shaping your dreams

Vol. 2 (2023.5)

STEEL-PRO 엔드밀 표준

SUS-PRO SUS · 난삭재용

ALU-PRO 알루미늄용

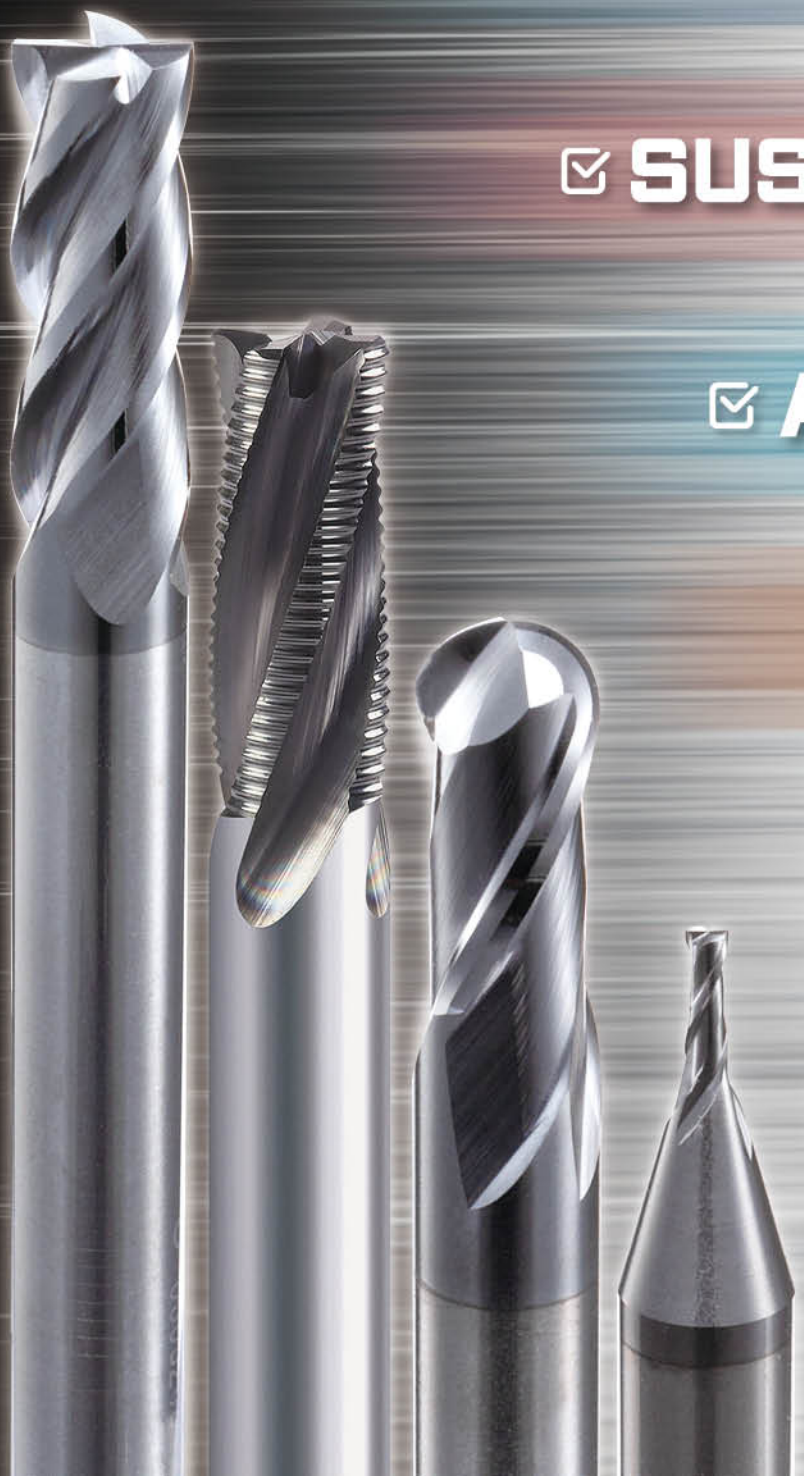
WS 고속 · 고경도용

STEEL-PRO

SUS-PRO

ALU-PRO

WS



품질경쟁력우수기업
최다 28년 연속 선정

한국OSG주식회사
OSG KOREA Corporation

■아이콘 설명

1 재질 Tool Materials

- CARBIDE 초경합금 Tungsten Carbide
- ULTRA FINE CARBIDE 초미립 초경합금 Tungsten Carbide

2 표면처리 Surface Treatment

- RADIA RADIA 코팅
- HS HS 코팅
- DUROREY DUROREY 코팅
- WS WS 코팅

3 비틀림각 Helix Angle

- 30° 엔드밀 홈 비틀림각을 표시 Helix angle of flute for end mills

4 R공차 Tolerance od Radius

- R ±0.02 엔드밀 R의 공차를 표시 Identifies the tolerance of the radius for end mills

5 외경공차 Tolerance for milling diameter

- 0~-0.02 엔드밀 외경의 공차를 표시 Tolerance for milling diameter

6 슈링크 Shrink

- SHRINK FIT 열박음홀더에 사용가능함을 표시 Suitable for the shrink holder system

ISO 13399에 따른 기호 목록

- OSG 엔드밀 카탈로그는 ISO 13399 기준으로 엔드밀 각 부 명칭을 나타냅니다.

명 칭	설 명	영 문
APMX	날길이	Depth of cut maximum
CHW	코너 챔퍼 폭	Corner chamfer width
DC	외경	Cutting diameter
DCON	샹크경	Connection diameter
DCX	대단경	Cutting diameter maximum
DN	목부경	Neck diameter
KAPR	선단각	Tool cutting edge angle
LF	전장	Functional length
LU	유효장	Usable length
RE	코너 래디우스	Corner radius
ZEFF	바닥날 갯수	Face effective cutting edge count
ZEFP	옆날 갯수	Peripheral effective cutting edge count

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STEEL-PRO

Cu • SUS • S45C ~ 50HRC 의 폭 넓은 피삭재 영역에서 탁월한 성능 발휘!

시리즈 Series	형상 Figure	날수 Flutes	분류 Type	주문번호 EDP NO.	사 진 Photo	코 팅 Coating	사이즈 Size	페이지 Page	절삭조건 Cutting Condition
STEEL PRO	볼	2날	볼	SP2B		RADIA	Φ0.15~Φ25	P16	P98
			롱넥 볼	SP2BN			Φ0.2~Φ12	P18	P99
	플랫	2날	플랫	SP2F			Φ0.15~Φ25	P23	P108
			롱 플랫	SP2F			Φ1~Φ20	P25	P110
			롱넥 플랫	SP2FN			Φ0.2~Φ12	P27	P111
		4날	플랫	SP4F			Φ1~Φ25	P31	P116
			롱 플랫	SP4F			Φ1~Φ20	P32	P117
			롱넥 플랫	SP4FN			Φ1~Φ12	P34	P118
	코너R	2날	코너R	SP2C			Φ1~Φ20	P36	P119
			롱넥 코너R	S2			Φ0.4~Φ20	P39	
		4날	코너R	SP4C			Φ1~Φ20	P50	P120
			롱넥 코너R	S4			Φ1~Φ20	P53	
	라핑	3날	라핑	SP3R			Φ3~Φ25	P56	P121
		4날		SP4R					
		5날		SP5R					
		4날	롱넥 라핑	SP4RN			Φ6~Φ12	P57	
	V컷	2날	V컷	SP2V			Φ3~Φ12	P58	–

STEEL-PRO+

30HRC ~ 70HRC 고경도 및 열처리강 가공의 高품질 • 長수명 실현!

시리즈 Series	형상 Figure	날수 Flutes	분류 Type	주문번호 EDP NO.	사 진 Photo	코 팅 Coating	사이즈 Size	페이지 Page	절삭조건 Cutting Condition
STEEL PRO+	볼	2날	볼	SPP2B		DUROREY [고경도코팅]	Φ0.4~Φ12	P59	P122
	플랫	4날	45도 플랫	SPP4FH			Φ3~Φ16	P60	P123

SUS-PRO

저진동 · 고강성 사양으로 난삭재(SUS, 티탄합금) 가공에서 고성능 발휘!

시리즈 Series	형상 Figure	날수 Flutes	분류 Type	주문번호 EDP NO.	사 진 Photo	코 팅 Coating	사이즈 Size	페이지 Page	절삭조건 Cutting Condition
SUS PRO	플랫	3날	플랫	SUS3F		RADIA	Φ1~Φ12	P62	P124
		4날		T4P			Φ1~Φ20	P63	P125
	코너R	4날	코너R	T4PC			Φ1~Φ20	P64	
	라핑	3날	라핑	S3R			Φ3~Φ20	P65	P126
		4날		S4R					
		4날	롱넥 라핑	S4RN			Φ6~Φ12	P66	

ALU-PRO

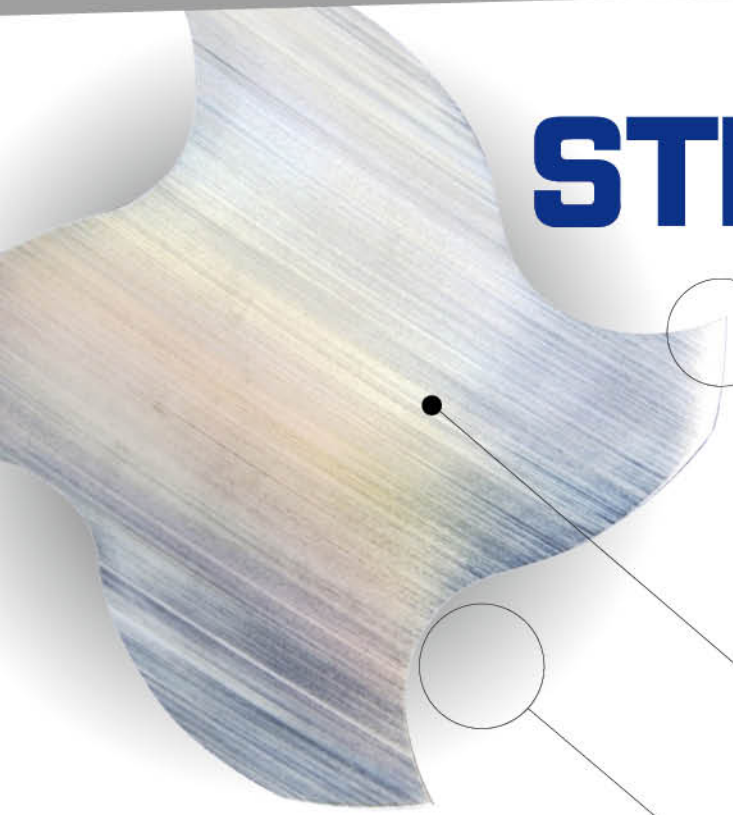
내마모성 및 면조도가 우수한 초경모재 사용으로 고품위 가공 가능!

시리즈 Series	형상 Figure	날수 Flutes	분류 Type	주문번호 EDP NO.	사 진 Photo	코 팅 Coating	사이즈 Size	페이지 Page	절삭조건 Cutting Condition
ALU PRO	플랫	2날	플랫	A2F		–	Φ1~Φ20	P68	P127
		3날		A3F			Φ1~Φ20	P69	P128
	라핑	3날	라핑	A3R			Φ4~Φ20	P72	P129

WS

건식 · 습식가공이 모두 가능한 고속 · 고경도 가공용 엔드밀 시리즈!

시리즈 Series	형상 Figure	날수 Flutes	분류 Type	품명 Abbreviation	사 진 Photo	코 팅 Coating	사이즈 Size	페이지 Page	절삭조건 Cutting Condition
WS	볼	2날	볼	WS-EBD		WS 코팅	Φ0.2~Φ12	P74	P130
			쇼트 볼	WS-EBDS			Φ0.2~Φ12	P75	
			롱넥 볼	WS-LN-EBD			Φ0.2~Φ12	P76	P132
			롱넥 볼(생크6)	WS-LN-EBD-6			Φ0.6~Φ2	P79	
	플랫	2날	플랫	WS-EDS			Φ0.1~Φ12	P80	P138
			롱넥 플랫	WS-LN-EDS			Φ0.1~Φ4	P81	P140
		4날	플랫	WS-EMS			Φ1~Φ12	P84	P146
			롱넥 플랫	WS-LN-EMS			Φ1~Φ12	P85	P149
			45도 플랫	WS-PHS			Φ3~Φ20	P86	P150
	코너R	2날	롱넥 코너R	WS-LN-CR-EDS			Φ0.4~Φ12	P87	P140
		4날	롱넥 코너R	WS-LN-CR-EMS			Φ2~Φ12	P92	P149
		4날	45도 코너R	WS-PKE			Φ3~Φ12	P94	P152
			45도 코너R(롱생크)	WS-LS-PKE			Φ4~Φ12	P95	
			고이송용 코너R	WS-CRE			Φ2~Φ12	P96	P154



STEEL-PRO

Anti-Vibration Carbide End Mills

STEEL 쾌삭 가공

경사각 Sharp Angle 적용으로 절삭저항 감소

높은 공구강성

사상 및 중 · 황삭까지 다양한 가공 가능

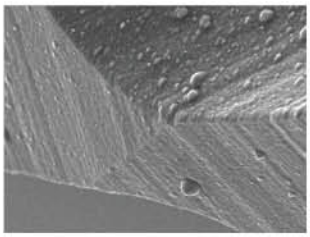
칩배출 최적화

신규 홈 형상 채택으로 원할한 칩배출

NEW! **RADIA 코팅**

新 코팅으로 高품질 · 長수명 실현

· 매끄러운 SMOOTH 코팅으로 치핑없는 안정된 성능
· 이중 코팅 구조로 내산화성 및 내마모성 우수
· 코팅 밀착력 개선으로 향상된 공구 신뢰성 제공

STEEL-PRO	기 존
	

· 볼 엔드밀 중심부 확대 비교 ·

안정적 가공

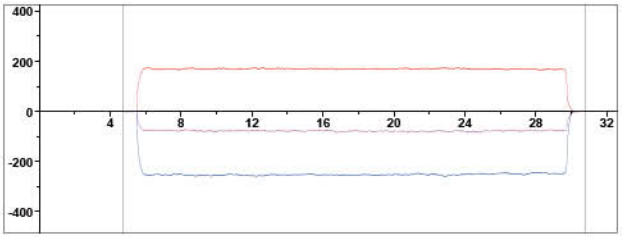
공구 부하 감소

- 경사각 Sharp Angle 적용으로 절삭 저항 최소화
- 원할한 칩배출을 위한 고강성 타입의 신규 홈 형상 적용

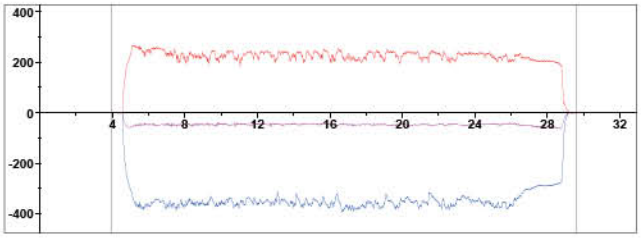
- 피삭재 : SUS316L (84-86HRB)
- 방　식 : 홈절삭 (수용성)
- 조　건 : S3700, F370, Ap 3mm
- 장　비 : 수직머시닝센터(BT40)

STEEL-PRO Ø6　　타사품 Ø6

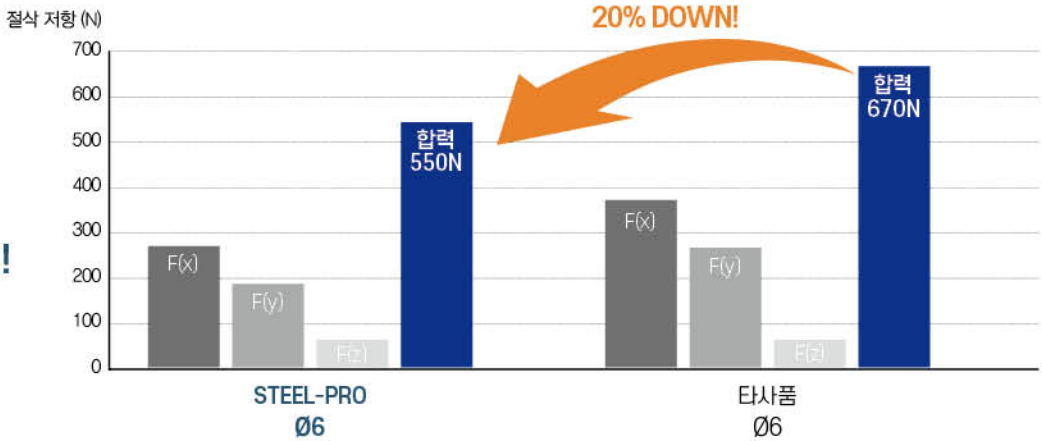
STEEL-PRO
4날 플랫 Ø6



타사품
4날 플랫 Ø6



절삭저항
타사품대비
약 20% DOWN!

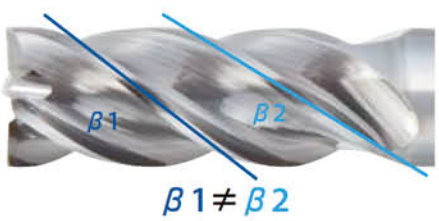


부등리드 적용

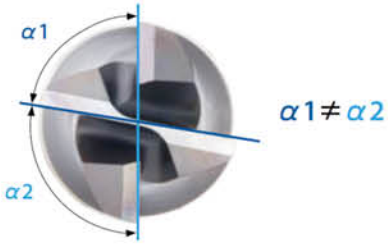
가공 떨림 억제

- 부등리드, 부등분할 적용으로 뛰어난 진동 억제 효과
- 안정된 고능률, 고이송 가공을 실현

• 부등리드 •



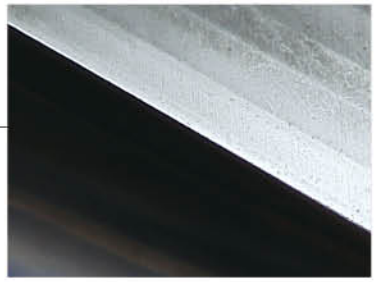
• 부등분할 •

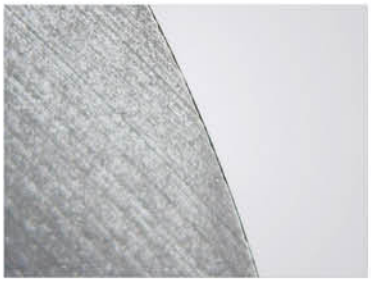


高품위 가공

고품위 가공을 위한 매끄러운 인선부 처리 기술 적용

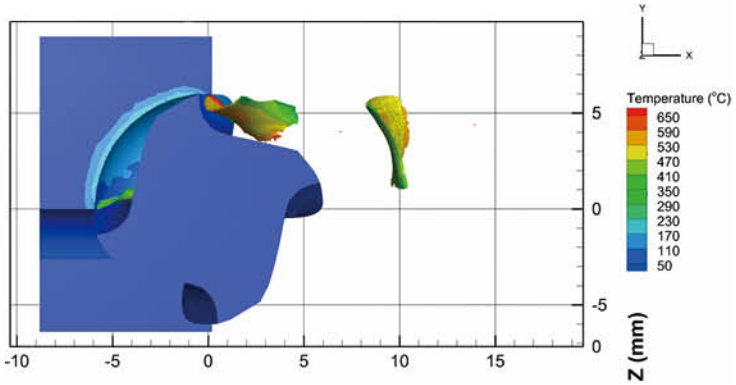
- OSG만이 할 수 있는 기술 노하우 집약
- 매끄러운 인선부 처리로 부드럽고 안정된 절삭가공 가능

STEEL-PRO	타사품
	

STEEL-PRO	타사품
	

가공 해석 시뮬레이션을 통한 최적 설계

- 가공 해석을 통한 최적 설계로 공구 수명 향상
- Edge 특수 인선처리로 절삭열을 효율적으로 배출

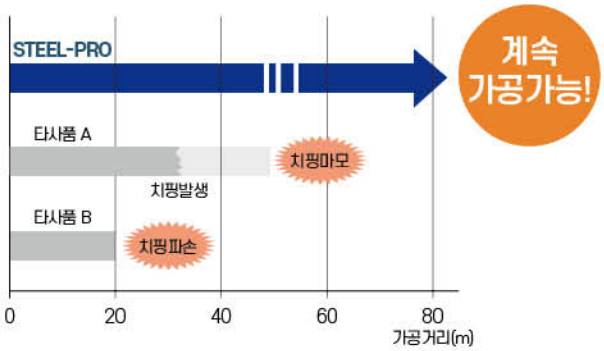


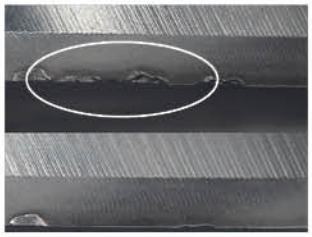
절삭성능

엔드밀 가공에서 치핑없는 안정된 절삭성능 발휘!

• 4날 플랫 Φ8 측면 가공

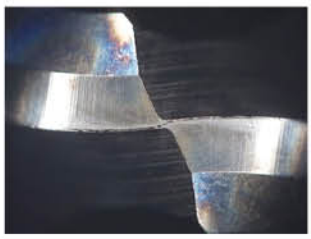
테스트	52m 가공 후 마모량 비교
사용공구	STEEL-PRO 4날 플랫 Φ8
피삭재	KP4M (28~30HRC)
가공방식	측면가공 (수용성)
가공조건	4,800 RPM · 1,540 mm/min
가공깊이	Ap=8mm Ae=1.2mm
가공장비	수직머시닝센터 (BT30)



STEEL-PRO	타사품 A	타사품 B
		

• 2날 볼 R3 포켓 가공

테스트	1,240m 가공 후 마모량 및 조도 비교
사용공구	STEEL-PRO 2날 볼 R3
피삭재	KP4M (28~30HRC)
가공방식	포켓가공 (에어미스트)
회전속도	13,500 RPM
이송속도	4,300 mm/min
가공깊이	Ap=0.2mm Pf=2mm
가공장비	수직머시닝센터 (HSK E40)

STEEL-PRO	타사품
	
	

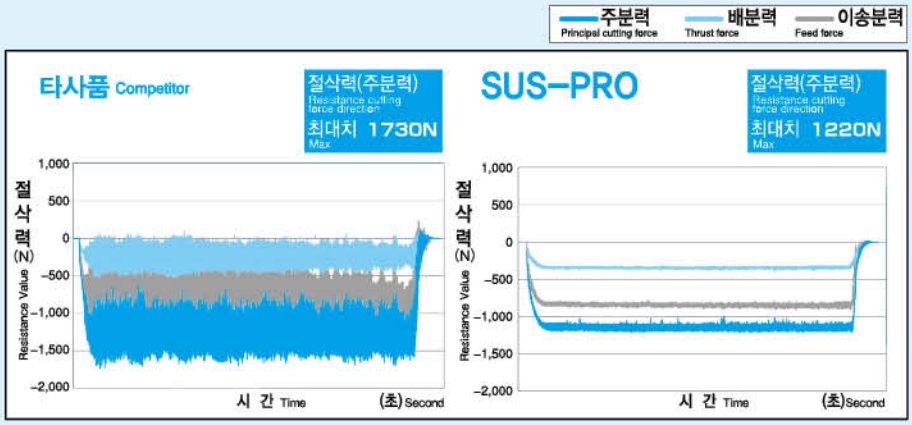
SUS · 난삭재용 시리즈

SUS-PRO

3날 플랫 : Ø1 ~ Ø12 (9규격)
4날 플랫 : Ø1 ~ Ø20 (46규격)
4날 코너R : Ø1 ~ Ø20 (41규격)
3.4 날 라핑 : Ø3 ~ Ø20 (20규격)

저진동·고강성 사양으로 안정된 고이송 가공을 실현

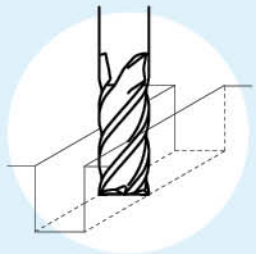
공구 Tool	4날 플랫 ϕ10
피삭재질 Work Material	SUS304
가공방법 Milling Method	홈절삭 Slotting
절삭속도 Cutting Speed	70m/min (2,230min^{-1})
이송속도 Feed	265mm/min (0.03mm/t)
절입깊이 Depth of Cut	ap=10mm (1D)
절삭유제 Coolant	수용성 절삭유제(20배) Water Soluble (5%)
사용기계 Machine	수직머시닝센터 Vertical Machining Center(BT40)

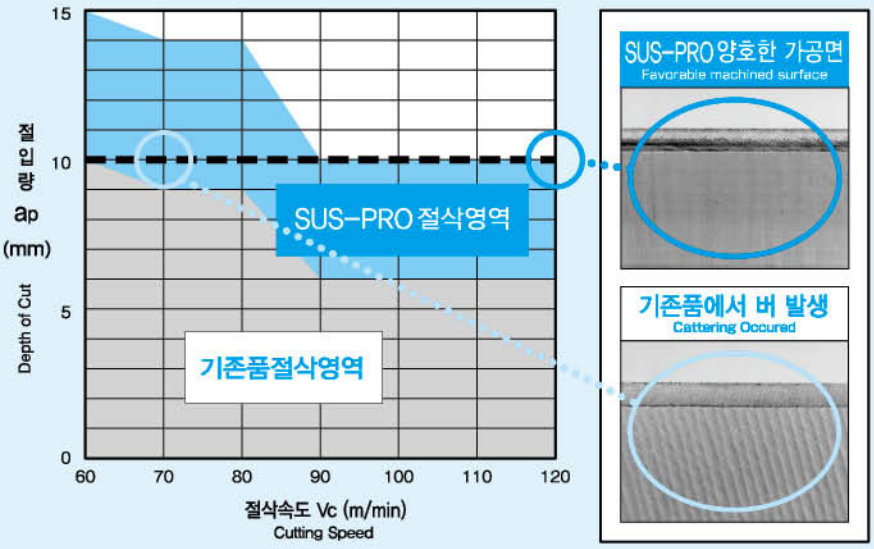


▶ 가공 데이터 Cutting Data

고능률 가공이 어려운 홈 가공에서 고속·고절입 가공 실현

공구 Tool	4날 플랫 ϕ10
피삭재질 Work Material	티탄합금(Ti-6Al-4V)
가공방법 Milling Method	홈절삭 Slotting
1날당 이송량 Feed per Tooth	0.05mm/t
절삭유제 Coolant	수용성 절삭유제(20배)
사용기계 Machine	수직머시닝센터





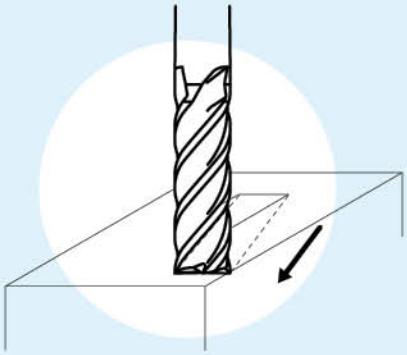
부등 분할 부등 리드 Unequal spacing, variable lead
- 뛰어난 진동 억제 효과 Superior suppression of vibration

최적의 홈 형상 Optimal flute shape
- 절삭칩을 순조롭게 배출
  Smooth evacuation of chips

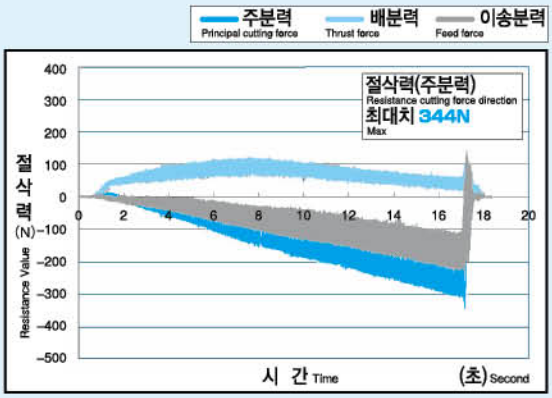
웹 테이퍼 Web taper
- 강성 UP에 의한 고능률 가공을 실현
  High efficient milling is achieved by increasing rigidity

경사절입 가공에서도 버발생 억제 가능!

