



엔드밀 L3

정삭면·정밀도 중시, 4날	4FESM	L3
정삭면·정밀도 중시, 자동반용	3FESW / 4FESW	L4
고이송·고능률 타입	4MFK / 4MFR	L5
난삭재 대응·고능률 타입	4TFK / 4TFR	L8
3차원·고능률 타입	3ZFKS / 3ZFKM	L10
고능률, 고이송, 정삭(어깨 가공)	6 / 8PFK	L12
라핑, 특수 파형 절삭날, 난삭재용	4 / 5 / 6RFH	L14
라핑, 파형 절삭날	3 / 4 / 5RDS	L16
라핑, 니크 절삭날	4 / 6RFSM	L17
고경도재용, 다날, 네가티브 경사, 정삭	4 / 5 / 6 / 7HFS	L18
특수 R형상 바닥날, 6날, 고이송 가공	6PDRS	L19
알루미늄·비철 금속용, 고능률·고정밀 타입	3AFK	L22
알루미늄·비철 금속용, 부등분할·와이퍼 절삭날 포함	3NESM	L25

고경도재 가공용 (미세 가공용) 솔리드 볼 엔드밀 L38

2KMB	표준 타입	L40
	롱 넥	L41

드릴 L52

KDA	3D, Type N, 콜런트 홀 없음	L54
	5D, Type N, 콜런트 홀 없음	L56
	3D, Type C, 콜런트 홀 있음	L58
	5D, Type C, 콜런트 홀 있음	L60
KDA Mini	3D, Type C, 콜런트 홀 있음	L67
	5D, Type C, 콜런트 홀 있음	L68
	8D, Type C, 콜런트 홀 있음	L69
	2D, Type N, 콜런트 홀 없음	L70
KDZ	4D, Type N, 콜런트 홀 없음	L71
	숫 타입, Type N, 콜런트 홀 없음	L76
	레귤러 타입, Type N, 콜런트 홀 없음	L78
KDZ-HP	숫 타입, Type N, 콜런트 홀 없음	L80
	숫 타입, 롱 샵크, Type N, 콜런트 홀 없음	L82
	레귤러 타입, Type N, 콜런트 홀 없음	L84
	레귤러 타입, Type C, 콜런트 홀 있음	L86
파인 마이크로 드릴		L92

SGS L96

Z-Carb-HPR	Z5MCR	ø6~25	L96
Z-Carb-XPR	ZR	ø6~20	L102
T-Carb	51MCR / 51MB	ø6~20	L105
H-Carb	77MCR	ø6~25	L110
고성능 드릴	142P 8D, 12D	ø3~19	L114
	143M-S 3D, 5D	ø3~19	L124
마이크로 드릴	M226 3D, 12D	ø0.04~3	L132
	M814 8D, 15D	ø1~4	L141
	M155	ø3.2~6.7	L145

공업용 정밀 나이프 L149

규격의 표시 방법

1

4 F E S M 020 - 060 - 04 XXXXXXXX

(1) 날수	(2) 용도 · 구분	(3) 비틀림각	(4) 인선 형상	(5) 날장	(6) 외경	(7) 날장	(8) 상크경	(9) 기타
2	F : 정밀도 · 정삭면 중시	D : 20-29°	B : 볼	S : 숏	020	060	04	코너 R, 코너 C 면 폭 등
3	Z : 3차원 · 고능률 타입	E : 30-39°	R : 라디우스	M : 미디엄	↓	↓	↓	
4	R : 라핑	F : 40-49°	S, K : 스퀘어	L : 롱	2.0mm	6.0mm	4.0mm	
5	H : 고경도재용	G : 50-59°	C : 면너 C면 포함	W : 자동반용				
6	N : 알루미늄 · 비철금속용							
7								
8								

2

4 T F R 030 - 080 - R02

(1) 날수	(2) 용도 · 구분	(3) 비틀림각	(4) 인선 형상	(5) 외경	(6) 날장	(7) 기타	
3	M : 고이송 · 고능률 타입	C : 10-19° E : 30-39° F : 40-49°	K : 인선 강화형	030 ↓ 3.0mm	080 ↓ 8.0mm	R02 : 코너 R 0.2mm	
4	P : 어깨가공 고이송 정삭		R : 라디우스			H : 라디우스 (콜린트 홀 포함)	090 : 목아래 길이 9mm
5	T : 고능률 타입 (난삭재 대응)		X : 특수				
6	A : 알루미늄 · 비철금속용						
8	R : 라핑						

L

아이콘 보는 방법

코팅의 종류와 비코팅(코팅 없음)의 표시 방법

MEGACOAT NANO	MEGACOAT HARD	MEGACOAT	TIAEN 코팅	ACTIN 코팅
CVD Diamond 코팅	비코팅 (코팅 없음)			

상크경 공차의 표시 방법

상크경 공차는 h5.

상크경 공차는 h6.

인선의 코너 형상의 표시 방법

라디우스

코너 샤프에지

코너 랜드 포함

코너 C면 포함

R공차의 표시 방법

R

0 ~ -0.02
불 엔드밀의 R공차는 0 ~ -0.02mm입니다.

날수의 표시 방법

3

3날 사양

비틀림각 표시 방법

30°

30도 비틀림

절삭날 형상

라핑 파형을 나타냅니다.

초경 소재

솔리드 엔드밀 시리즈의 소재는 모두 초경입니다.

솔리드 툴

엔드밀



미세 가공

드릴

SGS

공업용 나이프

4FESM

추천 피삭재 ★ 제 1 추천

P
~30HRC

P
30~40HRC

H
~55HRC

M
Stainless steel

K
Cast Iron

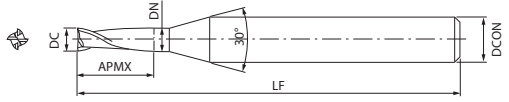
N
Aluminum & Non Ferrous Material

MEGACOAT

Sharp

h5
Shank Dia.

30°



4FESM (미디엄, 핀 카드)

어깨 가공


규격	재고	치수 (mm)						ZEEP 수	
		DC	외경 공차		APMX	DN	DCON		LF
			min.	max.					
4FESM 010-025-04	● 1	-0.015	0	2.5	1.1	4	45		
015-040-04	● 1.5			4	1.6				
020-060-04	● 2			6	2.1				
025-080-04	● 2.5			8	2.6				
030-100-06	● 3			-0.02	0	10	3.2	6	50
035-100-06	● 3.5	11	3.7						
040-110-06	● 4	13	4.2						
045-110-06	● 4.5	15	4.7						
050-130-06	● 5	16	5.2						
055-130-06	● 5.5	-0.025	-0.005	19	5.7	8	60		
060-130-06	● 6			20	-				
060-150-06	● 6			19	-				
070-160-08	● 7			22	-				
080-190-08	● 8			25	-				
080-200-08	● 8	-0.03	-0.01	19	9.2	10	70		
090-190-10	● 9			26	-				
100-220-10	● 10			14.2	-				
100-250-10	● 10			30	15.2				
120-260-12	● 12			32	-				
140-260-16	● 14	-0.03	-0.01	16	16	16	90		
150-300-16	● 15			15.2	-				
160-320-16	● 16			32	-				



기준 절삭조건 L26



슬리드 툴

3FESW, 4FESW



추천 피삭재 ★ 제 1 추천

P
~30HRC

P
30~40HRC

H
~55HRC

M
Stainless steel

K
Cast Iron

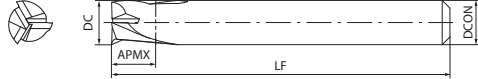
N
Aluminum & Non Ferrous Material

MEGACOAT

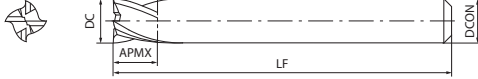
Sharp

h6
Shank Dia.

35°



(3FESW)



(4FESW)

3FESW

어깨 가공 홀 가공

규격	재고	DC	치수 (mm)					ZEP 수
			외경 공차		APMX	DCON	LF	
			min.	max.				
3FESW 030-030-04	● 3				3			
035-035-04	● 3.5				3.5	4	45	
040-040-04	● 4				4			
050-050-05A	● 5	-0.02			5	5	35	
050-050-06	● 5				5	6	45	
060-060-05A	● 6				6	5	35	
060-060-06	● 6				6	6		
070-070-07	● 7	0			7	7		3
080-080-07	● 8				8			
080-080-08	● 8	-0.025			8			
100-080-07	● 10				7		45	
100-080-10	● 10				8	10		
120-080-10	● 12	-0.03			12			
120-080-12	● 12				12			
130-080-13	● 13				13			

기준 절삭조건 Ⓢ L27

4FESW

어깨 가공 홀 가공

규격	재고	DC	치수 (mm)					ZEP 수
			외경 공차		APMX	DCON	LF	
			min.	max.				
4FESW 030-030-04	● 3				3			
035-035-04	● 3.5				3.5	4		
040-040-04	● 4	-0.02			4			
050-050-06	● 5				5	6		
060-060-06	● 6				6	6		
070-070-07	● 7	0			7	7	45	4
080-080-07	● 8				8			
080-080-08	● 8	-0.025			8			
100-080-07	● 10				7			
100-080-10	● 10				8	10		
120-080-10	● 12	-0.03			12			
120-080-12	● 12				12			
130-080-13	● 13				13			

기준 절삭조건 Ⓢ L27



슬리드 톨

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

● : 표준 재고

고이송·고능률 엔드밀

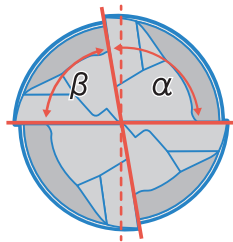
4MFK / 4MFR

강가공의 새로운 스탠다드
떨림에 강하고 고이송 가공이 가능

1 부등분할 · 부등리드 사양으로 떨림을 억제

떨림을 억제하여 우수한 정삭면을 실현

부등분할

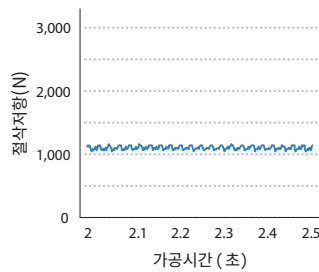


절삭날의 위치를 부등배분으로 하여
절삭시의 주기적인 진동을 억제

$$\alpha \neq \beta$$

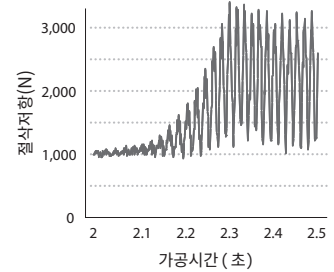
절삭저항 비교 (당사비교)

4MFK



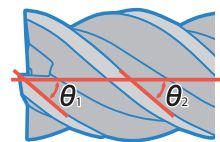
진동을 억제하여 안정가공이 가능

경쟁사A



절삭조건 : n = 2,650 min⁻¹, Vf = 300 mm/min, ap × ae = 10 × 8 mm, 가공경 ø8, 홀 가공 Wet 피삭재 : SCM440

부등리드

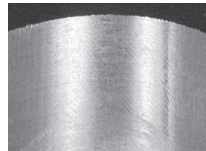


비틀림각(리드각 θ)을 절삭날마다
바꾼다.
이것으로 강한 제진 효과를 발휘
떨림을 억제하여 정삭면이 우수

$$\theta_1 \neq \theta_2$$

정삭면 비교 (당사비교)

4MFK



경쟁사A



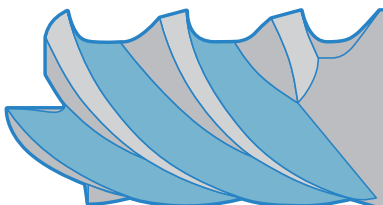
떨림 발생

절삭조건 : n = 6,000 min⁻¹, Vf = 1,500 mm/min, ap × ae = 8 × 2 mm, 가공경 ø8, 어깨 가공 Wet 피삭재 : S45C

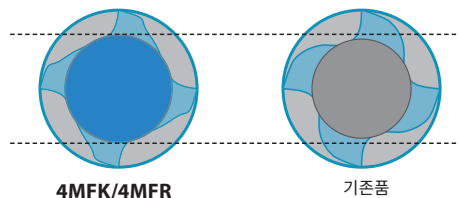
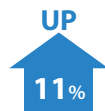
2 우수한 칩배출성

신발상의 특수 홈 형상으로 홈 · 고이송 가공에서도 우수한 칩배출성

큰 칩 포켓



센터 두께 비교 (당사비교)



4MFK/4MFR

기존품

L



슬리드 툴

4MFK



추천 피삭재

★ 제 1 추천

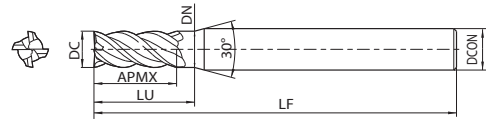


Fig. 1

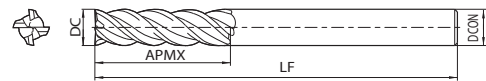


Fig. 2

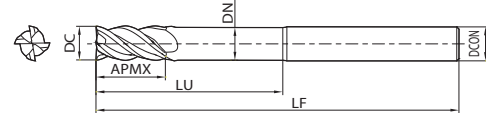


Fig. 3

4MFK (코너 랜드 포함)

규격	재고	치수 (mm)										ZFP	Fig.	
		DC	외경 공차		APMX	+날장 타입	DN	LU	DCON	LF	날 수			
			min.	max.										
4MFK 030-045 030-080 030-120 035-050 035-095 035-140 040-060 040-110 040-120 040-160	●	3	-0.015	0	4.5	S		5.4	6	60	4	1		
	●				8	M	3.15	9.6						
	●				12	L		14.4						
	●	3.5	-0.015	0	9.5	M	3.7	11.4	6	60	4	1		
	●				14	L		16.8						
	●	4	-0.015	0	6	S		7.2	6	60	4	1		
	●				11	M	4.2	13.2						
	●				12	M		14.4						
	●				16	L		19.2						
	4MFK 045-065 045-120 045-180 050-075 050-130 050-200 055-080 055-130 055-210	●	4.5	-0.015	0	6.5	S		7.8	6	60	4	1	
●		12				M	4.7	14.4						
●		18				L		21.6						
●		5	-0.015	0	7.5	S		9	6	60	4	1		
●					13	M	5.2	15.6						
●		5.5	-0.015	0	20	L		24	6	60	4	1		
●					8	S		9.6						
●					13	M	5.7	15.6						
●					21	L		25.2						
4MFK 060-090 060-090-180 060-090-300 060-130 060-150 060-220 065-160 070-105 070-160 070-250		●	6	-0.02	0		S	-	-	6	60	4	2	
	●	9				S'	5.8	18	6					70
	●					S'		30						
	●	6.5	-0.02	0	13	M		-	6	60	4	2		
	●				22	L		-						
	●	7	-0.02	0	15	M		-	6	60	4	2		
	●				16	M	6.7	19.2						
	●				10.5	S		12.6						
	●				16	M	7.2	19.2						
	●	7	-0.02	0	25	L		30	6	70	4	1		
●														

규격	재고	치수 (mm)										ZFP	Fig.
		DC	외경 공차		APMX	+날장 타입	DN	LU	DCON	LF	날 수		
			min.	max.									
4MFK 075-190 080-120 080-120-240 080-120-400 080-190 080-200 080-280 085-190 090-135 090-205	●	7.5	-0.02	0	19	M	7.7	22.8	8	70	80	4	1
	●					S	-	-					
	●				12	S'	7.7	24					
	●	8	-0.025	-0.005		S'		40	8	70	80	4	2
	●				19	M		-					
	●	8.5	-0.025	-0.005	20	M		-	10	80	80	4	1
	●				28	L		-					
	●				19	M	8.7	22.8					
	●				13.5	S	9.2	16.2					
	●	9	-0.025	-0.005	20.5	M		24.6	10	80	80	4	2
●													
4MFK 095-220 100-150 100-150-300 100-150-500 100-220 100-250 100-330 110-260	●	9.5	-0.025	-0.005	22	M	9.7	26.4	10	80	100	4	1
	●					S	-	-					
	●				15	S'	9.7	30					
	●	10	-0.025	-0.005		S'		50	10	80	100	4	3
	●				22	M		-					
	●	11	-0.03	-0.01	25	M		-	12	80	100	4	2
	●				33	L		-					
	●				26	M	11.2	31.2					
	●												
	4MFK 120-180 120-180-360 120-180-600 120-260 120-360 160-240 160-350 160-480	●	12	-0.03	-0.01		S	-	-	12	100	110	4
●		18				S'	11.7	36					
●						S'		60					
●		16	-0.03	-0.01	26	M		-	16	110	110	4	2
●					36	L		-					
●		16	-0.03	-0.01	24	S		-	16	110	110	4	2
●					35	M		-					
●													
●					48	L		-					

* 날장 타입별 가공 구분

S: 숏, M: 미디엄

S': 숏 (롱 넥), L: 롱



기준 절삭조건 L28

●: 표준 재고

L

슬리드 톨

엔드밀


미세 가공

드릴

SGS

공업용 나이프

4MFR



추천 피삭재 ★ 제 1 추천

P
~30HRC

P
30~40HRC

H
~55HRC

M
Stainless steel

S
Titanium Alloy

K
Cast Iron

N
Aluminum & Non Ferrous Material

MEGA-COAT
MIND

h5
Shank Dia.

42°
44°

Radius
R

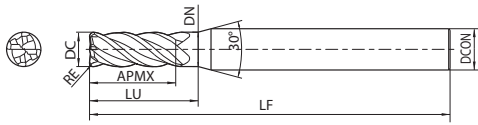


Fig. 1

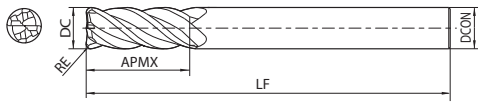


Fig. 2

4MFR (라디우스)

어깨 가공 홈 가공

규격	재고	치수 (mm)								ZFP 수	Fig.	
		DC	외경 공차		RE	APMX	DN	LU	DCON			LF
			min.	max.								
4MFR 030-080-R02	●				0.2							
030-080-R03	●	3			0.3	8	3.15	9.6				
030-080-R05	●				0.5							
035-095-R02	●				0.2							
035-095-R03	●	3.5			0.3	9.5	3.7	11.4				
035-095-R05	●				0.5							
040-110-R02	●				0.2							
040-110-R03	●				0.3	11	4.2	13.2				
040-110-R05	●	4			0.5							
040-110-R10	●				1							
045-120-R02	●		-0.015		0.2						1	
045-120-R03	●				0.3	11	4.2	13.2				
045-120-R05	●	4.5			0.5	12	4.7	14.4				
045-120-R10	●			0	1			6	60	4		
050-130-R02	●				0.2							
050-130-R03	●				0.3							
050-130-R05	●	5			0.5		5.2					
050-130-R10	●				1			15.6				
055-130-R02	●				0.2							
055-130-R03	●				0.3							
055-130-R05	●	5.5			0.5	13	5.7					
055-130-R10	●				1							
060-130-R02	●				0.2							
060-130-R03	●				0.3							
060-130-R05	●	6	-0.02		0.5		-	-			2	
060-130-R10	●				1							
060-130-R15	●				1.5							

규격	재고	치수 (mm)								ZFP 수	Fig.	
		DC	외경 공차		RE	APMX	DN	LU	DCON			LF
			min.	max.								
4MFR 080-190-R02	●				0.2							
080-190-R03	●				0.3							
080-190-R05	●				0.5							
080-190-R10	●	8			1	19		8	70			
080-190-R15	●				1.5							
080-190-R20	●				2							
080-190-R30	●				3							
100-220-R02	●		-0.025	-0.005	0.2							
100-220-R03	●				0.3							
100-220-R05	●				0.5							
100-220-R10	●	10			1	22		10	80			
100-220-R15	●				1.5						4	2
100-220-R20	●				2							
100-220-R30	●				3							
120-260-R03	●				0.3							
120-260-R05	●				0.5							
120-260-R10	●				1	26		12	100			
120-260-R15	●	12			1.5							
120-260-R20	●				2							
120-260-R30	●		-0.03	-0.01	3							
160-350-R10	●				1							
160-350-R15	●				1.5	35		16	110			
160-350-R20	●	16			2							
160-350-R30	●				3							



슬리드
틀

기준 절삭조건 L28

● : 표준 재고

고능률·난삭재 가공용

4TFK / 4TFR

난삭재의 고이송·고능률 가공이 가능
떨림에 강한 버를 억제

1 고이송 가공시의 칩배출성을 향상

칩 포켓, 경사각을 크게하여 고이송 가공에서도 우수한 칩배출

4TFK / 4TFR

고능률 가공에 적합한 홀 형상

엔드밀 단면

칩 막힘 없음

절삭조건 : $n=2,800\text{min}^{-1}$, $V_f=550\text{ mm/min}$, $a_p=4\text{ mm}$
가공경 $\phi 8\text{ mm}$, 홀 가공, Wet 피삭재 : SUS304

기존품

엔드밀 단면

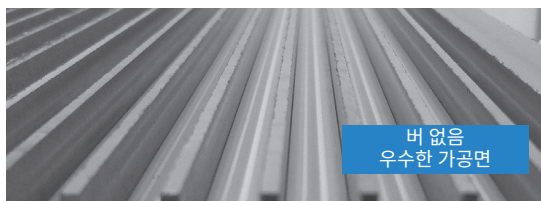
칩 막힘 발생

절삭조건 : $n=2,800\text{min}^{-1}$, $V_f=270\text{ mm/min}$, $a_p=4\text{ mm}$
가공경 $\phi 8\text{ mm}$, 홀 가공, Wet 피삭재 : SUS304

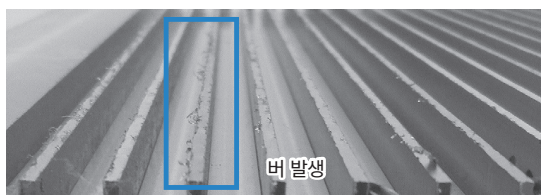
2 버를 억제

저저항 설계와 우수한 칩배출성으로 가공경과 같은 깊이로 홀 가공이 가능

4TFK



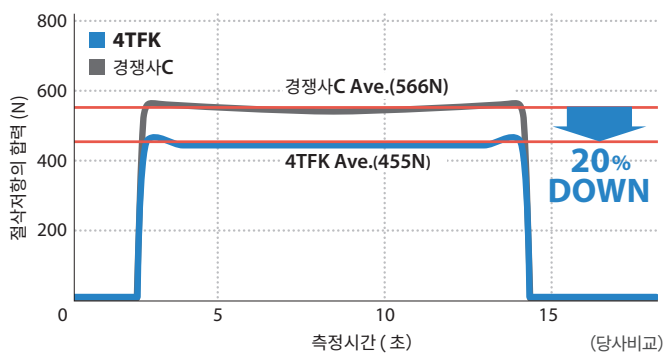
경쟁사C



절삭조건 : $n=3,200\text{min}^{-1}$, $V_f=150\text{ mm/min}$, $a_p=6\text{ mm}$
가공경 $\phi 6\text{ mm}$, 홀 가공, Wet 피삭재 : SUS304

절삭저항 비교


(100mm 절삭시의 측정 결과)



절삭조건 : $n=4,800\text{min}^{-1}$, $V_f=500\text{ mm/min}$, $a_p=6\text{ mm}$
가공경 $\phi 6\text{ mm}$, 홀 가공, Dry 피삭재 : SCM440

3 부등분할·부등리드로 떨림을 억제

4TFK, 4TFR



추천 피삭재 ★ 제1 추천

P ~30HRC	P 30~40HRC	H ~55HRC	M Stainless steel	S Titanium Alloy	S Heat-resistant Alloy	K Cast Iron
--------------------	----------------------	--------------------	-----------------------------	----------------------------	----------------------------------	-----------------------

NIKKBALUIT
MINO

h5
Shank Dia.

42°
44°

Land

Radius
R

(4TFK) (4TFR)

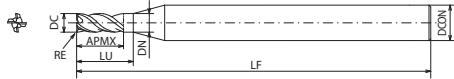


Fig. 1

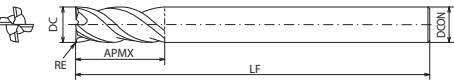


Fig. 2

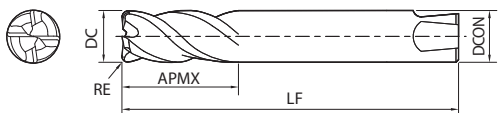


Fig. 3 (X-Treme Shank)

4TFK (코너 랜드 포함)

규격	재고	치수 (mm)								ZEFP	Fig.
		DC	외경 공차		APMX	* 날장 타입별 DN	LU	DCON	LF		
			min.	max.							
4TFK 030-045	●			4.5	S	5.4					
030-080	●	3		8	M	3.15	9.6				
030-120	●			12	L		14.4				
040-060	●			6	S		7.2				
040-120	●	4	-0.015	12	M	4.2	14.4				1
040-160	●			16	L		19.2	6	60		
050-075	●			7.5	S		9				
050-130	●	5	0	13	M	5.2	15.6				
050-200	●			20	L		24				
060-090	●			9	S						
060-150	●	6	-0.02	15	M	-	-				2
060-220	●			22	L						
070-105	●			10.5	S		12.6				
070-160	●	7		16	M	7.2	19.2				1
070-250	●			25	L		30	8	70		
080-120	●			12	S					4	
080-200	●	8		20	M	-	-				2
080-280	●			28	L						
090-135	●			13.5	S		16.2				
090-205	●	9	-0.025	20.5	M	9.2	24.6				1
100-150	●			15	S			10	80		
100-250	●	10		25	M						
100-330	●			33	L						
120-180	●			18	S						
120-260	●	12		26	M			12	100		
120-360	●			36	L	-	-				2
160-240	●			24	S						
160-350	●	16	-0.03	35	M			16	110		
160-480	●			48	L						
200-300	●	20		30	S			20	125		
200-450	●			45	M						

기준 절삭조건 L29

* 날장 타입별 가공 구분

- S: 숏 어깨 가공 홀 가공
- M: 미디엄 어깨 가공
- L: 롱 어깨 가공

●: 표준 재고

4TFR (라디우스)

규격	재고	치수 (mm)								ZEFP	Fig.	
		DC	외경 공차		RE	APMX	DN	LU	DCON			LF
			min.	max.								
4TFR 030-080-R02	●	3			0.2	8	3.15	9.6				
030-080-R05	●				0.5							
040-120-R02	●				0.2	12	4.2	14.4				1
040-120-R05	●	4	-0.015		0.5							
050-130-R02	●				0.2							
050-130-R05	●	5	0		0.5	13	5.2	15.6	6	60		
050-130-R10	●				1							
060-150-R03	●				0.3							
060-150-R05	●	6	-0.02		0.5	15						
060-150-R10	●				1							
080-200-R03	●				0.3							
080-200-R05	●				0.5							
080-200-R10	●	8			1	20			8	70		
080-200-R20	●				2							
100-250-R03	●				0.3							
100-250-R05	●				0.5							
100-250-R10	●	10	-0.025	-0.005	1	25			10	80		
100-250-R15	●				1.5							
100-250-R20	●				2							2
100-250-R30	●				3							
120-260-R05	●				0.5						4	
120-260-R10	●				1							
120-260-R15	●	12			1.5	26			12	100		
120-260-R20	●				2							
120-260-R30	●				3							
160-350-R10	●				1							
160-350-R20	●	16			2	35			16	110		
160-350-R30	●				3							
200-450-R10	●				1							
200-450-R20	●	20	-0.03	-0.01	2	45			20	125		
200-450-R30	●				3							
4TFR 120-260-R10-XT	●				1							
120-260-R20-XT	●	12			2	26			12	94		
120-260-R30-XT	●				3							
160-350-R10-XT	●				1							
160-350-R20-XT	●	16			2	35			16	116		3
160-350-R30-XT	●				3							
200-450-R10-XT	●				1							
200-450-R20-XT	●	20			2	45			20	130		
200-450-R30-XT	●				3							

*4TFR...XT의 샤프크 형상 (X-Treme Shank) 은 NIKKEN의 X-Treme 적용입니다.

기준 절삭조건 L29



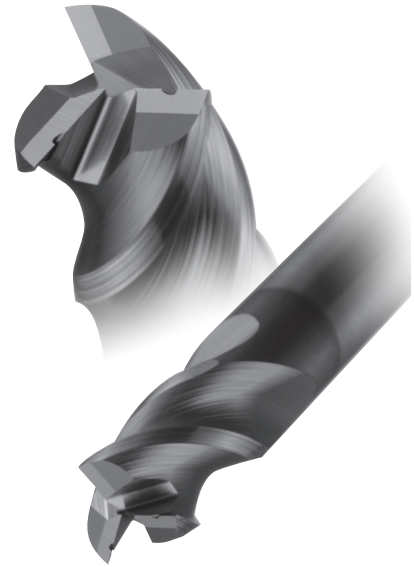
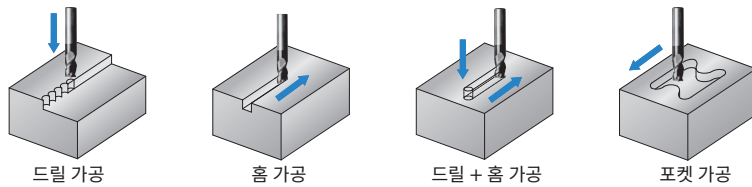
슬리드

3차원·고능률 엔드밀

3ZFK

1개로 드릴·홈·정삭의 트리플 가공에 대응

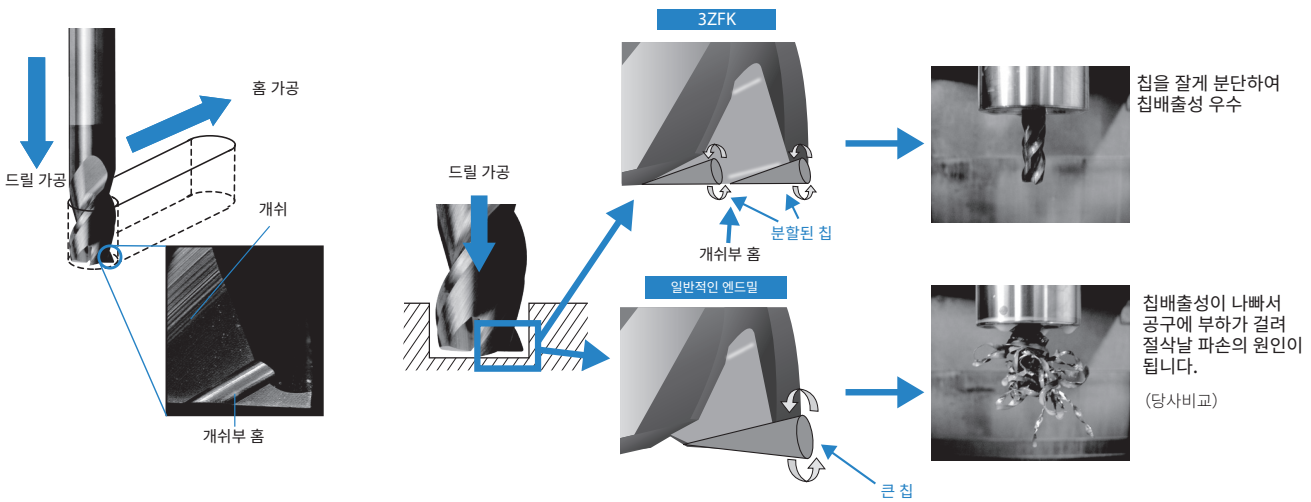
가공 용도



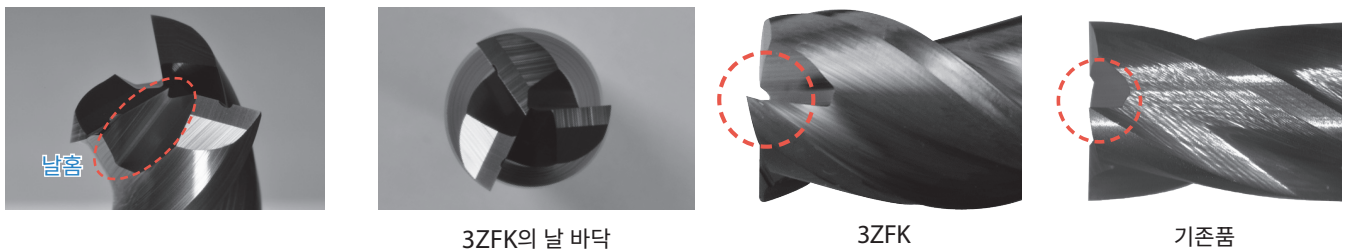
1 신설계로 고능률

칩배출성 우수! 개취(Gash)부 홈이 드릴 가공시의 칩을 분단

개취(Gash)부 홈의 효과



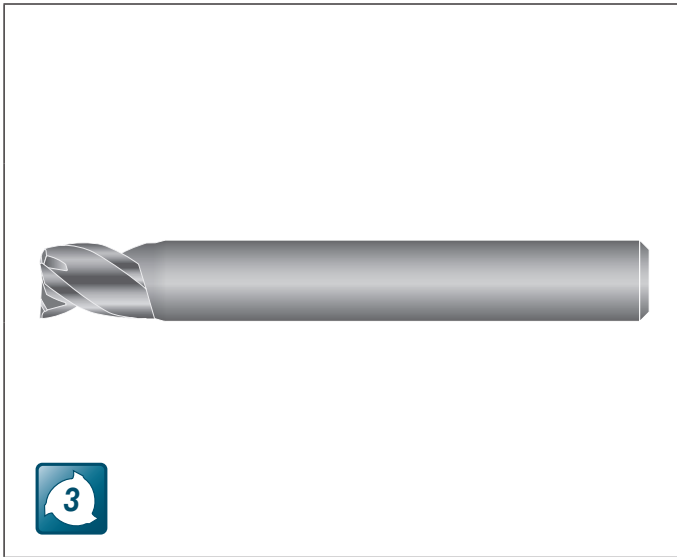
「막힘」에 강하다! 날홈/개취가 깊어 칩의 「막힘」을 억제



L
슬리드 톨

엔드밀
미세 가공
드릴
SGS
공업용 나이프

3ZFKS, 3ZFKM



추천 피삭재

★ 제1 추천

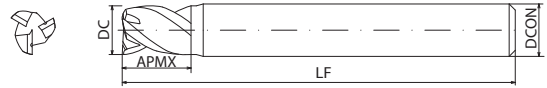


Fig. 1

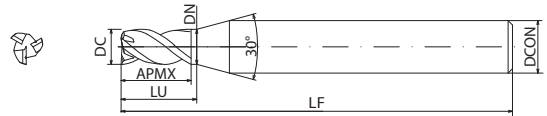


Fig. 2

3ZFKS (숫)

어깨 가공 홈 가공 드릴 가공

규격	재고	치수 (mm)							ZFP 별수	Fig.	
		DC	외경 공차		APMX	DN	LU	DCON			LF
			min.	max.							
3ZFKS 060-090-06	● 6	-0.02	0	9	-	-	6	50	3	1	
070-105-08	● 7			10.5	7.2	11.3	8	60		2	
080-120-08	● 8	-0.025	-0.005	12	-	-	10	70	1	1	
100-150-10	● 10			15			12	75			
120-180-12	● 12			-0.03			-0.01	18			12

기준 절삭조건 Ⓢ L30

3ZFKM (미디엄)

어깨 가공 홈 가공 드릴 가공

규격	재고	치수 (mm)							ZFP 별수	Fig.	
		DC	외경 공차		APMX	DN	LU	DCON			LF
			min.	max.							
3ZFKM 030-060-06	● 3	-0.015	0	6	3.2	6.5	6	50	3	2	
030-080-06	● 3			8	4.2	8.6					
040-080-06	● 4	-0.02	-0.005	12	4.2	13	8	60	1	2	
040-120-06	● 4			12	13	6					
050-100-06	● 5			10	5.2	10.8					
050-130-06	● 5	-0.02	-0.005	13	-	-	8	60	2	1	
060-130-06	● 6			13	-	-					
070-160-08	● 7	-0.025	-0.005	16	7.2	17.3	10	70	1	1	
080-190-08	● 8			19	12	75					
100-220-10	● 10	-0.03	-0.01	22	12	75	16	90	1	1	
120-260-12	● 12			26							16
160-350-16	● 16	35	16	90							

기준 절삭조건 Ⓢ L30



슬리드
드릴

● : 표준 재고

고능률 다날 엔드밀

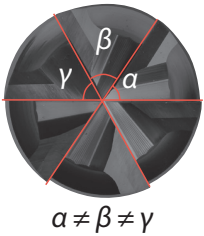
6PFK/8PFK

신설계로 고능률 가공, 우수한 정삭면

1 부등분할/부등리드

독자적인 부등분할/부등리드로 우수한 내떨림 성능

부등분할



절삭날을 부등분할로 함으로써
절삭시의 주기적인 진동을 억제

$$\alpha \neq \beta \neq \gamma$$

부등리드



비틀림각(리드각)을 절삭날마다 바꿈으로써
강한 제진 효과를 발휘
떨림을 억제하여 정삭면이 우수

$$\theta_1 \neq \theta_2 \neq \theta_3$$

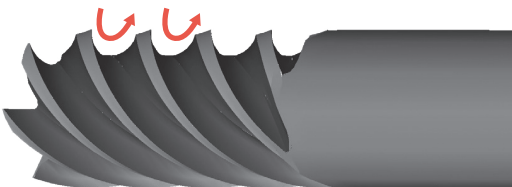
벽면 상태의 비교 가공경 $\phi 12$ (당사비교)

피삭재	SCM440	SUS304	Ti-6Al-4V
절삭조건	n=3,300min ⁻¹ (Vc=124m/min) Vf=2,000mm/min (fz=0.1mm/t) ap × ae=30 × 1.5mm	n=2,500min ⁻¹ (Vc=94m/min) Vf=1,130mm/min (fz=0.08mm/t) ap × ae=30 × 0.6mm	n=2,500min ⁻¹ (Vc=94m/min) Vf=1,130mm/min (fz=0.08mm/t) ap × ae=30 × 0.6mm
결과	6PFK	6PFK	6PFK
	경쟁사A	경쟁사A	경쟁사A
	떨림 발생	떨림 발생	물림이 나빠서 가공면이 흐려짐

6/8날의 다날 사양으로 어깨 가공의 고이송 가공
우수한 정삭면을 실현

2 특수 홈 형상

신설계의 특수 홈 형상에 의한 안정된 칩배출성



넓은 칩 포켓으로 우수한 칩배출
고이송 가공에 위력을 발휘

L

솔리드 톨

엔드밀


미세 가공



드릴

SGS

공업용 나이프

6PFK, 8PFK



추천 피삭재 ★ 제1 추천

P
~30HRC

P
30~40HRC

H
~55HRC

M
Stainless steel

S
Titanium Alloy

K
Cast Iron

N
Aluminum & Non Ferrous Material

MEGACORNET
MAKO

h5
Shank Dia.

42°
44°

Land

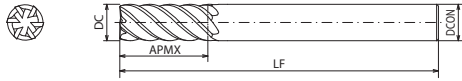


Fig. 1

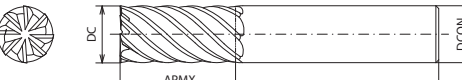


Fig. 2

6PFK, 8PFK (미디엄)

어깨 가공

규격	재고	치수 (mm)						ZFP 개수	Fig.
		DC	외경 공차		APMX	DCON	LF		
			min.	max.					
6PFK 060-150	● 6	-0.02	0	15	6	60	6	1	
	● 8	-0.025	-0.005	20	8	70			
	● 10			25	10	80			
	● 12			30	12	100			
	● 16			40	16	110			
	● 20			45	20	125			
● 25	50			25	140				
8PFK 250-500	● 25	-0.03	-0.01	50	25	140	8	2	

기준 절삭조건 L31

6PFK, 8PFK (롱)

어깨 가공

규격	재고	치수 (mm)						ZFP 개수	Fig.	
		DC	외경 공차		APMX	DCON	LF			
			min.	max.						
6PFK 060-250	● 6	-0.02	0	25	6	70	6	1		
	● 8	-0.025	-0.005	35	8	90				
	● 10			45	10	100				
	● 12			55	12	120				
	● 16			65	16	135				
	● 20			75	20	155				
	● 25			100	25	180				
	8PFK 250-1000			● 25	-0.03	-0.01			100	25

기준 절삭조건 L31

●: 표준 재고

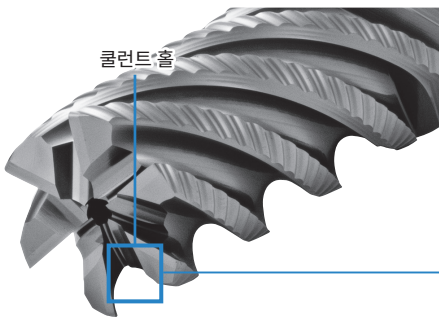
난삭재 가공용 고성능 라핑 엔드밀

4 / 5 / 6RFH

쿨런트 홀 포함. 다날 사양으로 난삭재의 고성능·안정 가공을 실현
스테인리스강이나 티탄합금의 깊은 홈 가공에 대응

1 다날 사양으로 고성능 가공을 실현

다날 사양으로 쿨런트 홀 포함. 독자적인 개취(Gash) 형상으로 칩배출성 향상
다날 사양(φ16-6날) 독자적인 개취(Gash) 형상

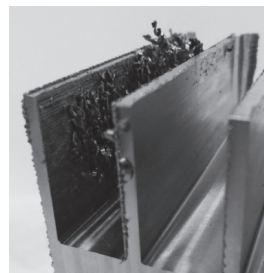


날 홈에 칩 흐름이 쉽다
라디우스 개취(Gash)

칩배출성 향상

스테인리스강·티탄합금으로 2D(ap=2 x DC)의 깊은 홈 가공이 가능
홈 가공의 성능 비교(당사비교)

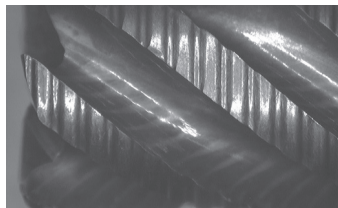
1패스 가공 후



경쟁사A

5RFH

5RFH (내부 급유+외부 급유)



절삭조건 : n = 2,550 min⁻¹, Vf = 336 mm/min, ap = 20 mm
가공경φ10, Wet, 홈 가공 피삭재 : SUS304

깊은 홈 가공에서도
결손 없음

경쟁사A (외부급유)

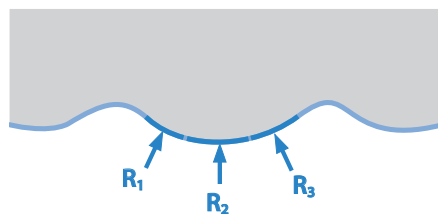


× 결손 (칩 씹힘)

2 결손에 강함

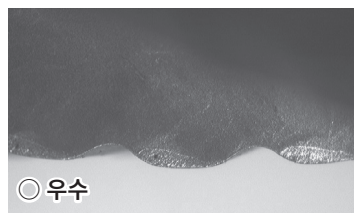
특수 R형상의 파형(물결) 절삭날로 응력 집중·경손을 억제. 안정 가공을 실현

특수 R형상의 파형 절삭날



다른 R의 조합으로 파형 절삭날을 구성(복합 R형상)
응력 집력을 완화하여 내결손성을 향상

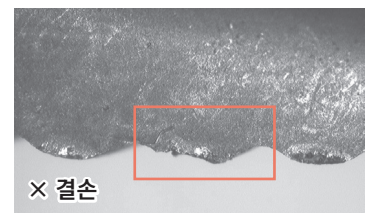
12m가공 후의 인선 상태(당사비교)



○ 우수

5RFH

절삭조건 : n = 2,900 min⁻¹, Vf = 712 mm/min, ap x ae = 5 x 3 mm
가공경φ10, Wet, 어깨 가공 피삭재 : Ti-6Al-4V




× 결손

경쟁사B

3 긴수명·안정 가공을 실현

교세라 PVD코팅 역사상 가장 고경도, 내열성이 우수한 MEGACOAT HARD를 채용

4 / 5 / 6RFH



4

5

6

★ 제 1 추천

P
~30HRC

P
30~40HRC

M
Stainless steel

S
Titanium Alloy

S
Heat-resistant Alloy

K
Cast Iron

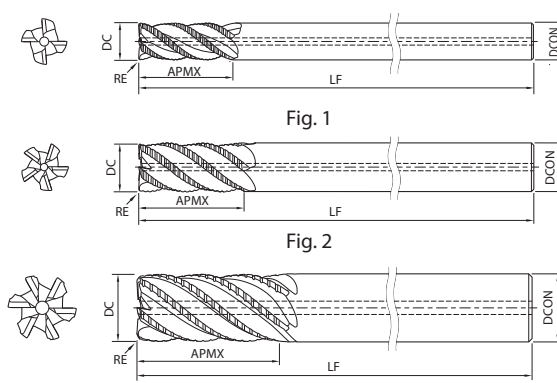
MEGACOAT HARD

Cutting shape

Radius R

h6
Shank Dia.

40°



4 / 5 / 6RFH (미디엄)

어깨 가공 홈 가공

규격	재고	치수 (mm)						ZFP 수	Fig.		
		DC	외경 공차		RE	APMX	DCON			LF	
			min.	max.							
4RFH 060-150	● 6	-0.05	0	0.3	15	6	60	4	1		
	● 8				20	8	70				
5RFH 100-250	● 10				-0.06	0.5	25	10	80	5	2
	● 12						26	12	100		
6RFH 160-350	● 16	-0.06	0.5	35			16	110	6	3	
	● 20			45			20	125			

기준 절삭조건 L32

4 / 5 / 6RFH (롱)

어깨 가공


규격	재고	치수 (mm)						ZFP 수	Fig.		
		DC	외경 공차		RE	APMX	DCON			LF	
			min.	max.							
4RFH 060-300	● 6	-0.05	0	0.3	30	6	80	4	1		
	● 8				40	8	100				
5RFH 100-500	● 10				-0.06	0.5	50	10	110	5	2
	● 12						60	12	130		
6RFH 160-800	● 16	-0.06	0.5	80			16	160	6	3	
	● 20			100			20	180			




기준 절삭조건 L33

코너R(RE)의 치수는 참고치입니다.



3 / 4 / 5RDS



추천 피삭재 ★ 제1 추천

P
~30HRC

P
30~40HRC

M
Stainless steel

K
Cast Iron

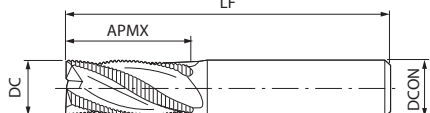
TiAlN

Cutting shape

C

h6
Shank Dia.

20°



3 / 4 / 5RDSM (미디엄)

어깨 가공 홀 가공

규격	재고	치수 (mm)						ZEP 수	
		DC	외경 공차		APMX	DCON	LF		CHW
			min.	max.					
3RDSM 040-110-06 050-130-06 060-130-06 080-160-08	● 4	-0.105	-0.03	11	55	0.3	3		
	● 5			13	6				
	● 6			16	8				
	● 8			22	10				
4RDSM 100-220-10 120-260-12 160-320-16 200-380-20	● 10	-0.16	-0.05	22	72	0.5	4		
	● 12			26	83				
	● 16			32	92				
	● 20			38	104				
5RDSM 250-450-25	● 25	-0.195	-0.065	45	121		5		

기준 절삭조건 ▶ L34

3 / 4 / 5RDSL (롱)

어깨 가공

규격	재고	치수 (mm)						ZEP 수	
		DC	외경 공차		APMX	DCON	LF		CHW
			min.	max.					
3RDSL 060-240-06 080-280-08	● 6	-0.105	-0.03	24	6	76	0.3	3	
	● 8			28	8				
4RDSL 100-340-10 120-450-12 160-560-16 200-600-20	● 10	-0.16	-0.05	34	10	125	0.5	4	
	● 12			45	12				
	● 16			56	16				
	● 20			60	20				
5RDSL 250-800-25	● 25	-0.195	-0.065	80	25	150		5	

기준 절삭조건 ▶ L34


항상 가공용으로, 3날, 4날, 5날의 3종을 레퍼토리. 사인 커브 형상의 절삭날로 절삭저항을 경감합니다.



슬리드 톨

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

● : 표준 재고

4 / 6RFS



추천 피삭재 ★ 제1 추천

P ~30HRC	P 30~40HRC	H ~55HRC	H ~68HRC	M Stainless steel	S Titanium Alloy	S Heat-resistant Alloy	K Cast Iron
--------------------	----------------------	--------------------	--------------------	-----------------------------	----------------------------	----------------------------------	-----------------------

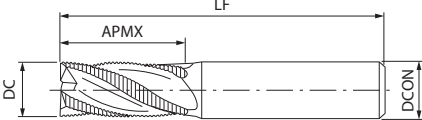
TiAlN

Cutting shape

C

h6
Shank Dia.

45°



4 / 6RFSM

어깨 가공

홀 가공

규격	재고	치수 (mm)						ZEP 수 별	
		DC	외경 공차		APMX	DCON	LF		CHW
			min.	max.					
4RFSM 060-130-06 080-160-08 100-220-10 120-260-12 160-320-16 200-380-20	● 6	-0.105	-0.03	13	6	57	0.3	4	
	● 8	-0.13	-0.04	16	8	63	0.4		
	● 10	-0.16	-0.05	22	10	72	0.5		
	● 12	-0.16	-0.05	26	12	83	0.6		
	● 16	-0.195	-0.065	32	16	92	1		
	● 20	-0.195	-0.065	38	20	104	1		
6RFSM 160-320-16 200-380-20 250-450-25	● 16	-0.16	-0.05	32	16	92	0.6	6	
	● 20	-0.195	-0.065	38	20	104	1		
	● 25	-0.195	-0.065	45	25	121	1.1		

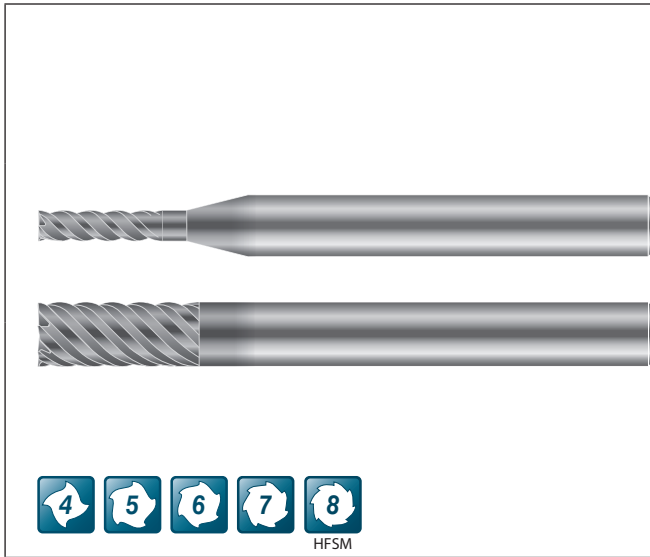
기준 절삭조건 L35

RFS타입은 비틀림각 45° 평평한 니크 절삭날이 있어 인선 강도가 강하고 고경도재·티탄합금에도 대응합니다.



슬리드틀

4 / 5 / 6 / 7 / 8HFS



추천 피삭재

★ 제1 추천

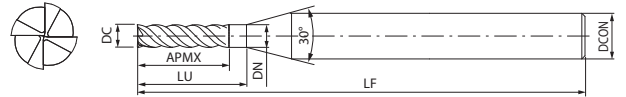


Fig. 1

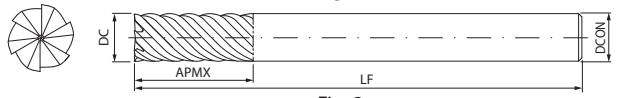


Fig. 2

4 / 5 / 6 / 7 / 8HFS (숫)

어깨 가공

규격	재고	치수 (mm)							ZEP 깊이	Fig.	
		DC	외경 공차		APMX	DN	LU	DCON			LF
			min.	max.							
4HFS 010-040-06	● 1	-0.015	0	4	1.05	4.8	6	60	4	1	
020-060-06	● 2			6	2.1	7.2					
030-080-06	● 3			8	3.15	9.6					
040-100-06	● 4			10	4.2	12					
050-120-06	● 5			12	5.2	14.4					
5HFS 040-100-06	● 4			10	4.2	12			5		
6HFS 060-140-06	● 6	-0.02		14					6	2	
080-180-08	● 8	-0.025	-0.005	18			8	70			
100-220-10	● 10			22			10	80			
120-260-12	● 12			-0.03	-0.01	26					12
7HFS 060-140-06	● 6			-0.02	0	14			6	60	7
080-180-08	● 8	-0.025	-0.005	18			8	70			
100-220-10	● 10			22			10	80			
120-260-12	● 12			-0.03	-0.01	26			12	90	

기준 절삭조건 L36

4 / 5 / 6 / 7 / 8HFSM (미디엄)

어깨 가공

규격	재고	치수 (mm)							ZEP 깊이	Fig.	
		DC	외경 공차		APMX	DN	LU	DCON			LF
			min.	max.							
4HFSM 010-050-06	● 1	-0.015	0	5	1.05	6	6	60	4	1	
020-090-06	● 2			9	2.1	10.8					
030-120-06	● 3			12	3.15	14.4					
040-140-06	● 4			14	4.2	16.8					
050-170-06	● 5			17	5.2	20.4					
5HFSM 040-140-06	● 4			14	4.2	16.8			5		
6HFSM 060-170-06	● 6	-0.02		17					6	2	
070-200-08	● 7	-0.025	-0.005	20	7.2	24	8	70			
080-230-08	● 8			23			10	80			
100-280-10	● 10			28			12	90			
120-330-12	● 12			33			12	90			
140-370-16	● 14			37	14.2	44.4			7	1	
150-420-16	● 15	-0.03	-0.01	42	15.2	50.4	16	105			
160-420-16	● 16										
200-480-20	● 20			48			20	110			
7HFSM 060-170-06	● 6	-0.02	0	17			6	60	7	2	
080-230-08	● 8	-0.025	-0.005	23			8	70			
100-280-10	● 10			28			10	80			
120-330-12	● 12			33			12	90			
160-420-16	● 16			-0.03	-0.01	42			16	105	
8HFSM 250-530-25	● 25			53			25	125	8		

기준 절삭조건 L36

고경도재 대응의 PVD코팅 “MEGACOAT HARD”채용. 코어경을 크게 확보하여 고강성을 실현. 공구의 긴 수명화와 안정 가공을 실현하는 고경도재 대응 엔드밀입니다. 절삭날의 경사각을 마이너스 (경사 네가티브 사양) 로 하여 인선 강도의 향상과 칩배출을 높였습니다.



● : 표준 재고



슬리드 톨

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

6PDR

추천 피삭재 ★ 제1 추천

P
~30HRC

P
30~40HRC

H
~55HRC


H
~68HRC

ACTIV

Radius
R

h6
Shank Dia.

20°



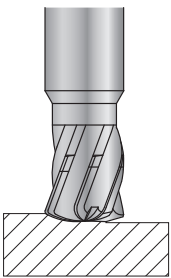
6PDR

모방 가공

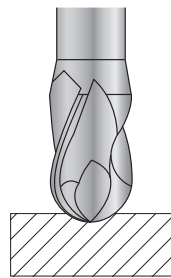
규격	재고	치수 (mm)							ZEP 수 별
		DC	외경 공차		APMX	LU	DCON	LF	
			min.	max.					
6PDRS 060-045-06	● 6	-0.038	-0.02	4.5	9	6	57	6	
080-060-08	● 8	-0.047	-0.025	6	12	8	63		
100-075-10	● 10	-0.059	-0.032	7.5	15	10	72		
120-090-12	● 12	-0.059	-0.032	9	18	12	83		

기준 절삭조건 ➡ L20

코어경을 크게하여 강성을 높였습니다. 6날 사양으로 고이송이 가능합니다.
 바닥날은 특수 R형상으로 절입량을 크게하여 고능률 가공을 실현합니다.
 경사 침하 가공, 원호 가공이 가능합니다.



PDR



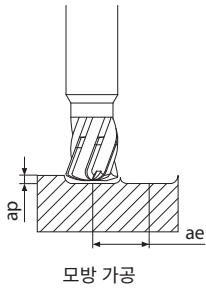
일반적인 볼 엔드밀



슬리드 톨

● : 표준 재고

기준 절삭조건



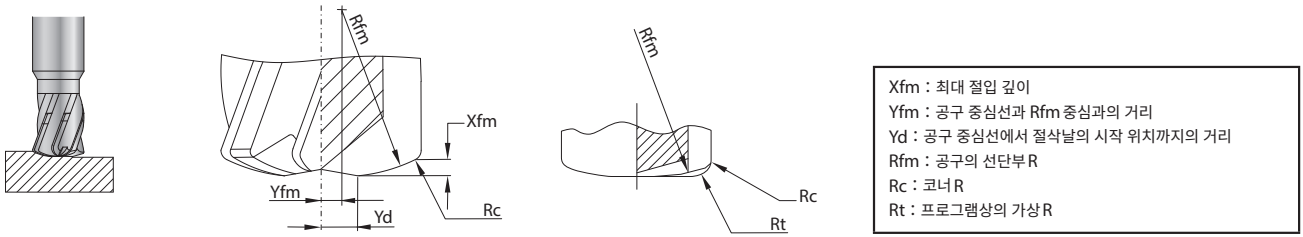
피삭재		절입량 (ap x ae) (mm)	외경 DC (mm)	ø6	ø8	ø10	ø12
프리하든강	52HRC	ø6 : 0.32 x 3.3mm (0.32 x 0.55DC) ø8 : 0.42 x 4.4mm (0.42 x 0.55DC)	회전 수 (min ⁻¹)	6,400	4,800	3,800	3,200
			이송 (mm/min)	7,600	7,200	6,900	7,600
탄소강 · 합금강	< 45HRC	ø10: 0.53 x 5.5mm (0.53 x 0.55DC) ø12: 0.63 x 6.6mm (0.63 x 0.55DC)	회전 수 (min ⁻¹)	8,500	6,400	5,100	4,200
			이송 (mm/min)	15,300	15,300	15,300	12,700



솔리드 툴

엔드밀
미세 가공
드릴
SGS
공업용 나이프

6PDRS의 절삭날 형상 상세



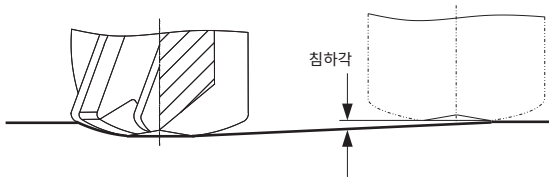
(단위: mm)

규격	외경	최대 절입 깊이	선단부 R	코너 R	공구 중심선과 Rfm 중심과의 거리	공구 중심선에서 절삭날의 시작 위치까지의 거리	프로그램상의 가상 R
	DC	Xfm	Rfm	Rc	Yfm	Yd	Rt
6PDRS060-045-06	6	0.32	6	0.62	0.75	1.32	0.62
6PDRS080-060-08	8	0.42	8	0.83	1.00	1.76	0.83
6PDRS100-075-10	10	0.53	10	1.04	1.25	2.20	1.04
6PDRS120-090-12	12	0.63	12	1.24	1.50	2.64	1.24

Xfm의 값을 초과하는 절입량에서의 가공은 추천하지 않습니다.

경사 침하 가공에 대해서

경사 침하 가공시에는 오른쪽 표의 비율로 이송 속도를 낮추어 가공하십시오.

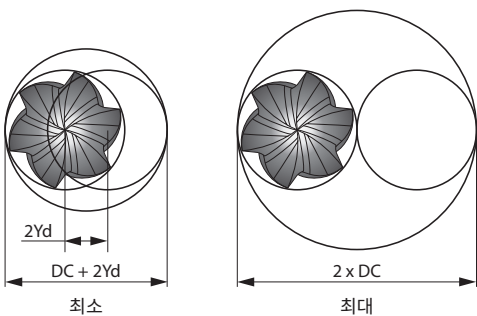


침하각	1°	2°	3°	4°	5°
이송 속도의 비율	100%	70%	50%	30%	10%

포켓 가공을 하는 경우는 0.5°의 침하각으로 하십시오.
드릴 가공은 권장하지 않습니다.

원호 가공에 대해서

1회 원호 가공의 홀경은 오른쪽 표의 범위에서 부탁드립니다.



(단위: mm)

규격	최소	최대
6PDRS060-045-06	8.64	12.00
6PDRS080-060-08	11.52	16.00
6PDRS100-075-10	14.40	20.00
6PDRS120-090-12	17.28	24.00



슬리드 툴

알루미늄·비철금속용

3AFK

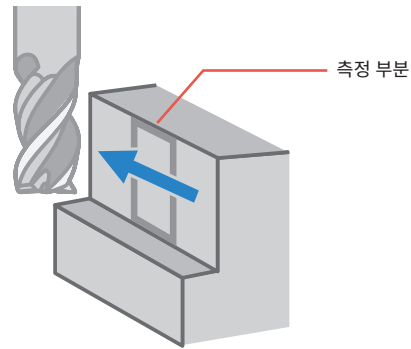
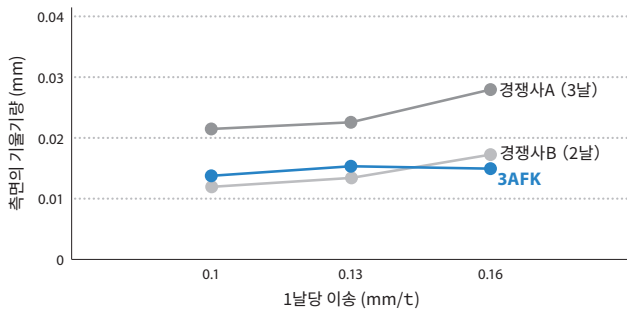
고능률·고정밀 가공을 실현하는 3날 엔드밀

우수한 절삭력과 높은 내떨림 성능을 양립. 다양한 가공에서 높은 안정성을 발휘

1 고능률·고정밀 가공을 실현

3날 사양으로 고능률. 우수한 가공 정밀도

측면의 기율기량 비교 (당사비교)



절삭조건 : $n = 11,700 \text{ min}^{-1}$, $V_f = 3,500 - 5,600 \text{ mm/min}$, $ap \times ae = 15 \times 1 \text{ mm}$
가공경 $\phi 10$, 어깨 가공, 다운 커트, Wet, HSK A63 피삭재 : A5052

L



솔리드 톨

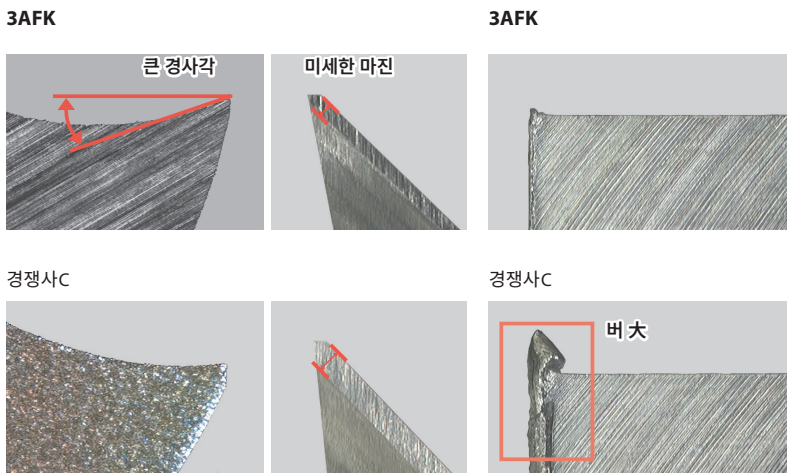
2 버를 억제

큰 경사각과 미세한 마진으로 우수한 절삭력

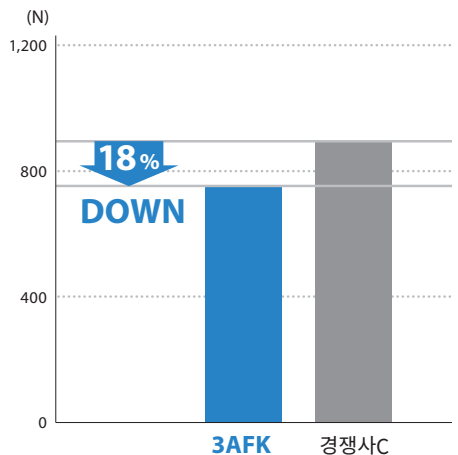
경사각과 마진 비교 (당사비교)

가공 후의 버 상태 비교 (당사비교)

절삭저항(합력)의 비교 (당사비교)



가공 후의 버 상태 비교 절삭조건 : $n = 11,700 \text{ min}^{-1}$, $V_f = 4,600 \text{ mm/min}$, $ap \times ae = 10 \times 1 \text{ mm}$
가공경 $\phi 10$, 어깨 가공, 다운 커트, Wet, HSK A63 피삭재 : A7075

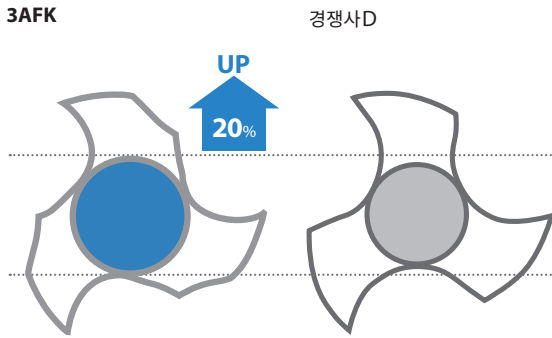


절삭조건 : $n = 11,700 \text{ min}^{-1}$, $V_f = 3,400 \text{ mm/min}$, $ap \times ae = 10 \times 10 \text{ mm}$
가공경 $\phi 10$, 홀 가공, Wet, BT50 피삭재 : A5052

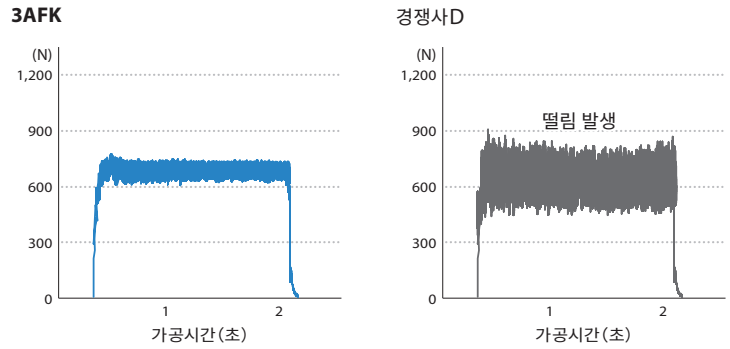
3 떨림에 강함

큰 센터 두께를 확보하고 높은 내떨림 성능

센터 두께 비교 (당사비교)

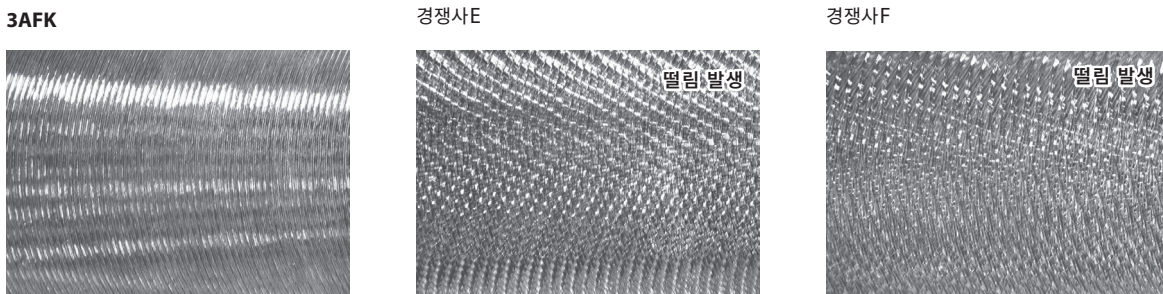


절삭저항 (분력)의 비교 (당사비교)



절삭조건 : $n = 11,700 \text{ min}^{-1}$, $V_f = 3,400 \text{ mm/min}$, $a_p \times a_e = 10 \times 10 \text{ mm}$, 가공경 $\phi 10$, 홈 가공, Wet, BT50 피삭재 : A5052

홈 가공 바닥면 비교 (당사비교)

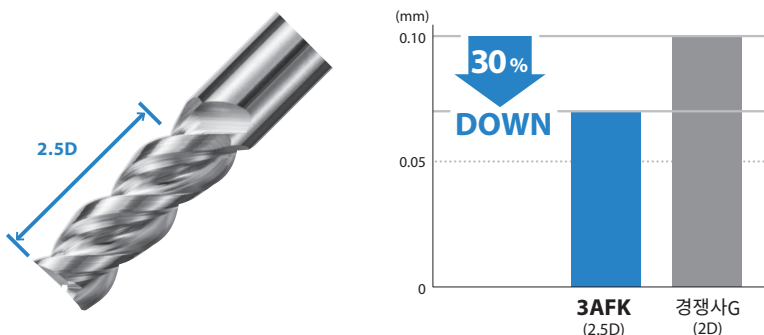


절삭조건 : $n = 11,100 \text{ min}^{-1}$, $V_f = 2,600 \text{ mm/min}$, $a_p = 10 \text{ mm}$, Wet 피삭재 : A5052

4 날장 2.5D (미디엄 타입) 을 레퍼토리

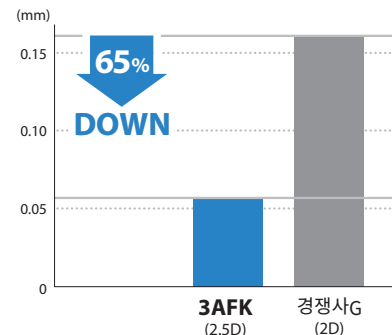
종절입이 큰 경우에서도 안정 가공이 가능

측면의 기울기량 비교 (당사비교)




절삭조건 : $n = 11,100 \text{ min}^{-1}$, $V_f = 3,800 \text{ mm/min}$, $a_p \times a_e = 20 \times 1 \text{ mm}$
가공경 $\phi 10$, 어깨 가공, 다운 커트, Wet, HSK A63 피삭재 : A7075

버 높이 비교 (당사비교)




슬리드 톨

3AFK



추천 피삭재 ★ 제1 추천



Uncoated

Land

h5
Shank Dia.

45°

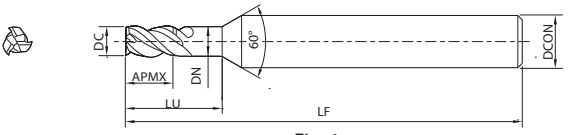


Fig. 1

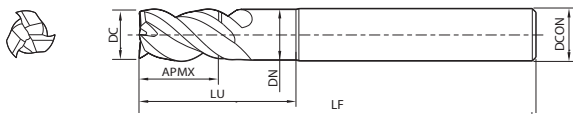


Fig. 2

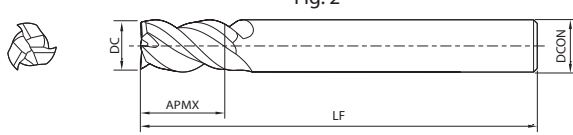


Fig. 3

3AFK (숫, 1.5D)

어깨 가공 홈 가공 드릴 가공

규격	재고	치수 (mm)							ZFP	Fig.	
		DC	외경 공차		APMX	DN	LU	DCON			LF
			min.	max.							
3AFK 030-045-090	● 3			4.5	2.7	9				1	
040-060-120	● 4	-0.015		6	3.7	12				1	
050-075-150	● 5			7.5	4.7	15	6	70		3	
060-090	● 6	-0.005		9	-	-				2	
060-090-180	● 6				5.7	18				1	
070-105-210	● 7	-0.015		10.5	6.7	21				3	
080-120	● 8	-0.006		12	-	-	8	80		2	
080-120-240	● 8				7.7	24				1	
090-135-270	● 9	-0.015	0	13.5	8.7	27				3	
100-150	● 10	-0.006		15	-	-	10	90		1	
100-150-300	● 10				9.7	30				2	
110-165-330	● 11	-0.015		16.5	10.7	33				1	
120-180	● 12			18	-	-	12	110		3	
120-180-360	● 12				11.7	36				2	
160-240	● 16	-0.008		24	-	-				3	
160-240-480	● 16				15.7	48	16	120		2	

기준 절삭조건 L37

3AFK (미디엄, 2.5D)

어깨 가공 홈 가공 드릴 가공

규격	재고	치수 (mm)							ZFP	Fig.	
		DC	외경 공차		APMX	DN	LU	DCON			LF
			min.	max.							
3AFK 030-075-150	● 3			7.5	2.7	15				1	
040-100-200	● 4	-0.015		10	3.7	20				1	
050-125-250	● 5			12.5	4.7	25	6	70		3	
060-150	● 6	-0.005		15	-	-				2	
060-150-300	● 6				5.7	30				1	
070-175-350	● 7	-0.015		17.5	6.7	35				3	
080-200	● 8	-0.006		20	-	-	8	80		2	
080-200-400	● 8				7.7	40				1	
090-225-450	● 9	-0.015	0	22.5	8.7	45				3	
100-250	● 10	-0.006		25	-	-	10	90		1	
100-250-500	● 10				9.7	50				2	
110-275-550	● 11	-0.015		27.5	10.7	55				1	
120-300	● 12			30	-	-	12	110		3	
120-300-600	● 12				11.7	60				2	
160-400	● 16	-0.008		40	-	-				3	
160-400-800	● 16				15.7	80	16	120		2	

기준 절삭조건 L37

● : 표준 재고

L

슬리드 톨

엔드밀



미세 가공

드릴


SGS





공업용 나이프

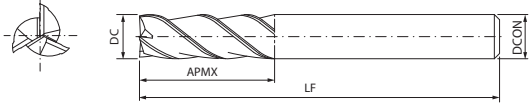
3NESM

추천 피삭재 ★ 제 1 추천






3NESM

어깨 가공 끝 가공

규격	재고	치수 (mm)						ZEP 수 값
		DC	외경 공차		APMX	DCON	LF	
			min.	max.				
3NESM	030-120-06	● 3	-0.028	-0.014	12	6	50	3
	040-120-06	● 4	-0.038	-0.02	14			
	050-140-06	● 5				-0.008	16	
	060-160-06	● 6	-0.009	20	10			
	080-200-08	● 8				-0.011	22	
	100-220-10	● 10	-0.013	25	16			
	120-250-12	● 12				0	32	
	160-320-16	● 16	38	20	104			
	200-380-20	● 20						

외경 ø6이상은 절삭날에 마진이 붙습니다.


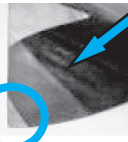

기준 절삭조건  L37

바닥날에 와이퍼 절삭날이 부착되어 있어 바닥의 정삭면 품위를 향상 시켰습니다.
부등분할로 떨림을 억제하고 측면의 정삭면 품위도 향상되었습니다.



알루미늄 합금의
고속가공에 의한
정삭면

바닥면·벽면·코너부의
조도 0.25µmRa를 달성

와이퍼

3날의 부등분할 홈



슬리드
틀

● : 표준 재고

4FESM (어깨 가공)

가공 형태	피삭재	외경 DC (mm)	ø1	ø2	ø4	ø6	ø8	ø12	ø16
	탄소강 · 주철 S45C, FC	회전 수 (min ⁻¹)	25,500	13,000	6,600	4,400	3,300	2,200	1,700
		이송 (mm/min)	335	345	580	620	625	630	600
	합금강 SCM, SNCM	회전 수 (min ⁻¹)	22,000	11,000	5,600	3,700	2,800	1,900	1,400
		이송 (mm/min)	290	290	395	455	455	470	460
	프리하든강 (30 ~ 45HRC)	회전 수 (min ⁻¹)	12,000	7,200	4,200	3,000	2,200	1,500	1,100
		이송 (mm/min)	105	125	150	160	160	165	140
	스테인리스강 SUS304	회전 수 (min ⁻¹)	22,000	11,000	5,600	3,700	2,800	1,900	1,400
		이송 (mm/min)	130	145	165	165	170	175	155

*스테인리스강 가공시에는 수용성 절삭유를 권장합니다.

홈 가공은 권장하지 않습니다.



솔리드 톨

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

3FESW

가공 형태	피삭재	구분	외경 DC (mm)	ø3	ø4	ø5	ø6	ø8	ø10	ø12	ø13
 <p>어깨 가공</p> <p>절입량 (ap x ae) (mm) 1DC x 0.2DC</p>	탄소강 · 주철 S45C, FC	어깨 가공	회전 수 (min ⁻¹)	11,000	8,000	6,400	5,300	4,000	3,200	2,700	2,500
			이송 (mm/min)	810	800	800	800	650	560	510	450
		홈 가공	회전 수 (min ⁻¹)	11,000	8,000	6,400	5,300	4,000	3,200	2,700	2,500
			이송 (mm/min)	810	800	800	800	650	560	510	450
	합금강 SCM, SNCM	어깨 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800
			이송 (mm/min)	530	530	530	530	430	370	340	300
홈 가공		회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800	
		이송 (mm/min)	530	530	530	530	430	370	340	300	
 <p>홈 가공</p> <p>절입량 (ap) (mm) 0.2DC</p>	프리하든강 (30 ~ 45HRC)	어깨 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800
			이송 (mm/min)	200	200	200	200	180	180	180	180
		홈 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800
			이송 (mm/min)	140	140	150	150	150	150	150	150
	스테인리스강 SUS304	어깨 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800
			이송 (mm/min)	300	300	300	300	240	210	200	200
홈 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800		
	이송 (mm/min)	150	150	160	160	160	160	160	160		

* 스테인리스강 가공시에는 수용성 절삭유를 사용을 권장합니다.

4FESW

가공 형태	피삭재	구분	외경 DC (mm)	ø3	ø4	ø5	ø6	ø8	ø10	ø12	ø13
 <p>어깨 가공</p> <p>절입량 (ap x ae) (mm) 1DC x 0.2DC</p>	탄소강 · 주철 S45C, FC	어깨 가공	회전 수 (min ⁻¹)	11,000	8,000	6,400	5,300	4,000	3,200	2,700	2,500
			이송 (mm/min)	960	960	960	960	780	680	620	570
		홈 가공	회전 수 (min ⁻¹)	11,000	8,000	6,400	5,300	4,000	3,200	2,700	2,500
			이송 (mm/min)	960	960	960	960	780	680	620	570
	합금강 SCM, SNCM	어깨 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800
			이송 (mm/min)	640	640	640	640	520	450	410	370
홈 가공		회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800	
		이송 (mm/min)	640	640	640	640	520	450	410	370	
 <p>홈 가공</p> <p>절입량 (ap) (mm) 0.2DC</p>	프리하든강 (30 ~ 45HRC)	어깨 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800
			이송 (mm/min)	240	240	240	240	210	210	210	210
		홈 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800
			이송 (mm/min)	160	160	180	180	180	180	180	180
	스테인리스강 SUS304	어깨 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800
			이송 (mm/min)	360	360	360	360	300	260	240	240
홈 가공	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,800		
	이송 (mm/min)	180	180	200	200	200	200	200	200		

* 스테인리스강 가공시에는 수용성 절삭유를 사용을 권장합니다.



슬리드 톨

4MFK (숫 · 미디엄) , 4MFR (미디엄)

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø3	ø4	ø5	ø6	ø8	ø10	ø12	ø16
 <p>어깨 가공</p>	탄소강 S45C	어깨 가공	숫 타입 1.2DC x 0.15DC 미디엄 타입 1.5DC x 0.15DC	회전 수 (min ⁻¹)	13,800	10,700	8,800	7,500	6,000	4,800	4,000	3,300
				이송 (mm/min)	1,400	1,400	1,400	1,500	1,500	1,400	1,400	1,300
	합금강 SCM, SNCM	어깨 가공	숫 타입 1.2DC x 0.1DC 미디엄 타입 1.5DC x 0.1DC	회전 수 (min ⁻¹)	10,600	9,300	8,300	7,400	6,000	4,700	3,800	2,800
				이송 (mm/min)	1,000	1,000	1,000	1,100	1,100	1,000	1,000	900
 <p>홈 가공</p>	탄소강 S45C	홈 가공	ap ≤ 1DC	회전 수 (min ⁻¹)	13,800	10,700	8,800	7,500	6,000	4,800	4,000	3,300
				이송 (mm/min)	620	700	750	780	830	850	800	750
	합금강 SCM, SNCM	홈 가공	ap ≤ 1DC	회전 수 (min ⁻¹)	10,600	9,300	8,300	7,400	6,000	4,700	3,800	2,800
				이송 (mm/min)	500	510	520	530	550	570	530	450
프리하드강 (30 ~ 45HRC)	어깨 가공	어깨 가공	숫 타입 1.2DC x 0.07DC 미디엄 타입 1.5DC x 0.07DC	회전 수 (min ⁻¹)	8,700	6,800	5,500	4,600	3,500	2,800	2,300	1,700
				이송 (mm/min)	670	730	790	840	900	810	770	630
	홈 가공	홈 가공	ap ≤ 1DC	회전 수 (min ⁻¹)	6,700	5,800	4,800	4,000	3,000	2,300	1,900	1,400
				이송 (mm/min)	320	330	360	370	400	420	380	300
스테인리스강 SUS304 티탄합금	어깨 가공	어깨 가공	숫 타입 1.2DC x 0.1DC 미디엄 타입 1.5DC x 0.1DC	회전 수 (min ⁻¹)	8,700	7,000	6,000	5,200	4,000	3,000	2,500	1,700
				이송 (mm/min)	670	720	780	830	840	760	710	520
	홈 가공	홈 가공	ap ≤ 0.3DC	회전 수 (min ⁻¹)	6,800	6,000	5,100	4,300	3,400	2,600	2,000	1,400
				이송 (mm/min)	190	220	240	250	250	240	230	190

* 스테인리스강, 티탄합금 가공시에는 수용성 절삭유 사용을 권장합니다.

