x8.0	3.0	—	8.0	—	4	50	75
IAS-2-3.0x12.0	3.0	—	12.0	—	4	50	75
IAS-4-3.0x12.0	3.0	—	12.0	—	4	50	95
IALS-2-3.0xL8.0	3.0	8.0	2.5	—	4	50	104
IULS-2-3.0xL8.0	3.0	8.0	2.5	—	4	50	185
IULS-4-3.0xL8.0	3.0	8.0	2.5	—	4	50	190
IALS-2-3.0xL10.0	3.0	10.0	2.5	—	4	50	104
IALS-2-3.0xL12.0	3.0	12.0	2.5	—	4	50	104
IULS-2-3.0xL12.0	3.0	12.0	2.5	—	4	50	185
IULS-4-3.0xL12.0	3.0	12.0	2.5	—	4	50	190
IALS-2-3.0xL14.0	3.0	14.0	2.5	—	4	50	104
IALS-2-3.0xL16.0	3.0	16.0	2.5	—	4	50	104
IULS-2-3.0xL16.0	3.0	16.0	2.5	—	4	50	185
IULS-4-3.0xL16.0	3.0	16.0	2.5	—	4	50	190
IALS-2-3.0xL18.0	3.0	18.0	2.5	—	4	50	104
IALS-2-3.0xL20.0	3.0	20.0	2.5	—	4	50	104

초경 엔드밀/스퀘어 Carbide EndMills/Square

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IULS-2-3.0xL20.0	3.0	20.0	2.5	—	4	50	185
IULS-4-3.0xL20.0	3.0	20.0	2.5	—	4	50	190
IALS-2-3.0xL25.0	3.0	25.0	2.5	—	4	60	104
IULS-2-3.0xL25.0	3.0	25.0	2.5	—	4	60	185
IULS-4-3.0xL25.0	3.0	25.0	2.5	—	4	60	190
IALS-2-3.0xL30.0	3.0	30.0	2.5	—	4	60	104
IULS-2-3.0xL30.0	3.0	30.0	2.5	—	4	60	185
IULS-4-3.0xL30.0	3.0	30.0	2.5	—	4	60	190
IAS-2-3.1x8.0	3.1	—	8.0	—	6	50	75
IAS-2-3.2x8.0	3.2	—	8.0	—	6	50	75
IAS-2-3.3x9.0	3.3	—	9.0	—	6	50	75
IAS-2-3.4x9.0	3.4	—	9.0	—	6	50	75
IUS-2-3.5x7.0	3.5	—	7.0	—	6	50	172
IAS-2-3.5x9.0	3.5	—	9.0	—	6	50	75
IAS-4-3.5x9.0	3.5	—	9.0	—	6	50	95
IAS-2-3.6x9.0	3.6	—	9.0	—	6	50	75
IAS-2-3.7x10.0	3.7	—	10.0	—	6	50	75
IAS-2-3.8x10.0	3.8	—	10.0	—	6	50	75
IAS-2-3.9x10.0	3.9	—	10.0	—	6	50	75
IAS-2-4.0x6.0	4.0	—	6.0	—	6	50	75
IUS-4-4.0x8.0	4.0	—	8.0	—	6	50	175
IUS-2-4.0x8.0	4.0	—	8.0	—	6	50	172
IAS-4-4.0x10.0	4.0	—	10.0	—	6	50	95
IAS-2-4.0x10.0	4.0	—	10.0	—	6	50	75
IAS-2-4.0x16.0	4.0	—	16.0	—	6	50	75
IAS-4-4.0x16.0	4.0	—	16.0	—	6	50	95
IULS-2-4.0xL10.0	4.0	10.0	3.2	—	6	50	185
IALS-2-4.0xL10.0	4.0	10.0	3.2	—	6	50	104
IALS-2-4.0xL12.0	4.0	12.0	3.2	—	6	50	104
IULS-4-4.0xL12.0	4.0	12.0	3.2	—	6	50	190
IULS-2-4.0xL15.0	4.0	15.0	3.2	—	6	50	185
IALS-2-4.0xL16.0	4.0	16.0	3.2	—	6	50	104
IULS-4-4.0xL16.0	4.0	16.0	3.2	—	6	50	190
IULS-2-4.0xL20.0	4.0	20.0	3.2	—	6	60	185
IALS-2-4.0xL20.0	4.0	20.0	3.2	—	6	50	104
IULS-4-4.0xL20.0	4.0	20.0	3.2	—	6	60	190
IALS-2-4.0xL25.0	4.0	25.0	3.2	—	6	60	104
IULS-4-4.0xL25.0	4.0	25.0	3.2	—	6	60	190
IALS-2-4.0xL30.0	4.0	30.0	3.2	—	6	60	104
IULS-4-4.0xL30.0	4.0	30.0	3.2	—	6	70	190
IALS-2-4.0xL35.0	4.0	35.0	3.2	—	6	70	104
IULS-4-4.0xL35.0	4.0	35.0	3.2	—	6	70	190
IAS-2-4.1x11.0	4.1	—	11.0	—	6	50	75
IAS-2-4.2x11.0	4.2	—	11.0	—	6	50	75
IAS-2-4.3x11.0	4.3	—	11.0	—	6	50	75
IAS-2-4.4x11.0	4.4	—	11.0	—	6	50	75
IUS-2-4.5x9.0	4.5	—	9.0	—	6	50	172
IAS-2-4.5x12.0	4.5	—	12.0	—	6	50	75
IAS-4-4.5x12.0	4.5	—	12.0	—	6	50	95
IAS-2-4.6x12.0	4.6	—	12.0	—	6	50	75
IAS-2-4.7x12.0	4.7	—	12.0	—	6	50	75
IAS-2-4.8x12.0	4.8	—	12.0	—	6	50	75

초경 엔드밀/스퀘어 Carbide EndMills/Square

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAS-2-4.9x13.0	4.9	—	13.0	—	6	50	75
IAS-2-5.0x8.0	5.0	—	8.0	—	6	50	75
IUS-2-5.0x10.0	5.0	—	10.0	—	6	50	172
IUS-6-5.0x10.0	5.0	—	10.0	—	6	50	179
IAS-4-5.0x13.0	5.0	—	13.0	—	6	50	95
IAS-2-5.0x13.0	5.0	—	13.0	—	6	50	75
IUS-6-5.0x15.0	5.0	—	15.0	—	6	50	179
IAS-2-5.0x20.0	5.0	—	20.0	—	6	60	75
IAS-4-5.0x20.0	5.0	—	20.0	—	6	60	95
IULS-2-5.0xL15.0	5.0	15.0	4.0	—	6	50	185
IALS-2-5.0xL15.0	5.0	15.0	4.0	—	6	50	104
IULS-4-5.0xL16.0	5.0	16.0	4.0	—	6	50	190
IULS-2-5.0xL20.0	5.0	20.0	4.0	—	6	50	185
IALS-2-5.0xL20.0	5.0	20.0	4.0	—	6	50	104
IALS-2-5.0xL25.0	5.0	25.0	4.0	—	6	60	104
IULS-4-5.0xL25.0	5.0	25.0	4.0	—	6	60	190
IALS-2-5.0xL30.0	5.0	30.0	4.0	—	6	60	104
IALS-2-5.0xL35.0	5.0	35.0	4.0	—	6	70	104
IULS-4-5.0xL35.0	5.0	35.0	4.0	—	6	70	190
IALS-2-5.0xL40.0	5.0	40.0	4.0	—	6	70	104
IAS-2-5.1x13.0	5.1	—	13.0	—	6	50	75
IAS-2-5.2x13.0	5.2	—	13.0	—	6	50	75
IAS-2-5.3x14.0	5.3	—	14.0	—	6	50	75
IAS-2-5.4x14.0	5.4	—	14.0	—	6	50	75
IUS-2-5.5x11.0	5.5	—	11.0	—	6	50	172
IAS-2-5.5x14.0	5.5	—	14.0	—	6	50	75
IAS-4-5.5x14.0	5.5	—	14.0	—	6	50	95
IAS-2-5.6x14.0	5.6	—	14.0	—	6	50	75
IAS-2-5.7x15.0	5.7	—	15.0	—	6	50	75
IAS-2-5.8x15.0	5.8	—	15.0	—	6	50	75
IAS-2-5.9x15.0	5.9	—	15.0	—	6	50	75
IAS-2-6.0x10.0	6.0	—	10.0	—	6	50	75
IUS-4-6.0x12.0	6.0	—	12.0	—	6	60	175
IUS-2-6.0x12.0	6.0	—	12.0	—	6	50	172
IUS-6-6.0x12.0	6.0	—	12.0	—	6	50	179
IAS-4-6.0x15.0	6.0	—	15.0	—	6	50	95
IAS-2-6.0x15.0	6.0	—	15.0	—	6	50	75
IUS-4-6.0x18.0	6.0	—	18.0	—	6	60	175
IUS-6-6.0x18.0	6.0	—	18.0	—	6	60	179
IAS-2-6.0x24.0	6.0	—	24.0	—	6	60	75
IAS-4-6.0x24.0	6.0	—	24.0	—	6	60	95
IULS-2-6.0xL15.0	6.0	15.0	5.0	—	6	50	185
IALS-2-6.0xL20.0	6.0	20.0	6.0	—	6	50	104
IULS-2-6.0xL20.0	6.0	20.0	5.0	—	6	50	185
IULS-4-6.0xL20.0	6.0	20.0	5.0	—	6	50	190
IALS-2-6.0xL30.0	6.0	30.0	6.0	—	6	60	104
IULS-2-6.0xL30.0	6.0	30.0	5.0	—	6	60	185
IULS-4-6.0xL30.0	6.0	30.0	5.0	—	6	60	190
IALS-2-6.0xL40.0	6.0	40.0	6.0	—	6	70	104
IULS-4-6.0xL40.0	6.0	40.0	5.0	—	6	70	190
IALS-2-6.0xL50.0	6.0	50.0	6.0	—	6	80	104
IULS-4-6.0xL50.0	6.0	50.0	5.0	—	6	80	190

초경 엔드밀/스퀘어 Carbide EndMills/Square

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALS-2-6.0xL60.0	6.0	60.0	6.0	—	6	90	104
IAS-2-6.5x17.0	6.5	—	17.0	—	8	70	75
IAS-4-6.5x17.0	6.5	—	17.0	—	8	70	95
IAS-2-6.5x20.0	6.5	—	20.0	—	8	70	75
IAS-2-7.0x18.0	7.0	—	18.0	—	8	70	75
IAS-4-7.0x18.0	7.0	—	18.0	—	8	70	95
IAS-4-7.5x19.0	7.5	—	19.0	—	8	70	95
IAS-2-7.5x20.0	7.5	—	20.0	—	8	70	75
IUS-4-8.0x16.0	8.0	—	16.0	—	8	70	175
IUS-6-8.0x16.0	8.0	—	16.0	—	8	70	179
IAS-2-8.0x20.0	8.0	—	20.0	—	8	70	75
IAS-4-8.0x20.0	8.0	—	20.0	—	8	70	95
IUS-4-8.0x24.0	8.0	—	24.0	—	8	70	175
IUS-6-8.0x24.0	8.0	—	24.0	—	8	70	179
IAS-2-8.0x32.0	8.0	—	32.0	—	8	80	75
IAS-4-8.0x32.0	8.0	—	32.0	—	8	80	95
IAS-4-8.5x22.0	8.5	—	22.0	—	10	80	96
IAS-2-8.5x23.0	8.5	—	23.0	—	10	80	75
IAS-2-9.0x23.0	9.0	—	23.0	—	10	80	76
IAS-4-9.0x23.0	9.0	—	23.0	—	10	80	96
IAS-4-9.5x24.0	9.5	—	24.0	—	10	80	96
IAS-2-9.5x25.0	9.5	—	25.0	—	10	80	76
IUS-4-10.0x20.0	10.0	—	20.0	—	10	80	175
IUS-6-10.0x20.0	10.0	—	20.0	—	10	80	179
IAS-2-10.0x25.0	10.0	—	25.0	—	10	80	76
IAS-4-10.0x25.0	10.0	—	25.0	—	10	80	96
IUS-4-10.0x30.0	10.0	—	30.0	—	10	80	175
IUS-6-10.0x30.0	10.0	—	30.0	—	10	80	179
IAS-2-10.0x40.0	10.0	—	40.0	—	10	90	76
IAS-4-10.0x40.0	10.0	—	40.0	—	10	90	96
IAS-2-10.5x28.0	10.5	—	28.0	—	12	110	76
IAS-2-11.0x28.0	11.0	—	28.0	—	12	110	76
IAS-2-11.5x30.0	11.5	—	30.0	—	12	110	76
IUS-4-12.0x24.0	12.0	—	24.0	—	12	110	175
IUS-6-12.0x24.0	12.0	—	24.0	—	12	110	179
IAS-2-12.0x30.0	12.0	—	30.0	—	12	110	76
IAS-4-12.0x30.0	12.0	—	30.0	—	12	110	96
IUS-4-12.0x36.0	12.0	—	36.0	—	12	110	175
IUS-6-12.0x36.0	12.0	—	36.0	—	12	110	179
IAS-2-12.0x48.0	12.0	—	48.0	—	12	120	76
IAS-4-12.0x48.0	12.0	—	48.0	—	12	120	96
IAS-4-14.0x26.0	14.0	—	26.0	—	14	110	96
IAS-2-14.0x28.0	14.0	—	28.0	—	14	110	76
IUS-4-14.0x35.0	14.0	—	35.0	—	14	120	175
IUS-6-14.0x35.0	14.0	—	35.0	—	14	120	179
IAS-4-16.0x32.0	16.0	—	32.0	—	16	120	96
IUS-4-16.0x40.0	16.0	—	40.0	—	16	130	175
IUS-6-16.0x40.0	16.0	—	40.0	—	16	130	179
IAS-2-16.0x48.0	16.0	—	48.0	—	16	140	76
IAS-4-18.0x32.0	18.0	—	32.0	—	18	120	96
IUS-4-18.0x45.0	18.0	—	45.0	—	18	140	175
IUS-6-18.0x45.0	18.0	—	45.0	—	18	140	179

초경 엔드밀/스퀘어 Carbide EndMills/Square

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	래디우스 R (R) Corner Radius	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAS-2-18.0x54.0	18.0	—	54.0	—	18	140	76
IAS-4-20.0x38.0	20.0	—	38.0	—	20	130	96
IUS-4-20.0x50.0	20.0	—	50.0	—	20	140	175
IUS-6-20.0x50.0	20.0	—	50.0	—	20	140	179
IAS-2-20.0x60.0	20.0	—	60.0	—	20	150	76

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IULR-2-0.2xR0.02xL0.5	0.2	0.02	0.5	0.15	4	50	201
IULR-2-0.2xR0.02xL1.0	0.2	0.02	1.0	0.15	4	50	201
IULR-2-0.2xR0.05xL0.5	0.2	0.05	0.5	0.15	4	50	201
IULR-2-0.2xR0.05xL1.0	0.2	0.05	1.0	0.15	4	50	201
IULR-2-0.3xR0.02xL1.0	0.3	0.02	1.0	0.25	4	50	201
IULR-2-0.3xR0.02xL1.5	0.3	0.02	1.5	0.25	4	50	201
IULR-2-0.3xR0.02xL2.0	0.3	0.02	2.0	0.25	4	50	201
IULR-2-0.3xR0.02xL2.5	0.3	0.02	2.5	0.25	4	50	201
IULR-2-0.3xR0.02xL3.0	0.3	0.02	3.0	0.25	4	50	201
IULR-2-0.3xR0.05xL1.0	0.3	0.05	1.0	0.25	4	50	201
IULR-2-0.3xR0.05xL1.5	0.3	0.05	1.5	0.25	4	50	201
IULR-2-0.3xR0.05xL2.0	0.3	0.05	2.0	0.25	4	50	201
IULR-2-0.3xR0.05xL2.5	0.3	0.05	2.5	0.25	4	50	201
IULR-2-0.3xR0.05xL3.0	0.3	0.05	3.0	0.25	4	50	201
IULR-2-0.4xR0.02xL1.0	0.4	0.02	1.0	0.3	4	50	201
IULR-2-0.4xR0.02xL1.5	0.4	0.02	1.5	0.3	4	50	201
IULR-2-0.4xR0.02xL2.0	0.4	0.02	2.0	0.3	4	50	201
IULR-2-0.4xR0.02xL2.5	0.4	0.02	2.5	0.3	4	50	201
IULR-2-0.4xR0.02xL3.0	0.4	0.02	3.0	0.3	4	50	201
IULR-2-0.4xR0.05xL1.0	0.4	0.05	1.0	0.3	4	50	201
IALR-2-0.4xR0.05xL1.0	0.4	0.05	1.0	0.3	4	50	127
IULR-2-0.4xR0.05xL1.5	0.4	0.05	1.5	0.3	4	50	201
IALR-2-0.4xR0.05xL1.5	0.4	0.05	1.5	0.3	4	50	127
IULR-2-0.4xR0.05xL2.0	0.4	0.05	2.0	0.3	4	50	201
IALR-2-0.4xR0.05xL2.0	0.4	0.05	2.0	0.3	4	50	127
IULR-2-0.4xR0.05xL2.5	0.4	0.05	2.5	0.3	4	50	201
IULR-2-0.4xR0.05xL3.0	0.4	0.05	3.0	0.3	4	50	201
IALR-2-0.4xR0.05xL3.0	0.4	0.05	3.0	0.3	4	50	127
IULR-2-0.4xR0.1xL1.0	0.4	0.1	1.0	0.3	4	50	202
IALR-2-0.4xR0.1xL1.0	0.4	0.1	1.0	0.3	4	50	127
IALR-2-0.4xR0.1xL1.5	0.4	0.1	1.5	0.3	4	50	127
IULR-2-0.4xR0.1xL2.0	0.4	0.1	2.0	0.3	4	50	202
IALR-2-0.4xR0.1xL2.0	0.4	0.1	2.0	0.3	4	50	127
IULR-2-0.4xR0.1xL3.0	0.4	0.1	3.0	0.3	4	50	202
IALR-2-0.4xR0.1xL3.0	0.4	0.1	3.0	0.3	4	50	127
IULR-2-0.5xR0.02xL1.0	0.5	0.02	1.0	0.4	4	50	202
IULR-2-0.5xR0.02xL2.0	0.5	0.02	2.0	0.4	4	50	202
IULR-2-0.5xR0.02xL3.0	0.5	0.02	3.0	0.4	4	50	202
IULR-2-0.5xR0.02xL4.0	0.5	0.02	4.0	0.4	4	50	202
IULR-2-0.5xR0.05xL1.0	0.5	0.05	1.0	0.4	4	50	202
IALR-2-0.5xR0.05xL1.0	0.5	0.05	1.0	0.4	4	50	127
IULR-2-0.5xR0.05xL2.0	0.5	0.05	2.0	0.4	4	50	202
IALR-2-0.5xR0.05xL2.0	0.5	0.05	2.0	0.4	4	50	127
IULR-2-0.5xR0.05xL3.0	0.5	0.05	3.0	0.4	4	50	202
IALR-2-0.5xR0.05xL3.0	0.5	0.05	3.0	0.4	4	50	127
IULR-2-0.5xR0.05xL4.0	0.5	0.05	4.0	0.4	4	50	202
IALR-2-0.5xR0.05xL4.0	0.5	0.05	4.0	0.4	4	50	127
IULR-2-0.5xR0.1xL1.0	0.5	0.1	1.0	0.4	4	50	202
IALR-2-0.5xR0.1xL1.0	0.5	0.1	1.0	0.4	4	50	127
IULR-2-0.5xR0.1xL2.0	0.5	0.1	2.0	0.4	4	50	202
IALR-2-0.5xR0.1xL2.0	0.5	0.1	2.0	0.4	4	50	127
IULR-2-0.5xR0.1xL3.0	0.5	0.1	3.0	0.4	4	50	202

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALR-2-0.5xR0.1xL3.0	0.5	0.1	3.0	0.4	4	50	127
IULR-2-0.5xR0.1xL4.0	0.5	0.1	4.0	0.4	4	50	202
IALR-2-0.5xR0.1xL4.0	0.5	0.1	4.0	0.4	4	50	127
IULR-2-0.6xR0.02xL2.0	0.6	0.02	2.0	0.5	4	50	202
IULR-3-0.6xR0.02xL2.0	0.6	0.02	2.0	0.5	4	50	205
IULR-2-0.6xR0.02xL4.0	0.6	0.02	4.0	0.5	4	50	202
IULR-3-0.6xR0.02xL4.0	0.6	0.02	4.0	0.5	4	50	205
IULR-2-0.6xR0.02xL6.0	0.6	0.02	6.0	0.5	4	50	202
IULR-3-0.6xR0.02xL6.0	0.6	0.02	6.0	0.5	4	50	205
IULR-2-0.6xR0.05xL2.0	0.6	0.05	2.0	0.5	4	50	202
IULR-3-0.6xR0.05xL2.0	0.6	0.05	2.0	0.5	4	50	205
IALR-2-0.6xR0.05xL2.0	0.6	0.05	2.0	0.5	4	50	127
IALR-2-0.6xR0.05xL3.0	0.6	0.05	3.0	0.5	4	50	127
IULR-2-0.6xR0.05xL4.0	0.6	0.05	4.0	0.5	4	50	202
IULR-3-0.6xR0.05xL4.0	0.6	0.05	4.0	0.5	4	50	205
IALR-2-0.6xR0.05xL4.0	0.6	0.05	4.0	0.5	4	50	127
IULR-2-0.6xR0.05xL6.0	0.6	0.05	6.0	0.5	4	50	202
IULR-3-0.6xR0.05xL6.0	0.6	0.05	6.0	0.5	4	50	205
IALR-2-0.6xR0.05xL6.0	0.6	0.05	6.0	0.5	4	50	127
IULR-2-0.6xR0.1xL2.0	0.6	0.1	2.0	0.5	4	50	202
IULR-3-0.6xR0.1xL2.0	0.6	0.1	2.0	0.5	4	50	205
IALR-2-0.6xR0.1xL2.0	0.6	0.1	2.0	0.5	4	50	127
IALR-2-0.6xR0.1xL3.0	0.6	0.1	3.0	0.5	4	50	127
IULR-2-0.6xR0.1xL4.0	0.6	0.1	4.0	0.5	4	50	202
IULR-3-0.6xR0.1xL4.0	0.6	0.1	4.0	0.5	4	50	205
IALR-2-0.6xR0.1xL4.0	0.6	0.1	4.0	0.5	4	50	127
IULR-2-0.6xR0.1xL6.0	0.6	0.1	6.0	0.5	4	50	202
IULR-3-0.6xR0.1xL6.0	0.6	0.1	6.0	0.5	4	50	205
IALR-2-0.6xR0.1xL6.0	0.6	0.1	6.0	0.5	4	50	127
IALR-2-0.6xR0.2xL2.0	0.6	0.2	2.0	0.5	4	50	128
IALR-2-0.6xR0.2xL3.0	0.6	0.2	3.0	0.5	4	50	128
IALR-2-0.6xR0.2xL4.0	0.6	0.2	4.0	0.5	4	50	128
IALR-2-0.6xR0.2xL6.0	0.6	0.2	6.0	0.5	4	50	128
IULR-2-0.8xR0.02xL2.0	0.8	0.02	2.0	0.65	4	50	202
IULR-3-0.8xR0.02xL2.0	0.8	0.02	2.0	0.65	4	50	205
IULR-2-0.8xR0.02xL4.0	0.8	0.02	4.0	0.65	4	50	202
IULR-3-0.8xR0.02xL4.0	0.8	0.02	4.0	0.65	4	50	205
IULR-2-0.8xR0.02xL6.0	0.8	0.02	6.0	0.65	4	50	202
IULR-3-0.8xR0.02xL6.0	0.8	0.02	6.0	0.65	4	50	205
IULR-2-0.8xR0.02xL8.0	0.8	0.02	8.0	0.65	4	50	202
IULR-3-0.8xR0.02xL8.0	0.8	0.02	8.0	0.65	4	50	205
IULR-2-0.8xR0.05xL2.0	0.8	0.05	2.0	0.65	4	50	202
IULR-3-0.8xR0.05xL2.0	0.8	0.05	2.0	0.65	4	50	205
IULR-2-0.8xR0.05xL4.0	0.8	0.05	4.0	0.65	4	50	202
IULR-3-0.8xR0.05xL4.0	0.8	0.05	4.0	0.65	4	50	205
IALR-2-0.8xR0.05xL4.0	0.8	0.05	4.0	0.65	4	50	128
IULR-2-0.8xR0.05xL6.0	0.8	0.05	6.0	0.65	4	50	202
IULR-3-0.8xR0.05xL6.0	0.8	0.05	6.0	0.65	4	50	205
IALR-2-0.8xR0.05xL6.0	0.8	0.05	6.0	0.7	4	50	128
IULR-2-0.8xR0.05xL8.0	0.8	0.05	8.0	0.65	4	50	202
IULR-3-0.8xR0.05xL8.0	0.8	0.05	8.0	0.65	4	50	205
IALR-2-0.8xR0.05xL8.0	0.8	0.05	8.0	0.7	4	50	128

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IULR-2-0.8xR0.1xL2.0	0.8	0.1	2.0	0.65	4	50	202
IULR-3-0.8xR0.1xL2.0	0.8	0.1	2.0	0.65	4	50	205
IULR-2-0.8xR0.1xL4.0	0.8	0.1	4.0	0.65	4	50	202
IULR-3-0.8xR0.1xL4.0	0.8	0.1	4.0	0.65	4	50	205
IALR-2-0.8xR0.1xL4.0	0.8	0.1	4.0	0.65	4	50	128
IULR-2-0.8xR0.1xL6.0	0.8	0.1	6.0	0.65	4	50	202
IULR-3-0.8xR0.1xL6.0	0.8	0.1	6.0	0.65	4	50	205
IALR-2-0.8xR0.1xL6.0	0.8	0.1	6.0	0.7	4	50	128
IULR-2-0.8xR0.1xL8.0	0.8	0.1	8.0	0.65	4	50	202
IULR-3-0.8xR0.1xL8.0	0.8	0.1	8.0	0.65	4	50	205
IALR-2-0.8xR0.1xL8.0	0.8	0.1	8.0	0.7	4	50	128
IULR-2-0.8xR0.2xL2.0	0.8	0.2	2.0	0.65	4	50	202
IULR-3-0.8xR0.2xL2.0	0.8	0.2	2.0	0.65	4	50	205
IULR-2-0.8xR0.2xL4.0	0.8	0.2	4.0	0.65	4	50	202
IULR-3-0.8xR0.2xL4.0	0.8	0.2	4.0	0.65	4	50	205
IALR-2-0.8xR0.2xL4.0	0.8	0.2	4.0	0.65	4	50	128
IULR-2-0.8xR0.2xL6.0	0.8	0.2	6.0	0.65	4	50	202
IULR-3-0.8xR0.2xL6.0	0.8	0.2	6.0	0.65	4	50	205
IALR-2-0.8xR0.2xL6.0	0.8	0.2	6.0	0.7	4	50	128
IULR-2-0.8xR0.2xL8.0	0.8	0.2	8.0	0.65	4	50	202
IULR-3-0.8xR0.2xL8.0	0.8	0.2	8.0	0.65	4	50	205
IALR-2-0.8xR0.2xL8.0	0.8	0.2	8.0	0.7	4	50	128
IULR-4-1.0xR0.02xL2.0	1.0	0.02	2.0	0.8	4	50	207
IULR-4-1.0xR0.02xL3.0	1.0	0.02	3.0	0.8	4	50	207
IULR-4-1.0xR0.02xL4.0	1.0	0.02	4.0	0.8	4	50	207
IULR-4-1.0xR0.02xL5.0	1.0	0.02	5.0	0.8	4	50	207
IULR-4-1.0xR0.02xL6.0	1.0	0.02	6.0	0.8	4	50	207
IULR-4-1.0xR0.02xL8.0	1.0	0.02	8.0	0.8	4	50	207
IULR-4-1.0xR0.02xL10.0	1.0	0.02	10.0	0.8	4	50	207
IULR-4-1.0xR0.05xL2.0	1.0	0.05	2.0	0.8	4	50	207
IALR-2-1.0xR0.05xL2.0	1.0	0.05	2.0	0.8	4	50	128
IULR-4-1.0xR0.05xL3.0	1.0	0.05	3.0	0.8	4	50	207
IALR-2-1.0xR0.05xL3.0	1.0	0.05	3.0	0.8	4	50	128
IALR-4-1.0xR0.05xL3.0	1.0	0.05	3.0	0.8	4	50	139
IULR-4-1.0xR0.05xL4.0	1.0	0.05	4.0	0.8	4	50	207
IALR-2-1.0xR0.05xL4.0	1.0	0.05	4.0	0.8	4	50	128
IALR-4-1.0xR0.05xL4.0	1.0	0.05	4.0	0.8	4	50	139
IULR-4-1.0xR0.05xL5.0	1.0	0.05	5.0	0.8	4	50	207
IULR-4-1.0xR0.05xL6.0	1.0	0.05	6.0	0.8	4	50	207
IALR-2-1.0xR0.05xL6.0	1.0	0.05	6.0	0.8	4	50	128
IALR-4-1.0xR0.05xL6.0	1.0	0.05	6.0	0.8	4	50	139
IULR-4-1.0xR0.05xL8.0	1.0	0.05	8.0	0.8	4	50	207
IALR-2-1.0xR0.05xL8.0	1.0	0.05	8.0	0.8	4	50	128
IALR-4-1.0xR0.05xL8.0	1.0	0.05	8.0	0.8	4	50	139
IULR-4-1.0xR0.05xL10.0	1.0	0.05	10.0	0.8	4	50	207
IALR-2-1.0xR0.05xL10.0	1.0	0.05	10.0	0.8	4	50	128
IALR-4-1.0xR0.05xL10.0	1.0	0.05	10.0	0.8	4	50	139
IALR-2-1.0xR0.05xL12.0	1.0	0.05	12.0	0.8	4	50	128
IALR-4-1.0xR0.05xL12.0	1.0	0.05	12.0	0.8	4	50	139
IAR-2-1.0xR0.1x2.0	1.0	0.1	—	2.0	4	50	111
IAR-4-1.0xR0.1x2.0	1.0	0.1	—	2.0	4	50	119
IULR-4-1.0xR0.1xL2.0	1.0	0.1	2.0	0.8	4	50	207

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALR-2-1.0xR0.1xL2.0	1.0	0.1	2.0	0.8	4	50	128
IULR-4-1.0xR0.1xL3.0	1.0	0.1	3.0	0.8	4	50	207
IALR-2-1.0xR0.1xL3.0	1.0	0.1	3.0	0.8	4	50	128
IALR-4-1.0xR0.1xL3.0	1.0	0.1	3.0	0.8	4	50	139
IULR-4-1.0xR0.1xL4.0	1.0	0.1	4.0	0.8	4	50	207
IALR-2-1.0xR0.1xL4.0	1.0	0.1	4.0	0.8	4	50	128
IALR-4-1.0xR0.1xL4.0	1.0	0.1	4.0	0.8	4	50	139
IULR-4-1.0xR0.1xL5.0	1.0	0.1	5.0	0.8	4	50	207
IULR-4-1.0xR0.1xL6.0	1.0	0.1	6.0	0.8	4	50	207
IALR-2-1.0xR0.1xL6.0	1.0	0.1	6.0	0.8	4	50	128
IALR-4-1.0xR0.1xL6.0	1.0	0.1	6.0	0.8	4	50	139
IULR-4-1.0xR0.1xL8.0	1.0	0.1	8.0	0.8	4	50	207
IALR-2-1.0xR0.1xL8.0	1.0	0.1	8.0	0.8	4	50	128
IALR-4-1.0xR0.1xL8.0	1.0	0.1	8.0	0.8	4	50	139
IULR-4-1.0xR0.1xL10.0	1.0	0.1	10.0	0.8	4	50	207
IALR-2-1.0xR0.1xL10.0	1.0	0.1	10.0	0.8	4	50	128
IALR-4-1.0xR0.1xL10.0	1.0	0.1	10.0	0.8	4	50	139
IALR-2-1.0xR0.1xL12.0	1.0	0.1	12.0	0.8	4	50	128
IALR-4-1.0xR0.1xL12.0	1.0	0.1	12.0	0.8	4	50	139
IAR-2-1.0xR0.2x2.0	1.0	0.2	—	2.0	4	50	111
IAR-4-1.0xR0.2x2.0	1.0	0.2	—	2.0	4	50	119
IULR-4-1.0xR0.2xL2.0	1.0	0.2	2.0	0.8	4	50	207
IALR-2-1.0xR0.2xL2.0	1.0	0.2	2.0	0.8	4	50	128
IULR-4-1.0xR0.2xL3.0	1.0	0.2	3.0	0.8	4	50	207
IALR-2-1.0xR0.2xL3.0	1.0	0.2	3.0	0.8	4	50	128
IALR-4-1.0xR0.2xL3.0	1.0	0.2	3.0	0.8	4	50	139
IULR-4-1.0xR0.2xL4.0	1.0	0.2	4.0	0.8	4	50	207
IALR-2-1.0xR0.2xL4.0	1.0	0.2	4.0	0.8	4	50	128
IALR-4-1.0xR0.2xL4.0	1.0	0.2	4.0	0.8	4	50	139
IULR-4-1.0xR0.2xL5.0	1.0	0.2	5.0	0.8	4	50	208
IULR-4-1.0xR0.2xL6.0	1.0	0.2	6.0	0.8	4	50	208
IALR-2-1.0xR0.2xL6.0	1.0	0.2	6.0	0.8	4	50	128
IALR-4-1.0xR0.2xL6.0	1.0	0.2	6.0	0.8	4	50	139
IULR-4-1.0xR0.2xL8.0	1.0	0.2	8.0	0.8	4	50	208
IALR-2-1.0xR0.2xL8.0	1.0	0.2	8.0	0.8	4	50	128
IALR-4-1.0xR0.2xL8.0	1.0	0.2	8.0	0.8	4	50	139
IULR-4-1.0xR0.2xL10.0	1.0	0.2	10.0	0.8	4	50	208
IALR-2-1.0xR0.2xL10.0	1.0	0.2	10.0	0.8	4	50	128
IALR-4-1.0xR0.2xL10.0	1.0	0.2	10.0	0.8	4	50	139
IALR-2-1.0xR0.2xL12.0	1.0	0.2	12.0	0.8	4	50	128
IALR-4-1.0xR0.2xL12.0	1.0	0.2	12.0	0.8	4	50	139
IAR-2-1.0xR0.3x2.0	1.0	0.3	—	2.0	4	50	111
IAR-4-1.0xR0.3x2.0	1.0	0.3	—	2.0	4	50	119
IULR-4-1.0xR0.3xL2.0	1.0	0.3	2.0	0.8	4	50	208
IALR-2-1.0xR0.3xL2.0	1.0	0.3	2.0	0.8	4	50	128
IULR-4-1.0xR0.3xL3.0	1.0	0.3	3.0	0.8	4	50	208
IALR-2-1.0xR0.3xL3.0	1.0	0.3	3.0	0.8	4	50	128
IALR-4-1.0xR0.3xL3.0	1.0	0.3	3.0	0.8	4	50	139
IULR-4-1.0xR0.3xL4.0	1.0	0.3	4.0	0.8	4	50	208
IALR-2-1.0xR0.3xL4.0	1.0	0.3	4.0	0.8	4	50	128
IALR-4-1.0xR0.3xL4.0	1.0	0.3	4.0	0.8	4	50	139
IULR-4-1.0xR0.3xL5.0	1.0	0.3	5.0	0.8	4	50	208

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IULR-4-1.0xR0.3xL6.0	1.0	0.3	6.0	0.8	4	50	208
IALR-2-1.0xR0.3xL6.0	1.0	0.3	6.0	0.8	4	50	128
IALR-4-1.0xR0.3xL6.0	1.0	0.3	6.0	0.8	4	50	139
IULR-4-1.0xR0.3xL8.0	1.0	0.3	8.0	0.8	4	50	208
IALR-2-1.0xR0.3xL8.0	1.0	0.3	8.0	0.8	4	50	128
IALR-4-1.0xR0.3xL8.0	1.0	0.3	8.0	0.8	4	50	139
IULR-4-1.0xR0.3xL10.0	1.0	0.3	10.0	0.8	4	50	208
IALR-2-1.0xR0.3xL10.0	1.0	0.3	10.0	0.8	4	50	128
IALR-4-1.0xR0.3xL10.0	1.0	0.3	10.0	0.8	4	50	139
IALR-2-1.0xR0.3xL12.0	1.0	0.3	12.0	0.8	4	50	128
IALR-4-1.0xR0.3xL12.0	1.0	0.3	12.0	0.8	4	50	139
IULR-4-1.2xR0.1xL5.0	1.2	0.1	5.0	1.0	4	50	208
IALR-2-1.2xR0.1xL6.0	1.2	0.1	6.0	1.0	4	50	128
IALR-2-1.2xR0.1xL8.0	1.2	0.1	8.0	1.0	4	50	128
IULR-4-1.2xR0.1xL10.0	1.2	0.1	10.0	1.0	4	50	208
IALR-2-1.2xR0.1xL10.0	1.2	0.1	10.0	1.0	4	50	128
IALR-4-1.2xR0.1xL10.0	1.2	0.1	10.0	1.0	4	50	140
IALR-2-1.2xR0.1xL12.0	1.2	0.1	12.0	1.0	4	50	128
IALR-4-1.2xR0.1xL15.0	1.2	0.1	15.0	1.0	4	50	140
IULR-4-1.2xR0.2xL5.0	1.2	0.2	5.0	1.0	4	50	208
IALR-2-1.2xR0.2xL6.0	1.2	0.2	6.0	1.0	4	50	129
IALR-2-1.2xR0.2xL8.0	1.2	0.2	8.0	1.0	4	50	129
IULR-4-1.2xR0.2xL10.0	1.2	0.2	10.0	1.0	4	50	208
IALR-2-1.2xR0.2xL10.0	1.2	0.2	10.0	1.0	4	50	129
IALR-4-1.2xR0.2xL10.0	1.2	0.2	10.0	1.0	4	50	140
IALR-2-1.2xR0.2xL12.0	1.2	0.2	12.0	1.0	4	50	129
IALR-4-1.2xR0.2xL15.0	1.2	0.2	15.0	1.0	4	50	140
IULR-4-1.2xR0.3xL5.0	1.2	0.3	5.0	1.0	4	50	208
IALR-2-1.2xR0.3xL6.0	1.2	0.3	6.0	1.0	4	50	129
IALR-2-1.2xR0.3xL8.0	1.2	0.3	8.0	1.0	4	50	129
IULR-4-1.2xR0.3xL10.0	1.2	0.3	10.0	1.0	4	50	208
IALR-2-1.2xR0.3xL10.0	1.2	0.3	10.0	1.0	4	50	129
IALR-4-1.2xR0.3xL10.0	1.2	0.3	10.0	1.0	4	50	140
IALR-2-1.2xR0.3xL12.0	1.2	0.3	12.0	1.0	4	50	129
IALR-4-1.2xR0.3xL15.0	1.2	0.3	15.0	1.0	4	50	140
IULR-4-1.5xR0.02xL3.0	1.5	0.02	3.0	1.2	4	50	208
IULR-4-1.5xR0.02xL4.0	1.5	0.02	4.0	1.2	4	50	208
IULR-4-1.5xR0.02xL6.0	1.5	0.02	6.0	1.2	4	50	208
IULR-4-1.5xR0.02xL8.0	1.5	0.02	8.0	1.2	4	50	208
IULR-4-1.5xR0.02xL12.0	1.5	0.02	12.0	1.2	4	50	208
IULR-4-1.5xR0.02xL15.0	1.5	0.02	15.0	1.2	4	50	208
IULR-4-1.5xR0.05xL3.0	1.5	0.05	3.0	1.2	4	50	208
IULR-4-1.5xR0.05xL4.0	1.5	0.05	4.0	1.2	4	50	208
IULR-4-1.5xR0.05xL6.0	1.5	0.05	6.0	1.2	4	50	208
IULR-4-1.5xR0.05xL8.0	1.5	0.05	8.0	1.2	4	50	208
IULR-4-1.5xR0.05xL12.0	1.5	0.05	12.0	1.2	4	50	208
IULR-4-1.5xR0.05xL15.0	1.5	0.05	15.0	1.2	4	50	208
IAR-2-1.5xR0.1x3.0	1.5	0.1	—	3.0	4	50	111
IAR-4-1.5xR0.1x3.0	1.5	0.1	—	3.0	4	50	119
IULR-4-1.5xR0.1xL3.0	1.5	0.1	3.0	1.2	4	50	208
IALR-4-1.5xR0.1xL3.0	1.5	0.1	3.0	1.2	4	50	140
IULR-4-1.5xR0.1xL4.0	1.5	0.1	4.0	1.2	4	50	208

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALR-2-1.5xR0.1xL4.0	1.5	0.1	4.0	1.2	4	50	129
IULR-4-1.5xR0.1xL6.0	1.5	0.1	6.0	1.2	4	50	208
IALR-2-1.5xR0.1xL6.0	1.5	0.1	6.0	1.2	4	50	129
IALR-4-1.5xR0.1xL6.0	1.5	0.1	6.0	1.2	4	50	140
IULR-4-1.5xR0.1xL8.0	1.5	0.1	8.0	1.2	4	50	208
IALR-2-1.5xR0.1xL8.0	1.5	0.1	8.0	1.2	4	50	129
IALR-2-1.5xR0.1xL10.0	1.5	0.1	10.0	1.2	4	50	129
IALR-4-1.5xR0.1xL10.0	1.5	0.1	10.0	1.2	4	50	140
IULR-4-1.5xR0.1xL12.0	1.5	0.1	12.0	1.2	4	50	208
IALR-2-1.5xR0.1xL12.0	1.5	0.1	12.0	1.2	4	50	129
IALR-4-1.5xR0.1xL12.0	1.5	0.1	12.0	1.2	4	50	140
IULR-4-1.5xR0.1xL15.0	1.5	0.1	15.0	1.2	4	50	208
IALR-2-1.5xR0.1xL16.0	1.5	0.1	16.0	1.2	4	50	129
IALR-4-1.5xR0.1xL18.0	1.5	0.1	18.0	1.2	4	50	140
IAR-2-1.5xR0.2x3.0	1.5	0.2	—	3.0	4	50	111
IAR-4-1.5xR0.2x3.0	1.5	0.2	—	3.0	4	50	119
IULR-4-1.5xR0.2xL3.0	1.5	0.2	3.0	1.2	4	50	208
IALR-4-1.5xR0.2xL3.0	1.5	0.2	3.0	1.2	4	50	140
IULR-4-1.5xR0.2xL4.0	1.5	0.2	4.0	1.2	4	50	208
IALR-2-1.5xR0.2xL4.0	1.5	0.2	4.0	1.2	4	50	129
IULR-4-1.5xR0.2xL6.0	1.5	0.2	6.0	1.2	4	50	208
IALR-2-1.5xR0.2xL6.0	1.5	0.2	6.0	1.2	4	50	129
IALR-4-1.5xR0.2xL6.0	1.5	0.2	6.0	1.2	4	50	140
IULR-4-1.5xR0.2xL8.0	1.5	0.2	8.0	1.2	4	50	208
IALR-2-1.5xR0.2xL8.0	1.5	0.2	8.0	1.2	4	50	129
IALR-2-1.5xR0.2xL10.0	1.5	0.2	10.0	1.2	4	50	129
IALR-4-1.5xR0.2xL10.0	1.5	0.2	10.0	1.2	4	50	140
IULR-4-1.5xR0.2xL12.0	1.5	0.2	12.0	1.2	4	50	208
IALR-2-1.5xR0.2xL12.0	1.5	0.2	12.0	1.2	4	50	129
IALR-4-1.5xR0.2xL12.0	1.5	0.2	12.0	1.2	4	50	140
IULR-4-1.5xR0.2xL15.0	1.5	0.2	15.0	1.2	4	50	208
IALR-2-1.5xR0.2xL16.0	1.5	0.2	16.0	1.2	4	50	129
IALR-4-1.5xR0.2xL18.0	1.5	0.2	18.0	1.2	4	50	140
IAR-2-1.5xR0.3x3.0	1.5	0.3	—	3.0	4	50	111
IAR-4-1.5xR0.3x3.0	1.5	0.3	—	3.0	4	50	119
IULR-4-1.5xR0.3xL3.0	1.5	0.3	3.0	1.2	4	50	208
IALR-4-1.5xR0.3xL3.0	1.5	0.3	3.0	1.2	4	50	140
IULR-4-1.5xR0.3xL4.0	1.5	0.3	4.0	1.2	4	50	208
IALR-2-1.5xR0.3xL4.0	1.5	0.3	4.0	1.2	4	50	129
IULR-4-1.5xR0.3xL6.0	1.5	0.3	6.0	1.2	4	50	208
IALR-2-1.5xR0.3xL6.0	1.5	0.3	6.0	1.2	4	50	129
IALR-4-1.5xR0.3xL6.0	1.5	0.3	6.0	1.2	4	50	140
IULR-4-1.5xR0.3xL8.0	1.5	0.3	8.0	1.2	4	50	208
IALR-2-1.5xR0.3xL8.0	1.5	0.3	8.0	1.2	4	50	129
IALR-2-1.5xR0.3xL10.0	1.5	0.3	10.0	1.2	4	50	129
IALR-4-1.5xR0.3xL10.0	1.5	0.3	10.0	1.2	4	50	140
IULR-4-1.5xR0.3xL12.0	1.5	0.3	12.0	1.2	4	50	209
IALR-2-1.5xR0.3xL12.0	1.5	0.3	12.0	1.2	4	50	129
IALR-4-1.5xR0.3xL12.0	1.5	0.3	12.0	1.2	4	50	140
IULR-4-1.5xR0.3xL15.0	1.5	0.3	15.0	1.2	4	50	209
IALR-2-1.5xR0.3xL16.0	1.5	0.3	16.0	1.2	4	50	129
IALR-4-1.5xR0.3xL18.0	1.5	0.3	18.0	1.2	4	50	140

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAR-4-1.5xR0.5x3.0	1.5	0.5	—	3.0	4	50	119
IULR-4-1.5xR0.5xL3.0	1.5	0.5	3.0	1.2	4	50	209
IULR-4-1.5xR0.5xL4.0	1.5	0.5	4.0	1.2	4	50	209
IALR-2-1.5xR0.5xL4.0	1.5	0.5	4.0	1.2	4	50	129
IULR-4-1.5xR0.5xL6.0	1.5	0.5	6.0	1.2	4	50	209
IALR-2-1.5xR0.5xL6.0	1.5	0.5	6.0	1.2	4	50	129
IALR-4-1.5xR0.5xL6.0	1.5	0.5	6.0	1.2	4	50	140
IULR-4-1.5xR0.5xL8.0	1.5	0.5	8.0	1.2	4	50	209
IALR-2-1.5xR0.5xL8.0	1.5	0.5	8.0	1.2	4	50	129
IALR-2-1.5xR0.5xL10.0	1.5	0.5	10.0	1.2	4	50	129
IULR-4-1.5xR0.5xL12.0	1.5	0.5	12.0	1.2	4	50	209
IALR-2-1.5xR0.5xL12.0	1.5	0.5	12.0	1.2	4	50	129
IALR-4-1.5xR0.5xL12.0	1.5	0.5	12.0	1.2	4	50	140
IULR-4-1.5xR0.5xL15.0	1.5	0.5	15.0	1.2	4	50	209
IALR-2-1.5xR0.5xL16.0	1.5	0.5	16.0	1.2	4	50	129
IALR-4-1.5xR0.5xL18.0	1.5	0.5	18.0	1.2	4	50	140
IULR-4-2.0xR0.02xL4.0	2.0	0.02	4.0	1.6	4	50	209
IULR-4-2.0xR0.02xL6.0	2.0	0.02	6.0	1.6	4	50	209
IULR-4-2.0xR0.02xL8.0	2.0	0.02	8.0	1.6	4	50	209
IULR-4-2.0xR0.02xL12.0	2.0	0.02	12.0	1.6	4	50	209
IULR-4-2.0xR0.02xL16.0	2.0	0.02	16.0	1.6	4	50	209
IULR-4-2.0xR0.02xL20.0	2.0	0.02	20.0	1.6	4	60	209
IULR-4-2.0xR0.05xL4.0	2.0	0.05	4.0	1.6	4	50	209
IULR-4-2.0xR0.05xL6.0	2.0	0.05	6.0	1.6	4	50	209
IULR-4-2.0xR0.05xL8.0	2.0	0.05	8.0	1.6	4	50	209
IULR-4-2.0xR0.05xL12.0	2.0	0.05	12.0	1.6	4	50	209
IULR-4-2.0xR0.05xL16.0	2.0	0.05	16.0	1.6	4	50	209
IULR-4-2.0xR0.05xL20.0	2.0	0.05	20.0	1.6	4	60	209
IAR-2-2.0xR0.1x4.0	2.0	0.1	—	4.0	4	50	111
IAR-4-2.0xR0.1x4.0	2.0	0.1	—	4.0	4	50	119
IULR-4-2.0xR0.1xL4.0	2.0	0.1	4.0	1.6	4	50	209
IALR-2-2.0xR0.1xL4.0	2.0	0.1	4.0	1.6	4	50	129
IULR-4-2.0xR0.1xL6.0	2.0	0.1	6.0	1.6	4	50	209
IALR-2-2.0xR0.1xL6.0	2.0	0.1	6.0	1.6	4	50	129
IALR-4-2.0xR0.1xL6.0	2.0	0.1	6.0	1.6	4	50	140
IULR-4-2.0xR0.1xL8.0	2.0	0.1	8.0	1.6	4	50	209
IALR-2-2.0xR0.1xL8.0	2.0	0.1	8.0	1.6	4	50	129
IALR-4-2.0xR0.1xL8.0	2.0	0.1	8.0	1.6	4	50	140
IALR-2-2.0xR0.1xL10.0	2.0	0.1	10.0	1.6	4	50	129
IALR-4-2.0xR0.1xL10.0	2.0	0.1	10.0	1.6	4	50	140
IULR-4-2.0xR0.1xL12.0	2.0	0.1	12.0	1.6	4	50	209
IALR-2-2.0xR0.1xL12.0	2.0	0.1	12.0	1.6	4	50	129
IALR-4-2.0xR0.1xL12.0	2.0	0.1	12.0	1.6	4	50	140
IALR-4-2.0xR0.1xL15.0	2.0	0.1	15.0	1.6	4	50	140
IULR-4-2.0xR0.1xL16.0	2.0	0.1	16.0	1.6	4	50	209
IALR-2-2.0xR0.1xL16.0	2.0	0.1	16.0	1.6	4	50	129
IALR-4-2.0xR0.1xL16.0	2.0	0.1	16.0	1.6	4	50	140
IULR-4-2.0xR0.1xL20.0	2.0	0.1	20.0	1.6	4	60	209
IALR-2-2.0xR0.1xL20.0	2.0	0.1	20.0	1.6	4	60	129
IALR-4-2.0xR0.1xL20.0	2.0	0.1	20.0	1.6	4	60	140
IALR-4-2.0xR0.1xL24.0	2.0	0.1	24.0	1.6	4	60	140
IAR-2-2.0xR0.2x4.0	2.0	0.2	—	4.0	4	50	111

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAR-4-2.0xR0.2x4.0	2.0	0.2	—	4.0	4	50	119
IULR-4-2.0xR0.2xL4.0	2.0	0.2	4.0	1.6	4	50	209
IALR-2-2.0xR0.2xL4.0	2.0	0.2	4.0	1.6	4	50	129
IULR-4-2.0xR0.2xL6.0	2.0	0.2	6.0	1.6	4	50	209
IALR-2-2.0xR0.2xL6.0	2.0	0.2	6.0	1.6	4	50	129
IALR-4-2.0xR0.2xL6.0	2.0	0.2	6.0	1.6	4	50	140
IULR-4-2.0xR0.2xL8.0	2.0	0.2	8.0	1.6	4	50	209
IALR-2-2.0xR0.2xL8.0	2.0	0.2	8.0	1.6	4	50	129
IALR-4-2.0xR0.2xL8.0	2.0	0.2	8.0	1.6	4	50	140
IALR-2-2.0xR0.2xL10.0	2.0	0.2	10.0	1.6	4	50	129
IALR-4-2.0xR0.2xL10.0	2.0	0.2	10.0	1.6	4	50	140
IULR-4-2.0xR0.2xL12.0	2.0	0.2	12.0	1.6	4	50	209
IALR-2-2.0xR0.2xL12.0	2.0	0.2	12.0	1.6	4	50	129
IALR-4-2.0xR0.2xL12.0	2.0	0.2	12.0	1.6	4	50	140
IALR-4-2.0xR0.2xL15.0	2.0	0.2	15.0	1.6	4	50	140
IULR-4-2.0xR0.2xL16.0	2.0	0.2	16.0	1.6	4	50	209
IALR-2-2.0xR0.2xL16.0	2.0	0.2	16.0	1.6	4	50	129
IALR-4-2.0xR0.2xL16.0	2.0	0.2	16.0	1.6	4	50	140
IULR-4-2.0xR0.2xL20.0	2.0	0.2	20.0	1.6	4	60	209
IALR-2-2.0xR0.2xL20.0	2.0	0.2	20.0	1.6	4	60	130
IALR-4-2.0xR0.2xL20.0	2.0	0.2	20.0	1.6	4	60	140
IALR-4-2.0xR0.2xL24.0	2.0	0.2	24.0	1.6	4	60	140
IAR-2-2.0xR0.3x4.0	2.0	0.3	—	4.0	4	50	111
IAR-4-2.0xR0.3x4.0	2.0	0.3	—	4.0	4	50	119
IULR-4-2.0xR0.3xL4.0	2.0	0.3	4.0	1.6	4	50	209
IALR-2-2.0xR0.3xL4.0	2.0	0.3	4.0	1.6	4	50	130
IULR-4-2.0xR0.3xL6.0	2.0	0.3	6.0	1.6	4	50	209
IALR-2-2.0xR0.3xL6.0	2.0	0.3	6.0	1.6	4	50	130
IALR-4-2.0xR0.3xL6.0	2.0	0.3	6.0	1.6	4	50	140
IULR-4-2.0xR0.3xL8.0	2.0	0.3	8.0	1.6	4	50	209
IALR-2-2.0xR0.3xL8.0	2.0	0.3	8.0	1.6	4	50	130
IALR-4-2.0xR0.3xL8.0	2.0	0.3	8.0	1.6	4	50	140
IALR-2-2.0xR0.3xL10.0	2.0	0.3	10.0	1.6	4	50	130
IALR-4-2.0xR0.3xL10.0	2.0	0.3	10.0	1.6	4	50	140
IULR-4-2.0xR0.3xL12.0	2.0	0.3	12.0	1.6	4	50	209
IALR-2-2.0xR0.3xL12.0	2.0	0.3	12.0	1.6	4	50	130
IALR-4-2.0xR0.3xL12.0	2.0	0.3	12.0	1.6	4	50	140
IALR-4-2.0xR0.3xL15.0	2.0	0.3	15.0	1.6	4	50	140
IULR-4-2.0xR0.3xL16.0	2.0	0.3	16.0	1.6	4	50	209
IALR-2-2.0xR0.3xL16.0	2.0	0.3	16.0	1.6	4	50	130
IALR-4-2.0xR0.3xL16.0	2.0	0.3	16.0	1.6	4	50	141
IULR-4-2.0xR0.3xL20.0	2.0	0.3	20.0	1.6	4	60	209
IALR-2-2.0xR0.3xL20.0	2.0	0.3	20.0	1.6	4	60	130
IALR-4-2.0xR0.3xL20.0	2.0	0.3	20.0	1.6	4	60	141
IALR-4-2.0xR0.3xL24.0	2.0	0.3	24.0	1.6	4	60	141
IAR-2-2.0xR0.5x4.0	2.0	0.5	—	4.0	4	50	111
IAR-4-2.0xR0.5x4.0	2.0	0.5	—	4.0	4	50	119
IULR-4-2.0xR0.5xL4.0	2.0	0.5	4.0	1.6	4	50	209
IALR-2-2.0xR0.5xL4.0	2.0	0.5	4.0	1.6	4	50	130
IULR-4-2.0xR0.5xL6.0	2.0	0.5	6.0	1.6	4	50	209
IALR-2-2.0xR0.5xL6.0	2.0	0.5	6.0	1.6	4	50	130
IULR-4-2.0xR0.5xL8.0	2.0	0.5	8.0	1.6	4	50	209

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALR-2-2.0xR0.5xL8.0	2.0	0.5	8.0	1.6	4	50	130
IALR-4-2.0xR0.5xL8.0	2.0	0.5	8.0	1.6	4	50	141
IALR-2-2.0xR0.5xL10.0	2.0	0.5	10.0	1.6	4	50	130
IULR-4-2.0xR0.5xL12.0	2.0	0.5	12.0	1.6	4	50	209
IALR-2-2.0xR0.5xL12.0	2.0	0.5	12.0	1.6	4	50	130
IALR-4-2.0xR0.5xL12.0	2.0	0.5	12.0	1.6	4	50	141
IULR-4-2.0xR0.5xL16.0	2.0	0.5	16.0	1.6	4	50	209
IALR-2-2.0xR0.5xL16.0	2.0	0.5	16.0	1.6	4	50	130
IALR-4-2.0xR0.5xL16.0	2.0	0.5	16.0	1.6	4	50	141
IULR-4-2.0xR0.5xL20.0	2.0	0.5	20.0	1.6	4	60	209
IALR-2-2.0xR0.5xL20.0	2.0	0.5	20.0	1.6	4	60	130
IALR-4-2.0xR0.5xL24.0	2.0	0.5	24.0	1.6	4	60	141
IAR-2-2.5xR0.1x5.0	2.5	0.1	—	5.0	4	50	111
IULR-4-2.5xR0.1xL10.0	2.5	0.1	10.0	2.0	4	50	209
IALR-4-2.5xR0.1xL10.0	2.5	0.1	10.0	2.0	4	50	141
IULR-4-2.5xR0.1xL20.0	2.5	0.1	20.0	2.0	4	50	210
IALR-4-2.5xR0.1xL20.0	2.5	0.1	20.0	2.0	4	50	141
IAR-2-2.5xR0.2x5.0	2.5	0.2	—	5.0	4	50	111
IULR-4-2.5xR0.2xL10.0	2.5	0.2	10.0	2.0	4	50	210
IALR-4-2.5xR0.2xL10.0	2.5	0.2	10.0	2.0	4	50	141
IULR-4-2.5xR0.2xL20.0	2.5	0.2	20.0	2.0	4	50	210
IALR-4-2.5xR0.2xL20.0	2.5	0.2	20.0	2.0	4	50	141
IAR-2-2.5xR0.3x5.0	2.5	0.3	—	5.0	4	50	111
IULR-4-2.5xR0.3xL10.0	2.5	0.3	10.0	2.0	4	50	210
IALR-4-2.5xR0.3xL10.0	2.5	0.3	10.0	2.0	4	50	141
IULR-4-2.5xR0.3xL20.0	2.5	0.3	20.0	2.0	4	50	210
IALR-4-2.5xR0.3xL20.0	2.5	0.3	20.0	2.0	4	50	141
IAR-2-2.5xR0.5x5.0	2.5	0.5	—	5.0	4	50	111
IULR-4-2.5xR0.5xL10.0	2.5	0.5	10.0	2.0	4	50	210
IALR-4-2.5xR0.5xL10.0	2.5	0.5	10.0	2.0	4	50	141
IULR-4-2.5xR0.5xL20.0	2.5	0.5	20.0	2.0	4	50	210
IALR-4-2.5xR0.5xL20.0	2.5	0.5	20.0	2.0	4	50	141
IULR-4-3.0xR0.05xL4.0	3.0	0.05	4.0	2.5	4	50	210
IULR-4-3.0xR0.05xL6.0	3.0	0.05	6.0	2.5	4	50	210
IULR-4-3.0xR0.05xL8.0	3.0	0.05	8.0	2.5	4	50	210
IULR-4-3.0xR0.05xL12.0	3.0	0.05	12.0	2.5	4	50	210
IULR-4-3.0xR0.05xL16.0	3.0	0.05	16.0	2.5	4	50	210
IULR-4-3.0xR0.05xL20.0	3.0	0.05	20.0	2.5	4	50	210
IAR-2-3.0xR0.1x6.0	3.0	0.1	—	6.0	4	50	111
IAR-4-3.0xR0.1x6.0	3.0	0.1	—	6.0	4	50	119
IULR-4-3.0xR0.1xL4.0	3.0	0.1	4.0	2.5	4	50	210
IULR-4-3.0xR0.1xL6.0	3.0	0.1	6.0	2.5	4	50	210
IULR-4-3.0xR0.1xL8.0	3.0	0.1	8.0	2.5	4	50	210
IALR-4-3.0xR0.1xL10.0	3.0	0.1	10.0	2.5	4	50	141
IULR-4-3.0xR0.1xL12.0	3.0	0.1	12.0	2.5	4	50	210
IALR-4-3.0xR0.1xL12.0	3.0	0.1	12.0	2.5	4	50	141
IALR-2-3.0xR0.1xL12.0	3.0	0.1	12.0	4.5	4	50	130
IALR-4-3.0xR0.1xL15.0	3.0	0.1	15.0	2.5	4	50	141
IULR-4-3.0xR0.1xL16.0	3.0	0.1	16.0	2.5	4	50	210
IALR-4-3.0xR0.1xL18.0	3.0	0.1	18.0	2.5	4	50	141
IALR-2-3.0xR0.1xL18.0	3.0	0.1	18.0	4.5	4	50	130
IULR-4-3.0xR0.1xL20.0	3.0	0.1	20.0	2.5	4	50	210

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALR-4-3.0xR0.1xL20.0	3.0	0.1	20.0	2.5	4	50	141
IALR-4-3.0xR0.1xL24.0	3.0	0.1	24.0	2.5	4	60	141
IALR-2-3.0xR0.1xL24.0	3.0	0.1	24.0	4.5	4	60	130
IULR-4-3.0xR0.1xL25.0	3.0	0.1	25.0	2.5	4	60	210
IULR-4-3.0xR0.1xL30.0	3.0	0.1	30.0	2.5	4	60	210
IALR-4-3.0xR0.1xL30.0	3.0	0.1	30.0	2.5	4	60	141
IALR-2-3.0xR0.1xL30.0	3.0	0.1	30.0	4.5	4	60	130
IUR-4-3.0xR0.2x6.0	3.0	0.2	—	6.0	4	50	193
IAR-2-3.0xR0.2x6.0	3.0	0.2	—	6.0	4	50	111
IAR-4-3.0xR0.2x6.0	3.0	0.2	—	6.0	4	50	119
IULR-4-3.0xR0.2xL4.0	3.0	0.2	4.0	2.5	4	50	210
IULR-4-3.0xR0.2xL6.0	3.0	0.2	6.0	2.5	4	50	210
IULR-4-3.0xR0.2xL8.0	3.0	0.2	8.0	2.5	4	50	210
IALR-4-3.0xR0.2xL10.0	3.0	0.2	10.0	2.5	4	50	141
IULR-4-3.0xR0.2xL12.0	3.0	0.2	12.0	2.5	4	50	210
IALR-4-3.0xR0.2xL12.0	3.0	0.2	12.0	2.5	4	50	141
IALR-2-3.0xR0.2xL12.0	3.0	0.2	12.0	4.5	4	50	130
IALR-4-3.0xR0.2xL15.0	3.0	0.2	15.0	2.5	4	50	141
IULR-4-3.0xR0.2xL16.0	3.0	0.2	16.0	2.5	4	50	210
IALR-4-3.0xR0.2xL18.0	3.0	0.2	18.0	2.5	4	50	141
IALR-2-3.0xR0.2xL18.0	3.0	0.2	18.0	4.5	4	50	130
IULR-4-3.0xR0.2xL20.0	3.0	0.2	20.0	2.5	4	50	210
IALR-4-3.0xR0.2xL20.0	3.0	0.2	20.0	2.5	4	50	141
IALR-4-3.0xR0.2xL24.0	3.0	0.2	24.0	2.5	4	60	141
IALR-2-3.0xR0.2xL24.0	3.0	0.2	24.0	4.5	4	60	130
IULR-4-3.0xR0.2xL25.0	3.0	0.2	25.0	2.5	4	60	210
IULR-4-3.0xR0.2xL30.0	3.0	0.2	30.0	2.5	4	60	210
IALR-4-3.0xR0.2xL30.0	3.0	0.2	30.0	2.5	4	60	141
IALR-2-3.0xR0.2xL30.0	3.0	0.2	30.0	4.5	4	60	130
IUR-4-3.0xR0.3x6.0	3.0	0.3	—	6.0	4	50	193
IAR-2-3.0xR0.3x6.0	3.0	0.3	—	6.0	4	50	111
IAR-4-3.0xR0.3x6.0	3.0	0.3	—	6.0	4	50	119
IULR-4-3.0xR0.3xL4.0	3.0	0.3	4.0	2.5	4	50	210
IULR-4-3.0xR0.3xL6.0	3.0	0.3	6.0	2.5	4	50	210
IULR-4-3.0xR0.3xL8.0	3.0	0.3	8.0	2.5	4	50	210
IALR-4-3.0xR0.3xL10.0	3.0	0.3	10.0	2.5	4	50	141
IULR-4-3.0xR0.3xL12.0	3.0	0.3	12.0	2.5	4	50	210
IALR-4-3.0xR0.3xL12.0	3.0	0.3	12.0	2.5	4	50	141
IALR-2-3.0xR0.3xL12.0	3.0	0.3	12.0	4.5	4	50	130
IALR-4-3.0xR0.3xL15.0	3.0	0.3	15.0	2.5	4	50	141
IULR-4-3.0xR0.3xL16.0	3.0	0.3	16.0	2.5	4	50	210
IALR-4-3.0xR0.3xL18.0	3.0	0.3	18.0	2.5	4	50	141
IALR-2-3.0xR0.3xL18.0	3.0	0.3	18.0	4.5	4	50	130
IULR-4-3.0xR0.3xL20.0	3.0	0.3	20.0	2.5	4	50	210
IALR-4-3.0xR0.3xL20.0	3.0	0.3	20.0	2.5	4	50	141
IALR-4-3.0xR0.3xL24.0	3.0	0.3	24.0	2.5	4	60	141
IALR-2-3.0xR0.3xL24.0	3.0	0.3	24.0	4.5	4	60	130
IULR-4-3.0xR0.3xL25.0	3.0	0.3	25.0	2.5	4	60	210
IULR-4-3.0xR0.3xL30.0	3.0	0.3	30.0	2.5	4	60	210
IALR-4-3.0xR0.3xL30.0	3.0	0.3	30.0	2.5	4	60	141
IALR-2-3.0xR0.3xL30.0	3.0	0.3	30.0	4.5	4	60	130
IUR-4-3.0xR0.5x6.0	3.0	0.5	—	6.0	4	50	193

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAR-2-3.0xR0.5x6.0	3.0	0.5	—	6.0	4	50	111
IAR-4-3.0xR0.5x6.0	3.0	0.5	—	6.0	4	50	119
IULR-4-3.0xR0.5xL4.0	3.0	0.5	4.0	2.5	4	50	210
IULR-4-3.0xR0.5xL6.0	3.0	0.5	6.0	2.5	4	50	210
IULR-4-3.0xR0.5xL8.0	3.0	0.5	8.0	2.5	4	50	210
IULR-4-3.0xR0.5xL12.0	3.0	0.5	12.0	2.5	4	50	210
IALR-4-3.0xR0.5xL12.0	3.0	0.5	12.0	2.5	4	50	141
IALR-2-3.0xR0.5xL12.0	3.0	0.5	12.0	4.5	4	50	130
IULR-4-3.0xR0.5xL16.0	3.0	0.5	16.0	2.5	4	50	210
IALR-4-3.0xR0.5xL18.0	3.0	0.5	18.0	2.5	4	50	141
IALR-2-3.0xR0.5xL18.0	3.0	0.5	18.0	4.5	4	50	130
IULR-4-3.0xR0.5xL20.0	3.0	0.5	20.0	2.5	4	50	210
IALR-4-3.0xR0.5xL24.0	3.0	0.5	24.0	2.5	4	60	141
IALR-2-3.0xR0.5xL24.0	3.0	0.5	24.0	4.5	4	60	130
IULR-4-3.0xR0.5xL25.0	3.0	0.5	25.0	2.5	4	60	210
IULR-4-3.0xR0.5xL30.0	3.0	0.5	30.0	2.5	4	60	210
IALR-4-3.0xR0.5xL30.0	3.0	0.5	30.0	2.5	4	60	141
IALR-2-3.0xR0.5xL30.0	3.0	0.5	30.0	4.5	4	60	130
IAR-2-3.0xR1.0x6.0	3.0	1.0	—	6.0	4	50	111
IAR-4-3.0xR1.0x6.0	3.0	1.0	—	6.0	4	50	119
IULR-4-3.0xR1.0xL8.0	3.0	1.0	8.0	2.5	4	50	211
IULR-4-3.0xR1.0xL12.0	3.0	1.0	12.0	2.5	4	50	211
IALR-4-3.0xR1.0xL12.0	3.0	1.0	12.0	2.5	4	50	141
IALR-2-3.0xR1.0xL12.0	3.0	1.0	12.0	4.5	4	50	130
IULR-4-3.0xR1.0xL16.0	3.0	1.0	16.0	2.5	4	50	211
IALR-4-3.0xR1.0xL18.0	3.0	1.0	18.0	2.5	4	50	141
IALR-2-3.0xR1.0xL18.0	3.0	1.0	18.0	4.5	4	50	130
IULR-4-3.0xR1.0xL20.0	3.0	1.0	20.0	2.5	4	50	211
IALR-4-3.0xR1.0xL24.0	3.0	1.0	24.0	2.5	4	60	141
IALR-2-3.0xR1.0xL24.0	3.0	1.0	24.0	4.5	4	60	130
IULR-4-3.0xR1.0xL25.0	3.0	1.0	25.0	2.5	4	60	211
IULR-4-3.0xR1.0xL30.0	3.0	1.0	30.0	2.5	4	60	211
IALR-4-3.0xR1.0xL30.0	3.0	1.0	30.0	2.5	4	60	141
IALR-2-3.0xR1.0xL30.0	3.0	1.0	30.0	4.5	4	60	130
IAR-2-4.0xR0.1x8.0	4.0	0.1	—	8.0	6	50	111
IAR-4-4.0xR0.1x8.0	4.0	0.1	—	8.0	6	50	119
IULR-4-4.0xR0.1xL8.0	4.0	0.1	8.0	3.2	6	50	211
IALR-4-4.0xR0.1xL10.0	4.0	0.1	10.0	3.2	6	50	141
IULR-4-4.0xR0.1xL12.0	4.0	0.1	12.0	3.2	6	50	211
IALR-4-4.0xR0.1xL15.0	4.0	0.1	15.0	3.2	6	50	142
IULR-4-4.0xR0.1xL16.0	4.0	0.1	16.0	3.2	6	50	211
IALR-4-4.0xR0.1xL16.0	4.0	0.1	16.0	3.2	6	50	142
IALR-2-4.0xR0.1xL16.0	4.0	0.1	16.0	6.0	6	50	130
IALR-4-4.0xR0.1xL20.0	4.0	0.1	20.0	3.2	6	60	142
IULR-4-4.0xR0.1xL24.0	4.0	0.1	24.0	3.2	6	60	211
IALR-4-4.0xR0.1xL24.0	4.0	0.1	24.0	3.2	6	60	142
IALR-2-4.0xR0.1xL24.0	4.0	0.1	24.0	6.0	6	60	130
IULR-4-4.0xR0.1xL32.0	4.0	0.1	32.0	3.2	6	70	211
IALR-4-4.0xR0.1xL32.0	4.0	0.1	32.0	3.2	6	70	142
IALR-2-4.0xR0.1xL32.0	4.0	0.1	32.0	6.0	6	70	130
IUR-4-4.0xR0.2x8.0	4.0	0.2	—	8.0	6	50	193
IAR-2-4.0xR0.2x8.0	4.0	0.2	—	8.0	6	50	111

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAR-4-4.0xR0.2x8.0	4.0	0.2	—	8.0	6	50	119
IULR-4-4.0xR0.2xL8.0	4.0	0.2	8.0	3.2	6	50	211
IALR-4-4.0xR0.2xL10.0	4.0	0.2	10.0	3.2	6	50	142
IULR-4-4.0xR0.2xL12.0	4.0	0.2	12.0	3.2	6	50	211
IALR-4-4.0xR0.2xL15.0	4.0	0.2	15.0	3.2	6	50	142
IULR-4-4.0xR0.2xL16.0	4.0	0.2	16.0	3.2	6	50	211
IALR-4-4.0xR0.2xL16.0	4.0	0.2	16.0	3.2	6	50	142
IALR-2-4.0xR0.2xL16.0	4.0	0.2	16.0	6.0	6	50	130
IALR-4-4.0xR0.2xL20.0	4.0	0.2	20.0	3.2	6	60	142
IULR-4-4.0xR0.2xL24.0	4.0	0.2	24.0	3.2	6	60	211
IALR-4-4.0xR0.2xL24.0	4.0	0.2	24.0	3.2	6	60	142
IALR-2-4.0xR0.2xL24.0	4.0	0.2	24.0	6.0	6	60	130
IULR-4-4.0xR0.2xL32.0	4.0	0.2	32.0	3.2	6	70	211
IALR-4-4.0xR0.2xL32.0	4.0	0.2	32.0	3.2	6	70	142
IALR-2-4.0xR0.2xL32.0	4.0	0.2	32.0	6.0	6	70	130
IUR-4-4.0xR0.3x8.0	4.0	0.3	—	8.0	6	50	193
IAR-2-4.0xR0.3x8.0	4.0	0.3	—	8.0	6	50	111
IAR-4-4.0xR0.3x8.0	4.0	0.3	—	8.0	6	50	119
IULR-4-4.0xR0.3xL8.0	4.0	0.3	8.0	3.2	6	50	211
IALR-4-4.0xR0.3xL10.0	4.0	0.3	10.0	3.2	6	50	142
IULR-4-4.0xR0.3xL12.0	4.0	0.3	12.0	3.2	6	50	211
IALR-4-4.0xR0.3xL15.0	4.0	0.3	15.0	3.2	6	50	142
IULR-4-4.0xR0.3xL16.0	4.0	0.3	16.0	3.2	6	50	211
IALR-4-4.0xR0.3xL16.0	4.0	0.3	16.0	3.2	6	50	142
IALR-2-4.0xR0.3xL16.0	4.0	0.3	16.0	6.0	6	50	130
IALR-4-4.0xR0.3xL20.0	4.0	0.3	20.0	3.2	6	60	142
IULR-4-4.0xR0.3xL24.0	4.0	0.3	24.0	3.2	6	60	211
IALR-4-4.0xR0.3xL24.0	4.0	0.3	24.0	3.2	6	60	142
IALR-2-4.0xR0.3xL24.0	4.0	0.3	24.0	6.0	6	60	130
IULR-4-4.0xR0.3xL32.0	4.0	0.3	32.0	3.2	6	70	211
IALR-4-4.0xR0.3xL32.0	4.0	0.3	32.0	3.2	6	70	142
IALR-2-4.0xR0.3xL32.0	4.0	0.3	32.0	6.0	6	70	130
IUR-4-4.0xR0.5x8.0	4.0	0.5	—	8.0	6	50	193
IAR-2-4.0xR0.5x8.0	4.0	0.5	—	8.0	6	50	111
IAR-4-4.0xR0.5x8.0	4.0	0.5	—	8.0	6	50	119
IULR-4-4.0xR0.5xL8.0	4.0	0.5	8.0	3.2	6	50	211
IULR-4-4.0xR0.5xL12.0	4.0	0.5	12.0	3.2	6	50	211
IULR-4-4.0xR0.5xL16.0	4.0	0.5	16.0	3.2	6	50	211
IALR-4-4.0xR0.5xL16.0	4.0	0.5	16.0	3.2	6	50	142
IALR-2-4.0xR0.5xL16.0	4.0	0.5	16.0	6.0	6	50	130
IULR-4-4.0xR0.5xL24.0	4.0	0.5	24.0	3.2	6	60	211
IALR-4-4.0xR0.5xL24.0	4.0	0.5	24.0	3.2	6	60	142
IALR-2-4.0xR0.5xL24.0	4.0	0.5	24.0	6.0	6	60	131
IULR-4-4.0xR0.5xL32.0	4.0	0.5	32.0	3.2	6	70	211
IALR-4-4.0xR0.5xL32.0	4.0	0.5	32.0	3.2	6	70	142
IALR-2-4.0xR0.5xL32.0	4.0	0.5	32.0	6.0	6	70	131
IAR-2-4.0xR1.0x8.0	4.0	1.0	—	8.0	6	50	111
IAR-4-4.0xR1.0x8.0	4.0	1.0	—	8.0	6	50	119
IULR-4-4.0xR1.0xL8.0	4.0	1.0	8.0	3.2	6	50	211
IULR-4-4.0xR1.0xL12.0	4.0	1.0	12.0	3.2	6	50	211
IULR-4-4.0xR1.0xL16.0	4.0	1.0	16.0	3.2	6	50	211
IALR-4-4.0xR1.0xL16.0	4.0	1.0	16.0	3.2	6	50	142

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALR-2-4.0xR1.0xL16.0	4.0	1.0	16.0	6.0	6	50	131
IULR-4-4.0xR1.0xL24.0	4.0	1.0	24.0	3.2	6	60	211
IALR-4-4.0xR1.0xL24.0	4.0	1.0	24.0	3.2	6	60	142
IALR-2-4.0xR1.0xL24.0	4.0	1.0	24.0	6.0	6	60	131
IULR-4-4.0xR1.0xL32.0	4.0	1.0	32.0	3.2	6	70	211
IALR-4-4.0xR1.0xL32.0	4.0	1.0	32.0	3.2	6	70	142
IALR-2-4.0xR1.0xL32.0	4.0	1.0	32.0	6.0	6	70	131
IAR-2-5.0xR0.1x10.0	5.0	0.1	—	10.0	6	50	111
IAR-4-5.0xR0.1x10.0	5.0	0.1	—	10.0	6	50	119
IULR-4-5.0xR0.1xL15.0	5.0	0.1	15.0	4.0	6	50	211
IALR-4-5.0xR0.1xL15.0	5.0	0.1	15.0	4.0	6	50	142
IULR-4-5.0xR0.1xL20.0	5.0	0.1	20.0	4.0	6	50	211
IALR-4-5.0xR0.1xL20.0	5.0	0.1	20.0	4.0	6	50	142
IALR-2-5.0xR0.1xL20.0	5.0	0.1	20.0	7.5	6	50	131
IULR-4-5.0xR0.1xL40.0	5.0	0.1	40.0	4.0	6	70	211
IALR-4-5.0xR0.1xL40.0	5.0	0.1	40.0	4.0	6	70	142
IALR-2-5.0xR0.1xL40.0	5.0	0.1	40.0	7.5	6	70	131
IUR-6-5.0xR0.2x10.0	5.0	0.2	—	10.0	6	50	197
IAR-2-5.0xR0.2x10.0	5.0	0.2	—	10.0	6	50	111
IAR-4-5.0xR0.2x10.0	5.0	0.2	—	10.0	6	50	119
IULR-4-5.0xR0.2xL15.0	5.0	0.2	15.0	4.0	6	50	211
IALR-2-5.0xR0.2xL15.0	5.0	0.2	15.0	7.5	6	50	131
IULR-4-5.0xR0.2xL20.0	5.0	0.2	20.0	4.0	6	50	211
IALR-4-5.0xR0.2xL20.0	5.0	0.2	20.0	4.0	6	50	142
IALR-2-5.0xR0.2xL20.0	5.0	0.2	20.0	7.5	6	50	131
IULR-4-5.0xR0.2xL40.0	5.0	0.2	40.0	4.0	6	70	211
IALR-4-5.0xR0.2xL40.0	5.0	0.2	40.0	4.0	6	70	142
IALR-2-5.0xR0.2xL40.0	5.0	0.2	40.0	7.5	6	70	131
IUR-6-5.0xR0.3x10.0	5.0	0.3	—	10.0	6	50	197
IAR-2-5.0xR0.3x10.0	5.0	0.3	—	10.0	6	50	112
IAR-4-5.0xR0.3x10.0	5.0	0.3	—	10.0	6	50	119
IULR-4-5.0xR0.3xL15.0	5.0	0.3	15.0	4.0	6	50	211
IALR-2-5.0xR0.3xL15.0	5.0	0.3	15.0	7.5	6	50	131
IULR-4-5.0xR0.3xL20.0	5.0	0.3	20.0	4.0	6	50	211
IALR-4-5.0xR0.3xL20.0	5.0	0.3	20.0	4.0	6	50	142
IALR-2-5.0xR0.3xL20.0	5.0	0.3	20.0	7.5	6	50	131
IULR-4-5.0xR0.3xL40.0	5.0	0.3	40.0	4.0	6	70	211
IALR-4-5.0xR0.3xL40.0	5.0	0.3	40.0	4.0	6	70	142
IALR-2-5.0xR0.3xL40.0	5.0	0.3	40.0	7.5	6	70	131
IUR-6-5.0xR0.5x10.0	5.0	0.5	—	10.0	6	50	197
IAR-2-5.0xR0.5x10.0	5.0	0.5	—	10.0	6	50	112
IAR-4-5.0xR0.5x10.0	5.0	0.5	—	10.0	6	50	119
IULR-4-5.0xR0.5xL15.0	5.0	0.5	15.0	4.0	6	50	211
IULR-4-5.0xR0.5xL20.0	5.0	0.5	20.0	4.0	6	50	211
IALR-4-5.0xR0.5xL20.0	5.0	0.5	20.0	4.0	6	50	142
IALR-2-5.0xR0.5xL20.0	5.0	0.5	20.0	7.5	6	50	131
IULR-4-5.0xR0.5xL40.0	5.0	0.5	40.0	4.0	6	70	211
IALR-4-5.0xR0.5xL40.0	5.0	0.5	40.0	4.0	6	70	142
IALR-2-5.0xR0.5xL40.0	5.0	0.5	40.0	7.5	6	70	131
IUR-6-5.0xR1.0x10.0	5.0	1.0	—	10.0	6	50	197
IAR-2-5.0xR1.0x10.0	5.0	1.0	—	10.0	6	50	112
IAR-4-5.0xR1.0x10.0	5.0	1.0	—	10.0	6	50	119

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IULR-4-5.0xR1.0xL15.0	5.0	1.0	15.0	4.0	6	50	211
IULR-4-5.0xR1.0xL20.0	5.0	1.0	20.0	4.0	6	50	211
IALR-4-5.0xR1.0xL20.0	5.0	1.0	20.0	4.0	6	50	142
IALR-2-5.0xR1.0xL20.0	5.0	1.0	20.0	7.5	6	50	131
IULR-4-5.0xR1.0xL40.0	5.0	1.0	40.0	4.0	6	70	212
IALR-4-5.0xR1.0xL40.0	5.0	1.0	40.0	4.0	6	70	142
IALR-2-5.0xR1.0xL40.0	5.0	1.0	40.0	7.5	6	70	131
IAR-2-5.0xR1.5x10.0	5.0	1.5	—	10.0	6	50	112
IAR-4-5.0xR1.5x10.0	5.0	1.5	—	10.0	6	50	120
IAR-2-6.0xR0.1x12.0	6.0	0.1	—	12.0	6	50	112
IAR-4-6.0xR0.1x12.0	6.0	0.1	—	12.0	6	50	120
IULR-4-6.0xR0.1xL12.0	6.0	0.1	12.0	5.0	6	50	212
IALR-4-6.0xR0.1xL15.0	6.0	0.1	15.0	5.0	6	50	142
IULR-4-6.0xR0.1xL18.0	6.0	0.1	18.0	5.0	6	50	212
IALR-4-6.0xR0.1xL20.0	6.0	0.1	20.0	5.0	6	50	142
IULR-4-6.0xR0.1xL24.0	6.0	0.1	24.0	5.0	6	60	212
IALR-4-6.0xR0.1xL24.0	6.0	0.1	24.0	5.0	6	60	142
IALR-2-6.0xR0.1xL24.0	6.0	0.1	24.0	9.0	6	60	131
IALR-4-6.0xR0.1xL30.0	6.0	0.1	30.0	5.0	6	60	142
IULR-4-6.0xR0.1xL48.0	6.0	0.1	48.0	5.0	6	80	212
IALR-4-6.0xR0.1xL48.0	6.0	0.1	48.0	5.0	6	80	142
IALR-2-6.0xR0.1xL48.0	6.0	0.1	48.0	9.0	6	80	131
IUR-4-6.0xR0.2x12.0	6.0	0.2	—	12.0	6	60	193
IUR-6-6.0xR0.2x12.0	6.0	0.2	—	12.0	6	60	197
IAR-2-6.0xR0.2x12.0	6.0	0.2	—	12.0	6	50	112
IAR-4-6.0xR0.2x12.0	6.0	0.2	—	12.0	6	50	120
IULR-4-6.0xR0.2xL12.0	6.0	0.2	12.0	5.0	6	50	212
IALR-4-6.0xR0.2xL15.0	6.0	0.2	15.0	5.0	6	50	142
IULR-4-6.0xR0.2xL18.0	6.0	0.2	18.0	5.0	6	50	212
IALR-4-6.0xR0.2xL20.0	6.0	0.2	20.0	5.0	6	50	142
IULR-4-6.0xR0.2xL24.0	6.0	0.2	24.0	5.0	6	60	212
IALR-4-6.0xR0.2xL24.0	6.0	0.2	24.0	5.0	6	60	142
IALR-2-6.0xR0.2xL24.0	6.0	0.2	24.0	9.0	6	60	131
IALR-4-6.0xR0.2xL30.0	6.0	0.2	30.0	5.0	6	60	142
IULR-4-6.0xR0.2xL48.0	6.0	0.2	48.0	5.0	6	80	212
IALR-4-6.0xR0.2xL48.0	6.0	0.2	48.0	5.0	6	80	142
IALR-2-6.0xR0.2xL48.0	6.0	0.2	48.0	9.0	6	80	131
IUR-4-6.0xR0.3x12.0	6.0	0.3	—	12.0	6	60	193
IUR-6-6.0xR0.3x12.0	6.0	0.3	—	12.0	6	60	197
IAR-2-6.0xR0.3x12.0	6.0	0.3	—	12.0	6	50	112
IAR-4-6.0xR0.3x12.0	6.0	0.3	—	12.0	6	50	120
IULR-4-6.0xR0.3xL12.0	6.0	0.3	12.0	5.0	6	50	212
IALR-4-6.0xR0.3xL15.0	6.0	0.3	15.0	5.0	6	50	142
IULR-4-6.0xR0.3xL18.0	6.0	0.3	18.0	5.0	6	50	212
IALR-4-6.0xR0.3xL20.0	6.0	0.3	20.0	5.0	6	50	143
IULR-4-6.0xR0.3xL24.0	6.0	0.3	24.0	5.0	6	60	212
IALR-4-6.0xR0.3xL24.0	6.0	0.3	24.0	5.0	6	60	143
IALR-2-6.0xR0.3xL24.0	6.0	0.3	24.0	9.0	6	60	131
IALR-4-6.0xR0.3xL30.0	6.0	0.3	30.0	5.0	6	60	143
IULR-4-6.0xR0.3xL48.0	6.0	0.3	48.0	5.0	6	80	212
IALR-4-6.0xR0.3xL48.0	6.0	0.3	48.0	5.0	6	80	143
IALR-2-6.0xR0.3xL48.0	6.0	0.3	48.0	9.0	6	80	131

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IUR-4-6.0xR0.5x12.0	6.0	0.5	—	12.0	6	60	193
IUR-6-6.0xR0.5x12.0	6.0	0.5	—	12.0	6	60	197
IAR-2-6.0xR0.5x12.0	6.0	0.5	—	12.0	6	50	112
IAR-4-6.0xR0.5x12.0	6.0	0.5	—	12.0	6	50	120
IULR-4-6.0xR0.5xL12.0	6.0	0.5	12.0	5.0	6	50	212
IALR-4-6.0xR0.5xL15.0	6.0	0.5	15.0	5.0	6	50	143
IULR-4-6.0xR0.5xL18.0	6.0	0.5	18.0	5.0	6	50	212
IALR-4-6.0xR0.5xL20.0	6.0	0.5	20.0	5.0	6	50	143
IULR-4-6.0xR0.5xL24.0	6.0	0.5	24.0	5.0	6	60	212
IALR-4-6.0xR0.5xL24.0	6.0	0.5	24.0	5.0	6	60	143
IALR-2-6.0xR0.5xL24.0	6.0	0.5	24.0	9.0	6	60	131
IALR-4-6.0xR0.5xL30.0	6.0	0.5	30.0	5.0	6	60	143
IULR-4-6.0xR0.5xL48.0	6.0	0.5	48.0	5.0	6	80	212
IALR-4-6.0xR0.5xL48.0	6.0	0.5	48.0	5.0	6	80	143
IALR-2-6.0xR0.5xL48.0	6.0	0.5	48.0	9.0	6	80	131
IUR-4-6.0xR1.0x12.0	6.0	1.0	—	12.0	6	60	193
IUR-6-6.0xR1.0x12.0	6.0	1.0	—	12.0	6	60	197
IAR-2-6.0xR1.0x12.0	6.0	1.0	—	12.0	6	50	112
IAR-4-6.0xR1.0x12.0	6.0	1.0	—	12.0	6	50	120
IULR-4-6.0xR1.0xL12.0	6.0	1.0	12.0	5.0	6	50	212
IULR-4-6.0xR1.0xL18.0	6.0	1.0	18.0	5.0	6	50	212
IULR-4-6.0xR1.0xL24.0	6.0	1.0	24.0	5.0	6	60	212
IALR-4-6.0xR1.0xL24.0	6.0	1.0	24.0	5.0	6	60	143
IALR-2-6.0xR1.0xL24.0	6.0	1.0	24.0	9.0	6	60	131
IULR-4-6.0xR1.0xL48.0	6.0	1.0	48.0	5.0	6	80	212
IALR-4-6.0xR1.0xL48.0	6.0	1.0	48.0	5.0	6	80	143
IALR-2-6.0xR1.0xL48.0	6.0	1.0	48.0	9.0	6	80	131
IAR-2-6.0xR1.5x12.0	6.0	1.5	—	12.0	6	50	112
IAR-4-6.0xR1.5x12.0	6.0	1.5	—	12.0	6	50	120
IAR-2-6.0xR2.0x12.0	6.0	2.0	—	12.0	6	50	112
IAR-4-8.0xR0.1x16.0	8.0	0.1	—	16.0	8	70	120
IAR-4-8.0xR0.2x16.0	8.0	0.2	—	16.0	8	70	120
IUR-4-8.0xR0.3x16.0	8.0	0.3	—	16.0	8	70	193
IUR-6-8.0xR0.3x16.0	8.0	0.3	—	16.0	8	70	197
IUR-4-8.0xR0.5x16.0	8.0	0.5	—	16.0	8	70	193
IUR-6-8.0xR0.5x16.0	8.0	0.5	—	16.0	8	70	197
IAR-4-8.0xR0.5x16.0	8.0	0.5	—	16.0	8	70	120
IUR-4-8.0xR1.0x16.0	8.0	1.0	—	16.0	8	70	193
IUR-6-8.0xR1.0x16.0	8.0	1.0	—	16.0	8	70	197
IAR-4-8.0xR1.0x16.0	8.0	1.0	—	16.0	8	70	120
IUR-6-8.0xR1.5x16.0	8.0	1.5	—	16.0	8	70	197
IAR-4-8.0xR1.5x16.0	8.0	1.5	—	16.0	8	70	120
IAR-4-8.0xR2.0x16.0	8.0	2.0	—	16.0	8	70	120
IAR-4-8.0xR2.5x16.0	8.0	2.5	—	16.0	8	70	120
IAR-4-8.0xR3.0x16.0	8.0	3.0	—	16.0	8	70	120
IAR-4-10.0xR0.1x20.0	10.0	0.1	—	20.0	10	80	120
IAR-4-10.0xR0.2x20.0	10.0	0.2	—	20.0	10	80	120
IUR-4-10.0xR0.3x20.0	10.0	0.3	—	20.0	10	80	193
IUR-6-10.0xR0.3x20.0	10.0	0.3	—	20.0	10	80	197
IAR-4-10.0xR0.3x20.0	10.0	0.3	—	20.0	10	80	120
IUR-4-10.0xR0.5x20.0	10.0	0.5	—	20.0	10	80	193
IUR-6-10.0xR0.5x20.0	10.0	0.5	—	20.0	10	80	197

초경 엔드밀/래디우스 Carbide EndMills/Radius

코드No. Code No.	날경 (D1) Tool Diameter	래디우스 R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IAR-4-10.0xR0.5x20.0	10.0	0.5	—	20.0	10	80	120
IUR-4-10.0xR1.0x20.0	10.0	1.0	—	20.0	10	80	193
IUR-6-10.0xR1.0x20.0	10.0	1.0	—	20.0	10	80	197
IAR-4-10.0xR1.0x20.0	10.0	1.0	—	20.0	10	80	120
IUR-6-10.0xR1.5x20.0	10.0	1.5	—	20.0	10	80	197
IAR-4-10.0xR1.5x20.0	10.0	1.5	—	20.0	10	80	120
IUR-6-10.0xR2.0x20.0	10.0	2.0	—	20.0	10	80	197
IAR-4-10.0xR2.0x20.0	10.0	2.0	—	20.0	10	80	120
IAR-4-10.0xR2.5x20.0	10.0	2.5	—	20.0	10	80	120
IAR-4-10.0xR3.0x20.0	10.0	3.0	—	20.0	10	80	120
IAR-4-12.0xR0.1x24.0	12.0	0.1	—	24.0	12	110	120
IAR-4-12.0xR0.2x24.0	12.0	0.2	—	24.0	12	110	120
IAR-4-12.0xR0.3x24.0	12.0	0.3	—	24.0	12	110	120
IUR-4-12.0xR0.5x24.0	12.0	0.5	—	24.0	12	110	193
IUR-6-12.0xR0.5x24.0	12.0	0.5	—	24.0	12	110	197
IAR-4-12.0xR0.5x24.0	12.0	0.5	—	24.0	12	110	120
IUR-4-12.0xR1.0x24.0	12.0	1.0	—	24.0	12	110	193
IUR-6-12.0xR1.0x24.0	12.0	1.0	—	24.0	12	110	197
IAR-4-12.0xR1.0x24.0	12.0	1.0	—	24.0	12	110	120
IUR-6-12.0xR1.5x24.0	12.0	1.5	—	24.0	12	110	197
IAR-4-12.0xR1.5x24.0	12.0	1.5	—	24.0	12	110	120
IUR-4-12.0xR2.0x24.0	12.0	2.0	—	24.0	12	110	193
IUR-6-12.0xR2.0x24.0	12.0	2.0	—	24.0	12	110	197
IAR-4-12.0xR2.0x24.0	12.0	2.0	—	24.0	12	110	120
IAR-4-12.0xR2.5x24.0	12.0	2.5	—	24.0	12	110	120
IAR-4-12.0xR3.0x24.0	12.0	3.0	—	24.0	12	110	120
IAR-4-16.0xR1.0x40.0	16.0	1.0	—	40.0	16	130	120
IAR-4-16.0xR2.0x40.0	16.0	2.0	—	40.0	16	130	120
IAR-4-16.0xR3.0x40.0	16.0	3.0	—	40.0	16	130	120
IAR-4-20.0xR1.0x50.0	20.0	1.0	—	50.0	20	140	120
IAR-4-20.0xR2.0x50.0	20.0	2.0	—	50.0	20	140	120
IAR-4-20.0xR3.0x50.0	20.0	3.0	—	50.0	20	140	120

초경 엔드밀/볼 Carbide EndMills/Ball

코드No. Code No.	볼 반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IUB-2-0.1xR0.05x0.1	0.05	—	0.1	0.1	4	50	215
IULB-2-0.1xR0.05xL0.2	0.05	0.2	0.07	0.1	4	50	217
IULB-2-0.1xR0.05xL0.3	0.05	0.3	0.07	0.1	4	50	217
IULB-2-0.1xR0.05xL0.5	0.05	0.5	0.07	0.1	4	50	217
IUB-2-0.2xR0.1x0.2	0.1	—	0.2	0.2	4	50	215
IULB-2-0.2xR0.1xL0.3	0.1	0.3	0.15	0.2	4	50	217
IULB-2-0.2xR0.1xL0.5	0.1	0.5	0.15	0.2	4	50	217
IULB-2-0.2xR0.1xL0.75	0.1	0.75	0.15	0.2	4	50	217
IULB-2-0.2xR0.1xL1.0	0.1	1.0	0.15	0.2	4	50	217
IUB-2-0.3xR0.15x0.3	0.15	—	0.3	0.3	4	50	215
IAB-2-0.3xR0.15x0.3	0.15	—	0.3	0.3	4	50	151
IALB-2-0.3xR0.15xL0.5	0.15	0.5	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL0.6	0.15	0.6	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL0.75	0.15	0.75	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL1.0	0.15	1.0	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL1.25	0.15	1.25	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL1.5	0.15	1.5	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL1.75	0.15	1.75	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL2.0	0.15	2.0	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL2.25	0.15	2.25	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL2.5	0.15	2.5	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL2.75	0.15	2.75	0.2	0.3	4	50	155
IALB-2-0.3xR0.15xL3.0	0.15	3.0	0.2	0.3	4	50	155
IUB-2-0.4xR0.2x0.6	0.2	—	0.6	0.4	4	50	215
IAB-2-0.4xR0.2x0.6	0.2	—	0.6	0.4	4	50	151
IULB-2-0.4xR0.2xL0.5	0.2	0.5	0.3	0.4	4	50	217
IALB-2-0.4xR0.2xL0.5	0.2	0.5	0.3	0.4	4	50	155
IULB-2-0.4xR0.2xL0.8	0.2	0.8	0.3	0.4	4	50	217
IALB-2-0.4xR0.2xL0.8	0.2	0.8	0.3	0.4	4	50	155
IULB-2-0.4xR0.2xL1.0	0.2	1.0	0.3	0.4	4	50	217
IALB-2-0.4xR0.2xL1.0	0.2	1.0	0.3	0.4	4	50	155
IULB-2-0.4xR0.2xL1.5	0.2	1.5	0.3	0.4	4	50	217
IALB-2-0.4xR0.2xL1.5	0.2	1.5	0.3	0.4	4	50	155
IULB-2-0.4xR0.2xL2.0	0.2	2.0	0.3	0.4	4	50	217
IALB-2-0.4xR0.2xL2.0	0.2	2.0	0.3	0.4	4	50	155
IULB-2-0.4xR0.2xL2.5	0.2	2.5	0.3	0.4	4	50	217
IALB-2-0.4xR0.2xL2.5	0.2	2.5	0.3	0.4	4	50	155
IULB-2-0.4xR0.2xL3.0	0.2	3.0	0.3	0.4	4	50	217
IALB-2-0.4xR0.2xL3.0	0.2	3.0	0.3	0.4	4	50	155
IUB-2-0.5xR0.25x0.8	0.25	—	0.8	0.5	4	50	215
IAB-2-0.5xR0.25x0.8	0.25	—	0.8	0.5	4	50	151
IULB-2-0.5xR0.25xL1.0	0.25	1.0	0.35	0.5	4	50	217
IALB-2-0.5xR0.25xL1.0	0.25	1.0	0.35	0.5	4	50	155
IULB-2-0.5xR0.25xL1.5	0.25	1.5	0.35	0.5	4	50	217
IALB-2-0.5xR0.25xL1.5	0.25	1.5	0.35	0.5	4	50	155
IULB-2-0.5xR0.25xL2.0	0.25	2.0	0.35	0.5	4	50	217
IALB-2-0.5xR0.25xL2.0	0.25	2.0	0.35	0.5	4	50	155
IULB-2-0.5xR0.25xL2.5	0.25	2.5	0.35	0.5	4	50	217
IALB-2-0.5xR0.25xL2.5	0.25	2.5	0.35	0.5	4	50	155
IULB-2-0.5xR0.25xL3.0	0.25	3.0	0.35	0.5	4	50	217
IALB-2-0.5xR0.25xL3.0	0.25	3.0	0.35	0.5	4	50	155
IULB-2-0.5xR0.25xL3.5	0.25	3.5	0.35	0.5	4	50	217