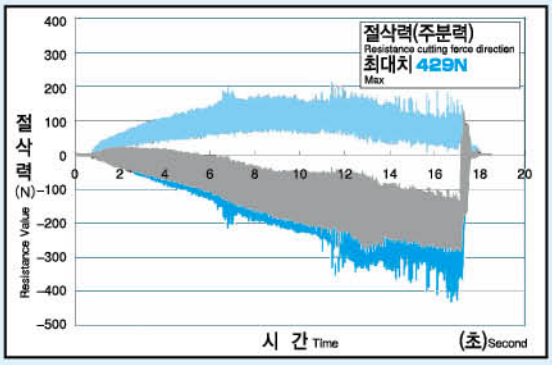
공구 Tool	4날코너R ϕ8×R1
피삭재질 Work Material	SUS304
가공방법 Milling Method	경사절입
절삭속도 Cutting Speed	70m/min (2,785min^{-1})
이송속도 Feed	500mm/min (0.045mm/t)
경사절입각도 Diagonal plunge angle	0.5°
절삭유제 Coolant	수용성 절삭유제(20배)
사용기계 Machine	수직머시닝센터



4날코너R
부등분할 부등리드
Unequal spacing Variable-lead

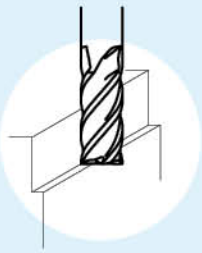


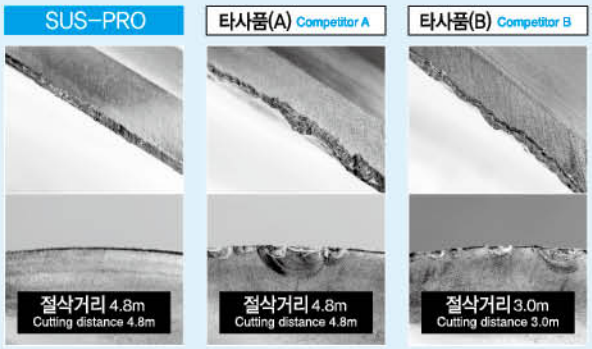
기존품
등분할 등리드



난삭재 가공에 최적화 된 설계로 안정된 가공을 실현

공구 Tool	4날플랫 ϕ10
피삭재질 Work Material	Inconel® 718 (46HRC)
가공방법 Milling Method	측면가공 Side Milling
절삭속도 Cutting Speed	40m/min (1,300min^{-1})
이송속도 Feed	210mm/min (0.04mm/t)
절입깊이 Depth of Cut	ap=15mm (1.5D) ae=0.5mm (0.05D)
절삭유제 Coolant	수용성 절삭유제(20배)
사용기계 Machine	수직머시닝센터(BT40)





ALU-PRO ENDMILL

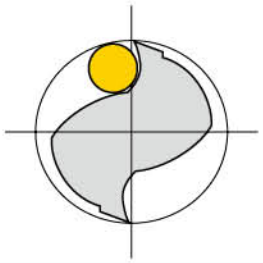
· 45° High Helix 및 Sharp Rake angle 적용으로 우수한 표면조도 및 고품위 가공을 실현
· OSG 만의 최적 설계로 AL 및 AL 합금의 강력절삭 및 고이송 가공 가능
· 내마모성 및 면조도가 우수한 초경모재 사용으로 장수명 실현
· 절삭 chip 배출성의 향상으로 가공절입량을 높일 수 있어 생산성 향상
· 총 160 규격 표준화로 아이템 확대

2날 플랫 : Ø1 ~ Ø20 (31규격)
3날 플랫 : Ø1 ~ Ø20 (113규격)
3날 라핑 : Ø4 ~ Ø20 (16규격)

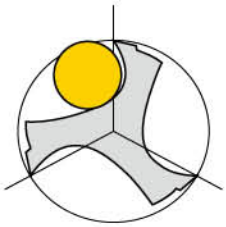
ALU-PRO ENDMILL의 특징

칩 배출을 고려한 넓은 칩 포켓 적용

종래 2날 타입



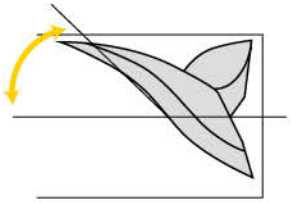
고능률 타입



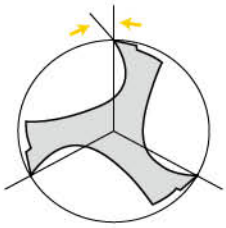
3날 채용으로 공구강성, 가공능률 UP

예리한 인선부

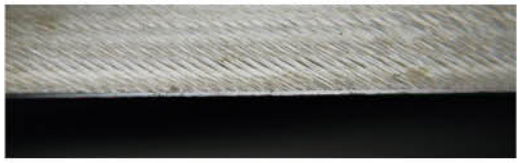
강 헬릭스 적용



큰 경사각



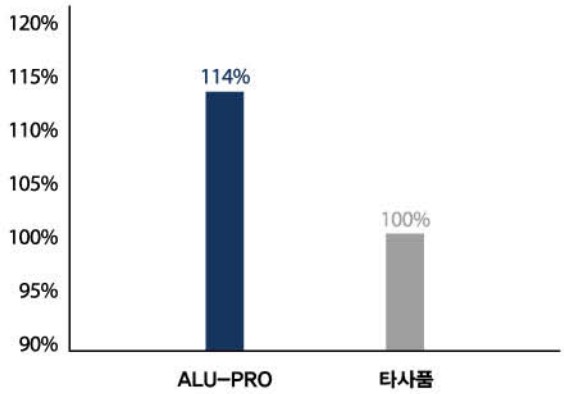
경방향, 축방향 모두 High Positive 경사각 적용

	ALU-PRO	타사품
날부		
홈부		

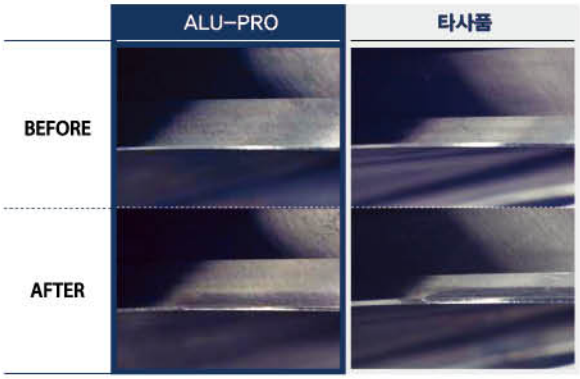
가공 테스트 결과

공 구	A3F080 (Ø8)	절삭방법	절삭방법
피삭재	AL6061(HRB44~46),RPM 5800, FEED 890, ap 6mm, ae 3mm	절삭유제	절삭유제
평 가	동일거리 65.4m / 이상 마모	총 가공시간	총 가공시간

성능비



가공 전후 공구 마모 사진



최고 성능의 고속 · 고경도 가공용
초경엔드밀 시리즈 탄생!!

WS Series

코팅

건식, 습식가공 모두 가능한 진화를 이룬 WS코팅 적용

- 코팅막이 Nano구조로 되어있어 고경도, 내마모, 내산화성이 우수
- 코팅 피막경도가 3600Hv로 내마모성이 향상되어 공구수명이 UP

소재

Superfine Tungsten Carbide Grain Sizes 적용

- 고속, 고능률 가공에 최적의 초경소재를 적용
- Nano복합 파우더 사용으로 내치핑성, 내마모성이 우수

형상

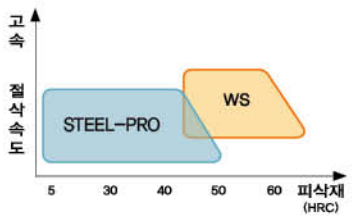
고속, 고능률 가공에 적합한 형상 적용

- 내치핑성, 내마모성을 향상시킨 新형상 적용
- 폭넓은 피삭재/가공영역/가공조건에 대응가능

가공기술

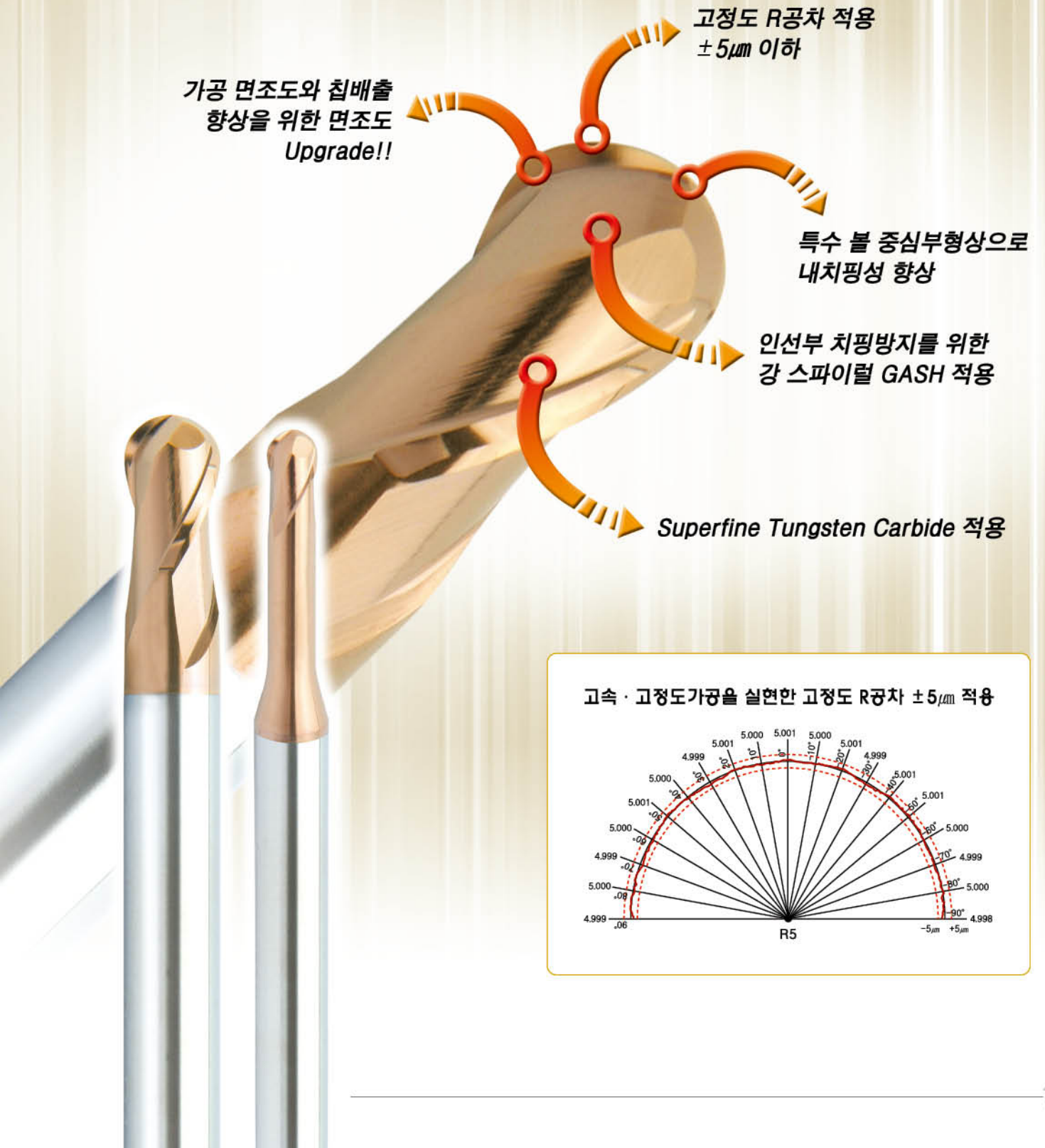
고정도, 고정밀 형상공차 적용

- 초정밀 6축 가공기에서 가공하여 인선부 흔들림 최소화, 고정도 가공 실현
- 볼엔드밀 R공차 ±5㎛이하로 고정도, 고정밀 형상가공 가능



폭넓은 피삭재 · 가공영역 · 가공조건에
대응가능한 WS Ball 시리즈

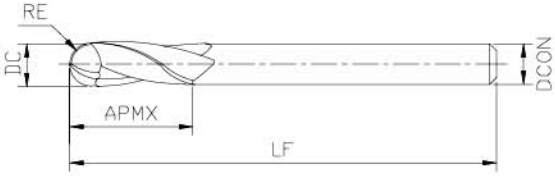
WS Ball Series



고속 · 고정도가공을 실현한 고정도 R공차 ±5㎛ 적용

SP2B / 2날 볼

CARBIDE | RADIA | R ±0.005 RE<3 | R 0~-0.010 3≤RE≤6 | R ±0.01 6<RE | SHRINK FIT | 30° | SPEED FEED P98



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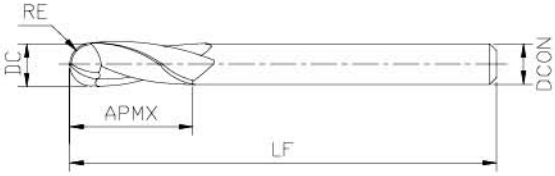
- 매끄러운 인선부 처리로 부드럽고 안정된 절삭!

주문번호 EDP No.	반지름 X 외경 RE X DC	전장 LF	날길이 APMX	자루경 DCON
SP2BX0P15X0P3	R0.075 X 0.15	40	0.3	4
SP2BX0P2X0P4	R0.1 X 0.2	40	0.4	4
SP2BX0P3X0P6	R0.15 X 0.3	40	0.6	4
SP2BX0P4X0P8	R0.2 X 0.4	40	0.8	4
SP2BX0P5X1	R0.25 X 0.5	40	1	4
SP2BX0P6X1P2	R0.3 X 0.6	40	1.2	4
SP2BX0P7X1P4	R0.35 X 0.7	40	1.4	4
SP2BX0P8X1P6	R0.4 X 0.8	40	1.6	4
SP2BX0P9X1P8	R0.45 X 0.9	40	1.8	4
SP2BX1X2P5	R0.5 X 1	50	2.5	6
SP2BX1P2X3	R0.6 X 1.2	50	3	6
SP2BX1P5X4	R0.75 X 1.5	50	4	6
SP2BX1P5X4L		70	4	6
SP2BX2X5	R1 X 2	50	5	6
SP2BX2X5L		80	5	6
SP2BX2P5X6	R1.25 X 2.5	60	6	6
SP2BX3X6	R1.5 X 3	60	6	6
SP2BX3X6L		80	6	6
SP2BX3X8		60	8	6
SP2BX3X8L		80	8	6
SP2BX3P5X8	R1.75 X 3.5	70	8	6
SP2BX4X8	R2 X 4	70	8	6
SP2BX4X8L		100	8	6
SP2BX4P5X9	R2.25 X 4.5	80	9	6
SP2BX5X10	R2.5 X 5	80	10	6
SP2BX5P5X11	R2.75 X 5.5	90	11	6
SP2BX6X9	R3 X 6	60	9	6
SP2BX6X12		90	12	6
SP2BX6X12L		150	12	6
SP2BX6P5X13	R3.25 X 6.5	90	13	8
SP2BX7X14	R3.5 X 7	90	14	8
SP2BX8X12	R4 X 8	60	12	8
SP2BX8X14		100	14	8
SP2BX8X14L		150	14	8
SP2BX8P5X16	R4.25 X 8.5	100	16	10
SP2BX9X18	R4.5 X 9	100	18	10
SP2BX10X18S	R5 X 10	80	18	10
SP2BX10X18		100	18	10
SP2BX10X18L		150	18	10
SP2BX11X20	R5.5 X 11	100	20	12

SP2B / 2날 볼

CARBIDE | RADIA | R ±0.005 RE<3 | R 0~-0.010 3≤RE≤6 | R ±0.01 6<RE | SHRINK FIT | 30° | SPEED FEED P98



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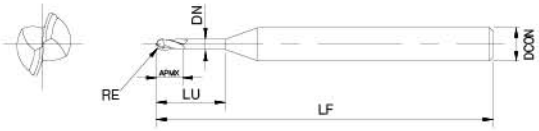
주문번호 EDP No.	반지름 X 외경 RE X DC	전장 LF	날길이 APMX	자루경 DCON
SP2BX12X22S	R6 X 12	80	22	12
SP2BX12X22		110	22	12
SP2BX12X22L		150	22	12
SP2BX13X24	R6.5 X 13	100	24	12
SP2BX14X26	R7 X 14	100	26	12
SP2BX15X28	R7.5 X 15	140	28	16
SP2BX16X30	R8 X 16	150	30	16
SP2BX18X34	R9 X 18	150	34	16
SP2BX20X38	R10 X 20	150	38	20
SP2BX25X50	R12.5 X 25	180	50	25

SP2BN / 2날 롱넥 볼

CARBIDE | RADIA | R ±0.005 RE<3 | R 0~-0.010 3≤RE≤6 | SHRNK FIT | 30° | SPEED FEED P99~P107



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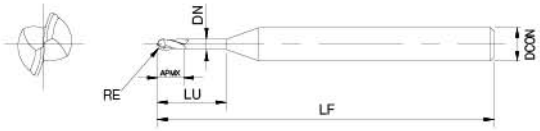
주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2BNX0P2X0P5	R0.1 X 0.5	45	0.16	4	0.175
SP2BNX0P2X1	R0.1 X 1	45	0.16	4	0.175
SP2BNX0P2X1P5	R0.1 X 1.5	45	0.16	4	0.175
SP2BNX0P2X2	R0.1 X 2	45	0.16	4	0.175
SP2BNX0P3X1	R0.15 X 1	45	0.24	4	0.275
SP2BNX0P3X1P5	R0.15 X 1.5	45	0.24	4	0.275
SP2BNX0P3X2	R0.15 X 2	45	0.24	4	0.275
SP2BNX0P3X2P5	R0.15 X 2.5	45	0.24	4	0.275
SP2BNX0P3X3	R0.15 X 3	45	0.24	4	0.275
SP2BNX0P3X4	R0.15 X 4	45	0.24	4	0.275
SP2BNX0P3X5	R0.15 X 5	45	0.24	4	0.275
SP2BNX0P4X1	R0.2 X 1	45	0.3	4	0.37
SP2BNX0P4X1P5	R0.2 X 1.5	45	0.3	4	0.37
SP2BNX0P4X2	R0.2 X 2	45	0.3	4	0.37
SP2BNX0P4X2P5	R0.2 X 2.5	45	0.3	4	0.37
SP2BNX0P4X3	R0.2 X 3	45	0.3	4	0.37
SP2BNX0P4X4	R0.2 X 4	45	0.3	4	0.37
SP2BNX0P4X5	R0.2 X 5	45	0.3	4	0.37
SP2BNX0P4X6	R0.2 X 6	45	0.3	4	0.37
SP2BNX0P4X8	R0.2 X 8	45	0.3	4	0.37
SP2BNX0P4X10	R0.2 X 10	45	0.3	4	0.37
SP2BNX0P5X1	R0.25 X 1	45	0.4	4	0.45
SP2BNX0P5X2	R0.25 X 2	45	0.4	4	0.45
SP2BNX0P5X3	R0.25 X 3	45	0.4	4	0.45
SP2BNX0P5X4	R0.25 X 4	45	0.4	4	0.45
SP2BNX0P5X5	R0.25 X 5	45	0.4	4	0.45
SP2BNX0P5X6	R0.25 X 6	45	0.4	4	0.45
SP2BNX0P5X8	R0.25 X 8	45	0.4	4	0.45
SP2BNX0P5X10	R0.25 X 10	45	0.4	4	0.45
SP2BNX0P5X12	R0.25 X 12	45	0.4	4	0.45
SP2BNX0P6X1	R0.3 X 1	45	0.5	4	0.55
SP2BNX0P6X2	R0.3 X 2	45	0.5	4	0.55
SP2BNX0P6X3	R0.3 X 3	45	0.5	4	0.55
SP2BNX0P6X4	R0.3 X 4	45	0.5	4	0.55
SP2BNX0P6X5	R0.3 X 5	45	0.5	4	0.55
SP2BNX0P6X6	R0.3 X 6	45	0.5	4	0.55
SP2BNX0P6X8	R0.3 X 8	45	0.5	4	0.55
SP2BNX0P6X10	R0.3 X 10	45	0.5	4	0.55
SP2BNX0P6X12	R0.3 X 12	45	0.5	4	0.55
SP2BNX0P6X14	R0.3 X 14	45	0.5	4	0.55

SP2BN / 2날 롱넥 볼

CARBIDE | RADIA | R ±0.005 (RE<3) | R 0~-0.010 (3≤RE≤6) | SHRNK FIT | 30° | SPEED FEED P99~P107



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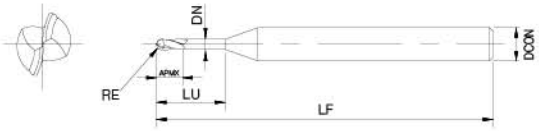
주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2BNX0P7X2	R0.35 X 2	45	0.6	4	0.65
SP2BNX0P7X4	R0.35 X 4	45	0.6	4	0.65
SP2BNX0P7X6	R0.35 X 6	45	0.6	4	0.65
SP2BNX0P7X8	R0.35 X 8	45	0.6	4	0.65
SP2BNX0P7X10	R0.35 X 10	45	0.6	4	0.65
SP2BNX0P8X2	R0.4 X 2	45	0.6	4	0.75
SP2BNX0P8X3	R0.4 X 3	45	0.6	4	0.75
SP2BNX0P8X4	R0.4 X 4	45	0.6	4	0.75
SP2BNX0P8X5	R0.4 X 5	45	0.6	4	0.75
SP2BNX0P8X6	R0.4 X 6	45	0.6	4	0.75
SP2BNX0P8X7	R0.4 X 7	45	0.6	4	0.75
SP2BNX0P8X8	R0.4 X 8	45	0.6	4	0.75
SP2BNX0P8X10	R0.4 X 10	45	0.6	4	0.75
SP2BNX0P8X12	R0.4 X 12	45	0.6	4	0.75
SP2BNX0P8X14	R0.4 X 14	45	0.6	4	0.75
SP2BNX0P9X4	R0.45 X 4	45	0.7	4	0.85
SP2BNX0P9X8	R0.45 X 8	45	0.7	4	0.85
SP2BNX1X2	R0.5 X 2	45	0.8	4	0.95
SP2BNX1X2P5	R0.5 X 2.5	45	0.8	4	0.95
SP2BNX1X3	R0.5 X 3	45	0.8	4	0.95
SP2BNX1X4	R0.5 X 4	45	0.8	4	0.95
SP2BNX1X5	R0.5 X 5	45	0.8	4	0.95
SP2BNX1X6	R0.5 X 6	45	0.8	4	0.95
SP2BNX1X7	R0.5 X 7	45	0.8	4	0.95
SP2BNX1X8	R0.5 X 8	45	0.8	4	0.95
SP2BNX1X9	R0.5 X 9	45	0.8	4	0.95
SP2BNX1X10	R0.5 X 10	45	0.8	4	0.95
SP2BNX1X12	R0.5 X 12	45	0.8	4	0.95
SP2BNX1X14	R0.5 X 14	50	0.8	4	0.95
SP2BNX1X16	R0.5 X 16	50	0.8	4	0.95
SP2BNX1X20	R0.5 X 20	50	0.8	4	0.95
SP2BNX1P2X4	R0.6 X 4	45	1	4	1.15
SP2BNX1P2X6	R0.6 X 6	45	1	4	1.15
SP2BNX1P2X8	R0.6 X 8	45	1	4	1.15
SP2BNX1P2X10	R0.6 X 10	45	1	4	1.15
SP2BNX1P2X12	R0.6 X 12	45	1	4	1.15
SP2BNX1P2X14	R0.6 X 14	50	1	4	1.15
SP2BNX1P2X16	R0.6 X 16	50	1	4	1.15
SP2BNX1P2X20	R0.6 X 20	50	1	4	1.15
SP2BNX1P4X6	R0.7 X 6	45	1.2	4	1.35