4MFK (롱)

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø3	ø4	ø5	ø6	ø8	ø10	ø12	ø16
 <p>어깨 가공</p>	탄소강 S45C	어깨 가공	3DC x 0.02DC	회전 수 (min ⁻¹)	11,000	8,500	7,000	6,000	4,800	3,800	3,200	2,600
				이송 (mm/min)	910	910	910	970	970	910	910	840
	합금강 SCM, SNCM	어깨 가공		회전 수 (min ⁻¹)	6,500	5,700	5,100	4,500	3,700	2,900	2,300	1,700
				이송 (mm/min)	540	540	540	600	600	540	540	490
	프리하드강 (30 ~ 45HRC)	어깨 가공		회전 수 (min ⁻¹)	4,900	3,900	3,100	2,600	2,000	1,600	1,300	1,000
				이송 (mm/min)	330	360	400	420	450	400	380	310
	스테인리스강 SUS304 티탄합금	어깨 가공		회전 수 (min ⁻¹)	4,300	3,500	3,000	2,600	2,000	1,500	1,300	900
				이송 (mm/min)	330	360	390	410	420	380	350	260

* 스테인리스강, 티탄합금 가공시에는 수용성 절삭유 사용을 권장합니다.

홈 가공은 권장하지 않습니다.



슬리드 툴

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

4TFK (숫 · 미디엄) , 4TFR (미디엄)

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø3	ø4	ø5	ø6	ø8	ø10	ø12	ø16	ø20
 <p>어깨 가공</p> <p>홀 가공</p>	탄소강 · 주철 S45C, FC	어깨 가공	1.5DC x 0.2DC	회전 수 (min ⁻¹)	13,800	10,300	8,300	6,900	5,200	4,100	3,400	2,600	2,100
				이송 (mm/min)	1,490	1,570	1,590	1,660	1,630	1,490	1,410	1,240	1,080
		홀 가공	DC ≤ ø12 : ap ≤ 1.0DC DC > ø12 : ap ≤ 12	회전 수 (min ⁻¹)	11,100	8,400	6,700	5,600	4,200	3,300	2,800	2,100	1,700
				이송 (mm/min)	770	790	790	800	750	690	600	540	410
	합금강 SCM, SNCM	어깨 가공	1.5DC x 0.2DC	회전 수 (min ⁻¹)	10,600	8,000	6,400	5,300	4,000	3,200	2,700	2,000	1,600
				이송 (mm/min)	900	1,020	1,020	1,020	920	870	800	720	640
		홀 가공	DC ≤ ø12 : ap ≤ 1.0DC DC > ø12 : ap ≤ 12	회전 수 (min ⁻¹)	8,500	6,400	5,100	4,200	3,200	2,500	2,100	1,600	1,300
				이송 (mm/min)	540	530	550	590	570	530	500	450	410
	프리하든강 (30 ~ 45HRC)	어깨 가공	1.5DC x 0.05DC	회전 수 (min ⁻¹)	9,500	7,200	5,700	4,800	3,600	2,900	2,400	1,800	1,400
				이송 (mm/min)	690	760	810	850	830	800	770	640	590
		홀 가공	ap ≤ 0.5 x DC	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,400	1,100
				이송 (mm/min)	480	540	570	600	550	490	460	380	340
스테인리스강 SUS304	어깨 가공	1.5DC x 0.05DC	회전 수 (min ⁻¹)	9,500	7,200	5,700	4,800	3,600	2,900	2,400	1,800	1,400	
			이송 (mm/min)	690	760	810	850	830	800	770	640	590	
	홀 가공	ap ≤ 0.5 x DC	회전 수 (min ⁻¹)	5,500	4,200	3,800	3,500	2,800	2,200	1,900	1,400	1,100	
			이송 (mm/min)	120	130	180	360	420	370	340	280	250	
티탄합금	어깨 가공	1.5DC x 0.1DC	회전 수 (min ⁻¹)	8,500	6,400	5,100	4,200	3,200	2,500	2,100	1,600	1,300	
			이송 (mm/min)	500	520	520	640	700	730	670	560	450	
	홀 가공	DC ≤ ø12 : ap ≤ 1.0DC DC > ø12 : ap ≤ 12	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,900	1,400	1,100	
			이송 (mm/min)	290	330	330	350	370	410	380	290	230	
초내열합금	어깨 가공	1.5DC x 0.05DC	회전 수 (min ⁻¹)	4,200	3,200	2,500	2,100	1,600	1,300	1,100	800	640	
			이송 (mm/min)	250	250	250	250	240	230	220	210	200	
	홀 가공	ap ≤ 0.3 x DC	회전 수 (min ⁻¹)	3,000	2,200	1,800	1,500	1,100	900	700	600	400	
			이송 (mm/min)	90	100	100	100	110	130	120	90	70	

* 스테인리스강, 티탄합금, 초내열합금의 가공시에는 수용성 절삭유 사용을 권장합니다.

4TFK (롱)

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø3	ø4	ø5	ø6	ø8	ø10	ø12	ø16	ø20
 <p>어깨 가공</p>	탄소강 · 주철 S45C, FC	어깨 가공	2.5DC x 0.1DC	회전 수 (min ⁻¹)	11,000	8,200	6,600	5,500	4,200	3,300	2,700	2,100	1,700
				이송 (mm/min)	970	1,020	1,030	1,080	1,060	970	920	810	700
	합금강 SCM, SNCM	어깨 가공	2.5DC x 0.1DC	회전 수 (min ⁻¹)	6,000	4,600	3,600	3,000	2,300	1,800	1,500	1,100	910
				이송 (mm/min)	490	550	550	550	500	470	430	390	350
	프리하든강 (30 ~ 45HRC)	어깨 가공	2.5DC x 0.05DC	회전 수 (min ⁻¹)	6,000	4,600	3,600	3,000	2,300	1,800	1,500	1,100	910
				이송 (mm/min)	490	550	550	550	500	470	430	390	350
	스테인리스강 SUS304	어깨 가공	2.5DC x 0.05DC	회전 수 (min ⁻¹)	4,800	3,600	2,900	2,400	1,800	1,500	1,200	900	700
				이송 (mm/min)	350	380	410	430	420	400	390	320	300
	티탄합금	어깨 가공	2.5DC x 0.05DC	회전 수 (min ⁻¹)	4,300	3,200	2,600	2,100	1,600	1,300	1,100	800	700
				이송 (mm/min)	250	260	260	320	350	370	340	280	230
	초내열합금	어깨 가공	2.5DC x 0.02DC	회전 수 (min ⁻¹)	2,100	1,600	1,300	1,100	800	650	550	400	320
				이송 (mm/min)	125	125	125	125	120	115	110	105	100

* 스테인리스강, 티탄합금, 초내열합금의 가공시에는 수용성 절삭유 사용을 권장합니다.

홀 가공은 권장하지 않습니다.



슬리드 톨

3ZFKS (숫) , 3ZFKM (미디엄)

가공 형태	피삭재	절입량 (ap x ae) (mm)	외경 DC (mm)	ø3	ø4	ø5	ø6	ø7	ø8	ø10	ø12	ø16	
 <p>어깨 가공</p>  <p>홈 가공</p> <p>드릴 가공</p>	탄소강 S45C	<p>어깨 가공</p> <p>숫 타입 1.2DC x 0.3DC 미디엄 타입 1.5DC x 0.3DC</p> <p>홈 가공 드릴 가공</p> <p>1DC</p>	회전 수 (min ⁻¹)	13,800	10,700	8,800	7,500	6,600	6,000	4,800	4,000	3,000	
	이송 (mm/min)	어깨 가공	850	950	1,100	1,200	1,100	1,000	910	850	800		
		드릴 가공	180	170	170	170	160	150	120	100	70		
		홈 가공	570	650	700	730	750	780	800	750	650		
	합금강 SCM, SNCM	<p>어깨 가공</p> <p>숫 타입 1.2DC x 0.3DC 미디엄 타입 1.5DC x 0.3DC</p> <p>홈 가공 드릴 가공</p> <p>0.5DC</p>	회전 수 (min ⁻¹)	10,600	9,300	8,300	7,400	6,500	6,000	4,700	3,500	1,900	
	이송 (mm/min)		어깨 가공	700	780	900	980	900	850	750	700	560	
			드릴 가공	120	120	130	140	130	130	120	100	70	
			홈 가공	500	540	570	590	610	600	580	500	340	
	프리하든강 (30 ~ 45HRC)		<p>홈 가공 드릴 가공</p> <p>0.5DC</p>	회전 수 (min ⁻¹)	5,200	4,000	3,200	2,600	2,300	2,000	1,600	1,400	1,000
	이송 (mm/min)			어깨 가공	440	440	490	490	490	440	400	370	300
		드릴 가공		90	110	110	130	110	100	80	70	50	
		홈 가공	220	270	270	320	330	330	230	200	140		
스테인리스강 SUS304	<p>어깨 가공</p> <p>숫 타입 1.2DC x 0.2DC 미디엄 타입 1.5DC x 0.2DC</p> <p>홈 가공 드릴 가공</p> <p>0.5DC</p>	회전 수 (min ⁻¹)	3,300	2,500	2,000	1,700	1,400	1,300	1,100	900	750		
이송 (mm/min)		어깨 가공	280	270	330	340	330	330	350	320	300		
		드릴 가공	20	30	40	40	40	30	20	20	20		
		홈 가공	110	110	130	140	130	130	120	120	120		
티탄합금		회전 수 (min ⁻¹)	3,300	2,500	2,000	1,700	1,400	1,300	1,100	900	750		
		이송 (mm/min)	어깨 가공	280	270	330	340	330	330	350	320	300	
	드릴 가공		20	30	40	40	40	30	20	20	20		
홈 가공	110		110	130	140	130	130	120	120	120			

* 스테인리스강, 티탄합금의 가공시에는 수용성 절삭유 사용을 권장합니다.

슬리드 톨

엔드밀

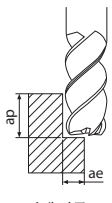
미세 가공

드릴

SGS

공업용
나이프

6PFK, 8PFK (미디엄)

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø6	ø8	ø10	ø12	ø16	ø20	ø25
 <p>어깨 가공</p>	탄소강 · 주철 S45C, FC	어깨 가공	DC < ø20 : 1.5DC x 0.2DC DC ≥ ø20 : 1.5DC x 0.1DC	회전 수 (min ⁻¹)	7,400	5,600	4,500	3,700	2,800	2,200	1,800
				이송 (mm/min)	2,650	2,640	2,410	2,250	2,010	1,700	1,500
	합금강 SCM, SNCM	어깨 가공	DC < ø20 : 1.5DC x 0.2DC DC ≥ ø20 : 1.5DC x 0.1DC	회전 수 (min ⁻¹)	6,400	4,800	3,800	3,200	2,400	1,900	1,500
				이송 (mm/min)	2,250	2,090	1,950	1,910	1,720	1,450	1,220
	프리하든강 (30 ~ 38HRC)	어깨 가공	1.5DC x 0.1DC	회전 수 (min ⁻¹)	5,600	4,200	3,300	2,800	2,100	1,700	1,300
				이송 (mm/min)	1,780	1,710	1,520	1,400	1,220	1,120	980
	스테인리스강 SUS304 티탄합금	어깨 가공	1.5DC x 0.05DC	회전 수 (min ⁻¹)	5,000	3,800	3,000	2,500	1,900	1,500	1,200
				이송 (mm/min)	1,350	1,320	1,200	1,130	970	850	720

* 스테인리스강, 티탄합금의 가공시에는 수용성 절삭유 사용을 권장합니다.

홈 가공은 권장하지 않습니다.

6PFK, 8PFK (롱)

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø6	ø8	ø10	ø12	ø16	ø20	ø25
 <p>어깨 가공</p>	탄소강 · 주철 S45C, FC	어깨 가공	3.0DC x 0.01DC	회전 수 (min ⁻¹)	4,600	3,500	2,800	2,300	1,700	1,400	1,100
				이송 (mm/min)	1,830	1,730	1,530	1,380	1,120	880	660
	합금강 SCM, SNCM	어깨 가공	3.0DC x 0.01DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,800	1,400	1,100	900
				이송 (mm/min)	1,490	1,340	1,220	1,120	940	720	540
	프리하든강 (30 ~ 38HRC)	어깨 가공	3.0DC x 0.01DC	회전 수 (min ⁻¹)	2,800	2,100	1,700	1,400	1,100	850	650
				이송 (mm/min)	920	680	750	670	550	480	390
	스테인리스강 SUS304 티탄합금	어깨 가공	3.0DC x 0.01DC	회전 수 (min ⁻¹)	2,500	1,900	1,500	1,300	950	750	600
				이송 (mm/min)	700	670	590	540	440	370	290

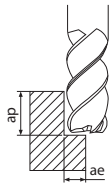
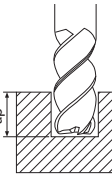
* 스테인리스강, 티탄합금의 가공시에는 수용성 절삭유 사용을 권장합니다.

홈 가공은 권장하지 않습니다.



슬리드 톨

4 / 5 / 6RFH (미디엄)

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø6	ø8	ø10	ø12	ø16	ø20
 <p>어깨 가공</p>  <p>홀 가공</p>	탄소강 · 합금강 · 주철 S45C, SCM, SNM, FC	어깨 가공	1.5DC x 0.3DC	회전 수 (min ⁻¹)	6,400	4,800	3,800	3,200	2,400	1,900
				이송 (mm/min)	1,040	1,050	1,100	1,000	980	920
		홀 가공	1DC	회전 수 (min ⁻¹)	5,300	4,000	3,200	2,700	2,000	1,600
				이송 (mm/min)	790	790	830	740	700	640
			2DC	회전 수 (min ⁻¹)	5,300	4,000	3,200	2,700	2,000	1,600
				이송 (mm/min)	550	550	580	510	490	450
	프리하든강 (30 ~ 45HRC)	어깨 가공	1.5DC x 0.3DC	회전 수 (min ⁻¹)	4,200	3,200	2,500	2,100	1,600	1,300
				이송 (mm/min)	490	620	580	540	490	460
		홀 가공	1DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,900	1,400	1,100
				이송 (mm/min)	410	410	430	400	370	360
			2DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,900	1,400	1,100
				이송 (mm/min)	290	290	300	280	260	250
	스테인리스강 SUS304	어깨 가공	1.5DC x 0.3DC	회전 수 (min ⁻¹)	6,400	4,800	3,800	3,200	2,400	1,900
				이송 (mm/min)	410	410	410	400	380	380
		홀 가공	1DC	회전 수 (min ⁻¹)	5,300	4,000	3,200	2,700	2,000	1,600
				이송 (mm/min)	280	260	310	240	250	250
			2DC	회전 수 (min ⁻¹)	5,300	4,000	3,200	2,700	2,000	1,600
				이송 (mm/min)	220	210	250	190	200	200
티탄합금	어깨 가공	1.5DC x 0.3DC	회전 수 (min ⁻¹)	4,200	3,200	2,500	2,100	1,600	1,300	
			이송 (mm/min)	330	420	410	390	380	370	
	홀 가공	1DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,900	1,400	1,100	
			이송 (mm/min)	220	240	240	240	250	250	
		2DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,900	1,400	1,100	
			이송 (mm/min)	180	190	190	190	200	200	
초내열합금	어깨 가공	1.5DC x 0.2DC	회전 수 (min ⁻¹)	800	600	480	400	300	240	
			이송 (mm/min)	60	60	60	60	60	60	
	홀 가공	1DC	회전 수 (min ⁻¹)	530	400	320	270	200	160	
			이송 (mm/min)	28	28	28	28	28	28	
		2DC	회전 수 (min ⁻¹)	530	400	320	270	200	160	
			이송 (mm/min)	20	20	20	20	20	20	

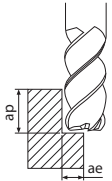
* 스테인리스강, 티탄합금, 초내열합금의 가공시에는 수용성 절삭유 사용을 권장합니다.



스플린드 톨

엔드밀
미세 가공
드릴
SGS
공업용 나이프

4 / 5 / 6RFH (롱)

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø6	ø8	ø10	ø12	ø16	ø20
 <p>어깨 가공</p>	탄소강 · 합금강 · 주철 S45C, SCM, SNCM, FC	어깨 가공	ap : 4.0DC ae : 0.1DC (DC ≤ ø12) ae : 1.2mm (DC > ø12)	회전 수 (min ⁻¹)	5,100	3,800	3,100	2,500	1,900	1,500
				이송 (mm/min)	620	630	660	600	590	550
	프리하든강 (30 ~ 45HRC)	어깨 가공	ap : 4.0DC ae : 0.1DC (DC ≤ ø12) ae : 1.2mm (DC > ø12)	회전 수 (min ⁻¹)	3,400	2,500	2,000	1,700	1,300	1,000
				이송 (mm/min)	340	430	410	380	340	320
	스테인리스강 SUS304	어깨 가공	ap : 4.0DC ae : 0.1DC (DC ≤ ø12) ae : 1.2mm (DC > ø12)	회전 수 (min ⁻¹)	5,100	3,800	3,100	2,500	1,900	1,500
				이송 (mm/min)	290	290	290	280	270	270
	티탄합금	어깨 가공	ap : 4.0DC ae : 0.1DC (DC ≤ ø12) ae : 1.2mm (DC > ø12)	회전 수 (min ⁻¹)	3,400	2,500	2,000	1,700	1,300	1,000
				이송 (mm/min)	230	290	290	270	270	260
	초내열합금	어깨 가공	ap : 4.0DC ae : 0.1DC (DC ≤ ø12) ae : 1.0mm (DC > ø12)	회전 수 (min ⁻¹)	640	480	380	320	240	190
				이송 (mm/min)	20	20	20	20	20	20

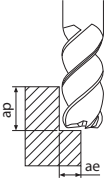
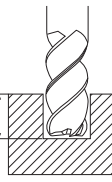
*스테인리스강, 티탄합금, 초내열합금의 가공시에는 수용성 절삭유 사용을 권장합니다.

홀 가공은 권장하지 않습니다.



슬리드 툴

3RDSM, 4RDSM, 5RDSM

가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø6	ø8	ø10	ø12	ø16	ø20	ø25
 <p>어깨 가공</p>	강	< 22HRC	1.5DC x 0.5DC	회전 수 (min ⁻¹)	11,100	8,400	6,700	5,600	4,200	3,300	2,700
				이송 (mm/min)	1,000	1,000	1,320	1,340	1,340	1,340	1,380
		22 ~ 32HRC	1.5DC x 0.4DC	회전 수 (min ⁻¹)	9,300	6,900	5,600	4,600	3,500	2,800	2,200
				이송 (mm/min)	800	800	1,000	1,030	1,040	1,050	1,110
		32 ~ 40HRC	1.5DC x 0.4DC	회전 수 (min ⁻¹)	9,600	7,200	5,700	4,800	3,600	2,900	2,300
				이송 (mm/min)	720	720	860	860	860	920	1,030
		32 ~ 40HRC	0.75DC	회전 수 (min ⁻¹)	7,900	5,900	4,800	4,000	3,000	2,400	1,900
				이송 (mm/min)	550	550	740	740	740	760	860
		40 ~ 45HRC	1.5DC x 0.4DC	회전 수 (min ⁻¹)	6,400	4,800	3,800	3,200	2,400	1,900	1,500
				이송 (mm/min)	320	320	410	410	400	400	400
		40 ~ 45HRC	0.6DC	회전 수 (min ⁻¹)	5,300	4,000	3,200	2,600	2,000	1,600	1,300
				이송 (mm/min)	260	260	340	340	330	330	330
45 ~ 50HRC	1DC x 0.4DC	회전 수 (min ⁻¹)	4,800	3,600	2,900	2,400	1,800	1,400	1,100		
		이송 (mm/min)	220	220	260	260	250	250	250		
45 ~ 50HRC	0.5DC	회전 수 (min ⁻¹)	4,300	3,200	2,600	2,200	1,600	1,300	1,000		
		이송 (mm/min)	180	180	240	230	230	220	220		
 <p>홀 가공</p>	스테인리스강 SUS304	어깨 가공	1.5DC x 0.4DC	회전 수 (min ⁻¹)	4,200	3,200	2,500	2,100	1,600	1,300	1,000
				이송 (mm/min)	150	150	180	180	170	170	170
스테인리스강 SUS304	홀 가공	0.5DC	회전 수 (min ⁻¹)	3,800	2,900	2,300	1,900	1,400	1,100	900	
			이송 (mm/min)	140	140	170	160	160	150	150	
주철	어깨 가공	1.5DC x 0.5DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,900	1,400	1,100	900	
			이송 (mm/min)	190	230	310	300	340	310	360	
주철	홀 가공	0.5DC	회전 수 (min ⁻¹)	2,700	2,000	1,600	1,300	1,000	800	600	
			이송 (mm/min)	110	130	180	170	190	180	190	
주철	어깨 가공	1.5DC x 0.5DC	회전 수 (min ⁻¹)	9,600	7,200	5,700	4,800	3,600	2,900	2,300	
			이송 (mm/min)	850	850	1,030	1,030	1,030	1,100	1,380	
주철	홀 가공	1DC	회전 수 (min ⁻¹)	7,900	5,900	4,800	4,000	3,000	2,400	1,900	
			이송 (mm/min)	700	700	900	900	900	910	1,140	

*스테인리스강 가공시에는 수용성 절삭유를 권장합니다.

슬리드 톨

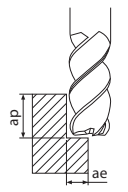
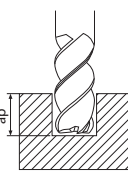
3RDSL, 4RDSL, 5RDSL (어깨 가공)

가공 형태	피삭재	절입량 (ap x ae) (mm)	외경 DC (mm)	ø6	ø8	ø10	ø12	ø16	ø20	ø25		
 <p>어깨 가공</p>	강	< 22HRC	2.5DC x 0.5DC	회전 수 (min ⁻¹)	7,800	5,900	4,700	3,900	2,900	2,300	1,900	
				이송 (mm/min)	700	700	770	780	840	840	940	
		22 ~ 32HRC	2.5DC x 0.4DC	회전 수 (min ⁻¹)	6,700	5,000	4,000	3,400	2,500	2,000	1,600	
				이송 (mm/min)	500	500	600	600	600	640	720	
		32 ~ 40HRC	2.5DC x 0.4DC	회전 수 (min ⁻¹)	4,500	3,400	2,700	2,200	1,700	1,300	1,100	
				이송 (mm/min)	220	220	290	290	280	280	280	
		40 ~ 45HRC	2.5DC x 0.4DC	회전 수 (min ⁻¹)	3,400	2,500	2,000	1,700	1,300	1,000	800	
				이송 (mm/min)	150	150	180	180	180	180	180	
		45 ~ 50HRC	2.5DC x 0.3DC	회전 수 (min ⁻¹)	2,900	2,200	1,800	1,500	1,100	900	700	
				이송 (mm/min)	110	110	130	130	120	120	120	
		스테인리스강 SUS304	어깨 가공	1.5DC x 0.1DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,900	1,400	1,100	900
					이송 (mm/min)	120	150	200	200	220	200	230
주철	어깨 가공	2.5DC x 0.5DC	회전 수 (min ⁻¹)	6,700	5,000	4,000	3,400	2,500	2,000	1,600		
			이송 (mm/min)	600	600	720	720	720	770	970		

*스테인리스강 가공시에는 수용성 절삭유를 권장합니다.

홀 가공은 권장하지 않습니다.

4RFSM, 6RFSM

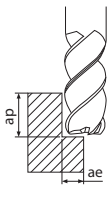
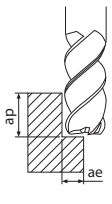
가공 형태	피삭재	구분	절입량 (ap x ae) (mm)	외경 DC (mm)	ø6	ø8	ø10	ø12	ø16		ø20		ø25
									4 枚刃	6 枚刃	4 枚刃	6 枚刃	
 <p>여깨 가공</p>	강	35 ~ 45HRC	여깨 가공 1.5DC x 0.4DC	회전 수 (min ⁻¹)	8,000	6,000	4,800	4,000	3,000	3,000	2,400	2,400	1,900
				이송 (mm/min)	630	630	630	640	640	900	640	930	800
		홀 가공	0.5DC	회전 수 (min ⁻¹)	6,400	4,800	3,800	3,200	2,400	2,400	1,900	1,900	1,500
				이송 (mm/min)	480	480	490	500	500	720	500	750	640
		45 ~ 55HRC	여깨 가공 1.5DC x 0.33DC	회전 수 (min ⁻¹)	5,800	4,400	3,500	2,900	2,200	2,200	1,800	1,800	1,400
				이송 (mm/min)	350	350	350	350	350	530	350	530	460
	홀 가공	0.5DC	회전 수 (min ⁻¹)	4,700	3,500	2,800	2,300	1,800	1,800	1,400	1,400	1,100	
			이송 (mm/min)	280	280	280	280	280	420	280	420	370	
	55 ~ 60HRC	여깨 가공 1.5DC x 0.25DC	회전 수 (min ⁻¹)	4,800	3,600	2,900	2,400	1,800	1,800	1,400	1,400	1,100	
			이송 (mm/min)	190	220	230	240	220	320	230	340	310	
	홀 가공	0.3DC	회전 수 (min ⁻¹)	3,800	2,900	2,300	1,900	1,400	1,400	1,100	1,100	900	
			이송 (mm/min)	150	170	180	180	180	260	180	280	250	
 <p>홀 가공</p>	스테인리스강 SUS304	여깨 가공 1.5DC x 0.4DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,900	1,400	1,400	1,100	1,100	900	
			이송 (mm/min)	300	280	260	300	280	420	290	430	380	
		홀 가공 0.5DC	회전 수 (min ⁻¹)	3,200	2,400	1,900	1,600	1,200	1,200	1,000	1,000	800	
	이송 (mm/min)		200	190	180	200	190	290	210	310	270		
	티탄 합금	< 40HRC	여깨 가공 2DC x 0.4DC	회전 수 (min ⁻¹)	3,700	2,800	2,200	1,900	1,400	1,400	1,100	1,100	900
				이송 (mm/min)	390	390	390	390	390	590	390	540	450
홀 가공 0.5DC		회전 수 (min ⁻¹)	3,000	2,200	1,800	1,500	1,100	1,100	900	900	700		
		이송 (mm/min)	310	310	310	310	310	470	310	430	360		
> 40HRC		여깨 가공 1.5DC x 0.25DC	회전 수 (min ⁻¹)	3,200	2,400	1,900	1,600	1,200	1,200	1,000	1,000	800	
			이송 (mm/min)	300	300	300	300	300	430	300	430	370	
홀 가공 0.3DC	회전 수 (min ⁻¹)	2,500	1,900	1,500	1,300	1,000	1,000	800	800	600			
	이송 (mm/min)	230	230	230	230	230	340	230	340	290			
내열합금 (Ni기 내열합금)	여깨 가공 1DC x 0.2DC	회전 수 (min ⁻¹)	1,600	1,200	1,000	800	600	600	500	500	400		
		이송 (mm/min)	100	100	100	100	100	140	100	140	130		
	홀 가공 0.25DC	회전 수 (min ⁻¹)	1,300	1,000	800	600	500	500	400	400	300		
		이송 (mm/min)	80	80	80	80	80	120	80	120	100		

* 스테인리스강, 티탄합금, 내열합금의 가공시에는 수용성 절삭유 사용을 권장합니다.



슬리드 톨

4HFSS, 5HFSS, 6HFSS, 7HFSS (어깨 가공)
4HF5M, 5HF5M, 6HF5M, 7HF5M, 8HF5M (어깨 가공)

가공 형태	피삭재	절입량 (ap x ae) (mm)	외경 DC (mm)	ø1	ø2	ø4	ø6	ø8	ø12		
 <p>어깨 가공</p>	공구강 (< 40HRC) 프리하튼강	1.5DC x 0.05DC (DC < ø3)	회전 수 (min ⁻¹)	20,700	20,000	11,100	7,400	5,600	3,700		
			이송 (mm/min)	910	1,750	2,000	2,900	2,930	2,930		
	공구강 · 열처리강 (40 ~ 45HRC) 프리하튼강	1.5DC x 0.1DC (ø3 ≤ DC)	회전 수 (min ⁻¹)	20,700	20,000	9,900	6,600	5,000	3,300		
			이송 (mm/min)	910	1,750	1,800	2,630	2,650	2,650		
	 <p>어깨 가공</p>	인공석 45 ~ 55HRC 55 ~ 60HRC 60 ~ 65HRC 65 ~ 70HRC	1.5DC x 0.05DC	회전 수 (min ⁻¹)	20,700	16,000	8,000	5,300	4,000	2,700	
				이송 (mm/min)	910	1,400	1,400	2,100	2,100	2,100	
				1.5DC x 0.02DC	회전 수 (min ⁻¹)	20,700	12,000	6,000	4,000	3,000	2,000
					이송 (mm/min)	640	730	740	1,100	1,100	1,100
				1.5DC x 0.02DC	회전 수 (min ⁻¹)	20,700	11,100	5,600	3,700	2,800	1,900
					이송 (mm/min)	550	600	600	880	880	880
				1.5DC x 0.02DC	회전 수 (min ⁻¹)	15,900	8,000	4,000	2,700	2,000	1,330
					이송 (mm/min)	370	370	370	560	560	550

*상기는 찍수날 타입의 조건입니다. 홀수날 타입의 경우는 이송을 15 ~ 20% 정도 올린 조건을 기준으로 해주십시오.

홈 가공은 권장하지 않습니다.



솔리드 톨

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

3AFK (숫)

피삭재	가공 형태	절입량 (mm) ap x ae	외경 DC (mm)											
			회전 수 (min ⁻¹)	ø3	ø4	ø5	ø6	ø7	ø8	ø9	ø10	ø11	ø12	ø16
알루미늄 합금 A5052 A7075	어깨 가공	1.5DC x 0.3DC	이송 (mm/min)	2,400	2,800	3,500	4,200	4,300	4,400	4,500	4,600	4,700	4,700	3,500
	홈 가공	1DC		1,600	2,000	2,500	3,000	3,100	3,200	3,300	3,400	3,500	3,500	2,200
	드릴 가공	1DC		350	350	350	350	350	350	350	350	350	350	350
피삭재	가공 형태	절입량 (mm) ap x ae	외경 DC (mm)											
			회전 수 (min ⁻¹)	ø3	ø4	ø5	ø6	ø7	ø8	ø9	ø10	ø11	ø12	ø16
알루미늄 합금 주물 AC, ADC	어깨 가공	1.5DC x 0.3DC	이송 (mm/min)	2,400	2,500	2,500	2,500	2,500	2,600	2,600	2,600	2,600	2,600	1,900
	홈 가공	1DC		1,300	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,800	1,300
	드릴 가공	1DC		300	250	200	200	190	150	150	100	100	80	60

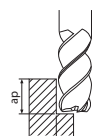
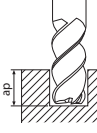
- 수용성 절삭유 사용 권장합니다.
- 공구의 돌출량이나 머신 · 워크 강성에 따라 절삭조건을 조절하십시오.
- 회전 수와 이송은 같은 비율로 조절하십시오.
- 드릴 가공으로 칩이 늘어지거나 막히는 경우는 스텝 가공을 하십시오.

3AFK (미디엄)

피삭재	가공 형태	절입량 (mm) ap x ae	외경 DC (mm)											
			회전 수 (min ⁻¹)	ø3	ø4	ø5	ø6	ø7	ø8	ø9	ø10	ø11	ø12	ø16
알루미늄 합금 A5052 A7075	어깨 가공	2.5DC x 0.3DC	이송 (mm/min)	2,300	2,600	3,200	3,600	3,600	3,600	3,700	3,900	4,000	4,000	2,800
	홈 가공	0.5DC		1,500	1,900	2,300	2,600	2,600	2,700	2,700	2,800	2,900	2,900	1,600
	드릴 가공	0.5DC		300	300	300	300	300	300	300	300	300	300	300
피삭재	가공 형태	절입량 (mm) ap x ae	외경 DC (mm)											
			회전 수 (min ⁻¹)	ø3	ø4	ø5	ø6	ø7	ø8	ø9	ø10	ø11	ø12	ø16
알루미늄 합금 주물 AC, ADC	어깨 가공	2.5DC x 0.3DC	이송 (mm/min)	2,300	2,200	2,000	2,000	2,000	2,000	2,000	2,000	2,100	2,100	1,500
	홈 가공	0.5DC		1,300	1,300	1,300	1,400	1,400	1,400	1,400	1,400	1,400	1,500	1,100
	드릴 가공	0.5DC		300	200	150	160	160	120	120	80	80	60	50

- 수용성 절삭유 사용 권장합니다.
- 공구의 돌출량이나 머신 · 워크 강성에 따라 절삭조건을 조절하십시오.
- 회전 수와 이송은 같은 비율로 조절하십시오.
- 드릴 가공으로 칩이 늘어지거나 막히는 경우는 스텝 가공을 하십시오.

3NESM

가공 형태	피삭재	구분	절입량 (mm) ap x ae	외경 DC (mm)	ø3	ø6	ø8	ø10	ø12	ø16	ø20
 어깨 가공	알루미늄 합금	어깨 가공	1.5DC x 0.5DC	회전 수 (min ⁻¹)	34,000	17,000	13,000	10,200	8,500	6,400	5,100
				이송 (mm/min)	2,750	2,750	2,750	2,750	2,750	2,750	2,750
 홈 가공		홈 가공	1DC	회전 수 (min ⁻¹)	26,500	13,000	9,800	8,000	6,600	5,000	4,000
				이송 (mm/min)	1,100	1,100	1,100	1,100	1,100	1,100	1,100



슬리드 툴

고경도재 가공용(미세 가공용) 솔리드 볼 엔드밀

2KMB

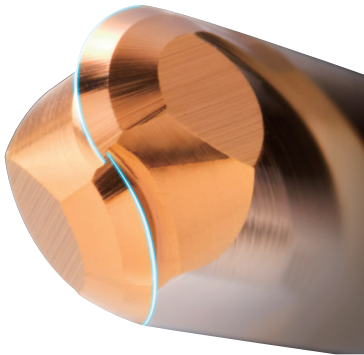
솔리드 공구의 새로운 영역에 도전 !

MEGACOAT HARD EX 으로 긴수명·고품위·안정 가공을 실현

고경도재를 제압하는 독자적인 형상

1 S자를 그리는 절삭날로 고품위

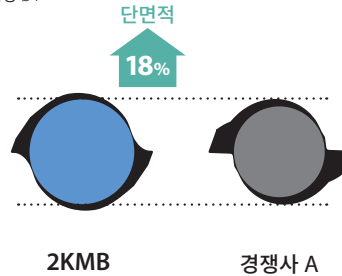
우수한 절삭성을 실현
고품위의 정삭면과 높은 내마모성



2 큰 센터 두께로 고강성

높은 공구 강성을 확보
안정 가공을 실현

볼 부위 단면 비교 (당사비교)
외경 $\phi 1$



L

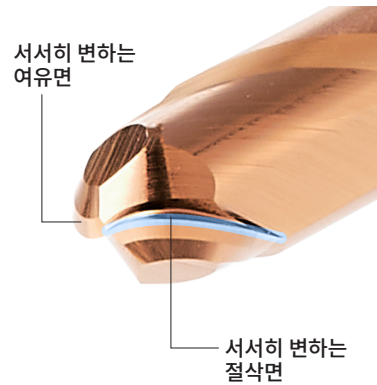
3 강한 백 테이퍼로 저저항

점 절삭으로 떨림을 억제
정삭면 품위 향상, 기울어짐을 저감



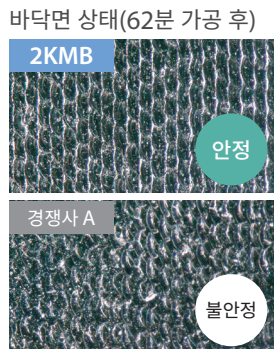
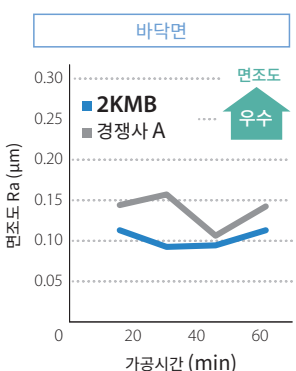
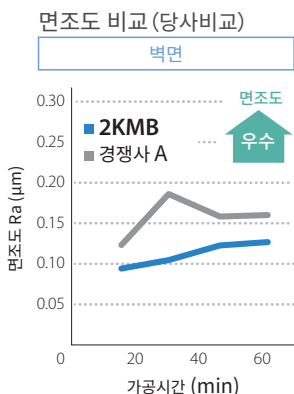
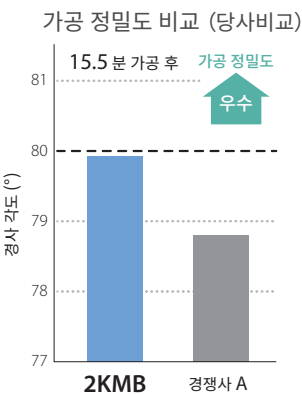
4 엄선한 인선 형상으로 안정 가공

인선 강도와 저저항을 양립
안정 가공과 고품위의 정삭면을 실현

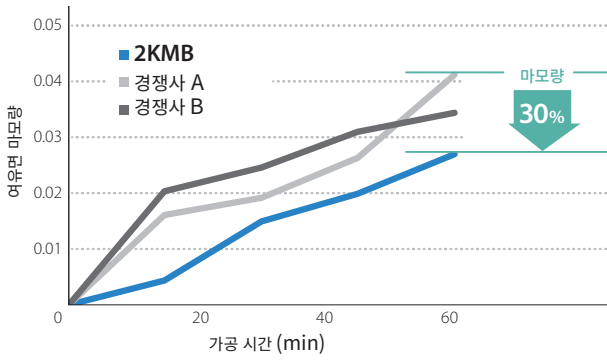


솔리드 툴

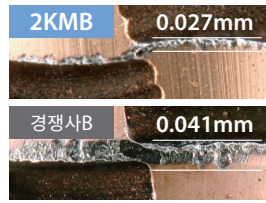
- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프



내마모성 비교 (당사비교)



인선 상태 (62분 가공 후)



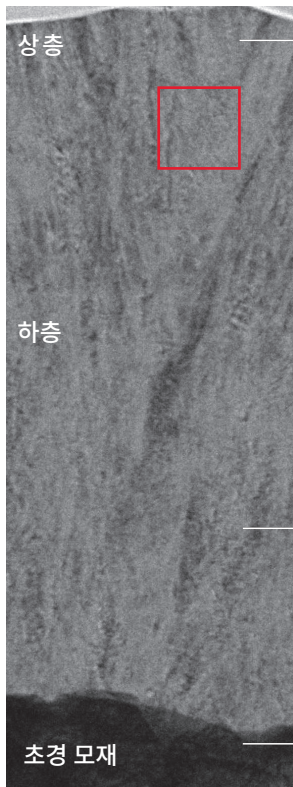
새로운 PVD코팅

MEGACOAT HARD EX

교세라 독자적인 코팅 MEGACOAT HARD가 진화
 다양한 고경도재로 긴수명 가공을 가능하게. 높은 범용성을 실현

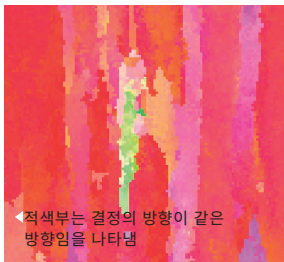
교세라의 첨단 기술로 특수한 2층 구조를 실현
 내치핑성과 내마모성의 상반되는 성능을 하이레벨로 양립

단면 사진



치핑 억제

고인성 결정층



- 초미세 구조로 높은 내충격성
- 내부 응력과 성장 방향의 제어로 막의 인성 향상

고온 마모 진행을 억제

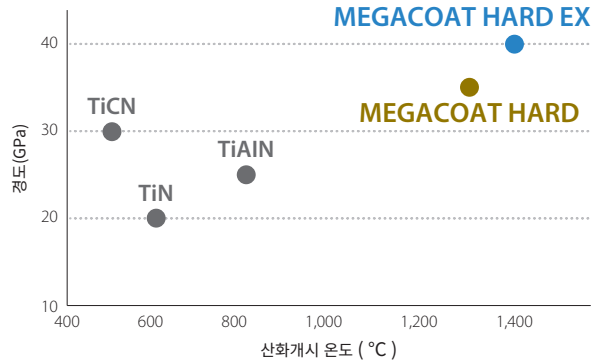
특수 척층 구조

- 고경도
- 독자적인 조성 설계로 우수한 내산화성과 높은 윤활성을 실현

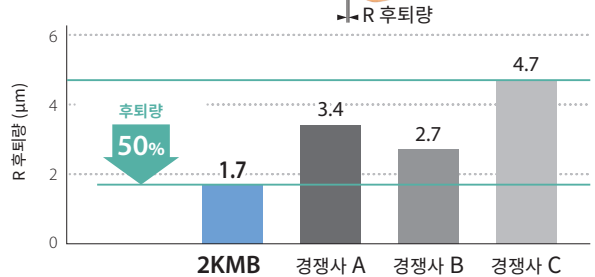
경질 막박리를 억제

특수 계면 처리

코팅 특성



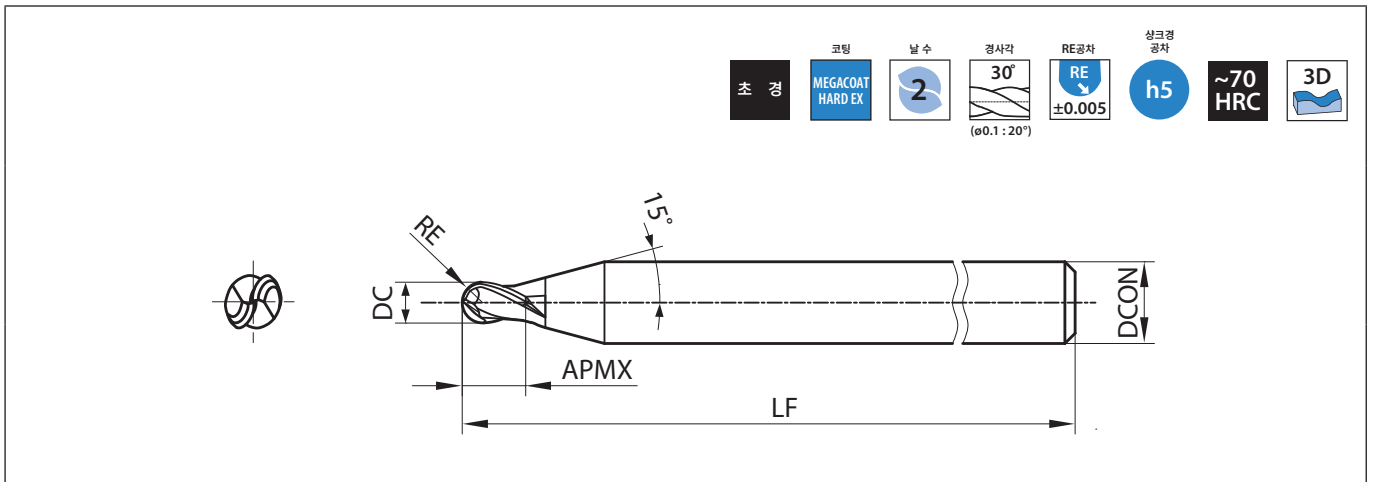
내마모성 비교 (당사비교)
 500mm 가공후의 R후퇴량



절삭조건: n = 40,000 min⁻¹, Vf = 70 mm/min, ap × ae = 0.003 × 0.005 mm, Wet (유성) 어께 가공 SKD11 (60HRC) ø 0.1 (롱 넥)



2KMB (표준)



2KMB (표준)

규격	재고	치수 (mm)							
		RE	RE공차		DC	APMX	DCON	LF	ZEP
			min.	max.					
2KMB 0010-0010-S4 0015-0015-S4 0020-0020-S4 0030-0030-S4 0040-0060-S4 0050-0080-S4 0060-0090-S4 0080-0120-S4 0100-0150-S4 0150-0230-S4 0200-0300-S4 0400-0600-S4	● 0.05	-0.005	+0.005	0.1	0.1	4	50	2	
	● 0.075			0.15	0.15				
	● 0.1			0.2	0.2				
	● 0.15			0.3	0.3				
	● 0.2			0.4	0.6				
	● 0.25			0.5	0.8				
	● 0.3			0.6	0.9				
	● 0.4			0.8	1.2				
	● 0.5			1	1.5				
	● 0.75			1.5	2.3				
	● 1			2	3				
	● 2			4	6				
2KMB 0250-0380-S6 0300-0500-S6 0400-0600-S6 0500-0800-S6 0600-1000-S6	● 1.25	-0.005	+0.005	2.5	3.8	6	60	2	
	● 1.5			3	5		70		
	● 2			4	6		80		
	● 2.5			5	8				
	● 3			6	10				

기준 절삭조건 ➡ L45



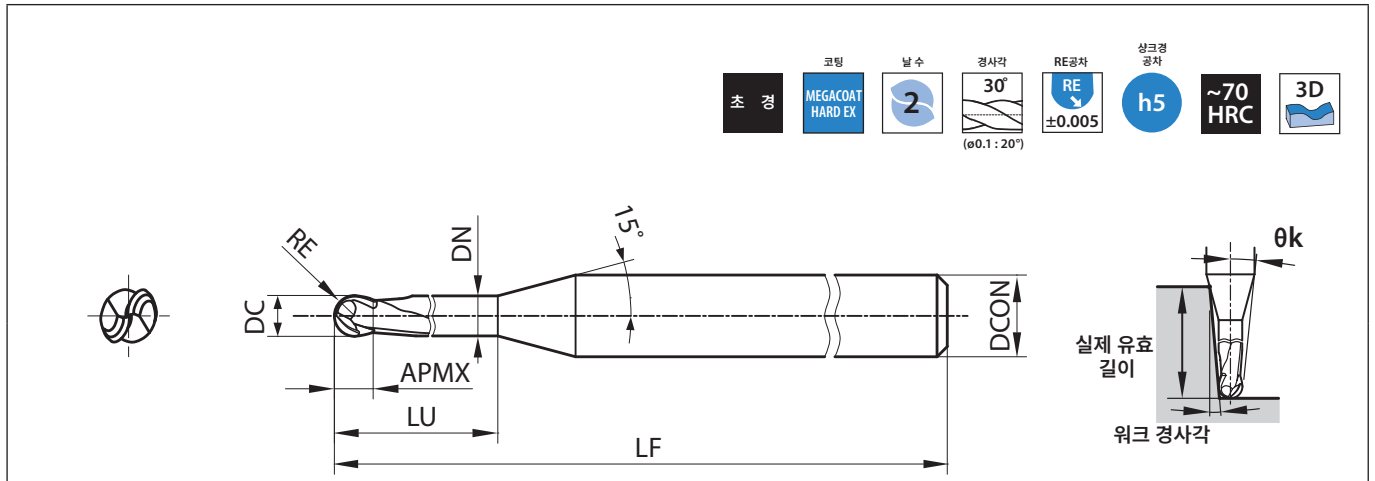
솔리드 볼

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

● : 표준 재고

L40

2KMBL (롱 넥)



2KMBL (롱 넥)

규격	재고	치수 (mm)								ZIPP	간섭 각도 (°)		워크 경사각에 대한 실제 유효 길이 (mm)					
		RE	RE공차		DC	APMX	DN	LU	DCON		LF	날 수	θk	0.5°	1°	1.5°	2°	3°
			min.	max.														
2KMBL 0010-0020-S4	●	0.05			0.1	0.07	0.09	0.2				14.68	0.22	0.23	0.23	0.24	0.25	
0010-0030-S4	●											14.49	0.32	0.33	0.34	0.35	0.38	
0010-0050-S4	●											14.13	0.53	0.55	0.56	0.58	0.63	
0015-0030-S4	●	0.075		0.15	0.1	0.14	0.5	0.3				14.53	0.32	0.33	0.34	0.35	0.37	
0015-0050-S4	●											14.17	0.53	0.54	0.56	0.58	0.62	
0015-0100-S4	●											13.33	1.05	1.08	1.12	1.16	1.24	
0020-0030-S4	●	0.1						0.3				14.58	0.32	0.33	0.34	0.35	0.37	
0020-0050-S4	●											14.2	0.53	0.54	0.56	0.58	0.62	
0020-0075-S4	●											13.76	0.79	0.81	0.84	0.86	0.93	
0020-0100-S4	●											13.35	1.04	1.08	1.11	1.15	1.24	
0020-0125-S4	●											12.96	1.3	1.35	1.39	1.44	1.55	
0020-0150-S4	●											12.59	1.56	1.61	1.67	1.73	1.86	
0020-0175-S4	●											12.24	1.82	1.88	1.94	2.01	2.17	
0020-0200-S4	●											11.91	2.08	2.15	2.22	2.3	2.48	
0020-0250-S4	●											11.3	2.6	2.68	2.78	2.88	3.1	
0030-0050-S4	●											0.15						0.5
0030-0060-S4	●	14.09	0.63	0.65	0.66	0.68	0.73											
0030-0075-S4	●	13.82	0.78	0.81	0.83	0.86	0.91											
0030-0100-S4	●	13.39	1.04	1.07	1.11	1.14	1.22											
0030-0125-S4	●	12.99	1.3	1.34	1.38	1.43	1.54											
0030-0150-S4	●	12.61	1.56	1.61	1.66	1.72	1.85											
0030-0175-S4	●	12.25	1.82	1.88	1.94	2.01	2.16											
0030-0200-S4	●	11.91	2.08	2.14	2.22	2.29	2.47											
0030-0225-S4	●	11.59	2.33	2.41	2.49	2.58	2.78											
0030-0250-S4	●	11.29	2.59	2.68	2.77	2.87	3.09											
0030-0300-S4	●	10.72	3.11	3.21	3.32	3.44	3.71											
0030-0350-S4	●	10.21	3.63	3.75	3.88	4.02	4.33											
0030-0400-S4	●	9.75	4.14	4.28	4.43	4.59	4.95											
0040-0050-S4	●	0.2						0.5				14.35	0.52	0.54	0.55	0.56	0.59	
0040-0080-S4	●											13.79	0.83	0.86	0.88	0.91	0.96	
0040-0100-S4	●											13.44	1.04	1.07	1.1	1.14	1.21	
0040-0150-S4	●											12.63	1.56	1.61	1.66	1.71	1.83	
0040-0200-S4	●											11.91	2.07	2.14	2.21	2.29	2.46	
0040-0250-S4	●											11.27	2.59	2.68	2.76	2.86	3.08	
0040-0300-S4	●											10.69	3.11	3.21	3.32	3.44	3.7	
0040-0350-S4	●											10.17	3.63	3.74	3.87	4.01	4.32	
0040-0400-S4	●											9.7	4.14	4.28	4.43	4.59	4.94	
0040-0450-S4	●											9.27	4.66	4.81	4.98	5.16	5.56	
0040-0500-S4	●	8.87	5.18	5.35	5.54	5.74	6.19											

기준 절삭조건 Ⓢ L46, L47

● : 표준 재고



솔리드
툴

2KMBL (롱 넥)

규격	재고	치수 (mm)								ZFP 길이	간섭 각도 (°)		웍경사각에 대한 실제 유효 길이 (mm)				
		RE	RE공차		DC	APMX	DN	LU	DCON		LF	θk	0.5°	1°	1.5°	2°	3°
			min.	max.													
2KMBL 0050-0100-S4	●										13.49	1.04	1.07	1.1	1.13	1.2	
0050-0150-S4	●										12.65	1.56	1.6	1.65	1.7	1.82	
0050-0200-S4	●										11.91	2.07	2.14	2.21	2.28	2.44	
0050-0250-S4	●										11.25	2.59	2.67	2.76	2.85	3.07	
0050-0300-S4	●										10.66	3.11	3.21	3.31	3.43	3.69	
0050-0350-S4	●	0.25		0.5	0.35	0.49					10.13	3.62	3.74	3.87	4	4.31	
0050-0400-S4	●										9.65	4.14	4.28	4.42	4.58	4.93	
0050-0450-S4	●										9.21	4.66	4.81	4.98	5.15	5.55	
0050-0500-S4	●										8.81	5.17	5.35	5.53	5.73	6.17	
0050-0550-S4	●										8.44	5.69	5.88	6.08	6.3	6.79	
0050-0600-S4	●										8.1	6.21	6.42	6.64	6.88	7.42	
0060-0100-S4	●										13.54	1.04	1.06	1.09	1.12	1.19	
0060-0150-S4	●										12.67	1.55	1.6	1.65	1.7	1.81	
0060-0200-S4	●										11.91	2.07	2.13	2.2	2.27	2.43	
0060-0250-S4	●										11.23	2.59	2.67	2.75	2.85	3.05	
0060-0300-S4	●										10.63	3.11	3.2	3.31	3.42	3.67	
0060-0350-S4	●										10.08	3.62	3.74	3.86	4	4.3	
0060-0400-S4	●	0.3		0.6	0.45	0.59					9.59	4.14	4.27	4.42	4.57	4.92	
0060-0450-S4	●										9.15	4.66	4.81	4.97	5.15	5.54	
0060-0500-S4	●										8.74	5.17	5.34	5.52	5.72	6.16	
0060-0550-S4	●										8.37	5.69	5.88	6.08	6.3	6.78	
0060-0600-S4	●										8.03	6.21	6.41	6.63	6.87	7.4	
0060-0700-S4	●										7.42	7.24	7.48	7.74	8.02	8.65	
0060-0800-S4	●										6.9	8.27	8.55	8.85	9.17	9.89	
0070-0200-S4	●	0.35	-0.005	+0.005	0.7	0.5	0.69		4	45	2	11.91	2.07	2.13	2.19	2.26	2.42
0070-0400-S4	●											9.54	4.14	4.27	4.41	4.56	4.91
0080-0200-S4	●											11.88	2.09	2.15	2.21	2.28	2.43
0080-0300-S4	●											10.53	3.12	3.22	3.32	3.43	3.67
0080-0400-S4	●											9.46	4.15	4.29	4.43	4.58	4.92
0080-0500-S4	●	0.4		0.8	0.6	0.78						8.58	5.19	5.36	5.53	5.73	6.16
0080-0600-S4	●											7.85	6.22	6.43	6.64	6.88	7.4
0080-0700-S4	●											7.24	7.26	7.49	7.75	8.03	8.65
0080-0800-S4	●											6.71	8.29	8.56	8.86	9.18	9.89
0080-1000-S4	●											5.86	10.36	10.7	11.08	11.48	12.38
0090-0200-S4	●											11.88	2.09	2.14	2.2	2.27	2.42
0090-0400-S4	●	0.45		0.9	0.65	0.88						9.4	4.15	4.28	4.42	4.57	4.9
0090-0600-S4	●											7.77	6.22	6.42	6.64	6.87	7.39
0100-0200-S4	●											11.88	2.08	2.14	2.2	2.26	2.41
0100-0250-S4	●											11.12	2.6	2.67	2.75	2.84	3.03
0100-0300-S4	●											10.45	3.12	3.21	3.31	3.41	3.65
0100-0400-S4	●											9.33	4.15	4.28	4.42	4.56	4.89
0100-0500-S4	●											8.42	5.19	5.35	5.52	5.71	6.14
0100-0600-S4	●	0.5		1	0.75	0.98						7.68	6.22	6.42	6.63	6.86	7.38
0100-0700-S4	●											7.05	7.25	7.49	7.74	8.01	8.62
0100-0800-S4	●											6.52	8.29	8.56	8.85	9.16	9.86
0100-0900-S4	●											6.06	9.32	9.63	9.96	10.31	11.11
0100-1000-S4	●											5.66	10.35	10.7	11.07	11.46	12.35
0100-1200-S4	●											5.01	12.42	12.84	13.28	13.76	14.84
0100-1300-S4	●											4.73	13.45	13.91	14.39	14.91	16.08

기준 절삭조건 ● L47, L48

● : 표준 재고



솔리드 볼 엔드밀

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

2KMBL (롱 넥)

규격	재고	치수 (mm)								ZFP 길이	간섭 각도 (°)	웍경사각에 대한 실제 유효 길이 (mm)																										
		RE	RE공차		DC	APMX	DN	LU	DCON			LF	θk	0.5°	1°	1.5°	2°	3°																				
			min.	max.																																		
2KMBL 0120-0240-S4	●	0.6			1.2	0.9	1.18			45							11.22	2.49	2.56	2.63	2.71	2.88																
0120-0400-S4	●																4	9.19	4.15	4.27	4.4	4.55	4.87															
0120-0600-S4	●																6	7.49	6.22	6.41	6.62	6.85	7.35															
0120-0800-S4	●																8	6.31	8.28	8.55	8.84	9.15	9.84															
0120-1000-S4	●																10	5.46	10.35	10.69	11.05	11.45	12.33															
0120-1200-S4	●																12	4.81	12.42	12.83	13.27	13.75	14.81															
0120-1400-S4	●																14	4.3	14.48	14.97	15.49	16.05	17.3															
0120-1600-S4	●																16	3.88	16.55	17.11	17.7	18.35	19.79															
0140-0800-S4	●	0.7			1.4	1	1.37			45							6.08	8.3	8.56	8.85	9.15	9.84																
0140-1200-S4	●																12	4.59	12.43	12.84	13.28	13.75	14.81															
0150-0300-S4	●	0.75			1.5	1.1	1.47			45							10.17	3.13	3.21	3.3	3.4	3.61																
0150-0400-S4	●																3	8.92	4.16	4.28	4.41	4.55	4.85															
0150-0600-S4	●																6	7.15	6.23	6.42	6.63	6.85	7.34															
0150-0800-S4	●																8	5.97	8.3	8.56	8.84	9.15	9.83															
0150-1000-S4	●																10	5.12	10.36	10.7	11.06	11.45	12.31															
0150-1200-S4	●																12	4.48	12.43	12.84	13.28	13.75	14.8															
0150-1400-S4	●																14	3.98	14.5	14.98	15.49	16.04	17.29															
0150-1600-S4	●																16	3.59	16.57	17.12	17.71	18.34	19.77															
0150-1800-S4	●	50															3.26	18.63	19.26	19.93	20.64	22.26																
0150-2000-S4	●																18	2.99	20.7	21.4	22.14	22.94	-															
0160-0800-S4	●	0.8	-0.005	+0.005	1.6	1.2	1.57		4	45	2						5.84	8.3	8.56	8.84	9.14	9.82																
0160-1200-S4	●																12	4.37	12.43	12.84	13.27	13.74	14.79															
0200-0300-S4	●	1			2	1.5	1.97			45							9.81	3.12	3.19	3.27	3.36	3.55																
0200-0400-S4	●																3	8.39	4.15	4.26	4.38	4.51	4.79															
0200-0600-S4	●																6	6.5	6.22	6.4	6.6	6.81	7.28															
0200-0800-S4	●																8	5.3	8.29	8.54	8.82	9.11	9.77															
0200-1000-S4	●																10	4.48	10.36	10.68	11.03	11.41	12.25															
0200-1200-S4	●																12	3.87	12.42	12.82	13.25	13.71	14.74															
0200-1300-S4	●																13	3.63	13.46	13.89	14.36	14.86	15.98															
0200-1400-S4	●																14	3.41	14.49	14.96	15.47	16.01	17.23															
0200-1600-S4	●																16	3.05	16.56	17.1	17.68	18.31	19.71															
0200-1800-S4	●																18	2.76	18.63	19.24	19.9	20.61	-															
0200-2000-S4	●																20	2.52	20.69	21.38	22.11	22.91	-															
0200-2200-S4	●																22	2.32	22.76	23.52	24.33	25.21	-															
0200-2500-S4	●																25	2.07	25.86	26.73	27.66	28.66	-															
0250-0600-S4	●																1.25								45							5.61	6.25	6.43	6.61	6.81	7.27	
0250-0800-S4	●																															6	4.45	8.32	8.57	8.83	9.11	9.75
0250-1000-S4	●																															8	3.69	10.39	10.7	11.05	11.41	12.24
0250-1500-S4	●	10	2.59	15.55	16.05	16.59	17.16	-																														
0250-2000-S4	●	15	1.99	20.72	21.4	22.13	-	-																														
0250-2500-S4	●	20	1.62	25.89	26.75	27.67	-	-																														
0250-2500-S4	●	25	1.62	25.89	26.75	27.67	-	-																														
0250-3000-S4	●	30	1.36	31.06	32.1	-	-	-																														

기준 절삭조건 L49, L50



솔리드 볼 엔드밀

● : 표준 재고

2KMBL (롱 넥)

규격	재고	치수 (mm)								ZFP 길이	간섭 각도 (°)					
		RE공차		DC	APMX	DN	LU	DCON	LF		θk	워크 경사각에 대한 실제 유효 길이 (mm)				
		min.	max.									0.5°	1°	1.5°	2°	3°
2KMBL 0300-0600-S6	●	1.5		3	2.5	2.9	6	60	60	8.3	6.34	6.51	6.69	6.88	7.32	
0300-0800-S6	●									6.97	8.41	8.65	8.91	9.18	9.81	
0300-1000-S6	●									6	10.47	10.79	11.12	11.48	12.29	
0300-1200-S6	●									5.27	12.54	12.93	13.34	13.78	14.78	
0300-1400-S6	●									4.69	14.61	15.07	15.56	16.08	17.27	
0300-1600-S6	●									4.23	16.68	17.21	17.77	18.38	19.75	
0300-2000-S6	●									3.54	20.81	21.48	22.21	22.98	24.73	
0300-2500-S6	●	2.94	25.98	26.83	27.75	28.73	-									
0350-1500-S6	●	1.75		3.5	2.8	3.4	15	60	60	3.96	15.63	16.12	16.64	17.2	18.45	
0350-2000-S6	●									3.1	20.8	21.47	22.18	22.94	24.66	
0350-2500-S6	●									2.55	25.97	26.81	27.72	28.69	-	
0350-3000-S6	●									2.17	31.14	32.16	33.26	34.44	-	
0400-0800-S6	●	2		4	3	3.9	8	65	65	5.76	8.39	8.61	8.85	9.11	9.69	
0400-1000-S6	●									4.8	10.46	10.75	11.07	11.41	12.17	
0400-1200-S6	●									4.11	12.52	12.89	13.28	13.71	14.66	
0400-1400-S6	●									3.6	14.59	15.03	15.5	16.01	17.14	
0400-1500-S6	●									3.39	15.63	16.1	16.61	17.16	18.39	
0400-2000-S6	●									2.62	20.79	21.45	22.15	22.91	-	
0400-2500-S6	●									2.13	25.96	26.8	27.69	28.66	-	
0400-3000-S6	●	1.8	31.13	32.15	33.23	-	-									
0400-3500-S6	●	1.56	36.3	37.49	38.78	-	-									
0500-1000-S6	●	2.5		5	3.5	4.8	10	70	70	2.94	10.63	10.92	11.22	11.55	-	
0500-1500-S6	●									1.95	15.8	16.27	16.76	-	-	
0500-2000-S6	●									1.46	20.97	21.61	-	-	-	
0500-2500-S6	●									1.16	26.14	26.96	-	-	-	
0500-3000-S6	●									0.97	31.31	-	-	-	-	
0500-4000-S6	●									0.73	41.64	-	-	-	-	
0600-1000-S6	●									3		6	6	5.7	10	70
0600-1500-S6	●	-	-	-	-	-	-									
0600-2000-S6	●	-	-	-	-	-	-									
0600-2500-S6	●	-	-	-	-	-	-									
0600-3000-S6	●	-	-	-	-	-	-									
0600-3500-S6	●	-	-	-	-	-	-									
0600-4000-S6	●	-	-	-	-	-	-									
0600-5000-S6	●	3		6	6	5.7	15	80	80	-	-	-	-	-	-	
0600-6000-S6	●						20			85	90	-	-	-	-	-
	●						25					-	-	-	-	-
	●	3		6	6	5.7	30	120	120	-	-	-	-	-	-	
	●						35			-	-	-	-	-	-	
	●						40			-	-	-	-	-	-	
	●						50			-	-	-	-	-	-	
	●	3		6	6	5.7	60	120	120	-	-	-	-	-	-	
	●						60			-	-	-	-	-	-	

기준 절삭조건 L50, L51



솔리드 볼

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

● : 표준 재고

기준 절삭조건

2KMB 표준

		프리하든강 NAK (35-45HRC)				프리하든강 · 열처리강 STAVAX · SKD61 (45-55HRC)				열처리강 SKD11 (55-62HRC)				열처리강 HAP10* · SKH (62-66HRC)				열처리강 HAP72* (66-70HRC)			
볼 반경 RE (mm)	날장 APMX (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)
0.05	0.1	50,000	200	0.008	0.008	40,000	170	0.006	0.006	40,000	110	0.003	0.006	40,000	70	0.002	0.006	40,000	60	0.002	0.003
0.075	0.15	50,000	240	0.008	0.008	40,000	200	0.006	0.006	40,000	170	0.003	0.006	40,000	110	0.002	0.006	40,000	90	0.002	0.003
0.1	0.2	50,000	480	0.015	0.031	40,000	400	0.011	0.022	40,000	350	0.011	0.011	40,000	260	0.003	0.006	40,000	170	0.003	0.003
0.15	0.3	50,000	550	0.015	0.046	40,000	460	0.011	0.033	40,000	400	0.011	0.022	40,000	330	0.006	0.011	40,000	250	0.003	0.006
0.2	0.6	50,000	1,320	0.031	0.092	40,000	1,100	0.022	0.066	40,000	900	0.022	0.055	40,000	530	0.011	0.022	36,000	480	0.01	0.022
0.25	0.8	50,000	1,580	0.046	0.108	40,000	1,320	0.033	0.077	40,000	1,100	0.028	0.055	40,000	660	0.017	0.033	32,000	500	0.011	0.022
0.3	0.9	50,000	2,110	0.077	0.154	40,000	1,760	0.055	0.11	40,000	1,320	0.033	0.066	30,000	790	0.022	0.055	27,000	590	0.022	0.055
0.4	1.2	50,000	2,900	0.154	0.231	40,000	2,420	0.11	0.165	40,000	1,980	0.077	0.11	30,000	1,320	0.055	0.11	25,500	990	0.033	0.11
0.5	1.5	45,000	3,300	0.154	0.462	40,000	2,750	0.11	0.33	30,000	2,200	0.11	0.22	25,000	1,540	0.088	0.11	21,500	1,160	0.055	0.11
0.75	2.3	35,000	3,960	0.231	0.462	30,000	3,300	0.165	0.33	30,000	2,750	0.11	0.33	25,000	2,200	0.11	0.22	20,000	1,650	0.066	0.22
1	3	25,000	3,960	0.308	0.77	25,000	3,300	0.22	0.55	25,000	2,750	0.22	0.55	20,000	2,200	0.165	0.33	16,000	1,650	0.11	0.33
1.25	3.8	25,000	3,960	0.462	0.924	25,000	3,300	0.33	0.66	20,000	2,750	0.22	0.55	18,000	2,200	0.165	0.44	15,500	1,650	0.11	0.44
1.5	5	22,000	3,960	0.308	0.968	20,000	3,300	0.22	0.88	18,000	2,750	0.22	0.66	14,000	2,200	0.22	0.55	13,000	1,650	0.132	0.55
2	6	22,000	3,960	0.462	1.815	20,000	3,300	0.33	1.65	16,000	2,750	0.22	0.88	12,000	2,200	0.22	0.66	10,500	1,650	0.165	0.66
2.5	8	20,000	3,960	0.462	1.815	18,000	3,300	0.33	1.65	12,000	2,750	0.22	1.32	9,500	2,200	0.22	0.77	8,500	1,650	0.176	0.77
3	10	18,000	3,960	0.462	2.42	16,000	3,300	0.33	2.2	8,000	2,750	0.33	1.32	7,000	2,200	0.22	1.1	6,000	1,650	0.176	1.1

떨림 등이 발생할 경우에는 필요에 따라 절삭조건을 조정해 주십시오.
 코너부 등의 절삭 부하가 커지는 곳에서는 특히 절삭조건 설정이나 톨패스 등에 주의해 주십시오.
 회전수와 이송 속도는 동일한 비율로 조정해 주셔야 합니다.
 오일 미스트 콜러트를 권장합니다.
 ø1 미만이나 L/D(아스펙트비)가 8을 넘어서는 경우는 상황에 따라서 절삭조건을 조정하십시오.



솔리드
볼

기준 절삭조건

2KMB 롱 넥

볼 반경 RE (mm)	프리하든강 NAK (35-45HRC)					프리하든강 · 열처리강 STAVAX · SKD61 (45-55HRC)					열처리강 SKD11 (55-62HRC)				열처리강 HAP10* · SKH (62-66HRC)				열처리강 HAP72* (66-70HRC)			
	유효 길이 LU (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	
0.05	0.2	50,000	170	0.005	0.008	40,000	140	0.003	0.006	40,000	110	0.002	0.006	40,000	80	0.002	0.003	40,000	60	0.002	0.003	
	0.3	50,000	130	0.005	0.008	40,000	110	0.003	0.006	40,000	80	0.002	0.006	40,000	60	0.002	0.003	40,000	50	0.002	0.003	
	0.5	50,000	100	0.003	0.005	40,000	80	0.002	0.003	40,000	60	0.001	0.003	40,000	30	0.001	0.002	40,000	20	0.001	0.002	
0.075	0.3	50,000	240	0.005	0.008	40,000	200	0.003	0.006	40,000	170	0.002	0.006	40,000	110	0.002	0.003	40,000	80	0.002	0.003	
	0.5	50,000	200	0.005	0.008	40,000	170	0.003	0.006	40,000	130	0.002	0.006	40,000	80	0.002	0.003	40,000	60	0.002	0.003	
	1	46,000	100	0.003	0.005	40,000	80	0.002	0.003	40,000	60	0.001	0.003	40,000	30	0.001	0.002	40,000	20	0.001	0.002	
0.1	0.3	50,000	470	0.015	0.015	40,000	390	0.011	0.011	40,000	330	0.007	0.006	40,000	220	0.003	0.003	40,000	170	0.003	0.003	
	0.5	50,000	420	0.012	0.015	40,000	350	0.009	0.011	40,000	310	0.006	0.006	40,000	200	0.003	0.003	40,000	150	0.003	0.003	
	0.75	50,000	370	0.008	0.015	40,000	310	0.006	0.011	40,000	220	0.003	0.006	40,000	170	0.002	0.003	40,000	130	0.002	0.003	
	1	50,000	340	0.005	0.008	40,000	280	0.003	0.006	40,000	180	0.002	0.003	40,000	130	0.001	0.002	40,000	100	0.001	0.002	
	1.25	46,000	240	0.005	0.008	40,000	200	0.003	0.006	40,000	150	0.002	0.003	40,000	110	0.001	0.002	40,000	80	0.001	0.002	
	1.5	46,000	200	0.005	0.008	40,000	170	0.003	0.006	40,000	130	0.002	0.003	40,000	90	0.001	0.002	40,000	70	0.001	0.002	
	1.75	46,000	160	0.003	0.004	40,000	130	0.002	0.003	40,000	110	0.001	0.002	40,000	70	0.001	0.002	40,000	50	0.001	0.001	
	2	46,000	130	0.003	0.004	40,000	110	0.002	0.003	40,000	90	0.001	0.002	40,000	60	0.001	0.001	40,000	40	0.001	0.001	
	2.5	41,000	100	0.001	0.003	40,000	80	0.001	0.002	40,000	70	0.001	0.001	40,000	50	0.001	0.001	40,000	30	0.001	0.001	
0.15	0.5	50,000	470	0.015	0.023	40,000	390	0.011	0.017	40,000	330	0.008	0.011	40,000	310	0.003	0.006	40,000	230	0.003	0.006	
	0.6	50,000	470	0.011	0.015	40,000	390	0.008	0.011	40,000	330	0.006	0.008	40,000	280	0.003	0.006	40,000	210	0.003	0.006	
	0.75	50,000	430	0.011	0.015	40,000	360	0.008	0.011	40,000	310	0.006	0.008	40,000	250	0.003	0.006	40,000	190	0.003	0.006	
	1	50,000	420	0.011	0.015	40,000	350	0.008	0.011	40,000	280	0.006	0.008	40,000	220	0.003	0.006	40,000	170	0.003	0.006	
	1.25	50,000	410	0.008	0.011	40,000	340	0.006	0.008	40,000	220	0.003	0.006	40,000	180	0.002	0.003	40,000	140	0.002	0.003	
	1.5	50,000	370	0.008	0.011	40,000	310	0.006	0.008	40,000	200	0.003	0.006	40,000	130	0.002	0.003	40,000	100	0.002	0.003	
	1.75	46,000	260	0.005	0.008	40,000	220	0.003	0.006	40,000	170	0.002	0.003	40,000	110	0.002	0.002	40,000	80	0.002	0.002	
	2	46,000	230	0.005	0.008	40,000	190	0.003	0.006	40,000	130	0.002	0.003	40,000	100	0.002	0.002	40,000	80	0.002	0.002	
	2.25	46,000	230	0.003	0.004	40,000	190	0.002	0.003	40,000	110	0.001	0.002	40,000	90	0.001	0.001	40,000	70	0.001	0.001	
	2.5	46,000	170	0.003	0.004	40,000	140	0.002	0.003	40,000	90	0.001	0.002	40,000	80	0.001	0.001	40,000	60	0.001	0.001	
	3	46,000	140	0.001	0.004	40,000	120	0.001	0.003	40,000	80	0.001	0.002	40,000	70	0.001	0.001	40,000	50	0.001	0.001	
	3.5	44,000	110	0.001	0.003	40,000	90	0.001	0.002	40,000	70	0.001	0.001	40,000	60	0.001	0.001	40,000	50	0.001	0.001	
0.2	0.5	50,000	1,060	0.046	0.077	40,000	880	0.033	0.055	40,000	790	0.033	0.033	40,000	640	0.01	0.022	36,000	480	0.01	0.022	
	0.8	50,000	1,060	0.031	0.077	40,000	880	0.022	0.055	40,000	790	0.022	0.033	40,000	640	0.009	0.022	36,000	480	0.009	0.022	
	1	50,000	1,060	0.031	0.077	40,000	880	0.022	0.055	40,000	790	0.022	0.033	40,000	640	0.009	0.022	36,000	480	0.009	0.022	
	1.5	50,000	820	0.015	0.046	40,000	680	0.011	0.033	40,000	550	0.011	0.022	40,000	440	0.006	0.011	35,000	330	0.006	0.011	



솔리드 볼 엔드밀

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

2KMB 롱 넥

분 반경 RE (mm)	유효 길이 LU (mm)	프리하든강 NAK (35-45HRC)				프리하든강 · 열처리강 STAVAX · SKD61 (45-55HRC)				열처리강 SKD11 (55-62HRC)				열처리강 HAP10* · SKH (62-66HRC)				열처리강 HAP72* (66-70HRC)			
		회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	중절입량 ap (mm)	횡절입량 ae (mm)
0.2	2	50,000	660	0.015	0.031	40,000	550	0.011	0.022	40,000	420	0.011	0.011	40,000	330	0.006	0.008	36,000	250	0.006	0.008
	2.5	44,000	550	0.011	0.015	40,000	460	0.008	0.011	40,000	330	0.006	0.008	40,000	290	0.003	0.006	36,000	220	0.003	0.006
	3	37,000	400	0.011	0.015	40,000	330	0.008	0.011	40,000	260	0.006	0.008	40,000	220	0.003	0.006	36,000	170	0.002	0.003
	3.5	37,000	300	0.008	0.011	40,000	250	0.006	0.008	40,000	180	0.003	0.006	40,000	130	0.002	0.003	36,000	100	0.001	0.002
	4	37,000	220	0.008	0.008	30,000	180	0.006	0.006	30,000	130	0.003	0.003	30,000	100	0.002	0.003	27,000	80	0.001	0.001
	4.5	33,000	130	0.004	0.008	30,000	110	0.003	0.006	30,000	90	0.002	0.003	30,000	70	0.001	0.002	27,000	50	0.001	0.001
	5	33,000	100	0.003	0.004	30,000	80	0.002	0.003	30,000	60	0.001	0.002	30,000	40	0.001	0.002	27,000	30	0.001	0.001
0.25	1	50,000	1,320	0.046	0.077	40,000	1,100	0.033	0.055	40,000	950	0.022	0.033	40,000	720	0.011	0.022	32,000	500	0.011	0.022
	1.5	50,000	1,130	0.031	0.077	40,000	940	0.022	0.055	40,000	790	0.011	0.033	40,000	570	0.008	0.022	32,000	400	0.008	0.022
	2	50,000	950	0.031	0.046	40,000	790	0.022	0.033	40,000	720	0.011	0.022	40,000	440	0.008	0.011	32,000	310	0.008	0.011
	2.5	45,500	790	0.015	0.031	40,000	660	0.011	0.022	40,000	580	0.008	0.011	40,000	400	0.006	0.008	32,000	280	0.006	0.008
	3	45,500	660	0.015	0.031	40,000	550	0.011	0.022	40,000	460	0.008	0.011	40,000	350	0.006	0.008	32,000	250	0.006	0.008
	3.5	45,000	550	0.011	0.015	40,000	460	0.008	0.011	40,000	400	0.006	0.008	40,000	310	0.003	0.006	32,000	220	0.003	0.006
	4	39,000	470	0.011	0.015	40,000	390	0.008	0.011	40,000	330	0.006	0.008	40,000	290	0.003	0.006	32,000	200	0.003	0.006
	4.5	35,000	400	0.008	0.008	40,000	330	0.006	0.006	40,000	290	0.003	0.003	40,000	240	0.002	0.003	32,000	170	0.001	0.002
	5	35,000	310	0.008	0.008	33,000	260	0.006	0.006	33,000	220	0.003	0.003	33,000	200	0.002	0.003	26,500	140	0.001	0.001
	5.5	31,500	260	0.004	0.008	30,000	220	0.003	0.006	30,000	180	0.002	0.003	30,000	130	0.001	0.002	24,000	90	0.001	0.001
	6	31,500	160	0.003	0.004	30,000	130	0.002	0.003	30,000	90	0.001	0.002	30,000	80	0.001	0.002	24,000	60	0.001	0.001
0.3	1	50,000	1,850	0.077	0.154	40,000	1,540	0.055	0.11	40,000	1,100	0.033	0.066	30,000	790	0.022	0.055	27,000	590	0.022	0.055
	1.5	50,000	1,850	0.077	0.154	40,000	1,540	0.055	0.11	40,000	1,100	0.033	0.066	30,000	790	0.022	0.055	27,000	590	0.022	0.055
	2	50,000	1,850	0.077	0.154	40,000	1,540	0.055	0.11	40,000	1,100	0.033	0.066	30,000	790	0.022	0.055	27,000	590	0.022	0.055
	2.5	50,000	1,580	0.046	0.077	40,000	1,320	0.033	0.055	40,000	920	0.022	0.044	30,000	700	0.022	0.033	27,000	530	0.022	0.033
	3	50,000	1,580	0.046	0.077	40,000	1,320	0.033	0.055	40,000	920	0.022	0.044	30,000	700	0.022	0.033	27,000	530	0.022	0.033
	3.5	49,000	1,320	0.031	0.046	40,000	1,100	0.022	0.033	40,000	680	0.011	0.033	30,000	530	0.011	0.022	27,000	340	0.011	0.022
	4	49,000	1,320	0.031	0.046	40,000	1,100	0.022	0.033	40,000	680	0.011	0.033	30,000	530	0.011	0.022	27,000	340	0.011	0.022
	4.5	46,000	1,190	0.031	0.046	35,000	990	0.022	0.033	35,000	640	0.011	0.022	30,000	470	0.009	0.017	27,000	260	0.009	0.017
	5	40,000	950	0.015	0.031	30,000	790	0.011	0.022	30,000	550	0.008	0.017	30,000	440	0.008	0.011	27,000	240	0.008	0.011
	5.5	40,000	920	0.015	0.024	30,000	770	0.011	0.017	30,000	500	0.008	0.011	30,000	400	0.006	0.009	27,000	220	0.005	0.008
	6	40,000	660	0.011	0.015	30,000	550	0.008	0.011	30,000	420	0.006	0.008	30,000	350	0.004	0.007	27,000	190	0.003	0.006
	7	33,000	530	0.008	0.011	25,000	440	0.006	0.008	25,000	330	0.003	0.006	20,000	290	0.003	0.003	18,000	160	0.002	0.002
	8	27,500	420	0.004	0.008	25,000	350	0.003	0.006	25,000	290	0.003	0.003	20,000	240	0.002	0.003	18,000	130	0.001	0.002