초경 엔드밀/볼 Carbide EndMills/Ball

코드No. Code No.	볼 반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALB-2-0.5xR0.25xL3.5	0.25	3.5	0.35	0.5	4	50	156
IULB-2-0.5xR0.25xL4.0	0.25	4.0	0.35	0.5	4	50	217
IALB-2-0.5xR0.25xL4.0	0.25	4.0	0.35	0.5	4	50	156
IUB-2-0.6xR0.3x0.9	0.3	—	0.9	0.6	4	50	215
IAB-2-0.6xR0.3x1.0	0.3	—	1.0	0.6	4	50	151
IULB-2-0.6xR0.3xL1.0	0.3	1.0	0.45	0.6	4	50	217
IALB-2-0.6xR0.3xL1.0	0.3	1.0	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL1.5	0.3	1.5	0.45	0.6	4	50	217
IALB-2-0.6xR0.3xL1.5	0.3	1.5	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL2.0	0.3	2.0	0.45	0.6	4	50	217
IALB-2-0.6xR0.3xL2.0	0.3	2.0	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL2.5	0.3	2.5	0.45	0.6	4	50	218
IALB-2-0.6xR0.3xL2.5	0.3	2.5	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL3.0	0.3	3.0	0.45	0.6	4	50	218
IALB-2-0.6xR0.3xL3.0	0.3	3.0	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL3.5	0.3	3.5	0.45	0.6	4	50	218
IALB-2-0.6xR0.3xL3.5	0.3	3.5	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL4.0	0.3	4.0	0.45	0.6	4	50	218
IALB-2-0.6xR0.3xL4.0	0.3	4.0	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL4.5	0.3	4.5	0.45	0.6	4	50	218
IALB-2-0.6xR0.3xL4.5	0.3	4.5	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL5.0	0.3	5.0	0.45	0.6	4	50	218
IALB-2-0.6xR0.3xL5.0	0.3	5.0	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL5.5	0.3	5.5	0.45	0.6	4	50	218
IALB-2-0.6xR0.3xL5.5	0.3	5.5	0.6	0.6	4	50	156
IULB-2-0.6xR0.3xL6.0	0.3	6.0	0.45	0.6	4	50	218
IALB-2-0.6xR0.3xL6.0	0.3	6.0	0.6	0.6	4	50	156
IUB-2-0.8xR0.4x1.2	0.4	—	1.2	0.8	4	50	215
IAB-2-0.8xR0.4x1.2	0.4	—	1.2	0.8	4	50	151
IULB-2-0.8xR0.4xL2.0	0.4	2.0	0.6	0.8	4	50	218
IALB-2-0.8xR0.4xL2.0	0.4	2.0	0.6	0.8	4	50	156
IULB-2-0.8xR0.4xL3.0	0.4	3.0	0.6	0.8	4	50	218
IALB-2-0.8xR0.4xL3.0	0.4	3.0	0.6	0.8	4	50	156
IULB-2-0.8xR0.4xL4.0	0.4	4.0	0.6	0.8	4	50	218
IALB-2-0.8xR0.4xL4.0	0.4	4.0	0.6	0.8	4	50	156
IULB-2-0.8xR0.4xL5.0	0.4	5.0	0.6	0.8	4	50	218
IALB-2-0.8xR0.4xL5.0	0.4	5.0	0.6	0.8	4	50	156
IULB-2-0.8xR0.4xL6.0	0.4	6.0	0.6	0.8	4	50	218
IALB-2-0.8xR0.4xL6.0	0.4	6.0	0.6	0.8	4	50	156
IULB-2-0.8xR0.4xL7.0	0.4	7.0	0.6	0.8	4	50	218
IALB-2-0.8xR0.4xL7.0	0.4	7.0	0.6	0.8	4	50	156
IULB-2-0.8xR0.4xL8.0	0.4	8.0	0.6	0.8	4	50	218
IALB-2-0.8xR0.4xL8.0	0.4	8.0	0.6	0.8	4	50	156
IUB-2-1.0xR0.5x1.5	0.5	—	1.5	1.0	4	50	215
IAB-2-1.0xR0.5x1.5	0.5	—	1.5	1.0	4	50	151
IULB-2-1.0xR0.5xL2.0	0.5	2.0	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL2.0	0.5	2.0	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL2.5	0.5	2.5	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL2.5	0.5	2.5	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL3.0	0.5	3.0	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL3.0	0.5	3.0	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL4.0	0.5	4.0	0.8	1.0	4	50	218

초경 엔드밀/볼 Carbide EndMills/Ball

코드No. Code No.	볼 반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALB-2-1.0xR0.5xL4.0	0.5	4.0	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL5.0	0.5	5.0	0.8	1.0	4	50	218
IULB-2-1.0xR0.5xL6.0	0.5	6.0	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL6.0	0.5	6.0	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL7.0	0.5	7.0	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL7.0	0.5	7.0	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL8.0	0.5	8.0	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL8.0	0.5	8.0	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL9.0	0.5	9.0	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL9.0	0.5	9.0	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL10.0	0.5	10.0	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL10.0	0.5	10.0	0.8	1.0	4	50	156
IULB-2-1.0xR0.5xL12.0	0.5	12.0	0.8	1.0	4	50	218
IALB-2-1.0xR0.5xL12.0	0.5	12.0	0.8	1.0	4	50	156
IAB-2-1.2xR0.6x1.8	0.6	—	1.8	1.2	4	50	151
IULB-2-1.2xR0.6xL2.4	0.6	2.4	0.9	1.2	4	50	218
IALB-2-1.2xR0.6xL2.4	0.6	2.4	0.9	1.2	4	50	156
IULB-2-1.2xR0.6xL4.0	0.6	4.0	0.9	1.2	4	50	218
IALB-2-1.2xR0.6xL4.0	0.6	4.0	0.9	1.2	4	50	156
IULB-2-1.2xR0.6xL6.0	0.6	6.0	0.9	1.2	4	50	218
IALB-2-1.2xR0.6xL6.0	0.6	6.0	0.9	1.2	4	50	156
IULB-2-1.2xR0.6xL8.0	0.6	8.0	0.9	1.2	4	50	218
IALB-2-1.2xR0.6xL8.0	0.6	8.0	0.9	1.2	4	50	156
IULB-2-1.2xR0.6xL10.0	0.6	10.0	0.9	1.2	4	50	218
IALB-2-1.2xR0.6xL10.0	0.6	10.0	0.9	1.2	4	50	156
IULB-2-1.2xR0.6xL12.0	0.6	12.0	0.9	1.2	4	50	218
IALB-2-1.2xR0.6xL12.0	0.6	12.0	0.9	1.2	4	50	156
IUB-2-1.5xR0.75x2.3	0.75	—	2.3	1.5	4	50	215
IAB-2-1.5xR0.75x2.3	0.75	—	2.3	1.5	4	50	151
IULB-2-1.5xR0.75xL3.0	0.75	3.0	1.1	1.5	4	50	218
IALB-2-1.5xR0.75xL3.0	0.75	3.0	1.1	1.5	4	50	156
IULB-2-1.5xR0.75xL4.0	0.75	4.0	1.1	1.5	4	50	218
IALB-2-1.5xR0.75xL4.0	0.75	4.0	1.1	1.5	4	50	156
IULB-2-1.5xR0.75xL6.0	0.75	6.0	1.1	1.5	4	50	218
IALB-2-1.5xR0.75xL6.0	0.75	6.0	1.1	1.5	4	50	156
IULB-2-1.5xR0.75xL8.0	0.75	8.0	1.1	1.5	4	50	218
IALB-2-1.5xR0.75xL8.0	0.75	8.0	1.1	1.5	4	50	156
IULB-2-1.5xR0.75xL10.0	0.75	10.0	1.1	1.5	4	50	218
IALB-2-1.5xR0.75xL10.0	0.75	10.0	1.1	1.5	4	50	156
IULB-2-1.5xR0.75xL12.0	0.75	12.0	1.1	1.5	4	50	218
IALB-2-1.5xR0.75xL12.0	0.75	12.0	1.1	1.5	4	50	156
IULB-2-1.5xR0.75xL14.0	0.75	14.0	1.1	1.5	4	50	218
IALB-2-1.5xR0.75xL14.0	0.75	14.0	1.1	1.5	4	50	156
IULB-2-1.5xR0.75xL16.0	0.75	16.0	1.1	1.5	4	50	218
IALB-2-1.5xR0.75xL16.0	0.75	16.0	1.1	1.5	4	50	156
IAB-2-1.6xR0.8x2.4	0.8	—	2.4	1.6	4	50	151
IALB-2-1.6xR0.8xL4.0	0.8	4.0	1.2	1.6	4	50	156
IULB-2-1.6xR0.8xL8.0	0.8	8.0	1.2	1.6	4	50	218
IALB-2-1.6xR0.8xL8.0	0.8	8.0	1.2	1.6	4	50	157
IULB-2-1.6xR0.8xL12.0	0.8	12.0	1.2	1.6	4	50	218
IALB-2-1.6xR0.8xL12.0	0.8	12.0	1.2	1.6	4	50	157
IULB-2-1.6xR0.8xL16.0	0.8	16.0	1.2	1.6	4	50	218

초경 엔드밀/볼 Carbide EndMills/Ball

코드No. Code No.	볼 반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALB-2-1.6xR0.8xL16.0	0.8	16.0	1.2	1.6	4	50	157
IUB-2-2.0xR1.0x3.0	1.0	—	3.0	2.0	4	50	215
IAB-2-2.0xR1.0x3.0	1.0	—	3.0	2.0	4	50	151
IULB-2-2.0xR1.0xL3.0	1.0	3.0	1.5	2.0	4	50	218
IALB-2-2.0xR1.0xL3.0	1.0	3.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL4.0	1.0	4.0	1.5	2.0	4	50	218
IALB-2-2.0xR1.0xL4.0	1.0	4.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL6.0	1.0	6.0	1.5	2.0	4	50	219
IALB-2-2.0xR1.0xL6.0	1.0	6.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL8.0	1.0	8.0	1.5	2.0	4	50	219
IALB-2-2.0xR1.0xL8.0	1.0	8.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL10.0	1.0	10.0	1.5	2.0	4	50	219
IALB-2-2.0xR1.0xL10.0	1.0	10.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL12.0	1.0	12.0	1.5	2.0	4	50	219
IALB-2-2.0xR1.0xL12.0	1.0	12.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL13.0	1.0	13.0	1.5	2.0	4	50	219
IALB-2-2.0xR1.0xL13.0	1.0	13.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL14.0	1.0	14.0	1.5	2.0	4	50	219
IALB-2-2.0xR1.0xL14.0	1.0	14.0	1.5	2.0	4	50	157
IALB-2-2.0xR1.0xL15.0	1.0	15.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL16.0	1.0	16.0	1.5	2.0	4	50	219
IALB-2-2.0xR1.0xL16.0	1.0	16.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL18.0	1.0	18.0	1.5	2.0	4	50	219
IALB-2-2.0xR1.0xL18.0	1.0	18.0	1.5	2.0	4	50	157
IULB-2-2.0xR1.0xL20.0	1.0	20.0	1.5	2.0	4	60	219
IALB-2-2.0xR1.0xL20.0	1.0	20.0	1.5	2.0	4	60	157
IUB-2-2.5xR1.25x3.8	1.25	—	3.8	2.5	4	50	215
IAB-2-2.5xR1.25x3.8	1.25	—	3.8	2.5	4	50	151
IULB-2-2.5xR1.25xL6.0	1.25	6.0	2.3	2.5	4	50	219
IALB-2-2.5xR1.25xL6.0	1.25	6.0	2.3	2.5	4	50	157
IULB-2-2.5xR1.25xL8.0	1.25	8.0	2.3	2.5	4	50	219
IALB-2-2.5xR1.25xL8.0	1.25	8.0	2.3	2.5	4	50	157
IULB-2-2.5xR1.25xL10.0	1.25	10.0	2.3	2.5	4	50	219
IALB-2-2.5xR1.25xL10.0	1.25	10.0	2.3	2.5	4	50	157
IULB-2-2.5xR1.25xL15.0	1.25	15.0	2.3	2.5	4	50	219
IALB-2-2.5xR1.25xL15.0	1.25	15.0	2.3	2.5	4	50	157
IULB-2-2.5xR1.25xL20.0	1.25	20.0	2.3	2.5	4	50	219
IALB-2-2.5xR1.25xL20.0	1.25	20.0	2.3	2.5	4	50	157
IUB-2-3.0xR1.5x5.0	1.5	—	5.0	3.0	4	50	215
IAB-2-3.0xR1.5x5.0	1.5	—	5.0	3.0	4	50	151
IULB-2-3.0xR1.5xL6.0	1.5	6.0	2.5	3.0	4	50	219
IALB-2-3.0xR1.5xL6.0	1.5	6.0	2.5	3.0	4	50	157
IULB-2-3.0xR1.5xL8.0	1.5	8.0	2.5	3.0	4	50	219
IALB-2-3.0xR1.5xL8.0	1.5	8.0	2.5	3.0	4	50	157
IULB-2-3.0xR1.5xL10.0	1.5	10.0	2.5	3.0	4	50	219
IALB-2-3.0xR1.5xL10.0	1.5	10.0	2.5	3.0	4	50	157
IULB-2-3.0xR1.5xL12.0	1.5	12.0	2.5	3.0	4	50	219
IALB-2-3.0xR1.5xL12.0	1.5	12.0	2.5	3.0	4	50	157
IULB-2-3.0xR1.5xL14.0	1.5	14.0	2.5	3.0	4	50	219
IALB-2-3.0xR1.5xL14.0	1.5	14.0	2.5	3.0	4	50	157
IALB-2-3.0xR1.5xL15.0	1.5	15.0	2.5	3.0	4	50	157
IULB-2-3.0xR1.5xL16.0	1.5	16.0	2.5	3.0	4	50	219

초경 엔드밀/볼 Carbide EndMills/Ball

코드No. Code No.	볼 반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IALB-2-3.0xR1.5xL16.0	1.5	16.0	2.5	3.0	4	50	157
IULB-2-3.0xR1.5xL20.0	1.5	20.0	2.5	3.0	4	50	219
IALB-2-3.0xR1.5xL20.0	1.5	20.0	2.5	3.0	4	50	157
IULB-2-3.0xR1.5xL25.0	1.5	25.0	2.5	3.0	4	60	219
IALB-2-3.0xR1.5xL25.0	1.5	25.0	2.5	3.0	4	60	157
IULB-2-3.0xR1.5xL30.0	1.5	30.0	2.5	3.0	4	60	219
IALB-2-3.0xR1.5xL30.0	1.5	30.0	2.5	3.0	4	60	157
IALB-2-3.5xR1.75xL10.0	1.75	10.0	2.8	3.5	6	50	157
IULB-2-3.5xR1.75xL15.0	1.75	15.0	2.8	3.5	6	50	219
IALB-2-3.5xR1.75xL15.0	1.75	15.0	2.8	3.5	6	50	157
IULB-2-3.5xR1.75xL20.0	1.75	20.0	2.8	3.5	6	60	219
IALB-2-3.5xR1.75xL20.0	1.75	20.0	2.8	3.5	6	60	157
IULB-2-3.5xR1.75xL25.0	1.75	25.0	2.8	3.5	6	60	219
IALB-2-3.5xR1.75xL25.0	1.75	25.0	2.8	3.5	6	60	157
IULB-2-3.5xR1.75xL30.0	1.75	30.0	2.8	3.5	6	70	219
IALB-2-3.5xR1.75xL30.0	1.75	30.0	2.8	3.5	6	70	157
IULB-2-3.5xR1.75xL35.0	1.75	35.0	2.8	3.5	6	70	219
IALB-2-3.5xR1.75xL35.0	1.75	35.0	2.8	3.5	6	70	157
IAB-2-4.0xR2.0x4.0	2.0	—	4.0	4.0	6	50	151
IUB-2-4.0xR2.0x6.0	2.0	—	6.0	4.0	6	50	215
IAB-2-4.0xR2.0x6.0	2.0	—	6.0	4.0	6	50	151
IULB-2-4.0xR2.0xL8.0	2.0	8.0	3.0	4.0	6	50	219
IULB-2-4.0xR2.0xL10.0	2.0	10.0	3.0	4.0	6	50	219
IALB-2-4.0xR2.0xL10.0	2.0	10.0	3.0	4.0	6	50	157
IULB-2-4.0xR2.0xL12.0	2.0	12.0	3.0	4.0	6	50	219
IALB-2-4.0xR2.0xL12.0	2.0	12.0	3.0	4.0	6	50	157
IULB-2-4.0xR2.0xL14.0	2.0	14.0	3.0	4.0	6	50	219
IALB-2-4.0xR2.0xL14.0	2.0	14.0	3.0	4.0	6	50	157
IULB-2-4.0xR2.0xL15.0	2.0	15.0	3.0	4.0	6	50	219
IALB-2-4.0xR2.0xL15.0	2.0	15.0	3.0	4.0	6	50	157
IALB-2-4.0xR2.0xL16.0	2.0	16.0	3.0	4.0	6	50	157
IULB-2-4.0xR2.0xL20.0	2.0	20.0	3.0	4.0	6	60	219
IALB-2-4.0xR2.0xL20.0	2.0	20.0	3.0	4.0	6	60	157
IULB-2-4.0xR2.0xL25.0	2.0	25.0	3.0	4.0	6	60	219
IALB-2-4.0xR2.0xL25.0	2.0	25.0	3.0	4.0	6	60	157
IULB-2-4.0xR2.0xL30.0	2.0	30.0	3.0	4.0	6	70	219
IALB-2-4.0xR2.0xL30.0	2.0	30.0	3.0	4.0	6	70	157
IULB-2-4.0xR2.0xL35.0	2.0	35.0	3.0	4.0	6	70	219
IALB-2-4.0xR2.0xL35.0	2.0	35.0	3.0	4.0	6	70	157
IAB-2-5.0xR2.5x5.0	2.5	—	5.0	5.0	6	50	151
IUB-2-5.0xR2.5x8.0	2.5	—	8.0	5.0	6	50	215
IAB-2-5.0xR2.5x8.0	2.5	—	8.0	5.0	6	50	151
IALB-2-5.0xR2.5xL10.0	2.5	10.0	3.5	5.0	6	50	158
IULB-2-5.0xR2.5xL15.0	2.5	15.0	3.5	5.0	6	50	219
IALB-2-5.0xR2.5xL15.0	2.5	15.0	3.5	5.0	6	50	158
IULB-2-5.0xR2.5xL20.0	2.5	20.0	3.5	5.0	6	50	219
IALB-2-5.0xR2.5xL20.0	2.5	20.0	3.5	5.0	6	50	158
IULB-2-5.0xR2.5xL25.0	2.5	25.0	3.5	5.0	6	60	219
IALB-2-5.0xR2.5xL25.0	2.5	25.0	3.5	5.0	6	60	158
IULB-2-5.0xR2.5xL30.0	2.5	30.0	3.5	5.0	6	60	219
IALB-2-5.0xR2.5xL30.0	2.5	30.0	3.5	5.0	6	60	158
IALB-2-5.0xR2.5xL35.0	2.5	35.0	3.5	5.0	6	70	158

초경 엔드밀/볼 Carbide EndMills/Ball

코드No. Code No.	볼 반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	생크 (D3) Shank Diameter	전장 (L3) Overall Length	페이지 page
IULB-2-5.0xR2.5xL40.0	2.5	40.0	3.5	5.0	6	70	219
IALB-2-5.0xR2.5xL40.0	2.5	40.0	3.5	5.0	6	70	158
IAB-2-6.0xR3.0x6.0	3.0	—	6.0	6.0	6	50	151
IUB-2-6.0xR3.0x10.0	3.0	—	10.0	6.0	6	50	215
IAB-2-6.0xR3.0x10.0	3.0	—	10.0	6.0	6	50	151
IULB-2-6.0xR3.0xL10.0	3.0	10.0	6.0	6.0	6	50	219
IALB-2-6.0xR3.0xL10.0	3.0	10.0	6.0	6.0	6	50	158
IULB-2-6.0xR3.0xL15.0	3.0	15.0	6.0	6.0	6	50	219
IALB-2-6.0xR3.0xL15.0	3.0	15.0	6.0	6.0	6	50	158
IULB-2-6.0xR3.0xL20.0	3.0	20.0	6.0	6.0	6	50	219
IALB-2-6.0xR3.0xL20.0	3.0	20.0	6.0	6.0	6	50	158
IULB-2-6.0xR3.0xL25.0	3.0	25.0	6.0	6.0	6	60	220
IALB-2-6.0xR3.0xL25.0	3.0	25.0	6.0	6.0	6	60	158
IULB-2-6.0xR3.0xL30.0	3.0	30.0	6.0	6.0	6	60	220
IALB-2-6.0xR3.0xL30.0	3.0	30.0	6.0	6.0	6	60	158
IULB-2-6.0xR3.0xL35.0	3.0	35.0	6.0	6.0	6	70	220
IALB-2-6.0xR3.0xL35.0	3.0	35.0	6.0	6.0	6	70	158
IULB-2-6.0xR3.0xL40.0	3.0	40.0	6.0	6.0	6	70	220
IALB-2-6.0xR3.0xL40.0	3.0	40.0	6.0	6.0	6	70	158
IALB-2-6.0xR3.0xL45.0	3.0	45.0	6.0	6.0	6	80	158
IULB-2-6.0xR3.0xL50.0	3.0	50.0	6.0	6.0	6	80	220
IALB-2-6.0xR3.0xL50.0	3.0	50.0	6.0	6.0	6	80	158
IULB-2-6.0xR3.0xL60.0	3.0	60.0	6.0	6.0	6	90	220
IUB-2-8.0xR4.0x12.0	4.0	—	12.0	8.0	8	70	215
IAB-2-8.0xR4.0x12.0	4.0	—	12.0	8.0	8	70	151
IAB-2-8.0xR4.0x16.0	4.0	—	16.0	8.0	8	70	151
IUB-2-10.0xR5.0x15.0	5.0	—	15.0	10.0	10	80	215
IAB-2-10.0xR5.0x15.0	5.0	—	15.0	10.0	10	80	151
IAB-2-10.0xR5.0x20.0	5.0	—	20.0	10.0	10	80	151
IUB-2-12.0xR6.0x20.0	6.0	—	20.0	12.0	12	110	215
IAB-2-12.0xR6.0x20.0	6.0	—	20.0	12.0	12	110	151
IAB-2-12.0xR6.0x24.0	6.0	—	24.0	12.0	12	110	151
IUB-2-16.0xR8.0x24.0	8.0	—	24.0	16.0	16	160	215
IAB-2-16.0xR8.0x30.0	8.0	—	30.0	16.0	16	140	151
IUB-2-18.0xR9.0x27.0	9.0	—	27.0	18.0	18	180	215
IUB-2-20.0xR10.0x30.0	10.0	—	30.0	20.0	20	180	215
IAB-2-20.0xR10.0x38.0	10.0	—	38.0	20.0	20	160	151

엔드밀 목차 End Mill table of contents

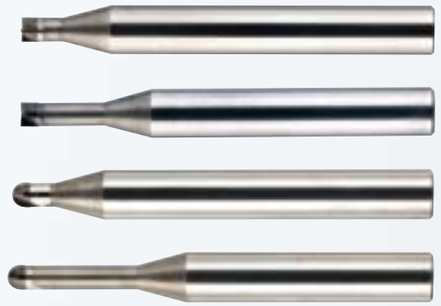
시리즈명 Series	페이지 Page
CBN Series	P051
ion Depo Type A Series	P073
ion Depo Type U Series	P171

CBN Series

CBN Series 래디우스 Radius
ion Depo A Series
ion Depo U Series

CBN 엔드밀 CBN End Mill

Non | BANCERA | CBN | 날 수 2~4 | 헬릭스각 0° | 목각 15° | Shank h4





특징

- 당사 CBN 엔드밀은 고정밀 , 긴 수명에 의해 초정밀 가공을 실현 !
- 재연마 최대 8 회 가능 , 원가 절감은 압도적 !
- 내마모 효과를 업할 수 있는 BANCERA 코팅 (세라믹계) 도 제공 가능 !
- 표준품 라인업은 외경 Φ 0.1 ～ 6.0 을 완비 , 특수 제작품도 단납기로 제공 가능

Features

- TOWA CBN end mill realizes ultra-precision machining with high accuracy and long life.
- Re-grinding is possible, reducing overall tooling cost.
- BANCERA coating (ceramic type) for improved wear resistance is available.
- Standard product lineup with diameters of Φ0.1 to 6.0, custom diameter/length available.

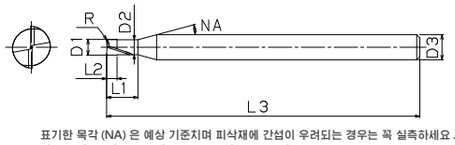
CBN 래디우스 엔드밀 CBN Radius End Mill

■형번:CBNLR-2 Model number:CBNLR-2

Non | BANCERA | CBN | 날 수 2 | 헬릭스각 0° | 목각 15° | Shank h4



날경하용공차 Diameter Tolerance	R 허용공차 R Tolerance
0/-0.003	±0.002

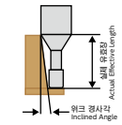


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	고경도강 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	◎							

최적◎Recommended 적용○Suggested

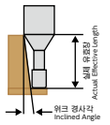


●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLR-2-0.1xR0.02xL0.2	0.1	0.02	0.2	0.04	0.08	15	4	50	0.24	0.25	0.26	0.27	0.29	32,160
CBNLR-2-0.1xR0.02xL0.3		0.02	0.3	0.04	0.08	15	4	50	0.35	0.36	0.37	0.38	0.41	32,640
CBNLR-2-0.1xR0.02xL0.5		0.02	0.5	0.04	0.08	15	4	50	0.55	0.57	0.59	0.61	0.66	33,600
CBNLR-2-0.1xR0.03xL0.2		0.03	0.2	0.04	0.08	15	4	50	0.24	0.25	0.26	0.27	0.29	30,720
CBNLR-2-0.1xR0.03xL0.3		0.03	0.3	0.04	0.08	15	4	50	0.35	0.36	0.37	0.38	0.41	31,200
CBNLR-2-0.1xR0.03xL0.5		0.03	0.5	0.04	0.08	15	4	50	0.55	0.57	0.59	0.61	0.66	32,160
CBNLR-2-0.15xR0.02xL0.2	0.15	0.02	0.2	0.06	0.13	15	4	50	0.24	0.25	0.26	0.27	0.29	32,160
CBNLR-2-0.15xR0.02xL0.3		0.02	0.3	0.06	0.13	15	4	50	0.35	0.36	0.37	0.38	0.41	32,640
CBNLR-2-0.15xR0.02xL0.5		0.02	0.5	0.06	0.13	15	4	50	0.55	0.57	0.59	0.61	0.66	33,600
CBNLR-2-0.15xR0.03xL0.2		0.03	0.2	0.06	0.13	15	4	50	0.24	0.25	0.26	0.27	0.29	30,720
CBNLR-2-0.15xR0.03xL0.3		0.03	0.3	0.06	0.13	15	4	50	0.35	0.36	0.37	0.38	0.41	31,200
CBNLR-2-0.15xR0.03xL0.5		0.03	0.5	0.06	0.13	15	4	50	0.55	0.57	0.59	0.61	0.66	32,160
CBNLR-2-0.2xR0.02xL0.3	0.2	0.02	0.3	0.08	0.17	15	4	50	0.37	0.38	0.39	0.41	0.44	24,480
CBNLR-2-0.2xR0.02xL0.5		0.02	0.5	0.08	0.17	15	4	50	0.57	0.59	0.61	0.64	0.69	24,480
CBNLR-2-0.2xR0.02xL1.0		0.02	1.0	0.08	0.17	15	4	50	1.09	1.13	1.17	1.21	1.31	25,200
CBNLR-2-0.2xR0.03xL0.3		0.03	0.3	0.08	0.17	15	4	50	0.37	0.38	0.39	0.40	0.44	22,000
CBNLR-2-0.2xR0.03xL0.5		0.03	0.5	0.08	0.17	15	4	50	0.57	0.59	0.61	0.63	0.68	22,000
CBNLR-2-0.2xR0.03xL1.0		0.03	1.0	0.08	0.17	15	4	50	1.09	1.13	1.17	1.21	1.31	22,640
CBNLR-2-0.2xR0.05xL0.3		0.05	0.3	0.08	0.17	15	4	50	0.37	0.38	0.39	0.40	0.43	22,000
CBNLR-2-0.2xR0.05xL0.5		0.05	0.5	0.08	0.17	15	4	50	0.57	0.59	0.61	0.63	0.68	22,000
CBNLR-2-0.2xR0.05xL1.0		0.05	1.0	0.08	0.17	15	4	50	1.09	1.13	1.17	1.21	1.30	22,640
CBNLR-2-0.3xR0.02xL0.5	0.3	0.02	0.5	0.13	0.27	15	4	50	0.57	0.59	0.61	0.64	0.69	24,160
CBNLR-2-0.3xR0.02xL0.75		0.02	0.75	0.13	0.27	15	4	50	0.83	0.86	0.89	0.92	1.00	24,320
CBNLR-2-0.3xR0.02xL1.0		0.02	1.0	0.13	0.27	15	4	50	1.09	1.13	1.17	1.21	1.31	24,480
CBNLR-2-0.3xR0.02xL1.5		0.02	1.5	0.13	0.27	15	4	50	1.61	1.66	1.72	1.79	1.93	24,800
CBNLR-2-0.3xR0.02xL2.0		0.02	2.0	0.13	0.27	15	4	50	2.12	2.20	2.28	2.36	2.55	25,200
CBNLR-2-0.3xR0.03xL0.5		0.03	0.5	0.13	0.27	15	4	50	0.57	0.59	0.61	0.63	0.68	21,760
CBNLR-2-0.3xR0.03xL0.75		0.03	0.75	0.13	0.27	15	4	50	0.83	0.86	0.89	0.92	0.99	21,920
CBNLR-2-0.3xR0.03xL1.0		0.03	1.0	0.13	0.27	15	4	50	1.09	1.13	1.17	1.21	1.31	22,000
CBNLR-2-0.3xR0.03xL1.5		0.03	1.5	0.13	0.27	15	4	50	1.61	1.66	1.72	1.78	1.93	22,320
CBNLR-2-0.3xR0.03xL2.0		0.03	2.0	0.13	0.27	15	4	50	2.12	2.20	2.28	2.36	2.55	22,640
CBNLR-2-0.3xR0.05xL0.5		0.05	0.5	0.13	0.27	15	4	50	0.57	0.59	0.61	0.63	0.68	21,760
CBNLR-2-0.3xR0.05xL0.75		0.05	0.75	0.13	0.27	15	4	50	0.83	0.86	0.89	0.92	0.99	21,920
CBNLR-2-0.3xR0.05xL1.0		0.05	1.0	0.13	0.27	15	4	50	1.09	1.13	1.17	1.21	1.30	22,000
CBNLR-2-0.3xR0.05xL1.5		0.05	1.5	0.13	0.27	15	4	50	1.61	1.66	1.72	1.78	1.92	22,320
CBNLR-2-0.3xR0.05xL2.0		0.05	2.0	0.13	0.27	15	4	50	2.12	2.20	2.27	2.36	2.54	22,640
CBNLR-2-0.4xR0.02xL0.5	0.4	0.02	0.5	0.24	0.37	15	4	50	0.57	0.59	0.61	0.64	0.69	22,960
CBNLR-2-0.4xR0.02xL1.0		0.02	1.0	0.24	0.37	15	4	50	1.09	1.13	1.17	1.21	1.31	23,120
CBNLR-2-0.4xR0.02xL1.5		0.02	1.5	0.24	0.37	15	4	50	1.61	1.66	1.72	1.79	1.93	23,360
CBNLR-2-0.4xR0.02xL2.0		0.02	2.0	0.24	0.37	15	4	50	2.12	2.20	2.28	2.36	2.55	23,680
CBNLR-2-0.4xR0.03xL0.5		0.03	0.5	0.24	0.37	15	4	50	0.57	0.59	0.61	0.63	0.68	20,640
CBNLR-2-0.4xR0.03xL1.0		0.03	1.0	0.24	0.37	15	4	50	1.09	1.13	1.17	1.21	1.31	20,800
CBNLR-2-0.4xR0.03xL1.5		0.03	1.5	0.24	0.37	15	4	50	1.61	1.66	1.72	1.78	1.93	20,960
CBNLR-2-0.4xR0.03xL2.0		0.03	2.0	0.24	0.37	15	4	50	2.12	2.20	2.28	2.36	2.55	21,280
CBNLR-2-0.4xR0.05xL0.5		0.05	0.5	0.24	0.37	15	4	50	0.57	0.59	0.61	0.63	0.68	20,640

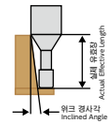
CBN Series



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

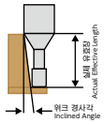
코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLR-2-0.4xR0.05xL1.0	0.4	0.05	1.0	0.24	0.37	15	4	50	1.09	1.13	1.17	1.21	1.30	20,800
CBNLR-2-0.4xR0.05xL1.5		0.05	1.5	0.24	0.37	15	4	50	1.61	1.66	1.72	1.78	1.92	20,800
CBNLR-2-0.4xR0.05xL2.0		0.05	2.0	0.24	0.37	15	4	50	2.12	2.20	2.27	2.36	2.54	21,280
CBNLR-2-0.4xR0.1xL0.5		0.1	0.5	0.24	0.37	15	4	50	0.57	0.59	0.61	0.62	0.67	20,640
CBNLR-2-0.4xR0.1xL1.0		0.1	1.0	0.24	0.37	15	4	50	1.09	1.12	1.16	1.20	1.29	20,800
CBNLR-2-0.4xR0.1xL1.5		0.1	1.5	0.24	0.37	15	4	50	1.61	1.66	1.71	1.77	1.91	20,800
CBNLR-2-0.4xR0.1xL2.0		0.1	2.0	0.24	0.37	15	4	50	2.12	2.19	2.27	2.35	2.53	20,800
CBNLR-2-0.5xR0.02xL0.5	0.5	0.02	0.5	0.3	0.47	15	4	50	0.57	0.59	0.61	0.64	0.69	18,880
CBNLR-2-0.5xR0.02xL1.0		0.02	1.0	0.3	0.47	15	4	50	1.09	1.13	1.17	1.21	1.31	19,040
CBNLR-2-0.5xR0.02xL1.5		0.02	1.5	0.3	0.47	15	4	50	1.61	1.66	1.72	1.79	1.93	19,200
CBNLR-2-0.5xR0.02xL2.5		0.02	2.5	0.3	0.47	15	4	50	2.64	2.73	2.83	2.94	3.17	21,040
CBNLR-2-0.5xR0.03xL0.5		0.03	0.5	0.3	0.47	15	4	50	0.57	0.59	0.61	0.63	0.68	16,960
CBNLR-2-0.5xR0.03xL1.0		0.03	1.0	0.3	0.47	15	4	50	1.09	1.13	1.17	1.21	1.31	17,120
CBNLR-2-0.5xR0.03xL1.5		0.03	1.5	0.3	0.47	15	4	50	1.61	1.66	1.72	1.78	1.93	17,280
CBNLR-2-0.5xR0.03xL2.5		0.03	2.5	0.3	0.47	15	4	50	2.64	2.73	2.83	2.93	3.17	18,880
CBNLR-2-0.5xR0.05xL0.5		0.05	0.5	0.3	0.47	15	4	50	0.57	0.59	0.61	0.63	0.68	16,960
CBNLR-2-0.5xR0.05xL1.0		0.05	1.0	0.3	0.47	15	4	50	1.09	1.13	1.17	1.21	1.30	17,120
CBNLR-2-0.5xR0.05xL1.5		0.05	1.5	0.3	0.47	15	4	50	1.61	1.66	1.72	1.78	1.92	17,280
CBNLR-2-0.5xR0.05xL2.5		0.05	2.5	0.3	0.47	15	4	50	2.64	2.73	2.83	2.93	3.17	18,880
CBNLR-2-0.5xR0.1xL0.5		0.1	0.5	0.3	0.47	15	4	50	0.57	0.59	0.61	0.62	0.67	16,960
CBNLR-2-0.5xR0.1xL1.0		0.1	1.0	0.3	0.47	15	4	50	1.09	1.12	1.16	1.20	1.29	17,120
CBNLR-2-0.5xR0.1xL1.5		0.1	1.5	0.3	0.47	15	4	50	1.61	1.66	1.71	1.77	1.91	17,280
CBNLR-2-0.5xR0.1xL2.5		0.1	2.5	0.3	0.47	15	4	50	2.64	2.73	2.82	2.92	3.15	18,880
CBNLR-2-0.6xR0.02xL0.5	0.6	0.02	0.5	0.3	0.57	15	4	50	0.57	0.59	0.61	0.64	0.69	18,880
CBNLR-2-0.6xR0.02xL1.0		0.02	1.0	0.3	0.57	15	4	50	1.09	1.13	1.17	1.21	1.31	19,040
CBNLR-2-0.6xR0.02xL1.5		0.02	1.5	0.3	0.57	15	4	50	1.61	1.66	1.72	1.79	1.93	19,200
CBNLR-2-0.6xR0.02xL2.5		0.02	2.5	0.3	0.57	15	4	50	2.64	2.73	2.83	2.94	3.17	21,040
CBNLR-2-0.6xR0.03xL0.5		0.03	0.5	0.3	0.57	15	4	50	0.57	0.59	0.61	0.63	0.68	16,960
CBNLR-2-0.6xR0.03xL1.0		0.03	1.0	0.3	0.57	15	4	50	1.09	1.13	1.17	1.21	1.31	17,120
CBNLR-2-0.6xR0.03xL1.5		0.03	1.5	0.3	0.57	15	4	50	1.61	1.66	1.72	1.78	1.93	17,280
CBNLR-2-0.6xR0.03xL2.5		0.03	2.5	0.3	0.57	15	4	50	2.64	2.73	2.83	2.93	3.17	18,880
CBNLR-2-0.6xR0.05xL0.5		0.05	0.5	0.3	0.57	15	4	50	0.57	0.59	0.61	0.63	0.68	16,960
CBNLR-2-0.6xR0.05xL1.0		0.05	1.0	0.3	0.57	15	4	50	1.09	1.13	1.17	1.21	1.30	17,120
CBNLR-2-0.6xR0.05xL1.5		0.05	1.5	0.3	0.57	15	4	50	1.61	1.66	1.72	1.78	1.92	17,280
CBNLR-2-0.6xR0.05xL2.5		0.05	2.5	0.3	0.57	15	4	50	2.64	2.73	2.83	2.93	3.17	18,880
CBNLR-2-0.6xR0.1xL0.5		0.1	0.5	0.3	0.57	15	4	50	0.57	0.59	0.61	0.62	0.67	16,960
CBNLR-2-0.6xR0.1xL1.0		0.1	1.0	0.3	0.57	15	4	50	1.09	1.12	1.16	1.20	1.29	17,120
CBNLR-2-0.6xR0.1xL1.5		0.1	1.5	0.3	0.57	15	4	50	1.61	1.66	1.71	1.77	1.91	17,280
CBNLR-2-0.6xR0.1xL2.5		0.1	2.5	0.3	0.57	15	4	50	2.64	2.73	2.82	2.92	3.15	18,880
CBNLR-2-0.8xR0.02xL1.5	0.8	0.02	1.5	0.56	0.77	15	4	50	1.61	1.66	1.72	1.79	1.93	19,200
CBNLR-2-0.8xR0.02xL2.5		0.02	2.5	0.56	0.77	15	4	50	2.64	2.73	2.83	2.94	3.17	18,880
CBNLR-2-0.8xR0.02xL5.0		0.02	5.0	0.56	0.77	15	4	50	5.23	5.41	5.60	5.81	6.28	21,760
CBNLR-2-0.8xR0.03xL1.5		0.03	1.5	0.56	0.77	15	4	50	1.61	1.66	1.72	1.78	1.93	17,280
CBNLR-2-0.8xR0.03xL2.5		0.03	2.5	0.56	0.77	15	4	50	2.64	2.73	2.83	2.93	3.17	18,880
CBNLR-2-0.8xR0.03xL5.0		0.03	5.0	0.56	0.77	15	4	50	5.23	5.41	5.60	5.81	6.28	19,520



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLR-2-0.8xR0.05xL1.5	0.8	0.05	1.5	0.56	0.77	15	4	50	1.61	1.66	1.72	1.78	1.92	17,280
CBNLR-2-0.8xR0.05xL2.5		0.05	2.5	0.56	0.77	15	4	50	2.64	2.73	2.83	2.93	3.17	18,880
CBNLR-2-0.8xR0.05xL5.0		0.05	5.0	0.56	0.77	15	4	50	5.22	5.40	5.60	5.81	6.27	19,520
CBNLR-2-0.8xR0.1xL1.5		0.1	1.5	0.56	0.77	15	4	50	1.61	1.66	1.71	1.77	1.91	17,280
CBNLR-2-0.8xR0.1xL2.5		0.1	2.5	0.56	0.77	15	4	50	2.64	2.73	2.82	2.92	3.15	18,880
CBNLR-2-0.8xR0.1xL5.0		0.1	5.0	0.56	0.77	15	4	50	5.22	5.40	5.59	5.80	6.26	19,520
CBNLR-2-1.0xR0.02xL1.0	1.0	0.02	1.0	0.7	0.96	15	4	50	1.11	1.15	1.19	1.23	1.33	17,600
CBNLR-2-1.0xR0.02xL2.0		0.02	2.0	0.7	0.96	15	4	50	2.14	2.22	2.30	2.38	2.57	17,600
CBNLR-2-1.0xR0.02xL3.0		0.02	3.0	0.7	0.96	15	4	50	3.18	3.29	3.41	3.53	3.82	17,600
CBNLR-2-1.0xR0.02xL5.0		0.02	5.0	0.7	0.96	15	4	50	5.24	5.43	5.62	5.83	6.30	19,920
CBNLR-2-1.0xR0.03xL1.0		0.03	1.0	0.7	0.96	15	4	50	1.11	1.15	1.19	1.23	1.33	15,840
CBNLR-2-1.0xR0.03xL2.0		0.03	2.0	0.7	0.96	15	4	50	2.14	2.22	2.30	2.38	2.57	15,840
CBNLR-2-1.0xR0.03xL3.0		0.03	3.0	0.7	0.96	15	4	50	3.18	3.29	3.40	3.53	3.82	15,840
CBNLR-2-1.0xR0.03xL5.0		0.03	5.0	0.7	0.96	15	4	50	5.24	5.43	5.62	5.83	6.30	17,920
CBNLR-2-1.0xR0.05xL1.0		0.05	1.0	0.7	0.96	15	4	50	1.11	1.15	1.19	1.23	1.32	15,840
CBNLR-2-1.0xR0.05xL2.0		0.05	2.0	0.7	0.96	15	4	50	2.14	2.22	2.29	2.38	2.57	15,840
CBNLR-2-1.0xR0.05xL3.0		0.05	3.0	0.7	0.96	15	4	50	3.18	3.29	3.40	3.53	3.81	15,840
CBNLR-2-1.0xR0.05xL5.0		0.05	5.0	0.7	0.96	15	4	50	5.24	5.42	5.62	5.83	6.30	17,920
CBNLR-2-1.0xR0.05xL10.0		0.05	10.0	0.7	0.96	15	4	50	10.41	10.77	11.16	11.58	12.51	20,000
CBNLR-2-1.0xR0.1xL1.0		0.1	1.0	0.7	0.96	15	4	50	1.11	1.14	1.18	1.22	1.31	15,840
CBNLR-2-1.0xR0.1xL2.0		0.1	2.0	0.7	0.96	15	4	50	2.14	2.21	2.29	2.37	2.56	15,840
CBNLR-2-1.0xR0.1xL3.0		0.1	3.0	0.7	0.96	15	4	50	3.17	3.28	3.40	3.52	3.80	15,840
CBNLR-2-1.0xR0.1xL5.0		0.1	5.0	0.7	0.96	15	4	50	5.24	5.42	5.61	5.82	6.29	17,920
CBNLR-2-1.0xR0.1xL10.0		0.1	10.0	0.7	0.96	15	4	50	10.41	10.77	11.16	11.57	12.50	20,000
CBNLR-2-1.0xR0.2xL1.0		0.2	1.0	0.7	0.96	15	4	50	1.10	1.14	1.17	1.21	1.29	15,840
CBNLR-2-1.0xR0.2xL2.0		0.2	2.0	0.7	0.96	15	4	50	2.14	2.21	2.28	2.36	2.53	15,840
CBNLR-2-1.0xR0.2xL3.0		0.2	3.0	0.7	0.96	15	4	50	3.17	3.28	3.39	3.51	3.78	15,840
CBNLR-2-1.0xR0.2xL5.0		0.2	5.0	0.7	0.96	15	4	50	5.24	5.41	5.60	5.81	6.26	17,920
CBNLR-2-1.5xR0.02xL2.0	1.5	0.02	2.0	1.0	1.44	15	4	50	2.18	2.26	2.34	2.43	2.62	20,720
CBNLR-2-1.5xR0.02xL3.0		0.02	3.0	1.0	1.44	15	4	50	3.22	3.33	3.45	3.58	3.86	20,720
CBNLR-2-1.5xR0.02xL4.5		0.02	4.5	1.0	1.44	15	4	50	4.77	4.93	5.11	5.30	5.73	20,720
CBNLR-2-1.5xR0.02xL7.5		0.02	7.5	1.0	1.44	15	4	50	7.87	8.14	8.43	8.75	9.46	23,520
CBNLR-2-1.5xR0.03xL2.0		0.03	2.0	1.0	1.44	15	4	50	2.18	2.26	2.34	2.42	2.62	18,640
CBNLR-2-1.5xR0.03xL3.0		0.03	3.0	1.0	1.44	15	4	50	3.22	3.33	3.45	3.57	3.86	18,640
CBNLR-2-1.5xR0.03xL4.5		0.03	4.5	1.0	1.44	15	4	50	4.77	4.93	5.11	5.30	5.73	18,640
CBNLR-2-1.5xR0.03xL7.5		0.03	7.5	1.0	1.44	15	4	50	7.87	8.14	8.43	8.75	9.46	21,120
CBNLR-2-1.5xR0.05xL2.0		0.05	2.0	1.0	1.44	15	4	50	2.18	2.26	2.34	2.42	2.61	18,640
CBNLR-2-1.5xR0.05xL3.0		0.05	3.0	1.0	1.44	15	4	50	3.22	3.33	3.44	3.57	3.86	18,640
CBNLR-2-1.5xR0.05xL4.5		0.05	4.5	1.0	1.44	15	4	50	4.77	4.93	5.11	5.30	5.72	18,640
CBNLR-2-1.5xR0.05xL5.0		0.05	5.0	1.0	1.44	15	4	50	5.28	5.46	5.66	5.87	6.34	18,640
CBNLR-2-1.5xR0.05xL7.5		0.05	7.5	1.0	1.44	15	4	50	7.87	8.14	8.43	8.75	9.45	21,120
CBNLR-2-1.5xR0.05xL10.0		0.05	10.0	1.0	1.44	15	4	50	10.45	10.81	11.20	11.62	12.56	21,120
CBNLR-2-1.5xR0.1xL2.0		0.1	2.0	1.0	1.44	15	4	50	2.18	2.25	2.33	2.41	2.60	18,640
CBNLR-2-1.5xR0.1xL3.0		0.1	3.0	1.0	1.44	15	4	50	3.21	3.32	3.44	3.56	3.85	18,640
CBNLR-2-1.5xR0.1xL4.5		0.1	4.5	1.0	1.44	15	4	50	4.76	4.93	5.10	5.29	5.71	18,640

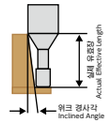


●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece.					표준가격 (엔) Retail Price (JPY)
									30'	1°	1°30'	2°	3°	
CBNLR-2-1.5xR0.1xL5.0	1.5	0.1	5.0	1.0	1.44	15	4	50	5.28	5.46	5.65	5.86	6.33	18,640
CBNLR-2-1.5xR0.1xL7.5		0.1	7.5	1.0	1.44	15	4	50	7.86	8.14	8.43	8.74	9.44	21,120
CBNLR-2-1.5xR0.1xL10.0		0.1	10.0	1.0	1.44	15	4	50	10.45	10.81	11.20	11.61	12.55	21,120
CBNLR-2-1.5xR0.2xL2.0		0.2	2.0	1.0	1.44	15	4	50	2.18	2.25	2.32	2.40	2.58	18,640
CBNLR-2-1.5xR0.2xL3.0		0.2	3.0	1.0	1.44	15	4	50	3.21	3.31	3.43	3.55	3.82	18,640
CBNLR-2-1.5xR0.2xL4.5		0.2	4.5	1.0	1.44	15	4	50	4.76	4.92	5.09	5.27	5.69	18,640
CBNLR-2-1.5xR0.2xL7.5		0.2	7.5	1.0	1.44	15	4	50	7.86	8.13	8.42	8.72	9.42	21,120
CBNLR-2-1.5xR0.3xL2.0		0.3	2.0	1.0	1.44	15	4	50	2.17	2.24	2.31	2.38	2.56	18,640
CBNLR-2-1.5xR0.3xL3.0		0.3	3.0	1.0	1.44	15	4	50	3.21	3.31	3.42	3.53	3.80	18,640
CBNLR-2-1.5xR0.3xL4.5		0.3	4.5	1.0	1.44	15	4	50	4.76	4.91	5.08	5.26	5.66	18,640
CBNLR-2-1.5xR0.3xL7.5		0.3	7.5	1.0	1.44	15	4	50	7.86	8.12	8.40	8.71	9.39	21,120
CBNLR-2-2.0xR0.02xL3.0	2.0	0.02	3.0	1.2	1.96	15	4	50	3.18	3.29	3.41	3.53	3.82	21,360
CBNLR-2-2.0xR0.02xL4.0		0.02	4.0	1.2	1.96	15	4	50	4.21	4.36	4.51	4.68	5.06	21,360
CBNLR-2-2.0xR0.02xL6.0		0.02	6.0	1.2	1.96	15	4	50	6.28	6.50	6.73	6.98	7.55	21,360
CBNLR-2-2.0xR0.02xL10.0		0.02	10.0	1.2	1.96	15	4	50	10.41	10.78	11.16	11.58	12.52	23,840
CBNLR-2-2.0xR0.03xL3.0		0.03	3.0	1.2	1.96	15	4	50	3.18	3.29	3.40	3.53	3.82	19,200
CBNLR-2-2.0xR0.03xL4.0		0.03	4.0	1.2	1.96	15	4	50	4.21	4.36	4.51	4.68	5.06	19,200
CBNLR-2-2.0xR0.03xL6.0		0.03	6.0	1.2	1.96	15	4	50	6.28	6.50	6.73	6.98	7.54	19,200
CBNLR-2-2.0xR0.03xL10.0		0.03	10.0	1.2	1.96	15	4	50	10.41	10.77	11.16	11.58	12.52	21,440
CBNLR-2-2.0xR0.05xL3.0		0.05	3.0	1.2	1.96	15	4	50	3.18	3.29	3.40	3.53	3.81	19,200
CBNLR-2-2.0xR0.05xL4.0		0.05	4.0	1.2	1.96	15	4	50	4.21	4.36	4.51	4.68	5.05	19,200
CBNLR-2-2.0xR0.05xL5.0		0.05	5.0	1.2	1.96	15	4	50	5.24	5.42	5.62	5.83	6.30	19,200
CBNLR-2-2.0xR0.05xL6.0		0.05	6.0	1.2	1.96	15	4	50	6.28	6.49	6.73	6.98	7.54	19,200
CBNLR-2-2.0xR0.05xL10.0		0.05	10.0	1.2	1.96	15	4	50	10.41	10.77	11.16	11.58	12.51	21,440
CBNLR-2-2.0xR0.05xL15.0		0.05	15.0	1.2	1.96	15	4	50	15.58	16.12	16.70	17.33	18.73	23,520
CBNLR-2-2.0xR0.1xL3.0		0.1	3.0	1.2	1.96	15	4	50	3.17	3.28	3.40	3.52	3.80	19,200
CBNLR-2-2.0xR0.1xL4.0		0.1	4.0	1.2	1.96	15	4	50	4.21	4.35	4.51	4.67	5.04	19,200
CBNLR-2-2.0xR0.1xL5.0		0.1	5.0	1.2	1.96	15	4	50	5.24	5.42	5.61	5.82	6.29	19,200
CBNLR-2-2.0xR0.1xL6.0		0.1	6.0	1.2	1.96	15	4	50	6.28	6.49	6.72	6.97	7.53	19,200
CBNLR-2-2.0xR0.1xL10.0		0.1	10.0	1.2	1.96	15	4	50	10.41	10.77	11.16	11.57	12.50	21,440
CBNLR-2-2.0xR0.1xL15.0		0.1	15.0	1.2	1.96	15	4	50	15.58	16.12	16.70	17.32	18.72	23,520
CBNLR-2-2.0xR0.2xL3.0		0.2	3.0	1.2	1.96	15	4	50	3.17	3.28	3.39	3.51	3.78	19,200
CBNLR-2-2.0xR0.2xL4.0		0.2	4.0	1.2	1.96	15	4	50	4.21	4.34	4.49	4.66	5.02	19,200
CBNLR-2-2.0xR0.2xL5.0		0.2	5.0	1.2	1.96	15	4	50	5.24	5.41	5.60	5.81	6.26	19,200
CBNLR-2-2.0xR0.2xL6.0		0.2	6.0	1.2	1.96	15	4	50	6.27	6.48	6.71	6.96	7.51	19,200
CBNLR-2-2.0xR0.3xL3.0		0.3	3.0	1.2	1.96	15	4	50	3.17	3.27	3.38	3.49	3.75	19,200
CBNLR-2-2.0xR0.3xL4.0		0.3	4.0	1.2	1.96	15	4	50	4.20	4.34	4.48	4.64	5.00	19,200
CBNLR-2-2.0xR0.3xL5.0		0.3	5.0	1.2	1.96	15	4	50	5.24	5.41	5.59	5.79	6.24	19,200
CBNLR-2-2.0xR0.3xL6.0		0.3	6.0	1.2	1.96	15	4	50	6.27	6.48	6.70	6.94	7.48	19,200
CBNLR-2-2.0xR0.3xL10.0		0.3	10.0	1.2	1.96	15	4	50	10.40	10.76	11.13	11.54	12.45	21,360
CBNLR-2-2.0xR0.5xL3.0		0.5	3.0	1.2	1.96	15	4	50	3.16	3.25	3.35	3.46	3.71	19,200
CBNLR-2-2.0xR0.5xL4.0		0.5	4.0	1.2	1.96	15	4	50	4.20	4.32	4.46	4.61	4.95	19,200
CBNLR-2-2.0xR0.5xL6.0		0.5	6.0	1.2	1.96	15	4	50	6.26	6.46	6.68	6.91	7.44	19,200
CBNLR-2-2.0xR0.5xL10.0		0.5	10.0	1.2	1.96	15	4	50	10.40	10.74	11.11	11.51	12.41	21,360
CBNLR-2-3.0xR0.05xL5.0	3.0	0.05	5.0	2.0	2.92	15	6	50	5.32	5.50	5.70	5.91	6.39	21,120

CBN Series



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece.					표준가격 (엔) Retail Price (JPY)
									30'	1°	1°30'	2°	3°	
CBNLR-2-3.0xR0.05xL10.0	3.0	0.05	10.0	2.0	2.92	15	6	50	10.49	10.85	11.24	11.66	12.61	25,340
CBNLR-2-3.0xR0.05xL15.0		0.05	15.0	2.0	2.92	15	6	50	15.66	16.20	16.78	17.41	18.82	26,400
CBNLR-2-3.0xR0.1xL5.0		0.1	5.0	2.0	2.92	15	6	50	5.32	5.50	5.70	5.91	6.38	21,120
CBNLR-2-3.0xR0.1xL10.0		0.1	10.0	2.0	2.92	15	6	50	10.49	10.85	11.24	11.66	12.59	25,340
CBNLR-2-3.0xR0.1xL15.0		0.1	15.0	2.0	2.92	15	6	50	15.66	16.20	16.78	17.40	18.81	26,400
CBNLR-2-3.0xR0.2xL5.0		0.2	5.0	2.0	2.92	15	6	50	5.32	5.49	5.69	5.89	6.35	21,120
CBNLR-2-3.0xR0.3xL5.0		0.3	5.0	2.0	2.92	15	6	50	5.31	5.49	5.67	5.88	6.33	21,120

CBN Series

CBN 추천 절삭 조건표
Recommended Milling Conditions

■형번:CBNLR-2
Model number:CBNLR-2

래디우스 엔드밀 Radius End Mill

절삭재료 Work Material		고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.1	0.2	50,000	200	0.002	0.01	50,000	150	0.002	0.005	50,000	150	0.002	0.005	50,000	100	0.001	0.001
	0.5	50,000	200	0.002	0.01	50,000	150	0.002	0.005	50,000	150	0.002	0.005	50,000	100	0.001	0.001
0.15	0.2	50,000	220	0.003	0.015	50,000	180	0.002	0.01	50,000	180	0.002	0.01	50,000	130	0.002	0.002
	0.5	50,000	200	0.002	0.015	50,000	150	0.002	0.01	50,000	150	0.002	0.01	50,000	100	0.001	0.001
0.2	0.3	50,000	300	0.003	0.03	50,000	300	0.003	0.03	50,000	300	0.003	0.03	50,000	200	0.002	0.02
	0.5	50,000	300	0.003	0.03	50,000	300	0.003	0.03	50,000	200	0.003	0.03	50,000	200	0.002	0.02
	1.0	50,000	200	0.003	0.02	50,000	200	0.003	0.02	50,000	200	0.003	0.02	50,000	100	0.002	0.01
0.3	0.5	50,000	500	0.003	0.05	50,000	500	0.003	0.05	50,000	400	0.003	0.05	50,000	300	0.002	0.03
	0.75	50,000	500	0.003	0.05	50,000	500	0.003	0.05	50,000	400	0.003	0.05	50,000	300	0.002	0.03
	1.0	50,000	500	0.003	0.05	50,000	500	0.003	0.05	50,000	400	0.003	0.05	50,000	300	0.002	0.03
	1.5	50,000	400	0.003	0.03	50,000	400	0.003	0.03	50,000	300	0.003	0.03	50,000	200	0.002	0.02
	2.0	50,000	400	0.003	0.03	50,000	400	0.003	0.03	50,000	300	0.003	0.03	50,000	200	0.002	0.02
0.4	0.5	50,000	700	0.005	0.1	50,000	700	0.005	0.1	50,000	600	0.005	0.1	50,000	400	0.003	0.03
	1.0	50,000	700	0.005	0.1	50,000	700	0.005	0.1	50,000	600	0.005	0.1	50,000	400	0.003	0.03
	1.5	50,000	500	0.005	0.05	50,000	500	0.005	0.05	50,000	400	0.005	0.05	50,000	300	0.003	0.02
	2.0	50,000	500	0.005	0.05	50,000	500	0.005	0.05	50,000	400	0.005	0.05	50,000	300	0.003	0.02
0.5	0.5	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	500	0.005	0.2
	1.0	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	500	0.005	0.2
	1.5	50,000	600	0.01	0.1	50,000	600	0.01	0.1	50,000	600	0.01	0.1	50,000	500	0.005	0.1
	2.5	50,000	600	0.01	0.1	50,000	600	0.01	0.1	50,000	600	0.01	0.1	50,000	500	0.005	0.1
0.6	0.5	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	500	0.005	0.2
	1.0	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	500	0.005	0.2
	1.5	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	600	0.01	0.2	50,000	500	0.005	0.2
	2.5	50,000	600	0.01	0.1	50,000	600	0.01	0.1	50,000	600	0.01	0.1	50,000	500	0.005	0.1
0.8	1.5	50,000	800	0.01	0.3	50,000	800	0.01	0.3	50,000	800	0.01	0.2	42,000	700	0.01	0.1
	5.0	50,000	600	0.005	0.1	50,000	600	0.005	0.1	50,000	600	0.005	0.1	42,000	600	0.005	0.05
1.0	1.0	48,000	1,000	0.01	0.4	48,000	1,000	0.01	0.4	48,000	1,000	0.01	0.3	34,000	800	0.01	0.2
	2.0	48,000	1,000	0.01	0.4	48,000	1,000	0.01	0.4	48,000	1,000	0.01	0.3	34,000	800	0.01	0.2
	3.0	48,000	1,000	0.01	0.3	48,000	1,000	0.01	0.3	48,000	1,000	0.01	0.2	34,000	800	0.01	0.1
	5.0	48,000	1,000	0.01	0.3	48,000	1,000	0.01	0.3	48,000	1,000	0.01	0.2	34,000	800	0.01	0.1
	10.0	48,000	800	0.005	0.2	48,000	1,000	0.005	0.2	48,000	1,000	0.005	0.2	30,000	600	0.005	0.1
1.5	2.0	33,000	1,200	0.02	0.8	33,000	1,000	0.01	0.6	33,000	1,000	0.01	0.6	24,000	800	0.01	0.3
	5.0	33,000	1,000	0.02	0.7	33,000	1,000	0.01	0.5	33,000	1,000	0.01	0.5	20,000	700	0.01	0.3
	10.0	30,000	1,000	0.02	0.5	30,000	900	0.01	0.4	30,000	900	0.01	0.4	20,000	700	0.01	0.2
2.0	3.0	24,000	1,100	0.02	0.8	24,000	1,100	0.02	0.8	24,000	1,000	0.01	0.7	18,000	800	0.01	0.5
	4.0	24,000	1,000	0.02	0.8	24,000	1,000	0.02	0.8	24,000	1,000	0.01	0.7	18,000	800	0.01	0.5
	5.0	24,000	1,000	0.02	0.8	24,000	1,000	0.02	0.8	24,000	1,000	0.01	0.7	18,000	800	0.01	0.5
	10.0	24,000	1,000	0.02	0.6	24,000	1,000	0.01	0.5	24,000	1,000	0.01	0.5	16,000	800	0.01	0.3
	15.0	24,000	900	0.01	0.6	24,000	800	0.01	0.4	24,000	800	0.01	0.4	16,000	600	0.01	0.2
3.0	5.0	24,000	1,200	0.03	0.8	24,000	1,100	0.03	0.8	24,000	1,100	0.03	0.8	18,000	800	0.02	0.6
	10.0	24,000	1,000	0.02	0.7	24,000	900	0.02	0.6	24,000	900	0.02	0.6	18,000	700	0.01	0.2
	15.0	24,000	800	0.02	0.7	24,000	600	0.02	0.5	24,000	600	0.01	0.3	18,000	600	0.01	0.1

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series

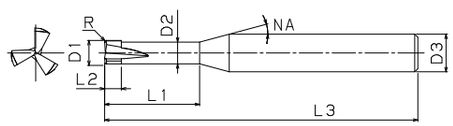
CBN 래디우스 엔드밀 CBN Radius End Mill

■형번:CBNLR-3 Model number:CBNLR-3

Non | BANCERA | CBN | 날 수 3 | 헬릭스각 0° | 목각 15° | Shank h4



날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
0/-0.003	±0.002

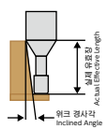


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	고경도강 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	◎							

최적◎Recommended 적응○Suggested



사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLR-3-0.6xR0.02xL0.5	0.6	0.02	0.5	0.3	0.57	15	4	50	0.57	0.59	0.61	0.64	0.69	22,720
CBNLR-3-0.6xR0.02xL1.0		0.02	1.0	0.3	0.57	15	4	50	1.09	1.13	1.17	1.21	1.31	22,880
CBNLR-3-0.6xR0.02xL1.5		0.02	1.5	0.3	0.57	15	4	50	1.61	1.66	1.72	1.79	1.93	23,040
CBNLR-3-0.6xR0.02xL2.0		0.02	2.0	0.3	0.57	15	4	50	2.12	2.20	2.28	2.36	2.55	24,960
CBNLR-3-0.6xR0.02xL2.5		0.02	2.5	0.3	0.57	15	4	50	2.64	2.73	2.83	2.94	3.17	25,200
CBNLR-3-0.6xR0.05xL0.5		0.05	0.5	0.3	0.57	15	4	50	0.57	0.59	0.61	0.63	0.68	20,400
CBNLR-3-0.6xR0.05xL1.0		0.05	1.0	0.3	0.57	15	4	50	1.09	1.13	1.17	1.21	1.30	20,560
CBNLR-3-0.6xR0.05xL1.5		0.05	1.5	0.3	0.57	15	4	50	1.61	1.66	1.72	1.78	1.92	20,800
CBNLR-3-0.6xR0.05xL2.0		0.05	2.0	0.3	0.57	15	4	50	2.12	2.20	2.27	2.36	2.54	21,600
CBNLR-3-0.6xR0.05xL2.5		0.05	2.5	0.3	0.57	15	4	50	2.64	2.73	2.83	2.93	3.17	22,720
CBNLR-3-0.6xR0.1xL0.5		0.1	0.5	0.3	0.57	15	4	50	0.57	0.59	0.61	0.62	0.67	20,400
CBNLR-3-0.6xR0.1xL1.0		0.1	1.0	0.3	0.57	15	4	50	1.09	1.12	1.16	1.20	1.29	20,560
CBNLR-3-0.6xR0.1xL1.5		0.1	1.5	0.3	0.57	15	4	50	1.61	1.66	1.71	1.77	1.91	20,800
CBNLR-3-0.6xR0.1xL2.0		0.1	2.0	0.3	0.57	15	4	50	2.12	2.19	2.27	2.35	2.53	21,600
CBNLR-3-0.6xR0.1xL2.5		0.1	2.5	0.3	0.57	15	4	50	2.64	2.73	2.82	2.92	3.15	22,720
CBNLR-3-0.8xR0.02xL1.5	0.8	0.02	1.5	0.56	0.77	15	4	50	1.61	1.66	1.72	1.79	1.93	23,040
CBNLR-3-0.8xR0.02xL2.5		0.02	2.5	0.56	0.77	15	4	50	2.64	2.73	2.83	2.94	3.17	25,280
CBNLR-3-0.8xR0.02xL5.0		0.02	5.0	0.56	0.77	15	4	50	5.23	5.41	5.60	5.81	6.28	26,160
CBNLR-3-0.8xR0.05xL1.5		0.05	1.5	0.56	0.77	15	4	50	1.61	1.66	1.72	1.78	1.92	20,800
CBNLR-3-0.8xR0.05xL2.5		0.05	2.5	0.56	0.77	15	4	50	2.64	2.73	2.83	2.93	3.17	22,720
CBNLR-3-0.8xR0.05xL5.0		0.05	5.0	0.56	0.77	15	4	50	5.22	5.40	5.60	5.81	6.27	23,440
CBNLR-3-0.8xR0.1xL1.5		0.1	1.5	0.56	0.77	15	4	50	1.61	1.66	1.71	1.77	1.91	20,800
CBNLR-3-0.8xR0.1xL2.5		0.1	2.5	0.56	0.77	15	4	50	2.64	2.73	2.82	2.92	3.15	22,720
CBNLR-3-0.8xR0.1xL5.0		0.1	5.0	0.56	0.77	15	4	50	5.22	5.40	5.59	5.80	6.26	23,440

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

CBN 추천 절삭 조건표
Recommended Milling Conditions

■형번:CBNLR-3
Model number:CBNLR-3

래디우스 엔드밀 Radius End Mill

절삭 재료 Work Material		고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.6	0.5	50,000	1,600	0.015	0.2	50,000	1,000	0.01	0.15	50,000	1,000	0.01	0.15	50,000	700	0.005	0.1
	1.0	50,000	1,500	0.01	0.2	50,000	900	0.005	0.15	50,000	900	0.005	0.15	50,000	600	0.003	0.1
	1.5	50,000	1,400	0.01	0.2	50,000	800	0.005	0.15	50,000	800	0.005	0.15	50,000	500	0.003	0.08
	2.5	40,000	1,100	0.005	0.1	40,000	500	0.005	0.1	40,000	500	0.005	0.1	40,000	300	0.003	0.05
0.8	1.5	40,000	2,200	0.015	0.4	40,000	1,000	0.01	0.2	40,000	1,000	0.01	0.2	40,000	800	0.005	0.1
	2.5	40,000	2,000	0.01	0.4	40,000	1,000	0.01	0.2	40,000	1,000	0.01	0.2	40,000	800	0.005	0.1
	5.0	40,000	1,500	0.007	0.3	40,000	800	0.005	0.15	40,000	800	0.005	0.15	40,000	400	0.003	0.07

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●정밀정문, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series

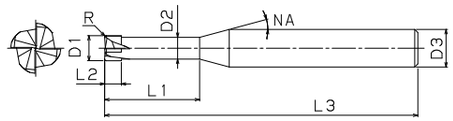
CBN 래디우스 엔드밀 CBN Radius End Mill

Non | BANCERA | CBN | 날 수 4 | 헬릭스각 0° | 목각 15° | Shank h4

■형번:CBNLR-4 Model number:CBNLR-4



날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
0/-0.003	±0.002

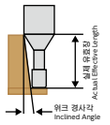


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	고경도강 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	◎							

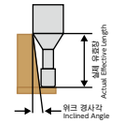
최적◎Recommended 적용○Suggested



사이즈(Size) : mm

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

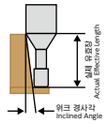
코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLR-4-1.0xR0.02xL1.0	1.0	0.02	1.0	0.7	0.96	15	4	50	1.11	1.15	1.19	1.23	1.33	21,120
CBNLR-4-1.0xR0.02xL2.0		0.02	2.0	0.7	0.96	15	4	50	2.14	2.22	2.30	2.38	2.57	21,120
CBNLR-4-1.0xR0.02xL3.0		0.02	3.0	0.7	0.96	15	4	50	3.18	3.29	3.41	3.53	3.82	21,120
CBNLR-4-1.0xR0.02xL5.0		0.02	5.0	0.7	0.96	15	4	50	5.24	5.43	5.62	5.83	6.30	23,920
CBNLR-4-1.0xR0.05xL1.0		0.05	1.0	0.7	0.96	15	4	50	1.11	1.15	1.19	1.23	1.32	19,040
CBNLR-4-1.0xR0.05xL2.0		0.05	2.0	0.7	0.96	15	4	50	2.14	2.22	2.29	2.38	2.57	19,040
CBNLR-4-1.0xR0.05xL3.0		0.05	3.0	0.7	0.96	15	4	50	3.18	3.29	3.40	3.53	3.81	19,040
CBNLR-4-1.0xR0.05xL5.0		0.05	5.0	0.7	0.96	15	4	50	5.24	5.42	5.62	5.83	6.30	21,520
CBNLR-4-1.0xR0.05xL10.0		0.05	10.0	0.7	0.96	15	4	50	10.41	10.77	11.16	11.58	12.51	24,000
CBNLR-4-1.0xR0.1xL1.0		0.1	1.0	0.7	0.96	15	4	50	1.11	1.14	1.18	1.22	1.31	19,040
CBNLR-4-1.0xR0.1xL2.0		0.1	2.0	0.7	0.96	15	4	50	2.14	2.21	2.29	2.37	2.56	19,040
CBNLR-4-1.0xR0.1xL3.0		0.1	3.0	0.7	0.96	15	4	50	3.17	3.28	3.40	3.52	3.80	19,040
CBNLR-4-1.0xR0.1xL4.0		0.1	4.0	0.7	0.96	15	4	50	4.21	4.35	4.51	4.67	5.04	20,280
CBNLR-4-1.0xR0.1xL5.0		0.1	5.0	0.7	0.96	15	4	50	5.24	5.42	5.61	5.82	6.29	21,520
CBNLR-4-1.0xR0.1xL10.0		0.1	10.0	0.7	0.96	15	4	50	10.41	10.77	11.16	11.57	12.50	24,000
CBNLR-4-1.0xR0.2xL1.0		0.2	1.0	0.7	0.96	15	4	50	1.10	1.14	1.17	1.21	1.29	19,040
CBNLR-4-1.0xR0.2xL2.0		0.2	2.0	0.7	0.96	15	4	50	2.14	2.21	2.28	2.36	2.53	19,040
CBNLR-4-1.0xR0.2xL3.0		0.2	3.0	0.7	0.96	15	4	50	3.17	3.28	3.39	3.51	3.78	19,040
CBNLR-4-1.0xR0.2xL5.0		0.2	5.0	0.7	0.96	15	4	50	5.24	5.41	5.60	5.81	6.26	21,520
CBNLR-4-1.5xR0.02xL2.0	1.5	0.02	2.0	1.0	1.44	15	4	50	2.18	2.26	2.34	2.43	2.62	24,880
CBNLR-4-1.5xR0.02xL3.0		0.02	3.0	1.0	1.44	15	4	50	3.22	3.33	3.45	3.58	3.86	24,880
CBNLR-4-1.5xR0.02xL4.5		0.02	4.5	1.0	1.44	15	4	50	4.77	4.93	5.11	5.30	5.73	24,880
CBNLR-4-1.5xR0.02xL7.5		0.02	7.5	1.0	1.44	15	4	50	7.87	8.14	8.43	8.75	9.46	28,240
CBNLR-4-1.5xR0.05xL2.0		0.05	2.0	1.0	1.44	15	4	50	2.18	2.26	2.34	2.42	2.61	22,400



사이즈(Size) : mm

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코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLR-4-1.5xR0.05xL3.0	1.5	0.05	3.0	1.0	1.44	15	4	50	3.22	3.33	3.44	3.57	3.86	22,400
CBNLR-4-1.5xR0.05xL4.5		0.05	4.5	1.0	1.44	15	4	50	4.77	4.93	5.11	5.30	5.72	22,400
CBNLR-4-1.5xR0.05xL5.0		0.05	5.0	1.0	1.44	15	4	50	5.28	5.46	5.66	5.87	6.34	22,400
CBNLR-4-1.5xR0.05xL7.5		0.05	7.5	1.0	1.44	15	4	50	7.87	8.14	8.43	8.75	9.45	25,360
CBNLR-4-1.5xR0.05xL10.0		0.05	10.0	1.0	1.44	15	4	50	10.45	10.81	11.20	11.62	12.56	25,360
CBNLR-4-1.5xR0.1xL2.0		0.1	2.0	1.0	1.44	15	4	50	2.18	2.25	2.33	2.41	2.60	22,400
CBNLR-4-1.5xR0.1xL3.0		0.1	3.0	1.0	1.44	15	4	50	3.21	3.32	3.44	3.56	3.85	22,400
CBNLR-4-1.5xR0.1xL4.5		0.1	4.5	1.0	1.44	15	4	50	4.76	4.93	5.10	5.29	5.71	22,400
CBNLR-4-1.5xR0.1xL5.0		0.1	5.0	1.0	1.44	15	4	50	5.28	5.46	5.65	5.86	6.33	22,400
CBNLR-4-1.5xR0.1xL7.5		0.1	7.5	1.0	1.44	15	4	50	7.86	8.14	8.43	8.74	9.44	25,360
CBNLR-4-1.5xR0.1xL10.0		0.1	10.0	1.0	1.44	15	4	50	10.45	10.81	11.20	11.61	12.55	25,360
CBNLR-4-1.5xR0.2xL2.0		0.2	2.0	1.0	1.44	15	4	50	2.18	2.25	2.32	2.40	2.58	22,400
CBNLR-4-1.5xR0.2xL3.0		0.2	3.0	1.0	1.44	15	4	50	3.21	3.31	3.43	3.55	3.82	22,400
CBNLR-4-1.5xR0.2xL4.5		0.2	4.5	1.0	1.44	15	4	50	4.76	4.92	5.09	5.27	5.69	22,400
CBNLR-4-1.5xR0.2xL7.5		0.2	7.5	1.0	1.44	15	4	50	7.86	8.13	8.42	8.72	9.42	25,360
CBNLR-4-1.5xR0.3xL3.0		0.3	3.0	1.0	1.44	15	4	50	3.21	3.31	3.42	3.53	3.80	22,400
CBNLR-4-2.0xR0.02xL3.0	2.0	0.02	3.0	1.2	1.96	15	4	50	3.18	3.29	3.41	3.53	3.82	25,680
CBNLR-4-2.0xR0.02xL4.0		0.02	4.0	1.2	1.96	15	4	50	4.21	4.36	4.51	4.68	5.06	25,680
CBNLR-4-2.0xR0.02xL6.0		0.02	6.0	1.2	1.96	15	4	50	6.28	6.50	6.73	6.98	7.55	25,680
CBNLR-4-2.0xR0.05xL3.0		0.05	3.0	1.2	1.96	15	4	50	3.18	3.29	3.40	3.53	3.81	23,040
CBNLR-4-2.0xR0.05xL4.0		0.05	4.0	1.2	1.96	15	4	50	4.21	4.36	4.51	4.68	5.05	23,040
CBNLR-4-2.0xR0.05xL5.0		0.05	5.0	1.2	1.96	15	4	50	5.24	5.42	5.62	5.83	6.30	23,040
CBNLR-4-2.0xR0.05xL6.0		0.05	6.0	1.2	1.96	15	4	50	6.28	6.49	6.73	6.98	7.54	23,040
CBNLR-4-2.0xR0.05xL10.0		0.05	10.0	1.2	1.96	15	4	50	10.41	10.77	11.16	11.58	12.51	25,760
CBNLR-4-2.0xR0.05xL15.0		0.05	15.0	1.2	1.96	15	4	50	15.58	16.12	16.70	17.33	18.73	28,220
CBNLR-4-2.0xR0.1xL3.0		0.1	3.0	1.2	1.96	15	4	50	3.17	3.28	3.40	3.52	3.80	23,040
CBNLR-4-2.0xR0.1xL4.0		0.1	4.0	1.2	1.96	15	4	50	4.21	4.35	4.51	4.67	5.04	23,040
CBNLR-4-2.0xR0.1xL5.0		0.1	5.0	1.2	1.96	15	4	50	5.24	5.42	5.61	5.82	6.29	23,040
CBNLR-4-2.0xR0.1xL6.0		0.1	6.0	1.2	1.96	15	4	50	6.28	6.49	6.72	6.97	7.53	23,040
CBNLR-4-2.0xR0.1xL10.0		0.1	10.0	1.2	1.96	15	4	50	10.41	10.77	11.16	11.57	12.50	25,760
CBNLR-4-2.0xR0.1xL15.0		0.1	15.0	1.2	1.96	15	4	50	15.58	16.12	16.70	17.32	18.72	28,220
CBNLR-4-2.0xR0.2xL3.0		0.2	3.0	1.2	1.96	15	4	50	3.17	3.28	3.39	3.51	3.78	23,040
CBNLR-4-2.0xR0.2xL4.0		0.2	4.0	1.2	1.96	15	4	50	4.21	4.34	4.49	4.66	5.02	23,040
CBNLR-4-2.0xR0.2xL5.0		0.2	5.0	1.2	1.96	15	4	50	5.24	5.41	5.60	5.81	6.26	23,040
CBNLR-4-2.0xR0.2xL6.0		0.2	6.0	1.2	1.96	15	4	50	6.27	6.48	6.71	6.96	7.51	23,040
CBNLR-4-2.0xR0.2xL10.0		0.2	10.0	1.2	1.96	15	4	50	10.41	10.76	11.14	11.55	12.48	25,680
CBNLR-4-2.0xR0.3xL5.0		0.3	5.0	1.2	1.96	15	4	50	5.24	5.41	5.59	5.79	6.24	23,040
CBNLR-4-2.0xR0.3xL10.0		0.3	10.0	1.2	1.96	15	4	50	10.40	10.76	11.13	11.54	12.45	25,680
CBNLR-4-3.0xR0.05xL5.0	3.0	0.05	5.0	2.0	2.92	15	6	50	5.32	5.50	5.70	5.91	6.39	29,760
CBNLR-4-3.0xR0.05xL6.0		0.05	6.0	2.0	2.92	15	6	50	6.35	6.57	6.81	7.06	7.63	29,760
CBNLR-4-3.0xR0.05xL9.0		0.05	9.0	2.0	2.92	15	6	50	9.46	9.78	10.13	10.51	11.36	30,400
CBNLR-4-3.0xR0.05xL10.0		0.05	10.0	2.0	2.92	15	6	50	10.49	10.85	11.24	11.66	12.61	30,400
CBNLR-4-3.0xR0.05xL12.0		0.05	12.0	2.0	2.92	15	6	50	12.56	12.99	13.46	13.96	15.09	31,040
CBNLR-4-3.0xR0.05xL15.0		0.05	15.0	2.0	2.92	15	6	50	15.66	16.20	16.78	17.41	18.82	31,680
CBNLR-4-3.0xR0.1xL5.0		0.1	5.0	2.0	2.92	15	6	50	5.32	5.50	5.70	5.91	6.38	29,760



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLR-4-3.0xR0.1xL6.0	3.0	0.1	6.0	2.0	2.92	15	6	50	6.35	6.57	6.80	7.06	7.62	29,760
CBNLR-4-3.0xR0.1xL9.0		0.1	9.0	2.0	2.92	15	6	50	9.45	9.78	10.13	10.51	11.35	30,400
CBNLR-4-3.0xR0.1xL10.0		0.1	10.0	2.0	2.92	15	6	50	10.49	10.85	11.24	11.66	12.59	30,400
CBNLR-4-3.0xR0.1xL12.0		0.1	12.0	2.0	2.92	15	6	50	12.55	12.99	13.45	13.96	15.08	31,040
CBNLR-4-3.0xR0.1xL15.0		0.1	15.0	2.0	2.92	15	6	50	15.66	16.20	16.78	17.40	18.81	31,680
CBNLR-4-3.0xR0.2xL5.0		0.2	5.0	2.0	2.92	15	6	50	5.32	5.49	5.69	5.89	6.35	29,760
CBNLR-4-3.0xR0.2xL6.0		0.2	6.0	2.0	2.92	15	6	50	6.35	6.56	6.79	7.04	7.60	29,760
CBNLR-4-3.0xR0.2xL9.0		0.2	9.0	2.0	2.92	15	6	50	9.45	9.77	10.12	10.49	11.33	30,400
CBNLR-4-3.0xR0.2xL12.0		0.2	12.0	2.0	2.92	15	6	50	12.55	12.98	13.44	13.94	15.06	31,040
CBNLR-4-3.0xR0.2xL15.0		0.2	15.0	2.0	2.92	15	6	50	15.65	16.19	16.77	17.39	18.79	31,680
CBNLR-4-3.0xR0.3xL5.0		0.3	5.0	2.0	2.92	15	6	50	5.31	5.49	5.67	5.88	6.33	29,760
CBNLR-4-3.0xR0.3xL10.0		0.3	10.0	2.0	2.92	15	6	50	10.48	10.84	11.22	11.63	12.55	30,400
CBNLR-4-4.0xR0.05xL15.0	4.0	0.05	15.0	2.0	3.92	15	6	50	15.66	16.20	16.78	17.41	18.82	38,020
CBNLR-4-4.0xR0.1xL10.0		0.1	10.0	2.0	3.92	15	6	50	10.49	10.85	11.24	11.66	12.59	36,480
CBNLR-4-4.0xR0.1xL15.0		0.1	15.0	2.0	3.92	15	6	50	15.66	16.20	16.78	17.40	18.81	38,020
CBNLR-4-4.0xR0.3xL10.0		0.3	10.0	2.0	3.92	15	6	50	10.48	10.84	11.22	11.63	12.55	36,480
CBNLR-4-4.0xR0.3xL15.0		0.3	15.0	2.0	3.92	15	6	50	15.65	16.18	16.76	17.38	18.76	38,020
CBNLR-4-4.0xR0.5xL15.0		0.5	15.0	2.0	3.92	15	6	50	15.64	16.17	16.74	17.35	18.72	38,020
CBNLR-4-5.0xR0.05xL15.0	5.0	0.05	15.0	2.0	4.92	15	6	50	15.66	16.20	16.78	FREE	FREE	44,320
CBNLR-4-5.0xR0.1xL15.0		0.1	15.0	2.0	4.92	15	6	50	15.66	16.20	16.78	FREE	FREE	44,320
CBNLR-4-5.0xR0.3xL15.0		0.3	15.0	2.0	4.92	15	6	50	15.65	16.18	16.76	FREE	FREE	44,320
CBNLR-4-5.0xR0.5xL15.0		0.5	15.0	2.0	4.92	15	6	50	15.64	16.17	16.74	FREE	FREE	44,320
CBNLR-4-6.0xR0.05xL15.0	6.0	0.05	15.0	2.0	5.92	15	6	50	FREE	FREE	FREE	FREE	FREE	52,590
CBNLR-4-6.0xR0.1xL10.0		0.1	10.0	2.0	5.92	15	6	50	FREE	FREE	FREE	FREE	FREE	50,460
CBNLR-4-6.0xR0.1xL15.0		0.1	15.0	2.0	5.92	15	6	50	FREE	FREE	FREE	FREE	FREE	52,590
CBNLR-4-6.0xR0.3xL10.0		0.3	10.0	2.0	5.92	15	6	50	FREE	FREE	FREE	FREE	FREE	50,460
CBNLR-4-6.0xR0.3xL15.0		0.3	15.0	2.0	5.92	15	6	50	FREE	FREE	FREE	FREE	FREE	52,590
CBNLR-4-6.0xR0.5xL15.0		0.5	15.0	2.0	5.92	15	6	50	FREE	FREE	FREE	FREE	FREE	52,590

CBN 추천 절삭 조건표
Recommended Milling Conditions

■형번:CBNLR-4
Model number:CBNLR-4

래디우스 엔드밀 Radius End Mill

절삭 재료 Work Material		고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
1.0	1.0	40,000	2,200	0.02	0.4	40,000	2,200	0.02	0.4	40,000	2,000	0.02	0.3	36,000	1,500	0.01	0.2
	3.0	40,000	2,200	0.02	0.4	40,000	2,200	0.02	0.4	40,000	2,000	0.02	0.3	36,000	1,500	0.01	0.2
	5.0	40,000	2,000	0.01	0.3	40,000	2,000	0.01	0.3	40,000	1,800	0.01	0.2	36,000	1,300	0.005	0.1
	10.0	40,000	1,600	0.01	0.2	40,000	1,600	0.01	0.2	40,000	1,400	0.005	0.1	36,000	1,000	0.005	0.005
1.5	2.0	38,000	4,000	0.04	0.6	36,000	4,000	0.04	0.6	30,000	3,200	0.03	0.5	24,000	2,000	0.015	0.3
	3.0	38,000	3,500	0.04	0.6	36,000	3,500	0.04	0.6	30,000	2,800	0.03	0.5	24,000	1,800	0.015	0.3
	5.0	38,000	3,500	0.04	0.6	36,000	3,500	0.04	0.6	30,000	2,800	0.03	0.5	24,000	1,800	0.01	0.2
	10.0	38,000	3,500	0.04	0.6	36,000	3,500	0.04	0.6	30,000	2,800	0.03	0.5	24,000	1,800	0.01	0.2
2.0	3.0	30,000	4,000	0.05	0.8	25,000	4,000	0.05	0.8	25,000	3,200	0.04	0.7	20,000	1,500	0.02	0.3
	5.0	30,000	3,500	0.04	0.8	25,000	3,500	0.04	0.8	24,000	2,800	0.03	0.7	18,000	1,500	0.01	0.3
	10.0	30,000	3,000	0.03	0.6	25,000	3,000	0.03	0.6	24,000	2,400	0.02	0.5	16,000	1,300	0.01	0.3
	15.0	30,000	2,500	0.02	0.4	25,000	2,500	0.02	0.4	24,000	2,000	0.01	0.4	16,000	1,000	0.01	0.2
3.0	5.0	26,000	4,000	0.05	0.9	26,000	4,000	0.04	0.9	22,000	3,200	0.04	0.8	12,000	1,500	0.02	0.6
	10.0	24,000	3,500	0.04	0.8	20,000	2,800	0.04	0.7	20,000	2,800	0.04	0.7	12,000	1,500	0.02	0.5
	15.0	24,000	3,000	0.03	0.8	20,000	2,400	0.03	0.7	20,000	2,400	0.03	0.7	12,000	1,300	0.01	0.5
4.0	10.0	22,000	3,300	0.04	1.0	20,000	2,600	0.04	0.8	20,000	2,600	0.04	0.8	12,000	1,500	0.03	0.6
	15.0	22,000	3,000	0.03	1.0	20,000	2,400	0.03	0.8	20,000	2,400	0.03	0.8	12,000	1,300	0.02	0.6
5.0	15.0	22,000	3,000	0.03	1.0	20,000	2,400	0.03	0.8	20,000	2,400	0.03	0.8	12,000	1,300	0.02	0.6
6.0	10.0	20,000	3,300	0.05	1.0	18,000	2,600	0.04	0.8	18,000	2,400	0.03	0.8	12,000	1,300	0.02	0.6
	15.0	18,000	3,100	0.05	1.0	16,000	2,400	0.04	0.8	16,000	2,200	0.03	0.8	11,000	1,100	0.02	0.6

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●표입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일단비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series

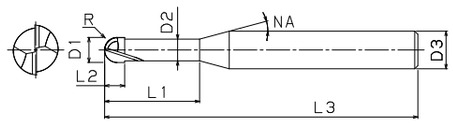
CBN 볼 엔드밀 CBN Ball End Mill

■형번:CBNLB-2 Model number:CBNLB-2

Non | BANCERA | CBN | 날 수 2 | 헬릭스각 0° | 목각 15° | Shank h4



날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
0/-0.003	±0.002

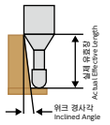


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	고경도강 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	◎							

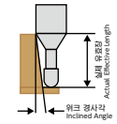
최적◎Recommended 적응○Suggested



사이즈(Size) : mm

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLB-2-0.1xR0.05xL0.2	0.05	0.2	0.08	0.1	0.08	15	4	50	0.24	0.25	0.26	0.27	0.28	21,600
CBNLB-2-0.1xR0.05xL0.3		0.3	0.08	0.1	0.08	15	4	50	0.35	0.36	0.37	0.38	0.41	30,560
CBNLB-2-0.1xR0.05xL0.5		0.5	0.08	0.1	0.08	15	4	50	0.55	0.57	0.59	0.61	0.66	30,560
CBNLB-2-0.15xR0.075xL0.45	0.075	0.45	0.12	0.15	0.13	15	4	50	0.50	0.52	0.53	0.55	0.59	30,560
CBNLB-2-0.15xR0.075xL0.75		0.75	0.12	0.15	0.13	15	4	50	0.81	0.84	0.86	0.89	0.96	31,840
CBNLB-2-0.2xR0.1xL0.3	0.1	0.3	0.15	0.2	0.17	15	4	50	0.36	0.37	0.38	0.39	0.42	24,400
CBNLB-2-0.2xR0.1xL0.5		0.5	0.15	0.2	0.17	15	4	50	0.57	0.59	0.61	0.62	0.67	20,800
CBNLB-2-0.2xR0.1xL0.6		0.6	0.15	0.2	0.17	15	4	50	0.67	0.69	0.72	0.74	0.79	25,200
CBNLB-2-0.2xR0.1xL1.0		1.0	0.15	0.2	0.17	15	4	50	1.09	1.12	1.16	1.20	1.29	24,000
CBNLB-2-0.3xR0.15xL0.3	0.15	0.3	0.23	0.3	0.27	15	4	50	0.36	0.37	0.38	0.39	0.41	24,000
CBNLB-2-0.3xR0.15xL0.5		0.5	0.23	0.3	0.27	15	4	50	0.57	0.58	0.60	0.62	0.66	24,400
CBNLB-2-0.3xR0.15xL0.75		0.75	0.23	0.3	0.27	15	4	50	0.83	0.85	0.88	0.90	0.97	24,800
CBNLB-2-0.4xR0.2xL0.5	0.2	0.5	0.3	0.4	0.37	15	4	50	0.57	0.58	0.59	0.61	0.64	20,000
CBNLB-2-0.4xR0.2xL0.75		0.75	0.3	0.4	0.37	15	4	50	0.83	0.85	0.87	0.90	0.96	22,080
CBNLB-2-0.4xR0.2xL1.0		1.0	0.3	0.4	0.37	15	4	50	1.08	1.12	1.15	1.18	1.27	22,480
CBNLB-2-0.4xR0.2xL1.2		1.2	0.3	0.4	0.37	15	4	50	1.29	1.33	1.37	1.41	1.52	22,880
CBNLB-2-0.4xR0.2xL2.0		2.0	0.3	0.4	0.37	15	4	50	2.12	2.19	2.26	2.33	2.51	24,000
CBNLB-2-0.4xR0.2xL3.0		3.0	0.3	0.4	0.37	15	4	50	3.15	3.26	3.37	3.48	3.75	24,000
CBNLB-2-0.5xR0.25xL1.0	0.25	1.0	0.38	0.5	0.47	15	4	50	1.08	1.11	1.14	1.18	1.26	22,480
CBNLB-2-0.5xR0.25xL1.5		1.5	0.38	0.5	0.47	15	4	50	1.60	1.65	1.70	1.75	1.88	23,200
CBNLB-2-0.5xR0.25xL2.5		2.5	0.38	0.5	0.47	15	4	50	2.63	2.72	2.81	2.90	3.12	23,200
CBNLB-2-0.5xR0.25xL3.5		3.5	0.38	0.5	0.47	15	4	50	3.67	3.79	3.91	4.05	4.36	23,200
CBNLB-2-0.6xR0.3xL1.2	0.3	1.2	0.5	0.6	0.57	15	4	50	1.29	1.32	1.36	1.40	1.49	20,720
CBNLB-2-0.6xR0.3xL1.5		1.5	0.5	0.6	0.57	15	4	50	1.60	1.64	1.69	1.74	1.87	21,120



사이즈(Size) : mm

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코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
CBNLB-2-0.3xR0.15xL1.6	0.4	1.6	0.6	0.8	0.77	15	4	50	1.70	1.74	1.79	1.85	1.97	20,720
CBNLB-2-0.8xR0.4xL2.0		2.0	0.6	0.8	0.77	15	4	50	2.11	2.17	2.24	2.31	2.46	21,120
CBNLB-2-0.8xR0.4xL4.0		4.0	0.6	0.8	0.77	15	4	50	4.18	4.31	4.45	4.60	4.95	22,400
CBNLB-2-0.8xR0.4xL6.0		6.0	0.6	0.8	0.77	15	4	50	6.25	6.45	6.67	6.90	7.44	22,400
CBNLB-2-1.0xR0.5xL2.0	0.5	2.0	0.7	1.0	0.96	15	4	50	2.13	2.18	2.25	2.31	2.46	20,720
CBNLB-2-1.0xR0.5xL2.5		2.5	0.7	1.0	0.96	15	4	50	2.64	2.72	2.80	2.89	3.09	21,120
CBNLB-2-1.0xR0.5xL3.0		3.0	0.7	1.0	0.96	15	4	50	3.16	3.25	3.35	3.46	3.71	20,480
CBNLB-2-1.0xR0.5xL4.0		4.0	0.7	1.0	0.96	15	4	50	4.20	4.32	4.46	4.61	4.95	22,400
CBNLB-2-1.0xR0.5xL5.0		5.0	0.7	1.0	0.96	15	4	50	5.23	5.39	5.57	5.76	6.19	20,480
CBNLB-2-1.0xR0.5xL6.0		6.0	0.7	1.0	0.96	15	4	50	6.26	6.46	6.68	6.91	7.44	22,400
CBNLB-2-1.0xR0.5xL8.0		8.0	0.7	1.0	0.96	15	4	50	8.33	8.60	8.90	9.21	9.92	22,800
CBNLB-2-1.0xR0.5xL10.0		10.0	0.7	1.0	0.96	15	4	50	10.40	10.74	11.11	11.51	12.41	21,280
CBNLB-2-1.2xR0.6xL2.4	0.6	2.4	0.8	1.2	1.16	15	4	50	2.54	2.61	2.68	2.76	2.94	21,600
CBNLB-2-1.2xR0.6xL3.0		3.0	0.8	1.2	1.16	15	4	50	3.16	3.25	3.34	3.45	3.68	22,000
CBNLB-2-1.2xR0.6xL6.0		6.0	0.8	1.2	1.16	15	4	50	6.26	6.46	6.67	6.90	7.41	23,200
CBNLB-2-1.5xR0.75xL3.0	0.75	3.0	1.0	1.5	1.44	15	4	50	3.19	3.28	3.37	3.47	3.70	20,000
CBNLB-2-1.5xR0.75xL3.8		3.8	1.0	1.5	1.44	15	4	50	4.02	4.13	4.26	4.39	4.69	22,000
CBNLB-2-1.5xR0.75xL5.0		5.0	1.0	1.5	1.44	15	4	50	5.26	5.42	5.59	5.77	6.18	22,080
CBNLB-2-1.5xR0.75xL7.5		7.5	1.0	1.5	1.44	15	4	50	7.84	8.09	8.36	8.64	9.29	23,200
CBNLB-2-1.5xR0.75xL10.0		10.0	1.0	1.5	1.44	15	4	50	10.43	10.76	11.13	11.52	12.40	22,080
CBNLB-2-1.5xR0.75xL15.0		15.0	1.0	1.5	1.44	15	4	50	15.60	16.11	16.67	17.27	18.61	23,200
CBNLB-2-2.0xR1.0xL4.0	1.0	4.0	1.2	2.0	1.96	15	4	50	4.18	4.29	4.41	4.54	4.83	22,000
CBNLB-2-2.0xR1.0xL5.0		5.0	1.2	2.0	1.96	15	4	50	5.21	5.36	5.52	5.69	6.08	20,000
CBNLB-2-2.0xR1.0xL6.0		6.0	1.2	2.0	1.96	15	4	50	6.25	6.43	6.63	6.84	7.32	23,200
CBNLB-2-2.0xR1.0xL8.0		8.0	1.2	2.0	1.96	15	4	50	8.31	8.57	8.84	9.14	9.81	23,200
CBNLB-2-2.0xR1.0xL10.0		10.0	1.2	2.0	1.96	15	4	50	10.38	10.71	11.06	11.44	12.29	22,080
CBNLB-2-2.0xR1.0xL14.0		14.0	1.2	2.0	1.96	15	4	50	14.51	14.99	15.49	16.04	17.27	23,600
CBNLB-2-2.0xR1.0xL15.0		15.0	1.2	2.0	1.96	15	4	50	15.55	16.06	16.60	17.19	18.51	22,080
CBNLB-2-2.0xR1.0xL20.0		20.0	1.2	2.0	1.96	15	4	50	20.72	21.40	22.14	22.94	FREE	23,600
CBNLB-2-3.0xR1.5xL5.0	1.5	5.0	2.0	3.0	2.92	15	6	50	5.27	5.40	5.55	5.70	6.06	23,200
CBNLB-2-3.0xR1.5xL6.0		6.0	2.0	3.0	2.92	15	6	50	6.31	6.47	6.65	6.85	7.30	23,200
CBNLB-2-3.0xR1.5xL9.0		9.0	2.0	3.0	2.92	15	6	50	9.41	9.68	9.98	10.30	11.03	24,000
CBNLB-2-3.0xR1.5xL10.0		10.0	2.0	3.0	2.92	15	6	50	10.44	10.75	11.09	11.45	12.27	24,000
CBNLB-2-3.0xR1.5xL15.0		15.0	2.0	3.0	2.92	15	6	50	15.61	16.10	16.63	17.20	18.49	24,800

CBN Series

CBN 추천 절삭 조건표
Recommended Milling Conditions

■형번:CBNLB-2
Model number:CBNLB-2

볼 엔드밀 Ball End Mill

절삭 재료 Work Material		고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.05	0.2	50,000	200	0.005	0.005	50,000	150	0.003	0.005	50,000	150	0.003	0.005	50,000	110	0.002	0.003
	0.5	50,000	100	0.003	0.003	50,000	90	0.003	0.003	50,000	90	0.003	0.003	50,000	80	0.002	0.002
0.075	0.45	50,000	280	0.005	0.005	50,000	180	0.003	0.005	50,000	180	0.003	0.005	50,000	120	0.002	0.003
	0.75	50,000	150	0.003	0.003	50,000	100	0.003	0.003	50,000	100	0.003	0.003	50,000	90	0.002	0.002
0.1	0.3	50,000	600	0.005	0.005	50,000	600	0.005	0.005	50,000	430	0.005	0.005	50,000	350	0.003	0.003
	0.6	50,000	500	0.005	0.005	50,000	500	0.005	0.005	50,000	360	0.005	0.005	50,000	260	0.003	0.003
	1.0	50,000	300	0.005	0.005	50,000	300	0.005	0.005	50,000	240	0.005	0.005	50,000	120	0.003	0.003
0.15	0.3	50,000	1,400	0.005	0.005	50,000	1,400	0.005	0.005	50,000	800	0.005	0.005	50,000	500	0.005	0.005
	0.5	50,000	1,200	0.005	0.005	50,000	1,200	0.005	0.005	50,000	600	0.005	0.005	50,000	450	0.003	0.005
	0.75	50,000	1,000	0.005	0.005	50,000	1,000	0.005	0.005	50,000	520	0.005	0.005	50,000	400	0.003	0.005
0.2	0.5	50,000	1,800	0.005	0.01	50,000	1,800	0.005	0.01	50,000	1,200	0.005	0.01	50,000	650	0.005	0.01
	0.75	50,000	1,600	0.005	0.01	50,000	1,600	0.005	0.01	50,000	1,000	0.005	0.01	50,000	550	0.005	0.01
	1.0	50,000	1,400	0.005	0.01	50,000	1,400	0.005	0.01	50,000	900	0.005	0.01	50,000	450	0.005	0.005
	1.2	50,000	1,200	0.005	0.01	50,000	1,200	0.005	0.01	50,000	800	0.005	0.01	50,000	550	0.005	0.005
	2.0	50,000	600	0.005	0.01	50,000	600	0.005	0.01	50,000	500	0.005	0.01	50,000	350	0.005	0.005
	3.0	50,000	400	0.005	0.01	50,000	400	0.005	0.01	50,000	360	0.005	0.01	50,000	280	0.003	0.003
0.25	1.0	50,000	1,800	0.01	0.015	50,000	1,800	0.01	0.015	50,000	1,500	0.01	0.01	50,000	1,100	0.01	0.01
	1.5	50,000	1,300	0.01	0.01	50,000	1,300	0.01	0.01	50,000	1,200	0.01	0.01	50,000	850	0.005	0.01
	2.5	50,000	800	0.01	0.01	50,000	800	0.01	0.01	50,000	620	0.01	0.01	50,000	550	0.005	0.01
	3.5	50,000	500	0.01	0.01	50,000	500	0.01	0.01	50,000	400	0.01	0.01	50,000	350	0.005	0.01
0.3	1.2	40,000	2,000	0.01	0.03	40,000	2,000	0.01	0.03	40,000	1,800	0.01	0.02	40,000	1,500	0.01	0.02
	1.5	40,000	2,000	0.02	0.03	40,000	2,000	0.02	0.03	40,000	1,800	0.01	0.02	40,000	1,500	0.01	0.02
	3.0	40,000	1,800	0.01	0.02	40,000	1,800	0.01	0.02	40,000	1,600	0.01	0.02	40,000	900	0.01	0.01
	4.0	30,000	1,300	0.01	0.01	30,000	1,300	0.01	0.01	30,000	1,200	0.01	0.01	30,000	600	0.005	0.01
	5.0	30,000	800	0.01	0.01	30,000	800	0.01	0.01	30,000	720	0.01	0.01	30,000	500	0.005	0.005
	6.0	30,000	500	0.01	0.01	30,000	500	0.01	0.01	30,000	450	0.01	0.01	30,000	360	0.005	0.005
0.4	2.0	30,000	2,000	0.03	0.05	30,000	2,000	0.03	0.05	30,000	2,000	0.02	0.03	30,000	1,500	0.01	0.03
	4.0	30,000	1,800	0.02	0.03	30,000	1,800	0.02	0.03	30,000	1,800	0.01	0.02	30,000	1,200	0.01	0.01
	6.0	30,000	1,200	0.01	0.03	30,000	1,200	0.01	0.03	30,000	1,200	0.01	0.01	30,000	860	0.01	0.01
0.5	2.0	40,000	3,000	0.05	0.05	40,000	3,000	0.05	0.05	40,000	3,000	0.03	0.05	40,000	2,000	0.02	0.03
	2.5	40,000	3,000	0.05	0.05	40,000	3,000	0.05	0.05	40,000	3,000	0.03	0.05	40,000	2,000	0.02	0.03
	3.0	40,000	3,000	0.05	0.05	40,000	3,000	0.05	0.05	40,000	2,600	0.02	0.03	40,000	1,800	0.02	0.02
	4.0	40,000	2,400	0.03	0.05	40,000	2,400	0.03	0.05	40,000	2,400	0.02	0.03	40,000	1,500	0.02	0.02
	5.0	40,000	2,000	0.02	0.05	40,000	2,000	0.02	0.05	40,000	2,000	0.02	0.03	40,000	1,200	0.01	0.02
	6.0	30,000	1,500	0.02	0.03	30,000	1,500	0.02	0.03	25,000	1,500	0.01	0.02	25,000	1,000	0.01	0.01
	8.0	30,000	1,200	0.01	0.03	30,000	1,200	0.01	0.03	24,000	1,000	0.01	0.01	18,000	850	0.01	0.01
	10.0	26,000	800	0.01	0.02	26,000	800	0.01	0.02	22,000	700	0.005	0.01	13,000	600	0.005	0.005
0.6	3.0	40,000	3,000	0.05	0.05	40,000	3,000	0.05	0.05	40,000	2,600	0.02	0.03	40,000	1,800	0.02	0.02
	6.0	30,000	1,500	0.02	0.03	30,000	1,500	0.02	0.03	25,000	1,500	0.01	0.02	25,000	1,000	0.01	0.01
0.75	3.0	40,000	3,000	0.05	0.05	40,000	3,000	0.05	0.05	40,000	2,600	0.02	0.03	40,000	1,800	0.02	0.02
	5.0	30,000	2,000	0.02	0.03	30,000	2,000	0.02	0.03	25,000	1,800	0.01	0.02	25,000	1,600	0.01	0.01
	10.0	30,000	1,800	0.02	0.02	30,000	2,000	0.01	0.03	25,000	1,800	0.01	0.02	25,000	1,400	0.01	0.01

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●정삭가공을 행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
볼 Ball
ion Depo A Series
ion Depo U Series

볼 엔드밀 Ball End Mill

절삭 재료 Work Material		고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.75	15.0	30,000	1,600	0.02	0.02	30,000	1,800	0.01	0.02	25,000	1,600	0.01	0.02	25,000	1,200	0.01	0.01
1.0	4.0	40,000	4,500	0.1	0.1	40,000	4,500	0.1	0.1	40,000	4,500	0.05	0.05	40,000	3,000	0.03	0.05
	5.0	40,000	4,500	0.08	0.08	40,000	4,500	0.08	0.08	40,000	4,500	0.05	0.05	40,000	2,800	0.03	0.05
	6.0	40,000	4,000	0.05	0.05	40,000	4,000	0.05	0.05	40,000	4,000	0.03	0.03	40,000	2,500	0.02	0.03
	8.0	33,000	3,000	0.03	0.05	33,000	3,000	0.03	0.05	33,000	2,500	0.02	0.03	33,000	1,800	0.01	0.02
	10.0	24,000	2,000	0.02	0.03	24,000	2,000	0.02	0.03	24,000	1,600	0.01	0.03	24,000	1,200	0.01	0.02
	15.0	24,000	1,800	0.02	0.02	24,000	1,800	0.02	0.02	24,000	1,600	0.01	0.02	24,000	1,000	0.01	0.01
	20.0	24,000	1,600	0.02	0.02	24,000	1,600	0.02	0.02	24,000	1,400	0.01	0.02	24,000	800	0.005	0.01
1.5	5.0	40,000	4,500	0.08	0.08	40,000	4,500	0.08	0.08	40,000	4,500	0.05	0.05	40,000	2,800	0.03	0.05
	10.0	24,000	2,000	0.02	0.03	24,000	2,000	0.02	0.03	24,000	1,600	0.01	0.03	24,000	1,200	0.01	0.02
	15.0	24,000	1,800	0.02	0.02	24,000	1,800	0.02	0.02	24,000	1,600	0.01	0.02	24,000	1,000	0.01	0.01

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●정삭가공은 행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series

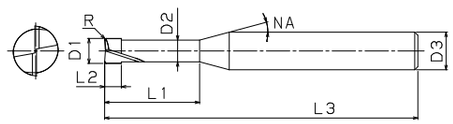
CBN 래핑 래디우스 엔드밀 CBN Lapping Radius End Mill

Non | BANCERA | CBN | 날 수 2 | 헬릭스각 0° | 목각 15° | Shank h4

■형번:LAPCBNLR-2 Model number:LAPCBNLR-2



날경하용공차 Diameter Tolerance	R 허용공차 R Tolerance
0/-0.003	±0.002

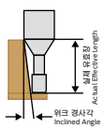


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	고경도강 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	◎							

최적◎Recommended 적응○Suggested



사이즈(Size) : mm

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
LAPCBNLR-2-0.4xR0.1xL1.2	0.4	0.1	1.2	0.3	0.37	15	4	50	1.29	1.34	1.38	1.43	1.54	22,880
LAPCBNLR-2-0.5xR0.1xL1.5	0.5	0.1	1.5	0.38	0.47	15	4	50	1.61	1.66	1.71	1.77	1.91	19,010
LAPCBNLR-2-0.6xR0.1xL1.5	0.6	0.1	1.5	0.5	0.57	15	4	50	1.61	1.66	1.71	1.77	1.91	19,010
LAPCBNLR-2-0.6xR0.2xL1.5		0.2	1.5	0.5	0.57	15	4	50	1.60	1.65	1.70	1.76	1.89	19,010
LAPCBNLR-2-1.0xR0.1xL2.0	1.0	0.1	2.0	0.7	0.96	15	4	50	2.14	2.21	2.29	2.37	2.56	17,420
LAPCBNLR-2-1.0xR0.2xL2.0		0.2	2.0	0.7	0.96	15	4	50	2.14	2.21	2.28	2.36	2.53	17,420
LAPCBNLR-2-1.0xR0.3xL2.0		0.3	2.0	0.7	0.96	15	4	50	2.13	2.20	2.27	2.34	2.51	17,420
LAPCBNLR-2-1.5xR0.1xL3.0	1.5	0.1	3.0	1.0	1.44	15	4	50	3.21	3.32	3.44	3.56	3.85	20,500
LAPCBNLR-2-1.5xR0.2xL3.0		0.2	3.0	1.0	1.44	15	4	50	3.21	3.31	3.43	3.55	3.82	20,500
LAPCBNLR-2-1.5xR0.3xL3.0		0.3	3.0	1.0	1.44	15	4	50	3.21	3.31	3.42	3.53	3.80	20,500
LAPCBNLR-2-2.0xR0.1xL5.0	2.0	0.1	5.0	1.2	1.96	15	4	50	5.24	5.42	5.61	5.82	6.29	21,120
LAPCBNLR-2-2.0xR0.2xL5.0		0.2	5.0	1.2	1.96	15	4	50	5.24	5.41	5.60	5.81	6.26	21,120
LAPCBNLR-2-2.0xR0.3xL5.0		0.3	5.0	1.2	1.96	15	4	50	5.24	5.41	5.59	5.79	6.24	21,120
LAPCBNLR-2-3.0xR0.1xL5.0	3.0	0.1	5.0	2.0	2.92	15	6	50	5.32	5.50	5.70	5.91	6.38	23,230
LAPCBNLR-2-3.0xR0.2xL5.0		0.2	5.0	2.0	2.92	15	6	50	5.32	5.49	5.69	5.89	6.35	23,230
LAPCBNLR-2-3.0xR0.3xL5.0		0.3	5.0	2.0	2.92	15	6	50	5.31	5.49	5.67	5.88	6.33	23,230

CBN 추천 절삭 조건표
Recommended Milling Conditions

■형번:LAPCBNLR-2
Model number:LAPCBNLR-2

래핑래디우스 엔드밀 Radius End Mill (for Lap)

절삭 재료 Work Material		고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.4	1.2	40,000	800	0.003	0.05	40,000	800	0.003	0.05	40,000	700	0.003	0.05	40,000	600	0.003	0.05
0.5	1.5	40,000	800	0.003	0.05	40,000	800	0.003	0.05	40,000	700	0.003	0.05	40,000	600	0.003	0.05
0.6	1.5	40,000	800	0.003	0.1	40,000	800	0.003	0.1	40,000	700	0.003	0.1	40,000	600	0.003	0.1
1.0	2.0	35,000	1,000	0.005	0.2	35,000	1,000	0.005	0.2	35,000	900	0.005	0.2	35,000	800	0.005	0.2
1.5	3.0	30,000	1,000	0.005	0.5	30,000	1,000	0.005	0.5	30,000	900	0.005	0.5	30,000	800	0.005	0.5
2.0	5.0	30,000	1,000	0.005	0.7	30,000	1,000	0.005	0.7	30,000	900	0.005	0.7	30,000	800	0.005	0.7
3.0	5.0	30,000	1,000	0.005	1.0	30,000	1,000	0.005	1.0	30,000	900	0.005	1.0	30,000	800	0.005	1.0

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●정임량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

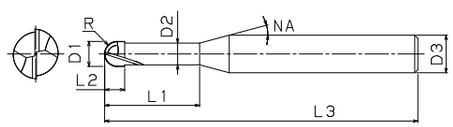
CBN 래핑 볼 엔드밀 CBN Lapping Ball End Mill

Non | BANCERA | CBN | 날 수 2 | 헬릭스각 0° | 목각 15° | Shank h4

■형번:LAPCBNLB-2 Model number:LAPCBNLB-2



날경하용공차 Diameter Tolerance	R 허용공차 R Tolerance
0/-0.003	±0.002

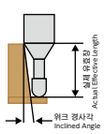


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	고경도강 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	◎							

최적◎Recommended 적응○Suggested



사이즈(Size) : mm

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
LAPCBNLB-2-0.4xR0.2xL1.0	0.2	1.0	0.3	0.4	0.37	15	4	50	1.08	1.12	1.15	1.18	1.27	22,880
LAPCBNLB-2-0.6xR0.3xL1.5	0.3	1.5	0.5	0.6	0.57	15	4	50	1.60	1.64	1.69	1.74	1.87	21,120
LAPCBNLB-2-1.0xR0.5xL2.0	0.5	2.0	0.7	1.0	0.96	15	4	50	2.13	2.18	2.25	2.31	2.46	20,720
LAPCBNLB-2-1.5xR0.75xL3.0	0.75	3.0	1.0	1.5	1.44	15	4	50	3.19	3.28	3.37	3.47	3.70	21,600
LAPCBNLB-2-1.5xR0.75xL5.0		5.0	1.0	1.5	1.44	15	4	50	5.26	5.42	5.59	5.77	6.18	23,200
LAPCBNLB-2-1.5xR0.75xL10.0		10.0	1.0	1.5	1.44	15	4	50	10.43	10.76	11.13	11.52	12.40	23,200
LAPCBNLB-2-2.0xR1.0xL5.0	1.0	5.0	2.0	2.0	1.96	15	4	50	5.21	5.36	5.52	5.69	6.08	22,000
LAPCBNLB-2-2.0xR1.0xL10.0		10.0	2.0	2.0	1.96	15	4	50	10.38	10.71	11.06	11.44	12.29	23,600
LAPCBNLB-2-2.0xR1.0xL15.0		15.0	2.0	2.0	1.96	15	4	50	15.55	16.06	16.60	17.19	18.51	23,600
LAPCBNLB-2-3.0xR1.5xL5.0	1.5	5.0	2.0	3.0	2.92	15	6	50	5.27	5.40	5.55	5.70	6.06	23,200
LAPCBNLB-2-3.0xR1.5xL10.0		10.0	2.0	3.0	2.92	15	6	50	10.44	10.75	11.09	11.45	12.27	24,000
LAPCBNLB-2-3.0xR1.5xL15.0		15.0	2.0	3.0	2.92	15	6	50	15.61	16.10	16.63	17.20	18.49	24,800

CBN 추천 절삭 조건표
Recommended Milling Conditions

■형번:LAPCBNLB-2
Model number:LAPCBNLB-2

래핑 볼 엔드밀 Ball End Mill (for Lap)

절삭 재료 Work Material		고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.2	1.0	40,000	800	0.003	0.01	40,000	800	0.003	0.01	40,000	700	0.003	0.01	40,000	600	0.003	0.01
0.3	1.5	40,000	800	0.003	0.01	40,000	800	0.003	0.01	40,000	700	0.003	0.01	40,000	600	0.003	0.01
0.5	2.0	35,000	1,000	0.005	0.01	35,000	1,000	0.005	0.01	35,000	900	0.005	0.01	35,000	800	0.005	0.01
0.75	3.0	35,000	1,000	0.005	0.02	35,000	1,000	0.005	0.02	35,000	900	0.005	0.02	35,000	800	0.005	0.02
	5.0	35,000	800	0.005	0.015	35,000	800	0.005	0.015	35,000	700	0.005	0.015	35,000	600	0.005	0.015
	10.0	35,000	700	0.005	0.015	35,000	700	0.005	0.015	35,000	600	0.005	0.015	35,000	500	0.005	0.015
1.0	5.0	30,000	1,000	0.005	0.03	30,000	1,000	0.005	0.03	30,000	900	0.005	0.03	30,000	800	0.005	0.03
	10.0	30,000	800	0.005	0.02	30,000	800	0.005	0.02	30,000	700	0.005	0.02	30,000	600	0.005	0.02
	15.0	30,000	700	0.005	0.02	30,000	700	0.005	0.02	30,000	600	0.005	0.02	30,000	500	0.005	0.02
1.5	5.0	30,000	1,000	0.005	0.04	30,000	1,000	0.005	0.04	30,000	900	0.005	0.04	30,000	800	0.005	0.04
	10.0	30,000	800	0.005	0.03	30,000	800	0.005	0.03	30,000	700	0.005	0.03	30,000	600	0.005	0.03
	15.0	30,000	700	0.005	0.03	30,000	700	0.005	0.03	30,000	600	0.005	0.03	30,000	500	0.005	0.03

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을평하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

초경 엔드밀 Carbide End Mill

ion A | super MG | 날 수 2·4 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4



특징

- 이온 플레이팅 방식의 코팅 ion Depo Type A는 조질강이나 탄소강,동 재질 등 다양한 피삭재에 대응 가능!
- 내마모에 뛰어난 오리지널 코팅으로 긴 수명화를 실현!
- 당사 독자적인 재연마, 재코팅 기술에 의해 성능 노화를 억제하여 한층 원가 절감에 공헌!
- 표준품 외 특별 주문품도 단납기로 제공 가능!