SP2BN / 2날 롱넥 볼

CARBIDE | RADIA | R ±0.005 RE<3 | R 0~-0.010 3≤RE≤6 | SHRNK FIT | 30° | SPEED FEED P99~P107



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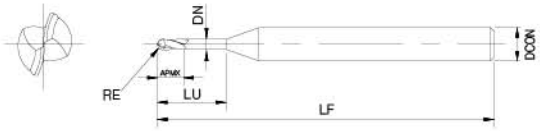
주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2BNX1P4X8	R0.7 X 8	45	1.2	4	1.35
SP2BNX1P4X12	R0.7 X 12	50	1.2	4	1.35
SP2BNX1P4X16	R0.7 X 16	50	1.2	4	1.35
SP2BNX1P5X3	R0.75 X 3	45	1.6	4	1.45
SP2BNX1P5X4	R0.75 X 4	45	1.6	4	1.45
SP2BNX1P5X6	R0.75 X 6	45	1.6	4	1.45
SP2BNX1P5X8	R0.75 X 8	45	1.6	4	1.45
SP2BNX1P5X10	R0.75 X 10	45	1.6	4	1.45
SP2BNX1P5X12	R0.75 X 12	45	1.6	4	1.45
SP2BNX1P5X14	R0.75 X 14	50	1.6	4	1.45
SP2BNX1P5X16	R0.75 X 16	50	1.6	4	1.45
SP2BNX1P5X18	R0.75 X 18	55	1.6	4	1.45
SP2BNX1P5X20	R0.75 X 20	55	1.6	4	1.45
SP2BNX1P5X22	R0.75 X 22	60	1.6	4	1.45
SP2BNX1P5X25	R0.75 X 25	65	1.6	4	1.45
SP2BNX1P5X30	R0.75 X 30	70	1.6	4	1.45
SP2BNX2X4	R1 X 4	45	1.6	4	1.95
SP2BNX2X5	R1 X 5	45	1.6	4	1.95
SP2BNX2X6	R1 X 6	45	1.6	4	1.95
SP2BNX2X8	R1 X 8	45	1.6	4	1.95
SP2BNX2X10	R1 X 10	45	1.6	4	1.95
SP2BNX2X12	R1 X 12	45	1.6	4	1.95
SP2BNX2X14	R1 X 14	50	1.6	4	1.95
SP2BNX2X16	R1 X 16	50	1.6	4	1.95
SP2BNX2X18	R1 X 18	55	1.6	4	1.95
SP2BNX2X20	R1 X 20	55	1.6	4	1.95
SP2BNX2X22	R1 X 22	60	1.6	4	1.95
SP2BNX2X25	R1 X 25	65	1.6	4	1.95
SP2BNX2X30	R1 X 30	70	1.6	4	1.95
SP2BNX2P5X10	R1.25 X 10	45	2	4	2.45
SP2BNX2P5X12	R1.25 X 12	45	2	4	2.45
SP2BNX2P5X16	R1.25 X 16	50	2	4	2.45
SP2BNX2P5X20	R1.25 X 20	55	2	4	2.45
SP2BNX3X6	R1.5 X 6	50	2.4	6	2.85
SP2BNX3X8	R1.5 X 8	50	2.4	6	2.85
SP2BNX3X10	R1.5 X 10	50	2.4	6	2.85
SP2BNX3X12	R1.5 X 12	50	2.4	6	2.85
SP2BNX3X14	R1.5 X 14	55	2.4	6	2.85
SP2BNX3X16	R1.5 X 16	55	2.4	6	2.85
SP2BNX3X18	R1.5 X 18	60	2.4	6	2.85

SP2BN / 2날 롱넥 볼

CARBIDE | RADIA | R ±0.005 | R 0~-0.010 | SHRNK FIT | 30° | SPEED FEED P99~P107



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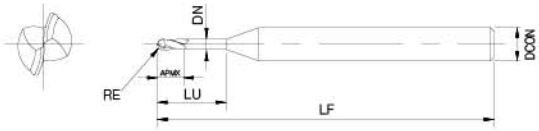
주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2BNX3X20	R1.5 X 20	60	2.4	6	2.85
SP2BNX3X25	R1.5 X 25	65	2.4	6	2.85
SP2BNX3X26	R1.5 X 26	65	2.4	6	2.85
SP2BNX3X30	R1.5 X 30	70	2.4	6	2.85
SP2BNX3X35	R1.5 X 35	80	2.4	6	2.85
SP2BNX3X40	R1.5 X 40	90	2.4	6	2.85
SP2BNX3X45	R1.5 X 45	90	2.4	6	2.85
SP2BNX3X50	R1.5 X 50	100	2.4	6	2.85
SP2BNX4X8	R2 X 8	60	3.2	6	3.85
SP2BNX4X10	R2 X 10	60	3.2	6	3.85
SP2BNX4X12	R2 X 12	60	3.2	6	3.85
SP2BNX4X14	R2 X 14	60	3.2	6	3.85
SP2BNX4X16	R2 X 16	60	3.2	6	3.85
SP2BNX4X20	R2 X 20	65	3.2	6	3.85
SP2BNX4X25	R2 X 25	70	3.2	6	3.85
SP2BNX4X26	R2 X 26	70	3.2	6	3.85
SP2BNX4X30	R2 X 30	80	3.2	6	3.85
SP2BNX4X35	R2 X 35	80	3.2	6	3.85
SP2BNX4X40	R2 X 40	90	3.2	6	3.85
SP2BNX4X45	R2 X 45	90	3.2	6	3.85
SP2BNX4X50	R2 X 50	100	3.2	6	3.85
SP2BNX5X16	R2.5 X 16	60	6	6	4.85
SP2BNX5X20	R2.5 X 20	60	6	6	4.85
SP2BNX5X25	R2.5 X 25	70	6	6	4.85
SP2BNX5X26	R2.5 X 26	70	6	6	4.85
SP2BNX5X30	R2.5 X 30	70	6	6	4.85
SP2BNX5X35	R2.5 X 35	70	6	6	4.85
SP2BNX5X40	R2.5 X 40	80	6	6	4.85
SP2BNX5X45	R2.5 X 45	90	6	6	4.85
SP2BNX5X50	R2.5 X 50	100	6	6	4.85
SP2BNX5X55	R2.5 X 55	100	6	6	4.85
SP2BNX5X60	R2.5 X 60	100	6	6	4.85
SP2BNX6X20	R3 X 20	60	8	6	5.85
SP2BNX6X20L		90	12	6	5.85
SP2BNX6X30	R3 X 30	60	8	6	5.85
SP2BNX6X30L		90	12	6	5.85
SP2BNX8X25	R4 X 25	70	10	8	7.7
SP2BNX8X25L		100	14	8	7.7
SP2BNX8X35	R4 X 35	70	10	8	7.7
SP2BNX8X35L		100	14	8	7.7

SP2BN / 2날 롱넥 볼

CARBIDE | RADIA | R ±0.005 RE<3 | R 0~-0.010 3≤RE≤6 | SHRINK FIT | 30° | SPEED FEED P99~P107



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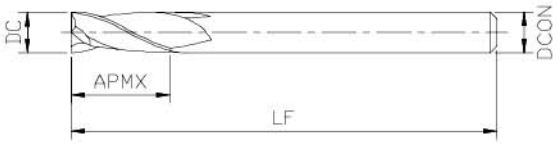
주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2BNX10X30	R5 X 30	75	12	10	9.7
SP2BNX10X30L		100	18	10	9.7
SP2BNX10X40	R5 X 40	75	12	10	9.7
SP2BNX10X40L		100	18	10	9.7
SP2BNX12X32	R6 X 32	80	14	12	11.7
SP2BNX12X32L		110	22	12	11.7
SP2BNX12X45	R6 X 45	80	14	12	11.7
SP2BNX12X45L		110	22	12	11.7

SP2F / 2날 플랫엔드밀

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRNK FIT | 30° | SPEED FEED P108~P109



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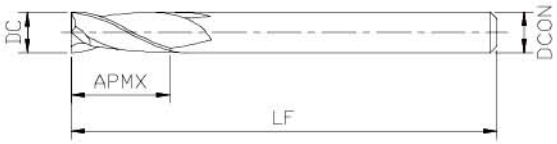
주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SP2FX0P15X0P3	0.15	40	0.3	4
SP2FX0P2X0P4	0.2	40	0.4	4
SP2FX0P25X0P5	0.25	40	0.5	4
SP2FX0P3X0P6	0.3	40	0.6	4
SP2FX0P35X0P7	0.35	40	0.7	4
SP2FX0P4X0P8	0.4	40	0.8	4
SP2FX0P45X0P9	0.45	40	0.9	4
SP2FX0P5X1	0.5	40	1	4
SP2FX0P55X1P1	0.55	40	1.1	4
SP2FX0P6X1P2	0.6	40	1.2	4
SP2FX0P65X1P3	0.65	40	1.3	4
SP2FX0P7X1P4	0.7	40	1.4	4
SP2FX0P75X1P5	0.75	40	1.5	4
SP2FX0P8X1P6	0.8	40	1.6	4
SP2FX0P85X1P7	0.85	40	1.7	4
SP2FX0P9X1P8	0.9	40	1.8	4
SP2FX0P95X2	0.95	40	2	4
SP2FX1X2P5	1	50	2.5	6
SP2FX1P1X3	1.1	50	3	6
SP2FX1P2X3	1.2	50	3	6
SP2FX1P3X3P2	1.3	50	3.2	6
SP2FX1P4X3P5	1.4	50	3.5	6
SP2FX1P5X4	1.5	50	4	6
SP2FX1P6X4	1.6	50	4	6
SP2FX1P7X4P2	1.7	50	4.2	6
SP2FX1P8X4P5	1.8	50	4.5	6
SP2FX1P9X5	1.9	50	5	6
SP2FX2X6	2	50	6	6
SP2FX2P5X7	2.5	50	7	6
SP2FX3X8	3	50	8	6
SP2FX3P5X10	3.5	50	10	6
SP2FX4X10	4	50	10	6
SP2FX4P5X12	4.5	50	12	6
SP2FX5X15	5	60	15	6
SP2FX5P5X15	5.5	60	15	6
SP2FX6X15	6	60	15	6
SP2FX6P5X18	6.5	60	18	8
SP2FX7X20	7	60	20	8
SP2FX7P5X20	7.5	60	20	8
SP2FX8X20	8	70	20	8

SP2F / 2날 플랫엔드밀

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRNK FIT | 30° | SPEED FEED P108~P109



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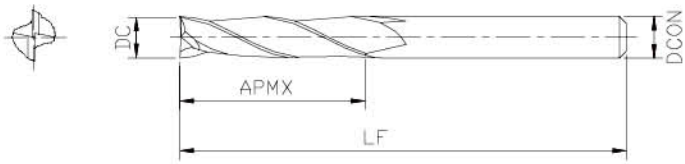
주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SP2FX8P5X22	8.5	70	22	10
SP2FX9X22	9	70	22	10
SP2FX9P5X24	9.5	70	24	10
SP2FX10X25	10	75	25	10
SP2FX10P5X26	10.5	75	26	12
SP2FX11X30	11	75	30	12
SP2FX12X30	12	80	30	12
SP2FX13X35	13	100	35	12
SP2FX14X35	14	100	35	16
SP2FX15X38	15	100	38	16
SP2FX16X40	16	100	40	16
SP2FX17X42	17	100	42	16
SP2FX18X45	18	100	45	16
SP2FX19X45	19	100	45	20
SP2FX20X45	20	100	45	20
SP2FX21X45	21	100	45	20
SP2FX22X45	22	100	45	20
SP2FX23X50	23	120	50	25
SP2FX24X50	24	120	50	25
SP2FX25X50	25	120	50	25

SP2F / 2날 롱 플랫엔드밀

CARBIDE | RADIA | 0~0.02 (DC≤12) | 0~0.03 (12<DC) | SHRINK FIT | 30° | SPEED FEED P110



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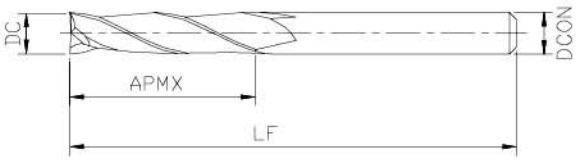
주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SP2FX1X4	1	60	4	6
SP2FX1X6		60	6	6
SP2FX1X8		60	8	6
SP2FX1X10		60	10	6
SP2FX1P5X6	1.5	60	6	6
SP2FX2X10	2	60	10	6
SP2FX2X12		60	12	6
SP2FX2X16		60	16	6
SP2FX2P5X12	2.5	60	12	6
SP2FX2P5X16		60	16	6
SP2FX3X12	3	70	12	6
SP2FX3X16		70	16	6
SP2FX3X20		70	20	6
SP2FX3X25		70	25	6
SP2FX4X12	4	70	12	6
SP2FX4X16		70	16	6
SP2FX4X20		70	20	6
SP2FX4X30		70	30	6
SP2FX5X20	5	70	20	6
SP2FX5X25		70	25	6
SP2FX5X30		80	30	6
SP2FX5X35		90	35	6
SP2FX5X40		95	40	6
SP2FX6X20	6	70	20	6
SP2FX6X20L		90	20	6
SP2FX6X25		75	25	6
SP2FX6X30		80	30	6
SP2FX6X40		120	40	6
SP2FX6X45		130	45	6
SP2FX8X25	8	80	25	8
SP2FX8X30		80	30	8
SP2FX8X40		90	40	8
SP2FX8X40L		120	40	8
SP2FX8X45		100	45	8
SP2FX8X50		150	50	8
SP2FX10X30	10	80	30	10
SP2FX10X30L		100	30	10
SP2FX10X35		90	35	10
SP2FX10X40		90	40	10
SP2FX10X45		100	45	10

SP2F / 2날 롱 플랫엔드밀

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRNK FIT | 30° | SPEED FEED P110



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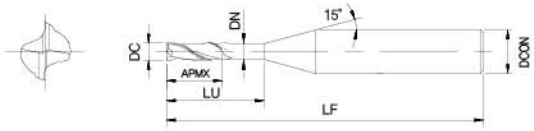
주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SP2FX10X50	10	100	50	10
SP2FX10X60		110	60	10
SP2FX10X65		150	65	10
SP2FX10X75		200	75	10
SP2FX12X35	12	90	35	12
SP2FX12X40		100	40	12
SP2FX12X40L		120	40	12
SP2FX12X45		130	45	12
SP2FX12X50		100	50	12
SP2FX12X55		110	55	12
SP2FX12X60		110	60	12
SP2FX16X50	16	110	50	16
SP2FX16X60		120	60	16
SP2FX16X70		130	70	16
SP2FX16X80		150	80	16
SP2FX16X110		200	110	16
SP2FX16X130		250	130	16
SP2FX20X60	20	130	60	20
SP2FX20X70		130	70	20
SP2FX20X80		150	80	20
SP2FX20X110		200	110	20

SP2FN / 2날 롱넥 플랫

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111~P115



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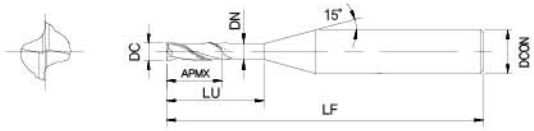
주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2FNX0P2X0P5	0.2 X 0.5	45	0.3	4	0.175
SP2FNX0P2X1	0.2 X 1	45	0.3	4	0.175
SP2FNX0P2X1P5	0.2 X 1.5	45	0.3	4	0.175
SP2FNX0P2X2	0.2 X 2	45	0.3	4	0.175
SP2FNX0P3X1	0.3 X 1	45	0.45	4	0.275
SP2FNX0P3X1P5	0.3 X 1.5	45	0.45	4	0.275
SP2FNX0P3X2	0.3 X 2	45	0.45	4	0.275
SP2FNX0P3X2P5	0.3 X 2.5	45	0.45	4	0.275
SP2FNX0P3X3	0.3 X 3	45	0.45	4	0.275
SP2FNX0P3X4	0.3 X 4	45	0.45	4	0.275
SP2FNX0P3X5	0.3 X 5	45	0.45	4	0.275
SP2FNX0P4X1	0.4 X 1	45	0.6	4	0.37
SP2FNX0P4X1P5	0.4 X 1.5	45	0.6	4	0.37
SP2FNX0P4X2	0.4 X 2	45	0.6	4	0.37
SP2FNX0P4X2P5	0.4 X 2.5	45	0.6	4	0.37
SP2FNX0P4X3	0.4 X 3	45	0.6	4	0.37
SP2FNX0P4X4	0.4 X 4	45	0.6	4	0.37
SP2FNX0P4X5	0.4 X 5	45	0.6	4	0.37
SP2FNX0P4X6	0.4 X 6	45	0.6	4	0.37
SP2FNX0P4X8	0.4 X 8	45	0.6	4	0.37
SP2FNX0P4X10	0.4 X 10	45	0.6	4	0.37
SP2FNX0P5X1	0.5 X 1	45	0.7	4	0.45
SP2FNX0P5X1P5	0.5 X 1.5	45	0.7	4	0.45
SP2FNX0P5X2	0.5 X 2	45	0.7	4	0.45
SP2FNX0P5X2P5	0.5 X 2.5	45	0.7	4	0.45
SP2FNX0P5X3	0.5 X 3	45	0.7	4	0.45
SP2FNX0P5X4	0.5 X 4	45	0.7	4	0.45
SP2FNX0P5X5	0.5 X 5	45	0.7	4	0.45
SP2FNX0P5X6	0.5 X 6	45	0.7	4	0.45
SP2FNX0P5X8	0.5 X 8	45	0.7	4	0.45
SP2FNX0P5X10	0.5 X 10	45	0.7	4	0.45
SP2FNX0P5X12	0.5 X 12	45	0.7	4	0.45
SP2FNX0P6X2	0.6 X 2	45	0.9	4	0.55
SP2FNX0P6X3	0.6 X 3	45	0.9	4	0.55
SP2FNX0P6X4	0.6 X 4	45	0.9	4	0.55
SP2FNX0P6X5	0.6 X 5	45	0.9	4	0.55
SP2FNX0P6X6	0.6 X 6	45	0.9	4	0.55
SP2FNX0P6X8	0.6 X 8	45	0.9	4	0.55
SP2FNX0P6X10	0.6 X 10	45	0.9	4	0.55
SP2FNX0P6X12	0.6 X 12	45	0.9	4	0.55

SP2FN / 2날 롱넥 플랫

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111~P115



- Cu · SUS · 45C ~ 50HRC에서 탁월한 성능 발휘!
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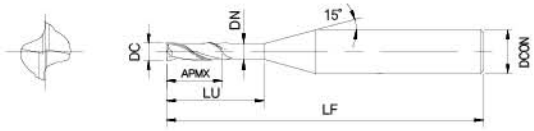
- 날끝 Touch 추가로 안정적 가공 지향

주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2FNX0P6X14	0.6 X 14	45	0.9	4	0.55
SP2FNX0P7X2	0.7 X 2	45	1	4	0.65
SP2FNX0P7X4	0.7 X 4	45	1	4	0.65
SP2FNX0P7X6	0.7 X 6	45	1	4	0.65
SP2FNX0P7X8	0.7 X 8	45	1	4	0.65
SP2FNX0P7X10	0.7 X 10	45	1	4	0.65
SP2FNX0P7X12	0.7 X 12	45	1	4	0.65
SP2FNX0P8X2	0.8 X 2	45	1.2	4	0.75
SP2FNX0P8X3	0.8 X 3	45	1.2	4	0.75
SP2FNX0P8X4	0.8 X 4	45	1.2	4	0.75
SP2FNX0P8X5	0.8 X 5	45	1.2	4	0.75
SP2FNX0P8X6	0.8 X 6	45	1.2	4	0.75
SP2FNX0P8X8	0.8 X 8	45	1.2	4	0.75
SP2FNX0P8X10	0.8 X 10	45	1.2	4	0.75
SP2FNX0P8X12	0.8 X 12	45	1.2	4	0.75
SP2FNX0P8X14	0.8 X 14	45	1.2	4	0.75
SP2FNX1X2	1 X 2	45	1.5	4	0.95
SP2FNX1X3	1 X 3	45	1.5	4	0.95
SP2FNX1X4	1 X 4	45	1.5	4	0.95
SP2FNX1X5	1 X 5	45	1.5	4	0.95
SP2FNX1X6	1 X 6	45	1.5	4	0.95
SP2FNX1X8	1 X 8	45	1.5	4	0.95
SP2FNX1X10	1 X 10	45	1.5	4	0.95
SP2FNX1X12	1 X 12	45	1.5	4	0.95
SP2FNX1X14	1 X 14	50	1.5	4	0.95
SP2FNX1X16	1 X 16	50	1.5	4	0.95
SP2FNX1X20	1 X 20	50	1.5	4	0.95
SP2FNX1P2X4	1.2 X 4	45	1.5	4	1.15
SP2FNX1P2X6	1.2 X 6	45	1.5	4	1.15
SP2FNX1P2X8	1.2 X 8	45	1.5	4	1.15
SP2FNX1P2X10	1.2 X 10	45	1.5	4	1.15
SP2FNX1P2X12	1.2 X 12	45	1.5	4	1.15
SP2FNX1P5X4	1.5 X 4	45	2.3	4	1.45
SP2FNX1P5X6	1.5 X 6	45	2.3	4	1.45
SP2FNX1P5X8	1.5 X 8	45	2.3	4	1.45
SP2FNX1P5X10	1.5 X 10	45	2.3	4	1.45
SP2FNX1P5X12	1.5 X 12	45	2.3	4	1.45
SP2FNX1P5X14	1.5 X 14	50	2.3	4	1.45
SP2FNX1P5X16	1.5 X 16	50	2.3	4	1.45
SP2FNX1P5X18	1.5 X 18	55	2.3	4	1.45

SP2FN / 2날 롱넥 플랫

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111~P115



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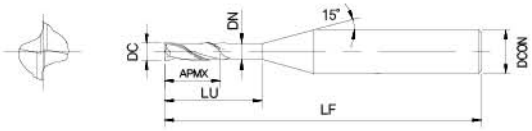
주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2FNX1P5X20	1.5 X 20	55	2.3	4	1.45
SP2FNX1P8X8	1.8 X 8	45	2.7	4	1.75
SP2FNX2X6	2 X 6	45	3	4	1.95
SP2FNX2X8	2 X 8	45	3	4	1.95
SP2FNX2X10	2 X 10	45	3	4	1.95
SP2FNX2X12	2 X 12	45	3	4	1.95
SP2FNX2X14	2 X 14	50	3	4	1.95
SP2FNX2X16	2 X 16	50	3	4	1.95
SP2FNX2X18	2 X 18	55	3	4	1.95
SP2FNX2X20	2 X 20	55	3	4	1.95
SP2FNX2X25	2 X 25	60	3	4	1.95
SP2FNX2X26	2 X 26	60	3	4	1.95
SP2FNX2X30	2 X 30	70	3	4	1.95
SP2FNX2X35	2 X 35	70	3	4	1.95
SP2FNX2X40	2 X 40	80	3	4	1.95
SP2FNX2X50	2 X 50	90	3	4	1.95
SP2FNX2P5X8	2.5 X 8	45	3.7	4	2.45
SP2FNX2P5X10	2.5 X 10	45	3.7	4	2.45
SP2FNX2P5X12	2.5 X 12	45	3.7	4	2.45
SP2FNX2P5X14	2.5 X 14	50	3.7	4	2.45
SP2FNX2P5X16	2.5 X 16	50	3.7	4	2.45
SP2FNX2P5X18	2.5 X 18	50	3.7	4	2.45
SP2FNX2P5X20	2.5 X 20	55	3.7	4	2.45
SP2FNX2P5X25	2.5 X 25	60	3.7	4	2.45
SP2FNX2P5X26	2.5 X 26	60	3.7	4	2.45
SP2FNX2P5X30	2.5 X 30	70	3.7	4	2.45
SP2FNX2P5X35	2.5 X 35	70	3.7	4	2.45
SP2FNX2P5X40	2.5 X 40	80	3.7	4	2.45
SP2FNX2P5X50	2.5 X 50	90	3.7	4	2.45
SP2FNX3X8	3 X 8	45	4.5	6	2.85
SP2FNX3X10	3 X 10	45	4.5	6	2.85
SP2FNX3X12	3 X 12	45	4.5	6	2.85
SP2FNX3X14	3 X 14	50	4.5	6	2.85
SP2FNX3X16	3 X 16	55	4.5	6	2.85
SP2FNX3X18	3 X 18	55	4.5	6	2.85
SP2FNX3X20	3 X 20	60	4.5	6	2.85
SP2FNX3X25	3 X 25	65	4.5	6	2.85
SP2FNX3X26	3 X 26	65	4.5	6	2.85
SP2FNX3X30	3 X 30	80	4.5	6	2.85
SP2FNX3X35	3 X 35	90	4.5	6	2.85

SP2FN / 2날 롱넥 플랫

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111~P115



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주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP2FNX3X40	3 X 40	90	4.5	6	2.85
SP2FNX3X45	3 X 45	90	4.5	6	2.85
SP2FNX3X50	3 X 50	90	4.5	6	2.85
SP2FNX4X10	4 X 10	45	6	6	3.85
SP2FNX4X12	4 X 12	50	6	6	3.85
SP2FNX4X14	4 X 14	60	6	6	3.85
SP2FNX4X16	4 X 16	60	6	6	3.85
SP2FNX4X18	4 X 18	60	6	6	3.85
SP2FNX4X20	4 X 20	70	6	6	3.85
SP2FNX4X25	4 X 25	80	6	6	3.85
SP2FNX4X26	4 X 26	80	6	6	3.85
SP2FNX4X30	4 X 30	90	6	6	3.85
SP2FNX4X35	4 X 35	90	6	6	3.85
SP2FNX4X40	4 X 40	100	6	6	3.85
SP2FNX4X45	4 X 45	100	6	6	3.85
SP2FNX4X50	4 X 50	100	6	6	3.85
SP2FNX4X60	4 X 60	100	6	6	3.85
SP2FNX5X16	5 X 16	60	8	6	4.85
SP2FNX5X20	5 X 20	60	8	6	4.85
SP2FNX5X25	5 X 25	70	8	6	4.85
SP2FNX5X26	5 X 26	70	8	6	4.85
SP2FNX5X30	5 X 30	80	8	6	4.85
SP2FNX5X35	5 X 35	90	8	6	4.85
SP2FNX5X40	5 X 40	90	8	6	4.85
SP2FNX5X50	5 X 50	100	8	6	4.85
SP2FNX5X60	5 X 60	100	8	6	4.85
SP2FNX6X15	6 X 15	60	9	6	5.85
SP2FNX6X20	6 X 20	60	9	6	5.85
SP2FNX6X30	6 X 30	70	9	6	5.85
SP2FNX6X32	6 X 32	90	9	6	5.85
SP2FNX8X25	8 X 25	70	12	8	7.7
SP2FNX8X30	8 X 30	80	12	8	7.7
SP2FNX8X42	8 X 42	100	12	8	7.7
SP2FNX10X30	10 X 30	75	15	10	9.7
SP2FNX10X35	10 X 35	80	15	10	9.7
SP2FNX10X45	10 X 45	100	15	10	9.7
SP2FNX12X35	12 X 35	80	20	12	11.7
SP2FNX12X40	12 X 40	90	20	12	11.7
SP2FNX12X50	12 X 50	110	20	12	11.7