솔리드 볼

기준 절삭조건

2KMB 롱 넥

볼 반경 RE (mm)	유효 길이 LU (mm)	프리하든강 NAK (35-45HRC)				프리하든강 · 열처리강 STAVAX · SKD61 (45-55HRC)				열처리강 SKD11 (55-62HRC)				열처리강 HAP10* · SKH (62-66HRC)				열처리강 HAP72* (66-70HRC)			
		회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)
0.35	2	50,000	2,110	0.108	0.154	40,000	1,760	0.077	0.11	40,000	1,430	0.055	0.088	30,000	1,100	0.033	0.077	27,000	770	0.022	0.055
	4	49,000	1,720	0.062	0.092	40,000	1,430	0.044	0.066	40,000	900	0.033	0.044	30,000	660	0.017	0.022	27,000	360	0.011	0.022
0.4	2	50,000	2,640	0.154	0.231	40,000	2,200	0.11	0.165	40,000	1,760	0.077	0.11	30,000	1,320	0.055	0.11	25,500	990	0.033	0.11
	3	50,000	2,640	0.154	0.231	40,000	2,200	0.11	0.165	40,000	1,760	0.077	0.11	30,000	1,320	0.055	0.055	25,500	990	0.033	0.055
	4	50,000	2,110	0.077	0.154	40,000	1,760	0.055	0.11	40,000	1,320	0.055	0.055	30,000	950	0.033	0.055	25,500	710	0.022	0.055
	5	50,000	2,110	0.077	0.077	40,000	1,760	0.055	0.055	40,000	1,100	0.033	0.055	30,000	680	0.022	0.033	25,500	510	0.017	0.033
	6	43,000	1,580	0.046	0.077	30,000	1,320	0.033	0.055	30,000	840	0.022	0.033	25,000	620	0.011	0.022	21,500	370	0.011	0.022
	7	40,000	1,320	0.031	0.046	30,000	1,100	0.022	0.033	30,000	750	0.011	0.022	25,000	570	0.008	0.011	21,500	340	0.006	0.01
	8	35,500	1,080	0.015	0.031	30,000	900	0.011	0.022	30,000	660	0.008	0.011	25,000	530	0.006	0.011	21,500	320	0.005	0.008
	9	27,500	600	0.008	0.008	25,000	500	0.006	0.006	25,000	420	0.003	0.003	20,000	350	0.002	0.003	17,000	210	0.002	0.002
0.45	2	50,000	2,900	0.154	0.308	40,000	2,420	0.11	0.22	30,000	1,980	0.088	0.165	30,000	1,430	0.066	0.11	27,000	1,000	0.033	0.11
	4	48,500	2,380	0.077	0.185	40,000	1,980	0.055	0.132	30,000	1,540	0.044	0.088	25,000	990	0.033	0.055	22,500	740	0.022	0.055
	6	41,000	1,580	0.054	0.077	30,000	1,320	0.039	0.055	25,000	880	0.028	0.039	20,000	660	0.017	0.028	18,000	430	0.011	0.022
0.5	2	46,000	3,300	0.154	0.462	40,000	2,750	0.11	0.33	30,000	2,200	0.11	0.22	25,000	1,540	0.088	0.11	21,500	1,160	0.055	0.11
	2.5	46,000	3,300	0.154	0.462	40,000	2,750	0.11	0.33	30,000	2,200	0.11	0.22	25,000	1,540	0.088	0.11	21,500	1,160	0.055	0.11
	3	46,000	3,300	0.154	0.462	40,000	2,750	0.11	0.33	30,000	2,200	0.11	0.22	25,000	1,540	0.088	0.11	21,500	1,160	0.055	0.11
	4	46,000	3,300	0.154	0.308	40,000	2,750	0.11	0.22	30,000	1,980	0.055	0.165	25,000	1,320	0.055	0.11	21,500	990	0.033	0.11
	5	40,000	2,640	0.077	0.231	30,000	2,200	0.055	0.165	25,000	1,760	0.044	0.11	20,000	1,010	0.033	0.055	17,000	760	0.022	0.055
	6	39,000	2,380	0.077	0.154	30,000	1,980	0.055	0.11	25,000	1,320	0.044	0.055	20,000	810	0.022	0.055	17,000	610	0.017	0.055
	7	33,500	1,580	0.062	0.092	30,000	1,320	0.044	0.066	25,000	1,050	0.033	0.044	20,000	750	0.022	0.033	17,000	560	0.011	0.033
	8	33,500	1,320	0.062	0.092	30,000	1,100	0.044	0.066	25,000	950	0.033	0.044	20,000	620	0.022	0.033	17,000	430	0.01	0.02
	9	33,500	1,080	0.046	0.077	25,000	900	0.033	0.055	20,000	830	0.022	0.033	18,000	550	0.011	0.022	15,500	390	0.008	0.01
	10	33,500	1,000	0.046	0.077	25,000	830	0.033	0.055	20,000	680	0.022	0.033	18,000	500	0.011	0.022	15,500	330	0.008	0.008
12	28,500	790	0.015	0.046	20,000	660	0.011	0.033	18,000	570	0.008	0.022	16,000	440	0.006	0.011	14,000	290	0.004	0.006	
13	24,500	660	0.013	0.031	20,000	550	0.009	0.022	18,000	460	0.006	0.011	16,000	390	0.003	0.007	14,000	250	0.002	0.004	



솔리드 볼

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

2KMB 롱 넥

볼 반경 RE (mm)	유효 길이 LU (mm)	프리하든강 NAK (35-45HRC)				프리하든강 · 열처리강 STAVAX · SKD61 (45-55HRC)				열처리강 SKD11 (55-62HRC)				열처리강 HAP10* · SKH (62-66HRC)				열처리강 HAP72* (66-70HRC)			
		회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)
0.6	2.4	39,500	3,300	0.154	0.462	30,000	2,750	0.11	0.33	30,000	2,200	0.11	0.22	25,000	1,760	0.088	0.11	21,500	1,320	0.055	0.11
	4	39,500	3,300	0.154	0.308	30,000	2,750	0.11	0.22	30,000	2,200	0.077	0.22	25,000	1,760	0.088	0.11	21,500	1,320	0.055	0.11
	6	39,500	2,640	0.108	0.154	30,000	2,200	0.077	0.11	25,000	1,760	0.055	0.11	20,000	1,320	0.033	0.077	17,000	860	0.022	0.077
	8	32,000	2,110	0.077	0.154	30,000	1,760	0.055	0.11	25,000	1,320	0.033	0.077	20,000	1,010	0.022	0.055	17,000	760	0.017	0.055
	10	29,500	1,580	0.046	0.108	20,000	1,320	0.033	0.077	20,000	950	0.022	0.055	18,000	750	0.011	0.033	15,500	560	0.01	0.03
	12	29,500	1,140	0.031	0.077	20,000	950	0.022	0.055	20,000	680	0.011	0.033	18,000	530	0.008	0.022	15,500	400	0.008	0.02
	14	25,000	790	0.031	0.046	18,000	660	0.022	0.033	18,000	440	0.011	0.022	16,000	330	0.006	0.011	14,000	250	0.005	0.01
	16	21,000	470	0.015	0.031	16,000	390	0.011	0.022	16,000	280	0.006	0.011	14,000	140	0.003	0.008	12,000	110	0.002	0.005
0.7	8	28,000	3,300	0.123	0.246	30,000	2,750	0.088	0.176	20,000	1,980	0.055	0.123	20,000	1,100	0.033	0.088	17,000	830	0.022	0.055
	12	26,000	1,850	0.108	0.185	20,000	1,540	0.077	0.132	18,000	1,210	0.044	0.088	18,000	770	0.017	0.055	15,500	620	0.017	0.055
0.75	3	36,000	3,960	0.231	0.462	30,000	3,300	0.165	0.33	30,000	2,750	0.11	0.33	25,000	2,200	0.11	0.22	20,000	1,650	0.066	0.22
	4	36,000	3,960	0.231	0.462	30,000	3,300	0.165	0.33	30,000	2,750	0.11	0.33	25,000	2,200	0.11	0.22	20,000	1,320	0.066	0.22
	6	36,000	3,960	0.231	0.308	30,000	3,300	0.165	0.22	30,000	2,200	0.11	0.22	25,000	1,760	0.11	0.11	20,000	990	0.066	0.11
	8	34,000	3,300	0.154	0.308	25,000	2,750	0.11	0.22	25,000	1,760	0.055	0.22	20,000	1,320	0.055	0.11	16,000	790	0.033	0.11
	10	34,000	3,300	0.154	0.154	25,000	2,750	0.11	0.11	25,000	1,320	0.055	0.11	20,000	950	0.055	0.055	16,000	570	0.033	0.055
	12	26,000	2,380	0.077	0.154	20,000	1,980	0.055	0.11	20,000	1,010	0.033	0.11	18,000	860	0.022	0.055	14,500	520	0.017	0.055
	14	23,000	1,580	0.077	0.108	20,000	1,320	0.055	0.077	20,000	900	0.033	0.055	18,000	720	0.022	0.033	14,500	430	0.012	0.016
	16	19,500	950	0.046	0.077	18,000	790	0.033	0.055	18,000	720	0.022	0.033	16,000	640	0.011	0.022	13,000	380	0.01	0.012
	18	19,500	730	0.031	0.062	16,000	610	0.022	0.044	16,000	440	0.013	0.028	14,000	440	0.009	0.017	11,500	260	0.007	0.01
	20	19,500	600	0.015	0.046	16,000	500	0.011	0.033	16,000	400	0.011	0.022	14,000	330	0.008	0.011	11,500	200	0.006	0.008
0.8	8	31,000	3,300	0.154	0.308	25,000	2,750	0.11	0.22	20,000	2,200	0.077	0.165	18,000	1,760	0.055	0.11	14,500	790	0.033	0.11
	12	28,000	2,380	0.108	0.154	20,000	1,980	0.077	0.11	16,000	1,650	0.055	0.077	14,000	1,320	0.033	0.055	11,500	590	0.022	0.055



솔리드 볼

기준 절삭조건

2KMB 롱 넥

볼 반경 RE (mm)	유효 길이 LU (mm)	프리하든강 NAK (35-45HRC)				프리하든강 · 열처리강 STAVAX · SKD61 (45-55HRC)				열처리강 SKD11 (55-62HRC)				열처리강 HAP10* · SKH (62-66HRC)				열처리강 HAP72* (66-70HRC)			
		회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	횡절입량 ae (mm)
1	3	27,000	3,960	0.308	0.77	25,000	3,300	0.22	0.55	25,000	2,750	0.22	0.55	20,000	2,200	0.165	0.33	16,000	1,650	0.11	0.33
	4	27,000	3,960	0.308	0.77	25,000	3,300	0.22	0.55	25,000	2,750	0.22	0.55	20,000	2,200	0.165	0.33	16,000	1,650	0.11	0.33
	6	27,000	3,300	0.308	0.77	25,000	2,750	0.22	0.55	25,000	2,200	0.22	0.33	20,000	1,760	0.165	0.33	16,000	1,320	0.11	0.33
	8	27,000	2,640	0.308	0.462	20,000	2,200	0.22	0.33	18,000	1,760	0.11	0.22	16,000	1,320	0.11	0.22	13,000	990	0.066	0.165
	10	27,000	2,640	0.154	0.462	18,000	2,200	0.11	0.33	16,000	1,760	0.11	0.22	14,000	1,320	0.11	0.11	11,500	860	0.066	0.11
	12	22,500	2,110	0.154	0.308	16,000	1,760	0.11	0.22	14,000	1,320	0.11	0.11	12,000	1,030	0.055	0.11	10,000	670	0.033	0.11
	13	22,500	2,110	0.123	0.308	16,000	1,760	0.088	0.22	14,000	1,320	0.066	0.11	12,000	1,030	0.044	0.088	10,000	620	0.033	0.055
	14	22,500	2,110	0.108	0.231	16,000	1,760	0.077	0.165	14,000	1,320	0.055	0.088	12,000	1,030	0.033	0.077	10,000	520	0.033	0.055
	16	22,500	2,110	0.108	0.231	16,000	1,760	0.077	0.165	14,000	1,320	0.055	0.088	12,000	1,030	0.033	0.077	10,000	410	0.033	0.055
	18	21,500	1,850	0.077	0.154	14,000	1,540	0.055	0.11	12,000	1,100	0.033	0.055	10,000	940	0.022	0.033	8,000	380	0.02	0.025
	20	19,500	1,320	0.077	0.154	14,000	1,100	0.055	0.11	12,000	900	0.033	0.055	10,000	790	0.022	0.033	8,000	320	0.015	0.02
	22	17,500	1,130	0.046	0.123	14,000	940	0.033	0.088	12,000	770	0.022	0.066	10,000	660	0.022	0.022	8,000	260	0.012	0.015
	25	14,500	900	0.046	0.077	12,000	750	0.033	0.055	10,000	620	0.022	0.033	8,500	460	0.011	0.022	7,000	180	0.008	0.012
1.25	6	24,000	3,700	0.462	0.77	20,000	3,080	0.33	0.55	20,000	2,530	0.22	0.55	18,000	2,200	0.165	0.44	15,500	1,650	0.11	0.44
	8	24,000	3,430	0.385	0.462	20,000	2,860	0.275	0.33	20,000	2,310	0.165	0.33	18,000	1,980	0.132	0.275	15,500	1,490	0.11	0.275
	10	24,000	3,300	0.308	0.462	20,000	2,750	0.22	0.33	20,000	2,200	0.165	0.22	18,000	1,760	0.11	0.165	15,500	1,230	0.066	0.165
	15	18,500	2,640	0.154	0.308	18,000	2,200	0.11	0.22	16,000	1,760	0.077	0.165	14,000	1,320	0.055	0.11	12,000	790	0.033	0.11
	20	17,000	1,980	0.108	0.231	16,000	1,650	0.077	0.165	14,000	1,320	0.055	0.11	10,000	1,100	0.033	0.055	8,500	660	0.033	0.055
	25	17,000	1,320	0.077	0.154	14,000	1,100	0.055	0.11	12,000	940	0.033	0.077	8,000	790	0.022	0.033	7,000	470	0.015	0.02
	30	13,000	950	0.046	0.108	12,000	790	0.033	0.077	10,000	700	0.022	0.055	7,000	640	0.011	0.022	6,000	380	0.008	0.012
1.5	6	22,000	3,960	0.462	0.968	20,000	3,300	0.33	0.88	18,000	2,750	0.22	0.66	14,000	2,200	0.22	0.55	13,000	1,650	0.132	0.55
	8	22,000	3,960	0.462	0.968	20,000	3,300	0.33	0.88	18,000	2,750	0.22	0.66	14,000	2,200	0.22	0.55	13,000	1,650	0.132	0.55
	10	22,000	3,300	0.308	0.726	20,000	2,750	0.22	0.66	18,000	2,200	0.22	0.44	14,000	1,820	0.11	0.33	13,000	1,400	0.11	0.33
	12	22,000	3,300	0.308	0.726	20,000	2,750	0.22	0.66	18,000	2,200	0.22	0.44	14,000	1,820	0.11	0.33	13,000	1,240	0.066	0.33
	14	20,000	2,640	0.154	0.484	18,000	2,200	0.11	0.44	16,000	1,760	0.11	0.33	12,000	1,450	0.11	0.22	11,000	990	0.066	0.22
	16	20,000	2,640	0.154	0.484	18,000	2,200	0.11	0.44	16,000	1,760	0.11	0.33	12,000	1,450	0.11	0.22	11,000	990	0.066	0.22
	20	20,000	2,120	0.154	0.363	18,000	1,760	0.11	0.33	16,000	1,320	0.11	0.22	12,000	1,060	0.11	0.11	11,000	740	0.066	0.11
	25	18,000	1,590	0.154	0.242	16,000	1,320	0.11	0.22	14,000	1,010	0.077	0.165	10,000	880	0.055	0.077	9,000	620	0.053	0.077



솔리드 볼

- 엔드밀
- 미세 가공
- 드릴
- SGS
- 공업용 나이프

2KMB 롱 넥

볼 반경 RE (mm)	유효 길이 LU (mm)	프리하든강 NAK (35-45HRC)				프리하든강 · 열처리강 STAVAX · SKD61 (45-55HRC)				열처리강 SKD11 (55-62HRC)				열처리강 HAP10* · SKH (62-66HRC)				열처리강 HAP72* (66-70HRC)			
		회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)	회전 수 n (min ⁻¹)	이송 Vf (mm/min)	총절입량 ap (mm)	형질입량 ae (mm)
1.75	15	22,000	3,960	0.385	1.21	20,000	3,300	0.275	1.1	16,000	2,530	0.165	0.55	14,000	1,650	0.143	0.44	13,000	990	0.143	0.422
	20	20,000	3,300	0.278	0.726	18,000	2,750	0.198	0.66	15,000	1,980	0.11	0.33	12,000	1,320	0.11	0.22	11,000	790	0.11	0.22
	25	18,000	2,380	0.186	0.424	16,000	1,980	0.132	0.385	14,000	1,760	0.11	0.22	10,000	1,100	0.066	0.132	9,000	660	0.066	0.132
	30	15,500	1,980	0.154	0.303	14,000	1,650	0.11	0.275	11,000	1,050	0.077	0.165	9,000	880	0.055	0.088	8,500	530	0.055	0.088
2	8	22,000	3,960	0.462	1.815	20,000	3,300	0.33	1.65	16,000	2,750	0.22	0.88	12,000	2,200	0.22	0.66	10,500	1,650	0.165	0.66
	10	22,000	3,960	0.462	1.815	20,000	3,300	0.33	1.65	16,000	2,750	0.22	0.88	12,000	2,200	0.22	0.66	10,500	1,650	0.165	0.66
	12	22,000	3,960	0.462	1.815	20,000	3,300	0.33	1.65	16,000	2,750	0.22	0.88	12,000	2,200	0.22	0.66	10,500	1,650	0.165	0.66
	14	22,000	3,960	0.462	1.815	20,000	3,300	0.33	1.65	16,000	2,200	0.22	0.88	12,000	1,760	0.22	0.66	10,500	1,320	0.132	0.66
	15	22,000	3,960	0.462	1.815	20,000	3,300	0.33	1.65	16,000	2,200	0.22	0.88	12,000	1,760	0.22	0.66	10,500	1,320	0.132	0.66
	20	18,000	3,170	0.308	1.21	16,000	2,640	0.22	1.1	14,000	1,980	0.11	0.66	10,000	1,540	0.11	0.44	8,500	1,000	0.088	0.44
	25	18,000	2,120	0.308	0.968	16,000	1,760	0.22	0.88	14,000	1,320	0.11	0.44	10,000	1,100	0.11	0.22	8,500	720	0.088	0.22
	30	15,500	2,120	0.154	0.363	14,000	1,760	0.11	0.33	10,000	1,320	0.077	0.22	10,000	1,100	0.055	0.165	8,500	720	0.055	0.165
	35	15,500	1,590	0.154	0.242	14,000	1,320	0.11	0.22	10,000	1,100	0.077	0.165	10,000	900	0.055	0.11	8,500	590	0.055	0.11
2.5	10	20,000	3,960	0.462	1.815	18,000	3,300	0.33	1.65	12,000	2,750	0.22	1.32	9,500	2,200	0.22	0.77	8,500	1,650	0.176	0.77
	15	20,000	3,960	0.462	1.815	18,000	3,300	0.33	1.65	12,000	2,750	0.22	1.32	9,500	2,200	0.22	0.77	8,500	1,650	0.176	0.77
	20	20,000	3,960	0.462	1.452	15,000	3,300	0.33	1.32	10,000	2,200	0.22	1.1	8,000	1,760	0.165	0.66	7,000	1,320	0.132	0.66
	25	16,500	3,300	0.308	1.21	15,000	2,750	0.22	1.1	9,000	1,980	0.165	0.88	7,500	1,540	0.11	0.55	6,500	1,160	0.088	0.44
	30	13,500	2,640	0.308	0.968	12,000	2,200	0.22	0.88	8,000	1,650	0.165	0.55	6,500	1,100	0.11	0.33	6,000	830	0.088	0.264
	40	11,000	1,590	0.154	0.242	10,000	1,320	0.11	0.22	7,000	1,100	0.077	0.165	5,500	900	0.055	0.22	5,000	680	0.044	0.176
3	10	18,000	3,960	0.462	2.42	16,000	3,300	0.33	2.2	8,000	2,750	0.33	1.32	7,000	2,200	0.22	1.1	6,000	1,650	0.176	0.88
	15	18,000	3,960	0.462	2.42	16,000	3,300	0.33	2.2	8,000	2,750	0.33	1.32	7,000	2,200	0.22	1.1	6,000	1,650	0.176	0.88
	20	18,000	3,960	0.462	2.42	16,000	3,300	0.33	2.2	8,000	2,750	0.33	1.32	7,000	2,200	0.22	1.1	6,000	1,650	0.176	0.88
	25	18,000	3,960	0.462	1.815	16,000	3,300	0.33	1.65	8,000	2,200	0.22	1.1	7,000	1,650	0.165	0.77	6,000	1,240	0.132	0.77
	30	18,000	3,960	0.308	1.815	14,000	3,300	0.22	1.65	7,500	2,200	0.22	1.1	6,500	1,650	0.165	0.77	6,000	1,070	0.132	0.77
	35	14,500	3,170	0.308	1.452	13,000	2,640	0.22	1.32	7,000	1,760	0.187	0.88	6,000	1,320	0.132	0.55	5,500	860	0.106	0.44
	40	13,500	2,380	0.308	1.21	12,000	1,980	0.22	1.1	6,500	1,320	0.165	0.66	5,500	1,100	0.11	0.44	5,000	720	0.088	0.352
	50	9,500	1,590	0.154	0.726	8,500	1,320	0.11	0.66	5,000	950	0.11	0.33	4,000	680	0.055	0.22	3,500	450	0.044	0.176
	60	7,000	800	0.108	0.363	6,000	660	0.077	0.33	3,500	500	0.055	0.165	2,500	330	0.033	0.077	2,500	210	0.026	0.062

떨림 등이 발생할 경우에는 필요에 따라 절삭조건을 조정해 주십시오.
 코너부 등의 절삭 부하가 커지는 곳에서는 특히 절삭조건 설정이나 톨패스 등에 주의해 주십시오.
 회전수와 이송 속도는 동일한 비율로 조정해 주셔야 합니다.
 오일 미스트 콜러트를 권장합니다.
 ø1 미만이나 L/D (아스펙트비) 가 8 을 넘어서는 경우는 상황에 따라서 절삭조건을 조정하십시오.



솔리드 톨

고능률 초경 코팅 솔리드 드릴

KDA

고능률·비용의 밸런스를 추구
범용성에 우수한 초경 솔리드 드릴

1 범용성을 추구한 설계와 레퍼토리 다양한 가공에 대응

Type N: 쿨런트 홀 없음 Type C: 쿨런트 홀 있음
3D와 5D를 각각 라인업



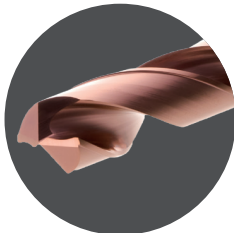
Type N
Normal type

쿨런트 홀이 없는 범용 타입
높은 경제성을 실현. 외부급유로 가공시에 권장

라인업

3D 5D
ø3~ø16

가공경은 0.1mm 단위로 레퍼토리




Type C
with Coolant hole

쿨런트 홀이 있어 내부 급유에 대응
스테인리스강 등에서 고능률·안정 가공을 실현

라인업

3D 5D
ø3~ø16

가공경은 0.1mm 단위로 레퍼토리



L

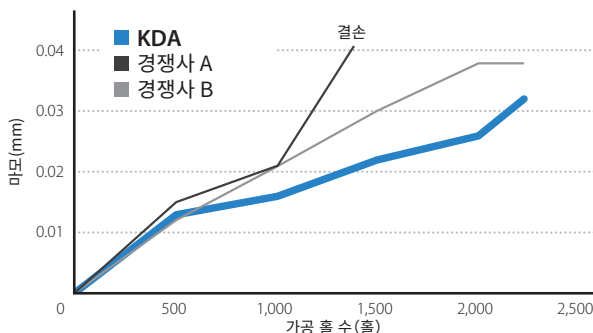


솔리드
드릴

2 긴수명 가공을 실현하는 고성능 코팅

내마모성·내열성에 우수한 알루미늄 크롬 (AlCr) 계 코팅을 채용

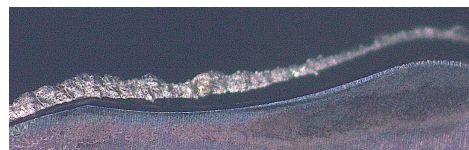
내마모성 비교 (당사비교)



절삭조건: Vc = 120 m/min, f = 0.23 mm/rev, H = 24 mm, Wet (내부 급유)
S50C BT50 ø 6 (5D) Type C



KDA



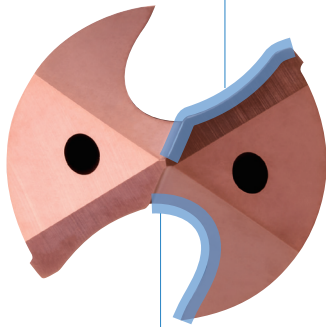
경쟁사 B

3 독자적인 형상으로 안정 가공을 실현

파형(물결) 설계의 절삭날과 특수 블레이드 형상

파형(물결) 설계의 절삭날

우수한 절삭성과
인선 강도를 양립



특수 블레이드 형상

우수한 칩처리와
높은 강성을 양립

칩 상태 (사내평가)



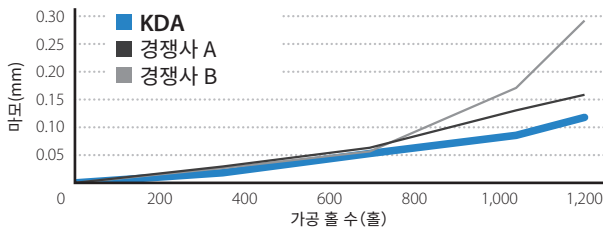
KDA

절삭조건: Vc=80m/min, f=0.14mm/rev, H=24mm, Wet (내부 급유)
BT50 ø6 (5D) Type C

4 다양한 피삭재에 대응

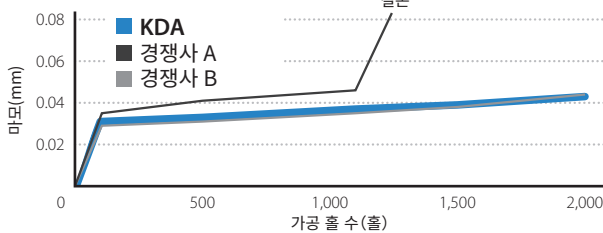
탄소강뿐만 아니라 금형상을 비롯하여 스테인리스강, 주철 가공 등에 대응

합금강 SCM440 (32HRC) (당사비교)



절삭조건: Vc=100m/min, f=0.15mm/rev, H=24mm, Wet (내부 급유)
BT50 ø6 (5D) Type C

스테인리스강 SUS304 (당사비교)

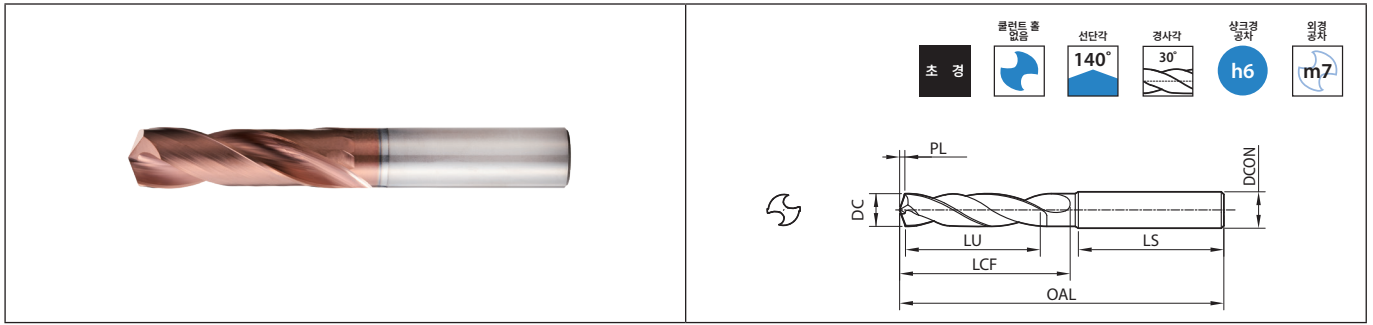


절삭조건: Vc=80m/min, f=0.14mm/rev, H=24mm, Wet (내부 급유)
BT50 ø6 (5D) Type C



슬리드 톨

KDA (3D, Type N, 콜런트 홀 없음)



드릴 치수

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 0300X03S060N	● 3	0.002	0.012			15.5				
0310X03S060N	● 3.1					15.3			0.5	
0320X03S060N	● 3.2					15.2				
0330X03S060N	● 3.3					15				
0340X03S060N	● 3.4			62		14.9	20			
0350X03S060N	● 3.5					14.7			0.6	
0360X03S060N	● 3.6					14.6				
0370X03S060N	● 3.7					14.4				
0380X03S060N	● 3.8					18.3				
0390X03S060N	● 3.9					18.1				
0400X03S060N	● 4					18				
0410X03S060N	● 4.1					17.8			0.7	
0420X03S060N	● 4.2					17.7				
0430X03S060N	● 4.3					17.5	24			
0440X03S060N	● 4.4					17.4				
0450X03S060N	● 4.5	0.004	0.016	6		17.2				
0460X03S060N	● 4.6					17.1			0.8	
0470X03S060N	● 4.7					16.9				
0480X03S060N	● 4.8					20.8				
0490X03S060N	● 4.9			66		20.6			36	
0500X03S060N	● 5					20.5				
0510X03S060N	● 5.1					20.3				
0520X03S060N	● 5.2					20.2			0.9	
0530X03S060N	● 5.3					20				
0540X03S060N	● 5.4					19.9	28			
0550X03S060N	● 5.5					19.7				
0560X03S060N	● 5.6					19.6				
0570X03S060N	● 5.7					19.4			1.0	
0580X03S060N	● 5.8					19.3				
0590X03S060N	● 5.9					19.1				
0600X03S060N	● 6					19				
0610X03S080N	● 6.1					24.8				
0620X03S080N	● 6.2					24.7			1.1	
0630X03S080N	● 6.3					24.5				
0640X03S080N	● 6.4					24.4				
0650X03S080N	● 6.5	0.006	0.021	8	79	24.2	34			
0660X03S080N	● 6.6					24.1				
0670X03S080N	● 6.7					23.9			1.2	
0680X03S080N	● 6.8					23.8				
0690X03S080N	● 6.9					23.6				

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 0700X03S080N	● 7					23.5	34		1.2	
0710X03S080N	● 7.1					30.3				
0720X03S080N	● 7.2					30.2				
0730X03S080N	● 7.3					30				
0740X03S080N	● 7.4					29.9			1.3	
0750X03S080N	● 7.5			8	79	29.7	41	36		
0760X03S080N	● 7.6					29.6				
0770X03S080N	● 7.7					29.4				
0780X03S080N	● 7.8					29.3				
0790X03S080N	● 7.9					29.1			1.4	
0800X03S080N	● 8					29				
0810X03S100N	● 8.1					34.8				
0820X03S100N	● 8.2					34.7				
0830X03S100N	● 8.3					34.5				
0840X03S100N	● 8.4	0.006	0.021			34.4				
0850X03S100N	● 8.5					34.2			1.5	
0860X03S100N	● 8.6					34.1				
0870X03S100N	● 8.7					33.9				
0880X03S100N	● 8.8					33.8				
0890X03S100N	● 8.9					33.6				
0900X03S100N	● 9			10	89	33.5	47	40	1.6	
0910X03S100N	● 9.1					33.3				
0920X03S100N	● 9.2					33.2				
0930X03S100N	● 9.3					33				
0940X03S100N	● 9.4					32.9				
0950X03S100N	● 9.5					32.7				
0960X03S100N	● 9.6					32.6			1.7	
0970X03S100N	● 9.7					32.4				
0980X03S100N	● 9.8					32.3				
0990X03S100N	● 9.9					32.1			1.8	

기준 절삭조건 L62

●: 표준 재고

규격 표시의 보는 법

KDA	0950	X	03	S100	C
제품명 고능률 초경 코팅 슬리드 드릴	외경 DC ø9.5		가공 깊이* (L/D) 03 : 3D 05 : 5D	상크경 DCON ø10.0	Type N : 콜러트 홀 없음 C : 콜러트 홀 있음

*가공 깊이는 L/D 의 대략적인 기준이며 사이즈에 따라 달라집니다.
 사이즈에 따라서 기재의 L/D 보다 작아지는 경우가 있으므로 치수표를 확인하십시오.

드릴 치수

규격	재고	치 수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 1000X03S100N	● 10	0.006	0.021	10	89	32	47	40		
1010X03S120N	● 10.1					39.8			1.8	
1020X03S120N	● 10.2					39.7				
1030X03S120N	● 10.3					39.5				
1040X03S120N	● 10.4					39.4				
1050X03S120N	● 10.5					39.2				
1060X03S120N	● 10.6					39.1				
1070X03S120N	● 10.7					38.9			1.9	
1080X03S120N	● 10.8					38.8				
1090X03S120N	● 10.9					38.6				
1100X03S120N	● 11			12	102	38.5	55			
1110X03S120N	● 11.1					38.3				
1120X03S120N	● 11.2					38.2			2.0	
1130X03S120N	● 11.3					38				
1140X03S120N	● 11.4					37.9				
1150X03S120N	● 11.5					37.7				
1160X03S120N	● 11.6					37.6				
1170X03S120N	● 11.7					37.4				
1180X03S120N	● 11.8					37.3			2.1	
1190X03S120N	● 11.9					37.1				
1200X03S120N	● 12	0.007	0.025			37		45		
1210X03S140N	● 12.1					41.8				
1220X03S140N	● 12.2					41.7				
1230X03S140N	● 12.3					41.5			2.2	
1240X03S140N	● 12.4					41.4				
1250X03S140N	● 12.5					41.2				
1260X03S140N	● 12.6					41.1				
1270X03S140N	● 12.7					40.9				
1280X03S140N	● 12.8					40.8				
1290X03S140N	● 12.9					40.6			2.3	
1300X03S140N	● 13			14	107	40.5	60			
1310X03S140N	● 13.1					40.3				
1320X03S140N	● 13.2					40.2				
1330X03S140N	● 13.3					40				
1340X03S140N	● 13.4					39.9			2.4	
1350X03S140N	● 13.5					39.7				
1360X03S140N	● 13.6					39.6				
1370X03S140N	● 13.7					39.4				
1380X03S140N	● 13.8					39.3			2.5	
1390X03S140N	● 13.9					39.1				

규격	재고	치 수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 1400X03S140N	● 14			14	107	39	60	45		
1410X03S160N	● 14.1					43.8			2.5	
1420X03S160N	● 14.2					43.7				
1430X03S160N	● 14.3					43.5				
1440X03S160N	● 14.4					43.4				
1450X03S160N	● 14.5					43.2			2.6	
1460X03S160N	● 14.6					43.1				
1470X03S160N	● 14.7					42.9				
1480X03S160N	● 14.8					42.8				
1490X03S160N	● 14.9					42.6				
1500X03S160N	● 15	0.007	0.025	16	115	42.5	65	48	2.7	
1510X03S160N	● 15.1					42.3				
1520X03S160N	● 15.2					42.2				
1530X03S160N	● 15.3					42				
1540X03S160N	● 15.4					41.9				
1550X03S160N	● 15.5					41.7				
1560X03S160N	● 15.6					41.6			2.8	
1570X03S160N	● 15.7					41.4				
1580X03S160N	● 15.8					41.3				
1590X03S160N	● 15.9					41.1				
1600X03S160N	● 16					41			2.9	

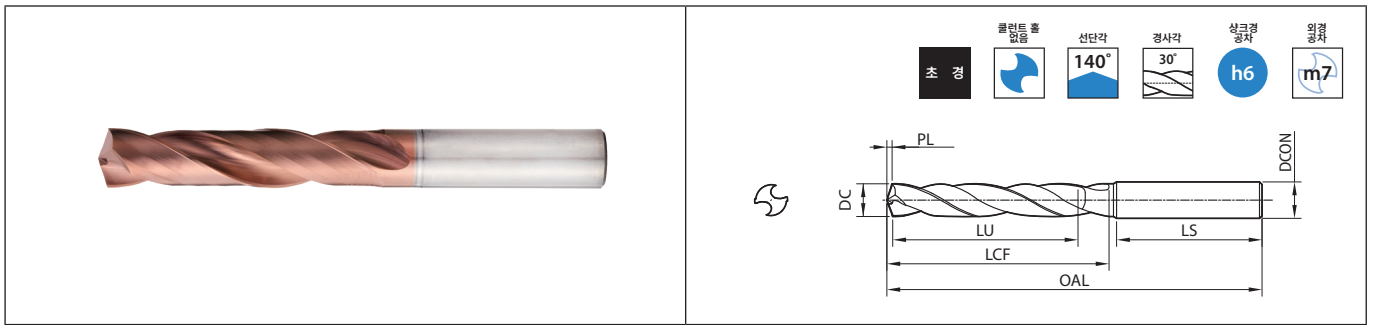


슬리드 드릴

기준 절삭조건 L62

● : 표준 재고

KDA (5D, Type N, 콜런트 홀 없음)



드릴 치수

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 0300X05S060N	● 3	0.002	0.012			23.5				
0310X05S060N	● 3.1					23.3			0.5	
0320X05S060N	● 3.2					23.2				
0330X05S060N	● 3.3					23	28			
0340X05S060N	● 3.4			66		22.9				
0350X05S060N	● 3.5					22.7			0.6	
0360X05S060N	● 3.6					22.6				
0370X05S060N	● 3.7					22.4				
0380X05S060N	● 3.8					30.3				
0390X05S060N	● 3.9					30.1				
0400X05S060N	● 4					30				
0410X05S060N	● 4.1					29.8			0.7	
0420X05S060N	● 4.2					29.7				
0430X05S060N	● 4.3			74		29.5	36			
0440X05S060N	● 4.4					29.4				
0450X05S060N	● 4.5	0.004	0.016	6		29.2				
0460X05S060N	● 4.6					29.1			0.8	
0470X05S060N	● 4.7					28.9				
0480X05S060N	● 4.8					36.8				
0490X05S060N	● 4.9					36.6				
0500X05S060N	● 5					36.5	36			
0510X05S060N	● 5.1					36.3				
0520X05S060N	● 5.2					36.2			0.9	
0530X05S060N	● 5.3					36				
0540X05S060N	● 5.4					82	35.9	44		
0550X05S060N	● 5.5					35.7				
0560X05S060N	● 5.6					35.6				
0570X05S060N	● 5.7					35.4			1.0	
0580X05S060N	● 5.8					35.3				
0590X05S060N	● 5.9					35.1				
0600X05S060N	● 6					35				
0610X05S080N	● 6.1					43.8				
0620X05S080N	● 6.2					43.7				
0630X05S080N	● 6.3					43.5			1.1	
0640X05S080N	● 6.4					43.4				
0650X05S080N	● 6.5	0.006	0.021	8	91	43.2	53			
0660X05S080N	● 6.6					43.1				
0670X05S080N	● 6.7					42.9				
0680X05S080N	● 6.8					42.8			1.2	
0690X05S080N	● 6.9					42.6				

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 0700X05S080N	● 7					42.5				1.2
0710X05S080N	● 7.1					42.3				
0720X05S080N	● 7.2					42.2				
0730X05S080N	● 7.3					42			1.3	
0740X05S080N	● 7.4					41.9				
0750X05S080N	● 7.5			8	91	41.7	53	36	1.3	
0760X05S080N	● 7.6					41.6				
0770X05S080N	● 7.7					41.4				
0780X05S080N	● 7.8					41.3				
0790X05S080N	● 7.9					41.1				1.4
0800X05S080N	● 8					41				
0810X05S100N	● 8.1					48.8				
0820X05S100N	● 8.2					48.7				
0830X05S100N	● 8.3					48.5				
0840X05S100N	● 8.4	0.006	0.021			48.4				
0850X05S100N	● 8.5					48.2			1.5	
0860X05S100N	● 8.6					48.1				
0870X05S100N	● 8.7					47.9				
0880X05S100N	● 8.8					47.8				
0890X05S100N	● 8.9					47.6				
0900X05S100N	● 9			10	103	47.5	61	40	1.6	
0910X05S100N	● 9.1					47.3				
0920X05S100N	● 9.2					47.2				
0930X05S100N	● 9.3					47				
0940X05S100N	● 9.4					46.9				
0950X05S100N	● 9.5					46.7				
0960X05S100N	● 9.6					46.6			1.7	
0970X05S100N	● 9.7					46.4				
0980X05S100N	● 9.8					46.3				
0990X05S100N	● 9.9					46.1			1.8	

기준 절삭조건 L62

●: 표준 재고

드릴 치수

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 1000X05S100N	● 10	0.006	0.021	10	103	46	61	40		
1010X05S120N	● 10.1					55.8			1.8	
1020X05S120N	● 10.2					55.7				
1030X05S120N	● 10.3					55.5				
1040X05S120N	● 10.4					55.4				
1050X05S120N	● 10.5					55.2				
1060X05S120N	● 10.6					55.1				
1070X05S120N	● 10.7					54.9		1.9		
1080X05S120N	● 10.8					54.8				
1090X05S120N	● 10.9					54.6				
1100X05S120N	● 11			12	118	54.5	71			
1110X05S120N	● 11.1					54.3				
1120X05S120N	● 11.2					54.2			2.0	
1130X05S120N	● 11.3					54				
1140X05S120N	● 11.4					53.9				
1150X05S120N	● 11.5					53.7				
1160X05S120N	● 11.6					53.6				
1170X05S120N	● 11.7					53.4				
1180X05S120N	● 11.8					53.3		2.1		
1190X05S120N	● 11.9					53.1				
1200X05S120N	● 12	0.007	0.025			53		45		
1210X05S140N	● 12.1					58.8				
1220X05S140N	● 12.2					58.7				
1230X05S140N	● 12.3					58.5			2.2	
1240X05S140N	● 12.4					58.4				
1250X05S140N	● 12.5					58.2				
1260X05S140N	● 12.6					58.1				
1270X05S140N	● 12.7					57.9				
1280X05S140N	● 12.8					57.8		2.3		
1290X05S140N	● 12.9					57.6				
1300X05S140N	● 13			14	124	57.5	77		2.3	
1310X05S140N	● 13.1					57.3				
1320X05S140N	● 13.2					57.2				
1330X05S140N	● 13.3					57				
1340X05S140N	● 13.4					56.9			2.4	
1350X05S140N	● 13.5					56.7				
1360X05S140N	● 13.6					56.6				
1370X05S140N	● 13.7					56.4				
1380X05S140N	● 13.8					56.3				
1390X05S140N	● 13.9					56.1			2.5	

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 1400X05S140N	● 14			14	124	56	77	45		
1410X05S160N	● 14.1					61.8			2.5	
1420X05S160N	● 14.2					61.7				
1430X05S160N	● 14.3					61.5				
1440X05S160N	● 14.4					61.4				
1450X05S160N	● 14.5					61.2			2.6	
1460X05S160N	● 14.6					61.1				
1470X05S160N	● 14.7					60.9				
1480X05S160N	● 14.8					60.8				
1490X05S160N	● 14.9					60.6				
1500X05S160N	● 15	0.007	0.025			60.5	83	48		
1510X05S160N	● 15.1			16	133	60.3			2.7	
1520X05S160N	● 15.2					60.2				
1530X05S160N	● 15.3					60				
1540X05S160N	● 15.4					59.9				
1550X05S160N	● 15.5					59.7				
1560X05S160N	● 15.6					59.6			2.8	
1570X05S160N	● 15.7					59.4				
1580X05S160N	● 15.8					59.3				
1590X05S160N	● 15.9					59.1				
1600X05S160N	● 16					59			2.9	

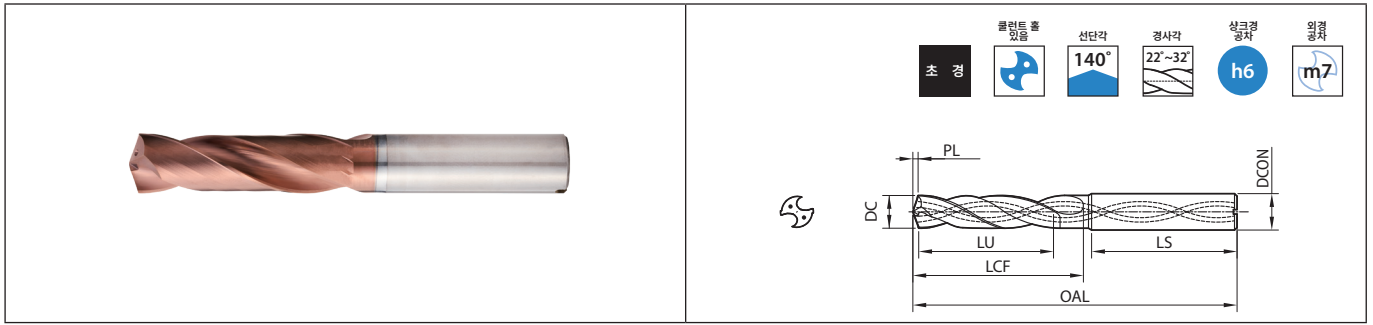


슬리틀

기준 절삭조건 L62

●: 표준 재고

KDA (3D, Type C, 콜런트 홀 있음)



드릴 치수

규격	재고	치수 (mm)							
		외경 공차		DCON	OAL	LU	LCF	LS	PL
		min.	max.						
KDA 0300X03S060C	● 3	0.002	0.012			15.5			
0310X03S060C	● 3.1					15.3			0.5
0320X03S060C	● 3.2					15.2			
0330X03S060C	● 3.3					15		20	
0340X03S060C	● 3.4			62		14.9			
0350X03S060C	● 3.5					14.7			0.6
0360X03S060C	● 3.6					14.6			
0370X03S060C	● 3.7					14.4			
0380X03S060C	● 3.8					18.3			
0390X03S060C	● 3.9					18.1			
0400X03S060C	● 4					18			
0410X03S060C	● 4.1					17.8			0.7
0420X03S060C	● 4.2					17.7		24	
0430X03S060C	● 4.3					17.5			
0440X03S060C	● 4.4					17.4			
0450X03S060C	● 4.5	0.004	0.016	6		17.2			
0460X03S060C	● 4.6					17.1			0.8
0470X03S060C	● 4.7					16.9			
0480X03S060C	● 4.8					20.8			
0490X03S060C	● 4.9			66		20.6		36	
0500X03S060C	● 5					20.5			
0510X03S060C	● 5.1					20.3			
0520X03S060C	● 5.2					20.2			0.9
0530X03S060C	● 5.3					20			
0540X03S060C	● 5.4					19.9	28		
0550X03S060C	● 5.5					19.7			
0560X03S060C	● 5.6					19.6			
0570X03S060C	● 5.7					19.4			1.0
0580X03S060C	● 5.8					19.3			
0590X03S060C	● 5.9					19.1			
0600X03S060C	● 6					19			
0610X03S080C	● 6.1					24.8			
0620X03S080C	● 6.2					24.7			
0630X03S080C	● 6.3					24.5			1.1
0640X03S080C	● 6.4					24.4			
0650X03S080C	● 6.5	0.006	0.021	8	79	24.2	34		
0660X03S080C	● 6.6					24.1			
0670X03S080C	● 6.7					23.9			
0680X03S080C	● 6.8					23.8			1.2
0690X03S080C	● 6.9					23.6			

규격	재고	치수 (mm)							
		외경 공차		DCON	OAL	LU	LCF	LS	PL
		min.	max.						
KDA 0700X03S080C	● 7					23.5	34		
0710X03S080C	● 7.1					30.3			1.2
0720X03S080C	● 7.2					30.2			
0730X03S080C	● 7.3					30			
0740X03S080C	● 7.4					29.9			1.3
0750X03S080C	● 7.5			8	79	29.7	41	36	
0760X03S080C	● 7.6					29.6			
0770X03S080C	● 7.7					29.4			
0780X03S080C	● 7.8					29.3			
0790X03S080C	● 7.9					29.1			1.4
0800X03S080C	● 8					29			
0810X03S100C	● 8.1					34.8			
0820X03S100C	● 8.2					34.7			
0830X03S100C	● 8.3					34.5			
0840X03S100C	● 8.4	0.006	0.021			34.4			
0850X03S100C	● 8.5					34.2			1.5
0860X03S100C	● 8.6					34.1			
0870X03S100C	● 8.7					33.9			
0880X03S100C	● 8.8					33.8			
0890X03S100C	● 8.9					33.6			
0900X03S100C	● 9			10	89	33.5	47	40	1.6
0910X03S100C	● 9.1					33.3			
0920X03S100C	● 9.2					33.2			
0930X03S100C	● 9.3					33			
0940X03S100C	● 9.4					32.9			
0950X03S100C	● 9.5					32.7			
0960X03S100C	● 9.6					32.6			1.7
0970X03S100C	● 9.7					32.4			
0980X03S100C	● 9.8					32.3			
0990X03S100C	● 9.9					32.1			1.8

기준 절삭조건 L62

●: 표준 재고

드릴 치수

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 1000X03S100C	● 10	0.006	0.021	10	89	32	47	40		
1010X03S120C	● 10.1					39.8			1.8	
1020X03S120C	● 10.2					39.7				
1030X03S120C	● 10.3					39.5				
1040X03S120C	● 10.4					39.4				
1050X03S120C	● 10.5					39.2				
1060X03S120C	● 10.6					39.1				
1070X03S120C	● 10.7					38.9			1.9	
1080X03S120C	● 10.8					38.8				
1090X03S120C	● 10.9					38.6				
1100X03S120C	● 11			12	102	38.5	55			
1110X03S120C	● 11.1					38.3				
1120X03S120C	● 11.2					38.2			2.0	
1130X03S120C	● 11.3					38				
1140X03S120C	● 11.4					37.9				
1150X03S120C	● 11.5					37.7				
1160X03S120C	● 11.6					37.6				
1170X03S120C	● 11.7					37.4				
1180X03S120C	● 11.8					37.3			2.1	
1190X03S120C	● 11.9					37.1				
1200X03S120C	● 12	0.007	0.025			37		45		
1210X03S140C	● 12.1					41.8				
1220X03S140C	● 12.2					41.7				
1230X03S140C	● 12.3					41.5			2.2	
1240X03S140C	● 12.4					41.4				
1250X03S140C	● 12.5					41.2				
1260X03S140C	● 12.6					41.1				
1270X03S140C	● 12.7					40.9				
1280X03S140C	● 12.8					40.8				
1290X03S140C	● 12.9					40.6			2.3	
1300X03S140C	● 13			14	107	40.5	60			
1310X03S140C	● 13.1					40.3				
1320X03S140C	● 13.2					40.2				
1330X03S140C	● 13.3					40				
1340X03S140C	● 13.4					39.9			2.4	
1350X03S140C	● 13.5					39.7				
1360X03S140C	● 13.6					39.6				
1370X03S140C	● 13.7					39.4				
1380X03S140C	● 13.8					39.3			2.5	
1390X03S140C	● 13.9					39.1				

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 1400X03S140C	● 14			14	107	39	60	45		
1410X03S160C	● 14.1					43.8			2.5	
1420X03S160C	● 14.2					43.7				
1430X03S160C	● 14.3					43.5				
1440X03S160C	● 14.4					43.4				
1450X03S160C	● 14.5					43.2			2.6	
1460X03S160C	● 14.6					43.1				
1470X03S160C	● 14.7					42.9				
1480X03S160C	● 14.8					42.8				
1490X03S160C	● 14.9					42.6				
1500X03S160C	● 15	0.007	0.025	16	115	42.5	65	48	2.7	
1510X03S160C	● 15.1					42.3				
1520X03S160C	● 15.2					42.2				
1530X03S160C	● 15.3					42				
1540X03S160C	● 15.4					41.9				
1550X03S160C	● 15.5					41.7				
1560X03S160C	● 15.6					41.6			2.8	
1570X03S160C	● 15.7					41.4				
1580X03S160C	● 15.8					41.3				
1590X03S160C	● 15.9					41.1				
1600X03S160C	● 16					41			2.9	

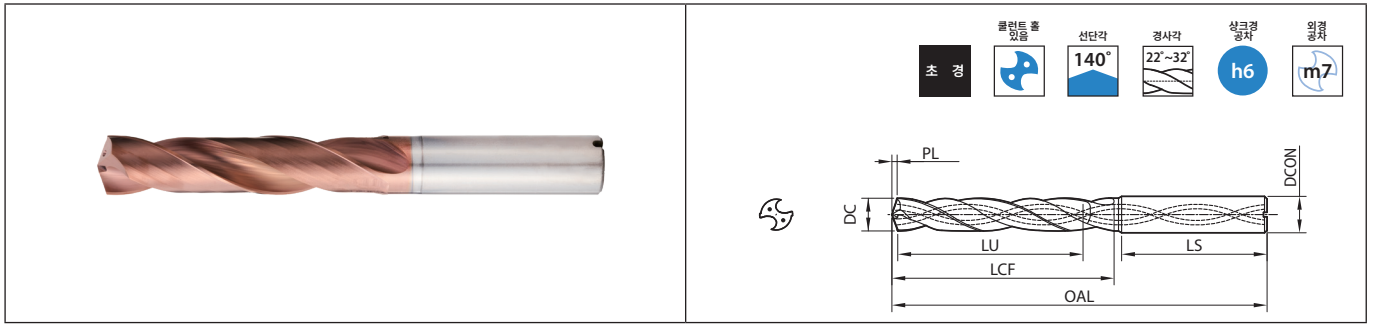


슬리틀

기준 절삭조건 L62

● : 표준 재고

KDA (5D, Type C, 콜런트 홀 있음)



드릴 치수

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 0300X05S060C	● 3	0.002	0.012			23.5				
0310X05S060C	● 3.1					23.3			0.5	
0320X05S060C	● 3.2					23.2				
0330X05S060C	● 3.3					23		28		
0340X05S060C	● 3.4			66		22.9				
0350X05S060C	● 3.5					22.7			0.6	
0360X05S060C	● 3.6					22.6				
0370X05S060C	● 3.7					22.4				
0380X05S060C	● 3.8					30.3				
0390X05S060C	● 3.9					30.1				
0400X05S060C	● 4					30				
0410X05S060C	● 4.1					29.8			0.7	
0420X05S060C	● 4.2					29.7				
0430X05S060C	● 4.3			74		29.5		36		
0440X05S060C	● 4.4					29.4				
0450X05S060C	● 4.5	0.004	0.016	6		29.2				
0460X05S060C	● 4.6					29.1			0.8	
0470X05S060C	● 4.7					28.9				
0480X05S060C	● 4.8					36.8				
0490X05S060C	● 4.9					36.6				
0500X05S060C	● 5					36.5		36		
0510X05S060C	● 5.1					36.3				
0520X05S060C	● 5.2					36.2			0.9	
0530X05S060C	● 5.3					36				
0540X05S060C	● 5.4			82		35.9		44		
0550X05S060C	● 5.5					35.7				
0560X05S060C	● 5.6					35.6				
0570X05S060C	● 5.7					35.4			1.0	
0580X05S060C	● 5.8					35.3				
0590X05S060C	● 5.9					35.1				
0600X05S060C	● 6					35				
0610X05S080C	● 6.1					43.8				
0620X05S080C	● 6.2					43.7				
0630X05S080C	● 6.3					43.5			1.1	
0640X05S080C	● 6.4					43.4				
0650X05S080C	● 6.5	0.006	0.021	8	91	43.2		53		
0660X05S080C	● 6.6					43.1				
0670X05S080C	● 6.7					42.9				
0680X05S080C	● 6.8					42.8			1.2	
0690X05S080C	● 6.9					42.6				

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 0700X05S080C	● 7					42.5				
0710X05S080C	● 7.1					42.3			1.2	
0720X05S080C	● 7.2					42.2				
0730X05S080C	● 7.3					42				
0740X05S080C	● 7.4					41.9			1.3	
0750X05S080C	● 7.5			8	91	41.7		53	36	
0760X05S080C	● 7.6					41.6				
0770X05S080C	● 7.7					41.4				
0780X05S080C	● 7.8					41.3				
0790X05S080C	● 7.9					41.1			1.4	
0800X05S080C	● 8					41				
0810X05S100C	● 8.1					48.8				
0820X05S100C	● 8.2					48.7				
0830X05S100C	● 8.3					48.5				
0840X05S100C	● 8.4	0.006	0.021			48.4				
0850X05S100C	● 8.5					48.2			1.5	
0860X05S100C	● 8.6					48.1				
0870X05S100C	● 8.7					47.9				
0880X05S100C	● 8.8					47.8				
0890X05S100C	● 8.9					47.6				
0900X05S100C	● 9			10	103	47.5		61	40	
0910X05S100C	● 9.1					47.3			1.6	
0920X05S100C	● 9.2					47.2				
0930X05S100C	● 9.3					47				
0940X05S100C	● 9.4					46.9				
0950X05S100C	● 9.5					46.7				
0960X05S100C	● 9.6					46.6			1.7	
0970X05S100C	● 9.7					46.4				
0980X05S100C	● 9.8					46.3				
0990X05S100C	● 9.9					46.1			1.8	

기준 절삭조건 L62

●: 표준 재고

드릴 치수

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 1000X05S100C	● 10	0.006	0.021	10	103	46	61	40		
1010X05S120C	● 10.1					55.8			1.8	
1020X05S120C	● 10.2					55.7				
1030X05S120C	● 10.3					55.5				
1040X05S120C	● 10.4					55.4				
1050X05S120C	● 10.5					55.2				
1060X05S120C	● 10.6					55.1				
1070X05S120C	● 10.7					54.9			1.9	
1080X05S120C	● 10.8					54.8				
1090X05S120C	● 10.9					54.6				
1100X05S120C	● 11			12	118	54.5	71			
1110X05S120C	● 11.1					54.3				
1120X05S120C	● 11.2					54.2			2.0	
1130X05S120C	● 11.3					54				
1140X05S120C	● 11.4					53.9				
1150X05S120C	● 11.5					53.7				
1160X05S120C	● 11.6					53.6				
1170X05S120C	● 11.7					53.4				
1180X05S120C	● 11.8					53.3			2.1	
1190X05S120C	● 11.9					53.1				
1200X05S120C	● 12	0.007	0.025			53		45		
1210X05S140C	● 12.1					58.8				
1220X05S140C	● 12.2					58.7				
1230X05S140C	● 12.3					58.5			2.2	
1240X05S140C	● 12.4					58.4				
1250X05S140C	● 12.5					58.2				
1260X05S140C	● 12.6					58.1				
1270X05S140C	● 12.7					57.9				
1280X05S140C	● 12.8					57.8				
1290X05S140C	● 12.9					57.6			2.3	
1300X05S140C	● 13			14	124	57.5	77			
1310X05S140C	● 13.1					57.3				
1320X05S140C	● 13.2					57.2				
1330X05S140C	● 13.3					57				
1340X05S140C	● 13.4					56.9			2.4	
1350X05S140C	● 13.5					56.7				
1360X05S140C	● 13.6					56.6				
1370X05S140C	● 13.7					56.4				
1380X05S140C	● 13.8					56.3				
1390X05S140C	● 13.9					56.1			2.5	

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	LS	PL
			min.	max.						
KDA 1400X05S140C	● 14			14	124	56	77	45		
1410X05S160C	● 14.1					61.8			2.5	
1420X05S160C	● 14.2					61.7				
1430X05S160C	● 14.3					61.5				
1440X05S160C	● 14.4					61.4				
1450X05S160C	● 14.5					61.2			2.6	
1460X05S160C	● 14.6					61.1				
1470X05S160C	● 14.7					60.9				
1480X05S160C	● 14.8					60.8				
1490X05S160C	● 14.9					60.6				
1500X05S160C	● 15	0.007	0.025			60.5	83	48		
1510X05S160C	● 15.1			16	133	60.3			2.7	
1520X05S160C	● 15.2					60.2				
1530X05S160C	● 15.3					60				
1540X05S160C	● 15.4					59.9				
1550X05S160C	● 15.5					59.7				
1560X05S160C	● 15.6					59.6			2.8	
1570X05S160C	● 15.7					59.4				
1580X05S160C	● 15.8					59.3				
1590X05S160C	● 15.9					59.1				
1600X05S160C	● 16					59			2.9	



슬리틀

기준 절삭조건 L62

●: 표준 재고

기준 절삭조건

피삭재	절삭속도 Vc (m/min)		이송 f (mm/rev)							
	Type N	Type C	ø3	ø4	ø6	ø8	ø10	ø12	ø14	ø16
										
연강 · 저탄소강 SS400 · S10C (< 125HB)	50-100	60-140	0.09-0.16	0.11-0.19	0.14-0.23	0.19-0.31	0.23-0.38	0.24-0.41	0.28-0.45	0.30-0.50
탄소강 S35C · S50C (< 25HRC)	45-90	60-120	0.09-0.16	0.11-0.19	0.14-0.23	0.19-0.31	0.23-0.38	0.24-0.41	0.28-0.45	0.30-0.50
합금강 · 공구강 SCM · SCr · SNCM (< 35HRC)	45-90	50-110	0.09-0.16	0.11-0.19	0.14-0.23	0.19-0.31	0.23-0.38	0.24-0.41	0.28-0.45	0.30-0.50
합금강 · 공구강 SCM · SCr · SNCM (35-48HRC)	40-80	40-90	0.09-0.14	0.10-0.17	0.13-0.22	0.17-0.29	0.21-0.35	0.22-0.37	0.26-0.41	0.28-0.44
오스테나이트계 스테인리스강 SUS304 (130-200HB)	20-40	40-80	0.05-0.10	0.06-0.12	0.07-0.14	0.08-0.18	0.09-0.20	0.10-0.22	0.11-0.24	0.12-0.24
고강도 오스테나이트계 스테인리스강 · 스테인리스 주강 (< 25HRC)	20-40	40-80	0.03-0.08	0.04-0.10	0.05-0.10	0.06-0.12	0.07-0.14	0.08-0.16	0.09-0.18	0.10-0.18
오스테나이트 페라이트계 스테인리스강 (< 30HRC)	20-35	30-60	0.03-0.08	0.04-0.10	0.05-0.10	0.06-0.12	0.07-0.14	0.08-0.16	0.09-0.18	0.10-0.18
회주철 FC250 (< 32HRC)	60-100	60-140	0.13-0.20	0.15-0.23	0.17-0.30	0.20-0.35	0.23-0.40	0.25-0.45	0.28-0.48	0.30-0.50
합금 주철 · 덕타일 주철 FCD450 (< 28HRC)	60-100	60-140	0.11-0.18	0.13-0.20	0.15-0.25	0.17-0.32	0.20-0.36	0.22-0.42	0.24-0.45	0.25-0.48
고합금 주철 · 덕타일 주철 (< 45HRC)	60-90	60-100	0.06-0.11	0.08-0.13	0.10-0.16	0.12-0.20	0.14-0.26	0.16-0.28	0.18-0.30	0.20-0.32

주의

- 1.워크가 기계에 단단히 고정되어 있는지 확인하십시오.
정밀 홀더, 하이드로척, 고품질의 클램프의 사용을 권장합니다.
- 2.장착시 드릴의 흔들림은 0.02mm 미만으로 사용하십시오.
- 3.기준 절삭조건은 수용성 절삭유를 적용시입니다.
- 4.사용하는 공구경이 없는 경우는 표 중 가장 가까운 공구경의 값을 참조하십시오.
가공 중의 실제 작업환경에 따라 절삭 파라미터를 조정하십시오.



슬리드 톨

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

가공사례

(모두 고객평가에 의함)

1 KDA는 현행의 설정 수명보다 20% 연장해도 경쟁사보다 어깨부 마모량이 적고 우수한 인선 상태였습니다.

Type C



가공 수

KDA 2,400 개 이상/자루

경쟁사C
경쟁사D 2,000 개/자루

절삭조건 :
홀1 : Vc = 50 m/min, f = 0.1 mm/rev, H = 25 mm
홀2 : Vc = 40 m/min, f = 0.1 mm/rev, H = 15 mm
Wet (내부 급유) 복합 가공기 KDA0690X05S080C

2 KDA는 경쟁사에 비해 홀경의 편차가 작고 고정밀 가공을 실현 가공음도 조용하고 칩 상태도 우수하였습니다.

Type N



홀경의 편차 (H=7.5mm지점)

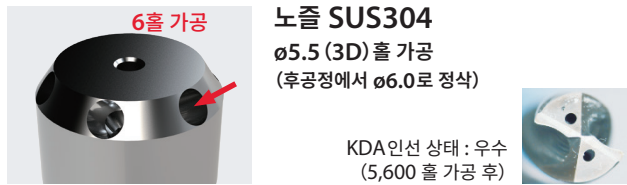
KDA 0.022 mm

경쟁사E 0.042 mm

절삭조건 :
Vc = 80 m/min, f = 0.15 mm/rev, H = 15 mm
Wet (외부급유) BT 50

3 KDA는 스테인리스강에서 안정 가공, 수명 2.3배 이상을 달성 경쟁사는 돌발 결손이 발생하여 불안정하였습니다.

Type C



가공 수

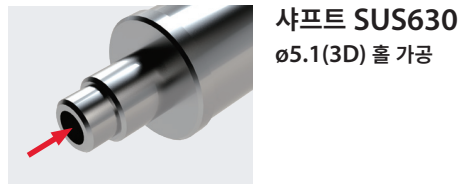
KDA 5,600 홀 이상/자루

경쟁사F 2,400 홀/자루

절삭조건 :
Vc = 30 m/min, f = 0.06 mm/rev, H = 9 mm
Wet (내부 급유) KDA0550X03S060C

4 KDA는 가공이 안정된 수명 1.2배를 실현 경쟁사는 불안정하기 때문에 워크 1로트에서 공구가 2자루 필요 KDA는 1자루로 대응 가능하였습니다.

Type N



가공 수

KDA 1,000 개/자루

경쟁사G 500 ~ 800 개/자루 (불안정)

절삭조건 :
Vc = 50 m/min, f = 0.1 mm/rev, H = 10 mm
Wet (외부급유) KDA0510X03S060N

5 KDA는 경쟁사와 동수의 설정 수명까지 우수한 가공 가능 비용 절감을 실현하였습니다.

Type N



가공 수

KDA 2,400 개/자루

경쟁사H 2,400 개/자루

절삭조건 :
Vc = 30 m/min, f = 0.1 mm/rev, H = 10 mm (3mm스텝)
Wet (외부급유) 자동반 KDA0350X03S060N

6 KDA는 우수한 가공이 가능 경쟁사에 비해 수명 1.3배 이상을 달성하였습니다.

Type N



가공 수

KDA 6,800 개/자루

경쟁사I 5,000 개/자루

절삭조건 :
Vc = 54 m/min, f = 0.22 mm/rev, H = 30 mm
Wet (외부급유) 복합 가공기 KDA1160X03S120N



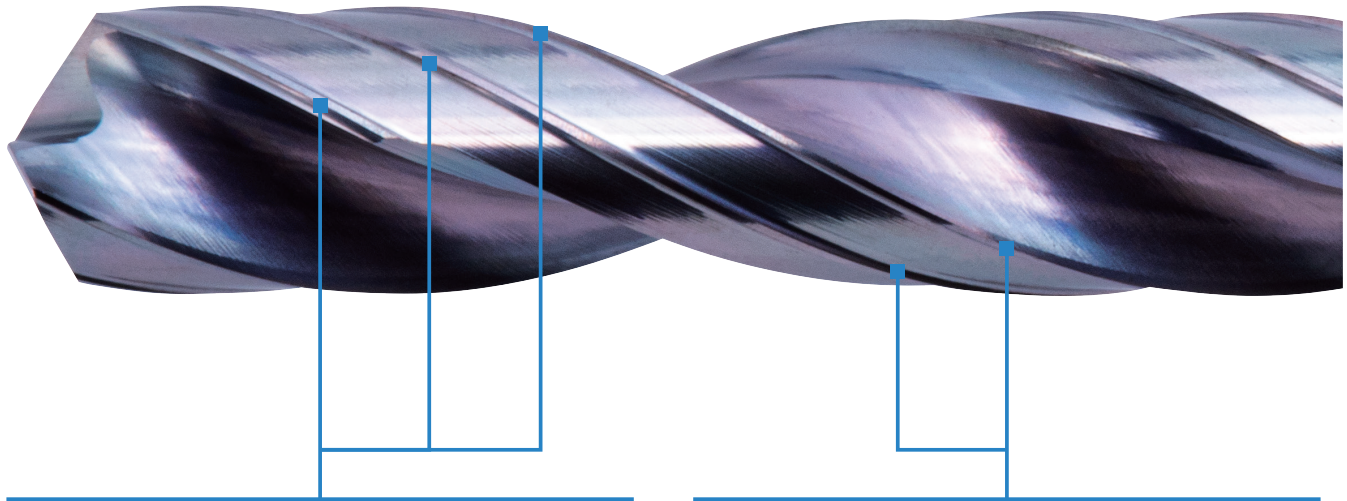
슬리드 톨

고정밀 소경 솔리드 드릴

KDA Mini

신개발 트리플 & 더블 마진
신코팅 MEGACOAT NANO® EX
고정밀 · 긴수명 · 안정 가공을 실현

1 안정성을 추구한 독자적인 형상



L



솔리드 드릴

선단부 트리플 마진 우수한 가공 정밀도

3쌍의 마진이 홀을 지지하고 가공을 가이드. 안정성을 항상 큰 센터 두께로 고강성

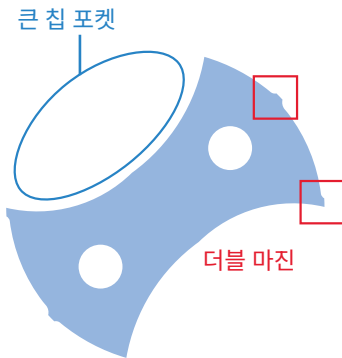
단면도 (이미지)



중간부 더블 마진 우수한 칩배출성

큰 칩 포켓. 칩배출 공간을 확보 칩 트러블을 억제

단면도 (이미지)



칩 형상 (사내평가)



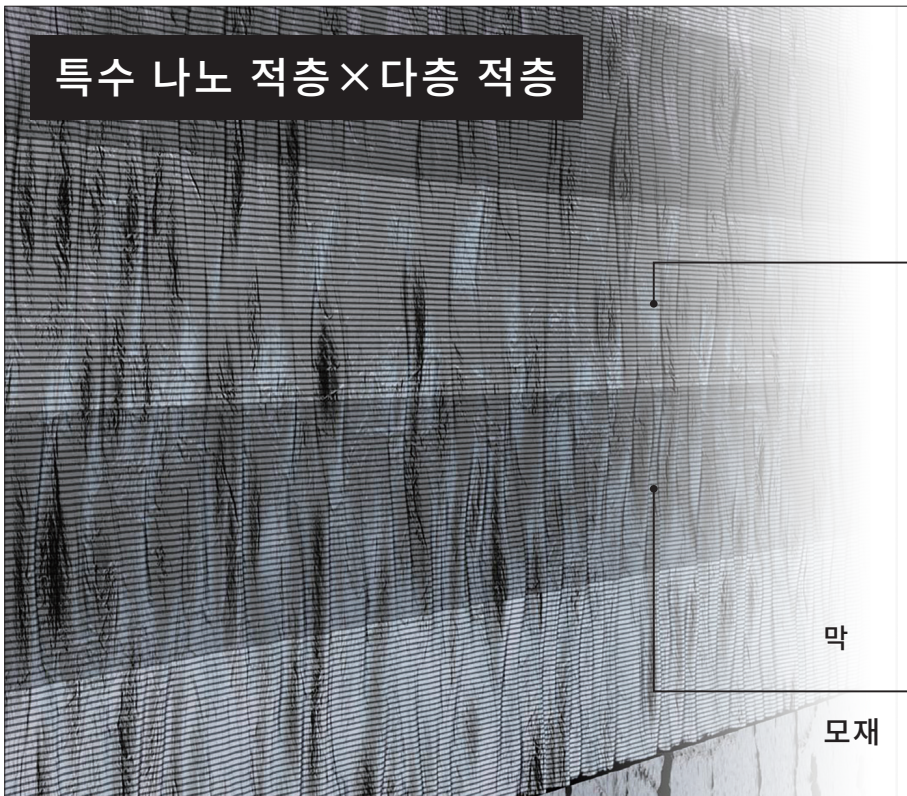
절삭조건 :
n = 9,000 min⁻¹ (Vc = 60 m/min)
Vf = 540 mm/min (f = 0.06 mm/rev)
가공경 ø2.1 가공 깊이 5 mm
Wet (내부 급유) 피삭재 : S50C

2 긴수명 가공을 만들어내는 독자적인 코팅



「더블 적층 기술」

2종류의 특수 나노 적층을 다층 적층화
내마모성·내용착성·내치핑성을
고차원으로 실현



특수 나노 적층 × 다층 적층

나노 적층화

AICrN계 코팅

Cr함유량을 적정화
우수한 윤활성·내용착성



나노 적층화

TiAlN계 코팅

고경도로 우수한 내마모성
내부 응력 적정화로 인성 향상



CG이미지



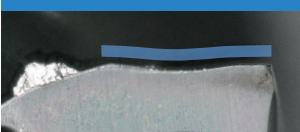
슬리드
틀

고성능 특수 나노 적층을 다층 적층화
크랙 진전을 억제. 우수한 내치핑성

내마모성 비교 (당사비교)

인선 상태 (코너부)

KDA Mini (660 홀 가공 후)



절삭날의 손상이 적고
지속적으로 가공 가능

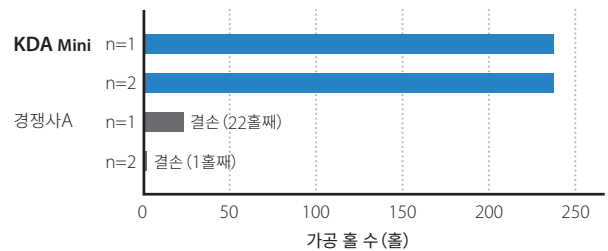
경쟁사C (455 홀 가공 후)



용착과 절삭날의 마모 진행
칩 엉킴 발생

절삭조건 : n = 8,000 min⁻¹ (Vc = 73 m/min), Vf = 400 mm/min (f = 0.05 mm/rev)
가공경 ø2.9 가공 깊이 10 mm Wet (내부 급유) 피삭재 : S50C

내결손성 비교 (당사비교)



절삭조건 : n = 9,500 min⁻¹ (Vc = 30 m/min), Vf = 285 mm/min (f = 0.03 mm/rev)
가공경 ø1.0 가공 깊이 8 mm Wet (내부 급유) 피삭재 : SUS304

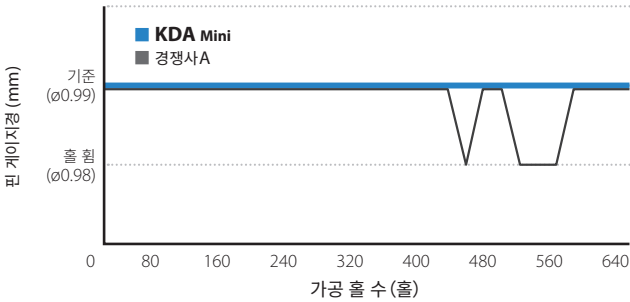
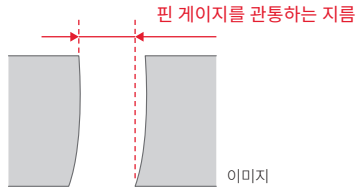
절삭 성능 (당사비교)

Case 1 가공 깊이 8D로 고정밀. 홀 힘·홀 위치 어긋남을 억제

S50C 가공 정밀도 비교

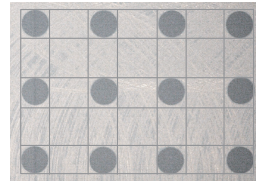
홀의 직진성

홀을 관통
핀 게이지경을 비교
기준: $\phi 0.99$



홀 위치 정밀도 워크 중앙 부근의 홀 위치를 측정

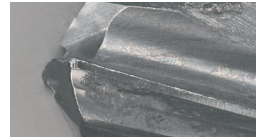
KDA Mini



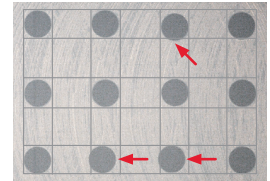
우수

인선 상태 (약 630홀 가공 후)

KDA Mini

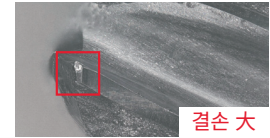


경쟁사A



홀 위치 어긋남 발생

경쟁사A



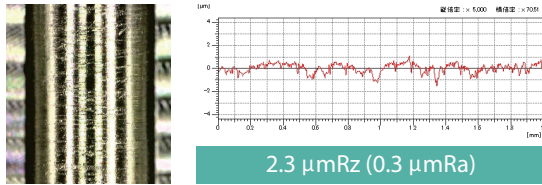
결손 大

절삭조건 : $n = 12,000 \text{ min}^{-1}$ ($V_c = 38 \text{ m/min}$), $V_f = 420 \text{ mm/min}$ ($f = 0.035 \text{ mm/rev}$), 가공경 $\phi 1$ 가공 깊이 8 mm Wet (내부 급유)

Case 2 스테인리스강 가공에서 우수한 가공면 품위

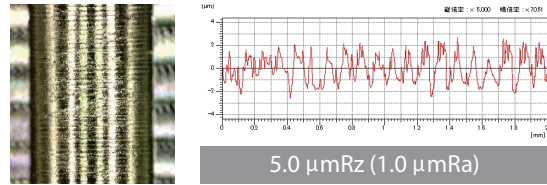
SUS304 가공면 품위 비교

KDA Mini



우수

경쟁사B



라이프링·상처 발생

절삭조건 : $n = 8,500 \text{ min}^{-1}$ ($V_c = 77 \text{ m/min}$), $V_f = 850 \text{ mm/min}$ ($f = 0.1 \text{ mm/rev}$), 가공경 $\phi 2.9$ 가공 깊이 23 mm Wet (내부 급유)

쿨런트 홀 없음도 레퍼토리. 안정 가공을 실현



Type N
Normal type

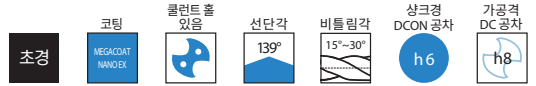
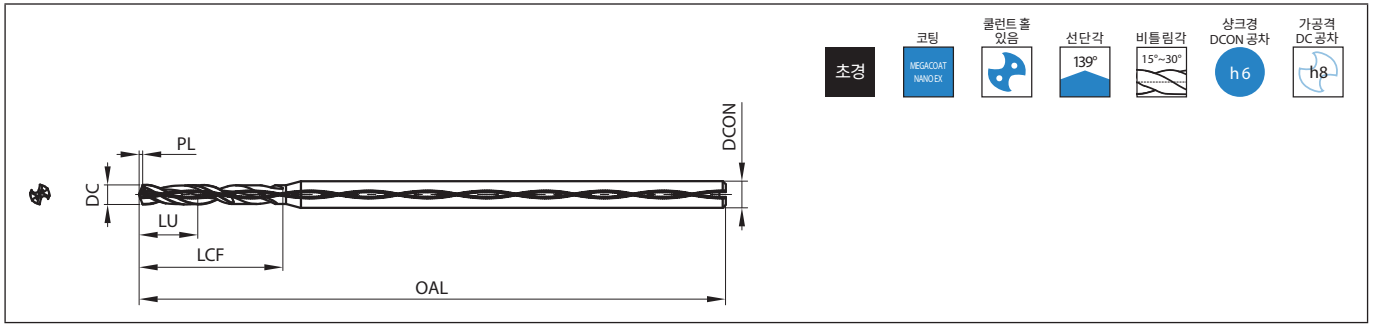
2D 4D

	가공경 DC 공차 (mm)
2D	+0.012 +0.002
4D	0 -0.014

더블 마진으로 우수한 가공 정밀도·품위
MEGACOAT NANO EX 로 긴수명 가공을 실현
2D는 파일럿 드릴로도 사용 가능



KDA Mini (3D, Type C, 쿨런트 홀 있음)



드릴 치수

규격	재고	치수 (mm)							
		DC	외경 공차		DCON	OAL	LU	LCF	PL
			min.	max.					
KDA 0100X03S030C	● 1	-0.014	0	3	54	3	8	0.19	
0110X03S030C	● 1.1					3.3	8.7	0.21	
0120X03S030C	● 1.2					3.6	9.4	0.22	
0130X03S030C	● 1.3					3.9	10	0.24	
0140X03S030C	● 1.4					4.2	10.6	0.26	
0150X03S030C	● 1.5					4.5	11.3	0.28	
0160X03S030C	● 1.6					4.8	11.8	0.3	
0170X03S030C	● 1.7					5.1	12.4	0.32	
0180X03S030C	● 1.8					5.4	13	0.34	
0190X03S030C	● 1.9				5.7	13.5	0.36		
0200X03S030C	● 2				60	6	14	0.37	
0210X03S030C	● 2.1					6.3	14.5	0.39	
0220X03S030C	● 2.2					6.6	15	0.41	
0230X03S030C	● 2.3					6.9	15.4	0.43	
0240X03S030C	● 2.4					7.2	15.8	0.45	
0250X03S030C	● 2.5					7.5	16.3	0.47	
0260X03S030C	● 2.6					65	7.8	16.6	0.49
0270X03S030C	● 2.7						8.1	17	0.5
0280X03S030C	● 2.8						8.4	17.4	0.52
0290X03S030C	● 2.9	8.7	17.7	0.54					

기준 절삭조건 L72



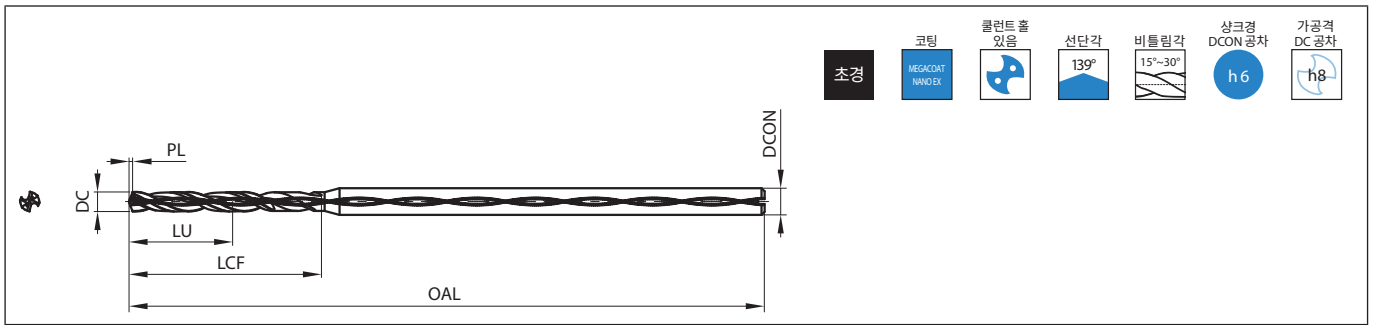
슬리드 톨

규격의 표시 방법

KDA	0120	X	03	S030	C
	외경 DC ø1.2		가공 깊이 (L/D) 03 : 3D	상크경 DCON ø3.0	Type C : 쿨런트 홀 있음 N : 쿨런트 홀 없음

● : 표준 재고

KDA Mini (5D, Type C, 쿨런트 홀 있음)



초경
코팅 MEGACAT NANDEX
쿨런트 홀 있음
선단각 139°
비틀림각 15°~30°
상크경 DCON 공차 h6
가공력 DC 공차 h8

드릴 치수

규격	재고	치수 (mm)							
		DC	외경 공차		DCON	OAL	LU	LCF	PL
			min.	max.					
KDA 0100X05S030C	● 1	-0.014	0	3	54	5	10	0.19	
0110X05S030C	● 1.1					5.5	10.9	0.21	
0120X05S030C	● 1.2					6	11.9	0.22	
0130X05S030C	● 1.3					6.5	12.8	0.24	
0140X05S030C	● 1.4					7	13.7	0.26	
0150X05S030C	● 1.5					7.5	14.6	0.28	
0160X05S030C	● 1.6					8	15.5	0.3	
0170X05S030C	● 1.7					8.5	16.4	0.32	
0180X05S030C	● 1.8					9	17.3	0.34	
0190X05S030C	● 1.9				9.5	18.1	0.36		
0200X05S030C	● 2				65	10	19	0.37	
0210X05S030C	● 2.1					10.5	19.8	0.39	
0220X05S030C	● 2.2					11	20.7	0.41	
0230X05S030C	● 2.3					11.5	21.5	0.43	
0240X05S030C	● 2.4					12	22.3	0.45	
0250X05S030C	● 2.5					12.5	23.1	0.47	
0260X05S030C	● 2.6					80	13	23.9	0.49
0270X05S030C	● 2.7						13.5	24.7	0.5
0280X05S030C	● 2.8						14	25.5	0.52
0290X05S030C	● 2.9	14.5	26.2	0.54					