Features

- ion Depo Type A coating for various work materials, heat-treated steel, carbon steel, and copper.
- Achieves long life with excellent wear resistance.
- TOWA re-polishing and re-coating technology enhances cutting tool life and reduces overall tooling cost.
- Non-standard custom-made products available.

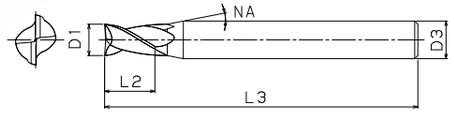
초경 스퀘어 엔드밀 Carbide Square End Mill

■형번:IAS-2 Model number:IAS-2

ion A | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4

날경 Diameter	날경허용공차 Diameter Tolerance
~φ6	-0.004/-0.007
φ8 ~φ12	-0.004/-0.014
φ14~φ20	-0.004/-0.020





표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material														
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

최적◎Recommended 적용○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAS-2-0.1x0.15	0.1	0.15	11	4	50	5,760
IAS-2-0.2x0.4	0.2	0.4	11	4	50	3,600
IAS-2-0.3x0.3	0.3	0.3	11	4	50	3,120
IAS-2-0.3x0.6		0.6	11	4	50	3,120
IAS-2-0.4x0.6	0.4	0.6	11	4	50	3,440
IAS-2-0.4x0.8		0.8	11	4	50	3,440
IAS-2-0.5x0.8	0.5	0.8	11	4	50	1,760
IAS-2-0.5x1.25		1.25	11	4	50	1,760
IAS-2-0.5x2.0		2.0	11	4	50	3,840
IAS-2-0.6x1.0	0.6	1.0	11	4	50	2,720
IAS-2-0.6x1.5		1.5	11	4	50	2,720
IAS-2-0.6x2.4		2.4	11	4	50	3,840
IAS-2-0.7x1.8	0.7	1.8	11	4	50	2,960
IAS-2-0.8x1.2	0.8	1.2	11	4	50	1,760
IAS-2-0.8x2.0		2.0	11	4	50	1,760
IAS-2-0.8x3.2		3.2	11	4	50	3,840
IAS-2-0.9x2.0	0.9	2.0	11	4	50	2,960
IAS-2-1.0x1.5	1.0	1.5	11	4	50	1,520
IAS-2-1.0x2.5		2.5	11	4	50	1,520
IAS-2-1.0x4.0		4.0	11	4	50	3,440
IAS-2-1.1x2.5	1.1	2.5	11	4	50	4,800
IAS-2-1.2x3.0	1.2	3.0	11	4	50	1,760
IAS-2-1.3x3.0	1.3	3.0	11	4	50	4,800
IAS-2-1.4x3.5	1.4	3.5	11	4	50	4,800
IAS-2-1.5x2.0	1.5	2.0	11	4	50	1,520
IAS-2-1.5x4.0		4.0	11	4	50	1,520
IAS-2-1.5x6.0		6.0	11	4	50	3,440
IAS-2-1.6x4.0	1.6	4.0	11	4	50	4,800
IAS-2-1.7x4.5	1.7	4.5	11	4	50	4,800
IAS-2-1.8x4.5	1.8	4.5	11	4	50	1,760
IAS-2-1.9x5.0	1.9	5.0	11	4	50	4,800
IAS-2-2.0x3.0	2.0	3.0	11	4	50	1,520
IAS-2-2.0x5.0		5.0	11	4	50	1,520
IAS-2-2.0x8.0		8.0	11	4	50	3,440
IAS-2-2.1x5.5	2.1	5.5	11	4	50	4,800
IAS-2-2.2x5.5	2.2	5.5	11	4	50	4,800
IAS-2-2.3x6.0	2.3	6.0	11	4	50	4,800
IAS-2-2.4x6.0	2.4	6.0	11	4	50	4,800
IAS-2-2.5x7.0	2.5	7.0	11	4	50	1,520
IAS-2-2.5x10.0		10.0	11	4	50	3,440
IAS-2-2.6x7.0	2.6	7.0	11	4	50	4,800
IAS-2-2.7x7.0	2.7	7.0	11	4	50	4,800
IAS-2-2.8x7.0	2.8	7.0	11	4	50	4,800
IAS-2-2.9x8.0	2.9	8.0	11	4	50	4,800
IAS-2-3.0x5.0	3.0	5.0	11	4	50	2,000

ion Depo Type A Series

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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAS-2-3.0x8.0	3.0	8.0	11	4	50	2,000
IAS-2-3.0x12.0		12.0	11	4	50	4,400
IAS-2-3.1x8.0	3.1	8.0	11	6	50	5,600
IAS-2-3.2x8.0	3.2	8.0	11	6	50	5,600
IAS-2-3.3x9.0	3.3	9.0	11	6	50	5,600
IAS-2-3.4x9.0	3.4	9.0	11	6	50	5,600
IAS-2-3.5x9.0	3.5	9.0	11	6	50	3,600
IAS-2-3.6x9.0	3.6	9.0	11	6	50	5,600
IAS-2-3.7x10.0	3.7	10.0	11	6	50	5,600
IAS-2-3.8x10.0	3.8	10.0	11	6	50	5,600
IAS-2-3.9x10.0	3.9	10.0	11	6	50	5,600
IAS-2-4.0x6.0	4.0	6.0	11	6	50	2,240
IAS-2-4.0x10.0		10.0	11	6	50	2,240
IAS-2-4.0x16.0		16.0	11	6	50	4,720
IAS-2-4.1x11.0	4.1	11.0	11	6	50	6,000
IAS-2-4.2x11.0	4.2	11.0	11	6	50	6,000
IAS-2-4.3x11.0	4.3	11.0	11	6	50	6,000
IAS-2-4.4x11.0	4.4	11.0	11	6	50	6,000
IAS-2-4.5x12.0	4.5	12.0	11	6	50	4,160
IAS-2-4.6x12.0	4.6	12.0	11	6	50	6,000
IAS-2-4.7x12.0	4.7	12.0	11	6	50	6,000
IAS-2-4.8x12.0	4.8	12.0	11	6	50	6,000
IAS-2-4.9x13.0	4.9	13.0	11	6	50	6,000
IAS-2-5.0x8.0	5.0	8.0	11	6	50	2,400
IAS-2-5.0x13.0		13.0	11	6	50	2,400
IAS-2-5.0x20.0		20.0	11	6	60	5,360
IAS-2-5.1x13.0	5.1	13.0	11	6	50	6,400
IAS-2-5.2x13.0	5.2	13.0	11	6	50	6,400
IAS-2-5.3x14.0	5.3	14.0	11	6	50	6,400
IAS-2-5.4x14.0	5.4	14.0	11	6	50	6,400
IAS-2-5.5x14.0	5.5	14.0	11	6	50	4,160
IAS-2-5.6x14.0	5.6	14.0	11	6	50	6,400
IAS-2-5.7x15.0	5.7	15.0	11	6	50	6,400
IAS-2-5.8x15.0	5.8	15.0	11	6	50	6,400
IAS-2-5.9x15.0	5.9	15.0	11	6	50	6,400
IAS-2-6.0x10.0	6.0	10.0	—	6	50	2,640
IAS-2-6.0x15.0		15.0	—	6	50	2,640
IAS-2-6.0x24.0		24.0	—	6	60	5,440
IAS-2-6.5x17.0	6.5	17.0	11	8	70	9,200
IAS-2-6.5x20.0		20.0	11	8	70	9,200
IAS-2-7.0x18.0	7.0	18.0	11	8	70	8,560
IAS-2-7.5x20.0	7.5	20.0	11	8	70	10,240
IAS-2-8.0x20.0	8.0	20.0	—	8	70	5,600
IAS-2-8.0x32.0		32.0	—	8	80	10,800
IAS-2-8.5x23.0	8.5	23.0	11	10	80	12,320

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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAS-2-9.0x23.0	9.0	23.0	11	10	80	11,280
IAS-2-9.5x25.0	9.5	25.0	11	10	80	13,440
IAS-2-10.0x25.0	10.0	25.0	—	10	80	6,560
IAS-2-10.0x40.0		40.0	—	10	90	12,240
IAS-2-10.5x28.0	10.5	28.0	11	12	110	17,120
IAS-2-11.0x28.0	11.0	28.0	11	12	110	17,120
IAS-2-11.5x30.0	11.5	30.0	11	12	110	10,800
IAS-2-12.0x30.0	12.0	30.0	—	12	110	10,800
IAS-2-12.0x48.0		48.0	—	12	120	20,480
IAS-2-14.0x28.0	14.0	28.0	—	14	110	20,560
IAS-2-16.0x48.0	16.0	48.0	—	16	140	22,640
IAS-2-18.0x54.0	18.0	54.0	—	18	140	35,600
IAS-2-20.0x60.0	20.0	60.0	—	20	150	38,560

CBN Series
ion Depo A Series 스퀘어 Square
ion Depo U Series

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.1	0.15	50,000	67	0.135	0.003	50,000	61	0.135	0.003	50,000	56	0.12	0.002	50,000	42	0.09	0.001	50,000	35	0.075	0.001
0.2	0.4	50,000	134	0.27	0.006	50,000	123	0.27	0.006	50,000	112	0.24	0.005	47,800	80	0.18	0.002	31,800	45	0.15	0.001
0.3	0.3	50,000	201	0.36	0.009	50,000	184	0.36	0.009	43,000	145	0.32	0.007	31,800	80	0.24	0.002	21,200	45	0.2	0.002
	0.6	50,000	186	0.63	0.005	50,000	171	0.63	0.005	40,900	130	0.56	0.004	30,200	70	0.42	0.001	20,200	40	0.35	0.001
0.4	0.6	50,000	268	0.54	0.012	43,800	215	0.54	0.012	32,200	145	0.48	0.010	23,900	80	0.36	0.003	15,900	45	0.3	0.002
	0.8	50,000	248	0.9	0.006	41,600	190	0.9	0.006	30,600	130	0.8	0.005	22,700	70	0.6	0.002	15,100	40	0.5	0.002
0.5	0.8	50,000	335	0.7	0.015	35,000	215	0.7	0.015	25,800	145	0.64	0.012	19,100	80	0.48	0.004	12,700	45	0.4	0.003
	1.25	48,400	300	1.125	0.008	33,300	190	1.125	0.008	24,500	130	1	0.006	18,100	70	0.75	0.002	12,100	40	0.625	0.002
	2.0	45,800	240	1.8	0.004	31,500	150	1.8	0.004	23,200	100	1.6	0.003	17,200	55	1.2	0.001	11,500	30	1	0.001
0.6	1.0	42,400	341	0.9	0.018	27,700	204	0.9	0.018	20,400	138	0.8	0.014	15,100	76	0.6	0.005	10,100	43	0.5	0.004
	1.5	40,300	300	1.35	0.009	27,700	190	1.35	0.009	20,400	130	1.2	0.007	15,100	70	0.9	0.002	10,100	40	0.75	0.002
	2.4	38,200	239	2.16	0.023	26,300	150	2.16	0.023	19,400	100	1.92	0.004	14,300	55	1.44	0.002	9,550	30	1.2	0.001
0.7	1.8	34,600	300	1.62	0.011	23,800	190	1.62	0.011	17,500	130	1.44	0.008	13,000	70	1.08	0.003	8,640	40	0.9	0.003
0.8	1.2	31,800	340	1.1	0.024	21,900	215	1.08	0.024	16,100	145	0.96	0.019	11,900	80	0.72	0.006	7,960	45	0.6	0.005
	2.0	30,200	300	1.8	0.012	20,800	190	1.8	0.012	15,300	130	1.6	0.010	11,300	70	1.2	0.003	7,560	40	1	0.003
	3.2	28,600	240	2.9	0.006	19,700	150	2.88	0.006	14,500	100	2.56	0.005	10,700	55	1.92	0.002	7,160	30	1.6	0.001
0.9	2	26,900	300	1.8	0.014	18,500	190	1.8	0.014	13,600	130	1.6	0.016	10,100	70	1.2	0.007	6,720	40	1	0.005
1.0	1.5	25,500	340	1.4	0.045	17,500	215	1.35	0.045	12,900	145	1.2	0.036	9,550	80	0.9	0.012	6,370	45	0.75	0.008
	2.5	24,200	300	2.3	0.03	16,600	190	2.25	0.03	12,200	130	2	0.018	9,070	70	1.5	0.008	6,050	40	1.25	0.006
	4.0	22,900	240	3.6	0.011	15,700	150	3.6	0.011	11,600	100	3.2	0.012	8,600	55	2.4	0.003	5,730	30	2	0.002
1.1	2.5	22,000	300	2.25	0.033	15,100	190	2.25	0.033	11,100	130	2	0.020	8,250	70	1.5	0.009	5,500	40	1.25	0.007
1.2	3.0	20,200	300	2.7	0.036	13,900	190	2.7	0.036	10,200	130	2.4	0.022	7,560	70	1.8	0.010	5,040	40	1.5	0.007
1.3	3.0	18,600	300	2.7	0.039	12,800	190	2.7	0.039	9,430	130	2.4	0.023	6,980	70	1.8	0.010	4,650	40	1.5	0.008
1.4	3.5	17,300	300	3.15	0.042	11,900	190	3.15	0.042	8,750	130	2.8	0.025	6,480	70	2.1	0.011	4,320	40	1.75	0.008
1.5	2.0	17,000	340	1.8	0.067	11,700	215	1.8	0.068	8,600	145	1.6	0.054	6,370	80	1.2	0.018	4,250	45	1	0.011
	4.0	16,100	300	3.6	0.045	11,100	190	3.6	0.045	8,170	130	3.2	0.027	6,050	70	2.4	0.012	4,030	40	2	0.009
	6.0	15,300	240	5.4	0.023	10,500	150	5.4	0.023	7,740	100	4.8	0.018	5,730	55	3.6	0.006	3,820	30	3	0.005
1.6	4.0	15,100	300	3.6	0.072	10,400	190	3.6	0.072	7,660	130	3.2	0.058	5,670	70	2.4	0.019	3,780	40	2	0.012
1.7	4.5	14,200	300	4.05	0.077	9,790	190	4.05	0.077	7,210	130	3.6	0.061	5,340	70	2.7	0.020	3,560	40	2.25	0.013
1.8	4.5	13,400	300	4.05	0.081	9,250	190	4.05	0.081	6,810	130	3.6	0.065	5,040	70	2.7	0.022	3,360	40	2.25	0.014
1.9	5.0	12,700	300	4.5	0.086	8,760	190	4.5	0.086	6,450	130	4	0.068	4,770	70	3	0.023	3,180	40	2.5	0.014
2.0	3.0	12,700	340	2.7	0.12	8,760	215	2.7	0.12	6,450	145	2.4	0.096	4,780	80	1.8	0.032	3,190	45	1.5	0.015
	5.0	12,100	300	4.5	0.09	8,320	190	4.5	0.09	6,130	130	4	0.072	4,540	70	3	0.024	3,030	40	2.5	0.015
	8.0	11,500	240	7.2	0.045	7,880	150	7.2	0.045	5,800	100	6.4	0.036	4,300	55	4.8	0.012	2,870	30	4	0.009
2.1	5.5	11,500	300	4.95	0.126	7,930	190	4.95	0.126	5,840	130	4.4	0.095	4,320	70	3.3	0.032	2,880	40	2.75	0.016
2.2	5.5	11,000	300	4.95	0.132	7,570	190	4.95	0.132	5,570	130	4.4	0.099	4,120	70	3.3	0.033	2,750	40	2.75	0.017
2.3	6.0	10,500	300	5.4	0.138	7,240	190	5.4	0.138	5,330	130	4.8	0.104	3,940	70	3.6	0.035	2,630	40	3	0.017
2.4	6.0	10,100	300	5.4	0.144	6,940	190	5.4	0.144	5,110	130	4.8	0.108	3,780	70	3.6	0.036	2,520	40	3	0.018
2.5	7.0	9,680	340	6.3	0.188	6,660	190	6.3	0.15	4,900	130	5.6	0.113	3,630	70	4.2	0.038	2,420	40	3.5	0.019
	10.0	9,170	240	9	0.075	6,310	150	9	0.094	4,640	100	8	0.06	3,440	55	6	0.02	2,290	30	5	0.015
2.6	7.0	9,300	300	6.3	0.156	6,400	190	6.3	0.156	4,710	130	5.6	0.117	3,490	70	4.2	0.039	2,330	40	3.5	0.020
2.7	7.0	8,960	300	6.3	0.162	6,170	190	6.3	0.162	4,540	130	5.6	0.122	3,360	70	4.2	0.041	2,240	40	3.5	0.020

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●∂p= 축방향 ,∂e= 반경방향 , ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
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●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
2.8	7.0	8,640	300	6.3	0.168	5,950	190	6.3	0.168	4,380	130	5.6	0.126	3,240	70	4.2	0.042	2,160	40	3.5	0.021
2.9	8.0	8,340	300	7.2	0.174	5,740	190	7.2	0.174	4,230	130	6.4	0.131	3,130	70	4.8	0.044	2,090	40	4	0.022
3.0	5.0	8,490	340	4.5	0.225	5,840	215	4.5	0.225	4,300	145	4	0.18	3,190	80	3	0.06	2,120	45	2.5	0.045
	8.0	8,060	300	7.2	0.18	5,550	190	7.2	0.18	4,080	130	6.4	0.135	3,020	70	4.8	0.045	2,020	40	4	0.023
	12.0	7,640	240	10.8	0.09	5,250	150	10.8	0.09	3,870	100	9.6	0.072	2,870	55	7.2	0.024	1,910	30	6	0.018
3.1	8.0	7,800	300	7.2	0.186	5,370	190	7.2	0.186	3,950	130	6.4	0.140	2,930	70	4.8	0.047	1,950	40	4	0.023
3.2	8.0	7,560	300	7.2	0.192	5,200	190	7.2	0.192	3,830	130	6.4	0.144	2,830	70	4.8	0.048	1,890	40	4	0.024
3.3	9.0	7,330	300	8.1	0.198	5,040	190	8.1	0.198	3,710	130	7.2	0.149	2,750	70	5.4	0.050	1,830	40	4.5	0.025
3.4	9.0	7,120	300	8.1	0.204	4,900	190	8.1	0.204	3,600	130	7.2	0.153	2,670	70	5.4	0.051	1,780	40	4.5	0.026
3.5	9.0	6,910	300	8.1	0.21	4,760	190	8.1	0.21	3,500	130	7.2	0.158	2,590	70	5.4	0.053	1,730	40	4.5	0.026
3.6	9.0	6,720	300	8.1	0.216	4,620	190	8.1	0.216	3,400	130	7.2	0.162	2,520	70	5.4	0.054	1,680	40	4.5	0.027
3.7	10.0	6,540	300	9	0.222	4,500	190	9	0.222	3,310	130	8	0.167	2,450	70	6	0.056	1,630	40	5	0.028
3.8	10.0	6,370	300	9	0.228	4,380	190	9	0.228	3,220	130	8	0.171	2,390	70	6	0.057	1,590	40	5	0.029
3.9	10.0	6,200	300	9	0.234	4,270	190	9	0.234	3,140	130	8	0.176	2,330	70	6	0.059	1,550	40	5	0.029
4.0	6.0	6,370	340	5.4	0.3	4,380	215	5.4	0.3	3,230	145	4.8	0.24	2,390	80	3.6	0.08	1,590	45	3	0.06
	10.0	6,050	300	9	0.24	4,160	190	9	0.24	3,060	130	8	0.18	2,270	70	6	0.06	1,510	40	5	0.03
	16.0	5,730	240	14.4	0.105	3,940	150	14.4	0.105	2,900	100	12.8	0.096	2,150	55	9.6	0.032	1,430	30	8	0.024
4.1	11.0	5,900	300	9.9	0.246	4,060	190	9.9	0.246	2,990	130	8.8	0.185	2,210	70	6.6	0.062	1,480	40	5.5	0.031
4.2	11.0	5,760	300	9.9	0.252	3,960	190	9.9	0.252	2,920	130	8.8	0.189	2,160	70	6.6	0.063	1,440	40	5.5	0.032
4.3	11.0	5,630	300	9.9	0.258	3,870	190	9.9	0.258	2,850	130	8.8	0.194	2,110	70	6.6	0.065	1,410	40	5.5	0.032
4.4	11.0	5,500	300	9.9	0.264	3,780	190	9.9	0.264	2,790	130	8.8	0.198	2,060	70	6.6	0.066	1,370	40	5.5	0.033
4.5	12.0	5,380	300	10.8	0.27	3,700	190	10.8	0.27	2,720	130	9.6	0.203	2,020	70	7.2	0.068	1,340	40	6	0.034
4.6	12.0	5,260	300	10.8	0.276	3,620	190	10.8	0.276	2,660	130	9.6	0.207	1,970	70	7.2	0.069	1,310	40	6	0.035
4.7	12.0	5,150	300	10.8	0.282	3,540	190	10.8	0.282	2,610	130	9.6	0.212	1,930	70	7.2	0.071	1,290	40	6	0.035
4.8	12.0	5,040	300	10.8	0.288	3,470	190	10.8	0.288	2,550	130	9.6	0.216	1,890	70	7.2	0.072	1,260	40	6	0.036
4.9	13.0	4,940	300	11.7	0.294	3,400	190	11.7	0.294	2,500	130	10.4	0.221	1,850	70	7.8	0.074	1,230	40	6.5	0.037
5.0	8.0	5,100	340	7.2	0.375	3,500	215	7.2	0.375	2,580	145	6.4	0.3	1,910	80	4.8	0.1	1,280	45	4	0.075
	13.0	4,840	300	11.7	0.3	3,330	190	11.7	0.3	2,450	130	10.4	0.225	1,810	70	7.8	0.075	1,210	40	6.5	0.038
	20.0	4,590	240	18	0.15	3,150	150	18	0.15	2,320	100	16	0.12	1,720	55	12	0.04	1,150	30	10	0.03
5.1	13.0	4,740	300	11.7	0.306	3,260	190	11.7	0.306	2,400	130	10.4	0.230	1,780	70	7.8	0.077	1,190	40	6.5	0.038
5.2	13.0	4,650	300	11.7	0.312	3,200	190	11.7	0.312	2,360	130	10.4	0.234	1,740	70	7.8	0.078	1,160	40	6.5	0.039
5.3	14.0	4,560	300	12.6	0.318	3,140	190	12.6	0.318	2,310	130	11.2	0.239	1,710	70	8.4	0.080	1,140	40	7	0.040
5.4	14.0	4,480	300	12.6	0.324	3,080	190	12.6	0.324	2,270	130	11.2	0.243	1,680	70	8.4	0.081	1,120	40	7	0.041
5.5	14.0	4,400	300	12.6	0.33	3,030	190	12.6	0.33	2,230	130	11.2	0.248	1,650	70	8.4	0.083	1,100	40	7	0.041
5.6	14.0	4,320	300	12.6	0.336	2,970	190	12.6	0.336	2,190	130	11.2	0.252	1,620	70	8.4	0.084	1,080	40	7	0.042
5.7	15.0	4,240	300	13.5	0.342	2,920	190	13.5	0.342	2,150	130	12	0.257	1,590	70	9	0.086	1,060	40	7.5	0.043
5.8	15.0	4,170	300	13.5	0.348	2,870	190	13.5	0.348	2,110	130	12	0.261	1,560	70	9	0.087	1,040	40	7.5	0.044
5.9	15.0	4,100	300	13.5	0.354	2,820	190	13.5	0.354	2,080	130	12	0.266	1,540	70	9	0.089	1,030	40	7.5	0.044
6.0	10.0	4,250	340	9	0.45	2,920	215	9	0.45	2,150	145	8	0.36	1,590	80	6	0.12	1,060	45	5	0.09
	15.0	4,030	300	13.5	0.36	2,770	190	13.5	0.36	2,040	130	12	0.27	1,510	70	9	0.09	1,010	40	7.5	0.045
	24.0	3,820	240	21.6	0.18	2,630	150	21.6	0.18	1,940	100	19.2	0.144	1,430	55	14.4	0.048	960	30	12	0.036
6.5	17.0	3,720	300	15.3	0.39	2,560	190	15.3	0.39	1,890	130	13.6	0.39	1,400	70	10.2	0.13	930	40	8.5	0.098

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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill

측 면 Side Milling

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
6.5	20.0	3,530	239	23.4	0.244	2,420	150	23.4	0.244	1,790	100	20.8	0.195	1,400	58	15.6	0.065	930	32	13	0.049
7.0	18.0	3,460	300	16.2	0.42	2,380	190	16.2	0.42	1,750	130	14.4	0.42	1,300	70	10.8	0.14	860	40	9	0.105
7.5	20.0	3,230	300	18	0.45	2,220	190	18	0.45	1,630	130	16	0.45	1,210	70	12	0.15	810	40	10	0.113
8.0	20.0	3,020	300	18	0.6	2,080	190	18	0.6	1,610	137	16	0.48	1,200	74	12	0.16	800	42	10	0.12
	32.0	2,870	240	28.8	0.3	1,970	150	28.8	0.3	1,450	100	25.6	0.24	1,080	55	19.2	0.08	720	30	16	0.06
8.5	23.0	2,850	300	20.7	0.51	1,960	190	20.7	0.51	1,440	130	18.4	0.51	1,070	70	13.8	0.17	710	40	11.5	0.128
9.0	23.0	2,690	300	20.7	0.54	1,850	190	20.7	0.54	1,360	130	18.4	0.54	1,010	70	13.8	0.18	670	40	11.5	0.135
9.5	25.0	2,550	300	22.5	0.57	1,750	190	22.5	0.57	1,290	130	20	0.57	950	70	15	0.19	640	40	12.5	0.143
10.0	25.0	2,420	300	22.5	0.75	1,660	190	22.5	0.75	1,290	137	20	0.6	960	74	15	0.2	640	42	12.5	0.15
	40.0	2,290	240	36	0.375	1,580	150	36	0.375	1,160	100	32	0.3	860	55	24	0.1	580	30	20	0.075
10.5	28.0	2,300	299	25.2	0.63	1,590	191	25.2	0.63	1,170	130	22.4	0.63	860	70	16.8	0.21	580	40	14	0.158
11.0	28.0	2,200	300	25.2	0.66	1,510	190	25.2	0.66	1,110	129	22.4	0.66	820	70	16.8	0.22	550	40	14	0.165
11.5	30.0	2,100	299	27	0.69	1,450	190	27	0.69	1,070	130	24	0.69	790	70	18	0.23	530	40	15	0.173
12.0	30.0	2,020	300	27	0.9	1,390	190	27	0.72	1,020	130	24	0.72	760	70	18	0.24	500	40	15	0.18
	48.0	1,910	240	43.2	0.45	1,320	150	43.2	0.45	970	100	38.4	0.36	720	55	28.8	0.12	480	30	24	0.09
14.0	28.0	1,700	279	37.8	0.525	1,210	183	37.8	0.525	890	124	33.6	0.42	660	67	25.2	0.14	440	38	21	0.105
16.0	48.0	1,490	280	43.2	0.6	1,060	183	43.2	0.6	780	124	38.4	0.48	580	67	28.8	0.16	380	37	24	0.12
18.0	54.0	1,320	279	48.6	0.675	940	182	48.6	0.675	690	123	43.2	0.54	510	67	32.4	0.18	340	38	27	0.135
20.0	60.0	1,190	279	54	0.75	850	183	54	0.75	620	123	48	0.6	460	67	36	0.2	310	38	30	0.15

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스퀘어 엔드밀 Square End Mill

홈 Slotting

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.1	0.15	50,000	37	0.038	0.1	50,000	33	0.038	0.1	50,000	32	0.03	0.1	50,000	20	0.015	0.1	50,000	15	0.009	0.1
0.2	0.4	50,000	74	0.075	0.2	50,000	67	0.075	0.2	50,000	64	0.06	0.2	38,200	30	0.03	0.2	25,500	15	0.018	0.2
0.3	0.3	50,000	111	0.1	0.3	50,000	100	0.1	0.3	36,600	70	0.08	0.3	25,500	30	0.04	0.3	17,000	15	0.024	0.3
	0.6	50,000	103	0.112	0.3	49,900	95	0.112	0.3	34,700	60	0.07	0.3	24,200	30	0.035	0.3	16,100	15	0.025	0.3
0.4	0.6	50,000	148	0.15	0.4	39,400	105	0.15	0.4	27,500	70	0.12	0.4	19,100	30	0.06	0.4	12,700	15	0.036	0.4
	0.8	50,000	138	0.16	0.4	37,400	95	0.16	0.4	26,000	60	0.1	0.4	18,100	30	0.05	0.4	12,100	15	0.035	0.4
0.5	0.8	45,800	170	0.2	0.5	31,500	105	0.2	0.5	21,900	70	0.16	0.5	15,300	30	0.08	0.5	10,200	15	0.048	0.5
	1.25	43,600	150	0.2	0.5	29,900	95	0.2	0.5	20,800	60	0.125	0.5	14,500	30	0.063	0.5	9,680	15	0.044	0.5
	2.0	41,200	120	0.06	0.5	28,400	75	0.06	0.5	19,700	50	0.045	0.5	13,700	20	0.225	0.5	9,170	10	0.015	0.5
0.6	1.0	38,200	170	0.25	0.6	26,300	105	0.25	0.6	18,300	70	0.2	0.6	12,700	30	0.1	0.6	8,490	15	0.06	0.6
	1.5	36,300	150	0.24	0.6	24,900	95	0.24	0.6	17,400	60	0.15	0.6	12,100	30	0.075	0.6	8,060	15	0.053	0.6
	2.4	34,300	120	0.072	0.6	23,600	75	0.072	0.6	16,500	50	0.054	0.6	11,500	20	0.27	0.6	7,640	10	0.018	0.6
0.7	1.8	31,200	150	0.288	0.7	21,400	95	0.288	0.7	14,900	60	0.18	0.7	10,400	30	0.09	0.7	6,910	15	0.063	0.7
0.8	1.2	28,600	170	0.3	0.8	19,700	105	0.3	0.8	13,700	70	0.24	0.8	9,550	30	0.12	0.8	6,370	15	0.072	0.8
	2.0	27,200	150	0.26	0.8	18,700	95	0.26	0.8	13,000	60	0.2	0.8	9,070	30	0.1	0.8	6,050	15	0.07	0.8
	3.2	25,800	120	0.1	0.8	17,700	75	0.1	0.8	12,300	50	0.072	0.8	8,600	20	0.36	0.8	5,730	10	0.024	0.8
0.9	2	24,200	150	0.32	0.9	16,600	95	0.32	0.9	11,600	60	0.2	0.9	8,060	30	0.1	0.9	5,380	15	0.07	0.9
1.0	1.5	22,900	170	0.375	1	15,700	105	0.375	1	11,000	70	0.3	1	7,640	30	0.15	1	5,100	15	0.09	1
	2.5	21,800	150	0.32	1	15,000	95	0.32	1	10,400	60	0.25	1	7,260	30	0.125	1	4,840	15	0.088	1
	4.0	20,600	120	0.12	1	14,200	75	0.12	1	9,860	50	0.09	1	6,880	20	0.45	1	4,590	10	0.03	1
1.1	2.5	19,800	150	0.4	1.1	13,600	95	0.4	1.1	9,460	60	0.25	1.1	6,600	30	0.125	1.1	4,400	15	0.088	1.1
1.2	3.0	18,200	150	0.48	1.2	12,500	95	0.48	1.2	8,670	60	0.3	1.2	6,050	30	0.15	1.2	4,030	15	0.105	1.2
1.3	3.0	16,800	150	0.48	1.3	11,500	95	0.48	1.3	8,010	60	0.3	1.3	5,580	30	0.15	1.3	3,720	15	0.105	1.3
1.4	3.5	15,600	150	0.56	1.4	10,700	95	0.56	1.4	7,430	60	0.35	1.4	5,180	30	0.175	1.4	3,460	15	0.123	1.4
1.5	2.0	15,300	170	0.6	1.5	10,500	105	0.6	1.5	7,310	70	0.4	1.5	5,100	30	0.2	1.5	3,400	15	0.12	1.5
	4.0	14,500	150	0.48	1.5	9,980	95	0.48	1.5	6,940	60	0.4	1.5	4,840	30	0.2	1.5	3,230	15	0.14	1.5
	6.0	13,700	120	0.18	1.5	9,460	75	0.18	1.5	6,580	50	0.135	1.5	4,590	20	0.675	1.5	3,060	10	0.045	1.5
1.6	4.0	13,600	150	0.64	1.6	9,350	95	0.64	1.6	6,510	60	0.4	1.6	4,540	30	0.2	1.6	3,020	15	0.14	1.6
1.7	4.5	12,800	150	0.72	1.7	8,800	95	0.72	1.7	6,120	60	0.45	1.7	4,270	30	0.225	1.7	2,850	15	0.158	1.7
1.8	4.5	12,100	150	0.72	1.8	8,310	95	0.72	1.8	5,780	60	0.45	1.8	4,030	30	0.225	1.8	2,690	15	0.158	1.8
1.9	5.0	11,500	150	0.8	1.9	7,870	95	0.8	1.9	5,480	60	0.5	1.9	3,820	30	0.25	1.9	2,550	15	0.175	1.9
2.0	3.0	11,500	170	0.75	2	7,880	105	0.8	2	5,480	70	0.6	2	3,820	30	0.3	2	2,550	15	0.18	2
	5.0	10,900	150	0.64	2	7,490	95	0.64	2	5,210	60	0.5	2	3,630	30	0.25	2	2,420	15	0.175	2
	8.0	10,300	120	0.24	2	7,090	75	0.24	2	4,930	50	0.18	2	3,440	20	0.9	2	2,290	10	0.06	2
2.1	5.5	10,400	150	0.88	2.1	7,120	95	0.88	2.1	4,960	60	0.55	2.1	3,460	30	0.275	2.1	2,300	15	0.193	2.1
2.2	5.5	9,910	150	0.88	2.2	6,800	95	0.88	2.2	4,730	60	0.55	2.2	3,300	30	0.275	2.2	2,200	15	0.193	2.2
2.3	6.0	9,480	150	0.96	2.3	6,500	95	0.96	2.3	4,530	60	0.6	2.3	3,160	30	0.3	2.3	2,100	15	0.21	2.3
2.4	6.0	9,090	150	0.96	2.4	6,230	95	0.96	2.4	4,340	60	0.6	2.4	3,020	30	0.3	2.4	2,020	15	0.21	2.4
2.5	7.0	8,720	150	1.12	2.5	5,980	105	1.12	2.5	4,160	60	0.7	2.5	2,900	30	0.35	2.5	1,940	15	0.245	2.5
	10.0	8,250	120	0.3	2.5	5,670	75	0.3	2.5	3,950	50	0.225	2.5	2,750	20	1.125	2.5	1,840	10	0.075	2.5
2.6	7.0	8,390	150	1.12	2.6	5,750	95	1.12	2.6	4,000	60	0.7	2.6	2,790	30	0.35	2.6	1,860	15	0.245	2.6
2.7	7.0	8,080	150	1.12	2.7	5,540	95	1.12	2.7	3,860	60	0.7	2.7	2,690	30	0.35	2.7	1,790	15	0.245	2.7

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●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill

홈 Slotting

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
2.8	7.0	7,790	150	1.12	2.8	5,340	95	1.12	2.8	3,720	60	0.7	2.8	2,590	30	0.35	2.8	1,730	15	0.245	2.8
2.9	8.0	7,520	150	1.28	2.9	5,160	95	1.28	2.9	3,590	60	0.8	2.9	2,500	30	0.4	2.9	1,670	15	0.28	2.9
3.0	5.0	7,640	170	1.25	3	5,250	105	1.25	3	3,660	70	1	3	2,550	30	0.5	3	1,700	15	0.3	3
	8.0	7,270	150	1.28	3	4,990	95	1.28	3	3,470	60	0.8	3	2,420	30	0.4	3	1,610	15	0.28	3
	12.0	6,880	120	0.36	3	4,730	75	0.36	3	3,290	50	0.27	3	2,290	20	1.35	3	1,530	10	0.09	3
3.1	8.0	7,030	150	1.28	3.1	4,830	95	1.28	3.1	3,360	60	0.8	3.1	2,340	30	0.4	3.1	1,560	15	0.28	3.1
3.2	8.0	6,810	150	1.28	3.2	4,680	95	1.28	3.2	3,250	60	0.8	3.2	2,270	30	0.4	3.2	1,510	15	0.28	3.2
3.3	9.0	6,610	150	1.44	3.3	4,530	95	1.44	3.3	3,150	60	0.9	3.3	2,200	30	0.45	3.3	1,470	15	0.315	3.3
3.4	9.0	6,410	150	1.44	3.4	4,400	95	1.44	3.4	3,060	60	0.9	3.4	2,130	30	0.45	3.4	1,420	15	0.315	3.4
3.5	9.0	6,230	150	1.44	3.5	4,270	95	1.44	3.5	2,970	60	0.9	3.5	2,070	30	0.45	3.5	1,380	15	0.315	3.5
3.6	9.0	6,060	150	1.44	3.6	4,160	95	1.44	3.6	2,890	60	0.9	3.6	2,020	30	0.45	3.6	1,340	15	0.315	3.6
3.7	10.0	5,890	150	1.6	3.7	4,040	95	1.6	3.7	2,810	60	1	3.7	1,960	30	0.5	3.7	1,310	15	0.35	3.7
3.8	10.0	5,740	150	1.6	3.8	3,940	95	1.6	3.8	2,740	60	1	3.8	1,910	30	0.5	3.8	1,270	15	0.35	3.8
3.9	10.0	5,590	150	1.6	3.9	3,840	95	1.6	3.9	2,670	60	1	3.9	1,860	30	0.5	3.9	1,240	15	0.35	3.9
4.0	6.0	5,730	170	1.5	4	3,940	105	1.5	4	2,740	70	1.2	4	1,910	30	0.6	4	1,280	15	0.36	4
	10.0	5,450	150	1.6	4	3,740	95	1.6	4	2,600	60	1	4	1,810	30	0.5	4	1,210	15	0.35	4
	16.0	5,160	120	0.48	4	3,550	75	0.48	4	2,470	50	0.36	4	1,720	20	1.8	4	1,150	10	0.12	4
4.1	11.0	5,320	150	1.76	4.1	3,650	95	1.76	4.1	2,540	60	1.1	4.1	1,770	30	0.55	4.1	1,180	15	0.385	4.1
4.2	11.0	5,190	150	1.76	4.2	3,560	95	1.76	4.2	2,480	60	1.1	4.2	1,730	30	0.55	4.2	1,150	15	0.385	4.2
4.3	11.0	5,070	150	1.76	4.3	3,480	95	1.76	4.3	2,420	60	1.1	4.3	1,690	30	0.55	4.3	1,130	15	0.385	4.3
4.4	11.0	4,960	151	1.76	4.4	3,400	95	1.76	4.4	2,370	60	1.1	4.4	1,650	30	0.55	4.4	1,100	15	0.385	4.4
4.5	12.0	4,850	151	1.92	4.5	3,320	95	1.92	4.5	2,310	60	1.2	4.5	1,610	30	0.6	4.5	1,080	15	0.42	4.5
4.6	12.0	4,740	150	1.92	4.6	3,250	95	1.92	4.6	2,260	60	1.2	4.6	1,580	30	0.6	4.6	1,050	15	0.42	4.6
4.7	12.0	4,640	150	1.92	4.7	3,180	95	1.92	4.7	2,210	60	1.2	4.7	1,540	30	0.6	4.7	1,030	15	0.42	4.7
4.8	12.0	4,540	150	1.92	4.8	3,120	95	1.92	4.8	2,170	60	1.2	4.8	1,510	30	0.6	4.8	1,010	15	0.42	4.8
4.9	13.0	4,450	150	2.08	4.9	3,050	95	2.08	4.9	2,120	60	1.3	4.9	1,480	30	0.65	4.9	990	15	0.455	4.9
5.0	8.0	4,590	170	2	5	3,150	105	2	5	2,190	70	1.6	5	1,530	30	0.8	5	1,020	15	0.48	5
	13.0	4,360	150	2.08	5	2,990	95	2.08	5	2,080	60	1.3	5	1,450	30	0.65	5	970	15	0.455	5
	20.0	4,130	120	0.6	5	2,840	75	0.6	5	1,970	50	0.45	5	1,380	20	2.25	5	920	10	0.15	5
5.1	13.0	4,280	151	2.08	5.1	2,930	95	2.08	5.1	2,040	60	1.3	5.1	1,420	30	0.65	5.1	950	15	0.455	5.1
5.2	13.0	4,190	150	2.08	5.2	2,880	95	2.08	5.2	2,000	60	1.3	5.2	1,400	30	0.65	5.2	930	15	0.455	5.2
5.3	14.0	4,110	150	2.24	5.3	2,820	95	2.24	5.3	1,960	60	1.4	5.3	1,370	30	0.7	5.3	910	15	0.49	5.3
5.4	14.0	4,040	150	2.24	5.4	2,770	95	2.24	5.4	1,930	60	1.4	5.4	1,340	30	0.7	5.4	900	15	0.49	5.4
5.5	14.0	3,960	150	2.24	5.5	2,720	95	2.24	5.5	1,890	60	1.4	5.5	1,320	30	0.7	5.5	880	15	0.49	5.5
5.6	14.0	3,890	150	2.24	5.6	2,670	95	2.24	5.6	1,860	60	1.4	5.6	1,300	30	0.7	5.6	860	15	0.49	5.6
5.7	15.0	3,830	151	2.4	5.7	2,620	95	2.4	5.7	1,830	60	1.5	5.7	1,270	30	0.75	5.7	850	15	0.525	5.7
5.8	15.0	3,760	150	2.4	5.8	2,580	95	2.4	5.8	1,790	60	1.5	5.8	1,250	30	0.75	5.8	830	15	0.525	5.8
5.9	15.0	3,700	151	2.4	5.9	2,540	95	2.4	5.9	1,760	60	1.5	5.9	1,230	30	0.75	5.9	820	15	0.525	5.9
6.0	10.0	3,820	170	2.4	6	2,630	105	2.4	6	1,830	70	2	6	1,280	30	1	6	850	15	0.6	6
	15.0	3,630	150	2.4	6	2,490	95	2.4	6	1,730	60	1.5	6	1,210	30	0.75	6	810	15	0.525	6
	24.0	3,440	120	0.72	6	2,370	75	0.72	6	1,650	50	0.54	6	1,150	20	2.7	6	770	10	0.18	6
6.5	17.0	3,350	150	2.72	6.5	2,300	95	2.72	6.5	1,600	60	1.7	6.5	1,120	30	0.85	6.5	740	15	0.595	6.5

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날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
6.5	20.0	3,350	127	0.78	6.5	2,300	79	0.78	6.5	1,600	53	0.585	6.5	1,120	21	2.925	6.5	740	11	0.195	6.5
7.0	18.0	3,110	150	2.88	7	2,140	95	2.88	7	1,490	60	1.8	7	1,040	30	0.9	7	690	15	0.63	7
7.5	20.0	2,910	151	3.2	7.5	1,990	95	3.2	7.5	1,390	60	2	7.5	970	30	1	7.5	650	15	0.7	7.5
8.0	20.0	2,730	151	3.2	8	1,870	95	3.2	8	1,300	60	2	8	910	30	1	8	600	15	0.7	8
	32.0	2,580	120	0.96	8	1,780	75	0.96	8	1,240	50	0.72	8	860	20	3.6	8	580	10	0.24	8
8.5	23.0	2,570	151	3.68	8.5	1,760	95	3.68	8.5	1,220	60	2.3	8.5	850	30	1.15	8.5	570	15	0.805	8.5
9.0	23.0	2,420	150	3.68	9	1,660	95	3.68	9	1,160	60	2.3	9	810	30	1.15	9	540	15	0.805	9
9.5	25.0	2,300	151	4	9.5	1,570	95	4	9.5	1,100	60	2.5	9.5	760	30	1.25	9.5	510	15	0.875	9.5
10.0	25.0	2,180	150	4	10	1,500	95	4	10	1,040	60	2.5	10	730	30	1.25	10	480	15	0.875	10
	40.0	2,070	120	1.2	10	1,420	75	1.2	10	990	50	0.9	10	690	20	4.5	10	460	10	0.3	10
10.5	28.0	2,080	151	4.48	10.5	1,420	95	4.48	10.5	990	60	2.8	10.5	690	30	1.4	10.5	460	15	0.98	10.5
11.0	28.0	1,980	150	4.48	11	1,360	95	4.48	11	950	60	2.8	11	660	30	1.4	11	440	15	0.98	11
11.5	30.0	1,900	151	4.8	11.5	1,300	95	4.8	11.5	910	60	3	11.5	630	30	1.5	11.5	420	15	1.05	11.5
12.0	30.0	1,820	151	4.8	12	1,250	95	4.8	12	870	60	3	12	600	30	1.5	12	400	15	1.05	12
	48.0	1,720	120	1.44	12	1,180	75	1.44	12	820	50	1.08	12	580	20	5.4	12	380	10	0.36	12
14.0	28.0	1,530	140	1.26	14	1,050	88	1.26	14	730	57	0.945	14	510	27	4.725	14	340	13	0.315	14
16.0	48.0	1,340	140	1.44	16	920	88	1.44	16	640	57	1.08	16	450	27	5.4	16	300	13	0.36	16
18.0	54.0	1,190	140	1.62	18	820	88	1.62	18	570	57	1.215	18	400	27	6.075	18	260	13	0.405	18
20.0	60.0	1,070	140	1.8	20	740	89	1.8	20	510	56	1.35	20	360	27	6.75	20	240	13	0.45	20

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●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
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CBN Series
ion Depo A Series 스퀘어 Square
ion Depo U Series

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.1	0.15	50,000	72	0.135	0.003	50,000	56	0.105	0.003	50,000	57	0.105	0.002	50,000	47	0.09	0.001
0.2	0.4	50,000	144	0.27	0.006	50,000	112	0.21	0.005	50,000	114	0.21	0.003	39,800	75	0.18	0.002
0.3	0.3	50,000	216	0.36	0.009	47,800	160	0.28	0.008	42,400	145	0.28	0.005	26,500	75	0.24	0.004
	0.6	50,000	198	0.63	0.006	45,400	140	0.49	0.005	40,300	125	0.49	0.003	25,300	65	0.42	0.002
0.4	0.6	50,000	287	0.54	0.012	35,800	160	0.42	0.010	31,800	145	0.42	0.006	19,900	75	0.36	0.005
	0.8	50,000	264	0.9	0.008	34,100	140	0.7	0.007	30,200	125	0.7	0.004	18,900	65	0.6	0.003
0.5	0.8	50,000	360	0.72	0.015	28,600	160	0.56	0.013	25,500	145	0.56	0.008	15,900	75	0.48	0.006
	1.25	48,380	320	1.125	0.01	27,300	140	0.875	0.009	24,200	125	0.875	0.005	15,200	65	0.75	0.004
	2.0	45,800	255	1.8	0.004	25,800	115	1.4	0.003	22,900	100	1.4	0.002	14,300	50	1.2	0.001
0.6	1.0	42,440	366	0.9	0.018	23,900	160	0.7	0.016	21,200	145	0.7	0.010	13,300	75	0.6	0.004
	1.5	40,320	320	1.35	0.012	22,700	140	1.05	0.011	20,200	125	1.05	0.006	12,600	65	0.9	0.004
	2.4	38,200	254	2.16	0.005	21,500	115	1.68	0.004	19,100	100	1.68	0.002	11,900	50	1.44	0.002
0.7	1.8	34,560	320	1.62	0.014	19,500	140	1.26	0.013	17,300	125	1.26	0.007	10,800	65	1.08	0.005
0.8	1.2	31,800	365	1.08	0.024	17,900	160	0.84	0.021	15,900	145	0.84	0.013	9,950	75	0.72	0.010
	2.0	30,200	320	1.8	0.016	17,000	140	1.4	0.014	15,100	125	1.4	0.008	9,450	65	1.2	0.006
	3.2	28,600	255	2.88	0.006	16,100	115	2.24	0.005	14,300	100	2.24	0.003	8,950	50	1.92	0.002
0.9	2	26,880	320	1.8	0.023	15,100	140	1.4	0.023	13,400	125	1.4	0.014	8,420	65	1.2	0.011
1.0	1.5	25,500	365	1.35	0.045	14,300	160	1.05	0.04	12,700	145	1.05	0.024	7,960	75	0.9	0.018
	2.5	24,200	320	2.25	0.025	13,600	140	1.75	0.025	12,100	125	1.75	0.016	7,560	65	1.5	0.012
	4.0	22,900	255	3.6	0.011	12,900	115	2.8	0.01	11,500	100	2.8	0.006	7,160	50	2.4	0.006
1.1	2.5	21,990	320	2.25	0.028	12,400	140	1.75	0.028	11,000	125	1.75	0.018	6,890	65	1.5	0.013
1.2	3.0	20,160	320	2.7	0.03	11,400	140	2.1	0.03	10,100	125	2.1	0.019	6,310	65	1.8	0.014
1.3	3.0	18,610	320	2.7	0.033	10,500	140	2.1	0.033	9,300	125	2.1	0.021	5,830	65	1.8	0.016
1.4	3.5	17,280	320	3.15	0.035	9,730	140	2.45	0.035	8,640	125	2.45	0.022	5,410	65	2.1	0.017
1.5	2.0	17,000	365	1.8	0.068	9,550	160	1.4	0.06	8,490	145	1.4	0.036	5,310	75	1.2	0.027
	4.0	16,100	320	3.6	0.038	9,070	140	2.8	0.038	8,070	125	2.8	0.024	5,040	65	2.4	0.018
	6.0	15,300	255	5.4	0.023	8,600	115	4.2	0.020	7,640	100	4.2	0.012	4,780	50	3.6	0.009
1.6	4.0	15,120	320	3.6	0.072	8,510	140	2.8	0.064	7,560	125	2.8	0.038	4,730	65	2.4	0.029
1.7	4.5	14,230	320	4.05	0.077	8,010	140	3.15	0.068	7,120	125	3.15	0.041	4,460	65	2.7	0.031
1.8	4.5	13,440	320	4.05	0.081	7,570	140	3.15	0.072	6,720	125	3.15	0.043	4,210	65	2.7	0.032
1.9	5.0	12,730	320	4.5	0.086	7,170	140	3.5	0.076	6,370	125	3.5	0.046	3,990	65	3	0.034
2.0	3.0	12,700	365	2.7	0.12	7,160	160	2.1	0.1	6,370	145	2.1	0.064	3,980	75	1.8	0.048
	5.0	12,100	320	4.5	0.09	6,810	140	3.5	0.08	6,050	125	3.5	0.048	3,780	65	3	0.036
	8.0	11,500	255	7.2	0.045	6,450	115	5.6	0.04	5,730	100	5.6	0.024	3,580	50	4.8	0.018
2.1	5.5	11,520	320	4.95	0.126	6,490	140	3.85	0.105	5,760	125	3.85	0.067	3,610	65	3.3	0.050
2.2	5.5	11,000	320	4.95	0.132	6,190	140	3.85	0.11	5,500	125	3.85	0.070	3,440	65	3.3	0.053
2.3	6.0	10,520	320	5.4	0.138	5,920	140	4.2	0.115	5,260	125	4.2	0.074	3,290	65	3.6	0.055
2.4	6.0	10,080	320	5.4	0.144	5,680	140	4.2	0.12	5,040	125	4.2	0.077	3,160	65	3.6	0.058
2.5	7.0	9,680	320	6.3	0.15	5,450	140	4.9	0.125	4,840	125	4.9	0.08	3,030	65	4.2	0.06
	10.0	9,170	255	9	0.75	5,160	115	7	0.065	4,590	100	7	0.04	2,870	50	6	0.03
2.6	7.0	9,300	320	6.3	0.156	5,240	140	4.9	0.13	4,650	125	4.9	0.083	2,910	65	4.2	0.062
2.7	7.0	8,960	320	6.3	0.162	5,050	140	4.9	0.135	4,480	125	4.9	0.086	2,810	65	4.2	0.065

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스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
2.8	7.0	8,640	320	6.3	0.168	4,870	140	4.9	0.14	4,320	125	4.9	0.090	2,710	65	4.2	0.067
2.9	8.0	8,340	320	7.2	0.174	4,700	140	5.6	0.145	4,170	125	5.6	0.093	2,610	65	4.8	0.070
3.0	5.0	8,490	365	4.5	0.225	4,780	160	3.5	0.195	4,250	145	3.5	0.12	2,660	75	3	0.09
	8.0	8,060	320	7.2	0.18	4,540	140	5.6	0.15	4,030	125	5.6	0.096	2,530	65	4.8	0.072
	12.0	7,640	255	10.8	0.9	4,300	115	8.4	0.078	3,820	100	8.4	0.048	2,390	50	7.2	0.036
3.1	8.0	7,800	320	7.2	0.186	4,390	140	5.6	0.155	3,900	125	5.6	0.099	2,440	65	4.8	0.074
3.2	8.0	7,560	320	7.2	0.192	4,260	140	5.6	0.16	3,780	125	5.6	0.102	2,370	65	4.8	0.077
3.3	9.0	7,330	320	8.1	0.198	4,130	140	6.3	0.165	3,670	125	6.3	0.106	2,300	65	5.4	0.079
3.4	9.0	7,120	320	8.1	0.204	4,010	140	6.3	0.17	3,560	125	6.3	0.109	2,230	65	5.4	0.082
3.5	9.0	6,910	320	8.1	0.21	3,890	140	6.3	0.175	3,460	125	6.3	0.112	2,160	65	5.4	0.084
3.6	9.0	6,720	320	8.1	0.216	3,780	140	6.3	0.18	3,360	125	6.3	0.115	2,100	65	5.4	0.086
3.7	10.0	6,540	320	9	0.222	3,680	140	7	0.185	3,270	125	7	0.118	2,050	65	6	0.089
3.8	10.0	6,370	320	9	0.228	3,590	140	7	0.19	3,180	125	7	0.122	1,990	65	6	0.091
3.9	10.0	6,200	320	9	0.234	3,490	140	7	0.195	3,100	125	7	0.125	1,940	65	6	0.094
4.0	6.0	6,370	365	5.4	0.3	3,580	160	4.2	0.26	3,190	145	4.2	0.16	1,990	75	3.6	0.12
	10.0	6,050	320	9	0.24	3,410	140	7	0.2	3,020	125	7	0.128	1,890	65	6	0.096
	16.0	5,730	255	14.4	1.2	3,230	115	11.2	0.104	2,870	100	11.2	0.064	1,790	50	9.6	0.048
4.1	11.0	5,900	320	9.9	0.246	3,320	140	7.7	0.205	2,950	125	7.7	0.131	1,850	65	6.6	0.098
4.2	11.0	5,760	320	9.9	0.252	3,240	140	7.7	0.21	2,880	125	7.7	0.134	1,800	65	6.6	0.101
4.3	11.0	5,630	320	9.9	0.258	3,170	140	7.7	0.215	2,810	125	7.7	0.138	1,760	65	6.6	0.103
4.4	11.0	5,500	320	9.9	0.264	3,100	140	7.7	0.22	2,750	125	7.7	0.141	1,720	65	6.6	0.106
4.5	12.0	5,380	320	10.8	0.27	3,030	140	8.4	0.225	2,690	125	8.4	0.144	1,680	65	7.2	0.108
4.6	12.0	5,260	320	10.8	0.276	2,960	140	8.4	0.23	2,630	125	8.4	0.147	1,650	65	7.2	0.110
4.7	12.0	5,150	320	10.8	0.282	2,900	140	8.4	0.235	2,570	125	8.4	0.150	1,610	65	7.2	0.113
4.8	12.0	5,040	320	10.8	0.288	2,840	140	8.4	0.24	2,520	125	8.4	0.154	1,580	65	7.2	0.115
4.9	13.0	4,940	320	11.7	0.294	2,780	140	9.1	0.245	2,470	125	9.1	0.157	1,550	65	7.8	0.118
5.0	8.0	5,100	365	7.2	0.375	2,870	160	5.6	0.325	2,550	145	5.6	0.2	1,590	75	4.8	0.15
	13.0	4,840	320	11.7	0.3	2,720	140	9.1	0.25	2,420	125	9.1	0.16	1,520	65	7.8	0.12
	20.0	4,590	255	18	1.5	2,580	115	14	0.13	2,290	100	14	0.08	1,430	50	12	0.06
5.1	13.0	4,740	320	11.7	0.306	2,670	140	9.1	0.255	2,370	125	9.1	0.163	1,490	65	7.8	0.122
5.2	13.0	4,650	320	11.7	0.312	2,620	140	9.1	0.26	2,330	125	9.1	0.166	1,460	65	7.8	0.125
5.3	14.0	4,560	320	12.6	0.318	2,570	140	9.8	0.265	2,280	125	9.8	0.170	1,430	65	8.4	0.127
5.4	14.0	4,480	320	12.6	0.324	2,520	140	9.8	0.27	2,240	125	9.8	0.173	1,400	65	8.4	0.130
5.5	14.0	4,400	320	12.6	0.33	2,480	140	9.8	0.275	2,200	125	9.8	0.176	1,380	65	8.4	0.132
5.6	14.0	4,320	320	12.6	0.336	2,430	140	9.8	0.28	2,160	125	9.8	0.179	1,350	65	8.4	0.134
5.7	15.0	4,240	320	13.5	0.342	2,390	140	10.5	0.285	2,120	125	10.5	0.182	1,330	65	9	0.137
5.8	15.0	4,170	320	13.5	0.348	2,350	140	10.5	0.29	2,090	125	10.5	0.186	1,310	65	9	0.139
5.9	15.0	4,100	320	13.5	0.354	2,310	140	10.5	0.295	2,050	125	10.5	0.189	1,280	65	9	0.142
6.0	10.0	4,250	365	9	0.45	2,390	160	7	0.39	2,120	145	7	0.24	1,330	75	6	0.18
	15.0	4,030	320	13.5	0.36	2,270	140	10.5	0.3	2,020	125	10.5	0.18	1,260	65	9	0.144
	24.0	3,820	255	21.6	1.8	2,150	115	16.8	0.156	1,910	100	16.8	0.096	1,200	50	14.4	0.09
6.5	17.0	3,720	320	15.3	0.488	2,100	140	11.9	0.423	1,860	125	11.9	0.26	1,170	65	10.2	0.195

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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
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●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
6.5	20.0	3,530	254	23.4	0.244	2,100	122	18.2	0.211	1,860	105	18.2	0.13	1,170	53	15.6	0.098
7.0	18.0	3,460	320	16.2	0.525	1,950	140	12.6	0.455	1,730	125	12.6	0.28	1,080	65	10.8	0.21
7.5	20.0	3,230	320	18	0.563	1,820	140	14	0.488	1,610	125	14	0.3	1,010	65	12	0.225
8.0	20.0	3,020	319	18	0.6	1,700	140	14	0.52	1,510	125	14	0.32	950	65	12	0.24
	32.0	2,870	255	28.8	0.3	1,610	115	22.4	0.26	1,430	100	22.4	0.16	900	50	19.2	0.12
8.5	23.0	2,850	320	20.7	0.638	1,600	140	16.1	0.553	1,420	125	16.1	0.34	890	65	13.8	0.255
9.0	23.0	2,690	320	20.7	0.675	1,510	140	16.1	0.585	1,340	125	16.1	0.36	840	65	13.8	0.27
9.5	25.0	2,550	320	22.5	0.713	1,430	140	17.5	0.618	1,270	125	17.5	0.38	800	65	15	0.285
10.0	25.0	2,420	320	22.5	0.75	1,360	140	17.5	0.65	1,210	125	17.5	0.4	760	65	15	0.3
	40.0	2,290	255	36	0.375	1,290	115	28	0.325	1,150	100	28	0.2	720	50	24	0.15
10.5	28.0	2,300	319	25.2	0.788	1,300	140	19.6	0.683	1,150	125	19.6	0.42	720	65	16.8	0.315
11.0	28.0	2,200	320	25.2	0.825	1,240	140	19.6	0.715	1,100	125	19.6	0.44	690	65	16.8	0.33
11.5	30.0	2,100	319	27	0.863	1,180	139	21	0.748	1,050	125	21	0.46	660	65	18	0.345
12.0	30.0	2,020	321	27	0.9	1,140	141	21	0.78	1,010	125	21	0.48	630	65	18	0.36
	48.0	1,910	255	43.2	0.45	1,080	115	33.6	0.39	960	100	33.6	0.24	600	50	28.8	0.18
14.0	28.0	1,700	298	37.8	0.525	950	131	29.4	0.455	850	117	29.4	0.28	530	60	25.2	0.21
16.0	48.0	1,490	298	43.2	0.6	840	132	33.6	0.52	740	116	33.6	0.32	460	59	28.8	0.24
18.0	54.0	1,320	297	48.6	0.675	740	131	37.8	0.585	660	116	37.8	0.36	410	59	32.4	0.27
20.0	60.0	1,190	298	54	0.75	670	132	42	0.65	590	116	42	0.4	370	60	36	0.3

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
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●∂p= 축방향 ,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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스퀘어 엔드밀 Square End Mill
홈 Slotting

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.1	0.15	50,000	39	0.045	0.1	50,000	28	0.023	0.1	50,000	29	0.018	0.1	50,000	24	0.015	0.1
0.2	0.4	50,000	78	0.09	0.2	50,000	57	0.045	0.2	50,000	59	0.036	0.2	31,800	30	0.03	0.2
0.3	0.3	50,000	117	0.12	0.3	38,200	65	0.06	0.3	34,000	60	0.048	0.3	21,200	30	0.04	0.3
	0.6	50,000	110	0.14	0.3	34,400	52	0.060	0.3	32,300	50	0.049	0.3	20,200	25	0.034	0.3
0.4	0.6	50,000	157	0.18	0.4	28,700	65	0.09	0.4	25,500	60	0.072	0.4	15,900	30	0.06	0.4
	0.8	50,000	147	0.2	0.4	25,800	52	0.085	0.4	24,200	50	0.07	0.4	15,100	25	0.048	0.4
0.5	0.8	45,800	180	0.24	0.5	22,900	65	0.12	0.5	20,400	60	0.096	0.5	12,700	30	0.08	0.5
	1.25	43,600	160	0.25	0.5	21,800	55	0.106	0.5	19,400	50	0.088	0.5	12,100	25	0.06	0.5
	2.0	41,200	125	0.075	0.5	20,600	45	0.038	0.5	18,300	40	0.03	0.5	11,500	20	0.025	0.5
0.6	1.0	38,200	179	0.3	0.6	19,100	65	0.15	0.6	17,000	60	0.12	0.6	10,600	30	0.1	0.6
	1.5	36,300	160	0.3	0.6	18,100	55	0.128	0.6	16,100	50	0.105	0.6	10,100	25	0.072	0.6
	2.4	34,400	125	0.09	0.6	17,200	45	0.045	0.6	17,200	45	0.036	0.6	9,550	20	0.03	0.6
0.7	1.8	31,200	160	0.36	0.7	15,600	55	0.153	0.7	13,800	50	0.126	0.7	8,640	25	0.086	0.7
0.8	1.2	28,600	180	0.36	0.8	14,300	65	0.18	0.8	12,700	60	0.144	0.8	7,960	30	0.12	0.8
	2.0	27,200	160	0.4	0.8	13,600	55	0.17	0.8	12,100	50	0.14	0.8	7,560	25	0.096	0.8
	3.2	25,800	125	0.12	0.8	12,900	45	0.06	0.8	11,500	40	0.048	0.8	7,160	20	0.04	0.8
0.9	2	24,200	160	0.4	0.9	12,100	55	0.17	0.9	10,800	50	0.14	0.9	6,720	25	0.096	0.9
1.0	1.5	22,900	180	0.45	1	11,500	65	0.225	1	10,200	60	0.18	1	6,370	30	0.15	1
	2.5	21,800	160	0.5	1	10,900	55	0.213	1	9,680	50	0.175	1	6,050	25	0.12	1
	4.0	20,600	125	0.15	1	10,300	45	0.075	1	9,170	40	0.06	1	5,730	20	0.05	1
1.1	2.5	19,800	160	0.5	1.1	9,900	55	0.213	1.1	8,800	50	0.175	1.1	5,500	25	0.12	1.1
1.2	3.0	18,200	160	0.6	1.2	9,070	55	0.255	1.2	8,060	50	0.21	1.2	5,040	25	0.144	1.2
1.3	3.0	16,800	160	0.6	1.3	8,370	55	0.255	1.3	7,440	50	0.21	1.3	4,650	25	0.144	1.3
1.4	3.5	15,600	160	0.7	1.4	7,780	55	0.298	1.4	6,910	50	0.245	1.4	4,320	25	0.168	1.4
1.5	4.5	15,300	180	0.6	1.5	7,640	65	0.3	1.5	6,790	60	0.24	1.5	4,250	30	0.2	1.5
	4.5	14,500	160	0.8	1.5	7,260	55	0.34	1.5	6,450	50	0.28	1.5	4,030	25	0.192	1.5
	5.0	13,700	125	0.225	1.5	6,880	45	0.113	1.5	6,110	40	0.09	1.5	3,820	20	0.075	1.5
1.6	2.0	13,600	160	0.8	1.6	6,800	55	0.34	1.6	6,050	50	0.28	1.6	3,780	25	0.192	1.6
1.7	4.0	12,800	160	0.9	1.7	6,400	55	0.383	1.7	5,690	50	0.315	1.7	3,560	25	0.216	1.7
1.8	6.0	12,100	160	0.9	1.8	6,050	55	0.383	1.8	5,380	50	0.315	1.8	3,360	25	0.216	1.8
1.9	4.0	11,500	160	1	1.9	5,730	55	0.425	1.9	5,090	50	0.35	1.9	3,180	25	0.24	1.9
2.0	3.0	11,500	180	0.9	2	5,730	65	0.45	2	5,100	60	0.36	2	3,190	30	0.3	2
	5.0	10,900	160	1	2	5,450	55	0.425	2	4,840	50	0.35	2	3,030	25	0.24	2
	8.0	10,300	125	0.3	2	5,160	45	0.15	2	4,590	40	0.12	2	2,870	20	0.1	2
2.1	5.5	10,400	160	1.1	2.1	5,180	55	0.468	2.1	4,610	50	0.385	2.1	2,880	25	0.264	2.1
2.2	5.5	9,910	160	1.1	2.2	4,950	55	0.468	2.2	4,400	50	0.385	2.2	2,750	25	0.264	2.2
2.3	6.0	9,480	160	1.2	2.3	4,730	55	0.51	2.3	4,210	50	0.42	2.3	2,630	25	0.288	2.3
2.4	6.0	9,090	160	1.2	2.4	4,540	55	0.51	2.4	4,030	50	0.42	2.4	2,520	25	0.288	2.4
2.5	7.0	8,720	160	1.4	2.5	4,350	55	0.595	2.5	3,870	50	0.49	2.5	2,420	25	0.336	2.5
	10.0	8,250	125	0.375	2.5	4,130	45	0.188	2.5	3,670	40	0.15	2.5	2,290	20	0.125	2.5
2.6	7.0	8,390	160	1.4	2.6	4,190	55	0.595	2.6	3,720	50	0.49	2.6	2,330	25	0.336	2.6
2.7	7.0	8,080	160	1.4	2.7	4,030	55	0.595	2.7	3,580	50	0.49	2.7	2,240	25	0.336	2.7

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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill
홈 Slotting

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
2.8	7.0	7,790	160	1.4	2.8	3,890	55	0.595	2.8	3,460	50	0.49	2.8	2,160	25	0.336	2.8
2.9	8.0	7,520	160	1.6	2.9	3,750	55	0.68	2.9	3,340	50	0.56	2.9	2,090	25	0.384	2.9
3.0	5.0	7,640	180	1.5	3	3,820	65	0.75	3	3,400	60	0.6	3	2,120	30	0.5	3
	8.0	7,270	160	1.6	3	3,630	55	0.68	3	3,230	50	0.56	3	2,020	25	0.384	3
	12.0	6,880	125	0.45	3	3,440	45	0.225	3	3,060	40	0.18	3	1,910	20	0.15	3
3.1	8.0	7,030	160	1.6	3.1	3,510	55	0.68	3.1	3,120	50	0.56	3.1	1,950	25	0.384	3.1
3.2	8.0	6,810	160	1.6	3.2	3,400	55	0.68	3.2	3,020	50	0.56	3.2	1,890	25	0.384	3.2
3.3	9.0	6,610	160	1.8	3.3	3,300	55	0.765	3.3	2,930	50	0.63	3.3	1,830	25	0.432	3.3
3.4	9.0	6,410	160	1.8	3.4	3,200	55	0.765	3.4	2,850	50	0.63	3.4	1,780	25	0.432	3.4
3.5	9.0	6,230	160	1.8	3.5	3,110	55	0.765	3.5	2,760	50	0.63	3.5	1,730	25	0.432	3.5
3.6	9.0	6,060	160	1.8	3.6	3,020	55	0.765	3.6	2,690	50	0.63	3.6	1,680	25	0.432	3.6
3.7	10.0	5,890	160	2	3.7	2,940	55	0.85	3.7	2,620	50	0.7	3.7	1,630	25	0.48	3.7
3.8	10.0	5,740	160	2	3.8	2,860	55	0.85	3.8	2,550	50	0.7	3.8	1,590	25	0.48	3.8
3.9	10.0	5,590	160	2	3.9	2,790	55	0.85	3.9	2,480	50	0.7	3.9	1,550	25	0.48	3.9
4.0	6.0	5,730	180	1.8	4	2,870	65	0.9	4	2,550	60	0.72	4	1,590	30	0.6	4
	10.0	5,450	160	2	4	2,720	55	0.85	4	2,420	50	0.7	4	1,510	25	0.48	4
	16.0	5,160	125	0.6	4	2,580	45	0.3	4	2,290	40	0.24	4	1,430	20	0.2	4
4.1	11.0	5,320	160	2.2	4.1	2,660	55	0.935	4.1	2,360	50	0.77	4.1	1,480	25	0.528	4.1
4.2	11.0	5,190	160	2.2	4.2	2,590	55	0.935	4.2	2,300	50	0.77	4.2	1,440	25	0.528	4.2
4.3	11.0	5,070	160	2.2	4.3	2,530	55	0.935	4.3	2,250	50	0.77	4.3	1,410	25	0.528	4.3
4.4	11.0	4,960	160	2.2	4.4	2,470	55	0.935	4.4	2,200	50	0.77	4.4	1,370	25	0.528	4.4
4.5	12.0	4,850	160	2.4	4.5	2,420	55	1.02	4.5	2,150	50	0.84	4.5	1,340	25	0.576	4.5
4.6	12.0	4,740	160	2.4	4.6	2,370	55	1.02	4.6	2,100	50	0.84	4.6	1,310	25	0.576	4.6
4.7	12.0	4,640	160	2.4	4.7	2,320	55	1.02	4.7	2,060	50	0.84	4.7	1,290	25	0.576	4.7
4.8	12.0	4,540	160	2.4	4.8	2,270	55	1.02	4.8	2,020	50	0.84	4.8	1,260	25	0.576	4.8
4.9	13.0	4,450	160	2.6	4.9	2,220	55	1.105	4.9	1,970	50	0.91	4.9	1,230	25	0.624	4.9
5.0	8.0	4,590	180	2.4	5	2,290	65	1.2	5	2,040	60	0.96	5	1,280	30	0.8	5
	13.0	4,360	160	2.6	5	2,180	55	1.105	5	1,940	50	0.91	5	1,210	25	0.624	5
	20.0	4,130	125	0.75	5	2,070	45	0.375	5	1,840	40	0.3	5	1,150	20	0.25	5
5.1	13.0	4,280	160	2.6	5.1	2,130	55	1.105	5.1	1,900	50	0.91	5.1	1,190	25	0.624	5.1
5.2	13.0	4,190	160	2.6	5.2	2,090	55	1.105	5.2	1,860	50	0.91	5.2	1,160	25	0.624	5.2
5.3	14.0	4,110	160	2.8	5.3	2,050	55	1.19	5.3	1,830	50	0.98	5.3	1,140	25	0.672	5.3
5.4	14.0	4,040	160	2.8	5.4	2,020	55	1.19	5.4	1,790	50	0.98	5.4	1,120	25	0.672	5.4
5.5	14.0	3,960	160	2.8	5.5	1,980	55	1.19	5.5	1,760	50	0.98	5.5	1,100	25	0.672	5.5
5.6	14.0	3,890	160	2.8	5.6	1,940	55	1.19	5.6	1,730	50	0.98	5.6	1,080	25	0.672	5.6
5.7	15.0	3,830	160	3	5.7	1,910	55	1.275	5.7	1,700	50	1.05	5.7	1,060	25	0.72	5.7
5.8	15.0	3,760	160	3	5.8	1,880	55	1.275	5.8	1,670	50	1.05	5.8	1,040	25	0.72	5.8
5.9	15.0	3,700	160	3	5.9	1,850	55	1.275	5.9	1,640	50	1.05	5.9	1,030	25	0.72	5.9
6.0	10.0	3,820	180	3	6	1,910	65	1.5	6	1,700	60	1.2	6	1,060	30	1	6
	15.0	3,630	160	3	6	1,810	55	1.275	6	1,610	50	1.05	6	1,010	25	0.72	6
	24.0	3,440	125	0.9	6	1,720	45	0.45	6	1,530	40	0.36	6	960	20	0.3	6
6.5	17.0	3,350	160	3.4	6.5	1,670	55	1.445	6.5	1,490	50	1.19	6.5	930	25	0.816	6.5

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●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

스퀘어 엔드밀 Square End Mill
홈 Slotting

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
6.5	20.0	3,180	125	0.975	6.5	1,670	47	0.488	6.5	1,490	42	0.39	6.5	930	21	0.325	6.5
7.0	18.0	3,110	160	3.6	7	1,560	55	1.53	7	1,380	50	1.26	7	860	25	0.864	7
7.5	20.0	2,910	160	4	7.5	1,450	55	1.7	7.5	1,290	50	1.4	7.5	810	25	0.96	7.5
8.0	23.0	2,730	160	4	8	1,360	55	1.7	8	1,210	50	1.4	8	760	25	0.96	8
	23.0	2,580	125	1.2	8	1,290	45	0.6	8	1,150	40	0.48	8	720	20	0.4	8
8.5	25.0	2,570	160	4.6	8.5	1,280	55	1.955	8.5	1,140	50	1.61	8.5	710	25	1.104	8.5
9.0	20.0	2,420	160	4.6	9	1,210	55	1.955	9	1,080	50	1.61	9	670	25	1.104	9
9.5	32.0	2,300	160	5	9.5	1,150	55	2.125	9.5	1,020	50	1.75	9.5	640	25	1.2	9.5
10.0	25.0	2,180	160	5	10	1,090	55	2.125	10	970	50	1.75	10	600	25	1.2	10
	40.0	2,070	125	1.5	10	1,030	45	0.75	10	920	40	0.6	10	580	20	0.5	10
10.5	28.0	2,080	160	5.6	10.5	1,040	55	2.38	10.5	920	50	1.96	10.5	580	25	1.344	10.5
11.0	28.0	1,980	160	5.6	11	990	55	2.38	11	880	50	1.96	11	550	25	1.344	11
11.5	30.0	1,900	160	6	11.5	950	55	2.55	11.5	840	50	2.1	11.5	530	25	1.44	11.5
12.0	30.0	1,820	160	6	12	910	55	2.55	12	810	50	2.1	12	500	25	1.44	12
	48.0	1,720	125	1.8	12	860	45	0.9	12	770	40	0.72	12	480	20	0.6	12
14.0	28.0	1,530	148	1.575	14	760	51	0.788	14	680	47	0.63	14	430	24	0.525	14
16.0	48.0	1,340	148	1.8	16	670	52	0.9	16	600	47	0.72	16	370	23	0.6	16
18.0	54.0	1,190	148	2.025	18	590	51	1.013	18	530	47	0.81	18	330	23	0.675	18
20.0	60.0	1,070	148	2.25	20	530	51	1.125	20	480	47	0.9	20	300	23	0.75	20

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●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.1	0.15	50,000	67	0.15	0.008	50,000	62	0.15	0.008	50,000	57	0.135	0.006	50,000	57	0.15	0.008
0.2	0.4	50,000	133	0.3	0.016	50,000	123	0.3	0.016	50,000	114	0.27	0.012	50,000	113	0.3	0.016
0.3	0.3	50,000	200	0.4	0.024	50,000	185	0.4	0.024	50,000	171	0.36	0.018	50,000	170	0.4	0.024
	0.6	50,000	186	0.7	0.015	50,000	172	0.7	0.015	50,000	158	0.63	0.012	50,000	156	0.7	0.012
0.4	0.6	50,000	267	0.6	0.032	50,000	246	0.6	0.032	50,000	228	0.54	0.024	50,000	226	0.6	0.032
	0.8	50,000	248	1	0.02	50,000	229	1	0.02	50,000	211	0.9	0.016	50,000	209	1	0.016
0.5	0.8	50,000	335	0.8	0.04	50,000	310	0.8	0.04	50,000	285	0.72	0.03	50,000	285	0.8	0.04
	1.25	50,000	310	1.25	0.025	50,000	287	1.25	0.025	48,400	255	1.125	0.02	50,000	261	1.25	0.02
	2.0	50,000	260	2	0.01	50,000	240	2	0.01	45,800	200	1.8	0.008	50,000	220	2	0.01
0.6	1.0	50,000	400	1	0.048	50,000	369	1	0.048	42,300	290	0.9	0.036	50,000	340	1	0.048
	1.5	50,000	371	1.5	0.03	50,000	344	1.5	0.03	40,300	255	1.35	0.024	50,000	313	1.5	0.024
	2.4	50,000	311	2.4	0.012	50,000	288	2.4	0.012	38,300	200	2.16	0.009	47,700	250	2.4	0.012
0.7	1.8	50,000	433	1.8	0.035	50,000	401	1.8	0.035	34,600	255	1.62	0.028	43,100	315	1.8	0.028
0.8	1.2	50,000	535	1.2	0.064	47,700	470	1.2	0.064	31,800	290	1.08	0.048	39,800	360	1.2	0.064
	2.0	50,000	495	2	0.04	45,400	415	2	0.04	30,200	255	1.8	0.032	37,800	315	2	0.032
	3.2	50,000	415	3.2	0.016	43,000	330	3.2	0.016	28,600	200	2.88	0.012	35,800	250	3.2	0.016
0.9	2	47,000	524	2	0.072	40,300	416	2	0.072	26,900	255	1.8	0.054	33,600	315	2	0.072
1.0	1.5	44,600	595	1.5	0.12	38,200	470	1.5	0.12	25,500	290	1.35	0.09	31,800	360	1.5	0.12
	2.5	42,300	525	2.5	0.08	36,300	415	2.5	0.08	24,200	255	2.25	0.06	30,200	315	2.5	0.08
	4.0	40,100	415	4	0.04	34,400	330	4	0.04	22,900	200	3.6	0.03	28,600	250	4	0.04
1.1	2.5	38,500	524	2.5	0.088	33,000	416	2.5	0.088	22,000	255	2.25	0.066	27,500	315	2.5	0.088
1.2	3.0	35,300	524	3	0.096	30,200	416	3	0.096	20,200	255	2.7	0.072	25,200	315	3	0.096
1.3	3.0	32,600	524	3	0.104	27,900	416	3	0.104	18,600	255	2.7	0.078	23,200	315	3	0.104
1.4	3.5	30,200	524	3.5	0.112	25,900	416	3.5	0.112	17,300	255	3.15	0.084	21,600	315	3.5	0.112
1.5	2.0	29,700	595	2	0.18	25,500	470	2	0.18	17,000	290	1.8	0.135	21,200	360	2	0.18
	4.0	28,200	525	4	0.12	24,200	415	4	0.12	16,100	255	3.6	0.09	20,200	315	4	0.12
	6.0	26,700	415	6	0.06	22,900	330	6	0.06	15,300	200	5.4	0.045	19,100	250	6	0.06
1.6	4.0	26,500	524	4	0.192	22,700	416	4	0.192	15,100	255	3.6	0.128	18,900	315	4	0.192
1.7	4.5	24,900	524	4.5	0.204	21,400	416	4.5	0.204	14,200	255	4.05	0.136	17,800	315	4.5	0.204
1.8	4.5	23,500	524	4.5	0.216	20,200	416	4.5	0.216	13,400	255	4.05	0.144	16,800	315	4.5	0.216
1.9	5.0	22,300	524	5	0.228	19,100	416	5	0.228	12,700	255	4.5	0.152	15,900	315	5	0.228
2.0	3.0	22,300	595	3	0.32	19,100	470	3	0.32	12,700	290	2.7	0.24	15,900	360	3	0.32
	5.0	21,200	525	5	0.24	18,100	415	5	0.24	12,100	255	4.5	0.16	15,100	315	5	0.24
	8.0	20,000	415	8	0.12	17,200	330	8	0.12	11,500	200	7.2	0.09	14,300	250	8	0.12
2.1	5.5	20,200	524	5.5	0.336	17,300	416	5.5	0.336	11,500	255	4.95	0.21	14,400	315	5.5	0.336
2.2	5.5	19,200	524	5.5	0.352	16,500	416	5.5	0.352	11,000	255	4.95	0.22	13,700	315	5.5	0.352
2.3	6.0	18,400	524	6	0.368	15,800	416	6	0.368	10,500	255	5.4	0.23	13,100	315	6	0.368
2.4	6.0	17,600	524	6	0.384	15,100	416	6	0.384	10,100	255	5.4	0.24	12,600	315	6	0.384
2.5	7.0	17,800	551	7	0.4	14,500	416	7	0.4	9,680	255	6.3	0.25	12,100	315	7	0.4
	10.0	16,000	415	10	0.2	13,700	330	10	0.2	9,170	200	9	0.15	11,500	250	10	0.2
2.6	7.0	16,300	524	7	0.416	14,000	416	7	0.416	9,310	255	6.3	0.26	11,600	315	7	0.416
2.7	7.0	15,700	524	7	0.432	13,400	416	7	0.432	8,960	255	6.3	0.27	11,200	315	7	0.432

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스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
2.8	7.0	15,100	524	7	0.448	13,000	416	7	0.448	8,640	255	6.3	0.28	10,800	315	7	0.448
2.9	8.0	14,600	524	8	0.464	12,500	416	8	0.464	8,340	255	7.2	0.29	10,400	315	8	0.464
3.0	5.0	14,800	595	5	0.6	12,700	470	5	0.6	8,490	290	4.5	0.45	10,600	360	5	0.6
	8.0	14,100	524	8	0.48	12,100	416	8	0.48	8,070	255	7.2	0.3	10,100	315	8	0.48
	12.0	13,400	415	12	0.24	11,500	330	12	0.24	7,640	200	10.8	0.18	9,550	250	12	0.24
3.1	8.0	13,700	524	8	0.496	11,700	416	8	0.496	7,810	255	7.2	0.31	9,740	315	8	0.496
3.2	8.0	13,200	524	8	0.512	11,300	416	8	0.512	7,560	255	7.2	0.32	9,440	315	8	0.512
3.3	9.0	12,800	524	9	0.528	11,000	416	9	0.528	7,330	255	8.1	0.33	9,150	315	9	0.528
3.4	9.0	12,500	524	9	0.544	10,700	416	9	0.544	7,120	255	8.1	0.34	8,880	315	9	0.544
3.5	9.0	12,100	524	9	0.56	10,400	416	9	0.56	6,910	255	8.1	0.35	8,630	315	9	0.56
3.6	9.0	11,800	524	9	0.576	10,100	416	9	0.576	6,720	255	8.1	0.36	8,390	315	9	0.576
3.7	10.0	11,400	524	10	0.592	9,810	416	10	0.592	6,540	255	9	0.37	8,160	315	10	0.592
3.8	10.0	11,100	524	10	0.608	9,550	416	10	0.608	6,370	255	9	0.38	7,950	315	10	0.608
3.9	10.0	10,900	524	10	0.624	9,300	416	10	0.624	6,210	255	9	0.39	7,740	315	10	0.624
4.0	6.0	11,100	595	6	0.8	9,550	470	6	0.8	6,370	290	5.4	0.6	7,960	360	6	0.8
	10.0	10,600	524	10	0.64	9,070	416	10	0.64	6,050	255	9	0.4	7,550	315	10	0.64
	16.0	10,000	415	16	0.32	8,600	330	16	0.32	5,730	200	14.4	0.24	7,160	250	16	0.32
4.1	11.0	10,300	524	11	0.656	8,850	416	11	0.656	5,900	255	9.9	0.41	7,370	315	11	0.656
4.2	11.0	10,100	524	11	0.672	8,640	416	11	0.672	5,760	255	9.9	0.42	7,190	315	11	0.672
4.3	11.0	9,850	524	11	0.688	8,440	416	11	0.688	5,630	255	9.9	0.43	7,020	315	11	0.688
4.4	11.0	9,620	524	11	0.704	8,250	416	11	0.704	5,500	255	9.9	0.44	6,860	315	11	0.704
4.5	12.0	9,410	524	12	0.72	8,060	416	12	0.72	5,380	255	10.8	0.45	6,710	315	12	0.72
4.6	12.0	9,200	524	12	0.736	7,890	416	12	0.736	5,260	255	10.8	0.46	6,570	315	12	0.736
4.7	12.0	9,010	524	12	0.752	7,720	416	12	0.752	5,150	255	10.8	0.47	6,430	315	12	0.752
4.8	12.0	8,820	524	12	0.768	7,560	416	12	0.768	5,040	255	10.8	0.48	6,290	315	12	0.768
4.9	13.0	8,640	524	13	0.784	7,410	416	13	0.784	4,940	255	11.7	0.49	6,160	315	13	0.784
5.0	8.0	8,920	595	8	1	7,640	470	8	1	5,100	290	7.2	0.75	6,370	360	8	1
	13.0	8,470	524	13	0.8	7,260	416	13	0.8	4,840	255	11.7	0.5	6,040	315	13	0.8
	20.0	8,020	415	20	0.4	6,880	330	20	0.4	4,590	200	18	0.3	5,730	250	20	0.4
5.1	13.0	8,300	524	13	0.816	7,120	416	13	0.816	4,750	255	11.7	0.51	5,920	315	13	0.816
5.2	13.0	8,140	524	13	0.832	6,980	416	13	0.832	4,650	255	11.7	0.52	5,810	315	13	0.832
5.3	14.0	7,990	524	14	0.848	6,850	416	14	0.848	4,570	255	12.6	0.53	5,700	315	14	0.848
5.4	14.0	7,840	524	14	0.864	6,720	416	14	0.864	4,480	255	12.6	0.54	5,590	315	14	0.864
5.5	14.0	7,700	524	14	0.88	6,600	416	14	0.88	4,400	255	12.6	0.55	5,490	315	14	0.88
5.6	14.0	7,560	524	14	0.896	6,480	416	14	0.896	4,320	255	12.6	0.56	5,390	315	14	0.896
5.7	15.0	7,430	524	15	0.912	6,370	416	15	0.912	4,250	255	13.5	0.57	5,300	315	15	0.912
5.8	15.0	7,300	524	15	0.928	6,260	416	15	0.928	4,170	255	13.5	0.58	5,210	315	15	0.928
5.9	15.0	7,180	525	15	0.944	6,150	416	15	0.944	4,100	255	13.5	0.59	5,120	315	15	0.944
6.0	10.0	7,430	595	10	1.2	6,370	470	10	1.2	4,250	290	9	0.9	5,310	360	10	1.2
	15.0	7,060	525	15	0.96	6,050	416	15	0.96	4,030	255	13.5	0.6	5,030	315	15	0.96
	24.0	6,690	415	24	0.6	5,730	330	24	0.6	3,820	200	21.6	0.45	4,780	250	24	0.6
6.5	17.0	6,510	524	17	1.3	5,580	416	17	1.3	3,720	255	15.3	0.975	4,650	315	17	1.3