SP4F / 4날 플랫

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRNK FIT | UNEQUAL HELIX | SPEED FEED P116

- Cu · SUS · 45C ~ 50HRC에서 탁월한 성능 발휘!
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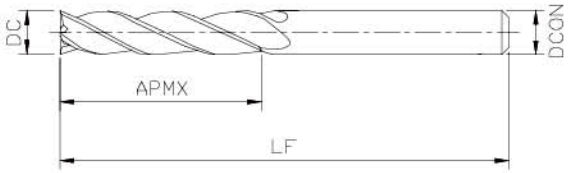
- 부등리드 · 부등분할 적용으로 뛰어난 진동 억제 효과
- 신규 홈 형상 채택으로 사상 및 중 · 황삭까지 가능

주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SP4FX1X2P5	1	50	2.5	6
SP4FX1P2X3	1.2	50	3	6
SP4FX1P5X4	1.5	50	4	6
SP4FX2X6	2	50	6	6
SP4FX2P5X7	2.5	50	7	6
SP4FX3X8	3	50	8	6
SP4FX3P5X10	3.5	50	10	6
SP4FX4X10	4	50	10	6
SP4FX4P5X12	4.5	50	12	6
SP4FX5X15	5	60	15	6
SP4FX5P5X15	5.5	60	15	6
SP4FX6X15	6	60	15	6
SP4FX6P5X18	6.5	60	18	8
SP4FX7X20	7	60	20	8
SP4FX7P5X20	7.5	60	20	8
SP4FX8X20	8	70	20	8
SP4FX8P5X22	8.5	70	22	10
SP4FX9X22	9	70	22	10
SP4FX9P5X24	9.5	70	24	10
SP4FX10X25	10	75	25	10
SP4FX10P5X26	10.5	75	26	12
SP4FX11X30	11	75	30	12
SP4FX12X30	12	80	30	12
SP4FX13X35	13	100	35	12
SP4FX14X35	14	100	35	16
SP4FX15X38	15	100	38	16
SP4FX16X40	16	100	40	16
SP4FX17X42	17	100	42	16
SP4FX18X45	18	100	45	16
SP4FX19X45	19	100	45	20
SP4FX20X45	20	100	45	20
SP4FX21X45	21	100	45	20
SP4FX22X45	22	100	45	20
SP4FX23X50	23	120	50	25
SP4FX24X50	24	120	50	25
SP4FX25X50	25	120	50	25

SP4F / 4날 롱 플랫

CARBIDE | RADIA | 0~0.02 (DC≤12) | 0~0.03 (12<DC) | SHRNK FIT | 30° | SPEED FEED P117



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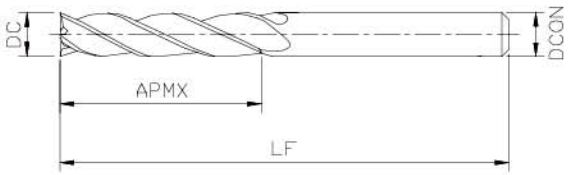
주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SP4FX1X4	1	60	4	6
SP4FX1X6		60	6	6
SP4FX1X8		60	8	6
SP4FX1X10		60	10	6
SP4FX1P5X6	1.5	60	6	6
SP4FX2X10	2	60	10	6
SP4FX2X12		60	12	6
SP4FX2X16		60	16	6
SP4FX2P5X12	2.5	60	12	6
SP4FX2P5X16		60	16	6
SP4FX3X12	3	70	12	6
SP4FX3X16		70	16	6
SP4FX3X20		70	20	6
SP4FX3X25		70	25	6
SP4FX4X12	4	70	12	6
SP4FX4X16		70	16	6
SP4FX4X20		70	20	6
SP4FX4X30		70	30	6
SP4FX5X20	5	70	20	6
SP4FX5X25		70	25	6
SP4FX5X30		80	30	6
SP4FX5X35		90	35	6
SP4FX5X40		95	40	6
SP4FX6X20	6	70	20	6
SP4FX6X20L		90	20	6
SP4FX6X25		75	25	6
SP4FX6X30		80	30	6
SP4FX6X40		120	40	6
SP4FX6X45		130	45	6
SP4FX8X25	8	80	25	8
SP4FX8X30		80	30	8
SP4FX8X40		90	40	8
SP4FX8X40L		120	40	8
SP4FX8X45		100	45	8
SP4FX8X50		150	50	8
SP4FX10X30	10	80	30	10
SP4FX10X30L		100	30	10
SP4FX10X35		90	35	10
SP4FX10X40		90	40	10
SP4FX10X45		100	45	10

SP4F / 4날 롱 플랫

CARBIDE | RADIA | 0~-0,02 (DC≤12) | 0~-0,03 (12<DC) | SHRNK FIT | 30° | SPEED FEED P117



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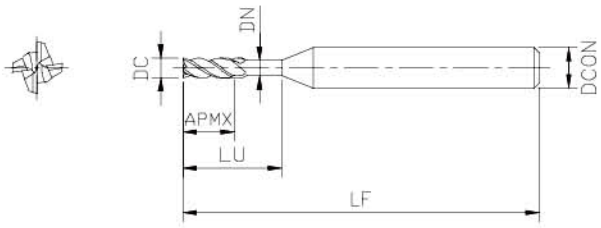
주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SP4FX10X50	10	100	50	10
SP4FX10X60		110	60	10
SP4FX10X65		150	65	10
SP4FX10X75		200	75	10
SP4FX12X35	12	90	35	12
SP4FX12X40		100	40	12
SP4FX12X40L		120	40	12
SP4FX12X45		130	45	12
SP4FX12X50		100	50	12
SP4FX12X55		110	55	12
SP4FX12X60		110	60	12
SP4FX16X50	16	110	50	16
SP4FX16X60		120	60	16
SP4FX16X70		130	70	16
SP4FX16X80		150	80	16
SP4FX16X110		200	110	16
SP4FX16X130		250	130	16
SP4FX20X60	20	130	60	20
SP4FX20X70		130	70	20
SP4FX20X80		150	80	20
SP4FX20X110		200	110	20

SP4FN / 4날 롱넥 플랫

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRINK FIT | UNEQUAL HELIX | SPEED FEED P118



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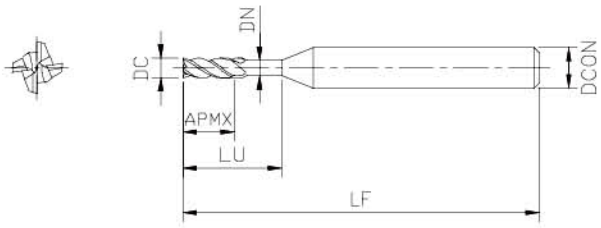
주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP4FNX1X4	1 X 4	45	1.5	4	0.95
SP4FNX1X6	1 X 6	45	1.5	4	0.95
SP4FNX1X8	1 X 8	45	1.5	4	0.95
SP4FNX1X10	1 X 10	45	1.5	4	0.95
SP4FNX1P5X6	1.5 X 6	45	2.3	4	1.45
SP4FNX1P5X8	1.5 X 8	45	2.3	4	1.45
SP4FNX1P5X10	1.5 X 10	45	2.3	4	1.45
SP4FNX1P5X12	1.5 X 12	45	2.3	4	1.45
SP4FNX2X8	2 X 8	45	3	4	1.95
SP4FNX2X10	2 X 10	45	3	4	1.95
SP4FNX2X12	2 X 12	45	3	4	1.95
SP4FNX2X16	2 X 16	50	3	4	1.95
SP4FNX2P5X12	2.5 X 12	45	3.7	4	2.45
SP4FNX2P5X16	2.5 X 16	50	3.7	4	2.45
SP4FNX3X14	3 X 14	50	4.5	6	2.85
SP4FNX3X16	3 X 16	50	4.5	6	2.85
SP4FNX3X25	3 X 25	65	4.5	6	2.85
SP4FNX3X26	3 X 26	65	4.5	6	2.85
SP4FNX4X10	4 X 10	45	6	6	3.85
SP4FNX4X12	4 X 12	50	6	6	3.85
SP4FNX4X14	4 X 14	60	6	6	3.85
SP4FNX4X16	4 X 16	60	6	6	3.85
SP4FNX4X20	4 X 20	60	6	6	3.85
SP4FNX4X25	4 X 25	70	6	6	3.85
SP4FNX4X26	4 X 26	70	6	6	3.85
SP4FNX4X30	4 X 30	80	6	6	3.85
SP4FNX4X35	4 X 35	90	6	6	3.85
SP4FNX4X40	4 X 40	90	6	6	3.85
SP4FNX4X45	4 X 45	100	6	6	3.85
SP4FNX4X50	4 X 50	100	6	6	3.85
SP4FNX4X60	4 X 60	100	6	6	3.85
SP4FNX5X16	5 X 16	60	8	6	4.85
SP4FNX5X20	5 X 20	60	8	6	4.85
SP4FNX5X25	5 X 25	70	8	6	4.85
SP4FNX5X26	5 X 26	70	8	6	4.85
SP4FNX5X30	5 X 30	80	8	6	4.85
SP4FNX5X35	5 X 35	90	8	6	4.85
SP4FNX5X40	5 X 40	90	8	6	4.85
SP4FNX5X50	5 X 50	100	8	6	4.85
SP4FNX5X60	5 X 60	100	8	6	4.85

SP4FN / 4날 롱넥 플랫

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRINK FIT | UNEQUAL HELIX | SPEED FEED P118

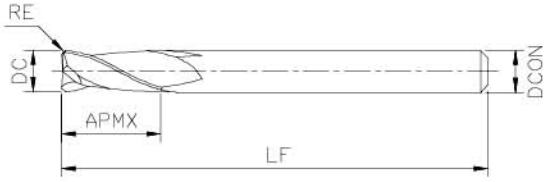


- Cu · SUS · 45C ~ 50HRC에서 탁월한 성능 발휘!
- 新 RADIA 코팅 적용으로 高품질 · 長수명 실현!
- 부등리드 · 부등분할 적용으로 뛰어난 진동 억제 효과

주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP4FNX6X15	6 X 15	60	9	6	5.85
SP4FNX6X20	6 X 20	60	9	6	5.85
SP4FNX6X30	6 X 30	70	9	6	5.85
SP4FNX8X25	8 X 25	70	12	8	7.7
SP4FNX8X30	8 X 30	80	12	8	7.7
SP4FNX10X30	10 X 30	75	15	10	9.7
SP4FNX10X35	10 X 35	80	15	10	9.7
SP4FNX10X45	10 X 45	100	15	10	9.7
SP4FNX12X35	12 X 35	80	20	12	11.7
SP4FNX12X40	12 X 40	90	20	12	11.7
SP4FNX12X50	12 X 50	110	20	12	11.7

SP2C / 2날 코너R

CARBIDE | RADIA | 0~0.02 (DC≤12) | 0~0.03 (12<DC) | SHRNK FIT | 30° | SPEED FEED P119



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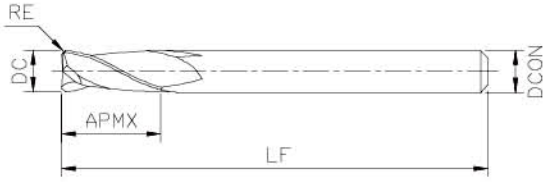
- 코너 래디우스 FACET Shape 적용으로 공구강성 극대화

주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON
SP2CX1XR0P05	1 X R0.05	50	2.5	6
SP2CX1XR0P1	1 X R0.1	50	2.5	6
SP2CX1XR0P3	1 X R0.3	50	2.5	6
SP2CX1XR0P2	1 X R02	50	2.5	6
SP2CX1P5XRP05	1.5 X R0.05	50	4	6
SP2CX1P5XR0P1	1.5 X R0.1	50	4	6
SP2CX1P5XR0P2	1.5 X R0.2	50	4	6
SP2CX1P5XR0P3	1.5 X R0.3	50	4	6
SP2CX1P5XR0P5	1.5 X R0.5	50	4	6
SP2CX2XR0P1	2 X R0.1	50	6	6
SP2CX2XR0P2	2 X R0.2	50	6	6
SP2CX2XR0P3	2 X R0.3	50	6	6
SP2CX2XR0P5	2 X R0.5	50	6	6
SP2CX2P5XR0P1	2.5 X R0.1	60	7	6
SP2CX2P5XR0P2	2.5 X R0.2	60	7	6
SP2CX2P5XR0P3	2.5 X R0.3	60	7	6
SP2CX2P5XR0P5	2.5 X R0.5	60	7	6
SP2CX3XR0P1	3 X R0.1	60	8	6
SP2CX3XR0P2	3 X R0.2	60	8	6
SP2CX3XR0P3	3 X R0.3	60	8	6
SP2CX3XR0P5	3 X R0.5	60	8	6
SP2CX3XR1	3 X R1	60	8	6
SP2CX3P5XR0P5	3.5 X R0.5	70	10	6
SP2CX4XR0P1	4 X R0.1	70	10	6
SP2CX4XR0P2	4 X R0.2	70	10	6
SP2CX4XR0P3	4 X R0.3	70	10	6
SP2CX4XR0P5	4 X R0.5	70	10	6
SP2CX4XR1	4 X R1	70	10	6
SP2CX5XR0P1	5 X R0.1	90	13	6
SP2CX5XR0P2	5 X R0.2	90	13	6
SP2CX5XR0P3	5 X R0.3	90	13	6
SP2CX5XR0P5	5 X R0.5	90	13	6
SP2CX5XR1	5 X R1	90	13	6
SP2CX6XR0P1	6 X R0.1	90	15	6
SP2CX6XR0P2	6 X R0.2	90	15	6
SP2CX6XR0P3S	6 X R0.3	60	15	6
SP2CX6XR0P3	6 X R0.3	90	15	6
SP2CX6XR0P5S	6 X R0.5	60	15	6
SP2CX6XR0P5	6 X R0.5	90	15	6
SP2CX6XR0P5L	6 X R0.5	110	15	6

SP2C / 2날 코너R

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRNK FIT | 30° | SPEED FEED P119



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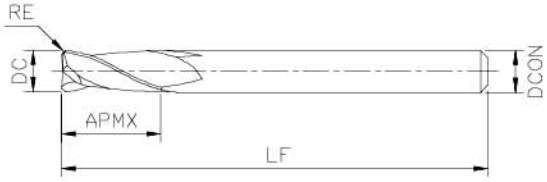
주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON
SP2CX6XR1S	6 X R1	60	15	6
SP2CX6XR1	6 X R1	90	15	6
SP2CX6XR1L	6 X R1	110	15	6
SP2CX6XR1P5	6 X R1.5	90	15	6
SP2CX6XR2	6 X R2	90	15	6
SP2CX7XR0P2	7 X R0.2	90	16	8
SP2CX8XR0P1	8 X R0.1	100	20	8
SP2CX8XR0P2	8 X R0.2	100	20	8
SP2CX8XR0P3S	8 X R0.3	70	20	8
SP2CX8XR0P3	8 X R0.3	100	20	8
SP2CX8XR0P5S	8 X R0.5	70	20	8
SP2CX8XR0P5	8 X R0.5	100	20	8
SP2CX8XR0P5L	8 X R0.5	120	20	8
SP2CX8XR1S	8 X R1	70	20	8
SP2CX8XR1	8 X R1	100	20	8
SP2CX8XR1L	8 X R1	120	20	8
SP2CX8XR1P5	8 X R1.5	100	20	8
SP2CX8XR2	8 X R2	100	20	8
SP2CX8XR2P5	8 X R2.5	100	20	8
SP2CX8XR3	8 X R3	100	20	8
SP2CX10XR0P1	10 X R0.1	100	25	10
SP2CX10XR0P2	10 X R0.2	100	25	10
SP2CX10XR0P3	10 X R0.3	100	25	10
SP2CX10XR0P5S	10 X R0.5	75	25	10
SP2CX10XR0P5	10 X R0.5	100	25	10
SP2CX10XR0P5L	10 X R0.5	130	25	10
SP2CX10XR1	10 X R1	100	25	10
SP2CX10XR1L	10 X R1	130	25	10
SP2CX10XR1P5	10 X R1.5	100	25	10
SP2CX10XR2	10 X R2	100	25	10
SP2CX10XR2P5	10 X R2.5	100	25	10
SP2CX10XR3	10 X R3	100	25	10
SP2CX10XR4	10 X R4	100	25	10
SP2CX12XR0P1	12 X R0.1	110	30	12
SP2CX12XR0P2	12 X R0.2	110	30	12
SP2CX12XR0P3	12 X R0.3	110	30	12
SP2CX12XR0P5	12 X R0.5	110	30	12
SP2CX12XR0P5L	12 X R0.5	130	30	12
SP2CX12XR1	12 X R1	110	30	12
SP2CX12XR1L	12 X R1	130	30	12

SP2C / 2날 코너R

CARBIDE | RADIA | 0~-0.02 DC≤12 | 0~-0.03 12<DC | SHRNK FIT | 30° | SPEED FEED P119



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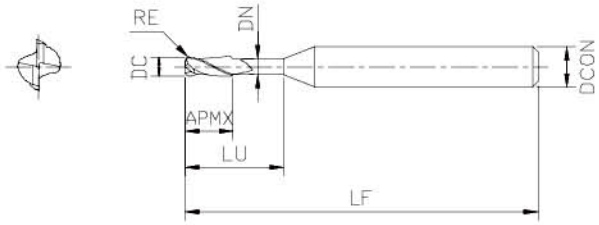
주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON
SP2CX12XR1P5	12 X R1.5	110	30	12
SP2CX12XR2	12 X R2	110	30	12
SP2CX12XR2P5	12 X R2.5	110	30	12
SP2CX12XR3	12 X R3	110	30	12
SP2CX12XR4	12 X R4	110	30	12
SP2CX12XR5	12 X R5	110	30	12
SP2CX14XR1	14 X R1	150	32	16
SP2CX16XR0P5	16 X R0.5	150	32	16
SP2CX16XR1	16 X R1	150	32	16
SP2CX16XR2	16 X R2	150	32	16
SP2CX16XR3	16 X R3	150	32	16
SP2CX20XR0P5	20 X R0.5	150	38	20
SP2CX20XR1	20 X R1	150	38	20
SP2CX20XR2	20 X R2	150	38	20
SP2CX20XR3	20 X R3	150	38	20

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115



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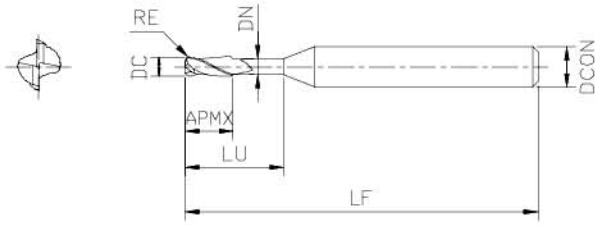
- 코너 래디우스 FACET Shape 적용으로 공구강성 극대화

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE					전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S2XP4X1XP05	0.4	X	1	X	R0.05	45	0.6	4	0.37
S2XP4X1X0P1	0.4	X	1	X	R0.1	45	0.6	4	0.37
S2XP4X1P5XP05	0.4	X	1.5	X	R0.05	45	0.6	4	0.37
S2XP4X1P5X0P1	0.4	X	1.5	X	R0.1	45	0.6	4	0.37
S2XP4X2XP05	0.4	X	2	X	R0.05	45	0.6	4	0.37
S2XP4X2X0P1	0.4	X	2	X	R0.1	45	0.6	4	0.37
S2XP4X2P5XP05	0.4	X	2.5	X	R0.05	45	0.6	4	0.37
S2XP4X2P5X0P1	0.4	X	2.5	X	R0.1	45	0.6	4	0.37
S2XP4X3XP05	0.4	X	3	X	R0.05	45	0.6	4	0.37
S2XP4X3X0P1	0.4	X	3	X	R0.1	45	0.6	4	0.37
S2XP4X4XP05	0.4	X	4	X	R0.05	45	0.6	4	0.37
S2XP4X4X0P1	0.4	X	4	X	R0.1	45	0.6	4	0.37
S2XP5X1XP05	0.5	X	1	X	R0.05	45	0.7	4	0.45
S2XP5X1X0P1	0.5	X	1	X	R0.1	45	0.7	4	0.45
S2XP5X1P5XP05	0.5	X	1.5	X	R0.05	45	0.7	4	0.45
S2XP5X1P5X0P1	0.5	X	1.5	X	R0.1	45	0.7	4	0.45
S2XP5X2XP05	0.5	X	2	X	R0.05	45	0.7	4	0.45
S2XP5X2X0P1	0.5	X	2	X	R0.1	45	0.7	4	0.45
S2XP5X2P5XP05	0.5	X	2.5	X	R0.05	45	0.7	4	0.45
S2XP5X2P5X0P1	0.5	X	2.5	X	R0.1	45	0.7	4	0.45
S2XP5X3XP05	0.5	X	3	X	R0.05	45	0.7	4	0.45
S2XP5X3X0P1	0.5	X	3	X	R0.1	45	0.7	4	0.45
S2XP5X4XP05	0.5	X	4	X	R0.05	45	0.7	4	0.45
S2XP5X4X0P1	0.5	X	4	X	R0.1	45	0.7	4	0.45
S2XP5X5XP05	0.5	X	5	X	R0.05	45	0.7	4	0.45
S2XP5X5X0P1	0.5	X	5	X	R0.1	45	0.7	4	0.45
S2XP5X6XP05	0.5	X	6	X	R0.05	45	0.7	4	0.45
S2XP5X6X0P1	0.5	X	6	X	R0.1	45	0.7	4	0.45
S2XP6X2XP05	0.6	X	2	X	R0.05	45	0.9	4	0.55
S2XP6X2X0P1	0.6	X	2	X	R0.1	45	0.9	4	0.55
S2XP6X2X0P2	0.6	X	2	X	R0.2	45	0.9	4	0.55
S2XP6X3XP05	0.6	X	3	X	R0.05	45	0.9	4	0.55
S2XP6X3X0P1	0.6	X	3	X	R0.1	45	0.9	4	0.55
S2XP6X3X0P2	0.6	X	3	X	R0.2	45	0.9	4	0.55
S2XP6X4XP05	0.6	X	4	X	R0.05	45	0.9	4	0.55
S2XP6X4X0P1	0.6	X	4	X	R0.1	45	0.9	4	0.55
S2XP6X4X0P2	0.6	X	4	X	R0.2	45	0.9	4	0.55
S2XP6X6XP05	0.6	X	6	X	R0.05	45	0.9	4	0.55
S2XP6X6X0P1	0.6	X	6	X	R0.1	45	0.9	4	0.55
S2XP6X6X0P2	0.6	X	6	X	R0.2	45	0.9	4	0.55

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115



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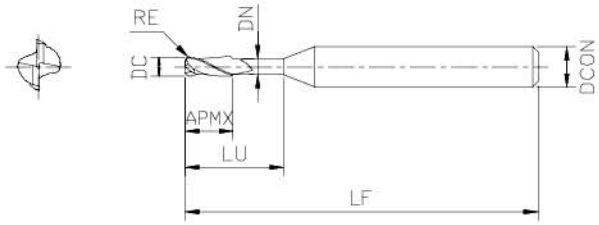
주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE					전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S2XP6X8XP05	0.6	X	8	X	R0.05	45	0.9	4	0.55
S2XP6X8X0P1	0.6	X	8	X	R0.1	45	0.9	4	0.55
S2XP6X8X0P2	0.6	X	8	X	R0.2	45	0.9	4	0.55
S2XP6X10XP05	0.6	X	10	X	R0.05	45	0.9	4	0.55
S2XP6X10X0P1	0.6	X	10	X	R0.1	45	0.9	4	0.55
S2XP6X10X0P2	0.6	X	10	X	R0.2	45	0.9	4	0.55
S2XP7X2XP05	0.7	X	2	X	R0.05	45	1	4	0.65
S2XP7X2X0P1	0.7	X	2	X	R0.1	45	1	4	0.65
S2XP7X2X0P2	0.7	X	2	X	R0.2	45	1	4	0.65
S2XP7X4XP05	0.7	X	4	X	R0.05	45	1	4	0.65
S2XP7X4X0P1	0.7	X	4	X	R0.1	45	1	4	0.65
S2XP7X4X0P2	0.7	X	4	X	R0.2	45	1	4	0.65
S2XP7X6XP05	0.7	X	6	X	R0.05	45	1	4	0.65
S2XP7X6X0P1	0.7	X	6	X	R0.1	45	1	4	0.65
S2XP7X6X0P2	0.7	X	6	X	R0.2	45	1	4	0.65
S2XP7X8XP05	0.7	X	8	X	R0.05	45	1	4	0.65
S2XP7X8X0P1	0.7	X	8	X	R0.1	45	1	4	0.65
S2XP7X8X0P2	0.7	X	8	X	R0.2	45	1	4	0.65
S2XP7X10XP05	0.7	X	10	X	R0.05	45	1	4	0.65
S2XP7X10X0P1	0.7	X	10	X	R0.1	45	1	4	0.65
S2XP7X10X0P2	0.7	X	10	X	R0.2	45	1	4	0.65
S2XP8X2XP05	0.8	X	2	X	R0.05	45	1.2	4	0.75
S2XP8X2X0P1	0.8	X	2	X	R0.1	45	1.2	4	0.75
S2XP8X2X0P2	0.8	X	2	X	R0.2	45	1.2	4	0.75
S2XP8X3XP05	0.8	X	3	X	R0.05	45	1.2	4	0.75
S2XP8X3X0P1	0.8	X	3	X	R0.1	45	1.2	4	0.75
S2XP8X3X0P2	0.8	X	3	X	R0.2	45	1.2	4	0.75
S2XP8X4XP05	0.8	X	4	X	R0.05	45	1.2	4	0.75
S2XP8X4X0P1	0.8	X	4	X	R0.1	45	1.2	4	0.75
S2XP8X4X0P2	0.8	X	4	X	R0.2	45	1.2	4	0.75
S2XP8X6XP05	0.8	X	6	X	R0.05	45	1.2	4	0.75
S2XP8X6X0P1	0.8	X	6	X	R0.1	45	1.2	4	0.75
S2XP8X6X0P2	0.8	X	6	X	R0.2	45	1.2	4	0.75
S2XP8X8XP05	0.8	X	8	X	R0.05	45	1.2	4	0.75
S2XP8X8X0P1	0.8	X	8	X	R0.1	45	1.2	4	0.75
S2XP8X8X0P2	0.8	X	8	X	R0.2	45	1.2	4	0.75
S2XP8X10XP05	0.8	X	10	X	R0.05	45	1.2	4	0.75
S2XP8X10X0P1	0.8	X	10	X	R0.1	45	1.2	4	0.75
S2XP8X10X0P2	0.8	X	10	X	R0.2	45	1.2	4	0.75
S2X1X3XP05	1	X	3	X	R0.05	45	1.5	4	0.95