기준 절삭조건 L72

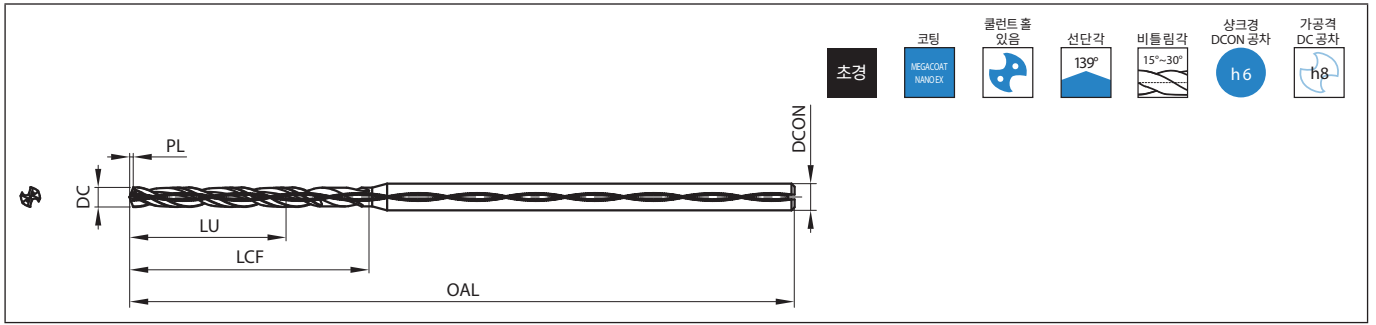


슬리드
드릴

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

●: 표준 재고

KDA Mini (8D, Type C, 쿨런트 홀 있음)



드릴 치수

규격	재고	치수 (mm)								
		DC	외경 공차		DCON	OAL	LU	LCF	PL	
			min.	max.						
KDA	0100X08S030C	● 1	-0.014	0	3	65	8	12.8	0.19	
	0110X08S030C	● 1.1					8.8	13.9	0.21	
	0120X08S030C	● 1.2					9.6	15.2	0.22	
	0130X08S030C	● 1.3					10.4	16.3	0.24	
	0140X08S030C	● 1.4					11.2	17.4	0.26	
	0150X08S030C	● 1.5					12	18.6	0.28	
	0160X08S030C	● 1.6					12.8	19.6	0.3	
	0170X08S030C	● 1.7					13.6	20.8	0.32	
	0180X08S030C	● 1.8					14.4	21.8	0.34	
	0190X08S030C	● 1.9				15.2	22.8	0.36		
	0200X08S030C	● 2				68	16	23.8	0.37	
	0210X08S030C	● 2.1					16.8	24.5	0.39	
	0220X08S030C	● 2.2					17.6	25.5	0.41	
	0230X08S030C	● 2.3					18.4	26.4	0.43	
	0240X08S030C	● 2.4					19.2	27.3	0.45	
	0250X08S030C	● 2.5					20	28.3	0.47	
	0260X08S030C	● 2.6					81	20.8	29.1	0.49
	0270X08S030C	● 2.7						21.6	30	0.5
	0280X08S030C	● 2.8						22.4	30.9	0.52
0290X08S030C	● 2.9	23.2	31.7	0.54						

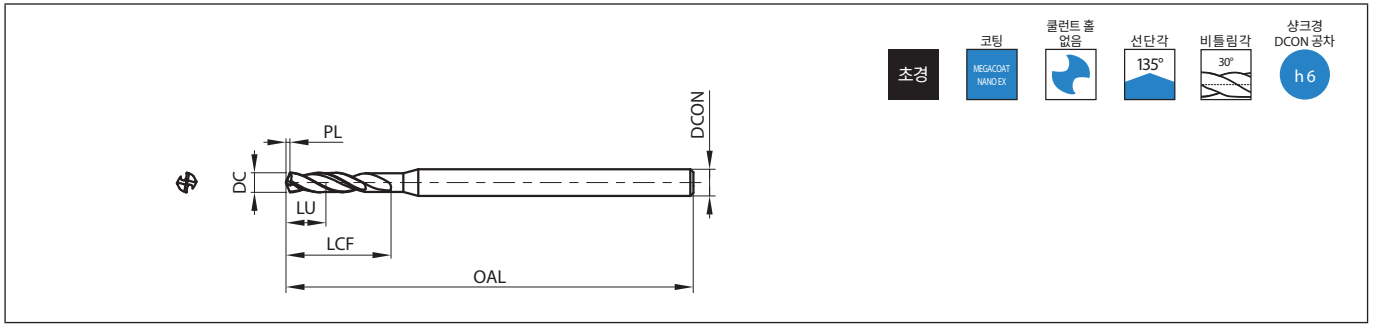
기준 절삭조건 L72



슬리드
틀

●: 표준 재고

KDA Mini (2D, Type N, 쿨런트 홀 없음)



초경 MEGACOAT NANO EX 쿨런트 홀 없음 신단각 135° 비틀림각 30° 상크경 DCON 공차 h6

드릴 치수

규격	재고	치수 (mm)							
		DC	외경 공차		DCON	OAL	LU	LCF	PL
			min.	max.					
KDA 0100X02S030N	● 1	+0.002	+0.012	3	45	2	6.5	0.21	
0110X02S030N	● 1.1					2.2	7	0.23	
0120X02S030N	● 1.2					2.4	7.6	0.25	
0130X02S030N	● 1.3					2.6	8.1	0.27	
0140X02S030N	● 1.4					2.8	8.5	0.29	
0150X02S030N	● 1.5					3	9	0.31	
0160X02S030N	● 1.6					3.2	9.4	0.33	
0170X02S030N	● 1.7					3.4	9.9	0.35	
0180X02S030N	● 1.8					3.6	10.3	0.37	
0190X02S030N	● 1.9					3.8	10.6	0.39	
0200X02S030N	● 2					4	11	0.41	
0210X02S030N	● 2.1					4.2	11.3	0.43	
0220X02S030N	● 2.2					4.4	11.7	0.46	
0230X02S030N	● 2.3					4.6	12	0.48	
0240X02S030N	● 2.4					4.8	12.2	0.5	
0250X02S030N	● 2.5					5	12.5	0.52	
0260X02S030N	● 2.6					5.2	12.7	0.54	
0270X02S030N	● 2.7					5.4	13	0.56	
0280X02S030N	● 2.8					5.6	13.2	0.58	
0290X02S030N	● 2.9	5.8	13.3	0.6					

기준 절삭조건 L73

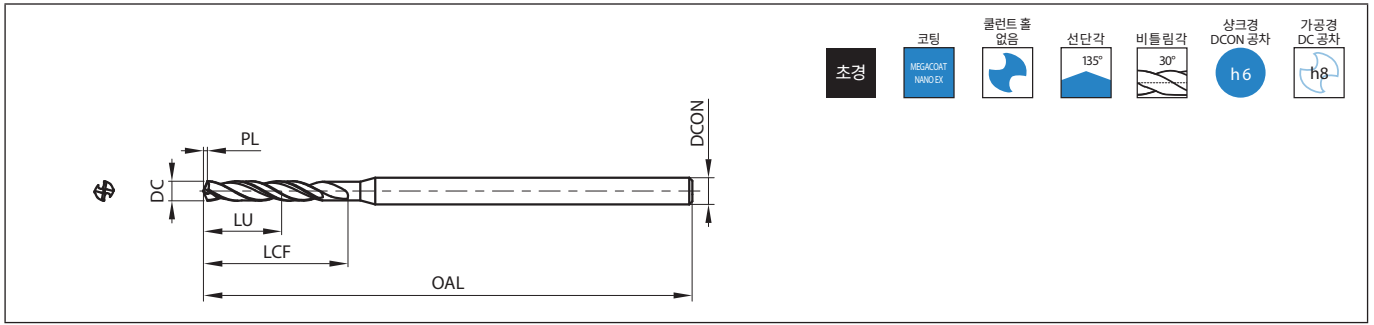


슬리드 드릴

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

●: 표준 재고

KDA Mini (4D, Type N, 쿨런트 홀 없음)



드릴 치수

규격	재고	치수 (mm)							
		DC	외경 공차		DCON	OAL	LU	LCF	PL
			min.	max.					
KDA 0100X04S030N	● 1					4	8	0.21	
0110X04S030N	● 1.1					4.4	8.8	0.23	
0120X04S030N	● 1.2					4.8	9.5	0.25	
0130X04S030N	● 1.3					5.2	10.3	0.27	
0140X04S030N	● 1.4					5.6	10.9	0.29	
0150X04S030N	● 1.5					6	11.7	0.31	
0160X04S030N	● 1.6					6.4	12.3	0.33	
0170X04S030N	● 1.7					6.8	12.9	0.35	
0180X04S030N	● 1.8					7.2	13.7	0.37	
0190X04S030N	● 1.9	-0.014	0	3	50	7.6	14.3	0.39	
0200X04S030N	● 2					8	15	0.41	
0210X04S030N	● 2.1					8.4	15.5	0.43	
0220X04S030N	● 2.2					8.8	16.3	0.46	
0230X04S030N	● 2.3					9.2	16.8	0.48	
0240X04S030N	● 2.4					9.6	17.5	0.5	
0250X04S030N	● 2.5					10	18	0.52	
0260X04S030N	● 2.6					10.4	18.7	0.54	
0270X04S030N	● 2.7					10.8	19.2	0.56	
0280X04S030N	● 2.8					11.2	19.3	0.58	
0290X04S030N	● 2.9					11.6		0.6	

기준 절삭조건 L73



슬리드 톨

● : 표준 재고

기준 절삭조건 (Type C, 쿨런트 홀 있음)

피삭재	절삭속도 Vc (m/min)	외경 DC (mm)	ø1	ø1.5	ø2	ø2.5	ø2.9
연강 (< 180HB) 저탄소강 (< 160HB) SS400 · S10C	40-80	회전 수 n (min ⁻¹)	12,700	10,600	9,500	7,600	6,600
		이송 f (mm/rev)	0.03-0.05	0.04-0.08	0.04-0.10	0.05-0.11	0.06-0.12
탄소강 · 합금강 S50C · SCM · SCr (20-30HRC)	40-80	회전 수 n (min ⁻¹)	12,700	10,600	9,500	7,600	6,600
		이송 f (mm/rev)	0.02-0.05	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.11
합금강 SCM · SCr (30-38HRC)	30-60	회전 수 n (min ⁻¹)	9,500	9,500	8,000	7,000	6,600
		이송 f (mm/rev)	0.02-0.04	0.03-0.06	0.05-0.08	0.06-0.10	0.06-0.12
특수강 · 프리하든강 SKS2 · SKD61 (30-38HRC)	25-50	회전 수 n (min ⁻¹)	8,000	8,500	7,200	6,400	5,500
		이송 f (mm/rev)	0.02-0.03	0.03-0.05	0.03-0.06	0.03-0.06	0.05-0.10
스테인리스강 SUS304 · SUS410 (< 200HB)	30-60	회전 수 n (min ⁻¹)	9,500	9,500	8,000	7,000	6,600
		이송 f (mm/rev)	0.02-0.03	0.03-0.05	0.03-0.06	0.03-0.08	0.04-0.10
회주철 FC250 (< 29HRC)	40-80	회전 수 n (min ⁻¹)	12,700	10,600	9,500	7,600	6,600
		이송 f (mm/rev)	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.10	0.07-0.12
덕타일 주철 FCD450 · FCD600 (< 28HRC)	30-60	회전 수 n (min ⁻¹)	9,500	9,500	8,000	7,000	6,600
		이송 f (mm/rev)	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.11

- 주의
1. 절삭조건표는 절삭조건을 나타냅니다. 실제의 가공 형상 및 사용 기계 등에서 절삭조건을 조정하십시오.
 2. 상기 조건은 수용성 절삭유제 사용시의 수치입니다.
 3. 주축 회전 수가 낮아지지 않는 경우는 회전 수를 낮춰서 사용하십시오.
 4. 머신 장착시에는 드릴 선단 외주의 흔들림을 0.02mm 이하로하여 사용하십시오.
 5. 드릴 장착시에는 홀 부가 유지구 안으로 들어가지 않도록 주의하십시오.



슬리드 톨

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공압용 나이프

기준 절삭조건 (Type N, 콜런트 홀 없음)

피삭재	절삭속도 Vc (m/min)	외경 DC (mm)	ø1	ø1.5	ø2	ø2.5	ø2.9
연강 (< 180HB) 저탄소강 (< 160HB) SS400 · S10C	30-80	회전 수 n (min ⁻¹)	10,200	8,900	9,500	9,500	8,500
		이송 f (mm/rev)	0.03-0.05	0.04-0.08	0.04-0.10	0.05-0.11	0.06-0.12
탄소강 · 합금강 S50C · SCM · SCr (20-30HRC)	30-80	회전 수 n (min ⁻¹)	10,200	8,900	8,700	8,900	7,900
		이송 f (mm/rev)	0.02-0.05	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.11
합금강 SCM · SCr (30-38HRC)	30-80	회전 수 n (min ⁻¹)	10,200	8,900	8,700	8,900	7,900
		이송 f (mm/rev)	0.02-0.04	0.03-0.06	0.05-0.08	0.06-0.10	0.06-0.12
특수강 · 프리하든강 SKS2 · SKD61 (30-38HRC)	30-60	회전 수 n (min ⁻¹)	10,200	8,900	7,900	6,400	5,800
		이송 f (mm/rev)	0.02-0.03	0.03-0.05	0.03-0.06	0.03-0.06	0.05-0.10
회주철 FC250 (< 29HRC)	30-80	회전 수 n (min ⁻¹)	10,200	8,900	8,700	9,500	8,500
		이송 f (mm/rev)	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.10	0.07-0.12
덕타일 주철 FCD450 · FCD600 (< 28HRC)	30-80	회전 수 n (min ⁻¹)	10,200	8,900	8,700	8,900	8,000
		이송 f (mm/rev)	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.11

- 주의
1. 절삭조건표는 절삭조건을 나타냅니다. 실제의 가공 형상 및 사용 기계 등에서 절삭조건을 조정하십시오.
 2. 상기 조건은 수용성 절삭유제 사용시의 수치입니다.
 3. 주축 회전 수가 낮아지지 않는 경우는 회전 수를 낮춰서 사용하십시오.
 4. 머신 장착시에는 드릴 선단 외주의 흔들림을 0.02mm 이하로하여 사용하십시오.
 5. 드릴 장착시에는 홀 부가 유지구 안으로 들어가지 않도록 주의하십시오.



슬리드
틀

고성능 NEW 플랫 드릴

KDZ



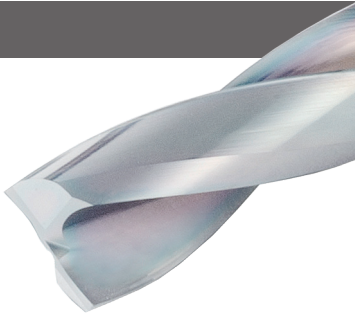
가공 용도에 맞게 선택하는 2가지 타입

안정성 중시

KDZ

스탠다드

인선강화

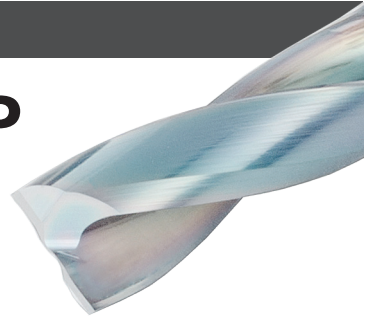


절삭성 중시

KDZ-HP

고정밀 가공

저저항

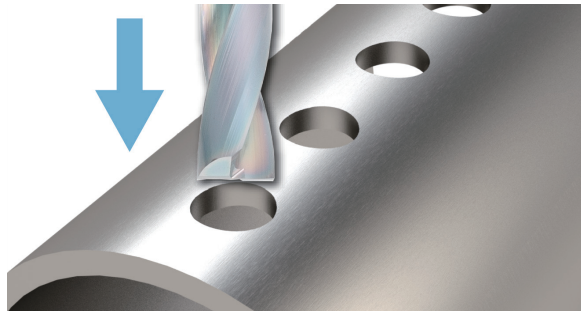


다양한 가공에 안정적으로 대응하는 스탠다드 타입

- 코너부 플렛 랜드 사양
- 특수 홈 형상으로 우수한 칩배출성
- MEGACOAT NANO EX로 긴수명

특수 씨닝 형상으로, 고정밀 안정 가공을 실현

- 원활한 절삭성으로 가공 정밀도 향상
- MEGACOAT NANO EX로 긴수명



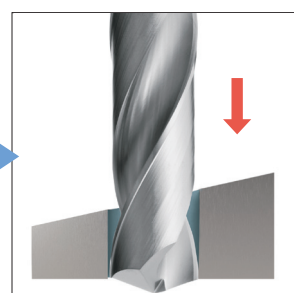
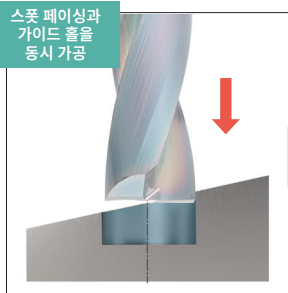
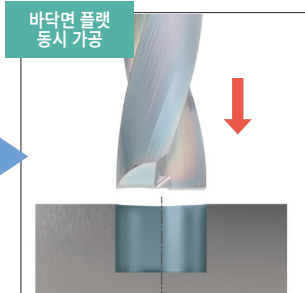
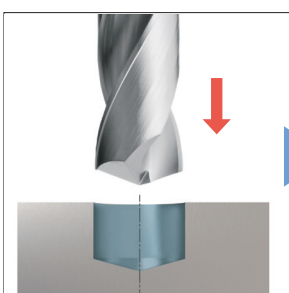
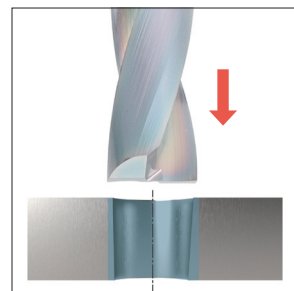
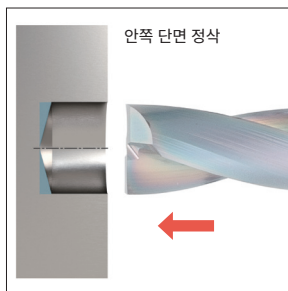
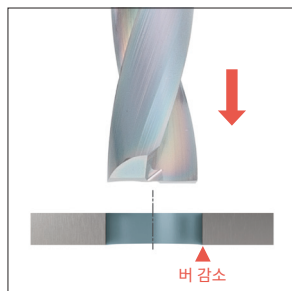
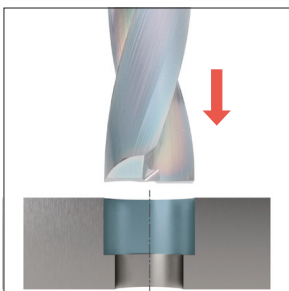
원통면·곡면에서 홀 가공 등, 선단각 있는 드릴로는 가공이 어려운 워크 형상에서도 가공 정밀도가 안정 (원통면·곡면에서는 KDZ-HP를 권장합니다.)

L



슬리드 드릴

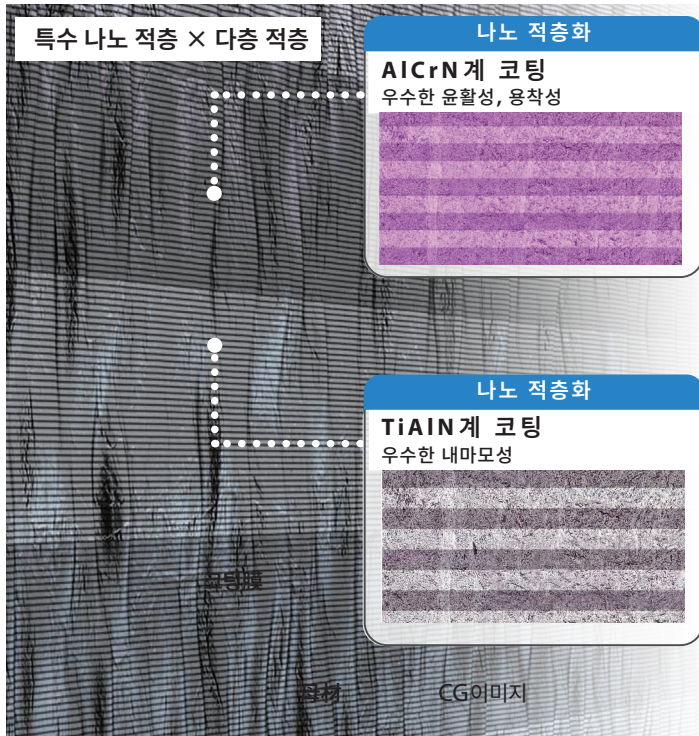
1 다양한 가공에 대응





2 내마모성과 내결손성을 고차원으로 양립

드릴에 요구되는 성능을 겸비한 독자적인 코팅 MEGACOAT® NANO EX



Point

1. 막의 적층 주기를 적정화하여 인성을 향상
2. 윤활성·내용착성이 우수한 Cr량을 늘리고
마모, 치핑을 억제

Solution

홀가공시 절삭날 상태 비교 (당사비교)

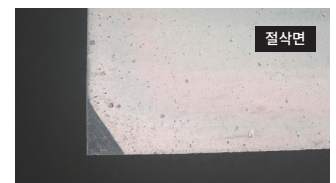
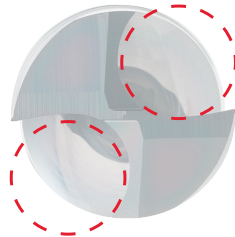


절삭조건 : Vc=80m/min, f=0.06mm/rev
가공경 ø3, 가공 길이 : 6 mm Wet(외부급유) 피삭재:S50C

3 높은 가공 성능을 실현하는 독자적인 형상

KDZ **안정성 증시**

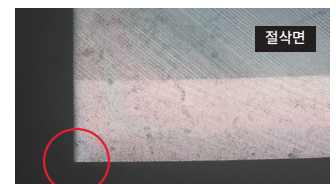
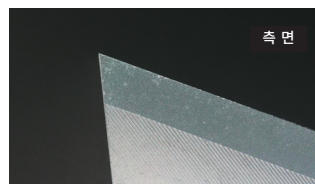
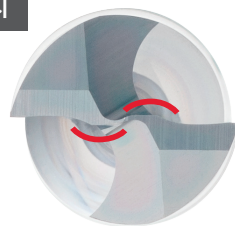
큰 칩 포켓
우수한 칩배출성



내결손성을 향상하는 플랫 랜드 사양

KDZ-HP **절삭성 증시**

특수 씨닝 사양으로
칩 분단을 촉진하고
배출성을 향상
인선 중심부에서의 부하 감소

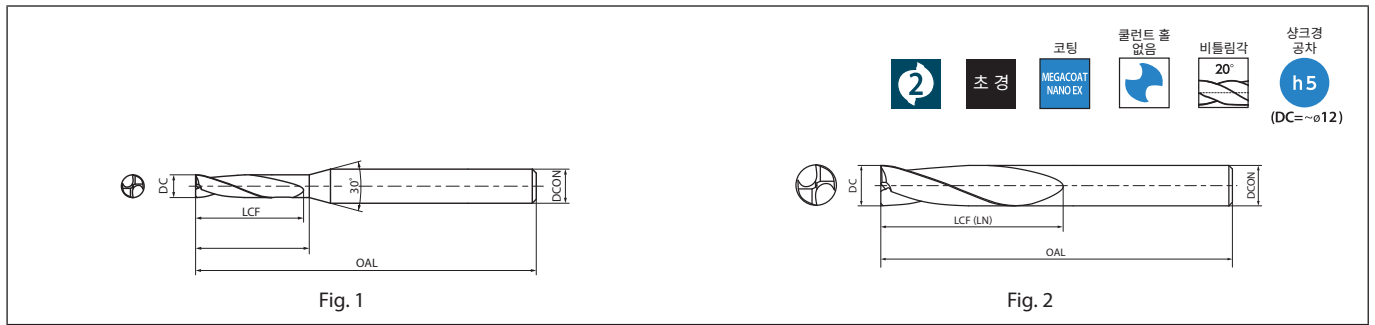


랜드 없이 인선 선단부터 절삭면을 형성
절삭성이 향상되어 고정밀·안정 가공이 가능(~ø12)



슬리드
틀

KDZ (숫)



KDZ (숫)

규격	재고	치수 (mm)						Fig.
		외경 공차		DCON	OAL	LCF	LN	
		min.	max.					
KDZ 0100X1.5S040N	● 1	-0.01	0	4	50	3	4	1
0110X1.5S040N	● 1.1					3.5	4.5	
0120X1.5S040N	● 1.2					4	5	
0130X1.5S040N	● 1.3					4.5	5.5	
0140X1.5S040N	● 1.4					5	6	
0150X1.5S040N	● 1.5					5.5	6.5	
0160X1.5S040N	● 1.6					6	7	
0170X1.5S040N	● 1.7							
0180X1.5S040N	● 1.8							
0190X1.5S040N	● 1.9							
KDZ 0200X1.5S040N	● 2	-0.01	0	4	50	6	7	1
0210X1.5S040N	● 2.1					7	8	
0220X1.5S040N	● 2.2					8	9	
0230X1.5S040N	● 2.3					9	10	
0240X1.5S040N	● 2.4							
0250X1.5S040N	● 2.5							
0260X1.5S040N	● 2.6							
0270X1.5S040N	● 2.7							
0280X1.5S040N	● 2.8							
0290X1.5S040N	● 2.9							
KDZ 0300X1.5S060N	● 3	-0.012	0	6	60	9	10	1
0310X1.5S060N	● 3.1					10	11	
0320X1.5S060N	● 3.2					11	12	
0330X1.5S060N	● 3.3					12	13	
0340X1.5S060N	● 3.4							
0350X1.5S060N	● 3.5							
0360X1.5S060N	● 3.6							
0370X1.5S060N	● 3.7							
0380X1.5S060N	● 3.8							
0390X1.5S060N	● 3.9							

규격	재고	치수 (mm)						Fig.
		외경 공차		DCON	OAL	LCF	LN	
		min.	max.					
KDZ 0400X1.5S060N	● 4	-0.012	0	6	60	12	13	1
0410X1.5S060N	● 4.1					13	14	
0420X1.5S060N	● 4.2					14	15	
0430X1.5S060N	● 4.3					15	16	
0440X1.5S060N	● 4.4							
0450X1.5S060N	● 4.5							
0460X1.5S060N	● 4.6							
0470X1.5S060N	● 4.7							
0480X1.5S060N	● 4.8							
0490X1.5S060N	● 4.9							
KDZ 0500X1.5S060N	● 5	-0.012	0	6	60	16	17	1
0510X1.5S060N	● 5.1					17	18	
0520X1.5S060N	● 5.2					18	19	
0530X1.5S060N	● 5.3					19	20	
0540X1.5S060N	● 5.4					20	21	
0550X1.5S060N	● 5.5					21	22	
0560X1.5S060N	● 5.6					22	23	
0570X1.5S060N	● 5.7							
0580X1.5S060N	● 5.8							
0590X1.5S060N	● 5.9							
KDZ 0600X1.5S060N	● 6	-0.015	0	8	70	19	21	1
0610X1.5S080N	● 6.1					20	22	
0620X1.5S080N	● 6.2					21	23	
0630X1.5S080N	● 6.3							
0640X1.5S080N	● 6.4							
0650X1.5S080N	● 6.5							
0660X1.5S080N	● 6.6							
0670X1.5S080N	● 6.7							
0680X1.5S080N	● 6.8							
0690X1.5S080N	● 6.9							

기준 절삭조건 L88

●: 표준 재고

L

플랫 드릴

엔드밀

미세가공

드릴

SGS

공업용 나이프

KDZ (숫)

규격	재고	치수 (mm)						Fig.	
		DC	외경 공차		DCON	OAL	LCF		LN
			min.	max.					
KDZ 0700X1.5S080N 0710X1.5S080N 0720X1.5S080N 0730X1.5S080N 0740X1.5S080N 0750X1.5S080N 0760X1.5S080N 0770X1.5S080N 0780X1.5S080N 0790X1.5S080N	●	7	-0.015	0	8	70	23	24	1
	●	7.1							
	●	7.2							
	●	7.3							
	●	7.4							
	●	7.5							
	●	7.6							
	●	7.7							
	●	7.8							
	●	7.9							
KDZ 0800X1.5S080N 0810X1.5S100N 0820X1.5S100N 0830X1.5S100N 0840X1.5S100N 0850X1.5S100N 0860X1.5S100N 0870X1.5S100N 0880X1.5S100N 0890X1.5S100N	●	8	-0.015	0	8	70	25	27	2
	●	8.1							
	●	8.2							
	●	8.3							
	●	8.4							
	●	8.5							
	●	8.6							
	●	8.7							
	●	8.8							
	●	8.9							
KDZ 0900X1.5S100N 0910X1.5S100N 0920X1.5S100N 0930X1.5S100N 0940X1.5S100N 0950X1.5S100N 0960X1.5S100N 0970X1.5S100N 0980X1.5S100N 0990X1.5S100N	●	9	-0.015	0	10	80	28	30	1
	●	9.1							
	●	9.2							
	●	9.3							
	●	9.4							
	●	9.5							
	●	9.6							
	●	9.7							
	●	9.8							
	●	9.9							

규격	재고	치수 (mm)						Fig.	
		DC	외경 공차		DCON	OAL	LCF		LN
			min.	max.					
KDZ 1000X1.5S100N 1010X1.5S120N 1020X1.5S120N 1030X1.5S120N 1040X1.5S120N 1050X1.5S120N 1060X1.5S120N 1070X1.5S120N 1080X1.5S120N 1090X1.5S120N	●	10	-0.015	0	10	80	31	33	1
	●	10.1							
	●	10.2							
	●	10.3							
	●	10.4							
	●	10.5							
	●	10.6							
	●	10.7							
	●	10.8							
	●	10.9							
KDZ 1100X1.5S120N 1110X1.5S120N 1120X1.5S120N 1130X1.5S120N 1140X1.5S120N 1150X1.5S120N 1160X1.5S120N 1170X1.5S120N 1180X1.5S120N 1190X1.5S120N 1200X1.5S120N	●	11	-0.018	0	12	100	34	36	1
	●	11.1							
	●	11.2							
	●	11.3							
	●	11.4							
	●	11.5							
	●	11.6							
	●	11.7							
	●	11.8							
	●	11.9							
	●	12							

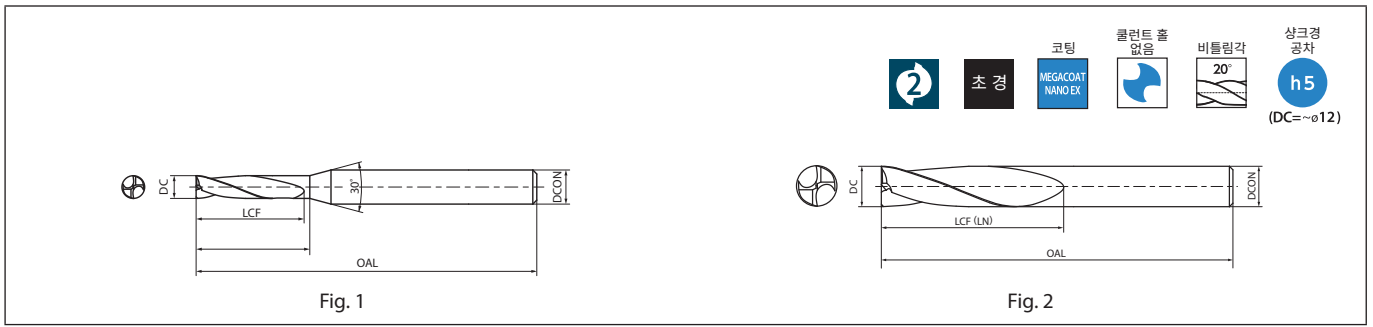


숫
드릴
틀

기준 절삭조건 ➡ L88

●: 표준 재고

KDZ (레귤러)



KDZ (레귤러)

규격	재고	치수 (mm)						Fig.
		외경 공차		DCON	OAL	LCF	LN	
		min.	max.					
KDZ 0300X3.0S060N 0310X3.0S060N 0320X3.0S060N 0330X3.0S060N 0340X3.0S060N 0350X3.0S060N 0360X3.0S060N 0370X3.0S060N 0380X3.0S060N 0390X3.0S060N	● 3	-0.012	0	6	60	14	15	1
	● 3.1							
	● 3.2							
	● 3.3							
	● 3.4							
	● 3.5							
	● 3.6							
	● 3.7							
	● 3.8							
	● 3.9							
KDZ 0400X3.0S060N 0410X3.0S060N 0420X3.0S060N 0430X3.0S060N 0440X3.0S060N 0450X3.0S060N 0460X3.0S060N 0470X3.0S060N 0480X3.0S060N 0490X3.0S060N	● 4	-0.012	0	6	60	19	20	1
	● 4.1							
	● 4.2							
	● 4.3							
	● 4.4							
	● 4.5							
	● 4.6							
	● 4.7							
	● 4.8							
	● 4.9							
KDZ 0500X3.0S060N 0510X3.0S060N 0520X3.0S060N 0530X3.0S060N 0540X3.0S060N 0550X3.0S060N 0560X3.0S060N 0570X3.0S060N 0580X3.0S060N 0590X3.0S060N	● 5	-0.012	0	6	60	23	24	1
	● 5.1							
	● 5.2							
	● 5.3							
	● 5.4							
	● 5.5							
	● 5.6							
	● 5.7							
	● 5.8							
	● 5.9							

규격	재고	치수 (mm)						Fig.
		외경 공차		DCON	OAL	LCF	LN	
		min.	max.					
KDZ 0600X3.0S060N 0610X3.0S080N 0620X3.0S080N 0630X3.0S080N 0640X3.0S080N 0650X3.0S080N 0660X3.0S080N 0670X3.0S080N 0680X3.0S080N 0690X3.0S080N	● 6	-0.015	0	6	60	28	2	
	● 6.1							
	● 6.2							
	● 6.3							
	● 6.4							
	● 6.5							
	● 6.6							
	● 6.7							
	● 6.8							
	● 6.9							
KDZ 0700X3.0S080N 0710X3.0S080N 0720X3.0S080N 0730X3.0S080N 0740X3.0S080N 0750X3.0S080N 0760X3.0S080N 0770X3.0S080N 0780X3.0S080N 0790X3.0S080N	● 7	-0.015	0	8	70	32	33	
	● 7.1							
	● 7.2							
	● 7.3							
	● 7.4							
	● 7.5							
	● 7.6							
	● 7.7							
	● 7.78							
	● 7.9							
KDZ 0800X3.0S080N 0810X3.0S100N 0820X3.0S100N 0830X3.0S100N 0840X3.0S100N 0850X3.0S100N 0860X3.0S100N 0870X3.0S100N 0880X3.0S100N 0890X3.0S100N	● 8	-0.015	0	8	70	36	2	
	● 8.1							
	● 8.2							
	● 8.3							
	● 8.4							
	● 8.5							
	● 8.6							
	● 8.7							
	● 8.8							
	● 8.9							

기준 절삭조건 L88

●: 표준 재고

L

플랫 드릴

엔드밀

미세가공


드릴

SGS

공업용 나이프

KDZ (레귤러)

규격	재고	치수 (mm)							Fig.
		DC	외경 공차		DCON	OAL	LCF	LN	
			min.	max.					
KDZ 0900X3.0S100N 0910X3.0S100N 0920X3.0S100N 0930X3.0S100N 0940X3.0S100N 0950X3.0S100N 0960X3.0S100N 0970X3.0S100N 0980X3.0S100N 0990X3.0S100N	● 9								
	● 9.1								
	● 9.2						40	41	
	● 9.3								
	● 9.4								
	● 9.5	-0.015	0	10	80				1
	● 9.6								
	● 9.7						42	43	
	● 9.8								
	● 9.9								
KDZ 1000X3.0S100N 1010X3.0S120N 1020X3.0S120N 1030X3.0S120N 1040X3.0S120N 1050X3.0S120N 1060X3.0S120N 1070X3.0S120N 1080X3.0S120N 1090X3.0S120N	● 10	-0.015		10	80		45		2
	● 10.1						45	46	
	● 10.2								
	● 10.3						46	47	
	● 10.4								
	● 10.5	-0.018	0	12	100				1
	● 10.6								
	● 10.7						47	48	
	● 10.8								
	● 10.9								
KDZ 1100X3.0S120N 1110X3.0S120N 1120X3.0S120N 1130X3.0S120N 1140X3.0S120N 1150X3.0S120N 1160X3.0S120N 1170X3.0S120N 1180X3.0S120N 1190X3.0S120N 1200X3.0S120N	● 11								
	● 11.1								
	● 11.2						51	52	
	● 11.3								
	● 11.4								
	● 11.5	-0.018	0	12	100				1
	● 11.6								
	● 11.7						53	54	
	● 11.8								
	● 11.9								
● 12						54		2	

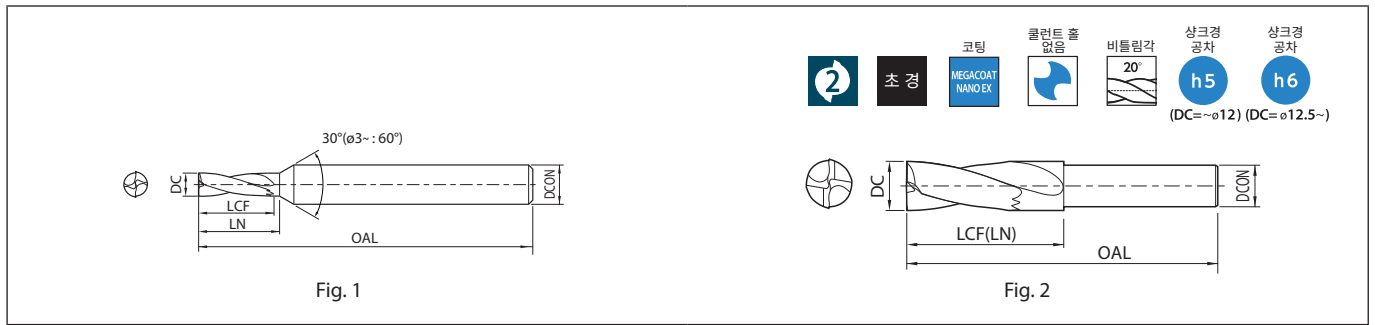
기준 절삭조건  L88

● : 표준 재고



슬리드
드릴

KDZ-HP (숫)



KDZ-HP (숫)

규격	재고	치수 (mm)						Fig.
		외경 공차		DCON	OAL	LCF	LN	
		min.	max.					
KDZ 0100X1.5S040N-HP	● 1	-0.01	0	4	50	3.5	4.3	1
0110X1.5S040N-HP	● 1.1					3.9	4.7	
0120X1.5S040N-HP	● 1.2					4.3	5.1	
0130X1.5S040N-HP	● 1.3					4.7	5.5	
0140X1.5S040N-HP	● 1.4					5.1	5.9	
0150X1.5S040N-HP	● 1.5					5.5	6.3	
0160X1.5S040N-HP	● 1.6					5.7	6.5	
0170X1.5S040N-HP	● 1.7					5.9	6.7	
0180X1.5S040N-HP	● 1.8					6.1	6.9	
0190X1.5S040N-HP	● 1.9					6.3	7.1	
KDZ 0200X1.5S040N-HP	● 2	-0.01	0	4	50	6.5	7.3	1
0210X1.5S040N-HP	● 2.1					6.9	7.7	
0220X1.5S040N-HP	● 2.2					7.3	8.1	
0230X1.5S040N-HP	● 2.3					7.7	8.5	
0240X1.5S040N-HP	● 2.4					8.1	8.9	
0250X1.5S040N-HP	● 2.5					8.5	9.3	
0260X1.5S040N-HP	● 2.6					8.8	9.5	
0270X1.5S040N-HP	● 2.7					9.1	9.8	
0280X1.5S040N-HP	● 2.8					9.3	10	
0290X1.5S040N-HP	● 2.9					9.5	10.3	
KDZ 0300X1.5S060N-HP	● 3	-0.012	0	6	60	9	10	1
0310X1.5S060N-HP	● 3.1					10	11	
0320X1.5S060N-HP	● 3.2					10	11	
0330X1.5S060N-HP	● 3.3					11	12	
0340X1.5S060N-HP	● 3.4					11	12	
0350X1.5S060N-HP	● 3.5					11	12	
0360X1.5S060N-HP	● 3.6					12	13	
0370X1.5S060N-HP	● 3.7					12	13	
0380X1.5S060N-HP	● 3.8					12	13	
0390X1.5S060N-HP	● 3.9					12	13	
KDZ 0400X1.5S060N-HP	● 4	-0.012	0	6	60	12	13	1
0410X1.5S060N-HP	● 4.1					13	14	
0420X1.5S060N-HP	● 4.2					13	14	
0430X1.5S060N-HP	● 4.3					14	15	
0440X1.5S060N-HP	● 4.4					14	15	
0450X1.5S060N-HP	● 4.5					14	15	
0460X1.5S060N-HP	● 4.6					15	16	
0470X1.5S060N-HP	● 4.7					15	16	
0480X1.5S060N-HP	● 4.8					15	16	
0490X1.5S060N-HP	● 4.9					15	16	

규격	재고	치수 (mm)						Fig.
		외경 공차		DCON	OAL	LCF	LN	
		min.	max.					
KDZ 0500X1.5S060N-HP	● 5	-0.012	0	6	60	16	17	1
0510X1.5S060N-HP	● 5.1							
0520X1.5S060N-HP	● 5.2							
0530X1.5S060N-HP	● 5.3							
0540X1.5S060N-HP	● 5.4							
0550X1.5S060N-HP	● 5.5							
0560X1.5S060N-HP	● 5.6							
0570X1.5S060N-HP	● 5.7							
0580X1.5S060N-HP	● 5.8							
0590X1.5S060N-HP	● 5.9							
KDZ 0600X1.5S060N-HP	● 6	-0.015	0	8	70	19	21	2
0610X1.5S080N-HP	● 6.1							
0620X1.5S080N-HP	● 6.2							
0630X1.5S080N-HP	● 6.3							
0640X1.5S080N-HP	● 6.4							
0650X1.5S080N-HP	● 6.5							
0660X1.5S080N-HP	● 6.6							
0670X1.5S080N-HP	● 6.7							
0680X1.5S080N-HP	● 6.8							
0690X1.5S080N-HP	● 6.9							
KDZ 0700X1.5S080N-HP	● 7	-0.015	0	8	70	22	24	1
0710X1.5S080N-HP	● 7.1							
0720X1.5S080N-HP	● 7.2							
0730X1.5S080N-HP	● 7.3							
0740X1.5S080N-HP	● 7.4							
0750X1.5S080N-HP	● 7.5							
0760X1.5S080N-HP	● 7.6							
0770X1.5S080N-HP	● 7.7							
0780X1.5S080N-HP	● 7.8							
0790X1.5S080N-HP	● 7.9							

기준 절삭조건 L89

●: 표준 재고

KDZ-HP (숫)

규격	재고	치수 (mm)						Fig.					
		DC	외경 공차		DCON	OAL	LCF		LN				
			min.	max.									
KDZ 0800X1.5S080N-HP 0810X1.5S100N-HP 0820X1.5S100N-HP 0830X1.5S100N-HP 0840X1.5S100N-HP 0850X1.5S100N-HP 0860X1.5S100N-HP 0870X1.5S100N-HP 0880X1.5S100N-HP 0890X1.5S100N-HP	● 8	-0.015	0	8	70			2					
	● 8.1								10	80		25	27
	● 8.2												
	● 8.3												
	● 8.4												
	● 8.5												
	● 8.6												
	● 8.7												
	● 8.8												
	● 8.9												
KDZ 0900X1.5S100N-HP 0910X1.5S100N-HP 0920X1.5S100N-HP 0930X1.5S100N-HP 0940X1.5S100N-HP 0950X1.5S100N-HP 0960X1.5S100N-HP 0970X1.5S100N-HP 0980X1.5S100N-HP 0990X1.5S100N-HP	● 9	-0.015	0	10	80			1					
	● 9.1								10	80		28	30
	● 9.2												
	● 9.3												
	● 9.4												
	● 9.5												
	● 9.6												
	● 9.7												
	● 9.8												
	● 9.9												
KDZ 1000X1.5S100N-HP 1010X1.5S120N-HP 1020X1.5S120N-HP 1030X1.5S120N-HP 1040X1.5S120N-HP 1050X1.5S120N-HP 1060X1.5S120N-HP 1070X1.5S120N-HP 1080X1.5S120N-HP 1090X1.5S120N-HP	● 10	-0.018	0	12	100			2					
	● 10.1								12	100		31	33
	● 10.2												
	● 10.3												
	● 10.4												
	● 10.5												
	● 10.6												
	● 10.7												
	● 10.8												
	● 10.9												

규격	재고	치수 (mm)						Fig.					
		DC	외경 공차		DCON	OAL	LCF		LN				
			min.	max.									
KDZ 1100X1.5S120N-HP 1110X1.5S120N-HP 1120X1.5S120N-HP 1130X1.5S120N-HP 1140X1.5S120N-HP 1150X1.5S120N-HP 1160X1.5S120N-HP 1170X1.5S120N-HP 1180X1.5S120N-HP 1190X1.5S120N-HP	● 11	-0.018	0	12	100			1					
	● 11.1								12	100		34	36
	● 11.2												
	● 11.3												
	● 11.4												
	● 11.5												
	● 11.6												
	● 11.7												
	● 11.8												
	● 11.9												
KDZ 1200X1.5S120N-HP 1250X1.5S120N-HP 1300X1.5S120N-HP 1350X1.5S120N-HP 1400X1.5S120N-HP 1450X1.5S120N-HP 1500X1.5S120N-HP 1550X1.5S120N-HP 1600X1.5S160N-HP 1650X1.5S160N-HP	● 12	-0.018	0	12	100			2					
	● 12.5								12	100		37	39
	● 13												
	● 13.5												
	● 14												
	● 14.5												
	● 15												
	● 15.5												
	● 16												
	● 16.5												
KDZ 1700X1.5S160N-HP 1750X1.5S160N-HP 1800X1.5S160N-HP 1850X1.5S160N-HP 1900X1.5S160N-HP 1950X1.5S160N-HP 2000X1.5S200N-HP	● 17	-0.021	0	16	125			2					
	● 17.5								16	125		54	54
	● 18												
	● 18.5												
	● 19												
	● 19.5												
	● 20												
	● 20												
	● 20												
	● 20												

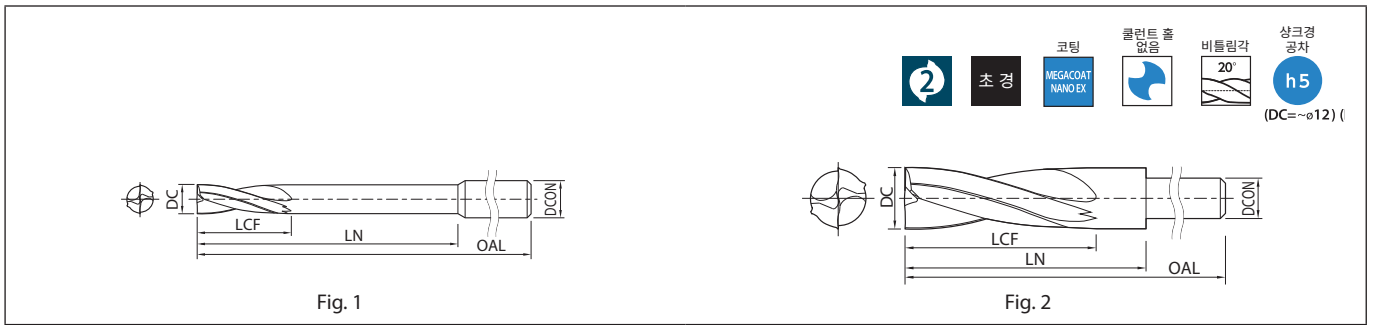
기준 절삭조건 L89



숫
드릴

● : 표준 재고

KDZ-HP (숫, 롱 샹크)



KDZ-HP (숫, 롱 샹크)

규격	재고	치수 (mm)							Fig.
		DC	외경 공차		DCON	OAL	LCF	LN	
			min.	max.					
KDZ 0300X1.5S060N-HPL 0310X1.5S060N-HPL 0320X1.5S060N-HPL 0330X1.5S060N-HPL 0340X1.5S060N-HPL 0350X1.5S060N-HPL 0360X1.5S060N-HPL 0370X1.5S060N-HPL 0380X1.5S060N-HPL 0390X1.5S060N-HPL	● 3	-0.01				9	30	1	
	수 3.1					31			
	수 3.2				10	32			
	수 3.3					33			
	수 3.4			6	100	34			
	● 3.5	-0.012	0			11	35		
	수 3.6					36			
	수 3.7					37			
	수 3.8					12	38		
	수 3.9					39			
KDZ 0400X1.5S060N-HPL 0410X1.5S060N-HPL 0420X1.5S060N-HPL 0430X1.5S060N-HPL 0440X1.5S060N-HPL 0450X1.5S060N-HPL 0460X1.5S060N-HPL 0470X1.5S060N-HPL 0480X1.5S060N-HPL 0490X1.5S060N-HPL	● 4					12	40	1	
	수 4.1					41			
	수 4.2				13	42			
	수 4.3					43			
	수 4.4			6	100	44			
	● 4.5	-0.012	0			14	45		
	수 4.6					46			
	수 4.7					47			
	수 4.8					15	48		
	수 4.9					49			
KDZ 0500X1.5S060N-HPL 0510X1.5S060N-HPL 0520X1.5S060N-HPL 0530X1.5S060N-HPL 0540X1.5S060N-HPL 0550X1.5S060N-HPL 0560X1.5S060N-HPL 0570X1.5S060N-HPL 0580X1.5S060N-HPL 0590X1.5S060N-HPL	● 5					50		1	
	수 5.1					51			
	수 5.2				16	52			
	수 5.3					53			
	수 5.4			6	110	54			
	● 5.5	-0.012	0			17	55		
	수 5.6					56			
	수 5.7					57			
	수 5.8					18	58		
	수 5.9					59			


규격	재고	치수 (mm)							Fig.
		DC	외경 공차		DCON	OAL	LCF	LN	
			min.	max.					
KDZ 0600X1.5S060N-HPL 0610X1.5S060N-HPL 0620X1.5S060N-HPL 0630X1.5S060N-HPL 0640X1.5S060N-HPL 0650X1.5S060N-HPL 0660X1.5S060N-HPL 0670X1.5S060N-HPL 0680X1.5S060N-HPL 0690X1.5S060N-HPL	● 6	-0.012					60	1	
	수 6.1					19	29		
	수 6.2								
	수 6.3								
	수 6.4			6	120	20	29.5	2	
	● 6.5	-0.015	0			21	30		
	수 6.6								
	수 6.7								
	수 6.8					21	30		
	수 6.9								
KDZ 0700X1.5S060N-HPL 0710X1.5S060N-HPL 0720X1.5S060N-HPL 0730X1.5S060N-HPL 0740X1.5S060N-HPL 0750X1.5S060N-HPL 0760X1.5S060N-HPL 0770X1.5S060N-HPL 0780X1.5S060N-HPL 0790X1.5S060N-HPL	● 7						30		2
	수 7.1					22			
	수 7.2								
	수 7.3						30.5		
	수 7.4			6	120	23			
	● 7.5	-0.015	0			24	31		
	수 7.6								
	수 7.7								
	수 7.8					24	31		
	수 7.9								
KDZ 0800X1.5S080N-HPL 0810X1.5S080N-HPL 0820X1.5S080N-HPL 0830X1.5S080N-HPL 0840X1.5S080N-HPL 0850X1.5S080N-HPL 0860X1.5S080N-HPL 0870X1.5S080N-HPL 0880X1.5S080N-HPL 0890X1.5S080N-HPL	● 8						80	1	
	수 8.1					25			
	수 8.2						31.5		
	수 8.3								
	수 8.4			8	130	26			
	● 8.5	-0.015	0			27	32		
	수 8.6								
	수 8.7								
	수 8.8					27			
	수 8.9						32.5		

기준 절삭조건 L90

●: 표준 재고 수: 주문생산

KDZ-HP (숫, 롱 샹크)

규격	재고	치수 (mm)							Fig.
		DC	외경 공차		DCON	OAL	LCF	LN	
			min.	max.					
KDZ 0900X1.5S080N-HPL 0910X1.5S080N-HPL 0920X1.5S080N-HPL 0930X1.5S080N-HPL 0940X1.5S080N-HPL 0950X1.5S080N-HPL 0960X1.5S080N-HPL 0970X1.5S080N-HPL 0980X1.5S080N-HPL 0990X1.5S080N-HPL	● 9	-0.015	0	8	130	28	32.5	2	
	수 9.1								
	수 9.2								
	수 9.3								
	수 9.4								
	● 9.5								
	수 9.6								
	수 9.7								
	수 9.8								
	수 9.9								
KDZ 1000X1.5S100N-HPL 1010X1.5S100N-HPL 1020X1.5S100N-HPL 1030X1.5S100N-HPL 1040X1.5S100N-HPL 1050X1.5S100N-HPL 1060X1.5S100N-HPL 1070X1.5S100N-HPL 1080X1.5S100N-HPL 1090X1.5S100N-HPL	● 10	-0.018	0	10	150	31	100	1	
	수 10.1								
	수 10.2								
	수 10.3								
	수 10.4								
	● 10.5								
	수 10.6								
	수 10.7								
	수 10.8								
	수 10.9								
KDZ 1100X1.5S100N-HPL 1110X1.5S100N-HPL 1120X1.5S100N-HPL 1130X1.5S100N-HPL 1140X1.5S100N-HPL 1150X1.5S100N-HPL 1160X1.5S100N-HPL 1170X1.5S100N-HPL 1180X1.5S100N-HPL 1190X1.5S100N-HPL 1200X1.5S120N-HPL	● 11	-0.018	0	10	150	34	37.5	2	
	수 11.1								
	수 11.2								
	수 11.3								
	수 11.4								
	● 11.5								
	수 11.6								
	수 11.7								
	수 11.8								
	수 11.9								
	● 12								

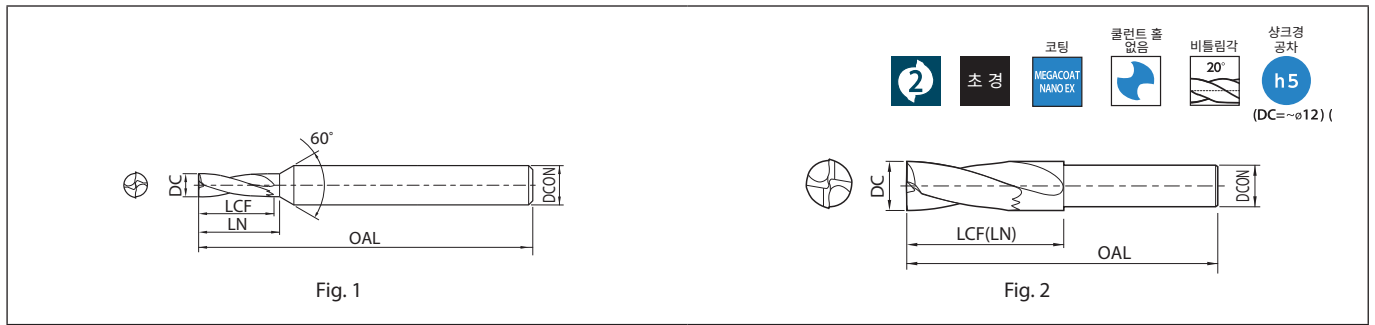
기준 절삭조건  L90



슬리드
틀

● : 표준 재고 수 : 주문생산

KDZ-HP (레귤러)



KDZ-HP (레귤러)

규격	재고	치수 (mm)						Fig.	
		DC	외경 공차		DCON	OAL	LCF		LN
			min.	max.					
KDZ 0300X3.0S060N-HP 0310X3.0S060N-HP 0320X3.0S060N-HP 0330X3.0S060N-HP 0340X3.0S060N-HP 0350X3.0S060N-HP 0360X3.0S060N-HP 0370X3.0S060N-HP 0380X3.0S060N-HP 0390X3.0S060N-HP	● 3	-0.012	0	6	60	14	15	1	
	● 3.1								
	● 3.2								
	● 3.3								
	● 3.4								
	● 3.5								
	● 3.6								
	● 3.7								
	● 3.8								
	● 3.9								
KDZ 0400X3.0S060N-HP 0410X3.0S060N-HP 0420X3.0S060N-HP 0430X3.0S060N-HP 0440X3.0S060N-HP 0450X3.0S060N-HP 0460X3.0S060N-HP 0470X3.0S060N-HP 0480X3.0S060N-HP 0490X3.0S060N-HP	● 4	-0.012	0	6	60	19	20	1	
	● 4.1								
	● 4.2								
	● 4.3								
	● 4.4								
	● 4.5								
	● 4.6								
	● 4.7								
	● 4.8								
	● 4.9								
KDZ 0500X3.0S060N-HP 0510X3.0S060N-HP 0520X3.0S060N-HP 0530X3.0S060N-HP 0540X3.0S060N-HP 0550X3.0S060N-HP 0560X3.0S060N-HP 0570X3.0S060N-HP 0580X3.0S060N-HP 0590X3.0S060N-HP	● 5	-0.012	0	6	60	23	24	1	
	● 5.1								
	● 5.2								
	● 5.3								
	● 5.4								
	● 5.5								
	● 5.6								
	● 5.7								
	● 5.8								
	● 5.9								

규격	재고	치수 (mm)						Fig.	
		DC	외경 공차		DCON	OAL	LCF		LN
			min.	max.					
KDZ 0600X3.0S060N-HP 0610X3.0S080N-HP 0620X3.0S080N-HP 0630X3.0S080N-HP 0640X3.0S080N-HP 0650X3.0S080N-HP 0660X3.0S080N-HP 0670X3.0S080N-HP 0680X3.0S080N-HP 0690X3.0S080N-HP	● 6	-0.012	0	6	60	28	29	1	
	● 6.1								
	● 6.2								
	● 6.3								
	● 6.4								
	● 6.5								
	● 6.6								
	● 6.7								
	● 6.8								
	● 6.9								
KDZ 0700X3.0S080N-HP 0710X3.0S080N-HP 0720X3.0S080N-HP 0730X3.0S080N-HP 0740X3.0S080N-HP 0750X3.0S080N-HP 0760X3.0S080N-HP 0770X3.0S080N-HP 0780X3.0S080N-HP 0790X3.0S080N-HP	● 7	-0.015	0	8	70	32	33	1	
	● 7.1								
	● 7.2								
	● 7.3								
	● 7.4								
	● 7.5								
	● 7.6								
	● 7.7								
	● 7.8								
	● 7.9								
KDZ 0800X3.0S080N-HP 0810X3.0S100N-HP 0820X3.0S100N-HP 0830X3.0S100N-HP 0840X3.0S100N-HP 0850X3.0S100N-HP 0860X3.0S100N-HP 0870X3.0S100N-HP 0880X3.0S100N-HP 0890X3.0S100N-HP	● 8	-0.015	0	8	70	36	37	1	
	● 8.1								
	● 8.2								
	● 8.3								
	● 8.4								
	● 8.5								
	● 8.6								
	● 8.7								
	● 8.8								
	● 8.9								

기준 절삭조건 L89

●: 표준 재고

L

소용돌이 홈

엔드밀

미세가공


드릴

SGS

공업용 나이프

KDZ-HP (레귤러)

규격	재고	치수 (mm)						Fig.	
		DC	외경 공차		DCON	OAL	LCF		LN
			min.	max.					
KDZ 0900X3.0S100N-HP 0910X3.0S100N-HP 0920X3.0S100N-HP 0930X3.0S100N-HP 0940X3.0S100N-HP 0950X3.0S100N-HP 0960X3.0S100N-HP 0970X3.0S100N-HP 0980X3.0S100N-HP 0990X3.0S100N-HP	● 9	-0.015	0	10	80	40	41	1	
	● 9.1								
	● 9.2								
	● 9.3								
	● 9.4								
	● 9.5								
	● 9.6								
	● 9.7								
	● 9.8								
	● 9.9								
KDZ 1000X3.0S120N-HP 1010X3.0S120N-HP 1020X3.0S120N-HP 1030X3.0S120N-HP 1040X3.0S120N-HP 1050X3.0S120N-HP 1060X3.0S120N-HP 1070X3.0S120N-HP 1080X3.0S120N-HP 1090X3.0S120N-HP	● 10	-0.018	0	12	100	45	46	1	
	● 10.1								
	● 10.2								
	● 10.3								
	● 10.4								
	● 10.5								
	● 10.6								
	● 10.7								
	● 10.8								
	● 10.9								
KDZ 1100X3.0S120N-HP 1110X3.0S120N-HP 1120X3.0S120N-HP 1130X3.0S120N-HP 1140X3.0S120N-HP 1150X3.0S120N-HP 1160X3.0S120N-HP 1170X3.0S120N-HP 1180X3.0S120N-HP 1190X3.0S120N-HP 1200X3.0S120N-HP	● 11	-0.018	0	12	100	51	52	1	
	● 11.1								
	● 11.2								
	● 11.3								
	● 11.4								
	● 11.5								
	● 11.6								
	● 11.7								
	● 11.8								
	● 11.9								
● 12	54	54	2						

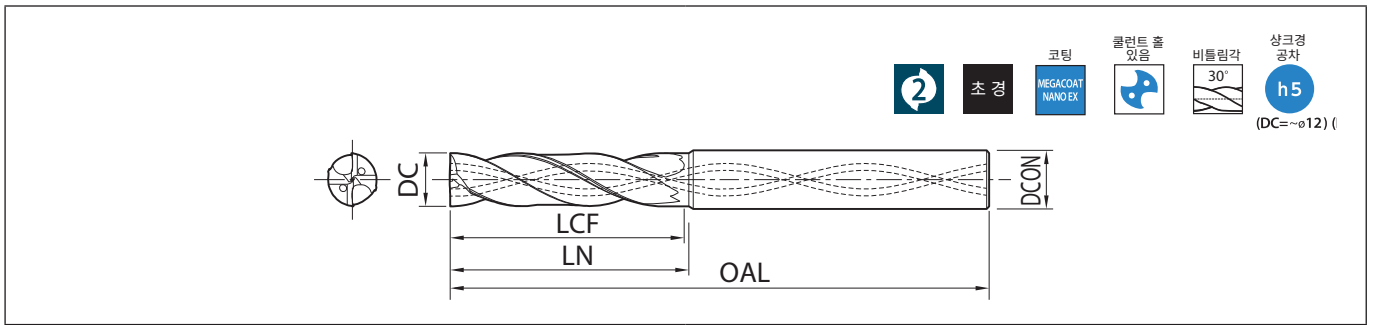
기준 절삭조건  L89

● : 표준 재고



슬리드
드릴

KDZ-HP (레귤러, 쿨런트 홀 있음, Type C)



KDZ-HP (레귤러, 쿨런트 홀 있음, Type C)

규격	재고	치수 (mm)							
		DC	외경 공차		DCON	OAL	LCF	LN	
			min.	max.					
KDZ 0300X3.0S030C-HP 0310X3.0S040C-HP 0320X3.0S040C-HP 0330X3.0S040C-HP 0340X3.0S040C-HP 0350X3.0S040C-HP 0360X3.0S040C-HP 0370X3.0S040C-HP 0380X3.0S040C-HP 0390X3.0S040C-HP	● 3	-0.012	0	3	68	13.5	15.5		
	● 3.1							14	16
	● 3.2							14.4	16.4
	● 3.3							14.9	16.9
	● 3.4							15.3	17.3
	● 3.5							15.8	17.8
	● 3.6							16.2	18.2
	● 3.7							16.7	18.7
	● 3.8							17.1	19.1
	● 3.9							17.6	19.6
KDZ 0400X3.0S040C-HP 0410X3.0S050C-HP 0420X3.0S050C-HP 0430X3.0S050C-HP 0440X3.0S050C-HP 0450X3.0S050C-HP 0460X3.0S050C-HP 0470X3.0S050C-HP 0480X3.0S050C-HP 0490X3.0S050C-HP	● 4	-0.012	0	4	72	18	20		
	● 4.1							18.5	20.5
	● 4.2							18.9	20.9
	● 4.3							19.4	21.4
	● 4.4							19.8	21.8
	● 4.5							20.3	22.3
	● 4.6							20.7	22.7
	● 4.7							21.2	23.2
	● 4.8							21.6	23.6
	● 4.9							22.1	24.1
KDZ 0500X3.0S050C-HP 0510X3.0S060C-HP 0520X3.0S060C-HP 0530X3.0S060C-HP 0540X3.0S060C-HP 0550X3.0S060C-HP 0560X3.0S060C-HP 0570X3.0S060C-HP 0580X3.0S060C-HP 0590X3.0S060C-HP	● 5	-0.012	0	5	80	22.5	24.5		
	● 5.1							23	25
	● 5.2							23.4	25.4
	● 5.3							23.9	25.9
	● 5.4							24.3	26.3
	● 5.5							24.8	26.8
	● 5.6							25.2	27.2
	● 5.7							25.7	27.7
	● 5.8							26.1	28.1
	● 5.9							26.6	28.6

규격	재고	치수 (mm)							
		DC	외경 공차		DCON	OAL	LCF	LN	
			min.	max.					
KDZ 0600X3.0S060C-HP 0610X3.0S070C-HP 0620X3.0S070C-HP 0630X3.0S070C-HP 0640X3.0S070C-HP 0650X3.0S070C-HP 0660X3.0S070C-HP 0670X3.0S070C-HP 0680X3.0S070C-HP 0690X3.0S070C-HP	● 6	-0.012	0	6	82	27	29		
	● 6.1							27.5	29.5
	● 6.2							27.9	29.9
	● 6.3							28.4	30.4
	● 6.4							28.8	30.8
	● 6.5							29.3	31.3
	● 6.6							29.7	31.7
	● 6.7							30.2	32.2
	● 6.8							30.6	32.6
	● 6.9							31.1	33.1
KDZ 0700X3.0S070C-HP 0710X3.0S080C-HP 0720X3.0S080C-HP 0730X3.0S080C-HP 0740X3.0S080C-HP 0750X3.0S080C-HP 0760X3.0S080C-HP 0770X3.0S080C-HP 0780X3.0S080C-HP 0790X3.0S080C-HP	● 7	-0.015	0	7	88	31.5	33.5		
	● 7.1							32	34
	● 7.2							32.4	34.4
	● 7.3							32.9	34.9
	● 7.4							33.3	35.3
	● 7.5							33.8	35.8
	● 7.6							34.2	36.2
	● 7.7							34.7	36.7
	● 7.8							35.1	37.1
	● 7.9							35.6	37.6
KDZ 0800X3.0S080C-HP 0810X3.0S090C-HP 0820X3.0S090C-HP 0830X3.0S090C-HP 0840X3.0S090C-HP 0850X3.0S090C-HP 0860X3.0S090C-HP 0870X3.0S090C-HP 0880X3.0S090C-HP 0890X3.0S090C-HP	● 8	-0.015	0	8	94	36	38		
	● 8.1							36.5	38.5
	● 8.2							36.9	38.9
	● 8.3							37.4	39.4
	● 8.4							37.8	39.8
	● 8.5							38.3	40.3
	● 8.6							38.7	40.7
	● 8.7							39.2	41.2
	● 8.8							39.6	41.6
	● 8.9							40.1	42.1


기준 절삭조건 **L91**

●: 표준 재고

L
 플랫 드릴
 엔드밀
 미세가공
 드릴
 SGS
 공업용 나이프

KDZ-HP (레귤러, 클런트 홀 있음, Type C)

규격	재고	치수 (mm)																										
		DC	외경 공차		DCON	OAL	LC	LN																				
			min.	max.																								
KDZ 0900X3.0S090C-HP 0910X3.0S100C-HP 0920X3.0S100C-HP 0930X3.0S100C-HP 0940X3.0S100C-HP 0950X3.0S100C-HP 0960X3.0S100C-HP 0970X3.0S100C-HP 0980X3.0S100C-HP 0990X3.0S100C-HP	● 9	-0.015	0	10	100	40.5	42.5																					
	● 9.1							106	41	43																		
	● 9.2										41.4	43.4																
	● 9.3												41.9	43.9														
	● 9.4														42.3	44.3												
	● 9.5																42.8	44.8										
	● 9.6																		43.2	45.2								
	● 9.7																				43.7	45.7						
	● 9.8																						44.1	46.1				
	● 9.9																								44.6	46.6		
KDZ 1000X3.0S100C-HP 1010X3.0S110C-HP 1020X3.0S110C-HP 1030X3.0S110C-HP 1040X3.0S110C-HP 1050X3.0S110C-HP 1060X3.0S110C-HP 1070X3.0S110C-HP 1080X3.0S110C-HP 1090X3.0S110C-HP	● 10	-0.015	0	10	106	45	47																					
	● 10.1							116	45.5	47.5																		
	● 10.2										45.9	47.9																
	● 10.3												46.4	48.4														
	● 10.4														46.8	48.8												
	● 10.5																47.3	49.3										
	● 10.6																		47.7	49.7								
	● 10.7																				48.2	50.2						
	● 10.8																						48.6	50.6				
	● 10.9																								49.1	51.1		
KDZ 1100X3.0S110C-HP 1110X3.0S120C-HP 1120X3.0S120C-HP 1130X3.0S120C-HP 1140X3.0S120C-HP 1150X3.0S120C-HP 1160X3.0S120C-HP 1170X3.0S120C-HP 1180X3.0S120C-HP 1190X3.0S120C-HP 1200X3.0S120C-HP	● 11	-0.018	0	11	116	49.5	51.5																					
	● 11.1							122	50	52																		
	● 11.2										50.4	52.4																
	● 11.3												50.9	52.9														
	● 11.4														51.3	53.3												
	● 11.5																51.8	53.8										
	● 11.6																		52.2	54.2								
	● 11.7																				52.7	54.7						
	● 11.8																						53.1	55.1				
	● 11.9																								53.6	55.6		
	● 12																										54	56

기준 절삭조건  L91



슬리드
틀

● : 표준 재고

기준 절삭조건

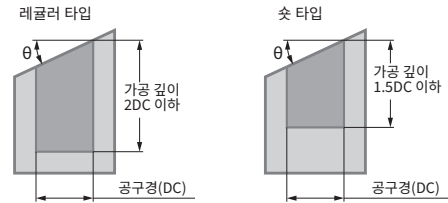
KDZ

피삭재	구분	외경 DC (mm)	ø1	ø2	ø3	ø4	ø5	ø6	ø8	ø10	ø12
일반 구조강 · 탄소강 SS400, S45C	 드릴 가공	회전 수 (min ⁻¹)	19,500	11,200	8,300	6,200	5,000	4,200	3,200	2,500	2,100
		이송 (mm/min)	300	380	520	520	520	520	520	450	450
합금강 SCM, SNCM		회전 수 (min ⁻¹)	19,000	10,000	7,200	5,400	4,400	3,600	2,700	2,200	1,800
		이송 (mm/min)	300	320	450	450	450	450	450	400	400
프리하든강 (30~45HRC)		회전 수 (min ⁻¹)	16,000	8,000	3,900	2,900	2,300	1,900	1,500	1,200	1,000
		이송 (mm/min)	210	210	210	210	210	210	210	190	190
덕타일 주철 FCD400		회전 수 (min ⁻¹)	16,000	10,000	7,200	5,400	4,400	3,600	2,700	2,200	1,800
		이송 (mm/min)	200	300	390	390	390	390	390	340	340
알루미늄 합금 A7075		회전 수 (min ⁻¹)	20,000	20,000	17,800	13,100	10,500	8,900	6,700	5,400	4,500
		이송 (mm/min)	500	850	1,270	1,270	1,270	1,270	1,270	1,270	1,270
알루미늄 합금 주물 AC, ADC		회전 수 (min ⁻¹)	20,000	20,000	13,100	10,000	8,000	6,700	5,000	4,000	3,400
		이송 (mm/min)	450	750	820	820	820	820	820	820	820

슬리드 톨

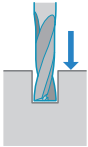
* 본 공구는 드릴가공 전용이기 때문에 횡이송 가공에는 사용할 수 없습니다.

- 절삭유 사용 권장합니다.
- 기계 강성, 공구 돌출량에 따라 절삭조건을 조정하십시오.
- 머신, 척은 가능한 한 강성이 높은 것을 사용하십시오.
- 2D 이상의 가공 깊이인 경우에는 스텝가공을 권장합니다.
- 스테인리스강(SUS304-SUS316)의 절삭은 권장하지 않습니다.
- 경사면에서 가공하는 경우는 워크의 경사각에 따라 가공조건을 조정이 필요합니다. (우측 그림)
워크 경사각 (θ) ≤ 30° ⇒ 이송을 50% 이하로 낮추십시오.
워크 경사각 (θ) > 30° ⇒ 회전수를 70% 이하, 이송을 30% 이하로 낮추십시오.



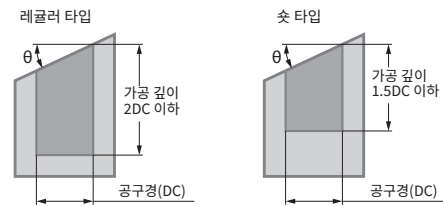
- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

KDZ-HP

피삭재	구분	외경 DC (mm)	공구 직경																
			ø1	ø1.5	ø2	ø2.5	ø3	ø3.5	ø4	ø4.5	ø5	ø6	ø8	ø10	ø12	ø14	ø16	ø18	ø20
일반 구조강 · 탄소강 SS400, S45C		회전 수 (min ⁻¹)	20,700	13,800	11,150	9,200	9,100	7,800	6,800	6,100	5,500	4,600	3,500	2,800	2,300	1,800	1,600	1,400	1,300
		이송 (mm/min)	350	350	430	430	520	520	520	520	520	520	520	520	520	520	480	480	480
합금강 SCM, SNCM		회전 수 (min ⁻¹)	17,500	11,700	9,600	7,650	7,200	6,200	5,400	4,800	4,400	3,600	2,700	2,200	1,800	1,500	1,350	1,200	1,100
		이송 (mm/min)	290	290	380	380	450	450	450	450	450	450	450	450	450	450	420	420	420
프라하드강 (30~45HRC)		회전 수 (min ⁻¹)	9,600	6,400	5,570	4,460	3,900	3,400	2,900	2,600	2,300	1,900	1,500	1,200	1,000	850	750	650	600
		이송 (mm/min)	120	120	170	170	210	210	210	210	210	210	210	210	210	210	200	200	200
덕타일 주철 FCD400		회전 수 (min ⁻¹)	15,900	10,600	10,360	8,290	7,200	6,200	5,400	4,800	4,400	3,600	2,700	2,200	1,800	1,550	1,350	1,200	1,100
		이송 (mm/min)	220	250	390	390	390	390	390	390	390	390	390	390	390	390	360	360	360
알루미늄 합금 A7075		회전 수 (min ⁻¹)	39,800	26,600	23,000	18,500	17,800	15,200	13,100	11,800	10,500	8,900	6,700	5,400	4,500	3,800	3,400	3,000	2,700
		이송 (mm/min)	900	1,000	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,270	1,270
알루미늄 합금 주물 AC, ADC		회전 수 (min ⁻¹)	29,000	19,200	17,500	14,000	13,100	11,500	10,000	8,800	8,000	6,700	5,000	4,000	3,400	2,900	2,500	2,200	2,000
		이송 (mm/min)	550	550	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820

* 본 공구는 드릴가공 전용이기 때문에 횡이송 가공에는 사용할 수 없습니다.

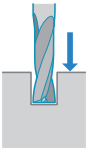
- 절삭유의 사용을 권장합니다.
- 기계 강성, 공구 톨출량에 따라 절삭조건을 조정하십시오.
- 머신, 척은 가능한 한 강성이 높은 것을 사용하십시오.
- 2D 이상의 가공 깊이인 경우에는 스텝가공을 권장합니다.
- 스테인리스강 (SUS304-SUS316) 의 절삭은 권장하지 않습니다.
- 경사면에서 가공하는 경우는 워크의 경사각에 따라 가공조건이 조정 필요 합니다. (우측 그림)
 워크 경사각 (θ) ≤ 30° ⇒ 이송을 50% 이하로 낮추십시오.
 워크 경사각 (θ) > 30° ⇒ 회전수를 70% 이하, 이송을 30% 이하로 낮추십시오.



슬리드 톨

기준 절삭조건

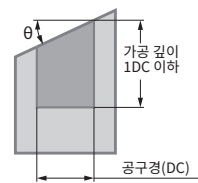
KDZ-HP 슷(롱 샹크 타입)

피삭재	구분	외경 DC (mm)	ø3	ø3.5	ø4	ø4.5	ø5	ø6	ø8	ø10	ø12
일반 구조강 · 탄소강 SS400, S45C	 드릴 가공	회전 수 (min ⁻¹)	10,600	9,100	8,000	7,100	6,400	5,300	4,000	3,200	2,700
		이송 (mm/min)	830	830	830	830	830	830	830	830	830
합금강 SCM, SNCM		회전 수 (min ⁻¹)	9,500	8,200	7,200	6,400	5,700	4,800	3,600	2,900	2,400
		이송 (mm/min)	630	630	630	630	630	630	630	630	630
프리하든강 (30~45HRC)		회전 수 (min ⁻¹)	7,400	6,400	5,600	5,000	4,500	3,700	2,800	2,200	1,900
		이송 (mm/min)	365	365	365	365	365	365	365	365	365
덕타일 주철 FCD400		회전 수 (min ⁻¹)	9,600	8,200	7,200	6,400	5,700	4,800	3,600	2,900	2,400
		이송 (mm/min)	475	475	475	475	475	475	475	475	475
알루미늄 합금 A7075		회전 수 (min ⁻¹)	12,700	10,900	9,600	8,500	7,600	6,400	4,800	3,800	3,200
		이송 (mm/min)	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050
알루미늄 합금 주물 AC, ADC		회전 수 (min ⁻¹)	9,500	8,200	7,200	6,400	5,700	4,800	3,600	2,900	2,400
		이송 (mm/min)	675	675	675	675	675	675	675	675	675

슬리드
드릴

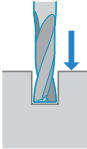
* 본 공구는 드릴가공 전용이기 때문에 횡이송 가공에는 사용할 수 없습니다.

- 절삭유의 사용을 권장합니다.
- 기계 강성, 공구 돌출량에 따라 절삭조건을 조정하십시오.
- 머신, 척은 가능한 강성이 높은 것을 사용하십시오.
- 스테인리스강(SUS304·SUS316)의 절삭은 권장하지 않습니다.
- 경사면에서 가공하는 경우는 워크의 경사각에 따라 가공조건이 조정 필요합니다. (우측 그림)
워크 경사각 (θ) ≤ 30° ⇒ 이송을 50% 이하로 낮추십시오.
워크 경사각 (θ) > 30° ⇒ 회전수를 70% 이하, 이송을 30% 이하로 낮추십시오.



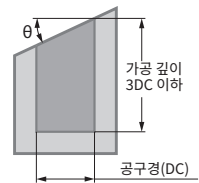
엔드밀
미세가공
드릴
SGS
공업용
나이프

KDZ-HP (Type C)

피삭재	구분	외경DC (mm)	ø3	ø4	ø5	ø6	ø8	ø10	ø12
일반 구조강 · 탄소강 SS400, S45C	 드릴 가공	회전 수 (min ⁻¹)	10,600	7,950	6,350	5,300	3,980	3,180	2,650
		이송 (mm/min)	750	750	750	750	750	750	750
합금강 SCM, SNCM		회전 수 (min ⁻¹)	9,550	7,160	5,730	4,770	3,580	2,860	2,390
		이송 (mm/min)	700	680	630	600	600	600	600
프리하든강 (30~45HRC)		회전 수 (min ⁻¹)	5,300	3,980	3,180	2,650	1,990	1,590	1,330
		이송 (mm/min)	300	300	300	300	300	280	280
스테인리스강 SUS304		회전 수 (min ⁻¹)	7,430	5,570	5,100	4,240	3,180	2,550	2,120
		이송 (mm/min)	400	400	400	500	500	500	500
덕타일 주철 FCD400		회전 수 (min ⁻¹)	9,550	7,160	5,730	4,770	3,580	2,860	2,390
		이송 (mm/min)	580	580	500	500	500	450	450
알루미늄 합금 A7075	회전 수 (min ⁻¹)	18,000	13,500	10,800	9,000	6,800	5,400	4,500	
	이송 (mm/min)	1,270	1,270	1,270	1,270	1,270	1,270	1,270	
알루미늄 합금 주물 AC, ADC	회전 수 (min ⁻¹)	13,100	10,000	8,000	6,700	5,000	4,000	3,400	
	이송 (mm/min)	900	900	850	850	850	850	850	

* 본 공구는 드릴가공 전용이기 때문에 횡이송 가공에는 사용할 수 없습니다.

- 절삭유의 사용을 권장합니다.
- 기계 강성, 공구 돌출량에 따라 절삭조건을 조정하십시오.
- 머신, 척은 가능한한 강성이 높은 것을 사용하십시오.
- 2D 이상의 가공 깊이인 경우에는 스텝가공을 권장합니다.
- 경사면에서 가공하는 경우는 워크의 경사각에 따라 가공조건을 조정이 필요합니다. (우측 그림)
 워크 경사각 (θ) ≤ 30° ⇒ 이송을 50% 이하로 낮추십시오.
 워크 경사각 (θ) > 30° ⇒ 회전수를 70% 이하, 이송을 30% 이하로 낮추십시오.
- 칩 배출이 나쁜 경우에는 소정의 가공 깊이의 경우에도 스텝 가공을 하거나 조건을 재검토해 주십시오.
- 절삭이 불안정한 경우에는 하절가공으로 하십시오.
- 스테인리스강의 절삭은 하절, 스텝 가공을 권장합니다.