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
ion Depo A Series 스퀘어 Square
ion Depo U Series

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
6.5	20.0	6,510	439	26	0.65	5,290	330	26	0.65	3,540	200	23.4	0.488	4,400	250	26	0.65
7.0	18.0	6,050	524	18	1.4	5,180	416	18	1.4	3,460	255	16.2	1.05	4,310	315	18	1.4
7.5	20.0	5,640	524	20	1.5	4,840	416	20	1.5	3,230	255	18	1.125	4,030	315	20	1.5
8.0	20.0	5,290	524	20	1.6	4,540	416	20	1.6	3,030	255	18	1.2	3,780	315	20	1.6
	32.0	5,020	415	32	0.8	4,300	330	32	0.8	2,870	200	28.8	0.6	3,580	250	32	0.8
8.5	23.0	4,980	524	23	1.7	4,270	416	23	1.7	2,850	255	20.7	1.275	3,550	315	23	1.7
9.0	23.0	4,700	524	23	1.8	4,030	416	23	1.8	2,690	255	20.7	1.35	3,360	315	23	1.8
9.5	25.0	4,460	525	25	1.9	3,820	416	25	1.9	2,550	255	22.5	1.425	3,180	315	25	1.9
10.0	25.0	4,230	524	25	2	3,630	416	25	2	2,420	255	22.5	1.5	3,020	315	25	2
	40.0	4,010	415	40	1	3,440	330	40	1	2,290	200	36	0.75	2,870	250	40	1
10.5	28.0	4,030	524	28	2.1	3,460	416	28	2.1	2,300	254	25.2	1.575	2,880	315	28	2.1
11.0	28.0	3,850	524	28	2.2	3,300	416	28	2.2	2,200	255	25.2	1.65	2,750	316	28	2.2
11.5	30.0	3,680	524	30	2.3	3,160	417	30	2.3	2,100	254	27	1.725	2,630	315	30	2.3
12.0	30.0	3,530	525	30	2.4	3,020	415	30	2.4	2,020	255	27	1.8	2,520	315	30	2.4
	48.0	3,340	415	48	1.2	2,870	330	48	1.2	1,910	200	43.2	0.9	2,390	250	48	1.2
14.0	28.0	2,970	487	42	1.4	2,550	387	42	1.4	1,700	236	37.8	1.05	2,120	293	42	1.4
16.0	48.0	2,600	487	48	1.6	2,230	387	48	1.6	1,490	237	43.2	1.2	1,850	292	48	1.6
18.0	54.0	2,310	487	54	1.8	1,980	386	54	1.8	1,320	236	48.6	1.35	1,650	293	54	1.8
20.0	60.0	2,080	487	60	2	1,780	386	60	2	1,190	236	54	1.5	1,480	292	60	2

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●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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스퀘어 엔드밀 Square End Mill
홈 Slotting

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.1	0.15	50,000	62	0.045	0.1	50,000	57	0.045	0.1	50,000	31	0.038	0.1	50,000	31	0.050	0.1
0.2	0.4	50,000	124	0.09	0.2	50,000	114	0.09	0.2	50,000	63	0.075	0.2	50,000	63	0.099	0.2
0.3	0.3	50,000	187	0.12	0.3	50,000	171	0.12	0.3	50,000	94	0.1	0.3	50,000	94	0.132	0.3
	0.6	50,000	171	0.116	0.3	50,000	156	0.116	0.3	50,000	87	0.105	0.3	50,000	88	0.14	0.3
0.4	0.6	50,000	249	0.18	0.4	50,000	228	0.18	0.4	50,000	125	0.15	0.4	50,000	126	0.198	0.4
	0.8	50,000	228	0.165	0.4	50,000	208	0.165	0.4	50,000	117	0.15	0.4	50,000	117	0.2	0.4
0.5	0.8	50,000	310	0.24	0.5	50,000	285	0.24	0.5	43,300	135	0.2	0.5	50,000	155	0.264	0.5
	1.25	50,000	285	0.206	0.5	50,000	260	0.206	0.5	41,200	120	0.188	0.5	50,000	146	0.25	0.5
	2.0	50,000	240	0.06	0.5	50,000	220	0.06	0.5	39,000	95	0.06	0.5	48,700	120	0.075	0.5
0.6	1.0	50,000	373	0.3	0.6	50,000	343	0.3	0.6	36,000	135	0.25	0.6	45,000	170	0.33	0.6
	1.5	50,000	342	0.248	0.6	50,000	312	0.248	0.6	34,300	120	0.225	0.6	42,800	151	0.3	0.6
	2.4	50,000	287	0.072	0.6	48,800	255	0.072	0.6	32,500	95	0.072	0.6	40,600	120	0.09	0.6
0.7	1.8	50,000	399	0.297	0.7	44,100	321	0.297	0.7	29,400	120	0.27	0.7	36,700	151	0.36	0.7
0.8	1.2	47,300	470	0.36	0.8	40,600	370	0.36	0.8	27,000	135	0.3	0.8	33,800	170	0.396	0.8
	2.0	45,000	410	0.33	0.8	38,500	320	0.33	0.8	25,700	120	0.3	0.8	32,100	150	0.4	0.8
	3.2	42,600	325	0.096	0.8	36,500	255	0.096	0.8	24,300	95	0.096	0.8	30,400	120	0.12	0.8
0.9	2	40,000	410	0.33	0.9	34,300	321	0.33	0.9	22,900	120	0.3	0.9	28,600	151	0.4	0.9
1.0	1.5	37,900	470	0.45	1	32,500	370	0.45	1	21,600	135	0.375	1	27,000	170	0.495	1
	2.5	36,000	410	0.413	1	30,800	320	0.413	1	20,600	120	0.375	1	25,700	150	0.5	1
	4.0	34,100	325	0.12	1	29,200	255	0.12	1	19,500	95	0.12	1	24,300	120	0.15	1
1.1	2.5	32,700	410	0.413	1.1	28,100	321	0.413	1.1	18,700	120	0.375	1.1	23,400	151	0.5	1.1
1.2	3.0	30,000	410	0.495	1.2	25,800	321	0.495	1.2	17,200	120	0.45	1.2	21,400	151	0.6	1.2
1.3	3.0	27,700	410	0.495	1.3	23,800	321	0.495	1.3	15,900	120	0.45	1.3	19,800	151	0.6	1.3
1.4	3.5	25,700	410	0.578	1.4	22,100	321	0.578	1.4	14,700	120	0.525	1.4	18,400	151	0.7	1.4
1.5	4.5	25,200	470	0.6	1.5	21,600	370	0.6	1.5	14,400	135	0.5	1.5	18,000	170	0.66	1.5
	4.5	24,000	410	0.66	1.5	20,600	320	0.66	1.5	13,700	120	0.6	1.5	17,100	150	0.8	1.5
	5.0	22,700	325	0.18	1.5	19,500	255	0.18	1.5	13,000	95	0.18	1.5	16,200	120	0.225	1.5
1.6	2.0	22,500	410	0.66	1.6	19,300	321	0.66	1.6	12,900	120	0.6	1.6	16,100	151	0.8	1.6
1.7	4.0	21,200	410	0.743	1.7	18,200	321	0.743	1.7	12,100	120	0.675	1.7	15,100	151	0.9	1.7
1.8	6.0	20,000	410	0.743	1.8	17,200	321	0.743	1.8	11,400	120	0.675	1.8	14,300	151	0.9	1.8
1.9	4.0	19,000	410	0.825	1.9	16,300	321	0.825	1.9	10,800	120	0.75	1.9	13,500	151	1	1.9
2.0	3.0	18,900	470	0.9	2	16,200	370	0.9	2	10,800	135	0.75	2	13,500	170	0.99	2
	5.0	18,000	410	0.825	2	15,400	320	0.825	2	10,300	120	0.75	2	12,800	150	1	2
	8.0	17,000	325	0.24	2	14,600	255	0.24	2	9,740	95	0.24	2	12,200	120	0.3	2
2.1	5.5	17,100	410	0.908	2.1	14,700	321	0.908	2.1	9,810	120	0.825	2.1	12,200	151	1.1	2.1
2.2	5.5	16,400	410	0.908	2.2	14,100	321	0.908	2.2	9,360	120	0.825	2.2	11,700	151	1.1	2.2
2.3	6.0	15,700	410	0.99	2.3	13,400	321	0.99	2.3	8,960	120	0.9	2.3	11,200	151	1.2	2.3
2.4	6.0	15,000	410	0.99	2.4	12,900	321	0.99	2.4	8,580	120	0.9	2.4	10,700	151	1.2	2.4
2.5	7.0	14,400	410	1.155	2.5	13,000	338	1.155	2.5	8,240	135	1.05	2.5	10,300	151	1.4	2.5
	10.0	13,600	325	0.3	2.5	11,700	255	0.3	2.5	7,790	95	0.3	2.5	9,740	120	0.375	2.5
2.6	7.0	13,900	410	1.155	2.6	11,900	321	1.155	2.6	7,920	120	1.05	2.6	9,880	151	1.4	2.6
2.7	7.0	13,300	410	1.155	2.7	11,400	321	1.155	2.7	7,630	120	1.05	2.7	9,520	151	1.4	2.7

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CBN Series
ion Depo A Series 스퀘어 Square
ion Depo U Series

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-2
Model number:IAS-2

스퀘어 엔드밀 Square End Mill

홈 Slotting

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
2.8	7.0	12,900	410	1.155	2.8	11,000	321	1.155	2.8	7,360	120	1.05	2.8	9,180	151	1.4	2.8
2.9	8.0	12,400	410	1.32	2.9	10,700	321	1.32	2.9	7,100	120	1.2	2.9	8,860	151	1.6	2.9
3.0	5.0	12,600	470	1.5	3	10,800	370	1.5	3	7,220	135	1.25	3	9,020	170	1.65	3
	8.0	12,000	410	1.32	3	10,300	321	1.32	3	6,870	120	1.2	3	8,570	151	1.6	3
	12.0	11,400	325	0.36	3	9,740	255	0.36	3	6,500	95	0.36	3	8,120	120	0.45	3
3.1	8.0	11,600	410	1.32	3.1	9,970	321	1.32	3.1	6,650	120	1.2	3.1	8,290	151	1.6	3.1
3.2	8.0	11,300	410	1.32	3.2	9,660	321	1.32	3.2	6,440	120	1.2	3.2	8,030	151	1.6	3.2
3.3	9.0	10,900	410	1.485	3.3	9,360	321	1.485	3.3	6,240	120	1.35	3.3	7,790	151	1.8	3.3
3.4	9.0	10,600	410	1.485	3.4	9,090	321	1.485	3.4	6,060	120	1.35	3.4	7,560	151	1.8	3.4
3.5	9.0	10,300	410	1.485	3.5	8,830	321	1.485	3.5	5,890	120	1.35	3.5	7,340	151	1.8	3.5
3.6	9.0	10,000	410	1.485	3.6	8,580	321	1.485	3.6	5,720	120	1.35	3.6	7,140	151	1.8	3.6
3.7	10.0	9,730	410	1.65	3.7	8,350	321	1.65	3.7	5,570	120	1.5	3.7	6,950	151	2	3.7
3.8	10.0	9,470	410	1.65	3.8	8,130	321	1.65	3.8	5,420	120	1.5	3.8	6,760	151	2	3.8
3.9	10.0	9,230	410	1.65	3.9	7,920	321	1.65	3.9	5,280	120	1.5	3.9	6,590	151	2	3.9
4.0	6.0	9,470	470	1.8	4	8,120	370	1.8	4	5,410	135	1.5	4	6,770	170	1.98	4
	10.0	9,000	410	1.65	4	7,730	321	1.65	4	5,150	120	1.5	4	6,430	151	2	4
	16.0	8,530	325	0.48	4	7,310	255	0.48	4	4,870	95	0.48	4	6,090	120	0.6	4
4.1	11.0	8,780	410	1.815	4.1	7,540	321	1.815	4.1	5,020	120	1.65	4.1	6,270	151	2.2	4.1
4.2	11.0	8,570	410	1.815	4.2	7,360	321	1.815	4.2	4,900	120	1.65	4.2	6,120	151	2.2	4.2
4.3	11.0	8,370	410	1.815	4.3	7,190	321	1.815	4.3	4,790	120	1.65	4.3	5,980	151	2.2	4.3
4.4	11.0	8,180	410	1.815	4.4	7,020	321	1.815	4.4	4,680	120	1.65	4.4	5,840	151	2.2	4.4
4.5	12.0	8,000	410	1.98	4.5	6,870	321	1.98	4.5	4,580	120	1.8	4.5	5,710	151	2.4	4.5
4.6	12.0	7,830	410	1.98	4.6	6,720	321	1.98	4.6	4,480	120	1.8	4.6	5,590	151	2.4	4.6
4.7	12.0	7,660	410	1.98	4.7	6,570	321	1.98	4.7	4,380	120	1.8	4.7	5,470	151	2.4	4.7
4.8	12.0	7,500	410	1.98	4.8	6,440	321	1.98	4.8	4,290	120	1.8	4.8	5,350	150	2.4	4.8
4.9	13.0	7,350	410	2.145	4.9	6,310	321	2.145	4.9	4,200	120	1.95	4.9	5,240	150	2.6	4.9
5.0	8.0	7,580	470	2.4	5	6,500	370	2.4	5	4,330	135	2	5	5,410	170	2.64	5
	13.0	7,200	410	2.145	5	6,180	321	2.145	5	4,120	120	1.95	5	5,140	151	2.6	5
	20.0	6,820	325	0.6	5	5,850	255	0.6	5	3,900	95	0.6	5	4,870	120	0.75	5
5.1	13.0	7,060	410	2.145	5.1	6,060	321	2.145	5.1	4,040	120	1.95	5.1	5,040	151	2.6	5.1
5.2	13.0	6,920	410	2.145	5.2	5,940	321	2.145	5.2	3,960	120	1.95	5.2	4,940	151	2.6	5.2
5.3	14.0	6,790	410	2.31	5.3	5,830	321	2.31	5.3	3,890	120	2.1	5.3	4,850	151	2.8	5.3
5.4	14.0	6,670	410	2.31	5.4	5,720	321	2.31	5.4	3,810	120	2.1	5.4	4,760	151	2.8	5.4
5.5	14.0	6,550	410	2.31	5.5	5,620	321	2.31	5.5	3,750	120	2.1	5.5	4,670	150	2.8	5.5
5.6	14.0	6,430	410	2.31	5.6	5,520	321	2.31	5.6	3,680	120	2.1	5.6	4,590	151	2.8	5.6
5.7	15.0	6,320	410	2.475	5.7	5,420	321	2.475	5.7	3,610	120	2.25	5.7	4,510	151	3	5.7
5.8	15.0	6,210	410	2.475	5.8	5,330	321	2.475	5.8	3,550	120	2.25	5.8	4,430	151	3	5.8
5.9	15.0	6,100	410	2.475	5.9	5,240	321	2.475	5.9	3,490	120	2.25	5.9	4,360	151	3	5.9
6.0	10.0	6,320	470	3	6	5,410	370	3	6	3,610	135	2.5	6	4,510	170	3.3	6
	15.0	6,000	410	2.475	6	5,150	321	2.475	6	3,430	120	2.25	6	4,280	150	3	6
	24.0	5,680	325	0.72	6	4,870	255	0.72	6	3,250	95	0.72	6	4,060	120	0.9	6
6.5	17.0	5,540	410	2.805	6.5	4,750	321	2.805	6.5	3,170	120	2.55	6.5	3,950	150	3.4	6.5

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●황입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

스퀘어 엔드밀 Square End Mill

홈 Slotting

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
6.5	20.0	5,240	326	0.78	6.5	4,500	255	0.78	6.5	3,000	95	0.78	6.5	3,750	120	0.975	6.5
7.0	18.0	5,140	410	2.97	7	4,410	321	2.97	7	2,940	120	2.7	7	3,670	151	3.6	7
7.5	20.0	4,800	410	3.3	7.5	4,120	321	3.3	7.5	2,750	120	3	7.5	3,430	151	4	7.5
8.0	23.0	4,500	410	3.3	8	3,860	321	3.3	8	2,580	135	3	8	3,210	150	4	8
	23.0	4,260	325	0.96	8	3,660	255	0.96	8	2,440	95	0.96	8	3,050	120	1.2	8
8.5	25.0	4,240	410	3.795	8.5	3,640	321	3.795	8.5	2,420	120	3.45	8.5	3,020	150	4.6	8.5
9.0	20.0	4,000	410	3.795	9	3,430	321	3.795	9	2,290	120	3.45	9	2,860	151	4.6	9
9.5	32.0	3,790	410	4.125	9.5	3,250	321	4.125	9.5	2,170	120	3.75	9.5	2,710	151	5	9.5
10.0	25.0	3,600	410	4.125	10	3,090	321	4.125	10	2,060	135	3.75	10	2,570	151	5	10
	40.0	3,410	325	1.2	10	2,920	255	1.2	10	1,950	95	1.2	10	2,440	120	1.5	10
10.5	28.0	3,430	410	4.62	10.5	2,940	321	4.62	10.5	1,960	120	4.2	10.5	2,450	151	5.6	10.5
11.0	28.0	3,270	410	4.62	11	2,810	321	4.62	11	1,870	120	4.2	11	2,340	151	5.6	11
11.5	30.0	3,130	410	4.95	11.5	2,690	321	4.95	11.5	1,790	120	4.5	11.5	2,230	150	6	11.5
12.0	30.0	3,000	410	4.95	12	2,580	322	4.95	12	1,720	135	4.5	12	2,140	150	6	12
	48.0	2,840	325	1.44	12	2,440	255	1.44	12	1,630	95	1.44	12	2,030	120	1.8	12
14.0	28.0	2,530	382	1.26	14	2,170	299	1.26	14	1,440	111	1.26	14	1,800	140	1.575	14
16.0	48.0	2,210	381	1.44	16	1,900	299	1.44	16	1,260	111	1.44	16	1,580	140	1.8	16
18.0	54.0	1,960	380	1.62	18	1,690	299	1.62	18	1,120	111	1.62	18	1,400	140	2.025	18
20.0	60.0	1,770	382	1.8	20	1,520	299	1.8	20	1,010	111	1.8	20	1,260	140	2.25	20

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ion Depo Type A Series

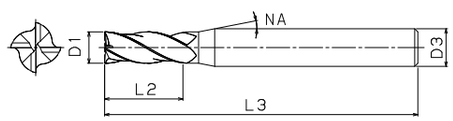
초경 스퀘어 엔드밀 Carbide Square End Mill

ion A | super MG | 날 수 4 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4

■형번:IAS-4 Model number:IAS-4



날경 Diameter	날경허용공차 Diameter Tolerance
~φ6	-0.004/-0.007
φ8 ~φ12	-0.004/-0.014
φ14~φ20	-0.004/-0.020



표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAS-4-1.0x2.5	1.0	2.5	11	4	50	3,920
IAS-4-1.0x4.0		4.0	11	4	50	6,800
IAS-4-1.5x4.0	1.5	4.0	11	4	50	3,920
IAS-4-1.5x6.0		6.0	11	4	50	6,800
IAS-4-2.0x5.0	2.0	5.0	11	4	50	2,400
IAS-4-2.0x8.0		8.0	11	4	50	4,800
IAS-4-2.5x7.0	2.5	7.0	11	4	50	2,400
IAS-4-2.5x10.0		10.0	11	4	50	4,800
IAS-4-3.0x8.0	3.0	8.0	11	4	50	2,480
IAS-4-3.0x12.0		12.0	11	4	50	5,040
IAS-4-3.5x9.0	3.5	9.0	11	6	50	5,200
IAS-4-4.0x10.0	4.0	10.0	11	6	50	2,800
IAS-4-4.0x16.0		16.0	11	6	50	5,360
IAS-4-4.5x12.0	4.5	12.0	11	6	50	5,600
IAS-4-5.0x13.0	5.0	13.0	11	6	50	2,880
IAS-4-5.0x20.0		20.0	11	6	60	5,520
IAS-4-5.5x14.0	5.5	14.0	11	6	50	6,000
IAS-4-6.0x15.0	6.0	15.0	—	6	50	3,040
IAS-4-6.0x24.0		24.0	—	6	60	5,840
IAS-4-6.5x17.0	6.5	17.0	11	8	70	10,240
IAS-4-7.0x18.0	7.0	18.0	11	8	70	8,560
IAS-4-7.5x19.0	7.5	19.0	11	8	70	10,800
IAS-4-8.0x20.0	8.0	20.0	—	8	70	6,160
IAS-4-8.0x32.0		32.0	—	8	80	11,920

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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAS-4-8.5x22.0	8.5	22.0	11	10	80	13,440
IAS-4-9.0x23.0	9.0	23.0	11	10	80	13,440
IAS-4-9.5x24.0	9.5	24.0	11	10	80	15,520
IAS-4-10.0x25.0	10.0	25.0	—	10	80	8,240
IAS-4-10.0x40.0		40.0	—	10	90	14,640
IAS-4-12.0x30.0	12.0	30.0	—	12	110	11,280
IAS-4-12.0x48.0		48.0	—	12	120	22,000
IAS-4-14.0x26.0	14.0	26.0	—	14	110	11,760
IAS-4-16.0x32.0	16.0	32.0	—	16	120	18,080
IAS-4-18.0x32.0	18.0	32.0	—	18	120	21,040
IAS-4-20.0x38.0	20.0	38.0	—	20	130	26,400

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-4
Model number:IAS-4

스퀘어 엔드밀 Square End Mill

측 면 Side Milling

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.5	25,500	680	1.5	0.03	17,500	395	1.5	0.03	13,100	245	1.25	0.02	9,550	155	1	0.008	6,370	90	1	0.006
	4.0	22,900	480	2.4	0.015	15,900	275	2.4	0.015	11,600	175	2	0.01	8,590	110	1.6	0.004	5,730	65	1.6	0.003
1.5	4.0	17,000	680	2.4	0.045	11,700	395	2.4	0.045	8,700	245	2	0.03	6,370	155	1.6	0.012	4,240	90	1.6	0.009
	6.0	15,300	480	3.6	0.023	10,600	275	3.6	0.023	7,750	175	3	0.015	5,730	110	2.4	0.006	3,820	65	2.4	0.005
2.0	5.0	12,700	680	3	0.12	8,750	395	3	0.12	6,530	245	2.5	0.096	4,770	155	2	0.032	3,180	90	2	0.024
	8.0	11,500	480	4.8	0.06	7,960	275	4.8	0.06	5,810	175	4	0.048	4,300	110	3.2	0.016	2,860	65	3.2	0.012
2.5	7.0	10,200	680	4.2	0.15	7,000	395	4.2	0.15	5,220	245	3.5	0.12	3,820	155	2.8	0.04	2,550	90	2.8	0.03
	10.0	9,170	480	6	0.075	6,370	275	6	0.075	4,650	175	5	0.06	3,440	110	4	0.02	2,290	65	4	0.015
3.0	8.0	8,490	680	4.8	0.225	5,840	395	4.8	0.225	4,350	245	4	0.18	3,180	155	3.2	0.06	2,120	90	3.2	0.045
	12.0	7,640	480	7.2	0.113	5,310	275	7.2	0.113	3,870	175	6	0.09	2,860	110	4.8	0.03	1,910	65	4.8	0.023
3.5	9.0	7,280	680	5.4	0.263	5,000	395	5.4	0.263	3,730	245	4.5	0.21	2,730	155	3.6	0.07	1,820	90	3.6	0.053
4.0	10.0	6,370	680	6	0.3	4,380	395	6	0.3	3,260	245	5	0.24	2,390	155	4	0.08	1,590	90	4	0.06
	16.0	5,730	480	9.6	0.15	3,980	275	9.6	0.15	2,900	175	8	0.12	2,150	110	6.4	0.04	1,430	65	6.4	0.03
4.5	12.0	5,660	680	7.2	0.338	3,890	395	7.2	0.338	2,900	245	6	0.27	2,120	155	4.8	0.09	1,410	90	4.8	0.068
5.0	13.0	5,090	680	7.8	0.375	3,500	395	7.8	0.375	2,610	245	6.5	0.3	1,910	155	5.2	0.1	1,270	90	5.2	0.075
	20.0	4,580	470	12	0.188	3,180	275	12	0.188	2,320	175	10	0.15	1,720	110	8	0.05	1,150	65	8	0.038
5.5	14.0	4,630	680	8.4	0.413	3,180	395	8.4	0.413	2,370	245	7	0.33	1,740	155	5.6	0.11	1,160	90	5.6	0.083
6.0	15.0	4,240	680	9	0.45	2,920	395	9	0.45	2,180	245	7.5	0.36	1,590	155	6	0.12	1,060	90	6	0.09
	24.0	3,820	480	14.4	0.225	2,650	275	14.4	0.225	1,940	175	12	0.18	1,430	110	9.6	0.06	950	65	9.6	0.045
6.5	17.0	3,920	680	10.2	0.488	2,690	395	10.2	0.488	2,010	245	8.5	0.39	1,470	155	6.8	0.13	980	90	6.8	0.098
7.0	18.0	3,640	680	10.8	0.525	2,500	395	10.8	0.525	1,860	245	9	0.42	1,360	155	7.2	0.14	910	90	7.2	0.105
7.5	19.0	3,400	680	11.4	0.563	2,330	395	11.4	0.563	1,740	245	9.5	0.45	1,270	155	7.6	0.15	850	90	7.6	0.113
8.0	20.0	3,180	680	12	0.6	2,190	395	12	0.6	1,630	245	10	0.48	1,190	155	8	0.16	800	90	8	0.12
	32.0	2,860	470	19.2	0.3	1,990	275	19.2	0.3	1,450	175	16	0.24	1,070	110	12.8	0.08	720	65	12.8	0.06
8.5	22.0	3,000	680	13.2	0.638	2,060	395	13.2	0.638	1,540	245	11	0.51	1,120	155	8.8	0.17	750	90	8.8	0.128
9.0	23.0	2,830	680	13.8	0.675	1,950	395	13.8	0.675	1,450	245	11.5	0.54	1,060	155	9.2	0.18	710	90	9.2	0.135
9.5	24.0	2,680	680	14.4	0.713	1,840	395	14.4	0.713	1,370	245	12	0.57	1,010	155	9.6	0.19	670	90	9.6	0.143
10.0	25.0	2,550	680	15	0.75	1,750	395	15	0.75	1,310	245	12.5	0.6	950	155	10	0.2	640	90	10	0.15
	40.0	2,290	470	24	0.375	1,590	275	24	0.375	1,160	175	20	0.3	860	110	16	0.1	570	65	16	0.075
12.0	30.0	2,120	680	18	0.9	1,460	395	18	0.9	1,090	245	15	0.72	800	155	12	0.24	530	90	12	0.18
	48.0	1,910	480	28.8	0.45	1,330	275	28.8	0.45	970	175	24	0.36	720	110	19.2	0.12	480	65	19.2	0.09
14.0	26.0	1,820	680	16.8	1.05	1,250	395	16.8	1.05	930	245	14	0.84	680	155	11.2	0.28	450	90	11.2	0.21
16.0	32.0	1,590	680	19.2	1.2	1,090	395	19.2	1.2	820	245	16	0.96	600	155	12.8	0.32	400	90	12.8	0.24
18.0	32.0	1,410	680	21.6	1.35	970	395	21.6	1.35	730	245	18	1.08	530	155	14.4	0.36	350	90	14.4	0.27
20.0	38.0	1,270	680	24	1.5	880	395	24	1.5	650	245	20	1.2	480	155	16	0.4	320	90	16	0.3

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스퀘어 엔드밀 Square End Mill

홈 Slotting

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.5	22,900	340	0.25	1	15,900	195	0.25	1	11,000	115	0.2	1	7,640	65	0.1	1	5,090	35	0.05	1
	4.0	20,700	230	0.125	1	14,200	135	0.125	1	9,870	80	0.1	1	6,840	45	0.05	1	4,620	25	0.025	1
1.5	4.0	15,300	340	0.4	1.5	10,600	195	0.4	1.5	7,320	115	0.32	1.5	5,090	65	0.16	1.5	3,400	35	0.08	1.5
	6.0	13,800	230	0.188	1.5	9,440	135	0.188	1.5	6,580	80	0.15	1.5	4,560	45	0.075	1.5	3,080	25	0.038	1.5
2.0	5.0	11,500	340	0.5	2	7,960	195	0.5	2	5,490	115	0.4	2	3,820	65	0.2	2	2,550	35	0.1	2
	8.0	10,400	240	0.25	2	7,080	135	0.25	2	4,930	80	0.2	2	3,420	45	0.1	2	2,310	25	0.05	2
2.5	7.0	9,170	340	0.7	2.5	6,370	195	0.7	2.5	4,390	115	0.56	2.5	3,060	65	0.28	2.5	2,040	35	0.14	2.5
	10.0	8,280	240	0.313	2.5	5,670	135	0.313	2.5	3,950	80	0.25	2.5	2,740	45	0.125	2.5	1,850	25	0.063	2.5
3.0	8.0	7,640	340	0.8	3	5,310	195	0.8	3	3,660	115	0.64	3	2,550	65	0.32	3	1,700	35	0.16	3
	12.0	6,900	240	0.375	3	4,720	135	0.375	3	3,290	80	0.3	3	2,280	45	0.15	3	1,540	25	0.075	3
3.5	9.0	6,550	340	0.9	3.5	4,550	195	0.9	3.5	3,140	115	0.72	3.5	2,180	65	0.36	3.5	1,460	35	0.18	3.5
4.0	10.0	5,730	340	1	4	3,980	195	1	4	2,750	115	0.8	4	1,910	65	0.4	4	1,270	35	0.2	4
	16.0	5,170	230	0.5	4	3,540	135	0.5	4	2,470	80	0.4	4	1,710	45	0.2	4	1,150	25	0.1	4
4.5	12.0	5,090	340	1.2	4.5	3,540	195	1.2	4.5	2,440	115	0.96	4.5	1,700	65	0.48	4.5	1,130	35	0.24	4.5
5.0	13.0	4,580	340	1.3	5	3,180	195	1.3	5	2,200	115	1.04	5	1,530	65	0.52	5	1,020	35	0.26	5
	20.0	4,140	240	0.625	5	2,830	135	0.625	5	1,970	80	0.5	5	1,370	45	0.25	5	920	25	0.125	5
5.5	14.0	4,170	340	1.4	5.5	2,890	195	1.4	5.5	2,000	115	1.12	5.5	1,390	65	0.56	5.5	930	35	0.28	5.5
6.0	15.0	3,820	340	1.5	6	2,650	195	1.5	6	1,830	115	1.2	6	1,270	65	0.6	6	850	35	0.3	6
	24.0	3,450	240	0.75	6	2,360	135	0.75	6	1,640	80	0.6	6	1,140	45	0.3	6	770	25	0.15	6
6.5	17.0	3,530	340	1.7	6.5	2,450	195	1.7	6.5	1,690	115	1.36	6.5	1,180	65	0.68	6.5	780	35	0.34	6.5
7.0	18.0	3,270	340	1.8	7	2,270	195	1.8	7	1,570	115	1.44	7	1,090	65	0.72	7	730	35	0.36	7
7.5	19.0	3,060	340	1.9	7.5	2,120	195	1.9	7.5	1,460	115	1.52	7.5	1,020	65	0.76	7.5	680	35	0.38	7.5
8.0	20.0	2,860	340	2	8	1,990	195	2	8	1,370	115	1.6	8	950	65	0.8	8	640	35	0.4	8
	32.0	2,590	240	1	8	1,770	135	1	8	1,230	80	0.8	8	860	45	0.4	8	580	25	0.2	8
8.5	22.0	2,700	340	2.2	8.5	1,870	195	2.2	8.5	1,290	115	1.76	8.5	900	65	0.88	8.5	600	35	0.44	8.5
9.0	23.0	2,550	340	2.3	9	1,770	195	2.3	9	1,220	115	1.84	9	850	65	0.92	9	570	35	0.46	9
9.5	24.0	2,410	340	2.4	9.5	1,680	195	2.4	9.5	1,160	115	1.92	9.5	800	65	0.96	9.5	540	35	0.48	9.5
10.0	25.0	2,290	340	2.5	10	1,590	195	2.5	10	1,100	115	2	10	760	65	1	10	510	35	0.5	10
	40.0	2,070	240	1.25	10	1,420	135	1.25	10	990	80	1	10	680	45	0.5	10	460	25	0.25	10
12.0	30.0	1,910	340	3	12	1,330	195	3	12	920	115	2.4	12	640	65	1.2	12	420	35	0.6	12
	48.0	1,720	230	1.5	12	1,180	135	1.5	12	820	80	1.2	12	570	45	0.6	12	380	25	0.3	12
14.0	26.0	1,640	340	2.8	14	1,140	195	2.8	14	780	115	2.24	14	550	65	1.12	14	360	35	0.56	14
16.0	32.0	1,430	340	3.2	16	990	195	3.2	16	690	115	2.56	16	480	65	1.28	16	320	35	0.64	16
18.0	32.0	1,270	340	3.6	18	880	195	3.6	18	610	115	2.88	18	420	65	1.44	18	280	35	0.72	18
20.0	38.0	1,150	340	4	20	800	195	4	20	550	115	3.2	20	380	65	1.6	20	250	35	0.8	20

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●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p=축방향,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클란트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일란비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-4
Model number:IAS-4

스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		주철 Cast Iron / 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy / 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy / INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.5	25,500	740	1.5	0.03	14,300	355	1.125	0.03	12,700	290	1	0.015	7,960	145	1	0.01
	4.0	22,900	510	2.4	0.02	12,900	250	1.8	0.02	11,500	200	1.6	0.01	7,160	105	1.6	0.005
1.5	4.0	17,000	740	2.4	0.045	9,550	355	1.8	0.045	8,490	290	1.6	0.023	5,310	145	1.6	0.015
	6.0	15,300	520	3.6	0.03	8,590	250	2.7	0.03	7,640	200	2.4	0.015	4,770	105	2.4	0.008
2.0	5.0	12,700	740	3	0.09	7,160	355	2.25	0.08	6,370	290	2	0.05	3,980	145	2	0.035
	8.0	11,500	510	4.8	0.05	6,450	250	3.6	0.04	5,730	200	3.2	0.025	3,580	105	3.2	0.02
2.5	7.0	10,200	740	4.2	0.113	5,730	355	3.15	0.1	5,090	290	2.8	0.063	3,180	145	2.8	0.044
	10.0	9,170	520	6	0.063	5,160	250	4.5	0.05	4,580	200	4	0.031	2,860	105	4	0.025
3.0	8.0	8,490	740	4.8	0.225	4,770	355	3.6	0.195	4,240	290	3.2	0.12	2,650	145	3.2	0.09
	12.0	7,640	520	7.2	0.011	4,300	250	5.4	0.098	3,820	200	4.8	0.06	2,390	105	4.8	0.045
3.5	9.0	7,280	740	5.4	0.263	4,090	355	4.05	0.228	3,640	290	3.6	0.14	2,270	145	3.6	0.105
4.0	10.0	6,370	740	6	0.3	3,580	355	4.5	0.26	3,180	290	4	0.16	1,990	145	4	0.12
	16.0	5,730	510	9.6	0.015	3,220	250	7.2	0.13	2,860	200	6.4	0.08	1,790	105	6.4	0.06
4.5	12.0	5,660	740	7.2	0.338	3,180	355	5.4	0.293	2,830	290	4.8	0.18	1,770	145	4.8	0.135
5.0	13.0	5,090	740	7.8	0.375	2,860	355	5.85	0.325	2,550	290	5.2	0.2	1,590	145	5.2	0.15
	20.0	4,580	510	12	0.019	2,580	250	9	0.163	2,290	200	8	0.1	1,430	105	8	0.075
5.5	14.0	4,630	740	8.4	0.413	2,600	355	6.3	0.358	2,310	290	5.6	0.22	1,450	145	5.6	0.165
6.0	15.0	4,240	740	9	0.45	2,390	355	6.75	0.39	2,120	290	6	0.24	1,330	145	6	0.18
	24.0	3,820	520	14.4	0.023	2,150	250	10.8	0.195	1,910	200	9.6	0.12	1,190	105	9.6	0.09
6.5	17.0	3,920	740	10.2	0.488	2,200	355	7.65	0.423	1,960	290	6.8	0.26	1,220	145	6.8	0.195
7.0	18.0	3,640	740	10.8	0.525	2,050	355	8.1	0.455	1,820	290	7.2	0.28	1,140	145	7.2	0.21
7.5	19.0	3,400	740	11.4	0.563	1,910	355	8.55	0.488	1,700	290	7.6	0.3	1,060	145	7.6	0.225
8.0	20.0	3,180	740	12	0.6	1,790	355	9	0.52	1,590	290	8	0.32	990	145	8	0.24
	32.0	2,860	510	19.2	0.03	1,610	250	14.4	0.26	1,430	200	12.8	0.16	900	105	12.8	0.12
8.5	22.0	3,000	740	13.2	0.638	1,690	355	9.9	0.553	1,500	290	8.8	0.34	940	145	8.8	0.255
9.0	23.0	2,830	740	13.8	0.675	1,590	355	10.35	0.585	1,410	290	9.2	0.36	880	145	9.2	0.27
9.5	24.0	2,680	740	14.4	0.713	1,510	355	10.8	0.618	1,340	290	9.6	0.38	840	145	9.6	0.285
10.0	25.0	2,550	740	15	0.75	1,430	355	11.25	0.65	1,270	290	10	0.4	800	145	10	0.3
	40.0	2,290	510	24	0.038	1,290	250	18	0.325	1,150	200	16	0.2	720	105	16	0.15
12.0	30.0	2,120	740	18	0.9	1,190	355	13.5	0.78	1,060	290	12	0.48	660	145	12	0.36
	48.0	1,910	520	28.8	0.045	1,070	250	21.6	0.39	950	200	19.2	0.24	600	105	19.2	0.18
14.0	26.0	1,820	740	16.8	1.05	1,020	355	12.6	0.91	910	290	11.2	0.56	570	145	11.2	0.42
16.0	32.0	1,590	740	19.2	1.2	900	355	14.4	1.04	800	290	12.8	0.64	500	145	12.8	0.48
18.0	32.0	1,410	730	21.6	1.35	800	355	16.2	1.17	710	290	14.4	0.72	440	145	14.4	0.54
20.0	38.0	1,270	730	24	1.5	720	355	18	1.3	640	290	16	0.8	400	145	16	0.6

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스퀘어 엔드밀 Square End Mill
홈 Slotting

절삭재료 Work Material		주철 Cast Iron / 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy / 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy / INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.5	11,000	365	0.25	1	11,500	140	0.15	1	10,200	115	0.1	1	6,370	60	0.08	1
	4.0	20,700	255	0.125	1	10,300	100	0.075	1	9,170	80	0.05	1	5,730	40	0.04	1
1.5	4.0	15,300	365	0.4	1.5	7,640	140	0.24	1.5	6,790	115	0.16	1.5	4,240	60	0.128	1.5
	6.0	13,800	255	0.188	1.5	6,880	100	0.113	1.5	6,110	80	0.075	1.5	3,820	40	0.06	1.5
2.0	5.0	11,500	365	0.5	2	5,730	140	0.3	2	5,090	115	0.2	2	3,180	60	0.16	2
	8.0	10,400	255	0.25	2	5,160	100	0.15	2	4,580	80	0.1	2	2,860	40	0.08	2
2.5	7.0	9,170	365	0.7	2.5	4,580	140	0.42	2.5	4,070	115	0.28	2.5	2,550	60	0.224	2.5
	10.0	8,280	255	0.313	2.5	4,130	100	0.188	2.5	3,670	80	0.125	2.5	2,290	40	0.1	2.5
3.0	8.0	7,640	365	0.8	3	3,820	140	0.48	3	3,400	115	0.32	3	2,120	60	0.256	3
	12.0	6,900	255	0.375	3	3,440	100	0.225	3	3,060	80	0.15	3	1,910	40	0.12	3
3.5	9.0	6,550	365	0.9	3.5	3,270	140	0.54	3.5	2,910	115	0.36	3.5	1,820	60	0.288	3.5
4.0	10.0	5,730	365	1	4	2,860	140	0.6	4	2,550	115	0.4	4	1,590	60	0.32	4
	16.0	5,170	255	0.5	4	2,580	100	0.3	4	2,290	80	0.2	4	1,430	40	0.16	4
4.5	12.0	5,090	365	1.2	4.5	2,550	140	0.72	4.5	2,260	115	0.48	4.5	1,410	60	0.384	4.5
5.0	13.0	4,580	365	1.3	5	2,290	140	0.78	5	2,040	115	0.52	5	1,270	60	0.416	5
	20.0	4,140	255	0.625	5	2,060	100	0.375	5	1,830	80	0.25	5	1,150	40	0.2	5
5.5	14.0	4,170	365	1.4	5.5	2,080	140	0.84	5.5	1,850	115	0.56	5.5	1,160	60	0.448	5.5
6.0	15.0	3,820	365	1.5	6	1,910	140	0.9	6	1,700	115	0.6	6	1,060	60	0.48	6
	24.0	3,450	255	0.75	6	1,720	100	0.45	6	1,530	80	0.3	6	950	40	0.24	6
6.5	17.0	3,530	365	1.7	6.5	1,760	140	1.02	6.5	1,570	115	0.68	6.5	980	60	0.544	6.5
7.0	18.0	3,270	365	1.8	7	1,640	140	1.08	7	1,460	115	0.72	7	910	60	0.576	7
7.5	19.0	3,060	365	1.9	7.5	1,530	140	1.14	7.5	1,360	115	0.76	7.5	850	60	0.608	7.5
8.0	20.0	2,860	365	2	8	1,430	140	1.2	8	1,270	115	0.8	8	800	60	0.64	8
	32.0	2,590	255	1	8	1,290	100	0.6	8	1,150	80	0.4	8	720	40	0.32	8
8.5	22.0	2,700	365	2.2	8.5	1,350	140	1.32	8.5	1,200	115	0.88	8.5	750	60	0.704	8.5
9.0	23.0	2,550	365	2.3	9	1,270	140	1.38	9	1,130	115	0.92	9	710	60	0.736	9
9.5	24.0	2,410	365	2.4	9.5	1,210	140	1.44	9.5	1,070	115	0.96	9.5	670	60	0.768	9.5
10.0	25.0	2,290	365	2.5	10	1,150	140	1.5	10	1,020	115	1	10	640	60	0.8	10
	40.0	2,070	255	1.25	10	1,030	100	0.75	10	920	80	0.5	10	570	40	0.4	10
12.0	30.0	1,910	365	3	12	950	140	1.8	12	850	115	1.2	12	530	60	0.96	12
	48.0	1,720	255	1.5	12	860	100	0.9	12	760	80	0.6	12	480	40	0.48	12
14.0	26.0	1,640	365	2.8	14	820	140	1.68	14	730	115	1.12	14	450	60	0.896	14
16.0	32.0	1,430	365	3.2	16	720	140	1.92	16	640	115	1.28	16	400	60	1.024	16
18.0	32.0	1,270	365	3.6	18	640	140	2.16	18	570	115	1.44	18	350	60	1.152	18
20.0	38.0	1,150	365	4	20	570	140	2.4	20	510	115	1.6	20	320	60	1.28	20

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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAS-4
Model number:IAS-4

스퀘어 엔드밀 Square End Mill
측 면 Side Milling

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.5	44,600	1190	1.875	0.08	38,200	940	1.875	0.08	25,500	580	1.5	0.06	31,800	720	1.875	0.08
	4.0	40,100	840	3	0.04	34,400	660	3	0.04	22,900	410	2.4	0.03	28,700	510	3	0.04
1.5	4.0	29,700	1190	3	0.12	25,500	940	3	0.12	17,000	580	2.4	0.09	21,200	720	3	0.12
	6.0	26,700	840	4.5	0.06	22,900	660	4.5	0.06	15,300	410	3.6	0.045	19,100	510	4.5	0.06
2.0	5.0	22,300	1190	3.75	0.24	19,100	940	3.75	0.24	12,700	580	3	0.18	15,900	720	3.75	0.24
	8.0	20,100	840	6	0.12	17,200	660	6	0.12	11,500	410	4.8	0.09	14,300	510	6	0.12
2.5	7.0	17,800	1190	5.25	0.3	15,300	940	5.25	0.3	10,200	580	4.2	0.225	12,700	720	5.25	0.3
	10.0	16,000	840	7.5	0.15	13,800	660	7.5	0.15	9,170	410	6	0.113	11,500	510	7.5	0.15
3.0	8.0	14,900	1190	6	0.6	12,700	940	6	0.6	8,490	580	4.8	0.45	10,600	720	6	0.6
	12.0	13,400	840	9	0.3	11,500	660	9	0.3	7,640	410	7.2	0.225	9,550	510	9	0.3
3.5	9.0	12,700	1190	6.75	0.7	10,900	940	6.75	0.7	7,280	580	5.4	0.525	9,090	720	6.75	0.7
4.0	10.0	11,100	1190	7.5	0.8	9,550	940	7.5	0.8	6,370	580	6	0.6	7,960	720	7.5	0.8
	16.0	10,000	840	12	0.4	8,590	660	12	0.4	5,730	410	9.6	0.3	7,160	510	12	0.4
4.5	12.0	9,900	1190	9	0.9	8,490	940	9	0.9	5,660	580	7.2	0.675	7,070	720	9	0.9
5.0	13.0	8,910	1190	9.75	1	7,640	940	9.75	1	5,090	580	7.8	0.75	6,370	720	9.75	1
	20.0	8,020	840	15	0.5	6,880	660	15	0.5	4,580	400	12	0.375	5,730	510	15	0.5
5.5	14.0	8,100	1190	10.5	1.1	6,940	940	10.5	1.1	4,630	580	8.4	0.825	5,790	720	10.5	1.1
6.0	15.0	7,430	1200	11.25	1.2	6,370	950	11.25	1.2	4,240	580	9	0.9	5,310	720	11.25	1.2
	24.0	6,680	840	18	0.6	5,730	660	18	0.6	3,820	410	14.4	0.45	4,770	510	18	0.6
6.5	17.0	6,860	1200	12.75	1.3	5,880	940	12.75	1.3	3,920	580	10.2	0.975	4,900	720	12.75	1.3
7.0	18.0	6,370	1200	13.5	1.4	5,460	950	13.5	1.4	3,640	580	10.8	1.05	4,550	720	13.5	1.4
7.5	19.0	5,940	1190	14.25	1.5	5,090	940	14.25	1.5	3,400	580	11.4	1.125	4,240	720	14.25	1.5
8.0	20.0	5,570	1190	15	1.6	4,770	940	15	1.6	3,180	580	12	1.2	3,980	720	15	1.6
	32.0	5,010	840	24	0.8	4,300	660	24	0.8	2,860	400	19.2	0.6	3,580	510	24	0.8
8.5	22.0	5,240	1190	16.5	1.7	4,490	940	16.5	1.7	3,000	580	13.2	1.275	3,740	720	16.5	1.7
9.0	23.0	4,950	1190	17.25	1.8	4,240	940	17.25	1.8	2,830	580	13.8	1.35	3,540	720	17.25	1.8
9.5	24.0	4,690	1190	18	1.9	4,020	940	18	1.9	2,680	580	14.4	1.425	3,350	720	18	1.9
10.0	25.0	4,460	1200	18.75	2	3,820	940	18.75	2	2,550	580	15	1.5	3,180	720	18.75	2
	40.0	4,010	840	30	1	3,440	660	30	1	2,290	400	24	0.75	2,860	500	30	1
12.0	30.0	3,710	1190	22.5	2.4	3,180	940	22.5	2.4	2,120	580	18	1.8	2,650	720	22.5	2.4
	48.0	3,340	840	36	1.2	2,860	660	36	1.2	1,910	410	28.8	0.9	2,390	510	36	1.2
14.0	26.0	3,180	1190	21	2.8	2,730	950	21	2.8	1,820	580	16.8	2.1	2,270	720	21	2.8
16.0	32.0	2,790	1200	24	3.2	2,390	950	24	3.2	1,590	580	19.2	2.4	1,990	720	24	3.2
18.0	32.0	2,480	1200	27	3.6	2,120	940	27	3.6	1,410	570	21.6	2.7	1,770	720	27	3.6
20.0	38.0	2,230	1200	30	4	1,910	940	30	4	1,270	570	24	3	1,590	720	30	4

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●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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스퀘어 엔드밀 Square End Mill
홈 Slotting

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.5	38,200	930	0.2	1	32,500	740	0.2	1	21,700	270	0.2	1	27,100	340	0.25	1
	4.0	34,100	650	0.1	1	29,300	520	0.1	1	19,500	190	0.1	1	24,400	230	0.125	1
1.5	4.0	25,500	930	0.32	1.5	21,700	740	0.32	1.5	14,400	270	0.32	1.5	18,000	340	0.4	1.5
	6.0	22,700	650	0.15	1.5	19,500	520	0.15	1.5	13,000	190	0.15	1.5	16,200	230	0.188	1.5
2.0	5.0	19,100	930	0.4	2	16,200	740	0.4	2	10,800	270	0.4	2	13,500	340	0.5	2
	8.0	17,000	650	0.2	2	14,600	520	0.2	2	9,760	190	0.2	2	12,200	240	0.25	2
2.5	7.0	15,300	930	0.56	2.5	13,000	740	0.56	2.5	8,660	270	0.56	2.5	10,800	330	0.7	2.5
	10.0	13,600	650	0.25	2.5	11,700	510	0.25	2.5	7,800	190	0.25	2.5	9,740	230	0.313	2.5
3.0	8.0	12,700	930	0.64	3	10,800	740	0.64	3	7,220	270	0.64	3	9,020	340	0.8	3
	12.0	11,400	650	0.3	3	9,760	520	0.3	3	6,500	190	0.3	3	8,120	240	0.375	3
3.5	9.0	10,900	930	0.72	3.5	9,280	740	0.72	3.5	6,180	270	0.72	3.5	7,730	330	0.9	3.5
4.0	10.0	9,550	930	0.8	4	8,120	740	0.8	4	5,410	270	0.8	4	6,760	330	1	4
	16.0	8,510	650	0.4	4	7,320	520	0.4	4	4,880	190	0.4	4	6,090	240	0.5	4
4.5	12.0	8,490	930	0.96	4.5	7,220	740	0.96	4.5	4,810	270	0.96	4.5	6,010	330	1.2	4.5
5.0	13.0	7,640	930	1.04	5	6,490	730	1.04	5	4,330	270	1.04	5	5,410	330	1.3	5
	20.0	6,810	650	0.5	5	5,860	520	0.5	5	3,900	190	0.5	5	4,870	230	0.625	5
5.5	14.0	6,940	930	1.12	5.5	5,900	730	1.12	5.5	3,940	270	1.12	5.5	4,920	340	1.4	5.5
6.0	15.0	6,370	930	1.2	6	5,410	740	1.2	6	3,610	270	1.2	6	4,510	340	1.5	6
	24.0	5,680	660	0.6	6	4,880	520	0.6	6	3,250	190	0.6	6	4,060	240	0.75	6
6.5	17.0	5,880	930	1.36	6.5	5,000	740	1.36	6.5	3,330	270	1.36	6.5	4,160	330	1.7	6.5
7.0	18.0	5,460	940	1.44	7	4,640	740	1.44	7	3,090	270	1.44	7	3,870	340	1.8	7
7.5	19.0	5,090	930	1.52	7.5	4,330	740	1.52	7.5	2,890	270	1.52	7.5	3,610	340	1.9	7.5
8.0	20.0	4,770	930	1.6	8	4,060	740	1.6	8	2,710	270	1.6	8	3,380	330	2	8
	32.0	4,260	660	0.8	8	3,660	520	0.8	8	2,440	190	0.8	8	3,040	230	1	8
8.5	22.0	4,490	930	1.76	8.5	3,820	740	1.76	8.5	2,550	270	1.76	8.5	3,180	330	2.2	8.5
9.0	23.0	4,240	930	1.84	9	3,610	740	1.84	9	2,410	270	1.84	9	3,010	340	2.3	9
9.5	24.0	4,020	930	1.92	9.5	3,420	740	1.92	9.5	2,280	270	1.92	9.5	2,850	340	2.4	9.5
10.0	25.0	3,820	930	2	10	3,250	740	2	10	2,160	270	2	10	2,710	340	2.5	10
	40.0	3,410	660	1	10	2,930	520	1	10	1,950	190	1	10	2,440	240	1.25	10
12.0	30.0	3,180	930	2.4	12	2,710	740	2.4	12	1,800	270	2.4	12	2,250	330	3	12
	48.0	2,840	660	1.2	12	2,440	520	1.2	12	1,630	190	1.2	12	2,030	240	1.5	12
14.0	26.0	2,730	940	2.24	14	2,320	740	2.24	14	1,550	270	2.24	14	1,930	330	2.8	14
16.0	32.0	2,390	940	2.56	16	2,030	740	2.56	16	1,350	270	2.56	16	1,690	330	3.2	16
18.0	32.0	2,120	930	2.88	18	1,800	730	2.88	18	1,200	270	2.88	18	1,500	330	3.6	18
20.0	38.0	1,910	930	3.2	20	1,620	730	3.2	20	1,080	270	3.2	20	1,350	330	4	20

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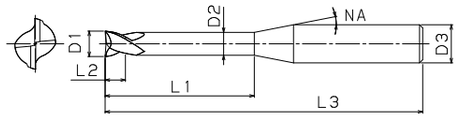
초경 롱 넥 스퀘어 엔드밀
Carbide Long Neck Square End Mill

ion A | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IALS-2 Model number:IALS-2

날경 Diameter	날경허용공차 Diameter Tolerance
~φ6	-0.004/-0.007
φ8~φ12	-0.004/-0.014
φ14~φ20	-0.004/-0.020



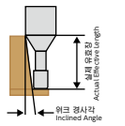


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요.
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

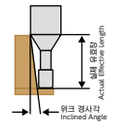
최적◎Recommended 적응○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALS-2-0.1xL0.3	0.1	0.3	0.1	0.08	11	4	50	0.37	0.39	0.41	0.43	0.48	7,440
IALS-2-0.1xL1.0		1.0	0.1	0.08	11	4	50	1.10	1.16	1.22	1.28	1.44	10,160
IALS-2-0.2xL0.5	0.2	0.5	0.15	0.18	11	4	50	0.58	0.61	0.64	0.67	0.75	4,880
IALS-2-0.2xL1.0		1.0	0.15	0.18	11	4	50	1.10	1.16	1.22	1.28	1.44	5,280
IALS-2-0.3xL1.5	0.3	1.5	0.25	0.27	11	4	50	1.65	1.73	1.82	1.92	2.16	4,320
IALS-2-0.3xL3.0		3.0	0.25	0.27	11	4	50	3.22	3.38	3.56	3.75	4.21	5,520
IALS-2-0.4xL1.5	0.4	1.5	0.3	0.37	11	4	50	1.65	1.73	1.82	1.92	2.16	3,120
IALS-2-0.4xL3.0		3.0	0.3	0.37	11	4	50	3.22	3.38	3.56	3.75	4.21	3,120
IALS-2-0.5xL2.0	0.5	2.0	0.4	0.47	11	4	50	2.17	2.28	2.40	2.53	2.84	2,240
IALS-2-0.5xL4.0		4.0	0.4	0.47	11	4	50	4.27	4.48	4.71	4.97	5.58	2,240
IALS-2-0.6xL1.5	0.6	1.5	0.5	0.57	11	4	50	1.65	1.73	1.82	1.92	2.16	2,400
IALS-2-0.8xL4.0	0.8	4.0	0.65	0.77	11	4	50	4.27	4.48	4.71	4.97	5.58	2,640
IALS-2-0.8xL8.0		8.0	0.65	0.77	11	4	50	8.46	8.87	9.33	9.85	11.06	2,640
IALS-2-1.0xL2.0	1.0	2.0	0.8	0.95	11	4	50	2.23	2.34	2.46	2.59	2.91	2,400
IALS-2-1.0xL4.0		4.0	0.8	0.95	11	4	50	4.32	4.54	4.77	5.03	5.65	2,400
IALS-2-1.0xL6.0		6.0	0.8	0.95	11	4	50	6.42	6.73	7.08	7.47	8.39	2,400
IALS-2-1.0xL8.0		8.0	0.8	0.95	11	4	50	8.51	8.93	9.39	9.91	11.13	2,400
IALS-2-1.0xL10.0		10.0	0.8	0.95	11	4	50	10.60	11.13	11.71	12.35	13.87	2,400
IALS-2-1.0xL12.0		12.0	0.8	0.95	11	4	50	12.70	13.33	14.02	14.78	16.61	2,400
IALS-2-1.2xL4.0	1.2	4.0	1.0	1.15	11	4	50	4.32	4.54	4.77	5.03	5.65	2,560
IALS-2-1.2xL6.0		6.0	1.0	1.15	11	4	50	6.42	6.73	7.08	7.47	8.39	2,560
IALS-2-1.2xL8.0		8.0	1.0	1.15	11	4	50	8.51	8.93	9.39	9.91	11.13	2,560
IALS-2-1.2xL10.0		10.0	1.0	1.15	11	4	50	10.60	11.13	11.71	12.35	13.87	2,560
IALS-2-1.2xL12.0		12.0	1.0	1.15	11	4	50	12.70	13.33	14.02	14.78	16.61	2,560



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALS-2-1.5xL4.0	1.5	4.0	1.2	1.45	11	4	50	4.32	4.54	4.77	5.03	5.65	2,560
IALS-2-1.5xL6.0		6.0	1.2	1.45	11	4	50	6.42	6.73	7.08	7.47	8.39	2,560
IALS-2-1.5xL8.0		8.0	1.2	1.45	11	4	50	8.51	8.93	9.39	9.91	11.13	2,560
IALS-2-1.5xL10.0		10.0	1.2	1.45	11	4	50	10.60	11.13	11.71	12.35	13.87	2,560
IALS-2-1.5xL12.0		12.0	1.2	1.45	11	4	50	12.70	13.33	14.02	14.78	16.61	2,560
IALS-2-1.5xL14.0		14.0	1.2	1.45	11	4	50	14.79	15.52	16.33	17.22	19.34	2,640
IALS-2-1.5xL16.0		16.0	1.2	1.45	11	4	50	16.89	17.72	18.64	19.66	22.08	2,640
IALS-2-2.0xL4.0	2.0	4.0	1.6	1.94	11	4	50	4.35	4.56	4.80	5.06	5.69	2,560
IALS-2-2.0xL6.0		6.0	1.6	1.94	11	4	50	6.44	6.76	7.11	7.50	8.43	2,560
IALS-2-2.0xL8.0		8.0	1.6	1.94	11	4	50	8.54	8.96	9.42	9.94	11.16	2,560
IALS-2-2.0xL10.0		10.0	1.6	1.94	11	4	50	10.63	11.16	11.74	12.38	13.90	2,560
IALS-2-2.0xL12.0		12.0	1.6	1.94	11	4	50	12.73	13.35	14.05	14.82	16.64	2,560
IALS-2-2.0xL14.0		14.0	1.6	1.94	11	4	50	14.82	15.55	16.36	17.25	FREE	2,560
IALS-2-2.0xL15.0		15.0	1.6	1.94	11	4	50	15.87	16.65	17.51	18.47	FREE	2,560
IALS-2-2.0xL16.0		16.0	1.6	1.94	11	4	50	16.91	17.75	18.67	19.69	FREE	2,560
IALS-2-2.0xL18.0		18.0	1.6	1.94	11	4	50	19.01	19.95	20.98	22.13	FREE	2,560
IALS-2-2.0xL20.0		20.0	1.6	1.94	11	4	60	21.10	22.14	23.29	24.57	FREE	2,560
IALS-2-3.0xL8.0	3.0	8.0	2.5	2.85	11	4	50	8.78	9.21	9.69	10.22	FREE	3,440
IALS-2-3.0xL10.0		10.0	2.5	2.85	11	4	50	10.87	11.41	12.00	12.66	FREE	3,440
IALS-2-3.0xL12.0		12.0	2.5	2.85	11	4	50	12.97	13.61	14.31	FREE	FREE	3,440
IALS-2-3.0xL14.0		14.0	2.5	2.85	11	4	50	15.06	15.81	16.63	FREE	FREE	3,440
IALS-2-3.0xL16.0		16.0	2.5	2.85	11	4	50	17.16	18.00	18.94	FREE	FREE	3,440
IALS-2-3.0xL18.0		18.0	2.5	2.85	11	4	50	19.25	20.20	FREE	FREE	FREE	3,440
IALS-2-3.0xL20.0		20.0	2.5	2.85	11	4	50	21.34	22.40	FREE	FREE	FREE	3,440
IALS-2-3.0xL25.0		25.0	2.5	2.85	11	4	60	26.58	27.89	FREE	FREE	FREE	3,440
IALS-2-3.0xL30.0		30.0	2.5	2.85	11	4	60	31.81	FREE	FREE	FREE	FREE	4,080
IALS-2-4.0xL10.0	4.0	10.0	3.2	3.8	11	6	50	11.01	11.55	12.15	12.82	14.39	3,920
IALS-2-4.0xL12.0		12.0	3.2	3.8	11	6	50	13.10	13.75	14.46	15.26	17.13	3,920
IALS-2-4.0xL16.0		16.0	3.2	3.8	11	6	50	17.29	18.14	19.09	20.13	FREE	3,920
IALS-2-4.0xL20.0		20.0	3.2	3.8	11	6	50	21.48	22.54	23.71	25.01	FREE	3,920
IALS-2-4.0xL25.0		25.0	3.2	3.8	11	6	60	26.71	28.03	29.49	FREE	FREE	3,920
IALS-2-4.0xL30.0		30.0	3.2	3.8	11	6	60	31.95	33.52	35.27	FREE	FREE	3,920
IALS-2-4.0xL35.0		35.0	3.2	3.8	11	6	70	37.18	39.02	FREE	FREE	FREE	3,920
IALS-2-5.0xL15.0	5.0	15.0	4.0	4.8	11	6	50	16.24	17.05	17.93	FREE	FREE	4,960
IALS-2-5.0xL20.0		20.0	4.0	4.8	11	6	50	21.48	22.54	FREE	FREE	FREE	4,960
IALS-2-5.0xL25.0		25.0	4.0	4.8	11	6	60	26.71	28.03	FREE	FREE	FREE	4,960
IALS-2-5.0xL30.0		30.0	4.0	4.8	11	6	60	31.95	FREE	FREE	FREE	FREE	4,960
IALS-2-5.0xL35.0		35.0	4.0	4.8	11	6	70	37.18	FREE	FREE	FREE	FREE	4,960
IALS-2-5.0xL40.0		40.0	4.0	4.8	11	6	70	42.42	FREE	FREE	FREE	FREE	4,960
IALS-2-6.0xL20.0	6.0	20.0	6.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	2,640
IALS-2-6.0xL30.0		30.0	6.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	2,640
IALS-2-6.0xL40.0		40.0	6.0	5.8	11	6	70	FREE	FREE	FREE	FREE	FREE	6,160
IALS-2-6.0xL50.0		50.0	6.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	7,840
IALS-2-6.0xL60.0		60.0	6.0	5.8	11	6	90	FREE	FREE	FREE	FREE	FREE	10,000

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALS-2
Model number:IALS-2

롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	유호장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.1	0.3	50,000	40	0.006	0.1	50,000	30	0.005	0.1	50,000	25	0.005	0.1	50,000	25	0.004	0.1	50,000	20	0.004	0.1
	1.0	50,000	10	0.002	0.1	50,000	10	0.002	0.1	50,000	5	0.002	0.1	50,000	5	0.002	0.1	37,500	4	0.001	0.1
0.2	0.5	50,000	110	0.012	0.2	50,000	95	0.01	0.2	50,000	80	0.009	0.2	42,000	55	0.008	0.2	29,300	35	0.007	0.2
	1.0	50,000	40	0.01	0.2	50,000	30	0.008	0.2	49,300	25	0.007	0.2	37,800	20	0.006	0.2	26,300	10	0.006	0.2
0.3	1.5	50,000	60	0.014	0.3	44,600	45	0.012	0.3	32,900	25	0.011	0.3	25,200	20	0.01	0.3	17,600	10	0.008	0.3
	3.0	43,500	25	0.007	0.3	31,700	15	0.006	0.3	23,400	10	0.005	0.3	17,900	5	0.005	0.3	12,500	4	0.004	0.3
0.4	1.5	45,800	135	0.019	0.4	33,500	85	0.016	0.4	24,600	50	0.014	0.4	18,900	35	0.013	0.4	13,200	20	0.011	0.4
	3.0	36,700	40	0.014	0.4	26,800	25	0.012	0.4	19,700	15	0.011	0.4	15,100	10	0.01	0.4	10,500	5	0.008	0.4
0.5	2.0	36,700	85	0.024	0.5	26,800	50	0.02	0.5	19,700	35	0.018	0.5	15,100	20	0.016	0.5	10,500	15	0.014	0.5
	4.0	29,300	35	0.018	0.5	21,400	20	0.015	0.5	15,800	15	0.014	0.5	12,100	10	0.012	0.5	8,440	5	0.011	0.5
0.6	1.5	33,900	225	0.036	0.6	24,800	140	0.03	0.6	18,300	85	0.027	0.6	14,000	55	0.024	0.6	9,760	35	0.021	0.6
0.8	4.0	22,900	70	0.038	0.8	16,700	45	0.032	0.8	12,300	25	0.029	0.8	9,460	20	0.026	0.8	6,590	10	0.022	0.8
	8.0	16,300	25	0.019	0.8	11,900	15	0.016	0.8	8,770	10	0.014	0.8	6,730	5	0.013	0.8	4,690	5	0.011	0.8
1.0	2.0	20,400	225	0.06	1	14,900	140	0.05	1	11,000	85	0.045	1	8,410	55	0.04	1	5,860	35	0.035	1
	4.0	18,300	85	0.048	1	13,400	50	0.04	1	9,860	35	0.036	1	7,570	20	0.032	1	5,270	15	0.028	1
	6.0	16,300	55	0.036	1	11,900	35	0.03	1	8,770	20	0.027	1	6,730	15	0.024	1	4,690	5	0.021	1
	8.0	14,700	35	0.036	1	10,700	30	0.03	1	7,890	15	0.027	1	6,050	10	0.024	1	4,220	5	0.021	1
	10.0	13,000	25	0.024	1	9,530	15	0.02	1	7,020	10	0.018	1	5,380	5	0.016	1	3,750	5	0.014	1
	12.0	13,000	20	0.018	1	9,530	10	0.015	1	7,020	5	0.014	1	5,380	4	0.012	1	3,750	3	0.011	1
1.2	4.0	15,300	135	0.058	1.2	11,200	85	0.048	1.2	8,220	50	0.043	1.2	6,310	35	0.038	1.2	4,400	20	0.034	1.2
	6.0	15,300	70	0.058	1.2	11,200	45	0.048	1.2	8,220	25	0.043	1.2	6,310	20	0.038	1.2	4,400	10	0.034	1.2
	8.0	13,600	50	0.043	1.2	9,920	30	0.036	1.2	7,310	20	0.032	1.2	5,600	10	0.029	1.2	3,910	5	0.025	1.2
	10.0	12,200	35	0.029	1.2	8,930	20	0.024	1.2	6,580	15	0.022	1.2	5,040	10	0.019	1.2	3,520	5	0.017	1.2
	12.0	10,900	25	0.029	1.2	7,940	15	0.024	1.2	5,850	10	0.022	1.2	4,480	5	0.019	1.2	3,130	5	0.017	1.2
1.5	4.0	13,600	225	0.09	1.5	9,920	140	0.075	1.5	7,310	85	0.068	1.5	5,600	55	0.06	1.5	3,910	35	0.053	1.5
	6.0	12,200	85	0.072	1.5	8,930	50	0.06	1.5	6,580	35	0.054	1.5	5,040	20	0.048	1.5	3,520	15	0.042	1.5
	8.0	10,900	60	0.054	1.5	7,940	40	0.045	1.5	5,850	25	0.041	1.5	4,480	15	0.036	1.5	3,130	10	0.032	1.5
	10.0	10,900	50	0.054	1.5	7,940	30	0.045	1.5	5,850	20	0.041	1.5	4,480	10	0.036	1.5	3,130	10	0.032	1.5
	12.0	9,780	35	0.054	1.5	7,150	20	0.045	1.5	5,260	15	0.041	1.5	4,040	10	0.036	1.5	2,810	5	0.032	1.5
	14.0	8,690	25	0.036	1.5	6,350	15	0.03	1.5	4,680	10	0.027	1.5	3,590	5	0.024	1.5	2,500	5	0.021	1.5
	16.0	8,690	20	0.027	1.5	6,350	15	0.023	1.5	4,680	10	0.02	1.5	3,590	5	0.018	1.5	2,500	3	0.016	1.5
2.0	4.0	10,200	225	0.12	2	7,440	140	0.1	2	5,480	85	0.09	2	4,200	55	0.08	2	2,930	35	0.07	2
	6.0	10,200	150	0.12	2	7,440	95	0.1	2	5,480	60	0.09	2	4,200	40	0.08	2	2,930	25	0.07	2
	8.0	9,170	85	0.096	2	6,700	50	0.08	2	4,930	35	0.072	2	3,780	20	0.064	2	2,640	15	0.056	2
	10.0	9,170	70	0.096	2	6,700	45	0.08	2	4,930	25	0.072	2	3,780	20	0.064	2	2,640	10	0.056	2
	12.0	8,150	55	0.072	2	5,950	35	0.06	2	4,390	20	0.054	2	3,360	15	0.048	2	2,350	10	0.042	2
	14.0	8,150	45	0.072	2	5,950	30	0.06	2	4,390	20	0.054	2	3,360	10	0.048	2	2,350	5	0.042	2
	15.0	7,340	40	0.072	2	5,360	25	0.06	2	3,950	15	0.054	2	3,030	10	0.048	2	2,110	5	0.042	2
	16.0	7,340	35	0.072	2	5,360	20	0.06	2	3,950	25	0.054	2	3,030	10	0.048	2	2,110	5	0.042	2
	18.0	7,340	30	0.048	2	5,360	20	0.04	2	3,950	10	0.036	2	3,030	5	0.032	2	2,110	5	0.028	2
	20.0	6,520	25	0.048	2	4,760	15	0.04	2	3,510	10	0.036	2	2,690	5	0.032	2	1,880	5	0.028	2
3.0	8.0	6,790	225	0.18	3	4,960	140	0.15	3	3,660	85	0.135	3	2,800	55	0.12	3	1,950	35	0.105	3

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p=축방향,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	유호장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
3.0	10.0	6,110	135	0.144	3	4,470	85	0.12	3	3,290	50	0.108	3	2,520	35	0.096	3	1,760	20	0.084	3
	12.0	6,110	85	0.144	3	4,470	50	0.12	3	3,290	35	0.108	3	2,520	20	0.096	3	1,760	15	0.084	3
	14.0	6,110	85	0.144	3	4,470	50	0.12	3	3,290	35	0.108	3	2,520	20	0.096	3	1,760	15	0.084	3
	16.0	5,430	60	0.108	3	3,970	40	0.09	3	2,920	25	0.081	3	2,240	15	0.072	3	1,560	10	0.063	3
	18.0	5,430	55	0.108	3	3,970	35	0.09	3	2,920	20	0.081	3	2,240	10	0.072	3	1,560	15	0.063	3
	20.0	5,430	50	0.108	3	3,970	30	0.09	3	2,920	20	0.081	3	2,240	10	0.072	3	1,560	10	0.063	3
	25.0	4,890	35	0.072	3	3,570	20	0.06	3	2,630	15	0.054	3	2,020	10	0.048	3	1,410	5	0.042	3
	30.0	4,350	25	0.072	3	3,180	15	0.06	3	2,340	10	0.054	3	1,800	5	0.048	3	1,250	5	0.042	3
4.0	10.0	5,100	225	0.24	4	3,720	140	0.2	4	2,740	85	0.18	4	2,100	55	0.16	4	1,470	35	0.14	4
	12.0	5,100	150	0.24	4	3,720	95	0.2	4	2,740	60	0.18	4	2,100	40	0.16	4	1,470	25	0.14	4
	16.0	4,590	85	0.192	4	3,350	50	0.16	4	2,470	35	0.144	4	1,890	20	0.128	4	1,320	15	0.112	4
	20.0	4,590	70	0.192	4	3,350	45	0.16	4	2,470	25	0.144	4	1,890	20	0.128	4	1,320	10	0.112	4
	25.0	4,080	50	0.144	4	2,980	30	0.12	4	2,190	20	0.108	4	1,680	15	0.096	4	1,170	10	0.084	4
	30.0	3,670	40	0.144	4	2,680	25	0.12	4	1,970	15	0.108	4	1,520	10	0.096	4	1,060	5	0.084	4
	35.0	3,670	30	0.096	4	2,680	20	0.08	4	1,970	10	0.072	4	1,520	5	0.064	4	1,060	5	0.056	4
5.0	15.0	4,080	150	0.3	5	2,980	95	0.25	5	2,190	60	0.225	5	1,680	40	0.2	5	1,170	25	0.175	5
	20.0	3,670	85	0.24	5	2,680	50	0.2	5	1,970	35	0.18	5	1,520	20	0.16	5	1,060	15	0.14	5
	25.0	3,670	70	0.24	5	2,680	45	0.2	5	1,970	25	0.18	5	1,520	20	0.16	5	1,060	10	0.14	5
	30.0	3,260	55	0.18	5	2,380	35	0.15	5	1,760	20	0.135	5	1,350	15	0.12	5	940	10	0.105	5
	35.0	3,260	45	0.18	5	2,380	30	0.15	5	1,760	20	0.135	5	1,350	10	0.12	5	940	5	0.105	5
	40.0	2,940	35	0.18	5	2,150	20	0.15	5	1,580	15	0.135	5	1,210	10	0.12	5	850	5	0.105	5
6.0	20.0	3,060	135	0.288	6	2,230	85	0.24	6	1,650	50	0.216	6	1,260	35	0.192	6	880	20	0.168	6
	30.0	3,060	70	0.288	6	2,230	45	0.24	6	1,650	25	0.216	6	1,260	20	0.192	6	880	10	0.168	6
	40.0	2,720	50	0.216	6	1,990	30	0.18	6	1,460	20	0.162	6	1,120	10	0.144	6	780	10	0.126	6
	50.0	2,450	35	0.144	6	1,790	20	0.12	6	1,320	15	0.108	6	1,010	10	0.096	6	710	5	0.084	6
	60.0	2,180	25	0.144	6	1,590	15	0.12	6	1,170	10	0.108	6	900	5	0.096	6	630	5	0.084	6

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●∂p=축방향,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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CBN Series
ion Depo A Series 스퀘어 Square
ion Depo U Series

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALS-2
Model number:IALS-2

롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.1	0.3	50,000	50	0.007	0.1	50,000	35	0.005	0.1	50,000	30	0.004	0.1	50,000	25	0.004	0.1
	1.0	50,000	10	0.003	0.1	50,000	10	0.002	0.1	50,000	10	0.002	0.1	40,700	5	0.002	0.1
0.2	0.5	50,000	150	0.014	0.2	50,000	100	0.009	0.2	50,000	95	0.008	0.2	31,800	50	0.008	0.2
	1.0	50,000	55	0.011	0.2	50,000	35	0.007	0.2	45,800	30	0.006	0.2	28,600	15	0.006	0.2
0.3	1.5	50,000	80	0.017	0.3	34,400	35	0.011	0.3	30,600	30	0.01	0.3	19,100	15	0.01	0.3
	3.0	43,500	30	0.008	0.3	24,400	10	0.005	0.3	21,700	10	0.005	0.3	13,600	5	0.005	0.3
0.4	1.5	45,800	185	0.022	0.4	25,800	70	0.014	0.4	22,900	55	0.013	0.4	14,300	30	0.013	0.4
	3.0	36,700	55	0.017	0.4	20,600	20	0.011	0.4	18,300	15	0.01	0.4	11,500	10	0.01	0.4
0.5	2.0	36,700	115	0.028	0.5	20,600	45	0.018	0.5	18,300	35	0.016	0.5	11,500	20	0.016	0.5
	4.0	29,300	50	0.021	0.5	16,500	20	0.014	0.5	14,700	15	0.012	0.5	9,170	10	0.012	0.5
0.6	1.5	33,900	305	0.042	0.6	19,100	100	0.027	0.6	17,000	95	0.024	0.6	10,600	50	0.024	0.6
0.8	4.0	22,900	95	0.045	0.8	12,900	35	0.029	0.8	11,500	30	0.026	0.8	7,160	15	0.026	0.8
	8.0	16,300	30	0.022	0.8	9,170	10	0.014	0.8	8,150	10	0.013	0.8	5,100	5	0.013	0.8
1.0	2.0	20,400	305	0.07	1	11,500	100	0.045	1	10,200	95	0.04	1	6,370	50	0.04	1
	4.0	18,300	115	0.056	1	10,300	45	0.036	1	9,170	35	0.032	1	5,730	20	0.032	1
	6.0	16,300	75	0.042	1	9,170	30	0.027	1	8,150	25	0.024	1	5,100	10	0.024	1
	8.0	14,700	50	0.042	1	8,250	20	0.027	1	7,340	15	0.024	1	4,590	10	0.024	1
	10.0	13,000	30	0.028	1	7,340	10	0.018	1	6,520	10	0.016	1	4,080	5	0.016	1
	12.0	13,000	25	0.021	1	7,340	10	0.014	1	6,520	5	0.012	1	4,080	4	0.012	1
1.2	4.0	15,300	185	0.067	1.2	8,600	70	0.043	1.2	7,640	55	0.038	1.2	4,780	30	0.038	1.2
	6.0	15,300	95	0.067	1.2	8,600	35	0.043	1.2	7,640	30	0.038	1.2	4,780	15	0.038	1.2
	8.0	13,600	65	0.05	1.2	7,640	25	0.032	1.2	6,790	20	0.029	1.2	4,250	10	0.029	1.2
	10.0	12,200	45	0.034	1.2	6,880	20	0.022	1.2	6,110	15	0.019	1.2	3,820	5	0.019	1.2
	12.0	10,900	30	0.034	1.2	6,110	10	0.022	1.2	5,430	10	0.019	1.2	3,400	5	0.019	1.2
1.5	4.0	13,600	305	0.105	1.5	7,640	100	0.068	1.5	6,790	95	0.06	1.5	4,250	50	0.06	1.5
	6.0	12,200	115	0.084	1.5	6,880	45	0.054	1.5	6,110	35	0.048	1.5	3,820	20	0.048	1.5
	8.0	10,900	80	0.063	1.5	6,110	30	0.041	1.5	5,430	25	0.036	1.5	3,400	15	0.036	1.5
	10.0	10,900	65	0.063	1.5	6,110	25	0.041	1.5	5,430	20	0.036	1.5	3,400	10	0.036	1.5
	12.0	9,780	50	0.063	1.5	5,500	20	0.041	1.5	4,890	15	0.036	1.5	3,060	10	0.036	1.5
	14.0	8,690	35	0.042	1.5	4,890	15	0.027	1.5	4,350	10	0.024	1.5	2,720	5	0.024	1.5
	16.0	8,690	30	0.032	1.5	4,890	10	0.02	1.5	4,350	10	0.018	1.5	2,720	5	0.018	1.5
2.0	4.0	10,200	305	0.14	2	5,730	100	0.09	2	5,100	95	0.08	2	3,190	50	0.08	2
	6.0	10,200	205	0.14	2	5,730	80	0.09	2	5,100	65	0.08	2	3,190	35	0.08	2
	8.0	9,170	115	0.112	2	5,160	45	0.072	2	4,590	35	0.064	2	2,870	20	0.064	2
	10.0	9,170	95	0.112	2	5,160	35	0.072	2	4,590	30	0.064	2	2,870	15	0.064	2
	12.0	8,150	75	0.084	2	4,590	30	0.054	2	4,080	25	0.048	2	2,550	10	0.048	2
	14.0	8,150	65	0.084	2	4,590	25	0.054	2	4,080	20	0.048	2	2,550	10	0.048	2
	15.0	7,340	55	0.084	2	4,130	20	0.054	2	3,670	15	0.048	2	2,290	10	0.048	2
	16.0	7,340	50	0.084	2	4,130	20	0.054	2	3,670	15	0.048	2	2,290	10	0.048	2
	18.0	7,340	40	0.056	2	4,130	15	0.036	2	3,670	15	0.032	2	2,290	5	0.032	2
	20.0	6,520	30	0.056	2	3,670	10	0.036	2	3,260	10	0.032	2	2,040	5	0.032	2
3.0	8.0	6,790	305	0.21	3	3,820	100	0.135	3	3,400	95	0.12	3	2,120	50	0.12	3

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롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
3.0	10.0	6,110	185	0.168	3	3,440	70	0.108	3	3,060	55	0.096	3	1,910	30	0.096	3
	12.0	6,110	115	0.168	3	3,440	45	0.108	3	3,060	35	0.096	3	1,910	20	0.096	3
	14.0	6,110	115	0.168	3	3,440	45	0.108	3	3,060	35	0.096	3	1,910	20	0.096	3
	16.0	5,430	80	0.126	3	3,060	30	0.081	3	2,720	25	0.072	3	1,700	15	0.072	3
	18.0	5,430	75	0.126	3	3,060	30	0.081	3	2,720	25	0.072	3	1,700	10	0.072	3
	20.0	5,430	65	0.126	3	3,060	25	0.081	3	2,720	20	0.072	3	1,700	10	0.072	3
	25.0	4,890	45	0.084	3	2,750	20	0.054	3	2,450	15	0.048	3	1,530	5	0.048	3
	30.0	4,350	30	0.084	3	2,450	10	0.054	3	2,180	10	0.048	3	1,360	5	0.048	3
4.0	10.0	5,100	305	0.28	4	2,870	100	0.18	4	2,550	95	0.16	4	1,590	50	0.16	4
	12.0	5,100	205	0.28	4	2,870	80	0.18	4	2,550	65	0.16	4	1,590	35	0.16	4
	16.0	4,590	115	0.224	4	2,580	45	0.144	4	2,290	35	0.128	4	1,430	20	0.128	4
	20.0	4,590	95	0.224	4	2,580	35	0.144	4	2,290	30	0.128	4	1,430	15	0.128	4
	25.0	4,080	70	0.168	4	2,290	25	0.108	4	2,040	20	0.096	4	1,280	10	0.096	4
	30.0	3,670	55	0.168	4	2,070	20	0.108	4	1,840	15	0.096	4	1,150	10	0.096	4
	35.0	3,670	45	0.112	4	2,070	15	0.072	4	1,840	10	0.064	4	1,150	5	0.064	4
5.0	15.0	4,080	205	0.35	5	2,290	80	0.225	5	2,040	65	0.2	5	1,280	35	0.2	5
	20.0	3,670	115	0.28	5	2,070	45	0.18	5	1,840	35	0.16	5	1,150	20	0.16	5
	25.0	3,670	95	0.28	5	2,070	35	0.18	5	1,840	30	0.16	5	1,150	15	0.16	5
	30.0	3,260	75	0.21	5	1,840	30	0.135	5	1,630	25	0.12	5	1,020	10	0.12	5
	35.0	3,260	65	0.21	5	1,840	25	0.135	5	1,630	20	0.12	5	1,020	10	0.12	5
	40.0	2,940	50	0.21	5	1,650	20	0.135	5	1,470	15	0.12	5	920	10	0.12	5
6.0	20.0	3,060	185	0.336	6	1,720	70	0.216	6	1,530	60	0.192	6	960	30	0.192	6
	30.0	3,060	95	0.336	6	1,720	35	0.216	6	1,530	30	0.192	6	960	15	0.192	6
	40.0	2,720	65	0.252	6	1,530	25	0.162	6	1,360	20	0.144	6	850	10	0.144	6
	50.0	2,450	45	0.168	6	1,380	20	0.108	6	1,220	15	0.096	6	770	5	0.096	6
	60.0	2,180	30	0.168	6	1,220	10	0.108	6	1,090	10	0.096	6	680	5	0.096	6

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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALS-2
Model number:IALS-2

롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.1	0.3	50,000	40	0.008	0.1	50,000	35	0.008	0.1	50,000	30	0.005	0.1	50,000	30	0.008	0.1
	1.0	50,000	10	0.003	0.1	50,000	10	0.003	0.1	50,000	10	0.002	0.1	50,000	10	0.003	0.1
0.2	0.5	50,000	120	0.015	0.2	50,000	110	0.015	0.2	50,000	95	0.01	0.2	50,000	95	0.015	0.2
	1.0	50,000	40	0.012	0.2	50,000	40	0.012	0.2	50,000	35	0.008	0.2	50,000	35	0.012	0.2
0.3	1.5	50,000	65	0.018	0.3	50,000	60	0.018	0.3	50,000	50	0.012	0.3	50,000	50	0.018	0.3
	3.0	50,000	30	0.009	0.3	50,000	25	0.009	0.3	43,500	20	0.006	0.3	50,000	25	0.009	0.3
0.4	1.5	50,000	160	0.024	0.4	50,000	100	0.024	0.4	45,800	115	0.016	0.4	50,000	125	0.024	0.4
	3.0	50,000	60	0.018	0.4	50,000	55	0.018	0.4	36,700	35	0.012	0.4	45,800	40	0.018	0.4
0.5	2.0	50,000	125	0.03	0.5	50,000	115	0.03	0.5	36,700	70	0.02	0.5	45,800	90	0.03	0.5
	4.0	50,000	65	0.023	0.5	44,000	55	0.023	0.5	29,300	30	0.015	0.5	36,700	40	0.023	0.5
0.6	1.5	50,000	360	0.045	0.6	50,000	330	0.045	0.6	33,900	190	0.03	0.6	42,400	240	0.045	0.6
0.8	4.0	40,100	135	0.048	0.8	34,400	105	0.048	0.8	22,900	60	0.032	0.8	28,600	75	0.048	0.8
	8.0	28,500	45	0.024	0.8	24,400	35	0.024	0.8	16,300	20	0.016	0.8	20,400	25	0.024	0.8
1.0	2.0	35,600	430	0.075	1	30,600	335	0.075	1	20,400	190	0.05	1	25,500	240	0.075	1
	4.0	32,100	160	0.06	1	27,500	125	0.06	1	18,300	70	0.04	1	22,900	90	0.06	1
	6.0	28,500	105	0.045	1	24,400	80	0.045	1	16,300	45	0.03	1	20,400	60	0.045	1
	8.0	25,700	70	0.045	1	22,000	55	0.045	1	14,700	30	0.03	1	18,300	40	0.045	1
	10.0	22,800	45	0.03	1	19,500	35	0.03	1	13,000	20	0.02	1	16,300	25	0.03	1
	12.0	22,800	35	0.023	1	19,500	25	0.023	1	13,000	15	0.015	1	16,300	20	0.023	1
1.2	4.0	26,700	260	0.072	1.2	22,900	205	0.072	1.2	15,300	115	0.048	1.2	19,100	145	0.072	1.2
	6.0	26,700	135	0.072	1.2	22,900	105	0.072	1.2	15,300	60	0.048	1.2	19,100	75	0.072	1.2
	8.0	23,800	95	0.054	1.2	20,400	75	0.054	1.2	13,600	40	0.036	1.2	17,000	50	0.054	1.2
	10.0	21,400	65	0.036	1.2	18,300	50	0.036	1.2	12,200	30	0.024	1.2	15,300	35	0.036	1.2
	12.0	19,000	45	0.036	1.2	16,300	35	0.036	1.2	10,900	20	0.024	1.2	13,600	25	0.036	1.2
1.5	4.0	23,800	430	0.112	1.5	20,400	335	0.112	1.5	13,600	190	0.075	1.5	17,000	240	0.112	1.5
	6.0	21,400	100	0.09	1.5	18,300	125	0.09	1.5	12,200	70	0.06	1.5	15,300	90	0.09	1.5
	8.0	19,000	115	0.067	1.5	16,300	90	0.067	1.5	10,900	50	0.045	1.5	13,600	65	0.067	1.5
	10.0	19,000	95	0.067	1.5	16,300	75	0.067	1.5	10,900	40	0.045	1.5	13,600	50	0.067	1.5
	12.0	17,100	70	0.067	1.5	14,700	55	0.067	1.5	9,780	30	0.045	1.5	12,200	40	0.067	1.5
	14.0	15,200	50	0.045	1.5	13,000	40	0.045	1.5	8,690	20	0.03	1.5	10,900	30	0.045	1.5
	16.0	15,200	40	0.034	1.5	13,000	30	0.034	1.5	8,690	20	0.023	1.5	10,900	25	0.034	1.5
2.0	4.0	17,800	430	0.15	2	15,300	335	0.15	2	10,200	190	0.1	2	12,700	240	0.15	2
	6.0	17,800	285	0.15	2	15,300	225	0.15	2	10,200	130	0.1	2	12,700	160	0.15	2
	8.0	16,000	160	0.12	2	13,700	125	0.12	2	9,170	70	0.08	2	11,500	90	0.12	2
	10.0	16,000	135	0.12	2	13,700	105	0.12	2	9,170	60	0.08	2	11,500	75	0.12	2
	12.0	14,300	105	0.09	2	12,200	80	0.09	2	8,150	45	0.06	2	10,200	60	0.09	2
	14.0	14,300	90	0.09	2	12,200	70	0.09	2	8,150	40	0.06	2	10,200	50	0.09	2
	15.0	12,800	75	0.09	2	11,000	60	0.09	2	7,340	35	0.06	2	9,170	40	0.09	2
	16.0	12,800	70	0.09	2	11,000	55	0.09	2	7,340	30	0.06	2	9,170	40	0.09	2
	18.0	12,800	60	0.06	2	11,000	45	0.06	2	7,340	25	0.04	2	9,170	35	0.06	2
	20.0	11,400	45	0.06	2	9,780	35	0.06	2	6,520	20	0.04	2	8,150	25	0.06	2
3.0	8.0	11,900	430	0.225	3	10,200	335	0.225	3	6,790	190	0.15	3	8,490	240	0.225	3

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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
3.0	10.0	10,700	260	0.18	3	9,170	205	0.18	3	6,110	115	0.12	3	7,640	145	0.18	3
	12.0	10,700	160	0.18	3	9,170	125	0.18	3	6,110	70	0.12	3	7,640	90	0.18	3
	14.0	10,700	160	0.18	3	9,170	125	0.18	3	6,110	70	0.12	3	7,640	90	0.18	3
	16.0	9,510	115	0.135	3	8,150	90	0.135	3	5,430	50	0.09	3	6,790	65	0.135	3
	18.0	9,510	105	0.135	3	8,150	80	0.135	3	5,430	45	0.09	3	6,790	60	0.135	3
	20.0	9,510	95	0.135	3	8,150	75	0.135	3	5,430	40	0.09	3	6,790	50	0.135	3
	25.0	8,560	65	0.09	3	7,340	50	0.09	3	4,890	30	0.06	3	6,110	35	0.09	3
	30.0	7,610	45	0.09	3	6,520	35	0.09	3	4,350	20	0.06	3	5,430	25	0.09	3
4.0	10.0	8,920	430	0.3	4	7,640	335	0.3	4	5,100	190	0.2	4	6,370	240	0.3	4
	12.0	8,920	230	0.3	4	7,640	225	0.3	4	5,100	130	0.2	4	6,370	160	0.3	4
	16.0	8,020	160	0.24	4	6,880	125	0.24	4	4,590	70	0.16	4	5,730	90	0.24	4
	20.0	8,020	135	0.24	4	6,880	105	0.24	4	4,590	60	0.16	4	5,730	75	0.24	4
	25.0	7,130	100	0.18	4	6,110	80	0.18	4	4,080	45	0.12	4	5,100	55	0.18	4
	30.0	6,420	75	0.18	4	5,500	60	0.18	4	3,670	35	0.12	4	4,590	40	0.18	4
	35.0	6,420	60	0.12	4	5,500	50	0.12	4	3,670	25	0.08	4	4,590	35	0.12	4
5.0	15.0	7,130	130	0.375	5	6,110	225	0.375	5	4,080	130	0.25	5	5,100	160	0.375	5
	20.0	6,420	160	0.3	5	5,500	125	0.3	5	3,670	70	0.2	5	4,590	90	0.3	5
	25.0	6,420	135	0.3	5	5,500	105	0.3	5	3,670	60	0.2	5	4,590	75	0.3	5
	30.0	5,710	105	0.225	5	4,890	80	0.225	5	3,260	45	0.15	5	4,080	60	0.225	5
	35.0	5,710	90	0.225	5	4,890	70	0.225	5	3,260	40	0.15	5	4,080	50	0.225	5
	40.0	5,140	70	0.225	5	4,400	55	0.225	5	2,940	30	0.15	5	3,670	40	0.225	5
6.0	20.0	5,350	260	0.36	6	4,590	100	0.36	6	3,060	115	0.24	6	3,820	140	0.36	6
	30.0	5,350	135	0.36	6	4,590	105	0.36	6	3,060	60	0.24	6	3,820	75	0.36	6
	40.0	4,760	95	0.27	6	4,080	75	0.27	6	2,720	40	0.18	6	3,400	50	0.27	6
	50.0	4,280	65	0.18	6	3,670	50	0.18	6	2,450	30	0.12	6	3,060	35	0.18	6
	60.0	3,810	45	0.18	6	3,260	35	0.18	6	2,180	20	0.12	6	2,720	25	0.18	6

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ion Depo Type A Series

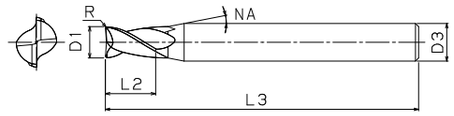
초경 래디우스 엔드밀 Carbide Radius End Mill

ion A | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IAR-2 Model number:IAR-2

날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8 ~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010





표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요.
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAR-2-1.0xR0.1x2.0	1.0	0.1	2.0	11	4	50	5,600
IAR-2-1.0xR0.2x2.0		0.2	2.0	11	4	50	5,600
IAR-2-1.0xR0.3x2.0		0.3	2.0	11	4	50	5,600
IAR-2-1.5xR0.1x3.0	1.5	0.1	3.0	11	4	50	5,600
IAR-2-1.5xR0.2x3.0		0.2	3.0	11	4	50	5,600
IAR-2-1.5xR0.3x3.0		0.3	3.0	11	4	50	5,600
IAR-2-2.0xR0.1x4.0	2.0	0.1	4.0	11	4	50	5,600
IAR-2-2.0xR0.2x4.0		0.2	4.0	11	4	50	5,600
IAR-2-2.0xR0.3x4.0		0.3	4.0	11	4	50	5,600
IAR-2-2.0xR0.5x4.0		0.5	4.0	11	4	50	5,600
IAR-2-2.5xR0.1x5.0	2.5	0.1	5.0	11	4	50	5,600
IAR-2-2.5xR0.2x5.0		0.2	5.0	11	4	50	5,600
IAR-2-2.5xR0.3x5.0		0.3	5.0	11	4	50	6,160
IAR-2-2.5xR0.5x5.0		0.5	5.0	11	4	50	6,160
IAR-2-3.0xR0.1x6.0	3.0	0.1	6.0	11	4	50	6,880
IAR-2-3.0xR0.2x6.0		0.2	6.0	11	4	50	6,880
IAR-2-3.0xR0.3x6.0		0.3	6.0	11	4	50	6,880
IAR-2-3.0xR0.5x6.0		0.5	6.0	11	4	50	6,880
IAR-2-3.0xR1.0x6.0		1.0	6.0	11	4	50	7,520
IAR-2-4.0xR0.1x8.0	4.0	0.1	8.0	11	6	50	6,960
IAR-2-4.0xR0.2x8.0		0.2	8.0	11	6	50	6,960
IAR-2-4.0xR0.3x8.0		0.3	8.0	11	6	50	6,960
IAR-2-4.0xR0.5x8.0		0.5	8.0	11	6	50	6,960
IAR-2-4.0xR1.0x8.0		1.0	8.0	11	6	50	7,600
IAR-2-5.0xR0.1x10.0	5.0	0.1	10.0	11	6	50	7,040
IAR-2-5.0xR0.2x10.0		0.2	10.0	11	6	50	7,040

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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAR-2-5.0xR0.3x10.0	5.0	0.3	10.0	11	6	50	7,040
IAR-2-5.0xR0.5x10.0		0.5	10.0	11	6	50	7,040
IAR-2-5.0xR1.0x10.0		1.0	10.0	11	6	50	7,680
IAR-2-5.0xR1.5x10.0		1.5	10.0	11	6	50	8,000
IAR-2-6.0xR0.1x12.0	6.0	0.1	12.0	—	6	50	13,920
IAR-2-6.0xR0.2x12.0		0.2	12.0	—	6	50	13,920
IAR-2-6.0xR0.3x12.0		0.3	12.0	—	6	50	13,920
IAR-2-6.0xR0.5x12.0		0.5	12.0	—	6	50	13,920
IAR-2-6.0xR1.0x12.0		1.0	12.0	—	6	50	14,880
IAR-2-6.0xR1.5x12.0		1.5	12.0	—	6	50	14,880
IAR-2-6.0xR2.0x12.0		2.0	12.0	—	6	50	14,880

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAR-2
Model number:IAR-2

래디우스 엔드밀 Radius End Mill

측 면 Side Milling

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.0	27,100	385	1.5	0.1	19,100	220	1.5	0.05	13,700	125	1	0.04	10,500	85	1	0.016	7,300	50	0.75	0.012
1.5	3.0	18,100	385	2.25	0.15	12,800	220	2.25	0.075	9,100	125	1.5	0.06	7,000	85	1.5	0.024	4,900	50	1.125	0.018
2.0	4.0	13,600	385	3	0.2	9,550	220	3	0.1	6,850	125	2	0.08	5,250	85	2	0.032	3,650	50	1.5	0.024
2.5	5.0	10,800	415	3.75	0.25	7,650	235	3.75	0.125	5,450	135	2.5	0.1	4,200	90	2.5	0.04	2,950	55	1.875	0.03
3.0	6.0	9,000	415	4.5	0.3	6,350	235	4.5	0.15	4,550	135	3	0.12	3,500	90	3	0.048	2,450	55	2.25	0.036
4.0	8.0	6,750	415	6	0.4	4,750	235	6	0.2	3,400	135	4	0.16	2,650	90	4	0.064	1,850	55	3	0.048
5.0	10.0	5,500	430	7.5	0.5	3,900	245	7.5	0.25	2,800	140	5	0.2	2,150	95	5	0.08	1,500	55	3.75	0.06
6.0	12.0	4,600	430	9	0.6	3,250	245	9	0.3	2,350	140	6	0.24	1,800	95	6	0.096	1,250	55	4.5	0.072

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래디우스 엔드밀 Radius End Mill

홈 Slotting

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.0	24,400	190	0.4	1	17,200	110	0.24	1	11,700	60	0.12	1	8,400	35	0.06	1	5,850	20	0.04	1
1.5	3.0	16,300	190	0.6	1.5	11,500	110	0.36	1.5	7,750	60	0.18	1.5	5,600	35	0.09	1.5	3,900	20	0.06	1.5
2.0	4.0	12,200	190	0.8	2	8,600	110	0.48	2	5,800	60	0.24	2	4,200	35	0.12	2	2,950	20	0.08	2
2.5	5.0	9,750	205	1	2.5	6,900	115	0.6	2.5	4,650	65	0.3	2.5	3,350	35	0.15	2.5	2,350	20	0.1	2.5
3.0	6.0	8,100	205	1.2	3	5,750	115	0.72	3	3,900	65	0.36	3	2,800	35	0.18	3	1,950	20	0.12	3
4.0	8.0	6,100	205	1.6	4	4,300	115	0.96	4	2,900	65	0.48	4	2,100	35	0.24	4	1,450	20	0.16	4
5.0	10.0	4,950	210	2	5	3,500	120	1.2	5	2,350	65	0.6	5	1,700	35	0.3	5	1,200	20	0.2	5
6.0	12.0	4,150	215	2.4	6	2,900	120	1.44	6	2,000	65	0.72	6	1,450	40	0.36	6	1,000	20	0.24	6

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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
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●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAR-2
Model number:IAR-2

래디우스 엔드밀 Radius End Mill

측 면 Side Milling

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.0	28,700	490	1.5	0.08	15,900	180	1.2	0.064	14,300	150	1	0.024	8,900	75	1	0.024
1.5	3.0	19,100	490	2.25	0.12	10,600	180	1.8	0.096	9,550	150	1.5	0.036	5,950	75	1.5	0.036
2.0	4.0	14,300	490	3	0.16	7,950	180	2.4	0.128	7,150	150	2	0.048	4,450	75	2	0.048
2.5	5.0	11,450	525	3.75	0.2	6,350	195	3	0.16	5,750	160	2.5	0.06	3,550	80	2.5	0.06
3.0	6.0	9,550	530	4.5	0.24	5,300	195	3.6	0.192	4,750	160	3	0.072	2,950	80	3	0.072
4.0	8.0	7,150	530	6	0.32	4,000	200	4.8	0.256	3,600	165	4	0.096	2,250	85	4	0.096
5.0	10.0	5,850	550	7.5	0.4	3,250	205	6	0.32	2,900	165	5	0.12	1,800	85	5	0.12
6.0	12.0	4,850	545	9	0.48	2,700	200	7.2	0.384	2,450	170	6	0.144	1,500	85	6	0.144