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115



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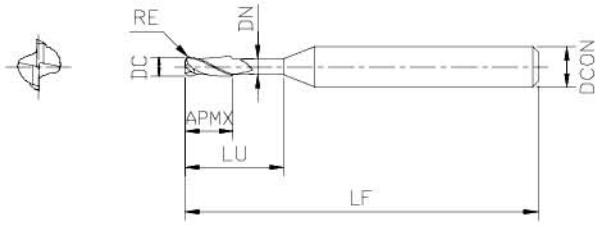
주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE					전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S2X1X3X0P1	1	X	3	X	R0.1	45	1.5	4	0.95
S2X1X3X0P2	1	X	3	X	R0.2	45	1.5	4	0.95
S2X1X3X0P3	1	X	3	X	R0.3	45	1.5	4	0.95
S2X1X4XP05	1	X	4	X	R0.05	45	1.5	4	0.95
S2X1X4X0P1	1	X	4	X	R0.1	45	1.5	4	0.95
S2X1X4X0P2	1	X	4	X	R0.2	45	1.5	4	0.95
S2X1X4X0P3	1	X	4	X	R0.3	45	1.5	4	0.95
S2X1X6XP05	1	X	6	X	R0.05	45	1.5	4	0.95
S2X1X6X0P1	1	X	6	X	R0.1	45	1.5	4	0.95
S2X1X6X0P2	1	X	6	X	R0.2	45	1.5	4	0.95
S2X1X6X0P3	1	X	6	X	R0.3	45	1.5	4	0.95
S2X1X8XP05	1	X	8	X	R0.05	45	1.5	4	0.95
S2X1X8X0P1	1	X	8	X	R0.1	45	1.5	4	0.95
S2X1X8X0P2	1	X	8	X	R0.2	45	1.5	4	0.95
S2X1X8X0P3	1	X	8	X	R0.3	45	1.5	4	0.95
S2X1X10XP05	1	X	10	X	R0.05	45	1.5	4	0.95
S2X1X10X0P1	1	X	10	X	R0.1	45	1.5	4	0.95
S2X1X10X0P2	1	X	10	X	R0.2	45	1.5	4	0.95
S2X1X10X0P3	1	X	10	X	R0.3	45	1.5	4	0.95
S2X1X12XP05	1	X	12	X	R0.05	45	1.5	4	0.95
S2X1X12X0P1	1	X	12	X	R0.1	45	1.5	4	0.95
S2X1X12X0P2	1	X	12	X	R0.2	45	1.5	4	0.95
S2X1X12X0P3	1	X	12	X	R0.3	45	1.5	4	0.95
S2X1X14XP05	1	X	14	X	R0.05	50	1.5	4	0.95
S2X1X14X0P1	1	X	14	X	R0.1	50	1.5	4	0.95
S2X1X14X0P2	1	X	14	X	R0.2	50	1.5	4	0.95
S2X1X14X0P3	1	X	14	X	R0.3	50	1.5	4	0.95
S2X1X16XP05	1	X	16	X	R0.05	50	1.5	4	0.95
S2X1X16X0P1	1	X	16	X	R0.1	50	1.5	4	0.95
S2X1X16X0P2	1	X	16	X	R0.2	50	1.5	4	0.95
S2X1X16X0P3	1	X	16	X	R0.3	50	1.5	4	0.95
S2X1X20XP05	1	X	20	X	R0.05	50	1.5	4	0.95
S2X1X20X0P1	1	X	20	X	R0.1	50	1.5	4	0.95
S2X1X20X0P2	1	X	20	X	R0.2	50	1.5	4	0.95
S2X1X20X0P3	1	X	20	X	R0.3	50	1.5	4	0.95
S2X1P2X4XP05	1.2	X	4	X	R0.05	45	1.5	4	1.15
S2X1P2X4X0P1	1.2	X	4	X	R0.1	45	1.5	4	1.15
S2X1P2X4X0P2	1.2	X	4	X	R0.2	45	1.5	4	1.15
S2X1P2X4X0P3	1.2	X	4	X	R0.3	45	1.5	4	1.15
S2X1P2X6XP05	1.2	X	6	X	R0.05	45	1.5	4	1.15

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115



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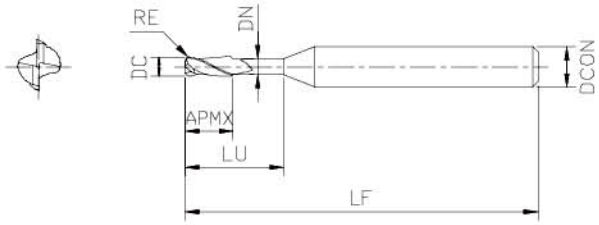
주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S2X1P2X6X0P1	1.2 X 6 X R0.1	45	1.5	4	1.15
S2X1P2X6X0P2	1.2 X 6 X R0.2	45	1.5	4	1.15
S2X1P2X6X0P3	1.2 X 6 X R0.3	45	1.5	4	1.15
S2X1P2X8XP05	1.2 X 8 X R0.05	45	1.5	4	1.15
S2X1P2X8X0P1	1.2 X 8 X R0.1	45	1.5	4	1.15
S2X1P2X8X0P2	1.2 X 8 X R0.2	45	1.5	4	1.15
S2X1P2X8X0P3	1.2 X 8 X R0.3	45	1.5	4	1.15
S2X1P2X10XP05	1.2 X 10 X R0.05	45	1.5	4	1.15
S2X1P2X10X0P1	1.2 X 10 X R0.1	45	1.5	4	1.15
S2X1P2X10X0P2	1.2 X 10 X R0.2	45	1.5	4	1.15
S2X1P2X10X0P3	1.2 X 10 X R0.3	45	1.5	4	1.15
S2X1P2X12XP05	1.2 X 12 X R0.05	45	1.5	4	1.15
S2X1P2X12X0P1	1.2 X 12 X R0.1	45	1.5	4	1.15
S2X1P2X12X0P2	1.2 X 12 X R0.2	45	1.5	4	1.15
S2X1P2X12X0P3	1.2 X 12 X R0.3	45	1.5	4	1.15
S2X1P5X4XP05	1.5 X 4 X R0.05	45	2.3	4	1.45
S2X1P5X4X0P1	1.5 X 4 X R0.1	45	2.3	4	1.45
S2X1P5X4X0P2	1.5 X 4 X R0.2	45	2.3	4	1.45
S2X1P5X4X0P3	1.5 X 4 X R0.3	45	2.3	4	1.45
S2X1P5X4X0P5	1.5 X 4 X R0.5	45	2.3	4	1.45
S2X1P5X6XP05	1.5 X 6 X R0.05	45	2.3	4	1.45
S2X1P5X6X0P1	1.5 X 6 X R0.1	45	2.3	4	1.45
S2X1P5X6X0P2	1.5 X 6 X R0.2	45	2.3	4	1.45
S2X1P5X6X0P3	1.5 X 6 X R0.3	45	2.3	4	1.45
S2X1P5X6X0P5	1.5 X 6 X R0.5	45	2.3	4	1.45
S2X1P5X8XP05	1.5 X 8 X R0.05	45	2.3	4	1.45
S2X1P5X8X0P1	1.5 X 8 X R0.1	45	2.3	4	1.45
S2X1P5X8X0P2	1.5 X 8 X R0.2	45	2.3	4	1.45
S2X1P5X8X0P3	1.5 X 8 X R0.3	45	2.3	4	1.45
S2X1P5X8X0P5	1.5 X 8 X R0.5	45	2.3	4	1.45
S2X1P5X10XP05	1.5 X 10 X R0.05	45	2.3	4	1.45
S2X1P5X10X0P1	1.5 X 10 X R0.1	45	2.3	4	1.45
S2X1P5X10X0P2	1.5 X 10 X R0.2	45	2.3	4	1.45
S2X1P5X10X0P3	1.5 X 10 X R0.3	45	2.3	4	1.45
S2X1P5X10X0P5	1.5 X 10 X R0.5	45	2.3	4	1.45
S2X1P5X12XP05	1.5 X 12 X R0.05	45	2.3	4	1.45
S2X1P5X12X0P1	1.5 X 12 X R0.1	45	2.3	4	1.45
S2X1P5X12X0P2	1.5 X 12 X R0.2	45	2.3	4	1.45
S2X1P5X12X0P3	1.5 X 12 X R0.3	45	2.3	4	1.45
S2X1P5X12X0P5	1.5 X 12 X R0.5	45	2.3	4	1.45

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115



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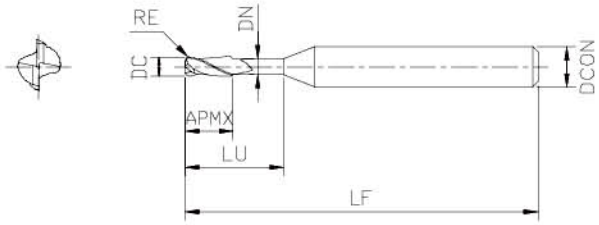
주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE					전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S2X1P5X14XP05	1.5	X	14	X	R0.05	50	2.3	4	1.45
S2X1P5X14X0P1	1.5	X	14	X	R0.1	50	2.3	4	1.45
S2X1P5X14X0P2	1.5	X	14	X	R0.2	50	2.3	4	1.45
S2X1P5X14X0P3	1.5	X	14	X	R0.3	50	2.3	4	1.45
S2X1P5X14X0P5	1.5	X	14	X	R0.5	50	2.3	4	1.45
S2X1P5X16XP05	1.5	X	16	X	R0.05	50	2.3	4	1.45
S2X1P5X16X0P1	1.5	X	16	X	R0.1	50	2.3	4	1.45
S2X1P5X16X0P2	1.5	X	16	X	R0.2	50	2.3	4	1.45
S2X1P5X16X0P3	1.5	X	16	X	R0.3	50	2.3	4	1.45
S2X1P5X16X0P5	1.5	X	16	X	R0.5	50	2.3	4	1.45
S2X1P5X20XP05	1.5	X	20	X	R0.05	55	2.3	4	1.45
S2X1P5X20X0P1	1.5	X	20	X	R0.1	55	2.3	4	1.45
S2X1P5X20X0P2	1.5	X	20	X	R0.2	55	2.3	4	1.45
S2X1P5X20X0P3	1.5	X	20	X	R0.3	55	2.3	4	1.45
S2X1P5X20X0P5	1.5	X	20	X	R0.5	55	2.3	4	1.45
S2X2X6X0P1	2	X	6	X	R0.1	45	3	4	1.95
S2X2X6X0P2	2	X	6	X	R0.2	45	3	4	1.95
S2X2X6X0P3	2	X	6	X	R0.3	45	3	4	1.95
S2X2X6X0P5	2	X	6	X	R0.5	45	3	4	1.95
S2X2X8X0P1	2	X	8	X	R0.1	45	3	4	1.95
S2X2X8X0P2	2	X	8	X	R0.2	45	3	4	1.95
S2X2X8X0P3	2	X	8	X	R0.3	45	3	4	1.95
S2X2X8X0P5	2	X	8	X	R0.5	45	3	4	1.95
S2X2X10X0P1	2	X	10	X	R0.1	45	3	4	1.95
S2X2X10X0P2	2	X	10	X	R0.2	45	3	4	1.95
S2X2X10X0P3	2	X	10	X	R0.3	45	3	4	1.95
S2X2X10X0P5	2	X	10	X	R0.5	45	3	4	1.95
S2X2X12X0P1	2	X	12	X	R0.1	45	3	4	1.95
S2X2X12X0P2	2	X	12	X	R0.2	45	3	4	1.95
S2X2X12X0P3	2	X	12	X	R0.3	45	3	4	1.95
S2X2X12X0P5	2	X	12	X	R0.5	45	3	4	1.95
S2X2X14X0P1	2	X	14	X	R0.1	50	3	4	1.95
S2X2X14X0P2	2	X	14	X	R0.2	50	3	4	1.95
S2X2X14X0P3	2	X	14	X	R0.3	50	3	4	1.95
S2X2X14X0P5	2	X	14	X	R0.5	50	3	4	1.95
S2X2X16X0P2	2	X	16	X	R0.2	50	3	4	1.95
S2X2X16X0P3	2	X	16	X	R0.3	50	3	4	1.95
S2X2X16X0P5	2	X	16	X	R0.5	50	3	4	1.95
S2X2X20X0P1	2	X	20	X	R0.1	55	3	4	1.95
S2X2X20X0P2	2	X	20	X	R0.2	55	3	4	1.95

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111~P115



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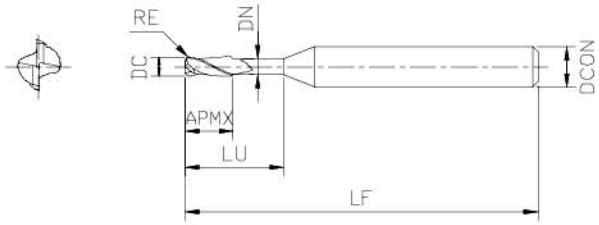
주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE					전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S2X2X20X0P3	2	X	20	X	R0.3	55	3	4	1.95
S2X2X20X0P5	2	X	20	X	R0.5	55	3	4	1.95
S2X2X25X0P1	2	X	25	X	R0.1	60	3	4	1.95
S2X2X25X0P2	2	X	25	X	R0.2	60	3	4	1.95
S2X2X25X0P3	2	X	25	X	R0.3	60	3	4	1.95
S2X2X25X0P5	2	X	25	X	R0.5	60	3	4	1.95
S2X2X26X0P1	2	X	26	X	R0.1	60	3	4	1.95
S2X2X26X0P2	2	X	26	X	R0.2	60	3	4	1.95
S2X2X26X0P3	2	X	26	X	R0.3	60	3	4	1.95
S2X2X26X0P5	2	X	26	X	R0.5	60	3	4	1.95
S2X2X30X0P1	2	X	30	X	R0.1	70	3	4	1.95
S2X2X30X0P2	2	X	30	X	R0.2	70	3	4	1.95
S2X2X30X0P3	2	X	30	X	R0.3	70	3	4	1.95
S2X2X30X0P5	2	X	30	X	R0.5	70	3	4	1.95
S2X2P5X8X0P1	2.5	X	8	X	R0.1	45	3.7	4	2.45
S2X2P5X8X0P2	2.5	X	8	X	R0.2	45	3.7	4	2.45
S2X2P5X8X0P3	2.5	X	8	X	R0.3	45	3.7	4	2.45
S2X2P5X8X0P5	2.5	X	8	X	R0.5	45	3.7	4	2.45
S2X2P5X10X0P1	2.5	X	10	X	R0.1	45	3.7	4	2.45
S2X2P5X10X0P2	2.5	X	10	X	R0.2	45	3.7	4	2.45
S2X2P5X10X0P3	2.5	X	10	X	R0.3	45	3.7	4	2.45
S2X2P5X10X0P5	2.5	X	10	X	R0.5	45	3.7	4	2.45
S2X2P5X12X0P1	2.5	X	12	X	R0.1	45	3.7	4	2.45
S2X2P5X12X0P2	2.5	X	12	X	R0.2	45	3.7	4	2.45
S2X2P5X12X0P3	2.5	X	12	X	R0.3	45	3.7	4	2.45
S2X2P5X12X0P5	2.5	X	12	X	R0.5	45	3.7	4	2.45
S2X2P5X14X0P1	2.5	X	14	X	R0.1	50	3.7	4	2.45
S2X2P5X14X0P2	2.5	X	14	X	R0.2	50	3.7	4	2.45
S2X2P5X14X0P3	2.5	X	14	X	R0.3	50	3.7	4	2.45
S2X2P5X14X0P5	2.5	X	14	X	R0.5	50	3.7	4	2.45
S2X2P5X16X0P1	2.5	X	16	X	R0.1	50	3.7	4	2.45
S2X2P5X16X0P2	2.5	X	16	X	R0.2	50	3.7	4	2.45
S2X2P5X16X0P3	2.5	X	16	X	R0.3	50	3.7	4	2.45
S2X2P5X16X0P5	2.5	X	16	X	R0.5	50	3.7	4	2.45
S2X2P5X20X0P1	2.5	X	20	X	R0.1	55	3.7	4	2.45
S2X2P5X20X0P2	2.5	X	20	X	R0.2	55	3.7	4	2.45
S2X2P5X20X0P3	2.5	X	20	X	R0.3	55	3.7	4	2.45
S2X2P5X20X0P5	2.5	X	20	X	R0.5	55	3.7	4	2.45
S2X2P5X25X0P1	2.5	X	25	X	R0.1	60	3.7	4	2.45
S2X2P5X25X0P2	2.5	X	25	X	R0.2	60	3.7	4	2.45

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115

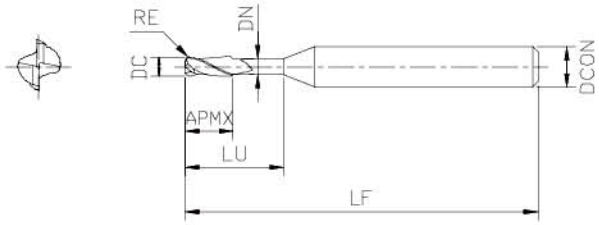


- Cu · SUS · 45C ~ 50HRC에서 탁월한 성능 발휘!
- 新 RADIA 코팅 적용으로 高품질 · 長수명 실현!
- 코너 래디우스 FACET Shape 적용으로 공구강성 극대화

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE					전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S2X2P5X25X0P3	2.5	X	25	X	R0.3	60	3.7	4	2.45
S2X2P5X25X0P5	2.5	X	25	X	R0.5	60	3.7	4	2.45
S2X2P5X26X0P1	2.5	X	26	X	R0.1	60	3.7	4	2.45
S2X2P5X26X0P2	2.5	X	26	X	R0.2	60	3.7	4	2.45
S2X2P5X26X0P3	2.5	X	26	X	R0.3	60	3.7	4	2.45
S2X2P5X26X0P5	2.5	X	26	X	R0.5	60	3.7	4	2.45
S2X2P5X30X0P1	2.5	X	30	X	R0.1	70	3.7	4	2.45
S2X2P5X30X0P2	2.5	X	30	X	R0.2	70	3.7	4	2.45
S2X2P5X30X0P3	2.5	X	30	X	R0.3	70	3.7	4	2.45
S2X2P5X30X0P5	2.5	X	30	X	R0.5	70	3.7	4	2.45
S2X3X8X0P1	3	X	8	X	R0.1	45	4.5	6	2.85
S2X3X8X0P2	3	X	8	X	R0.2	45	4.5	6	2.85
S2X3X8X0P3	3	X	8	X	R0.3	45	4.5	6	2.85
S2X3X8X0P5	3	X	8	X	R0.5	45	4.5	6	2.85
S2X3X8X1	3	X	8	X	R1.0	45	4.5	6	2.85
S2X3X10X0P1	3	X	10	X	R0.1	45	4.5	6	2.85
S2X3X10X0P2	3	X	10	X	R0.2	45	4.5	6	2.85
S2X3X10X0P3	3	X	10	X	R0.3	45	4.5	6	2.85
S2X3X10X0P5	3	X	10	X	R0.5	45	4.5	6	2.85
S2X3X10X1	3	X	10	X	R1.0	45	4.5	6	2.85
S2X3X12X0P1	3	X	12	X	R0.1	45	4.5	6	2.85
S2X3X12X0P2	3	X	12	X	R0.2	45	4.5	6	2.85
S2X3X12X0P3	3	X	12	X	R0.3	45	4.5	6	2.85
S2X3X12X0P5	3	X	12	X	R0.5	45	4.5	6	2.85
S2X3X12X1	3	X	12	X	R1.0	45	4.5	6	2.85
S2X3X14X0P1	3	X	14	X	R0.1	50	4.5	6	2.85
S2X3X14X0P2	3	X	14	X	R0.2	50	4.5	6	2.85
S2X3X14X0P3	3	X	14	X	R0.3	50	4.5	6	2.85
S2X3X14X0P5	3	X	14	X	R0.5	50	4.5	6	2.85
S2X3X14X1	3	X	14	X	R1.0	50	4.5	6	2.85
S2X3X16X0P1	3	X	16	X	R0.1	55	4.5	6	2.85
S2X3X16X0P2	3	X	16	X	R0.2	55	4.5	6	2.85
S2X3X16X0P3	3	X	16	X	R0.3	55	4.5	6	2.85
S2X3X16X0P5	3	X	16	X	R0.5	55	4.5	6	2.85
S2X3X16X1	3	X	16	X	R1.0	55	4.5	6	2.85
S2X3X20X0P1	3	X	20	X	R0.1	60	4.5	6	2.85
S2X3X20X0P2	3	X	20	X	R0.2	60	4.5	6	2.85
S2X3X20X0P3	3	X	20	X	R0.3	60	4.5	6	2.85
S2X3X20X0P5	3	X	20	X	R0.5	60	4.5	6	2.85
S2X3X20X1	3	X	20	X	R1.0	60	4.5	6	2.85

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115



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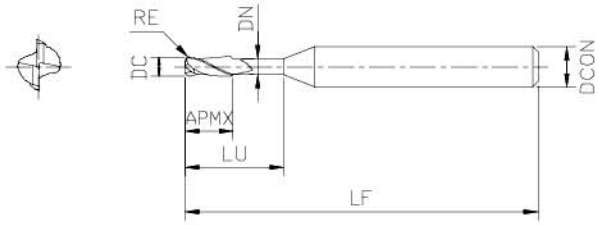
S2X3X25X0P1	3 X 25 X R0.1	65	4.5	6	2.85
S2X3X25X0P2	3 X 25 X R0.2	65	4.5	6	2.85
S2X3X25X0P3	3 X 25 X R0.3	65	4.5	6	2.85
S2X3X25X0P5	3 X 25 X R0.5	65	4.5	6	2.85
S2X3X25X1	3 X 25 X R1.0	65	4.5	6	2.85
S2X3X26X0P1	3 X 26 X R0.1	65	4.5	6	2.85
S2X3X26X0P2	3 X 26 X R0.2	65	4.5	6	2.85
S2X3X26X0P3	3 X 26 X R0.3	65	4.5	6	2.85
S2X3X26X0P5	3 X 26 X R0.5	65	4.5	6	2.85
S2X3X26X1	3 X 26 X R1.0	65	4.5	6	2.85
S2X3X30X0P1	3 X 30 X R0.1	80	4.5	6	2.85
S2X3X30X0P2	3 X 30 X R0.2	80	4.5	6	2.85
S2X3X30X0P3	3 X 30 X R0.3	80	4.5	6	2.85
S2X3X30X0P5	3 X 30 X R0.5	80	4.5	6	2.85
S2X3X30X1	3 X 30 X R1.0	80	4.5	6	2.85
S2X3X35X0P1	3 X 35 X R0.1	90	4.5	6	2.85
S2X3X35X0P2	3 X 35 X R0.2	90	4.5	6	2.85
S2X3X35X0P3	3 X 35 X R0.3	90	4.5	6	2.85
S2X3X35X0P5	3 X 35 X R0.5	90	4.5	6	2.85
S2X3X35X1	3 X 35 X R1.0	90	4.5	6	2.85
S2X3X40X0P1	3 X 40 X R0.1	90	4.5	6	2.85
S2X3X40X0P2	3 X 40 X R0.2	90	4.5	6	2.85
S2X3X40X0P3	3 X 40 X R0.3	90	4.5	6	2.85
S2X3X40X0P5	3 X 40 X R0.5	90	4.5	6	2.85
S2X3X40X1	3 X 40 X R1.0	90	4.5	6	2.85
S2X4X10X0P1	4 X 10 X R0.1	45	6	6	3.85
S2X4X10X0P2	4 X 10 X R0.2	45	6	6	3.85
S2X4X10X0P3	4 X 10 X R0.3	45	6	6	3.85
S2X4X10X0P5	4 X 10 X R0.5	45	6	6	3.85
S2X4X10X1	4 X 10 X R1.0	45	6	6	3.85
S2X4X12X0P1	4 X 12 X R0.1	50	6	6	3.85
S2X4X12X0P2	4 X 12 X R0.2	50	6	6	3.85
S2X4X12X0P3	4 X 12 X R0.3	50	6	6	3.85
S2X4X12X0P5	4 X 12 X R0.5	50	6	6	3.85
S2X4X12X1	4 X 12 X R1.0	50	6	6	3.85
S2X4X14X0P1	4 X 14 X R0.1	60	6	6	3.85
S2X4X14X0P2	4 X 14 X R0.2	60	6	6	3.85
S2X4X14X0P3	4 X 14 X R0.3	60	6	6	3.85
S2X4X14X0P5	4 X 14 X R0.5	60	6	6	3.85
S2X4X14X1	4 X 14 X R1.0	60	6	6	3.85