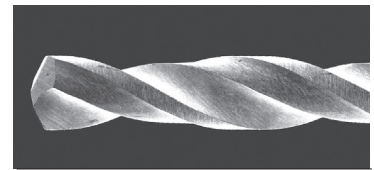
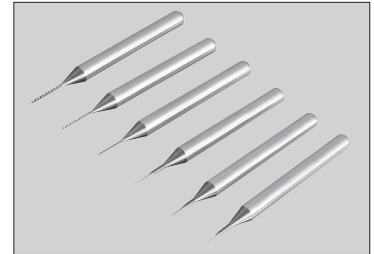


슬리드
드릴

파인 마이크로 드릴

특징

1. 교세라의 미세 연마 기술에 의해 편차가 적은 고품위 인선 형상을 실현.
2. 강인한 초미립자 초경 합금에 의해 안정된 인선 강도와 내결손성 향상을 실현.
3. 얇은 · 고성능 특수 코팅막 (FS 코팅) 의 효과에 의해 더욱 고능률로 긴수명의 홀 가공이 가능.



ø0.1(FDM-010M A)

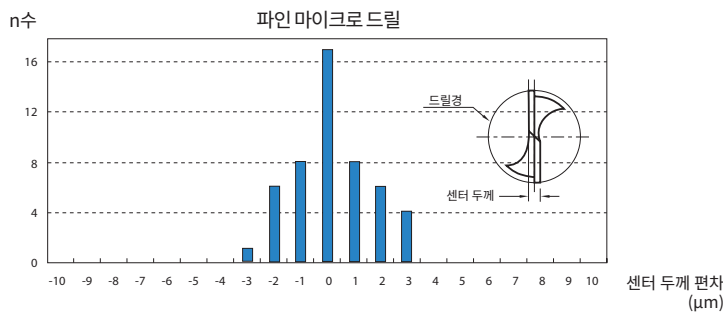
※ FS 코팅의 FS 란, Fine Surface(파인 서페이스) 의 약어로 막 표면의 평활성이 우수하고 낮은 마찰계수를 가지며 우수한 내마모성과 함께 절삭성의 향상 · 칩배출의 향상에도 효과적인 코팅입니다.

가공 품질

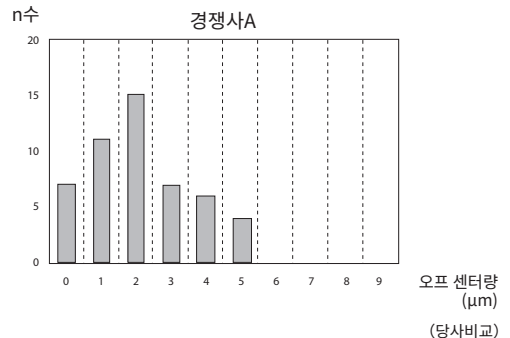
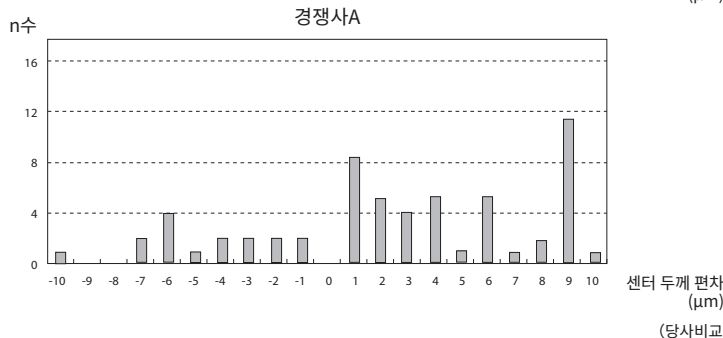
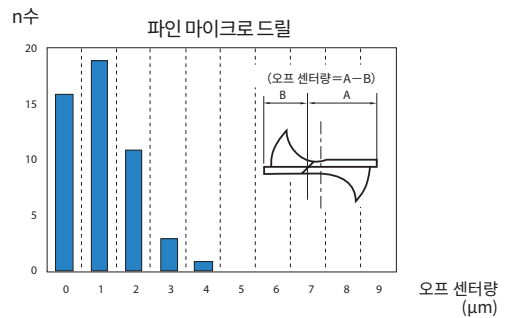
	선단부 상태		워크의 버 상태		가공조건
	파인 마이크로 드릴	경쟁사 A (코팅품)	파인 마이크로 드릴	경쟁사 A (코팅품)	
가공후의 상태					피삭재 : SUS304 (t=0.5mm) 드릴경 : ø0.3mm FDM-030 (FSA) 절삭속도 : Vc=10m/min (n=10,600min ⁻¹) 이송 : f=0.001mm/rev 절삭유 : Wet (수용성) 홀 깊이 : 0.5mm (관통홀) 스텝 깊이 : 0.025mm/회 가공 홀 수 : 200 홀 (당사비교)

인선 품질의 비교

인선 센터 두께의 편차 비교
(드릴경 ø0.3)



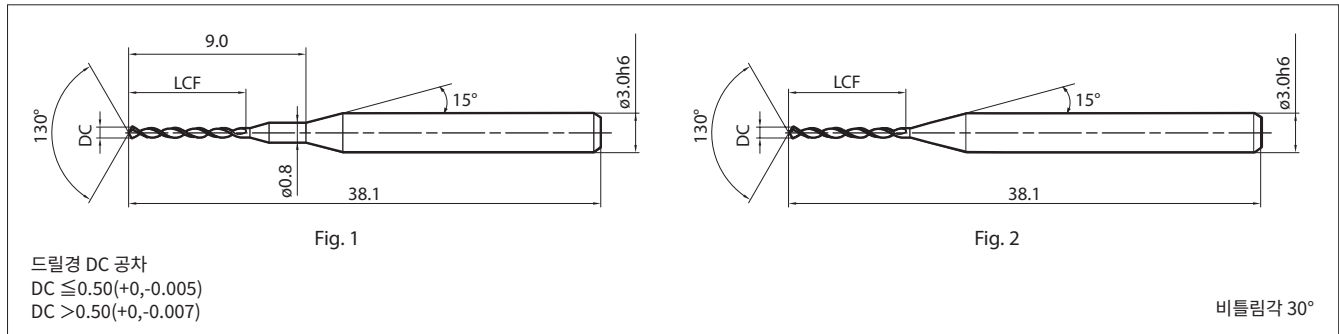
인선 센터의 편차 비교
(드릴경 ø0.3)



슬리드 톨

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공압용 나이프

FDM-M (상크 ø3, 코팅품)



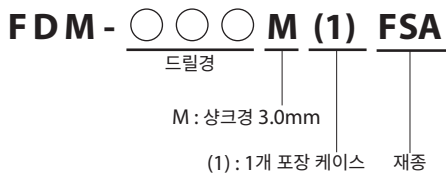
드릴경 DC 공차
 DC ≤ 0.50(+0,-0.005)
 DC > 0.50(+0,-0.007)

비틀림각 30°

규격	치수(mm)		형상	재고표시 코팅품 FSA
	드릴경	날장		
	DC	LCF		
FDM-010M(1)	0.10	1.3	Fig. 1	●
FDM-011M(1)	0.11			
FDM-012M(1)	0.12	1.5		
FDM-013M(1)	0.13			
FDM-014M(1)	0.14	1.7		
FDM-015M(1)	0.15			
FDM-016M(1)	0.16	1.9		
FDM-017M(1)	0.17			
FDM-018M(1)	0.18	2.2		
FDM-019M(1)	0.19			
FDM-020M(1)	0.20	2.4		
FDM-021M(1)	0.21			
FDM-022M(1)	0.22	2.7		
FDM-023M(1)	0.23			
FDM-024M(1)	0.24	2.9		
FDM-025M(1)	0.25			
FDM-026M(1)	0.26	3.1		
FDM-027M(1)	0.27			
FDM-028M(1)	0.28	3.3		
FDM-029M(1)	0.29			
FDM-030M(1)	0.30	5.0		
FDM-031M(1)	0.31			

규격	치수(mm)		형상	재고표시 코팅품 FSA	
	드릴경	날장			
	DC	LCF			
FDM-032M(1)	0.32	5.0	Fig. 1	●	
FDM-033M(1)	0.33				
FDM-034M(1)	0.34				
FDM-035M(1)	0.35				
FDM-036M(1)	0.36	6.0			
FDM-037M(1)	0.37				
FDM-038M(1)	0.38				
FDM-039M(1)	0.39				
FDM-040M(1)	0.40	7.0		Fig. 2	●
FDM-041M(1)	0.41				
FDM-042M(1)	0.42				
FDM-043M(1)	0.43				
FDM-044M(1)	0.44				
FDM-045M(1)	0.45				
FDM-046M(1)	0.46				
FDM-047M(1)	0.47				
FDM-048M(1)	0.48				
FDM-049M(1)	0.49				
FDM-050M(1)	0.50	8.0			
FDM-060M(1)	0.60				
FDM-070M(1)	0.70				
FDM-080M(1)	0.80				
FDM-080M(1)	0.80	10.0	●		

규격의 보는 방법

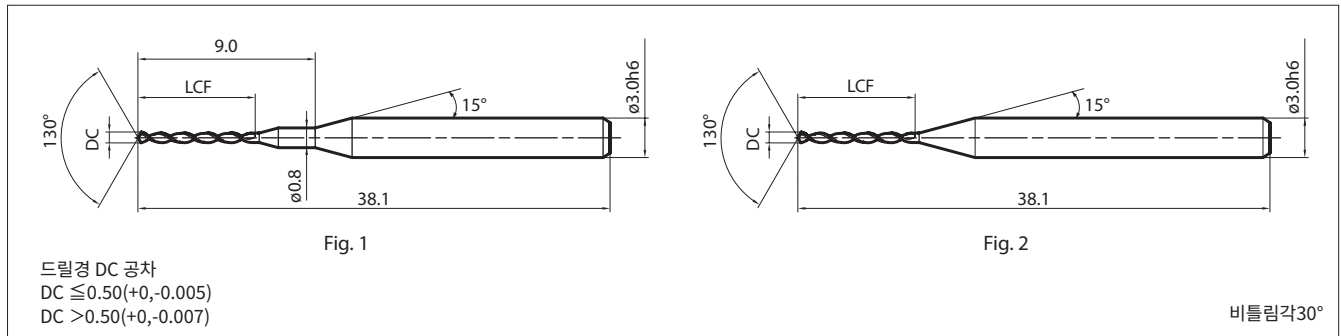


● : 표준 재고



슬리드
드릴

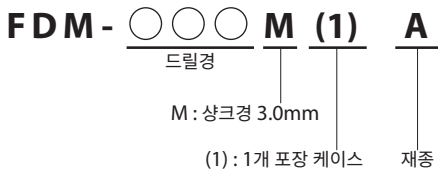
FDM-M (상크 ø3, 비코팅품)



규격	치수 (mm)		형상	재고표시
	드릴경	날장		비코팅품
	DC	LCF		A
FDM-010M(1)	0.10	1.3	Fig. 1	●
FDM-011M(1)	0.11			●
FDM-012M(1)	0.12	1.5		●
FDM-013M(1)	0.13			●
FDM-014M(1)	0.14	1.7		●
FDM-015M(1)	0.15			●
FDM-016M(1)	0.16	1.9		●
FDM-017M(1)	0.17			●
FDM-018M(1)	0.18	2.2		●
FDM-019M(1)	0.19			●
FDM-020M(1)	0.20	2.4	Fig. 1	●
FDM-021M(1)	0.21			●
FDM-022M(1)	0.22	2.7		●
FDM-023M(1)	0.23			●
FDM-024M(1)	0.24	2.9		●
FDM-025M(1)	0.25			●
FDM-026M(1)	0.26	3.1		●
FDM-027M(1)	0.27			●
FDM-028M(1)	0.28	3.3		●
FDM-029M(1)	0.29			●
FDM-030M(1)	0.30	5.0	Fig. 2	●
FDM-031M(1)	0.31			●

규격	치수 (mm)		형상	재고표시	
	드릴경	날장		비코팅품	
	DC	LCF		A	
FDM-032M(1)	0.32	5.0	Fig. 1	●	
FDM-033M(1)	0.33			●	
FDM-034M(1)	0.34			●	
FDM-035M(1)	0.35			●	
FDM-036M(1)	0.36	6.0		●	
FDM-037M(1)	0.37			●	
FDM-038M(1)	0.38			●	
FDM-039M(1)	0.39			●	
FDM-040M(1)	0.40	7.0		Fig. 2	●
FDM-041M(1)	0.41				●
FDM-042M(1)	0.42		●		
FDM-043M(1)	0.43		●		
FDM-044M(1)	0.44		●		
FDM-045M(1)	0.45		●		
FDM-046M(1)	0.46		●		
FDM-047M(1)	0.47		●		
FDM-048M(1)	0.48		●		
FDM-049M(1)	0.49		●		
FDM-050M(1)	0.50	8.0	Fig. 2	●	
FDM-060M(1)	0.60			●	
FDM-070M(1)	0.70			●	
FDM-080M(1)	0.80			●	
FDM-060M(1)	0.60	10.0		Fig. 2	●
FDM-080M(1)	0.80				●

규격의 보는 방법



● : 표준 재고

L

솔리드 드릴

엔드밀

미세가공

드릴

SGS

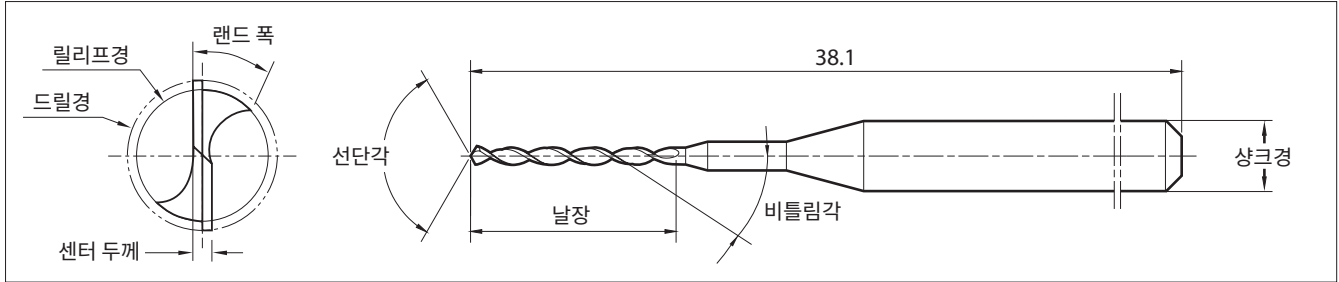
공업용 나이프

주문품 대응

표준품 이외의 사이즈에 대해서도 제작 가능

- ①드릴경 (ø0.1~0.8mm)
- ②드릴경 공차
- ③날장
- ④상크경 : ø3.0 / ø3.175
- ⑤코팅 : FSA(코팅) / A(비코팅) 등을 주문

납기는 표준 사이즈의 날장 변경품 수준이라면 짧은 납기로 제작 가능합니다.
선단각, 비틀림각, 기타의 변경에 대해서도 문의 해주세요.



추천 절삭조건

드릴경 (mm)	탄소강 · 합금강		스테인리스강		주 철		알루미늄 · 동합금	
	절삭속도 Vc (m/min)	이송 f (mm/rev)	절삭속도 Vc (m/min)	이송 f (mm/rev)	절삭속도 Vc (m/min)	이송 f (mm/rev)	절삭속도 Vc (m/min)	이송 f (mm/rev)
0.10~0.19	2~6	0.0005~0.002	2~6	0.0003~0.001	2~10	0.0005~0.003	4~15	0.0005~0.003
0.20~0.29	4~10	0.001~0.004	4~10	0.0005~0.002	5~15	0.001~0.005	10~20	0.001~0.005
0.30~0.50	6~15	0.002~0.010	6~10	0.001~0.005	10~20	0.004~0.015	15~30	0.004~0.015
0.60~0.80	8~24	0.004~0.015	8~15	0.002~0.007	10~30	0.005~0.020	20~45	0.005~0.020

주의사항

- 상기는 어디까지나 기준입니다. 피삭재 경도나 기계 조건에 따라 달라집니다.
- 절삭유를 사용하십시오. 불수용성 절삭유를 권장합니다.
- 드릴의 척킹은 정밀도가 높은 척을 사용하여 척으로부터의 돌출 길이를 가능한 짧게 하십시오.
- 가공 깊이가 드릴경의 3배를 초과하는 경우는 스텝 가공을 하십시오. 1회의 스텝 깊이는 드릴경의 10~50%로 하고 깊은 홀일수록 짧게 하십시오.

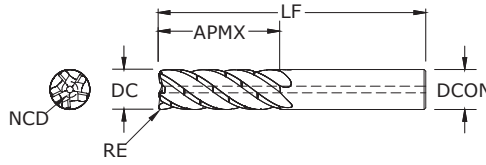
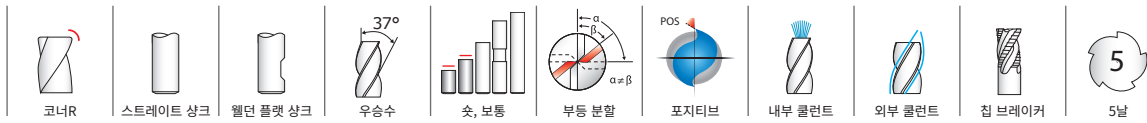
가공 사례

쾌삭성 프리하든강		SK3		SUS316L	
<ul style="list-style-type: none"> · 플레이트 · n=16,000min⁻¹ · H=1mm (관통홀) · Vf=22mm/min · Wet (유성) · FDM-010M (A) (ø0.10mm) 		<ul style="list-style-type: none"> · 게이지 · n=10,000min⁻¹ · H=3.5mm · Vf=100mm/min · Wet (유성) · FDM-036M (FSA) (ø0.36mm) 		<ul style="list-style-type: none"> · 플레이트 · n=8,000min⁻¹ · H=2.7mm · Vf=45mm/min · Wet (유성) · XFDM-040 (FSA) (ø0.40mm) 	
파인 마이크로 드릴	600홀/자루	파인 마이크로 드릴	5,200홀/자루	파인 마이크로 드릴	2,400홀/자루
경쟁사B (코팅품)	200 홀 / 자루 (결손)	경쟁사C (코팅품)	4,000홀/자루	경쟁사D (하이스 코팅)	300홀/자루
<ul style="list-style-type: none"> · 경쟁사B는 200홀/자루에서 결손 · 파인 마이크로 드릴은 비코팅품 (A) 에서도 불구하고 경쟁사B의 3배 가공이 가능. 		<ul style="list-style-type: none"> · 파인 마이크로 드릴은 경쟁사C와 비교해 공구 수명이 30% 향상됨. 		<ul style="list-style-type: none"> · 파인 마이크로 드릴은 경쟁사D와 비교해 공구 수명이 8배 향상. 	
(고객평가)		(고객평가)		(고객평가)	



슬리드 드릴

미리 사양 | 숫 & 보통
Z-Carb-HPR



공차 (mm)

- 6 외경
DC = +0,000/-0,030
DCON = h_e
RE = +0,000/-0,050
- >6-10 외경
DC = +0,000/-0,040
DCON = h_e
RE = +0,000/-0,050
- >10-25 외경
DC = +0,000/-0,050
DCON = h_e
RE = +0,000/-0,050

Z5MCR

미리 시리즈

- 비틀림각, 인덱스, 날 길이, 경사각의 최적의 밸런스
- 부등분할 구조로 떨림을 억제하고 독자 개발의 인선 형상으로 절삭력과 강도를 향상
- 떨림 발생을 억제하는 형상으로 깊은 가공과 고속가공이 가능합니다.
- 중앙 클런트홀이 절삭부에 효과적으로 냉각수를 공급하고 포켓 가공 또는 홈가공시에 칩배출성을 향상시킵니다.
- 엄격한 공차로 코너R 형상을 관리
- 다양한 피삭재의 황삭가공, 램핑가공, 고속가공 및 정삭가공에서 우수한 성능을 발휘합니다.
- 45 HRC (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

mm						EDP NO.									
외경 DC	날장 APMX	전장 LF	상크경 DCON	코너 RE	비절단 센터 외경 NCD	TI-NAMITE [®] -A (TA)	TI-NAMITE [®] -A (TA) WITH CHIPBREAKER	TI-NAMITE [®] -A (TA) W/INTERNAL COOLANT	TI-NAMITE [®] -A (TA) W/FLAT	TI-NAMITE [®] -M (TM)	TI-NAMITE [®] -M (TM) WITH CHIPBREAKER	TI-NAMITE [®] -M (TM) W/INTERNAL COOLANT	TI-NAMITE [®] -M (TM) W/FLAT	MEGACOAT NANO (MN)	MEGACOAT NANO (MN) W/FLAT
6,0	9,0	54,0	6,0	0,5	2,11	48000	-	-	-	47000	-	-	-	-	-
6,0	13,0	57,0	6,0	0,3	2,11	48001	-	-	-	47001	-	-	-	47098	-
6,0	13,0	57,0	6,0	0,5	2,11	47120	-	-	-	47002	-	-	-	47099	-
6,0	13,0	57,0	6,0	1,0	2,11	48002	-	-	-	47003	-	-	-	47100	-
6,0	13,0	57,0	6,0	1,5	2,11	48003	-	-	-	47004	-	-	-	47101	-
6,0	18,0	63,0	6,0	0,3	2,11	47480	47481	-	-	47482	47483	-	-	-	-
6,0	18,0	63,0	6,0	0,5	2,11	47484	47485	-	-	47486	47487	-	-	-	-
6,0	18,0	63,0	6,0	1,0	2,11	47488	47489	-	-	47490	47491	-	-	-	-
6,0	18,0	63,0	6,0	1,5	2,11	47492	47493	-	-	47494	47495	-	-	-	-
8,0	11,0	58,0	8,0	0,5	2,79	48004	-	-	-	47005	-	-	-	-	-
8,0	18,0	63,0	8,0	0,5	2,79	47121	-	-	-	47006	-	-	-	47102	-
8,0	18,0	63,0	8,0	1,0	2,79	47122	-	-	-	47007	-	-	-	47103	-
8,0	18,0	63,0	8,0	1,5	2,79	48005	-	-	-	47008	-	-	-	-	-
8,0	18,0	63,0	8,0	2,0	2,79	48006	-	-	-	47009	-	-	-	-	-
8,0	24,0	75,0	8,0	0,5	2,79	47496	47497	-	-	47498	47499	-	-	-	-
8,0	24,0	75,0	8,0	1,0	2,79	47500	47501	-	-	47502	47503	-	-	-	-
8,0	24,0	75,0	8,0	1,5	2,79	47504	47505	-	-	47506	47507	-	-	-	-
8,0	24,0	75,0	8,0	2,0	2,79	47508	47509	-	-	47510	47511	-	-	-	-
10,0	13,0	66,0	10,0	1,0	3,51	48007	-	-	-	47010	-	-	-	47104	-
10,0	22,0	72,0	10,0	0,5	3,51	47123	-	-	-	47011	-	-	-	47105	-
10,0	22,0	72,0	10,0	1,0	3,51	47124	-	-	-	47012	-	-	-	47106	-
10,0	22,0	72,0	10,0	1,5	3,51	48008	-	-	-	47013	-	-	-	-	-
10,0	22,0	72,0	10,0	2,0	3,51	48009	-	-	-	47014	-	-	-	-	-
10,0	22,0	72,0	10,0	2,5	3,51	48010	-	-	-	47015	-	-	-	-	-
10,0	30,0	75,0	10,0	0,5	3,51	47512	47513	-	-	47514	47515	-	-	-	-
10,0	30,0	75,0	10,0	1,0	3,51	47516	47517	-	-	47518	47519	-	-	-	-
10,0	30,0	75,0	10,0	1,5	3,51	47520	47521	-	-	47522	47523	-	-	-	-
10,0	30,0	75,0	10,0	2,0	3,51	47524	47525	-	-	47526	47527	-	-	-	-
10,0	30,0	75,0	10,0	2,5	3,51	47528	47529	-	-	47530	47531	-	-	-	-
12,0	15,0	73,0	12,0	1,0	4,19	48011	-	-	48029	47016	-	-	47024	47107	-
12,0	26,0	83,0	12,0	0,5	4,19	47125	-	47160	47128	47017	-	47161	47025	47108	-
12,0	26,0	83,0	12,0	0,76	4,19	47126	-	47162	47129	47018	-	47163	47026	-	-
12,0	26,0	83,0	12,0	1,0	4,19	47127	-	47164	47130	47019	-	47165	47027	47109	-
12,0	26,0	83,0	12,0	1,5	4,19	48012	-	47166	48030	47020	-	47167	47028	-	-
12,0	26,0	83,0	12,0	2,0	4,19	48013	-	47168	48031	47021	-	47169	47029	-	-
12,0	26,0	83,0	12,0	2,5	4,19	48014	-	47170	48032	47022	-	47171	47030	-	-
12,0	26,0	83,0	12,0	3,0	4,19	48015	-	47172	48033	47023	-	47173	47031	-	-
12,0	36,0	83,0	12,0	0,5	4,19	47532	47533	-	-	47534	47535	-	-	-	-
12,0	36,0	83,0	12,0	0,76	4,19	47536	47537	-	-	47538	47539	-	-	-	-
12,0	36,0	83,0	12,0	1,0	4,19	47540	47541	-	-	47542	47543	-	-	-	-
12,0	36,0	83,0	12,0	1,5	4,19	47544	47545	-	-	47546	47547	-	-	-	-
12,0	36,0	83,0	12,0	2,0	4,19	47548	47549	-	-	47550	47551	-	-	-	-
12,0	36,0	83,0	12,0	2,5	4,19	47552	47553	-	-	47554	47555	-	-	-	-
12,0	36,0	83,0	12,0	3,0	4,19	47556	47557	-	-	47558	47559	-	-	-	-

신제품



슬리드 톨

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

- STEELS
- STAINLESS STEELS
- CAST IRON
- HIGH TEMP ALLOYS



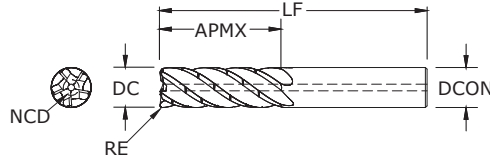
공차 (mm)

6 외경
DC = +0,000/-0,030
DCON= h₆
RE = +0,000/-0,050

>6-10 외경
DC = +0,000/-0,040
DCON= h₆
RE = +0,000/-0,050

>10-25 외경
DC = +0,000/-0,050
DCON= h₆
RE = +0,000/-0,050

신제품



숫 & 보통 | 미리 사양
Z-Carb-HPR

Z5MCR

미리 시리즈

mm						EDP NO.									
외경 DC	날장 APMX	전장 LF	샤크경 DCON	코너 RE	비절단 센터 외경 NCD	Ti-NAMITE-A (TA)	Ti-NAMITE-A (TA) WITH CHIPBREAKER	Ti-NAMITE-A (TA) W/INTERNAL COOLANT	Ti-NAMITE-A (TA) W/FLAT	Ti-NAMITE-M (TM)	Ti-NAMITE-M (TM) WITH CHIPBREAKER	Ti-NAMITE-M (TM) W/INTERNAL COOLANT	Ti-NAMITE-M (TM) W/FLAT	MEGACOAT NANO (MN)	MEGACOAT NANO (MN) W/FLAT
16,0	19,0	82,0	16,0	1,0	5,59	48016	-	48056	48034	47032	-	47046	47039	47110	-
16,0	19,0	82,0	16,0	1,5	5,59	48070	-	-	-	48071	-	-	-	-	-
16,0	35,0	92,0	16,0	1,0	5,59	47131	-	47134	48035	47033	-	47047	47040	47111	-
16,0	35,0	92,0	16,0	1,5	5,59	48017	-	48057	48036	47034	-	47048	47041	-	-
16,0	35,0	92,0	16,0	2,0	5,59	47132	-	47135	48037	47035	-	47049	47042	-	-
16,0	35,0	92,0	16,0	2,5	5,59	48018	-	48058	48038	47036	-	47050	47043	-	-
16,0	35,0	92,0	16,0	3,0	5,59	47133	-	47136	48039	47037	-	47051	47044	-	-
16,0	35,0	92,0	16,0	4,0	5,59	48019	-	48059	48040	47038	-	47052	47045	-	-
16,0	48,0	100,0	16,0	1,0	5,59	47560	47561	-	-	47562	47563	-	-	-	-
16,0	48,0	100,0	16,0	1,5	5,59	47564	47565	-	-	47566	47567	-	-	-	-
16,0	48,0	100,0	16,0	2,0	5,59	47568	47569	-	-	47570	47571	-	-	-	-
16,0	48,0	100,0	16,0	2,5	5,59	47572	47573	-	-	47574	47575	-	-	-	-
16,0	48,0	100,0	16,0	3,0	5,59	47576	47577	-	-	47578	47579	-	-	-	-
16,0	48,0	100,0	16,0	4,0	5,59	47580	47581	-	-	47582	47583	-	-	-	-
20,0	23,0	92,0	20,0	1,0	7,01	48020	-	48060	48041	47053	-	47069	47061	-	-
20,0	43,0	104,0	20,0	1,0	7,01	47137	-	47140	48042	47054	-	47070	47062	-	-
20,0	43,0	104,0	20,0	1,5	7,01	48021	-	48061	48043	47055	-	47071	47063	-	-
20,0	43,0	104,0	20,0	2,0	7,01	47138	-	47141	48044	47056	-	47072	47064	-	-
20,0	43,0	104,0	20,0	2,5	7,01	48022	-	48062	48045	47057	-	47073	47065	-	-
20,0	43,0	104,0	20,0	3,0	7,01	47139	-	47142	48046	47058	-	47074	47066	-	-
20,0	43,0	104,0	20,0	4,0	7,01	48023	-	48063	48047	47059	-	47075	47067	-	-
20,0	43,0	104,0	20,0	5,0	7,01	48024	-	48064	48048	47060	-	47076	47068	-	-
20,0	60,0	140,0	20,0	1,0	7,01	47584	47585	-	-	47586	47587	-	-	-	-
20,0	60,0	140,0	20,0	1,5	7,01	47588	47589	-	-	47590	47591	-	-	-	-
20,0	60,0	140,0	20,0	2,0	7,01	47592	47593	-	-	47594	47595	-	-	-	-
20,0	60,0	140,0	20,0	2,5	7,01	47596	47597	-	-	47598	47599	-	-	-	-
20,0	60,0	140,0	20,0	3,0	7,01	47600	47601	-	-	47602	47603	-	-	-	-
20,0	60,0	140,0	20,0	4,0	7,01	47604	47605	-	-	47606	47607	-	-	-	-
20,0	60,0	140,0	20,0	5,0	7,01	47608	47609	-	-	47610	47611	-	-	-	-
25,0	28,0	100,0	25,0	1,0	8,76	48025	-	48065	48049	47077	-	47091	47084	-	-
25,0	53,0	121,0	25,0	1,0	8,76	47143	-	47146	48050	47078	-	47092	47085	-	-
25,0	53,0	121,0	25,0	2,0	8,76	47144	-	47147	48051	47079	-	47093	47086	-	-
25,0	53,0	121,0	25,0	2,5	8,76	48026	-	48066	48052	47080	-	47094	47087	-	-
25,0	53,0	121,0	25,0	3,0	8,76	47145	-	47148	48053	47081	-	47095	47088	-	-
25,0	53,0	121,0	25,0	4,0	8,76	48027	-	48067	48054	47082	-	47096	47089	-	-
25,0	53,0	121,0	25,0	5,0	8,76	48028	-	48068	48055	47083	-	47097	47090	-	-
25,0	75,0	170,0	25,0	1,0	8,76	47612	47613	-	-	47614	47615	-	-	-	-
25,0	75,0	170,0	25,0	2,0	8,76	47616	47617	-	-	47618	47619	-	-	-	-
25,0	75,0	170,0	25,0	2,5	8,76	47620	47621	-	-	47622	47623	-	-	-	-
25,0	75,0	170,0	25,0	3,0	8,76	47624	47625	-	-	47626	47627	-	-	-	-
25,0	75,0	170,0	25,0	4,0	8,76	47628	47629	-	-	47630	47631	-	-	-	-
25,0	75,0	170,0	25,0	5,0	8,76	47632	47633	-	-	47634	47635	-	-	-	-

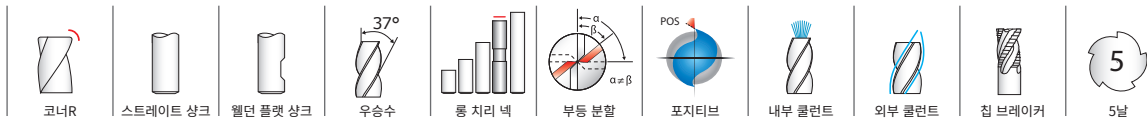
- 비틀림각, 인덱스, 날 길이, 경사각의 최적의 밸런스
- 부등분할 구조로 떨림을 억제하고 독자 개발의 인선 형상으로 절삭력과 강도를 향상
- 떨림 발생을 억제하는 형상으로 깊은 가공과 고속가공이 가능합니다.
- 중앙 콜러트홀이 절삭부에 효과적으로 냉각수를 공급하고 포켓 가공 또는 홈가공시에 칩배출성을 향상시킵니다.
- 엄격한 공차로 코너R 형상을 관리
- 다양한 피삭재의 황삭가공, 램핑가공, 고속가공 및 정삭가공에서 우수한 성능을 발휘합니다.
- 45 HRC (≤ 420 Bhn) 이하의 피삭재에 권장합니다.



슬리드 톨

- STEELS
- STAINLESS STEELS
- CAST IRON
- HIGH TEMP ALLOYS

미리 사양 | 롱 리치 넥
Z-Carb-HPR

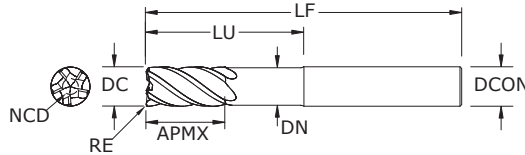


공차 (mm)

6 외경
DC = +0,000/-0,030
DCON = h_e
RE = +0,000/-0,050

>6-10 외경
DC = +0,000/-0,040
DCON = h_e
RE = +0,000/-0,050

>10-25 외경
DC = +0,000/-0,050
DCON = h_e
RE = +0,000/-0,050



Z5MLC

미리 시리즈

- 비틀림각, 인덱스, 날 길이, 경사각의 최적의 밸런스
- 부등분할 구조로 떨림을 억제하고 독자 개발의 인선 형상으로 절삭력과 강도를 향상
- 떨림 발생을 억제하는 형상으로 깊은 가공과 고속가공이 가능합니다.
- 중앙 콜런트홀이 절삭부에 효과적으로 냉각수를 공급하고 포켓 가공 또는 홈가공시에 칩배출성을 향상시킵니다.
- 엄격한 공차로 코너R 형상을 관리
- 다양한 피삭재의 황삭가공, 램핑가공, 고속가공 및 정삭가공에서 우수한 성능을 발휘합니다.
- 45 HRC (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

mm								EDP NO.			
외경 DC	날장 APMX	전장 LF	상크경 DCON	코너R RE	비절단 센터 외경 NCD	목 아래 길이 LU	목 외경 DN	Ti-NAMITE-A (TA)	Ti-NAMITE-A (TA) WITH CHIPBREAKER	Ti-NAMITE-M (TM)	Ti-NAMITE-M (TM) WITH CHIPBREAKER
6,0	13,0	75,0	6,0	0,3	2,11	24,0	5,70	47636	47637	47638	47639
6,0	13,0	75,0	6,0	0,5	2,11	24,0	5,70	47640	47641	47642	47643
6,0	13,0	75,0	6,0	1,0	2,11	24,0	5,70	47644	47645	47646	47647
6,0	13,0	75,0	6,0	1,5	2,11	24,0	5,70	47648	47649	47650	47651
8,0	18,0	75,0	8,0	0,5	2,79	32,0	7,60	47652	47653	47654	47655
8,0	18,0	75,0	8,0	1,0	2,79	32,0	7,60	47656	47657	47658	47659
8,0	18,0	75,0	8,0	1,5	2,79	32,0	7,60	47660	47661	47662	47663
8,0	18,0	75,0	8,0	2,0	2,79	32,0	7,60	47664	47665	47666	47667
10,0	22,0	100,0	10,0	0,5	3,51	40,0	9,50	47668	47669	47670	47671
10,0	22,0	100,0	10,0	1,0	3,51	40,0	9,50	47672	47673	47674	47675
10,0	22,0	100,0	10,0	1,5	3,51	40,0	9,50	47676	47677	47678	47679
10,0	22,0	100,0	10,0	2,0	3,51	40,0	9,50	47680	47681	47682	47683
10,0	22,0	100,0	10,0	2,5	3,51	40,0	9,50	47684	47685	47686	47687
12,0	26,0	100,0	12,0	0,5	4,19	48,0	11,40	47688	47689	47690	47691
12,0	26,0	100,0	12,0	0,76	4,19	48,0	11,40	47692	47693	47694	47695
12,0	26,0	100,0	12,0	1,0	4,19	48,0	11,40	47696	47697	47698	47699
12,0	26,0	100,0	12,0	1,5	4,19	48,0	11,40	47700	47701	47702	47703
12,0	26,0	100,0	12,0	2,0	4,19	48,0	11,40	47704	47705	47706	47707
12,0	26,0	100,0	12,0	2,5	4,19	48,0	11,40	47708	47709	47710	47711
12,0	26,0	100,0	12,0	3,0	4,19	48,0	11,40	47712	47713	47714	47715

L



슬리드 톨

엔드밀

미세가공

드릴

SGS

공업용 나이프

- STEELS
- STAINLESS STEELS
- CAST IRON
- HIGH TEMP ALLOYS



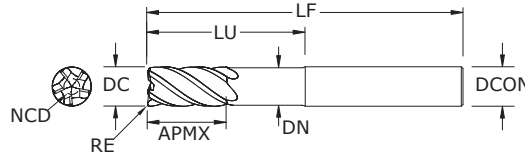
롱 리치 넥 | 미리 사양
Z-Carb-HPR

공차 (mm)

6 외경
DC = +0,000/-0,030
DCON = h₆
RE = +0,000/-0,050

>6-10 외경
DC = +0,000/-0,040
DCON = h₆
RE = +0,000/-0,050

>10-25 외경
DC = +0,000/-0,050
DCON = h₆
RE = +0,000/-0,050



Z5MLC
미리 시리즈

mm								EDP NO.			
외경 DC	날장 APMX	전장 LF	상크경 DCON	코너R RE	비절단 센터 외경 NCD	목 아래 길이 LU	목 외경 DN	Ti-NAMITE-A (TA)	Ti-NAMITE-A (TA) WITH CHIPBREAKER	Ti-NAMITE-M (TM)	Ti-NAMITE-M (TM) WITH CHIPBREAKER
16,0	35,0	125,0	16,0	1,0	5,59	64,0	15,20	47716	47717	47718	47719
16,0	35,0	125,0	16,0	1,5	5,59	64,0	15,20	47720	47721	47722	47723
16,0	35,0	125,0	16,0	2,0	5,59	64,0	15,20	47724	47725	47726	47727
16,0	35,0	125,0	16,0	2,5	5,59	64,0	15,20	47728	47729	47730	47731
16,0	35,0	125,0	16,0	3,0	5,59	64,0	15,20	47732	47733	47734	47735
16,0	35,0	125,0	16,0	4,0	5,59	64,0	15,20	47736	47737	47738	47739
20,0	43,0	150,0	20,0	1,0	7,01	80,0	19,00	47740	47741	47742	47743
20,0	43,0	150,0	20,0	1,5	7,01	80,0	19,00	47744	47745	47746	47747
20,0	43,0	150,0	20,0	2,0	7,01	80,0	19,00	47748	47749	47750	47751
20,0	43,0	150,0	20,0	2,5	7,01	80,0	19,00	47752	47753	47754	47755
20,0	43,0	150,0	20,0	3,0	7,01	80,0	19,00	47756	47757	47758	47759
20,0	43,0	150,0	20,0	4,0	7,01	80,0	19,00	47760	47761	47762	47763
20,0	43,0	150,0	20,0	5,0	7,01	80,0	19,00	47764	47765	47766	47767
25,0	53,0	170,0	25,0	1,0	8,76	100,0	23,75	47768	47769	47770	47771
25,0	53,0	170,0	25,0	2,0	8,76	100,0	23,75	47772	47773	47774	47775
25,0	53,0	170,0	25,0	2,5	8,76	100,0	23,75	47776	47777	47778	47779
25,0	53,0	170,0	25,0	3,0	8,76	100,0	23,75	47780	47781	47782	47783
25,0	53,0	170,0	25,0	4,0	8,76	100,0	23,75	47784	47785	47786	47787
25,0	53,0	170,0	25,0	5,0	8,76	100,0	23,75	47788	47789	47790	47791

- 비틀림각, 인덱스, 날 깊이, 경사각의 최적의 밸런스
- 부등분할 구조로 떨림을 억제하고 독자 개발의 인선 형상으로 절삭력과 강도를 향상
- 떨림 발생을 억제하는 형상으로 깊은 가공과 고속가공이 가능합니다.
- 중앙 콜런트홀이 절삭부에 효과적으로 냉각수를 공급하고 포켓 가공 또는 홈가공시에 칩배출성을 향상시킵니다.
- 엄격한 공차로 코너R 형상을 관리
- 다양한 피삭재의 황삭가공, 램핑가공, 고속가공 및 정삭가공에서 우수한 성능을 발휘합니다.
- 45 HRC (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

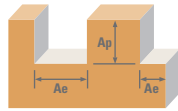


슬리드 톨

- STEELS
- STAINLESS STEELS
- CAST IRON
- HIGH TEMP ALLOYS



미리 사양
Z-Carb-HPR



시리즈 ZSM, ZSMCR, ZSML, ZSMLC 미리 사양	경도	Ae x DC	Ap x DC	Vc (m/min)	DC · mm									
					6	8	10	12	16	20	25			
탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRC	고속가공 ¹ 	≤ 0.1	≤ APMX	219 (176-263)	RPM	11633	8725	6980	5816	4362	3490	2792	
						Fz	0.050	0.083	0.104	0.125	0.146	0.165	0.183	
						Feed (mm/min)	2931	3630	3629	3629	3183	2885	2548	
	솔더링 	≤ 0.4	≤ APMX	169 (135-203)	RPM	8967	6725	5380	4484	3363	2690	2152		
					Fz	0.029	0.049	0.061	0.074	0.087	0.099	0.108		
					Feed (mm/min)	1291	1650	1650	1668	1463	1327	1157		
	홈가공 ² 	1	≤ 1	134 (107-161)	RPM	7109	5332	4265	3555	2666	2133	1706		
					Fz	0.029	0.049	0.061	0.074	0.087	0.099	0.108		
					Feed (mm/min)	1024	1308	1308	1322	1160	1052	917		
	합금강 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRC	고속가공 ¹ 	≤ 0.1	≤ APMX	125 (100-150)	RPM	6624	4968	3975	3312	2484	1987	1590
							Fz	0.036	0.062	0.077	0.091	0.108	0.123	0.133
							Feed (mm/min)	1192	1537	1537	1510	1335	1219	1053
솔더링 		≤ 0.5	≤ APMX	96 (77-115)	RPM	5089	3817	3054	2545	1909	1527	1221		
					Fz	0.022	0.036	0.045	0.055	0.067	0.075	0.080		
					Feed (mm/min)	550	692	692	702	635	570	489		
홈가공 ² 		1	≤ 1	76 (61-91)	RPM	4039	3029	2424	2020	1515	1212	969		
					Fz	0.022	0.036	0.045	0.055	0.067	0.075	0.080		
					Feed (mm/min)	436	549	549	557	504	452	388		
공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2		≤ 375 Bhn or ≤ 40 HRC	고속가공 ¹ 	≤ 0.1	≤ APMX	73 (59-88)	RPM	3878	2908	2327	1939	1454	1163	931
							Fz	0.029	0.049	0.061	0.072	0.084	0.096	0.105
							Feed (mm/min)	558	714	713	698	614	558	489
	솔더링 	≤ 0.4	≤ APMX	56 (45-68)	RPM	2989	2242	1793	1495	1121	897	717		
					Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.065		
					Feed (mm/min)	251	335	335	323	287	263	233		
	홈가공 ² 	1	≤ 1	44 (35-53)	RPM	2343	1757	1406	1171	879	703	562		
					Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.065		
					Feed (mm/min)	197	262	262	253	225	206	183		
	스테인리스강 (패삭강) 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRC	고속가공 ¹ 	≤ 0.1	≤ APMX	194 (155-232)	RPM	10260	7695	6156	5130	3847	3078	2462
							Fz	0.036	0.062	0.077	0.091	0.108	0.123	0.133
							Feed (mm/min)	1847	2381	2380	2339	2068	1888	1631
솔더링 		≤ 0.4	≤ APMX	149 (119-179)	RPM	7917	5938	4750	3958	2969	2375	1900		
					Fz	0.022	0.036	0.045	0.055	0.067	0.075	0.080		
					Feed (mm/min)	855	1077	1077	1092	988	887	760		
홈가공 ² 		1	≤ 1	119 (95-143)	RPM	6301	4726	3781	3151	2363	1890	1512		
					Fz	0.022	0.036	0.045	0.055	0.067	0.075	0.080		
					Feed (mm/min)	680	857	857	869	786	706	605		
스테인리스강 (오스테나이트계) 304, 304L, 316, 316L		≤ 275 Bhn or ≤ 28 HRC	고속가공 ¹ 	≤ 0.1	≤ APMX	134 (107-161)	RPM	7109	5332	4265	3555	2666	2133	1706
							Fz	0.029	0.049	0.061	0.072	0.084	0.096	0.105
							Feed (mm/min)	1024	1308	1308	1280	1126	1024	896
	솔더링 	≤ 0.4	≤ APMX	104 (83-124)	RPM	5493	4120	3296	2747	2060	1648	1318		
					Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.063		
					Feed (mm/min)	461	615	615	593	527	483	412		
	홈가공 ² 	1	≤ 1	82 (66-99)	RPM	4362	3272	2617	2181	1636	1309	1047		
					Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.063		
					Feed (mm/min)	366	489	489	471	419	384	327		
	스테인리스강 (석출경화계) 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRC	고속가공 ¹ 	≤ 0.1	≤ APMX	125 (100-150)	RPM	6624	4968	3975	3312	2484	1987	1590
							Fz	0.029	0.049	0.061	0.072	0.084	0.096	0.105
							Feed (mm/min)	954	1219	1219	1192	1049	954	835
솔더링 		≤ 0.4	≤ APMX	94 (76-113)	RPM	5009	3756	3005	2504	1878	1503	1202		
					Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.063		
					Feed (mm/min)	421	561	561	541	481	441	376		
홈가공 ² 		1	≤ 1	76 (61-91)	RPM	4039	3029	2424	2020	1515	1212	969		
					Fz	0.017	0.030	0.037	0.043	0.051	0.059	0.063		
					Feed (mm/min)	339	452	452	436	388	355	303		

L



솔더링
툴

엔드밀

미세가공

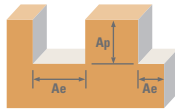
드릴

SGS

공업용
나이프



시리즈
Z5M, Z5MCR,
Z5ML, Z5MLC
미리 사양



미리 사양
Z-Carb-HPR

경도	Ae x DC	Ap x DC	Vc (m/min)	DC · mm								
				6	8	10	12	16	20	25		
주철 (저중합금) Gray, Malleable, Ductile	고속가공 ¹ 	≤ 0.1	≤ APMX	175 (140-210)	RPM	9290	6968	5574	4645	3484	2787	2230
					Fz	0.046	0.075	0.093	0.113	0.133	0.149	0.165
					Feed (mm/min)	2118	2602	2601	2620	2319	2081	1840
	≤ 220 Bhn or ≤ 19 HRC 	≤ 0.4	≤ APMX	136 (109-163)	RPM	7190	5392	4314	3595	2696	2157	1726
					Fz	0.026	0.045	0.056	0.067	0.079	0.091	0.098
					Feed (mm/min)	949	1208	1208	1208	1070	978	841
	홈가공 ² 	1	≤ 1	108 (87-130)	RPM	5736	4302	3441	2868	2151	1721	1377
					Fz	0.026	0.045	0.056	0.067	0.079	0.091	0.098
					Feed (mm/min)	757	964	964	964	853	780	671
주철 (고합금) Gray, Malleable, Ductile	고속가공 ¹ 	≤ 0.1	≤ APMX	134 (107-161)	RPM	7109	5332	4265	3555	2666	2133	1706
					Fz	0.034	0.055	0.069	0.084	0.100	0.112	0.123
					Feed (mm/min)	1194	1479	1479	1493	1331	1194	1045
	≤ 260 Bhn or ≤ 26 HRC 	≤ 0.4	≤ APMX	104 (83-124)	RPM	5493	4120	3296	2747	2060	1648	1318
					Fz	0.020	0.034	0.043	0.050	0.059	0.067	0.073
					Feed (mm/min)	554	703	703	692	606	549	478
	홈가공 ² 	1	≤ 1	82 (66-99)	RPM	4362	3272	2617	2181	1636	1309	1047
					Fz	0.020	0.034	0.043	0.050	0.059	0.067	0.073
					Feed (mm/min)	440	558	558	550	482	436	380
초내열합금 (니켈, 코발트, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400	고속가공 ¹ 	≤ 0.1	≤ APMX	35 (28-42)	RPM	1858	1394	1115	929	697	557	446
					Fz	0.026	0.045	0.056	0.067	0.079	0.091	0.098
					Feed (mm/min)	245	312	312	312	276	253	217
	≤ 300 Bhn or ≤ 32 HRC 	≤ 0.4	≤ APMX	24 (20-29)	RPM	1293	969	776	646	485	388	310
					Fz	0.016	0.027	0.034	0.041	0.048	0.054	0.060
					Feed (mm/min)	105	132	132	132	116	105	92
	홈가공 ² 	1	≤ 1	20 (16-24)	RPM	1050	788	630	525	394	315	252
					Fz	0.016	0.027	0.034	0.041	0.048	0.054	0.060
					Feed (mm/min)	86	108	108	107	94	86	75
초내열합금 (니켈, 코발트, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	고속가공 ¹ 	≤ 0.1	≤ APMX	30 (24-37)	RPM	1616	1212	969	808	606	485	388
					Fz	0.019	0.032	0.040	0.048	0.056	0.064	0.070
					Feed (mm/min)	155	194	194	194	171	155	136
	≤ 400 Bhn or ≤ 43 HRC 	≤ 0.4	≤ APMX	19 (15-23)	RPM	1002	751	601	501	376	301	240
					Fz	0.012	0.019	0.024	0.029	0.033	0.037	0.043
					Feed (mm/min)	58	72	72	72	63	56	51
	홈가공 ² 	1	≤ 1	15 (12-18)	RPM	808	606	485	404	303	242	194
					Fz	0.012	0.019	0.024	0.029	0.033	0.037	0.043
					Feed (mm/min)	47	58	58	58	50	45	41
티탄합금 Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	고속가공 ¹ 	≤ 0.1	≤ APMX	85 (68-102)	RPM	4524	3393	2714	2262	1696	1357	1086
					Fz	0.031	0.053	0.067	0.079	0.092	0.107	0.115
					Feed (mm/min)	706	905	905	896	782	724	624
	≤ 350 Bhn or ≤ 38 HRC 	≤ 0.4	≤ APMX	66 (52-79)	RPM	3474	2605	2084	1737	1303	1042	834
					Fz	0.019	0.032	0.040	0.048	0.056	0.064	0.070
					Feed (mm/min)	333	417	417	417	367	333	292
	홈가공 ² 	1	≤ 1	52 (41-62)	RPM	2747	2060	1648	1373	1030	824	659
					Fz	0.019	0.032	0.040	0.048	0.056	0.064	0.070
					Feed (mm/min)	264	330	330	330	290	264	231
티탄합금 (오스테나이트계) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	고속가공 ¹ 	≤ 0.1	≤ APMX	47 (38-57)	RPM	2504	1878	1503	1252	939	751	601
					Fz	0.031	0.053	0.067	0.079	0.092	0.107	0.115
					Feed (mm/min)	391	501	501	496	433	401	346
	≤ 440 Bhn or ≤ 47 HRC 	≤ 0.4	≤ APMX	23 (18-27)	RPM	1212	909	727	606	454	364	291
					Fz	0.019	0.032	0.040	0.048	0.056	0.064	0.070
					Feed (mm/min)	116	145	145	145	128	116	102
	홈가공 ² 	1	≤ 1	18 (15-22)	RPM	969	727	582	485	364	291	233
					Fz	0.019	0.032	0.040	0.048	0.056	0.064	0.070
					Feed (mm/min)	93	116	116	116	102	93	81

주의:

- Bhn (브리넬 경도) HRC (록웰C 경도) HSM (고속 가공)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fz x 5 x rpm

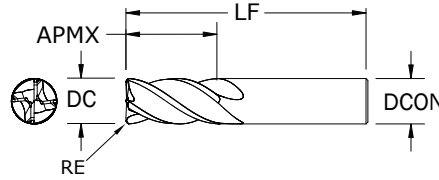
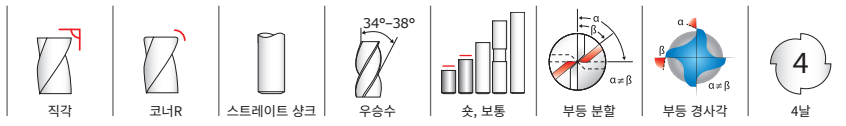
¹ 날장 4D 이상 사양을 사용하는 경우는 고속가공 방식을 추천합니다.
² 날장 4D 이상 사양으로 슬로링시, Ap를 0.5D 이하로 줄여 주십시오.

- 램핑은 5° 이하로 홈가공 절삭속도와 이송을 적용해 주십시오. (플런지 가공 불가)
- 피삭재가 상기표 보다 고경도일 경우는 절삭속도와 이송을 낮춰 주십시오.
- 정삭가공 시에는 이송과 Ae를 낮춰 주십시오. (최대 0.02 x DC)



슬러링
틀

미리 사양
Z-Carb-XPR



공차 (mm)

6 외경
DC = +0,000/-0,030
DCON = h_e
RE = +0,000/-0,050

>6-10 외경
DC = +0,000/-0,040
DCON = h_e
RE = +0,000/-0,050

>10-20 외경
DC = +0,000/-0,050
DCON = h_e
RE = +0,000/-0,050

ZR
미리 시리즈

- 중심날 부근의 개방형 구조로 플러징, 램핑, 헬리컬 가공 같이 축 방향 이송이 있는 공정에서 부드럽고 효율적으로 칩 배출
- 코너부의 와이퍼 밀 날은 코너 강도를 증가시키고, 바닥 가공면의 면조도를 개선
- 부등 플루트 구조로 하모닉 제거, 채터링 억제, 이상적인 형태의 칩 생성, 가공부 온도 컨트롤
- 2D 깊이 가공의 칩 배출에 특화된 플루트 형상
- 특히 Ti-NAMITE-X, MEGACOAT NANO 코팅으로 다양한 소재에서 수명 향상
- 인성과 강도가 균형 잡힌 프리미엄 초경 소재

mm					EDP NO.	
외경 DC	날장 APMX	전장 LF	샤크경 DCON	코너R RE	TI-NAMITE®-X (TX)	MEGACOAT NANO (MN)
6,0	13,0	57,0	6,0	-	47801	47800
6,0	13,0	57,0	6,0	0,50	47803	47802
6,0	13,0	57,0	6,0	1,00	47805	47804
8,0	19,0	63,0	8,0	-	47807	47806
8,0	19,0	63,0	8,0	0,50	47809	47808
8,0	19,0	63,0	8,0	1,00	47811	47810
8,0	19,0	63,0	8,0	2,00	47813	47812
10,0	22,0	72,0	10,0	-	47815	47814
10,0	22,0	72,0	10,0	0,50	47817	47816
10,0	22,0	72,0	10,0	1,00	47819	47818
10,0	22,0	72,0	10,0	2,00	47821	47820
12,0	26,0	83,0	12,0	-	47823	47822
12,0	26,0	83,0	12,0	0,50	47825	47824
12,0	26,0	83,0	12,0	0,75	47829	47828
12,0	26,0	83,0	12,0	1,00	47831	47830
14,0	26,0	83,0	14,0	-	47833	47832
14,0	26,0	83,0	14,0	1,00	47835	47834
16,0	32,0	92,0	16,0	-	47837	47836
16,0	32,0	92,0	16,0	1,00	47839	47838
16,0	32,0	92,0	16,0	2,00	47841	47840
16,0	32,0	92,0	16,0	3,00	47843	47842
20,0	38,0	104,0	20,0	-	47845	47844
20,0	38,0	104,0	20,0	1,00	47847	47846

STEELS

STAINLESS STEELS

CAST IRON

HIGH TEMP ALLOYS

엔드밀

미세가공

드릴

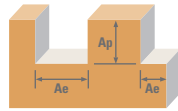
SGS

공업용 나이프

슬리드 톨



미리 사양
Z-Carb-XPR

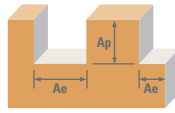


시리즈 ZR 미리 사양	경도	Ae x DC	Ap x DC	Vc (m/min)	DC • mm						
					6	8	10	12	16	20	
탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	≤ 0.25	≤ APMX	206 (165-247)	솔더링						
					RPM	10920	8190	6552	5460	4095	3276
					Fz	0.0464	0.0668	0.0870	0.1071	0.1247	0.1376
	≤ 275 Bhn or ≤ 28 HRc	1	≤ 1	137 (110-165)	홈가공						
					RPM	7280	5460	4368	3640	2730	2184
					Fz	0.0365	0.0526	0.0685	0.0843	0.0982	0.1083
	≤ 275 Bhn or ≤ 28 HRc	1	≤ 1	195 (156-234)	플런지 가공						
					RPM	10354	7765	6212	5177	3883	3106
					Fz	0.0334	0.0482	0.0627	0.0772	0.0882	0.0992
합금강 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRc	≤ 0.25	≤ APMX	160 (128-192)	솔더링						
					RPM	8493	6370	5096	4247	3185	2548
					Fz	0.0324	0.0518	0.0727	0.0932	0.1096	0.1207
	≤ 375 Bhn or ≤ 40 HRc	1	≤ 1	107 (85-128)	홈가공						
					RPM	5662	4247	3397	2831	2123	1699
					Fz	0.0255	0.0408	0.0572	0.0734	0.0863	0.0950
	≤ 375 Bhn or ≤ 40 HRc	1	≤ 1	152 (122-183)	플런지 가공						
					RPM	8089	6067	4853	4044	3033	2427
					Fz	0.0233	0.0374	0.0524	0.0672	0.0771	0.0870
공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRc	≤ 0.25	≤ APMX	73 (59-88)	솔더링						
					RPM	3883	2912	2330	1941	1456	1165
					Fz	0.0259	0.0396	0.0541	0.0685	0.0826	0.0935
	≤ 375 Bhn or ≤ 40 HRc	1	≤ 0.5	49 (39-59)	홈가공						
					RPM	2588	1941	1553	1294	971	777
					Fz	0.0204	0.0312	0.0426	0.0539	0.0650	0.0736
	≤ 375 Bhn or ≤ 40 HRc	1	≤ 0.5	67 (54-80)	플런지 가공						
					RPM	3559	2669	2135	1780	1335	1068
					Fz	0.0187	0.0286	0.0390	0.0493	0.0584	0.0674
스테인리스강 (페삭강) 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRc	≤ 0.25	≤ APMX	165 (132-198)	솔더링						
					RPM	8736	6552	5242	4368	3276	2621
					Fz	0.0328	0.0488	0.0659	0.0829	0.0981	0.1090
	≤ 275 Bhn or ≤ 28 HRc	1	≤ 1	110 (88-132)	홈가공						
					RPM	5824	4368	3494	2912	2184	1747
					Fz	0.0258	0.0384	0.0519	0.0653	0.0772	0.0858
	≤ 275 Bhn or ≤ 28 HRc	1	≤ 1	155 (124-187)	플런지 가공						
					RPM	8251	6188	4950	4125	3094	2475
					Fz	0.0236	0.0352	0.0475	0.0598	0.0692	0.0786
스테인리스강 (오스테나이트계) 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	≤ 0.25	≤ APMX	114 (91-137)	솔더링						
					RPM	6067	4550	3640	3033	2275	1820
					Fz	0.0255	0.0390	0.0537	0.0683	0.0846	0.0979
	≤ 275 Bhn or ≤ 28 HRc	1	≤ 0.5	76 (61-91)	홈가공						
					RPM	4044	3033	2427	2022	1517	1213
					Fz	0.0201	0.0307	0.0423	0.0538	0.0666	0.0771
	≤ 275 Bhn or ≤ 28 HRc	1	≤ 0.5	107 (85-128)	6° Ramp						
					RPM	5662	4247	3397	2831	2123	1699
					Fz	0.0184	0.0281	0.0387	0.0493	0.0599	0.0706
스테인리스강 (석출경화계) 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRc	≤ 0.25	≤ APMX	110 (88-132)	솔더링						
					RPM	5824	4368	3494	2912	2184	1747
					Fz	0.0254	0.0390	0.0537	0.0683	0.0846	0.0979
	≤ 325 Bhn or ≤ 35 HRc	1	≤ 1	73 (59-88)	홈가공						
					RPM	3883	2912	2330	1941	1456	1165
					Fz	0.0200	0.0307	0.0423	0.0538	0.0666	0.0771
	≤ 325 Bhn or ≤ 35 HRc	1	≤ 1	104 (83-124)	6° Ramp						
					RPM	5500	4125	3300	2750	2063	1650
					Fz	0.0183	0.0281	0.0387	0.0493	0.0599	0.0706



솔리드 톨

미리 사양
Z-Carb-XPR



시리즈 ZR 미리 사양	경도	Ae x DC	Ap x DC	Vc (m/min)	DC • mm						
					6	8	10	12	16	20	
주철 (저·중합금) Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRC	≤ 0.25	≤ APMX	192 (154-230)	솔더링						
					RPM	10192	7644	6115	5096	3822	3058
					Fz	0.0363	0.0526	0.0699	0.0869	0.1059	0.1218
	≤ 220 Bhn or ≤ 19 HRC	1	≤ 1	128 (102-154)	홈가공						
					RPM	6795	5096	4077	3397	2548	2038
					Fz	0.0286	0.0414	0.0550	0.0684	0.0834	0.0959
	≤ 220 Bhn or ≤ 19 HRC	1	≤ 1	183 (146-219)	플랜지 가공						
					RPM	9707	7280	5824	4853	3640	2912
					Fz	0.0262	0.0379	0.0504	0.0626	0.0752	0.0878
주철 (고합금) Gray, Malleable, Ductile	≤ 260 Bhn or ≤ 26 HRC	≤ 0.25	≤ APMX	114 (91-137)	솔더링						
					RPM	6067	4550	3640	3033	2275	1820
					Fz	0.0255	0.0390	0.0537	0.0683	0.0846	0.0979
	≤ 260 Bhn or ≤ 26 HRC	1	≤ 1	76 (61-91)	홈가공						
					RPM	4044	3033	2427	2022	1517	1213
					Fz	0.0201	0.0307	0.0423	0.0538	0.0666	0.0771
	≤ 260 Bhn or ≤ 26 HRC	1	≤ 1	107 (85-128)	플랜지 가공						
					RPM	5662	4247	3397	2831	2123	1699
					Fz	0.0184	0.0281	0.0387	0.0493	0.0599	0.0706
초내열합금 (니켈, 코발트, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400	≤ 300 Bhn or ≤ 32 HRC	≤ 0.25	≤ APMX	32 (26-38)	솔더링						
					RPM	1699	1274	1019	849	637	510
					Fz	0.0174	0.0287	0.0413	0.0536	0.0650	0.0735
	≤ 300 Bhn or ≤ 32 HRC	1	≤ 0.375	21 (17-26)	홈가공						
					RPM	1132	849	679	566	425	340
					Fz	0.0137	0.0226	0.0325	0.0422	0.0512	0.0579
	≤ 300 Bhn or ≤ 32 HRC	1	≤ 0.5	30 (24-37)	3° Ramp						
					RPM	1618	1213	971	809	607	485
					Fz	0.0125	0.0207	0.0298	0.0386	0.0458	0.0530
초내열합금 (니켈, 코발트, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRC	≤ 0.25	≤ APMX	18 (15-22)	솔더링						
					RPM	971	728	582	485	364	291
					Fz	0.0166	0.0271	0.0386	0.0500	0.0611	0.0695
	≤ 400 Bhn or ≤ 43 HRC	1	≤ 0.375	12 (10-15)	홈가공						
					RPM	647	485	388	324	243	194
					Fz	0.0131	0.0213	0.0304	0.0394	0.0481	0.0547
	≤ 400 Bhn or ≤ 43 HRC	1	≤ 0.5	15 (12-18)	3° Ramp						
					RPM	809	607	485	404	303	243
					Fz	0.0120	0.0195	0.0278	0.0361	0.0431	0.0501
티탄합금 Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRC	≤ 0.25	≤ APMX	82 (66-99)	솔더링						
					RPM	4368	3276	2621	2184	1638	1310
					Fz	0.0286	0.0429	0.0577	0.0721	0.0894	0.1040
	≤ 350 Bhn or ≤ 38 HRC	1	≤ 0.5	55 (44-66)	홈가공						
					RPM	2912	2184	1747	1456	1092	874
					Fz	0.0225	0.0338	0.0454	0.0568	0.0704	0.0819
	≤ 350 Bhn or ≤ 38 HRC	1	≤ 0.5	76 (61-91)	6° Ramp						
					RPM	4044	3033	2427	2022	1517	1213
					Fz	0.0206	0.0309	0.0416	0.0520	0.0635	0.0750
티탄합금 (오스테나이트계) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	≤ 440 Bhn or ≤ 47 HRC	≤ 0.25	≤ APMX	46 (37-55)	솔더링						
					RPM	2427	1820	1456	1213	910	728
					Fz	0.0243	0.0375	0.0512	0.0648	0.0837	0.1007
	≤ 440 Bhn or ≤ 47 HRC	1	≤ 0.375	30 (24-37)	홈가공						
					RPM	1618	1213	971	809	607	485
					Fz	0.0191	0.0295	0.0403	0.0510	0.0659	0.0793
	≤ 440 Bhn or ≤ 47 HRC	1	≤ 0.5	43 (34-51)	6° Ramp						
					RPM	2265	1699	1359	1132	849	679
					Fz	0.0175	0.0270	0.0369	0.0467	0.0596	0.0726

주의:
 • Bhn (브리넬 경도) HRC (록웰C 경도)
 • rpm = Vc x 3.82 / DC
 • ipm = Fz x 4 x rpm
 • 피삭재가 상기표 보다 고경도일 경우는 절삭속도와 이송을 낮춰 주십시오.
 • 정삭가공 시에는 이송과 Ae를 낮춰 주십시오. (최대 0.02 x DC)

L

솔러드 톨

엔드밀

미세가공

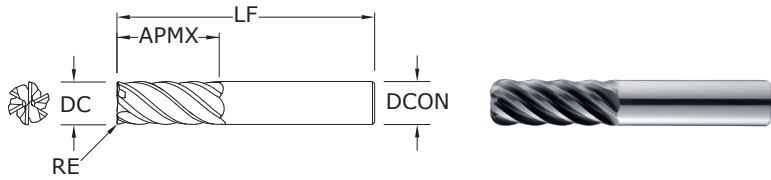
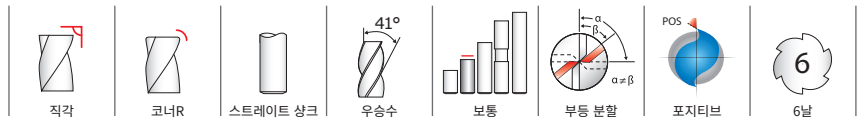
드릴

SGS

공압용 나이프



미리 사양
T-Carb®



51M·
51MCR
미리 시리즈

mm					EDP NO.
외경 DC	날장 APMX	전장 LF	샤크경 DCON	코너R RE	Ti-NAMITE [®] -X (TX)
6,0	19,0	63,0	6,0	-	45100
6,0	19,0	63,0	6,0	0,5	45112
6,0	19,0	63,0	6,0	1,0	45170
6,0	19,0	63,0	6,0	1,5	45171
8,0	20,0	63,0	8,0	-	45101
8,0	20,0	63,0	8,0	0,5	45113
8,0	20,0	63,0	8,0	1,0	45114
8,0	20,0	63,0	8,0	1,2	45150
8,0	20,0	63,0	8,0	1,5	45172
8,0	20,0	63,0	8,0	2,0	45173
10,0	22,0	75,0	10,0	-	45102
10,0	22,0	75,0	10,0	0,5	45174
10,0	22,0	75,0	10,0	1,0	45115
10,0	22,0	75,0	10,0	1,5	45116
10,0	22,0	75,0	10,0	2,0	45117
10,0	22,0	75,0	10,0	2,5	45175
12,0	26,0	83,0	12,0	-	45103
12,0	26,0	83,0	12,0	0,5	45176
12,0	26,0	83,0	12,0	0,76	45177
12,0	26,0	83,0	12,0	1,0	45118
12,0	26,0	83,0	12,0	1,5	45119
12,0	26,0	83,0	12,0	2,0	45120
12,0	26,0	83,0	12,0	2,5	45178
12,0	26,0	83,0	12,0	3,0	45179
16,0	32,0	92,0	16,0	-	45104
16,0	32,0	92,0	16,0	1,0	45121
16,0	32,0	92,0	16,0	1,5	45122
16,0	32,0	92,0	16,0	2,0	45123
16,0	32,0	92,0	16,0	2,5	45180
16,0	32,0	92,0	16,0	3,0	45181
16,0	32,0	92,0	16,0	4,0	45182
20,0	38,0	104,0	20,0	-	45105
20,0	38,0	104,0	20,0	1,0	45124
20,0	38,0	104,0	20,0	1,5	45125
20,0	38,0	104,0	20,0	2,0	45126
20,0	38,0	104,0	20,0	2,5	45183
20,0	38,0	104,0	20,0	3,0	45184
20,0	38,0	104,0	20,0	4,0	45185
20,0	38,0	104,0	20,0	5,0	45186

- 트로코이드나 펄 밀링 기법을 활용한 고속 가공에 특화된 디자인
- 편심형 릴리프 형상으로 강도와 면조도 우수
- 엄격한 공차로 개선된 코너R 형상
- 45 HRC (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

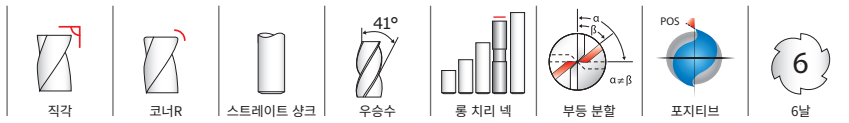
공차 (mm)
6,0-20,0 외경
DC = +0,000/-0,050
DCON = h₆
RE = +0,000/-0,050

- STEELS
- STAINLESS STEELS
- HIGH TEMP ALLOYS
- HARDENED STEELS

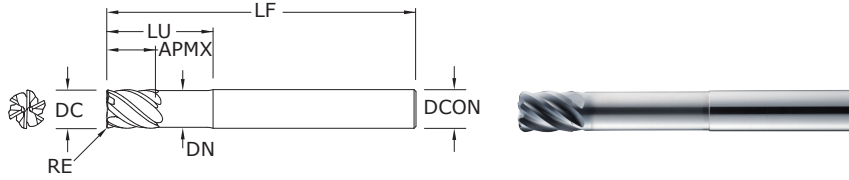


슬리드 톨

미리 사양
T-Carb®



51ML · 51MLC
미리 시리즈



- 트로코이드나 필 밀링 기법을 활용한 고속 가공에 특화된 디자인
- 편심형 릴리프 형상으로 강도와 면조도 우수
- 엄격한 공차로 개선된 코너R 형상
- 45 HRC (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

mm							EDP NO.
외경 DC	날장 APMX	전장 LF	샤크경 DCON	목 아래 길이 LU	목 외경 DN	코너R RE	Ti-NAMITE-X (TX)
6,0	8,0	75,0	6,0	32,0	5,69	-	45106
6,0	8,0	75,0	6,0	32,0	5,69	0,5	45127
6,0	8,0	75,0	6,0	32,0	5,69	1,0	45187
6,0	8,0	75,0	6,0	32,0	5,69	1,5	45188
8,0	10,0	75,0	8,0	32,0	7,59	-	45107
8,0	10,0	75,0	8,0	32,0	7,59	0,5	45128
8,0	10,0	75,0	8,0	32,0	7,59	1,0	45129
8,0	10,0	75,0	8,0	32,0	7,59	1,5	45189
8,0	10,0	75,0	8,0	32,0	7,59	2,0	45190
10,0	12,0	100,0	10,0	40,0	9,50	-	45108
10,0	12,0	100,0	10,0	40,0	9,50	0,5	45191
10,0	12,0	100,0	10,0	40,0	9,50	1,0	45130
10,0	12,0	100,0	10,0	40,0	9,50	1,5	45131
10,0	12,0	100,0	10,0	40,0	9,50	2,0	45132
10,0	12,0	100,0	10,0	40,0	9,50	2,5	45192
12,0	15,0	100,0	12,0	48,0	11,38	-	45109
12,0	15,0	100,0	12,0	48,0	11,38	0,5	45193
12,0	15,0	100,0	12,0	48,0	11,38	0,76	45194
12,0	15,0	100,0	12,0	48,0	11,38	1,0	45133
12,0	15,0	100,0	12,0	48,0	11,38	1,5	45134
12,0	15,0	100,0	12,0	48,0	11,38	2,0	45135
12,0	15,0	100,0	12,0	48,0	11,38	2,5	45195
12,0	15,0	100,0	12,0	48,0	11,38	3,0	45196
16,0	20,0	115,0	16,0	65,0	15,19	-	45110
16,0	20,0	115,0	16,0	65,0	15,19	1,0	45136
16,0	20,0	115,0	16,0	65,0	15,19	1,5	45137
16,0	20,0	115,0	16,0	65,0	15,19	2,0	45138
16,0	20,0	115,0	16,0	65,0	15,19	2,5	45197
16,0	20,0	115,0	16,0	65,0	15,19	3,0	45198
16,0	20,0	115,0	16,0	65,0	15,19	4,0	45199
20,0	24,0	150,0	20,0	80,0	19,00	-	45111
20,0	24,0	150,0	20,0	80,0	19,00	1,0	45139
20,0	24,0	150,0	20,0	80,0	19,00	1,5	45140
20,0	24,0	150,0	20,0	80,0	19,00	2,0	45141
20,0	24,0	150,0	20,0	80,0	19,00	2,5	45200
20,0	24,0	150,0	20,0	80,0	19,00	3,0	45201
20,0	24,0	150,0	20,0	80,0	19,00	4,0	45202
20,0	24,0	150,0	20,0	80,0	19,00	5,0	45203

공차 (mm)

6,0-20,0 외경
DC = +0,000/-0,050
DCON = h₆
RE = +0,000/-0,050

- STEELS
- STAINLESS STEELS
- HIGH TEMP ALLOYS
- HARDENED STEELS

L

슬리드 톨

엔드밀

미세가공

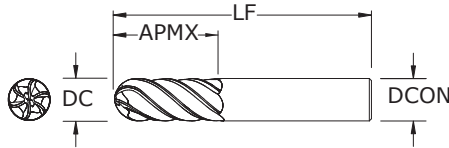
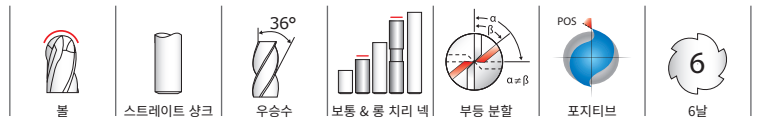
드릴

SGS

공업용 나이프



미리 사양
T-Carb®



51MB
미리 시리즈

- 트로코이드나 필 밀링 기법을 활용한 고속 가공에 특화된 디자인
- 페킷 릴리프로 우수한 강도와 매끄러운 정삭면
- 복잡한 형상의 정삭 작업을 위한 볼 엔드 디자인
- 45 HRc (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

mm					EDP NO.
외경 DC	날장 APMX	전장 LF	샹크경 DCON	Ti-NAMITE [®] -X (TX)	
6,0	19,0	63,0	6,0	45204	
8,0	20,0	63,0	8,0	45206	
10,0	22,0	75,0	10,0	45208	
12,0	26,0	83,0	12,0	45210	
16,0	32,0	92,0	16,0	45212	
20,0	38,0	104,0	20,0	45214	

RE=1/2 외경 (DC)

공차 (mm)

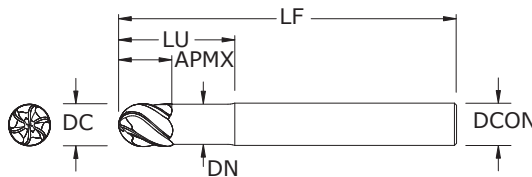
6,0-10,0 외경
DC= +0,000/-0,040
DCON= h₆
RE = +0,000/-0,025

12,0-20,0 외경
DC= +0,000/-0,050
DCON= h₆
RE = +0,000/-0,025

- STEELS
- STAINLESS STEELS
- HIGH TEMP ALLOYS
- HARDENED STEELS



슬리드 톨



51MLB
미리 시리즈

- 트로코이드나 필 밀링 기법을 활용한 고속 가공에 특화된 디자인
- 페킷 릴리프로 우수한 강도와 매끄러운 정삭면
- 복잡한 형상의 정삭 작업을 위한 볼 엔드 디자인
- 45 HRc (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

mm						EDP NO.
외경 DC	날장 APMX	전장 LF	샹크경 DCON	목아래 길이 LU	목외경 DN	Ti-NAMITE [®] -X (TX)
6,0	8,0	75,0	6,0	32,0	5,68	45205
8,0	10,0	75,0	8,0	32,0	7,58	45207
10,0	12,0	100,0	10,0	40,0	9,49	45209
12,0	15,0	100,0	12,0	48,0	11,37	45211
16,0	20,0	115,0	16,0	65,0	15,18	45213
20,0	24,0	150,0	20,0	80,0	18,99	45215

RE=1/2 외경 (DC)

공차 (mm)

6,0-10,0 외경
DC= +0,000/-0,040
DCON= h₆
RE = +0,000/-0,025

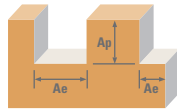
12,0-20,0 외경
DC= +0,000/-0,050
DCON= h₆
RE = +0,000/-0,025

- STEELS
- STAINLESS STEELS
- HIGH TEMP ALLOYS
- HARDENED STEELS

미리 사양
T-Carb®



시리즈
51M, 51MCR,
51ML, 51MLC,
51MB, 51MLB
미리 사양



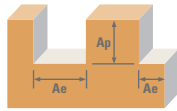
경도	Ae x DC	Ap x DC	Vc (m/min)	DC · mm							
				6	8	10	12	16	20		
탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	솔더링 ≤ 0.1	≤ 1	219	RPM	11633	8725	6980	5816	4362	3490
				(176-263)	Fz	0.048	0.081	0.101	0.121	0.142	0.158
				Feed (mm/min)	3350	4240	4230	4223	3717	3308	
	고속 가공 ≤ 0.05	≤ 2	279	RPM	14784	11088	8870	7392	5544	4435	
			(223-335)	Fz	0.066	0.113	0.141	0.169	0.197	0.220	
			Feed (mm/min)	5854	7517	7504	7495	6553	5854		
합금강 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 375 Bhn or ≤ 40 HRc	솔더링 ≤ 0.1	≤ 1	149	RPM	7917	5938	4750	3958	2969	2375
				(119-179)	Fz	0.036	0.061	0.077	0.092	0.107	0.119
				Feed (mm/min)	1710	2173	2195	2185	1906	1696	
	고속 가공 ≤ 0.05	≤ 2	189	RPM	10017	7513	6010	5009	3756	3005	
			(151-227)	Fz	0.049	0.083	0.104	0.125	0.146	0.163	
			Feed (mm/min)	2945	3741	3750	3756	3291	2939		
스테인리스강 (쾌삭강) 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRc	솔더링 ≤ 0.1	≤ 1	155	RPM	8240	6180	4944	4120	3090	2472
				(140-171)	Fz	0.035	0.060	0.075	0.090	0.105	0.117
				Feed (mm/min)	1730	2225	2225	2225	1947	1735	
	고속 가공 ≤ 0.05	≤ 2	198	RPM	10502	7877	6301	5251	3938	3151	
			(178-218)	Fz	0.048	0.082	0.102	0.122	0.143	0.159	
			Feed (mm/min)	3025	3875	3856	3844	3379	3006		
스테인리스강 (오스테나이트계) 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	솔더링 ≤ 0.1	≤ 1	107	RPM	5655	4241	3393	2827	2121	1696
				(96-117)	Fz	0.029	0.049	0.061	0.073	0.086	0.096
				Feed (mm/min)	984	1247	1242	1238	1094	977	
	고속 가공 ≤ 0.05	≤ 2	137	RPM	7271	5453	4362	3635	2726	2181	
			(123-151)	Fz	0.040	0.069	0.086	0.103	0.120	0.134	
			Feed (mm/min)	1745	2258	2251	2247	1963	1754		
스테인리스강 (석출경화계) 13-8 PH, 15-5 PH, 17-4 PH, Custom 450	≤ 325 Bhn or ≤ 35 HRc	솔더링 ≤ 0.1	≤ 1	99	RPM	5251	3938	3151	2626	1969	1575
				(89-109)	Fz	0.029	0.049	0.061	0.073	0.086	0.096
				Feed (mm/min)	914	1158	1153	1150	1016	907	
	고속 가공 ≤ 0.05	≤ 2	125	RPM	6624	4968	3975	3312	2484	1987	
			(112-137)	Fz	0.040	0.069	0.086	0.103	0.120	0.134	
			Feed (mm/min)	1590	2057	2051	2047	1789	1598		

솔리드 톨



미리 사양
T-Carb®

시리즈
51M, 51MCR,
51ML, 51MLC,
51MB, 51MLB
미리 사양



재료	경도	Ae x DC	Ap x DC	Vc (m/min)	DC • mm						
					6	8	10	12	16	20	
초내열합금 (니켈, 코발트, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400	≤ 300 Bhn or ≤ 32 HRc	≤ 0.1	≤ 1	32 (26-38)	RPM	1696	1272	1018	848	636	509
					Fz	0.034	0.057	0.071	0.085	0.100	0.110
					Feed (mm/min)	346	435	434	433	382	336
	고속 가공	≤ 0.05	≤ 2	40 (32-48)	RPM	2100	1575	1260	1050	788	630
					Fz	0.046	0.077	0.097	0.120	0.140	0.150
					Feed (mm/min)	580	728	733	756	662	567
초내열합금 (니켈, 코발트, IRON BASE) Inconel 718, X-750, Incoloy, Waspaloy, Hastelloy, Rene	≤ 400 Bhn or ≤ 43 HRc	≤ 0.1	≤ 1	24 (20-29)	RPM	1293	969	776	646	485	388
					Fz	0.023	0.039	0.049	0.059	0.068	0.077
					Feed (mm/min)	178	227	228	229	198	179
	고속 가공	≤ 0.05	≤ 2	30 (24-37)	RPM	1616	1212	969	808	606	485
					Fz	0.032	0.054	0.068	0.081	0.095	0.110
					Feed (mm/min)	310	393	396	393	345	320
티탄합금 Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si	≤ 350 Bhn or ≤ 38 HRc	≤ 0.1	≤ 1	85 (68-102)	RPM	4524	3393	2714	2262	1696	1357
					Fz	0.023	0.039	0.049	0.059	0.068	0.077
					Feed (mm/min)	624	794	798	801	692	627
	고속 가공	≤ 0.05	≤ 2	108 (87-130)	RPM	5736	4302	3441	2868	2151	1721
					Fz	0.032	0.054	0.068	0.081	0.095	0.110
					Feed (mm/min)	1101	1394	1404	1394	1226	1136
티탄합금 (오스테나이트계) Ti10Al2Fe3Al, Ti5Al5V5Mo3Cr, Ti7Al4Mo, Ti3Al8V6Cr4Zr4Mo, Ti6Al6V6Sn, Ti15V3 Cr3Sn3Al	≤ 440 Bhn or ≤ 47 HRc	≤ 0.1	≤ 1	47 (38-57)	RPM	2504	1878	1503	1252	939	751
					Fz	0.023	0.039	0.049	0.059	0.068	0.077
					Feed (mm/min)	346	440	442	443	383	347
	고속 가공	≤ 0.05	≤ 2	61 (49-73)	RPM	3231	2424	1939	1616	1212	969
					Fz	0.032	0.054	0.068	0.081	0.095	0.110
					Feed (mm/min)	620	785	791	785	691	640
H 공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 375 Bhn or ≤ 40 HRc	≤ 0.1	≤ 1	73 (59-88)	RPM	3878	2908	2327	1939	1454	1163
					Fz	0.029	0.049	0.061	0.073	0.086	0.096
					Feed (mm/min)	675	855	852	849	750	670
	고속 가공	≤ 0.05	≤ 2	93 (74-112)	RPM	4928	3696	2957	2464	1848	1478
					Fz	0.040	0.069	0.086	0.103	0.120	0.134
					Feed (mm/min)	1183	1530	1526	1523	1331	1189

- 주의:
- Bhn (브리넬 경도) HRc (록웰C 경도) HSM (고속 가공)
 - rpm = (Vc x 1000) / (DC x 3.14)
 - mm/min = Fz x 6 x rpm
 - 피삭재가 상기표 보다 고경도일 경우는 절삭속도와 이송을 낮춰 주십시오.
 - 정삭가공 시에는 이송과 Ae를 낮춰 주십시오. (최대 0.02 x DC)
 - 표에 명시된 피드는 칩 시닝 조정이 된 값입니다.