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래디우스 엔드밀 Radius End Mill

홈 Slotting

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.0	25,800	245	0.3	1	12,800	75	0.15	1	11,500	60	0.12	1	7,150	30	0.09	1
1.5	3.0	17,200	245	0.45	1.5	8,500	75	0.225	1.5	7,650	60	0.18	1.5	4,750	30	0.135	1.5
2.0	4.0	12,900	245	0.6	2	6,350	70	0.3	2	5,750	60	0.24	2	3,550	30	0.18	2
2.5	5.0	10,300	260	0.75	2.5	5,100	80	0.375	2.5	4,600	65	0.3	2.5	2,850	35	0.225	2.5
3.0	6.0	8,600	265	0.9	3	4,250	80	0.45	3	3,800	65	0.36	3	2,400	35	0.27	3
4.0	8.0	6,450	265	1.2	4	3,200	80	0.6	4	2,850	65	0.48	4	1,800	35	0.36	4
5.0	10.0	5,250	270	1.5	5	2,600	80	0.75	5	2,350	65	0.6	5	1,450	35	0.45	5
6.0	12.0	4,400	270	1.8	6	2,150	80	0.9	6	1,950	65	0.72	6	1,200	35	0.54	6

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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAR-2
Model number:IAR-2

래디우스 엔드밀 Radius End Mill

측 면 Side Milling

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.0	47,800	590	1.5	0.16	41,400	470	1.5	0.16	28,700	300	1.5	0.12	38,200	400	1.5	0.16
1.5	3.0	31,900	590	2.25	0.24	27,600	470	2.25	0.24	19,100	300	2.25	0.18	25,500	400	2.25	0.24
2.0	4.0	23,900	590	3	0.32	20,700	470	3	0.32	14,300	300	3	0.24	19,100	400	3	0.32
2.5	5.0	19,100	635	3.75	0.4	16,600	505	3.75	0.4	11,500	320	3.75	0.3	15,300	430	3.75	0.4
3.0	6.0	15,900	640	4.5	0.48	13,800	510	4.5	0.48	9,550	325	4.5	0.36	12,800	435	4.5	0.48
4.0	8.0	12,000	640	6	0.64	10,400	510	6	0.64	7,150	325	6	0.48	9,550	435	6	0.64
5.0	10.0	9,750	660	7.5	0.8	8,450	525	7.5	0.8	5,850	335	7.5	0.6	7,800	445	7.5	0.8
6.0	12.0	8,100	655	9	0.96	7,050	530	9	0.96	4,850	335	9	0.72	6,500	445	9	0.96

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래디우스 엔드밀 Radius End Mill

홈 Slotting

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.0	40,600	465	0.32	1	35,200	365	0.32	1	24,400	140	0.28	1	32,500	185	0.4	1
1.5	3.0	27,100	465	0.48	1.5	23,500	370	0.48	1.5	16,300	140	0.42	1.5	21,700	185	0.6	1.5
2.0	4.0	20,300	465	0.64	2	17,600	370	0.64	2	12,200	140	0.56	2	16,300	185	0.8	2
2.5	5.0	16,300	495	0.8	2.5	14,100	395	0.8	2.5	9,800	150	0.7	2.5	13,000	200	1	2.5
3.0	6.0	13,600	500	0.96	3	11,700	400	0.96	3	8,100	150	0.84	3	10,800	200	1.2	3
4.0	8.0	10,200	500	1.28	4	8,800	400	1.28	4	6,100	150	1.12	4	8,100	200	1.6	4
5.0	10.0	8,300	520	1.6	5	7,200	410	1.6	5	4,950	155	1.4	5	6,600	210	2	5
6.0	12.0	6,900	515	1.92	6	6,000	410	1.92	6	4,150	155	1.68	6	5,500	210	2.4	6

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CBN Series
ion Depo A Series 래디우스 Radius
ion Depo U Series

ion Depo Type A Series

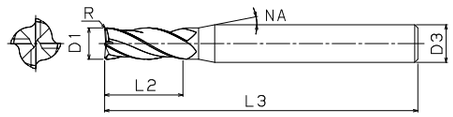
초경 래디우스 엔드밀 Carbide Radius End Mill

ion A | super MG | 날 수 4 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4

■형번:IAR-4 Model number:IAR-4



날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8 ~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010



표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAR-4-1.0xR0.1x2.0	1.0	0.1	2.0	11	4	50	9,520
IAR-4-1.0xR0.2x2.0		0.2	2.0	11	4	50	9,520
IAR-4-1.0xR0.3x2.0		0.3	2.0	11	4	50	9,520
IAR-4-1.5xR0.1x3.0	1.5	0.1	3.0	11	4	50	9,520
IAR-4-1.5xR0.2x3.0		0.2	3.0	11	4	50	9,520
IAR-4-1.5xR0.3x3.0		0.3	3.0	11	4	50	9,520
IAR-4-1.5xR0.5x3.0		0.5	3.0	11	4	50	9,520
IAR-4-2.0xR0.1x4.0	2.0	0.1	4.0	11	4	50	9,520
IAR-4-2.0xR0.2x4.0		0.2	4.0	11	4	50	9,520
IAR-4-2.0xR0.3x4.0		0.3	4.0	11	4	50	9,520
IAR-4-2.0xR0.5x4.0		0.5	4.0	11	4	50	9,520
IAR-4-3.0xR0.1x6.0	3.0	0.1	6.0	11	4	50	11,760
IAR-4-3.0xR0.2x6.0		0.2	6.0	11	4	50	11,760
IAR-4-3.0xR0.3x6.0		0.3	6.0	11	4	50	11,760
IAR-4-3.0xR0.5x6.0		0.5	6.0	11	4	50	11,760
IAR-4-3.0xR1.0x6.0		1.0	6.0	11	4	50	12,800
IAR-4-4.0xR0.1x8.0	4.0	0.1	8.0	11	6	50	11,840
IAR-4-4.0xR0.2x8.0		0.2	8.0	11	6	50	11,840
IAR-4-4.0xR0.3x8.0		0.3	8.0	11	6	50	11,840
IAR-4-4.0xR0.5x8.0		0.5	8.0	11	6	50	11,840
IAR-4-4.0xR1.0x8.0		1.0	8.0	11	6	50	12,960
IAR-4-5.0xR0.1x10.0	5.0	0.1	10.0	11	6	50	12,000
IAR-4-5.0xR0.2x10.0		0.2	10.0	11	6	50	12,000
IAR-4-5.0xR0.3x10.0		0.3	10.0	11	6	50	12,000
IAR-4-5.0xR0.5x10.0		0.5	10.0	11	6	50	12,000
IAR-4-5.0xR1.0x10.0		1.0	10.0	11	6	50	13,120

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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAR-4-5.0xR1.5x10.0	5.0	1.5	10.0	11	6	50	13,600
IAR-4-6.0xR0.1x12.0	6.0	0.1	12.0	—	6	50	11,600
IAR-4-6.0xR0.2x12.0		0.2	12.0	—	6	50	11,600
IAR-4-6.0xR0.3x12.0		0.3	12.0	—	6	50	11,600
IAR-4-6.0xR0.5x12.0		0.5	12.0	—	6	50	11,600
IAR-4-6.0xR1.0x12.0		1.0	12.0	—	6	50	12,400
IAR-4-6.0xR1.5x12.0		1.5	12.0	—	6	50	12,400
IAR-4-8.0xR0.1x16.0	8.0	0.1	16.0	—	8	70	16,720
IAR-4-8.0xR0.2x16.0		0.2	16.0	—	8	70	16,720
IAR-4-8.0xR0.5x16.0		0.5	16.0	—	8	70	16,720
IAR-4-8.0xR1.0x16.0		1.0	16.0	—	8	70	16,720
IAR-4-8.0xR1.5x16.0		1.5	16.0	—	8	70	17,600
IAR-4-8.0xR2.0x16.0		2.0	16.0	—	8	70	17,600
IAR-4-8.0xR2.5x16.0		2.5	16.0	—	8	70	18,640
IAR-4-8.0xR3.0x16.0		3.0	16.0	—	8	70	18,640
IAR-4-10.0xR0.1x20.0	10.0	0.1	20.0	—	10	80	17,600
IAR-4-10.0xR0.2x20.0		0.2	20.0	—	10	80	17,600
IAR-4-10.0xR0.3x20.0		0.3	20.0	—	10	80	17,600
IAR-4-10.0xR0.5x20.0		0.5	20.0	—	10	80	17,600
IAR-4-10.0xR1.0x20.0		1.0	20.0	—	10	80	17,600
IAR-4-10.0xR1.5x20.0		1.5	20.0	—	10	80	18,640
IAR-4-10.0xR2.0x20.0		2.0	20.0	—	10	80	18,640
IAR-4-10.0xR2.5x20.0		2.5	20.0	—	10	80	20,480
IAR-4-10.0xR3.0x20.0		3.0	20.0	—	10	80	20,480
IAR-4-12.0xR0.1x24.0	12.0	0.1	24.0	—	12	110	27,840
IAR-4-12.0xR0.2x24.0		0.2	24.0	—	12	110	27,840
IAR-4-12.0xR0.3x24.0		0.3	24.0	—	12	110	27,840
IAR-4-12.0xR0.5x24.0		0.5	24.0	—	12	110	27,840
IAR-4-12.0xR1.0x24.0		1.0	24.0	—	12	110	27,840
IAR-4-12.0xR1.5x24.0		1.5	24.0	—	12	110	28,800
IAR-4-12.0xR2.0x24.0		2.0	24.0	—	12	110	28,800
IAR-4-12.0xR2.5x24.0		2.5	24.0	—	12	110	29,680
IAR-4-12.0xR3.0x24.0		3.0	24.0	—	12	110	29,680
IAR-4-16.0xR1.0x40.0	16.0	1.0	40.0	—	16	130	32,160
IAR-4-16.0xR2.0x40.0		2.0	40.0	—	16	130	32,160
IAR-4-16.0xR3.0x40.0		3.0	40.0	—	16	130	32,160
IAR-4-20.0xR1.0x50.0	20.0	1.0	50.0	—	20	140	45,920
IAR-4-20.0xR2.0x50.0		2.0	50.0	—	20	140	45,920
IAR-4-20.0xR3.0x50.0		3.0	50.0	—	20	140	45,920

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAR-4
Model number:IAR-4

래디우스 엔드밀 Radius End Mill

측 면 Side Milling

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.0	27,000	810	1.2	0.09	19,100	460	1.2	0.09	13,700	220	1	0.07	10,500	175	1	0.05	7,320	105	0.8	0.03
1.5	3.0	18,000	810	1.8	0.14	12,700	460	1.8	0.14	9,130	220	1.5	0.11	7,010	175	1.5	0.07	4,880	105	1.1	0.05
2.0	4.0	13,500	810	2.4	0.2	9,550	460	2.4	0.2	6,850	220	2	0.16	5,250	175	2	0.1	3,660	105	1.5	0.06
3.0	6.0	9,020	810	3.6	0.3	6,370	460	3.6	0.3	4,560	220	3	0.24	3,500	175	3	0.15	2,440	105	2.3	0.09
4.0	8.0	6,770	810	4.8	0.4	4,780	460	4.8	0.4	3,420	220	4	0.32	2,630	175	4	0.2	1,830	105	3	0.12
5.0	10.0	5,410	810	6	0.5	3,820	460	6	0.5	2,740	220	5	0.4	2,100	175	5	0.25	1,470	105	3.8	0.15
6.0	12.0	4,510	810	7.2	0.6	3,190	460	7.2	0.6	2,280	220	6	0.48	1,750	175	6	0.3	1,220	105	4.5	0.18
8.0	16.0	3,380	810	9.6	0.8	2,390	460	9.6	0.8	1,710	220	8	0.64	1,320	175	8	0.4	920	105	6	0.24
10.0	20.0	2,710	810	12	1	1,910	460	12	1	1,370	220	10	0.8	1,050	175	10	0.5	730	105	7.5	0.3
12.0	24.0	2,260	810	14.4	1.2	1,590	460	14.4	1.2	1,140	220	12	0.96	880	175	12	0.6	610	105	9	0.36
16.0	40.0	1,690	810	19.2	1.6	1,200	460	19.2	1.6	860	220	16	1.28	660	175	16	0.8	460	105	12	0.48
20.0	50.0	1,360	815	24	2	960	460	24	2	690	220	20	1.6	530	175	20	1	370	105	15	0.6

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래디우스 엔드밀 Radius End Mill

홈 Slotting

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.0	24,300	400	0.25	1	17,200	225	0.25	1	11,600	100	0.2	1	8,410	70	0.1	1	5,860	40	0.05	1
1.5	3.0	16,200	400	0.38	1.5	11,500	225	0.38	1.5	7,760	100	0.3	1.5	5,600	70	0.15	1.5	3,910	40	0.08	1.5
2.0	4.0	12,200	400	0.5	2	8,600	225	0.5	2	5,820	100	0.4	2	4,200	70	0.2	2	2,930	40	0.1	2
3.0	6.0	8,120	400	0.75	3	5,730	225	0.75	3	3,880	100	0.6	3	2,800	70	0.3	3	1,950	40	0.15	3
4.0	8.0	6,090	400	1	4	4,300	225	1	4	2,910	100	0.8	4	2,100	70	0.4	4	1,470	40	0.2	4
5.0	10.0	4,870	400	1.25	5	3,440	225	1.25	5	2,330	100	1	5	1,680	70	0.5	5	1,170	40	0.25	5
6.0	12.0	4,060	400	1.5	6	2,870	225	1.5	6	1,940	100	1.2	6	1,400	70	0.6	6	980	40	0.3	6
8.0	16.0	3,050	400	2	8	2,150	225	2	8	1,460	100	1.6	8	1,050	70	0.8	8	730	40	0.4	8
10.0	20.0	2,440	400	2.5	10	1,720	225	2.5	10	1,170	105	2	10	840	70	1	10	590	40	0.5	10
12.0	24.0	2,030	400	3	12	1,430	225	3	12	970	100	2.4	12	700	70	1.2	12	490	40	0.6	12
16.0	40.0	1,520	400	4	16	1,080	225	4	16	730	100	3.2	16	530	70	1.6	16	370	40	0.8	16
20.0	50.0	1,220	405	5	20	860	225	5	20	580	100	4	20	420	70	2	20	300	40	1	20

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●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
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CBN Series
ion Depo A Series 래디우스 Radius
ion Depo U Series

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAR-4
Model number:IAR-4

래디우스 엔드밀 Radius End Mill

측 면 Side Milling

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.0	28,600	1,030	1.5	0.1	15,900	380	1	0.06	14,300	315	1	0.05	8,920	160	1	0.03
1.5	3.0	19,100	1,030	2.3	0.15	10,600	380	1.5	0.09	9,550	315	1.5	0.08	5,940	160	1.5	0.05
2.0	4.0	14,300	1,030	3	0.2	7,960	380	2	0.12	7,160	315	2	0.1	4,460	160	2	0.06
3.0	6.0	9,550	1,030	4.5	0.3	5,310	380	3	0.18	4,780	315	3	0.15	2,970	160	3	0.09
4.0	8.0	7,160	1,030	6	0.4	3,980	380	4	0.24	3,580	315	4	0.2	2,230	160	4	0.12
5.0	10.0	5,730	1,030	7.5	0.5	3,190	380	5	0.3	2,870	315	5	0.25	1,790	160	5	0.15
6.0	12.0	4,780	1,030	9	0.6	2,660	380	6	0.36	2,390	315	6	0.3	1,490	160	6	0.18
8.0	16.0	3,580	1,030	12	0.8	1,990	380	8	0.48	1,790	315	8	0.4	1,120	160	8	0.24
10.0	20.0	2,870	1,030	15	1	1,590	380	10	0.6	1,430	315	10	0.5	890	160	10	0.3
12.0	24.0	2,390	1,030	18	1.2	1,330	380	12	0.72	1,200	315	12	0.6	750	160	12	0.36
16.0	40.0	1,790	1,030	24	1.6	1,000	380	16	0.96	900	315	16	0.8	560	160	16	0.48
20.0	50.0	1,430	1,030	30	2	800	380	20	1.2	720	315	20	1	450	160	20	0.6

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래디우스 엔드밀 Radius End Mill

홈 Slotting

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.0	25,800	510	0.25	1	12,700	155	0.15	1	11,500	125	0.1	1	7,130	65	0.08	1
1.5	3.0	17,200	510	0.38	1.5	8,490	155	0.23	1.5	7,640	125	0.15	1.5	4,760	65	0.12	1.5
2.0	4.0	12,900	510	0.5	2	6,370	155	0.3	2	5,730	125	0.2	2	3,570	65	0.16	2
3.0	6.0	8,600	510	0.75	3	4,250	155	0.45	3	3,820	125	0.3	3	2,380	65	0.24	3
4.0	8.0	6,450	510	1	4	3,190	155	0.6	4	2,870	125	0.4	4	1,790	65	0.32	4
5.0	10.0	5,160	510	1.25	5	2,550	155	0.75	5	2,290	125	0.5	5	1,430	65	0.4	5
6.0	12.0	4,300	510	1.5	6	2,120	155	0.9	6	1,910	125	0.6	6	1,190	65	0.48	6
8.0	16.0	3,230	510	2	8	1,590	155	1.2	8	1,430	125	0.8	8	890	65	0.64	8
10.0	20.0	2,580	510	2.5	10	1,280	155	1.5	10	1,150	125	1	10	720	65	0.8	10
12.0	24.0	2,150	510	3	12	1,060	155	1.8	12	960	125	1.2	12	600	65	0.96	12
16.0	40.0	1,610	510	4	16	800	155	2.4	16	720	125	1.6	16	450	65	1.28	16
20.0	50.0	1,290	510	5	20	640	150	3	20	580	125	2	20	360	65	1.6	20

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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAR-4
Model number:IAR-4

래디우스 엔드밀 Radius End Mill

측 면 Side Milling

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.0	47,700	1,240	1.5	0.15	41,400	995	1.5	0.15	28,600	630	1.2	0.1	38,200	840	1.5	0.15
1.5	3.0	31,800	1,240	2.3	0.23	27,600	995	2.3	0.23	19,100	630	1.8	0.15	25,500	840	2.3	0.23
2.0	4.0	23,900	1,240	3	0.3	20,700	995	3	0.3	14,300	630	2.4	0.2	19,100	840	3	0.3
3.0	6.0	15,900	1,240	4.5	0.45	13,800	995	4.5	0.45	9,550	630	3.6	0.3	12,700	840	4.5	0.45
4.0	8.0	11,900	1,240	6	0.6	10,300	995	6	0.6	7,160	630	4.8	0.4	9,550	840	6	0.6
5.0	10.0	9,550	1,240	7.5	0.75	8,280	995	7.5	0.75	5,730	630	6	0.5	7,640	840	7.5	0.75
6.0	12.0	7,960	1,240	9	0.9	6,900	995	9	0.9	4,780	630	7.2	0.6	6,370	840	9	0.9
8.0	16.0	5,970	1,240	12	1.2	5,180	995	12	1.2	3,580	630	9.6	0.8	4,780	840	12	1.2
10.0	20.0	4,780	1,240	15	1.5	4,140	995	15	1.5	2,870	630	12	1	3,820	840	15	1.5
12.0	24.0	3,980	1,240	18	1.8	3,450	995	18	1.8	2,390	630	14.4	1.2	3,190	840	18	1.8
16.0	40.0	2,990	1,240	24	2.4	2,590	995	24	2.4	1,790	630	19.2	1.6	2,390	840	24	2.4
20.0	50.0	2,390	1,240	30	3	2,070	995	30	3	1,430	630	24	2	1,910	840	30	3

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●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

래디우스 엔드밀 Radius End Mill

홈 Slotting

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.0	40,600	975	0.2	1	35,200	775	0.2	1	24,300	295	0.2	1	32,500	395	0.2	1
1.5	3.0	27,000	975	0.3	1.5	23,400	775	0.3	1.5	16,200	295	0.3	1.5	21,600	395	0.3	1.5
2.0	4.0	20,300	975	0.4	2	17,600	775	0.4	2	12,200	295	0.4	2	16,200	395	0.4	2
3.0	6.0	13,500	975	0.6	3	11,700	775	0.6	3	8,120	295	0.6	3	10,800	395	0.6	3
4.0	8.0	10,100	975	0.8	4	8,800	775	0.8	4	6,090	295	0.8	4	8,120	395	0.8	4
5.0	10.0	8,120	975	1	5	7,040	775	1	5	4,870	295	1	5	6,500	395	1	5
6.0	12.0	6,770	975	1.2	6	5,860	775	1.2	6	4,060	295	1.2	6	5,410	395	1.2	6
8.0	16.0	5,080	975	1.6	8	4,400	775	1.6	8	3,050	295	1.6	8	4,060	395	1.6	8
10.0	20.0	4,060	975	2	10	3,520	775	2	10	2,440	295	2	10	3,250	395	2	10
12.0	24.0	3,380	975	2.4	12	2,930	775	2.4	12	2,030	295	2.4	12	2,710	395	2.4	12
16.0	40.0	2,540	975	3.2	16	2,200	775	3.2	16	1,520	295	3.2	16	2,030	395	3.2	16
20.0	50.0	2,030	975	4	20	1,760	775	4	20	1,220	295	4	20	1,630	395	4	20

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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ion Depo Type A Series

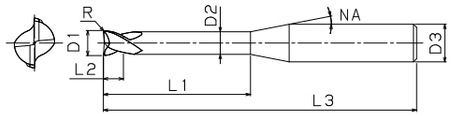
초경 롱 넥 래디우스 엔드밀
Carbide Long Neck Radius End Mill

ion A | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IALR-2 Model number:IALR-2

날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8 ~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010



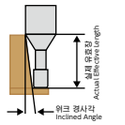


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

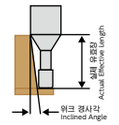
최적◎Recommended 적응○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-2-0.4xR0.05xL1.0	0.4	0.05	1.0	0.3	0.37	11	4	50	1.13	1.18	1.24	1.30	1.46	4,640
IALR-2-0.4xR0.05xL1.5		0.05	1.5	0.3	0.37	11	4	50	1.65	1.73	1.82	1.91	2.14	4,640
IALR-2-0.4xR0.05xL2.0		0.05	2.0	0.3	0.37	11	4	50	2.17	2.28	2.39	2.52	2.83	4,640
IALR-2-0.4xR0.05xL3.0		0.05	3.0	0.3	0.37	11	4	50	3.22	3.38	3.55	3.74	4.20	4,640
IALR-2-0.4xR0.1xL1.0		0.1	1.0	0.3	0.37	11	4	50	1.12	1.17	1.23	1.29	1.44	4,640
IALR-2-0.4xR0.1xL1.5		0.1	1.5	0.3	0.37	11	4	50	1.65	1.72	1.81	1.90	2.12	4,640
IALR-2-0.4xR0.1xL2.0		0.1	2.0	0.3	0.37	11	4	50	2.17	2.27	2.39	2.51	2.81	4,640
IALR-2-0.4xR0.1xL3.0		0.1	3.0	0.3	0.37	11	4	50	3.22	3.37	3.54	3.73	4.18	4,640
IALR-2-0.5xR0.05xL1.0	0.5	0.05	1.0	0.4	0.47	11	4	50	1.13	1.18	1.24	1.30	1.46	3,760
IALR-2-0.5xR0.05xL2.0		0.05	2.0	0.4	0.47	11	4	50	2.17	2.28	2.39	2.52	2.83	3,760
IALR-2-0.5xR0.05xL3.0		0.05	3.0	0.4	0.47	11	4	50	3.22	3.38	3.55	3.74	4.20	3,760
IALR-2-0.5xR0.05xL4.0		0.05	4.0	0.4	0.47	11	4	50	4.27	4.47	4.70	4.96	5.56	3,760
IALR-2-0.5xR0.1xL1.0		0.1	1.0	0.4	0.47	11	4	50	1.12	1.17	1.23	1.29	1.44	3,760
IALR-2-0.5xR0.1xL2.0		0.1	2.0	0.4	0.47	11	4	50	2.17	2.27	2.39	2.51	2.81	3,760
IALR-2-0.5xR0.1xL3.0		0.1	3.0	0.4	0.47	11	4	50	3.22	3.37	3.54	3.73	4.18	3,760
IALR-2-0.5xR0.1xL4.0		0.1	4.0	0.4	0.47	11	4	50	4.26	4.47	4.70	4.95	5.55	3,760
IALR-2-0.6xR0.05xL2.0	0.6	0.05	2.0	0.5	0.57	11	4	50	2.17	2.28	2.39	2.52	2.83	3,760
IALR-2-0.6xR0.05xL3.0		0.05	3.0	0.5	0.57	11	4	50	3.22	3.38	3.55	3.74	4.20	3,760
IALR-2-0.6xR0.05xL4.0		0.05	4.0	0.5	0.57	11	4	50	4.27	4.47	4.70	4.96	5.56	3,760
IALR-2-0.6xR0.05xL6.0		0.05	6.0	0.5	0.57	11	4	50	6.36	6.67	7.02	7.40	8.30	3,760
IALR-2-0.6xR0.1xL2.0		0.1	2.0	0.5	0.57	11	4	50	2.17	2.27	2.39	2.51	2.81	3,760
IALR-2-0.6xR0.1xL3.0		0.1	3.0	0.5	0.57	11	4	50	3.22	3.37	3.54	3.73	4.18	3,760
IALR-2-0.6xR0.1xL4.0		0.1	4.0	0.5	0.57	11	4	50	4.26	4.47	4.70	4.95	5.55	3,760
IALR-2-0.6xR0.1xL6.0		0.1	6.0	0.5	0.57	11	4	50	6.36	6.67	7.01	7.39	8.29	3,760

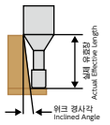


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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-2-0.6xR0.1xL6.0	0.6	0.1	6.0	0.5	0.57	11	4	50	6.36	6.67	7.02	7.40	8.30	3,760
IALR-2-0.8xR0.05xL4.0	0.8	0.05	4.0	0.65	0.77	11	4	50	4.27	4.47	4.70	4.96	5.56	4,320
IALR-2-0.8xR0.05xL6.0		0.05	6.0	0.65	0.77	11	4	50	6.36	6.67	7.02	7.40	8.30	4,320
IALR-2-0.8xR0.05xL8.0		0.05	8.0	0.65	0.77	11	4	50	8.45	8.87	9.33	9.84	11.04	4,320
IALR-2-0.8xR0.1xL4.0		0.1	4.0	0.65	0.77	11	4	50	4.26	4.47	4.70	4.95	5.55	4,320
IALR-2-0.8xR0.1xL6.0		0.1	6.0	0.65	0.77	11	4	50	6.36	6.67	7.01	7.39	8.29	4,320
IALR-2-0.8xR0.1xL8.0		0.1	8.0	0.65	0.77	11	4	50	8.45	8.86	9.32	9.82	11.02	4,320
IALR-2-0.8xR0.2xL4.0		0.2	4.0	0.65	0.77	11	4	50	4.26	4.46	4.68	4.93	5.51	4,320
IALR-2-0.8xR0.2xL6.0		0.2	6.0	0.65	0.77	11	4	50	6.35	6.66	6.99	7.37	8.25	4,320
IALR-2-0.8xR0.2xL8.0		0.2	8.0	0.65	0.77	11	4	50	8.45	8.85	9.30	9.80	10.99	4,320
IALR-2-1.0xR0.05xL2.0	1.0	0.05	2.0	0.8	0.95	11	4	50	2.23	2.33	2.45	2.58	2.90	3,680
IALR-2-1.0xR0.05xL3.0		0.05	3.0	0.8	0.95	11	4	50	3.27	3.43	3.61	3.80	4.27	3,680
IALR-2-1.0xR0.05xL4.0		0.05	4.0	0.8	0.95	11	4	50	4.32	4.53	4.76	5.02	5.63	3,680
IALR-2-1.0xR0.05xL6.0		0.05	6.0	0.8	0.95	11	4	50	6.41	6.73	7.08	7.46	8.37	4,000
IALR-2-1.0xR0.05xL8.0		0.05	8.0	0.8	0.95	11	4	50	8.51	8.93	9.39	9.90	11.11	4,000
IALR-2-1.0xR0.05xL10.0		0.05	10.0	0.8	0.95	11	4	50	10.60	11.12	11.70	12.34	13.85	4,000
IALR-2-1.0xR0.05xL12.0		0.05	12.0	0.8	0.95	11	4	50	12.70	13.32	14.01	14.77	16.59	4,000
IALR-2-1.0xR0.1xL2.0		0.1	2.0	0.8	0.95	11	4	50	2.22	2.33	2.44	2.57	2.88	3,680
IALR-2-1.0xR0.1xL3.0		0.1	3.0	0.8	0.95	11	4	50	3.27	3.43	3.60	3.79	4.25	3,680
IALR-2-1.0xR0.1xL4.0		0.1	4.0	0.8	0.95	11	4	50	4.32	4.53	4.76	5.01	5.62	3,680
IALR-2-1.0xR0.1xL6.0		0.1	6.0	0.8	0.95	11	4	50	6.41	6.72	7.07	7.45	8.36	4,000
IALR-2-1.0xR0.1xL8.0		0.1	8.0	0.8	0.95	11	4	50	8.51	8.92	9.38	9.89	11.09	4,000
IALR-2-1.0xR0.1xL10.0		0.1	10.0	0.8	0.95	11	4	50	10.60	11.12	11.69	12.33	13.83	4,000
IALR-2-1.0xR0.1xL12.0		0.1	12.0	0.8	0.95	11	4	50	12.69	13.32	14.00	14.76	16.57	4,000
IALR-2-1.0xR0.2xL2.0		0.2	2.0	0.8	0.95	11	4	50	2.22	2.32	2.43	2.55	2.84	3,680
IALR-2-1.0xR0.2xL3.0		0.2	3.0	0.8	0.95	11	4	50	3.27	3.42	3.58	3.77	4.21	3,680
IALR-2-1.0xR0.2xL4.0		0.2	4.0	0.8	0.95	11	4	50	4.31	4.52	4.74	4.99	5.58	3,680
IALR-2-1.0xR0.2xL6.0		0.2	6.0	0.8	0.95	11	4	50	6.41	6.71	7.05	7.43	8.32	4,000
IALR-2-1.0xR0.2xL8.0		0.2	8.0	0.8	0.95	11	4	50	8.50	8.91	9.36	9.87	11.06	4,000
IALR-2-1.0xR0.2xL10.0		0.2	10.0	0.8	0.95	11	4	50	10.60	11.11	11.67	12.30	13.80	4,000
IALR-2-1.0xR0.2xL12.0		0.2	12.0	0.8	0.95	11	4	50	12.69	13.31	13.99	14.74	16.54	4,000
IALR-2-1.0xR0.3xL2.0		0.3	2.0	0.8	0.95	11	4	50	2.21	2.31	2.41	2.53	2.81	3,680
IALR-2-1.0xR0.3xL3.0		0.3	3.0	0.8	0.95	11	4	50	3.26	3.41	3.57	3.75	4.18	3,680
IALR-2-1.0xR0.3xL4.0		0.3	4.0	0.8	0.95	11	4	50	4.31	4.51	4.73	4.97	5.55	3,680
IALR-2-1.0xR0.3xL6.0		0.3	6.0	0.8	0.95	11	4	50	6.40	6.70	7.04	7.41	8.29	4,000
IALR-2-1.0xR0.3xL8.0		0.3	8.0	0.8	0.95	11	4	50	8.50	8.90	9.35	9.84	11.02	4,000
IALR-2-1.0xR0.3xL10.0		0.3	10.0	0.8	0.95	11	4	50	10.59	11.10	11.66	12.28	13.76	4,000
IALR-2-1.0xR0.3xL12.0		0.3	12.0	0.8	0.95	11	4	50	12.68	13.30	13.97	14.72	16.50	4,000
IALR-2-1.2xR0.1xL6.0	1.2	0.1	6.0	1.0	1.15	11	4	50	6.41	6.72	7.07	7.45	8.36	4,080
IALR-2-1.2xR0.1xL8.0		0.1	8.0	1.0	1.15	11	4	50	8.51	8.92	9.38	9.89	11.09	4,080
IALR-2-1.2xR0.1xL10.0		0.1	10.0	1.0	1.15	11	4	50	10.60	11.12	11.69	12.33	13.83	4,080
IALR-2-1.2xR0.1xL12.0		0.1	12.0	1.0	1.15	11	4	50	12.69	13.32	14.00	14.76	16.57	4,080

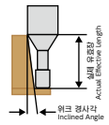
ion Depo Type A Series



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사이즈(Size) : mm

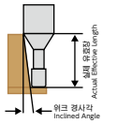
코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-2-1.2xR0.2xL6.0	1.2	0.2	6.0	1.0	1.15	11	4	50	6.41	6.71	7.05	7.43	8.32	4,080
IALR-2-1.2xR0.2xL8.0		0.2	8.0	1.0	1.15	11	4	50	8.50	8.91	9.36	9.87	11.06	4,080
IALR-2-1.2xR0.2xL10.0		0.2	10.0	1.0	1.15	11	4	50	10.60	11.11	11.67	12.30	13.80	4,080
IALR-2-1.2xR0.2xL12.0		0.2	12.0	1.0	1.15	11	4	50	12.69	13.31	13.99	14.74	16.54	4,080
IALR-2-1.2xR0.3xL6.0		0.3	6.0	1.0	1.15	11	4	50	6.40	6.70	7.04	7.41	8.29	4,080
IALR-2-1.2xR0.3xL8.0		0.3	8.0	1.0	1.15	11	4	50	8.50	8.90	9.35	9.84	11.02	4,080
IALR-2-1.2xR0.3xL10.0		0.3	10.0	1.0	1.15	11	4	50	10.59	11.10	11.66	12.28	13.76	4,080
IALR-2-1.2xR0.3xL12.0		0.3	12.0	1.0	1.15	11	4	50	12.68	13.30	13.97	14.72	16.50	4,080
IALR-2-1.5xR0.1xL4.0	1.5	0.1	4.0	1.2	1.45	11	4	50	4.32	4.53	4.76	5.01	5.62	3,920
IALR-2-1.5xR0.1xL6.0		0.1	6.0	1.2	1.45	11	4	50	6.41	6.72	7.07	7.45	8.36	3,920
IALR-2-1.5xR0.1xL8.0		0.1	8.0	1.2	1.45	11	4	50	8.51	8.92	9.38	9.89	11.09	4,080
IALR-2-1.5xR0.1xL10.0		0.1	10.0	1.2	1.45	11	4	50	10.60	11.12	11.69	12.33	13.83	4,080
IALR-2-1.5xR0.1xL12.0		0.1	12.0	1.2	1.45	11	4	50	12.69	13.32	14.00	14.76	16.57	4,080
IALR-2-1.5xR0.1xL16.0		0.1	16.0	1.2	1.45	11	4	50	16.88	17.71	18.62	19.64	22.05	4,080
IALR-2-1.5xR0.2xL4.0		0.2	4.0	1.2	1.45	11	4	50	4.31	4.52	4.74	4.99	5.58	3,920
IALR-2-1.5xR0.2xL6.0		0.2	6.0	1.2	1.45	11	4	50	6.41	6.71	7.05	7.43	8.32	3,920
IALR-2-1.5xR0.2xL8.0		0.2	8.0	1.2	1.45	11	4	50	8.50	8.91	9.36	9.87	11.06	4,080
IALR-2-1.5xR0.2xL10.0		0.2	10.0	1.2	1.45	11	4	50	10.60	11.11	11.67	12.30	13.80	4,080
IALR-2-1.5xR0.2xL12.0		0.2	12.0	1.2	1.45	11	4	50	12.69	13.31	13.99	14.74	16.54	4,080
IALR-2-1.5xR0.2xL16.0		0.2	16.0	1.2	1.45	11	4	50	16.88	17.70	18.61	19.62	22.01	4,080
IALR-2-1.5xR0.3xL4.0		0.3	4.0	1.2	1.45	11	4	50	4.31	4.51	4.73	4.97	5.55	3,920
IALR-2-1.5xR0.3xL6.0		0.3	6.0	1.2	1.45	11	4	50	6.40	6.70	7.04	7.41	8.29	3,920
IALR-2-1.5xR0.3xL8.0		0.3	8.0	1.2	1.45	11	4	50	8.50	8.90	9.35	9.84	11.02	4,080
IALR-2-1.5xR0.3xL10.0		0.3	10.0	1.2	1.45	11	4	50	10.59	11.10	11.66	12.28	13.76	4,080
IALR-2-1.5xR0.3xL12.0		0.3	12.0	1.2	1.45	11	4	50	12.68	13.30	13.97	14.72	16.50	4,080
IALR-2-1.5xR0.3xL16.0		0.3	16.0	1.2	1.45	11	4	50	16.87	17.69	18.59	19.60	21.98	4,080
IALR-2-1.5xR0.5xL4.0		0.5	4.0	1.2	1.45	11	4	50	4.30	4.49	4.69	4.93	5.48	3,920
IALR-2-1.5xR0.5xL6.0		0.5	6.0	1.2	1.45	11	4	50	6.39	6.68	7.01	7.36	8.22	3,920
IALR-2-1.5xR0.5xL8.0		0.5	8.0	1.2	1.45	11	4	50	8.49	8.88	9.32	9.80	10.95	4,080
IALR-2-1.5xR0.5xL10.0		0.5	10.0	1.2	1.45	11	4	50	10.58	11.08	11.63	12.24	13.69	4,080
IALR-2-1.5xR0.5xL12.0		0.5	12.0	1.2	1.45	11	4	50	12.68	13.28	13.94	14.68	16.43	4,080
IALR-2-1.5xR0.5xL16.0		0.5	16.0	1.2	1.45	11	4	50	16.86	17.67	18.56	19.55	21.91	4,080
IALR-2-2.0xR0.1xL4.0	2.0	0.1	4.0	1.6	1.94	11	4	50	4.34	4.55	4.79	5.04	5.65	3,920
IALR-2-2.0xR0.1xL6.0		0.1	6.0	1.6	1.94	11	4	50	6.44	6.75	7.10	7.48	8.39	4,080
IALR-2-2.0xR0.1xL8.0		0.1	8.0	1.6	1.94	11	4	50	8.53	8.95	9.41	9.92	11.13	4,080
IALR-2-2.0xR0.1xL10.0		0.1	10.0	1.6	1.94	11	4	50	10.63	11.15	11.72	12.36	13.87	4,080
IALR-2-2.0xR0.1xL12.0		0.1	12.0	1.6	1.94	11	4	50	12.72	13.34	14.03	14.79	16.61	4,080
IALR-2-2.0xR0.1xL16.0		0.1	16.0	1.6	1.94	11	4	50	16.91	17.74	18.65	19.67	FREE	4,080
IALR-2-2.0xR0.1xL20.0		0.1	20.0	1.6	1.94	11	4	60	21.10	22.13	23.28	24.55	FREE	4,080
IALR-2-2.0xR0.2xL4.0		0.2	4.0	1.6	1.94	11	4	50	4.34	4.54	4.77	5.02	5.62	3,920
IALR-2-2.0xR0.2xL6.0		0.2	6.0	1.6	1.94	11	4	50	6.43	6.74	7.08	7.46	8.36	4,080
IALR-2-2.0xR0.2xL8.0		0.2	8.0	1.6	1.94	11	4	50	8.53	8.94	9.39	9.90	11.09	4,080
IALR-2-2.0xR0.2xL10.0		0.2	10.0	1.6	1.94	11	4	50	10.62	11.14	11.70	12.34	13.83	4,080
IALR-2-2.0xR0.2xL12.0		0.2	12.0	1.6	1.94	11	4	50	12.72	13.33	14.02	14.77	16.57	4,080
IALR-2-2.0xR0.2xL16.0		0.2	16.0	1.6	1.94	11	4	50	16.90	17.73	18.64	19.65	FREE	4,080



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-2-2.0xR0.2xL20.0	2.0	0.2	20.0	1.6	1.94	11	4	60	21.09	22.12	23.26	24.52	FREE	4,080
IALR-2-2.0xR0.3xL4.0		0.3	4.0	1.6	1.94	11	4	50	4.34	4.53	4.76	5.00	5.58	3,920
IALR-2-2.0xR0.3xL6.0		0.3	6.0	1.6	1.94	11	4	50	6.43	6.73	7.07	7.44	8.32	4,080
IALR-2-2.0xR0.3xL8.0		0.3	8.0	1.6	1.94	11	4	50	8.52	8.93	9.38	9.88	11.06	4,080
IALR-2-2.0xR0.3xL10.0		0.3	10.0	1.6	1.94	11	4	50	10.62	11.13	11.69	12.31	13.80	4,080
IALR-2-2.0xR0.3xL12.0		0.3	12.0	1.6	1.94	11	4	50	12.71	13.32	14.00	14.75	16.54	4,080
IALR-2-2.0xR0.3xL16.0		0.3	16.0	1.6	1.94	11	4	50	16.90	17.72	18.62	19.63	FREE	4,080
IALR-2-2.0xR0.3xL20.0		0.3	20.0	1.6	1.94	11	4	60	21.09	22.11	23.25	24.50	FREE	4,080
IALR-2-2.0xR0.5xL4.0		0.5	4.0	1.6	1.94	11	4	50	4.33	4.52	4.72	4.96	5.51	3,920
IALR-2-2.0xR0.5xL6.0		0.5	6.0	1.6	1.94	11	4	50	6.42	6.71	7.04	7.39	8.25	4,080
IALR-2-2.0xR0.5xL8.0		0.5	8.0	1.6	1.94	11	4	50	8.51	8.91	9.35	9.83	10.99	4,080
IALR-2-2.0xR0.5xL10.0		0.5	10.0	1.6	1.94	11	4	50	10.61	11.11	11.66	12.27	13.73	4,080
IALR-2-2.0xR0.5xL12.0		0.5	12.0	1.6	1.94	11	4	50	12.70	13.30	13.97	14.71	16.47	4,080
IALR-2-2.0xR0.5xL16.0		0.5	16.0	1.6	1.94	11	4	50	16.89	17.70	18.59	19.58	FREE	4,080
IALR-2-2.0xR0.5xL20.0		0.5	20.0	1.6	1.94	11	4	60	21.08	22.09	23.22	24.46	FREE	4,080
IALR-2-3.0xR0.1xL12.0	3.0	0.1	12.0	4.5	2.85	11	4	50	12.96	13.60	14.30	FREE	FREE	6,880
IALR-2-3.0xR0.1xL18.0		0.1	18.0	4.5	2.85	11	4	50	19.25	20.19	FREE	FREE	FREE	7,040
IALR-2-3.0xR0.1xL24.0		0.1	24.0	4.5	2.85	11	4	60	25.53	26.78	FREE	FREE	FREE	7,280
IALR-2-3.0xR0.1xL30.0		0.1	30.0	4.5	2.85	11	4	60	31.81	FREE	FREE	FREE	FREE	7,600
IALR-2-3.0xR0.2xL12.0		0.2	12.0	4.5	2.85	11	4	50	12.96	13.59	14.28	FREE	FREE	6,880
IALR-2-3.0xR0.2xL18.0		0.2	18.0	4.5	2.85	11	4	50	19.24	20.18	FREE	FREE	FREE	7,040
IALR-2-3.0xR0.2xL24.0		0.2	24.0	4.5	2.85	11	4	60	25.52	26.77	FREE	FREE	FREE	7,280
IALR-2-3.0xR0.2xL30.0		0.2	30.0	4.5	2.85	11	4	60	31.80	FREE	FREE	FREE	FREE	7,600
IALR-2-3.0xR0.3xL12.0		0.3	12.0	4.5	2.85	11	4	50	12.95	13.58	14.27	FREE	FREE	6,880
IALR-2-3.0xR0.3xL18.0		0.3	18.0	4.5	2.85	11	4	50	19.24	20.17	FREE	FREE	FREE	7,040
IALR-2-3.0xR0.3xL24.0		0.3	24.0	4.5	2.85	11	4	60	25.52	26.76	FREE	FREE	FREE	7,280
IALR-2-3.0xR0.3xL30.0		0.3	30.0	4.5	2.85	11	4	60	31.80	FREE	FREE	FREE	FREE	7,600
IALR-2-3.0xR0.5xL12.0		0.5	12.0	4.5	2.85	11	4	50	12.94	13.56	14.24	FREE	FREE	6,880
IALR-2-3.0xR0.5xL18.0		0.5	18.0	4.5	2.85	11	4	50	19.23	20.15	FREE	FREE	FREE	7,040
IALR-2-3.0xR0.5xL24.0		0.5	24.0	4.5	2.85	11	4	60	25.51	26.74	FREE	FREE	FREE	7,280
IALR-2-3.0xR0.5xL30.0		0.5	30.0	4.5	2.85	11	4	60	31.79	FREE	FREE	FREE	FREE	7,600
IALR-2-3.0xR1.0xL12.0		1.0	12.0	4.5	2.85	11	4	50	12.92	13.51	14.16	14.88	FREE	6,880
IALR-2-3.0xR1.0xL18.0		1.0	18.0	4.5	2.85	11	4	50	19.20	20.10	FREE	FREE	FREE	7,040
IALR-2-3.0xR1.0xL24.0		1.0	24.0	4.5	2.85	11	4	60	25.49	26.69	FREE	FREE	FREE	7,280
IALR-2-3.0xR1.0xL30.0		1.0	30.0	4.5	2.85	11	4	60	31.77	FREE	FREE	FREE	FREE	7,600
IALR-2-4.0xR0.1xL16.0	4.0	0.1	16.0	6.0	3.8	11	6	50	17.29	18.13	19.07	20.11	FREE	6,880
IALR-2-4.0xR0.1xL24.0		0.1	24.0	6.0	3.8	11	6	60	25.66	26.92	28.32	FREE	FREE	6,880
IALR-2-4.0xR0.1xL32.0		0.1	32.0	6.0	3.8	11	6	70	34.04	35.71	37.56	FREE	FREE	6,880
IALR-2-4.0xR0.2xL16.0		0.2	16.0	6.0	3.8	11	6	50	17.28	18.12	19.05	20.09	FREE	6,880
IALR-2-4.0xR0.2xL24.0		0.2	24.0	6.0	3.8	11	6	60	25.66	26.91	28.30	FREE	FREE	6,880
IALR-2-4.0xR0.2xL32.0		0.2	32.0	6.0	3.8	11	6	70	34.03	35.70	37.55	FREE	FREE	6,880
IALR-2-4.0xR0.3xL16.0		0.3	16.0	6.0	3.8	11	6	50	17.28	18.11	19.04	20.07	FREE	6,880
IALR-2-4.0xR0.3xL24.0		0.3	24.0	6.0	3.8	11	6	60	25.65	26.90	28.28	FREE	FREE	6,880
IALR-2-4.0xR0.3xL32.0		0.3	32.0	6.0	3.8	11	6	70	34.03	35.69	37.53	FREE	FREE	6,880
IALR-2-4.0xR0.5xL16.0		0.5	16.0	6.0	3.8	11	6	50	17.27	18.09	19.01	20.02	FREE	6,880



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-2-4.0xR0.5xL24.0	4.0	0.5	24.0	6.0	3.8	11	6	60	25.64	26.88	28.25	FREE	FREE	6,880
IALR-2-4.0xR0.5xL32.0		0.5	32.0	6.0	3.8	11	6	70	34.02	35.67	37.50	FREE	FREE	6,880
IALR-2-4.0xR1.0xL16.0		1.0	16.0	6.0	3.8	11	6	50	17.24	18.05	18.93	19.92	FREE	6,880
IALR-2-4.0xR1.0xL24.0		1.0	24.0	6.0	3.8	11	6	60	25.62	26.84	28.18	FREE	FREE	6,880
IALR-2-4.0xR1.0xL32.0		1.0	32.0	6.0	3.8	11	6	70	34.00	35.62	37.42	FREE	FREE	6,880
IALR-2-5.0xR0.1xL20.0	5.0	0.1	20.0	7.5	4.8	11	6	50	21.47	22.53	FREE	FREE	FREE	8,720
IALR-2-5.0xR0.1xL40.0		0.1	40.0	7.5	4.8	11	6	70	42.41	FREE	FREE	FREE	FREE	10,960
IALR-2-5.0xR0.2xL15.0		0.2	15.0	7.5	4.8	11	6	50	16.23	17.03	17.90	FREE	FREE	8,720
IALR-2-5.0xR0.2xL20.0		0.2	20.0	7.5	4.8	11	6	50	21.47	22.52	FREE	FREE	FREE	8,720
IALR-2-5.0xR0.2xL40.0		0.2	40.0	7.5	4.8	11	6	70	42.41	FREE	FREE	FREE	FREE	10,960
IALR-2-5.0xR0.3xL15.0		0.3	15.0	7.5	4.8	11	6	50	16.23	17.02	17.88	FREE	FREE	8,720
IALR-2-5.0xR0.3xL20.0		0.3	20.0	7.5	4.8	11	6	50	21.46	22.51	FREE	FREE	FREE	8,720
IALR-2-5.0xR0.3xL40.0		0.3	40.0	7.5	4.8	11	6	70	42.40	FREE	FREE	FREE	FREE	10,960
IALR-2-5.0xR0.5xL20.0		0.5	20.0	7.5	4.8	11	6	50	21.46	22.49	FREE	FREE	FREE	8,720
IALR-2-5.0xR0.5xL40.0		0.5	40.0	7.5	4.8	11	6	70	42.40	FREE	FREE	FREE	FREE	10,960
IALR-2-5.0xR1.0xL20.0		1.0	20.0	7.5	4.8	11	6	50	21.43	22.44	FREE	FREE	FREE	8,720
IALR-2-5.0xR1.0xL40.0		1.0	40.0	7.5	4.8	11	6	70	42.37	FREE	FREE	FREE	FREE	10,960
IALR-2-6.0xR0.1xL24.0	6.0	0.1	24.0	9.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	8,720
IALR-2-6.0xR0.1xL48.0		0.1	48.0	9.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	13,680
IALR-2-6.0xR0.2xL24.0		0.2	24.0	9.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	8,720
IALR-2-6.0xR0.2xL48.0		0.2	48.0	9.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	13,680
IALR-2-6.0xR0.3xL24.0		0.3	24.0	9.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	8,720
IALR-2-6.0xR0.3xL48.0		0.3	48.0	9.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	13,680
IALR-2-6.0xR0.5xL24.0		0.5	24.0	9.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	8,720
IALR-2-6.0xR0.5xL48.0		0.5	48.0	9.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	13,680
IALR-2-6.0xR1.0xL24.0		1.0	24.0	9.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	8,720
IALR-2-6.0xR1.0xL48.0		1.0	48.0	9.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	13,680

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALR-2
Model number:IALR-2

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.4	1.0	50,000	255	0.025	0.4	40,600	165	0.02	0.4	29,100	95	0.02	0.4	21,000	60	0.015	0.4	14,600	35	0.014	0.4
	1.5	50,000	170	0.02	0.4	36,500	100	0.015	0.4	26,200	55	0.015	0.4	18,900	35	0.015	0.4	13,200	20	0.011	0.4
	2.0	50,000	90	0.02	0.4	26,500	50	0.015	0.4	26,200	30	0.015	0.4	18,900	20	0.015	0.4	13,200	10	0.011	0.4
	3.0	41,400	50	0.015	0.4	29,200	30	0.01	0.4	20,900	15	0.01	0.4	15,100	10	0.01	0.4	10,500	5	0.008	0.4
0.5	1.0	46,000	295	0.03	0.5	32,500	165	0.025	0.5	23,300	95	0.025	0.5	16,800	60	0.02	0.5	11,700	35	0.018	0.5
	2.0	41,400	110	0.025	0.5	29,200	65	0.02	0.5	20,900	35	0.02	0.5	15,100	25	0.015	0.5	10,500	15	0.014	0.5
	3.0	36,800	70	0.02	0.5	26,000	40	0.015	0.5	18,600	25	0.015	0.5	13,400	15	0.01	0.5	9,370	10	0.011	0.5
	4.0	33,100	45	0.02	0.5	23,400	25	0.015	0.5	16,700	15	0.015	0.5	12,100	10	0.01	0.5	8,440	5	0.011	0.5
0.6	2.0	34,500	175	0.03	0.6	24,300	100	0.025	0.6	17,400	55	0.02	0.6	12,600	35	0.02	0.6	8,790	20	0.017	0.6
	3.0	34,500	95	0.03	0.6	24,300	50	0.025	0.6	17,400	30	0.02	0.6	12,600	20	0.02	0.6	8,790	10	0.017	0.6
	4.0	30,700	65	0.02	0.6	21,600	35	0.02	0.6	15,500	20	0.015	0.6	11,200	15	0.015	0.6	7,810	10	0.013	0.6
	6.0	24,500	30	0.015	0.6	17,300	15	0.01	0.6	12,400	10	0.01	0.6	8,970	5	0.01	0.6	6,250	5	0.008	0.6
0.8	4.0	25,900	95	0.04	0.8	18,300	55	0.03	0.8	13,100	30	0.03	0.8	9,460	20	0.025	0.8	6,590	10	0.022	0.8
	6.0	20,700	50	0.03	0.8	14,600	30	0.025	0.8	10,500	15	0.02	0.8	7,570	10	0.02	0.8	5,270	5	0.017	0.8
	8.0	18,400	30	0.02	0.8	13,000	15	0.015	0.8	9,310	10	0.015	0.8	6,730	5	0.015	0.8	4,690	5	0.011	0.8
1.0	2.0	23,000	295	0.06	1	16,200	165	0.05	1	11,600	95	0.045	1	8,410	60	0.04	1	5,860	35	0.035	1
	3.0	23,000	195	0.06	1	16,200	110	0.05	1	11,600	65	0.045	1	8,410	40	0.04	1	5,860	25	0.035	1
	4.0	20,700	110	0.05	1	14,600	65	0.04	1	10,500	35	0.035	1	7,570	25	0.03	1	5,270	15	0.028	1
	6.0	18,400	70	0.035	1	13,000	40	0.03	1	9,310	25	0.025	1	6,730	15	0.025	1	4,690	10	0.021	1
	8.0	16,600	45	0.035	1	11,700	25	0.03	1	8,380	15	0.025	1	6,050	10	0.025	1	4,220	5	0.021	1
	10.0	14,700	30	0.025	1	10,400	15	0.02	1	7,450	10	0.02	1	5,380	5	0.015	1	3,750	5	0.014	1
	12.0	14,700	25	0.02	1	10,400	15	0.015	1	7,450	5	0.015	1	5,380	5	0.01	1	3,750	3	0.011	1
1.2	6.0	17,200	95	0.06	1.2	12,200	50	0.05	1.2	8,730	30	0.045	1.2	6,310	20	0.04	1.2	4,400	10	0.034	1.2
	8.0	15,330	65	0.045	1.2	10,800	35	0.035	1.2	7,760	20	0.03	1.2	5,600	15	0.03	1.2	3,910	10	0.025	1.2
	10.0	13,800	45	0.03	1.2	9,740	25	0.025	1.2	6,980	15	0.02	1.2	5,040	10	0.02	1.2	3,520	5	0.017	1.2
	12.0	12,300	30	0.03	1.2	8,660	15	0.025	1.2	6,210	10	0.02	1.2	4,480	5	0.02	1.2	3,130	5	0.017	1.2
1.5	4.0	15,300	295	0.09	1.5	10,800	165	0.075	1.5	7,760	95	0.07	1.5	5,600	60	0.06	1.5	3,910	35	0.053	1.5
	6.0	13,800	110	0.07	1.5	9,740	65	0.06	1.5	6,980	35	0.055	1.5	5,040	25	0.05	1.5	3,520	15	0.042	1.5
	8.0	12,300	80	0.055	1.5	8,660	45	0.045	1.5	6,210	25	0.04	1.5	4,480	15	0.035	1.5	3,130	10	0.032	1.5
	10.0	12,300	65	0.055	1.5	8,660	35	0.045	1.5	6,210	20	0.04	1.5	4,480	15	0.035	1.5	3,130	10	0.032	1.5
	12.0	11,000	45	0.055	1.5	7,790	25	0.045	1.5	5,590	15	0.04	1.5	4,040	10	0.035	1.5	2,810	5	0.032	1.5
	16.0	9,810	30	0.025	1.5	6,930	15	0.025	1.5	4,970	10	0.02	1.5	3,590	5	0.02	1.5	2,500	3	0.016	1.5
2.0	4.0	11,500	295	0.12	2	8,120	165	0.1	2	5,820	95	0.09	2	4,200	60	0.08	2	2,930	35	0.07	2
	6.0	11,500	195	0.12	2	8,120	110	0.1	2	5,820	65	0.09	2	4,200	40	0.08	2	2,930	25	0.07	2
	8.0	10,300	110	0.095	2	7,310	65	0.08	2	5,240	35	0.07	2	3,780	25	0.065	2	2,640	15	0.056	2
	10.0	10,300	95	0.095	2	7,310	50	0.08	2	5,240	30	0.07	2	3,780	20	0.065	2	2,640	10	0.056	2
	12.0	9,200	70	0.07	2	6,500	40	0.06	2	4,660	25	0.055	2	3,360	15	0.05	2	2,350	10	0.042	2
	16.0	8,280	45	0.07	2	5,850	25	0.06	2	4,190	15	0.055	2	3,030	10	0.05	2	2,110	5	0.042	2
	20.0	7,360	30	0.05	2	5,200	15	0.04	2	3,730	10	0.035	2	2,690	5	0.03	2	1,880	5	0.028	2
3.0	12.0	6,900	110	0.145	3	4,870	65	0.12	3	3,490	35	0.11	3	2,520	25	0.095	3	1,760	15	0.084	3
	18.0	6,140	70	0.11	3	4,330	40	0.09	3	3,100	25	0.08	3	2,240	15	0.07	3	1,560	10	0.063	3
	24.0	5,520	45	0.11	3	3,900	25	0.09	3	2,790	15	0.08	3	2,020	10	0.07	3	1,410	5	0.063	3

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●정삭절삭은, 정삭가공을행하는절무의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p=축방향,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●유일미스트콜란트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 될모 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALR-2
Model number:IALR-2

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
3.0	30.0	4,910	30	0.07	3	3,470	15	0.06	3	2,480	10	0.055	3	1,800	5	0.05	3	1,250	5	0.042	3
4.0	16.0	5,180	110	0.19	4	3,660	65	0.16	4	2,620	35	0.145	4	1,890	25	0.13	4	1,320	15	0.112	4
	24.0	4,600	70	0.145	4	3,250	40	0.12	4	2,330	25	0.11	4	1,680	15	0.095	4	1,170	10	0.084	4
	32.0	4,140	45	0.145	4	2,920	25	0.12	4	2,100	15	0.11	4	1,515	10	0.095	4	1,060	5	0.084	4
5.0	15.0	4,600	195	0.3	5	3,250	110	0.25	5	2,330	65	0.225	5	1,680	40	0.2	5	1,170	25	0.175	5
	40.0	3,310	45	0.18	5	2,340	25	0.15	5	1,680	15	0.135	5	1,210	10	0.12	5	850	5	0.105	5
6.0	24.0	3,450	110	0.29	6	2,440	65	0.24	6	1,750	35	0.215	6	1,260	25	0.19	6	880	15	0.168	6
	48.0	2,760	45	0.215	6	1,950	25	0.18	6	1,400	15	0.16	6	1,010	10	0.145	6	710	5	0.126	6

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

CBN Series
ion Depo A Series 레디우스 Radius
ion Depo U Series

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.4	1.0	50,000	305	0.03	0.4	31,800	130	0.02	0.4	28,600	105	0.015	0.4	17,800	55	0.015	0.4
	1.5	50,000	205	0.02	0.4	28,600	80	0.015	0.4	25,800	65	0.015	0.4	16,000	35	0.015	0.4
	2.0	50,000	110	0.02	0.4	28,600	40	0.015	0.4	25,800	35	0.015	0.4	16,000	15	0.015	0.4
	3.0	41,200	60	0.015	0.4	22,900	25	0.01	0.4	20,600	20	0.01	0.4	12,800	10	0.01	0.4
0.5	1.0	45,800	350	0.035	0.5	25,500	130	0.025	0.5	22,900	105	0.02	0.5	14,300	55	0.02	0.5
	2.0	41,200	135	0.03	0.5	22,900	50	0.02	0.5	20,600	40	0.015	0.5	12,800	20	0.015	0.5
	3.0	36,700	85	0.02	0.5	20,400	30	0.015	0.5	18,300	25	0.01	0.5	11,400	15	0.01	0.5
	4.0	33,000	55	0.02	0.5	18,300	20	0.015	0.5	16,500	15	0.01	0.5	10,300	10	0.01	0.5
0.6	2.0	34,400	210	0.035	0.6	19,100	80	0.02	0.6	17,200	65	0.02	0.6	10,700	35	0.02	0.6
	3.0	34,400	110	0.035	0.6	19,100	40	0.02	0.6	17,200	35	0.02	0.6	10,700	15	0.02	0.6
	4.0	30,600	75	0.025	0.6	17,000	30	0.015	0.6	15,300	25	0.015	0.6	9,510	10	0.015	0.6
	6.0	24,400	35	0.015	0.6	13,600	15	0.01	0.6	12,200	10	0.01	0.6	7,610	5	0.01	0.6
0.8	4.0	25,800	110	0.045	0.8	14,300	40	0.03	0.8	12,900	35	0.025	0.8	8,020	15	0.025	0.8
	6.0	20,600	60	0.035	0.8	11,500	25	0.02	0.8	10,300	20	0.02	0.8	6,420	10	0.02	0.8
	8.0	18,300	35	0.02	0.8	10,200	15	0.015	0.8	9,170	10	0.015	0.8	5,710	5	0.015	0.8
1.0	2.0	22,900	350	0.07	1	12,700	130	0.045	1	11,500	105	0.04	1	7,130	55	0.04	1
	3.0	22,900	235	0.07	1	12,700	85	0.045	1	11,500	70	0.04	1	7,130	35	0.04	1
	4.0	20,600	135	0.055	1	11,500	50	0.035	1	10,300	40	0.03	1	6,420	20	0.03	1
	6.0	18,300	85	0.04	1	10,200	30	0.025	1	9,170	25	0.025	1	5,710	15	0.025	1
	8.0	16,500	55	0.04	1	9,170	20	0.025	1	8,250	15	0.025	1	5,140	10	0.025	1
	10.0	14,700	35	0.03	1	8,150	15	0.02	1	7,340	10	0.015	1	4,570	5	0.015	1
	12.0	14,700	25	0.02	1	8,150	10	0.015	1	7,340	10	0.01	1	4,570	5	0.01	1
1.2	6.0	17,200	110	0.065	1.2	9,550	40	0.045	1.2	8,600	35	0.04	1.2	5,350	15	0.04	1.2
	8.0	15,300	75	0.05	1.2	8,490	30	0.03	1.2	7,640	25	0.03	1.2	4,760	10	0.03	1.2
	10.0	13,700	55	0.035	1.2	7,640	20	0.02	1.2	6,880	15	0.02	1.2	4,280	10	0.02	1.2
	12.0	12,200	35	0.035	1.2	6,790	15	0.02	1.2	6,110	10	0.02	1.2	3,810	5	0.02	1.2
1.5	4.0	15,300	350	0.105	1.5	8,490	130	0.07	1.5	7,640	105	0.06	1.5	4,760	55	0.06	1.5
	6.0	13,700	135	0.085	1.5	7,640	50	0.055	1.5	6,880	40	0.05	1.5	4,280	20	0.05	1.5
	8.0	12,200	95	0.065	1.5	6,790	35	0.04	1.5	6,110	30	0.035	1.5	3,810	15	0.035	1.5
	10.0	12,200	75	0.065	1.5	6,790	30	0.04	1.5	6,110	25	0.035	1.5	3,810	10	0.035	1.5
	12.0	11,000	55	0.065	1.5	6,110	20	0.04	1.5	5,500	15	0.035	1.5	3,420	10	0.035	1.5
	16.0	9,780	35	0.03	1.5	5,430	10	0.02	1.5	4,890	10	0.02	1.5	3,040	5	0.02	1.5
2.0	4.0	11,500	350	0.14	2	6,370	130	0.09	2	5,730	105	0.08	2	3,570	55	0.08	2
	6.0	11,500	235	0.14	2	6,370	85	0.09	2	5,730	70	0.08	2	3,570	35	0.08	2
	8.0	10,300	135	0.11	2	5,730	50	0.07	2	5,160	40	0.065	2	3,210	20	0.065	2
	10.0	10,300	110	0.11	2	5,730	40	0.07	2	5,160	35	0.065	2	3,210	15	0.065	2
	12.0	9,170	85	0.085	2	5,100	30	0.055	2	4,590	25	0.05	2	2,850	15	0.05	2
	16.0	8,250	55	0.085	2	4,590	20	0.055	2	4,130	15	0.05	2	2,570	10	0.05	2
	20.0	7,340	35	0.055	2	4,080	15	0.035	2	3,670	10	0.03	2	2,280	5	0.03	2
3.0	12.0	6,880	135	0.17	3	3,820	50	0.11	3	3,440	40	0.095	3	2,140	20	0.095	3
	18.0	6,110	85	0.125	3	3,400	30	0.08	3	3,060	25	0.07	3	1,900	15	0.07	3
	24.0	5,500	55	0.125	3	3,060	20	0.08	3	2,750	15	0.07	3	1,710	10	0.07	3

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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALR-2
Model number:IALR-2

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		주철 Cast Iron / 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy / 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy / INCONEL			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
3.0	30.0	4,890	35	0.085	3	2,720	15	0.055	3	2,450	10	0.05	3	1,520	5	0.05	3
4.0	16.0	5,160	135	0.225	4	2,870	50	0.145	4	2,580	40	0.13	4	1,610	20	0.13	4
	24.0	4,590	85	0.17	4	2,550	30	0.11	4	2,290	25	0.095	4	1,430	15	0.095	4
	32.0	4,130	55	0.17	4	2,290	20	0.11	4	2,070	15	0.095	4	1,290	10	0.095	4
5.0	15.0	4,590	235	0.35	5	2,550	85	0.225	5	2,290	70	0.2	5	1,430	35	0.2	5
	40.0	3,300	55	0.21	5	2,840	20	0.135	5	1,650	15	0.12	5	1,030	10	0.12	5
6.0	24.0	3,440	135	0.335	6	1,910	50	0.215	6	1,720	40	0.19	6	1,070	20	0.19	6
	48.0	2,750	55	0.25	6	1,530	20	0.16	6	1,380	15	0.145	6	860	10	0.145	6

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●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
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ion Depo Type A Series

CBN Series
ion Depo A Series 레디우스 Radius
ion Depo U Series

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy / A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy / Al·AC·ADC				동합금 Copper Alloy / 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.4	1.0	50,000	240	0.03	0.4	50,000	220	0.03	0.4	50,000	185	0.02	0.4	50,000	185	0.03	0.4
	1.5	50,000	160	0.025	0.4	50,000	145	0.025	0.4	50,000	125	0.015	0.4	50,000	125	0.025	0.4
	2.0	50,000	85	0.025	0.4	50,000	80	0.025	0.4	50,000	65	0.015	0.4	50,000	65	0.025	0.4
	3.0	50,000	60	0.02	0.4	50,000	55	0.02	0.4	41,200	35	0.01	0.4	50,000	45	0.02	0.4
0.5	1.0	50,000	300	0.04	0.5	50,000	275	0.04	0.5	45,800	215	0.025	0.5	50,000	235	0.04	0.5
	2.0	50,000	125	0.03	0.5	50,000	115	0.03	0.5	41,200	80	0.02	0.5	50,000	100	0.03	0.5
	3.0	50,000	90	0.025	0.5	50,000	85	0.025	0.5	36,700	50	0.015	0.5	48,900	70	0.025	0.5
	4.0	50,000	65	0.025	0.5	47,700	60	0.025	0.5	33,000	35	0.015	0.5	44,000	45	0.025	0.5
0.6	2.0	50,000	240	0.035	0.6	49,600	220	0.035	0.6	34,400	130	0.025	0.6	45,800	170	0.035	0.6
	3.0	50,000	125	0.035	0.6	49,600	115	0.035	0.6	34,400	70	0.025	0.6	45,800	90	0.035	0.6
	4.0	50,000	100	0.025	0.6	44,100	80	0.025	0.6	30,600	45	0.02	0.6	40,700	65	0.025	0.6
	6.0	40,700	50	0.02	0.6	35,300	40	0.02	0.6	24,400	25	0.01	0.6	32,600	30	0.02	0.6
0.8	4.0	43,000	145	0.05	0.8	37,200	115	0.05	0.8	25,800	70	0.03	0.8	34,400	90	0.05	0.8
	6.0	34,400	80	0.035	0.8	29,800	65	0.035	0.8	20,600	35	0.025	0.8	27,500	50	0.035	0.8
	8.0	30,600	50	0.025	0.8	26,500	40	0.025	0.8	18,300	25	0.015	0.8	24,400	30	0.025	0.8
1.0	2.0	38,200	460	0.075	1	33,100	365	0.075	1	22,900	215	0.05	1	30,600	285	0.075	1
	3.0	38,200	305	0.075	1	33,100	245	0.075	1	22,900	145	0.05	1	30,600	190	0.075	1
	4.0	34,400	175	0.06	1	29,800	140	0.06	1	20,600	80	0.04	1	27,500	110	0.06	1
	6.0	30,600	110	0.045	1	26,500	90	0.045	1	18,300	50	0.03	1	24,400	70	0.045	1
	8.0	27,500	75	0.045	1	23,800	60	0.045	1	16,500	35	0.03	1	22,000	45	0.045	1
	10.0	24,400	50	0.03	1	21,200	40	0.03	1	14,700	25	0.02	1	19,500	30	0.03	1
	12.0	24,400	35	0.025	1	21,200	30	0.025	1	14,700	15	0.015	1	19,500	20	0.025	1
1.2	6.0	28,600	145	0.07	1.2	24,800	115	0.07	1.2	17,200	70	0.05	1.2	22,900	90	0.07	1.2
	8.0	25,500	100	0.055	1.2	22,100	80	0.055	1.2	15,300	45	0.035	1.2	20,400	60	0.055	1.2
	10.0	22,900	70	0.035	1.2	19,900	55	0.035	1.2	13,700	35	0.025	1.2	18,300	45	0.035	1.2
	12.0	20,400	50	0.035	1.2	17,600	40	0.035	1.2	12,200	25	0.025	1.2	16,300	30	0.035	1.2
1.5	4.0	25,500	460	0.115	1.5	22,100	365	0.115	1.5	15,300	215	0.075	1.5	20,400	285	0.115	1.5
	6.0	22,900	175	0.09	1.5	19,900	140	0.09	1.5	13,700	80	0.06	1.5	18,300	110	0.09	1.5
	8.0	20,400	125	0.07	1.5	17,600	100	0.07	1.5	12,200	55	0.045	1.5	16,300	75	0.07	1.5
	10.0	20,400	100	0.07	1.5	17,600	80	0.07	1.5	12,200	45	0.045	1.5	16,300	60	0.07	1.5
	12.0	18,300	75	0.07	1.5	15,900	60	0.07	1.5	11,000	35	0.045	1.5	14,700	45	0.07	1.5
	16.0	16,300	45	0.035	1.5	14,100	35	0.035	1.5	9,780	20	0.025	1.5	13,000	25	0.035	1.5
2.0	4.0	19,100	460	0.15	2	16,500	365	0.15	2	11,500	215	0.1	2	15,300	285	0.15	2
	6.0	19,100	305	0.15	2	16,500	245	0.15	2	11,500	145	0.1	2	15,300	190	0.15	2
	8.0	17,200	175	0.12	2	14,900	140	0.12	2	10,300	80	0.08	2	13,700	110	0.12	2
	10.0	17,200	145	0.12	2	14,900	115	0.12	2	10,300	70	0.08	2	13,700	90	0.12	2
	12.0	15,300	110	0.09	2	13,200	90	0.09	2	9,170	50	0.06	2	12,200	70	0.09	2
	16.0	13,700	75	0.09	2	11,900	60	0.09	2	8,250	35	0.06	2	11,000	45	0.09	2
	20.0	12,200	50	0.06	2	10,600	40	0.06	2	7,340	25	0.04	2	9,780	30	0.06	2
3.0	12.0	11,500	175	0.18	3	9,930	140	0.18	3	6,880	80	0.12	3	9,170	110	0.18	3
	18.0	10,200	110	0.135	3	8,830	90	0.135	3	6,110	50	0.09	3	8,150	70	0.135	3
	24.0	9,170	75	0.135	3	7,950	60	0.135	3	5,500	35	0.09	3	7,340	45	0.135	3

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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALR-2
Model number:IALR-2

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
3.0	30.0	8,150	50	0.09	3	7,060	40	0.09	3	4,890	25	0.06	3	6,520	30	0.09	3
4.0	16.0	8,600	175	0.24	4	7,450	140	0.24	4	5,160	80	0.16	4	6,880	110	0.24	4
	24.0	7,640	110	0.18	4	6,620	90	0.18	4	4,590	50	0.12	4	6,110	70	0.18	4
	32.0	6,880	75	0.18	4	5,960	60	0.18	4	4,130	35	0.12	4	5,500	45	0.18	4
5.0	15.0	7,640	305	0.375	5	6,620	245	0.375	5	4,590	145	0.25	5	6,110	190	0.375	5
	40.0	5,500	75	0.225	5	4,770	60	0.225	5	3,300	35	0.15	5	4,400	45	0.225	5
6.0	24.0	5,730	175	0.36	6	4,970	140	0.36	6	3,440	80	0.24	6	4,590	110	0.36	6
	48.0	4,590	75	0.27	6	3,980	60	0.27	6	2,750	35	0.18	6	3,670	45	0.27	6

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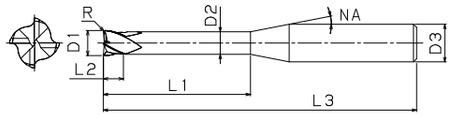
초경 롱 넥 래디우스 엔드밀
Carbide Long Neck Radius End Mill

ion A | super MG | 날 수 4 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IALR-4 Model number:IALR-4

날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8 ~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010



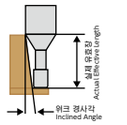


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

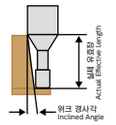
최적◎Recommended 적용○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-4-1.0xR0.05xL3.0	1.0	0.05	3.0	0.8	0.95	11	4	50	3.27	3.43	3.61	3.80	4.27	5,760
IALR-4-1.0xR0.05xL4.0		0.05	4.0	0.8	0.95	11	4	50	4.32	4.53	4.76	5.02	5.63	5,760
IALR-4-1.0xR0.05xL6.0		0.05	6.0	0.8	0.95	11	4	50	6.41	6.73	7.08	7.46	8.37	5,760
IALR-4-1.0xR0.05xL8.0		0.05	8.0	0.8	0.95	11	4	50	8.51	8.93	9.39	9.90	11.11	5,760
IALR-4-1.0xR0.05xL10.0		0.05	10.0	0.8	0.95	11	4	50	10.60	11.12	11.70	12.34	13.85	5,760
IALR-4-1.0xR0.05xL12.0		0.05	12.0	0.8	0.95	11	4	50	12.70	13.32	14.01	14.77	16.59	5,760
IALR-4-1.0xR0.1xL3.0		0.1	3.0	0.8	0.95	11	4	50	3.27	3.43	3.60	3.79	4.25	5,760
IALR-4-1.0xR0.1xL4.0		0.1	4.0	0.8	0.95	11	4	50	4.32	4.53	4.76	5.01	5.62	5,760
IALR-4-1.0xR0.1xL6.0		0.1	6.0	0.8	0.95	11	4	50	6.41	6.72	7.07	7.45	8.36	5,760
IALR-4-1.0xR0.1xL8.0		0.1	8.0	0.8	0.95	11	4	50	8.51	8.92	9.38	9.89	11.09	5,760
IALR-4-1.0xR0.1xL10.0		0.1	10.0	0.8	0.95	11	4	50	10.60	11.12	11.69	12.33	13.83	5,760
IALR-4-1.0xR0.1xL12.0		0.1	12.0	0.8	0.95	11	4	50	12.69	13.32	14.00	14.76	16.57	5,760
IALR-4-1.0xR0.2xL3.0		0.2	3.0	0.8	0.95	11	4	50	3.27	3.42	3.58	3.77	4.21	5,760
IALR-4-1.0xR0.2xL4.0		0.2	4.0	0.8	0.95	11	4	50	4.31	4.52	4.74	4.99	5.58	5,760
IALR-4-1.0xR0.2xL6.0		0.2	6.0	0.8	0.95	11	4	50	6.41	6.71	7.05	7.43	8.32	5,760
IALR-4-1.0xR0.2xL8.0		0.2	8.0	0.8	0.95	11	4	50	8.50	8.91	9.36	9.87	11.06	5,760
IALR-4-1.0xR0.2xL10.0		0.2	10.0	0.8	0.95	11	4	50	10.60	11.11	11.67	12.30	13.80	5,760
IALR-4-1.0xR0.2xL12.0		0.2	12.0	0.8	0.95	11	4	50	12.69	13.31	13.99	14.74	16.54	5,760
IALR-4-1.0xR0.3xL3.0		0.3	3.0	0.8	0.95	11	4	50	3.26	3.41	3.57	3.75	4.18	5,760
IALR-4-1.0xR0.3xL4.0		0.3	4.0	0.8	0.95	11	4	50	4.31	4.51	4.73	4.97	5.55	5,760
IALR-4-1.0xR0.3xL6.0		0.3	6.0	0.8	0.95	11	4	50	6.40	6.70	7.04	7.41	8.29	5,760
IALR-4-1.0xR0.3xL8.0		0.3	8.0	0.8	0.95	11	4	50	8.50	8.90	9.35	9.84	11.02	5,760
IALR-4-1.0xR0.3xL10.0		0.3	10.0	0.8	0.95	11	4	50	10.59	11.10	11.66	12.28	13.76	5,760
IALR-4-1.0xR0.3xL12.0		0.3	12.0	0.8	0.95	11	4	50	12.68	13.30	13.97	14.72	16.50	5,760

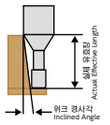


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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-4-1.2xR0.1xL10.0	1.2	0.1	10.0	1.0	1.15	11	4	50	10.60	11.12	11.69	12.33	13.83	6,080
IALR-4-1.2xR0.1xL15.0		0.1	15.0	1.0	1.15	11	4	50	15.84	16.61	17.47	18.42	20.68	9,120
IALR-4-1.2xR0.2xL10.0		0.2	10.0	1.0	1.15	11	4	50	10.60	11.11	11.67	12.30	13.80	6,080
IALR-4-1.2xR0.2xL15.0		0.2	15.0	1.0	1.15	11	4	50	15.83	16.60	17.45	18.40	20.64	9,120
IALR-4-1.2xR0.3xL10.0		0.3	10.0	1.0	1.15	11	4	50	10.59	11.10	11.66	12.28	13.76	6,080
IALR-4-1.2xR0.3xL15.0		0.3	15.0	1.0	1.15	11	4	50	15.83	16.59	17.44	18.38	20.61	9,120
IALR-4-1.5xR0.1xL3.0	1.5	0.1	3.0	1.2	1.45	11	4	50	3.27	3.43	3.60	3.79	4.25	6,080
IALR-4-1.5xR0.1xL6.0		0.1	6.0	1.2	1.45	11	4	50	6.41	6.72	7.07	7.45	8.36	6,080
IALR-4-1.5xR0.1xL10.0		0.1	10.0	1.2	1.45	11	4	50	10.60	11.12	11.69	12.33	13.83	6,080
IALR-4-1.5xR0.1xL12.0		0.1	12.0	1.2	1.45	11	4	50	12.69	13.32	14.00	14.76	16.57	6,080
IALR-4-1.5xR0.1xL18.0		0.1	18.0	1.2	1.45	11	4	50	18.98	19.91	20.94	22.08	FREE	6,080
IALR-4-1.5xR0.2xL3.0		0.2	3.0	1.2	1.45	11	4	50	3.27	3.42	3.58	3.77	4.21	6,080
IALR-4-1.5xR0.2xL6.0		0.2	6.0	1.2	1.45	11	4	50	6.41	6.71	7.05	7.43	8.32	6,080
IALR-4-1.5xR0.2xL10.0		0.2	10.0	1.2	1.45	11	4	50	10.60	11.11	11.67	12.30	13.80	6,080
IALR-4-1.5xR0.2xL12.0		0.2	12.0	1.2	1.45	11	4	50	12.69	13.31	13.99	14.74	16.54	6,080
IALR-4-1.5xR0.2xL18.0		0.2	18.0	1.2	1.45	11	4	50	18.97	19.90	20.92	22.06	FREE	6,080
IALR-4-1.5xR0.3xL3.0		0.3	3.0	1.2	1.45	11	4	50	3.26	3.41	3.57	3.75	4.18	6,080
IALR-4-1.5xR0.3xL6.0		0.3	6.0	1.2	1.45	11	4	50	6.40	6.70	7.04	7.41	8.29	6,080
IALR-4-1.5xR0.3xL10.0		0.3	10.0	1.2	1.45	11	4	50	10.59	11.10	11.66	12.28	13.76	6,080
IALR-4-1.5xR0.3xL12.0		0.3	12.0	1.2	1.45	11	4	50	12.68	13.30	13.97	14.72	16.50	6,080
IALR-4-1.5xR0.3xL18.0		0.3	18.0	1.2	1.45	11	4	50	18.97	19.89	20.90	22.03	FREE	6,080
IALR-4-1.5xR0.5xL6.0		0.5	6.0	1.2	1.45	11	4	50	6.39	6.68	7.01	7.36	8.22	6,080
IALR-4-1.5xR0.5xL12.0		0.5	12.0	1.2	1.45	11	4	50	12.68	13.28	13.94	14.68	16.43	6,080
IALR-4-1.5xR0.5xL18.0		0.5	18.0	1.2	1.45	11	4	50	18.96	19.87	20.87	21.99	FREE	6,080
IALR-4-2.0xR0.1xL6.0	2.0	0.1	6.0	1.6	1.94	11	4	50	6.44	6.75	7.10	7.48	8.39	6,080
IALR-4-2.0xR0.1xL8.0		0.1	8.0	1.6	1.94	11	4	50	8.53	8.95	9.41	9.92	11.13	6,080
IALR-4-2.0xR0.1xL10.0		0.1	10.0	1.6	1.94	11	4	50	10.63	11.15	11.72	12.36	13.87	6,080
IALR-4-2.0xR0.1xL12.0		0.1	12.0	1.6	1.94	11	4	50	12.72	13.34	14.03	14.79	16.61	6,080
IALR-4-2.0xR0.1xL15.0		0.1	15.0	1.6	1.94	11	4	50	15.86	16.64	17.50	18.45	FREE	6,080
IALR-4-2.0xR0.1xL16.0		0.1	16.0	1.6	1.94	11	4	50	16.91	17.74	18.65	19.67	FREE	6,080
IALR-4-2.0xR0.1xL20.0		0.1	20.0	1.6	1.94	11	4	60	21.10	22.13	23.28	24.55	FREE	6,080
IALR-4-2.0xR0.1xL24.0		0.1	24.0	1.6	1.94	11	4	60	25.29	26.53	27.90	FREE	FREE	6,080
IALR-4-2.0xR0.2xL6.0		0.2	6.0	1.6	1.94	11	4	50	6.43	6.74	7.08	7.46	8.36	6,080
IALR-4-2.0xR0.2xL8.0		0.2	8.0	1.6	1.94	11	4	50	8.53	8.94	9.39	9.90	11.09	6,080
IALR-4-2.0xR0.2xL10.0		0.2	10.0	1.6	1.94	11	4	50	10.62	11.14	11.70	12.34	13.83	6,080
IALR-4-2.0xR0.2xL12.0		0.2	12.0	1.6	1.94	11	4	50	12.72	13.33	14.02	14.77	16.57	6,080
IALR-4-2.0xR0.2xL15.0		0.2	15.0	1.6	1.94	11	4	50	15.86	16.63	17.48	18.43	FREE	6,080
IALR-4-2.0xR0.2xL16.0		0.2	16.0	1.6	1.94	11	4	50	16.90	17.73	18.64	19.65	FREE	6,080
IALR-4-2.0xR0.2xL20.0		0.2	20.0	1.6	1.94	11	4	60	21.09	22.12	23.26	24.52	FREE	6,080
IALR-4-2.0xR0.2xL24.0		0.2	24.0	1.6	1.94	11	4	60	25.28	26.52	27.88	FREE	FREE	6,080
IALR-4-2.0xR0.3xL6.0		0.3	6.0	1.6	1.94	11	4	50	6.43	6.73	7.07	7.44	8.32	6,080
IALR-4-2.0xR0.3xL8.0		0.3	8.0	1.6	1.94	11	4	50	8.52	8.93	9.38	9.88	11.06	6,080
IALR-4-2.0xR0.3xL10.0		0.3	10.0	1.6	1.94	11	4	50	10.62	11.13	11.69	12.31	13.80	6,080
IALR-4-2.0xR0.3xL12.0		0.3	12.0	1.6	1.94	11	4	50	12.71	13.32	14.00	14.75	16.54	6,080
IALR-4-2.0xR0.3xL15.0		0.3	15.0	1.6	1.94	11	4	50	15.85	16.62	17.47	18.41	FREE	6,080

ion Depo Type A Series

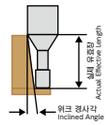


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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-4-2.0xR0.3xL16.0	2.0	0.3	16.0	1.6	1.94	11	4	50	16.90	17.72	18.62	19.63	FREE	6,080
IALR-4-2.0xR0.3xL20.0		0.3	20.0	1.6	1.94	11	4	60	21.09	22.11	23.25	24.50	FREE	6,080
IALR-4-2.0xR0.3xL24.0		0.3	24.0	1.6	1.94	11	4	60	25.28	26.51	27.87	FREE	FREE	6,080
IALR-4-2.0xR0.5xL8.0		0.5	8.0	1.6	1.94	11	4	50	8.51	8.91	9.35	9.83	10.99	6,080
IALR-4-2.0xR0.5xL12.0		0.5	12.0	1.6	1.94	11	4	50	12.70	13.30	13.97	14.71	16.47	6,080
IALR-4-2.0xR0.5xL16.0		0.5	16.0	1.6	1.94	11	4	50	16.89	17.70	18.59	19.58	FREE	6,080
IALR-4-2.0xR0.5xL24.0		0.5	24.0	1.6	1.94	11	4	60	25.27	26.49	27.84	FREE	FREE	6,080
IALR-4-2.5xR0.1xL10.0	2.5	0.1	10.0	2.0	2.44	11	4	50	10.63	11.15	11.72	12.36	13.87	6,400
IALR-4-2.5xR0.1xL20.0		0.1	20.0	2.0	2.44	11	4	50	21.10	22.13	23.28	FREE	FREE	6,400
IALR-4-2.5xR0.2xL10.0		0.2	10.0	2.0	2.44	11	4	50	10.62	11.14	11.70	12.34	13.83	6,400
IALR-4-2.5xR0.2xL20.0		0.2	20.0	2.0	2.44	11	4	50	21.09	22.12	23.26	FREE	FREE	6,400
IALR-4-2.5xR0.3xL10.0		0.3	10.0	2.0	2.44	11	4	50	10.62	11.13	11.69	12.31	13.80	6,400
IALR-4-2.5xR0.3xL20.0		0.3	20.0	2.0	2.44	11	4	50	21.09	22.11	23.25	FREE	FREE	6,400
IALR-4-2.5xR0.5xL10.0		0.5	10.0	2.0	2.44	11	4	50	10.61	11.11	11.66	12.27	13.73	6,400
IALR-4-2.5xR0.5xL20.0		0.5	20.0	2.0	2.44	11	4	50	21.08	22.09	23.22	FREE	FREE	6,400
IALR-4-3.0xR0.1xL10.0	3.0	0.1	10.0	2.5	2.85	11	4	50	10.87	11.40	11.99	12.64	FREE	8,320
IALR-4-3.0xR0.1xL12.0		0.1	12.0	2.5	2.85	11	4	50	12.96	13.60	14.30	FREE	FREE	8,320
IALR-4-3.0xR0.1xL15.0		0.1	15.0	2.5	2.85	11	4	50	16.10	16.89	17.77	FREE	FREE	8,320
IALR-4-3.0xR0.1xL18.0		0.1	18.0	2.5	2.85	11	4	50	19.25	20.19	FREE	FREE	FREE	8,320
IALR-4-3.0xR0.1xL20.0		0.1	20.0	2.5	2.85	11	4	50	21.34	22.39	FREE	FREE	FREE	8,320
IALR-4-3.0xR0.1xL24.0		0.1	24.0	2.5	2.85	11	4	60	25.53	26.78	FREE	FREE	FREE	8,800
IALR-4-3.0xR0.1xL30.0		0.1	30.0	2.5	2.85	11	4	60	31.81	FREE	FREE	FREE	FREE	8,800
IALR-4-3.0xR0.2xL10.0		0.2	10.0	2.5	2.85	11	4	50	10.86	11.39	11.97	12.62	FREE	8,320
IALR-4-3.0xR0.2xL12.0		0.2	12.0	2.5	2.85	11	4	50	12.96	13.59	14.28	FREE	FREE	8,320
IALR-4-3.0xR0.2xL15.0		0.2	15.0	2.5	2.85	11	4	50	16.10	16.88	17.75	FREE	FREE	8,320
IALR-4-3.0xR0.2xL18.0		0.2	18.0	2.5	2.85	11	4	50	19.24	20.18	FREE	FREE	FREE	8,320
IALR-4-3.0xR0.2xL20.0		0.2	20.0	2.5	2.85	11	4	50	21.33	22.38	FREE	FREE	FREE	8,320
IALR-4-3.0xR0.2xL24.0		0.2	24.0	2.5	2.85	11	4	60	25.52	26.77	FREE	FREE	FREE	8,800
IALR-4-3.0xR0.2xL30.0		0.2	30.0	2.5	2.85	11	4	60	31.80	FREE	FREE	FREE	FREE	8,800
IALR-4-3.0xR0.3xL10.0		0.3	10.0	2.5	2.85	11	4	50	10.86	11.38	11.96	12.60	FREE	8,320
IALR-4-3.0xR0.3xL12.0		0.3	12.0	2.5	2.85	11	4	50	12.95	13.58	14.27	FREE	FREE	8,320
IALR-4-3.0xR0.3xL15.0		0.3	15.0	2.5	2.85	11	4	50	16.10	16.87	17.74	FREE	FREE	8,320
IALR-4-3.0xR0.3xL18.0		0.3	18.0	2.5	2.85	11	4	50	19.24	20.17	FREE	FREE	FREE	8,320
IALR-4-3.0xR0.3xL20.0		0.3	20.0	2.5	2.85	11	4	50	21.33	22.37	FREE	FREE	FREE	8,320
IALR-4-3.0xR0.3xL24.0		0.3	24.0	2.5	2.85	11	4	60	25.52	26.76	FREE	FREE	FREE	8,800
IALR-4-3.0xR0.3xL30.0		0.3	30.0	2.5	2.85	11	4	60	31.80	FREE	FREE	FREE	FREE	8,800
IALR-4-3.0xR0.5xL12.0		0.5	12.0	2.5	2.85	11	4	50	12.94	13.56	14.24	FREE	FREE	8,320
IALR-4-3.0xR0.5xL18.0		0.5	18.0	2.5	2.85	11	4	50	19.23	20.15	FREE	FREE	FREE	8,320
IALR-4-3.0xR0.5xL24.0		0.5	24.0	2.5	2.85	11	4	60	25.51	26.74	FREE	FREE	FREE	8,800
IALR-4-3.0xR0.5xL30.0		0.5	30.0	2.5	2.85	11	4	60	31.79	FREE	FREE	FREE	FREE	8,800
IALR-4-3.0xR1.0xL12.0		1.0	12.0	2.5	2.85	11	4	50	12.92	13.51	14.16	14.88	FREE	8,320
IALR-4-3.0xR1.0xL18.0		1.0	18.0	2.5	2.85	11	4	50	19.20	20.10	FREE	FREE	FREE	8,320
IALR-4-3.0xR1.0xL24.0		1.0	24.0	2.5	2.85	11	4	60	25.49	26.69	FREE	FREE	FREE	8,800
IALR-4-3.0xR1.0xL30.0		1.0	30.0	2.5	2.85	11	4	60	31.77	FREE	FREE	FREE	FREE	8,800
IALR-4-4.0xR0.1xL10.0	4.0	0.1	10.0	3.2	3.8	11	6	50	11.00	11.54	12.14	12.80	14.36	8,320

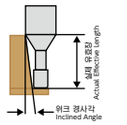
CBN Series
ion Depo A Series 래디우스 Radius
ion Depo U Series



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-4-4.0xR0.1xL15.0	4.0	0.1	15.0	3.2	3.8	11	6	50	16.24	17.04	17.91	18.89	FREE	8,320
IALR-4-4.0xR0.1xL16.0		0.1	16.0	3.2	3.8	11	6	50	17.29	18.13	19.07	20.11	FREE	8,320
IALR-4-4.0xR0.1xL20.0		0.1	20.0	3.2	3.8	11	6	60	21.47	22.53	23.69	24.99	FREE	8,320
IALR-4-4.0xR0.1xL24.0		0.1	24.0	3.2	3.8	11	6	60	25.66	26.92	28.32	FREE	FREE	8,320
IALR-4-4.0xR0.1xL32.0		0.1	32.0	3.2	3.8	11	6	70	34.04	35.71	37.56	FREE	FREE	8,320
IALR-4-4.0xR0.2xL10.0		0.2	10.0	3.2	3.8	11	6	50	11.00	11.53	12.12	12.77	14.32	8,320
IALR-4-4.0xR0.2xL15.0		0.2	15.0	3.2	3.8	11	6	50	16.23	17.03	17.90	18.87	FREE	8,320
IALR-4-4.0xR0.2xL16.0		0.2	16.0	3.2	3.8	11	6	50	17.28	18.12	19.05	20.09	FREE	8,320
IALR-4-4.0xR0.2xL20.0		0.2	20.0	3.2	3.8	11	6	60	21.47	22.52	23.68	24.96	FREE	8,320
IALR-4-4.0xR0.2xL24.0		0.2	24.0	3.2	3.8	11	6	60	25.66	26.91	28.30	FREE	FREE	8,320
IALR-4-4.0xR0.2xL32.0		0.2	32.0	3.2	3.8	11	6	70	34.03	35.70	37.55	FREE	FREE	8,320
IALR-4-4.0xR0.3xL10.0		0.3	10.0	3.2	3.8	11	6	50	10.99	11.52	12.11	12.75	14.29	8,320
IALR-4-4.0xR0.3xL15.0		0.3	15.0	3.2	3.8	11	6	50	16.23	17.02	17.88	18.85	FREE	8,320
IALR-4-4.0xR0.3xL16.0		0.3	16.0	3.2	3.8	11	6	50	17.28	18.11	19.04	20.07	FREE	8,320
IALR-4-4.0xR0.3xL20.0		0.3	20.0	3.2	3.8	11	6	60	21.46	22.51	23.66	24.94	FREE	8,320
IALR-4-4.0xR0.3xL24.0		0.3	24.0	3.2	3.8	11	6	60	25.65	26.90	28.28	FREE	FREE	8,320
IALR-4-4.0xR0.3xL32.0		0.3	32.0	3.2	3.8	11	6	70	34.03	35.69	37.53	FREE	FREE	8,320
IALR-4-4.0xR0.5xL16.0		0.5	16.0	3.2	3.8	11	6	50	17.27	18.09	19.01	20.02	FREE	8,320
IALR-4-4.0xR0.5xL24.0		0.5	24.0	3.2	3.8	11	6	60	25.64	26.88	28.25	FREE	FREE	8,320
IALR-4-4.0xR0.5xL32.0		0.5	32.0	3.2	3.8	11	6	70	34.02	35.67	37.50	FREE	FREE	8,320
IALR-4-4.0xR1.0xL16.0		1.0	16.0	3.2	3.8	11	6	50	17.24	18.05	18.93	19.92	FREE	8,320
IALR-4-4.0xR1.0xL24.0		1.0	24.0	3.2	3.8	11	6	60	25.62	26.84	28.18	FREE	FREE	8,320
IALR-4-4.0xR1.0xL32.0		1.0	32.0	3.2	3.8	11	6	70	34.00	35.62	37.42	FREE	FREE	8,320
IALR-4-5.0xR0.1xL15.0	5.0	0.1	15.0	4.0	4.8	11	6	50	16.24	17.04	17.91	FREE	FREE	10,400
IALR-4-5.0xR0.1xL20.0		0.1	20.0	4.0	4.8	11	6	50	21.47	22.53	FREE	FREE	FREE	10,400
IALR-4-5.0xR0.1xL40.0		0.1	40.0	4.0	4.8	11	6	70	42.41	FREE	FREE	FREE	FREE	13,280
IALR-4-5.0xR0.2xL20.0		0.2	20.0	4.0	4.8	11	6	50	21.47	22.52	FREE	FREE	FREE	10,400
IALR-4-5.0xR0.2xL40.0		0.2	40.0	4.0	4.8	11	6	70	42.41	FREE	FREE	FREE	FREE	13,280
IALR-4-5.0xR0.3xL20.0		0.3	20.0	4.0	4.8	11	6	50	21.46	22.51	FREE	FREE	FREE	10,400
IALR-4-5.0xR0.3xL40.0		0.3	40.0	4.0	4.8	11	6	70	42.40	FREE	FREE	FREE	FREE	13,280
IALR-4-5.0xR0.5xL20.0		0.5	20.0	4.0	4.8	11	6	50	21.46	22.49	FREE	FREE	FREE	10,400
IALR-4-5.0xR0.5xL40.0		0.5	40.0	4.0	4.8	11	6	70	42.40	FREE	FREE	FREE	FREE	13,280
IALR-4-5.0xR1.0xL20.0		1.0	20.0	4.0	4.8	11	6	50	21.43	22.44	FREE	FREE	FREE	10,400
IALR-4-5.0xR1.0xL40.0		1.0	40.0	4.0	4.8	11	6	70	42.37	FREE	FREE	FREE	FREE	13,280
IALR-4-6.0xR0.1xL15.0	6.0	0.1	15.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.1xL20.0		0.1	20.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.1xL24.0		0.1	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.1xL30.0		0.1	30.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.1xL48.0		0.1	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,480
IALR-4-6.0xR0.2xL15.0		0.2	15.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.2xL20.0		0.2	20.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.2xL24.0		0.2	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.2xL30.0		0.2	30.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.2xL48.0		0.2	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,480
IALR-4-6.0xR0.3xL15.0		0.3	15.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALR-4-6.0xR0.3xL20.0	6.0	0.3	20.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.3xL24.0		0.3	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.3xL30.0		0.3	30.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.3xL48.0		0.3	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,480
IALR-4-6.0xR0.5xL15.0		0.5	15.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.5xL20.0		0.5	20.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.5xL24.0		0.5	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.5xL30.0		0.5	30.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR0.5xL48.0		0.5	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,480
IALR-4-6.0xR1.0xL24.0		1.0	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	10,400
IALR-4-6.0xR1.0xL48.0		1.0	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,480