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115



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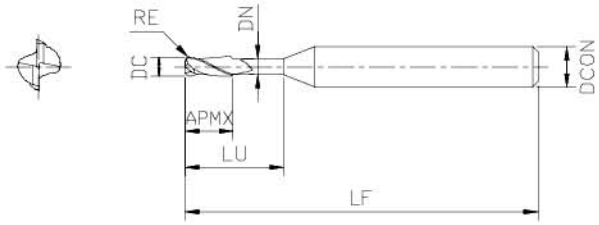
주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S2X4X16X0P1	4 X 16 X R0.1	60	6	6	3.85
S2X4X16X0P2	4 X 16 X R0.2	60	6	6	3.85
S2X4X16X0P3	4 X 16 X R0.3	60	6	6	3.85
S2X4X16X0P5	4 X 16 X R0.5	60	6	6	3.85
S2X4X16X1	4 X 16 X R1.0	60	6	6	3.85
S2X4X20X0P1	4 X 20 X R0.1	60	6	6	3.85
S2X4X20X0P2	4 X 20 X R0.2	60	6	6	3.85
S2X4X20X0P3	4 X 20 X R0.3	60	6	6	3.85
S2X4X20X0P5	4 X 20 X R0.5	60	6	6	3.85
S2X4X20X1	4 X 20 X R1.0	60	6	6	3.85
S2X4X25X0P1	4 X 25 X R0.1	70	6	6	3.85
S2X4X25X0P2	4 X 25 X R0.2	70	6	6	3.85
S2X4X25X0P3	4 X 25 X R0.3	70	6	6	3.85
S2X4X25X0P5	4 X 25 X R0.5	70	6	6	3.85
S2X4X25X1	4 X 25 X R1.0	70	6	6	3.85
S2X4X26X0P1	4 X 26 X R0.1	70	6	6	3.85
S2X4X26X0P2	4 X 26 X R0.2	70	6	6	3.85
S2X4X26X0P3	4 X 26 X R0.3	70	6	6	3.85
S2X4X26X0P5	4 X 26 X R0.5	70	6	6	3.85
S2X4X26X1	4 X 26 X R1.0	70	6	6	3.85
S2X4X30X0P1	4 X 30 X R0.1	80	6	6	3.85
S2X4X30X0P2	4 X 30 X R0.2	80	6	6	3.85
S2X4X30X0P3	4 X 30 X R0.3	80	6	6	3.85
S2X4X30X0P5	4 X 30 X R0.5	80	6	6	3.85
S2X4X30X1	4 X 30 X R1.0	80	6	6	3.85
S2X4X35X0P1	4 X 35 X R0.1	90	6	6	3.85
S2X4X35X0P2	4 X 35 X R0.2	90	6	6	3.85
S2X4X35X0P3	4 X 35 X R0.3	90	6	6	3.85
S2X4X35X0P5	4 X 35 X R0.5	90	6	6	3.85
S2X4X35X1	4 X 35 X R1.0	90	6	6	3.85
S2X4X40X0P1	4 X 40 X R0.1	90	6	6	3.85
S2X4X40X0P2	4 X 40 X R0.2	90	6	6	3.85
S2X4X40X0P3	4 X 40 X R0.3	90	6	6	3.85
S2X4X40X0P5	4 X 40 X R0.5	90	6	6	3.85
S2X4X40X1	4 X 40 X R1.0	90	6	6	3.85
S2X4X45X0P1	4 X 45 X R0.1	100	6	6	3.85
S2X4X45X0P2	4 X 45 X R0.2	100	6	6	3.85
S2X4X45X0P3	4 X 45 X R0.3	100	6	6	3.85
S2X4X45X0P5	4 X 45 X R0.5	100	6	6	3.85
S2X4X45X1	4 X 45 X R1.0	100	6	6	3.85

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111~P115



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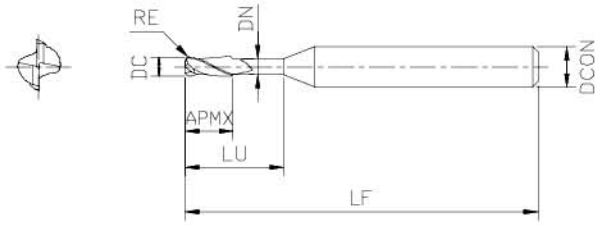
S2X4X50X0P1	4 X 50 X R0.1	100	6	6	3.85
S2X4X50X0P2	4 X 50 X R0.2	100	6	6	3.85
S2X4X50X0P3	4 X 50 X R0.3	100	6	6	3.85
S2X4X50X0P5	4 X 50 X R0.5	100	6	6	3.85
S2X4X50X1	4 X 50 X R1.0	100	6	6	3.85
S2X6X20X0P1	6 X 20 X R0.1	60	9	6	5.85
S2X6X20X0P2	6 X 20 X R0.2	60	9	6	5.85
S2X6X20X0P3	6 X 20 X R0.3	60	9	6	5.85
S2X6X20X0P5	6 X 20 X R0.5	60	9	6	5.85
S2X6X20X1	6 X 20 X R1.0	60	9	6	5.85
S2X6X20X1P5	6 X 20 X R1.5	60	9	6	5.85
S2X6X20X2	6 X 20 X R2.0	60	9	6	5.85
S2X6X30X0P3	6 X 30 X R0.3	70	15	6	5.85
S2X6X30X0P5	6 X 30 X R0.5	70	15	6	5.85
S2X6X30X1	6 X 30 X R1.0	70	15	6	5.85
S2X8X25X0P1	8 X 25 X R0.1	70	12	8	7.7
S2X8X25X0P2	8 X 25 X R0.2	70	12	8	7.7
S2X8X25X0P3	8 X 25 X R0.3	70	12	8	7.7
S2X8X25X0P5	8 X 25 X R0.5	70	12	8	7.7
S2X8X25X1	8 X 25 X R1.0	70	12	8	7.7
S2X8X25X1P5	8 X 25 X R1.5	70	12	8	7.7
S2X8X25X2	8 X 25 X R2.0	70	12	8	7.7
S2X8X35X0P5	8 X 35 X R0.5	100	20	8	7.7
S2X10X30X0P1	10 X 30 X R0.1	75	15	10	9.7
S2X10X30X0P2	10 X 30 X R0.2	75	15	10	9.7
S2X10X30X0P3	10 X 30 X R0.3	75	15	10	9.7
S2X10X30X0P5	10 X 30 X R0.5	75	15	10	9.7
S2X10X30X1	10 X 30 X R1.0	75	15	10	9.7
S2X10X30X1P5	10 X 30 X R1.5	75	15	10	9.7
S2X10X30X2	10 X 30 X R2.0	75	15	10	9.7
S2X10X40X1	10 X 40 X R1	100	25	10	9.7
S2X12X50X0P3	12 X 50 X R0.3	110	20	12	11.7
S2X12X50X0P5	12 X 50 X R0.5	110	20	12	11.7
S2X12X50X1	12 X 50 X R1.0	110	20	12	11.7
S2X16X35X0P5	16 X 35 X R0.5	100	20	16	15.5
S2X16X35X1	16 X 35 X R1.0	100	20	16	15.5
S2X16X50X0P5	16 X 50 X R0.5	150	35	16	15.5
S2X16X50X1	16 X 50 X R1.0	150	35	16	15.5
S2X20X40X0P5	20 X 40 X R0.5	100	25	20	19.5
S2X20X40X1	20 X 40 X R1.0	100	25	20	19.5

S2 / 2날 롱넥 코너R

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30° | SPEED FEED P111-P115



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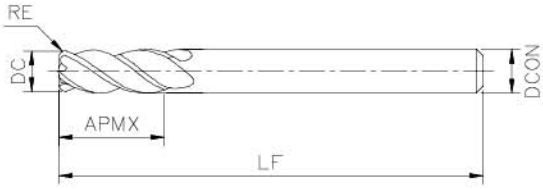
S2X20X55X0P5	20 X 55 X R0.5	150	40	20	19.5
S2X20X55X1	20 X 55 X R1.0	150	40	20	19.5

SP4C / 4날 코너R

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRNK FIT | UNEQUAL HELIX | SPEED FEED P120



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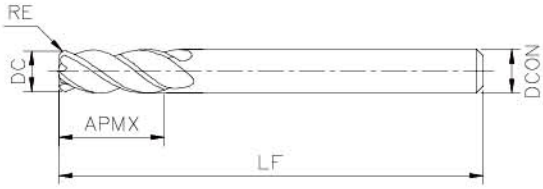
주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON
SP4CX1XR0P05	1 X R0.05	50	2.5	6
SP4CX1XR0P1	1 X R0.1	50	2.5	6
SP4CX1XR0P2	1 X R0.3	50	2.5	6
SP4CX1XR0P3	1 X R02	50	2.5	6
SP4CX1P5XRP05	1.5 X R0.05	50	4	6
SP4CX1P5XR0P1	1.5 X R0.1	50	4	6
SP4CX1P5XR0P2	1.5 X R0.2	50	4	6
SP4CX1P5XR0P3	1.5 X R0.3	50	4	6
SP4CX1P5XR0P5	1.5 X R0.5	50	4	6
SP4CX2XR0P1	2 X R0.1	50	6	6
SP4CX2XR0P2	2 X R0.2	50	6	6
SP4CX2XR0P3	2 X R0.3	50	6	6
SP4CX2XR0P5	2 X R0.5	50	6	6
SP4CX2P5XR0P1	2.5 X R0.1	60	7	6
SP4CX2P5XR0P2	2.5 X R0.2	60	7	6
SP4CX2P5XR0P3	2.5 X R0.3	60	7	6
SP4CX2P5XR0P5	2.5 X R0.5	60	7	6
SP4CX3XR0P1	3 X R0.1	60	8	6
SP4CX3XR0P2	3 X R0.2	60	8	6
SP4CX3XR0P3	3 X R0.3	60	8	6
SP4CX3XR0P5	3 X R0.5	60	8	6
SP4CX3XR1	3 X R1	60	8	6
SP4CX3P5XR0P5	3.5 X R0.5	70	10	6
SP4CX4XR0P1	4 X R0.1	70	10	6
SP4CX4XR0P2	4 X R0.2	70	10	6
SP4CX4XR0P3	4 X R0.3	70	10	6
SP4CX4XR0P5	4 X R0.5	70	10	6
SP4CX4XR1	4 X R1	70	10	6
SP4CX5XR0P1	5 X R0.1	90	13	6
SP4CX5XR0P2	5 X R0.2	90	13	6
SP4CX5XR0P3	5 X R0.3	90	13	6
SP4CX5XR0P5	5 X R0.5	90	13	6
SP4CX5XR1	5 X R1	90	13	6
SP4CX6XR0P1	6 X R0.1	90	15	6
SP4CX6XR0P2	6 X R0.2	90	15	6
SP4CX6XR0P3S	6 X R0.3	60	15	6
SP4CX6XR0P3	6 X R0.3	90	15	6
SP4CX6XR0P5S	6 X R0.5	60	15	6
SP4CX6XR0P5	6 X R0.5	90	15	6
SP4CX6XR0P5L	6 X R0.5	110	15	6

SP4C / 4날 코너R

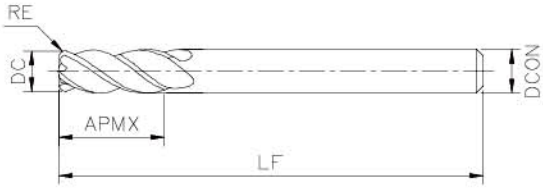
CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRNK FIT | UNEQUAL HELIX | SPEED FEED P120



- Cu · SUS · 45C ~ 50HRC에서 탁월한 성능 발휘!
- 新 RADIA 코팅 적용으로 高품질 · 長수명 실현!
- 코너 래디우스 FACET Shape 적용으로 공구강성 극대화

주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON
SP4CX6XR1S	6 X R1	60	15	6
SP4CX6XR1	6 X R1	90	15	6
SP4CX6XR1L	6 X R1	110	15	6
SP4CX6XR1P5	6 X R1.5	90	15	6
SP4CX6XR2	6 X R2	90	15	6
SP4CX7XR0P2	7 X R0.2	90	16	8
SP4CX8XR0P1	8 X R0.1	100	20	8
SP4CX8XR0P2	8 X R0.2	100	20	8
SP4CX8XR0P3S	8 X R0.3	70	20	8
SP4CX8XR0P3	8 X R0.3	100	20	8
SP4CX8XR0P5S	8 X R0.5	70	20	8
SP4CX8XR0P5	8 X R0.5	100	20	8
SP4CX8XR0P5L	8 X R0.5	120	20	8
SP4CX8XR1S	8 X R1	70	20	8
SP4CX8XR1	8 X R1	100	20	8
SP4CX8XR1L	8 X R1	120	20	8
SP4CX8XR1P5	8 X R1.5	100	20	8
SP4CX8XR2	8 X R2	100	20	8
SP4CX8XR2P5	8 X R2.5	100	20	8
SP4CX8XR3	8 X R3	100	20	8
SP4CX10XR0P1	10 X R0.1	100	25	10
SP4CX10XR0P2	10 X R0.2	100	25	10
SP4CX10XR0P3	10 X R0.3	100	25	10
SP4CX10XR0P5S	10 X R0.5	75	25	10
SP4CX10XR0P5	10 X R0.5	100	25	10
SP4CX10XR0P5L	10 X R0.5	130	25	10
SP4CX10XR1	10 X R1	100	25	10
SP4CX10XR1L	10 X R1	130	25	10
SP4CX10XR1P5	10 X R1.5	100	25	10
SP4CX10XR2	10 X R2	100	25	10
SP4CX10XR2P5	10 X R2.5	100	25	10
SP4CX10XR3	10 X R3	100	25	10
SP4CX10XR4	10 X R4	100	25	10
SP4CX12XR0P1	12 X R0.1	110	30	12
SP4CX12XR0P2	12 X R0.2	110	30	12
SP4CX12XR0P3	12 X R0.3	110	30	12
SP4CX12XR0P5	12 X R0.5	110	30	12
SP4CX12XR0P5L	12 X R0.5	130	30	12
SP4CX12XR1	12 X R1	110	30	12
SP4CX12XR1L	12 X R1	130	30	12

SP4C / 4날 코너R



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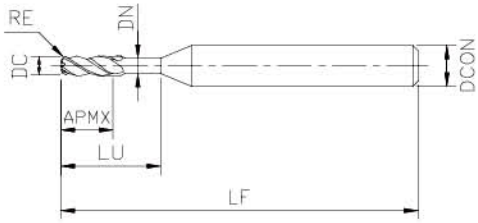
- 코너 래디우스 FACET Shape 적용으로 공구강성 극대화

주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON
SP4CX12XR1P5	12 X R1.5	110	30	12
SP4CX12XR2	12 X R2	110	30	12
SP4CX12XR2P5	12 X R2.5	110	30	12
SP4CX12XR3	12 X R3	110	30	12
SP4CX12XR4	12 X R4	110	30	12
SP4CX12XR5	12 X R5	110	30	12
SP4CX14XR1	14 X R1	150	32	16
SP4CX16XR0P5	16 X R0.5	150	32	16
SP4CX16XR1	16 X R1	150	32	16
SP4CX16XR2	16 X R2	150	32	16
SP4CX16XR3	16 X R3	150	32	16
SP4CX20XR0P5	20 X R0.5	150	38	20
SP4CX20XR1	20 X R1	150	38	20
SP4CX20XR2	20 X R2	150	38	20
SP4CX20XR3	20 X R3	150	38	20

S4 / 4날 롱넥 코너R

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRNK FIT | UNEQUAL HELIX | SPEED FEED P118



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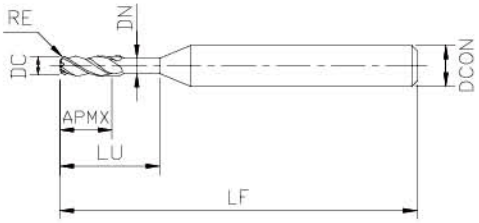
- 코너 래디우스 FACET Shape 적용으로 공구강성 극대화

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE					전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S4X1X6X0P2	1	X	6	X	R0.2	45	1.5	4	0.95
S4X1X8X0P1	1	X	8	X	R0.1	45	1.5	4	0.95
S4X1P5X8X0P2	1.5	X	8	X	R0.2	45	2.3	4	1.45
S4X1P5X10X0P2	1.5	X	10	X	R0.2	45	2.3	4	1.45
S4X1P5X10X0P5	1.5	X	10	X	R0.5	45	2.3	4	1.45
S4X1P5X12X0P1	1.5	X	12	X	R0.1	45	2.3	4	1.45
S4X1P5X12X0P2	1.5	X	12	X	R0.2	45	2.3	4	1.45
S4X1P5X12X0P5	1.5	X	12	X	R0.5	45	2.3	4	1.45
S4X2X8X0P5	2	X	8	X	R0.5	45	3	4	1.95
S4X2X10X0P2	2	X	10	X	R0.2	45	3	4	1.95
S4X2X10X0P5	2	X	10	X	R0.5	45	3	4	1.95
S4X2X12X0P2	2	X	12	X	R0.2	45	3	4	1.95
S4X2X12X0P5	2	X	12	X	R0.5	45	3	4	1.95
S4X2X16X0P5	2	X	16	X	R0.5	50	3	4	1.95
S4X2X20X0P5	2	X	20	X	R0.5	55	3	4	1.95
S4X3X10X0P5	3	X	10	X	R0.5	45	4.5	6	2.85
S4X3X12X0P2	3	X	12	X	R0.2	45	4.5	6	2.85
S4X3X12X0P5	3	X	12	X	R0.5	45	4.5	6	2.85
S4X3X16X0P2	3	X	16	X	R0.2	55	4.5	6	2.85
S4X3X16X0P5	3	X	16	X	R0.5	55	4.5	6	2.85
S4X3X20X0P5	3	X	20	X	R0.5	60	4.5	6	2.85
S4X3X25X0P5	3	X	25	X	R0.5	65	4.5	6	2.85
S4X3X26X0P5	3	X	26	X	R0.5	65	4.5	6	2.85
S4X3X30X0P5	3	X	30	X	R0.5	80	4.5	6	2.85
S4X4X10X0P1	4	X	10	X	R0.1	45	6	6	3.85
S4X4X10X0P2	4	X	10	X	R0.2	45	6	6	3.85
S4X4X10X0P3	4	X	10	X	R0.3	45	6	6	3.85
S4X4X10X0P5	4	X	10	X	R0.5	45	6	6	3.85
S4X4X10X1	4	X	10	X	R1.0	45	6	6	3.85
S4X4X12X0P1	4	X	12	X	R0.1	50	6	6	3.85
S4X4X12X0P2	4	X	12	X	R0.2	50	6	6	3.85
S4X4X12X0P3	4	X	12	X	R0.3	50	6	6	3.85
S4X4X12X0P5	4	X	12	X	R0.5	50	6	6	3.85
S4X4X12X1	4	X	12	X	R1.0	50	6	6	3.85
S4X4X14X0P1	4	X	14	X	R0.1	60	6	6	3.85
S4X4X14X0P2	4	X	14	X	R0.2	60	6	6	3.85
S4X4X14X0P3	4	X	14	X	R0.3	60	6	6	3.85
S4X4X14X0P5	4	X	14	X	R0.5	60	6	6	3.85
S4X4X14X1	4	X	14	X	R1.0	60	6	6	3.85
S4X4X16X0P1	4	X	16	X	R0.1	60	6	6	3.85
S4X4X16X0P2	4	X	16	X	R0.2	60	6	6	3.85

S4 / 4날 롱넥 코너R

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRINK FIT | UNEQUAL HELIX | SPEED FEED P118



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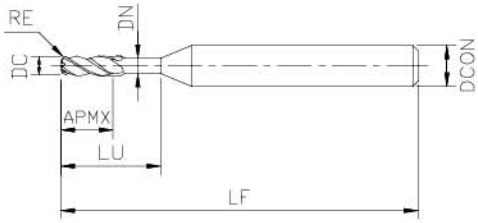
- 코너 래디우스 FACET Shape 적용으로 공구강성 극대화

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S4X4X16X0P3	4 X 16 X R0.3	60	6	6	3.85
S4X4X16X0P5	4 X 16 X R0.5	60	6	6	3.85
S4X4X16X1	4 X 16 X R1.0	60	6	6	3.85
S4X4X20X0P1	4 X 20 X R0.1	60	6	6	3.85
S4X4X20X0P2	4 X 20 X R0.2	60	6	6	3.85
S4X4X20X0P3	4 X 20 X R0.3	60	6	6	3.85
S4X4X20X0P5	4 X 20 X R0.5	60	6	6	3.85
S4X4X20X1	4 X 20 X R1.0	60	6	6	3.85
S4X4X25X0P1	4 X 25 X R0.1	70	6	6	3.85
S4X4X25X0P2	4 X 25 X R0.2	70	6	6	3.85
S4X4X25X0P3	4 X 25 X R0.3	70	6	6	3.85
S4X4X25X0P5	4 X 25 X R0.5	70	6	6	3.85
S4X4X25X1	4 X 25 X R1.0	70	6	6	3.85
S4X4X26X0P1	4 X 26 X R0.1	70	6	6	3.85
S4X4X26X0P2	4 X 26 X R0.2	70	6	6	3.85
S4X4X26X0P3	4 X 26 X R0.3	70	6	6	3.85
S4X4X26X0P5	4 X 26 X R0.5	70	6	6	3.85
S4X4X26X1	4 X 26 X R1.0	70	6	6	3.85
S4X4X30X0P1	4 X 30 X R0.1	80	6	6	3.85
S4X4X30X0P2	4 X 30 X R0.2	80	6	6	3.85
S4X4X30X0P3	4 X 30 X R0.3	80	6	6	3.85
S4X4X30X0P5	4 X 30 X R0.5	80	6	6	3.85
S4X4X30X1	4 X 30 X R1.0	80	6	6	3.85
S4X4X35X0P1	4 X 35 X R0.1	90	6	6	3.85
S4X4X35X0P2	4 X 35 X R0.2	90	6	6	3.85
S4X4X35X0P3	4 X 35 X R0.3	90	6	6	3.85
S4X4X35X0P5	4 X 35 X R0.5	90	6	6	3.85
S4X4X35X1	4 X 35 X R1.0	90	6	6	3.85
S4X4X40X0P1	4 X 40 X R0.1	90	6	6	3.85
S4X4X40X0P2	4 X 40 X R0.2	90	6	6	3.85
S4X4X40X0P3	4 X 40 X R0.3	90	6	6	3.85
S4X4X40X0P5	4 X 40 X R0.5	90	6	6	3.85
S4X4X40X1	4 X 40 X R1.0	90	6	6	3.85
S4X4X45X0P1	4 X 45 X R0.1	100	6	6	3.85
S4X4X45X0P2	4 X 45 X R0.2	100	6	6	3.85
S4X4X45X0P3	4 X 45 X R0.3	100	6	6	3.85
S4X4X45X0P5	4 X 45 X R0.5	100	6	6	3.85
S4X4X45X1	4 X 45 X R1.0	100	6	6	3.85
S4X4X50X0P1	4 X 50 X R0.1	100	6	6	3.85
S4X4X50X0P2	4 X 50 X R0.2	100	6	6	3.85
S4X4X50X0P3	4 X 50 X R0.3	100	6	6	3.85

S4 / 4날 롱넥 코너R

CARBIDE | RADIA | 0~-0.02 (DC≤12) | 0~-0.03 (12<DC) | SHRINK FIT | UNEQUAL HELIX | SPEED FEED P118



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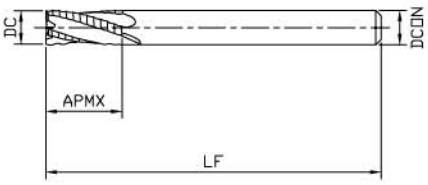
- 코너 래디우스 FACET Shape 적용으로 공구강성 극대화

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE					전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S4X4X50X0P5	4	X	50	X	R0.5	100	6	6	3.85
S4X4X50X1	4	X	50	X	R1.0	100	6	6	3.85
S4X6X20X0P1	6	X	20	X	R0.1	60	9	6	5.85
S4X6X20X0P2	6	X	20	X	R0.2	60	9	6	5.85
S4X6X20X0P3	6	X	20	X	R0.3	60	9	6	5.85
S4X6X20X0P5	6	X	20	X	R0.5	60	9	6	5.85
S4X6X20X1	6	X	20	X	R1.0	60	9	6	5.85
S4X6X20X1P5	6	X	20	X	R1.5	60	9	6	5.85
S4X6X20X2	6	X	20	X	R2.0	60	9	6	5.85
S4X6X30X0P3	6	X	30	X	R0.3	70	15	6	5.85
S4X6X30X0P5	6	X	30	X	R0.5	70	15	6	5.85
S4X6X30X1	6	X	30	X	R1.0	70	15	6	5.85
S4X8X25X0P1	8	X	25	X	R0.1	70	12	8	7.7
S4X8X25X0P2	8	X	25	X	R0.2	70	12	8	7.7
S4X8X25X0P3	8	X	25	X	R0.3	70	12	8	7.7
S4X8X25X0P5	8	X	25	X	R0.5	70	12	8	7.7
S4X8X25X1	8	X	25	X	R1.0	70	12	8	7.7
S4X8X25X1P5	8	X	25	X	R1.5	70	12	8	7.7
S4X8X25X2	8	X	25	X	R2.0	70	12	8	7.7
S4X8X35X0P5	8	X	35	X	R0.5	100	20	8	7.7
S4X8X35X1	8	X	35	X	R1	100	20	8	7.7
S4X10X30X0P1	10	X	30	X	R0.1	75	15	10	9.7
S4X10X30X0P2	10	X	30	X	R0.2	75	15	10	9.7
S4X10X30X0P3	10	X	30	X	R0.3	75	15	10	9.7
S4X10X30X0P5	10	X	30	X	R0.5	75	15	10	9.7
S4X10X30X1	10	X	30	X	R1.0	75	15	10	9.7
S4X10X30X1P5	10	X	30	X	R1.5	75	15	10	9.7
S4X10X30X2	10	X	30	X	R2.0	75	15	10	9.7
S4X10X40X0P5	10	X	40	X	R0.5	100	25	10	9.7
S4X10X40X1	10	X	40	X	R1	100	25	10	9.7
S4X12X50X0P3	12	X	50	X	R0.3	110	20	12	11.7
S4X12X50X0P5	12	X	50	X	R0.5	110	20	12	11.7
S4X12X50X1	12	X	50	X	R1.0	110	20	12	11.7
S4X16X35X0P5	16	X	35	X	R0.5	100	20	16	15.7
S4X16X35X1	16	X	35	X	R1.0	100	20	16	15.7
S4X16X50X0P5	16	X	50	X	R0.5	150	35	16	15.7
S4X16X50X1	16	X	50	X	R1.0	150	35	16	15.7
S4X20X40X0P5	20	X	40	X	R0.5	100	25	20	19.6
S4X20X40X1	20	X	40	X	R1.0	100	25	20	19.6
S4X20X55X0P5	20	X	55	X	R0.5	150	40	20	19.6
S4X20X55X1	20	X	55	X	R1.0	150	40	20	19.6

SP3·4·5R / 3·4·5날 라핑

CARBIDE | RADIA | SHRINK FIT | 20° | SPEED FEED P121

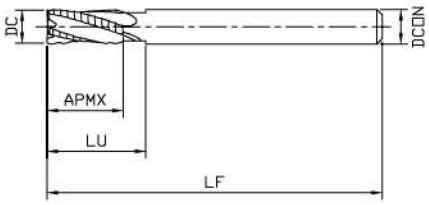


- 저진동 · 고강성 사양으로 황삭 가공에서 탁월한 성능 발휘!
- 新 RADIA 코팅 적용으로 高품질 · 長수명 실현!
- 코너C · 특수 니크 산형 적용으로 안정된 절삭!