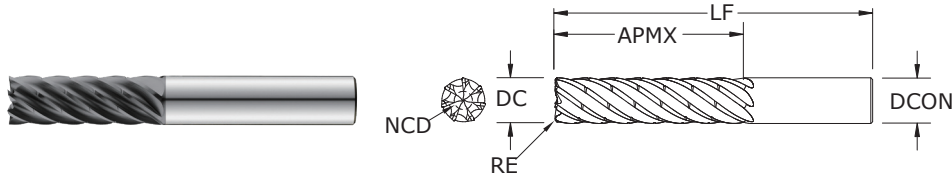


슬리드 톨

미리 사양
H-Carb



77M ·
77MCR
미리 시리즈



신제품

- 깊은 면의 트로코이드 및 고속 가공에 특화
- 최적화된 코어로 강성과 칩 흐름 개선
- 긴 플루트에 걸쳐 생성되는 칩을 분쇄. 깊은 포켓 작업에서 칩 처리 개선
- 45 HRc (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

mm						EDP NO.							
외경 DC	날장 APMX	전장 LF	상크경 DCON	코너R RE	비절삭 중심경 NCD	Ti-NAMITE [®] -A (TA) EDP NO.	Ti-NAMITE [®] -A (TA) EDP NO. 칩 브레이커	Ti-NAMITE [®] -A (TA) EDP NO.	Ti-NAMITE [®] -A (TA) EDP NO. 칩 브레이커	Ti-NAMITE [®] -M (TM) EDP NO.	Ti-NAMITE [®] -M (TM) EDP NO. 칩 브레이커	Ti-NAMITE [®] -M (TM) EDP NO.	Ti-NAMITE [®] -M (TM) EDP NO. 칩 브레이커
						외부 콜러트	외부 콜러트	내부 콜러트	내부 콜러트	외부 콜러트	외부 콜러트	내부 콜러트	내부 콜러트
6,0	15,0	63,0	6,0	-	2,03	74300	74302	-	-	74301	74303	-	-
6,0	15,0	63,0	6,0	0,3	2,03	74304	74306	-	-	74305	74307	-	-
6,0	15,0	63,0	6,0	0,5	2,03	74308	74310	-	-	74309	74311	-	-
6,0	18,0	63,0	6,0	-	2,03	74316	74318	-	-	74317	74319	-	-
6,0	18,0	63,0	6,0	0,3	2,03	74320	74322	-	-	74321	74323	-	-
6,0	18,0	63,0	6,0	0,5	2,03	74324	74326	-	-	74325	74327	-	-
6,0	24,0	75,0	6,0	-	2,03	74332	74334	-	-	74333	74335	-	-
6,0	24,0	75,0	6,0	0,3	2,03	74336	74338	-	-	74337	74339	-	-
6,0	24,0	75,0	6,0	0,5	2,03	74340	74342	-	-	74341	74343	-	-
8,0	20,0	75,0	8,0	-	2,71	74348	74350	-	-	74349	74351	-	-
8,0	20,0	75,0	8,0	0,5	2,71	74352	74354	-	-	74353	74355	-	-
8,0	20,0	75,0	8,0	1,0	2,71	74356	74358	-	-	74357	74359	-	-
8,0	20,0	75,0	8,0	2,0	2,71	74360	74362	-	-	74361	74363	-	-
8,0	24,0	75,0	8,0	-	2,71	74364	74366	-	-	74365	74367	-	-
8,0	24,0	75,0	8,0	0,5	2,71	74368	74370	-	-	74369	74371	-	-
8,0	24,0	75,0	8,0	1,0	2,71	74372	74374	-	-	74373	74375	-	-
8,0	24,0	75,0	8,0	2,0	2,71	74376	74378	-	-	74377	74379	-	-
8,0	32,0	85,0	8,0	-	2,71	74380	74382	-	-	74381	74383	-	-
8,0	32,0	85,0	8,0	0,5	2,71	74384	74386	-	-	74385	74387	-	-
8,0	32,0	85,0	8,0	1,0	2,71	74388	74390	-	-	74389	74391	-	-
8,0	32,0	85,0	8,0	2,0	2,71	74392	74394	-	-	74393	74395	-	-
10,0	25,0	75,0	10,0	-	3,38	74396	74398	-	-	74397	74399	-	-
10,0	25,0	75,0	10,0	0,5	3,38	74400	74402	-	-	74401	74403	-	-
10,0	25,0	75,0	10,0	1,0	3,38	74404	74406	-	-	74405	74407	-	-
10,0	30,0	80,0	10,0	-	3,38	74408	74410	-	-	74409	74411	-	-
10,0	30,0	80,0	10,0	0,5	3,38	74412	74414	-	-	74413	74415	-	-
10,0	30,0	80,0	10,0	1,0	3,38	74416	74418	-	-	74417	74419	-	-
10,0	40,0	100,0	10,0	-	3,38	74420	74422	-	-	74421	74423	-	-
10,0	40,0	100,0	10,0	0,5	3,38	74424	74426	-	-	74425	74427	-	-
10,0	40,0	100,0	10,0	1,0	3,38	74428	74430	-	-	74429	74431	-	-
12,0	30,0	83,0	12,0	-	4,06	74432	74434	74672	74674	74433	74435	74673	74675
12,0	30,0	83,0	12,0	0,5	4,06	74436	74438	74676	74678	74437	74439	74677	74679
12,0	30,0	83,0	12,0	1,0	4,06	74440	74442	74680	74682	74441	74443	74681	74683
12,0	30,0	83,0	12,0	2,0	4,06	74600	74601	74684	74686	74602	74603	74685	74687
12,0	30,0	83,0	12,0	3,0	4,06	74604	74605	74688	74690	74606	74607	74689	74691
12,0	36,0	83,0	12,0	-	4,06	74444	74446	74692	74694	74445	74447	74693	74695
12,0	36,0	83,0	12,0	0,5	4,06	74448	74450	74696	74698	74449	74451	74697	74699
12,0	36,0	83,0	12,0	1,0	4,06	74452	74454	74700	74702	74453	74455	74701	74703
12,0	36,0	83,0	12,0	2,0	4,06	74608	74609	74704	74706	74610	74611	74705	74707
12,0	36,0	83,0	12,0	3,0	4,06	74612	74613	74708	74710	74614	74615	74709	74711
12,0	48,0	100,0	12,0	-	4,06	74456	74458	74712	74714	74457	74459	74713	74715
12,0	48,0	100,0	12,0	0,5	4,06	74460	74462	74716	74718	74461	74463	74717	74719
12,0	48,0	100,0	12,0	1,0	4,06	74464	74466	74720	74722	74465	74467	74721	74723
12,0	48,0	100,0	12,0	2,0	4,06	74616	74617	74724	74726	74618	74619	74725	74727
12,0	48,0	100,0	12,0	3,0	4,06	74620	74621	74728	74730	74622	74623	74729	74731

- 공차 (mm)
- 6 외경
DC = +0,000/-0,030
DCON= h₆
RE = +0,000 / -0,050
- >6-10 외경
DC = +0,000/-0,040
DCON= h₆
RE = +0,000 / -0,050
- >10-25 외경
DC = +0,000/-0,050
DCON= h₆
RE = +0,000 / -0,050

- STEELS
- STAINLESS STEELS
- CAST IRON
- HIGH TEMP ALLOYS

L

솔리드 톨

엔드밀

미세가공

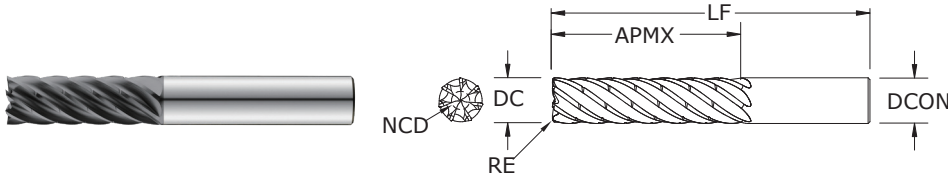
드릴

SGS

공업용 나이프



미리 사양
H-Carb



77M·77MCR
미리 시리즈

신제품

mm						EDP NO.							
외경 DC	날장 APMX	전장 LF	샤크경 DCON	코너R RE	비절단 센터외경 NCD	Ti-NAMITE-A (TA) EDP NO.	Ti-NAMITE-A (TA) EDP NO. 칩 브레이커	Ti-NAMITE-A (TA) EDP NO.	Ti-NAMITE-A (TA) EDP NO. 칩 브레이커	Ti-NAMITE-M (TM) EDP NO.	Ti-NAMITE-M (TM) EDP NO. 칩 브레이커	Ti-NAMITE-M (TM) EDP NO.	Ti-NAMITE-M (TM) EDP NO. 칩 브레이커
						외부 콜런트	외부 콜런트	내부 콜런트	내부 콜런트	외부 콜런트	외부 콜런트	내부 콜런트	내부 콜런트
16,0	40,0	92,0	16,0	-	5,41	74468	74470	74732	74734	74469	74471	74733	74735
16,0	40,0	92,0	16,0	0,5	5,41	74472	74474	74736	74738	74473	74475	74737	74739
16,0	40,0	92,0	16,0	1,0	5,41	74476	74478	74740	74742	74477	74479	74741	74743
16,0	40,0	92,0	16,0	2,0	5,41	74624	74625	74744	74746	74626	74627	74745	74747
16,0	40,0	92,0	16,0	3,0	5,41	74628	74629	74748	74750	74630	74631	74749	74751
16,0	48,0	100,0	16,0	-	5,41	74480	74482	74752	74754	74481	74483	74753	74755
16,0	48,0	100,0	16,0	0,5	5,41	74484	74486	74756	74758	74485	74487	74757	74759
16,0	48,0	100,0	16,0	1,0	5,41	74488	74490	74760	74762	74489	74491	74761	74763
16,0	48,0	100,0	16,0	2,0	5,41	74632	74633	74764	74766	74634	74635	74765	74767
16,0	48,0	100,0	16,0	3,0	5,41	74636	74637	74768	74770	74638	74639	74769	74771
16,0	64,0	115,0	16,0	-	5,41	74492	74494	74772	74774	74493	74495	74773	74775
16,0	64,0	115,0	16,0	0,5	5,41	74496	74498	74776	74778	74497	74499	74777	74779
16,0	64,0	115,0	16,0	1,0	5,41	74500	74502	74780	74782	74501	74503	74781	74783
16,0	64,0	115,0	16,0	2,0	5,41	74640	74641	74784	74786	74642	74643	74785	74787
16,0	64,0	115,0	16,0	3,0	5,41	74644	74645	74788	74790	74646	74647	74789	74791
20,0	50,0	100,0	20,0	-	6,76	74504	74506	74792	74794	74505	74507	74793	74795
20,0	50,0	100,0	20,0	0,5	6,76	74508	74510	74796	74798	74509	74511	74797	74799
20,0	50,0	100,0	20,0	1,0	6,76	74512	74514	74800	74802	74513	74515	74801	74803
20,0	50,0	100,0	20,0	2,0	6,76	74516	74518	74804	74806	74517	74519	74805	74807
20,0	50,0	100,0	20,0	3,0	6,76	74648	74649	74808	74810	74650	74651	74809	74811
20,0	50,0	100,0	20,0	4,0	6,76	74652	74653	74812	74814	74654	74655	74813	74815
20,0	60,0	115,0	20,0	-	6,76	74520	74522	74816	74818	74521	74523	74817	74819
20,0	60,0	115,0	20,0	0,5	6,76	74524	74526	74820	74822	74525	74527	74821	74823
20,0	60,0	115,0	20,0	1,0	6,76	74528	74530	74824	74826	74529	74531	74825	74827
20,0	60,0	115,0	20,0	2,0	6,76	74532	74534	74828	74830	74533	74535	74829	74831
20,0	60,0	115,0	20,0	3,0	6,76	74656	74657	74832	74834	74658	74659	74833	74835
20,0	60,0	115,0	20,0	4,0	6,76	74660	74661	74836	74838	74662	74663	74837	74839
20,0	80,0	140,0	20,0	-	6,76	74536	74538	74840	74842	74537	74539	74841	74843
20,0	80,0	140,0	20,0	0,5	6,76	74540	74542	74844	74846	74541	74543	74845	74847
20,0	80,0	140,0	20,0	1,0	6,76	74544	74546	74848	74850	74545	74547	74849	74851
20,0	80,0	140,0	20,0	2,0	6,76	74548	74550	74852	74854	74549	74551	74853	74855
20,0	80,0	140,0	20,0	3,0	6,76	74664	74665	74856	74858	74666	74667	74857	74859
20,0	80,0	140,0	20,0	4,0	6,76	74668	74669	74860	74862	74670	74671	74861	74863
25,0	63,0	135,0	25,0	-	8,45	74552	74554	74864	74866	74553	74555	74865	74867
25,0	63,0	135,0	25,0	1,0	8,45	74556	74558	74868	74870	74557	74559	74869	74871
25,0	63,0	135,0	25,0	2,0	8,45	74560	74562	74872	74874	74561	74563	74873	74875
25,0	63,0	135,0	25,0	3,0	8,45	74564	74566	74876	74878	74565	74567	74877	74879
25,0	75,0	150,0	25,0	-	8,45	74568	74570	74880	74882	74569	74571	74881	74883
25,0	75,0	150,0	25,0	1,0	8,45	74572	74574	74884	74886	74573	74575	74885	74887
25,0	75,0	150,0	25,0	2,0	8,45	74576	74578	74888	74890	74577	74579	74889	74891
25,0	75,0	150,0	25,0	3,0	8,45	74580	74582	74892	74894	74581	74583	74893	74895
25,0	100,0	170,0	25,0	-	8,45	74584	74586	74896	74898	74585	74587	74897	74899
25,0	100,0	170,0	25,0	1,0	8,45	74588	74590	74900	74902	74589	74591	74901	74903
25,0	100,0	170,0	25,0	2,0	8,45	74592	74594	74904	74906	74593	74595	74905	74907
25,0	100,0	170,0	25,0	3,0	8,45	74596	74598	74908	74910	74597	74599	74909	74911

- 깊은 면의 트로코이드 및 고속 가공에 특화
- 최적화된 코어로 강성과 칩 흐름 개선
- 긴 플루트에 걸쳐 생성되는 칩을 분쇄. 깊은 포켓 작업에서 칩 처리 개선
- 45 HRC (≤ 420 Bhn) 이하의 피삭재에 권장합니다.

공차 (mm)

6 외경
DC = +0,000/-0,030
DCON = h₆
RE = +0,000 / -0,050

>6-10 외경
DC = +0,000/-0,040
DCON = h₆
RE = +0,000 / -0,050

>10-25 외경
DC = +0,000/-0,050
DCON = h₆
RE = +0,000 / -0,050

STEELS

STAINLESS STEELS

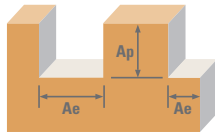
CAST IRON

HIGH TEMP ALLOYS



슬리드
틀

미리 사양
H-Carb



시리즈 77M, 77MCR 미리 사양	경도	Ae x DC	Ap x DC	Vc (m/min)	DC · mm							
					6	8	10	12	16	20	25	
					RPM							
탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 275 Bhn or ≤ 28 HRc	고속 가공 2.5xD	≤ 0.2 ≤ APMX	284 (227-341)	Fz	12208	9156	7325	6104	4578	3662	2930
					Feed (mm/min)	0.0413	0.0411	0.0640	0.0711	0.0889	0.1013	0.1050
		고속 가공 3xD	≤ 0.15 ≤ APMX	257 (206-308)	Fz	3529	2634	3282	3038	2849	2597	2154
					Feed (mm/min)	0.0347	0.0461	0.0717	0.0797	0.0996	0.1135	0.1176
		고속 가공 4xD	≤ 0.1 ≤ APMX	230 (184-276)	Fz	2965	2955	3676	3405	3192	2910	2412
					Feed (mm/min)	0.0362	0.0480	0.0747	0.0830	0.1037	0.1182	0.0919
	≤ 375 Bhn or ≤ 40 HRc	고속 가공 2.5xD	≤ 0.2 ≤ APMX	132 (106-159)	Fz	3094	3076	3830	3546	3323	3030	1885
					Feed (mm/min)	0.0213	0.0285	0.0512	0.0610	0.0711	0.0827	0.0875
		고속 가공 3xD	≤ 0.15 ≤ APMX	138 (111-166)	Fz	8068	6051	4841	4034	3025	2420	1936
					Feed (mm/min)	0.0239	0.0319	0.0574	0.0683	0.0797	0.0926	0.0980
		고속 가공 4xD	≤ 0.1 ≤ APMX	152 (122-182)	Fz	1350	1351	1945	1929	1688	1569	1328
					Feed (mm/min)	0.0249	0.0332	0.0597	0.0711	0.0830	0.0964	0.1021
합금강 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	고속 가공 2.5xD	≤ 0.2 ≤ APMX	83 (66-100)	Fz	4087	3065	2452	2044	1533	1226	981	
				Feed (mm/min)	0.0140	0.0183	0.0294	0.0356	0.0457	0.0560	0.0625	
	고속 가공 3xD	≤ 0.15 ≤ APMX	86 (69-103)	Fz	401	393	505	509	490	481	429	
				Feed (mm/min)	0.0157	0.0205	0.0330	0.0398	0.0512	0.0627	0.0700	
	고속 가공 4xD	≤ 0.1 ≤ APMX	77 (62-92)	Fz	449	440	566	569	549	538	481	
				Feed (mm/min)	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653	0.0729	
공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2	고속 가공 2.5xD	≤ 0.2 ≤ APMX	197 (158-236)	Fz	487	477	3822	3185	2389	1911	1529	
				Feed (mm/min)	0.0140	0.0183	0.0294	0.0356	0.0457	0.0560	0.0625	
	고속 가공 3xD	≤ 0.15 ≤ APMX	204 (163-245)	Fz	9660	7245	5796	4830	3623	2898	2318	
				Feed (mm/min)	0.0242	0.0319	0.0502	0.0598	0.0711	0.0837	0.0896	
	고속 가공 4xD	≤ 0.1 ≤ APMX	182 (146-218)	Fz	1461	1445	1818	1803	1610	1515	1298	
				Feed (mm/min)	0.0252	0.0332	0.0523	0.0622	0.0741	0.0871	0.0933	
스테인리스강 (패삭강) 303, 416, 420F, 430F, 440F	고속 가공 2.5xD	≤ 0.2 ≤ APMX	130 (104-156)	Fz	6369	4777	3822	3185	2389	1911	1529	
				Feed (mm/min)	0.0168	0.0221	0.0371	0.0432	0.0584	0.0693	0.0750	
	고속 가공 3xD	≤ 0.15 ≤ APMX	134 (107-161)	Fz	749	739	993	963	976	927	803	
				Feed (mm/min)	0.0188	0.0248	0.0416	0.0484	0.0655	0.0777	0.0840	
	고속 가공 4xD	≤ 0.1 ≤ APMX	120 (96-144)	Fz	838	829	1113	1079	1095	1039	899	
				Feed (mm/min)	0.0196	0.0258	0.0433	0.0504	0.0682	0.0809	0.0875	
스테인리스강 (오스테나이트계) 304, 304L, 316, 316L	고속 가공 2.5xD	≤ 0.2 ≤ APMX	124 (99-149)	Fz	6104	4578	3662	3052	2289	1831	1465	
				Feed (mm/min)	0.0168	0.0221	0.0371	0.0432	0.0584	0.0693	0.0750	
	고속 가공 3xD	≤ 0.15 ≤ APMX	129 (103-155)	Fz	718	708	952	923	936	888	769	
				Feed (mm/min)	0.0188	0.0248	0.0416	0.0484	0.0655	0.0777	0.0840	
	고속 가공 4xD	≤ 0.1 ≤ APMX	115 (92-138)	Fz	803	795	1066	1034	1050	996	861	
				Feed (mm/min)	0.0196	0.0258	0.0433	0.0504	0.0682	0.0809	0.0875	
고속 가공 2.5xD	≤ 0.2 ≤ APMX	124 (99-149)	Fz	837	827	1110	1077	1093	1037	897		
			Feed (mm/min)	0.0168	0.0221	0.0371	0.0432	0.0584	0.0693	0.0750		



슬리드 톨

엔드밀

미세가공

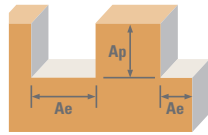
드릴

SGS

공업용 나이프



미리 사양
H-Carb



시리즈
77M, 77MCR
미리 사양

경도	Ae x DC	Ap x DC	Vc (m/min)	DC - mm							
				6	8	10	12	16	20	25	
주철 (저·중합금) Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	고속 가공 2.5xD ≤ 0.2 ≤ APMX	218 (174-262)	RPM	10722	8041	6433	5361	4021	3217	2573
			Fz	0.0239	0.0315	0.0474	0.0559	0.0762	0.0880	0.0925	
			Feed (mm/min)	1794	1773	2135	2098	2145	1981	1666	
		고속 가공 3xD ≤ 0.15 ≤ APMX	225 (180-270)	Fz	0.0268	0.0353	0.0531	0.0626	0.0854	0.0986	0.1036
			Feed (mm/min)	2011	1987	2391	2349	2404	2220	1866	
			고속 가공 4xD ≤ 0.1 ≤ APMX	202 (162-242)	Fz	0.0279	0.0368	0.0553	0.0652	0.0889	0.1027
	Feed (mm/min)	2094		2071	2490	2447	2502	2312	1944		
	≤ 260 Bhn or ≤ 26 HRc	고속 가공 2.5xD ≤ 0.2 ≤ APMX		130 (104-156)	RPM	6369	4777	3822	3185	2389	1911
			Fz	0.0168	0.0221	0.0371	0.0432	0.0584	0.0693	0.0750	
			Feed (mm/min)	749	739	993	963	976	927	803	
		고속 가공 3xD ≤ 0.15 ≤ APMX	134 (107-161)	Fz	0.0188	0.0248	0.0416	0.0484	0.0655	0.0777	0.0840
			Feed (mm/min)	838	829	1113	1079	1095	1039	899	
고속 가공 4xD ≤ 0.1 ≤ APMX			120 (96-144)	Fz	0.0196	0.0258	0.0433	0.0504	0.0682	0.0809	0.0875
	Feed (mm/min)	874	863	1158	1124	1140	1082	936			
	초내열합금 (니켈, 코발트, IRON BASE) Inconel 601, 617, 625, Incoloy, Monel 400	≤ 300 Bhn or ≤ 32 HRc	고속 가공 2.5xD ≤ 0.2 ≤ APMX	41 (33-49)	RPM	2017	1513	1210	1008	756	605
Fz				0.0140	0.0183	0.0294	0.0356	0.0457	0.0560	0.0625	
Feed (mm/min)				198	194	249	251	242	237	212	
고속 가공 3xD ≤ 0.15 ≤ APMX			43 (34-52)	Fz	0.0157	0.0205	0.0330	0.0398	0.0512	0.0627	0.0700
			Feed (mm/min)	222	217	280	281	271	266	237	
			고속 가공 4xD ≤ 0.1 ≤ APMX	38 (30-46)	Fz	0.0163	0.0213	0.0344	0.0415	0.0533	0.0653
Feed (mm/min)		230		226	291	293	282	277	247		
≤ 400 Bhn or ≤ 43 HRc		고속 가공 2.5xD ≤ 0.2 ≤ APMX		26 (21-31)	RPM	1274	955	764	637	478	382
			Fz	0.0114	0.0152	0.0243	0.0305	0.0381	0.0480	0.0550	
			Feed (mm/min)	102	102	130	136	127	128	118	
		고속 가공 3xD ≤ 0.15 ≤ APMX	27 (22-32)	Fz	0.0128	0.0171	0.0273	0.0342	0.0427	0.0538	0.0616
			Feed (mm/min)	114	114	146	152	143	144	132	
	고속 가공 4xD ≤ 0.1 ≤ APMX		24 (19-29)	Fz	0.0133	0.0178	0.0284	0.0356	0.0445	0.0560	0.0642
Feed (mm/min)		119	119	152	159	149	150	137			
티탄합금 Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si		≤ 350 Bhn or ≤ 38 HRc	고속 가공 2.5xD ≤ 0.2 ≤ APMX	88 (70-106)	RPM	4352	3264	2611	2176	1632	1306
	Fz			0.0191	0.0254	0.0397	0.0483	0.0635	0.0747	0.0800	
	Feed (mm/min)			582	580	726	736	725	683	585	
	고속 가공 3xD ≤ 0.15 ≤ APMX		91 (73-109)	Fz	0.0213	0.0285	0.0445	0.0541	0.0711	0.0837	0.0896
			Feed (mm/min)	649	651	813	824	812	765	655	
			고속 가공 4xD ≤ 0.1 ≤ APMX	82 (66-98)	Fz	0.0222	0.0296	0.0463	0.0563	0.0741	0.0871
	Feed (mm/min)	676		676	846	858	847	796	682		
	≤ 420 Bhn or ≤ 45 HRc	고속 가공 2.5xD ≤ 0.2 ≤ APMX		52 (42-62)	RPM	2548	1911	1529	1274	955	764
			Fz	0.0163	0.0254	0.0397	0.0483	0.0635	0.0747	0.0800	
			Feed (mm/min)	291	340	425	431	425	400	342	
		고속 가공 3xD ≤ 0.15 ≤ APMX	54 (43-65)	Fz	0.0182	0.0285	0.0445	0.0541	0.0711	0.0837	0.0896
			Feed (mm/min)	325	381	476	482	476	448	384	
고속 가공 4xD ≤ 0.1 ≤ APMX			48 (38-58)	Fz	0.0190	0.0296	0.0463	0.0563	0.0741	0.0871	0.0933
	Feed (mm/min)	339	396	495	502	496	466	399			

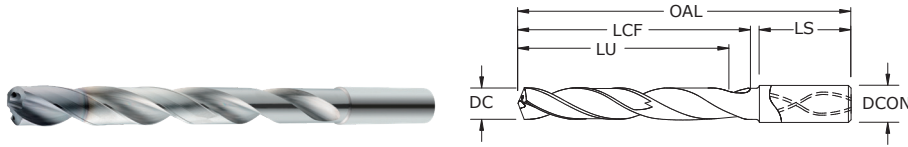
- Bhn (브리넬 경도) HRc (록웰C 경도) HSM (고속 가공)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fz x 7 x rpm
- 피삭재가 상기표 보다 고경도일 경우는 절삭속도와 이송을 낮춰 주십시오.
- 정상가공 시에는 이송과 Ae를 낮춰 주십시오. (최대 0.02 x DC)
- 표에 명시된 피드는 칩 시닝 조정이 된 값입니다.



슬리드 톨

인치 & 미리 사양

142P 시리즈



142P 8xD

인치 & 미리 시리즈

- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 흘치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- 내부 쿨러트 지원으로 칩 배출과 수명 개선
- 크로스 홀과 경사면 같은 난해한 작업시, 4마진 디자인에 의한 홀 진직도와 진원도 개선
- 특히 Ti-NAMITE-X 코팅과 고성능 소재로, 난삭재 가공시 내마모성과 인성이 우수
- HRC50 이하 소재에 추천

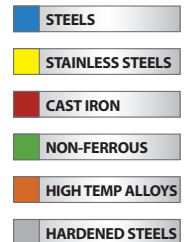
inch & mm								EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	샵크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	샵크 길이 LS	Ti-NAMITE-X (TX)
0.1181	3,000 mm		6,0	72,0	34,0	29,0	36,0	66606
0.1220	3,100 mm		6,0	72,0	34,0	29,0	36,0	66607
0.1250	3,175 mm	1/8	6,0	72,0	34,0	29,0	36,0	56472
0.1260	3,200 mm		6,0	72,0	34,0	29,0	36,0	66608
0.1299	3,300 mm		6,0	72,0	34,0	29,0	36,0	66609
0.1339	3,400 mm		6,0	72,0	34,0	29,0	36,0	66610
0.1360	3,454 mm	#29	6,0	72,0	34,0	29,0	36,0	56473
0.1378	3,500 mm		6,0	72,0	34,0	29,0	36,0	66611
0.1406	3,571 mm	9/64	6,0	72,0	34,0	29,0	36,0	56474
0.1417	3,600 mm		6,0	72,0	34,0	29,0	36,0	66612
0.1457	3,700 mm		6,0	72,0	34,0	29,0	36,0	66613
0.1496	3,800 mm		6,0	81,0	43,0	37,0	36,0	66614
0.1535	3,900 mm		6,0	81,0	43,0	37,0	36,0	66615
0.1562	3,967 mm	5/32	6,0	81,0	43,0	37,0	36,0	56475
0.1575	4,000 mm		6,0	81,0	43,0	37,0	36,0	66616
0.1590	4,039 mm	#21	6,0	81,0	43,0	37,0	36,0	56476
0.1614	4,100 mm		6,0	81,0	43,0	37,0	36,0	66617
0.1654	4,200 mm		6,0	81,0	43,0	37,0	36,0	66618
0.1693	4,300 mm		6,0	81,0	43,0	37,0	36,0	66619
0.1719	4,366 mm	11/64	6,0	81,0	43,0	36,0	36,0	56477
0.1732	4,400 mm		6,0	81,0	43,0	36,0	36,0	66620
0.1772	4,500 mm		6,0	81,0	43,0	36,0	36,0	66621
0.1811	4,600 mm		6,0	81,0	43,0	36,0	36,0	66622
0.1850	4,699 mm	#13	6,0	81,0	43,0	36,0	36,0	66623
0.1875	4,763 mm	3/16	6,0	95,0	57,0	50,0	36,0	56478
0.1890	4,801 mm	#12	6,0	95,0	57,0	50,0	36,0	66624
0.1929	4,900 mm		6,0	95,0	57,0	50,0	36,0	66625
0.1969	5,000 mm		6,0	95,0	57,0	49,0	36,0	66626
0.2008	5,100 mm		6,0	95,0	57,0	49,0	36,0	66627
0.2031	5,159 mm	13/64	6,0	95,0	57,0	49,0	36,0	56479
0.2047	5,200 mm		6,0	95,0	57,0	49,0	36,0	66628
0.2087	5,300 mm		6,0	95,0	57,0	49,0	36,0	66629
0.2126	5,400 mm		6,0	95,0	57,0	49,0	36,0	66630
0.2165	5,500 mm		6,0	95,0	57,0	49,0	36,0	66631
0.2188	5,558 mm	7/32	6,0	95,0	57,0	49,0	36,0	56480
0.2205	5,600 mm		6,0	95,0	57,0	49,0	36,0	66632
0.2244	5,700 mm		6,0	95,0	57,0	48,0	36,0	66633
0.2283	5,800 mm		6,0	95,0	57,0	48,0	36,0	66634
0.2323	5,900 mm		6,0	95,0	57,0	48,0	36,0	66635
0.2344	5,954 mm	15/64	6,0	95,0	57,0	48,0	36,0	56481
0.2362	6,000 mm		6,0	95,0	57,0	48,0	36,0	66636
0.2402	6,100 mm		8,0	114,0	76,0	67,0	36,0	66637
0.2441	6,200 mm		8,0	114,0	76,0	67,0	36,0	66638
0.2480	6,300 mm		8,0	114,0	76,0	67,0	36,0	66639

공차 (inch)

- ≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆
- >.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h₆
- >.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h₆
- >.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h₆
- >.7087-1.1811 외경
DC = +.00031/+0.0114
DCON= h₆

공차 (mm)

- ≤3 외경
DC = +0,002/+0,012
DCON= h₆
- >3-6 외경
DC = +0,004/+0,016
DCON= h₆
- >6-10 외경
DC = +0,006/+0,021
DCON= h₆
- >10-18 외경
DC = +0,007/+0,025
DCON= h₆
- >18-30 외경
DC = +0,008/+0,029
DCON= h₆



L

슬리드 드릴

엔드밀

미세가공

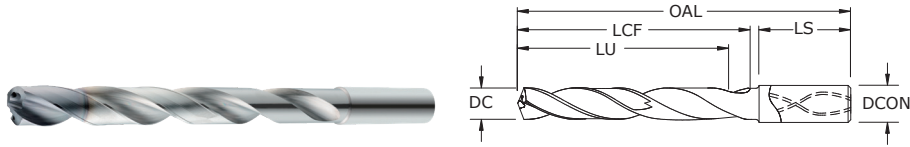
드릴

SGS

공업용 나이프



인치 & 미리 사양
142P 시리즈



142P 8xD
인치 & 미리 시리즈

공차 (inch)

≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆

>.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h₆

>.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h₆

>.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h₆

>.7087-1.1811 외경
DC = +.00031/+0.00114
DCON= h₆

공차 (mm)

≤3 외경
DC = +0,002/+0,012
DCON= h₆

>3-6 외경
DC = +0,004/+0,016
DCON= h₆

>6-10 외경
DC = +0,006/+0,021
DCON= h₆

>10-18 외경
DC = +0,007/+0,025
DCON= h₆

>18-30 외경
DC = +0,008/+0,029
DCON= h₆

STEELS

STAINLESS STEELS

CAST IRON

NON-FERROUS

HIGH TEMP ALLOYS

HARDENED STEELS

inch & mm		inch & mm							EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크길이 LS	Ti-NAMITE-X (TX)	
0.2500	6,350 mm	1/4 E	8,0	114,0	76,0	66,0	36,0	56482	
0.2520	6,400 mm		8,0	114,0	76,0	66,0	36,0	66640	
0.2559	6,500 mm		8,0	114,0	76,0	66,0	36,0	66641	
0.2570	6,528 mm	F	8,0	114,0	76,0	66,0	36,0	56483	
0.2598	6,600 mm		8,0	114,0	76,0	66,0	36,0	66642	
0.2638	6,700 mm		8,0	114,0	76,0	66,0	36,0	66643	
0.2656	6,746 mm	17/64	8,0	114,0	76,0	66,0	36,0	56484	
0.2677	6,800 mm		8,0	114,0	76,0	66,0	36,0	66644	
0.2717	6,900 mm		8,0	114,0	76,0	66,0	36,0	66645	
0.2756	7,000 mm		8,0	114,0	76,0	65,0	36,0	66646	
0.2795	7,100 mm		8,0	114,0	76,0	65,0	36,0	66647	
0.2812	7,142 mm	9/32	8,0	114,0	76,0	65,0	36,0	56485	
0.2835	7,200 mm		8,0	114,0	76,0	65,0	36,0	66648	
0.2874	7,300 mm		8,0	114,0	76,0	65,0	36,0	66649	
0.2913	7,400 mm		8,0	114,0	76,0	65,0	36,0	66650	
0.2953	7,500 mm		8,0	114,0	76,0	65,0	36,0	66651	
0.2969	7,541 mm	19/64	8,0	114,0	76,0	65,0	36,0	56486	
0.2992	7,600 mm		8,0	114,0	76,0	65,0	36,0	66652	
0.3031	7,700 mm		8,0	114,0	76,0	64,0	36,0	66653	
0.3071	7,800 mm		8,0	114,0	76,0	64,0	36,0	66654	
0.3110	7,900 mm		8,0	114,0	76,0	64,0	36,0	66655	
0.3125	7,938 mm	5/16	8,0	114,0	76,0	64,0	36,0	56487	
0.3150	8,000 mm		8,0	114,0	76,0	64,0	36,0	66656	
0.3189	8,100 mm		10,0	142,0	95,0	83,0	40,0	66657	
0.3228	8,200 mm		10,0	142,0	95,0	83,0	40,0	66658	
0.3268	8,300 mm		10,0	142,0	95,0	83,0	40,0	66659	
0.3281	8,334 mm	21/64	10,0	142,0	95,0	83,0	40,0	56488	
0.3307	8,400 mm		10,0	142,0	95,0	82,0	40,0	66660	
0.3320	8,433 mm	Q	10,0	142,0	95,0	82,0	40,0	56489	
0.3346	8,500 mm		10,0	142,0	95,0	82,0	40,0	66661	
0.3386	8,600 mm		10,0	142,0	95,0	82,0	40,0	66662	
0.3425	8,700 mm		10,0	142,0	95,0	82,0	40,0	66663	
0.3438	8,733 mm	11/32	10,0	142,0	95,0	82,0	40,0	56490	
0.3465	8,800 mm		10,0	142,0	95,0	82,0	40,0	66664	
0.3504	8,900 mm		10,0	142,0	95,0	82,0	40,0	66665	
0.3543	9,000 mm		10,0	142,0	95,0	82,0	40,0	66666	
0.3583	9,100 mm		10,0	142,0	95,0	81,0	40,0	66667	
0.3594	9,129 mm	23/64	10,0	142,0	95,0	81,0	40,0	56491	
0.3622	9,200 mm		10,0	142,0	95,0	81,0	40,0	66668	
0.3661	9,300 mm		10,0	142,0	95,0	81,0	40,0	66669	
0.3680	9,347 mm	U	10,0	142,0	95,0	81,0	40,0	56492	
0.3701	9,400 mm		10,0	142,0	95,0	81,0	40,0	66670	
0.3740	9,500 mm		10,0	142,0	95,0	81,0	40,0	66671	
0.3750	9,525 mm	3/8	10,0	142,0	95,0	81,0	40,0	56493	

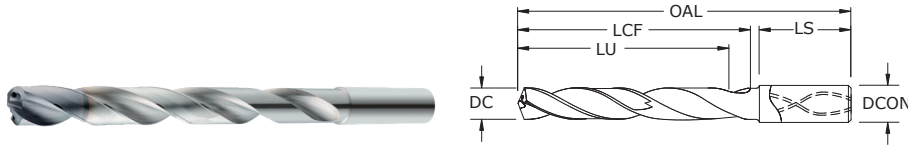
- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- 내부 콜러트 지원으로 칩 배출과 수명 개선
- 크로스 홀과 경사면 같은 난해한 작업시, 4-마진 디자인에 의한 홀 진직도와 진원도 개선
- 특히 Ti-NAMITE-X 코팅과 고성능 모재로, 난삭재 가공시 내마모성과 인성이 우수
- HRC50 이하 소재에 추천



슬리드 드릴

인치 & 미리 사양

142P 시리즈



142P 8xD

인치 & 미리 시리즈

- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- 내부 쿨러트 지원으로 칩 배출과 수명 개선
- 크로스 홀과 경사면 같은 난해한 작업시, 4마진 디자인에 의한 홀 진직도와 진원도 개선
- 특히 Ti-NAMITE-X 코팅과 고성능 모재로, 난삭재 가공시 내마모성과 인성이 우수
- HRC50 이하 소재에 추천

inch & mm									EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	샵크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	샵크 길이 LS	Ti-NAMITE-X (TX)	
0.3780	9,600 mm		10,0	142,0	95,0	81,0	40,0	66672	
0.3819	9,700 mm		10,0	142,0	95,0	80,0	40,0	66673	
0.3858	9,800 mm		10,0	142,0	95,0	80,0	40,0	66674	
0.3898	9,900 mm		10,0	142,0	95,0	80,0	40,0	66675	
0.3906	9,921 mm	25/64	10,0	142,0	95,0	80,0	40,0	56494	
0.3937	10,000 mm		10,0	142,0	95,0	80,0	40,0	66676	
0.3976	10,100 mm		12,0	162,0	114,0	99,0	45,0	66677	
0.4016	10,200 mm		12,0	162,0	114,0	99,0	45,0	66678	
0.4055	10,300 mm		12,0	162,0	114,0	99,0	45,0	66679	
0.4062	10,317 mm	13/32	12,0	162,0	114,0	99,0	45,0	56495	
0.4095	10,400 mm		12,0	162,0	114,0	98,0	45,0	66680	
0.4134	10,500 mm		12,0	162,0	114,0	98,0	45,0	66681	
0.4173	10,600 mm		12,0	162,0	114,0	98,0	45,0	66682	
0.4213	10,700 mm		12,0	162,0	114,0	98,0	45,0	66683	
0.4219	10,716 mm	27/64	12,0	162,0	114,0	98,0	45,0	56496	
0.4252	10,800 mm		12,0	162,0	114,0	98,0	45,0	66684	
0.4291	10,900 mm		12,0	162,0	114,0	98,0	45,0	66685	
0.4331	11,000 mm		12,0	162,0	114,0	97,0	45,0	66686	
0.4370	11,100 mm		12,0	162,0	114,0	97,0	45,0	66687	
0.4375	11,113 mm	7/16	12,0	162,0	114,0	97,0	45,0	56497	
0.4409	11,200 mm		12,0	162,0	114,0	97,0	45,0	66688	
0.4449	11,300 mm		12,0	162,0	114,0	97,0	45,0	66689	
0.4488	11,400 mm		12,0	162,0	114,0	97,0	45,0	66690	
0.4528	11,500 mm		12,0	162,0	114,0	97,0	45,0	66691	
0.4567	11,600 mm		12,0	162,0	114,0	97,0	45,0	66692	
0.4606	11,700 mm		12,0	162,0	114,0	96,0	45,0	66693	
0.4646	11,800 mm		12,0	162,0	114,0	96,0	45,0	66694	
0.4685	11,900 mm		12,0	162,0	114,0	96,0	45,0	66695	
0.4688	11,908 mm	15/32	12,0	162,0	114,0	96,0	45,0	56498	
0.4724	12,000 mm		12,0	162,0	114,0	96,0	45,0	66696	
0.4844	12,304 mm	31/64	14,0	178,0	133,0	114,0	45,0	56499	
0.4921	12,500 mm		14,0	178,0	133,0	114,0	45,0	66697	
0.5000	12,700 mm	1/2	14,0	178,0	133,0	114,0	45,0	56500	
0.5039	12,800 mm		14,0	178,0	133,0	114,0	45,0	66698	
0.5118	13,000 mm		14,0	178,0	133,0	114,0	45,0	66699	
0.5156	13,096 mm	33/64	14,0	178,0	133,0	113,0	45,0	56501	
0.5315	13,500 mm		14,0	178,0	133,0	113,0	45,0	66700	
0.5433	13,800 mm		14,0	178,0	133,0	113,0	45,0	66701	
0.5512	14,000 mm		14,0	178,0	133,0	113,0	45,0	66702	
0.5625	14,288 mm	9/16	16,0	203,0	152,0	130,0	48,0	56502	
0.5709	14,500 mm		16,0	203,0	152,0	130,0	48,0	66703	
0.5781	14,684 mm	37/64	16,0	203,0	152,0	130,0	48,0	56503	
0.5827	14,800 mm		16,0	203,0	152,0	130,0	48,0	66704	
0.5906	15,000 mm		16,0	203,0	152,0	129,0	48,0	66705	

- 공차 (inch)**
- ≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆
 - >.1181~.2362 외경
DC = +.00016/+0.00063
DCON= h₆
 - >.2362~.3937 외경
DC = +.00024/+0.00083
DCON= h₆
 - >.3937~.7087 외경
DC = +.00028/+0.00098
DCON= h₆
 - >.7087~1.1811 외경
DC = +.00031/+0.0114
DCON= h₆

- 공차 (mm)**
- ≤3 외경
DC = +0,002/+0,012
DCON= h₆
 - >3~6 외경
DC = +0,004/+0,016
DCON= h₆
 - >6~10 외경
DC = +0,006/+0,021
DCON= h₆
 - >10~18 외경
DC = +0,007/+0,025
DCON= h₆
 - >18~30 외경
DC = +0,008/+0,029
DCON= h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

L

슬리드 드릴

엔드밀

미세가공

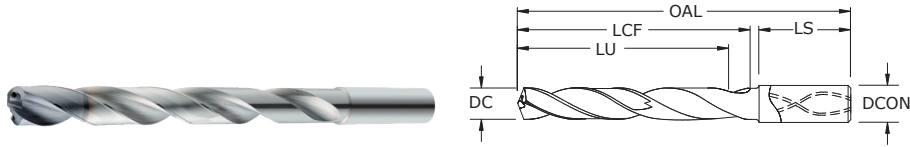
드릴

SGS

공업용 나이프



인치 & 미리 사양
142P 시리즈



142P 8xD
인치 & 미리 시리즈

공차 (inch)

- ≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆
- >.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h₆
- >.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h₆
- >.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h₆
- >.7087-1.1811 외경
DC = +.00031/+0.00114
DCON= h₆

공차 (mm)

- ≤3 외경
DC = +0,002/+0,012
DCON= h₆
- >3-6 외경
DC = +0,004/+0,016
DCON= h₆
- >6-10 외경
DC = +0,006/+0,021
DCON= h₆
- >10-18 외경
DC = +0,007/+0,025
DCON= h₆
- >18-30 외경
DC = +0,008/+0,029
DCON= h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

inch & mm

DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크 길이 LS	EDP NO.
0.6102	15,500 mm		16,0	203,0	152,0	129,0	48,0	66706
0.6221	15,800 mm		16,0	203,0	152,0	128,0	48,0	66707
0.6250	15,875 mm	5/8	16,0	203,0	152,0	128,0	48,0	56504
0.6299	16,000 mm		16,0	203,0	152,0	128,0	48,0	66708
0.6562	16,667 mm	21/32	18,0	222,0	171,0	145,0	48,0	56505
0.6875	17,463 mm	11/16	18,0	222,0	171,0	145,0	48,0	56506
0.7500	19,050 mm	3/4	20,0	243,0	190,0	161,0	50,0	56507

Ti-NAMITE-X (TX)

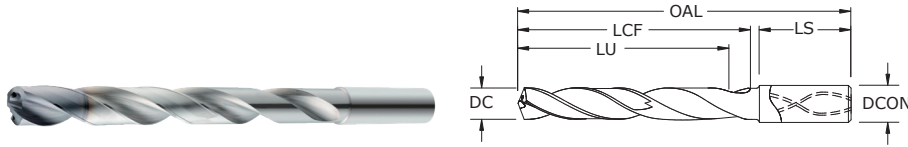
- 고성능 포인트 디자인으로 소재에 안정적으로 진입, 홀치수, 원통도 개선, 돌입 저항이 작고 수명 연장
- 내부 콜러트 지원으로 칩 배출과 수명 개선
- 크로스 홀과 경사면 같은 난해한 작업시, 4-마진 디자인에 의한 홀 진직도와 직원도 개선
- 특허 Ti-NAMITE-X 코팅과 고성능 모재로, 난삭재 가공시 내마모성과 인성이 우수
- HRc50 이하 소재에 추천



슬리드 톨

인치 & 미리 사양

142P 시리즈



142P 12xD

인치 & 미리 시리즈

- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- 내부 쿨러트 지원으로 칩 배출과 수명 개선
- 크로스 홀과 경사면 같은 난해한 작업시, 4마진 디자인에 의한 홀 진직도와 진원도 개선
- 특히 Ti-NAMITE-X 코팅과 고성능 소재로, 난삭재 가공시 내마모성과 인성이 우수
- HRC50 이하 소재에 추천

inch & mm								EDP NO.	공차 (inch)
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	샹크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	샹크 길이 LS	Ti-NAMITE-X (TX)	
0.1181	3,000 mm		6,0	87,0	49,0	44,0	36,0	66709	≤.1181 외경 DC = +.00008/+0.00047 DCON= h ₆
0.1220	3,100 mm		6,0	87,0	49,0	44,0	36,0	66710	>.1181-.2362 외경 DC = +.00016/+0.00063 DCON= h ₆
0.1250	3,175 mm	1/8	6,0	87,0	49,0	44,0	36,0	56508	>.2362-.3937 외경 DC = +.00024/+0.00083 DCON= h ₆
0.1260	3,200 mm		6,0	87,0	49,0	44,0	36,0	66711	
0.1299	3,300 mm		6,0	87,0	49,0	44,0	36,0	66712	
0.1339	3,400 mm		6,0	87,0	49,0	44,0	36,0	66713	
0.1360	3,454 mm	#29	6,0	87,0	49,0	44,0	36,0	56509	>.3937-.7087 외경 DC = +.00028/+0.00098 DCON= h ₆
0.1378	3,500 mm		6,0	87,0	49,0	44,0	36,0	66714	
0.1406	3,571 mm	9/64	6,0	87,0	49,0	43,0	36,0	56510	>.7087-1.1811 외경 DC = +.00031/+0.00114 DCON= h ₆
0.1417	3,600 mm		6,0	87,0	49,0	43,0	36,0	66715	
0.1457	3,700 mm		6,0	87,0	49,0	43,0	36,0	66716	
0.1496	3,800 mm		6,0	100,0	62,0	56,0	36,0	66717	
0.1535	3,900 mm		6,0	100,0	62,0	56,0	36,0	66718	
0.1562	3,967 mm	5/32	6,0	100,0	62,0	56,0	36,0	56511	공차 (mm)
0.1575	4,000 mm		6,0	100,0	62,0	56,0	36,0	66719	≤3 외경 DC = +0,002/+0,012 DCON= h ₆
0.1590	4,039 mm	#21	6,0	100,0	62,0	56,0	36,0	56512	>3-6 외경 DC = +0,004/+0,016 DCON= h ₆
0.1614	4,100 mm		6,0	100,0	62,0	56,0	36,0	66720	>6-10 외경 DC = +0,006/+0,021 DCON= h ₆
0.1654	4,200 mm		6,0	100,0	62,0	55,0	36,0	66721	>10-18 외경 DC = +0,007/+0,025 DCON= h ₆
0.1693	4,300 mm		6,0	100,0	62,0	55,0	36,0	66722	>18-30 외경 DC = +0,008/+0,029 DCON= h ₆
0.1719	4,366 mm	11/64	6,0	100,0	62,0	55,0	36,0	56513	
0.1732	4,400 mm		6,0	100,0	62,0	55,0	36,0	66723	
0.1772	4,500 mm		6,0	100,0	62,0	55,0	36,0	66724	
0.1811	4,600 mm		6,0	100,0	62,0	55,0	36,0	66725	
0.1850	4,699 mm	#13	6,0	100,0	62,0	55,0	36,0	66726	
0.1875	4,763 mm	3/16	6,0	119,0	81,0	74,0	36,0	56514	
0.1890	4,801 mm	#12	6,0	119,0	81,0	74,0	36,0	66727	
0.1929	4,900 mm		6,0	119,0	81,0	74,0	36,0	66728	
0.1969	5,000 mm		6,0	119,0	81,0	73,0	36,0	66729	
0.2008	5,100 mm		6,0	119,0	81,0	73,0	36,0	66730	
0.2031	5,159 mm	13/64	6,0	119,0	81,0	73,0	36,0	56515	
0.2047	5,200 mm		6,0	119,0	81,0	73,0	36,0	66731	
0.2087	5,300 mm		6,0	119,0	81,0	73,0	36,0	66732	
0.2126	5,400 mm		6,0	119,0	81,0	73,0	36,0	66733	
0.2165	5,500 mm		6,0	119,0	81,0	73,0	36,0	66734	
0.2188	5,558 mm	7/32	6,0	119,0	81,0	73,0	36,0	56516	
0.2205	5,600 mm		6,0	119,0	81,0	73,0	36,0	66735	
0.2244	5,700 mm		6,0	119,0	81,0	72,0	36,0	66736	
0.2283	5,800 mm		6,0	119,0	81,0	72,0	36,0	66737	
0.2323	5,900 mm		6,0	119,0	81,0	72,0	36,0	66738	
0.2344	5,954 mm	15/64	6,0	119,0	81,0	72,0	36,0	56517	
0.2362	6,000 mm		6,0	119,0	81,0	72,0	36,0	66739	
0.2402	6,100 mm		8,0	146,0	108,0	99,0	36,0	66740	
0.2441	6,200 mm		8,0	146,0	108,0	99,0	36,0	66741	
0.2480	6,300 mm		8,0	146,0	108,0	99,0	36,0	66742	

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

L



슬리드 드릴

엔드밀

미세가공

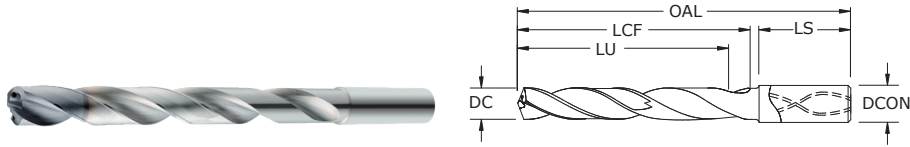
드릴

SGS

공업용 나이프



인치 & 미리 사양
142P 시리즈



142P 12xD
인치 & 미리 시리즈

공차 (inch)

≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆

>.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h₆

>.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h₆

>.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h₆

>.7087-1.1811 외경
DC = +.00031/+0.00114
DCON= h₆

공차 (mm)

≤3 외경
DC = +0,002/+0,012
DCON= h₆

>3-6 외경
DC = +0,004/+0,016
DCON= h₆

>6-10 외경
DC = +0,006/+0,021
DCON= h₆

>10-18 외경
DC = +0,007/+0,025
DCON= h₆

>18-30 외경
DC = +0,008/+0,029
DCON= h₆

STEELS

STAINLESS STEELS

CAST IRON

NON-FERROUS

HIGH TEMP ALLOYS

HARDENED STEELS

inch & mm		inch & mm							EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크길이 LS	Ti-NAMITE-X (TX)	
0.2500	6,350 mm	1/4 E	8,0	146,0	108,0	98,0	36,0	56518	
0.2520	6,400 mm		8,0	146,0	108,0	98,0	36,0	66743	
0.2559	6,500 mm		8,0	146,0	108,0	98,0	36,0	66744	
0.2570	6,528 mm	F	8,0	146,0	108,0	98,0	36,0	56519	
0.2598	6,600 mm		8,0	146,0	108,0	98,0	36,0	66745	
0.2638	6,700 mm		8,0	146,0	108,0	98,0	36,0	66746	
0.2656	6,746 mm	17/64	8,0	146,0	108,0	98,0	36,0	56520	
0.2677	6,800 mm		8,0	146,0	108,0	98,0	36,0	66747	
0.2717	6,900 mm		8,0	146,0	108,0	98,0	36,0	66748	
0.2756	7,000 mm		8,0	146,0	108,0	97,0	36,0	66749	
0.2795	7,100 mm		8,0	146,0	108,0	97,0	36,0	66750	
0.2812	7,142 mm	9/32	8,0	146,0	108,0	97,0	36,0	56521	
0.2835	7,200 mm		8,0	146,0	108,0	97,0	36,0	66751	
0.2874	7,300 mm		8,0	146,0	108,0	97,0	36,0	66752	
0.2913	7,400 mm		8,0	146,0	108,0	97,0	36,0	66753	
0.2953	7,500 mm		8,0	146,0	108,0	97,0	36,0	66754	
0.2969	7,541 mm	19/64	8,0	146,0	108,0	97,0	36,0	56522	
0.2992	7,600 mm		8,0	146,0	108,0	97,0	36,0	66755	
0.3031	7,700 mm		8,0	146,0	108,0	96,0	36,0	66756	
0.3071	7,800 mm		8,0	146,0	108,0	96,0	36,0	66757	
0.3110	7,900 mm		8,0	146,0	108,0	96,0	36,0	66758	
0.3125	7,938 mm	5/16	8,0	146,0	108,0	96,0	36,0	56523	
0.3150	8,000 mm		8,0	146,0	108,0	96,0	36,0	66759	
0.3189	8,100 mm		10,0	182,0	135,0	123,0	40,0	66760	
0.3228	8,200 mm		10,0	182,0	135,0	123,0	40,0	66761	
0.3268	8,300 mm		10,0	182,0	135,0	123,0	40,0	66762	
0.3281	8,334 mm	21/64	10,0	182,0	135,0	123,0	40,0	56524	
0.3307	8,400 mm		10,0	182,0	135,0	122,0	40,0	66763	
0.3320	8,433 mm	Q	10,0	182,0	135,0	122,0	40,0	56525	
0.3346	8,500 mm		10,0	182,0	135,0	122,0	40,0	66764	
0.3386	8,600 mm		10,0	182,0	135,0	122,0	40,0	66765	
0.3425	8,700 mm		10,0	182,0	135,0	122,0	40,0	66766	
0.3438	8,733 mm	11/32	10,0	182,0	135,0	122,0	40,0	56526	
0.3465	8,800 mm		10,0	182,0	135,0	122,0	40,0	66767	
0.3504	8,900 mm		10,0	182,0	135,0	122,0	40,0	66768	
0.3543	9,000 mm		10,0	182,0	135,0	122,0	40,0	66769	
0.3583	9,100 mm		10,0	182,0	135,0	121,0	40,0	66770	
0.3594	9,129 mm	23/64	10,0	182,0	135,0	121,0	40,0	56527	
0.3622	9,200 mm		10,0	182,0	135,0	121,0	40,0	66771	
0.3661	9,300 mm		10,0	182,0	135,0	121,0	40,0	66772	
0.3680	9,347 mm	U	10,0	182,0	135,0	121,0	40,0	56528	
0.3701	9,400 mm		10,0	182,0	135,0	121,0	40,0	66773	
0.3740	9,500 mm		10,0	182,0	135,0	121,0	40,0	66774	
0.3750	9,525 mm	3/8	10,0	182,0	135,0	121,0	40,0	56529	

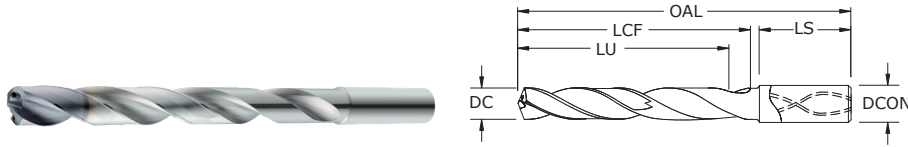
- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- 내부 콜러트 지원으로 칩 배출과 수명 개선
- 크로스 홀과 경사면 같은 난해한 작업시, 4-마진 디자인에 의한 홀 진직도와 진원도 개선
- 특히 Ti-NAMITE-X 코팅과 고성능 모재로, 난삭재 가공시 내마모성과 인성이 우수
- HRC50 이하 소재에 추천



슬리드 드릴

인치 & 미리 사양

142P 시리즈



142P 12xD

인치 & 미리 시리즈

- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 흘치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- 내부 콜러트 지원으로 칩 배출과 수명 개선
- 크로스 홀과 경사면 같은 난해한 작업시, 4-마진 디자인에 의한 홀 진직도와 진원도 개선
- 특히 Ti-NAMITE-X 코팅과 고성능 모재로, 난삭재 가공시 내마모성과 인성이 우수
- HRC50 이하 소재에 추천

inch & mm								EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	샤크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	샤크 길이 LS	Ti-NAMITE-X (TX)
0.3780	9,600 mm		10,0	182,0	135,0	121,0	40,0	66775
0.3819	9,700 mm		10,0	182,0	135,0	120,0	40,0	66776
0.3858	9,800 mm		10,0	182,0	135,0	120,0	40,0	66777
0.3898	9,900 mm		10,0	182,0	135,0	120,0	40,0	66778
0.3906	9,921 mm	25/64	10,0	182,0	135,0	120,0	40,0	56530
0.3937	10,000 mm		10,0	182,0	135,0	120,0	40,0	66779
0.3976	10,100 mm		12,0	210,0	162,0	147,0	45,0	66780
0.4016	10,200 mm		12,0	210,0	162,0	147,0	45,0	66781
0.4055	10,300 mm		12,0	210,0	162,0	147,0	45,0	66782
0.4062	10,317 mm	13/32	12,0	210,0	162,0	147,0	45,0	56531
0.4095	10,400 mm		12,0	210,0	162,0	146,0	45,0	66783
0.4134	10,500 mm		12,0	210,0	162,0	146,0	45,0	66784
0.4173	10,600 mm		12,0	210,0	162,0	146,0	45,0	66785
0.4213	10,700 mm		12,0	210,0	162,0	146,0	45,0	66786
0.4219	10,716 mm	27/64	12,0	210,0	162,0	146,0	45,0	56532
0.4252	10,800 mm		12,0	210,0	162,0	146,0	45,0	66787
0.4291	10,900 mm		12,0	210,0	162,0	146,0	45,0	66788
0.4331	11,000 mm		12,0	210,0	162,0	145,0	45,0	66789
0.4370	11,100 mm		12,0	210,0	162,0	145,0	45,0	66790
0.4375	11,113 mm	7/16	12,0	210,0	162,0	145,0	45,0	56533
0.4409	11,200 mm		12,0	210,0	162,0	145,0	45,0	66791
0.4449	11,300 mm		12,0	210,0	162,0	145,0	45,0	66792
0.4488	11,400 mm		12,0	210,0	162,0	145,0	45,0	66793
0.4528	11,500 mm		12,0	210,0	162,0	145,0	45,0	66794
0.4567	11,600 mm		12,0	210,0	162,0	145,0	45,0	66795
0.4606	11,700 mm		12,0	210,0	162,0	144,0	45,0	66796
0.4646	11,800 mm		12,0	210,0	162,0	144,0	45,0	66797
0.4685	11,900 mm		12,0	210,0	162,0	144,0	45,0	66798
0.4688	11,908 mm	15/32	12,0	210,0	162,0	144,0	45,0	56534
0.4724	12,000 mm		12,0	210,0	162,0	144,0	45,0	66799
0.4844	12,304 mm	31/64	14,0	234,0	189,0	171,0	45,0	56535
0.4921	12,500 mm		14,0	234,0	189,0	170,0	45,0	66800
0.5000	12,700 mm	1/2	14,0	234,0	189,0	170,0	45,0	56536
0.5039	12,800 mm		14,0	234,0	189,0	170,0	45,0	66801
0.5118	13,000 mm		14,0	234,0	189,0	170,0	45,0	66802
0.5156	13,096 mm	33/64	14,0	234,0	189,0	169,0	45,0	56537
0.5315	13,500 mm		14,0	234,0	189,0	169,0	45,0	66803
0.5433	13,800 mm		14,0	234,0	189,0	168,0	45,0	66804
0.5512	14,000 mm		14,0	234,0	189,0	168,0	45,0	66805
0.5625	14,288 mm	9/16	16,0	267,0	216,0	195,0	48,0	56538
0.5709	14,500 mm		16,0	267,0	216,0	194,0	48,0	66806
0.5781	14,684 mm	37/64	16,0	267,0	216,0	194,0	48,0	56539
0.5827	14,800 mm		16,0	267,0	216,0	194,0	48,0	66807
0.5906	15,000 mm		16,0	267,0	216,0	193,0	48,0	66808

공차 (inch)

- ≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆
- >.1181~.2362 외경
DC = +.00016/+0.00063
DCON= h₆
- >.2362~.3937 외경
DC = +.00024/+0.00083
DCON= h₆
- >.3937~.7087 외경
DC = +.00028/+0.00098
DCON= h₆
- >.7087~1.1811 외경
DC = +.00031/+0.0114
DCON= h₆

공차 (mm)

- ≤3 외경
DC = +0,002/+0,012
DCON= h₆
- >3~6 외경
DC = +0,004/+0,016
DCON= h₆
- >6~10 외경
DC = +0,006/+0,021
DCON= h₆
- >10~18 외경
DC = +0,007/+0,025
DCON= h₆
- >18~30 외경
DC = +0,008/+0,029
DCON= h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS



드릴

엔드밀

미세가공

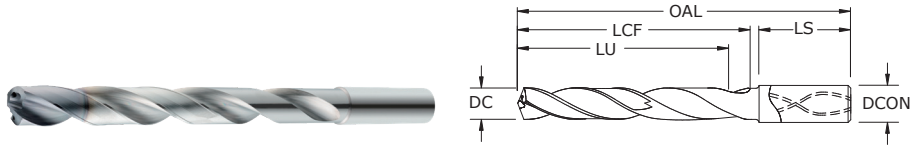
드릴

SGS

공업용 나이프



인치 & 미리 사양
142P 시리즈



142P 12xD
인치 & 미리 시리즈

공차 (inch)

- ≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆
- >.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h₆
- >.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h₆
- >.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h₆
- >.7087-1.1811 외경
DC = +.00031/+0.00114
DCON= h₆

공차 (mm)

- ≤3 외경
DC = +0,002/+0,012
DCON= h₆
- >3-6 외경
DC = +0,004/+0,016
DCON= h₆
- >6-10 외경
DC = +0,006/+0,021
DCON= h₆
- >10-18 외경
DC = +0,007/+0,025
DCON= h₆
- >18-30 외경
DC = +0,008/+0,029
DCON= h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

inch & mm

DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크길이 LS	EDP NO.	Ti-NAMITE-X (TX)
0.6102	15,500 mm		16,0	267,0	216,0	193,0	48,0	66809	
0.6221	15,800 mm		16,0	267,0	216,0	192,0	48,0	66810	
0.6250	15,875 mm	5/8	16,0	267,0	216,0	192,0	48,0	56540	
0.6299	16,000 mm		16,0	267,0	216,0	192,0	48,0	66811	
0.6562	16,667 mm	21/32	18,0	292,0	241,0	216,0	48,0	56541	
0.6875	17,463 mm	11/16	18,0	292,0	241,0	215,0	48,0	56542	
0.7500	19,050 mm	3/4	20,0	319,0	266,0	238,0	50,0	56543	

- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- 내부 콜런트 지원으로 칩 배출과 수명 개선
- 크로스 홀과 경사면 같은 난해한 작업시, 4-마진 디자인에 의한 홀 직진도와 직원도 개선
- 특허 Ti-NAMITE-X 코팅과 고성능 모재로, 난삭재 가공시 내마모성과 인성이 우수
- HRc50 이하 소재에 추천



슬리드 톨

미리 사양
142P 시리즈



시리즈 142P 미리 사양	경도	Vc (m/min)	DC - mm								
			3	6	8	10	12	14	16		
탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	130 (104-155)	RPM	13733	6867	5150	4120	3433	2943	2575	
			Fr	0.104	0.207	0.276	0.345	0.414	0.483	0.552	
			Feed (mm/min)	1422	1422	1422	1422	1422	1422	1422	
	≤ 275 Bhn or ≤ 28 HRc	116 (93-139)	RPM	12279	6140	4605	3684	3070	2631	2302	
			Fr	0.093	0.186	0.248	0.310	0.372	0.434	0.496	
			Feed (mm/min)	1143	1143	1143	1143	1143	1143	1143	
	≤ 425 Bhn or ≤ 45 HRc	67 (54-80)	RPM	7109	3555	2666	2133	1777	1523	1333	
			Fr	0.079	0.157	0.210	0.262	0.314	0.367	0.419	
			Feed (mm/min)	559	559	559	559	559	559	559	
합금강 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	101 (80-121)	RPM	10664	5332	3999	3199	2666	2285	1999	
			Fr	0.079	0.157	0.210	0.262	0.314	0.367	0.419	
			Feed (mm/min)	838	838	838	838	838	838	838	
	≤ 375 Bhn or ≤ 40 HRc	61 (49-73)	RPM	6463	3231	2424	1939	1616	1385	1212	
			Fr	0.067	0.134	0.178	0.223	0.267	0.312	0.356	
			Feed (mm/min)	432	432	432	432	432	432	432	
	≤ 425 Bhn or ≤ 45 HRc	43 (34-51)	RPM	4524	2262	1696	1357	1131	969	848	
			Fr	0.048	0.095	0.127	0.159	0.191	0.223	0.255	
			Feed (mm/min)	216	216	216	216	216	216	216	
≤ 200 Bhn or ≤ 13 HRc	44 (35-53)	RPM	4686	2343	1757	1406	1171	1004	879		
		Fr	0.068	0.136	0.181	0.226	0.271	0.316	0.361		
		Feed (mm/min)	318	318	318	318	318	318	318		
≤ 375 Bhn or ≤ 40 HRc	29 (23-35)	RPM	3070	1535	1151	921	767	658	576		
		Fr	0.032	0.065	0.086	0.108	0.129	0.151	0.172		
		Feed (mm/min)	99	99	99	99	99	99	99		
스테인리스강 (패삭강) 303, 416, 420F, 430F, 440F	≤ 185 Bhn or ≤ 9 HRc	93 (74-112)	RPM	9856	9856	4928	3696	2957	2464	2112	1848
			Fr	0.062	0.062	0.124	0.165	0.206	0.247	0.289	0.330
			Feed (mm/min)	610	610	610	610	610	610	610	610
	≤ 275 Bhn or ≤ 28 HRc	59 (48-71)	RPM	6301	6301	3151	2363	1890	1575	1350	1181
			Fr	0.048	0.048	0.097	0.129	0.161	0.193	0.226	0.258
			Feed (mm/min)	305	305	305	305	305	305	305	305
	≤ 275 Bhn or ≤ 28 HRc	46 (37-55)	RPM	4847	4847	2424	1818	1454	1212	1039	909
			Fr	0.048	0.048	0.095	0.127	0.159	0.191	0.223	0.254
			Feed (mm/min)	231	231	231	231	231	231	231	231
≤ 375 Bhn or ≤ 40 HRc	34 (27-40)	RPM	3555	3555	1777	1333	1066	889	762	666	
		Fr	0.043	0.043	0.086	0.114	0.143	0.171	0.200	0.229	
		Feed (mm/min)	152	152	152	152	152	152	152	152	
주철 Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	110 (88-132)	RPM	11633	5816	4362	3490	2908	2493	2181	
			Fr	0.109	0.218	0.291	0.364	0.437	0.509	0.582	
			Feed (mm/min)	1270	1270	1270	1270	1270	1270	1270	
	≤ 260 Bhn or ≤ 26 HRc	102 (82-123)	RPM	10825	5413	4059	3248	2706	2320	2030	
			Fr	0.109	0.218	0.291	0.364	0.436	0.509	0.582	
			Feed (mm/min)	1181	1181	1181	1181	1181	1181	1181	



슬리드
드릴

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용
나이프



미리 사양
142P 시리즈

시리즈 142P 미리 사양	경도	Vc (m/min)	DC·mm								
			3	6	8	10	12	14	16		
N 알루미늄합금 2017, 2024, 356, 6061, 7075	≤ 80 Bhn or ≤ 47 HRb (188-282)	235	RPM	24882	12441	9331	7465	6220	5332	4665	
		Fr	0.117	0.235	0.313	0.391	0.470	0.548	0.626		
		Feed (mm/min)	2921	2921	2921	2921	2921	2921	2921		
	≤ 150 Bhn or ≤ 88 HRb (161-241)	201	RPM	21327	10664	7998	6398	5332	4570	3999	
		Fr	0.119	0.238	0.318	0.397	0.476	0.556	0.635		
		Feed (mm/min)	2540	2540	2540	2540	2540	2540	2540		
	동합금 Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc (134-201)	168	RPM	17773	8886	6665	5332	4443	3808	3332
			Fr	0.048	0.096	0.128	0.160	0.192	0.223	0.255	
			Feed (mm/min)	851	851	851	851	851	851	851	
		≤ 200 Bhn or ≤ 23 HRc (107-161)	134	RPM	14218	7109	5332	4265	3555	3047	2666
			Fr	0.048	0.096	0.129	0.161	0.193	0.225	0.257	
			Feed (mm/min)	686	686	686	686	686	686	686	
S 초내열합금 (니켈, 코발트, Iron Base) Incoloy 601, 617, 625, Incoloy, Monel 400, Rene, Waspaloy	≤ 300 Bhn or ≤ 32 HRc (23-35)	29	RPM	3070	1535	1151	921	767	658	576	
		Fr	0.019	0.038	0.051	0.063	0.076	0.089	0.101		
		Feed (mm/min)	58	58	58	58	58	58	58		
	≤ 400 Bhn or ≤ 43 HRc (12-18)	15	RPM	1616	808	606	485	404	346	303	
		Fr	0.016	0.031	0.042	0.052	0.063	0.073	0.084		
		Feed (mm/min)	25	25	25	25	25	25	25		
	티탄합금 Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si, Ti-6Al4V	≤ 275 Bhn or ≤ 28 HRc (52-79)	66	RPM	6947	3474	2605	2084	1737	1489	1303
			Fr	0.042	0.084	0.112	0.140	0.168	0.196	0.224	
			Feed (mm/min)	292	292	292	292	292	292	292	
		≤ 350 Bhn or ≤ 38 HRc (39-59)	49	RPM	5170	2585	1939	1551	1293	1108	969
			Fr	0.038	0.077	0.102	0.128	0.153	0.179	0.204	
			Feed (mm/min)	198	198	198	198	198	198	198	
≤ 440 Bhn or ≤ 47 HRc (21-31)		26	RPM	2747	1373	1030	824	687	589	515	
		Fr	0.029	0.057	0.076	0.096	0.115	0.134	0.153		
		Feed (mm/min)	79	79	79	79	79	79	79		
H 공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc (21-31)	26	RPM	2747	1373	1030	824	687	589	515	
		Fr	0.020	0.041	0.054	0.068	0.081	0.095	0.109		
		Feed (mm/min)	56	56	56	56	56	56	56		

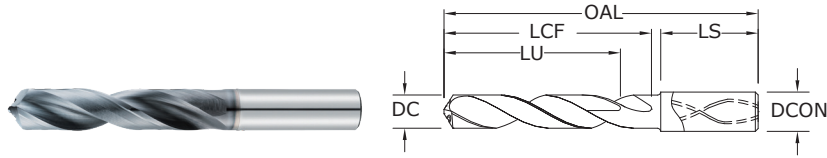
- Bhn (브리넬 경도) HRc (록웰C 경도) HRb (록웰B 경도)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x RPM
- 피삭재가 상기표 보다 고경도일 경우는 절삭속도와 이송을 낮춰 주십시오.