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALR-4
Model number:IALR-4

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
1.0	3.0	23,000	395	0.06	1	16,200	220	0.05	1	11,600	125	0.045	1	8,410	80	0.04	1	5,860	49	0.035	1
	4.0	20,700	220	0.05	1	14,600	125	0.04	1	10,500	70	0.035	1	7,570	45	0.03	1	5,270	27	0.03	1
	6.0	18,400	140	0.035	1	13,000	80	0.03	1	9,310	45	0.025	1	6,730	30	0.025	1	4,690	18	0.02	1
	8.0	16,600	95	0.035	1	11,700	55	0.03	1	8,380	30	0.025	1	6,050	20	0.025	1	4,220	12	0.02	1
	10.0	14,700	60	0.025	1	10,400	35	0.02	1	7,450	20	0.02	1	5,380	15	0.015	1	3,750	8	0.015	1
	12.0	14,700	45	0.02	1	10,400	25	0.015	1	7,450	15	0.015	1	5,380	10	0.01	1	3,750	6	0.01	1
1.2	10.0	13,800	90	0.03	1.2	9,740	50	0.025	1.2	6,980	30	0.02	1.2	5,040	20	0.02	1.2	3,520	11	0.015	1.2
	15.0	12,300	40	0.02	1.2	8,660	25	0.02	1.2	6,210	15	0.015	1.2	4,480	10	0.015	1.2	3,130	5	0.015	1.2
1.5	3.0	15,300	585	0.09	1.5	10,800	330	0.075	1.5	7,760	190	0.07	1.5	5,600	120	0.06	1.5	3,910	73	0.055	1.5
	6.0	13,800	220	0.07	1.5	9,740	125	0.06	1.5	6,980	70	0.055	1.5	5,040	45	0.05	1.5	3,520	27	0.04	1.5
	10.0	12,300	130	0.055	1.5	8,660	70	0.045	1.5	6,210	40	0.04	1.5	4,480	25	0.035	1.5	3,130	16	0.03	1.5
	12.0	11,000	95	0.055	1.5	7,790	55	0.045	1.5	5,590	30	0.04	1.5	4,040	20	0.035	1.5	2,810	12	0.03	1.5
	18.0	9,810	45	0.025	1.5	6,930	25	0.025	1.5	4,970	15	0.02	1.5	3,590	10	0.02	1.5	2,500	6	0.015	1.5
2.0	6.0	11,500	395	0.12	2	8,120	220	0.1	2	5,820	125	0.09	2	4,200	80	0.08	2	2,930	49	0.07	2
	8.0	10,300	220	0.095	2	7,310	125	0.08	2	5,240	70	0.07	2	3,780	45	0.065	2	2,640	27	0.055	2
	10.0	10,300	185	0.095	2	7,310	105	0.08	2	5,240	60	0.07	2	3,780	40	0.065	2	2,640	23	0.055	2
	12.0	9,200	140	0.07	2	6,500	80	0.06	2	4,660	45	0.055	2	3,360	30	0.05	2	2,350	18	0.04	2
	15.0	8,280	100	0.07	2	5,850	55	0.06	2	4,190	35	0.055	2	3,030	20	0.05	2	2,110	13	0.04	2
	16.0	8,280	95	0.07	2	5,850	55	0.06	2	4,190	30	0.055	2	3,030	20	0.05	2	2,110	12	0.04	2
	20.0	7,360	60	0.05	2	5,200	35	0.04	2	3,730	20	0.035	2	2,690	15	0.03	2	1,880	8	0.03	2
	24.0	7,360	45	0.035	2	5,200	25	0.03	2	3,730	15	0.025	2	2,690	10	0.025	2	1,880	6	0.02	2
2.5	10.0	8,280	220	0.12	2.5	5,850	125	0.1	2.5	4,190	70	0.09	2.5	3,030	45	0.08	2.5	2,110	27	0.07	2.5
	20.0	6,630	95	0.09	2.5	4,680	55	0.075	2.5	3,350	30	0.07	2.5	2,420	20	0.06	2.5	1,690	12	0.055	2.5
3.0	10.0	6,900	355	0.145	3	4,870	200	0.12	3	3,490	115	0.11	3	2,520	70	0.095	3	1,760	44	0.085	3
	12.0	6,900	220	0.145	3	4,870	125	0.12	3	3,490	70	0.11	3	2,520	45	0.095	3	1,760	27	0.085	3
	15.0	6,900	185	0.145	3	4,870	105	0.12	3	3,490	60	0.11	3	2,520	40	0.095	3	1,760	23	0.085	3
	18.0	6,140	140	0.11	3	4,330	80	0.09	3	3,100	45	0.08	3	2,240	30	0.07	3	1,560	18	0.065	3
	20.0	6,140	130	0.11	3	4,330	70	0.09	3	3,100	40	0.08	3	2,240	25	0.07	3	1,560	16	0.065	3
	24.0	5,520	95	0.11	3	3,900	55	0.09	3	2,790	30	0.08	3	2,020	20	0.07	3	1,410	12	0.065	3
	30.0	4,910	60	0.07	3	3,470	35	0.06	3	2,480	20	0.055	3	1,800	15	0.05	3	1,250	8	0.04	3
4.0	10.0	5,750	585	0.24	4	4,060	330	0.2	4	2,910	190	0.18	4	2,100	120	0.16	4	1,470	73	0.14	4
	15.0	5,180	355	0.19	4	3,660	200	0.16	4	2,620	115	0.145	4	1,890	70	0.13	4	1,320	44	0.11	4
	16.0	5,180	220	0.19	4	3,660	125	0.16	4	2,620	70	0.145	4	1,890	45	0.13	4	1,320	28	0.11	4
	20.0	5,180	185	0.19	4	3,660	105	0.16	4	2,620	60	0.145	4	1,890	40	0.13	4	1,320	23	0.11	4
	24.0	4,600	140	0.145	4	3,250	80	0.12	4	2,330	45	0.11	4	1,680	30	0.095	4	1,170	18	0.085	4
	32.0	4,140	95	0.145	4	2,920	55	0.12	4	2,100	30	0.11	4	1,520	20	0.095	4	1,060	12	0.085	4
5.0	15.0	4,600	395	0.3	5	3,250	220	0.25	5	2,330	125	0.225	5	1,680	80	0.2	5	1,170	49	0.175	5
	20.0	4,140	220	0.24	5	2,920	125	0.2	5	2,100	70	0.18	5	1,520	45	0.16	5	1,060	27	0.14	5
	40.0	3,310	95	0.18	5	2,340	55	0.15	5	1,680	30	0.135	5	1,210	20	0.12	5	850	12	0.105	5
6.0	15.0	3,840	585	0.36	6	2,710	330	0.3	6	1,940	190	0.27	6	1,400	120	0.24	6	980	73	0.21	6
	20.0	3,450	355	0.29	6	2,440	200	0.24	6	1,750	115	0.215	6	1,260	70	0.19	6	880	44	0.17	6
	24.0	3,450	220	0.29	6	2,440	125	0.24	6	1,750	70	0.215	6	1,260	45	0.19	6	880	28	0.17	6

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p=축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는등일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALR-4
Model number:IALR-4

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
6.0	30.0	3,450	185	0.29	6	2,440	105	0.24	6	1,750	60	0.215	6	1,260	40	0.19	6	880	23	0.17	6
	48.0	2,760	95	0.215	6	1,950	55	0.18	6	1,400	30	0.16	6	1,010	20	0.145	6	710	12	0.125	6

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●정업정은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p=축방향,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

CBN Series
ion Depo A Series 래디우스 Radius
ion Depo U Series

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	3.0	22,900	470	0.07	1	12,700	175	0.045	1	11,500	145	0.04	1	7,130	75	0.04	1
	4.0	20,600	265	0.055	1	11,500	100	0.035	1	10,300	80	0.03	1	6,420	40	0.03	1
	6.0	18,300	170	0.04	1	10,200	65	0.025	1	9,170	50	0.025	1	5,710	25	0.025	1
	8.0	16,500	115	0.04	1	9,170	40	0.025	1	8,250	35	0.025	1	5,140	20	0.025	1
	10.0	14,700	75	0.03	1	8,150	25	0.02	1	7,340	25	0.015	1	4,570	10	0.015	1
	12.0	14,700	55	0.02	1	8,150	20	0.015	1	7,340	15	0.01	1	4,570	10	0.01	1
1.2	10.0	13,700	105	0.035	1.2	7,640	40	0.02	1.2	6,880	35	0.02	1.2	4,280	15	0.02	1.2
	15.0	12,200	50	0.025	1.2	6,790	20	0.015	1.2	6,110	15	0.015	1.2	3,810	10	0.015	1.2
1.5	3.0	15,300	700	0.105	1.5	8,490	260	0.07	1.5	7,640	215	0.06	1.5	4,760	110	0.06	1.5
	6.0	13,700	265	0.085	1.5	7,640	100	0.055	1.5	6,880	80	0.05	1.5	4,280	40	0.05	1.5
	10.0	12,200	155	0.065	1.5	6,790	55	0.04	1.5	6,110	45	0.035	1.5	3,810	25	0.035	1.5
	12.0	11,000	115	0.065	1.5	6,110	40	0.04	1.5	5,500	35	0.035	1.5	3,420	20	0.035	1.5
	18.0	9,780	55	0.03	1.5	5,430	20	0.02	1.5	4,890	15	0.02	1.5	3,040	10	0.02	1.5
2.0	6.0	11,500	470	0.14	2	6,370	175	0.09	2	5,730	145	0.08	2	3,570	75	0.08	2
	8.0	10,300	265	0.11	2	5,730	100	0.07	2	5,160	80	0.065	2	3,210	40	0.065	2
	10.0	10,300	220	0.11	2	5,730	80	0.07	2	5,160	70	0.065	2	3,210	35	0.065	2
	12.0	9,170	170	0.085	2	5,100	65	0.055	2	4,590	50	0.05	2	2,850	25	0.05	2
	15.0	8,250	120	0.085	2	4,590	45	0.055	2	4,130	35	0.05	2	2,570	20	0.05	2
	16.0	8,250	115	0.085	2	4,590	40	0.055	2	4,130	35	0.05	2	2,570	20	0.05	2
	20.0	7,340	75	0.055	2	4,080	25	0.035	2	3,670	25	0.03	2	2,280	10	0.03	2
	24.0	7,340	55	0.04	2	4,080	20	0.025	2	3,670	15	0.025	2	2,280	10	0.025	2
2.5	10.0	8,250	265	0.14	2.5	4,590	100	0.09	2.5	4,130	80	0.08	2.5	2,570	40	0.08	2.5
	20.0	6,600	115	0.105	2.5	3,670	40	0.07	2.5	3,300	35	0.06	2.5	2,060	20	0.06	2.5
3.0	10.0	6,880	425	0.17	3	3,820	155	0.11	3	3,440	130	0.095	3	2,140	65	0.095	3
	12.0	6,880	265	0.17	3	3,820	100	0.11	3	3,440	80	0.095	3	2,140	40	0.095	3
	15.0	6,880	220	0.17	3	3,820	80	0.11	3	3,440	70	0.095	3	2,140	35	0.095	3
	18.0	6,110	170	0.125	3	3,400	65	0.08	3	3,060	50	0.07	3	1,900	25	0.07	3
	20.0	6,110	155	0.125	3	3,400	55	0.08	3	3,060	45	0.07	3	1,900	25	0.07	3
	24.0	5,500	115	0.125	3	3,060	40	0.08	3	2,750	35	0.07	3	1,710	20	0.07	3
	30.0	4,890	75	0.085	3	2,720	25	0.055	3	2,450	25	0.05	3	1,520	10	0.05	3
4.0	10.0	5,730	700	0.28	4	3,190	260	0.18	4	2,865	215	0.16	4	1,790	110	0.16	4
	15.0	5,160	425	0.225	4	2,870	155	0.145	4	2,580	130	0.13	4	1,610	65	0.13	4
	16.0	5,160	265	0.225	4	2,870	100	0.145	4	2,580	80	0.13	4	1,610	40	0.13	4
	20.0	5,160	220	0.225	4	2,870	80	0.145	4	2,580	70	0.13	4	1,610	35	0.13	4
	24.0	4,590	170	0.17	4	2,550	65	0.11	4	2,290	50	0.095	4	1,430	25	0.095	4
	32.0	4,130	115	0.17	4	2,290	40	0.11	4	2,070	35	0.095	4	1,290	20	0.095	4
5.0	15.0	4,590	470	0.35	5	2,550	175	0.225	5	2,290	145	0.2	5	1,430	75	0.2	5
	20.0	4,130	265	0.28	5	2,290	100	0.18	5	2,070	80	0.16	5	1,290	40	0.16	5
	40.0	3,300	115	0.21	5	1,840	40	0.135	5	1,650	35	0.12	5	1,030	20	0.12	5
6.0	15.0	3,820	700	0.42	6	2,120	260	0.27	6	1,910	215	0.24	6	1,190	110	0.24	6
	20.0	3,440	425	0.335	6	1,910	155	0.215	6	1,720	130	0.19	6	1,070	65	0.19	6
	24.0	3,440	265	0.335	6	1,910	100	0.215	6	1,720	80	0.19	6	1,070	40	0.19	6

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●∂p=축방향,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALR-4
Model number:IALR-4

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		주철 Cast Iron / 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy / 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
6.0	30.0	3,440	225	0.335	6	1,910	80	0.215	6	1,720	70	0.19	6	1,070	35	0.19	6
	48.0	2,750	115	0.25	6	1,530	40	0.16	6	1,380	35	0.145	6	860	20	0.145	6

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CBN Series
ion Depo A Series 래디우스 Radius
ion Depo U Series

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	3.0	38,200	615	0.075	1	33,100	490	0.075	1	22,900	285	0.05	1	30,600	385	0.075	1
	4.0	34,400	345	0.06	1	29,800	275	0.06	1	20,600	160	0.04	1	27,500	215	0.06	1
	6.0	30,600	220	0.045	1	26,500	175	0.045	1	18,300	105	0.03	1	24,400	140	0.045	1
	8.0	27,500	145	0.045	1	23,800	115	0.045	1	16,500	70	0.03	1	22,000	90	0.045	1
	10.0	24,400	95	0.03	1	21,200	75	0.03	1	14,700	45	0.02	1	19,500	60	0.03	1
	12.0	24,400	70	0.025	1	21,200	55	0.025	1	14,700	35	0.015	1	19,500	45	0.025	1
1.2	10.0	22,900	140	0.035	1.2	19,900	110	0.035	1.2	13,700	65	0.025	1.2	18,300	85	0.035	1.2
	15.0	20,400	65	0.025	1.2	17,600	55	0.025	1.2	12,200	30	0.02	1.2	16,300	40	0.025	1.2
1.5	3.0	25,500	915	0.115	1.5	22,100	730	0.115	1.5	15,300	430	0.075	1.5	20,400	570	0.115	1.5
	6.0	22,900	345	0.09	1.5	19,900	275	0.09	1.5	13,700	160	0.06	1.5	18,300	215	0.09	1.5
	10.0	20,400	200	0.07	1.5	17,600	160	0.07	1.5	12,200	95	0.045	1.5	16,300	125	0.07	1.5
	12.0	18,300	145	0.07	1.5	15,900	115	0.07	1.5	11,000	70	0.045	1.5	14,700	90	0.07	1.5
	18.0	16,300	70	0.035	1.5	14,100	55	0.035	1.5	9,780	35	0.025	1.5	13,000	45	0.035	1.5
2.0	6.0	19,100	615	0.15	2	16,500	490	0.15	2	11,460	285	0.1	2	15,300	385	0.15	2
	8.0	17,200	345	0.12	2	14,900	275	0.12	2	10,300	160	0.08	2	13,700	215	0.12	2
	10.0	17,200	290	0.12	2	14,900	230	0.12	2	10,300	135	0.08	2	13,700	180	0.12	2
	12.0	15,300	220	0.09	2	13,200	175	0.09	2	9,170	105	0.06	2	12,200	140	0.09	2
	15.0	13,700	160	0.09	2	11,900	125	0.09	2	8,250	75	0.06	2	11,000	100	0.09	2
	16.0	13,700	145	0.09	2	11,900	115	0.09	2	8,250	70	0.06	2	11,000	90	0.09	2
	20.0	12,200	95	0.06	2	10,600	75	0.06	2	7,340	45	0.04	2	9,780	60	0.06	2
	24.0	12,200	70	0.045	2	10,600	55	0.045	2	7,340	35	0.03	2	9,780	45	0.045	2
2.5	10.0	13,700	345	0.15	2.5	11,900	275	0.15	2.5	8,250	160	0.1	2.5	11,000	215	0.15	2.5
	20.0	11,000	145	0.115	2.5	9,540	115	0.115	2.5	6,600	70	0.075	2.5	8,800	90	0.115	2.5
3.0	10.0	11,500	555	0.18	3	9,930	440	0.18	3	6,880	260	0.12	3	9,170	345	0.18	3
	12.0	11,500	345	0.18	3	9,930	275	0.18	3	6,880	160	0.12	3	9,170	215	0.18	3
	15.0	11,500	290	0.18	3	9,930	230	0.18	3	6,880	135	0.12	3	9,170	180	0.18	3
	18.0	10,200	220	0.135	3	8,830	175	0.135	3	6,110	105	0.09	3	8,150	140	0.135	3
	20.0	10,200	200	0.135	3	8,830	160	0.135	3	6,110	95	0.09	3	8,150	125	0.135	3
	24.0	9,170	145	0.135	3	7,950	115	0.135	3	5,500	70	0.09	3	7,340	90	0.135	3
	30.0	8,150	95	0.09	3	7,060	75	0.09	3	4,890	45	0.06	3	6,520	60	0.09	3
4.0	10.0	9,550	915	0.3	4	8,280	730	0.3	4	5,730	430	0.2	4	7,640	570	0.3	4
	15.0	8,600	555	0.24	4	7,450	440	0.24	4	5,160	260	0.16	4	6,880	345	0.24	4
	16.0	8,600	345	0.24	4	7,450	275	0.24	4	5,160	160	0.16	4	6,880	215	0.24	4
	20.0	8,600	290	0.24	4	7,450	230	0.24	4	5,160	135	0.16	4	6,880	180	0.24	4
	24.0	7,640	220	0.18	4	6,620	175	0.18	4	4,590	105	0.12	4	6,110	140	0.18	4
	32.0	6,880	145	0.18	4	5,960	115	0.18	4	4,130	70	0.12	4	5,500	90	0.18	4
5.0	15.0	7,640	615	0.375	5	6,620	490	0.375	5	4,590	285	0.25	5	6,110	385	0.375	5
	20.0	6,880	345	0.3	5	5,960	275	0.3	5	4,130	160	0.2	5	5,500	215	0.3	5
	40.0	5,500	145	0.225	5	4,770	115	0.225	5	3,300	70	0.15	5	4,400	90	0.225	5
6.0	15.0	6,370	915	0.45	6	5,520	730	0.45	6	3,820	430	0.3	6	5,100	570	0.45	6
	20.0	5,730	555	0.36	6	4,970	440	0.36	6	3,440	260	0.24	6	4,590	345	0.36	6
	24.0	5,730	345	0.36	6	4,970	275	0.36	6	3,440	160	0.24	6	4,590	215	0.36	6

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트콜런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일란비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALR-4
Model number:IALR-4

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
6.0	30.0	5,730	290	0.36	6	4,970	230	0.36	6	3,440	135	0.24	6	4,590	180	0.36	6
	48.0	4,590	145	0.27	6	3,980	115	0.27	6	2,750	70	0.18	6	3,670	90	0.27	6

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●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 될모 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일란비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

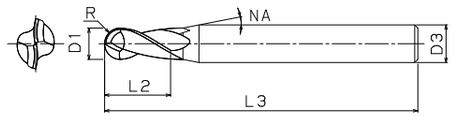
초경볼 엔드밀 Carbide Ball End Mill

■형번:IAB-2 Model number:IAB-2

ion A | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4

날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8 ~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010





표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IAB-2-0.3xR0.15x0.3	0.15	0.3	0.3	11	4	50	4,640
IAB-2-0.4xR0.2x0.6	0.2	0.6	0.4	11	4	50	3,120
IAB-2-0.5xR0.25x0.8	0.25	0.8	0.5	11	4	50	2,880
IAB-2-0.6xR0.3x1.0	0.3	1.0	0.6	11	4	50	2,800
IAB-2-0.8xR0.4x1.2	0.4	1.2	0.8	11	4	50	2,800
IAB-2-1.0xR0.5x1.5	0.5	1.5	1.0	11	4	50	2,560
IAB-2-1.2xR0.6x1.8	0.6	1.8	1.2	11	4	50	3,600
IAB-2-1.5xR0.75x2.3	0.75	2.3	1.5	11	4	50	3,120
IAB-2-1.6xR0.8x2.4	0.8	2.4	1.6	11	4	50	3,600
IAB-2-2.0xR1.0x3.0	1.0	3.0	2.0	11	4	50	2,320
IAB-2-2.5xR1.25x3.8	1.25	3.8	2.5	11	4	50	4,000
IAB-2-3.0xR1.5x5.0	1.5	5.0	3.0	11	4	50	2,800
IAB-2-4.0xR2.0x4.0	2.0	4.0	4.0	11	6	50	3,200
IAB-2-4.0xR2.0x6.0		6.0	4.0	11	6	50	3,200
IAB-2-5.0xR2.5x5.0	2.5	5.0	5.0	11	6	50	3,840
IAB-2-5.0xR2.5x8.0		8.0	5.0	11	6	50	3,840
IAB-2-6.0xR3.0x6.0	3.0	6.0	6.0	—	6	50	4,000
IAB-2-6.0xR3.0x10.0		10.0	6.0	—	6	50	4,000
IAB-2-8.0xR4.0x12.0	4.0	12.0	8.0	—	8	70	7,760
IAB-2-8.0xR4.0x16.0		16.0	8.0	—	8	70	7,760
IAB-2-10.0xR5.0x15.0	5.0	15.0	10.0	—	10	80	10,160
IAB-2-10.0xR5.0x20.0		20.0	10.0	—	10	80	10,160
IAB-2-12.0xR6.0x20.0	6.0	20.0	12.0	—	12	110	17,120
IAB-2-12.0xR6.0x24.0		24.0	12.0	—	12	110	17,120
IAB-2-16.0xR8.0x30.0	8.0	30.0	16.0	—	16	140	42,720
IAB-2-20.0xR10.0x38.0	10.0	38.0	20.0	—	20	160	66,320

ion Depo Type A Series

CBN Series
ion Depo A Series 볼 Ball
ion Depo U Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAB-2
Model number:IAB-2

볼 엔드밀 Ball End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
볼반경 (R) Ball R	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.15	0.3	50,000	285	0.03	0.06	50,000	225	0.03	0.06	50,000	210	0.025	0.05	50,000	180	0.015	0.03	50,000	150	0.012	0.025
0.2	0.6	50,000	380	0.04	0.08	50,000	300	0.04	0.08	50,000	280	0.03	0.06	50,000	240	0.02	0.04	39,800	160	0.016	0.03
0.25	0.8	50,000	475	0.05	0.1	50,000	375	0.05	0.1	50,000	350	0.04	0.08	41,400	250	0.025	0.05	31,800	160	0.02	0.04
0.3	1.0	50,000	570	0.06	0.12	50,000	450	0.06	0.12	47,700	400	0.05	0.1	34,500	250	0.03	0.06	26,500	160	0.024	0.05
0.4	1.2	47,700	725	0.08	0.16	37,800	455	0.08	0.16	35,800	400	0.065	0.13	25,900	250	0.04	0.08	19,900	160	0.032	0.065
0.5	1.5	38,200	725	0.1	0.2	30,200	455	0.1	0.2	28,600	400	0.08	0.16	20,700	250	0.05	0.1	15,900	160	0.04	0.08
0.6	1.8	31,800	725	0.12	0.24	25,200	455	0.12	0.24	23,900	400	0.095	0.19	17,200	250	0.06	0.12	13,300	160	0.048	0.095
0.75	2.3	25,500	725	0.15	0.3	20,200	455	0.15	0.3	19,100	400	0.12	0.24	13,800	250	0.075	0.15	10,600	160	0.06	0.12
0.8	2.4	23,900	725	0.16	0.32	18,900	455	0.16	0.32	17,900	400	0.13	0.26	12,900	250	0.08	0.16	9,950	160	0.064	0.13
1.0	3.0	19,100	740	0.2	0.4	15,100	465	0.2	0.4	14,300	410	0.16	0.32	10,300	255	0.1	0.2	7,960	160	0.08	0.16
1.3	3.8	15,300	755	0.25	0.5	12,100	470	0.25	0.5	11,500	415	0.2	0.4	8,280	260	0.125	0.25	6,370	165	0.1	0.2
1.5	5.0	12,700	770	0.3	0.6	10,100	480	0.3	0.6	9,550	425	0.24	0.48	6,900	265	0.15	0.3	5,310	170	0.12	0.24
2.0	4.0	9,550	785	0.4	0.8	7,560	490	0.4	0.8	7,160	435	0.32	0.64	5,180	270	0.2	0.4	3,980	170	0.16	0.32
	6.0	9,550	755	0.4	0.8	7,560	470	0.4	0.8	7,160	415	0.32	0.64	5,180	260	0.2	0.4	3,980	165	0.16	0.32
2.5	5.0	7,640	790	0.5	1	6,050	495	0.5	1	5,730	435	0.4	0.8	4,140	270	0.25	0.5	3,190	175	0.2	0.4
	8.0	7,640	760	0.5	1	6,050	475	0.5	1	5,730	420	0.4	0.8	4,140	260	0.25	0.5	3,190	165	0.2	0.4
3.0	6.0	6,370	800	0.6	1.2	5,040	500	0.6	1.2	4,780	440	0.48	0.96	3,450	275	0.3	0.6	2,660	175	0.24	0.48
	10.0	6,370	770	0.6	1.2	5,040	480	0.6	1.2	4,780	425	0.48	0.96	3,450	265	0.3	0.6	2,660	170	0.24	0.48
4.0	12.0	4,780	790	0.8	1.6	3,780	495	0.8	1.6	3,580	435	0.64	1.28	2,590	270	0.4	0.8	1,990	175	0.32	0.64
	16.0	4,780	760	0.8	1.6	3,780	475	0.8	1.6	3,580	420	0.64	1.28	2,590	260	0.4	0.8	1,990	165	0.32	0.64
5.0	15.0	3,820	785	1	2	3,030	490	1	2	2,870	435	0.8	1.6	2,070	270	0.5	1	1,590	170	0.4	0.8
	20.0	3,820	755	1	2	3,030	470	1	2	2,870	415	0.8	1.6	2,070	260	0.5	1	1,590	165	0.4	0.8
6.0	20.0	3,190	725	1.2	2.4	2,520	455	1.2	2.4	2,390	400	0.96	1.92	1,730	250	0.6	1.2	1,330	160	0.48	0.96
	24.0	3,190	695	1.2	2.4	2,520	435	1.2	2.4	2,390	385	0.96	1.92	1,730	240	0.6	1.2	1,330	155	0.48	0.96
8.0	30.0	2,390	655	1.6	3.2	1,890	410	1.6	3.2	1,790	360	1.28	2.56	1,300	225	0.8	1.6	1,000	145	0.64	1.28
10.0	38.0	1,910	580	2	4	1,510	360	2	4	1,430	320	1.6	3.2	1,040	200	1	2	800	125	0.8	1.6

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는등절란비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IAB-2
Model number:IAB-2

볼 엔드밀 Ball End Mill

절삭재료 Work Material		주철 Cast Iron / 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy / 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
볼반경 (R) Ball R	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.15	0.3	50,000	285	0.03	0.06	50,000	180	0.025	0.055	50,000	165	0.025	0.05	37,100	110	0.02	0.035
0.2	0.6	50,000	380	0.04	0.08	50,000	240	0.035	0.07	47,700	210	0.03	0.065	27,800	110	0.025	0.05
0.25	0.8	50,000	475	0.05	0.1	44,600	265	0.045	0.09	38,200	210	0.04	0.08	22,300	110	0.03	0.06
0.3	1.0	50,000	570	0.06	0.12	37,100	265	0.055	0.11	31,800	210	0.05	0.095	18,600	110	0.035	0.07
0.4	1.2	47,700	725	0.08	0.16	27,800	265	0.07	0.145	23,900	210	0.065	0.13	13,900	110	0.05	0.095
0.5	1.5	38,200	725	0.1	0.2	22,300	265	0.09	0.18	19,100	210	0.08	0.16	11,100	110	0.06	0.12
0.6	1.8	31,800	725	0.12	0.24	18,600	265	0.11	0.215	15,900	210	0.095	0.19	9,290	110	0.07	0.145
0.75	2.3	25,500	725	0.15	0.3	14,800	265	0.135	0.27	12,700	210	0.12	0.24	7,430	110	0.09	0.18
0.8	2.4	23,900	725	0.16	0.32	13,900	265	0.145	0.29	11,900	210	0.13	0.255	6,970	110	0.095	0.19
1.0	3.0	19,100	740	0.2	0.4	11,100	275	0.18	0.36	9,550	215	0.16	0.32	5,570	115	0.12	0.24
1.3	3.8	15,300	755	0.25	0.5	8,920	280	0.225	0.45	7,640	220	0.2	0.4	4,460	115	0.15	0.3
1.5	5.0	12,700	770	0.3	0.6	7,430	285	0.27	0.54	6,370	225	0.24	0.48	3,720	120	0.18	0.36
2.0	4.0	9,550	785	0.4	0.8	5,570	290	0.36	0.72	4,780	225	0.32	0.64	2,790	120	0.24	0.48
	6.0	9,550	755	0.4	0.8	5,570	280	0.36	0.72	4,780	220	0.32	0.64	2,790	115	0.24	0.48
2.5	5.0	7,640	790	0.5	1	4,460	290	0.45	0.9	3,820	230	0.4	0.8	2,230	120	0.3	0.6
	8.0	7,640	760	0.5	1	4,460	280	0.45	0.9	3,820	220	0.4	0.8	2,230	115	0.3	0.6
3.0	6.0	6,370	800	0.6	1.2	3,720	295	0.54	1.08	3,190	230	0.48	0.96	1,860	120	0.36	0.72
	10.0	6,370	770	0.6	1.2	3,720	285	0.54	1.08	3,190	225	0.48	0.96	1,860	120	0.36	0.72
4.0	12.0	4,780	790	0.8	1.6	2,790	290	0.72	1.44	2,390	230	0.64	1.28	1,400	120	0.48	0.96
	16.0	4,780	760	0.8	1.6	2,790	280	0.72	1.44	2,390	220	0.64	1.28	1,400	115	0.48	0.96
5.0	15.0	3,820	785	1	2	2,230	290	0.9	1.8	1,910	225	0.8	1.6	1,120	120	0.6	1.2
	20.0	3,820	755	1	2	2,230	280	0.9	1.8	1,910	220	0.8	1.6	1,120	115	0.6	1.2
6.0	20.0	3,190	725	1.2	2.4	1,860	265	1.08	2.16	1,590	210	0.96	1.92	930	110	0.72	1.44
	24.0	3,190	695	1.2	2.4	1,860	255	1.08	2.16	1,590	200	0.96	1.92	930	105	0.72	1.44
8.0	30.0	2,390	655	1.6	3.2	1,400	240	1.44	2.88	1,200	190	1.28	2.56	700	100	0.96	1.92
10.0	38.0	1,910	580	2	4	1,120	215	1.8	3.6	960	170	1.6	3.2	560	90	1.2	2.4

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ion Depo Type A Series

CBN Series
ion Depo A Series 볼 Ball
ion Depo U Series

볼 엔드밀 Ball End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy / A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy / Al·AC·ADC				동합금 Copper Alloy / 동-텅스텐 (Cupper Tungsten)				수지 Resin			
볼반경 (R) Ball R	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.15	0.3	50,000	285	0.03	0.06	50,000	285	0.03	0.06	50,000	270	0.03	0.06	50,000	285	0.03	0.06
0.2	0.6	50,000	380	0.04	0.08	50,000	380	0.04	0.08	50,000	360	0.04	0.08	50,000	380	0.04	0.08
0.25	0.8	50,000	475	0.05	0.1	50,000	475	0.05	0.1	50,000	450	0.05	0.1	50,000	475	0.05	0.1
0.3	1.0	50,000	570	0.06	0.12	50,000	570	0.06	0.12	50,000	540	0.06	0.12	50,000	570	0.06	0.12
0.4	1.2	50,000	760	0.08	0.16	50,000	760	0.08	0.16	47,700	690	0.08	0.16	50,000	760	0.08	0.16
0.5	1.5	50,000	950	0.1	0.2	47,700	905	0.1	0.2	38,200	690	0.1	0.2	47,700	905	0.1	0.2
0.6	1.8	47,700	1,090	0.12	0.24	39,800	905	0.12	0.24	31,800	690	0.12	0.24	39,800	905	0.12	0.24
0.75	2.3	38,200	1,090	0.15	0.3	31,800	905	0.15	0.3	25,500	690	0.15	0.3	31,800	905	0.15	0.3
0.8	2.4	35,800	1,090	0.16	0.32	29,800	905	0.16	0.32	23,900	690	0.16	0.32	29,800	905	0.16	0.32
1.0	3.0	28,600	1,110	0.2	0.4	23,900	925	0.2	0.4	19,100	700	0.2	0.4	23,900	925	0.2	0.4
1.3	3.8	22,900	1,130	0.25	0.5	19,100	945	0.25	0.5	15,300	715	0.25	0.5	19,100	945	0.25	0.5
1.5	5.0	19,100	1,155	0.3	0.6	15,900	960	0.3	0.6	12,700	730	0.3	0.6	15,900	960	0.3	0.6
2.0	4.0	14,300	1,175	0.4	0.8	11,900	980	0.4	0.8	9,550	745	0.4	0.8	11,900	980	0.4	0.8
	6.0	14,300	1,130	0.4	0.8	11,900	945	0.4	0.8	9,550	715	0.4	0.8	11,900	945	0.4	0.8
2.5	5.0	11,500	1,185	0.5	1	9,550	990	0.5	1	7,640	750	0.5	1	9,550	990	0.5	1
	8.0	11,500	1,145	0.5	1	9,550	955	0.5	1	7,640	720	0.5	1	9,550	955	0.5	1
3.0	6.0	9,550	1,200	0.6	1.2	7,960	1,000	0.6	1.2	6,370	755	0.6	1.2	7,960	1,000	0.6	1.2
	10.0	9,550	1,155	0.6	1.2	7,960	960	0.6	1.2	6,370	730	0.6	1.2	7,960	960	0.6	1.2
4.0	12.0	7,160	1,185	0.8	1.6	5,970	990	0.8	1.6	4,780	750	0.8	1.6	5,970	990	0.8	1.6
	16.0	7,160	1,145	0.8	1.6	5,970	955	0.8	1.6	4,780	720	0.8	1.6	5,970	955	0.8	1.6
5.0	15.0	5,730	1,175	1	2	4,780	980	1	2	3,820	745	1	2	4,780	980	1	2
	20.0	5,730	1,130	1	2	4,780	945	1	2	3,820	715	1	2	4,780	945	1	2
6.0	20.0	4,780	1,090	1.2	2.4	3,980	905	1.2	2.4	3,190	690	1.2	2.4	3,980	905	1.2	2.4
	24.0	4,780	1,045	1.2	2.4	3,980	870	1.2	2.4	3,190	660	1.2	2.4	3,980	870	1.2	2.4
8.0	30.0	3,580	980	1.6	3.2	2,990	815	1.6	3.2	2,390	620	1.6	3.2	2,990	815	1.6	3.2
10.0	38.0	2,870	870	2	4	2,390	725	2	4	1,910	550	2	4	2,390	725	2	4

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

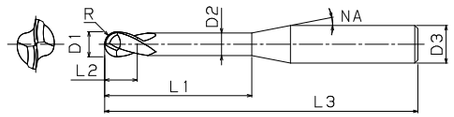
초경 롱 넥 볼 엔드밀
Carbide Long Neck Ball End Mill

ion A | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IALB-2 Model number:IALB-2

날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
～φ6	-0.004/-0.007	±0.002
φ8～φ12	-0.004/-0.014	±0.005
φ14～φ20	-0.004/-0.020	±0.010



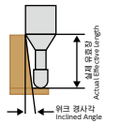


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ～50HRC	～55HRC	～62HRC	～70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
◎	◎	◎	◎	◎	○			◎	○		○	○	◎	○

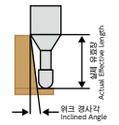
최적◎Recommended 적응○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

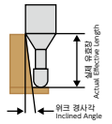
코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALB-2-0.3xR0.15xL0.5	0.15	0.5	0.2	0.3	0.27	11	4	50	0.60	0.62	0.64	0.67	0.74	5,600
IALB-2-0.3xR0.15xL0.6		0.6	0.2	0.3	0.27	11	4	50	0.70	0.73	0.76	0.79	0.87	5,600
IALB-2-0.3xR0.15xL0.75		0.75	0.2	0.3	0.27	11	4	50	0.86	0.89	0.93	0.98	1.08	5,600
IALB-2-0.3xR0.15xL1.0		1.0	0.2	0.3	0.27	11	4	50	1.12	1.17	1.22	1.28	1.42	5,600
IALB-2-0.3xR0.15xL1.25		1.25	0.2	0.3	0.27	11	4	50	1.38	1.44	1.51	1.59	1.76	6,000
IALB-2-0.3xR0.15xL1.5		1.5	0.2	0.3	0.27	11	4	50	1.64	1.72	1.80	1.89	2.11	6,000
IALB-2-0.3xR0.15xL1.75		1.75	0.2	0.3	0.27	11	4	50	1.91	1.99	2.09	2.20	2.45	6,000
IALB-2-0.3xR0.15xL2.0		2.0	0.2	0.3	0.27	11	4	50	2.17	2.27	2.38	2.50	2.79	6,000
IALB-2-0.3xR0.15xL2.25		2.25	0.2	0.3	0.27	11	4	50	2.43	2.54	2.67	2.80	3.13	6,160
IALB-2-0.3xR0.15xL2.5		2.5	0.2	0.3	0.27	11	4	50	2.69	2.82	2.96	3.11	3.48	6,160
IALB-2-0.3xR0.15xL2.75		2.75	0.2	0.3	0.27	11	4	50	2.95	3.09	3.24	3.41	3.82	6,160
IALB-2-0.3xR0.15xL3.0		3.0	0.2	0.3	0.27	11	4	50	3.21	3.37	3.53	3.72	4.16	6,160
IALB-2-0.4xR0.2xL0.5	0.2	0.5	0.3	0.4	0.37	11	4	50	0.59	0.61	0.64	0.66	0.72	3,840
IALB-2-0.4xR0.2xL0.8		0.8	0.3	0.4	0.37	11	4	50	0.86	0.89	0.93	0.97	1.06	3,840
IALB-2-0.4xR0.2xL1.0		1.0	0.3	0.4	0.37	11	4	50	1.12	1.16	1.21	1.27	1.40	3,840
IALB-2-0.4xR0.2xL1.5		1.5	0.3	0.4	0.37	11	4	50	1.64	1.71	1.79	1.88	2.09	3,920
IALB-2-0.4xR0.2xL2.0		2.0	0.3	0.4	0.37	11	4	50	2.17	2.26	2.37	2.49	2.77	4,000
IALB-2-0.4xR0.2xL2.5		2.5	0.3	0.4	0.37	11	4	50	2.69	2.81	2.95	3.10	3.46	4,160
IALB-2-0.4xR0.2xL3.0		3.0	0.3	0.4	0.37	11	4	50	3.21	3.36	3.53	3.71	4.14	4,400
IALB-2-0.5xR0.25xL1.0	0.25	1.0	0.35	0.5	0.47	11	4	50	1.12	1.16	1.21	1.26	1.39	3,840
IALB-2-0.5xR0.25xL1.5		1.5	0.35	0.5	0.47	11	4	50	1.64	1.71	1.78	1.87	2.07	3,840
IALB-2-0.5xR0.25xL2.0		2.0	0.35	0.5	0.47	11	4	50	2.16	2.26	2.36	2.48	2.76	3,840
IALB-2-0.5xR0.25xL2.5		2.5	0.35	0.5	0.47	11	4	50	2.69	2.81	2.94	3.09	3.44	3,840
IALB-2-0.5xR0.25xL3.0		3.0	0.35	0.5	0.47	11	4	50	3.21	3.36	3.52	3.70	4.13	3,840



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사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALB-2-0.5xR0.25xL3.5	0.25	3.5	0.35	0.5	0.47	11	4	50	3.73	3.91	4.10	4.31	4.81	3,840
IALB-2-0.5xR0.25xL4.0		4.0	0.35	0.5	0.47	11	4	50	4.26	4.45	4.67	4.92	5.49	3,840
IALB-2-0.6xR0.3xL1.0	0.3	1.0	0.6	0.6	0.57	11	4	50	1.11	1.15	1.20	1.25	1.37	3,280
IALB-2-0.6xR0.3xL1.5		1.5	0.6	0.6	0.57	11	4	50	1.64	1.70	1.78	1.86	2.05	2,960
IALB-2-0.6xR0.3xL2.0		2.0	0.6	0.6	0.57	11	4	50	2.16	2.25	2.35	2.47	2.74	2,960
IALB-2-0.6xR0.3xL2.5		2.5	0.6	0.6	0.57	11	4	50	2.68	2.80	2.93	3.08	3.42	3,040
IALB-2-0.6xR0.3xL3.0		3.0	0.6	0.6	0.57	11	4	50	3.21	3.35	3.51	3.69	4.11	3,040
IALB-2-0.6xR0.3xL3.5		3.5	0.6	0.6	0.57	11	4	50	3.73	3.90	4.09	4.30	4.79	3,120
IALB-2-0.6xR0.3xL4.0		4.0	0.6	0.6	0.57	11	4	50	4.25	4.45	4.67	4.91	5.48	3,120
IALB-2-0.6xR0.3xL4.5		4.5	0.6	0.6	0.57	11	4	50	4.78	5.00	5.24	5.51	6.16	3,120
IALB-2-0.6xR0.3xL5.0		5.0	0.6	0.6	0.57	11	4	50	5.30	5.55	5.82	6.12	6.85	3,120
IALB-2-0.6xR0.3xL5.5		5.5	0.6	0.6	0.57	11	4	50	5.83	6.10	6.40	6.73	7.53	3,120
IALB-2-0.6xR0.3xL6.0		6.0	0.6	0.6	0.57	11	4	50	6.35	6.65	6.98	7.34	8.22	3,120
IALB-2-0.8xR0.4xL2.0	0.4	2.0	0.6	0.8	0.77	11	4	50	2.16	2.24	2.34	2.45	2.70	2,960
IALB-2-0.8xR0.4xL3.0		3.0	0.6	0.8	0.77	11	4	50	3.20	3.34	3.49	3.66	4.07	3,120
IALB-2-0.8xR0.4xL4.0		4.0	0.6	0.8	0.77	11	4	50	4.25	4.44	4.65	4.88	5.44	3,120
IALB-2-0.8xR0.4xL5.0		5.0	0.6	0.8	0.77	11	4	50	5.30	5.54	5.81	6.10	6.81	3,120
IALB-2-0.8xR0.4xL6.0		6.0	0.6	0.8	0.77	11	4	50	6.34	6.64	6.96	7.32	8.18	3,120
IALB-2-0.8xR0.4xL7.0		7.0	0.6	0.8	0.77	11	4	50	7.39	7.74	8.12	8.54	9.55	3,120
IALB-2-0.8xR0.4xL8.0		8.0	0.6	0.8	0.77	11	4	50	8.44	8.83	9.27	9.76	10.92	3,120
IALB-2-1.0xR0.5xL2.0	0.5	2.0	0.8	1.0	0.95	11	4	50	2.21	2.29	2.38	2.49	2.74	2,480
IALB-2-1.0xR0.5xL2.5		2.5	0.8	1.0	0.95	11	4	50	2.73	2.84	2.96	3.10	3.42	2,480
IALB-2-1.0xR0.5xL3.0		3.0	0.8	1.0	0.95	11	4	50	3.25	3.39	3.54	3.71	4.11	2,480
IALB-2-1.0xR0.5xL4.0		4.0	0.8	1.0	0.95	11	4	50	4.30	4.49	4.69	4.93	5.48	2,800
IALB-2-1.0xR0.5xL6.0		6.0	0.8	1.0	0.95	11	4	50	6.39	6.68	7.01	7.36	8.22	3,040
IALB-2-1.0xR0.5xL7.0		7.0	0.8	1.0	0.95	11	4	50	7.44	7.78	8.16	8.58	9.58	3,040
IALB-2-1.0xR0.5xL8.0		8.0	0.8	1.0	0.95	11	4	50	8.49	8.88	9.32	9.80	10.95	3,040
IALB-2-1.0xR0.5xL9.0		9.0	0.8	1.0	0.95	11	4	50	9.53	9.98	10.47	11.02	12.32	3,040
IALB-2-1.0xR0.5xL10.0		10.0	0.8	1.0	0.95	11	4	50	10.58	11.08	11.63	12.24	13.69	3,040
IALB-2-1.0xR0.5xL12.0		12.0	0.8	1.0	0.95	11	4	50	12.68	13.28	13.94	14.68	16.43	3,040
IALB-2-1.2xR0.6xL2.4	0.6	2.4	0.9	1.2	1.15	11	4	50	2.62	2.72	2.83	2.95	3.25	3,760
IALB-2-1.2xR0.6xL4.0		4.0	0.9	1.2	1.15	11	4	50	4.29	4.48	4.68	4.90	5.44	3,760
IALB-2-1.2xR0.6xL6.0		6.0	0.9	1.2	1.15	11	4	50	6.39	6.67	6.99	7.34	8.18	4,080
IALB-2-1.2xR0.6xL8.0		8.0	0.9	1.2	1.15	11	4	50	8.48	8.87	9.30	9.78	10.92	4,080
IALB-2-1.2xR0.6xL10.0		10.0	0.9	1.2	1.15	11	4	50	10.58	11.07	11.61	12.22	13.66	4,080
IALB-2-1.2xR0.6xL12.0		12.0	0.9	1.2	1.15	11	4	50	12.67	13.27	13.92	14.66	16.40	4,080
IALB-2-1.5xR0.75xL3.0	0.75	3.0	1.1	1.5	1.45	11	4	50	3.24	3.36	3.50	3.65	4.02	2,880
IALB-2-1.5xR0.75xL4.0		4.0	1.1	1.5	1.45	11	4	50	4.29	4.46	4.66	4.87	5.39	2,880
IALB-2-1.5xR0.75xL6.0		6.0	1.1	1.5	1.45	11	4	50	6.38	6.66	6.97	7.31	8.13	2,880
IALB-2-1.5xR0.75xL8.0		8.0	1.1	1.5	1.45	11	4	50	8.48	8.86	9.28	9.75	10.87	3,040
IALB-2-1.5xR0.75xL10.0		10.0	1.1	1.5	1.45	11	4	50	10.57	11.05	11.59	12.19	13.60	3,280
IALB-2-1.5xR0.75xL12.0		12.0	1.1	1.5	1.45	11	4	50	12.66	13.25	13.90	14.62	16.34	3,520
IALB-2-1.5xR0.75xL14.0		14.0	1.1	1.5	1.45	11	4	50	14.76	15.45	16.21	17.06	19.08	3,520
IALB-2-1.5xR0.75xL16.0		16.0	1.1	1.5	1.45	11	4	50	16.85	17.65	18.52	19.50	21.82	3,520
IALB-2-1.6xR0.8xL4.0	0.8	4.0	1.2	1.6	1.55	11	4	50	4.29	4.46	4.65	4.86	5.37	4,000



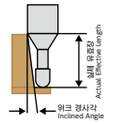
●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALB-2-1.6xR0.8xL8.0	0.8	8.0	1.2	1.6	1.55	11	4	50	8.47	8.85	9.27	9.74	10.85	4,080
IALB-2-1.6xR0.8xL12.0		12.0	1.2	1.6	1.55	11	4	50	12.66	13.25	13.89	14.61	16.33	4,080
IALB-2-1.6xR0.8xL16.0		16.0	1.2	1.6	1.55	11	4	50	16.85	17.64	18.52	19.49	21.80	4,080
IALB-2-2.0xR1.0xL3.0	1.0	3.0	1.5	2.0	1.94	11	4	50	3.26	3.37	3.49	3.63	3.97	2,480
IALB-2-2.0xR1.0xL4.0		4.0	1.5	2.0	1.94	11	4	50	4.30	4.47	4.65	4.85	5.34	2,480
IALB-2-2.0xR1.0xL6.0		6.0	1.5	2.0	1.94	11	4	50	6.40	6.66	6.96	7.29	8.08	2,800
IALB-2-2.0xR1.0xL8.0		8.0	1.5	2.0	1.94	11	4	50	8.49	8.86	9.27	9.72	10.81	3,040
IALB-2-2.0xR1.0xL10.0		10.0	1.5	2.0	1.94	11	4	50	10.58	11.06	11.58	12.16	13.55	3,040
IALB-2-2.0xR1.0xL12.0		12.0	1.5	2.0	1.94	11	4	50	12.68	13.26	13.89	14.60	16.29	3,040
IALB-2-2.0xR1.0xL13.0		13.0	1.5	2.0	1.94	11	4	50	13.73	14.35	15.05	15.82	17.66	3,040
IALB-2-2.0xR1.0xL14.0		14.0	1.5	2.0	1.94	11	4	50	14.77	15.45	16.20	17.04	19.03	3,040
IALB-2-2.0xR1.0xL15.0		15.0	1.5	2.0	1.94	11	4	50	15.82	16.55	17.36	18.26	FREE	3,040
IALB-2-2.0xR1.0xL16.0		16.0	1.5	2.0	1.94	11	4	50	16.87	17.65	18.52	19.48	FREE	3,040
IALB-2-2.0xR1.0xL18.0		18.0	1.5	2.0	1.94	11	4	50	18.96	19.85	20.83	21.91	FREE	3,040
IALB-2-2.0xR1.0xL20.0		20.0	1.5	2.0	1.94	11	4	60	21.05	22.04	23.14	24.35	FREE	3,040
IALB-2-2.5xR1.25xL6.0	1.25	6.0	2.3	2.5	2.44	11	4	50	6.39	6.64	6.92	7.23	7.99	3,280
IALB-2-2.5xR1.25xL8.0		8.0	2.3	2.5	2.44	11	4	50	8.48	8.84	9.23	9.67	10.73	3,360
IALB-2-2.5xR1.25xL10.0		10.0	2.3	2.5	2.44	11	4	50	10.57	11.03	11.54	12.11	13.47	3,440
IALB-2-2.5xR1.25xL15.0		15.0	2.3	2.5	2.44	11	4	50	15.81	16.53	17.32	18.20	FREE	4,080
IALB-2-2.5xR1.25xL20.0		20.0	2.3	2.5	2.44	11	4	50	21.04	22.02	23.10	FREE	FREE	4,800
IALB-2-3.0xR1.5xL6.0	1.5	6.0	2.5	3.0	2.85	11	4	50	6.62	6.87	7.15	7.46	8.22	2,800
IALB-2-3.0xR1.5xL8.0		8.0	2.5	3.0	2.85	11	4	50	8.71	9.07	9.46	9.90	10.96	3,040
IALB-2-3.0xR1.5xL10.0		10.0	2.5	3.0	2.85	11	4	50	10.80	11.26	11.77	12.34	FREE	3,520
IALB-2-3.0xR1.5xL12.0		12.0	2.5	3.0	2.85	11	4	50	12.90	13.46	14.08	14.78	FREE	3,680
IALB-2-3.0xR1.5xL14.0		14.0	2.5	3.0	2.85	11	4	50	14.99	15.66	16.40	FREE	FREE	4,080
IALB-2-3.0xR1.5xL15.0		15.0	2.5	3.0	2.85	11	4	50	16.04	16.76	17.55	FREE	FREE	4,000
IALB-2-3.0xR1.5xL16.0		16.0	2.5	3.0	2.85	11	4	50	17.09	17.86	18.71	FREE	FREE	4,080
IALB-2-3.0xR1.5xL20.0		20.0	2.5	3.0	2.85	11	4	50	21.27	22.25	FREE	FREE	FREE	3,920
IALB-2-3.0xR1.5xL25.0		25.0	2.5	3.0	2.85	11	4	60	26.51	27.74	FREE	FREE	FREE	3,920
IALB-2-3.0xR1.5xL30.0		30.0	2.5	3.0	2.85	11	4	60	31.74	FREE	FREE	FREE	FREE	4,480
IALB-2-3.5xR1.75xL10.0	1.75	10.0	2.8	3.5	3.35	11	6	50	10.79	11.24	11.73	12.28	13.61	4,480
IALB-2-3.5xR1.75xL15.0		15.0	2.8	3.5	3.35	11	6	50	16.03	16.73	17.51	18.38	20.45	4,480
IALB-2-3.5xR1.75xL20.0		20.0	2.8	3.5	3.35	11	6	60	21.26	22.23	23.29	24.47	FREE	4,800
IALB-2-3.5xR1.75xL25.0		25.0	2.8	3.5	3.35	11	6	60	26.50	27.72	29.07	30.57	FREE	4,800
IALB-2-3.5xR1.75xL30.0		30.0	2.8	3.5	3.35	11	6	70	31.73	33.21	34.85	36.66	FREE	5,120
IALB-2-3.5xR1.75xL35.0		35.0	2.8	3.5	3.35	11	6	70	36.97	38.71	40.63	FREE	FREE	6,160
IALB-2-4.0xR2.0xL10.0	2.0	10.0	3.0	4.0	3.8	11	6	50	10.92	11.36	11.84	12.39	13.70	3,120
IALB-2-4.0xR2.0xL12.0		12.0	3.0	4.0	3.8	11	6	50	13.01	13.55	14.16	14.82	16.43	4,080
IALB-2-4.0xR2.0xL14.0		14.0	3.0	4.0	3.8	11	6	50	15.10	15.75	16.47	17.26	19.17	4,080
IALB-2-4.0xR2.0xL15.0		15.0	3.0	4.0	3.8	11	6	50	16.15	16.85	17.62	18.48	20.54	4,080
IALB-2-4.0xR2.0xL16.0		16.0	3.0	4.0	3.8	11	6	50	17.20	17.95	18.78	19.70	FREE	4,080
IALB-2-4.0xR2.0xL20.0		20.0	3.0	4.0	3.8	11	6	60	21.39	22.34	23.40	24.58	FREE	4,080
IALB-2-4.0xR2.0xL25.0		25.0	3.0	4.0	3.8	11	6	60	26.62	27.84	29.18	FREE	FREE	4,080
IALB-2-4.0xR2.0xL30.0		30.0	3.0	4.0	3.8	11	6	70	31.86	33.33	34.96	FREE	FREE	4,080
IALB-2-4.0xR2.0xL35.0		35.0	3.0	4.0	3.8	11	6	70	37.09	38.82	FREE	FREE	FREE	4,720

ion Depo Type A Series

CBN Series
ion Depo A Series 볼 Ball
ion Depo U Series



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사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IALB-2-5.0xR2.5xL10.0	2.5	10.0	3.5	5.0	4.8	11	6	50	10.89	11.31	11.77	12.28	FREE	4,800
IALB-2-5.0xR2.5xL15.0		15.0	3.5	5.0	4.8	11	6	50	16.13	16.80	17.55	FREE	FREE	6,800
IALB-2-5.0xR2.5xL20.0		20.0	3.5	5.0	4.8	11	6	50	21.36	22.29	FREE	FREE	FREE	6,800
IALB-2-5.0xR2.5xL25.0		25.0	3.5	5.0	4.8	11	6	60	26.60	27.79	FREE	FREE	FREE	6,800
IALB-2-5.0xR2.5xL30.0		30.0	3.5	5.0	4.8	11	6	60	31.83	FREE	FREE	FREE	FREE	7,280
IALB-2-5.0xR2.5xL35.0		35.0	3.5	5.0	4.8	11	6	70	37.07	FREE	FREE	FREE	FREE	7,280
IALB-2-5.0xR2.5xL40.0		40.0	3.5	5.0	4.8	11	6	70	42.30	FREE	FREE	FREE	FREE	9,200
IALB-2-6.0xR3.0xL10.0	3.0	10.0	6.0	6.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	5,120
IALB-2-6.0xR3.0xL15.0		15.0	6.0	6.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	5,120
IALB-2-6.0xR3.0xL20.0		20.0	6.0	6.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	5,120
IALB-2-6.0xR3.0xL25.0		25.0	6.0	6.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	5,120
IALB-2-6.0xR3.0xL30.0		30.0	6.0	6.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	5,280
IALB-2-6.0xR3.0xL35.0		35.0	6.0	6.0	5.8	11	6	70	FREE	FREE	FREE	FREE	FREE	5,440
IALB-2-6.0xR3.0xL40.0		40.0	6.0	6.0	5.8	11	6	70	FREE	FREE	FREE	FREE	FREE	5,760
IALB-2-6.0xR3.0xL45.0		45.0	6.0	6.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	6,160
IALB-2-6.0xR3.0xL50.0		50.0	6.0	6.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	6,240

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALB-2
Model number:IALB-2

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
볼반경(R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.15	0.5	50,000	285	0.03	0.06	50,000	225	0.03	0.06	50,000	210	0.025	0.05	50,000	180	0.015	0.03	50,000	150	0.012	0.025
	0.6	50,000	285	0.03	0.06	50,000	225	0.03	0.06	50,000	210	0.025	0.05	50,000	180	0.015	0.03	50,000	150	0.012	0.025
	0.75	50,000	285	0.03	0.06	50,000	225	0.03	0.06	50,000	210	0.025	0.05	50,000	180	0.015	0.03	50,000	150	0.012	0.025
	1.0	50,000	190	0.025	0.06	50,000	150	0.025	0.06	50,000	140	0.02	0.05	50,000	120	0.012	0.03	47,700	95	0.01	0.025
	1.25	50,000	120	0.025	0.06	50,000	95	0.025	0.06	50,000	90	0.02	0.05	50,000	75	0.012	0.03	47,700	60	0.01	0.025
	1.5	50,000	100	0.025	0.06	50,000	80	0.025	0.06	50,000	75	0.02	0.05	50,000	65	0.012	0.03	47,700	50	0.01	0.025
	1.75	50,000	90	0.02	0.06	50,000	70	0.02	0.06	50,000	65	0.015	0.05	50,000	55	0.009	0.03	42,400	40	0.007	0.025
	2.0	50,000	80	0.02	0.06	50,000	60	0.02	0.06	50,000	55	0.015	0.05	50,000	50	0.009	0.03	42,400	35	0.007	0.025
	2.3	50,000	70	0.02	0.06	50,000	55	0.02	0.06	50,000	50	0.015	0.05	49,600	45	0.009	0.03	38,200	30	0.007	0.025
	2.5	50,000	60	0.01	0.06	50,000	50	0.01	0.06	50,000	45	0.01	0.05	49,600	40	0.006	0.03	38,200	25	0.005	0.025
	2.75	50,000	55	0.01	0.06	50,000	40	0.01	0.06	50,000	40	0.01	0.05	44,100	30	0.006	0.03	33,900	20	0.005	0.025
	3.0	50,000	45	0.01	0.06	50,000	35	0.01	0.06	50,000	35	0.01	0.05	44,100	25	0.006	0.03	33,900	15	0.005	0.025
0.2	0.5	50,000	380	0.04	0.08	50,000	300	0.04	0.08	50,000	280	0.03	0.065	50,000	240	0.02	0.04	39,800	160	0.016	0.03
	0.8	50,000	380	0.04	0.08	50,000	300	0.04	0.08	50,000	280	0.03	0.065	50,000	240	0.02	0.04	39,800	160	0.016	0.03
	1.0	50,000	380	0.04	0.08	50,000	300	0.04	0.08	50,000	280	0.03	0.065	50,000	240	0.02	0.04	39,800	160	0.016	0.03
	1.5	50,000	255	0.03	0.08	50,000	200	0.03	0.08	50,000	190	0.025	0.065	46,500	150	0.016	0.04	35,800	95	0.013	0.03
	2.0	50,000	135	0.03	0.08	50,000	105	0.03	0.08	50,000	100	0.025	0.065	46,500	80	0.016	0.04	35,800	50	0.013	0.03
	2.5	50,000	110	0.025	0.08	50,000	85	0.025	0.08	50,000	80	0.02	0.065	41,400	60	0.012	0.04	31,800	35	0.01	0.03
	3.0	50,000	90	0.025	0.08	50,000	70	0.025	0.08	50,000	65	0.02	0.065	37,200	45	0.012	0.04	28,600	30	0.01	0.03
0.25	1.0	50,000	475	0.05	0.1	50,000	375	0.05	0.1	50,000	350	0.04	0.08	41,400	250	0.025	0.05	31,800	160	0.02	0.04
	1.5	50,000	320	0.05	0.1	50,000	250	0.05	0.1	50,000	235	0.04	0.08	41,400	165	0.025	0.05	31,800	105	0.02	0.04
	2.0	50,000	200	0.04	0.1	50,000	155	0.04	0.1	50,000	145	0.03	0.08	37,200	95	0.02	0.05	28,600	60	0.016	0.04
	2.5	50,000	165	0.04	0.1	50,000	130	0.04	0.1	50,000	125	0.03	0.08	37,200	80	0.02	0.05	28,600	50	0.016	0.04
	3.0	50,000	145	0.03	0.1	48,400	110	0.03	0.1	45,800	95	0.025	0.08	33,100	60	0.015	0.05	25,500	40	0.012	0.04
	3.5	50,000	125	0.03	0.1	48,400	95	0.03	0.1	45,800	85	0.025	0.08	33,100	50	0.015	0.05	25,500	35	0.012	0.04
	4.0	50,000	105	0.03	0.1	43,500	75	0.03	0.1	41,200	65	0.025	0.08	29,800	40	0.015	0.05	22,900	25	0.012	0.04
0.3	1.0	50,000	570	0.06	0.12	50,000	450	0.06	0.12	47,700	400	0.05	0.095	34,500	250	0.03	0.06	26,500	160	0.024	0.05
	1.5	50,000	570	0.06	0.12	50,000	450	0.06	0.12	47,700	400	0.05	0.095	34,500	250	0.03	0.06	26,500	160	0.024	0.05
	2.0	50,000	380	0.05	0.12	45,400	275	0.05	0.12	43,000	240	0.04	0.095	31,000	150	0.024	0.06	23,900	95	0.019	0.05
	2.5	50,000	240	0.05	0.12	45,400	170	0.05	0.12	43,000	150	0.04	0.095	31,000	95	0.024	0.06	23,900	60	0.019	0.05
	3.0	50,000	200	0.05	0.12	45,400	145	0.05	0.12	43,000	125	0.04	0.095	31,000	80	0.024	0.06	23,900	50	0.019	0.05
	3.5	50,000	175	0.035	0.12	40,300	115	0.035	0.12	38,200	100	0.03	0.095	27,600	60	0.018	0.06	21,200	40	0.014	0.05
	4.0	50,000	155	0.035	0.12	40,300	100	0.035	0.12	38,200	90	0.03	0.095	27,600	55	0.018	0.06	21,200	35	0.014	0.05
	4.5	45,800	125	0.035	0.12	36,300	80	0.035	0.12	34,400	70	0.03	0.095	24,800	45	0.018	0.06	19,100	30	0.014	0.05
	5.0	45,800	110	0.025	0.12	36,300	70	0.025	0.12	34,400	60	0.02	0.095	24,800	40	0.012	0.06	19,100	25	0.01	0.05
	5.5	40,700	85	0.025	0.12	32,200	55	0.025	0.12	30,600	50	0.02	0.095	22,100	30	0.012	0.06	17,000	20	0.01	0.05
	6.0	40,700	75	0.025	0.12	32,200	50	0.025	0.12	30,600	40	0.02	0.095	22,100	25	0.012	0.06	17,000	15	0.01	0.05
0.4	2.0	47,700	725	0.08	0.16	37,800	455	0.08	0.16	35,800	400	0.065	0.13	25,900	250	0.04	0.08	19,900	160	0.032	0.065
	3.0	43,000	440	0.065	0.16	34,000	275	0.065	0.16	32,200	240	0.05	0.13	23,300	150	0.032	0.08	17,900	95	0.026	0.065
	4.0	43,000	230	0.065	0.16	34,000	145	0.065	0.16	32,200	125	0.05	0.13	23,300	80	0.032	0.08	17,900	50	0.026	0.065
	5.0	38,200	170	0.05	0.16	30,200	105	0.05	0.16	28,600	95	0.04	0.13	20,700	60	0.024	0.08	15,900	35	0.019	0.065
	6.0	34,400	125	0.05	0.16	27,200	80	0.05	0.16	25,800	70	0.04	0.13	18,600	45	0.024	0.08	14,300	30	0.019	0.065

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p = 축방향 ,∂e= 반경방향 , ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는등일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
볼반경(R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.4	7.0	34,400	105	0.03	0.16	27,200	65	0.03	0.16	25,800	60	0.025	0.13	18,600	35	0.016	0.08	14,300	25	0.013	0.065
	8.0	30,600	75	0.03	0.16	24,200	50	0.03	0.16	22,900	40	0.025	0.13	16,500	25	0.016	0.08	12,700	15	0.013	0.065
0.5	2.0	38,200	725	0.1	0.2	30,200	455	0.1	0.2	28,600	400	0.08	0.16	20,700	250	0.05	0.1	15,900	160	0.04	0.08
	2.5	38,200	725	0.1	0.2	30,200	455	0.1	0.2	28,600	400	0.08	0.16	20,700	250	0.05	0.1	15,900	160	0.04	0.08
	3.0	38,200	485	0.1	0.2	30,200	305	0.1	0.2	28,600	270	0.08	0.16	20,700	165	0.05	0.1	15,900	105	0.04	0.08
	4.0	34,400	275	0.08	0.2	27,200	170	0.08	0.2	25,800	150	0.065	0.16	18,600	95	0.04	0.1	14,300	60	0.032	0.08
	6.0	30,600	175	0.06	0.2	24,200	110	0.06	0.2	22,900	95	0.05	0.16	16,500	60	0.03	0.1	12,700	40	0.024	0.08
	7.0	30,600	150	0.06	0.2	24,200	95	0.06	0.2	22,900	85	0.05	0.16	16,500	50	0.03	0.1	12,700	35	0.024	0.08
	8.0	27,500	115	0.06	0.2	21,800	75	0.06	0.2	20,600	65	0.05	0.16	14,900	40	0.03	0.1	11,500	25	0.024	0.08
	9.0	27,500	100	0.04	0.2	21,800	65	0.04	0.2	20,600	55	0.03	0.16	14,900	35	0.02	0.1	11,500	20	0.016	0.08
	10.0	24,400	75	0.04	0.2	19,300	50	0.04	0.2	18,300	40	0.03	0.16	13,200	25	0.02	0.1	10,200	15	0.016	0.08
	12.0	24,400	55	0.03	0.2	19,300	35	0.03	0.2	18,300	30	0.025	0.16	13,200	20	0.015	0.1	10,200	10	0.012	0.08
0.6	2.4	31,800	725	0.12	0.24	25,200	455	0.12	0.24	23,900	400	0.095	0.19	17,200	250	0.06	0.12	13,300	160	0.048	0.095
	4.0	28,600	440	0.095	0.24	22,700	275	0.095	0.24	21,500	240	0.075	0.19	15,500	150	0.048	0.12	11,900	95	0.038	0.095
	6.0	28,600	230	0.095	0.24	22,700	145	0.095	0.24	21,500	125	0.075	0.19	15,500	80	0.048	0.12	11,900	50	0.038	0.095
	8.0	25,500	160	0.07	0.24	20,200	100	0.07	0.24	19,100	90	0.06	0.19	13,800	55	0.036	0.12	10,600	35	0.029	0.095
	10.0	22,900	110	0.05	0.24	18,100	70	0.05	0.24	17,200	60	0.04	0.19	12,400	40	0.024	0.12	9,550	25	0.019	0.095
	12.0	20,400	75	0.05	0.24	16,100	50	0.05	0.24	15,300	40	0.04	0.19	11,000	25	0.024	0.12	8,490	15	0.019	0.095
0.75	3.0	25,500	725	0.15	0.3	20,200	455	0.15	0.3	19,100	400	0.12	0.24	13,800	250	0.075	0.15	10,600	160	0.06	0.12
	4.0	25,500	725	0.15	0.3	20,200	455	0.15	0.3	19,100	400	0.12	0.24	13,800	250	0.075	0.15	10,600	160	0.06	0.12
	6.0	22,900	275	0.12	0.3	18,100	170	0.12	0.3	17,200	150	0.095	0.24	12,400	95	0.06	0.15	9,550	60	0.048	0.12
	8.0	20,400	195	0.09	0.3	16,100	120	0.09	0.3	15,300	105	0.07	0.24	11,000	65	0.045	0.15	8,490	45	0.036	0.12
	10.0	20,400	160	0.09	0.3	16,100	100	0.09	0.3	15,300	90	0.07	0.24	11,000	55	0.045	0.15	8,490	35	0.036	0.12
	12.0	18,300	115	0.09	0.3	14,500	75	0.09	0.3	13,700	65	0.07	0.24	9,930	40	0.045	0.15	7,640	25	0.036	0.12
	14.0	16,300	85	0.06	0.3	12,900	55	0.06	0.3	12,200	45	0.05	0.24	8,830	30	0.03	0.15	6,790	20	0.024	0.12
	16.0	16,300	70	0.045	0.3	12,900	45	0.045	0.3	12,200	40	0.035	0.24	8,830	25	0.023	0.15	6,790	15	0.018	0.12
0.8	4.0	23,900	725	0.16	0.32	18,900	455	0.16	0.32	17,900	400	0.13	0.255	12,900	250	0.08	0.16	9,950	160	0.064	0.13
	8.0	21,500	230	0.13	0.32	17,000	145	0.13	0.32	16,100	125	0.1	0.255	11,600	80	0.064	0.16	8,950	50	0.051	0.13
	12.0	17,200	125	0.095	0.32	13,600	80	0.095	0.32	12,900	70	0.075	0.255	9,310	45	0.048	0.16	7,160	30	0.038	0.13
	16.0	15,300	75	0.065	0.32	12,100	50	0.065	0.32	11,500	40	0.05	0.255	8,280	25	0.032	0.16	6,370	15	0.026	0.13
1	3.0	19,100	725	0.2	0.4	15,100	455	0.2	0.4	14,300	400	0.16	0.32	10,300	250	0.1	0.2	7,960	160	0.08	0.16
	4.0	19,100	725	0.2	0.4	15,100	455	0.2	0.4	14,300	400	0.16	0.32	10,300	250	0.1	0.2	7,960	160	0.08	0.16
	6.0	19,100	485	0.2	0.4	15,100	305	0.2	0.4	14,300	270	0.16	0.32	10,300	165	0.1	0.2	7,960	105	0.08	0.16
	8.0	17,200	275	0.16	0.4	13,600	170	0.16	0.4	12,900	150	0.13	0.32	9,310	95	0.08	0.2	7,160	60	0.064	0.16
	10.0	17,200	230	0.16	0.4	13,600	145	0.16	0.4	12,900	125	0.13	0.32	9,310	80	0.08	0.2	7,160	50	0.064	0.16
	12.0	15,300	175	0.12	0.4	12,100	110	0.12	0.4	11,500	95	0.095	0.32	8,280	60	0.06	0.2	6,370	40	0.048	0.16
	13.0	15,300	165	0.12	0.4	12,100	100	0.12	0.4	11,500	90	0.095	0.32	8,280	55	0.06	0.2	6,370	35	0.048	0.16
	14.0	15,300	150	0.12	0.4	12,100	95	0.12	0.4	11,500	85	0.095	0.32	8,280	50	0.06	0.2	6,370	35	0.048	0.16
	15.0	13,700	125	0.12	0.4	10,900	80	0.12	0.4	10,300	70	0.095	0.32	7,450	45	0.06	0.2	5,730	30	0.048	0.16
	16.0	13,700	115	0.12	0.4	10,900	75	0.12	0.4	10,300	65	0.095	0.32	7,450	40	0.06	0.2	5,730	25	0.048	0.16
	18.0	13,700	100	0.08	0.4	10,900	65	0.08	0.4	10,300	55	0.065	0.32	7,450	35	0.04	0.2	5,730	20	0.032	0.16
	20.0	12,200	75	0.08	0.4	9,680	50	0.08	0.4	9,170	40	0.065	0.32	6,620	25	0.04	0.2	5,100	15	0.032	0.16

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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALB-2
Model number:IALB-2

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.25	6.0	15,300	725	0.25	0.5	12,100	455	0.25	0.5	11,500	400	0.2	0.4	8,280	250	0.125	0.25	6,370	160	0.1	0.2
	8.0	13,700	440	0.2	0.5	10,900	275	0.2	0.5	10,300	240	0.16	0.4	7,450	150	0.1	0.25	5,730	95	0.08	0.2
	10.0	13,700	275	0.2	0.5	10,900	170	0.2	0.5	10,300	150	0.16	0.4	7,450	95	0.1	0.25	5,730	60	0.08	0.2
	15.0	12,200	175	0.15	0.5	9,680	110	0.15	0.5	9,170	95	0.12	0.4	6,620	60	0.075	0.25	5,100	40	0.06	0.2
	20.0	11,000	115	0.15	0.5	8,710	75	0.15	0.5	8,250	65	0.12	0.4	5,960	40	0.075	0.25	4,590	25	0.06	0.2
1.5	6.0	12,700	725	0.3	0.6	10,100	455	0.3	0.6	9,550	400	0.24	0.48	6,900	250	0.15	0.3	5,310	160	0.12	0.24
	8.0	12,700	725	0.3	0.6	10,100	455	0.3	0.6	9,550	400	0.24	0.48	6,900	250	0.15	0.3	5,310	160	0.12	0.24
	10.0	11,500	440	0.24	0.6	9,070	275	0.24	0.6	8,600	240	0.19	0.48	6,210	150	0.12	0.3	4,780	95	0.096	0.24
	12.0	11,500	275	0.24	0.6	9,070	170	0.24	0.6	8,600	150	0.19	0.48	6,210	95	0.12	0.3	4,780	60	0.096	0.24
	14.0	11,500	275	0.24	0.6	9,070	170	0.24	0.6	8,600	150	0.19	0.48	6,210	95	0.12	0.3	4,780	60	0.096	0.24
	15.0	11,500	230	0.24	0.6	9,070	145	0.24	0.6	8,600	125	0.19	0.48	6,210	80	0.12	0.3	4,780	50	0.096	0.24
	16.0	10,200	195	0.18	0.6	8,070	120	0.18	0.6	7,640	105	0.145	0.48	5,520	65	0.09	0.3	4,250	45	0.072	0.24
	20.0	10,200	160	0.18	0.6	8,070	100	0.18	0.6	7,640	90	0.145	0.48	5,520	55	0.09	0.3	4,250	35	0.072	0.24
	25.0	9,170	110	0.12	0.6	7,260	70	0.12	0.6	6,880	60	0.095	0.48	4,970	40	0.06	0.3	3,820	25	0.048	0.24
	30.0	8,150	75	0.12	0.6	6,450	50	0.12	0.6	6,110	40	0.095	0.48	4,420	25	0.06	0.3	3,400	15	0.048	0.24
1.75	10.0	10,900	725	0.35	0.7	8,640	455	0.35	0.7	8,190	400	0.28	0.56	5,910	250	0.175	0.35	4,550	160	0.14	0.28
	15.0	9,820	275	0.28	0.7	7,780	170	0.28	0.7	7,370	150	0.225	0.56	5,320	95	0.14	0.35	4,100	60	0.112	0.28
	20.0	8,730	185	0.21	0.7	6,910	115	0.21	0.7	6,550	100	0.17	0.56	4,730	65	0.105	0.35	3,640	40	0.084	0.28
	25.0	7,860	135	0.21	0.7	6,220	85	0.21	0.7	5,900	75	0.17	0.56	4,260	45	0.105	0.35	3,280	30	0.084	0.28
	30.0	7,860	105	0.14	0.7	6,220	65	0.14	0.7	5,900	60	0.11	0.56	4,260	35	0.07	0.35	3,280	25	0.056	0.28
	35.0	6,990	75	0.14	0.7	5,530	50	0.14	0.7	5,240	40	0.11	0.56	3,790	25	0.07	0.35	2,910	15	0.056	0.28
2	10.0	9,550	725	0.4	0.8	7,560	455	0.4	0.8	7,160	400	0.32	0.64	5,180	250	0.2	0.4	3,980	160	0.16	0.32
	12.0	9,550	485	0.4	0.8	7,560	305	0.4	0.8	7,160	270	0.32	0.64	5,180	165	0.2	0.4	3,980	105	0.16	0.32
	14.0	8,600	440	0.32	0.8	6,810	275	0.32	0.8	6,450	240	0.255	0.64	4,660	150	0.16	0.4	3,580	95	0.128	0.32
	15.0	8,600	440	0.32	0.8	6,810	275	0.32	0.8	6,450	240	0.255	0.64	4,660	150	0.16	0.4	3,580	95	0.128	0.32
	16.0	8,600	275	0.32	0.8	6,810	170	0.32	0.8	6,450	150	0.255	0.64	4,660	95	0.16	0.4	3,580	60	0.128	0.32
	20.0	8,600	230	0.32	0.8	6,810	145	0.32	0.8	6,450	125	0.255	0.64	4,660	80	0.16	0.4	3,580	50	0.128	0.32
	25.0	7,640	170	0.24	0.8	6,050	105	0.24	0.8	5,730	95	0.19	0.64	4,140	60	0.12	0.4	3,190	35	0.096	0.32
	30.0	6,880	125	0.24	0.8	5,450	80	0.24	0.8	5,160	70	0.19	0.64	3,730	45	0.12	0.4	2,870	30	0.096	0.32
	35.0	6,880	105	0.16	0.8	5,450	65	0.16	0.8	5,160	60	0.13	0.64	3,730	35	0.08	0.4	2,870	25	0.064	0.32
2.5	10.0	7,640	725	0.5	1	6,050	455	0.5	1	5,730	400	0.4	0.8	4,140	250	0.25	0.5	3,190	160	0.2	0.4
	15.0	7,640	485	0.5	1	6,050	305	0.5	1	5,730	270	0.4	0.8	4,140	165	0.25	0.5	3,190	105	0.2	0.4
	20.0	6,880	275	0.4	1	5,450	170	0.4	1	5,160	150	0.32	0.8	3,730	95	0.2	0.5	2,870	60	0.16	0.4
	25.0	6,880	230	0.4	1	5,450	145	0.4	1	5,160	125	0.32	0.8	3,730	80	0.2	0.5	2,870	50	0.16	0.4
	30.0	6,110	175	0.3	1	4,840	110	0.3	1	4,590	95	0.24	0.8	3,310	60	0.15	0.5	2,550	40	0.12	0.4
	35.0	6,110	150	0.3	1	4,840	95	0.3	1	4,590	85	0.24	0.8	3,310	50	0.15	0.5	2,550	35	0.12	0.4
	40.0	5,500	115	0.3	1	4,360	75	0.3	1	4,130	65	0.24	0.8	2,980	40	0.15	0.5	2,290	25	0.12	0.4
3	10.0	6,370	725	0.6	1.2	5,040	455	0.6	1.2	4,780	400	0.48	0.96	3,450	250	0.3	0.6	2,660	160	0.24	0.48
	15.0	6,370	725	0.6	1.2	5,040	455	0.6	1.2	4,780	400	0.48	0.96	3,450	250	0.3	0.6	2,660	160	0.24	0.48
	20.0	5,730	440	0.48	1.2	4,540	275	0.48	1.2	4,300	240	0.385	0.96	3,110	150	0.24	0.6	2,390	95	0.192	0.48
	25.0	5,730	275	0.48	1.2	4,540	170	0.48	1.2	4,300	150	0.385	0.96	3,110	95	0.24	0.6	2,390	60	0.192	0.48
	30.0	5,730	230	0.48	1.2	4,540	145	0.48	1.2	4,300	125	0.385	0.96	3,110	80	0.24	0.6	2,390	50	0.192	0.48

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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일란비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		탄소강 Carbon Steel S45C S55C				합금강 Alloy Steel SK SCM				프리하든강 Prehardened Steels PX5 / NAK80				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
3	35.0	5,100	180	0.36	1.2	4,030	115	0.36	1.2	3,820	100	0.29	0.96	2,760	60	0.18	0.6	2,120	40	0.144	0.48
	40.0	5,100	160	0.36	1.2	4,030	100	0.36	1.2	3,820	90	0.29	0.96	2,760	55	0.18	0.6	2,120	35	0.144	0.48
	45.0	4,590	125	0.36	1.2	3,630	80	0.36	1.2	3,440	70	0.29	0.96	2,490	45	0.18	0.6	1,910	30	0.144	0.48
	50.0	4,590	110	0.24	1.2	3,630	70	0.24	1.2	3,440	60	0.19	0.96	2,490	40	0.12	0.6	1,910	25	0.096	0.48

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일란비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
ion Depo A Series 볼 Ball
ion Depo U Series

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALB-2
Model number:IALB-2

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.15	0.5	50,000	285	0.03	0.06	50,000	180	0.025	0.055	50,000	165	0.025	0.05	37,100	110	0.02	0.035
	0.6	50,000	285	0.03	0.06	50,000	180	0.025	0.055	50,000	165	0.025	0.05	37,100	110	0.02	0.035
	0.75	50,000	285	0.03	0.06	50,000	180	0.025	0.055	50,000	165	0.025	0.05	37,100	110	0.02	0.035
	1.0	50,000	190	0.025	0.06	50,000	120	0.02	0.055	50,000	110	0.02	0.05	33,400	70	0.015	0.035
	1.25	50,000	120	0.025	0.06	50,000	75	0.02	0.055	50,000	70	0.02	0.05	33,400	40	0.015	0.035
	1.5	50,000	100	0.025	0.06	50,000	65	0.02	0.055	50,000	60	0.02	0.05	33,400	35	0.015	0.035
	1.75	50,000	90	0.02	0.06	50,000	55	0.015	0.055	50,000	50	0.015	0.05	29,700	30	0.01	0.035
	2.0	50,000	80	0.02	0.06	50,000	50	0.015	0.055	50,000	45	0.015	0.05	29,700	25	0.01	0.035
	2.3	50,000	70	0.02	0.06	50,000	45	0.015	0.055	45,800	35	0.015	0.05	26,700	20	0.01	0.035
	2.5	50,000	60	0.01	0.06	50,000	40	0.01	0.055	45,800	30	0.01	0.05	26,700	20	0.005	0.035
	2.75	50,000	55	0.01	0.06	47,500	30	0.01	0.055	40,700	25	0.01	0.05	23,800	15	0.005	0.035
	3.0	50,000	45	0.01	0.06	47,500	30	0.01	0.055	40,700	20	0.01	0.05	23,800	10	0.005	0.035
0.2	0.5	50,000	380	0.04	0.08	50,000	240	0.035	0.07	47,700	210	0.03	0.065	27,800	110	0.025	0.05
	0.8	50,000	380	0.04	0.08	50,000	240	0.035	0.07	47,700	210	0.03	0.065	27,800	110	0.025	0.05
	1.0	50,000	380	0.04	0.08	50,000	240	0.035	0.07	47,700	210	0.03	0.065	27,800	110	0.025	0.05
	1.5	50,000	255	0.03	0.08	50,000	160	0.03	0.07	43,000	125	0.025	0.065	25,100	70	0.02	0.05
	2.0	50,000	135	0.03	0.08	50,000	85	0.03	0.07	43,000	65	0.025	0.065	25,100	35	0.02	0.05
	2.5	50,000	110	0.025	0.08	44,600	60	0.02	0.07	38,200	50	0.02	0.065	22,300	25	0.015	0.05
	3.0	50,000	90	0.025	0.08	40,100	45	0.02	0.07	34,400	35	0.02	0.065	20,000	20	0.015	0.05
0.25	1.0	50,000	475	0.05	0.1	44,600	265	0.045	0.09	38,200	210	0.04	0.08	22,300	110	0.03	0.06
	1.5	50,000	320	0.05	0.1	44,600	180	0.045	0.09	38,200	140	0.04	0.08	22,300	75	0.03	0.06
	2.0	50,000	200	0.04	0.1	40,100	100	0.035	0.09	34,400	80	0.03	0.08	20,000	40	0.025	0.06
	2.5	50,000	165	0.04	0.1	40,100	85	0.035	0.09	34,400	65	0.03	0.08	20,000	35	0.025	0.06
	3.0	50,000	145	0.03	0.1	35,600	65	0.025	0.09	30,600	50	0.025	0.08	17,800	25	0.02	0.06
	3.5	50,000	125	0.03	0.1	35,600	55	0.025	0.09	30,600	45	0.025	0.08	17,800	25	0.02	0.06
	4.0	50,000	105	0.03	0.1	32,100	45	0.025	0.09	27,500	35	0.025	0.08	16,000	20	0.02	0.06
0.3	1.0	50,000	570	0.06	0.12	37,100	265	0.055	0.11	31,800	210	0.05	0.095	18,600	110	0.035	0.07
	1.5	50,000	570	0.06	0.12	37,100	265	0.055	0.11	31,800	210	0.05	0.095	18,600	110	0.035	0.07
	2.0	50,000	380	0.05	0.12	33,400	160	0.045	0.11	28,600	125	0.04	0.095	16,700	70	0.03	0.07
	2.5	50,000	240	0.05	0.12	33,400	100	0.045	0.11	28,600	80	0.04	0.095	16,700	40	0.03	0.07
	3.0	50,000	200	0.05	0.12	33,400	85	0.045	0.11	28,600	65	0.04	0.095	16,700	35	0.03	0.07
	3.5	50,000	175	0.035	0.12	29,700	65	0.03	0.11	25,500	50	0.03	0.095	14,800	30	0.02	0.07
	4.0	50,000	155	0.035	0.12	29,700	60	0.03	0.11	25,500	45	0.03	0.095	14,800	25	0.02	0.07
	4.5	45,800	125	0.035	0.12	26,700	45	0.03	0.11	22,900	35	0.03	0.095	13,400	20	0.02	0.07
	5.0	45,800	110	0.025	0.12	26,700	40	0.02	0.11	22,900	30	0.02	0.095	13,400	20	0.015	0.07
	5.5	40,700	85	0.025	0.12	23,800	30	0.02	0.11	20,400	25	0.02	0.095	11,900	15	0.015	0.07
	6.0	40,700	75	0.025	0.12	23,800	30	0.02	0.11	20,400	20	0.02	0.095	11,900	10	0.015	0.07
0.4	2.0	47,700	725	0.08	0.16	27,800	265	0.07	0.145	23,900	210	0.065	0.13	13,900	110	0.05	0.095
	3.0	43,000	440	0.065	0.16	25,100	160	0.06	0.145	21,500	125	0.05	0.13	12,500	70	0.04	0.095
	4.0	43,000	230	0.065	0.16	25,100	85	0.06	0.145	21,500	65	0.05	0.13	12,500	35	0.04	0.095
	5.0	38,200	170	0.05	0.16	22,300	60	0.045	0.145	19,100	50	0.04	0.13	11,100	25	0.03	0.095
	6.0	34,400	125	0.05	0.16	20,000	45	0.045	0.145	17,200	35	0.04	0.13	10,000	20	0.03	0.095

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롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
0.4	7.0	34,400	105	0.03	0.16	20,000	40	0.03	0.145	17,200	30	0.025	0.13	10,000	15	0.02	0.095
	8.0	30,600	75	0.03	0.16	17,800	30	0.03	0.145	15,300	20	0.025	0.13	8,920	10	0.02	0.095
0.5	2.0	38,200	725	0.1	0.2	22,300	265	0.09	0.18	19,100	210	0.08	0.16	11,100	110	0.06	0.12
	2.5	38,200	725	0.1	0.2	22,300	265	0.09	0.18	19,100	210	0.08	0.16	11,100	110	0.06	0.12
	3.0	38,200	485	0.1	0.2	22,300	180	0.09	0.18	19,100	140	0.08	0.16	11,100	75	0.06	0.12
	4.0	34,400	275	0.08	0.2	20,000	100	0.07	0.18	17,200	80	0.065	0.16	10,000	40	0.05	0.12
	6.0	30,600	175	0.06	0.2	17,800	65	0.055	0.18	15,300	50	0.05	0.16	8,920	25	0.035	0.12
	7.0	30,600	150	0.06	0.2	17,800	55	0.055	0.18	15,300	45	0.05	0.16	8,920	25	0.035	0.12
	8.0	27,500	115	0.06	0.2	16,000	45	0.055	0.18	13,700	35	0.05	0.16	8,020	20	0.035	0.12
	9.0	27,500	100	0.04	0.2	16,000	35	0.035	0.18	13,700	30	0.03	0.16	8,020	15	0.025	0.12
	10.0	24,400	75	0.04	0.2	14,300	30	0.035	0.18	12,200	20	0.03	0.16	7,130	10	0.025	0.12
	12.0	24,400	55	0.03	0.2	14,300	20	0.025	0.18	12,200	15	0.025	0.16	7,130	10	0.02	0.12
0.6	2.4	31,800	725	0.12	0.24	18,600	265	0.11	0.215	15,900	210	0.095	0.19	9,290	110	0.07	0.145
	4.0	28,600	440	0.095	0.24	16,700	160	0.085	0.215	14,300	125	0.075	0.19	8,360	70	0.06	0.145
	6.0	28,600	230	0.095	0.24	16,700	85	0.085	0.215	14,300	65	0.075	0.19	8,360	35	0.06	0.145
	8.0	25,500	160	0.07	0.24	14,800	60	0.065	0.215	12,700	45	0.06	0.19	7,430	25	0.045	0.145
	10.0	22,900	110	0.05	0.24	13,400	40	0.045	0.215	11,500	30	0.04	0.19	6,690	20	0.03	0.145
	12.0	20,400	75	0.05	0.24	11,900	30	0.045	0.215	10,200	20	0.04	0.19	5,940	10	0.03	0.145
0.75	3.0	25,500	725	0.15	0.3	14,800	265	0.135	0.27	12,700	210	0.12	0.24	7,430	110	0.09	0.18
	4.0	25,500	725	0.15	0.3	14,800	265	0.135	0.27	12,700	210	0.12	0.24	7,430	110	0.09	0.18
	6.0	22,900	275	0.12	0.3	13,400	100	0.11	0.27	11,500	80	0.095	0.24	6,690	40	0.07	0.18
	8.0	20,400	195	0.09	0.3	11,900	70	0.08	0.27	10,200	55	0.07	0.24	5,940	30	0.055	0.18
	10.0	20,400	160	0.09	0.3	11,900	60	0.08	0.27	10,200	45	0.07	0.24	5,940	25	0.055	0.18
	12.0	18,300	115	0.09	0.3	10,700	45	0.08	0.27	9,170	35	0.07	0.24	5,350	20	0.055	0.18
	14.0	16,300	85	0.06	0.3	9,510	30	0.055	0.27	8,150	25	0.05	0.24	4,760	15	0.035	0.18
	16.0	16,300	70	0.045	0.3	9,510	25	0.04	0.27	8,150	20	0.035	0.24	4,760	10	0.025	0.18
0.8	4.0	23,900	725	0.16	0.32	13,900	265	0.145	0.29	11,900	210	0.13	0.255	6,970	100	0.095	0.19
	8.0	21,500	230	0.13	0.32	12,500	85	0.115	0.29	10,700	65	0.1	0.255	6,270	35	0.075	0.19
	12.0	17,200	125	0.095	0.32	10,000	45	0.085	0.29	8,600	35	0.075	0.255	5,020	20	0.06	0.19
	16.0	15,300	75	0.065	0.32	8,920	30	0.06	0.29	7,640	20	0.05	0.255	4,460	10	0.04	0.19
1	3.0	19,100	725	0.2	0.4	11,100	265	0.18	0.36	9,550	210	0.16	0.32	5,570	100	0.12	0.24
	4.0	19,100	725	0.2	0.4	11,100	265	0.18	0.36	9,550	210	0.16	0.32	5,570	100	0.12	0.24
	6.0	19,100	485	0.2	0.4	11,100	180	0.18	0.36	9,550	140	0.16	0.32	5,570	75	0.12	0.24
	8.0	17,200	275	0.16	0.4	10,000	100	0.145	0.36	8,600	80	0.13	0.32	5,020	40	0.095	0.24
	10.0	17,200	230	0.16	0.4	10,000	85	0.145	0.36	8,600	65	0.13	0.32	5,020	35	0.095	0.24
	12.0	15,300	175	0.12	0.4	8,920	65	0.11	0.36	7,640	50	0.095	0.32	4,460	25	0.07	0.24
	13.0	15,300	165	0.12	0.4	8,920	60	0.11	0.36	7,640	45	0.095	0.32	4,460	25	0.07	0.24
	14.0	15,300	150	0.12	0.4	8,920	55	0.11	0.36	7,640	45	0.095	0.32	4,460	25	0.07	0.24
	15.0	13,700	125	0.12	0.4	8,020	45	0.11	0.36	6,880	35	0.095	0.32	4,010	20	0.07	0.24
	16.0	13,700	115	0.12	0.4	8,020	45	0.11	0.36	6,880	35	0.095	0.32	4,010	20	0.07	0.24
	18.0	13,700	100	0.08	0.4	8,020	35	0.07	0.36	6,880	30	0.065	0.32	4,010	15	0.05	0.24
	20.0	12,200	75	0.08	0.4	7,130	30	0.07	0.36	6,110	20	0.065	0.32	3,570	10	0.05	0.24

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
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●∂p= 축방향 ,∂e= 반경방향 ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
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●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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CBN Series
ion Depo A Series 볼 Ball
ion Depo U Series

ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALB-2
Model number:IALB-2

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.25	6.0	15,300	725	0.25	0.5	8,920	265	0.225	0.45	7,640	210	0.2	0.4	4,460	110	0.15	0.3
	8.0	13,700	440	0.2	0.5	8,020	160	0.18	0.45	6,880	125	0.16	0.4	4,010	70	0.12	0.3
	10.0	13,700	275	0.2	0.5	8,020	100	0.18	0.45	6,880	80	0.16	0.4	4,010	40	0.12	0.3
	15.0	12,200	175	0.15	0.5	7,130	65	0.135	0.45	6,110	50	0.12	0.4	3,570	25	0.09	0.3
	20.0	11,000	115	0.15	0.5	6,420	45	0.135	0.45	5,500	35	0.12	0.4	3,210	20	0.09	0.3
1.5	6.0	12,700	725	0.3	0.6	7,430	265	0.27	0.54	6,370	210	0.24	0.48	3,720	110	0.18	0.36
	8.0	12,700	725	0.3	0.6	7,430	265	0.27	0.54	6,370	210	0.24	0.48	3,720	110	0.18	0.36
	10.0	11,500	440	0.24	0.6	6,690	160	0.215	0.54	5,730	125	0.19	0.48	3,340	70	0.145	0.36
	12.0	11,500	275	0.24	0.6	6,690	100	0.215	0.54	5,730	80	0.19	0.48	3,340	40	0.145	0.36
	14.0	11,500	275	0.24	0.6	6,690	100	0.215	0.54	5,730	80	0.19	0.48	3,340	40	0.145	0.36
	15.0	11,500	230	0.24	0.6	6,690	85	0.215	0.54	5,730	65	0.19	0.48	3,340	35	0.145	0.36
	16.0	10,200	195	0.18	0.6	5,940	70	0.16	0.54	5,100	55	0.145	0.48	2,970	30	0.11	0.36
	20.0	10,200	160	0.18	0.6	5,940	60	0.16	0.54	5,100	45	0.145	0.48	2,970	25	0.11	0.36
	25.0	9,170	110	0.12	0.6	5,350	40	0.11	0.54	4,590	30	0.095	0.48	2,680	20	0.07	0.36
	30.0	8,150	75	0.12	0.6	4,760	30	0.11	0.54	4,080	20	0.095	0.48	2,380	10	0.07	0.36
1.75	10.0	10,900	725	0.35	0.7	6,370	265	0.315	0.63	5,460	210	0.28	0.56	3,190	110	0.21	0.42
	15.0	9,820	275	0.28	0.7	5,730	100	0.25	0.63	4,910	80	0.225	0.56	2,870	40	0.17	0.42
	20.0	8,730	185	0.21	0.7	5,100	70	0.19	0.63	4,370	55	0.17	0.56	2,550	30	0.125	0.42
	25.0	7,860	135	0.21	0.7	4,590	50	0.19	0.63	3,930	40	0.17	0.56	2,290	20	0.125	0.42
	30.0	7,860	105	0.14	0.7	4,590	40	0.125	0.63	3,930	30	0.11	0.56	2,290	15	0.085	0.42
	35.0	6,990	75	0.14	0.7	4,080	30	0.125	0.63	3,490	20	0.11	0.56	2,040	10	0.085	0.42
2	10.0	9,550	725	0.4	0.8	5,570	265	0.36	0.72	4,780	210	0.32	0.64	2,790	110	0.24	0.48
	12.0	9,550	485	0.4	0.8	5,570	180	0.36	0.72	4,780	140	0.32	0.64	2,790	75	0.24	0.48
	14.0	8,600	440	0.32	0.8	5,020	160	0.29	0.72	4,300	125	0.255	0.64	2,510	70	0.19	0.48
	15.0	8,600	440	0.32	0.8	5,020	160	0.29	0.72	4,300	125	0.255	0.64	2,510	70	0.19	0.48
	16.0	8,600	275	0.32	0.8	5,020	100	0.29	0.72	4,300	80	0.255	0.64	2,510	40	0.19	0.48
	20.0	8,600	230	0.32	0.8	5,020	85	0.29	0.72	4,300	65	0.255	0.64	2,510	35	0.19	0.48
	25.0	7,640	170	0.24	0.8	4,460	60	0.215	0.72	3,820	50	0.19	0.64	2,230	25	0.145	0.48
	30.0	6,880	125	0.24	0.8	4,010	45	0.215	0.72	3,440	35	0.19	0.64	2,010	20	0.145	0.48
	35.0	6,880	105	0.16	0.8	4,010	40	0.145	0.72	3,440	30	0.13	0.64	2,010	15	0.095	0.48
2.5	10.0	7,640	725	0.5	1	4,460	265	0.45	0.9	3,820	210	0.4	0.8	2,230	110	0.3	0.6
	15.0	7,640	485	0.5	1	4,460	180	0.45	0.9	3,820	140	0.4	0.8	2,230	75	0.3	0.6
	20.0	6,880	275	0.4	1	4,010	100	0.36	0.9	3,440	80	0.32	0.8	2,010	40	0.24	0.6
	25.0	6,880	230	0.4	1	4,010	85	0.36	0.9	3,440	65	0.32	0.8	2,010	35	0.24	0.6
	30.0	6,110	175	0.3	1	3,570	65	0.27	0.9	3,060	50	0.24	0.8	1,790	30	0.18	0.6
	35.0	6,110	150	0.3	1	3,570	55	0.27	0.9	3,060	45	0.24	0.8	1,790	25	0.18	0.6
	40.0	5,500	115	0.3	1	3,210	45	0.27	0.9	2,750	35	0.24	0.8	1,610	110	0.18	0.6
3	10.0	6,370	725	0.6	1.2	3,720	265	0.54	1.08	3,190	210	0.48	0.96	1,860	110	0.36	0.72
	15.0	6,370	725	0.6	1.2	3,720	265	0.54	1.08	3,190	210	0.48	0.96	1,860	100	0.36	0.72
	20.0	5,730	440	0.48	1.2	3,340	160	0.43	1.08	2,870	125	0.385	0.96	1,670	70	0.29	0.72
	25.0	5,730	275	0.48	1.2	3,340	100	0.43	1.08	2,870	80	0.385	0.96	1,670	40	0.29	0.72
	30.0	5,730	230	0.48	1.2	3,340	85	0.43	1.08	2,870	65	0.385	0.96	1,670	35	0.29	0.72

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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트콜런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		주철 Cast Iron 연성주철 Ductile Cast Iron				스테인리스강 Stainless Steel				내열합금 Heat Resistant Alloy 티타늄합금 (Titanium Alloy)				내열합금 Heat Resistant Alloy INCONEL			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
3	35.0	5,100	180	0.36	1.2	2,970	65	0.325	1.08	2,550	50	0.29	0.96	1,490	30	0.215	0.72
	40.0	5,100	160	0.36	1.2	2,970	60	0.325	1.08	2,550	45	0.29	0.96	1,490	25	0.215	0.72
	45.0	4,590	125	0.36	1.2	2,680	45	0.325	1.08	2,290	35	0.29	0.96	1,340	20	0.215	0.72
	50.0	4,590	110	0.24	1.2	2,680	40	0.215	1.08	2,290	30	0.19	0.96	1,340	20	0.145	0.72

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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALB-2
Model number:IALB-2

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.15	0.5	50,000	180	0.03	0.06	50,000	165	0.03	0.06	50,000	270	0.03	0.06	50,000	285	0.03	0.06
	0.6	50,000	180	0.03	0.06	50,000	165	0.03	0.06	50,000	270	0.03	0.06	50,000	285	0.03	0.06
	0.75	50,000	180	0.03	0.06	50,000	165	0.03	0.06	50,000	270	0.03	0.06	50,000	285	0.03	0.06
	1.0	50,000	120	0.025	0.06	50,000	110	0.025	0.06	50,000	180	0.025	0.06	50,000	190	0.025	0.06
	1.25	50,000	75	0.025	0.06	50,000	70	0.025	0.06	50,000	115	0.025	0.06	50,000	120	0.025	0.06
	1.5	50,000	65	0.025	0.06	50,000	60	0.025	0.06	50,000	95	0.025	0.06	50,000	100	0.025	0.06
	1.75	50,000	55	0.02	0.06	50,000	50	0.02	0.06	50,000	85	0.02	0.06	50,000	90	0.02	0.06
	2.0	50,000	50	0.02	0.06	50,000	45	0.02	0.06	50,000	75	0.02	0.06	50,000	80	0.02	0.06
	2.3	50,000	45	0.02	0.06	50,000	40	0.02	0.06	50,000	65	0.02	0.06	50,000	70	0.02	0.06
	2.5	50,000	40	0.01	0.06	50,000	35	0.01	0.06	50,000	55	0.01	0.06	50,000	60	0.01	0.06
	2.75	50,000	35	0.01	0.06	50,000	30	0.01	0.06	50,000	50	0.01	0.06	50,000	55	0.01	0.06
	3.0	50,000	30	0.01	0.06	50,000	25	0.01	0.06	50,000	45	0.01	0.06	50,000	45	0.01	0.06
0.2	0.5	50,000	240	0.04	0.08	50,000	220	0.04	0.08	50,000	360	0.04	0.08	50,000	380	0.04	0.08
	0.8	50,000	240	0.04	0.08	50,000	220	0.04	0.08	50,000	360	0.04	0.08	50,000	380	0.04	0.08
	1.0	50,000	240	0.04	0.08	50,000	220	0.04	0.08	50,000	360	0.04	0.08	50,000	380	0.04	0.08
	1.5	50,000	160	0.03	0.08	50,000	145	0.03	0.08	50,000	240	0.03	0.08	50,000	255	0.03	0.08
	2.0	50,000	85	0.03	0.08	50,000	80	0.03	0.08	50,000	125	0.03	0.08	50,000	135	0.03	0.08
	2.5	50,000	70	0.025	0.08	50,000	65	0.025	0.08	50,000	105	0.025	0.08	50,000	110	0.025	0.08
	3.0	50,000	60	0.025	0.08	50,000	55	0.025	0.08	50,000	85	0.025	0.08	50,000	90	0.025	0.08
0.25	1.0	50,000	300	0.05	0.1	50,000	275	0.05	0.1	50,000	450	0.05	0.1	50,000	475	0.05	0.1
	1.5	50,000	200	0.05	0.1	50,000	185	0.05	0.1	50,000	300	0.05	0.1	50,000	320	0.05	0.1
	2.0	50,000	125	0.04	0.1	50,000	115	0.04	0.1	50,000	190	0.04	0.1	50,000	200	0.04	0.1
	2.5	50,000	105	0.04	0.1	50,000	95	0.04	0.1	50,000	160	0.04	0.1	50,000	165	0.04	0.1
	3.0	50,000	90	0.03	0.1	50,000	85	0.03	0.1	50,000	135	0.03	0.1	50,000	145	0.03	0.1
	3.5	50,000	80	0.03	0.1	50,000	70	0.03	0.1	50,000	115	0.03	0.1	50,000	125	0.03	0.1
	4.0	50,000	65	0.03	0.1	50,000	60	0.03	0.1	50,000	100	0.03	0.1	50,000	105	0.03	0.1
0.3	1.0	50,000	360	0.06	0.12	50,000	330	0.06	0.12	50,000	540	0.06	0.12	50,000	570	0.06	0.12
	1.5	50,000	360	0.06	0.12	50,000	330	0.06	0.12	50,000	540	0.06	0.12	50,000	570	0.06	0.12
	2.0	50,000	240	0.05	0.12	50,000	220	0.05	0.12	50,000	360	0.05	0.12	50,000	380	0.05	0.12
	2.5	50,000	150	0.05	0.12	50,000	140	0.05	0.12	50,000	225	0.05	0.12	50,000	240	0.05	0.12
	3.0	50,000	125	0.05	0.12	50,000	115	0.05	0.12	50,000	190	0.05	0.12	50,000	200	0.05	0.12
	3.5	50,000	110	0.035	0.12	50,000	100	0.035	0.12	50,000	170	0.035	0.12	50,000	175	0.035	0.12
	4.0	50,000	100	0.035	0.12	50,000	90	0.035	0.12	50,000	150	0.035	0.12	50,000	155	0.035	0.12
	4.5	50,000	85	0.035	0.12	50,000	80	0.035	0.12	45,800	120	0.035	0.12	50,000	135	0.035	0.12
	5.0	50,000	75	0.025	0.12	50,000	70	0.025	0.12	45,800	105	0.025	0.12	50,000	120	0.025	0.12
	5.5	50,000	65	0.025	0.12	50,000	60	0.025	0.12	40,700	80	0.025	0.12	50,000	105	0.025	0.12
	6.0	50,000	60	0.025	0.12	50,000	55	0.025	0.12	40,700	75	0.025	0.12	50,000	95	0.025	0.12
0.4	2.0	50,000	480	0.08	0.16	50,000	440	0.08	0.16	47,700	690	0.08	0.16	50,000	760	0.08	0.16
	3.0	50,000	320	0.065	0.16	50,000	295	0.065	0.16	43,000	415	0.065	0.16	50,000	510	0.065	0.16
	4.0	50,000	170	0.065	0.16	50,000	155	0.065	0.16	43,000	220	0.065	0.16	50,000	270	0.065	0.16
	5.0	50,000	140	0.05	0.16	47,700	120	0.05	0.16	38,200	160	0.05	0.16	47,700	210	0.05	0.16
	6.0	50,000	115	0.05	0.16	43,000	90	0.05	0.16	34,400	120	0.05	0.16	43,000	155	0.05	0.16