주문번호 EDP No.	외경 DC	날수 FLUTES	전장 LF	날길이 APMX	자루경 DCON
SP3RX3X8	3	3날	50	8	6
SP3RX4X10	4	3날	50	10	6
SP4RX5X13	5	4날	50	13	6
SP4RX6X10	6	4날	60	10	6
SP4RX6X15	6	4날	60	15	6
SP4RX6X20	6	4날	60	20	6
SP4RX7X19	7	4날	70	19	8
SP4RX8X13	8	4날	70	13	8
SP4RX8X20	8	4날	70	20	8
SP4RX9X23	9	4날	70	23	10
SP4RX10X16	10	4날	75	16	10
SP4RX10X25	10	4날	75	25	10
SP4RX11X28	11	4날	80	28	12
SP4RX12X31	12	4날	80	31	12
SP4RX13X36	13	4날	100	36	12
SP4RX14X26	14	4날	100	26	14
SP4RX14X35	14	4날	100	35	16
SP4RX16X41	16	4날	100	41	16
SP4RX20X51	20	4날	100	51	20
SP5RX25X51	25	5날	100	51	25

SP4RN / 4날 롱넥 라핑

CARBIDE | RADIA | SHRINK FIT | 20° | SPEED FEED P121

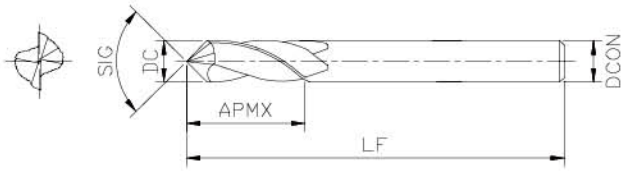


- 저진동 · 고강성 사양으로 황삭 가공에서 탁월한 성능 발휘!
- 新 RADIA 코팅 적용으로 高품질 · 長수명 실현!
- 코너C · 특수 니크 산형 적용으로 안정된 절삭!

주문번호 EDP No.	외경 X 유효장 DC X LU	날수 FLUTES	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
SP4RNX6X15	6 X 20	4날	60	15	6	5.85
SP4RNX8X20	8 X 25	4날	70	20	8	7.7
SP4RNX10X25	10 X 31	4날	75	25	10	9.7
SP4RNX12X31	12 X 36	4날	80	31	12	11.7

SP2V / 2날 V컷

CARBIDE | RADIA | 0~-0.015 | SHRINK FIT | 30°

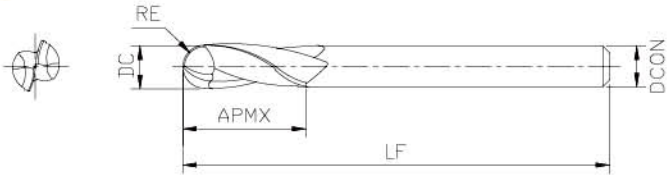


- Cu · SUS · 45C ~ 50HRC에서 탁월한 성능 발휘!
- 新 RADIA 코팅 적용으로 高품질 · 長수명 실현!
- 다양한 선단각으로 챔퍼가공 및 형상가공 가능

주문번호 EDP No.	외경 X 챔퍼각도 DC X SIG	전장 LF	날길이 APMX	자루경 DCON
SP2VX3X60	3 X 60°	50	6	6
SP2VX3X90	3 X 90°	50	6	6
SP2VX3X120	3 X 120°	50	6	6
SP2VX4X60	4 X 60°	50	8	6
SP2VX4X90	4 X 90°	50	8	6
SP2VX4X120	4 X 120°	50	8	6
SP2VX5X60	5 X 60°	55	10	6
SP2VX5X90	5 X 90°	55	10	6
SP2VX5X120	5 X 120°	55	10	6
SP2VX6X60	6 X 60°	60	12	6
SP2VX6X90	6 X 90°	60	12	6
SP2VX6X120	6 X 120°	60	12	6
SP2VX7X90	7 X 90°	65	14	8
SP2VX8X60	8 X 60°	70	16	8
SP2VX8X90	8 X 90°	70	16	8
SP2VX8X120	8 X 120°	70	16	8
SP2VX9X90	9 X 90°	75	18	10
SP2VX10X60	10 X 60°	80	20	10
SP2VX10X90	10 X 90°	80	20	10
SP2VX10X120	10 X 120°	80	20	10
SP2VX12X60	12 X 60°	90	24	12
SP2VX12X90	12 X 90°	90	24	12
SP2VX12X120	12 X 120°	90	24	12

SPP2B / 2날 볼

CARBIDE | DUROREY | R ±0.005 (RE<3) | R 0~-0.010 (3≤RE≤6) | R ±0.01 (6<RE) | SHRINK FIT | 30° | SPEED FEED P122

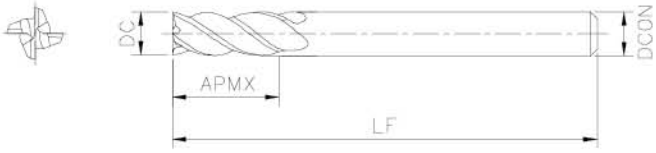


- 30HRC ~ 70HRC 고경도 및 열처리강에서 탁월한 성능 발휘!
- 新 DUROREY 코팅 적용으로 高품질 · 長수명 실현!
- 매끄러운 인선부 처리로 부드럽고 안정된 절삭!

주문번호 EDP No.	반지름 X 외경 RE X DC	전장 LF	날길이 APMX	자루경 DCON
SPP2BX0P4X0P8	R0.2 X 0.4	40	0.8	4
SPP2BX0P6X1P2	R0.3 X 0.6	40	1.2	4
SPP2BX0P8X1P6	R0.4 X 0.8	40	1.6	4
SPP2BX1X2P5	R0.5 X 1	50	2.5	6
SPP2BX2X5	R1 X 2	50	5	6
SPP2BX3X6	R1.5 X 3	60	6	6
SPP2BX4X8	R2 X 4	70	8	6
SPP2BX6X12	R3 X 6	90	12	6
SPP2BX8X14	R4 X 8	100	14	8
SPP2BX10X18	R5 X 10	100	18	10
SPP2BX12X22	R6 X 12	110	22	12

SPP4FH / 4날 45도 플랫

CARBIDE | DUROREY | 0~-0.02 DC≤12 | 0~-0.03 12<DC | SHRINK FIT | 45° | SPEED FEED P123



- 30HRC ~ 70HRC 고경도 및 열처리강에서 탁월한 성능 발휘!
- 新 DUROREY 코팅 적용으로 高품질 · 長수명 실현!
- 칩배출성과 공구 강성을 높여 고능률 중절삭 가능

주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SPP4FHX3X8	3	50	8	6
SPP4FHX4X10	4	50	10	6
SPP4FHX5X15	5	60	15	6
SPP4FHX6X15	6	60	15	6
SPP4FHX6X20		70	20	6
SPP4FHX8X20	8	70	20	8
SPP4FHX8X30		80	30	8
SPP4FHX10X25	10	75	25	10
SPP4FHX10X30		80	30	10
SPP4FHX12X30	12	80	30	12
SPP4FHX12X40		90	40	12
SPP4FHX12X50		100	50	12
SPP4FHX16X40	16	100	40	16
SPP4FHX16X60		120	60	16

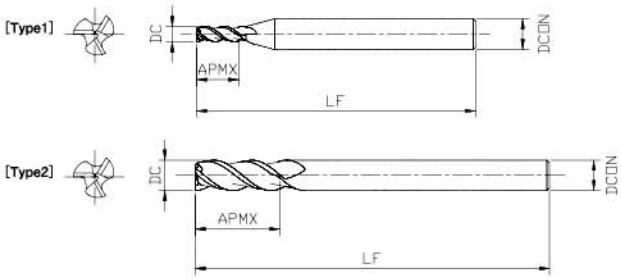
SUS-PRO

SUS · 난삭재용 시리즈

SUS3F / 3날 플랫

CARBIDE | RADIA | 0~-0.02 | SHRINK FIT | 40° | SPEED FEED P124

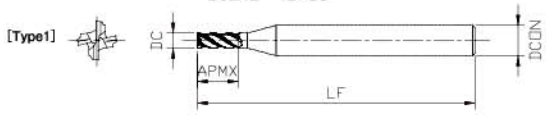
- 홈·측면 절삭에서 복잡한 포켓가공
- BURR가 발생하기 쉬운 가공에도 사용
- 난삭재(SUS, 티탄합금) 가공에서 고성능 발휘!

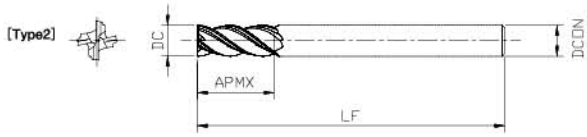


주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
SUS3FX1X2P5	1	50	2.5	6
SUS3FX2X6	2	50	6	6
SUS3FX3X8	3	55	8	6
SUS3FX4X10	4	55	10	6
SUS3FX5X15	5	55	15	6
SUS3FX6X15	6	60	15	6
SUS3FX8X20	8	70	20	8
SUS3FX10X25	10	75	25	10
SUS3FX12X30	12	80	30	12

T4P / 4날 플랫

- 홈·측면 절삭에서 복잡한 포켓가공
- BURR가 발생하기 쉬운 가공에도 사용
- 난삭재(SUS, 티탄합금) 가공에서 고성능 발휘!

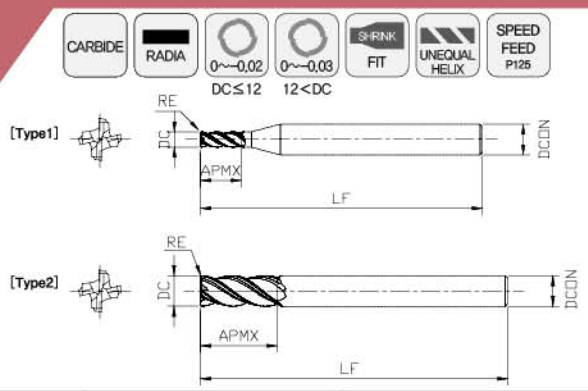




주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
T4P 010 02 4S	1	50	2	4
T4P 010 025 4S	1	50	2.5	4
T4P 010	1	50	2.5	6
T4P 010 03 4S	1	50	3	4
T4P 012	1.2	50	3	6
T4P 015 03 4S	1.5	50	3	4
T4P 015 4S	1.5	50	4	4
T4P 015	1.5	50	4	6
T4P 020 03 4S	2	50	3	4
T4P 020 4S	2	50	6	4
T4P 020	2	50	6	6
T4P 025 04 4S	2.5	50	4	4
T4P 025 4S	2.5	50	7	4
T4P 025	2.5	50	7	6
T4P 025 08 4S	2.5	50	8	4
T4P 030 05	3	55	5	6
T4P 030	3	55	8	6
T4P 030 10	3	60	10	6
T4P 035	3.5	55	10	6
T4P 040 06	4	55	6	6
T4P 040	4	55	10	6
T4P 040 12	4	60	12	6
T4P 045	4.5	55	12	6
T4P 050 08	5	55	8	6
T4P 050	5	55	15	6
T4P 050 20	5	55	20	6
T4P 055	5.5	60	15	6
T4P 060	6	60	15	6
T4P 060 20	6	65	20	6
T4P 060 25	6	70	25	6
T4P 070	7	70	20	8
T4P 080	8	70	20	8
T4P 080 25	8	70	25	8
T4P 080 30	8	80	30	8
T4P 100	10	75	25	10
T4P 100 30	10	80	30	10
T4P 100 35	10	85	35	10
T4P 120 20	12	80	20	12
T4P 120	12	80	30	12
T4P 120 35	12	80	35	12
T4P 120 40	12	90	40	12
T4P 160 25	16	100	25	16
T4P 160 35	16	100	35	16
T4P 160	16	100	42	16
T4P 160 50	16	110	50	16
T4P 200	20	100	48	20

T4PC / 4날 코너R

- 홈·측면 절삭에서 복잡한 포켓가공
- BURR가 발생하기 쉬운 가공에도 사용
- 난삭재(SUS, 티탄합금) 가공에서 고성능 발휘!

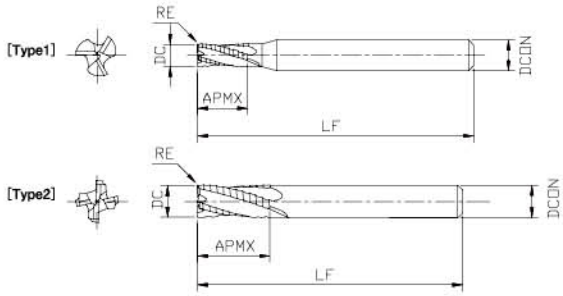


주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON
T4PC 010 010	1 X R0.1	50	2.5	6
T4PC 010 020	1 X R0.2	50	2.5	6
T4PC 015 010	1.5 X R0.1	50	4	6
T4PC 015 020	1.5 X R0.2	50	4	6
T4PC 020 010	2 X R0.1	50	6	6
T4PC 020 020	2 X R0.2	50	6	6
T4PC 025 020	2.5 X R0.2	50	7	6
T4PC 030 020	3 X R0.2	55	8	6
T4PC 030 030	3 X R0.3	55	8	6
T4PC 030 050	3 X R0.5	55	8	6
T4PC 040 020	4 X R0.2	55	10	6
T4PC 040 050	4 X R0.5	55	10	6
T4PC 050 020	5 X R0.2	55	15	6
T4PC 050 050	5 X R0.5	55	15	6
T4PC 050 100	5 X R1	55	15	6
T4PC 060 050	6 X R0.5	60	15	6
T4PC 060 100	6 X R1	60	15	6
T4PC 060 150	6 X R1.5	60	15	6
T4PC 070 030	7 X R0.3	70	20	8
T4PC 080 020	8 X R0.2	70	20	8
T4PC 080 030	8 X R0.3	70	20	8
T4PC 080 050	8 X R0.5	70	20	8
T4PC 080 100	8 X R1	70	20	8
T4PC 080 150	8 X R1.5	70	20	8
T4PC 080 200	8 X R2	70	20	8
T4PC 100 030	10 X R0.3	75	25	10
T4PC 100 050	10 X R0.5	75	25	10
T4PC 100 100	10 X R1	75	25	10
T4PC 100 150	10 X R1.5	75	25	10
T4PC 100 200	10 X R2	75	25	10
T4PC 100 300	10 X R3	75	25	10
T4PC 120 030	12 X R0.3	80	30	12
T4PC 120 050	12 X R0.5	80	30	12
T4PC 120 100	12 X R1	80	30	12
T4PC 120 150	12 X R1.5	80	30	12
T4PC 120 200	12 X R2	80	30	12
T4PC 120 300	12 X R3	80	30	12
T4PC 160 050	16 X R0.5	100	42	16
T4PC 160 100	16 X R1	100	42	16
T4PC 200 050	20 X R0.5	100	48	20
T4PC 200 100	20 X R1	100	48	20

S3R · 4R / 3·4날 라핑

CARBIDE | RADIA | SHRINK FIT | UNEQUAL HELIX | SPEED FEED P126

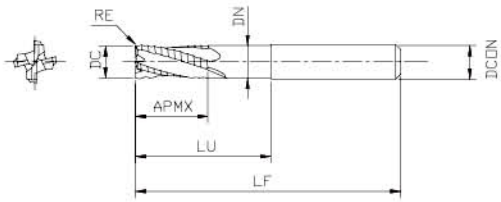
- 홈·측면 절삭에서 복잡한 포켓가공
- BURR가 발생하기 쉬운 가공에도 사용
- 난삭재(SUS, 티탄합금) 가공에서 고성능 발휘!



주문번호 EDP No.	외경 X 코너R DC X RE			날수 FLUTES	전장 LF	날길이 APMX	자루경 DCON
S3R 030 02	3	X	R0.2	3날	50	8	6
S3R 040 02	4	X	R0.2	3날	50	10	6
S4R 050 02	5	X	R0.2	4날	50	13	6
S4R 060 02	6	X	R0.2	4날	60	13	6
S4R 060 05	6	X	R0.5	4날	60	13	6
S4R 080 02	8	X	R0.2	4날	70	19	8
S4R 080 10	8	X	R1	4날	70	19	8
S4R 100 03	10	X	R0.3	4날	75	22	10
S4R 100 10	10	X	R1	4날	75	22	10
S4R 120 03	12	X	R0.3	4날	80	26	12
S4R 120 10	12	X	R1	4날	75	26	12
S4R 160 05	16	X	R0.5	4날	100	32	16
S4R 160 15	16	X	R1.5	4날	100	32	16
S4R 200 05	20	X	R0.5	4날	100	38	20
S4R 200 15	20	X	R1.5	4날	100	38	20

S4RN / 4날 롱넥 라핑

CARBIDE | RADIA | SHRINK FIT | UNEQUAL HELIX | SPEED FEED P126



- 홈·측면 절삭에서 복잡한 포켓가공
- BURR가 발생하기 쉬운 가공에도 사용
- 난삭재(SUS, 티탄합금) 가공에서 고성능 발휘!

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	날수 FLUTES	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
S4RN 060 200 02	6 X 20 X R0.2	4날	60	10	6	5.8
S4RN 060 200 05	6 X 20 X R0.5	4날	60	10	6	5.8
S4RN 080 250 02	8 X 25 X R0.2	4날	70	12	8	7.8
S4RN 100 300 03	10 X 30 X R0.3	4날	75	15	10	9.8
S4RN 120 350 03	12 X 35 X R0.3	4날	75	20	12	11.8

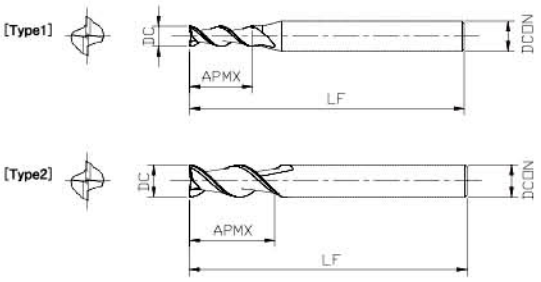
ALU-PRO

알루미늄용 시리즈

A2F / 2날 플랫

CARBIDE | 0~-0.015 | SHRINK FIT | 45° | SPEED FEED P127

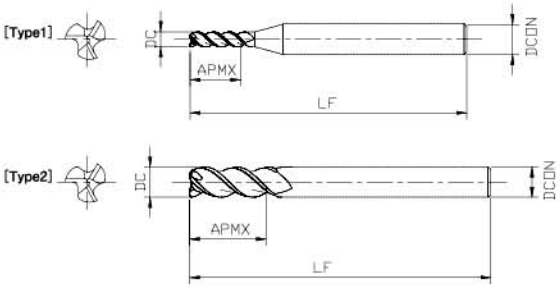
- 동, AL, AL합금용 가공용으로 절삭성과 채터링을 제어하는 형상으로 양호한 사상면을 실현한 2날 스퀘어 엔드밀입니다.
- 가공깊에 따른 최적의 날장 선택으로 가공 효율성이 향상됩니다.



주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
A2F 010	1	50	3	6
A2F 010 05	1	45	5	6
A2F 010 06	1	60	6	6
A2F 012	1.2	50	4	6
A2F 015	1.5	50	5	6
A2F 015 08	1.5	60	8	6
A2F 020	2	50	6	6
A2F 020 10	2	60	10	6
A2F 025	2.5	55	10	6
A2F 030	3	55	11	6
A2F 030 15	3		15	6
A2F 040	4	55	13	6
A2F 040 16	4	65	16	6
A2F 050	5	55	17	6
A2F 050 22	5	60	22	6
A2F 060	6	60	17	6
A2F 060 26	6	70	26	6
A2F 070	7	65	23	8
A2F 080	8	70	23	8
A2F 080 31	8	80	31	8
A2F 100	10	75	28	10
A2F 100 36	10	90	36	10
A2F 120	12	80	33	12
A2F 120 41	12	95	41	12
A2F 140	14	90	38	14
A2F 140 S16	14	90	38	16
A2F 160	16	100	43	16
A2F 160 53	16	105	53	16
A2F 180	18	100	49	16
A2F 200	20	100	49	20
A2F 200 56	20	110	56	20

A3F / 3날 플랫

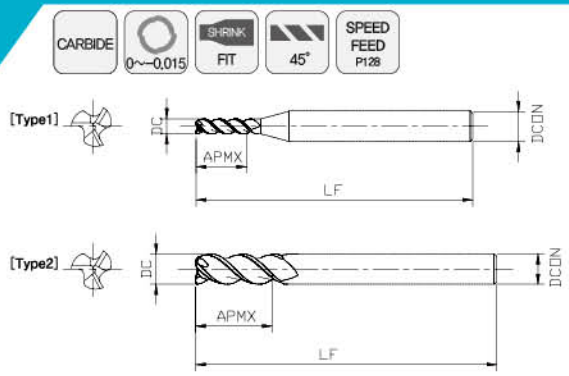
• AL, AL합금용 가공용으로 절삭성과 채터링을 제어하는 형상으로 양호한 사상면을 실현한 3날 스퀘어 엔드밀입니다.



주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
A3F 010	1	50	3	6
A3F 010 02	1	40	2	6
A3F 010 025	1	40	2.5	6
A3F 010 04	1	60	4	6
A3F 010 06	1	60	6	6
A3F 012	1.2	50	4	6
A3F 015	1.5	50	5	6
A3F 015 03	1.5	40	3	6
A3F 015 06	1.5	60	6	6
A3F 015 08	1.5	60	8	6
A3F 015 10	1.5	60	10	6
A3F 020	2	50	6	6
A3F 020 03	2	40	3	6
A3F 020 08	2	60	8	6
A3F 020 10	2	60	10	6
A3F 020 12	2	60	12	6
A3F 025	2.5	55	10	6
A3F 025 08	2.5	40	8	6
A3F 025 12	2.5	60	12	6
A3F 030	3	55	11	6
A3F 030 04	3	45	4	6
A3F 030 08	3	45	8	6
A3F 030 15	3	65	15	6
A3F 030 20	3	70	20	6
A3F 030 25	3	75	25	6
A3F 030 30	3	80	30	6
A3F 035	3.5	55	12	6
A3F 040	4	55	13	6
A3F 040 05	4	45	5	6
A3F 040 08	4	45	8	6
A3F 040 11	4	45	11	6
A3F 040 16	4	65	16	6
A3F 040 20	4	70	20	6
A3F 040 26	4	75	26	6
A3F 040 30	4	80	30	6
A3F 045	4.5	55	15	6
A3F 050	5	55	17	6
A3F 050 06	5	45	6	6
A3F 050 22	5	60	22	6
A3F 050 26	5	70	26	6
A3F 050 31	5	75	31	6
A3F 050 36	5	80	36	6
A3F 050 41	5	85	41	6
A3F 050 46	5	90	46	6

A3F/ 3날 플랫

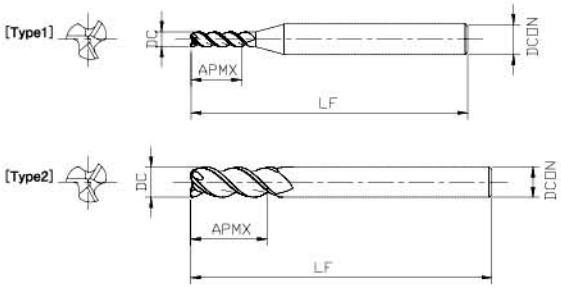
• AL, AL합금용 가공용으로 절삭성과 채터링을 제어하는 형상으로 양호한 사상면을 실현한 3날 스퀘어 엔드밀입니다.



주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
A3F 055	5.5	55	17	6
A3F 060	6	60	17	6
A3F 060 07	6	50	7	6
A3F 060 13	6	50	13	6
A3F 060 22	6	60	22	6
A3F 060 26	6	70	26	6
A3F 060 31	6	75	31	6
A3F 060 36	6	80	36	6
A3F 060 43	6	90	43	6
A3F 060 51	6	100	51	6
A3F 070	7	65	23	8
A3F 080	8	70	23	8
A3F 080 10	8	60	10	8
A3F 080 20	8	60	20	8
A3F 080 29	8	80	29	8
A3F 080 31	8	80	31	8
A3F 080 36	8	85	36	8
A3F 080 41	8	90	41	8
A3F 080 46	8	95	46	8
A3F 080 51	8	100	51	8
A3F 080 56	8	105	56	8
A3F 080 66	8	110	66	8
A3F 090	9	70	28	10
A3F 100	10	75	28	10
A3F 100 12	10	65	12	10
A3F 100 23	10	65	23	10
A3F 100 33	10	90	33	10
A3F 100 36	10	90	36	10
A3F 100 41	10	90	41	10
A3F 100 46	10	100	46	10
A3F 100 51	10	100	51	10
A3F 100 56	10	110	56	10
A3F 100 61	10	110	61	10
A3F 100 66	10	120	66	10
A3F 120	12	80	33	12
A3F 120 14	12	70	14	12
A3F 120 27	12	70	27	12
A3F 120 41	12	95	41	12
A3F 120 46	12	100	46	12
A3F 120 51	12	100	51	12
A3F 120 56	12	110	56	12
A3F 120 61	12	110	61	12
A3F 120 66	12	120	66	12
A3F 120 71	12	120	71	12

A3F / 3날 플랫

• AL, AL합금용 가공용으로 절삭성과 채터링을 제어하는 형상으로 양호한 사상면을 실현한 3날 스퀘어 엔드밀입니다.

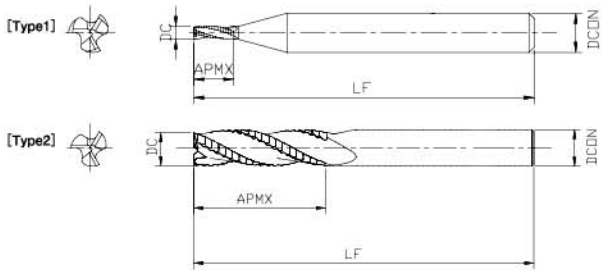


주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
A3F 120 76	12	135	76	12
A3F 140	14	90	38	16
A3F 160	16	100	43	16
A3F 160 19	16	90	19	16
A3F 160 33	16	90	33	16
A3F 160 53	16	105	53	16
A3F 160 56	16	110	56	16
A3F 160 66	16	130	66	16
A3F 160 76	16	150	76	16
A3F 160 86	16	160	86	16
A3F 160 96	16	180	96	16
A3F 160 106	16	190	106	16
A3F 160 116	16	200	116	16
A3F 180	18	100	49	16
A3F 200	20	100	49	20
A3F 200 23	20	90	23	20
A3F 200 39	20	90	39	20
A3F 200 56	20	110	56	20
A3F 200 66	20	130	66	20
A3F 200 76	20	150	76	20
A3F 200 86	20	160	86	20
A3F 200 96	20	180	96	20
A3F 200 106	20	190	106	20
A3F 200 116	20	200	116	20
A3F 200 126	20	220	126	20

A3R / 3날 라핑

CARBIDE | SHRINK FIT | 45° | SPEED FEED P129

• AL, AL합금 황삭가공용 초경 라핑엔드밀입니다.
칩배출성을 향상시킨 특수 RADIAL 홈형상을 적용하여 고능률 가공이 가능합니다.