슬리드
틀

인치 & 미리 사양

143M-S 시리즈



143M-S 3xD

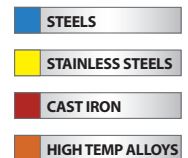
인치 & 미리 시리즈

- 내부 콜러트 지원으로 수명과 칩 배출 개선
- 편심형 2-마진 디자인으로 강도 약화 없이 마찰열을 줄이고 용착 최소화
- 정밀 호닝처리로 칩핑으로부터 인선 보호
- 고성능 포인트 디자인으로 소재에 안정적으로 진입, 홀치수, 원통도 개선, 돌입 저항이 작고 수명 연장
- Ti-NAMITE-A 코팅으로 인코넬, 스테인리스, 티타늄 합금 같은 내열합금 가공 시 내마모성 내부식성 우수
- HRC50 이하 소재에 추천

inch & mm									EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크 길이 LS	Ti-NAMITE-A (ATTIN)	
0.1181	3,000 mm		6,0	62,0	20,0	15,0	36,0	69120	
0.1220	3,100 mm		6,0	62,0	20,0	15,0	36,0	69121	
0.1250	3,175 mm	1/8	6,0	62,0	20,0	15,0	36,0	56800	
0.1260	3,200 mm		6,0	62,0	20,0	15,0	36,0	69122	
0.1299	3,300 mm		6,0	62,0	20,0	15,0	36,0	69123	
0.1339	3,400 mm		6,0	62,0	20,0	15,0	36,0	69124	
0.1360	3,454 mm	#29	6,0	62,0	20,0	15,0	36,0	56801	
0.1378	3,500 mm		6,0	62,0	20,0	15,0	36,0	69125	
0.1406	3,571 mm	9/64	6,0	62,0	20,0	15,0	36,0	56802	
0.1417	3,600 mm		6,0	62,0	20,0	15,0	36,0	69126	
0.1457	3,700 mm		6,0	62,0	20,0	15,0	36,0	69127	
0.1496	3,800 mm		6,0	66,0	24,0	18,0	36,0	69128	
0.1535	3,900 mm		6,0	66,0	24,0	18,0	36,0	69129	
0.1562	3,967 mm	5/32	6,0	66,0	24,0	18,0	36,0	56803	
0.1575	4,000 mm		6,0	66,0	24,0	18,0	36,0	69130	
0.1590	4,039 mm	#21	6,0	66,0	24,0	18,0	36,0	56804	
0.1614	4,100 mm		6,0	66,0	24,0	18,0	36,0	69131	
0.1654	4,200 mm		6,0	66,0	24,0	18,0	36,0	69132	
0.1693	4,300 mm		6,0	66,0	24,0	18,0	36,0	69133	
0.1719	4,366 mm	11/64	6,0	66,0	24,0	17,0	36,0	56805	
0.1732	4,400 mm		6,0	66,0	24,0	17,0	36,0	69134	
0.1772	4,500 mm		6,0	66,0	24,0	17,0	36,0	69135	
0.1811	4,600 mm		6,0	66,0	24,0	17,0	36,0	69136	
0.1850	4,699 mm	#13	6,0	66,0	24,0	17,0	36,0	69137	
0.1875	4,763 mm	3/16	6,0	66,0	28,0	21,0	36,0	56806	
0.1890	4,801 mm	#12	6,0	66,0	28,0	21,0	36,0	69138	
0.1929	4,900 mm		6,0	66,0	28,0	21,0	36,0	69139	
0.1969	5,000 mm		6,0	66,0	28,0	20,0	36,0	69140	
0.2008	5,100 mm		6,0	66,0	28,0	20,0	36,0	69141	
0.2031	5,159 mm	13/64	6,0	66,0	28,0	20,0	36,0	56807	
0.2047	5,200 mm		6,0	66,0	28,0	20,0	36,0	69142	
0.2087	5,300 mm		6,0	66,0	28,0	20,0	36,0	69143	
0.2126	5,400 mm		6,0	66,0	28,0	20,0	36,0	69144	
0.2165	5,500 mm		6,0	66,0	28,0	20,0	36,0	69145	
0.2188	5,558 mm	7/32	6,0	66,0	28,0	20,0	36,0	56808	
0.2205	5,600 mm		6,0	66,0	28,0	20,0	36,0	69146	
0.2244	5,700 mm		6,0	66,0	28,0	19,0	36,0	69147	
0.2283	5,800 mm		6,0	66,0	28,0	19,0	36,0	69148	
0.2323	5,900 mm		6,0	66,0	28,0	19,0	36,0	69149	
0.2344	5,954 mm	15/64	6,0	66,0	28,0	19,0	36,0	56809	
0.2362	6,000 mm		6,0	66,0	28,0	19,0	36,0	69150	
0.2402	6,100 mm		8,0	79,0	34,0	25,0	36,0	69151	
0.2441	6,200 mm		8,0	79,0	34,0	25,0	36,0	69152	
0.2480	6,300 mm		8,0	79,0	34,0	25,0	36,0	69153	
0.2500	6,350 mm	1/4 E	8,0	79,0	34,0	24,0	36,0	56810	
0.2520	6,400 mm		8,0	79,0	34,0	24,0	36,0	69154	

- 공차 (inch)
- ≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆
 - >.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h₆
 - >.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h₆
 - >.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h₆
 - >.7087-1.1811 외경
DC = +.00031/+0.00114
DCON= h₆

- 공차 (mm)
- ≤3 외경
DC = +0,002/+0,012
DCON= h₆
 - >3-6 외경
DC = +0,004/+0,016
DCON= h₆
 - >6-10 외경
DC = +0,006/+0,021
DCON= h₆
 - >10-18 외경
DC = +0,007/+0,025
DCON= h₆
 - >18-30 외경
DC = +0,008/+0,029
DCON= h₆

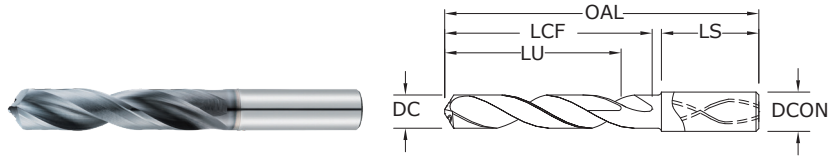


솔리드 드릴

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프



인치 & 미리 사양
143M-S 시리즈



143M-S 3xD
인치 & 미리 시리즈

공차 (inch)

≤.1181 외경
DC = +.00008/+0.00047
DCON = h₆

>.1181-.2362 외경
DC = +.00016/+0.00063
DCON = h₆

>.2362-.3937 외경
DC = +.00024/+0.00083
DCON = h₆

>.3937-.7087 외경
DC = +.00028/+0.00098
DCON = h₆

>.7087-1.1811 외경
DC = +.00031/+0.00114
DCON = h₆

공차 (mm)

≤3 외경
DC = +0,002/+0,012
DCON = h₆

>3-6 외경
DC = +0,004/+0,016
DCON = h₆

>6-10 외경
DC = +0,006/+0,021
DCON = h₆

>10-18 외경
DC = +0,007/+0,025
DCON = h₆

>18-30 외경
DC = +0,008/+0,029
DCON = h₆

STEELS

STAINLESS STEELS

CAST IRON

HIGH TEMP ALLOYS

inch & mm		inch & mm							EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크길이 LS	Ti-NAMITE-A (AITIN)	
0.2559	6,500 mm		8,0	79,0	34,0	24,0	36,0	69155	
0.2570	6,528 mm	F	8,0	79,0	34,0	24,0	36,0	56811	
0.2598	6,600 mm		8,0	79,0	34,0	24,0	36,0	69156	
0.2638	6,700 mm		8,0	79,0	34,0	24,0	36,0	69157	
0.2656	6,746 mm	17/64	8,0	79,0	34,0	24,0	36,0	56812	
0.2677	6,800 mm		8,0	79,0	34,0	24,0	36,0	69158	
0.2717	6,900 mm		8,0	79,0	34,0	24,0	36,0	69159	
0.2756	7,000 mm		8,0	79,0	34,0	24,0	36,0	69160	
0.2795	7,100 mm		8,0	79,0	41,0	30,0	36,0	69161	
0.2812	7,142 mm	9/32	8,0	79,0	41,0	30,0	36,0	56813	
0.2835	7,200 mm		8,0	79,0	41,0	30,0	36,0	69162	
0.2874	7,300 mm		8,0	79,0	41,0	30,0	36,0	69163	
0.2913	7,400 mm		8,0	79,0	41,0	30,0	36,0	69164	
0.2953	7,500 mm		8,0	79,0	41,0	30,0	36,0	69165	
0.2969	7,541 mm	19/64	8,0	79,0	41,0	30,0	36,0	56814	
0.2992	7,600 mm		8,0	79,0	41,0	30,0	36,0	69166	
0.3031	7,700 mm		8,0	79,0	41,0	29,0	36,0	69167	
0.3071	7,800 mm		8,0	79,0	41,0	29,0	36,0	69168	
0.3110	7,900 mm		8,0	79,0	41,0	29,0	36,0	69169	
0.3125	7,938 mm	5/16	8,0	79,0	41,0	29,0	36,0	56815	
0.3150	8,000 mm		8,0	79,0	41,0	29,0	36,0	69170	
0.3189	8,100 mm		10,0	89,0	47,0	35,0	40,0	69171	
0.3228	8,200 mm		10,0	89,0	47,0	35,0	40,0	69172	
0.3268	8,300 mm		10,0	89,0	47,0	35,0	40,0	69173	
0.3281	8,334 mm	21/64	10,0	89,0	47,0	34,0	40,0	56816	
0.3307	8,400 mm		10,0	89,0	47,0	34,0	40,0	69174	
0.3320	8,433 mm	Q	10,0	89,0	47,0	34,0	40,0	56817	
0.3346	8,500 mm		10,0	89,0	47,0	34,0	40,0	69175	
0.3386	8,600 mm		10,0	89,0	47,0	34,0	40,0	69176	
0.3425	8,700 mm		10,0	89,0	47,0	34,0	40,0	69177	
0.3438	8,733 mm	11/32	10,0	89,0	47,0	34,0	40,0	56818	
0.3465	8,800 mm		10,0	89,0	47,0	34,0	40,0	69178	
0.3504	8,900 mm		10,0	89,0	47,0	34,0	40,0	69179	
0.3543	9,000 mm		10,0	89,0	47,0	34,0	40,0	69180	
0.3583	9,100 mm		10,0	89,0	47,0	33,0	40,0	69181	
0.3594	9,129 mm	23/64	10,0	89,0	47,0	33,0	40,0	56819	
0.3622	9,200 mm		10,0	89,0	47,0	33,0	40,0	69182	
0.3661	9,300 mm		10,0	89,0	47,0	33,0	40,0	69183	
0.3680	9,347 mm	U	10,0	89,0	47,0	33,0	40,0	56820	
0.3701	9,400 mm		10,0	89,0	47,0	33,0	40,0	69184	
0.3740	9,500 mm		10,0	89,0	47,0	33,0	40,0	69185	
0.3750	9,525 mm	3/8	10,0	89,0	47,0	33,0	40,0	56821	
0.3780	9,600 mm		10,0	89,0	47,0	33,0	40,0	69186	
0.3819	9,700 mm		10,0	89,0	47,0	32,0	40,0	69187	
0.3858	9,800 mm		10,0	89,0	47,0	32,0	40,0	69188	
0.3898	9,900 mm		10,0	89,0	47,0	32,0	40,0	69189	

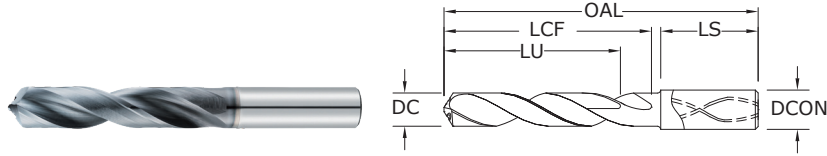
- 내부 콜러트 지원으로 수명과 칩 배출 개선
- 편심형 2-마진 디자인으로 강도 약화 없이 마찰열을 줄이고 용착 최소화
- 정밀 호닝처리로 칩 핑으로부터 인선 보호
- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- Ti-NAMITE-A 코팅으로 인코넬, 스테인리스, 티타늄 합금 같은 내열합금 가공 시 내마모성 내부식성 우수
- HRC50 이하 소재에 추천



슬리드 드릴

인치 & 미리 사양

143M-S 시리즈



143M-S 3xD

인치 & 미리 시리즈

- 내부 콜러트 지원으로 수명과 칩 배출 개선
- 편심형 2-마진 디자인으로 강도 약화 없이 마찰열을 줄이고 용착 최소화
- 정밀 호닝처리로 칩핑으로부터 인선 보호
- 고성능 포인트 디자인으로 소재에 안정적으로 진입, 홀치수, 원통도 개선, 돌입 저항이 작고 수명 연장
- Ti-NAMITE-A 코팅으로 인코넬, 스테인리스, 티타늄 합금 같은 내열합금 가공 시 내마모성 내부식성 우수
- HRC50 이하 소재에 추천

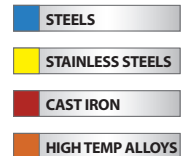
inch & mm								EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크 길이 LS	Ti-NAMITE-A (ATTIN)
0.3906	9,921 mm	25/64	10,0	89,0	47,0	32,0	40,0	56822
0.3937	10,000 mm		10,0	89,0	47,0	32,0	40,0	69190
0.3976	10,100 mm		12,0	102,0	55,0	40,0	45,0	69191
0.4016	10,200 mm		12,0	102,0	55,0	40,0	45,0	69192
0.4055	10,300 mm		12,0	102,0	55,0	40,0	45,0	69193
0.4062	10,317 mm	13/32	12,0	102,0	55,0	40,0	45,0	56823
0.4095	10,400 mm		12,0	102,0	55,0	39,0	45,0	69194
0.4134	10,500 mm		12,0	102,0	55,0	39,0	45,0	69195
0.4173	10,600 mm		12,0	102,0	55,0	39,0	45,0	69196
0.4213	10,700 mm		12,0	102,0	55,0	39,0	45,0	69197
0.4219	10,716 mm	27/64	12,0	102,0	55,0	39,0	45,0	56824
0.4252	10,800 mm		12,0	102,0	55,0	39,0	45,0	69198
0.4291	10,900 mm		12,0	102,0	55,0	39,0	45,0	69199
0.4331	11,000 mm		12,0	102,0	55,0	39,0	45,0	69200
0.4370	11,100 mm		12,0	102,0	55,0	38,0	45,0	69201
0.4375	11,113 mm	7/16	12,0	102,0	55,0	38,0	45,0	56825
0.4409	11,200 mm		12,0	102,0	55,0	38,0	45,0	69202
0.4449	11,300 mm		12,0	102,0	55,0	38,0	45,0	69203
0.4488	11,400 mm		12,0	102,0	55,0	38,0	45,0	69204
0.4528	11,500 mm		12,0	102,0	55,0	38,0	45,0	69205
0.4567	11,600 mm		12,0	102,0	55,0	38,0	45,0	69206
0.4606	11,700 mm		12,0	102,0	55,0	37,0	45,0	69207
0.4646	11,800 mm		12,0	102,0	55,0	37,0	45,0	69208
0.4685	11,900 mm		12,0	102,0	55,0	37,0	45,0	69209
0.4688	11,908 mm	15/32	12,0	102,0	55,0	37,0	45,0	56826
0.4724	12,000 mm		12,0	102,0	55,0	37,0	45,0	69210
0.4844	12,304 mm	31/64	14,0	107,0	60,0	41,0	45,0	56827
0.4921	12,500 mm		14,0	107,0	60,0	41,0	45,0	69211
0.5000	12,700 mm	1/2	14,0	107,0	60,0	41,0	45,0	56828
0.5039	12,800 mm		14,0	107,0	60,0	41,0	45,0	69212
0.5118	13,000 mm		14,0	107,0	60,0	41,0	45,0	69213
0.5156	13,096 mm	33/64	14,0	107,0	60,0	40,0	45,0	56829
0.5315	13,500 mm		14,0	107,0	60,0	40,0	45,0	69214
0.5433	13,800 mm		14,0	107,0	60,0	39,0	45,0	69215
0.5512	14,000 mm		14,0	107,0	60,0	39,0	45,0	69216
0.5625	14,288 mm	9/16	16,0	115,0	65,0	43,0	48,0	56830
0.5709	14,500 mm		16,0	115,0	65,0	43,0	48,0	69217
0.5781	14,684 mm	37/64	16,0	115,0	65,0	43,0	48,0	56831
0.5827	14,800 mm		16,0	115,0	65,0	43,0	48,0	69218
0.5906	15,000 mm		16,0	115,0	65,0	42,0	48,0	69219
0.6102	15,500 mm		16,0	115,0	65,0	42,0	48,0	69220
0.6221	15,800 mm		16,0	115,0	65,0	41,0	48,0	69221
0.6250	15,875 mm	5/8	16,0	115,0	65,0	41,0	48,0	56832
0.6299	16,000 mm		16,0	115,0	65,0	41,0	48,0	69222
0.6562	16,667 mm	21/32	18,0	123,0	73,0	47,0	48,0	56833
0.6875	17,463 mm	11/16	18,0	123,0	73,0	47,0	48,0	56834
0.7500	19,050 mm	3/4	20,0	131,0	79,0	50,0	50,0	56835

공차 (inch)

- ≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆
- >.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h₆
- >.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h₆
- >.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h₆
- >.7087-1.1811 외경
DC = +.00031/+0.0114
DCON= h₆

공차 (mm)

- ≤3 외경
DC = +0,002/+0,012
DCON= h₆
- >3-6 외경
DC = +0,004/+0,016
DCON= h₆
- >6-10 외경
DC = +0,006/+0,021
DCON= h₆
- >10-18 외경
DC = +0,007/+0,025
DCON= h₆
- >18-30 외경
DC = +0,008/+0,029
DCON= h₆



L



슬리드 드릴

엔드밀

미세가공

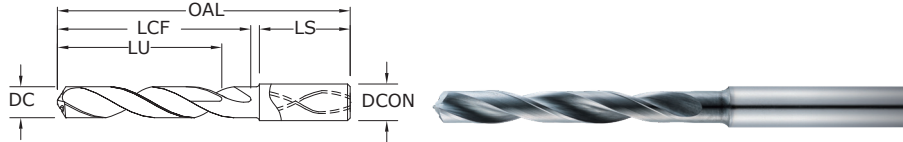
드릴

SGS

공업용 나이프



인치 & 미리 사양
143M-S 시리즈



143M-S 5xD
인치 & 미리 시리즈

공차 (inch)

≤.1181 외경
DC = +.00008/+0.00047
DCON= h6

>.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h6

>.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h6

>.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h6

>.7087-1.1811 외경
DC = +.00031/+0.0114
DCON= h6

공차 (mm)

≤3 외경
DC = +0,002/+0,012
DCON= h6

>3-6 외경
DC = +0,004/+0,016
DCON= h6

>6-10 외경
DC = +0,006/+0,021
DCON= h6

>10-18 외경
DC = +0,007/+0,025
DCON= h6

>18-30 외경
DC = +0,008/+0,029
DCON= h6

STEELS

STAINLESS STEELS

CAST IRON

HIGH TEMP ALLOYS

inch & mm		inch & mm							EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크 길이 LS	Ti-NAMITE-A (AITIN)	
0.1181	3,000 mm		6,0	66,0	28,0	23,0	36,0	69223	
0.1220	3,100 mm		6,0	66,0	28,0	23,0	36,0	69224	
0.1250	3,175 mm	1/8	6,0	66,0	28,0	23,0	36,0	56836	
0.1260	3,200 mm		6,0	66,0	28,0	23,0	36,0	69225	
0.1299	3,300 mm		6,0	66,0	28,0	23,0	36,0	69226	
0.1339	3,400 mm		6,0	66,0	28,0	23,0	36,0	69227	
0.1360	3,454 mm	#29	6,0	66,0	28,0	23,0	36,0	56837	
0.1378	3,500 mm		6,0	66,0	28,0	23,0	36,0	69228	
0.1406	3,571 mm	9/64	6,0	66,0	28,0	23,0	36,0	56838	
0.1417	3,600 mm		6,0	66,0	28,0	23,0	36,0	69229	
0.1457	3,700 mm		6,0	66,0	28,0	23,0	36,0	69230	
0.1496	3,800 mm		6,0	74,0	36,0	29,0	36,0	69231	
0.1535	3,900 mm		6,0	74,0	36,0	29,0	36,0	69232	
0.1562	3,967 mm	5/32	6,0	74,0	36,0	29,0	36,0	56839	
0.1575	4,000 mm		6,0	74,0	36,0	29,0	36,0	69233	
0.1590	4,039 mm	#21	6,0	74,0	36,0	29,0	36,0	56840	
0.1614	4,100 mm		6,0	74,0	36,0	29,0	36,0	69234	
0.1654	4,200 mm		6,0	74,0	36,0	29,0	36,0	69235	
0.1693	4,300 mm		6,0	74,0	36,0	29,0	36,0	69236	
0.1719	4,366 mm	11/64	6,0	74,0	36,0	29,0	36,0	56841	
0.1732	4,400 mm		6,0	74,0	36,0	29,0	36,0	69237	
0.1772	4,500 mm		6,0	74,0	36,0	29,0	36,0	69238	
0.1811	4,600 mm		6,0	74,0	36,0	29,0	36,0	69239	
0.1850	4,699 mm	#13	6,0	74,0	36,0	29,0	36,0	69240	
0.1875	4,763 mm	3/16	6,0	82,0	44,0	37,0	36,0	56842	
0.1890	4,801 mm	#12	6,0	82,0	44,0	37,0	36,0	69241	
0.1929	4,900 mm		6,0	82,0	44,0	37,0	36,0	69242	
0.1969	5,000 mm		6,0	82,0	44,0	36,0	36,0	69243	
0.2008	5,100 mm		6,0	82,0	44,0	36,0	36,0	69244	
0.2031	5,159 mm	13/64	6,0	82,0	44,0	36,0	36,0	56843	
0.2047	5,200 mm		6,0	82,0	44,0	36,0	36,0	69245	
0.2087	5,300 mm		6,0	82,0	44,0	36,0	36,0	69246	
0.2126	5,400 mm		6,0	82,0	44,0	36,0	36,0	69247	
0.2165	5,500 mm		6,0	82,0	44,0	36,0	36,0	69248	
0.2188	5,558 mm	7/32	6,0	82,0	44,0	36,0	36,0	56844	
0.2205	5,600 mm		6,0	82,0	44,0	36,0	36,0	69249	
0.2244	5,700 mm		6,0	82,0	44,0	35,0	36,0	69250	
0.2283	5,800 mm		6,0	82,0	44,0	35,0	36,0	69251	
0.2323	5,900 mm		6,0	82,0	44,0	35,0	36,0	69252	
0.2344	5,954 mm	15/64	6,0	82,0	44,0	35,0	36,0	56845	
0.2362	6,000 mm		6,0	82,0	44,0	35,0	36,0	69253	
0.2402	6,100 mm		8,0	91,0	53,0	44,0	36,0	69254	
0.2441	6,200 mm		8,0	91,0	53,0	44,0	36,0	69255	
0.2480	6,300 mm		8,0	91,0	53,0	44,0	36,0	69256	
0.2500	6,350 mm	1/4 E	8,0	91,0	53,0	43,0	36,0	56846	
0.2520	6,400 mm		8,0	91,0	53,0	43,0	36,0	69257	

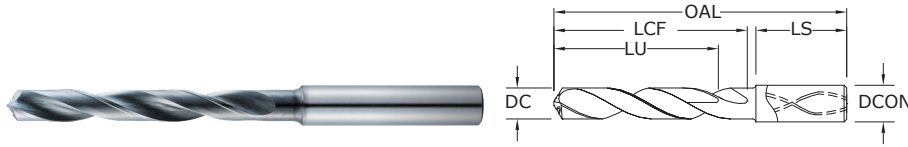
- 내부 콜러트 지원으로 수명과 칩 배출 개선
- 편심형 2-마진 디자인으로 강도 약화 없이 마찰열을 줄이고 용착 최소화
- 정밀 호닝처리로 칩 핑으로부터 인선 보호
- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- Ti-NAMITE-A 코팅으로 인코넬, 스테인리스, 티타늄 합금 같은 내열합금 가공 시 내마모성 내부식성 우수
- HRC50 이하 소재에 추천



슬리드 드릴

인치 & 미리 사양

143M-S 시리즈



143M-S 5xD

인치 & 미리 시리즈

- 내부 콜러트 지원으로 수명과 칩 배출 개선
- 편심형 2-마진 디자인으로 강도 약화 없이 마찰열을 줄이고 용착 최소화
- 정밀 호닝처리로 칩핑으로부터 인선 보호
- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- Ti-NAMITE-A 코팅으로 인코넬, 스테인리스, 티타늄 합금 같은 내열합금 가공 시 내마모성 내부식성 우수
- HRC50 이하 소재에 추천

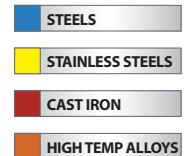
inch & mm									EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	샤크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	샤크 길이 LS	Ti-NAMITE-A (AITIN)	
0.2559	6,500 mm		8,0	91,0	53,0	43,0	36,0	69258	
0.2570	6,528 mm	F	8,0	91,0	53,0	43,0	36,0	56847	
0.2598	6,600 mm		8,0	91,0	53,0	43,0	36,0	69259	
0.2638	6,700 mm		8,0	91,0	53,0	43,0	36,0	69260	
0.2656	6,746 mm	17/64	8,0	91,0	53,0	43,0	36,0	56848	
0.2677	6,800 mm		8,0	91,0	53,0	43,0	36,0	69261	
0.2717	6,900 mm		8,0	91,0	53,0	43,0	36,0	69262	
0.2756	7,000 mm		8,0	91,0	53,0	42,0	36,0	69263	
0.2795	7,100 mm		8,0	91,0	53,0	42,0	36,0	69264	
0.2812	7,142 mm	9/32	8,0	91,0	53,0	42,0	36,0	56849	
0.2835	7,200 mm		8,0	91,0	53,0	42,0	36,0	69265	
0.2874	7,300 mm		8,0	91,0	53,0	42,0	36,0	69266	
0.2913	7,400 mm		8,0	91,0	53,0	42,0	36,0	69267	
0.2953	7,500 mm		8,0	91,0	53,0	42,0	36,0	69268	
0.2969	7,541 mm	19/64	8,0	91,0	53,0	42,0	36,0	56850	
0.2992	7,600 mm		8,0	91,0	53,0	42,0	36,0	69269	
0.3031	7,700 mm		8,0	91,0	53,0	41,0	36,0	69270	
0.3071	7,800 mm		8,0	91,0	53,0	41,0	36,0	69271	
0.3110	7,900 mm		8,0	91,0	53,0	41,0	36,0	69272	
0.3125	7,938 mm	5/16	8,0	91,0	53,0	41,0	36,0	56851	
0.3150	8,000 mm		8,0	91,0	53,0	41,0	36,0	69273	
0.3189	8,100 mm		10,0	103,0	61,0	49,0	40,0	69274	
0.3228	8,200 mm		10,0	103,0	61,0	49,0	40,0	69275	
0.3268	8,300 mm		10,0	103,0	61,0	49,0	40,0	69276	
0.3281	8,334 mm	21/64	10,0	103,0	61,0	48,0	40,0	56852	
0.3307	8,400 mm		10,0	103,0	61,0	48,0	40,0	69277	
0.3320	8,433 mm	Q	10,0	103,0	61,0	48,0	40,0	56853	
0.3346	8,500 mm		10,0	103,0	61,0	48,0	40,0	69278	
0.3386	8,600 mm		10,0	103,0	61,0	48,0	40,0	69279	
0.3425	8,700 mm		10,0	103,0	61,0	48,0	40,0	69280	
0.3438	8,733 mm	11/32	10,0	103,0	61,0	48,0	40,0	56854	
0.3465	8,800 mm		10,0	103,0	61,0	48,0	40,0	69281	
0.3504	8,900 mm		10,0	103,0	61,0	48,0	40,0	69282	
0.3543	9,000 mm		10,0	103,0	61,0	48,0	40,0	69283	
0.3583	9,100 mm		10,0	103,0	61,0	47,0	40,0	69284	
0.3594	9,129 mm	23/64	10,0	103,0	61,0	47,0	40,0	56855	
0.3622	9,200 mm		10,0	103,0	61,0	47,0	40,0	69285	
0.3661	9,300 mm		10,0	103,0	61,0	47,0	40,0	69286	
0.3680	9,347 mm	U	10,0	103,0	61,0	47,0	40,0	56856	
0.3701	9,400 mm		10,0	103,0	61,0	47,0	40,0	69287	
0.3740	9,500 mm		10,0	103,0	61,0	47,0	40,0	69288	
0.3750	9,525 mm	3/8	10,0	103,0	61,0	47,0	40,0	56857	
0.3780	9,600 mm		10,0	103,0	61,0	47,0	40,0	69289	
0.3819	9,700 mm		10,0	103,0	61,0	46,0	40,0	69290	
0.3858	9,800 mm		10,0	103,0	61,0	46,0	40,0	69291	
0.3898	9,900 mm		10,0	103,0	61,0	46,0	40,0	69292	

공차 (inch)

- ≤.1181 외경
DC = +.00008/+0.00047
DCON= h₆
- >.1181-.2362 외경
DC = +.00016/+0.00063
DCON= h₆
- >.2362-.3937 외경
DC = +.00024/+0.00083
DCON= h₆
- >.3937-.7087 외경
DC = +.00028/+0.00098
DCON= h₆
- >.7087-1.1811 외경
DC = +.00031/+0.00114
DCON= h₆

공차 (mm)

- ≤3 외경
DC = +0,002/+0,012
DCON= h₆
- >3-6 외경
DC = +0,004/+0,016
DCON= h₆
- >6-10 외경
DC = +0,006/+0,021
DCON= h₆
- >10-18 외경
DC = +0,007/+0,025
DCON= h₆
- >18-30 외경
DC = +0,008/+0,029
DCON= h₆



L



솔리드 드릴

엔드밀

미세가공

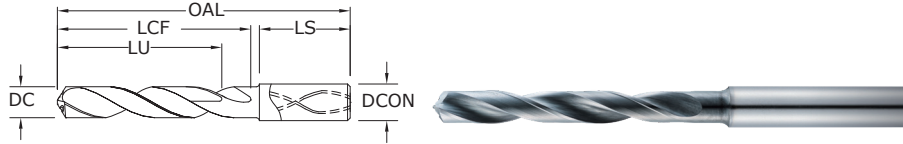
드릴

SGS

공업용 나이프



인치 & 미리 사양
143M-S 시리즈



143M-S 5xD
인치 & 미리 시리즈

공차 (inch)

≤.1181 외경
DC = +.00008/+0.00047
DCON = h₆

>.1181-.2362 외경
DC = +.00016/+0.00063
DCON = h₆

>.2362-.3937 외경
DC = +.00024/+0.00083
DCON = h₆

>.3937-.7087 외경
DC = +.00028/+0.00098
DCON = h₆

>.7087-1.1811 외경
DC = +.00031/+0.00114
DCON = h₆

공차 (mm)

≤3 외경
DC = +0,002/+0,012
DCON = h₆

>3-6 외경
DC = +0,004/+0,016
DCON = h₆

>6-10 외경
DC = +0,006/+0,021
DCON = h₆

>10-18 외경
DC = +0,007/+0,025
DCON = h₆

>18-30 외경
DC = +0,008/+0,029
DCON = h₆

STEELS

STAINLESS STEELS

CAST IRON

HIGH TEMP ALLOYS

inch & mm		inch & mm		inch & mm		inch & mm		inch & mm		EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	상크 길이 LS	Ti-NAMITE-A (AITIN)		
0.3906	9,921 mm	25/64	10,0	103,0	61,0	46,0	40,0	56858		
0.3937	10,000 mm		10,0	103,0	61,0	46,0	40,0	69293		
0.3976	10,100 mm		12,0	118,0	71,0	56,0	45,0	69294		
0.4016	10,200 mm		12,0	118,0	71,0	56,0	45,0	69295		
0.4055	10,300 mm		12,0	118,0	71,0	56,0	45,0	69296		
0.4062	10,317 mm	13/32	12,0	118,0	71,0	56,0	45,0	56859		
0.4095	10,400 mm		12,0	118,0	71,0	55,0	45,0	69297		
0.4134	10,500 mm		12,0	118,0	71,0	55,0	45,0	69298		
0.4173	10,600 mm		12,0	118,0	71,0	55,0	45,0	69299		
0.4213	10,700 mm		12,0	118,0	71,0	55,0	45,0	69300		
0.4219	10,716 mm	27/64	12,0	118,0	71,0	55,0	45,0	56860		
0.4252	10,800 mm		12,0	118,0	71,0	55,0	45,0	69301		
0.4291	10,900 mm		12,0	118,0	71,0	55,0	45,0	69302		
0.4331	11,000 mm		12,0	118,0	71,0	54,0	45,0	69303		
0.4370	11,100 mm		12,0	118,0	71,0	54,0	45,0	69304		
0.4375	11,113 mm	7/16	12,0	118,0	71,0	54,0	45,0	56861		
0.4409	11,200 mm		12,0	118,0	71,0	54,0	45,0	69305		
0.4449	11,300 mm		12,0	118,0	71,0	54,0	45,0	69306		
0.4488	11,400 mm		12,0	118,0	71,0	54,0	45,0	69307		
0.4528	11,500 mm		12,0	118,0	71,0	54,0	45,0	69308		
0.4567	11,600 mm		12,0	118,0	71,0	54,0	45,0	69309		
0.4606	11,700 mm		12,0	118,0	71,0	53,0	45,0	69310		
0.4646	11,800 mm		12,0	118,0	71,0	53,0	45,0	69311		
0.4685	11,900 mm		12,0	118,0	71,0	53,0	45,0	69312		
0.4688	11,908 mm	15/32	12,0	118,0	71,0	53,0	45,0	56862		
0.4724	12,000 mm		12,0	118,0	71,0	53,0	45,0	69313		
0.4844	12,304 mm	31/64	14,0	124,0	77,0	58,0	45,0	56863		
0.4921	12,500 mm		14,0	124,0	77,0	58,0	45,0	69314		
0.5000	12,700 mm	1/2	14,0	124,0	77,0	58,0	45,0	56864		
0.5039	12,800 mm		14,0	124,0	77,0	58,0	45,0	69315		
0.5118	13,000 mm		14,0	124,0	77,0	58,0	45,0	69316		
0.5156	13,096 mm	33/64	14,0	124,0	77,0	57,0	45,0	56865		
0.5315	13,500 mm		14,0	124,0	77,0	57,0	45,0	69317		
0.5433	13,800 mm		14,0	124,0	77,0	56,0	45,0	69318		
0.5512	14,000 mm		14,0	124,0	77,0	56,0	45,0	69319		
0.5625	14,288 mm	9/16	16,0	133,0	83,0	61,0	48,0	56866		
0.5709	14,500 mm		16,0	133,0	83,0	61,0	48,0	69320		
0.5781	14,684 mm	37/64	16,0	133,0	83,0	61,0	48,0	56867		
0.5827	14,800 mm		16,0	133,0	83,0	61,0	48,0	69321		
0.5906	15,000 mm		16,0	133,0	83,0	60,0	48,0	69322		
0.6102	15,500 mm		16,0	133,0	83,0	60,0	48,0	69323		
0.6221	15,800 mm		16,0	133,0	83,0	59,0	48,0	69324		
0.6250	15,875 mm	5/8	16,0	133,0	83,0	59,0	48,0	56868		
0.6299	16,000 mm		16,0	133,0	83,0	59,0	48,0	69325		
0.6562	16,667 mm	21/32	18,0	143,0	93,0	68,0	48,0	56869		
0.6875	17,463 mm	11/16	18,0	143,0	93,0	67,0	48,0	56870		
0.7500	19,050 mm	3/4	20,0	153,0	101,0	72,0	50,0	56871		

- 내부 콜러트 지원으로 수명과 칩 배출 개선
- 편심형 2-마진 디자인으로 강도 약화 없이 마찰열을 줄이고 용착 최소화
- 정밀 호닝처리로 칩핑으로부터 안전 보호
- 고성능 포인트 디자인으로 소재에 안정적으로 진입. 홀치수, 원통도 개선. 돌입 저항이 작고 수명 연장
- Ti-NAMITE-A 코팅으로 인코넬, 스테인리스, 티타늄 합금 같은 내열합금 가공 시 내마모성 내부식성 우수
- HRC50 이하 소재에 추천



슬리드 드릴

미리 사양
143M-S 시리즈



시리즈 143M-S 미리 사양	경도	Vc (m/min)	DC·mm								
			3	6	8	10	12	14	16		
탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	130 (104-155)	RPM	13733	6867	5150	4120	3433	2943	2575	
			Fr	0.094	0.189	0.252	0.314	0.377	0.440	0.503	
			Feed (mm/min)	1295	1295	1295	1295	1295	1295	1295	
	≤ 275 Bhn or ≤ 28 HRc	116 (93-139)	RPM	12279	6140	4605	3684	3070	2631	2302	
			Fr	0.085	0.170	0.226	0.283	0.339	0.396	0.452	
			Feed (mm/min)	1041	1041	1041	1041	1041	1041	1041	
	≤ 425 Bhn or ≤ 45 HRc	67 (54-80)	RPM	7109	3555	2666	2133	1777	1523	1333	
			Fr	0.071	0.143	0.191	0.238	0.286	0.333	0.381	
			Feed (mm/min)	508	508	508	508	508	508	508	
P 합금강 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	101 (80-121)	RPM	10664	5332	3999	3199	2666	2285	1999	
			Fr	0.071	0.143	0.191	0.238	0.286	0.333	0.381	
			Feed (mm/min)	762	762	762	762	762	762	762	
	≤ 375 Bhn or ≤ 40 HRc	61 (49-73)	RPM	6463	3231	2424	1939	1616	1385	1212	
			Fr	0.061	0.122	0.162	0.203	0.244	0.284	0.325	
			Feed (mm/min)	394	394	394	394	394	394	394	
	≤ 425 Bhn or ≤ 45 HRc	43 (34-51)	RPM	4524	2262	1696	1357	1131	969	848	
			Fr	0.043	0.086	0.115	0.144	0.173	0.202	0.231	
			Feed (mm/min)	196	196	196	196	196	196	196	
L 공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 200 Bhn or ≤ 13 HRc	44 (35-53)	RPM	4686	2343	1757	1406	1171	1004	879	
			Fr	0.062	0.125	0.166	0.208	0.249	0.291	0.332	
			Feed (mm/min)	292	292	292	292	292	292	292	
솔리드 톨 ≤ 375 Bhn or ≤ 40 HRc	29 (23-35)	RPM	3070	1535	1151	921	767	658	576		
		Fr	0.029	0.058	0.077	0.097	0.116	0.135	0.154		
		Feed (mm/min)	89	89	89	89	89	89	89		
M 스테인리스강 (페삭강) 303, 416, 420F, 430F, 440F	≤ 185 Bhn or ≤ 9 HRc	99 (79-119)	RPM	10502	5251	3938	3151	2626	2250	1969	
			Fr	0.073	0.145	0.193	0.242	0.290	0.339	0.387	
			Feed (mm/min)	762	762	762	762	762	762	762	
	엔드밀 미세가공 드릴 SGS 공업용 나이프	≤ 275 Bhn or ≤ 28 HRc	64 (51-77)	RPM	6786	3393	2545	2036	1696	1454	1272
				Fr	0.056	0.112	0.150	0.187	0.225	0.262	0.299
				Feed (mm/min)	381	381	381	381	381	381	381
	≤ 275 Bhn or ≤ 28 HRc	49 (39-59)	RPM	5170	2585	1939	1551	1293	1108	969	
			Fr	0.056	0.112	0.149	0.187	0.224	0.261	0.299	
			Feed (mm/min)	290	290	290	290	290	290	290	
스테인리스강 (오스테나이트계) 304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, Custom 450	≤ 375 Bhn or ≤ 40 HRc	35 (28-42)	RPM	3716	1858	1394	1115	929	796	697	
			Fr	0.050	0.100	0.133	0.166	0.200	0.233	0.266	
			Feed (mm/min)	185	185	185	185	185	185	185	



미리 사양
143M-S 시리즈

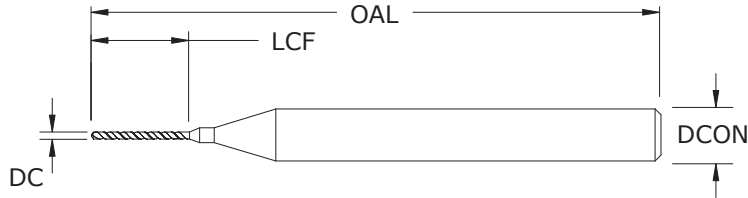
시리즈 143M-S 미리 사양	경도	Vc (m/min)	DC·mm							
			3	6	8	10	12	14	16	
K 주철 Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	110 (88-132)	RPM	11633	5816	4362	3490	2908	2493	2181
			Fr	0.109	0.218	0.291	0.364	0.437	0.509	0.582
			Feed (mm/min)	1270	1270	1270	1270	1270	1270	1270
	≤ 260 Bhn or ≤ 26 HRc	102 (82-123)	RPM	10825	5413	4059	3248	2706	2320	2030
			Fr	0.109	0.218	0.291	0.364	0.436	0.509	0.582
			Feed (mm/min)	1181	1181	1181	1181	1181	1181	1181
S 초내열합금 (니켈, 코발트, Iron Base) Inconel 601, 617, 625, Incoloy, Monel 400, Rene, Waspaloy	≤ 300 Bhn or ≤ 32 HRc	40 (32-48)	RPM	4201	2100	1575	1260	1050	900	788
			Fr	0.034	0.069	0.092	0.115	0.138	0.161	0.184
			Feed (mm/min)	145	145	145	145	145	145	145
	≤ 400 Bhn or ≤ 43 HRc	21 (17-26)	RPM	2262	1131	848	679	565	485	424
			Fr	0.029	0.058	0.078	0.097	0.117	0.136	0.156
			Feed (mm/min)	66	66	66	66	66	66	66
S 티탄합금 Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.5Si, Ti-6Al4V	≤ 275 Bhn or ≤ 28 HRc	66 (52-79)	RPM	6947	3474	2605	2084	1737	1489	1303
			Fr	0.042	0.084	0.112	0.140	0.168	0.196	0.224
			Feed (mm/min)	292	292	292	292	292	292	292
	≤ 350 Bhn or ≤ 38 HRc	49 (39-59)	RPM	5170	2585	1939	1551	1293	1108	969
			Fr	0.038	0.077	0.102	0.128	0.153	0.179	0.204
			Feed (mm/min)	198	198	198	198	198	198	198
≤ 440 Bhn or ≤ 47 HRc	26 (21-31)	RPM	2747	1373	1030	824	687	589	515	
		Fr	0.029	0.057	0.076	0.096	0.115	0.134	0.153	
		Feed (mm/min)	79	79	79	79	79	79	79	

- Bhn (브리넬 경도) HRc (록웰C 경도) HRb (록웰B 경도)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x RPM
- 피삭재가 상기표 보다 고경도일 경우는 절삭속도와 이송을 낮춰 주십시오.



슬리드
틀

미리 사양 2날 외부 컬런트



M226 미리 시리즈

- 4페릿 포인트 형상으로 돌입이 안정적이고, 홀 치수 관리와 수명이 우수(>.08mm). 0.08이하는 2페릿 포인트 형상
- 경면 처리로, 깊은 홀 작업의 칩 흐름을 개선
- 비코팅과 코팅 2가지 옵션이 있으며, 절삭과 비절삭 다양한 피삭재에서 성능과 수명이 우수
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 미크론 입자 조정
- SGS ISO인증 품질 절차에 따라 생산

inch & mm								EDP NO.	
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	포인트각	비코팅	Ti-NAMITE-A (AITIN)
0.0016	0,040 mm		3,0	38,0	0,5	0,4	118	07722	-
0.0018	0,050 mm		3,0	38,0	0,6	0,5	118	07723	-
0.0020	0,050 mm		3,0	38,0	0,8	0,7	118	07724	-
0.0024	0,060 mm		3,0	38,0	0,8	0,7	118	07725	-
0.0028	0,070 mm		3,0	38,0	1,3	1,2	118	07726	-
0.0031	0,080 mm		3,0	38,0	1,3	1,2	118	07727	-
0.0035	0,090 mm		3,0	38,0	1,3	1,2	118	07728	-
0.0039	0,100 mm		3,0	38,0	1,0	0,9	118	07729	-
0.0043	0,110 mm		3,0	38,0	1,0	0,8	118	07730	-
0.0047	0,120 mm		3,0	38,0	1,0	0,8	118	07731	-
0.0051	0,130 mm		3,0	38,0	1,0	0,8	118	07732	-
0.0055	0,140 mm		3,0	38,0	1,0	0,8	118	07733	-
0.0059	0,150 mm	#97	3,0	38,0	2,0	1,8	118	07734	-
0.0063	0,160 mm	#96	3,0	38,0	2,0	1,8	118	07735	-
0.0067	0,170 mm	#95	3,0	38,0	2,0	1,7	118	07736	-
0.0071	0,180 mm	#94	3,0	38,0	2,5	2,2	118	07737	-
0.0075	0,190 mm	#93	3,0	38,0	2,5	2,2	118	07738	-
0.0079	0,200 mm	#92	3,0	38,0	2,5	2,2	118	07739	-
0.0083	0,210 mm	#91	3,0	38,0	2,5	2,2	118	07740	-
0.0087	0,220 mm	#90	3,0	38,0	2,5	2,2	118	07741	-
0.0091	0,230 mm	#89	3,0	38,0	3,8	3,5	118	07742	-
0.0094	0,240 mm		3,0	38,0	3,8	3,4	118	07743	-
0.0098	0,250 mm		3,0	38,0	3,8	3,4	118	07744	07400
0.0102	0,260 mm		3,0	38,0	3,8	3,4	118	07745	07401
0.0106	0,270 mm		3,0	38,0	3,8	3,4	118	07746	07402
0.0110	0,280 mm	#85	3,0	38,0	3,8	3,4	118	07747	07403
0.0114	0,290 mm		3,0	38,0	3,8	3,4	118	07748	07404
0.0118	0,300 mm		3,0	38,0	5,7	5,3	118	07749	07405
0.0122	0,310 mm		3,0	38,0	5,7	5,2	118	07750	07406
0.0126	0,320 mm		3,0	38,0	5,7	5,2	118	07751	07407
0.0130	0,330 mm	#81	3,0	38,0	5,7	5,2	118	07752	07408
0.0134	0,340 mm		3,0	38,0	5,7	5,2	118	07753	07409
0.0138	0,350 mm		3,0	38,0	5,7	5,2	130	07754	07410
0.0142	0,360 mm		3,0	38,0	5,7	5,2	130	07755	07411
0.0146	0,370 mm		3,0	38,0	5,7	5,1	130	07756	07412
0.0150	0,380 mm		3,0	38,0	6,4	5,8	130	07757	07413
0.0154	0,390 mm		3,0	38,0	6,4	5,8	130	07758	07414
0.0157	0,400 mm		3,0	38,0	6,4	5,8	130	07759	07415
0.0161	0,410 mm		3,0	38,0	6,4	5,8	130	07760	07416
0.0165	0,420 mm		3,0	38,0	6,4	5,8	130	07761	07417
0.0169	0,430 mm		3,0	38,0	6,4	5,8	130	07762	07418
0.0173	0,440 mm		3,0	38,0	6,4	5,7	130	07763	07419
0.0177	0,450 mm		3,0	38,0	6,4	5,7	130	07764	07420
0.0181	0,460 mm		3,0	38,0	6,4	5,7	130	07765	07421
0.0185	0,470 mm		3,0	38,0	6,4	5,7	130	07766	07422
0.0189	0,480 mm		3,0	38,0	6,6	5,9	130	07767	07423

공차 (mm)

0,04-3,0 외경
DC = +0,000/-0,008
DCON = h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

L



슬리드 톨

엔드밀

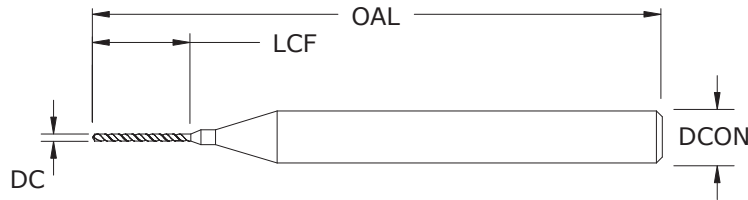
미세가공

드릴

SGS

공업용 나이프

미리 사양
2날 외부 콜러트



M226
미리 시리즈

공차 (mm)

0,04-3,0 외경
DC = +0,000/-0,008
DCON = h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

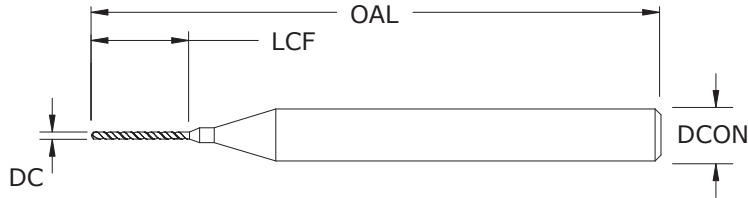
inch & mm								EDP NO.	
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	포인트각	비코팅	Ti-NAMITE-A (AITIN)
0.0193	0,490 mm		3,0	38,0	6,6	5,9	130	07768	07424
0.0197	0,500 mm		3,0	38,0	6,6	5,9	130	07769	07425
0.0201	0,510 mm		3,0	38,0	6,6	5,8	130	07770	07426
0.0205	0,520 mm		3,0	38,0	6,6	5,8	130	07771	07427
0.0209	0,530 mm		3,0	38,0	6,6	5,8	130	07772	07428
0.0213	0,540 mm		3,0	38,0	6,6	5,8	130	07773	07429
0.0217	0,550 mm		3,0	38,0	8,6	7,8	130	07774	07430
0.0220	0,560 mm		3,0	38,0	8,6	7,8	130	07775	07431
0.0224	0,570 mm		3,0	38,0	8,6	7,7	130	07776	07432
0.0228	0,580 mm		3,0	38,0	8,6	7,7	130	07777	07433
0.0232	0,590 mm		3,0	38,0	8,6	7,7	130	07778	07434
0.0236	0,600 mm		3,0	38,0	8,6	7,7	130	07779	07435
0.0240	0,610 mm	#73	3,0	38,0	8,6	7,7	130	07780	07436
0.0244	0,620 mm		3,0	38,0	8,6	7,7	130	07781	07437
0.0248	0,630 mm		3,0	38,0	8,6	7,7	130	07782	07438
0.0252	0,640 mm		3,0	38,0	8,6	7,6	130	07783	07439
0.0256	0,650 mm		3,0	38,0	8,6	7,6	130	07784	07440
0.0260	0,660 mm	#71	3,0	38,0	8,6	7,6	130	07785	07441
0.0264	0,670 mm		3,0	38,0	8,6	7,6	130	07786	07442
0.0268	0,680 mm		3,0	38,0	8,6	7,6	130	07787	07443
0.0272	0,690 mm		3,0	38,0	8,6	7,6	130	07788	07444
0.0276	0,700 mm		3,0	38,0	10,2	9,2	130	07789	07445
0.0280	0,710 mm	#70	3,0	38,0	10,2	9,1	130	07790	07446
0.0283	0,720 mm		3,0	38,0	10,2	9,1	130	07791	07447
0.0287	0,730 mm		3,0	38,0	10,2	9,1	130	07792	07448
0.0291	0,740 mm		3,0	38,0	10,2	9,1	130	07793	07449
0.0295	0,750 mm		3,0	38,0	10,2	9,1	130	07794	07450
0.0295	0,750 mm		3,0	50,0	11,0	9,9	130	07795	07451
0.0299	0,760 mm		3,0	38,0	10,2	9,1	130	07796	07452
0.0303	0,770 mm		3,0	38,0	10,2	9,0	130	07797	07453
0.0307	0,780 mm		3,0	38,0	10,2	9,0	130	07798	07454
0.0311	0,790 mm		3,0	38,0	10,2	9,0	130	07799	07455
0.0315	0,800 mm		3,0	38,0	10,2	9,0	130	07800	07456
0.0315	0,800 mm		3,0	50,0	11,0	9,8	130	07801	07457
0.0319	0,810 mm		3,0	38,0	10,2	9,0	130	07802	07458
0.0323	0,820 mm		3,0	38,0	10,2	9,0	130	07803	07459
0.0327	0,830 mm		3,0	38,0	10,2	9,0	130	07804	07460
0.0331	0,840 mm		3,0	38,0	10,2	8,9	130	07805	07461
0.0335	0,850 mm		3,0	38,0	10,2	8,9	130	07806	07462
0.0335	0,850 mm		3,0	50,0	13,0	11,7	130	07807	07463
0.0339	0,860 mm		3,0	38,0	10,2	8,9	130	07808	07464
0.0343	0,870 mm		3,0	38,0	10,2	8,9	130	07809	07465
0.0346	0,880 mm		3,0	38,0	10,2	8,9	130	07810	07466
0.0350	0,890 mm	#65	3,0	38,0	10,2	8,9	130	07811	07467
0.0354	0,900 mm		3,0	38,0	10,2	8,9	130	07812	07468
0.0354	0,900 mm		3,0	50,0	13,0	11,7	130	07813	07469

- 4페스트 포인트 형상으로 돌입이 안정적이고, 홀 치수 관리와 수명이 우수 (>.08mm). 0.08이하의 2페스트 포인트 형상
- 경면 처리로, 깊은 홀 작업의 칩 흐름을 개선
- 비코팅과 코팅 2가지 옵션이 있으며, 철계와 비철계 다양한 피삭재에서 성능과 수명이 우수
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 마이크로 입자 초경
- SGS ISO인증 품질 절차에 따라 생산



슬리드 톨

미리 사양 2날 외부 쿨러트



M226 미리 시리즈

- 4페릿 포인트 형상으로 돌입이 안정적이고, 홀 치수 관리와 수명이 우수(>.08mm). 0.08이하는 2페릿 포인트 형상
- 경면 처리로, 깊은 홀 작업의 칩 흐름을 개선
- 비코팅과 코팅 2가지 옵션이 있으며, 절삭과 비절삭 다양한 피삭재에서 성능과 수명이 우수
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 미크론 입자 조정
- SGS ISO인증 품질 절차에 따라 생산

inch & mm								EDP NO.	
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	샤크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	포인트각	비코팅	Ti-NAMITE-A (AITIN)
0.0358	0,910 mm		3,0	38,0	10,2	8,8	130	07814	07470
0.0362	0,920 mm		3,0	38,0	10,2	8,8	130	07815	07471
0.0366	0,930 mm		3,0	38,0	10,2	8,8	130	07816	07472
0.0370	0,940 mm	#63	3,0	38,0	10,2	8,8	130	07817	07473
0.0374	0,950 mm		3,0	38,0	10,2	8,8	130	07818	07474
0.0374	0,950 mm		3,0	50,0	15,0	13,6	130	07819	07475
0.0378	0,960 mm		3,0	38,0	10,2	8,8	130	07820	07476
0.0382	0,970 mm		3,0	38,0	10,2	8,7	130	07821	07477
0.0386	0,980 mm		3,0	38,0	10,2	8,7	130	07822	07478
0.0390	0,990 mm	#61	3,0	38,0	10,2	8,7	130	07823	07479
0.0394	1,000 mm		3,0	38,0	10,2	8,7	130	07824	07480
0.0394	1,000 mm		3,0	50,0	15,0	13,5	130	07825	07481
0.0398	1,010 mm		3,0	38,0	10,2	8,7	130	07826	07482
0.0402	1,020 mm		3,0	38,0	10,2	8,7	130	07827	07483
0.0406	1,030 mm		3,0	38,0	10,2	8,7	130	07828	07484
0.0409	1,040 mm		3,0	38,0	10,2	8,6	130	07829	07485
0.0413	1,050 mm		3,0	38,0	10,2	8,6	130	07830	07486
0.0413	1,050 mm		3,0	50,0	17,0	15,4	130	07831	07487
0.0417	1,060 mm		3,0	38,0	10,2	8,6	130	07832	07488
0.0421	1,070 mm		3,0	38,0	10,2	8,6	130	07833	07489
0.0425	1,080 mm		3,0	38,0	10,2	8,6	130	07834	07490
0.0429	1,090 mm		3,0	38,0	10,2	8,6	130	07835	07491
0.0433	1,100 mm		3,0	38,0	10,2	8,6	130	07836	07492
0.0433	1,100 mm		3,0	50,0	17,0	15,4	130	07837	07493
0.0437	1,110 mm		3,0	38,0	10,2	8,5	130	07838	07494
0.0441	1,120 mm		3,0	38,0	10,2	8,5	130	07839	07495
0.0445	1,130 mm		3,0	38,0	10,2	8,5	130	07840	07496
0.0449	1,140 mm		3,0	38,0	10,2	8,5	130	07841	07497
0.0453	1,150 mm		3,0	38,0	10,2	8,5	130	07842	07498
0.0453	1,150 mm		3,0	50,0	17,0	15,3	130	07843	07499
0.0457	1,160 mm		3,0	38,0	10,2	8,5	130	07844	07500
0.0461	1,170 mm		3,0	38,0	10,2	8,4	130	07845	07501
0.0465	1,180 mm	#56	3,0	38,0	10,2	8,4	130	07846	07502
0.0469	1,190 mm	3/64	3,0	38,0	10,2	8,4	130	07847	07503
0.0472	1,200 mm		3,0	38,0	10,2	8,4	130	07848	07504
0.0472	1,200 mm		3,0	50,0	17,0	15,2	130	07849	07505
0.0476	1,210 mm		3,0	38,0	10,2	8,4	130	07850	07506
0.0480	1,220 mm		3,0	38,0	10,2	8,4	130	07851	07507
0.0484	1,230 mm		3,0	38,0	10,2	8,4	130	07852	07508
0.0488	1,240 mm		3,0	38,0	10,2	8,3	130	07853	07509
0.0492	1,250 mm		3,0	38,0	10,2	8,3	130	07854	07510
0.0492	1,250 mm		3,0	50,0	19,0	17,1	130	07855	07511
0.0496	1,260 mm		3,0	38,0	10,2	8,3	130	07856	07512
0.0500	1,270 mm		3,0	38,0	10,2	8,3	130	07857	07513
0.0504	1,280 mm		3,0	38,0	10,2	8,3	130	07858	07514
0.0508	1,290 mm		3,0	38,0	10,2	8,3	130	07859	07515

공차 (mm)

0,04-3,0 외경
DC = +0,000/-0,008
DCON= h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

L



슬리드 톨

엔드밀

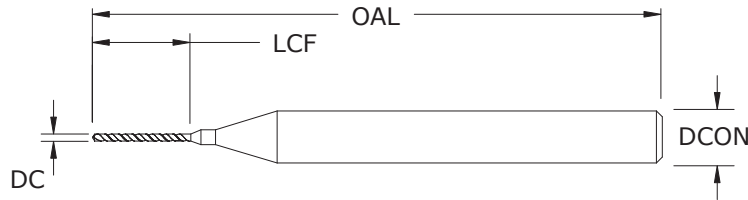
미세가공

드릴

SGS

공업용 나이프

미리 사양
2날 외부 콜러트



M226
미리 시리즈

공차 (mm)

0,04-3,0 외경
DC = +0,000/-0,008
DCON = h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

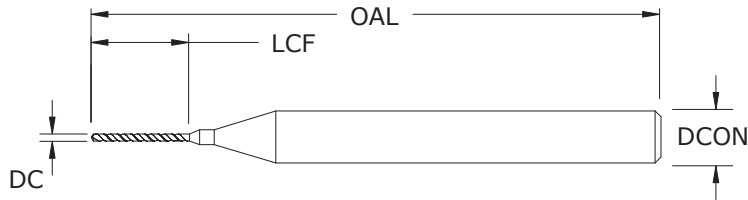
inch & mm								EDP NO.	
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	포인트각	비코팅	Ti-NAMITE-A (AITIN)
0.0512	1,300 mm		3,0	38,0	10,2	8,3	130	07860	07516
0.0512	1,300 mm		3,0	50,0	19,0	17,1	130	07861	07517
0.0516	1,310 mm		3,0	38,0	10,2	8,2	130	07862	07518
0.0520	1,320 mm		3,0	38,0	10,2	8,2	130	07863	07519
0.0524	1,330 mm		3,0	38,0	10,2	8,2	130	07864	07520
0.0528	1,340 mm		3,0	38,0	10,2	8,2	130	07865	07521
0.0531	1,350 mm		3,0	38,0	10,2	8,2	130	07866	07522
0.0531	1,350 mm		3,0	50,0	19,0	17,0	130	07867	07523
0.0535	1,360 mm		3,0	38,0	10,2	8,2	130	07868	07524
0.0539	1,370 mm		3,0	38,0	10,2	8,1	130	07869	07525
0.0543	1,380 mm		3,0	38,0	10,2	8,1	130	07870	07526
0.0547	1,390 mm		3,0	38,0	10,2	8,1	130	07871	07527
0.0551	1,400 mm		3,0	38,0	10,2	8,1	130	07872	07528
0.0551	1,400 mm		3,0	50,0	19,0	16,9	130	07873	07529
0.0555	1,410 mm		3,0	38,0	10,2	8,1	130	07874	07530
0.0559	1,420 mm		3,0	38,0	10,2	8,1	130	07875	07531
0.0563	1,430 mm		3,0	38,0	10,2	8,1	130	07876	07532
0.0567	1,440 mm		3,0	38,0	10,2	8,0	130	07877	07533
0.0571	1,450 mm		3,0	38,0	10,2	8,0	130	07878	07534
0.0571	1,450 mm		3,0	50,0	20,0	17,8	130	07879	07535
0.0575	1,460 mm		3,0	38,0	10,2	8,0	130	07880	07536
0.0579	1,470 mm		3,0	38,0	10,2	8,0	130	07881	07537
0.0583	1,480 mm		3,0	38,0	10,2	8,0	130	07882	07538
0.0587	1,490 mm		3,0	38,0	10,2	8,0	130	07883	07539
0.0591	1,500 mm		3,0	38,0	10,2	8,0	130	07884	07540
0.0591	1,500 mm		3,0	50,0	20,0	17,8	130	07885	07541
0.0594	1,510 mm		3,0	38,0	10,2	7,9	130	07886	07542
0.0598	1,520 mm		3,0	38,0	10,2	7,9	130	07887	07543
0.0602	1,530 mm		3,0	38,0	10,2	7,9	130	07888	07544
0.0606	1,540 mm		3,0	38,0	10,2	7,9	130	07889	07545
0.0610	1,550 mm		3,0	38,0	10,2	7,9	130	07890	07546
0.0610	1,550 mm		3,0	50,0	20,0	17,7	130	07891	07547
0.0614	1,560 mm		3,0	38,0	10,2	7,9	130	07892	07548
0.0618	1,570 mm		3,0	38,0	10,2	7,8	130	07893	07549
0.0622	1,580 mm		3,0	38,0	10,2	7,8	130	07894	07550
0.0626	1,590 mm		3,0	38,0	10,2	7,8	130	07895	07551
0.0630	1,600 mm		3,0	38,0	10,2	7,8	130	07896	07552
0.0630	1,600 mm		3,0	50,0	20,0	17,6	130	07897	07553
0.0634	1,610 mm		3,0	38,0	10,2	7,8	130	07898	07554
0.0638	1,620 mm		3,0	38,0	10,2	7,8	130	07899	07555
0.0642	1,630 mm		3,0	38,0	10,2	7,8	130	07900	07556
0.0646	1,640 mm		3,0	38,0	10,2	7,7	130	07901	07557
0.0650	1,650 mm		3,0	38,0	10,2	7,7	130	07902	07558
0.0650	1,650 mm		3,0	50,0	20,0	17,5	130	07903	07559
0.0654	1,660 mm		3,0	38,0	10,2	7,7	130	07904	07560
0.0657	1,670 mm		3,0	38,0	10,2	7,7	130	07905	07561

- 4페시 포인트 형상으로 돌입이 안정적이고, 홀 치수 관리와 수명이 우수 (>.08mm). 0.08이하의 2페시 포인트 형상
- 경면 처리로, 깊은 홀 작업의 칩 흐름을 개선
- 비코팅과 코팅 2가지 옵션이 있으며, 철계와 비철계 다양한 피삭재에서 성능과 수명이 우수
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 마이크로 입자 초경
- SGS ISO인증 품질 절차에 따라 생산



슬리드 톨

미리 사양 2날 외부 컬런트



M226 미리 시리즈

- 4페릿 포인트 형상으로 돌입이 안정적이고, 홀 치수 관리와 수명이 우수(>.08mm). 0.08이하는 2페릿 포인트 형상
- 경면 처리로, 깊은 홀 작업의 칩 흐름을 개선
- 비코팅과 코팅 2가지 옵션이 있으며, 절삭과 비절삭 다양한 피삭재에서 성능과 수명이 우수
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 미크론 입자 초경
- SGS ISO인증 품질 절차에 따라 생산

inch & mm								EDP NO.	
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	포인트각	비코팅	Ti-NAMITE-A (AITIN)
0.0661	1,680 mm		3,0	38,0	10,2	7,7	130	07906	07562
0.0665	1,690 mm		3,0	38,0	10,2	7,7	130	07907	07563
0.0669	1,700 mm		3,0	38,0	10,2	7,7	130	07908	07564
0.0669	1,700 mm		3,0	50,0	20,0	17,5	130	07909	07565
0.0673	1,710 mm		3,0	38,0	10,2	7,6	130	07910	07566
0.0677	1,720 mm		3,0	38,0	10,2	7,6	130	07911	07567
0.0681	1,730 mm		3,0	38,0	10,2	7,6	130	07912	07568
0.0685	1,740 mm		3,0	38,0	10,2	7,6	130	07913	07569
0.0689	1,750 mm		3,0	38,0	10,2	7,6	130	07914	07570
0.0689	1,750 mm		3,0	50,0	20,0	17,4	130	07915	07571
0.0693	1,760 mm		3,0	38,0	10,2	7,6	130	07916	07572
0.0697	1,770 mm		3,0	38,0	10,2	7,5	130	07917	07573
0.0701	1,780 mm		3,0	38,0	10,2	7,5	130	07918	07574
0.0705	1,790 mm		3,0	38,0	10,2	7,5	130	07919	07575
0.0709	1,800 mm		3,0	38,0	10,2	7,5	130	07920	07576
0.0709	1,800 mm		3,0	50,0	20,0	17,3	130	07921	07577
0.0713	1,810 mm		3,0	38,0	10,2	7,5	130	07922	07578
0.0717	1,820 mm		3,0	38,0	10,2	7,5	130	07923	07579
0.0720	1,830 mm		3,0	38,0	10,2	7,5	130	07924	07580
0.0724	1,840 mm		3,0	38,0	10,2	7,4	130	07925	07581
0.0728	1,850 mm		3,0	38,0	10,2	7,4	130	07926	07582
0.0728	1,850 mm		3,0	60,0	22,8	20,0	130	07927	07583
0.0732	1,860 mm		3,0	38,0	10,2	7,4	130	07928	07584
0.0736	1,870 mm		3,0	38,0	10,2	7,4	130	07929	07585
0.0740	1,880 mm		3,0	38,0	10,2	7,4	130	07930	07586
0.0744	1,890 mm		3,0	38,0	10,2	7,4	130	07931	07587
0.0748	1,900 mm		3,0	38,0	10,2	7,4	130	07932	07588
0.0748	1,900 mm		3,0	60,0	22,8	20,0	130	07933	07589
0.0752	1,910 mm		3,0	38,0	10,2	7,3	130	07934	07590
0.0756	1,920 mm		3,0	38,0	10,2	7,3	130	07935	07591
0.0760	1,930 mm	#48	3,0	38,0	10,2	7,3	130	07936	07592
0.0764	1,940 mm		3,0	38,0	10,2	7,3	130	07937	07593
0.0768	1,950 mm		3,0	38,0	10,2	7,3	130	07938	07594
0.0768	1,950 mm		3,0	60,0	24,0	21,1	130	07939	07595
0.0772	1,960 mm		3,0	38,0	10,2	7,3	130	07940	07596
0.0776	1,970 mm		3,0	38,0	10,2	7,2	130	07941	07597
0.0780	1,980 mm		3,0	38,0	10,2	7,2	130	07942	07598
0.0783	1,990 mm		3,0	38,0	10,2	7,2	130	07943	07599
0.0787	2,000 mm		3,0	38,0	10,2	7,2	130	07944	07600
0.0787	2,000 mm		3,0	60,0	24,0	21,0	130	07945	07601
0.0791	2,010 mm		3,0	38,0	10,2	7,2	130	07946	07602
0.0795	2,020 mm		3,0	38,0	10,2	7,2	130	07947	07603
0.0799	2,030 mm		3,0	38,0	10,2	7,2	130	07948	07604
0.0803	2,040 mm		3,0	38,0	10,2	7,1	130	07949	07605
0.0807	2,050 mm		3,0	38,0	10,2	7,1	130	07950	07606
0.0807	2,050 mm		3,0	60,0	25,2	22,1	130	07951	07607

공차 (mm)

0,04-3,0 외경
DC = +0,000/-0,008
DCON= h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

L



슬리드 톨

엔드밀

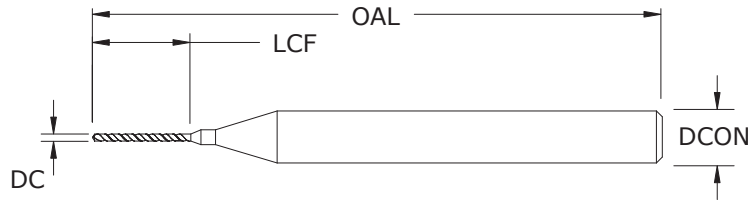
미세가공

드릴

SGS

공업용 나이프

미리 사양
2날 외부 콜러트



M226
미리 시리즈

공차 (mm)

0,04-3,0 외경
DC = +0,000/-0,008
DCON = h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

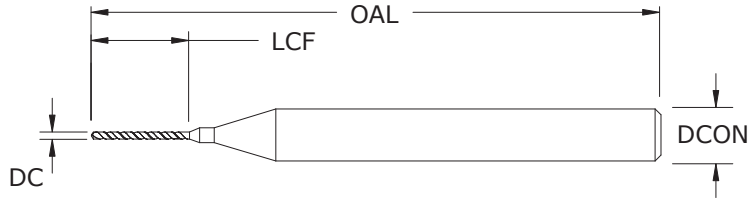
inch & mm								EDP NO.	
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	포인트각	비코팅	Ti-NAMITE-A (AITIN)
0.0811	2,060 mm		3,0	38,0	10,2	7,1	130	07952	07608
0.0815	2,070 mm		3,0	38,0	10,2	7,1	130	07953	07609
0.0819	2,080 mm		3,0	38,0	10,2	7,1	130	07954	07610
0.0823	2,090 mm		3,0	38,0	10,2	7,1	130	07955	07611
0.0827	2,100 mm		3,0	38,0	10,2	7,1	130	07956	07612
0.0827	2,100 mm		3,0	60,0	25,2	22,1	130	07957	07613
0.0831	2,110 mm		3,0	38,0	10,2	7,0	130	07958	07614
0.0835	2,120 mm		3,0	38,0	10,2	7,0	130	07959	07615
0.0839	2,130 mm		3,0	38,0	10,2	7,0	130	07960	07616
0.0843	2,140 mm		3,0	38,0	10,2	7,0	130	07961	07617
0.0846	2,150 mm		3,0	38,0	10,2	7,0	130	07962	07618
0.0846	2,150 mm		3,0	60,0	26,4	23,2	130	07963	07619
0.0850	2,160 mm		3,0	38,0	10,2	7,0	130	07964	07620
0.0854	2,170 mm		3,0	38,0	10,2	6,9	130	07965	07621
0.0858	2,180 mm		3,0	38,0	10,2	6,9	130	07966	07622
0.0862	2,190 mm		3,0	38,0	10,2	6,9	130	07967	07623
0.0866	2,200 mm		3,0	38,0	10,2	6,9	130	07968	07624
0.0866	2,200 mm		3,0	60,0	26,4	23,1	130	07969	07625
0.0870	2,210 mm		3,0	38,0	10,2	6,9	130	07970	07626
0.0874	2,220 mm		3,0	38,0	10,2	6,9	130	07971	07627
0.0878	2,230 mm		3,0	38,0	10,2	6,9	130	07972	07628
0.0882	2,240 mm		3,0	38,0	10,2	6,8	130	07973	07629
0.0886	2,250 mm		3,0	38,0	10,2	6,8	130	07974	07630
0.0886	2,250 mm		3,0	60,0	27,6	24,2	130	07975	07631
0.0890	2,260 mm	#43	3,0	38,0	10,2	6,8	130	07976	07632
0.0894	2,270 mm		3,0	38,0	10,2	6,8	130	07977	07633
0.0898	2,280 mm		3,0	38,0	10,2	6,8	130	07978	07634
0.0902	2,290 mm		3,0	38,0	10,2	6,8	130	07979	07635
0.0906	2,300 mm		3,0	38,0	10,2	6,8	130	07980	07636
0.0906	2,300 mm		3,0	60,0	27,6	24,2	130	07981	07637
0.0909	2,310 mm		3,0	38,0	10,2	6,7	130	07982	07638
0.0913	2,320 mm		3,0	38,0	10,2	6,7	130	07983	07639
0.0917	2,330 mm		3,0	38,0	10,2	6,7	130	07984	07640
0.0921	2,340 mm		3,0	38,0	10,2	6,7	130	07985	07641
0.0925	2,350 mm		3,0	38,0	10,2	6,7	130	07986	07642
0.0925	2,350 mm		3,0	60,0	28,8	25,3	130	07987	07643
0.0929	2,360 mm		3,0	38,0	10,2	6,7	130	07988	07644
0.0933	2,370 mm		3,0	38,0	10,2	6,6	130	07989	07645
0.0937	2,380 mm		3,0	38,0	10,2	6,6	130	07990	07646
0.0941	2,390 mm		3,0	38,0	10,2	6,6	130	07991	07647
0.0945	2,400 mm		3,0	38,0	10,2	6,6	130	07992	07648
0.0945	2,400 mm		3,0	60,0	28,8	25,2	130	07993	07649
0.0949	2,410 mm		3,0	38,0	10,2	6,6	130	07994	07650
0.0953	2,420 mm		3,0	38,0	10,2	6,6	130	07995	07651
0.0957	2,430 mm		3,0	38,0	10,2	6,6	130	07996	07652
0.0961	2,440 mm		3,0	38,0	10,2	6,5	130	07997	07653

- 4페시 포인트 형상으로 돌입이 안정적이고, 홀 치수 관리와 수명이 우수 (>.08mm). 0.08이하의 2페시 포인트 형상
- 경면 처리로, 깊은 홀 작업의 칩 흐름을 개선
- 비코팅과 코팅 2가지 옵션이 있으며, 철계와 비철계 다양한 피삭재에서 성능과 수명이 우수
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 미크론 입자 초경
- SGS ISO인증 품질 절차에 따라 생산



슬리드 톨

미리 사양 2날 외부 쿨러트



M226 미리 시리즈

- 4페셋 포인트 형상으로 돌입이 안정적이고, 홀 치수 관리와 수명이 우수(>.08mm). 0.08이하는 2페셋 포인트 형상
- 경면 처리로, 깊은 홀 작업의 칩 흐름을 개선
- 비코팅과 코팅 2가지 옵션이 있으며, 절삭과 비절삭 다양한 피삭재에서 성능과 수명이 우수
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 미크론 입자 조정
- SGS ISO인증 품질 절차에 따라 생산

inch & mm								EDP NO.	
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	포인트각	비코팅	Ti-NAMITE-A (AITIN)
0.0965	2,450 mm		3,0	38,0	10,2	6,5	130	07998	07654
0.0965	2,450 mm		3,0	60,0	30,0	26,3	130	07999	07655
0.0969	2,460 mm		3,0	38,0	10,2	6,5	130	08000	07656
0.0972	2,470 mm		3,0	38,0	10,2	6,5	130	08001	07657
0.0976	2,480 mm		3,0	38,0	10,2	6,5	130	08002	07658
0.0980	2,490 mm	#40	3,0	38,0	10,2	6,5	130	08003	07659
0.0984	2,500 mm		3,0	38,0	10,2	6,5	130	08004	07660
0.0984	2,500 mm		3,0	60,0	30,0	26,3	130	08005	07661
0.0988	2,510 mm		3,0	38,0	10,2	6,4	130	08006	07662
0.0992	2,520 mm		3,0	38,0	10,2	6,4	130	08007	07663
0.0996	2,530 mm		3,0	38,0	10,2	6,4	130	08008	07664
0.1000	2,540 mm		3,0	38,0	10,2	6,4	130	08009	07665
0.1004	2,550 mm		3,0	38,0	10,2	6,4	130	08010	07666
0.1004	2,550 mm		3,0	60,0	31,2	27,4	130	08011	07667
0.1008	2,560 mm		3,0	38,0	10,2	6,4	130	08012	07668
0.1012	2,570 mm		3,0	38,0	10,2	6,3	130	08013	07669
0.1016	2,580 mm		3,0	38,0	10,2	6,3	130	08014	07670
0.1020	2,590 mm		3,0	38,0	10,2	6,3	130	08015	07671
0.1024	2,600 mm		3,0	38,0	10,2	6,3	130	08016	07672
0.1024	2,600 mm		3,0	60,0	31,2	27,3	130	08017	07673
0.1028	2,610 mm		3,0	38,0	10,2	6,3	130	08018	07674
0.1031	2,620 mm		3,0	38,0	10,2	6,3	130	08019	07675
0.1035	2,630 mm		3,0	38,0	10,2	6,3	130	08020	07676
0.1039	2,640 mm		3,0	38,0	10,2	6,2	130	08021	07677
0.1043	2,650 mm		3,0	38,0	10,2	6,2	130	08022	07678
0.1043	2,650 mm		3,0	60,0	32,4	28,4	130	08023	07679
0.1047	2,660 mm		3,0	38,0	10,2	6,2	130	08024	07680
0.1051	2,670 mm		3,0	38,0	10,2	6,2	130	08025	07681
0.1055	2,680 mm		3,0	38,0	10,2	6,2	130	08026	07682
0.1059	2,690 mm		3,0	38,0	10,2	6,2	130	08027	07683
0.1063	2,700 mm		3,0	38,0	10,2	6,2	130	08028	07684
0.1063	2,700 mm		3,0	60,0	32,4	28,4	130	08029	07685
0.1067	2,710 mm		3,0	38,0	10,2	6,1	130	08030	07686
0.1071	2,720 mm		3,0	38,0	10,2	6,1	130	08031	07687
0.1075	2,730 mm		3,0	38,0	10,2	6,1	130	08032	07688
0.1079	2,740 mm		3,0	38,0	10,2	6,1	130	08033	07689
0.1083	2,750 mm		3,0	38,0	10,2	6,1	130	08034	07690
0.1083	2,750 mm		3,0	60,0	33,6	29,5	130	08035	07691
0.1087	2,760 mm		3,0	38,0	10,2	6,1	130	08036	07692
0.1091	2,770 mm		3,0	38,0	10,2	6,0	130	08037	07693
0.1094	2,780 mm	7/64	3,0	38,0	10,2	6,0	130	08038	07694
0.1098	2,790 mm		3,0	38,0	10,2	6,0	130	08039	07695
0.1102	2,800 mm		3,0	38,0	10,2	6,0	130	08040	07696
0.1102	2,800 mm		3,0	60,0	33,6	29,4	130	08041	07697
0.1106	2,810 mm		3,0	38,0	10,2	6,0	130	08042	07698
0.1110	2,820 mm	#34	3,0	38,0	10,2	6,0	130	08043	07699

공차 (mm)

0,04-3,0 외경
DC = +0,000/-0,008
DCON = h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

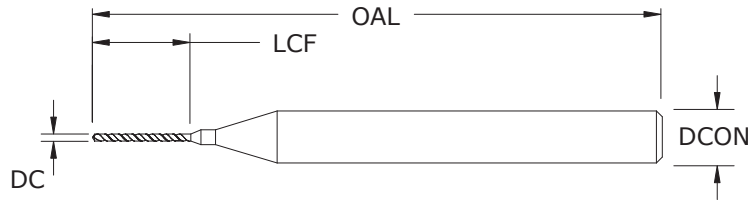
L



슬리드 톨

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

미리 사양
2날 외부 콜러트



M226
미리 시리즈

공차 (mm)

0,04-3,0 외경
DC = +0,000/-0,008
DCON = h₆

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

inch & mm								EDP NO.	
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	포인트각	비코팅	Ti-NAMITE-A (AITIN)
0.1114	2,830 mm		3,0	38,0	10,2	6,0	130	08044	07700
0.1118	2,840 mm		3,0	38,0	10,2	5,9	130	08045	07701
0.1122	2,850 mm		3,0	38,0	10,2	5,9	130	08046	07702
0.1122	2,850 mm		3,0	60,0	34,8	30,5	130	08047	07703
0.1126	2,860 mm		3,0	38,0	10,2	5,9	130	08048	07704
0.1130	2,870 mm		3,0	38,0	10,2	5,9	130	08049	07705
0.1134	2,880 mm		3,0	38,0	10,2	5,9	130	08050	07706
0.1138	2,890 mm		3,0	38,0	10,2	5,9	130	08051	07707
0.1142	2,900 mm		3,0	38,0	10,2	5,9	130	08052	07708
0.1142	2,900 mm		3,0	60,0	34,8	30,5	130	08053	07709
0.1146	2,910 mm		3,0	38,0	10,2	5,8	130	08054	07710
0.1150	2,920 mm		3,0	38,0	10,2	5,8	130	08055	07711
0.1154	2,930 mm		3,0	38,0	10,2	5,8	130	08056	07712
0.1157	2,940 mm		3,0	38,0	10,2	5,8	130	08057	07713
0.1161	2,950 mm		3,0	38,0	10,2	5,8	130	08058	07714
0.1161	2,950 mm		3,0	60,0	36,0	31,6	130	08059	07715
0.1165	2,960 mm		3,0	38,0	10,2	5,8	130	08060	07716
0.1169	2,970 mm		3,0	38,0	10,2	5,7	130	08061	07717
0.1173	2,980 mm		3,0	38,0	10,2	5,7	130	08062	07718
0.1177	2,990 mm		3,0	38,0	10,2	5,7	130	08063	07719
0.1181	3,000 mm		3,0	38,0	10,2	5,7	130	08064	07720
0.1181	3,000 mm		3,0	60,0	36,0	31,5	130	08065	07721

- 4페시 포인트 형상으로 돌입이 안정적이고, 홀 치수 관리와 수명이 우수 (>.08mm). 0.08이하의 2페시 포인트 형상
- 경면 처리로, 깊은 홀 작업의 칩 흐름을 개선
- 비코팅과 코팅 2가지 옵션이 있으며, 철계와 비철계 다양한 피삭재에서 성능과 수명이 우수
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 마이크론 입자 초경
- SGS ISO인증 품질 절차에 따라 생산



슬리드 톨

미리 사양
M226

시리즈 M226 미리 사양	경도	Vc (m/min)	DC • mm						
			0.04	0.25	0.5	1	2	3	
P 탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	40 (32-48)	RPM	315060	50410	25205	12602	6301	4201
			Fr	0.0012	0.0072	0.0144	0.0288	0.0576	0.0865
			Feed (mm/min)	363	363	363	363	363	363
			RPM	472590	75614	37807	18904	9452	6301
			Fr	0.0010	0.0065	0.0130	0.0261	0.0521	0.0782
			Feed (mm/min)	493	493	493	493	493	493
M 스테인리스강 (패삭강) 304, 304L, 316, 316L	≤ 275 Bhn or ≤ 28 HRc	20 (16-24)	RPM	157530	25205	12602	6301	3151	2100
			Fr	0.0009	0.0054	0.0109	0.0218	0.0435	0.0653
			Feed (mm/min)	137	137	137	137	137	137
			RPM	96942	15511	7755	3878	1939	1293
			Fr	0.0007	0.0044	0.0088	0.0177	0.0354	0.0531
			Feed (mm/min)	69	69	69	69	69	69
K 주철 Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	85 (68-102)	RPM	678591	108575	54287	27144	13572	9048
			Fr	0.0007	0.0041	0.0082	0.0164	0.0328	0.0491
			Feed (mm/min)	445	445	445	445	445	445
			RPM	593768	95003	47501	23751	11875	7917
			Fr	0.0020	0.0123	0.0247	0.0493	0.0986	0.1479
			Feed (mm/min)	1171	1171	1171	1171	1171	1171
N 동합금 Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	55 (44-66)	RPM	436237	69798	34899	17449	8725	5816
			Fr	0.0020	0.0123	0.0247	0.0493	0.0987	0.1480
			Feed (mm/min)	861	861	861	861	861	861
			RPM	593768	95003	47501	23751	11875	7917
			Fr	0.0020	0.0123	0.0247	0.0493	0.0986	0.1479
			Feed (mm/min)	1171	1171	1171	1171	1171	1171
S 초내열합금 (니켈, 코발트, Iron Base) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 320 Bhn or ≤ 34 HRc	15 (12-18)	RPM	121177	19388	9694	4847	2424	1616
			Fr	0.0004	0.0028	0.0055	0.0110	0.0220	0.0330
			Feed (mm/min)	53	53	53	53	53	53
			RPM	121177	19388	9694	4847	2424	1616
			Fr	0.0007	0.0042	0.0085	0.0170	0.0339	0.0509
			Feed (mm/min)	82	82	82	82	82	82
H 공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc	24 (20-29)	RPM	193883	31021	15511	7755	3878	2585
			Fr	0.0005	0.0033	0.0066	0.0131	0.0262	0.0393
			Feed (mm/min)	102	102	102	102	102	102

- Bhn (브리넬 경도) HRc (록웰C 경도) HRb (록웰B 경도)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x rpm (Fr x 추천치가 장비 한계 초과시에는 최대 가능 rpm)
- 비코팅 드릴을 사용시 속도와 피드를 30% 줄여 주십시오.
- 위보다 경도가 높은 소재에서는 속도와 피드를 줄여 주십시오.