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롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.4	7.0	50,000	95	0.03	0.16	43,000	75	0.03	0.16	34,400	100	0.03	0.16	43,000	130	0.03	0.16
	8.0	45,800	70	0.03	0.16	38,200	55	0.03	0.16	30,600	75	0.03	0.16	38,200	95	0.03	0.16
0.5	2.0	50,000	600	0.1	0.2	47,700	525	0.1	0.2	38,200	690	0.1	0.2	47,700	905	0.1	0.2
	2.5	50,000	600	0.1	0.2	47,700	525	0.1	0.2	38,200	690	0.1	0.2	47,700	905	0.1	0.2
	3.0	50,000	400	0.1	0.2	47,700	350	0.1	0.2	38,200	460	0.1	0.2	47,700	610	0.1	0.2
	4.0	50,000	250	0.08	0.2	43,000	200	0.08	0.2	34,400	260	0.08	0.2	43,000	345	0.08	0.2
	6.0	45,800	165	0.06	0.2	38,200	125	0.06	0.2	30,600	165	0.06	0.2	38,200	220	0.06	0.2
	7.0	45,800	145	0.06	0.2	38,200	110	0.06	0.2	30,600	145	0.06	0.2	38,200	190	0.06	0.2
	8.0	41,200	110	0.06	0.2	34,400	85	0.06	0.2	27,500	110	0.06	0.2	34,400	145	0.06	0.2
	9.0	41,200	95	0.04	0.2	34,400	75	0.04	0.2	27,500	95	0.04	0.2	34,400	125	0.04	0.2
	10.0	36,700	70	0.04	0.2	30,600	55	0.04	0.2	24,400	70	0.04	0.2	30,600	95	0.04	0.2
	12.0	36,700	55	0.03	0.2	30,600	40	0.03	0.2	24,400	55	0.03	0.2	30,600	70	0.03	0.2
0.6	2.4	47,700	690	0.12	0.24	39,800	525	0.12	0.24	31,800	690	0.12	0.24	39,800	905	0.12	0.24
	4.0	43,000	415	0.095	0.24	35,800	315	0.095	0.24	28,600	415	0.095	0.24	35,800	545	0.095	0.24
	6.0	43,000	220	0.095	0.24	35,800	165	0.095	0.24	28,600	220	0.095	0.24	35,800	290	0.095	0.24
	8.0	38,200	150	0.07	0.24	31,800	115	0.07	0.24	25,500	150	0.07	0.24	31,800	200	0.07	0.24
	10.0	34,400	105	0.05	0.24	28,600	80	0.05	0.24	22,900	105	0.05	0.24	28,600	140	0.05	0.24
	12.0	30,600	75	0.05	0.24	25,500	55	0.05	0.24	20,400	70	0.05	0.24	25,500	95	0.05	0.24
0.75	3.0	38,200	690	0.15	0.3	31,800	525	0.15	0.3	25,500	690	0.15	0.3	31,800	905	0.15	0.3
	4.0	38,200	690	0.15	0.3	31,800	525	0.15	0.3	25,500	690	0.15	0.3	31,800	905	0.15	0.3
	6.0	34,400	260	0.12	0.3	28,600	200	0.12	0.3	22,900	260	0.12	0.3	28,600	345	0.12	0.3
	8.0	30,600	185	0.09	0.3	25,500	140	0.09	0.3	20,400	185	0.09	0.3	25,500	245	0.09	0.3
	10.0	30,600	150	0.09	0.3	25,500	115	0.09	0.3	20,400	150	0.09	0.3	25,500	200	0.09	0.3
	12.0	27,500	110	0.09	0.3	22,900	85	0.09	0.3	18,300	110	0.09	0.3	22,900	145	0.09	0.3
	14.0	24,400	80	0.06	0.3	20,400	60	0.06	0.3	16,300	80	0.06	0.3	20,400	105	0.06	0.3
	16.0	24,400	65	0.045	0.3	20,400	50	0.045	0.3	16,300	65	0.045	0.3	20,400	85	0.045	0.3
0.8	4.0	35,800	690	0.16	0.32	29,800	525	0.16	0.32	23,900	690	0.16	0.32	29,800	905	0.16	0.32
	8.0	32,200	220	0.13	0.32	26,800	165	0.13	0.32	21,500	220	0.13	0.32	26,800	290	0.13	0.32
	12.0	25,800	120	0.095	0.32	21,500	90	0.095	0.32	17,200	120	0.095	0.32	21,500	155	0.095	0.32
	16.0	22,900	75	0.065	0.32	19,100	55	0.065	0.32	15,300	75	0.065	0.32	19,100	95	0.065	0.32
1	3.0	28,600	690	0.2	0.4	23,900	525	0.2	0.4	19,100	690	0.2	0.4	23,900	905	0.2	0.4
	4.0	28,600	690	0.2	0.4	23,900	525	0.2	0.4	19,100	690	0.2	0.4	23,900	905	0.2	0.4
	6.0	28,600	460	0.2	0.4	23,900	350	0.2	0.4	19,100	460	0.2	0.4	23,900	610	0.2	0.4
	8.0	25,800	260	0.16	0.4	21,500	200	0.16	0.4	17,200	260	0.16	0.4	21,500	345	0.16	0.4
	10.0	25,800	220	0.16	0.4	21,500	165	0.16	0.4	17,200	220	0.16	0.4	21,500	290	0.16	0.4
	12.0	22,900	165	0.12	0.4	19,100	125	0.12	0.4	15,300	165	0.12	0.4	19,100	220	0.12	0.4
	13.0	22,900	155	0.12	0.4	19,100	120	0.12	0.4	15,300	155	0.12	0.4	19,100	205	0.12	0.4
	14.0	22,900	145	0.12	0.4	19,100	110	0.12	0.4	15,300	145	0.12	0.4	19,100	190	0.12	0.4
	15.0	20,600	120	0.12	0.4	17,200	90	0.12	0.4	13,700	120	0.12	0.4	17,200	155	0.12	0.4
	16.0	20,600	110	0.12	0.4	17,200	85	0.12	0.4	13,700	110	0.12	0.4	17,200	145	0.12	0.4
	18.0	20,600	95	0.08	0.4	17,200	75	0.08	0.4	13,700	95	0.08	0.4	17,200	125	0.08	0.4
	20.0	18,300	70	0.08	0.4	15,300	55	0.08	0.4	12,200	75	0.08	0.4	15,300	95	0.08	0.4

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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ion Depo Type A Series

ion Depo Type A 추천 절삭 조건표
Recommended Milling Conditions

■형번:IALB-2
Model number:IALB-2

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.25	6.0	22,900	690	0.25	0.5	19,100	525	0.25	0.5	15,300	690	0.25	0.5	19,100	905	0.25	0.5
	8.0	20,600	415	0.2	0.5	17,200	315	0.2	0.5	13,700	415	0.2	0.5	17,200	545	0.2	0.5
	10.0	20,600	260	0.2	0.5	17,200	200	0.2	0.5	13,700	260	0.2	0.5	17,200	345	0.2	0.5
	15.0	18,300	165	0.15	0.5	15,300	125	0.15	0.5	12,200	165	0.15	0.5	15,300	220	0.15	0.5
	20.0	16,500	110	0.15	0.5	13,700	85	0.15	0.5	11,000	110	0.15	0.5	13,700	145	0.15	0.5
1.5	6.0	19,100	690	0.3	0.6	15,900	525	0.3	0.6	12,700	685	0.3	0.6	15,900	905	0.3	0.6
	8.0	19,100	690	0.3	0.6	15,900	525	0.3	0.6	12,700	685	0.3	0.6	15,900	905	0.3	0.6
	10.0	17,200	415	0.24	0.6	14,300	315	0.24	0.6	11,500	415	0.24	0.6	14,300	545	0.24	0.6
	12.0	17,200	260	0.24	0.6	14,300	200	0.24	0.6	11,500	260	0.24	0.6	14,300	345	0.24	0.6
	14.0	17,200	260	0.24	0.6	14,300	200	0.24	0.6	11,500	260	0.24	0.6	14,300	345	0.24	0.6
	15.0	17,200	220	0.24	0.6	14,300	165	0.24	0.6	11,500	220	0.24	0.6	14,300	290	0.24	0.6
	16.0	15,300	185	0.18	0.6	12,700	140	0.18	0.6	10,200	185	0.18	0.6	12,700	245	0.18	0.6
	20.0	15,300	150	0.18	0.6	12,700	115	0.18	0.6	10,200	150	0.18	0.6	12,700	200	0.18	0.6
	25.0	13,700	105	0.12	0.6	11,500	80	0.12	0.6	9,170	105	0.12	0.6	11,500	140	0.12	0.6
	30.0	12,200	75	0.12	0.6	10,200	55	0.12	0.6	8,150	75	0.12	0.6	10,200	95	0.12	0.6
1.75	10.0	16,400	690	0.35	0.7	13,600	525	0.35	0.7	10,900	690	0.35	0.7	13,600	905	0.35	0.7
	15.0	14,700	260	0.28	0.7	12,300	200	0.28	0.7	9,820	260	0.28	0.7	12,300	345	0.28	0.7
	20.0	13,100	175	0.21	0.7	10,900	135	0.21	0.7	8,730	175	0.21	0.7	10,900	230	0.21	0.7
	25.0	11,800	125	0.21	0.7	9,820	95	0.21	0.7	7,860	125	0.21	0.7	9,820	165	0.21	0.7
	30.0	11,800	100	0.14	0.7	9,820	75	0.14	0.7	7,860	100	0.14	0.7	9,820	135	0.14	0.7
	35.0	10,500	70	0.14	0.7	8,730	55	0.14	0.7	6,990	75	0.14	0.7	8,730	95	0.14	0.7
2	10.0	14,300	690	0.4	0.8	11,900	525	0.4	0.8	9,550	690	0.4	0.8	11,900	905	0.4	0.8
	12.0	14,300	460	0.4	0.8	11,900	350	0.4	0.8	9,550	460	0.4	0.8	11,900	610	0.4	0.8
	14.0	12,900	415	0.32	0.8	10,700	315	0.32	0.8	8,600	415	0.32	0.8	10,700	545	0.32	0.8
	15.0	12,900	415	0.32	0.8	10,700	315	0.32	0.8	8,600	415	0.32	0.8	10,700	545	0.32	0.8
	16.0	12,900	260	0.32	0.8	10,700	200	0.32	0.8	8,600	260	0.32	0.8	10,700	345	0.32	0.8
	20.0	12,900	220	0.32	0.8	10,700	165	0.32	0.8	8,600	220	0.32	0.8	10,700	290	0.32	0.8
	25.0	11,500	160	0.24	0.8	9,550	120	0.24	0.8	7,640	160	0.24	0.8	9,550	210	0.24	0.8
	30.0	10,300	120	0.24	0.8	8,600	90	0.24	0.8	6,880	120	0.24	0.8	8,600	155	0.24	0.8
	35.0	10,300	100	0.16	0.8	8,600	75	0.16	0.8	6,880	100	0.16	0.8	8,600	130	0.16	0.8
2.5	10.0	11,500	690	0.5	1	9,550	525	0.5	1	7,640	690	0.5	1	9,550	905	0.5	1
	15.0	11,500	460	0.5	1	9,550	350	0.5	1	7,640	460	0.5	1	9,550	610	0.5	1
	20.0	10,300	260	0.4	1	8,600	200	0.4	1	6,880	260	0.4	1	8,600	345	0.4	1
	25.0	10,300	220	0.4	1	8,600	165	0.4	1	6,880	220	0.4	1	8,600	290	0.4	1
	30.0	9,170	165	0.3	1	7,640	125	0.3	1	6,110	165	0.3	1	7,640	220	0.3	1
	35.0	9,170	145	0.3	1	7,640	110	0.3	1	6,110	145	0.3	1	7,640	190	0.3	1
	40.0	8,250	110	0.3	1	6,880	85	0.3	1	5,500	110	0.3	1	6,880	145	0.3	1
3	10.0	9,550	690	0.6	1.2	7,960	525	0.6	1.2	6,370	685	0.6	1.2	7,960	905	0.6	1.2
	15.0	9,550	690	0.6	1.2	7,960	525	0.6	1.2	6,370	685	0.6	1.2	7,960	905	0.6	1.2
	20.0	8,600	415	0.48	1.2	7,160	315	0.48	1.2	5,730	415	0.48	1.2	7,160	545	0.48	1.2
	25.0	8,600	260	0.48	1.2	7,160	200	0.48	1.2	5,730	260	0.48	1.2	7,160	345	0.48	1.2
	30.0	8,600	220	0.48	1.2	7,160	165	0.48	1.2	5,730	220	0.48	1.2	7,160	290	0.48	1.2

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트콜런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		알루미늄합금 Aluminum Alloy A5000번·A7000번대				알루미늄및알루미늄주물 Aluminum Alloy Al·AC·ADC				동합금 Copper Alloy 동-텅스텐 (Cupper Tungsten)				수지 Resin			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
3	35.0	7,640	170	0.36	1.2	6,370	130	0.36	1.2	5,100	170	0.36	1.2	6,370	225	0.36	1.2
	40.0	7,640	150	0.36	1.2	6,370	115	0.36	1.2	5,100	150	0.36	1.2	6,370	200	0.36	1.2
	45.0	6,880	120	0.36	1.2	5,730	90	0.36	1.2	4,590	120	0.36	1.2	5,730	155	0.36	1.2
	50.0	6,880	105	0.24	1.2	5,730	80	0.24	1.2	4,590	105	0.24	1.2	5,730	140	0.24	1.2

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●오일미스트콜런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
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ion Depo Type U Series

초경 엔드밀 Carbide End Mill

ion U | super MG | 날 수 2~6 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4





특징

- 이온 플레이팅 방식의 코팅 ion Depo Type U 는 고경도재 가공에 최적 !
- 내열성이 뛰어난 코팅으로 황삭 가공부터 정삭가공까지 모든 가공에 대응 !
- 당사 독자적인 재연마 , 재코팅 기술에 의해 성능 노화를 억제하여 한층 윈가 절감에 공헌 !
- 표준품 외 특별 주문품도 단납기에 제공 가능 !

Features

- ion Depo Type U plating for high hardness materials.
- Heat resistance coating supports all processing from roughing to finishing.
- TOWA re-polishing and re-coating technology enhances cutting tool life and reduces overall tooling cost.
- Non-standard custom-made products available.

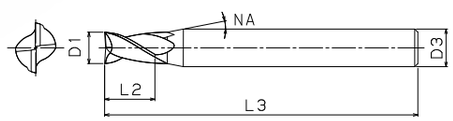
초경 스퀘어 엔드밀 Carbide Square End Mill

■형번:IUS-2 Model number:IUS-2

ion U | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank h4



날경 Diameter	날경허용공차 Diameter Tolerance
~φ6	-0.004/-0.007
φ8~φ12	-0.004/-0.014
φ14~φ20	-0.004/-0.020



표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

최적◎Recommended 적용○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IUS-2-0.1x0.15	0.1	0.15	11	4	50	5,760
IUS-2-0.2x0.4	0.2	0.4	11	4	50	3,680
IUS-2-0.3x0.6	0.3	0.6	11	4	50	2,880
IUS-2-0.4x0.8	0.4	0.8	11	4	50	3,360
IUS-2-0.5x1.0	0.5	1.0	11	4	50	2,000
IUS-2-0.6x1.2	0.6	1.2	11	4	50	2,800
IUS-2-0.7x1.4	0.7	1.4	11	4	50	3,040
IUS-2-0.8x1.6	0.8	1.6	11	4	50	2,000
IUS-2-0.9x1.8	0.9	1.8	11	4	50	3,040
IUS-2-1.0x2.0	1.0	2.0	11	4	50	1,760
IUS-2-1.1x2.2	1.1	2.2	11	4	50	3,120
IUS-2-1.2x2.4	1.2	2.4	11	4	50	2,000
IUS-2-1.3x2.6	1.3	2.6	11	4	50	3,120
IUS-2-1.4x2.8	1.4	2.8	11	4	50	3,120
IUS-2-1.5x3.0	1.5	3.0	11	4	50	1,840
IUS-2-1.6x3.2	1.6	3.2	11	4	50	3,120
IUS-2-1.7x3.4	1.7	3.4	11	4	50	3,120
IUS-2-1.8x3.6	1.8	3.6	11	4	50	2,000
IUS-2-1.9x3.8	1.9	3.8	11	4	50	3,120
IUS-2-2.0x4.0	2.0	4.0	11	4	50	1,840
IUS-2-2.1x4.2	2.1	4.2	11	4	50	3,120
IUS-2-2.2x4.4	2.2	4.4	11	4	50	3,120
IUS-2-2.3x4.6	2.3	4.6	11	4	50	3,120
IUS-2-2.4x4.8	2.4	4.8	11	4	50	3,120
IUS-2-2.5x5.0	2.5	5.0	11	4	50	1,840
IUS-2-2.6x5.2	2.6	5.2	11	4	50	4,000
IUS-2-2.7x5.4	2.7	5.4	11	4	50	4,000
IUS-2-2.8x5.6	2.8	5.6	11	4	50	4,000
IUS-2-2.9x5.8	2.9	5.8	11	4	50	4,000
IUS-2-3.0x6.0	3.0	6.0	11	4	50	2,320
IUS-2-3.5x7.0	3.5	7.0	11	6	50	3,520
IUS-2-4.0x8.0	4.0	8.0	11	6	50	2,560
IUS-2-4.5x9.0	4.5	9.0	11	6	50	4,000
IUS-2-5.0x10.0	5.0	10.0	11	6	50	2,720
IUS-2-5.5x11.0	5.5	11.0	11	6	50	4,000
IUS-2-6.0x12.0	6.0	12.0	—	6	50	2,960

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUS-2
Model number:IUS-2

스퀘어 엔드밀 Square End Mill

측 면 Side Milling

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.1	0.2	50,000	40	0.1	0.006	50,000	20	0.1	0.001	50,000	20	0.08	0.001
0.2	0.4	50,000	55	0.2	0.012	39,800	35	0.2	0.002	25,500	20	0.16	0.002
0.3	0.6	40,900	65	0.3	0.018	26,500	35	0.3	0.003	17,000	20	0.24	0.002
0.4	0.8	30,600	65	0.4	0.024	19,900	35	0.4	0.004	12,700	20	0.32	0.003
0.5	1.0	24,500	65	0.5	0.03	15,900	35	0.5	0.005	10,200	20	0.4	0.004
0.6	1.2	20,400	65	0.6	0.036	13,300	35	0.6	0.006	8,490	20	0.48	0.005
0.7	1.4	17,500	65	0.7	0.042	11,400	35	0.7	0.007	7,280	20	0.56	0.006
0.8	1.6	15,300	65	0.8	0.048	9,950	35	0.8	0.008	6,370	20	0.64	0.006
0.9	1.8	13,600	65	0.9	0.054	8,840	35	0.9	0.009	5,660	20	0.72	0.007
1.0	2.0	12,300	65	1	0.1	7,960	35	1	0.020	5,090	20	0.8	0.012
1.1	2.2	11,600	70	1.1	0.11	7,810	40	1.1	0.022	5,210	20	0.88	0.013
1.2	2.4	10,600	70	1.2	0.12	7,160	40	1.2	0.024	4,770	20	0.96	0.014
1.3	2.6	9,790	70	1.3	0.13	6,610	40	1.3	0.026	4,410	20	1.04	0.016
1.4	2.8	9,090	70	1.4	0.14	6,140	40	1.4	0.028	4,090	20	1.12	0.017
1.5	3.0	8,490	70	1.5	0.15	5,730	40	1.5	0.030	3,820	20	1.2	0.018
1.6	3.2	8,550	75	1.6	0.16	5,570	40	1.6	0.032	3,780	20	1.28	0.019
1.7	3.4	8,050	75	1.7	0.17	5,240	40	1.7	0.034	3,560	20	1.36	0.020
1.8	3.6	7,600	75	1.8	0.18	4,950	40	1.8	0.036	3,360	20	1.44	0.022
1.9	3.8	7,200	75	1.9	0.19	4,690	40	1.9	0.038	3,180	20	1.52	0.023
2.0	4.0	6,840	75	2	0.2	4,460	40	2	0.040	3,020	20	1.6	0.024
2.1	4.2	6,820	80	2.1	0.21	4,550	40	2.1	0.042	3,030	25	1.68	0.025
2.2	4.4	6,510	80	2.2	0.22	4,340	40	2.2	0.044	2,890	25	1.76	0.026
2.3	4.6	6,230	80	2.3	0.23	4,150	40	2.3	0.046	2,770	25	1.84	0.028
2.4	4.8	5,970	80	2.4	0.24	3,980	40	2.4	0.048	2,650	25	1.92	0.029
2.5	5.0	5,730	80	2.5	0.25	3,820	40	2.5	0.050	2,550	25	2	0.030
2.6	5.2	5,510	80	2.6	0.26	3,670	40	2.6	0.052	2,450	25	2.08	0.031
2.7	5.4	5,310	80	2.7	0.27	3,540	40	2.7	0.054	2,360	25	2.16	0.032
2.8	5.6	5,120	80	2.8	0.28	3,410	40	2.8	0.056	2,270	25	2.24	0.034
2.9	5.8	4,940	80	2.9	0.29	3,290	40	2.9	0.058	2,200	25	2.32	0.035
3.0	6.0	4,770	80	3	0.3	3,180	40	3	0.060	2,120	25	2.4	0.036
3.5	7.0	4,090	80	3.5	0.35	2,730	40	3.5	0.070	1,820	25	2.8	0.070
4.0	8.0	3,580	80	4	0.4	2,390	40	4	0.160	1,590	25	3.2	0.160
4.5	9.0	3,180	80	4.5	0.45	2,120	40	4.5	0.180	1,410	25	3.6	0.180
5.0	10.0	2,860	80	5	0.5	1,910	40	5	0.200	1,270	25	4	0.200
5.5	11.0	2,600	80	5.5	0.55	1,740	40	5.5	0.220	1,160	25	4.4	0.220
6.0	12.0	2,390	80	6	0.6	1,590	40	6	0.240	1,060	25	4.8	0.240

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p=축방향, ∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트쿨런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

스퀘어 엔드밀 Square End Mill

홈 Slotting

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.1	0.2	50,000	30	0.006	0.1	50,000	15	0.002	0.1	45,800	10	0.001	0.1
0.2	0.4	50,000	35	0.012	0.2	35,700	20	0.004	0.2	22,900	10	0.002	0.2
0.3	0.6	36,300	40	0.018	0.3	23,800	20	0.006	0.3	15,300	10	0.003	0.3
0.4	0.8	27,200	40	0.024	0.4	17,800	20	0.008	0.4	11,500	10	0.004	0.4
0.5	1.0	21,800	40	0.04	0.5	14,300	20	0.015	0.5	9,170	10	0.01	0.5
0.6	1.2	18,100	40	0.048	0.6	11,900	20	0.018	0.6	7,640	10	0.012	0.6
0.7	1.4	15,600	40	0.056	0.7	10,200	20	0.021	0.7	6,550	10	0.014	0.7
0.8	1.6	13,600	40	0.064	0.8	8,910	20	0.024	0.8	5,730	10	0.016	0.8
0.9	1.8	12,100	40	0.072	0.9	7,920	20	0.027	0.9	5,090	10	0.018	0.9
1.0	2.0	10,900	40	0.1	1	7,130	20	0.05	1	4,580	10	0.035	1
1.1	2.2	11,200	45	0.11	1.1	6,480	20	0.055	1.1	4,170	10	0.04	1.1
1.2	2.4	10,300	45	0.12	1.2	5,940	20	0.06	1.2	3,820	10	0.04	1.2
1.3	2.6	9,480	45	0.13	1.3	5,480	20	0.065	1.3	3,530	10	0.05	1.3
1.4	2.8	8,800	45	0.14	1.4	5,090	20	0.07	1.4	3,270	10	0.05	1.4
1.5	3.0	8,210	45	0.15	1.5	5,310	25	0.075	1.5	3,440	10	0.05	1.5
1.6	3.2	8,120	45	0.16	1.6	4,970	25	0.08	1.6	3,220	10	0.06	1.6
1.7	3.4	7,640	45	0.17	1.7	4,680	25	0.085	1.7	3,030	10	0.06	1.7
1.8	3.6	7,220	45	0.18	1.8	4,420	25	0.09	1.8	2,860	10	0.06	1.8
1.9	3.8	6,840	45	0.19	1.9	4,190	25	0.095	1.9	2,710	10	0.07	1.9
2.0	4.0	6,490	45	0.2	2	4,250	25	0.1	2	2,720	15	0.07	2
2.1	4.2	6,520	50	0.21	2.1	4,050	25	0.105	2.1	2,590	15	0.07	2.1
2.2	4.4	6,220	50	0.22	2.2	3,860	25	0.11	2.2	2,470	15	0.08	2.2
2.3	4.6	5,950	50	0.23	2.3	3,700	25	0.115	2.3	2,370	15	0.08	2.3
2.4	4.8	5,700	50	0.24	2.4	3,540	25	0.12	2.4	2,270	15	0.08	2.4
2.5	5.0	5,470	50	0.25	2.5	3,400	25	0.125	2.5	2,180	15	0.09	2.5
2.6	5.2	5,260	50	0.26	2.6	3,270	25	0.13	2.6	2,090	15	0.09	2.6
2.7	5.4	5,070	50	0.27	2.7	3,150	25	0.135	2.7	2,020	15	0.09	2.7
2.8	5.6	4,890	50	0.28	2.8	3,040	25	0.14	2.8	1,940	15	0.10	2.8
2.9	5.8	4,720	50	0.29	2.9	2,930	25	0.145	2.9	1,880	15	0.10	2.9
3.0	6.0	4,560	50	0.3	3	2,970	25	0.15	3	1,910	15	0.11	3
3.5	7.0	3,910	50	0.35	3.5	2,550	25	0.175	3.5	1,640	15	0.12	3.5
4.0	8.0	3,420	50	0.8	4	2,230	25	0.28	4	1,430	15	0.16	4
4.5	9.0	3,040	50	0.9	4.5	1,980	25	0.315	4.5	1,270	15	0.18	4.5
5.0	10.0	2,740	50	1	5	1,780	25	0.35	5	1,150	15	0.2	5
5.5	11.0	2,490	50	1.1	5.5	1,620	25	0.385	5.5	1,040	15	0.22	5.5
6.0	12.0	2,280	50	1.2	6	1,490	25	0.42	6	950	15	0.24	6

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p=축방향, ∂e= 반경방향. ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트쿨런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

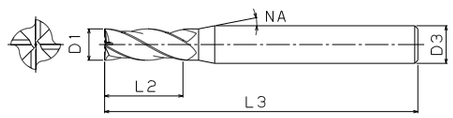
초경 스퀘어 엔드밀 Carbide Square End Mill

ion U | super MG | 날 수 4 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4

■형번:IUS-4 Model number:IUS-4



날경 Diameter	날경허용공차 Diameter Tolerance
~ϕ6	-0.004/-0.007
ϕ8~ϕ12	-0.004/-0.014
ϕ14~ϕ20	-0.004/-0.020



표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IUS-4-1.0x2.0	1.0	2.0	11	4	50	5,040
IUS-4-1.5x3.0	1.5	3.0	11	4	50	5,040
IUS-4-2.0x4.0	2.0	4.0	11	4	50	5,040
IUS-4-3.0x6.0	3.0	6.0	11	4	50	5,840
IUS-4-4.0x8.0	4.0	8.0	11	6	50	6,320
IUS-4-6.0x12.0	6.0	12.0	—	6	60	6,640
IUS-4-6.0x18.0		18.0	—	6	60	7,120
IUS-4-8.0x16.0	8.0	16.0	—	8	70	9,920
IUS-4-8.0x24.0		24.0	—	8	70	11,040
IUS-4-10.0x20.0	10.0	20.0	—	10	80	15,520
IUS-4-10.0x30.0		30.0	—	10	80	16,000
IUS-4-12.0x24.0	12.0	24.0	—	12	110	19,600
IUS-4-12.0x36.0		36.0	—	12	110	20,320
IUS-4-14.0x35.0	14.0	35.0	—	14	120	11,760
IUS-4-16.0x40.0	16.0	40.0	—	16	130	18,080
IUS-4-18.0x45.0	18.0	45.0	—	18	140	21,040
IUS-4-20.0x50.0	20.0	50.0	—	20	140	26,400

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUS-4
Model number:IUS-4

스퀘어 엔드밀 Square End Mill

측 면 Side Milling

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2.0	11,500	110	1	0.06	7,640	75	1	0.01	5,100	40	0.8	0.007
1.5	3.0	8,600	130	1.5	0.11	5,730	90	1.5	0.02	3,820	50	1.2	0.013
2.0	4.0	6,810	145	2	0.16	4,540	100	2	0.03	3,030	55	1.6	0.019
3.0	6.0	4,780	170	3	0.3	3,190	115	3	0.06	2,120	65	2.4	0.036
4.0	8.0	3,580	180	4	0.4	2,390	120	4	0.08	1,590	65	3.2	0.048
6.0	12.0	2,390	190	6	0.6	1,590	125	6	0.12	1,060	70	4.8	0.072
	18.0	2,390	180	6	0.54	1,590	120	6	0.11	1,060	65	4.8	0.065
8.0	16.0	1,790	180	8	0.8	1,200	120	8	0.16	800	65	6.4	0.096
	24.0	1,790	170	8	0.72	1,200	115	8	0.14	800	65	6.4	0.086
10.0	20.0	1,430	170	10	1	960	115	10	0.20	640	65	10	0.2
	30.0	1,360	155	10	0.9	910	105	10	0.18	610	55	10	0.18
12.0	24.0	1,140	155	12	1.2	760	105	12	0.24	510	55	12	0.24
	36.0	1,080	145	12	1.08	720	95	12	0.216	480	50	12	0.216
14.0	35.0	980	150	14	1.26	650	100	14	0.252	440	45	14	0.252
16.0	40.0	860	150	16	1.44	570	100	16	0.288	380	45	16	0.288
18.0	45.0	760	150	18	1.62	510	100	18	0.324	340	45	18	0.324
20.0	50.0	680	150	20	1.8	460	100	20	0.36	310	50	20	0.36

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUS-4
Model number:IUS-4

스퀘어 엔드밀 Square End Mill
홈 Slotting

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	2.0	10,900	65	0.06	1	7,130	40	0.05	1	4,590	20	0.025	1
1.5	3.0	8,210	80	0.09	1.5	5,350	55	0.07	1.5	3,440	30	0.038	1.5
2.0	4.0	6,500	90	0.16	2	4,240	55	0.09	2	2,720	30	0.05	2
3.0	6.0	4,560	105	0.36	3	2,970	65	0.14	3	1,910	35	0.075	3
4.0	8.0	3,420	110	0.64	4	2,230	70	0.18	4	1,430	40	0.1	4
6.0	12.0	2,280	115	1.2	6	1,490	75	0.33	6	960	40	0.192	6
	18.0	2,170	75	0.96	6	1,410	55	0.27	6	910	30	0.15	6
8.0	16.0	1,710	110	1.6	8	1,120	70	0.44	8	720	40	0.256	8
	24.0	1,630	75	1.28	8	1,060	55	0.36	8	680	30	0.2	8
10.0	20.0	1,370	105	2	10	890	65	0.55	10	580	35	0.32	10
	30.0	1,300	95	1.6	10	850	60	0.45	10	550	30	0.25	10
12.0	24.0	1,090	95	2.4	12	710	60	0.66	12	460	30	0.384	12
	36.0	1,040	90	1.92	12	680	55	0.54	12	440	30	0.3	12
14.0	35.0	930	90	2.24	14	610	55	0.63	14	390	30	0.35	14
16.0	40.0	820	90	2.56	16	530	55	0.72	16	340	30	0.4	16
18.0	45.0	730	90	2.88	18	470	55	0.81	18	310	30	0.45	18
20.0	50.0	650	90	3.2	20	430	55	0.9	20	280	30	0.5	20

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
ion Depo A Series
ion Depo U Series 스퀘어 Square

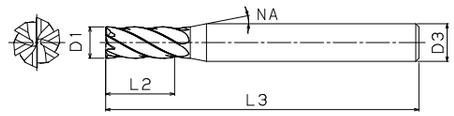
초경 스퀘어 엔드밀 Carbide Square End Mill

ion U | super MG | 날 수 6 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4

■형번:IUS-6 Model number:IUS-6



날경 Diameter	날경허용공차 Diameter Tolerance
~ϕ6	-0.004/-0.007
ϕ8~ϕ12	-0.004/-0.014
ϕ14~ϕ20	-0.004/-0.020



표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IUS-6-5.0x10.0	5.0	10.0	11	6	50	6,720
IUS-6-5.0x15.0		15.0	11	6	50	7,440
IUS-6-6.0x12.0	6.0	12.0	—	6	50	7,280
IUS-6-6.0x18.0		18.0	—	6	60	8,080
IUS-6-8.0x16.0	8.0	16.0	—	8	70	9,920
IUS-6-8.0x24.0		24.0	—	8	70	11,040
IUS-6-10.0x20.0	10.0	20.0	—	10	80	13,200
IUS-6-10.0x30.0		30.0	—	10	80	14,720
IUS-6-12.0x24.0	12.0	24.0	—	12	110	16,880
IUS-6-12.0x36.0		36.0	—	12	110	18,720
IUS-6-14.0x35.0	14.0	35.0	—	14	120	12,800
IUS-6-16.0x40.0	16.0	40.0	—	16	130	22,320
IUS-6-18.0x45.0	18.0	45.0	—	18	140	25,280
IUS-6-20.0x50.0	20.0	50.0	—	20	140	28,000

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUS-6
Model number:IUS-6

스퀘어 엔드밀 Square End Mill

측 면 Side Milling

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
5.0	10.0	2,860	250	5	0.5	1,910	155	5	0.30	1,270	90	4	0.150
	15.0	2,830	245	5	0.45	1,850	150	5	0.27	1,210	85	5	0.135
6.0	12.0	2,390	250	6	0.6	1,590	155	6	0.36	1,070	90	5	0.180
	18.0	2,350	245	6	0.54	1,540	150	6	0.32	1,010	85	5	0.162
8.0	16.0	1,790	250	8	0.8	1,200	160	8	0.48	800	90	6	0.240
	24.0	1,750	245	8	0.72	1,140	150	8	0.43	760	85	6	0.216
10.0	20.0	1,430	250	10	1	960	160	10	0.60	640	90	10	0.300
	30.0	1,390	245	10	0.9	910	150	10	0.54	610	85	10	0.270
12.0	24.0	1,140	240	12	1.2	760	150	12	0.72	510	85	12	0.360
	36.0	1,090	230	12	1.08	720	140	12	0.72	480	80	12	0.324
14.0	35.0	980	240	14	1.26	650	150	14	0.84	440	85	14	0.420
16.0	40.0	860	240	16	1.44	570	150	16	0.96	380	85	16	0.480
18.0	45.0	760	240	18	1.62	510	150	18	1.08	340	85	18	0.540
20.0	50.0	680	240	20	1.8	460	150	20	1.20	310	85	20	0.600

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●정임방은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUS-6
Model number:IUS-6

스퀘어 엔드밀 Square End Mill

홈 Slotting

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
5.0	10.0	2,740	150	0.5	5	1,790	90	0.3	5	1,150	45	0.1	5
	15.0	2,610	145	0.45	5	1,690	90	0.27	5	1,090	40	0.09	5
6.0	12.0	2,280	150	0.6	6	1,490	90	0.36	6	960	45	0.12	6
	18.0	2,180	145	0.54	6	1,410	90	0.324	6	910	40	0.108	6
8.0	16.0	1,710	150	0.8	8	1,120	90	0.48	8	720	45	0.16	8
	24.0	1,630	145	0.72	8	1,060	90	0.432	8	680	40	0.144	8
10.0	20.0	1,370	150	1	10	890	90	0.6	10	580	45	0.2	10
	30.0	1,310	145	0.90	10	850	90	0.54	10	550	45	0.18	10
12.0	24.0	1,090	145	1.8	12	710	90	0.96	12	460	45	0.36	12
	36.0	1,030	135	1.08	12	680	85	0.864	12	440	40	0.324	12
14.0	35.0	930	145	2.1	14	610	90	1.12	14	390	40	0.42	14
16.0	40.0	820	145	2.4	16	530	90	1.28	16	340	40	0.48	16
18.0	45.0	730	145	2.7	18	470	90	1.44	18	310	45	0.54	18
20.0	50.0	650	145	3	20	430	90	1.6	20	280	45	0.6	20

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 될요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

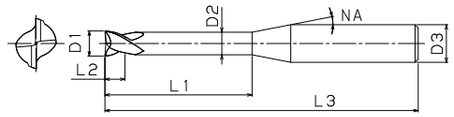
초경 롱 넥 스퀘어 엔드밀
Carbide Long Neck Square End Mill

ion U | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IULS-2 Model number:IULS-2

날경 Diameter	날경허용공차 Diameter Tolerance
~φ6	-0.004/-0.007
φ8~φ12	-0.004/-0.014
φ14~φ20	-0.004/-0.020



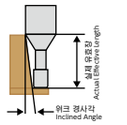


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

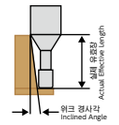
최적◎Recommended 적응○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

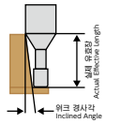
코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULS-2-0.1xL0.3	0.1	0.3	0.1	0.08	11	4	50	0.37	0.39	0.41	0.43	0.48	8,400
IULS-2-0.1xL0.5		0.5	0.1	0.08	11	4	50	0.58	0.61	0.64	0.67	0.75	9,120
IULS-2-0.15xL0.3	0.15	0.3	0.12	0.13	11	4	50	0.37	0.39	0.41	0.43	0.48	11,200
IULS-2-0.15xL0.5		0.5	0.12	0.13	11	4	50	0.58	0.61	0.64	0.67	0.75	8,400
IULS-2-0.2xL0.5	0.2	0.5	0.15	0.18	11	4	50	0.58	0.61	0.64	0.67	0.75	10,000
IULS-2-0.2xL0.75		0.75	0.15	0.18	11	4	50	0.84	0.88	0.93	0.98	1.10	5,760
IULS-2-0.2xL1.0		1.0	0.15	0.18	11	4	50	1.10	1.16	1.22	1.28	1.44	5,920
IULS-2-0.3xL1.0	0.3	1.0	0.25	0.27	11	4	50	1.13	1.18	1.24	1.31	1.47	8,800
IULS-2-0.3xL1.5		1.5	0.25	0.27	11	4	50	1.65	1.73	1.82	1.92	2.16	5,040
IULS-2-0.3xL2.0		2.0	0.25	0.27	11	4	50	2.17	2.28	2.40	2.53	2.84	5,040
IULS-2-0.3xL2.5		2.5	0.25	0.27	11	4	50	2.70	2.83	2.98	3.14	3.53	6,240
IULS-2-0.3xL3.0		3.0	0.25	0.27	11	4	50	3.22	3.38	3.56	3.75	4.21	6,480
IULS-2-0.4xL1.0	0.4	1.0	0.3	0.37	11	4	50	1.13	1.18	1.24	1.31	1.47	6,480
IULS-2-0.4xL1.5		1.5	0.3	0.37	11	4	50	1.65	1.73	1.82	1.92	2.16	3,680
IULS-2-0.4xL2.0		2.0	0.3	0.37	11	4	50	2.17	2.28	2.40	2.53	2.84	3,680
IULS-2-0.4xL2.5		2.5	0.3	0.37	11	4	50	2.70	2.83	2.98	3.14	3.53	3,680
IULS-2-0.4xL3.0		3.0	0.3	0.37	11	4	50	3.22	3.38	3.56	3.75	4.21	3,680
IULS-2-0.5xL1.0	0.5	1.0	0.4	0.47	11	4	50	1.13	1.18	1.24	1.31	1.47	2,640
IULS-2-0.5xL1.5		1.5	0.4	0.47	11	4	50	1.65	1.73	1.82	1.92	2.16	2,640
IULS-2-0.5xL2.0		2.0	0.4	0.47	11	4	50	2.17	2.28	2.40	2.53	2.84	2,640
IULS-2-0.5xL2.5		2.5	0.4	0.47	11	4	50	2.70	2.83	2.98	3.14	3.53	2,640
IULS-2-0.5xL3.0		3.0	0.4	0.47	11	4	50	3.22	3.38	3.56	3.75	4.21	2,640
IULS-2-0.5xL3.5		3.5	0.4	0.47	11	4	50	3.75	3.93	4.13	4.36	4.90	2,640
IULS-2-0.5xL4.0		4.0	0.4	0.47	11	4	50	4.27	4.48	4.71	4.97	5.58	2,640



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULS-2-0.6xL1.5	0.6	1.5	0.5	0.57	11	4	50	1.65	1.73	1.82	1.92	2.16	2,800
IULS-2-0.6xL2.0		2.0	0.5	0.57	11	4	50	2.17	2.28	2.40	2.53	2.84	2,800
IULS-2-0.6xL3.0		3.0	0.5	0.57	11	4	50	3.22	3.38	3.56	3.75	4.21	2,800
IULS-2-0.6xL4.0		4.0	0.5	0.57	11	4	50	4.27	4.48	4.71	4.97	5.58	2,800
IULS-2-0.6xL5.0		5.0	0.5	0.57	11	4	50	5.32	5.58	5.87	6.19	6.95	2,800
IULS-2-0.6xL6.0		6.0	0.5	0.57	11	4	50	6.36	6.68	7.02	7.41	8.32	2,800
IULS-2-0.7xL2.0	0.7	2.0	0.55	0.67	11	4	50	2.17	2.28	2.40	2.53	2.84	3,200
IULS-2-0.7xL4.0		4.0	0.55	0.67	11	4	50	4.27	4.48	4.71	4.97	5.58	3,200
IULS-2-0.7xL6.0		6.0	0.55	0.67	11	4	50	6.36	6.68	7.02	7.41	8.32	3,200
IULS-2-0.8xL3.0	0.8	3.0	0.65	0.77	11	4	50	3.22	3.38	3.56	3.75	4.21	3,120
IULS-2-0.8xL4.0		4.0	0.65	0.77	11	4	50	4.27	4.48	4.71	4.97	5.58	3,120
IULS-2-0.8xL5.0		5.0	0.65	0.77	11	4	50	5.32	5.58	5.87	6.19	6.95	3,120
IULS-2-0.8xL6.0		6.0	0.65	0.77	11	4	50	6.36	6.68	7.02	7.41	8.32	3,120
IULS-2-0.8xL8.0		8.0	0.65	0.77	11	4	50	8.46	8.87	9.33	9.85	11.06	3,120
IULS-2-1.0xL2.0	1.0	2.0	0.8	0.95	11	4	50	2.23	2.34	2.46	2.59	2.91	2,800
IULS-2-1.0xL3.0		3.0	0.8	0.95	11	4	50	3.28	3.44	3.62	3.81	4.28	2,800
IULS-2-1.0xL4.0		4.0	0.8	0.95	11	4	50	4.32	4.54	4.77	5.03	5.65	2,800
IULS-2-1.0xL5.0		5.0	0.8	0.95	11	4	50	5.37	5.63	5.93	6.25	7.02	2,800
IULS-2-1.0xL6.0		6.0	0.8	0.95	11	4	50	6.42	6.73	7.08	7.47	8.39	2,800
IULS-2-1.0xL7.0		7.0	0.8	0.95	11	4	50	7.46	7.83	8.24	8.69	9.76	2,800
IULS-2-1.0xL8.0		8.0	0.8	0.95	11	4	50	8.51	8.93	9.39	9.91	11.13	2,800
IULS-2-1.0xL9.0		9.0	0.8	0.95	11	4	50	9.56	10.03	10.55	11.13	12.50	2,800
IULS-2-1.0xL10.0		10.0	0.8	0.95	11	4	50	10.60	11.13	11.71	12.35	13.87	2,800
IULS-2-1.0xL12.0		12.0	0.8	0.95	11	4	50	12.70	13.33	14.02	14.78	16.61	2,800
IULS-2-1.2xL6.0	1.2	6.0	1.0	1.15	11	4	50	6.42	6.73	7.08	7.47	8.39	2,960
IULS-2-1.2xL8.0		8.0	1.0	1.15	11	4	50	8.51	8.93	9.39	9.91	11.13	2,960
IULS-2-1.2xL10.0		10.0	1.0	1.15	11	4	50	10.60	11.13	11.71	12.35	13.87	2,960
IULS-2-1.2xL12.0		12.0	1.0	1.15	11	4	50	12.70	13.33	14.02	14.78	16.61	2,960
IULS-2-1.2xL16.0		16.0	1.0	1.15	11	4	50	16.89	17.72	18.64	19.66	22.08	4,720
IULS-2-1.4xL6.0	1.4	6.0	1.1	1.35	11	4	50	6.42	6.73	7.08	7.47	8.39	3,040
IULS-2-1.4xL12.0		12.0	1.1	1.35	11	4	50	12.70	13.33	14.02	14.78	16.61	3,040
IULS-2-1.5xL4.0	1.5	4.0	1.2	1.45	11	4	50	4.32	4.54	4.77	5.03	5.65	2,960
IULS-2-1.5xL6.0		6.0	1.2	1.45	11	4	50	6.42	6.73	7.08	7.47	8.39	2,960
IULS-2-1.5xL8.0		8.0	1.2	1.45	11	4	50	8.51	8.93	9.39	9.91	11.13	2,960
IULS-2-1.5xL10.0		10.0	1.2	1.45	11	4	50	10.60	11.13	11.71	12.35	13.87	2,960
IULS-2-1.5xL12.0		12.0	1.2	1.45	11	4	50	12.70	13.33	14.02	14.78	16.61	2,960
IULS-2-1.5xL14.0		14.0	1.2	1.45	11	4	50	14.79	15.52	16.33	17.22	19.34	3,040
IULS-2-1.5xL16.0		16.0	1.2	1.45	11	4	50	16.89	17.72	18.64	19.66	22.08	3,040
IULS-2-1.6xL6.0	1.6	6.0	1.3	1.55	11	4	50	6.42	6.73	7.08	7.47	8.39	3,040
IULS-2-1.6xL8.0		8.0	1.3	1.55	11	4	50	8.51	8.93	9.39	9.91	11.13	3,040
IULS-2-1.8xL6.0	1.8	6.0	1.4	1.75	11	4	50	6.42	6.73	7.08	7.47	8.39	3,040
IULS-2-1.8xL8.0		8.0	1.4	1.75	11	4	50	8.51	8.93	9.39	9.91	11.13	3,040
IULS-2-1.8xL10.0		10.0	1.4	1.75	11	4	50	10.60	11.13	11.71	12.35	13.87	3,040
IULS-2-1.8xL12.0		12.0	1.4	1.75	11	4	50	12.70	13.33	14.02	14.78	16.61	3,040
IULS-2-1.8xL14.0		14.0	1.4	1.75	11	4	50	14.79	15.52	16.33	17.22	19.34	3,040



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULS-2-1.8xL16.0	1.8	16.0	1.4	1.75	11	4	50	16.89	17.72	18.64	19.66	FREE	3,040
IULS-2-2.0xL4.0	2.0	4.0	1.6	1.94	11	4	50	4.35	4.56	4.80	5.06	5.69	2,960
IULS-2-2.0xL6.0		6.0	1.6	1.94	11	4	50	6.44	6.76	7.11	7.50	8.43	2,960
IULS-2-2.0xL8.0		8.0	1.6	1.94	11	4	50	8.54	8.96	9.42	9.94	11.16	2,960
IULS-2-2.0xL10.0		10.0	1.6	1.94	11	4	50	10.63	11.16	11.74	12.38	13.90	2,960
IULS-2-2.0xL12.0		12.0	1.6	1.94	11	4	50	12.73	13.35	14.05	14.82	16.64	2,960
IULS-2-2.0xL14.0		14.0	1.6	1.94	11	4	50	14.82	15.55	16.36	17.25	FREE	2,960
IULS-2-2.0xL16.0		16.0	1.6	1.94	11	4	50	16.91	17.75	18.67	19.69	FREE	2,960
IULS-2-2.0xL18.0		18.0	1.6	1.94	11	4	50	19.01	19.95	20.98	22.13	FREE	2,960
IULS-2-2.0xL20.0		20.0	1.6	1.94	11	4	60	21.10	22.14	23.29	24.57	FREE	2,960
IULS-2-2.5xL8.0	2.5	8.0	2.0	2.44	11	4	50	8.54	8.96	9.42	9.94	11.16	3,120
IULS-2-2.5xL12.0		12.0	2.0	2.44	11	4	50	12.73	13.35	14.05	14.82	FREE	3,120
IULS-2-2.5xL16.0		16.0	2.0	2.44	11	4	50	16.91	17.75	18.67	19.69	FREE	3,120
IULS-2-2.5xL20.0		20.0	2.0	2.44	11	4	50	21.10	22.14	23.29	FREE	FREE	3,120
IULS-2-3.0xL8.0	3.0	8.0	2.5	2.85	11	4	50	8.78	9.21	9.69	10.22	FREE	4,000
IULS-2-3.0xL12.0		12.0	2.5	2.85	11	4	50	12.97	13.61	14.31	FREE	FREE	4,000
IULS-2-3.0xL16.0		16.0	2.5	2.85	11	4	50	17.16	18.00	18.94	FREE	FREE	4,000
IULS-2-3.0xL20.0		20.0	2.5	2.85	11	4	50	21.34	22.40	FREE	FREE	FREE	4,000
IULS-2-3.0xL25.0		25.0	2.5	2.85	11	4	60	26.58	27.89	FREE	FREE	FREE	4,000
IULS-2-3.0xL30.0		30.0	2.5	2.85	11	4	60	31.81	FREE	FREE	FREE	FREE	4,800
IULS-2-4.0xL10.0	4.0	10.0	3.2	3.8	11	6	50	11.01	11.55	12.15	12.82	14.39	4,180
IULS-2-4.0xL15.0		15.0	3.2	3.8	11	6	50	16.24	17.05	17.93	18.91	FREE	4,180
IULS-2-4.0xL20.0		20.0	3.2	3.8	11	6	60	21.48	22.54	23.71	25.01	FREE	4,180
IULS-2-5.0xL15.0	5.0	15.0	4.0	4.8	11	6	50	16.24	17.05	17.93	FREE	FREE	5,260
IULS-2-5.0xL20.0		20.0	4.0	4.8	11	6	50	21.48	22.54	FREE	FREE	FREE	5,490
IULS-2-6.0xL15.0	6.0	15.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	5,260
IULS-2-6.0xL20.0		20.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	5,260
IULS-2-6.0xL30.0		30.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	5,490

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IULS-2
Model number:IULS-2

롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.1	0.3	50,000	26	0.005	0.1	50,000	23	0.004	0.1	50,000	20	0.004	0.1	50,000	20	0.003	0.1
	0.5	50,000	14	0.004	0.1	50,000	12	0.003	0.1	50,000	10	0.003	0.1	50,000	10	0.002	0.1
0.15	0.3	50,000	59	0.007	0.15	50,000	51	0.006	0.15	50,000	45	0.005	0.15	42,400	38	0.005	0.15
	0.5	50,000	40	0.005	0.15	50,000	34	0.005	0.15	50,000	30	0.004	0.15	38,200	23	0.004	0.15
0.2	0.5	50,000	79	0.009	0.2	50,000	68	0.008	0.2	50,000	60	0.007	0.2	31,800	38	0.006	0.2
	0.75	50,000	53	0.007	0.2	50,000	46	0.006	0.2	50,000	40	0.006	0.2	28,700	23	0.005	0.2
	1.0	50,000	28	0.007	0.2	50,000	24	0.006	0.2	50,000	21	0.006	0.2	28,700	12	0.005	0.2
0.3	1.0	50,000	79	0.011	0.3	47,800	65	0.010	0.3	33,400	40	0.008	0.3	19,100	23	0.007	0.3
	1.5	50,000	42	0.011	0.3	47,800	34	0.010	0.3	33,400	21	0.008	0.3	19,100	12	0.007	0.3
	2.0	50,000	32	0.008	0.3	42,400	24	0.007	0.3	29,700	15	0.006	0.3	17,000	8	0.005	0.3
	2.5	50,000	25	0.005	0.3	38,200	17	0.005	0.3	26,700	10	0.004	0.3	15,300	6	0.004	0.3
	3.0	47,500	19	0.005	0.3	34,000	11	0.005	0.3	23,800	7	0.004	0.3	13,600	4	0.004	0.3
0.4	1.0	50,000	158	0.018	0.4	39,800	108	0.016	0.4	27,900	66	0.014	0.4	15,900	38	0.012	0.4
	1.5	50,000	106	0.014	0.4	35,800	65	0.013	0.4	25,100	40	0.011	0.4	14,300	23	0.010	0.4
	2.0	50,000	56	0.014	0.4	35,800	34	0.013	0.4	25,100	21	0.011	0.4	14,300	12	0.010	0.4
	2.5	44,600	41	0.011	0.4	31,800	25	0.010	0.4	22,300	15	0.008	0.4	12,700	9	0.007	0.4
	3.0	40,100	31	0.011	0.4	28,700	19	0.010	0.4	20,100	11	0.008	0.4	11,500	7	0.007	0.4
0.5	1.0	44,600	176	0.023	0.5	31,800	108	0.02	0.5	22,300	66	0.018	0.5	12,700	38	0.015	0.5
	1.5	44,600	118	0.023	0.5	31,800	73	0.02	0.5	22,300	44	0.018	0.5	12,700	25	0.015	0.5
	2.0	40,100	67	0.018	0.5	28,700	41	0.016	0.5	20,100	25	0.014	0.5	11,500	14	0.012	0.5
	2.5	40,100	56	0.018	0.5	28,700	34	0.016	0.5	20,100	21	0.014	0.5	11,500	12	0.012	0.5
	3.0	35,700	43	0.014	0.5	25,500	26	0.012	0.5	17,800	16	0.011	0.5	10,200	9	0.009	0.5
	3.5	35,700	37	0.014	0.5	25,500	23	0.012	0.5	17,800	14	0.011	0.5	10,200	8	0.009	0.5
	4.0	32,100	28	0.014	0.5	22,900	17	0.012	0.5	16,000	11	0.011	0.5	9,170	6	0.009	0.5
0.6	1.5	37,100	176	0.027	0.6	26,500	108	0.024	0.6	18,600	66	0.021	0.6	10,600	38	0.018	0.6
	2.0	33,400	106	0.022	0.6	23,900	65	0.019	0.6	16,700	40	0.017	0.6	9,550	23	0.014	0.6
	3.0	33,400	56	0.022	0.6	23,900	34	0.019	0.6	16,700	21	0.017	0.6	9,550	12	0.014	0.6
	4.0	29,700	39	0.016	0.6	21,200	24	0.014	0.6	14,900	14	0.013	0.6	8,490	8	0.011	0.6
	6.0	23,800	19	0.011	0.6	17,000	11	0.010	0.6	11,900	7	0.008	0.6	6,790	4	0.007	0.6
0.7	2.0	31,800	176	0.032	0.7	22,700	108	0.028	0.7	15,900	66	0.025	0.7	9,090	38	0.021	0.7
	4.0	25,500	45	0.019	0.7	18,200	27	0.017	0.7	12,700	17	0.015	0.7	7,280	10	0.013	0.7
	6.0	22,900	26	0.013	0.7	16,400	16	0.011	0.7	11,500	10	0.010	0.7	6,550	6	0.008	0.7
0.8	3.0	25,100	106	0.029	0.8	17,900	65	0.026	0.8	12,500	40	0.022	0.8	7,160	23	0.019	0.8
	4.0	25,100	56	0.029	0.8	17,900	34	0.026	0.8	12,500	21	0.022	0.8	7,160	12	0.019	0.8
	5.0	22,300	41	0.022	0.8	15,900	25	0.019	0.8	11,100	15	0.017	0.8	6,370	9	0.014	0.8
	6.0	20,100	31	0.022	0.8	14,300	19	0.019	0.8	10,000	12	0.017	0.8	5,730	7	0.014	0.8
	8.0	17,800	19	0.014	0.8	12,700	11	0.019	0.8	8,900	7	0.011	0.8	5,090	4	0.010	0.8
1.0	2.0	22,300	176	0.045	1	15,900	108	0.04	1	11,100	66	0.035	1	6,370	38	0.03	1
	3.0	22,300	118	0.045	1	15,900	73	0.04	1	11,100	44	0.035	1	6,370	25	0.03	1
	4.0	20,100	67	0.036	1	14,300	41	0.032	1	10,000	25	0.028	1	5,730	14	0.024	1
	5.0	20,100	56	0.036	1	14,300	34	0.032	1	10,000	21	0.028	1	5,730	12	0.024	1
	6.0	17,800	43	0.027	1	12,700	26	0.024	1	8,910	16	0.021	1	5,090	9	0.018	1

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 , ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IULS-2
Model number:IULS-2

롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	7.0	17,800	37	0.027	1	12,700	23	0.024	1	8,910	14	0.021	1	5,090	8	0.018	1
	8.0	16,000	28	0.027	1	11,500	17	0.024	1	8,020	11	0.021	1	4,580	6	0.018	1
	9.0	16,000	24	0.018	1	11,500	15	0.016	1	8,020	9	0.014	1	4,580	5	0.012	1
	10.0	14,300	19	0.018	1	10,200	11	0.016	1	7,130	7	0.014	1	4,070	4	0.012	1
	12.0	14,300	14	0.014	1	10,200	8	0.012	1	7,130	5	0.011	1	4,070	3	0.009	1
1.2	6.0	16,700	56	0.043	1.2	11,900	34	0.019	1.2	8,360	21	0.034	1.2	4,770	12	0.029	1.2
	8.0	14,900	39	0.032	1.2	10,600	24	0.019	1.2	7,430	15	0.025	1.2	4,240	8	0.022	1.2
	10.0	13,400	27	0.022	1.2	9,550	17	0.019	1.2	6,680	10	0.017	1.2	3,820	6	0.014	1.2
	12.0	11,900	19	0.022	1.2	8,490	11	0.019	1.2	5,940	7	0.017	1.2	3,400	4	0.014	1.2
	16.0	11,900	11	0.011	1.2	8,490	7	0.019	1.2	5,940	4	0.008	1.2	3,400	2	0.007	1.2
1.4	6.0	14,300	67	0.050	1.4	10,200	41	0.019	1.4	7,160	25	0.039	1.4	4,090	14	0.034	1.4
	12.0	11,500	26	0.025	1.4	8,190	16	0.019	1.4	5,730	10	0.020	1.4	3,270	6	0.017	1.4
1.5	4	14,900	176	0.068	1.5	10,600	108	0.06	1.5	7,430	66	0.053	1.5	4,240	38	0.045	1.5
	6	13,400	67	0.054	1.5	9,550	41	0.048	1.5	6,680	25	0.042	1.5	3,820	14	0.036	1.5
	8	11,900	47	0.041	1.5	8,490	29	0.036	1.5	5,940	18	0.032	1.5	3,400	10	0.027	1.5
	10	11,900	39	0.041	1.5	8,490	24	0.036	1.5	5,940	14	0.032	1.5	3,400	8	0.027	1.5
	12	10,700	28	0.041	1.5	7,640	17	0.036	1.5	5,350	11	0.032	1.5	3,060	6	0.027	1.5
	14	9,500	21	0.027	1.5	6,790	13	0.024	1.5	4,750	8	0.021	1.5	2,720	4	0.018	1.5
	16	9,500	17	0.020	1.5	6,790	10	0.018	1.5	4,750	6	0.016	1.5	2,720	4	0.014	1.5
1.6	6	12,500	106	0.058	1.6	8,950	65	0.051	1.6	6,270	40	0.045	1.6	3,580	23	0.038	1.6
	8	12,500	56	0.058	1.6	8,950	34	0.051	1.6	6,270	21	0.045	1.6	3,580	12	0.038	1.6
1.8	6	11,100	106	0.065	1.8	7,960	65	0.058	1.8	5,570	40	0.050	1.8	3,180	23	0.043	1.8
	8	11,100	67	0.065	1.8	7,960	41	0.058	1.8	5,570	25	0.050	1.8	3,180	14	0.043	1.8
	10	9,900	46	0.049	1.8	7,070	28	0.043	1.8	4,950	17	0.038	1.8	2,830	10	0.032	1.8
	12	9,900	39	0.049	1.8	7,070	24	0.043	1.8	4,950	14	0.038	1.8	2,830	8	0.032	1.8
	14	8,910	29	0.049	1.8	6,370	18	0.043	1.8	4,460	11	0.038	1.8	2,550	6	0.032	1.8
	16	8,910	25	0.032	1.8	6,370	15	0.029	1.8	4,460	9	0.025	1.8	2,550	5	0.022	1.8
2	4	11,100	176	0.09	2	7,960	108	0.08	2	5,570	66	0.07	2	3,180	38	0.06	2
	6	11,100	118	0.09	2	7,960	73	0.08	2	5,570	44	0.07	2	3,180	25	0.06	2
	8	10,030	67	0.072	2	7,160	41	0.064	2	5,010	25	0.056	2	2,860	14	0.048	2
	10	10,030	56	0.072	2	7,160	34	0.064	2	5,010	21	0.056	2	2,860	12	0.048	2
	12	8,910	43	0.054	2	6,370	26	0.048	2	4,460	16	0.042	2	2,550	9	0.036	2
	14	8,910	37	0.054	2	6,370	23	0.048	2	4,460	14	0.042	2	2,550	8	0.036	2
	16	8,020	28	0.054	2	5,730	17	0.048	2	4,010	11	0.042	2	2,290	6	0.036	2
	18	8,020	24	0.036	2	5,730	15	0.032	2	4,010	9	0.028	2	2,290	5	0.024	2
	20	7,130	19	0.036	2	5,090	11	0.032	2	3,570	7	0.028	2	2,040	4	0.024	2
2.5	8	8,020	106	0.09	2.5	5,730	65	0.08	2.5	4,010	40	0.07	2.5	2,290	23	0.06	2.5
	12	8,020	67	0.09	2.5	5,730	41	0.08	2.5	4,010	25	0.07	2.5	2,290	14	0.06	2.5
	16	7,130	40	0.068	2.5	5,090	25	0.06	2.5	3,570	15	0.053	2.5	2,040	9	0.045	2.5
	20	6,420	28	0.068	2.5	4,580	17	0.06	2.5	3,210	11	0.053	2.5	1,830	6	0.045	2.5
3	8	7,430	176	0.135	3	5,310	108	0.12	3	3,710	66	0.105	3	2,120	38	0.09	3
	12	6,680	67	0.108	3	4,770	41	0.096	3	3,340	25	0.084	3	1,910	14	0.072	3

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●오일미스트쿨런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
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롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
3	16	5,940	47	0.081	3	4,240	29	0.072	3	2,970	18	0.063	3	1,700	10	0.054	3
	20	5,940	39	0.081	3	4,240	24	0.072	3	2,970	14	0.063	3	1,700	8	0.054	3
	25	5,350	27	0.054	3	3,820	17	0.048	3	2,670	10	0.042	3	1,530	6	0.036	3
	30	4,750	19	0.054	3	3,400	11	0.048	3	2,380	7	0.042	3	1,360	4	0.036	3
4	10	5,570	176	0.18	4	3,980	108	0.16	4	2,790	66	0.14	4	1,590	38	0.12	4
	15	5,010	106	0.144	4	3,580	65	0.128	4	2,510	40	0.112	4	1,430	23	0.096	4
	20	5,010	56	0.144	4	3,580	34	0.128	4	2,510	21	0.112	4	1,430	12	0.096	4
5	15	4,460	118	0.225	5	3,180	72	0.2	5	2,230	44	0.175	5	1,270	25	0.15	5
	20	4,010	67	0.18	5	2,860	41	0.16	5	2,010	25	0.14	5	1,150	14	0.12	5
6	15	3,710	176	0.27	6	2,650	108	0.24	6	1,860	66	0.21	6	1,060	38	0.18	6
	20	3,340	106	0.216	6	2,390	65	0.192	6	1,670	40	0.168	6	950	23	0.144	6
	30	3,340	56	0.216	6	2,390	34	0.192	6	1,670	21	0.168	6	950	12	0.144	6

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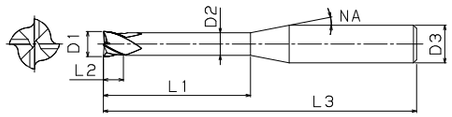
초경 롱 넥 스퀘어 엔드밀
Carbide Long Neck Square End Mill

ion U | super MG | 날 수 4 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IULS-4 Model number:IULS-4

날경 Diameter	날경허용공차 Diameter Tolerance
~φ6	-0.004/-0.007
φ8~φ12	-0.004/-0.014
φ14~φ20	-0.004/-0.020



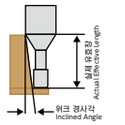


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material												
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

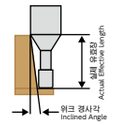
최적◎Recommended 적응○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULS-4-1.0xL4.0	1.0	4.0	0.8	0.95	11	4	50	4.32	4.54	4.77	5.03	5.65	3,960
IULS-4-1.0xL6.0		6.0	0.8	0.95	11	4	50	6.42	6.73	7.08	7.47	8.39	3,960
IULS-4-1.0xL8.0		8.0	0.8	0.95	11	4	50	8.51	8.93	9.39	9.91	11.13	3,960
IULS-4-1.0xL10.0		10.0	0.8	0.95	11	4	50	10.60	11.13	11.71	12.35	13.87	3,960
IULS-4-1.2xL6.0	1.2	6.0	1.0	1.15	11	4	50	6.42	6.73	7.08	7.47	8.39	3,960
IULS-4-1.2xL8.0		8.0	1.0	1.15	11	4	50	8.51	8.93	9.39	9.91	11.13	3,960
IULS-4-1.2xL10.0		10.0	1.0	1.15	11	4	50	10.60	11.13	11.71	12.35	13.87	3,960
IULS-4-1.2xL12.0		12.0	1.0	1.15	11	4	50	12.70	13.33	14.02	14.78	16.61	3,960
IULS-4-1.5xL6.0	1.5	6.0	1.2	1.45	11	4	50	6.42	6.73	7.08	7.47	8.39	3,960
IULS-4-1.5xL8.0		8.0	1.2	1.45	11	4	50	8.51	8.93	9.39	9.91	11.13	3,960
IULS-4-1.5xL10.0		10.0	1.2	1.45	11	4	50	10.60	11.13	11.71	12.35	13.87	3,960
IULS-4-1.5xL12.0		12.0	1.2	1.45	11	4	50	12.70	13.33	14.02	14.78	16.61	3,960
IULS-4-1.5xL14.0		14.0	1.2	1.45	11	4	50	14.79	15.52	16.33	17.22	19.34	3,960
IULS-4-1.5xL16.0		16.0	1.2	1.45	11	4	50	16.89	17.72	18.64	19.66	22.08	3,960
IULS-4-1.8xL6.0	1.8	6.0	1.4	1.75	11	4	50	6.42	6.73	7.08	7.47	8.39	3,960
IULS-4-1.8xL8.0		8.0	1.4	1.75	11	4	50	8.51	8.93	9.39	9.91	11.13	3,960
IULS-4-1.8xL10.0		10.0	1.4	1.75	11	4	50	10.60	11.13	11.71	12.35	13.87	3,960
IULS-4-1.8xL12.0		12.0	1.4	1.75	11	4	50	12.70	13.33	14.02	14.78	16.61	3,960
IULS-4-1.8xL14.0		14.0	1.4	1.75	11	4	50	14.79	15.52	16.33	17.22	19.34	3,960
IULS-4-1.8xL16.0		16.0	1.4	1.75	11	4	50	16.89	17.72	18.64	19.66	FREE	3,960
IULS-4-2.0xL6.0	2.0	6.0	1.6	1.94	11	4	50	6.44	6.76	7.11	7.50	8.43	3,960
IULS-4-2.0xL8.0		8.0	1.6	1.94	11	4	50	8.54	8.96	9.42	9.94	11.16	3,960
IULS-4-2.0xL10.0		10.0	1.6	1.94	11	4	50	10.63	11.16	11.74	12.38	13.90	3,960
IULS-4-2.0xL12.0		12.0	1.6	1.94	11	4	50	12.73	13.35	14.05	14.82	16.64	3,960



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULS-4-2.0xL14.0	2.0	14.0	1.6	1.94	11	4	50	14.82	15.55	16.36	17.25	FREE	3,960
IULS-4-2.0xL16.0		16.0	1.6	1.94	11	4	50	16.91	17.75	18.67	19.69	FREE	3,960
IULS-4-2.0xL18.0		18.0	1.6	1.94	11	4	50	19.01	19.95	20.98	22.13	FREE	3,960
IULS-4-2.0xL20.0		20.0	1.6	1.94	11	4	60	21.10	22.14	23.29	24.57	FREE	3,960
IULS-4-2.5xL8.0	2.5	8.0	2.0	2.44	11	4	50	8.54	8.96	9.42	9.94	11.16	3,960
IULS-4-2.5xL12.0		12.0	2.0	2.44	11	4	50	12.73	13.35	14.05	14.82	FREE	3,960
IULS-4-2.5xL16.0		16.0	2.0	2.44	11	4	50	16.91	17.75	18.67	19.69	FREE	3,960
IULS-4-2.5xL20.0		20.0	2.0	2.44	11	4	50	21.10	22.14	23.29	FREE	FREE	3,960
IULS-4-3.0xL8.0	3.0	8.0	2.5	2.85	11	4	50	8.78	9.21	9.69	10.22	FREE	5,600
IULS-4-3.0xL12.0		12.0	2.5	2.85	11	4	50	12.97	13.61	14.31	FREE	FREE	5,600
IULS-4-3.0xL16.0		16.0	2.5	2.85	11	4	50	17.16	18.00	18.94	FREE	FREE	5,600
IULS-4-3.0xL20.0		20.0	2.5	2.85	11	4	50	21.34	22.40	FREE	FREE	FREE	5,600
IULS-4-3.0xL25.0		25.0	2.5	2.85	11	4	60	26.58	27.89	FREE	FREE	FREE	5,920
IULS-4-3.0xL30.0		30.0	2.5	2.85	11	4	60	31.81	FREE	FREE	FREE	FREE	6,400
IULS-4-4.0xL12.0	4.0	12.0	3.2	3.8	11	6	50	13.10	13.75	14.46	15.26	17.13	5,840
IULS-4-4.0xL16.0		16.0	3.2	3.8	11	6	50	17.29	18.14	19.09	20.13	FREE	5,840
IULS-4-4.0xL20.0		20.0	3.2	3.8	11	6	60	21.48	22.54	23.71	25.01	FREE	5,840
IULS-4-4.0xL25.0		25.0	3.2	3.8	11	6	60	26.71	28.03	29.49	FREE	FREE	6,160
IULS-4-4.0xL30.0		30.0	3.2	3.8	11	6	70	31.95	33.52	35.27	FREE	FREE	6,800
IULS-4-4.0xL35.0		35.0	3.2	3.8	11	6	70	37.18	39.02	FREE	FREE	FREE	7,360
IULS-4-5.0xL16.0	5.0	16.0	4.0	4.8	11	6	50	17.29	18.14	19.09	FREE	FREE	7,360
IULS-4-5.0xL25.0		25.0	4.0	4.8	11	6	60	26.71	28.03	FREE	FREE	FREE	7,680
IULS-4-5.0xL35.0		35.0	4.0	4.8	11	6	70	37.18	FREE	FREE	FREE	FREE	8,000
IULS-4-6.0xL20.0	6.0	20.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	7,360
IULS-4-6.0xL30.0		30.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	7,680
IULS-4-6.0xL40.0		40.0	5.0	5.8	11	6	70	FREE	FREE	FREE	FREE	FREE	8,000
IULS-4-6.0xL50.0		50.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	11,200

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IULS-4
Model number:IULS-4

롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
1.0	4.0	20,100	67	0.032	1	14,300	41	0.028	1	10,000	25	0.024	1	5,730	14	0.02	1
	6.0	17,800	43	0.024	1	12,700	26	0.021	1	8,910	16	0.018	1	5,090	9	0.015	1
	8.0	16,000	28	0.024	1	11,500	17	0.021	1	8,020	11	0.018	1	4,580	6	0.015	1
	10.0	14,300	19	0.016	1	10,200	11	0.014	1	7,130	7	0.012	1	4,070	4	0.01	1
1.2	6.0	16,700	56	0.038	1.2	11,900	34	0.034	1.2	8,360	21	0.029	1.2	4,770	12	0.024	1.2
	8.0	14,900	39	0.029	1.2	10,600	24	0.025	1.2	7,430	15	0.022	1.2	4,240	8	0.018	1.2
	10.0	13,400	27	0.019	1.2	9,550	17	0.017	1.2	6,680	10	0.014	1.2	3,820	6	0.012	1.2
	12.0	11,900	19	0.019	1.2	8,490	11	0.017	1.2	5,940	7	0.014	1.2	3,400	4	0.012	1.2
1.5	6.0	13,400	67	0.048	1.5	9,550	41	0.042	1.5	6,680	25	0.036	1.5	3,820	14	0.03	1.5
	8.0	11,900	47	0.036	1.5	8,490	29	0.032	1.5	5,940	18	0.027	1.5	3,400	10	0.023	1.5
	10.0	11,900	39	0.036	1.5	8,490	24	0.032	1.5	5,940	14	0.027	1.5	3,400	8	0.023	1.5
	12.0	10,700	28	0.036	1.5	7,640	17	0.032	1.5	5,350	11	0.027	1.5	3,060	6	0.023	1.5
	14.0	9,510	21	0.024	1.5	6,790	13	0.021	1.5	4,750	8	0.018	1.5	2,720	4	0.015	1.5
	16.0	9,510	17	0.018	1.5	6,790	10	0.016	1.5	4,750	6	0.014	1.5	2,720	4	0.011	1.5
1.8	6.0	11,100	106	0.058	1.8	7,960	65	0.050	1.8	5,570	40	0.043	1.8	3,180	23	0.036	1.8
	8.0	11,100	67	0.058	1.8	7,960	41	0.050	1.8	5,570	25	0.043	1.8	3,180	14	0.036	1.8
	10.0	9,900	46	0.043	1.8	7,070	28	0.038	1.8	4,950	17	0.032	1.8	2,830	10	0.027	1.8
	12.0	9,900	39	0.043	1.8	7,070	24	0.038	1.8	4,950	14	0.032	1.8	2,830	8	0.027	1.8
	14.0	8,910	29	0.043	1.8	6,370	18	0.038	1.8	4,460	11	0.032	1.8	2,550	6	0.027	1.8
	16.0	8,910	25	0.029	1.8	6,370	15	0.025	1.8	4,460	9	0.022	1.8	2,550	5	0.018	1.8
2.0	6.0	11,100	118	0.08	2	7,960	73	0.07	2	5,570	44	0.06	2	3,180	25	0.05	2
	8.0	10,000	67	0.064	2	7,160	41	0.056	2	5,010	25	0.048	2	2,860	14	0.04	2
	10.0	10,000	56	0.064	2	7,160	34	0.056	2	5,010	21	0.048	2	2,860	12	0.04	2
	12.0	8,910	43	0.048	2	6,370	26	0.042	2	4,460	16	0.036	2	2,550	9	0.03	2
	14.0	8,910	37	0.048	2	6,370	23	0.042	2	4,460	14	0.036	2	2,550	8	0.03	2
	16.0	8,020	28	0.048	2	5,730	17	0.042	2	4,010	11	0.036	2	2,290	6	0.03	2
	18.0	8,020	24	0.032	2	5,730	15	0.028	2	4,010	9	0.024	2	2,290	5	0.02	2
	20.0	7,130	19	0.032	2	5,090	11	0.028	2	3,570	7	0.024	2	2,040	4	0.02	2
2.5	8.0	8,020	106	0.08	2.5	5,730	65	0.07	2.5	4,010	40	0.06	2.5	2,290	23	0.05	2.5
	12.0	8,020	67	0.08	2.5	5,730	41	0.07	2.5	4,010	25	0.06	2.5	2,290	14	0.05	2.5
	16.0	7,130	40	0.06	2.5	5,090	25	0.053	2.5	3,570	15	0.045	2.5	2,040	9	0.038	2.5
	20.0	6,420	28	0.06	2.5	4,580	17	0.053	2.5	3,210	11	0.045	2.5	1,830	6	0.038	2.5
3	8.0	7,430	176	0.12	3	5,310	108	0.105	3	3,710	66	0.09	3	2,120	38	0.075	3
	12.0	6,680	67	0.096	3	4,770	41	0.084	3	3,340	25	0.072	3	1,910	14	0.06	3
	16.0	5,940	47	0.072	3	4,240	29	0.063	3	2,970	18	0.054	3	1,700	10	0.045	3
	20.0	5,940	39	0.072	3	4,240	24	0.063	3	2,970	14	0.054	3	1,700	8	0.045	3
	25.0	5,350	27	0.048	3	3,820	17	0.042	3	2,670	10	0.036	3	1,530	6	0.03	3
	30.0	4,750	19	0.048	3	3,400	11	0.042	3	2,380	7	0.036	3	1,360	4	0.03	3
4	12.0	5,570	118	0.16	4	3,980	73	0.14	4	2,790	44	0.12	4	1,590	25	0.1	4
	16.0	5,010	67	0.128	4	3,580	41	0.112	4	2,510	25	0.096	4	1,430	14	0.08	4
	20.0	5,010	56	0.128	4	3,580	34	0.112	4	2,510	21	0.096	4	1,430	12	0.08	4
	25.0	4,460	41	0.096	4	3,180	25	0.084	4	2,230	15	0.072	4	1,270	9	0.06	4

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

롱 넥 스퀘어 엔드밀 Long Neck Square End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
4	30.0	4,010	31	0.096	4	2,860	19	0.084	4	2,010	12	0.072	4	1,150	7	0.06	4
	35.0	4,010	25	0.064	4	2,860	15	0.056	4	2,010	10	0.048	4	1,150	5	0.04	4
5	16.0	4,010	106	0.16	5	2,860	65	0.14	5	2,010	40	0.12	5	1,150	23	0.1	5
	25.0	4,010	56	0.16	5	2,860	34	0.14	5	2,010	21	0.12	5	1,150	12	0.1	5
	35.0	3,570	37	0.12	5	2,550	23	0.105	5	1,780	14	0.09	5	1,020	8	0.075	5
6	20.0	3,340	106	0.192	6	2,390	65	0.168	6	1,670	40	0.144	6	950	23	0.12	6
	30.0	3,340	56	0.192	6	2,390	34	0.168	6	1,670	21	0.144	6	950	12	0.12	6
	40.0	2,970	39	0.144	6	2,120	24	0.126	6	1,490	15	0.108	6	850	8	0.09	6
	50.0	2,670	27	0.096	6	1,910	17	0.084	6	1,340	10	0.072	6	760	6	0.06	6

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●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
ion Depo A Series
ion Depo U Series 스퀘어 Square

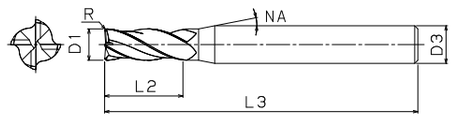
초경 래디우스 엔드밀 Carbide Radius End Mill

ion U | super MG | 날 수 4 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4

■형번:IUR-4 Model number:IUR-4



날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010



표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IUR-4-3.0xR0.2x6.0	3.0	0.2	6.0	11	4	50	10,000
IUR-4-3.0xR0.3x6.0		0.3	6.0	11	4	50	10,000
IUR-4-3.0xR0.5x6.0		0.5	6.0	11	4	50	10,000
IUR-4-4.0xR0.2x8.0	4.0	0.2	8.0	11	6	50	10,800
IUR-4-4.0xR0.3x8.0		0.3	8.0	11	6	50	10,800
IUR-4-4.0xR0.5x8.0		0.5	8.0	11	6	50	10,800
IUR-4-6.0xR0.2x12.0	6.0	0.2	12.0	—	6	60	12,400
IUR-4-6.0xR0.3x12.0		0.3	12.0	—	6	60	12,400
IUR-4-6.0xR0.5x12.0		0.5	12.0	—	6	60	12,400
IUR-4-6.0xR1.0x12.0		1.0	12.0	—	6	60	12,400
IUR-4-8.0xR0.3x16.0	8.0	0.3	16.0	—	8	70	17,200
IUR-4-8.0xR0.5x16.0		0.5	16.0	—	8	70	17,200
IUR-4-8.0xR1.0x16.0		1.0	16.0	—	8	70	17,200
IUR-4-10.0xR0.3x20.0	10.0	0.3	20.0	—	10	80	23,360
IUR-4-10.0xR0.5x20.0		0.5	20.0	—	10	80	23,360
IUR-4-10.0xR1.0x20.0		1.0	20.0	—	10	80	23,360
IUR-4-12.0xR0.5x24.0	12.0	0.5	24.0	—	12	110	28,160
IUR-4-12.0xR1.0x24.0		1.0	24.0	—	12	110	28,160
IUR-4-12.0xR2.0x24.0		2.0	24.0	—	12	110	28,160

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUR-4
Model number:IUR-4

래디우스 엔드밀 Radius End Mill

측 면 Side Milling

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
3.0	6.0	4,780	190	3	0.3	3,190	125	3	0.06	2,760	100	2.4	0.04
4.0	8.0	3,580	200	4	0.4	2,390	130	4	0.08	2,070	105	3.2	0.05
6.0	12.0	2,390	210	6	0.6	1,590	140	6	0.12	1,380	110	4.8	0.07
8.0	16.0	1,790	200	8	0.8	1,200	130	8	0.16	1,040	105	6.4	0.10
10.0	20.0	1,430	190	10	1.0	960	125	10	0.20	830	100	8.0	0.12
12.0	24.0	1,140	170	12	1.2	760	115	12	0.24	660	90	9.6	0.14

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●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
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ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUR-4
Model number:IUR-4

래디우스 엔드밀 Radius End Mill

홈 Slotting

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
3.0	6.0	4,780	190	0.4	3	3,190	140	0.2	3	2,760	110	0.09	3	2,660	95	0.08	3
4.0	8.0	3,580	200	0.6	4	2,390	150	0.3	4	2,070	115	0.12	4	1,990	100	0.10	4
6.0	12.0	2,390	210	1.2	6	1,590	155	0.6	6	1,380	120	0.18	6	1,330	105	0.15	6
8.0	16.0	1,790	200	1.6	8	1,200	150	0.8	8	1,040	115	0.24	8	1,000	100	0.20	8
10.0	20.0	1,430	190	2.0	10	960	140	1.0	10	830	110	0.30	10	800	95	0.25	10
12.0	24.0	1,140	170	2.4	12	760	130	1.2	12	660	100	0.36	12	630	85	0.30	12

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
ion Depo A Series
ion Depo U Series 래디우스 Radius

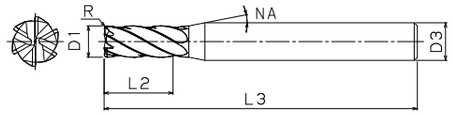
초경 래디우스 엔드밀 Carbide Radius End Mill

ion U | super MG | 날 수 6 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4

■형번:IUR-6 Model number:IUR-6



날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010



표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	날장 (L2) Length of Cut	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IUR-6-5.0xR0.2x10.0	5.0	0.2	10.0	11	6	50	11,600
IUR-6-5.0xR0.3x10.0		0.3	10.0	11	6	50	11,600
IUR-6-5.0xR0.5x10.0		0.5	10.0	11	6	50	11,600
IUR-6-5.0xR1.0x10.0		1.0	10.0	11	6	50	11,600
IUR-6-6.0xR0.2x12.0	6.0	0.2	12.0	—	6	60	12,400
IUR-6-6.0xR0.3x12.0		0.3	12.0	—	6	60	12,400
IUR-6-6.0xR0.5x12.0		0.5	12.0	—	6	60	12,400
IUR-6-6.0xR1.0x12.0		1.0	12.0	—	6	60	12,400
IUR-6-8.0xR0.3x16.0	8.0	0.3	16.0	—	8	70	17,200
IUR-6-8.0xR0.5x16.0		0.5	16.0	—	8	70	17,200
IUR-6-8.0xR1.0x16.0		1.0	16.0	—	8	70	17,200
IUR-6-8.0xR1.5x16.0		1.5	16.0	—	8	70	17,200
IUR-6-10.0xR0.3x20.0	10.0	0.3	20.0	—	10	80	23,360
IUR-6-10.0xR0.5x20.0		0.5	20.0	—	10	80	23,360
IUR-6-10.0xR1.0x20.0		1.0	20.0	—	10	80	23,360
IUR-6-10.0xR1.5x20.0		1.5	20.0	—	10	80	23,360
IUR-6-10.0xR2.0x20.0		2.0	20.0	—	10	80	23,360
IUR-6-12.0xR0.5x24.0	12.0	0.5	24.0	—	12	110	28,160
IUR-6-12.0xR1.0x24.0		1.0	24.0	—	12	110	28,160
IUR-6-12.0xR1.5x24.0		1.5	24.0	—	12	110	28,160
IUR-6-12.0xR2.0x24.0		2.0	24.0	—	12	110	28,160

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUR-6
Model number:IUR-6

래디우스 엔드밀 Radius End Mill

측 면 Side Milling

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
5.0	10.0	3,500	595	5	0.15	1,910	235	5	0.15	1,590	150	5	0.10
6.0	12.0	2,920	605	6	0.18	1,590	240	6	0.18	1,330	150	6	0.12
8.0	16.0	2,190	605	8	0.24	1,200	240	8	0.24	1,000	150	8	0.16
10.0	20.0	1,750	595	10	0.30	960	235	10	0.30	800	150	10	0.20
12.0	24.0	1,460	580	12	0.36	800	230	12	0.36	670	145	12	0.24

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트쿨런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUR-6
Model number:IUR-6

래디우스 엔드밀 Radius End Mill

홈 Slotting

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)			
날경 Dia.	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm	min^{-1}	mm/min	∂p mm	∂e mm
5.0	10.0	3,820	650	0.5	5.0	2,550	315	0.3	5.0	1,910	255	0.1	5.0	1,280	140	0.1	5.0
6.0	12.0	3,190	660	0.6	6.0	2,120	320	0.3	6.0	1,590	260	0.1	6.0	1,060	140	0.1	6.0
8.0	16.0	2,390	660	0.8	8.0	1,590	320	0.4	8.0	1,200	260	0.2	8.0	800	140	0.1	8.0
10.0	20.0	1,910	650	1.0	10.0	1,280	315	0.5	10.0	960	255	0.2	10.0	640	140	0.1	10.0
12.0	24.0	1,590	630	1.2	12.0	1,060	305	0.6	12.0	800	245	0.2	12.0	530	135	0.1	12.0

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 , ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
ion Depo A Series
ion Depo U Series 래디우스 Radius

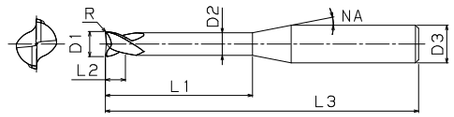
초경 롱 넥 래디우스 엔드밀
Carbide Long Neck Radius End Mill

ion U | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IULR-2 Model number:IULR-2



날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010

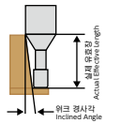


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material												
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

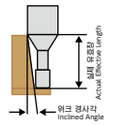
최적◎Recommended 적응○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULR-2-0.2xR0.02xL0.5	0.2	0.02	0.5	0.15	0.18	11	4	50	0.58	0.60	0.63	0.67	0.75	8,080
IULR-2-0.2xR0.02xL1.0		0.02	1.0	0.15	0.18	11	4	50	1.10	1.15	1.21	1.28	1.43	8,080
IULR-2-0.2xR0.05xL0.5		0.05	0.5	0.15	0.18	11	4	50	0.58	0.60	0.63	0.66	0.74	8,080
IULR-2-0.2xR0.05xL1.0		0.05	1.0	0.15	0.18	11	4	50	1.10	1.15	1.21	1.27	1.42	8,080
IULR-2-0.3xR0.02xL1.0	0.3	0.02	1.0	0.25	0.27	11	4	50	1.13	1.18	1.24	1.31	1.47	7,840
IULR-2-0.3xR0.02xL1.5		0.02	1.5	0.25	0.27	11	4	50	1.65	1.73	1.82	1.92	2.15	7,840
IULR-2-0.3xR0.02xL2.0		0.02	2.0	0.25	0.27	11	4	50	2.17	2.28	2.40	2.53	2.84	7,840
IULR-2-0.3xR0.02xL2.5		0.02	2.5	0.25	0.27	11	4	50	2.70	2.83	2.98	3.14	3.52	9,840
IULR-2-0.3xR0.02xL3.0		0.02	3.0	0.25	0.27	11	4	50	3.22	3.38	3.55	3.75	4.21	9,840
IULR-2-0.3xR0.05xL1.0		0.05	1.0	0.25	0.27	11	4	50	1.13	1.18	1.24	1.30	1.46	7,840
IULR-2-0.3xR0.05xL1.5		0.05	1.5	0.25	0.27	11	4	50	1.65	1.73	1.82	1.91	2.14	7,840
IULR-2-0.3xR0.05xL2.0		0.05	2.0	0.25	0.27	11	4	50	2.17	2.28	2.39	2.52	2.83	7,840
IULR-2-0.3xR0.05xL2.5		0.05	2.5	0.25	0.27	11	4	50	2.70	2.83	2.97	3.13	3.51	9,840
IULR-2-0.3xR0.05xL3.0		0.05	3.0	0.25	0.27	11	4	50	3.22	3.38	3.55	3.74	4.20	9,840
IULR-2-0.4xR0.02xL1.0	0.4	0.02	1.0	0.3	0.37	11	4	50	1.13	1.18	1.24	1.31	1.47	5,200
IULR-2-0.4xR0.02xL1.5		0.02	1.5	0.3	0.37	11	4	50	1.65	1.73	1.82	1.92	2.15	5,200
IULR-2-0.4xR0.02xL2.0		0.02	2.0	0.3	0.37	11	4	50	2.17	2.28	2.40	2.53	2.84	5,200
IULR-2-0.4xR0.02xL2.5		0.02	2.5	0.3	0.37	11	4	50	2.70	2.83	2.98	3.14	3.52	5,200
IULR-2-0.4xR0.02xL3.0		0.02	3.0	0.3	0.37	11	4	50	3.22	3.38	3.55	3.75	4.21	5,200
IULR-2-0.4xR0.05xL1.0		0.05	1.0	0.3	0.37	11	4	50	1.13	1.18	1.24	1.30	1.46	5,200
IULR-2-0.4xR0.05xL1.5		0.05	1.5	0.3	0.37	11	4	50	1.65	1.73	1.82	1.91	2.14	5,200
IULR-2-0.4xR0.05xL2.0		0.05	2.0	0.3	0.37	11	4	50	2.17	2.28	2.39	2.52	2.83	5,200
IULR-2-0.4xR0.05xL2.5		0.05	2.5	0.3	0.37	11	4	50	2.70	2.83	2.97	3.13	3.51	5,200
IULR-2-0.4xR0.05xL3.0		0.05	3.0	0.3	0.37	11	4	50	3.22	3.38	3.55	3.74	4.20	5,200



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULR-2-0.4xR0.1xL1.0	0.4	0.1	1.0	0.3	0.37	11	4	50	1.12	1.17	1.23	1.29	1.44	5,200
IULR-2-0.4xR0.1xL2.0		0.1	2.0	0.3	0.37	11	4	50	2.17	2.27	2.39	2.51	2.81	5,200
IULR-2-0.4xR0.1xL3.0		0.1	3.0	0.3	0.37	11	4	50	3.22	3.37	3.54	3.73	4.18	5,200
IULR-2-0.5xR0.02xL1.0	0.5	0.02	1.0	0.4	0.47	11	4	50	1.13	1.18	1.24	1.31	1.47	4,240
IULR-2-0.5xR0.02xL2.0		0.02	2.0	0.4	0.47	11	4	50	2.17	2.28	2.40	2.53	2.84	4,240
IULR-2-0.5xR0.02xL3.0		0.02	3.0	0.4	0.47	11	4	50	3.22	3.38	3.55	3.75	4.21	4,240
IULR-2-0.5xR0.02xL4.0		0.02	4.0	0.4	0.47	11	4	50	4.27	4.48	4.71	4.97	5.58	4,240
IULR-2-0.5xR0.05xL1.0		0.05	1.0	0.4	0.47	11	4	50	1.13	1.18	1.24	1.30	1.46	4,240
IULR-2-0.5xR0.05xL2.0		0.05	2.0	0.4	0.47	11	4	50	2.17	2.28	2.39	2.52	2.83	4,240
IULR-2-0.5xR0.05xL3.0		0.05	3.0	0.4	0.47	11	4	50	3.22	3.38	3.55	3.74	4.20	4,240
IULR-2-0.5xR0.05xL4.0		0.05	4.0	0.4	0.47	11	4	50	4.27	4.47	4.70	4.96	5.56	4,240
IULR-2-0.5xR0.1xL1.0		0.1	1.0	0.4	0.47	11	4	50	1.12	1.17	1.23	1.29	1.44	4,240
IULR-2-0.5xR0.1xL2.0		0.1	2.0	0.4	0.47	11	4	50	2.17	2.27	2.39	2.51	2.81	4,240
IULR-2-0.5xR0.1xL3.0		0.1	3.0	0.4	0.47	11	4	50	3.22	3.37	3.54	3.73	4.18	4,240
IULR-2-0.5xR0.1xL4.0		0.1	4.0	0.4	0.47	11	4	50	4.26	4.47	4.70	4.95	5.55	4,240
IULR-2-0.6xR0.02xL2.0	0.6	0.02	2.0	0.5	0.57	11	4	50	2.17	2.28	2.40	2.53	2.84	4,560
IULR-2-0.6xR0.02xL4.0		0.02	4.0	0.5	0.57	11	4	50	4.27	4.48	4.71	4.97	5.58	4,560
IULR-2-0.6xR0.02xL6.0		0.02	6.0	0.5	0.57	11	4	50	6.36	6.67	7.02	7.40	8.31	4,560
IULR-2-0.6xR0.05xL2.0		0.05	2.0	0.5	0.57	11	4	50	2.17	2.28	2.39	2.52	2.83	4,560
IULR-2-0.6xR0.05xL4.0		0.05	4.0	0.5	0.57	11	4	50	4.27	4.47	4.70	4.96	5.56	4,560
IULR-2-0.6xR0.05xL6.0		0.05	6.0	0.5	0.57	11	4	50	6.36	6.67	7.02	7.40	8.30	4,560
IULR-2-0.6xR0.1xL2.0		0.1	2.0	0.5	0.57	11	4	50	2.17	2.27	2.39	2.51	2.81	4,240
IULR-2-0.6xR0.1xL4.0		0.1	4.0	0.5	0.57	11	4	50	4.26	4.47	4.70	4.95	5.55	4,240
IULR-2-0.6xR0.1xL6.0		0.1	6.0	0.5	0.57	11	4	50	6.36	6.67	7.01	7.39	8.29	4,240
IULR-2-0.8xR0.02xL2.0	0.8	0.02	2.0	0.65	0.77	11	4	50	2.17	2.28	2.40	2.53	2.84	4,800
IULR-2-0.8xR0.02xL4.0		0.02	4.0	0.65	0.77	11	4	50	4.27	4.48	4.71	4.97	5.58	4,800
IULR-2-0.8xR0.02xL6.0		0.02	6.0	0.65	0.77	11	4	50	6.36	6.67	7.02	7.40	8.31	4,800
IULR-2-0.8xR0.02xL8.0		0.02	8.0	0.65	0.77	11	4	50	8.46	8.87	9.33	9.84	11.05	4,960
IULR-2-0.8xR0.05xL2.0		0.05	2.0	0.65	0.77	11	4	50	2.17	2.28	2.39	2.52	2.83	4,800
IULR-2-0.8xR0.05xL4.0		0.05	4.0	0.65	0.77	11	4	50	4.27	4.47	4.70	4.96	5.56	4,800
IULR-2-0.8xR0.05xL6.0		0.05	6.0	0.65	0.77	11	4	50	6.36	6.67	7.02	7.40	8.30	4,800
IULR-2-0.8xR0.05xL8.0		0.05	8.0	0.65	0.77	11	4	50	8.45	8.87	9.33	9.84	11.04	4,960
IULR-2-0.8xR0.1xL2.0		0.1	2.0	0.65	0.77	11	4	50	2.17	2.27	2.39	2.51	2.81	4,800
IULR-2-0.8xR0.1xL4.0		0.1	4.0	0.65	0.77	11	4	50	4.26	4.47	4.70	4.95	5.55	4,800
IULR-2-0.8xR0.1xL6.0		0.1	6.0	0.65	0.77	11	4	50	6.36	6.67	7.01	7.39	8.29	4,800
IULR-2-0.8xR0.1xL8.0		0.1	8.0	0.65	0.77	11	4	50	8.45	8.86	9.32	9.82	11.02	4,960
IULR-2-0.8xR0.2xL2.0		0.2	2.0	0.65	0.77	11	4	50	2.17	2.26	2.37	2.49	2.77	4,800
IULR-2-0.8xR0.2xL4.0		0.2	4.0	0.65	0.77	11	4	50	4.26	4.46	4.68	4.93	5.51	4,800
IULR-2-0.8xR0.2xL6.0		0.2	6.0	0.65	0.77	11	4	50	6.35	6.66	6.99	7.37	8.25	4,800
IULR-2-0.8xR0.2xL8.0		0.2	8.0	0.65	0.77	11	4	50	8.45	8.85	9.30	9.80	10.99	4,960

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IULR-2
Model number:IULR-2

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.2	0.5	31,800	165	0.003	0.16	31,100	160	0.003	0.08	30,500	160	0.003	0.04	30,200	155	0.003	0.02	27,200	115	0.002	0.014
	1.0	27,000	125	0.002	0.13	26,500	125	0.002	0.06	26,000	120	0.002	0.03	25,700	115	0.002	0.02	23,100	85	0.001	0.01
0.3	1.0	33,400	280	0.003	0.32	32,800	275	0.003	0.16	32,100	270	0.003	0.08	31,800	265	0.003	0.04	28,600	195	0.002	0.028
	1.5	28,400	215	0.003	0.32	27,900	210	0.003	0.16	27,300	205	0.003	0.08	27,000	155	0.003	0.04	24,300	145	0.001	0.022
	2.0	28,400	195	0.003	0.24	27,900	190	0.003	0.12	27,300	185	0.003	0.06	27,000	105	0.003	0.03	24,300	135	0.001	0.018
	2.5	28,400	175	0.002	0.24	27,900	170	0.002	0.12	27,300	165	0.002	0.06	27,000	70	0.002	0.03	24,300	120	0.001	0.014
	3.0	28,400	155	0.002	0.2	27,900	155	0.002	0.1	27,300	150	0.002	0.05	27,000	45	0.002	0.03	24,300	105	0.001	0.012
0.4	1.0	37,100	445	0.005	0.4	33,700	405	0.005	0.2	30,600	370	0.005	0.1	27,800	335	0.005	0.05	25,100	240	0.004	0.032
	1.5	31,500	340	0.005	0.32	28,600	310	0.005	0.16	26,000	280	0.005	0.08	23,900	260	0.005	0.05	21,300	185	0.003	0.026
	2.0	31,500	305	0.004	0.29	28,600	280	0.004	0.14	26,000	255	0.004	0.07	23,400	225	0.004	0.05	18,800	145	0.002	0.02
	2.5	31,500	275	0.004	0.23	28,600	250	0.004	0.12	26,000	230	0.004	0.06	22,800	200	0.003	0.05	21,300	150	0.001	0.016
	3.0	31,500	250	0.003	0.18	28,600	225	0.003	0.09	26,000	205	0.003	0.05	22,300	175	0.002	0.05	18,800	120	0.001	0.014
0.5	1.0	30,900	465	0.024	0.34	28,100	420	0.016	0.23	25,600	385	0.011	0.15	23,200	350	0.007	0.1	20,900	250	0.005	0.076
	2.0	26,300	355	0.019	0.27	23,900	325	0.013	0.18	21,700	295	0.008	0.12	19,700	265	0.006	0.08	17,800	190	0.003	0.06
	3.0	23,200	190	0.015	0.23	21,100	170	0.01	0.15	19,200	155	0.007	0.1	18,600	225	0.004	0.07	15,700	100	0.002	0.048
	4.0	23,200	115	0.011	0.2	21,100	100	0.007	0.13	19,200	95	0.005	0.09	17,400	190	0.003	0.06	15,700	60	0.002	0.038
0.6	2.0	28,300	510	0.041	0.33	25,800	465	0.026	0.25	23,400	420	0.016	0.2	21,200	380	0.01	0.15	19,100	275	0.007	0.098
	4.0	21,900	355	0.029	0.26	19,900	325	0.018	0.2	18,100	295	0.011	0.16	19,100	285	0.007	0.12	14,800	190	0.005	0.078
	6.0	21,900	320	0.02	0.21	19,900	290	0.013	0.16	18,100	265	0.008	0.12	18,000	220	0.005	0.1	13,100	100	0.003	0.062
0.8	2.0	29,100	885	0.068	0.54	26,500	805	0.045	0.36	24,100	730	0.03	0.24	21,900	665	0.02	0.16	19,700	480	0.014	0.136
	4.0	27,700	755	0.054	0.49	25,100	690	0.036	0.32	22,900	625	0.024	0.22	20,800	570	0.015	0.14	18,700	410	0.011	0.122
	6.0	23,300	575	0.038	0.41	21,200	520	0.025	0.28	19,300	475	0.017	0.18	17,500	430	0.011	0.12	15,700	310	0.007	0.104
	8.0	17,500	385	0.023	0.35	15,900	350	0.015	0.23	14,400	320	0.01	0.16	13,100	290	0.007	0.1	11,800	210	0.005	0.088

●공구는 홀더에 확실하게 고정하고, 진동을 억제해 주세요. Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향,∂e= 반경방향, ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
ion Depo A Series
ion Depo U Series 래디우스 Radius

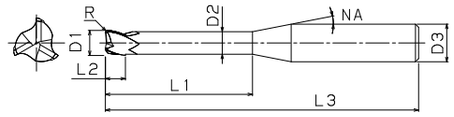
초경 롱 넥 래디우스 엔드밀
Carbide Long Neck Radius End Mill

ion U | super MG | 날 수 3 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IULR-3 Model number:IULR-3



날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010



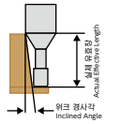
표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

최적◎Recommended 적응○Suggested

●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)



사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULR-3-0.6xR0.02xL2.0	0.6	0.02	2.0	0.5	0.57	11	4	50	2.17	2.28	2.40	2.53	2.84	6,160
IULR-3-0.6xR0.02xL4.0		0.02	4.0	0.5	0.57	11	4	50	4.27	4.48	4.71	4.97	5.58	6,160
IULR-3-0.6xR0.02xL6.0		0.02	6.0	0.5	0.57	11	4	50	6.36	6.67	7.02	7.40	8.31	6,160
IULR-3-0.6xR0.05xL2.0		0.05	2.0	0.5	0.57	11	4	50	2.17	2.28	2.39	2.52	2.83	6,160
IULR-3-0.6xR0.05xL4.0		0.05	4.0	0.5	0.57	11	4	50	4.27	4.47	4.70	4.96	5.56	6,160
IULR-3-0.6xR0.05xL6.0		0.05	6.0	0.5	0.57	11	4	50	6.36	6.67	7.02	7.40	8.30	6,160
IULR-3-0.6xR0.1xL2.0		0.1	2.0	0.5	0.57	11	4	50	2.17	2.27	2.39	2.51	2.81	5,760
IULR-3-0.6xR0.1xL4.0		0.1	4.0	0.5	0.57	11	4	50	4.26	4.47	4.70	4.95	5.55	5,760
IULR-3-0.6xR0.1xL6.0		0.1	6.0	0.5	0.57	11	4	50	6.36	6.67	7.01	7.39	8.29	5,760
IULR-3-0.8xR0.02xL2.0	0.8	0.02	2.0	0.65	0.77	11	4	50	2.17	2.28	2.40	2.53	2.84	6,480
IULR-3-0.8xR0.02xL4.0		0.02	4.0	0.65	0.77	11	4	50	4.27	4.48	4.71	4.97	5.58	6,480
IULR-3-0.8xR0.02xL6.0		0.02	6.0	0.65	0.77	11	4	50	6.36	6.67	7.02	7.40	8.31	6,480
IULR-3-0.8xR0.02xL8.0		0.02	8.0	0.65	0.77	11	4	50	8.46	8.87	9.33	9.84	11.05	6,720
IULR-3-0.8xR0.05xL2.0		0.05	2.0	0.65	0.77	11	4	50	2.17	2.28	2.39	2.52	2.83	6,480
IULR-3-0.8xR0.05xL4.0		0.05	4.0	0.65	0.77	11	4	50	4.27	4.47	4.70	4.96	5.56	6,480
IULR-3-0.8xR0.05xL6.0		0.05	6.0	0.65	0.77	11	4	50	6.36	6.67	7.02	7.40	8.30	6,480
IULR-3-0.8xR0.05xL8.0		0.05	8.0	0.65	0.77	11	4	50	8.45	8.87	9.33	9.84	11.04	6,720
IULR-3-0.8xR0.1xL2.0		0.1	2.0	0.65	0.77	11	4	50	2.17	2.27	2.39	2.51	2.81	6,480
IULR-3-0.8xR0.1xL4.0		0.1	4.0	0.65	0.77	11	4	50	4.26	4.47	4.70	4.95	5.55	6,480
IULR-3-0.8xR0.1xL6.0		0.1	6.0	0.65	0.77	11	4	50	6.36	6.67	7.01	7.39	8.29	6,480
IULR-3-0.8xR0.1xL8.0		0.1	8.0	0.65	0.77	11	4	50	8.45	8.86	9.32	9.82	11.02	6,720
IULR-3-0.8xR0.2xL2.0		0.2	2.0	0.65	0.77	11	4	50	2.17	2.26	2.37	2.49	2.77	6,480
IULR-3-0.8xR0.2xL4.0		0.2	4.0	0.65	0.77	11	4	50	4.26	4.46	4.68	4.93	5.51	6,480
IULR-3-0.8xR0.2xL6.0		0.2	6.0	0.65	0.77	11	4	50	6.35	6.66	6.99	7.37	8.25	6,480
IULR-3-0.8xR0.2xL8.0		0.2	8.0	0.65	0.77	11	4	50	8.45	8.85	9.30	9.80	10.99	6,720

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IULR-3
Model number:IULR-3

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.6	2.0	30,300	765	0.025	0.21	27,600	695	0.02	0.2	26,300	660	0.016	0.2	23,900	600	0.01	0.15	19,100	385	0.007	0.1
	4.0	25,800	585	0.018	0.17	23,400	530	0.014	0.16	22,300	505	0.011	0.16	20,300	460	0.007	0.12	16,200	295	0.005	0.08
	6.0	22,700	310	0.012	0.14	20,700	280	0.01	0.12	19,700	270	0.008	0.12	17,900	245	0.005	0.1	14,300	155	0.003	0.06
0.8	2.0	30,300	1,385	0.047	0.25	27,600	1,255	0.038	0.22	26,300	1,195	0.03	0.22	23,900	1,090	0.02	0.16	19,100	695	0.014	0.14
	4.0	28,800	1,185	0.035	0.22	26,200	1,075	0.028	0.2	24,900	1,025	0.023	0.2	22,700	930	0.015	0.14	18,100	595	0.011	0.12
	6.0	24,300	895	0.025	0.19	22,100	815	0.02	0.17	21,000	775	0.016	0.17	19,100	705	0.011	0.12	15,300	450	0.007	0.1
	8.0	18,200	605	0.017	0.16	16,500	550	0.014	0.15	15,700	525	0.011	0.15	14,300	475	0.007	0.1	11,500	305	0.005	0.09

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는물수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

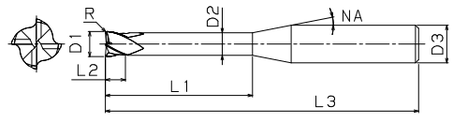
초경 롱 넥 래디우스 엔드밀
Carbide Long Neck Radius End Mill

ion U | super MG | 날 수 4 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IULR-4 Model number:IULR-4



날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010

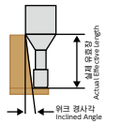


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

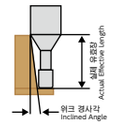
최적◎Recommended 적응○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

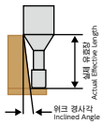
코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULR-4-1.0xR0.02xL2.0	1.0	0.02	2.0	0.8	0.95	11	4	50	2.23	2.34	2.46	2.59	2.91	4,960
IULR-4-1.0xR0.02xL3.0		0.02	3.0	0.8	0.95	11	4	50	3.27	3.44	3.61	3.81	4.28	4,960
IULR-4-1.0xR0.02xL4.0		0.02	4.0	0.8	0.95	11	4	50	4.32	4.53	4.77	5.03	5.65	4,960
IULR-4-1.0xR0.02xL5.0		0.02	5.0	0.8	0.95	11	4	50	5.37	5.63	5.92	6.25	7.01	4,960
IULR-4-1.0xR0.02xL6.0		0.02	6.0	0.8	0.95	11	4	50	6.42	6.73	7.08	7.47	8.38	5,440
IULR-4-1.0xR0.02xL8.0		0.02	8.0	0.8	0.95	11	4	50	8.51	8.93	9.39	9.90	11.12	5,440
IULR-4-1.0xR0.02xL10.0		0.02	10.0	0.8	0.95	11	4	50	10.60	11.13	11.70	12.34	13.86	5,440
IULR-4-1.0xR0.05xL2.0		0.05	2.0	0.8	0.95	11	4	50	2.23	2.33	2.45	2.58	2.90	4,960
IULR-4-1.0xR0.05xL3.0		0.05	3.0	0.8	0.95	11	4	50	3.27	3.43	3.61	3.80	4.27	4,960
IULR-4-1.0xR0.05xL4.0		0.05	4.0	0.8	0.95	11	4	50	4.32	4.53	4.76	5.02	5.63	4,960
IULR-4-1.0xR0.05xL5.0		0.05	5.0	0.8	0.95	11	4	50	5.37	5.63	5.92	6.24	7.00	4,960
IULR-4-1.0xR0.05xL6.0		0.05	6.0	0.8	0.95	11	4	50	6.41	6.73	7.08	7.46	8.37	5,440
IULR-4-1.0xR0.05xL8.0		0.05	8.0	0.8	0.95	11	4	50	8.51	8.93	9.39	9.90	11.11	5,440
IULR-4-1.0xR0.05xL10.0		0.05	10.0	0.8	0.95	11	4	50	10.60	11.12	11.70	12.34	13.85	5,440
IULR-4-1.0xR0.1xL2.0		0.1	2.0	0.8	0.95	11	4	50	2.22	2.33	2.44	2.57	2.88	4,960
IULR-4-1.0xR0.1xL3.0		0.1	3.0	0.8	0.95	11	4	50	3.27	3.43	3.60	3.79	4.25	4,960
IULR-4-1.0xR0.1xL4.0		0.1	4.0	0.8	0.95	11	4	50	4.32	4.53	4.76	5.01	5.62	4,960
IULR-4-1.0xR0.1xL5.0		0.1	5.0	0.8	0.95	11	4	50	5.37	5.62	5.91	6.23	6.99	4,960
IULR-4-1.0xR0.1xL6.0		0.1	6.0	0.8	0.95	11	4	50	6.41	6.72	7.07	7.45	8.36	5,440
IULR-4-1.0xR0.1xL8.0		0.1	8.0	0.8	0.95	11	4	50	8.51	8.92	9.38	9.89	11.09	5,440
IULR-4-1.0xR0.1xL10.0		0.1	10.0	0.8	0.95	11	4	50	10.60	11.12	11.69	12.33	13.83	4,960
IULR-4-1.0xR0.2xL2.0		0.2	2.0	0.8	0.95	11	4	50	2.22	2.32	2.43	2.55	2.84	4,960
IULR-4-1.0xR0.2xL3.0		0.2	3.0	0.8	0.95	11	4	50	3.27	3.42	3.58	3.77	4.21	4,960
IULR-4-1.0xR0.2xL4.0		0.2	4.0	0.8	0.95	11	4	50	4.31	4.52	4.74	4.99	5.58	4,960



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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULR-4-1.2xR0.1xL5.0	1.2	0.1	5.0	1.0	1.15	11	4	50	5.37	5.62	5.91	6.23	6.99	5,600
IULR-4-1.2xR0.1xL10.0		0.1	10.0	1.0	1.15	11	4	50	10.60	11.12	11.69	12.33	13.83	5,600
IULR-4-1.2xR0.2xL5.0		0.2	5.0	1.0	1.15	11	4	50	5.36	5.62	5.90	6.21	6.95	5,600
IULR-4-1.2xR0.2xL10.0		0.2	10.0	1.0	1.15	11	4	50	10.60	11.11	11.67	12.30	13.80	5,600
IULR-4-1.2xR0.3xL5.0		0.3	5.0	1.0	1.15	11	4	50	5.36	5.61	5.88	6.19	6.92	5,600
IULR-4-1.2xR0.3xL10.0		0.3	10.0	1.0	1.15	11	4	50	10.59	11.10	11.66	12.28	13.76	5,600
IULR-4-1.5xR0.02xL3.0	1.5	0.02	3.0	1.2	1.45	11	4	50	3.27	3.44	3.61	3.81	4.28	5,280
IULR-4-1.5xR0.02xL4.0		0.02	4.0	1.2	1.45	11	4	50	4.32	4.53	4.77	5.03	5.65	5,280
IULR-4-1.5xR0.02xL6.0		0.02	6.0	1.2	1.45	11	4	50	6.42	6.73	7.08	7.47	8.38	5,280
IULR-4-1.5xR0.02xL8.0		0.02	8.0	1.2	1.45	11	4	50	8.51	8.93	9.39	9.90	11.12	5,600
IULR-4-1.5xR0.02xL12.0		0.02	12.0	1.2	1.45	11	4	50	12.70	13.32	14.01	14.78	16.60	5,600
IULR-4-1.5xR0.02xL15.0		0.02	15.0	1.2	1.45	11	4	50	15.84	16.62	17.48	18.44	20.71	5,600
IULR-4-1.5xR0.05xL3.0		0.05	3.0	1.2	1.45	11	4	50	3.27	3.43	3.61	3.80	4.27	5,280
IULR-4-1.5xR0.05xL4.0		0.05	4.0	1.2	1.45	11	4	50	4.32	4.53	4.76	5.02	5.63	5,280
IULR-4-1.5xR0.05xL6.0		0.05	6.0	1.2	1.45	11	4	50	6.41	6.73	7.08	7.46	8.37	5,280
IULR-4-1.5xR0.05xL8.0		0.05	8.0	1.2	1.45	11	4	50	8.51	8.93	9.39	9.90	11.11	5,600
IULR-4-1.5xR0.05xL12.0		0.05	12.0	1.2	1.45	11	4	50	12.70	13.32	14.01	14.77	16.59	5,600
IULR-4-1.5xR0.05xL15.0		0.05	15.0	1.2	1.45	11	4	50	15.84	16.62	17.48	18.43	20.70	5,600
IULR-4-1.5xR0.1xL3.0		0.1	3.0	1.2	1.45	11	4	50	3.27	3.43	3.60	3.79	4.25	5,280
IULR-4-1.5xR0.1xL4.0		0.1	4.0	1.2	1.45	11	4	50	4.32	4.53	4.76	5.01	5.62	5,280
IULR-4-1.5xR0.1xL6.0		0.1	6.0	1.2	1.45	11	4	50	6.41	6.72	7.07	7.45	8.36	5,280
IULR-4-1.5xR0.1xL8.0		0.1	8.0	1.2	1.45	11	4	50	8.51	8.92	9.38	9.89	11.09	5,600
IULR-4-1.5xR0.1xL12.0		0.1	12.0	1.2	1.45	11	4	50	12.69	13.32	14.00	14.76	16.57	5,600
IULR-4-1.5xR0.1xL15.0		0.1	15.0	1.2	1.45	11	4	50	15.84	16.61	17.47	18.42	20.68	5,600
IULR-4-1.5xR0.2xL3.0		0.2	3.0	1.2	1.45	11	4	50	3.27	3.42	3.58	3.77	4.21	5,280
IULR-4-1.5xR0.2xL4.0		0.2	4.0	1.2	1.45	11	4	50	4.31	4.52	4.74	4.99	5.58	5,280
IULR-4-1.5xR0.2xL6.0		0.2	6.0	1.2	1.45	11	4	50	6.41	6.71	7.05	7.43	8.32	5,280
IULR-4-1.5xR0.2xL8.0		0.2	8.0	1.2	1.45	11	4	50	8.50	8.91	9.36	9.87	11.06	5,600
IULR-4-1.5xR0.2xL12.0		0.2	12.0	1.2	1.45	11	4	50	12.69	13.31	13.99	14.74	16.54	5,600
IULR-4-1.5xR0.2xL15.0		0.2	15.0	1.2	1.45	11	4	50	15.83	16.60	17.45	18.40	20.64	5,600
IULR-4-1.5xR0.3xL3.0		0.3	3.0	1.2	1.45	11	4	50	3.26	3.41	3.57	3.75	4.18	5,280
IULR-4-1.5xR0.3xL4.0		0.3	4.0	1.2	1.45	11	4	50	4.31	4.51	4.73	4.97	5.55	5,280
IULR-4-1.5xR0.3xL6.0		0.3	6.0	1.2	1.45	11	4	50	6.40	6.70	7.04	7.41	8.29	5,280
IULR-4-1.5xR0.3xL8.0		0.3	8.0	1.2	1.45	11	4	50	8.50	8.90	9.35	9.84	11.02	5,600



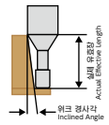
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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece.					표준가격 (엔) Retail Price (JPY)
									30'	1°	1°30'	2°	3°	
IULR-4-1.5xR0.3xL12.0	1.5	0.3	12.0	1.2	1.45	11	4	50	12.68	13.30	13.97	14.72	16.50	5,600
IULR-4-1.5xR0.3xL15.0		0.3	15.0	1.2	1.45	11	4	50	15.83	16.59	17.44	18.38	20.61	5,600
IULR-4-1.5xR0.5xL3.0		0.5	3.0	1.2	1.45	11	4	50	3.25	3.39	3.54	3.71	4.11	5,280
IULR-4-1.5xR0.5xL4.0		0.5	4.0	1.2	1.45	11	4	50	4.30	4.49	4.69	4.93	5.48	5,280
IULR-4-1.5xR0.5xL6.0		0.5	6.0	1.2	1.45	11	4	50	6.39	6.68	7.01	7.36	8.22	5,280
IULR-4-1.5xR0.5xL8.0		0.5	8.0	1.2	1.45	11	4	50	8.49	8.88	9.32	9.80	10.95	5,600
IULR-4-1.5xR0.5xL12.0		0.5	12.0	1.2	1.45	11	4	50	12.68	13.28	13.94	14.68	16.43	5,600
IULR-4-1.5xR0.5xL15.0		0.5	15.0	1.2	1.45	11	4	50	15.82	16.57	17.41	18.33	20.54	5,600
IULR-4-2.0xR0.02xL4.0	2.0	0.02	4.0	1.6	1.94	11	4	50	4.35	4.56	4.80	5.06	5.68	5,280
IULR-4-2.0xR0.02xL6.0		0.02	6.0	1.6	1.94	11	4	50	6.44	6.76	7.11	7.50	8.42	5,280
IULR-4-2.0xR0.02xL8.0		0.02	8.0	1.6	1.94	11	4	50	8.54	8.96	9.42	9.94	11.16	5,600
IULR-4-2.0xR0.02xL12.0		0.02	12.0	1.6	1.94	11	4	50	12.72	13.35	14.04	14.81	16.63	5,600
IULR-4-2.0xR0.02xL16.0		0.02	16.0	1.6	1.94	11	4	50	16.91	17.75	18.67	19.69	FREE	5,600
IULR-4-2.0xR0.02xL20.0		0.02	20.0	1.6	1.94	11	4	60	21.10	22.14	23.29	24.56	FREE	5,600
IULR-4-2.0xR0.05xL4.0		0.05	4.0	1.6	1.94	11	4	50	4.35	4.56	4.79	5.05	5.67	5,280
IULR-4-2.0xR0.05xL6.0		0.05	6.0	1.6	1.94	11	4	50	6.44	6.76	7.10	7.49	8.41	5,280
IULR-4-2.0xR0.05xL8.0		0.05	8.0	1.6	1.94	11	4	50	8.54	8.95	9.42	9.93	11.15	5,600
IULR-4-2.0xR0.05xL12.0		0.05	12.0	1.6	1.94	11	4	50	12.72	13.35	14.04	14.81	16.62	5,600
IULR-4-2.0xR0.05xL16.0		0.05	16.0	1.6	1.94	11	4	50	16.91	17.74	18.66	19.68	FREE	5,600
IULR-4-2.0xR0.05xL20.0		0.05	20.0	1.6	1.94	11	4	60	21.10	22.14	23.28	24.56	FREE	5,600
IULR-4-2.0xR0.1xL4.0		0.1	4.0	1.6	1.94	11	4	50	4.34	4.55	4.79	5.04	5.65	5,280
IULR-4-2.0xR0.1xL6.0		0.1	6.0	1.6	1.94	11	4	50	6.44	6.75	7.10	7.48	8.39	4,800
IULR-4-2.0xR0.1xL8.0		0.1	8.0	1.6	1.94	11	4	50	8.53	8.95	9.41	9.92	11.13	5,600
IULR-4-2.0xR0.1xL12.0		0.1	12.0	1.6	1.94	11	4	50	12.72	13.34	14.03	14.79	16.61	5,600
IULR-4-2.0xR0.1xL16.0		0.1	16.0	1.6	1.94	11	4	50	16.91	17.74	18.65	19.67	FREE	5,600
IULR-4-2.0xR0.1xL20.0		0.1	20.0	1.6	1.94	11	4	60	21.10	22.13	23.28	24.55	FREE	5,600
IULR-4-2.0xR0.2xL4.0		0.2	4.0	1.6	1.94	11	4	50	4.34	4.54	4.77	5.02	5.62	5,280
IULR-4-2.0xR0.2xL6.0		0.2	6.0	1.6	1.94	11	4	50	6.43	6.74	7.08	7.46	8.36	4,800
IULR-4-2.0xR0.2xL8.0		0.2	8.0	1.6	1.94	11	4	50	8.53	8.94	9.39	9.90	11.09	5,600
IULR-4-2.0xR0.2xL12.0		0.2	12.0	1.6	1.94	11	4	50	12.72	13.33	14.02	14.77	16.57	5,600
IULR-4-2.0xR0.2xL16.0		0.2	16.0	1.6	1.94	11	4	50	16.90	17.73	18.64	19.65	FREE	5,600
IULR-4-2.0xR0.2xL20.0		0.2	20.0	1.6	1.94	11	4	60	21.09	22.12	23.26	24.52	FREE	5,600
IULR-4-2.0xR0.3xL4.0		0.3	4.0	1.6	1.94	11	4	50	4.34	4.53	4.76	5.00	5.58	5,280
IULR-4-2.0xR0.3xL6.0		0.3	6.0	1.6	1.94	11	4	50	6.43	6.73	7.07	7.44	8.32	4,800
IULR-4-2.0xR0.3xL8.0		0.3	8.0	1.6	1.94	11	4	50	8.52	8.93	9.38	9.88	11.06	5,600
IULR-4-2.0xR0.3xL12.0		0.3	12.0	1.6	1.94	11	4	50	12.71	13.32	14.00	14.75	16.54	5,600
IULR-4-2.0xR0.3xL16.0		0.3	16.0	1.6	1.94	11	4	50	16.90	17.72	18.62	19.63	FREE	5,600
IULR-4-2.0xR0.3xL20.0		0.3	20.0	1.6	1.94	11	4	60	21.09	22.11	23.25	24.50	FREE	5,600
IULR-4-2.0xR0.5xL4.0		0.5	4.0	1.6	1.94	11	4	50	4.33	4.52	4.72	4.96	5.51	5,280
IULR-4-2.0xR0.5xL6.0		0.5	6.0	1.6	1.94	11	4	50	6.42	6.71	7.04	7.39	8.25	5,280
IULR-4-2.0xR0.5xL8.0		0.5	8.0	1.6	1.94	11	4	50	8.51	8.91	9.35	9.83	10.99	5,600
IULR-4-2.0xR0.5xL12.0		0.5	12.0	1.6	1.94	11	4	50	12.70	13.30	13.97	14.71	16.47	5,600
IULR-4-2.0xR0.5xL16.0		0.5	16.0	1.6	1.94	11	4	50	16.89	17.70	18.59	19.58	FREE	5,600
IULR-4-2.0xR0.5xL20.0		0.5	20.0	1.6	1.94	11	4	60	21.08	22.09	23.22	24.46	FREE	5,600
IULR-4-2.5xR0.1xL10.0	2.5	0.1	10.0	2.0	2.44	11	4	50	10.63	11.15	11.72	12.36	13.87	5,760

ion Depo Type U Series

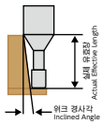
CBN Series
ion Depo A Series
ion Depo U Series
레디우스 Radius



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece.					표준가격 (엔) Retail Price (JPY)
									30'	1°	1°30'	2°	3°	
IULR-4-2.5xR0.1xL20.0	2.5	0.1	20.0	2.0	2.44	11	4	50	21.10	22.13	23.28	FREE	FREE	6,000
IULR-4-2.5xR0.2xL10.0		0.2	10.0	2.0	2.44	11	4	50	10.62	11.14	11.70	12.34	13.83	5,760
IULR-4-2.5xR0.2xL20.0		0.2	20.0	2.0	2.44	11	4	50	21.09	22.12	23.26	FREE	FREE	6,000
IULR-4-2.5xR0.3xL10.0		0.3	10.0	2.0	2.44	11	4	50	10.62	11.13	11.69	12.31	13.80	5,760
IULR-4-2.5xR0.3xL20.0		0.3	20.0	2.0	2.44	11	4	50	21.09	22.11	23.25	FREE	FREE	6,000
IULR-4-2.5xR0.5xL10.0		0.5	10.0	2.0	2.44	11	4	50	10.61	11.11	11.66	12.27	13.73	5,760
IULR-4-2.5xR0.5xL20.0		0.5	20.0	2.0	2.44	11	4	50	21.08	22.09	23.22	FREE	FREE	6,000
IULR-4-3.0xR0.05xL4.0	3.0	0.05	4.0	2.5	2.85	11	4	50	4.59	4.81	5.06	5.34	5.99	4,800
IULR-4-3.0xR0.05xL6.0		0.05	6.0	2.5	2.85	11	4	50	6.68	7.01	7.37	7.77	8.72	4,800
IULR-4-3.0xR0.05xL8.0		0.05	8.0	2.5	2.85	11	4	50	8.78	9.21	9.68	10.21	FREE	4,800
IULR-4-3.0xR0.05xL12.0		0.05	12.0	2.5	2.85	11	4	50	12.97	13.60	14.31	FREE	FREE	5,760
IULR-4-3.0xR0.05xL16.0		0.05	16.0	2.5	2.85	11	4	50	17.15	18.00	18.93	FREE	FREE	7,200
IULR-4-3.0xR0.05xL20.0		0.05	20.0	2.5	2.85	11	4	50	21.34	22.39	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.1xL4.0		0.1	4.0	2.5	2.85	11	4	50	4.59	4.81	5.05	5.32	5.97	4,800
IULR-4-3.0xR0.1xL6.0		0.1	6.0	2.5	2.85	11	4	50	6.68	7.01	7.36	7.76	8.71	4,800
IULR-4-3.0xR0.1xL8.0		0.1	8.0	2.5	2.85	11	4	50	8.78	9.20	9.68	10.20	FREE	4,800
IULR-4-3.0xR0.1xL12.0		0.1	12.0	2.5	2.85	11	4	50	12.96	13.60	14.30	FREE	FREE	5,760
IULR-4-3.0xR0.1xL16.0		0.1	16.0	2.5	2.85	11	4	50	17.15	17.99	18.92	FREE	FREE	7,200
IULR-4-3.0xR0.1xL20.0		0.1	20.0	2.5	2.85	11	4	50	21.34	22.39	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.1xL25.0		0.1	25.0	2.5	2.85	11	4	60	26.57	27.88	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.1xL30.0		0.1	30.0	2.5	2.85	11	4	60	31.81	FREE	FREE	FREE	FREE	8,080
IULR-4-3.0xR0.2xL4.0		0.2	4.0	2.5	2.85	11	4	50	4.58	4.80	5.04	5.30	5.93	4,800
IULR-4-3.0xR0.2xL6.0		0.2	6.0	2.5	2.85	11	4	50	6.68	7.00	7.35	7.74	8.67	4,800
IULR-4-3.0xR0.2xL8.0		0.2	8.0	2.5	2.85	11	4	50	8.77	9.19	9.66	10.18	FREE	4,800
IULR-4-3.0xR0.2xL12.0		0.2	12.0	2.5	2.85	11	4	50	12.96	13.59	14.28	FREE	FREE	5,760
IULR-4-3.0xR0.2xL16.0		0.2	16.0	2.5	2.85	11	4	50	17.15	17.98	18.91	FREE	FREE	7,200
IULR-4-3.0xR0.2xL20.0		0.2	20.0	2.5	2.85	11	4	50	21.33	22.38	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.2xL25.0		0.2	25.0	2.5	2.85	11	4	60	26.57	27.87	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.2xL30.0		0.2	30.0	2.5	2.85	11	4	60	31.80	FREE	FREE	FREE	FREE	8,080
IULR-4-3.0xR0.3xL4.0		0.3	4.0	2.5	2.85	11	4	50	4.58	4.79	5.02	5.28	5.90	4,800
IULR-4-3.0xR0.3xL6.0		0.3	6.0	2.5	2.85	11	4	50	6.67	6.99	7.33	7.72	8.64	4,800
IULR-4-3.0xR0.3xL8.0		0.3	8.0	2.5	2.85	11	4	50	8.77	9.18	9.65	10.16	FREE	4,800
IULR-4-3.0xR0.3xL12.0		0.3	12.0	2.5	2.85	11	4	50	12.95	13.58	14.27	FREE	FREE	5,760
IULR-4-3.0xR0.3xL16.0		0.3	16.0	2.5	2.85	11	4	50	17.14	17.97	18.89	FREE	FREE	7,200
IULR-4-3.0xR0.3xL20.0		0.3	20.0	2.5	2.85	11	4	50	21.33	22.37	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.3xL25.0		0.3	25.0	2.5	2.85	11	4	60	26.57	27.86	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.3xL30.0		0.3	30.0	2.5	2.85	11	4	60	31.80	FREE	FREE	FREE	FREE	8,080
IULR-4-3.0xR0.5xL4.0		0.5	4.0	2.5	2.85	11	4	50	4.57	4.77	4.99	5.24	5.83	4,800
IULR-4-3.0xR0.5xL6.0		0.5	6.0	2.5	2.85	11	4	50	6.66	6.97	7.30	7.68	8.57	4,800
IULR-4-3.0xR0.5xL8.0		0.5	8.0	2.5	2.85	11	4	50	8.76	9.16	9.61	10.11	FREE	4,800
IULR-4-3.0xR0.5xL12.0		0.5	12.0	2.5	2.85	11	4	50	12.94	13.56	14.24	FREE	FREE	5,760
IULR-4-3.0xR0.5xL16.0		0.5	16.0	2.5	2.85	11	4	50	17.13	17.95	18.86	FREE	FREE	7,200
IULR-4-3.0xR0.5xL20.0		0.5	20.0	2.5	2.85	11	4	50	21.32	22.35	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.5xL25.0		0.5	25.0	2.5	2.85	11	4	60	26.56	27.84	FREE	FREE	FREE	7,200
IULR-4-3.0xR0.5xL30.0		0.5	30.0	2.5	2.85	11	4	60	31.79	FREE	FREE	FREE	FREE	8,080



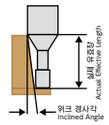
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사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULR-4-3.0xR1.0xL8.0	3.0	1.0	8.0	2.5	2.85	11	4	50	8.73	9.12	9.54	10.01	FREE	4,800
IULR-4-3.0xR1.0xL12.0		1.0	12.0	2.5	2.85	11	4	50	12.92	13.51	14.16	14.88	FREE	5,760
IULR-4-3.0xR1.0xL16.0		1.0	16.0	2.5	2.85	11	4	50	17.11	17.90	18.78	FREE	FREE	7,200
IULR-4-3.0xR1.0xL20.0		1.0	20.0	2.5	2.85	11	4	50	21.30	22.30	FREE	FREE	FREE	7,200
IULR-4-3.0xR1.0xL25.0		1.0	25.0	2.5	2.85	11	4	60	26.53	27.79	FREE	FREE	FREE	7,200
IULR-4-3.0xR1.0xL30.0		1.0	30.0	2.5	2.85	11	4	60	31.77	FREE	FREE	FREE	FREE	8,080
IULR-4-4.0xR0.1xL8.0	4.0	0.1	8.0	3.2	3.8	11	6	50	8.91	9.34	9.82	10.36	11.62	7,200
IULR-4-4.0xR0.1xL12.0		0.1	12.0	3.2	3.8	11	6	50	13.10	13.74	14.45	15.23	17.10	7,200
IULR-4-4.0xR0.1xL16.0		0.1	16.0	3.2	3.8	11	6	50	17.29	18.13	19.07	20.11	FREE	7,200
IULR-4-4.0xR0.1xL24.0		0.1	24.0	3.2	3.8	11	6	60	25.66	26.92	28.32	FREE	FREE	8,000
IULR-4-4.0xR0.1xL32.0		0.1	32.0	3.2	3.8	11	6	70	34.04	35.71	37.56	FREE	FREE	8,000
IULR-4-4.0xR0.2xL8.0		0.2	8.0	3.2	3.8	11	6	50	8.91	9.33	9.81	10.34	11.59	7,200
IULR-4-4.0xR0.2xL12.0		0.2	12.0	3.2	3.8	11	6	50	13.09	13.73	14.43	15.21	17.06	7,200
IULR-4-4.0xR0.2xL16.0		0.2	16.0	3.2	3.8	11	6	50	17.28	18.12	19.05	20.09	FREE	7,200
IULR-4-4.0xR0.2xL24.0		0.2	24.0	3.2	3.8	11	6	60	25.66	26.91	28.30	FREE	FREE	8,000
IULR-4-4.0xR0.2xL32.0		0.2	32.0	3.2	3.8	11	6	70	34.03	35.70	37.55	FREE	FREE	8,000
IULR-4-4.0xR0.3xL8.0		0.3	8.0	3.2	3.8	11	6	50	8.90	9.33	9.79	10.31	11.55	7,200
IULR-4-4.0xR0.3xL12.0		0.3	12.0	3.2	3.8	11	6	50	13.09	13.72	14.42	15.19	17.03	7,200
IULR-4-4.0xR0.3xL16.0		0.3	16.0	3.2	3.8	11	6	50	17.28	18.11	19.04	20.07	FREE	7,200
IULR-4-4.0xR0.3xL24.0		0.3	24.0	3.2	3.8	11	6	60	25.65	26.90	28.28	FREE	FREE	8,000
IULR-4-4.0xR0.3xL32.0		0.3	32.0	3.2	3.8	11	6	70	34.03	35.69	37.53	FREE	FREE	8,000
IULR-4-4.0xR0.5xL8.0		0.5	8.0	3.2	3.8	11	6	50	8.89	9.31	9.76	10.27	11.48	7,200
IULR-4-4.0xR0.5xL12.0		0.5	12.0	3.2	3.8	11	6	50	13.08	13.70	14.39	15.15	16.96	7,200
IULR-4-4.0xR0.5xL16.0		0.5	16.0	3.2	3.8	11	6	50	17.27	18.09	19.01	20.02	FREE	7,200
IULR-4-4.0xR0.5xL24.0		0.5	24.0	3.2	3.8	11	6	60	25.64	26.88	28.25	FREE	FREE	8,000
IULR-4-4.0xR0.5xL32.0		0.5	32.0	3.2	3.8	11	6	70	34.02	35.67	37.50	FREE	FREE	8,000
IULR-4-4.0xR1.0xL8.0		1.0	8.0	3.2	3.8	11	6	50	8.87	9.26	9.69	10.16	11.31	7,200
IULR-4-4.0xR1.0xL12.0		1.0	12.0	3.2	3.8	11	6	50	13.06	13.65	14.31	15.04	16.78	7,200
IULR-4-4.0xR1.0xL16.0		1.0	16.0	3.2	3.8	11	6	50	17.24	18.05	18.93	19.92	FREE	7,200
IULR-4-4.0xR1.0xL24.0		1.0	24.0	3.2	3.8	11	6	60	25.62	26.84	28.18	FREE	FREE	8,000
IULR-4-4.0xR1.0xL32.0		1.0	32.0	3.2	3.8	11	6	70	34.00	35.62	37.42	FREE	FREE	8,000
IULR-4-5.0xR0.1xL15.0	5.0	0.1	15.0	4.0	4.8	11	6	50	16.24	17.04	17.91	FREE	FREE	10,240
IULR-4-5.0xR0.1xL20.0		0.1	20.0	4.0	4.8	11	6	50	21.47	22.53	FREE	FREE	FREE	10,240
IULR-4-5.0xR0.1xL40.0		0.1	40.0	4.0	4.8	11	6	70	42.41	FREE	FREE	FREE	FREE	12,800
IULR-4-5.0xR0.2xL15.0		0.2	15.0	4.0	4.8	11	6	50	16.23	17.03	17.90	FREE	FREE	10,240
IULR-4-5.0xR0.2xL20.0		0.2	20.0	4.0	4.8	11	6	50	21.47	22.52	FREE	FREE	FREE	10,240
IULR-4-5.0xR0.2xL40.0		0.2	40.0	4.0	4.8	11	6	70	42.41	FREE	FREE	FREE	FREE	12,800
IULR-4-5.0xR0.3xL15.0		0.3	15.0	4.0	4.8	11	6	50	16.23	17.02	17.88	FREE	FREE	10,240
IULR-4-5.0xR0.3xL20.0		0.3	20.0	4.0	4.8	11	6	50	21.46	22.51	FREE	FREE	FREE	10,240
IULR-4-5.0xR0.3xL40.0		0.3	40.0	4.0	4.8	11	6	70	42.40	FREE	FREE	FREE	FREE	12,800
IULR-4-5.0xR0.5xL15.0		0.5	15.0	4.0	4.8	11	6	50	16.22	17.00	17.85	FREE	FREE	10,240
IULR-4-5.0xR0.5xL20.0		0.5	20.0	4.0	4.8	11	6	50	21.46	22.49	FREE	FREE	FREE	10,240
IULR-4-5.0xR0.5xL40.0		0.5	40.0	4.0	4.8	11	6	70	42.40	FREE	FREE	FREE	FREE	12,800
IULR-4-5.0xR1.0xL15.0		1.0	15.0	4.0	4.8	11	6	50	16.20	16.95	17.78	FREE	FREE	10,240
IULR-4-5.0xR1.0xL20.0		1.0	20.0	4.0	4.8	11	6	50	21.43	22.44	FREE	FREE	FREE	10,240

ion Depo Type U Series

CBN Series
ion Depo A Series
ion Depo U Series
레디우스 Radius



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	날경 (D1) Tool Diameter	래디우스R (R) Corner Radius	유효장 (L1) Effective Length	날장 (L2) Length of Cut	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULR-4-5.0xR1.0xL40.0	5.0	1.0	40.0	4.0	4.8	11	6	70	42.37	FREE	FREE	FREE	FREE	12,800
IULR-4-6.0xR0.1xL12.0	6.0	0.1	12.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IULR-4-6.0xR0.1xL18.0		0.1	18.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR0.1xL24.0		0.1	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR0.1xL48.0		0.1	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,080
IULR-4-6.0xR0.2xL12.0		0.2	12.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IULR-4-6.0xR0.2xL18.0		0.2	18.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR0.2xL24.0		0.2	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR0.2xL48.0		0.2	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,080
IULR-4-6.0xR0.3xL12.0		0.3	12.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IULR-4-6.0xR0.3xL18.0		0.3	18.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR0.3xL24.0		0.3	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR0.3xL48.0		0.3	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,080
IULR-4-6.0xR0.5xL12.0		0.5	12.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IULR-4-6.0xR0.5xL18.0		0.5	18.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR0.5xL24.0		0.5	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR0.5xL48.0		0.5	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,080
IULR-4-6.0xR1.0xL12.0		1.0	12.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	10,400
IULR-4-6.0xR1.0xL18.0		1.0	18.0	5.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR1.0xL24.0		1.0	24.0	5.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	13,200
IULR-4-6.0xR1.0xL48.0		1.0	48.0	5.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	16,080

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IULR-4
Model number:IULR-4

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
1.0	2	30,200	1,650	0.080	0.35	27,600	1,505	0.065	0.32	25,200	1,375	0.050	0.30	21,000	1,145	0.040	0.25	16,800	825	0.026	0.20
	3	28,700	1,565	0.080	0.35	26,200	1,430	0.065	0.32	23,900	1,305	0.050	0.30	19,900	1,090	0.040	0.25	16,000	785	0.026	0.20
	4	26,000	1,415	0.040	0.32	23,700	1,295	0.040	0.29	21,700	1,180	0.040	0.28	18,100	985	0.030	0.22	14,400	710	0.020	0.18
	5	23,000	1,250	0.030	0.32	21,000	1,145	0.030	0.29	19,100	1,045	0.030	0.28	16,000	870	0.020	0.22	12,800	625	0.014	0.18
	6	20,200	1,105	0.020	0.30	18,500	1,010	0.020	0.27	16,900	920	0.020	0.26	14,100	765	0.010	0.20	11,200	550	0.006	0.16
	8	18,700	970	0.015	0.28	17,100	885	0.015	0.25	15,600	810	0.015	0.24	13,000	675	0.008	0.16	10,400	485	0.006	0.13
	10	15,700	775	0.010	0.25	14,300	705	0.010	0.23	13,100	645	0.010	0.22	10,900	535	0.006	0.12	8,740	385	0.004	0.10
1.2	5	26,700	1,750	0.040	0.40	24,400	1,595	0.040	0.37	22,300	1,460	0.040	0.35	18,600	1,215	0.030	0.25	14,800	875	0.020	0.20
	10	17,400	1,135	0.020	0.35	15,900	1,040	0.020	0.32	14,500	950	0.020	0.30	12,100	710	0.016	0.22	9,660	510	0.010	0.18
1.5	3	26,900	2,200	0.050	0.58	25,600	2,095	0.050	0.53	24,400	1,995	0.050	0.50	21,200	1,735	0.040	0.40	17,000	1,250	0.026	0.32
	4	24,200	1,980	0.045	0.52	23,100	1,885	0.045	0.47	22,000	1,795	0.045	0.45	19,100	1,560	0.036	0.35	15,300	1,125	0.022	0.28
	6	21,500	1,760	0.035	0.35	20,500	1,675	0.035	0.32	19,500	1,595	0.035	0.30	17,000	1,390	0.030	0.25	13,600	1,000	0.020	0.20
	8	18,800	1,540	0.045	0.35	17,900	1,465	0.035	0.32	17,100	1,395	0.030	0.30	14,800	1,215	0.026	0.22	11,900	875	0.016	0.18
	12	14,800	1,210	0.025	0.29	14,100	1,155	0.025	0.26	13,400	1,100	0.025	0.25	11,700	955	0.020	0.18	9,340	685	0.014	0.14
	15	12,100	890	0.020	0.21	11,500	850	0.020	0.19	11,000	810	0.020	0.18	9,550	705	0.010	0.15	7,640	505	0.006	0.12
2.0	4	25,200	2,745	0.085	0.69	23,000	2,510	0.070	0.63	21,000	2,290	0.060	0.60	17,500	1,910	0.050	0.50	14,000	1,375	0.032	0.40
	6	22,400	2,445	0.085	0.69	20,500	2,235	0.070	0.63	18,700	2,040	0.060	0.60	15,600	1,700	0.050	0.50	12,500	1,225	0.032	0.40
	8	20,900	2,280	0.070	0.69	19,100	2,080	0.060	0.63	17,400	1,900	0.050	0.60	14,500	1,585	0.040	0.50	11,600	1,140	0.026	0.40
	12	16,400	1,785	0.050	0.55	14,900	1,630	0.045	0.50	13,600	1,490	0.035	0.48	11,400	1,240	0.030	0.40	9,110	895	0.020	0.32
	16	14,100	1,385	0.035	0.42	12,900	1,265	0.030	0.38	11,800	1,155	0.025	0.36	9,810	960	0.020	0.30	7,850	695	0.014	0.24
	20	10,600	885	0.015	0.42	9,660	805	0.015	0.38	8,830	735	0.010	0.36	7,360	615	0.010	0.30	5,880	440	0.006	0.24
2.5	10	21,100	2,870	0.085	0.69	19,200	2,625	0.070	0.63	17,600	2,395	0.060	0.60	14,600	1,995	0.050	0.50	11,700	1,435	0.032	0.40
	20	14,300	1,760	0.050	0.55	13,100	1,605	0.045	0.50	11,900	1,465	0.035	0.48	9,960	1,220	0.030	0.40	7,970	880	0.020	0.32
3.0	4	18,300	2,995	0.120	0.97	16,700	2,735	0.100	0.88	15,300	2,500	0.085	0.84	12,700	2,085	0.070	0.70	10,200	1,500	0.046	0.56
	6	15,600	2,550	0.120	0.97	14,200	2,325	0.100	0.88	13,000	2,125	0.085	0.84	10,800	1,770	0.070	0.70	8,660	1,275	0.046	0.56
	8	13,400	2,190	0.105	0.83	12,200	2,000	0.085	0.76	11,100	1,825	0.070	0.72	9,300	1,520	0.060	0.60	7,440	1,095	0.040	0.48
	12	13,400	2,190	0.085	0.69	12,200	2,000	0.070	0.63	11,100	1,825	0.060	0.60	9,300	1,520	0.050	0.50	7,440	1,095	0.032	0.40
	16	11,900	1,950	0.085	0.55	10,900	1,780	0.070	0.50	9,930	1,625	0.060	0.48	8,280	1,355	0.050	0.40	6,620	975	0.032	0.32
	20	9,900	1,455	0.070	0.55	9,040	1,330	0.060	0.50	8,250	1,215	0.050	0.48	6,880	1,010	0.040	0.40	5,500	730	0.026	0.32
	25	9,160	1,215	0.050	0.42	8,370	1,110	0.045	0.38	7,640	1,010	0.035	0.36	6,370	845	0.030	0.30	5,100	605	0.020	0.24
	30	7,700	865	0.035	0.42	7,030	790	0.030	0.38	6,420	725	0.025	0.36	5,350	600	0.020	0.30	4,280	435	0.014	0.24
4.0	8	12,600	2,745	0.140	1.39	11,500	2,510	0.115	1.26	10,500	2,290	0.095	1.20	8,760	1,910	0.080	1.00	7,010	1,375	0.052	0.80
	12	12,600	2,745	0.120	1.11	11,500	2,510	0.100	1.01	10,500	2,290	0.085	0.96	8,760	1,910	0.070	0.80	7,010	1,375	0.046	0.64
	16	10,300	2,255	0.105	0.97	9,430	2,055	0.085	0.88	8,620	1,880	0.070	0.84	7,180	1,565	0.060	0.70	5,740	1,125	0.040	0.56
	24	8,190	1,785	0.070	0.83	7,480	1,630	0.060	0.76	6,830	1,490	0.050	0.72	5,690	1,240	0.040	0.60	4,550	895	0.026	0.48
	32	6,680	1,455	0.050	0.69	6,100	1,330	0.045	0.63	5,570	1,215	0.035	0.60	4,640	1,010	0.030	0.50	3,710	730	0.020	0.40
5.0	15	10,100	2,745	0.140	2.08	9,200	2,510	0.115	1.89	8,410	2,290	0.095	1.80	7,010	1,910	0.080	1.50	5,600	1,375	0.052	1.20
	20	7,860	2,145	0.120	1.66	7,180	1,955	0.100	1.51	6,560	1,785	0.085	1.44	5,460	1,490	0.070	1.20	4,370	1,070	0.046	0.96
	40	5,040	1,305	0.035	1.11	4,600	1,190	0.030	1.01	4,200	1,090	0.025	0.96	3,500	905	0.020	0.80	2,800	655	0.014	0.64
6.0	12	8,400	2,745	0.140	2.77	7,670	2,510	0.115	2.52	7,010	2,290	0.095	2.40	5,840	1,910	0.080	2.00	4,670	1,375	0.052	1.60
	18	6,890	2,255	0.140	2.77	6,290	2,055	0.115	2.52	5,740	1,880	0.095	2.40	4,790	1,565	0.080	2.00	3,830	1,125	0.052	1.60
	24	6,300	2,060	0.120	2.08	5,750	1,880	0.100	1.89	5,250	1,720	0.085	1.80	4,380	1,430	0.070	1.50	3,500	1,030	0.046	1.20

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트쿨런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

롱 넥 래디우스 엔드밀 Long Neck Radius End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
날경 Dia.	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
6.0	48	3,190	990	0.050	1.39	2,920	905	0.045	1.26	2,660	825	0.035	1.20	2,220	690	0.030	1.00	1,780	495	0.020	0.80

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트쿨런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

CBN Series
ion Depo A Series
ion Depo U Series 래디우스 Radius

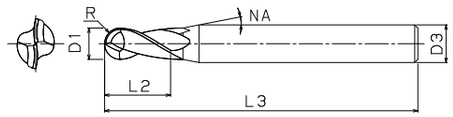
초경볼 엔드밀 Carbide Ball End Mill

■형번:IUB-2 Model number:IUB-2

ion U | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank 0/-0.005 | Shank h4



날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010

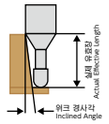


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

최적◎Recommended 적응○Suggested



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	표준가격 (엔) Retail Price (JPY)
IUB-2-0.1xR0.05x0.1	0.05	0.1	0.1	11	4	50	8,640
IUB-2-0.2xR0.1x0.2	0.1	0.2	0.2	11	4	50	6,880
IUB-2-0.3xR0.15x0.3	0.15	0.3	0.3	11	4	50	4,960
IUB-2-0.4xR0.2x0.6	0.2	0.6	0.4	11	4	50	3,360
IUB-2-0.5xR0.25x0.8	0.25	0.8	0.5	11	4	50	3,120
IUB-2-0.6xR0.3x0.9	0.3	0.9	0.6	11	4	50	3,040
IUB-2-0.8xR0.4x1.2	0.4	1.2	0.8	11	4	50	3,040
IUB-2-1.0xR0.5x1.5	0.5	1.5	1.0	11	4	50	2,800
IUB-2-1.5xR0.75x2.3	0.75	2.3	1.5	11	4	50	3,360
IUB-2-2.0xR1.0x3.0	1.0	3.0	2.0	11	4	50	3,040
IUB-2-2.5xR1.25x3.8	1.25	3.8	2.5	11	4	50	4,240
IUB-2-3.0xR1.5x5.0	1.5	5.0	3.0	11	4	50	3,040
IUB-2-4.0xR2.0x6.0	2.0	6.0	4.0	11	6	50	3,440
IUB-2-5.0xR2.5x8.0	2.5	8.0	5.0	11	6	50	4,160
IUB-2-6.0xR3.0x10.0	3.0	10.0	6.0	—	6	50	4,320
IUB-2-8.0xR4.0x12.0	4.0	12.0	8.0	—	8	70	10,960
IUB-2-10.0xR5.0x15.0	5.0	15.0	10.0	—	10	80	14,080
IUB-2-12.0xR6.0x20.0	6.0	20.0	12.0	—	12	110	20,240
IUB-2-16.0xR8.0x24.0	8.0	24.0	16.0	—	16	160	32,000
IUB-2-18.0xR9.0x27.0	9.0	27.0	18.0	—	18	180	40,080
IUB-2-20.0xR10.0x30.0	10.0	30.0	20.0	—	20	180	49,920

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IUB-2
Model number:IUB-2

볼 엔드밀 Ball End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
볼반경 (R) Ball R	날장 Length of cut	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
0.05	0.1	50,000	120	0.007	0.02	50,000	120	0.006	0.02	50,000	85	0.005	0.01	50,000	90	0.004	0.008	50,000	80	0.003	0.006
0.1	0.2	50,000	240	0.014	0.04	50,000	240	0.012	0.04	50,000	170	0.010	0.02	50,000	180	0.008	0.016	50,000	160	0.006	0.012
0.15	0.3	50,000	360	0.021	0.06	50,000	360	0.018	0.05	50,000	255	0.015	0.03	50,000	270	0.012	0.024	42,400	205	0.009	0.018
0.2	0.6	50,000	480	0.028	0.08	50,000	480	0.024	0.07	50,000	340	0.020	0.04	39,800	285	0.016	0.032	31,800	205	0.012	0.024
0.25	0.8	50,000	600	0.035	0.10	50,000	600	0.030	0.09	50,000	425	0.025	0.05	31,800	285	0.020	0.040	25,500	205	0.015	0.030
0.3	0.9	50,000	720	0.042	0.12	50,000	720	0.036	0.11	42,400	435	0.030	0.06	26,500	285	0.024	0.048	21,200	205	0.018	0.036
0.4	1.2	50,000	960	0.056	0.16	41,800	800	0.048	0.14	31,800	435	0.040	0.08	19,900	285	0.032	0.064	15,900	205	0.024	0.048
0.5	1.5	47,700	1,145	0.07	0.20	33,400	800	0.060	0.18	25,500	435	0.050	0.10	15,900	285	0.040	0.080	12,700	205	0.030	0.060
0.75	2.3	31,800	1,145	0.105	0.30	22,300	800	0.090	0.27	17,000	435	0.075	0.15	10,600	285	0.060	0.120	8,490	205	0.045	0.090
1	3.0	23,900	1,145	0.14	0.40	16,700	820	0.120	0.36	12,700	440	0.100	0.20	7,960	290	0.080	0.160	6,370	210	0.060	0.120
1.25	3.8	19,100	1,145	0.175	0.50	13,400	835	0.150	0.45	10,200	450	0.125	0.25	6,370	300	0.100	0.200	5,100	210	0.075	0.150
1.5	5.0	15,900	1,145	0.21	0.60	11,100	850	0.180	0.54	8,490	460	0.150	0.30	5,310	305	0.120	0.240	4,250	215	0.090	0.180
2	6.0	11,900	1,145	0.28	0.80	8,360	865	0.240	0.72	6,370	470	0.200	0.40	3,980	310	0.160	0.320	3,190	220	0.120	0.240
2.5	8.0	9,550	1,145	0.35	1.00	6,690	875	0.300	0.90	5,100	470	0.250	0.50	3,190	310	0.200	0.400	2,550	220	0.150	0.300
3	10.0	7,960	1,145	0.42	1.20	5,570	880	0.360	1.08	4,250	475	0.300	0.60	2,650	285	0.240	0.480	2,120	225	0.180	0.360
4	12.0	5,970	1,145	0.56	1.60	4,180	875	0.480	1.44	3,190	470	0.400	0.80	1,990	310	0.320	0.640	1,590	220	0.240	0.480
5	15.0	4,780	1,145	0.7	2.00	3,340	865	0.600	1.80	2,550	470	0.500	1.00	1,590	310	0.400	0.800	1,280	220	0.300	0.600
6	20.0	3,980	1,145	0.84	2.40	2,790	800	0.720	2.16	2,120	435	0.600	1.20	1,330	285	0.480	0.960	1,060	205	0.360	0.720
8	24	2,980	1145	1.12	3.2	2,090	805	0.96	2.88	1,590	460	0.8	1.6	990	285	0.64	1.28	800	205	0.48	0.96
9	27	2,650	1145	1.26	3.6	1,860	805	1.08	3.24	1,410	455	0.9	1.8	880	285	0.72	1.44	710	205	0.54	1.08
10	30	2,390	1145	1.4	4	1,670	800	1.2	3.6	1,270	455	1	2	800	285	0.8	1.6	640	205	0.6	1.2

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p = 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트콜런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

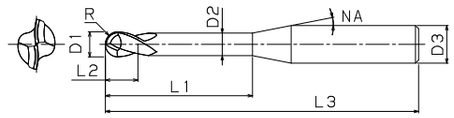
초경 롱 넥 볼 엔드밀
Carbide Long Neck Ball End Mill

ion U | super MG | 날 수 2 | 헬릭스각 30° | 목각 11° | Shank h4

■형번:IULB-2 Model number:IULB-2



날경 Diameter	날경허용공차 Diameter Tolerance	R 허용공차 R Tolerance
~φ6	-0.004/-0.007	±0.002
φ8~φ12	-0.004/-0.014	±0.005
φ14~φ20	-0.004/-0.020	±0.010

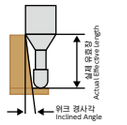


표기한 목각 (NA) 은 예상 기준치며 피삭재에 간섭이 우려되는 경우는 꼭 실측하세요 .
The neck angle (NA) shown is a reference value.
If concerned about interference with the work material,
please check by actual measurement.

절삭 재료 대응표 Material compatibility table

절삭재료 Work Material													
탄소강 Carbon Steel S45C S55C	합금강 Alloy Steel SK SCM	프리하든강 Prehardened Steel NAK HPM	스테인리스강 Stainless Steel	절삭재료 Hardened Steel ~50HRC	~55HRC	~62HRC	~70HRC	주철 Cast Iron 연성주철 Ductile Cast Iron	알루미늄합금 Aluminum Alloy	흑연 Graphite	동합금 Copper Alloy	수지 Resin	티타늄합금 Titanium Alloy	내열합금 Heat Resistant Alloy
				○	◎	◎	○						○	

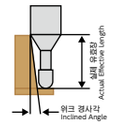
최적◎Recommended 적응○Suggested



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사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULB-2-0.1xR0.05xL0.2	0.05	0.2	0.07	0.1	0.08	11	4	50	0.26	0.27	0.28	0.30	0.33	8,240
IULB-2-0.1xR0.05xL0.3		0.3	0.07	0.1	0.08	11	4	50	0.37	0.38	0.40	0.42	0.46	8,240
IULB-2-0.1xR0.05xL0.5		0.5	0.07	0.1	0.08	11	4	50	0.58	0.60	0.63	0.66	0.74	8,960
IULB-2-0.2xR0.1xL0.3	0.1	0.3	0.15	0.2	0.18	11	4	50	0.36	0.38	0.39	0.41	0.45	5,760
IULB-2-0.2xR0.1xL0.5		0.5	0.15	0.2	0.18	11	4	50	0.57	0.60	0.62	0.65	0.72	5,760
IULB-2-0.2xR0.1xL0.75		0.75	0.15	0.2	0.18	11	4	50	0.83	0.87	0.91	0.96	1.06	5,760
IULB-2-0.2xR0.1xL1.0		1.0	0.15	0.2	0.18	11	4	50	1.10	1.15	1.20	1.26	1.40	5,760
IULB-2-0.4xR0.2xL0.5	0.2	0.5	0.3	0.4	0.37	11	4	50	0.59	0.61	0.64	0.66	0.72	3,920
IULB-2-0.4xR0.2xL0.8		0.8	0.3	0.4	0.37	11	4	50	0.91	0.94	0.98	1.03	1.13	3,920
IULB-2-0.4xR0.2xL1.0		1.0	0.3	0.4	0.37	11	4	50	1.12	1.16	1.21	1.27	1.40	3,920
IULB-2-0.4xR0.2xL1.5		1.5	0.3	0.4	0.37	11	4	50	1.64	1.71	1.79	1.88	2.09	4,000
IULB-2-0.4xR0.2xL2.0		2.0	0.3	0.4	0.37	11	4	50	2.17	2.26	2.37	2.49	2.77	4,080
IULB-2-0.4xR0.2xL2.5		2.5	0.3	0.4	0.37	11	4	50	2.69	2.81	2.95	3.10	3.46	4,240
IULB-2-0.4xR0.2xL3.0		3.0	0.3	0.4	0.37	11	4	50	3.21	3.36	3.53	3.71	4.14	4,480
IULB-2-0.5xR0.25xL1.0	0.25	1.0	0.35	0.5	0.47	11	4	50	1.12	1.16	1.21	1.26	1.39	3,920
IULB-2-0.5xR0.25xL1.5		1.5	0.35	0.5	0.47	11	4	50	1.64	1.71	1.78	1.87	2.07	3,920
IULB-2-0.5xR0.25xL2.0		2.0	0.35	0.5	0.47	11	4	50	2.16	2.26	2.36	2.48	2.76	3,920
IULB-2-0.5xR0.25xL2.5		2.5	0.35	0.5	0.47	11	4	50	2.69	2.81	2.94	3.09	3.44	3,920
IULB-2-0.5xR0.25xL3.0		3.0	0.35	0.5	0.47	11	4	50	3.21	3.36	3.52	3.70	4.13	3,920
IULB-2-0.5xR0.25xL3.5		3.5	0.35	0.5	0.47	11	4	50	3.73	3.91	4.10	4.31	4.81	3,920
IULB-2-0.5xR0.25xL4.0		4.0	0.35	0.5	0.47	11	4	50	4.26	4.45	4.67	4.92	5.49	3,920
IULB-2-0.6xR0.3xL1.0	0.3	1.0	0.45	0.6	0.57	11	4	50	1.11	1.15	1.20	1.25	1.37	3,360
IULB-2-0.6xR0.3xL1.5		1.5	0.45	0.6	0.57	11	4	50	1.64	1.70	1.78	1.86	2.05	3,040
IULB-2-0.6xR0.3xL2.0		2.0	0.45	0.6	0.57	11	4	50	2.16	2.25	2.35	2.47	2.74	3,040

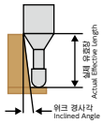


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사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULB-2-0.3xR0.15xL2.5	0.3	2.5	0.45	0.6	0.57	11	4	50	2.68	2.80	2.93	3.08	3.42	3,120
IULB-2-0.6xR0.3xL3.0		3.0	0.45	0.6	0.57	11	4	50	3.21	3.35	3.51	3.69	4.11	3,120
IULB-2-0.6xR0.3xL3.5		3.5	0.45	0.6	0.57	11	4	50	3.73	3.90	4.09	4.30	4.79	3,200
IULB-2-0.6xR0.3xL4.0		4.0	0.45	0.6	0.57	11	4	50	4.25	4.45	4.67	4.91	5.48	3,200
IULB-2-0.6xR0.3xL4.5		4.5	0.45	0.6	0.57	11	4	50	4.78	5.00	5.24	5.51	6.16	3,200
IULB-2-0.6xR0.3xL5.0		5.0	0.45	0.6	0.57	11	4	50	5.30	5.55	5.82	6.12	6.85	3,200
IULB-2-0.6xR0.3xL5.5		5.5	0.45	0.6	0.57	11	4	50	5.83	6.10	6.40	6.73	7.53	3,200
IULB-2-0.6xR0.3xL6.0		6.0	0.45	0.6	0.57	11	4	50	6.35	6.65	6.98	7.34	8.22	3,200
IULB-2-0.8xR0.4xL2.0	0.4	2.0	0.6	0.8	0.77	11	4	50	2.16	2.24	2.34	2.45	2.70	3,040
IULB-2-0.8xR0.4xL3.0		3.0	0.6	0.8	0.77	11	4	50	3.20	3.34	3.49	3.66	4.07	3,200
IULB-2-0.8xR0.4xL4.0		4.0	0.6	0.8	0.77	11	4	50	4.25	4.44	4.65	4.88	5.44	3,200
IULB-2-0.8xR0.4xL5.0		5.0	0.6	0.8	0.77	11	4	50	5.30	5.54	5.81	6.10	6.81	3,200
IULB-2-0.8xR0.4xL6.0		6.0	0.6	0.8	0.77	11	4	50	6.34	6.64	6.96	7.32	8.18	3,200
IULB-2-0.8xR0.4xL7.0		7.0	0.6	0.8	0.77	11	4	50	7.39	7.74	8.12	8.54	9.55	3,200
IULB-2-0.8xR0.4xL8.0		8.0	0.6	0.8	0.77	11	4	50	8.44	8.83	9.27	9.76	10.92	3,200
IULB-2-1.0xR0.5xL2.0	0.5	2.0	0.8	1.0	0.95	11	4	50	2.21	2.29	2.38	2.49	2.74	2,560
IULB-2-1.0xR0.5xL2.5		2.5	0.8	1.0	0.95	11	4	50	2.73	2.84	2.96	3.10	3.42	2,560
IULB-2-1.0xR0.5xL3.0		3.0	0.8	1.0	0.95	11	4	50	3.25	3.39	3.54	3.71	4.11	2,560
IULB-2-1.0xR0.5xL4.0		4.0	0.8	1.0	0.95	11	4	50	4.30	4.49	4.69	4.93	5.48	2,880
IULB-2-1.0xR0.5xL5.0		5.0	0.8	1.0	0.95	11	4	50	5.35	5.59	5.85	6.14	6.85	2,880
IULB-2-1.0xR0.5xL6.0		6.0	0.8	1.0	0.95	11	4	50	6.39	6.68	7.01	7.36	8.22	3,120
IULB-2-1.0xR0.5xL7.0		7.0	0.8	1.0	0.95	11	4	50	7.44	7.78	8.16	8.58	9.58	3,120
IULB-2-1.0xR0.5xL8.0		8.0	0.8	1.0	0.95	11	4	50	8.49	8.88	9.32	9.80	10.95	3,120
IULB-2-1.0xR0.5xL9.0		9.0	0.8	1.0	0.95	11	4	50	9.53	9.98	10.47	11.02	12.32	3,120
IULB-2-1.0xR0.5xL10.0		10.0	0.8	1.0	0.95	11	4	50	10.58	11.08	11.63	12.24	13.69	3,120
IULB-2-1.0xR0.5xL12.0		12.0	0.8	1.0	0.95	11	4	50	12.68	13.28	13.94	14.68	16.43	3,120
IULB-2-1.2xR0.6xL2.4	0.6	2.4	0.9	1.2	1.15	11	4	50	2.62	2.72	2.83	2.95	3.25	3,840
IULB-2-1.2xR0.6xL4.0		4.0	0.9	1.2	1.15	11	4	50	4.29	4.48	4.68	4.90	5.44	3,840
IULB-2-1.2xR0.6xL6.0		6.0	0.9	1.2	1.15	11	4	50	6.39	6.67	6.99	7.34	8.18	4,160
IULB-2-1.2xR0.6xL8.0		8.0	0.9	1.2	1.15	11	4	50	8.48	8.87	9.30	9.78	10.92	4,160
IULB-2-1.2xR0.6xL10.0		10.0	0.9	1.2	1.15	11	4	50	10.58	11.07	11.61	12.22	13.66	4,160
IULB-2-1.2xR0.6xL12.0		12.0	0.9	1.2	1.15	11	4	50	12.67	13.27	13.92	14.66	16.40	4,160
IULB-2-1.5xR0.75xL3.0	0.75	3.0	1.1	1.5	1.45	11	4	50	3.24	3.36	3.50	3.65	4.02	2,960
IULB-2-1.5xR0.75xL4.0		4.0	1.1	1.5	1.45	11	4	50	4.29	4.46	4.66	4.87	5.39	2,960
IULB-2-1.5xR0.75xL6.0		6.0	1.1	1.5	1.45	11	4	50	6.38	6.66	6.97	7.31	8.13	2,960
IULB-2-1.5xR0.75xL8.0		8.0	1.1	1.5	1.45	11	4	50	8.48	8.86	9.28	9.75	10.87	3,120
IULB-2-1.5xR0.75xL10.0		10.0	1.1	1.5	1.45	11	4	50	10.57	11.05	11.59	12.19	13.60	3,360
IULB-2-1.5xR0.75xL12.0		12.0	1.1	1.5	1.45	11	4	50	12.66	13.25	13.90	14.62	16.34	3,600
IULB-2-1.5xR0.75xL14.0		14.0	1.1	1.5	1.45	11	4	50	14.76	15.45	16.21	17.06	19.08	3,600
IULB-2-1.5xR0.75xL16.0		16.0	1.1	1.5	1.45	11	4	50	16.85	17.65	18.52	19.50	21.82	3,600
IULB-2-1.6xR0.8xL8.0	0.8	8.0	1.2	1.6	1.55	11	4	50	8.47	8.85	9.27	9.74	10.85	4,160
IULB-2-1.6xR0.8xL12.0		12.0	1.2	1.6	1.55	11	4	50	12.66	13.25	13.89	14.61	16.33	4,160
IULB-2-1.6xR0.8xL16.0		16.0	1.2	1.6	1.55	11	4	50	16.85	17.64	18.52	19.49	21.80	4,160
IULB-2-2.0xR1.0xL3.0	1.0	3.0	1.5	2.0	1.94	11	4	50	3.26	3.37	3.49	3.63	3.97	2,560
IULB-2-2.0xR1.0xL4.0		4.0	1.5	2.0	1.94	11	4	50	4.30	4.47	4.65	4.85	5.34	2,560

ion Depo Type U Series

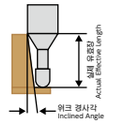


●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULB-2-2.0xR1.0xL6.0	1.0	6.0	1.5	2.0	1.94	11	4	50	6.40	6.66	6.96	7.29	8.08	2,880
IULB-2-2.0xR1.0xL8.0		8.0	1.5	2.0	1.94	11	4	50	8.49	8.86	9.27	9.72	10.81	3,120
IULB-2-2.0xR1.0xL10.0		10.0	1.5	2.0	1.94	11	4	50	10.58	11.06	11.58	12.16	13.55	3,120
IULB-2-2.0xR1.0xL12.0		12.0	1.5	2.0	1.94	11	4	50	12.68	13.26	13.89	14.60	16.29	3,120
IULB-2-2.0xR1.0xL13.0		13.0	1.5	2.0	1.94	11	4	50	13.73	14.35	15.05	15.82	17.66	3,120
IULB-2-2.0xR1.0xL14.0		14.0	1.5	2.0	1.94	11	4	50	14.77	15.45	16.20	17.04	19.03	3,120
IULB-2-2.0xR1.0xL16.0		16.0	1.5	2.0	1.94	11	4	50	16.87	17.65	18.52	19.48	FREE	3,120
IULB-2-2.0xR1.0xL18.0		18.0	1.5	2.0	1.94	11	4	50	18.96	19.85	20.83	21.91	FREE	3,120
IULB-2-2.0xR1.0xL20.0		20.0	1.5	2.0	1.94	11	4	60	21.05	22.04	23.14	24.35	FREE	3,120
IULB-2-2.5xR1.25xL6.0	1.25	6.0	2.3	2.5	2.44	11	4	50	6.39	6.64	6.92	7.23	7.99	3,840
IULB-2-2.5xR1.25xL8.0		8.0	2.3	2.5	2.44	11	4	50	8.48	8.84	9.23	9.67	10.73	3,360
IULB-2-2.5xR1.25xL10.0		10.0	2.3	2.5	2.44	11	4	50	10.57	11.03	11.54	12.11	13.47	4,080
IULB-2-2.5xR1.25xL15.0		15.0	2.3	2.5	2.44	11	4	50	15.81	16.53	17.32	18.20	FREE	4,160
IULB-2-2.5xR1.25xL20.0		20.0	2.3	2.5	2.44	11	4	50	21.04	22.02	23.10	FREE	FREE	4,880
IULB-2-3.0xR1.5xL6.0	1.5	6.0	2.5	3.0	2.85	11	4	50	6.62	6.87	7.15	7.46	8.22	3,120
IULB-2-3.0xR1.5xL8.0		8.0	2.5	3.0	2.85	11	4	50	8.71	9.07	9.46	9.90	10.96	3,120
IULB-2-3.0xR1.5xL10.0		10.0	2.5	3.0	2.85	11	4	50	10.80	11.26	11.77	12.34	FREE	3,600
IULB-2-3.0xR1.5xL12.0		12.0	2.5	3.0	2.85	11	4	50	12.90	13.46	14.08	14.78	FREE	3,760
IULB-2-3.0xR1.5xL14.0		14.0	2.5	3.0	2.85	11	4	50	14.99	15.66	16.40	FREE	FREE	4,160
IULB-2-3.0xR1.5xL16.0		16.0	2.5	3.0	2.85	11	4	50	17.09	17.86	18.71	FREE	FREE	4,160
IULB-2-3.0xR1.5xL20.0		20.0	2.5	3.0	2.85	11	4	50	21.27	22.25	FREE	FREE	FREE	4,000
IULB-2-3.0xR1.5xL25.0		25.0	2.5	3.0	2.85	11	4	60	26.51	27.74	FREE	FREE	FREE	4,000
IULB-2-3.0xR1.5xL30.0		30.0	2.5	3.0	2.85	11	4	60	31.74	FREE	FREE	FREE	FREE	4,560
IULB-2-3.5xR1.75xL15.0	1.75	15.0	2.8	3.5	3.35	11	6	50	16.03	16.73	17.51	18.38	20.45	5,280
IULB-2-3.5xR1.75xL20.0		20.0	2.8	3.5	3.35	11	6	60	21.26	22.23	23.29	24.47	FREE	5,280
IULB-2-3.5xR1.75xL25.0		25.0	2.8	3.5	3.35	11	6	60	26.50	27.72	29.07	30.57	FREE	5,600
IULB-2-3.5xR1.75xL30.0		30.0	2.8	3.5	3.35	11	6	70	31.73	33.21	34.85	36.66	FREE	5,600
IULB-2-3.5xR1.75xL35.0		35.0	2.8	3.5	3.35	11	6	70	36.97	38.71	40.63	FREE	FREE	7,200
IULB-2-4.0xR2.0xL8.0	2.0	8.0	3.0	4.0	3.8	11	6	50	8.82	9.16	9.53	9.95	10.96	3,200
IULB-2-4.0xR2.0xL10.0		10.0	3.0	4.0	3.8	11	6	50	10.92	11.36	11.84	12.39	13.70	3,200
IULB-2-4.0xR2.0xL12.0		12.0	3.0	4.0	3.8	11	6	50	13.01	13.55	14.16	14.82	16.43	4,160
IULB-2-4.0xR2.0xL14.0		14.0	3.0	4.0	3.8	11	6	50	15.10	15.75	16.47	17.26	19.17	4,160
IULB-2-4.0xR2.0xL15.0		15.0	3.0	4.0	3.8	11	6	50	16.15	16.85	17.62	18.48	20.54	4,160
IULB-2-4.0xR2.0xL20.0		20.0	3.0	4.0	3.8	11	6	60	21.39	22.34	23.40	24.58	FREE	4,160
IULB-2-4.0xR2.0xL25.0		25.0	3.0	4.0	3.8	11	6	60	26.62	27.84	29.18	FREE	FREE	4,160
IULB-2-4.0xR2.0xL30.0		30.0	3.0	4.0	3.8	11	6	70	31.86	33.33	34.96	FREE	FREE	4,160
IULB-2-4.0xR2.0xL35.0		35.0	3.0	4.0	3.8	11	6	70	37.09	38.82	FREE	FREE	FREE	4,800
IULB-2-5.0xR2.5xL15.0	2.5	15.0	3.5	5.0	4.8	11	6	50	16.13	16.80	17.55	FREE	FREE	6,880
IULB-2-5.0xR2.5xL20.0		20.0	3.5	5.0	4.8	11	6	50	21.36	22.29	FREE	FREE	FREE	6,960
IULB-2-5.0xR2.5xL25.0		25.0	3.5	5.0	4.8	11	6	60	26.60	27.79	FREE	FREE	FREE	6,960
IULB-2-5.0xR2.5xL30.0		30.0	3.5	5.0	4.8	11	6	60	31.83	FREE	FREE	FREE	FREE	7,440
IULB-2-5.0xR2.5xL40.0		40.0	3.5	5.0	4.8	11	6	70	42.30	FREE	FREE	FREE	FREE	9,280
IULB-2-6.0xR3.0xL10.0	3.0	10.0	6.0	6.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	5,200
IULB-2-6.0xR3.0xL15.0		15.0	6.0	6.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	5,200
IULB-2-6.0xR3.0xL20.0		20.0	6.0	6.0	5.8	11	6	50	FREE	FREE	FREE	FREE	FREE	5,200

CBN Series
ion Depo A Series
ion Depo U Series 볼 Ball



●재연마가 가능한 공구의 세부사항에 관해서는 문의해 주십시오. (Regrinding is possible. Please contact us for details.)

사이즈(Size) : mm

코드No. Code No.	볼반경 (R) Ball R	유효장 (L1) Effective Length	날장 (L2) Length of Cut	날경 (D1) Tool Diameter	목(부직)경 (D2) Neck Diameter	목각 (NA)° Neck Taper Angle	생크 (D3) Shank Diameter	전장 (L3) Overall Length	피삭재 경사각에 대한 실제 유효장 Actual effective length by inclined angle of workpiece. 30'	1°	1°30'	2°	3°	표준가격 (엔) Retail Price (JPY)
IULB-2-6.0xR3.0xL25.0	3.0	25.0	6.0	6.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	5,200
IULB-2-6.0xR3.0xL30.0		30.0	6.0	6.0	5.8	11	6	60	FREE	FREE	FREE	FREE	FREE	5,360
IULB-2-6.0xR3.0xL35.0		35.0	6.0	6.0	5.8	11	6	70	FREE	FREE	FREE	FREE	FREE	5,360
IULB-2-6.0xR3.0xL40.0		40.0	6.0	6.0	5.8	11	6	70	FREE	FREE	FREE	FREE	FREE	5,840
IULB-2-6.0xR3.0xL50.0		50.0	6.0	6.0	5.8	11	6	80	FREE	FREE	FREE	FREE	FREE	6,320
IULB-2-6.0xR3.0xL60.0		60.0	6.0	6.0	5.8	11	6	90	FREE	FREE	FREE	FREE	FREE	6,800

ion Depo Type U Series

ion Depo Type U 추천 절삭 조건표
Recommended Milling Conditions

■형번:IULB-2
Model number:IULB-2

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.05	0.2	50,000	120	0.007	0.02	50,000	120	0.007	0.02	50,000	85	0.005	0.01	50,000	90	0.004	0.008	50,000	80	0.003	0.006
	0.3	50,000	80	0.007	0.02	50,000	80	0.007	0.02	50,000	55	0.005	0.01	50,000	60	0.004	0.008	50,000	55	0.003	0.006
	0.5	50,000	40	0.005	0.02	50,000	40	0.005	0.02	50,000	30	0.004	0.01	50,000	30	0.003	0.008	50,000	30	0.002	0.006
0.1	0.3	50,000	240	0.013	0.04	50,000	240	0.013	0.04	50,000	170	0.01	0.02	50,000	180	0.008	0.016	50,000	160	0.006	0.012
	0.5	50,000	240	0.013	0.04	50,000	240	0.013	0.04	50,000	170	0.01	0.02	50,000	180	0.008	0.016	50,000	160	0.006	0.012
	0.75	50,000	160	0.01	0.04	50,000	160	0.01	0.04	50,000	115	0.008	0.02	50,000	120	0.006	0.016	50,000	105	0.005	0.012
	1.0	50,000	85	0.01	0.04	50,000	85	0.01	0.04	50,000	60	0.008	0.02	50,000	65	0.006	0.016	50,000	55	0.005	0.012
0.2	0.5	50,000	480	0.026	0.08	50,000	480	0.026	0.08	50,000	340	0.02	0.04	39,800	285	0.016	0.032	31,800	205	0.012	0.024
	0.8	50,000	480	0.026	0.08	50,000	480	0.026	0.08	50,000	340	0.02	0.04	39,800	285	0.016	0.032	31,800	205	0.012	0.024
	1.0	50,000	490	0.026	0.08	50,000	490	0.026	0.08	50,000	345	0.02	0.04	39,800	290	0.016	0.032	31,800	210	0.012	0.024
	1.5	50,000	500	0.021	0.08	50,000	500	0.021	0.08	50,000	355	0.016	0.04	35,800	270	0.013	0.032	28,600	190	0.01	0.024
	2.0	50,000	510	0.021	0.08	50,000	510	0.021	0.08	50,000	360	0.016	0.04	35,800	275	0.013	0.032	28,600	195	0.01	0.024
	2.5	50,000	520	0.016	0.08	50,000	520	0.016	0.08	50,000	365	0.012	0.04	31,800	250	0.01	0.032	25,500	175	0.007	0.024
	3.0	50,000	525	0.016	0.08	50,000	500	0.016	0.08	45,800	325	0.012	0.04	28,600	215	0.01	0.032	22,900	155	0.007	0.024
0.25	1.0	50,000	660	0.033	0.1	50,000	655	0.033	0.1	50,000	465	0.025	0.05	31,800	310	0.02	0.04	25,500	220	0.015	0.03
	1.5	50,000	655	0.033	0.1	50,000	630	0.033	0.1	50,000	445	0.025	0.05	31,800	300	0.02	0.04	25,500	215	0.015	0.03
	2.0	50,000	650	0.026	0.1	50,000	660	0.026	0.1	45,800	430	0.02	0.05	28,600	285	0.016	0.04	22,900	200	0.012	0.03
	2.5	50,000	600	0.026	0.1	50,000	635	0.026	0.1	45,800	415	0.02	0.05	28,600	275	0.016	0.04	22,900	195	0.012	0.03
	3.0	50,000	180	0.02	0.1	50,000	180	0.02	0.1	40,700	105	0.015	0.05	25,500	70	0.012	0.04	20,400	50	0.009	0.03
	3.5	50,000	155	0.02	0.1	50,000	155	0.02	0.1	40,700	90	0.015	0.05	25,500	60	0.012	0.04	20,400	40	0.009	0.03
	4.0	50,000	135	0.02	0.1	48,100	130	0.02	0.1	36,700	70	0.015	0.05	22,900	45	0.012	0.04	18,300	35	0.009	0.03
0.3	1.0	50,000	720	0.039	0.12	50,000	720	0.039	0.12	42,400	435	0.03	0.06	26,500	285	0.024	0.048	21,200	205	0.018	0.036
	1.5	50,000	720	0.039	0.12	50,000	720	0.039	0.12	42,400	435	0.03	0.06	26,500	285	0.024	0.048	21,200	205	0.018	0.036
	2.0	50,000	480	0.031	0.12	50,000	480	0.031	0.12	38,200	260	0.024	0.06	23,900	175	0.019	0.048	19,100	125	0.014	0.036
	2.5	50,000	735	0.031	0.12	50,000	735	0.031	0.12	38,200	395	0.024	0.06	23,900	265	0.019	0.048	19,100	185	0.014	0.036
	3.0	50,000	750	0.031	0.12	50,000	750	0.031	0.12	38,200	405	0.024	0.06	23,900	270	0.019	0.048	19,100	190	0.014	0.036
	3.5	50,000	765	0.023	0.12	44,600	680	0.023	0.12	33,900	365	0.018	0.06	21,200	245	0.014	0.048	17,000	175	0.011	0.036
	4.0	50,000	780	0.023	0.12	44,600	695	0.023	0.12	33,900	375	0.018	0.06	21,200	250	0.014	0.048	17,000	175	0.011	0.036
	4.5	50,000	785	0.023	0.12	40,100	600	0.023	0.12	30,600	325	0.018	0.06	19,100	215	0.014	0.048	15,300	155	0.011	0.036
	5.0	50,000	790	0.016	0.12	40,100	630	0.016	0.12	30,600	340	0.012	0.06	19,100	225	0.01	0.048	15,300	160	0.007	0.036
	5.5	50,000	785	0.016	0.12	35,600	540	0.016	0.12	27,200	290	0.012	0.06	17,000	190	0.01	0.048	13,600	135	0.007	0.036
	6.0	50,000	780	0.016	0.12	35,600	565	0.016	0.12	27,200	305	0.012	0.06	17,000	200	0.01	0.048	13,600	145	0.007	0.036
0.4	2.0	50,000	960	0.052	0.16	41,800	850	0.052	0.16	31,800	460	0.04	0.08	19,900	305	0.032	0.064	15,900	215	0.024	0.048
	3.0	50,000	645	0.042	0.16	37,600	485	0.042	0.16	28,600	260	0.032	0.08	17,900	175	0.026	0.064	14,300	125	0.019	0.048
	4.0	50,000	340	0.042	0.16	37,600	255	0.042	0.16	28,600	135	0.032	0.08	17,900	90	0.026	0.064	14,300	65	0.019	0.048
	5.0	47,700	265	0.031	0.16	33,400	185	0.031	0.16	25,500	100	0.024	0.08	15,900	65	0.019	0.064	12,700	45	0.014	0.048
	6.0	43,000	200	0.031	0.16	30,100	140	0.031	0.16	22,900	75	0.024	0.08	14,300	50	0.019	0.064	11,500	35	0.014	0.048
	7.0	43,000	165	0.021	0.16	30,100	115	0.021	0.16	22,900	60	0.016	0.08	14,300	40	0.013	0.064	11,500	30	0.01	0.048
	8.0	38,200	120	0.021	0.16	26,700	85	0.021	0.16	20,400	45	0.016	0.08	12,700	30	0.013	0.064	10,200	20	0.01	0.048
0.5	2.0	47,700	1,170	0.065	0.2	33,400	820	0.065	0.2	25,500	440	0.05	0.1	15,900	290	0.04	0.08	12,700	210	0.03	0.06
	2.5	47,700	1,190	0.065	0.2	33,400	835	0.065	0.2	25,500	450	0.05	0.1	15,900	300	0.04	0.08	12,700	210	0.03	0.06
	3.0	47,700	1,215	0.065	0.2	33,400	850	0.065	0.2	25,500	460	0.05	0.1	15,900	305	0.04	0.08	12,700	215	0.03	0.06

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●절입량은, 정삭가공을행하는경우의대지입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 , ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는동일한비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

롱 넥 볼 엔드밀 Long Neck Ball End Mill

절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm	min-1	mm/min	∂p mm	∂e mm
0.5	4.0	43,000	1,115	0.052	0.2	30,100	780	0.052	0.2	22,900	420	0.04	0.1	14,300	280	0.032	0.08	11,500	200	0.024	0.06
	5.0	43,000	1,125	0.052	0.2	30,100	750	0.052	0.2	22,900	405	0.04	0.1	14,300	270	0.032	0.08	11,500	190	0.024	0.06
	6.0	38,200	1,010	0.039	0.2	26,700	700	0.039	0.2	20,400	375	0.03	0.1	12,700	250	0.024	0.08	10,200	180	0.018	0.06
	7.0	38,200	1,000	0.039	0.2	26,700	675	0.039	0.2	20,400	365	0.03	0.1	12,700	240	0.024	0.08	10,200	170	0.018	0.06
	8.0	34,400	890	0.039	0.2	24,100	635	0.039	0.2	18,300	345	0.03	0.1	11,500	225	0.024	0.08	9,170	160	0.018	0.06
	9.0	34,400	825	0.026	0.2	24,100	610	0.026	0.2	18,300	330	0.02	0.1	11,500	220	0.016	0.08	9,170	155	0.012	0.06
	10.0	30,600	120	0.026	0.2	21,400	85	0.026	0.2	16,300	45	0.02	0.1	10,200	30	0.016	0.08	8,150	20	0.012	0.06
	12.0	30,600	90	0.02	0.2	21,400	60	0.02	0.2	16,300	35	0.015	0.1	10,200	20	0.012	0.08	8,150	15	0.009	0.06
0.6	2.4	39,800	1,145	0.078	0.24	27,800	800	0.078	0.24	21,200	435	0.06	0.12	13,300	285	0.048	0.096	10,600	205	0.036	0.072
	4.0	35,800	690	0.062	0.24	25,100	485	0.062	0.24	19,100	260	0.048	0.12	11,900	175	0.038	0.096	9,550	125	0.029	0.072
	6.0	35,800	365	0.062	0.24	25,100	255	0.062	0.24	19,100	135	0.048	0.12	11,900	90	0.038	0.096	9,550	65	0.029	0.072
	8.0	31,800	250	0.047	0.24	22,300	175	0.047	0.24	17,000	95	0.036	0.12	10,600	65	0.029	0.096	8,490	45	0.022	0.072
	10.0	28,600	840	0.031	0.24	20,000	590	0.031	0.24	15,300	320	0.024	0.12	9,550	210	0.019	0.096	7,640	150	0.014	0.072
	12.0	25,500	765	0.031	0.24	17,800	535	0.031	0.24	13,600	290	0.024	0.12	8,490	190	0.019	0.096	6,790	135	0.014	0.072
0.75	3.0	31,800	1,215	0.098	0.3	22,300	850	0.098	0.3	17,000	460	0.075	0.15	10,600	305	0.06	0.12	8,490	215	0.045	0.09
	4.0	31,800	1,240	0.098	0.3	22,300	865	0.098	0.3	17,000	465	0.075	0.15	10,600	310	0.06	0.12	8,490	220	0.045	0.09
	6.0	28,600	1,125	0.078	0.3	20,000	750	0.078	0.3	15,300	405	0.06	0.15	9,550	270	0.048	0.12	7,640	190	0.036	0.09
	8.0	25,500	1,010	0.058	0.3	17,800	700	0.058	0.3	13,600	375	0.045	0.15	8,490	250	0.036	0.12	6,790	180	0.027	0.09
	10.0	25,500	1,000	0.058	0.3	17,800	675	0.058	0.3	13,600	365	0.045	0.15	8,490	240	0.036	0.12	6,790	170	0.027	0.09
	12.0	22,900	890	0.058	0.3	16,000	635	0.058	0.3	12,200	345	0.045	0.15	7,640	225	0.036	0.12	6,110	160	0.027	0.09
	14.0	20,400	735	0.039	0.3	14,300	545	0.039	0.3	10,900	295	0.03	0.15	6,790	195	0.024	0.12	5,430	140	0.018	0.09
	16.0	20,400	110	0.029	0.3	14,300	75	0.029	0.3	10,900	40	0.023	0.15	6,790	25	0.018	0.12	5,430	20	0.014	0.09
0.8	8.0	26,800	365	0.083	0.32	18,800	255	0.083	0.32	14,300	135	0.064	0.16	8,950	90	0.051	0.128	7,160	65	0.038	0.096
	12.0	21,500	200	0.062	0.32	15,000	140	0.062	0.32	11,500	75	0.048	0.16	7,160	50	0.038	0.128	5,730	35	0.029	0.096
	16.0	19,100	120	0.042	0.32	13,400	85	0.042	0.32	10,200	45	0.032	0.16	6,370	30	0.026	0.128	5,100	20	0.019	0.096
1	3.0	23,900	1,145	0.13	0.4	16,700	800	0.13	0.4	12,700	435	0.1	0.2	7,960	285	0.08	0.16	6,370	205	0.06	0.12
	4.0	23,900	1,145	0.13	0.4	16,700	800	0.13	0.4	12,700	435	0.1	0.2	7,960	285	0.08	0.16	6,370	205	0.06	0.12
	6.0	23,900	1,170	0.13	0.4	16,700	820	0.13	0.4	12,700	440	0.1	0.2	7,960	290	0.08	0.16	6,370	210	0.06	0.12
	8.0	21,500	1,075	0.104	0.4	15,000	750	0.104	0.4	11,500	405	0.08	0.2	7,160	270	0.064	0.16	5,730	190	0.048	0.12
	10.0	21,500	1,095	0.104	0.4	15,000	765	0.104	0.4	11,500	415	0.08	0.2	7,160	275	0.064	0.16	5,730	195	0.048	0.12
	12.0	19,100	990	0.078	0.4	13,400	695	0.078	0.4	10,200	375	0.06	0.2	6,370	245	0.048	0.16	5,100	175	0.036	0.12
	13.0	19,100	1,000	0.078	0.4	13,400	665	0.078	0.4	10,200	360	0.06	0.2	6,370	240	0.048	0.16	5,100	170	0.036	0.12
	14.0	19,100	1,010	0.078	0.4	13,400	700	0.078	0.4	10,200	375	0.06	0.2	6,370	250	0.048	0.16	5,100	180	0.036	0.12
	16.0	17,200	900	0.078	0.4	12,000	605	0.078	0.4	9,170	325	0.06	0.2	5,730	215	0.048	0.16	4,590	155	0.036	0.12
	18.0	17,200	890	0.052	0.4	12,000	635	0.052	0.4	9,170	345	0.04	0.2	5,730	225	0.032	0.16	4,590	160	0.024	0.12
	20.0	15,300	735	0.052	0.4	10,700	545	0.052	0.4	8,150	295	0.04	0.2	5,100	195	0.032	0.16	4,080	140	0.024	0.12
1.25	6.0	19,100	1,145	0.163	0.5	13,400	800	0.163	0.5	10,200	435	0.125	0.25	6,370	285	0.1	0.2	5,100	205	0.075	0.15
	8.0	17,200	690	0.13	0.5	12,000	485	0.13	0.5	9,170	260	0.1	0.25	5,730	175	0.08	0.2	4,590	125	0.06	0.15
	10.0	17,200	435	0.13	0.5	12,000	305	0.13	0.5	9,170	165	0.1	0.25	5,730	110	0.08	0.2	4,590	75	0.06	0.15
	15.0	15,300	275	0.098	0.5	10,700	195	0.098	0.5	8,150	105	0.075	0.25	5,100	70	0.06	0.2	4,080	50	0.045	0.15
	20.0	13,700	185	0.098	0.5	9,630	130	0.098	0.5	7,340	70	0.075	0.25	4,590	45	0.06	0.2	3,670	35	0.045	0.15
1.5	6.0	15,900	1,145	0.195	0.6	11,100	800	0.195	0.6	8,490	435	0.15	0.3	5,310	285	0.12	0.24	4,250	205	0.09	0.18

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절삭재료 Work Material		프리하든강 Prehardened Steels				고경도강 Hardened Steels SKD61 (~50HRC)				고경도강 Hardened Steels STAVAX/HPM/SKD61 (~55HRC)				고경도강 Hardened Steels SKD11/SKH51 (~62HRC)				고경도강 Hardened Steels ASP23/HAP5R/HAP72 (62HRC 이상)			
볼반경 (R) Ball R	유효장 Effective Length	Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut		Spindle Speed	Feed	Depth of Cut	
		min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm	min⁻¹	mm/min	∂p mm	∂e mm
1.5	8.0	15,900	1,170	0.195	0.6	11,100	820	0.195	0.6	8,490	440	0.15	0.3	5,310	290	0.12	0.24	4,250	210	0.09	0.18
	10.0	14,300	1,075	0.156	0.6	10,000	750	0.156	0.6	7,640	405	0.12	0.3	4,780	270	0.096	0.24	3,820	190	0.072	0.18
	12.0	14,300	1,095	0.156	0.6	10,000	765	0.156	0.6	7,640	415	0.12	0.3	4,780	275	0.096	0.24	3,820	195	0.072	0.18
	14.0	14,300	1,115	0.156	0.6	10,000	780	0.156	0.6	7,640	420	0.12	0.3	4,780	280	0.096	0.24	3,820	200	0.072	0.18
	16.0	12,700	1,000	0.117	0.6	8,920	670	0.117	0.6	6,790	360	0.09	0.3	4,250	240	0.072	0.24	3,400	170	0.054	0.18
	20.0	12,700	1,010	0.117	0.6	8,920	700	0.117	0.6	6,790	375	0.09	0.3	4,250	250	0.072	0.24	3,400	180	0.054	0.18
	25.0	11,500	900	0.078	0.6	8,020	605	0.078	0.6	6,110	325	0.06	0.3	3,820	215	0.048	0.24	3,060	155	0.036	0.18
	30.0	10,200	790	0.078	0.6	7,130	565	0.078	0.6	5,430	305	0.06	0.3	3,400	200	0.048	0.24	2,720	145	0.036	0.18
1.75	15.0	12,300	1,030	0.182	0.7	8,600	765	0.182	0.7	6,550	415	0.14	0.35	4,100	275	0.112	0.28	3,280	195	0.084	0.21
	20.0	10,900	290	0.137	0.7	7,640	205	0.137	0.7	5,820	110	0.105	0.35	3,640	70	0.084	0.28	2,910	50	0.063	0.21
	25.0	9,820	210	0.137	0.7	6,880	145	0.137	0.7	5,240	80	0.105	0.35	3,280	50	0.084	0.28	2,620	35	0.063	0.21
	30.0	9,820	170	0.091	0.7	6,880	120	0.091	0.7	5,240	65	0.07	0.35	3,280	40	0.056	0.28	2,620	30	0.042	0.21
	35.0	8,730	750	0.091	0.7	6,110	525	0.091	0.7	4,660	285	0.07	0.35	2,910	185	0.056	0.28	2,330	135	0.042	0.21
2	8.0	11,900	1,190	0.26	0.8	8,360	835	0.26	0.8	6,370	450	0.2	0.4	3,980	300	0.16	0.32	3,190	210	0.12	0.24
	10.0	11,900	1,215	0.26	0.8	8,360	850	0.26	0.8	6,370	460	0.2	0.4	3,980	305	0.16	0.32	3,190	215	0.12	0.24
	12.0	11,900	1,235	0.26	0.8	8,360	865	0.26	0.8	6,370	465	0.2	0.4	3,980	310	0.16	0.32	3,190	220	0.12	0.24
	14.0	10,700	1,125	0.208	0.8	7,520	750	0.208	0.8	5,730	405	0.16	0.4	3,580	270	0.128	0.32	2,870	190	0.096	0.24
	15.0	10,700	1,135	0.208	0.8	7,520	785	0.208	0.8	5,730	425	0.16	0.4	3,580	280	0.128	0.32	2,870	200	0.096	0.24
	20.0	10,700	1,125	0.208	0.8	7,520	760	0.208	0.8	5,730	410	0.16	0.4	3,580	270	0.128	0.32	2,870	195	0.096	0.24
	25.0	9,550	990	0.156	0.8	6,690	705	0.156	0.8	5,100	380	0.12	0.4	3,190	250	0.096	0.32	2,550	180	0.072	0.24
	30.0	8,600	825	0.156	0.8	6,020	610	0.156	0.8	4,590	330	0.12	0.4	2,870	220	0.096	0.32	2,290	155	0.072	0.24
	35.0	8,600	165	0.104	0.8	6,020	115	0.104	0.8	4,590	60	0.08	0.4	2,870	40	0.064	0.32	2,290	30	0.048	0.24
2.5	15.0	9,550	770	0.325	1	6,690	535	0.325	1	5,100	290	0.25	0.5	3,190	190	0.2	0.4	2,550	135	0.15	0.3
	20.0	8,600	435	0.26	1	6,020	305	0.26	1	4,590	165	0.2	0.5	2,870	110	0.16	0.4	2,290	75	0.12	0.3
	25.0	8,600	365	0.26	1	6,020	255	0.26	1	4,590	135	0.2	0.5	2,870	90	0.16	0.4	2,290	65	0.12	0.3
	30.0	7,640	275	0.195	1	5,350	195	0.195	1	4,080	105	0.15	0.5	2,550	70	0.12	0.4	2,040	50	0.09	0.3
	40.0	6,880	185	0.195	1	4,820	130	0.195	1	3,670	70	0.15	0.5	2,290	45	0.12	0.4	1,840	35	0.09	0.3
3	10.0	7,960	1,170	0.39	1.2	5,570	820	0.39	1.2	4,250	440	0.3	0.6	2,660	290	0.24	0.48	2,120	210	0.18	0.36
	15.0	7,960	1,190	0.39	1.2	5,570	835	0.39	1.2	4,250	450	0.3	0.6	2,660	300	0.24	0.48	2,120	210	0.18	0.36
	20.0	7,160	1,095	0.312	1.2	5,020	765	0.312	1.2	3,820	415	0.24	0.6	2,390	275	0.192	0.48	1,910	195	0.144	0.36
	25.0	7,160	1,115	0.312	1.2	5,020	780	0.312	1.2	3,820	420	0.24	0.6	2,390	280	0.192	0.48	1,910	200	0.144	0.36
	30.0	7,160	1,125	0.312	1.2	5,020	750	0.312	1.2	3,820	405	0.24	0.6	2,390	270	0.192	0.48	1,910	190	0.144	0.36
	35.0	6,370	1,010	0.234	1.2	4,460	700	0.234	1.2	3,400	375	0.18	0.6	2,120	250	0.144	0.48	1,700	180	0.108	0.36
	40.0	6,370	1,000	0.234	1.2	4,460	675	0.234	1.2	3,400	365	0.18	0.6	2,120	240	0.144	0.48	1,700	170	0.108	0.36
	50.0	5,730	890	0.156	1.2	4,010	635	0.156	1.2	3,060	345	0.12	0.6	1,910	225	0.096	0.48	1,530	160	0.072	0.36
	60.0	5,100	735	0.156	1.2	3,570	545	0.156	1.2	2,720	295	0.12	0.6	1,700	195	0.096	0.48	1,360	140	0.072	0.36

●공구는 홀더에 확실하게 고정하고 , 진동을 억제해 주세요 . Reduce tool deflection by mounting the tool securely into the holder.
●절입량은, 정삭가공을행하는경우의최대치입니다. Depth of Cut shows the maximum value for finishing.
●∂p= 축방향 ,∂e= 반경방향 . ∂p=Axial Depth of Cut ∂e=Radial Depth of Cut.
●오일미스트클런트, 또는불수용성절삭액을사용해주세요. We recommend using oil mist coolant or non-water soluble cutting fluid.
●공구 돌출은 필요 이상으로 하지 말아 주세요. Length of tool overhang must be as short as possible.
●RPM & FEED는등절란비율로조정해주세요. Adjust milling conditions according to the depth of cut and the rigidity of the machine and work holding.

Memo

Memo