슬리드
드릴

엔드밀

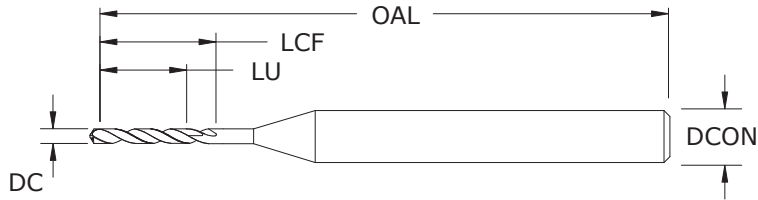
미세가공

드릴

SGS

공업용
나이프

미리 사양
2날 내부 콜러트



M814
미리 시리즈

공차 (mm)

1,0-3,0 외경
DC = +0,000/-0,006 (k6)
DCON = h6
3,4-4,0 외경
DC = +0,000/-0,009 (k6)
DCON = h6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

inch & mm						EDP NO.
DECIMAL DC	미리 사양 DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	Ti-NAMITE-CR (AlCrN)
0.0394	1,000 mm	4,0	53,0	13,3	11,8	06000
0.0394	1,000 mm	4,0	53,0	20,3	18,8	06031
0.0433	1,100 mm	4,0	53,0	14,1	12,5	06001
0.0433	1,100 mm	4,0	53,0	21,8	20,2	06032
0.0472	1,200 mm	4,0	53,0	14,9	13,1	06002
0.0472	1,200 mm	4,0	53,0	23,3	21,5	06033
0.0512	1,300 mm	4,0	64,0	15,7	13,8	06003
0.0512	1,300 mm	4,0	64,0	24,8	22,9	06034
0.0551	1,400 mm	4,0	64,0	16,5	14,4	06004
0.0551	1,400 mm	4,0	64,0	26,3	24,2	06035
0.0591	1,500 mm	4,0	64,0	17,3	15,1	06005
0.0591	1,500 mm	4,0	64,0	27,8	25,6	06036
0.0630	1,600 mm	4,0	64,0	18,1	15,7	06006
0.0630	1,600 mm	4,0	64,0	29,3	26,9	06037
0.0669	1,700 mm	4,0	64,0	18,9	16,4	06007
0.0669	1,700 mm	4,0	64,0	30,8	28,3	06038
0.0709	1,800 mm	4,0	76,0	20,4	17,7	06008
0.0709	1,800 mm	4,0	76,0	33,0	30,3	06039
0.0748	1,900 mm	4,0	76,0	21,2	18,4	06009
0.0748	1,900 mm	4,0	76,0	34,5	31,7	06040
0.0787	2,000 mm	4,0	76,0	22,0	19,0	06010
0.0787	2,000 mm	4,0	76,0	36,0	33,0	06041
0.0827	2,100 mm	4,0	76,0	22,8	19,7	06011
0.0827	2,100 mm	4,0	76,0	37,5	34,4	06042
0.0866	2,200 mm	4,0	76,0	25,7	22,4	06012
0.0866	2,200 mm	4,0	76,0	41,1	37,8	06043
0.0906	2,300 mm	4,0	76,0	26,5	23,1	06013
0.0906	2,300 mm	4,0	76,0	42,6	39,2	06044
0.0945	2,400 mm	4,0	76,0	27,3	23,7	06014
0.0945	2,400 mm	4,0	76,0	44,1	40,5	06045
0.0984	2,500 mm	4,0	76,0	28,1	24,4	06015
0.0984	2,500 mm	4,0	64,0	45,6	41,9	06046
0.1024	2,600 mm	4,0	64,0	28,9	25,0	06016
0.1024	2,600 mm	4,0	64,0	47,1	43,2	06047
0.1063	2,700 mm	4,0	64,0	29,7	25,7	06017
0.1063	2,700 mm	4,0	64,0	48,6	44,6	06048
0.1102	2,800 mm	4,0	64,0	30,5	26,3	06018
0.1102	2,800 mm	4,0	81,0	50,1	45,9	06049
0.1142	2,900 mm	4,0	81,0	32,2	27,9	06019
0.1142	2,900 mm	4,0	81,0	52,5	48,2	06050
0.1181	3,000 mm	4,0	81,0	33,0	28,5	06020
0.1181	3,000 mm	4,0	81,0	54,0	49,5	06051
0.1220	3,100 mm	4,0	81,0	33,8	29,2	06021
0.1220	3,100 mm	4,0	81,0	55,5	50,9	06052
0.1260	3,200 mm	4,0	81,0	34,6	29,8	06022
0.1260	3,200 mm	4,0	81,0	57,0	52,2	06053

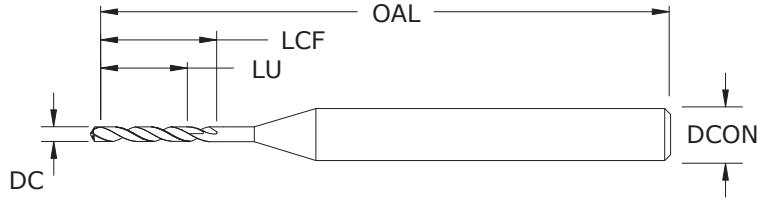
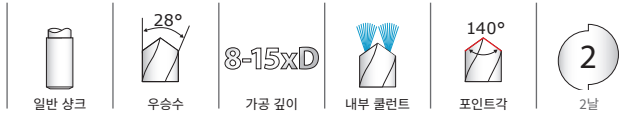
- 스플릿 포인트와 더불어 마진으로 우수한 정삭 품위와 치수 관리
- 콜러트 홀 사양으로 펙 사이클 없이 관통이 가능
- 고성능 코팅과 경면 플루트로 난삭재에서도 수명과 생산성 향상
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 마이크론 입자 초경
- SGS ISO인증 품질 공정에 따라 생산



슬리드 톨

미리 사양

2날 내부 쿨러



M814

미리 시리즈

- 스플릿 포인트와 더블 마진으로 우수한 정삭 품질과 치수 관리
- 쿨러트 홀 사양으로 펍 사이클 없이 관통이 가능
- 고성능 코팅과 경면 플루트로 난삭재에서도 수명과 생산성 향상
- 수요가 많은 사양들로 레파토리 구성
- 마이크로 톨 작업에 특화된 서브 마이크로 입자 조정
- SGS ISO인증 품질 공정에 따라 생산

inch & mm						EDP NO.
DECIMAL DC	미리 사양 DC	샤크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	Ti-NAMITE-CR (AlCrN)
0.1299	3,300 mm	4,0	90,0	35,4	30,5	06023
0.1299	3,300 mm	4,0	90,0	58,5	53,6	06054
0.1339	3,400 mm	4,0	90,0	38,1	33,0	06024
0.1339	3,400 mm	4,0	90,0	61,9	56,8	06055
0.1378	3,500 mm	4,0	90,0	38,9	33,7	06025
0.1378	3,500 mm	4,0	90,0	63,4	58,2	06056
0.1417	3,600 mm	4,0	106,0	39,7	34,3	06026
0.1417	3,600 mm	4,0	106,0	64,9	59,5	06057
0.1457	3,700 mm	4,0	106,0	40,5	35,0	06027
0.1457	3,700 mm	4,0	106,0	66,4	60,9	06058
0.1496	3,800 mm	4,0	106,0	41,3	35,6	06028
0.1496	3,800 mm	4,0	106,0	67,9	62,2	06059
0.1535	3,900 mm	4,0	106,0	42,1	36,3	06029
0.1535	3,900 mm	4,0	106,0	69,4	63,6	06060
0.1575	4,000 mm	4,0	106,0	42,9	36,9	06030
0.1575	4,000 mm	4,0	106,0	70,9	64,9	06061

공차 (mm)

1,0-3,0 외경
DC = +0,000/-0,006 (k6)
DCON = h6
3,4-4,0 외경
DC = +0,000/-0,009 (k6)
DCON = h6

- STEELS
- STAINLESS STEELS
- CAST IRON
- NON-FERROUS
- HIGH TEMP ALLOYS
- HARDENED STEELS

L



솔리드 톨

엔드밀

미세가공

드릴

SGS

공업용 나이프

미리 사양
M814 8xD 시리즈

시리즈 M814 8xD 미리 사양	경도	Vc (m/min)	DC • mm				
			1	2	3	4	
P 탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	125 (100-150)	RPM	39746	19873	13249	9937
			Fr	0.023	0.046	0.069	0.092
			Feed (mm/min)	909	909	909	909
			RPM	30052	15026	10017	7513
			Fr	0.022	0.043	0.065	0.086
			Feed (mm/min)	648	648	648	648
M 스테인리스강 (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 250 Bhn or ≤ 24 HRc	64 (51-77)	RPM	20358	10179	6786	5089
			Fr	0.018	0.036	0.054	0.071
			Feed (mm/min)	363	363	363	363
			RPM	12118	6059	4039	3029
			Fr	0.014	0.028	0.042	0.056
			Feed (mm/min)	170	170	170	170
K 주철 Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	130 (104-155)	RPM	41200	20600	13733	10300
			Fr	0.032	0.063	0.095	0.127
			Feed (mm/min)	1308	1308	1308	1308
			RPM	41200	20600	13733	10300
			Fr	0.039	0.079	0.118	0.158
			Feed (mm/min)	1626	1626	1626	1626
N 알루미늄합금 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	130 (104-155)	RPM	41200	20600	13733	10300
			Fr	0.039	0.079	0.118	0.158
			Feed (mm/min)	1626	1626	1626	1626
			RPM	31506	15753	10502	7877
			Fr	0.011	0.023	0.034	0.045
			Feed (mm/min)	356	356	356	356
동합금 Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	99 (79-119)	RPM	48471	24235	16157	12118
			Fr	0.024	0.047	0.071	0.094
			Feed (mm/min)	1143	1143	1143	1143
			RPM	48471	24235	16157	12118
			Fr	0.024	0.047	0.071	0.094
			Feed (mm/min)	1143	1143	1143	1143
플라스틱 Polycarbonate, PVC		152 (122-183)	RPM	8725	4362	2908	2181
			Fr	0.010	0.019	0.029	0.038
			Feed (mm/min)	84	84	84	84
			RPM	14541	7271	4847	3635
			Fr	0.010	0.020	0.030	0.041
			Feed (mm/min)	147	147	147	147
S 초내열합금 (니켈, 코발트, Iron Base) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 320 Bhn or ≤ 34 HRc	27 (22-33)	RPM	14541	7271	4847	3635
			Fr	0.010	0.020	0.030	0.041
			Feed (mm/min)	147	147	147	147
			RPM	14541	7271	4847	3635
			Fr	0.010	0.020	0.030	0.041
			Feed (mm/min)	147	147	147	147
H 공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc	46 (37-55)	RPM	14541	7271	4847	3635
			Fr	0.010	0.020	0.030	0.041
			Feed (mm/min)	147	147	147	147

- Bhn (브리넬 경도) HRc (록웰C 경도) HRb (록웰B 경도)
- $rpm = (Vc \times 1000) / (DC \times 3.14)$
- $mm/min = Fr \times rpm$ (Fr x 추천치가 장비 한계 초과시에는 최대 가능 rpm)
- 비코팅 드릴을 사용시 속도와 피드를 30% 줄여 주십시오.
- 위보다 경도가 높은 소재에서는 속도와 피드를 줄여 주십시오.



슬리드 드릴

미리 사양 M814 15xD 시리즈

시리즈 M814 15xD 미리 사양	경도	Vc (m/min)	DC • mm					
			1	2	3	4		
P 탄소강 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536	≤ 175 Bhn or ≤ 7 HRc	125 (100-150)	RPM	39746	19873	13249	9937	
			Fr	0.016	0.032	0.048	0.064	
			Feed (mm/min)	635	635	635	635	
	합금강 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100	≤ 275 Bhn or ≤ 28 HRc	94 (76-113)	RPM	30052	15026	10017	7513
				Fr	0.014	0.028	0.042	0.056
				Feed (mm/min)	419	419	419	419
M 스테인리스강 (FREE MACHINING) 303, 416, 420F, 430F, 440F	≤ 275 Bhn or ≤ 28 HRc	65 (51-77)	RPM	20358	10179	6786	5089	
			Fr	0.012	0.024	0.036	0.047	
			Feed (mm/min)	241	241	241	241	
	스테인리스강 (패삭강) 304, 316, 321, 13-8 PH, 15-5PH, 17-4 PH, CUSTOM 450	≤ 325 Bhn or ≤ 35 HRc	38 (30-46)	RPM	12118	6059	4039	3029
				Fr	0.009	0.019	0.028	0.038
				Feed (mm/min)	114	114	114	114
K 주철 Gray, Malleable, Ductile	≤ 220 Bhn or ≤ 19 HRc	130 (104-155)	RPM	41200	20600	13733	10300	
			Fr	0.022	0.043	0.065	0.086	
			Feed (mm/min)	889	889	889	889	
N 알루미늄합금 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	130 (104-155)	RPM	41200	20600	13733	10300	
			Fr	0.029	0.057	0.086	0.115	
			Feed (mm/min)	1181	1181	1181	1181	
	동합금 Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	99 (79-119)	RPM	31506	15753	10502	7877
				Fr	0.029	0.057	0.086	0.114
				Feed (mm/min)	902	902	902	902
플라스틱 Polycarbonate, PVC		152 (122-183)	RPM	48471	24235	16157	12118	
			Fr	0.017	0.033	0.050	0.066	
			Feed (mm/min)	800	800	800	800	
S 초내열합금 (니켈, 코발트, Iron Base) Inconel 601, 617, 625, Incoloy 800, Monel 400, Rene, Waspaloy	≤ 320 Bhn or ≤ 34 HRc	27 (22-33)	RPM	8725	4362	2908	2181	
			Fr	0.006	0.012	0.017	0.023	
			Feed (mm/min)	51	51	51	51	
티탄합금 Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.55i	≤ 350 Bhn or ≤ 38 HRc	46 (37-55)	RPM	14541	7271	4847	3635	
			Fr	0.007	0.014	0.021	0.028	
			Feed (mm/min)	102	102	102	102	
H 공구강 A2, D2, H13, L2, M2, P20, S7, T15, W2	≤ 475 Bhn or ≤ 50 HRc	46 (37-55)	RPM	14541	7271	4847	3635	
			Fr	0.007	0.014	0.021	0.028	
			Feed (mm/min)	102	102	102	102	

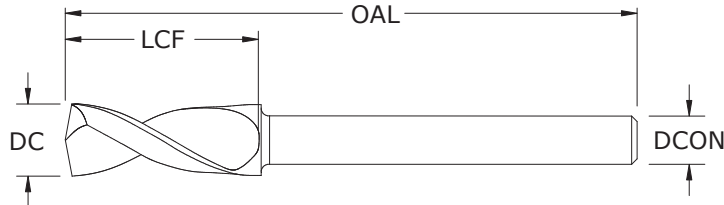
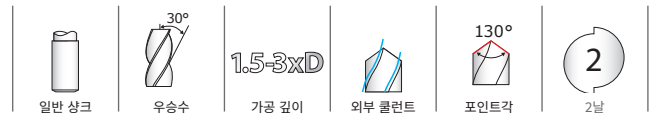
- Bhn (브리넬 경도) HRc (록웰C 경도) HRb (록웰B 경도)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x rpm (Fr x 추천치가 장비 한계 초과시에는 최대 가능 rpm)
- 비코팅 드릴을 사용시 속도와 피드를 30% 줄여 주십시오.
- 위보다 경도가 높은 소재에서는 속도와 피드를 줄여 주십시오.



- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

미리 사양

2날 인버스 상크 드릴 외부 콜러트



M155 미리 시리즈

공차 (inch)

0.1260-0.2638 외경
DC = +0.000/-0.004
DCON = +0.00016/-0.00016

공차 (mm)

3,2-6,7 외경
DC = +0,000/-0,010
DCON = +0,004/-0,004

- NON-FERROUS
- HIGH TEMP ALLOYS

inch & mm							EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	Ti-NAMITE-CR (AlCrN)
0.1260	3,200 mm		1/8	1-1/2	0.500	0.500	06069
0.1280	3,250 mm		1/8	1-1/2	0.500	0.500	06070
0.1285	3,264 mm	#30	1/8	1-1/2	0.500	0.500	06071
0.1299	3,300 mm		1/8	1-1/2	0.500	0.500	06072
0.1319	3,350 mm		1/8	1-1/2	0.500	0.500	06073
0.1339	3,400 mm		1/8	1-1/2	0.500	0.500	06074
0.1358	3,450 mm		1/8	1-1/2	0.500	0.500	06075
0.1360	3,454 mm	#29	1/8	1-1/2	0.500	0.500	06076
0.1378	3,500 mm		1/8	1-1/2	0.500	0.500	06077
0.1398	3,550 mm		1/8	1-1/2	0.500	0.500	06078
0.1405	3,569 mm	#28	1/8	1-1/2	0.500	0.500	06079
0.1406	3,571 mm	9/64	1/8	1-1/2	0.500	0.500	06080
0.1417	3,600 mm		1/8	1-1/2	0.500	0.500	06081
0.1437	3,650 mm		1/8	1-1/2	0.500	0.500	06082
0.1440	3,658 mm	#27	1/8	1-1/2	0.500	0.500	06083
0.1457	3,700 mm		1/8	1-1/2	0.500	0.500	06084
0.1470	3,734 mm	#26	1/8	1-1/2	0.500	0.500	06085
0.1476	3,750 mm		1/8	1-1/2	0.500	0.500	06086
0.1495	3,797 mm	#25	1/8	1-1/2	0.500	0.500	06087
0.1496	3,800 mm		1/8	1-1/2	0.500	0.500	06088
0.1516	3,850 mm		1/8	1-1/2	0.500	0.500	06089
0.1520	3,861 mm	#24	1/8	1-1/2	0.500	0.500	06090
0.1535	3,900 mm		1/8	1-1/2	0.500	0.500	06091
0.1540	3,912 mm	#23	1/8	1-1/2	0.500	0.500	06092
0.1555	3,950 mm		1/8	1-1/2	0.500	0.500	06093
0.1562	3,967 mm	5/32	1/8	1-1/2	0.500	0.500	06094
0.1570	3,988 mm	#22	1/8	1-1/2	0.500	0.500	06095
0.1575	4,000 mm		1/8	1-1/2	0.500	0.500	06096
0.1590	4,039 mm	#21	1/8	1-1/2	0.500	0.500	06097
0.1594	4,050 mm		1/8	1-1/2	0.500	0.500	06098
0.1610	4,089 mm	#20	1/8	1-1/2	0.500	0.500	06099
0.1614	4,100 mm		1/8	1-1/2	0.500	0.500	06100
0.1634	4,150 mm		1/8	1-1/2	0.500	0.500	06101
0.1654	4,200 mm		1/8	1-1/2	0.500	0.500	06102
0.1660	4,216 mm	#19	1/8	1-1/2	0.500	0.500	06103
0.1673	4,250 mm		1/8	1-1/2	0.500	0.500	06104
0.1693	4,300 mm		1/8	1-1/2	0.500	0.500	06105
0.1695	4,305 mm	#18	1/8	1-1/2	0.500	0.500	06106
0.1713	4,350 mm		1/8	1-1/2	0.500	0.500	06107
0.1719	4,366 mm	11/64	1/8	1-1/2	0.500	0.500	06108
0.1730	4,394 mm	#17	1/8	1-1/2	0.500	0.500	06109
0.1732	4,400 mm		1/8	1-1/2	0.500	0.500	06110
0.1752	4,450 mm		1/8	1-1/2	0.500	0.500	06111
0.1770	4,496 mm	#16	1/8	1-1/2	0.500	0.500	06112
0.1772	4,500 mm		1/8	1-1/2	0.500	0.500	06113
0.1791	4,550 mm		1/8	1-1/2	0.500	0.500	06114

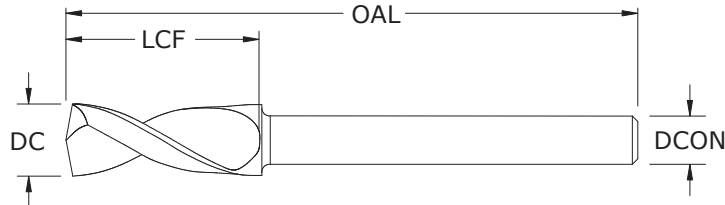
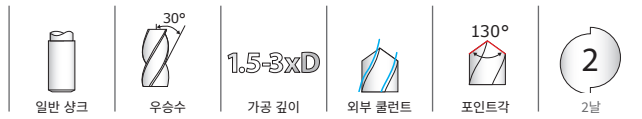
- 다양한 소재 대응에 최적화된 인선 형상
- 4페시 포인트 형상이 진입시 센터링 보조
- 경면 처리로 부드러운 칩 흐름
- 폭 넓은 레파토리로, 마이크로 스피들에서 일반적으로 대응 가능한 홀 사이즈보다 더 큰 홀에 대응 가능
- 마이크로 톨 공정에 특화된 서브 마이크론 입자 초경
- SGS ISO인증 품질 공정에 따라 생산



슬리드 톨

미리 사양

2날 인버스 샹크 드릴 외부 컬런트



M155 미리 시리즈

- 다양한 소재 대응에 최적화된 인선 형상
- 4페시 포인트 형상이 진입시 센터링 보조
- 경면 처리로 부드러운 칩 흐름
- 폭 넓은 레파토리로, 마이크로 스피들에 서 일반적으로 대응 가능한 홀 사이즈 보다 더 큰 홀에 대응 가능
- 마이크로 톨 공정에 특화된 서브 미크론 입자 초경
- SGS ISO인증 품질 공정에 따라 생산

inch & mm							EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	샹크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	Ti-NAMITE-CR (AlCN)
0.1800	4,572 mm	#15	1/8	1-1/2	0.500	0.500	06115
0.1811	4,600 mm		1/8	1-1/2	0.500	0.500	06116
0.1820	4,623 mm	#14	1/8	1-1/2	0.500	0.500	06117
0.1831	4,650 mm		1/8	1-1/2	0.500	0.500	06118
0.1850	4,700 mm	#13	1/8	1-1/2	0.500	0.500	06120
0.1870	4,750 mm		1/8	1-1/2	0.500	0.500	06121
0.1875	4,763 mm	3/16	1/8	1-1/2	0.500	0.500	06122
0.1890	4,800 mm	#12	1/8	1-1/2	0.500	0.500	06124
0.1909	4,850 mm		1/8	1-1/2	0.500	0.500	06125
0.1910	4,851 mm	#11	1/8	1-1/2	0.500	0.500	06126
0.1929	4,900 mm		1/8	1-1/2	0.500	0.500	06127
0.1935	4,915 mm	#10	1/8	1-1/2	0.500	0.500	06128
0.1949	4,950 mm		1/8	1-1/2	0.500	0.500	06129
0.1960	4,978 mm	#9	1/8	1-1/2	0.500	0.500	06130
0.1968	5,000 mm		1/8	1-1/2	0.500	0.500	06131
0.1988	5,050 mm		1/8	1-1/2	0.500	0.500	06132
0.1990	5,055 mm	#8	1/8	1-1/2	0.500	0.500	06133
0.2008	5,100 mm		1/8	1-1/2	0.500	0.500	06134
0.2010	5,105 mm	#7	1/8	1-1/2	0.500	0.500	06135
0.2028	5,150 mm		1/8	1-1/2	0.500	0.500	06136
0.2031	5,159 mm	13/64	1/8	1-1/2	0.500	0.500	06137
0.2040	5,182 mm	#6	1/8	1-1/2	0.500	0.500	06138
0.2047	5,200 mm		1/8	1-1/2	0.500	0.500	06139
0.2055	5,220 mm	#5	1/8	1-1/2	0.500	0.500	06140
0.2067	5,250 mm		1/8	1-1/2	0.500	0.500	06141
0.2087	5,300 mm		1/8	1-1/2	0.500	0.500	06142
0.2090	5,309 mm	#4	1/8	1-1/2	0.500	0.500	06143
0.2106	5,350 mm		1/8	1-1/2	0.500	0.500	06144
0.2126	5,400 mm		1/8	1-1/2	0.500	0.500	06145
0.2130	5,410 mm	#3	1/8	1-1/2	0.500	0.500	06146
0.2146	5,450 mm		1/8	1-1/2	0.500	0.500	06147
0.2165	5,500 mm		1/8	1-1/2	0.500	0.500	06148
0.2185	5,550 mm		1/8	1-1/2	0.500	0.500	06149
0.2188	5,558 mm	7/32	1/8	1-1/2	0.500	0.500	06150
0.2205	5,600 mm		1/8	1-1/2	0.500	0.500	06151
0.2210	5,613 mm	#2	1/8	1-1/2	0.500	0.500	06152
0.2224	5,650 mm		1/8	1-1/2	0.500	0.500	06153
0.2244	5,700 mm		1/8	1-1/2	0.500	0.500	06154
0.2264	5,750 mm		1/8	1-1/2	0.500	0.500	06155
0.2280	5,791 mm	#1	1/8	1-1/2	0.500	0.500	06156
0.2283	5,800 mm		1/8	1-1/2	0.500	0.500	06157
0.2302	5,850 mm		1/8	1-1/2	0.500	0.500	06158
0.2323	5,900 mm		1/8	1-1/2	0.500	0.500	06159
0.2340	5,944 mm	A	1/8	1-1/2	0.500	0.500	06160
0.2343	5,950 mm		1/8	1-1/2	0.500	0.500	06161
0.2344	5,954 mm	15/64	1/8	1-1/2	0.500	0.500	06162

공차 (inch)
0.1260-0.2638 외경
DC = +0.000/-0.004
DCON = +0.00016/-0.00016

공차 (mm)
3,2-6,7 외경
DC = +0,000/-0,010
DCON = +0,004/-0,004

NON-FERROUS
HIGH TEMP ALLOYS

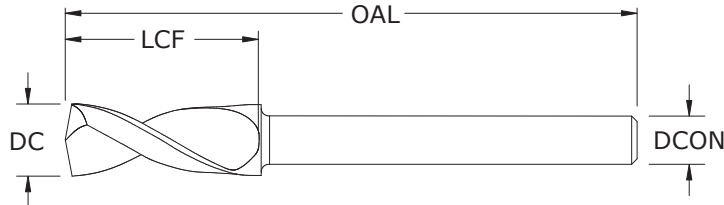
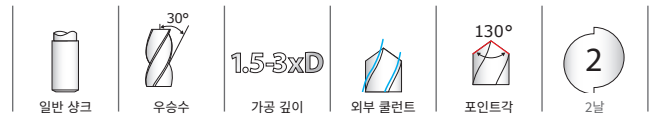
L

슬리드 톨

엔드밀
미세가공
드릴
SGS
공업용 나이프

미리 사양

2날 인버스 상크 드릴 외부 콜러트



M155
미리 시리즈

공차 (inch)

0.1260-0.2638 외경
DC = +0.000/-0.004
DCON = +0.00016/-0.00016

공차 (mm)

3,2-6,7 외경
DC = +0,000/-0,010
DCON = +0,004/-0,004

- NON-FERROUS
- HIGH TEMP ALLOYS

inch & mm							EDP NO.
DECIMAL DC	미리 사양 DC	FRACTIONAL/ LETTER/WIRE DC	상크경 DCON	전장 OAL	날장 LCF	사용 가능 길이 LU	Ti-NAMITE-CR (AlCrN)
0.2362	6,000 mm		1/8	1-1/2	0.500	0.500	06163
0.2380	6,045 mm	B	1/8	1-1/2	0.500	0.500	06164
0.2382	6,050 mm		1/8	1-1/2	0.500	0.500	06165
0.2402	6,100 mm		1/8	1-1/2	0.500	0.500	06166
0.2420	6,147 mm	C	1/8	1-1/2	0.500	0.500	06167
0.2421	6,150 mm		1/8	1-1/2	0.500	0.500	06168
0.2441	6,200 mm		1/8	1-1/2	0.500	0.500	06169
0.2460	6,248 mm	D	1/8	1-1/2	0.500	0.500	06170
0.2461	6,250 mm		1/8	1-1/2	0.500	0.500	06171
0.2480	6,300 mm		1/8	1-1/2	0.500	0.500	06172
0.2500	6,350 mm	1/4 E	1/8	1-1/2	0.500	0.500	06173
0.2520	6,400 mm		1/8	1-1/2	0.500	0.500	06176
0.2559	6,500 mm		1/8	1-1/2	0.500	0.500	06177
0.2570	6,528 mm	F	1/8	1-1/2	0.500	0.500	06178
0.2598	6,600 mm		1/8	1-1/2	0.500	0.500	06179
0.2610	6,629 mm	G	1/8	1-1/2	0.500	0.500	06180
0.2638	6,700 mm		1/8	1-1/2	0.500	0.500	06181

- 다양한 소재 대응에 최적화된 인선 형상
- 4페셋 포인트 형상이 진입시 센터링 보조
- 경면 처리로 부드러운 칩 흐름
- 폭 넓은 레파토리로, 마이크로 스피들에서 일반적으로 대응 가능한 홀 사이즈 보다 더 큰 홀에 대응 가능
- 마이크로 톨 공정에 특화된 서브 미크론 입자 초경
- SGS ISO인증 품질 공정에 따라 생산



슬리드 톨

미리 사양
M155

시리즈 M155 미리 사양	경도	Vc (m/min)	DC • mm						
			3	4	5	6	7		
N 알루미늄합금 2017, 2024, 356, 6061, 7075	≤ 150 Bhn or ≤ 7 HRc	137 (110-165)	RPM	14541	10906	8725	7271	6232	
			Fr	0.1310	0.1747	0.2183	0.2620	0.3057	
			Feed (mm/min)	1905	1905	1905	1905	1905	
	동합금 Alum Bronze, C110, Muntz Brass	≤ 140 Bhn or ≤ 3 HRc	107 (140-210)	RPM	11310	8482	6786	5655	4847
				Fr	0.1303	0.1737	0.2171	0.2605	0.3039
				Feed (mm/min)	1473	1473	1473	1473	1473
	플라스틱 Polycarbonate, PVC		175 (140-210)	RPM	18580	13935	11148	9290	7963
				Fr	0.1504	0.2005	0.2506	0.3007	0.3509
				Feed (mm/min)	2794	2794	2794	2794	2794
S 티탄합금 Pure Titanium, Ti6Al4V, Ti6Al2Sn4Zr2Mo, Ti4Al4Mo2Sn0.55Si	≤ 350 Bhn or ≤ 38 HRc	30 (24-37)	RPM	3231	2424	1939	1616	1385	
			Fr	0.0440	0.0587	0.0734	0.0880	0.1027	
			Feed (mm/min)	142	142	142	142	142	

- Bhn (브리넬 경도) HRc (록웰C 경도) HRb (록웰B 경도)
- rpm = (Vc x 1000) / (DC x 3.14)
- mm/min = Fr x rpm (Fr x 추천치가 장비 한계 초과시에는 최대 가능 rpm)
- 위보다 경도가 높은 소재에서는 속도와 피드를 줄여 주십시오.



솔리드 톨

엔드밀
미세가공
드릴
SGS
공업용 나이프

공업용 정밀 나이프

KYOCERA INDUSTRIAL PRECISION KNIVES



L



슬릿
톱

KYOCERA Industrial

교세라의 공업용 정밀 나이프·내마모 부품

Industrial Precision Knives / Wear Resistant Parts

교세라는 파인 세라믹의 개척자로서 긴 시간 축적해온 재료기술·정밀가공 기술을 활용하여, 고품질·고정도의 공업용 정밀 나이프·내마모 부품 등을 공급하는 것으로 산업계의 품질 향상에 기여하고 있습니다.

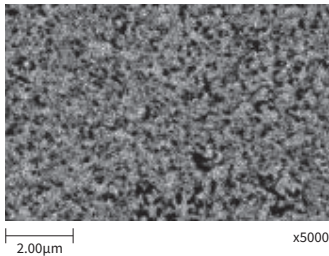
As a pioneer of fine ceramics, Kyocera contributes to improved quality throughout all types of industry by supplying high quality, high precision industrial precision knives and wear resistant parts. Our products are manufactured based on superior materials and precision machining technologies accumulated through many years of experience.

●초미립자 초경(FW) Super micro-grain carbide

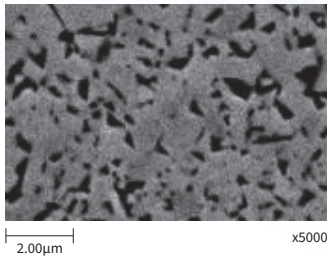
고강도·고인성의 재료이면서 내충격성이 뛰어난 재료입니다. 미세한 결합 구조를 가지고 있어 각종 공업용 정밀 나이프에 많이 사용되며 방전가공도 가능합니다.

An extremely high-strength, tough material, this material provides the best shock resistance. With a minute crystalline structure, used on many industrial precision knives and can be processed using electrical discharge machining.

■초미립자 초경
Super micro-grain carbide



■기존 재질
Conventional Material



●내마모 초경(VW) Wear resistant carbide

내마모 부품 재료에서 고강도·고인성입니다. 우수한 내마모성 및 윤활성이 우수합니다. 방전등에 의한 미세가공도 가능합니다.

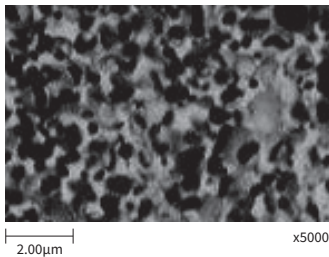
The wear resistant parts material provides high hardness and toughness, delivering superior wear resistance and slidability. Can be fine-processed using electrical discharge machining.

●써메트 Cermet

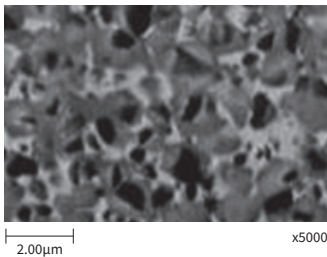
TiC나 TiN, NbC를 주성분으로 Co, Ni 등 금속과의 복합재료입니다. 내마모성이 우수하며 금속이 늘어붙기 어렵고 금속과의 용접이나 방전가공도 가능합니다.

Composite material of TiC, TiN and NbC with Co, Ni, etc. High wear resistant material with low affinity with metals. Can be processed by electrical discharge machining and brazed with metals.

■미립자 써메트
Micro-grain cermet



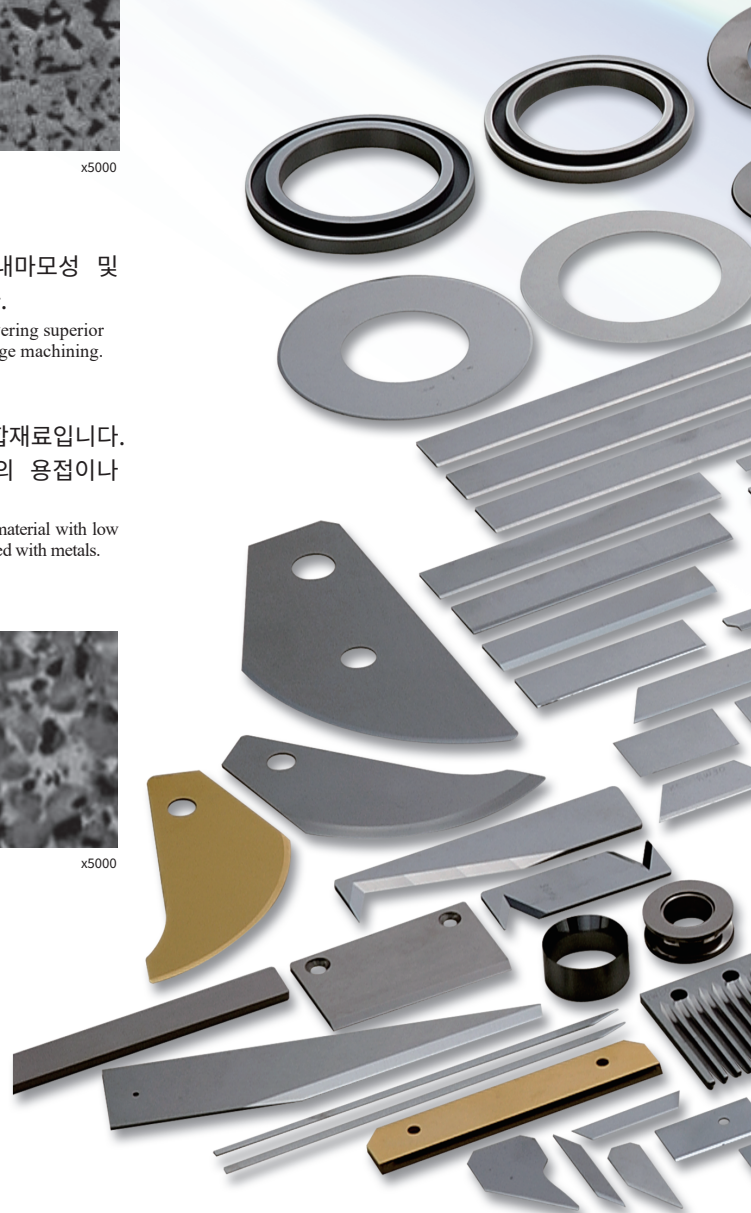
■기존재질
Conventional Material



●지르코니아 Zirconia

내구성이 우수, 비자성, 전기 절연성 등의 특성을 갖춘 강인한 세라믹입니다. 가위 등의 공구를 중심으로 다양한 용도에서 사용되고 있습니다.

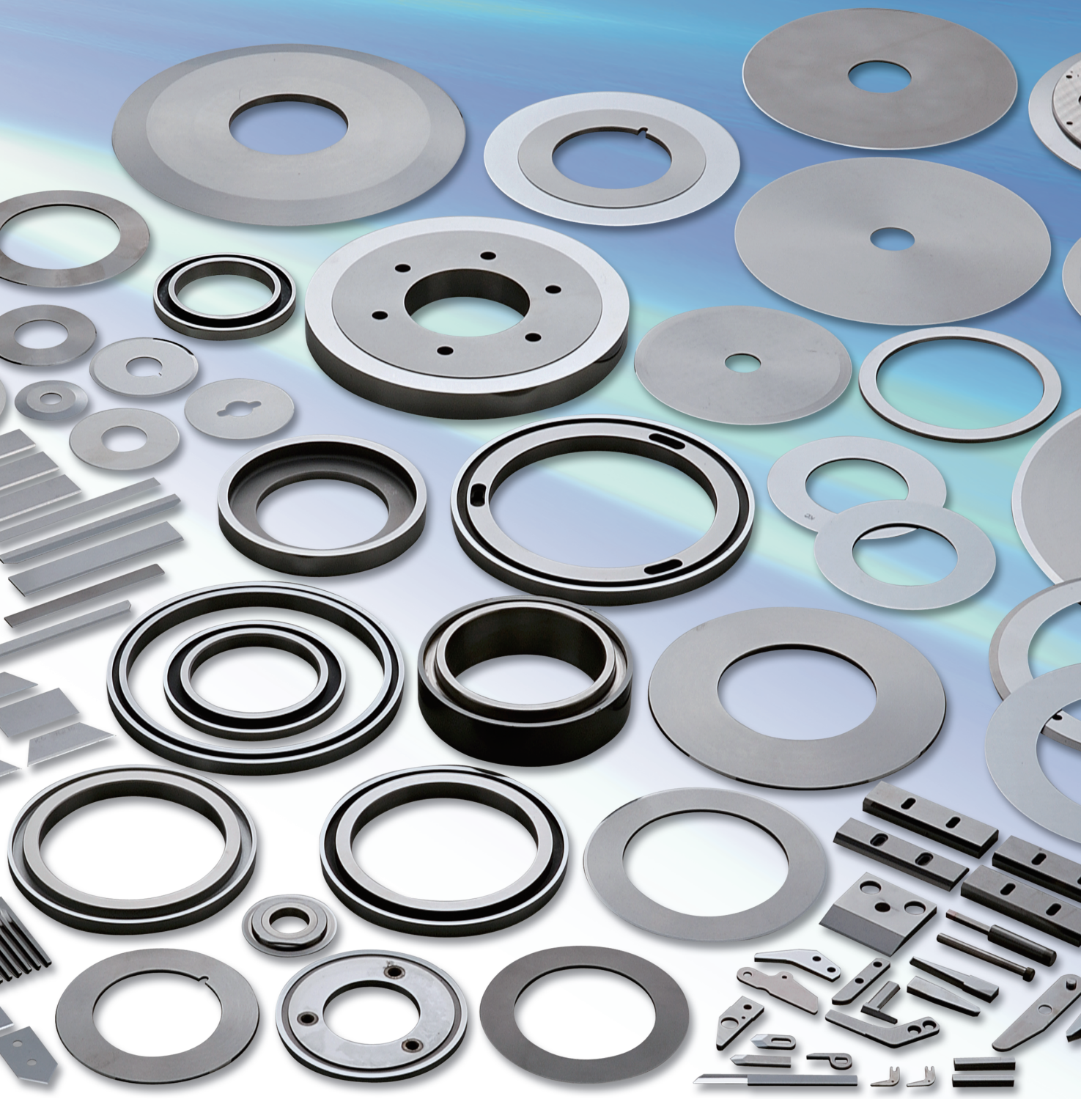
A tough ceramic that has superior corrosion resistance, with non-magnetic and electrical insulation properties. Used in a wide variety of cutting instruments, such as scissors and knives.



슬리드 톨

- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

Precision Knives



슬릿 드릴

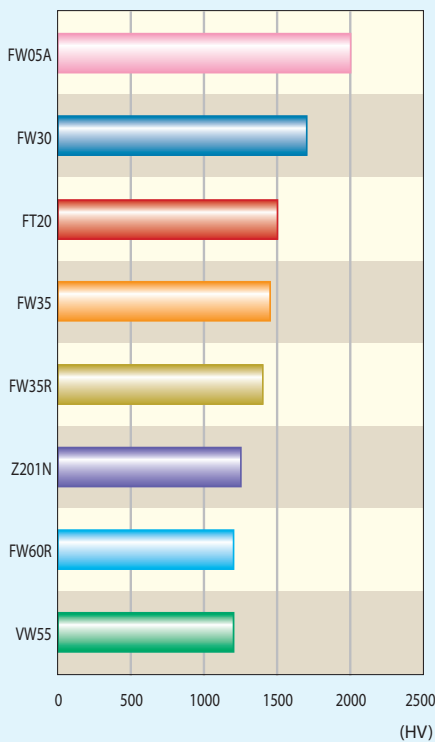
공업용 정밀 나이프·내마모 부품 재종특성표

Material Properties of Industrial Precision Knives and Wear Resistant Parts

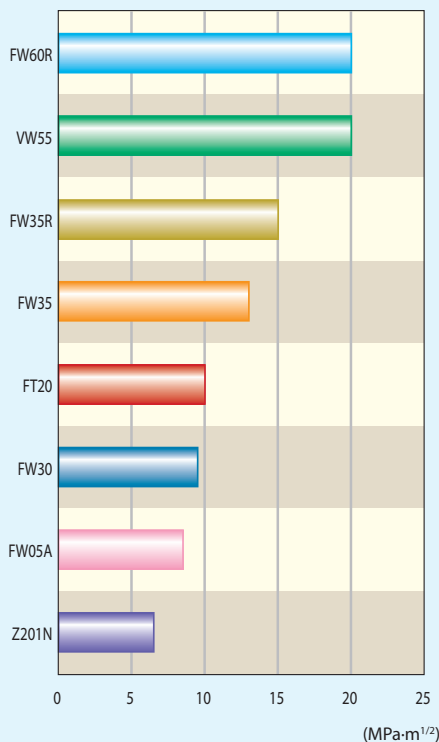
재 질 Material			초미립자 Super micro-grain carbide							미립자 Micro-grain carbide	내마모·내충격 Wear Resistance / Shock Resistance			
항 목 Properties	단위 Unit		FW05A	FW08	FW25	FW30	FW35	FW35R	FW60R	KW10A	VW30	VW55	VW70	VW80
비 중 Ratio	—		14.8	14.7	13.9	14.1	14.2	14.1	13.6	14.8	14.5	14.0	13.8	13.3
경 도 Hardness	HV		2000	1850	1600	1700	1450	1400	1200	1750	1450	1200	950	850
	HRA		94.0	93.5	92.0	92.5	90.5	90.0	88.5	93.0	90.5	88.5	85.5	83.0
파 괴 인 성 Fracture Toughness	MPa·m ^{1/2}		8.5	9.0	10.5	9.5	13.0	15.0	20.0	9.0	14.5	20.0	>20	>20
탄 성 강 도 Transverse Strength	MPa		3600	3920	3900	4400	3300	3300	3500	2800	3300	3700	3100	2800

재 질 Material			비자성 Non-magnetic	써메트 Cermet			알루미늄 Alumina	지르코니아 Zirconia	질화규소 Silicon nitride
항 목 Properties	단위 Unit		NW20	TN60	TC60M	FT20	A4795S	Z201N	SN235P
비 중 Ratio	—		14.4	6.6	8.1	6.4	3.9	6.1	3.2
경 도 Hardness	HV		1500	1600	1500	1500	1650	1250	1500
	HRA		91.0	92.0	91.0	91.0	—	—	—
파 괴 인 성 Fracture Toughness	MPa·m ^{1/2}		10.0	9.0	10.5	10.0	3.5	6.5	6.5
탄 성 강 도 Transverse Strength	MPa		3300	1760	1670	2500	320	980	880

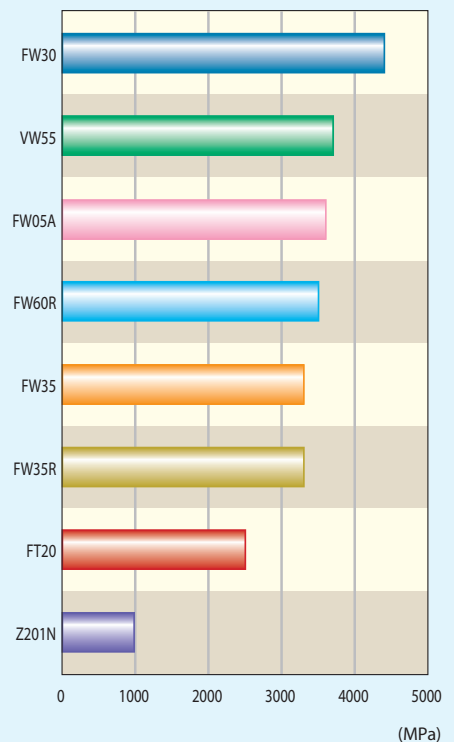
비커스 경도 비교 Vickers Hardness



파괴인성 비교 Fracture Toughness



탄성강도 비교 Transverse Strength



슬리드 블

엔드밀

미세가공

드릴

SGS

공업용 나이프

채용 제품 예 Examples of Application



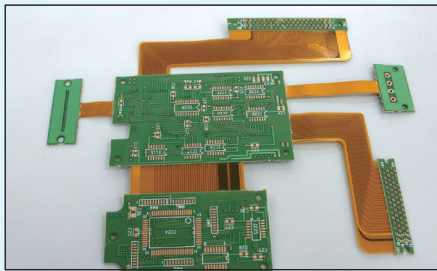
고기능 필름
High function film



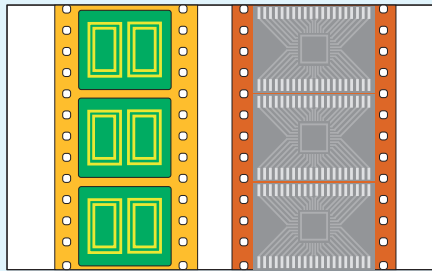
액정 디스플레이(편광판)
LCD Display (Polarizing plate)



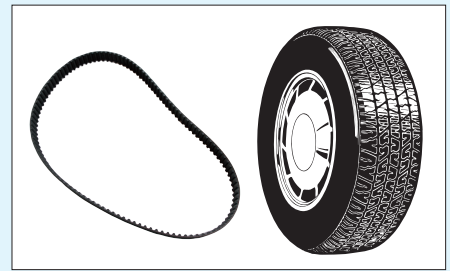
리튬이온 2차전지
Lithium ion rechargeable battery



FPC(플렉시블 프린트 기판)
FPC (Flexible printed circuit board)



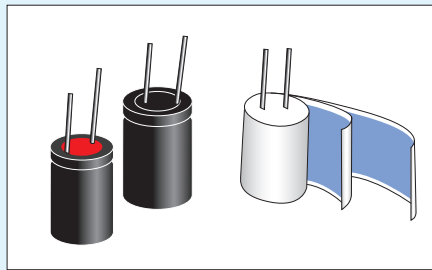
TAB테이프·COF테이프
TAB Tape, COF Tape



고무제품(타이밍벨트·타이어)
Rubber Products (Timing belt / Tires)



접착 테이프
Adhesive tape

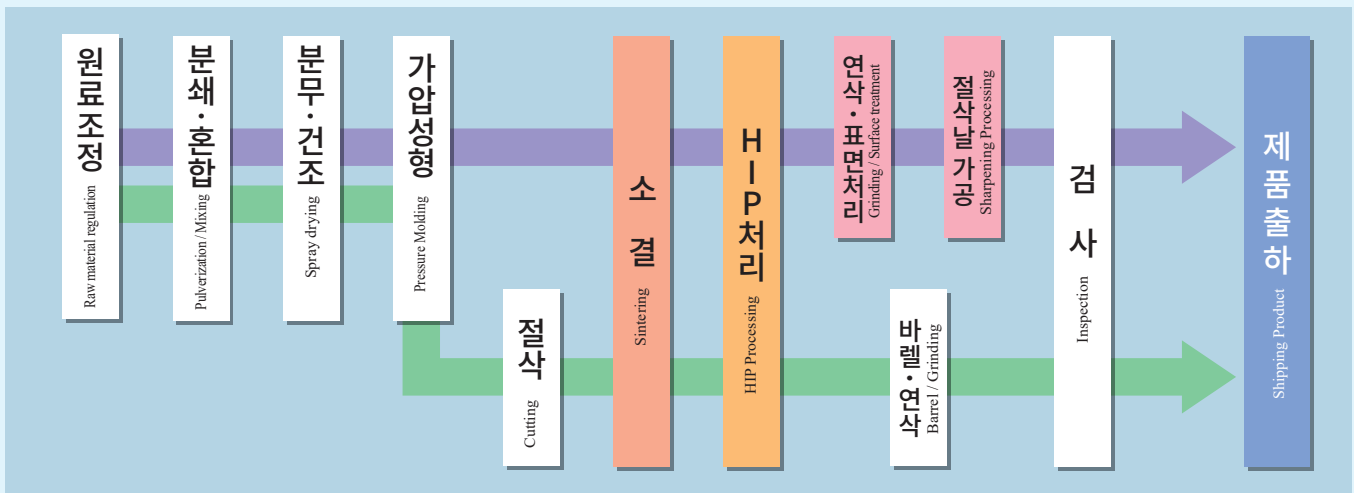


알루미늄 전해 콘덴서
Aluminum electrolytic capacitor



종이·골판지
Paper / Cardboard box

제조공정 Manufacturing process



슬리드
틀

게벨·갱 날

Gable / Gang Blades

초미립자 초경, 써메트, 지르코니아 등의 풍부한 나이프용 재료 레파토리와 다양한 가공기술을 조합하여 고객의 요청에 대응 가능한 고정도, 긴 수명의 절단 나이프를 제공합니다.

Our wide range of knife materials including micro-grain carbides, cermet, and zirconia provides customers with high precision and long life slitting knives through various processing technologies.



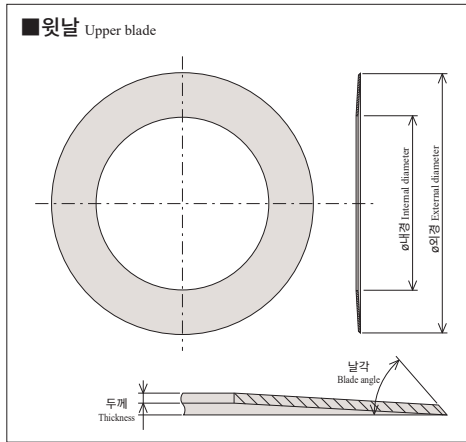
L



슬리딩
드림

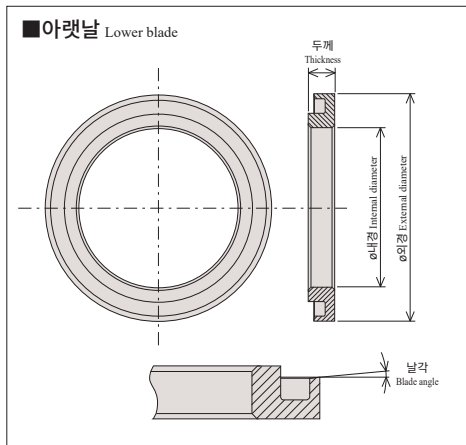
- 엔드밀
- 미세가공
- 드릴
- SGS
- 공업용 나이프

●표준 게벨 날 Standard gable blades



(단위 Unit : mm)

NO.	윗날 / 품명 Upper blade / Description	재 질 Material	Ø외경 External diameter	Ø내경 Internal diameter	두께 Thickness	날각 Blade angle
1	GUBD-09807T45DC15	FW35	98	66	0.7	45°
2	GUBD-09807T60DC15					60°
3	GUBD-10807T45DC15		108	75		45°
4	GUBD-10807T60DC15					60°
5	GUBD-11808T45DC15		118	80	0.8	45°
6	GUBD-11808T60DC15					60°



(단위 Unit : mm)

NO.	아랫날 / 품명 Lower blade / Description	재 질 Material	Ø외경 External diameter	Ø내경 Internal diameter	두께 Thickness	날각 Blade angle
7	GDBD-08005T	FW35	80	55	5	5°
8	GDBD-08610T		86	60	10	
9	GDBD-09210T		92	65		



슬리드 블

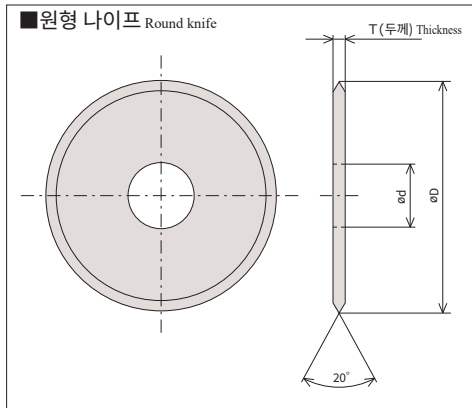
원형 나이프

Round knives

정밀한 절삭날 기술과 오리지널 표면 처리 기술에 의해
싱글 필름에서 각종 복합재의 절단까지 폭넓은 적용이 가능합니다.

Our precise edge sharpening technology and original surface processing technology provides a wide range of slitting knives from single films to various types of composite materials.

(단위Unit :mm)



품 번 Description	재 질 Material	외경øD External diameter	내경ød Internal diameter	두께(T) Thickness	날각(°) Blade angle
FRC28L	FW35	28	6.0	0.3	20°
FRC45L		45	8.1/8.3		
FRC50L		50	10.0		
FRC60L		60			
FRC80L		80	19.0		
FRC100L		100			

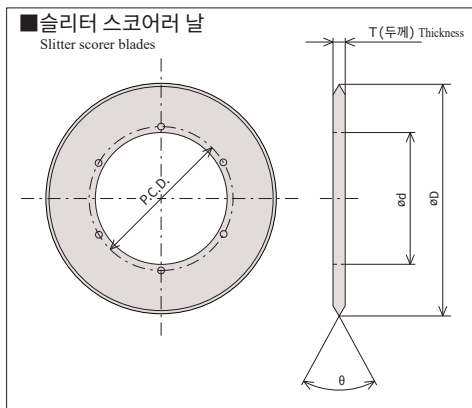
슬리터 스코어러 날

Slitter scorer blades

고경도 초미립자 초경과 정밀한 절삭날 기술에 의한 종이·골판지 절단에 있어서 긴 수명을 실현

High hardness micro-grain carbide and precise edge sharpening technology improves tool life at cardboard cutting.

(단위Unit :mm)



품 번 Description	재 질 Material	외경øD External diameter	내경ød Internal diameter	두께(T) Thickness	날각θ(°) Blade angle	비고 Remarks
D260XD140X1.5T15DW	FW25	260	140	1.5	15°	P.C.D.160, 6-ø9
D260XD140X1.5T20DW					20°	
D280XD160X1T18DW		280	160	1.0	18°	P.C.D.175, 6-ø7.5
D280XD160X1T20DW					20°	



판형 나이프

Plate knives

최적의 재료 선정과 뛰어난 연마, 표면처리 기술로

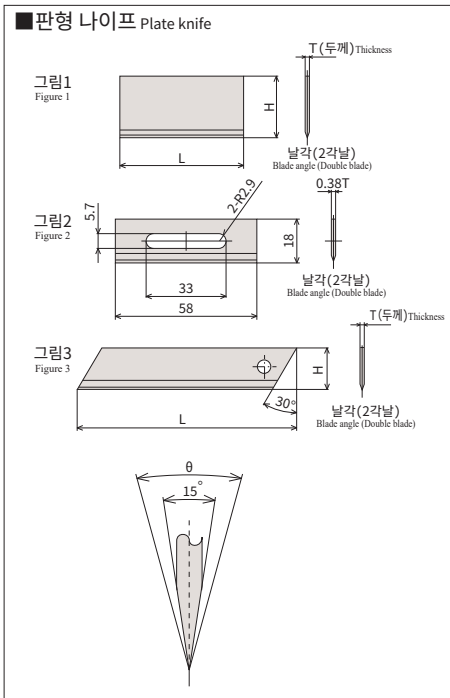
절단면의 버나 절단 분진에 의한 이물질 발생을 억제하고 제품의 품질 향상이 가능합니다.

뛰어난 내마모성과 절단성으로 단수지 생산의 효율 향상이 가능합니다.

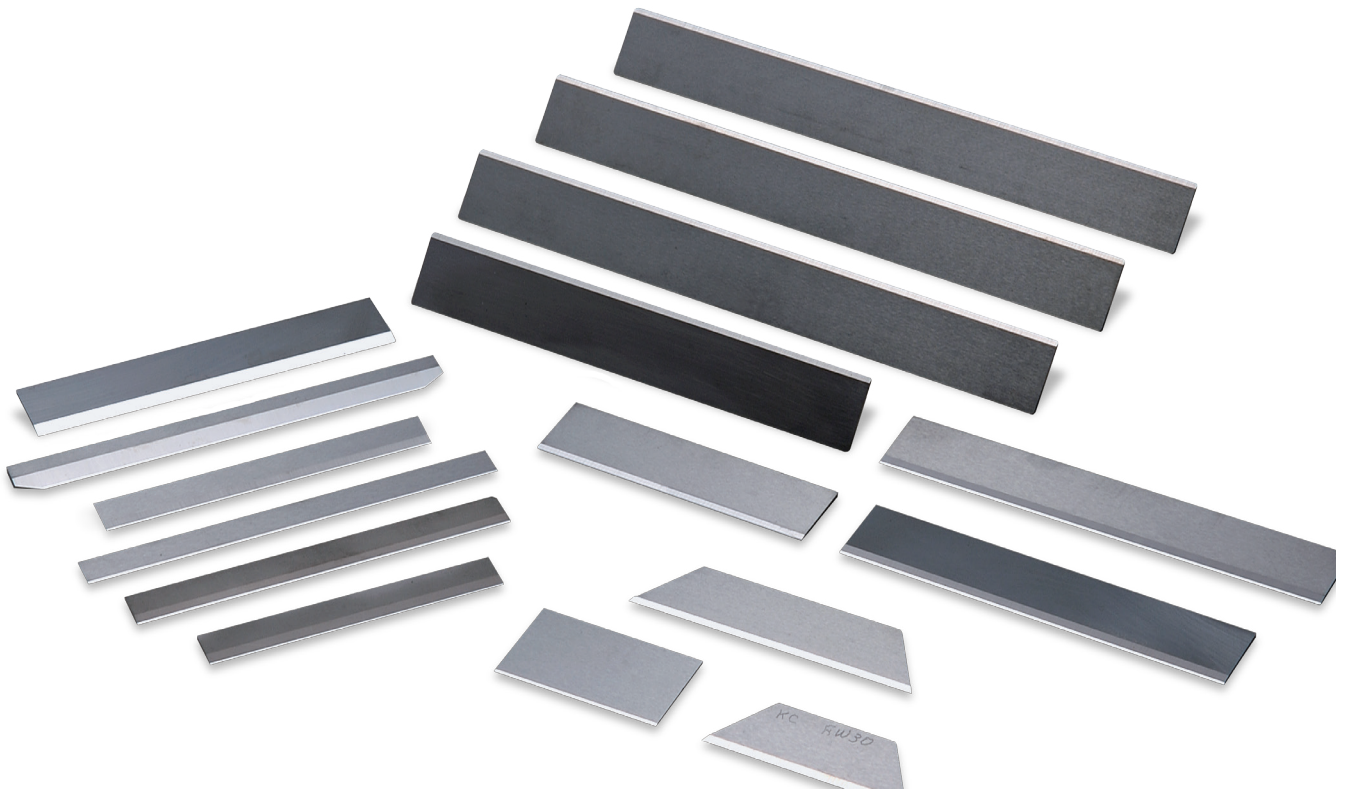
Optimum material choice and superior grinding and surface treatment technologies controls upper dulled edges and residual dust, increasing finished product quality.

Superior wear resistance and sharpness provide higher efficiency in producing short fiber.

(단위Unit :mm)



품 번 Description	재 질 Material	길이(L) Length	폭(H) Width	두께(T) Thickness	날각(15×θ)° Blade angle	형상 Shape
FBC4009G	FW30	40	9	0.2	2각날(15×25) Double blade	그림1 Figure 1
FBC4019G	FW25		19	0.25		
FBC3515G	FW30	35	15	0.5		
FBC7010G		70	10	0.9		
FBC9519G		95	19			
FBC5818G	FW30	58	18	0.38	2각날(15×30) Double blade	그림2 Figure 2
FBC6009G		60	9			0.5
FBC6018G		110	18	그림3 Figure 3		



슬리드 톨

특수형상 나이프

Special shape knives

특수형상 나이프 Special shape knives

다양한 용도에 맞는 특수형상의 나이프 제작이 가능합니다.

Special shape knives are available for a wide range of applications.



L

치 구

Jigs

치구, 금형 관련 제품 Jigs and mold related products

최적의 재료 선정과 고정도 가공 기술에 의해 다양한 용도에 대응하는 고품질·고정도의 내마모 제품을 제공합니다. 특히 금속과의 친화성이 적은 써메트의 사용에 의해 금형가공등에서는 제품표면의 손상을 절감하는 것이 가능합니다.

Optimum material choice and high-precision processing technology provide high quality, high precision wear resistant parts for a wide range of applications. Due to its low affinity with metal, cermet is especially suitable for reducing scratches on the surface of finished products during metal mold processing.



솔리드 툴

엔드밀

미세가공

드릴

SGS

공업용 나이프

수명 평가 비교 Life Evaluation Comparison

(단위:배율) Unit : Times

접착 테이프 Adhesive tape

재료 (Material)	수명 평가 (Life Evaluation)
High-speed tool steel (SKH)	1
Micro-grain carbide (초미립자 초경)	15

- 날 형상 : 게벨 날
Edge shape : gable blade
- 절단방법 : 쉐어컷
Cutting method : Shear-cut
- 재 질 : SKH→초미립자
Material : High-speed tool steel → Micro-grain
- 효과 : 15배
Results : 15 times
- 기타 : 표면 점착물 감소
Others : Reduced blade sticking

복합 필름 + 금속박 Composite film + Metal foil

재료 (Material)	수명 평가 (Life Evaluation)
High-speed tool steel (SKH)	1
Micro-grain carbide (초미립자 초경)	8

- 날 형상 : 갱 날
Edge shape : Gang blade
- 절단방법 : 쉐어컷
Cutting method : Shear-cut
- 재 질 : SKH→초미립자
Material : High-speed tool steel → Micro-grain
- 효과 : 8배
Results : 8 times
- 기타 : 절단면 우수
Others : Good cutting surface

PET필름 PET Film

재료 (Material)	수명 평가 (Life Evaluation)
Tool Steel (SK)	1
Micro-grain carbide (초미립자 초경)	10

- 날 형상 : 판형 날
Edge shape : Plate knife
- 절단방법 : 공중절단(비접촉)
Cutting method : Cut in the air (Non-contact)
- 재 질 : SK→초미립자
Material : Tool Steel → Micro-grain
- 효과 : 10배
Results : 10 times
- 기타 : 절단면 우수
Others : Good cutting surface

알루미늄박 Aluminum foil

재료 (Material)	수명 평가 (Life Evaluation)
High-speed tool steel (SKH)	1
Micro-grain carbide (초미립자 초경)	13

- 날 형상 : 갱 날
Edge shape : Gang blade
- 절단방법 : 쉐어컷
Cutting method : Shear-cut
- 재 질 : SKH→초미립자
Material : High-speed tool steel → Micro-grain
- 효과 : 13배
Results : 13 times
- 기타 : 품질 안정
Others : Stable quality

골판지 Cardboard box

재료 (Material)	수명 평가 (Life Evaluation)
Competitor carbide (타사 초경)	45
Micro-grain carbide (초미립자 초경)	100

- 날 형상 : 원형 날
Edge shape : Round knife
- 절단방법 : 슬리터 스코어러
Cutting method : Slitter scorer
- 재 질 : 타사초경→초미립자 초경
Material : Competitor → Micro-grain carbide
- 효과 : 2.3배
Results : 2.3 times
- 기타 : 생산성 향상
Others : Productivity improvement

동 박 Copper foil

재료 (Material)	수명 평가 (Life Evaluation)
High-speed tool steel (SKH)	1
Micro-grain carbide (초미립자 초경)	10

- 날 형상 : 갱 날
Edge shape : Gang blade
- 절단방법 : 쉐어컷
Cutting method : Shear-cut
- 재 질 : SKH→초미립자
Material : High-speed tool steel → Micro-grain
- 효과 : 10배
Results : 10 times
- 기타 : 품질 안정
Others : Stable quality

고무 시트 Rubber sheet

재료 (Material)	수명 평가 (Life Evaluation)
Tool Steel (SK)	1
Micro-grain carbide (초미립자 초경)	8

- 날 형상 : 원형 나시지
Edge shape : Round knife with satin finished surface
- 절단방법 : 회전절단
Cutting method : Rotating cut
- 재 질 : SK→초미립자
Material : Tool Steel → Micro-grain
- 효과 : 8배
Results : 8 times
- 기타 : 표면 점착물 감소
Others : Decreased adhesion to blade

섬유 Fibers

재료 (Material)	수명 평가 (Life Evaluation)
Competitor carbide (타사 초경)	1
Micro-grain carbide (초미립자 초경)	3

- 날 형상 : 판형 날
Edge shape : Plate knife
- 절단방법 : 찢어컷
Cutting method : Chopped cut
- 재 질 : 타사초경→초미립자 초경
Material : Competitor → Micro-grain carbide
- 효과 : 3배
Results : 3 times
- 기타 : 생산성 향상
Others : Productivity improvement

(고객평가) User's evaluation



슬리터
칼

중부 테크니컬 센터

Chubu Technical Center

슬리터 평가 장비에 의한

절단면 품질 개선

Improved cut surface using a slitter evaluation machine

절삭면의 분진, 버, 플레어, 소음, 변형 등의 문제 해결을 위해서 슬릿을 평가하고 최적의 나이프 사양과 절단 조건을 제안합니다.

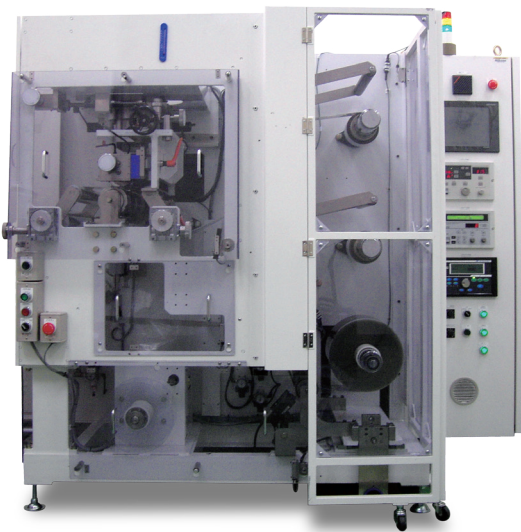
We evaluate cut surface and provide suitable proposal for the best specification and cutting conditions to solve problems such as residual dust, burr, flare, everted edge, whisker, and deformation.



이 문제들을 해결하고 싶습니까?

슬리터 평가 장비

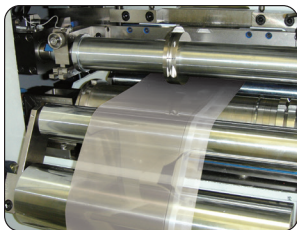
Slitter Evaluation Machine



L



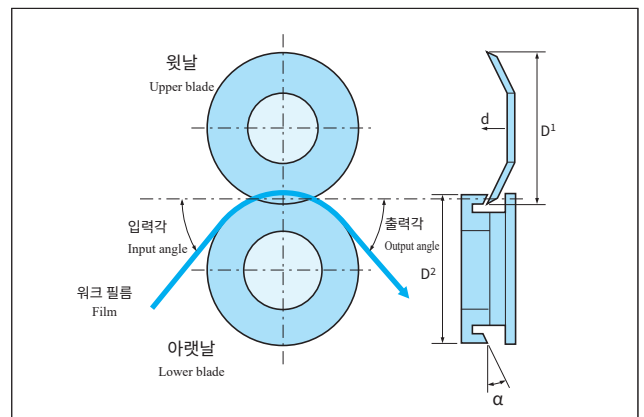
슬리드 톨



슬리팅 조건 설정

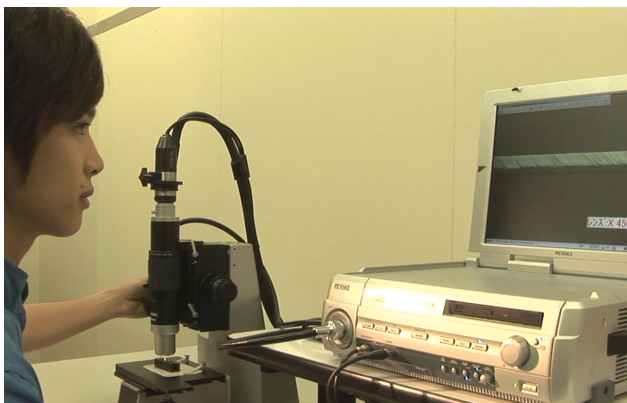
Slitting layout Position

- 게벨날, 갱날 등
Gable / Gang blades, etc.
- 날각, 표면처리, 오버랩, 오프셋, 입/출력각, 장력, 라인속도 등
Blade angle, Surface treatment, Overwrap, Offset, Input / Output angle, Tension, Line speed, etc.



디지털 스코프에 의한 절삭면 평가

Cut surface evaluation by Digital Scope



평가 장비 탑재 가능 워크 조건

Evaluation Machine Loadable Material (Workpiece) Size

재료 폭
Material width

50~300mm

재료 경
Material diameter

300mm

재료 코어경
Material core diameter

ø3in, 6in

엔드밀

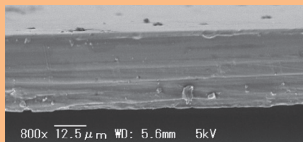
미세가공

드릴

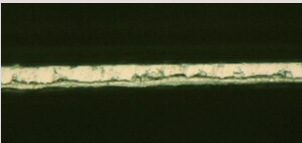
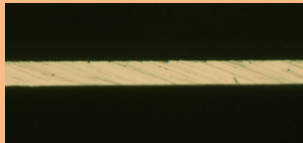
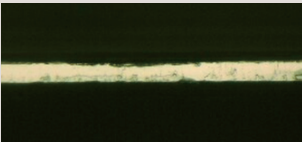
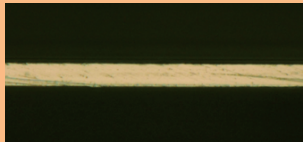
SGS

공업용 나이프


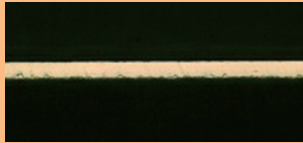


절삭면 비교 사진 Comparison Photograph of Cut Surfaces

폴리에틸렌 테레프탈레이트 (PET)	금속날 Metallic blade	교세라 초미립자 초경날 Kyocera micro-grain carbide blade	뜯김·분진 절감! Reduce whiskers and dust SEM
	윗날 Upper blade  800x 12.5 μm WD: 7.0mm 10kV	교세라 초미립자 초경날  800x 12.5 μm WD: 6.2mm 5kV	
아랫날 Lower blade  800x 12.5 μm WD: 7.7mm 10kV	교세라 초미립자 초경날  800x 12.5 μm WD: 5.6mm 5kV		

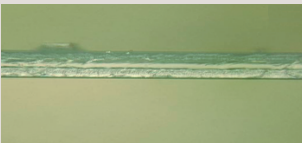
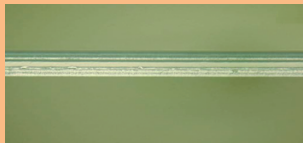
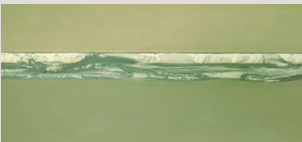
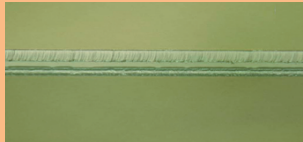
금속날을 사용할 경우, 절삭이 되지 않고 뜯김이 발생하지만 초미립자 초경의 경우는 양호한 절삭면 가능!
Metal blades can not cut and create whiskers and dust. Micro-grain carbide blades provide an excellent cut surface.

알루미늄 박막	금속날	교세라 초미립자 초경날	절단면 변형 억제! Prevent dust and deformation 디지털 스코프 Digital scope
	윗날 Upper blade 	교세라 초미립자 초경날 	
아랫날 Lower blade 	교세라 초미립자 초경날 		

금속날을 사용할 경우, 윗날의 변형이 발생하지만 초미립자 초경의 경우는 양호한 절삭면 가능!
Metal blades create dust and deformation by the upper blade. Micro-grain carbide blades provide an excellent cut surface.

동박	금속날	교세라 초미립자 초경날	절단면 변형 억제! Prevent dust and deformation 디지털 스코프 Digital scope
	윗날 Upper blade 	교세라 초미립자 초경날 	
아랫날 Lower blade 	교세라 초미립자 초경날 		

금속날을 사용할 경우, 윗날의 변형이 발생하지만 초미립자 초경의 경우는 양호한 절삭면 가능!
Metal blades create dust and deformation by the upper blade. Micro-grain carbide blades provide an excellent cut surface.

점착필름	금속날	교세라 초미립자 초경날	변형·버 억제! Prevent deformation and burr 디지털 스코프 Digital scope
	윗날 Upper blade 	교세라 초미립자 초경날 	
아랫날 Lower blade 	교세라 초미립자 초경날 		

금속날을 사용할 경우, 점착층에 변형과 버가 발생하지만 초미립자 초경의 경우는 양호한 절삭면 가능!
Metal blades create deformation of adhesive layer and burr. Micro-grain carbide blades provide an excellent cut surface.

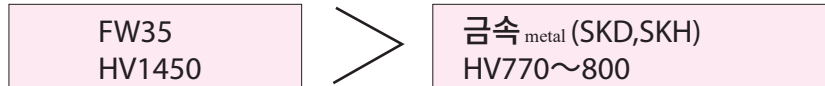


기술자료 Technical Information

금속 나이프와 초경 나이프의 비교

Comparison of Metal Knife and Micro-grain Knife

경도가 다르다! 《긴 수명》 Different hardness <Long life>



FW35 경도2배(금속대비)
Double FW35 hardness (compared to metal)

재 질 Material	FW35	SKD	SKH
	초미립자 초경 Micro-grain carbide	합금 공구강 Alloy Tool Steel	고속 공구강(하이스) High-Speed Tool Steel (High-speed steel)
용 도 Application	공업용 정밀 나이프용 For Industrial Precision Knives	절삭, 충격용, 금형용, 와이어 다이스, 프레스 등 For cutting tools, impact parts, wire drawing die, press die, etc.	절삭공구용강, 홀가공 공구, 톱니공구 등 For cutting tools, drill, end mill, gear cutting tools and others
첨가원소 Added chemical element	WC + 10Co	C, W, Cr, Mo 등 etc.	C, W, Cr, Mo, Co 등 etc.
비커스 경도 Vickers hardness	1450(HV)	770(HV)	800(HV)

초경 나이프 입자 차이에 의한 인선 비교

Blade comparison by grain diameters

입자 크기의 차이가 샤프한 인선 실현!! Smaller diameters create sharp edges

초경재료는 작은 입자의 집합체로 구성되어 있으며,

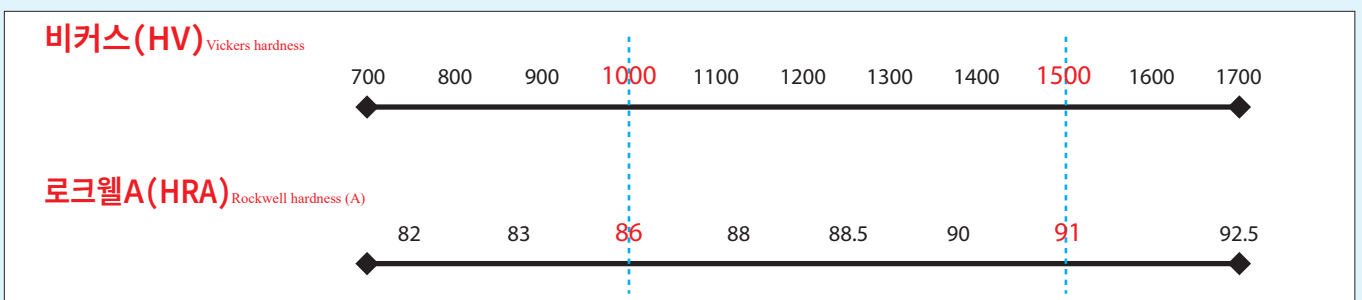
이 입자의 크기가 인선(날끝)의 예리함에 영향을 주어 인선의 선명도를 결정 짓습니다.

인선은 입자 크기가 작을수록 선명하고 안정된 인선을 만들 수 있습니다.

Micro-grain carbide is composed of an aggregate of micro grains. The grain size has a large effect to the sharpness of the blade edge. The smaller the grain diameter, the sharper and more stable blade edge line can be created.

HV-HRA비교표

Hardness comparison



L



솔리드 톨

엔드밀

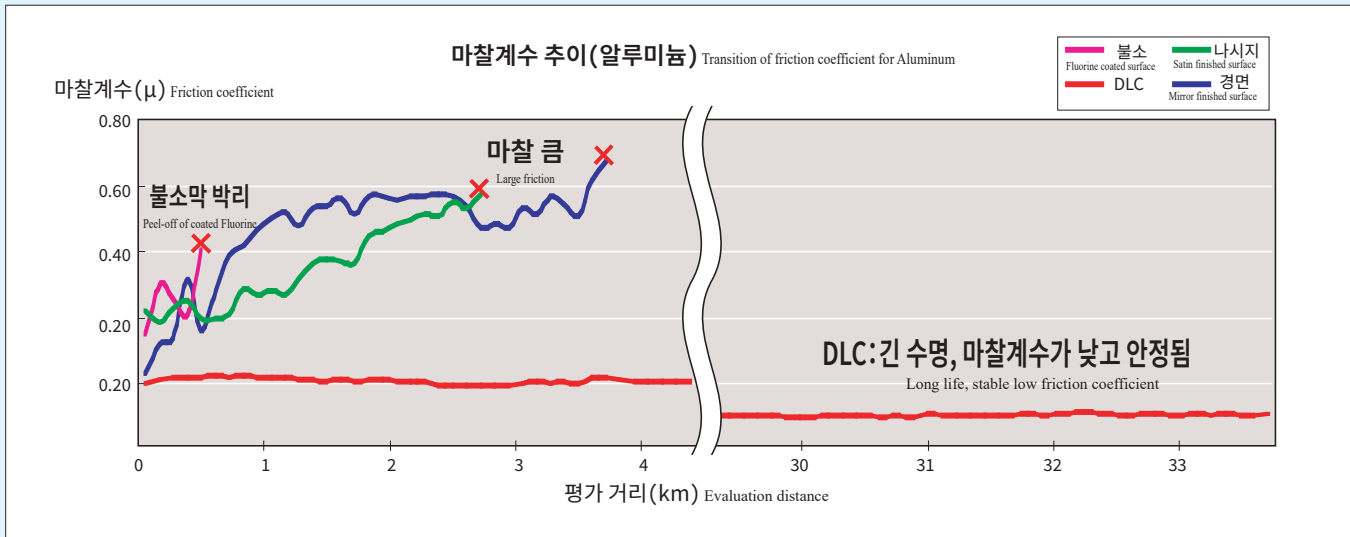
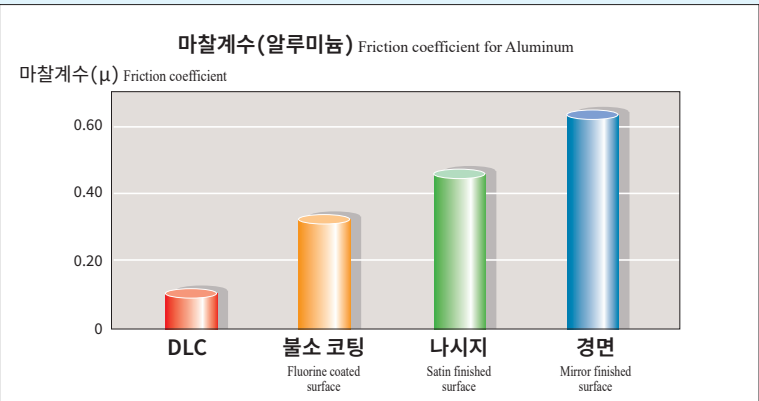
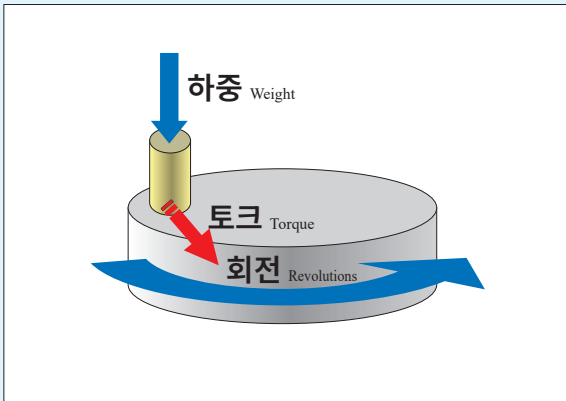
미세가공

드릴

SGS

공업용 나이프

핀 ON 디스크 마찰 실험 Pin on disc friction test



(당사비교) Internal evaluation

각종 표면 처리 Surface Treatment Variation

DLC코팅 ※ DLC (Diamond-like Carbon) Coated Treatment	내마모성 향상, 내부착성 향상, 내약품성 향상 Wear resistance, adhesion resistance and chemical resistance improved
나시지 처리 Satin finished surface treatment	절삭 가루 감소, 내부착성 향상 Reduced cut off dust, improved adhesion resistance
PVD코팅 PVD (Physical Vapor Deposition) Coated Treatment	내약품성 향상, 매끄러움 향상 Chemical resistance and smoothness improved

※DLC코팅은 유사 다이아몬드 코팅입니다. DLC Coating: Diamond-like Carbon Coating

표면 처리 Surface treatment

표면 처리 (Surface Treatment)	수명 Life	내점착 Adhesion resistance	매끄러움 Smoothness	내측성 Corrosion resistance
DLC코트 DLC (Diamond-like Carbon) Coated Treatment	◎	○	◎	◎
나시지 처리 Satin finished surface treatment	○	◎	◎	△
PVD코팅 PVD (Physical Vapor Deposition) Coated Treatment	◎	△	○	◎

◎ : 1st choice, ○ : 2nd choice, △ : 3rd choice



슬리드 툴