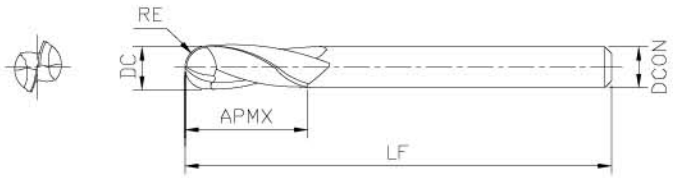
주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
A3R 040	4	55	10	6
A3R 050	5	55	15	6
A3R 060	6	60	15	6
A3R 060 25	6	80	25	6
A3R 080	8	65	20	8
A3R 080 30	8	90	30	8
A3R 100	10	70	25	10
A3R 100 40	10	100	40	10
A3R 120	12	80	30	12
A3R 120 50	12	110	50	12
A3R 140	14	90	35	16
A3R 160	16	100	42	16
A3R 160 52	16	150	52	16
A3R 180	18	100	45	20
A3R 200	20	100	48	20
A3R 200 55	20	160	55	20

WS

고속 · 고경도용 시리즈

WS-EBD / 2날 볼

ULTRA FINE CARBIDE | WS | R ±0.005 | SHRINK FIT | 30° | SPEED FEED P130~P131

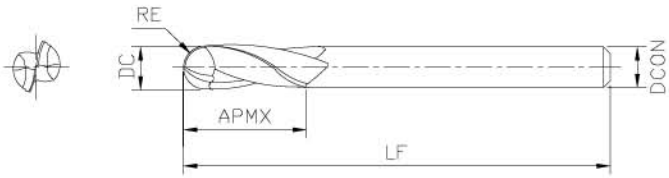


- 고성능 WS코팅이 적용된 볼 엔드밀입니다.
- 고강성 스파이럴 GASH를 적용하여 저경도강에서 열처리된 고경도강까지 폭넓은 가공영역에 모두 고속절삭이 가능한 볼 엔드밀입니다.

주문번호 EDP No.	반지름 X 외경 RE X DC	전장 LF	날길이 APMX	자루경 DCON
W04002K	R0.1 X 0.2	40	0.4	4
W04003K	R0.15 X 0.3	40	0.6	4
W04004K	R0.2 X 0.4	40	0.8	4
W04005K	R0.25 X 0.5	40	1	4
W04006K	R0.3 X 0.6	40	1.2	4
W04007K	R0.35 X 0.7	40	1.4	4
W04008K	R0.4 X 0.8	40	1.6	4
W04009K	R0.45 X 0.9	40	1.8	4
W040104K	R0.5 X 1	50	2.5	4
W04010K	R0.5 X 1	50	2.5	6
W04015K	R0.75 X 1.5	50	4	6
W04020K	R1 X 2	50	5	6
W04025K	R1.25 X 2.5	60	7	6
W04030K	R1.5 X 3	60	8	6
W04035K	R1.75 X 3.5	70	8	6
W04040K	R2 X 4	70	8	6
W04045K	R2.25 X 4.5	80	10	6
W04050K	R2.5 X 5	80	10	6
W04060K	R3 X 6	90	12	6
W04080K	R4 X 8	100	14	8
W04100K	R5 X 10	100	18	10
W04120K	R6 X 12	110	22	12

WS-EBDS / 2날 쇼트 볼

ULTRA FINE CARBIDE | WS | R ±0.005 | SHRINK FIT | 30° | SPEED FEED P130~P131

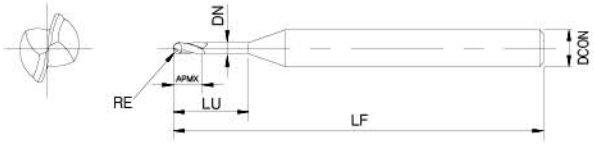


- 고성능 WS코팅이 적용된 날길이 쇼트형 볼 엔드밀입니다.
- 고강성 스파이럴 GASH를 적용하여 저경도강에서 열처리된 고경도강까지 폭넓은 가공영역에 모두 고속절삭이 가능한 볼 엔드밀입니다.

주문번호 EDP No.	반지름 X 외경 RE X DC	전장 LF	날길이 APMX	자루경 DCON
W03002K	R0.1 X 0.2	40	0.2	6
W03003K	R0.15 X 0.3	40	0.3	6
W03004K	R0.2 X 0.4	40	0.4	6
W03005K	R0.25 X 0.5	40	0.5	6
W03006K	R0.3 X 0.6	40	0.6	6
W03007K	R0.35 X 0.7	40	0.7	6
W03008K	R0.4 X 0.8	40	0.8	6
W03009K	R0.45 X 0.9	40	0.9	6
W03010K	R0.5 X 1	40	1.5	6
W03015K	R0.75 X 1.5	40	2.5	6
W03020K	R1 X 2	40	3	6
W03030K	R1.5 X 3	50	4.5	6
W03040K	R2 X 4	50	6	6
W03050K	R2.5 X 5	50	7.5	6
W03060K	R3 X 6	50	9	6
W03080K	R4 X 8	50	12	8
W03100K	R5 X 10	60	15	10
W03120K	R6 X 12	60	18	12

WS-LN-EBD / 2날 롱넥 볼

ULTRA FINE CARBIDE | WS | R ±0.005 | SHRINK FIT | 30° | SPEED FEED P132~P137

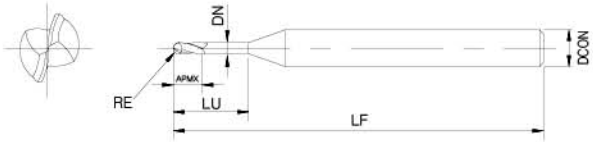


- 고성능 WS코팅이 적용된 롱넥 볼 엔드밀입니다.
- 리브홈가공에 최고의 성능을 발휘하여 가공형상에 맞추어 자유롭게 유효길이를 선택하여 사용할 수 있습니다.
- 소경(R0.5이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W01002006K	R0.1 X 0.6	45	0.2	4	0.18
W01002010K	R0.1 X 1	45	0.2	4	0.18
W01002015K	R0.1 X 1.5	45	0.2	4	0.18
W01003010K	R0.15 X 1	45	0.3	4	0.28
W01003015K	R0.15 X 1.5	45	0.3	4	0.28
W01003020K	R0.15 X 2	45	0.3	4	0.28
W01003030K	R0.15 X 3	45	0.3	4	0.28
W01004010K	R0.2 X 1	45	0.4	4	0.37
W01004015K	R0.2 X 1.5	45	0.4	4	0.37
W01004020K	R0.2 X 2	45	0.4	4	0.37
W01004025K	R0.2 X 2.5	45	0.4	4	0.37
W01004030K	R0.2 X 3	45	0.4	4	0.37
W01004040K	R0.2 X 4	45	0.4	4	0.37
W01004050K	R0.2 X 5	45	0.4	4	0.37
W01005010K	R0.25 X 1	45	0.5	4	0.45
W01005015K	R0.25 X 1.5	45	0.5	4	0.45
W01005020K	R0.25 X 2	45	0.5	4	0.45
W01005025K	R0.25 X 2.5	45	0.5	4	0.45
W01005040K	R0.25 X 4	45	0.5	4	0.45
W01005050K	R0.25 X 5	45	0.5	4	0.45
W01005060K	R0.25 X 6	45	0.5	4	0.45
W01005080K	R0.25 X 8	45	0.5	4	0.45
W01006020K	R0.3 X 2	45	0.6	4	0.55
W01006030K	R0.3 X 3	45	0.6	4	0.55
W01006040K	R0.3 X 4	45	0.6	4	0.55
W01006050K	R0.3 X 5	45	0.6	4	0.55
W01006060K	R0.3 X 6	45	0.6	4	0.55
W01006080K	R0.3 X 8	45	0.6	4	0.55
W01006100K	R0.3 X 10	45	0.6	4	0.55
W01008020K	R0.4 X 2	45	0.8	4	0.75
W01008030K	R0.4 X 3	45	0.8	4	0.75
W01008040K	R0.4 X 4	45	0.8	4	0.75
W01008050K	R0.4 X 5	45	0.8	4	0.75
W01008060K	R0.4 X 6	45	0.8	4	0.75
W01008080K	R0.4 X 8	45	0.8	4	0.75
W01008100K	R0.4 X 10	45	0.8	4	0.75
W01008120K	R0.4 X 12	45	0.8	4	0.75
W01010030K	R0.5 X 3	50	1	4	0.95
W01010040K	R0.5 X 4	50	1	4	0.95
W01010050K	R0.5 X 5	50	1	4	0.95

WS-LN-EBD / 2날 롱넥 볼

ULTRA FINE CARBIDE | WS | R ±0.005 | SHRINK FIT | 30° | SPEED FEED P132~P137

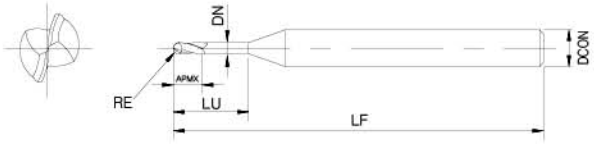


- 고성능 WS코팅이 적용된 롱넥 볼 엔드밀입니다.
- 리브홈가공에 최고의 성능을 발휘하여 가공형상에 맞추어 자유롭게 유효길이를 선택하여 사용할 수 있습니다.
- 소경(R0.5이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W01010060K	R0.5 X 6	50	1	4	0.95
W01010070K	R0.5 X 7	50	1	4	0.95
W01010080K	R0.5 X 8	50	1	4	0.95
W01010090K	R0.5 X 9	50	1	4	0.95
W01010100K	R0.5 X 10	50	1	4	0.95
W01010120K	R0.5 X 12	50	1	4	0.95
W01010140K	R0.5 X 14	50	1	4	0.95
W01010160K	R0.5 X 16	50	1	4	0.95
W01010200K	R0.5 X 20	55	1	4	0.95
W01012040K	R0.6 X 4	50	1.2	4	1.15
W01012060K	R0.6 X 6	50	1.2	4	1.15
W01012080K	R0.6 X 8	50	1.2	4	1.15
W01012100K	R0.6 X 10	50	1.2	4	1.15
W01012120K	R0.6 X 12	50	1.2	4	1.15
W01015040K	R0.75 X 4	50	1.5	4	1.45
W01015060K	R0.75 X 6	50	1.5	4	1.45
W01015080K	R0.75 X 8	50	1.5	4	1.45
W01015100K	R0.75 X 10	50	1.5	4	1.45
W01015120K	R0.75 X 12	50	1.5	4	1.45
W01015140K	R0.75 X 14	50	1.5	4	1.45
W01015160K	R0.75 X 16	50	1.5	4	1.45
W01015200K	R0.75 X 20	55	1.5	4	1.45
W01020060K	R1 X 6	50	3	4	1.95
W01020080K	R1 X 8	50	3	4	1.95
W01020100K	R1 X 10	50	3	4	1.95
W01020120K	R1 X 12	50	3	4	1.95
W01020140K	R1 X 14	50	3	4	1.95
W01020160K	R1 X 16	50	3	4	1.95
W01020180K	R1 X 18	55	3	4	1.95
W01020200K	R1 X 20	55	3	4	1.95
W01020250K	R1 X 25	60	3	4	1.95
W01020300K	R1 X 30	70	3	4	1.95
W01025080K	R1.25 X 8	55	3.5	4	2.45
W01025100K	R1.25 X 10	55	3.5	4	2.45
W01030080K	R1.5 X 8	55	4	6	2.85
W01030100K	R1.5 X 10	55	4	6	2.85
W01030120K	R1.5 X 12	55	4	6	2.85
W01030140K	R1.5 X 14	55	4	6	2.85
W01030160K	R1.5 X 16	55	4	6	2.85
W01030180K	R1.5 X 18	60	4	6	2.85

WS-LN-EBD / 2날 롱넥 볼

ULTRA FINE CARBIDE | WS | R ±0.005 | SHRINK FIT | 30° | SPEED FEED P132~P137

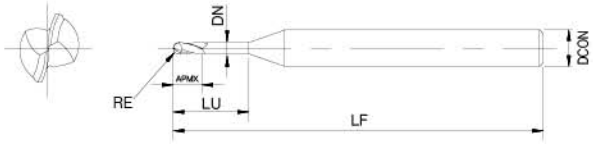


- 고성능 WS코팅이 적용된 롱넥 볼 엔드밀입니다.
- 리브홈가공에 최고의 성능을 발휘하여 가공형상에 맞추어 자유롭게 유효길이를 선택하여 사용할 수 있습니다.
- 소경(R0.5이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W01030200K	R1.5 X 20	60	4	6	2.85
W01030250K	R1.5 X 25	60	4	6	2.85
W01030300K	R1.5 X 30	70	4	6	2.85
W01030350K	R1.5 X 35	75	4	6	2.85
W01040100K	R2 X 10	55	5	6	3.85
W01040120K	R2 X 12	55	5	6	3.85
W01040160K	R2 X 16	55	5	6	3.85
W01040200K	R2 X 20	60	5	6	3.85
W01040250K	R2 X 25	60	5	6	3.85
W01040300K	R2 X 30	70	5	6	3.85
W01040350K	R2 X 35	75	5	6	3.85
W01040400K	R2 X 40	80	5	6	3.85
W01060150K	R3 X 15	60	8	6	5.9
W01060300K	R3 X 30	60	8	6	5.9
W01080150K	R4 X 15	65	10	8	7.9
W01080200K	R4 X 20	80	10	8	7.9
W01100200K	R5 X 20	60	12	10	9.9
W01100250K	R5 X 25	80	12	10	9.9
W01120250K	R6 X 25	80	14	12	11.9
W01120400K	R6 X 40	110	14	12	11.9

WS-LN-EBD-6 / 2날 롱넥 볼(생크6)

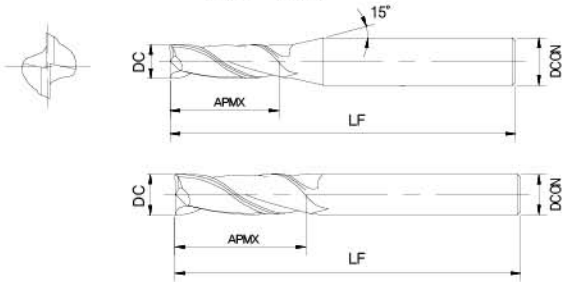
ULTRA FINE CARBIDE | WS | R ±0.005 | SHRINK FIT | 30° | SPEED FEED P132~P137



- 고성능 WS코팅이 적용된 생크6의 롱넥 볼 엔드밀입니다.
- 리브홈가공에 최고의 성능을 발휘하여 가공형상에 맞추어 자유롭게 유효길이를 선택하여 사용할 수 있습니다.
- 소경(R0.5이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	반지름 X 유효장 RE X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W02006020K	R0.3 X 2	45	0.6	6	0.55
W02006040K	R0.3 X 4	45	0.6	6	0.55
W02006060K	R0.3 X 6	45	0.6	6	0.55
W02008040K	R0.4 X 4	45	0.8	6	0.75
W02008060K	R0.4 X 6	45	0.8	6	0.75
W02010040K	R0.5 X 4	50	1	6	0.95
W02010060K	R0.5 X 6	50	1	6	0.95
W02010080K	R0.5 X 8	50	1	6	0.95
W02010100K	R0.5 X 10	50	1	6	0.95
W02015060K	R0.75 X 6	50	1.5	6	1.45
W02015080K	R0.75 X 8	50	1.5	6	1.45
W02015100K	R0.75 X 10	50	1.5	6	1.45
W02015120K	R0.75 X 12	50	1.5	6	1.45
W02020060K	R1 X 6	50	3	6	1.95
W02020080K	R1 X 8	50	3	6	1.95
W02020100K	R1 X 10	50	3	6	1.95
W02020120K	R1 X 12	50	3	6	1.95

WS-EDS / 2날 플랫

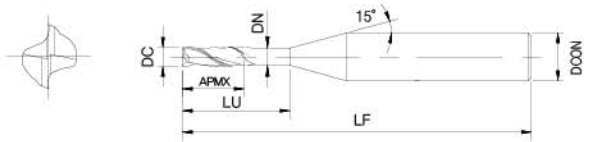


- 고성능 WS코팅이 적용된 2날 스퀘어 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.

주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
W09001001K	0.1	40	0.1	4
W09002002K	0.2	40	0.2	4
W09003003K	0.3	40	0.3	4
W09005100K	0.5	40	1	4
W09006012K	0.6	40	1.2	4
W09007014K	0.7	40	1.4	4
W09008016K	0.8	40	1.6	4
W09009018K	0.9	40	1.8	4
W09010020K	1	50	2	6
W09015030K	1.5	50	3	6
W09020040K	2	50	4	6
W09020060K	2	50	6	6
W09025070K	2.5	50	7	6
W09030060K	3	70	6	3
W09030080K	3	60	8	6
W09030100K	3	60	10	6
W09030120K	3	60	12	6
W09040080K	4	80	8	4
W09040100K	4	80	10	4
W09040120K	4	60	12	6
W09050130K	5	60	13	6
W09060150K	6	60	15	6
W09080190K	8	65	19	8
W09100250K	10	70	25	10
W09120300K	12	80	30	12

WS-LN-EDS / 2날 롱넥 플랫

ULTRA FINE CARBIDE | WS | 0~-0.012 | SHRINK FIT | 30° | SPEED FEED P140~P145

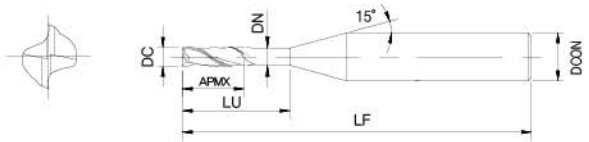


- 고성능 WS코팅이 적용된 2날 롱넥 스퀘어 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.
- 소경(ϕ 1이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W08001003K	0.1 X 0.3	45	0.15	4	0.09
W08001005K	0.1 X 0.5	45	0.15	4	0.083
W08002005K	0.2 X 0.5	45	0.3	4	0.18
W08002010K	0.2 X 1	45	0.3	4	0.18
W08002015K	0.2 X 1.5	45	0.3	4	0.18
W08003010K	0.3 X 1	45	0.45	4	0.28
W08003015K	0.3 X 1.5	45	0.45	4	0.28
W08003020K	0.3 X 2	45	0.45	4	0.28
W08003025K	0.3 X 2.5	45	0.45	4	0.28
W08003030K	0.3 X 3	45	0.45	4	0.28
W08003040K	0.3 X 4	45	0.45	4	0.28
W08003050K	0.3 X 5	45	0.45	4	0.28
W08004010K	0.4 X 1	45	0.6	4	0.37
W08004015K	0.4 X 1.5	45	0.6	4	0.37
W08004020K	0.4 X 2	45	0.6	4	0.37
W08004025K	0.4 X 2.5	45	0.6	4	0.37
W08004030K	0.4 X 3	45	0.6	4	0.37
W08004040K	0.4 X 4	45	0.6	4	0.37
W08004050K	0.4 X 5	45	0.6	4	0.37
W08004060K	0.4 X 6	45	0.6	4	0.37
W08005010K	0.5 X 1	45	0.7	4	0.45
W08005015K	0.5 X 1.5	45	0.7	4	0.45
W08005020K	0.5 X 2	45	0.7	4	0.45
W08005025K	0.5 X 2.5	45	0.7	4	0.45
W08005040K	0.5 X 4	45	0.7	4	0.45
W08005050K	0.5 X 5	45	0.7	4	0.45
W08005060K	0.5 X 6	45	0.7	4	0.45
W08005080K	0.5 X 8	45	0.7	4	0.45
W08006020K	0.6 X 2	45	0.9	4	0.55
W08006030K	0.6 X 3	45	0.9	4	0.55
W08006040K	0.6 X 4	45	0.9	4	0.55
W08006050K	0.6 X 5	45	0.9	4	0.55
W08006060K	0.6 X 6	45	0.9	4	0.55
W08006080K	0.6 X 8	45	0.9	4	0.55
W08006100K	0.6 X 10	45	0.9	4	0.55
W08007040K	0.7 X 4	45	1.2	4	0.65
W08007060K	0.7 X 6	45	1.2	4	0.65
W08008020K	0.8 X 2	45	1.2	4	0.75
W08008030K	0.8 X 3	45	1.2	4	0.75
W08008040K	0.8 X 4	45	1.2	4	0.75

WS-LN-EDS / 2날 롱넥 플랫

ULTRA FINE CARBIDE | WS | 0~-0.012 | SHRINK FIT | 30° | SPEED FEED P140~P145

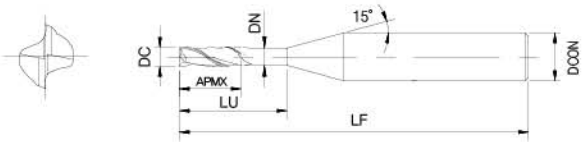


- 고성능 WS코팅이 적용된 2날 롱넥 스퀘어 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.
- 소경(ϕ 1이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W08008050K	0.8 X 5	45	1.2	4	0.75
W08008060K	0.8 X 6	45	1.2	4	0.75
W08008080K	0.8 X 8	45	1.2	4	0.75
W08008100K	0.8 X 10	45	1.2	4	0.75
W08008120K	0.8 X 12	45	1.2	4	0.75
W08010030K	1 X 3	50	1.5	4	0.95
W08010040K	1 X 4	50	1.5	4	0.95
W08010050K	1 X 5	50	1.5	4	0.95
W08010060K	1 X 6	50	1.5	4	0.95
W08010080K	1 X 8	50	1.5	4	0.95
W08010100K	1 X 10	50	1.5	4	0.95
W08010120K	1 X 12	50	1.5	4	0.95
W08010140K	1 X 14	50	1.5	4	0.95
W08010160K	1 X 16	50	1.5	4	0.95
W08010200K	1 X 20	55	1.5	4	0.95
W08012040K	1.2 X 4	50	1.8	4	1.15
W08012060K	1.2 X 6	50	1.8	4	1.15
W08012080K	1.2 X 8	50	1.8	4	1.15
W08012100K	1.2 X 10	50	1.8	4	1.15
W08012120K	1.2 X 12	50	1.8	4	1.15
W08015040K	1.5 X 4	50	2.3	4	1.45
W08015060K	1.5 X 6	50	2.3	4	1.45
W08015080K	1.5 X 8	50	2.3	4	1.45
W08015100K	1.5 X 10	50	2.3	4	1.45
W08015120K	1.5 X 12	50	2.3	4	1.45
W08015140K	1.5 X 14	50	2.3	4	1.45
W08015160K	1.5 X 16	50	2.3	4	1.45
W08015180K	1.5 X 18	55	2.3	4	1.45
W08015200K	1.5 X 20	55	2.3	4	1.45
W08020060K	2 X 6	50	3	4	1.95
W08020080K	2 X 8	50	3	4	1.95
W08020100K	2 X 10	50	3	4	1.95
W08020120K	2 X 12	50	3	4	1.95
W08020140K	2 X 14	50	3	4	1.95
W08020160K	2 X 16	50	3	4	1.95
W08020180K	2 X 18	55	3	4	1.95
W08020200K	2 X 20	55	3	4	1.95
W08020250K	2 X 25	60	3	4	1.95
W08020300K	2 X 30	70	3	4	1.95
W08025080K	2.5 X 8	50	4	4	2.45

WS-LN-EDS / 2날 롱넥 플랫

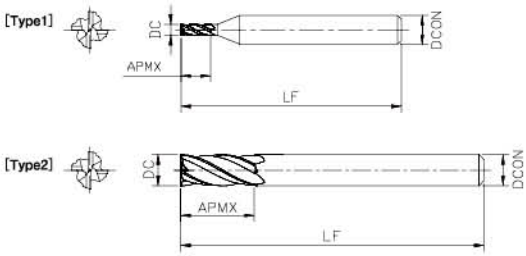
ULTRA FINE CARBIDE | WS | 0~-0.012 | SHRINK FIT | 30° | SPEED FEED P140~P145



- 고성능 WS코팅이 적용된 2날 롱넥 스퀘어 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.
- 소경(ϕ 10이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W08025100K	2.5 X 10	50	4	4	2.45
W08030080K	3 X 8	55	4.5	6	2.85
W08030100K	3 X 10	55	4.5	6	2.85
W08030120K	3 X 12	55	4.5	6	2.85
W08030140K	3 X 14	55	4.5	6	2.85
W08030160K	3 X 16	55	4.5	6	2.85
W08030180K	3 X 18	60	4.5	6	2.85
W08030200K	3 X 20	60	4.5	6	2.85
W08030250K	3 X 25	60	4.5	6	2.85
W08030300K	3 X 30	70	4.5	6	2.85
W08030350K	3 X 35	75	4.5	6	2.85
W08030400K	3 X 40	80	4.5	6	2.85
W08040100K	4 X 10	55	6	6	3.85
W08040120K	4 X 12	55	6	6	3.85
W08040160K	4 X 16	55	6	6	3.85
W08040200K	4 X 20	60	6	6	3.85
W08040250K	4 X 25	60	6	6	3.85
W08040300K	4 X 30	70	6	6	3.85
W08040350K	4 X 35	75	6	6	3.85
W08040400K	4 X 40	80	6	6	3.85

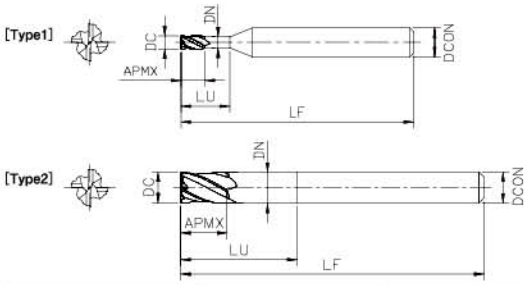
WS-EMS / 4날 플랫



- 고성능 WS코팅이 적용된 4날 스퀘어 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.

주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
W11010K	1	50	2.5	6
W11012K	1.2	50	3	6
W11015K	1.5	50	4	6
W11020K	2	50	6	6
W11025K	2.5	50	7	6
W11030K	3	60	8	6
W11035K	3.5	60	9	6
W11040K	4	60	10	6
W11050K	5	60	13	6
W11060K	6	60	15	6
W11080K	8	65	19	8
W11100K	10	70	25	10
W11120K	12	80	30	12

WS-LN-EMS / 4날 롱넥 플랫

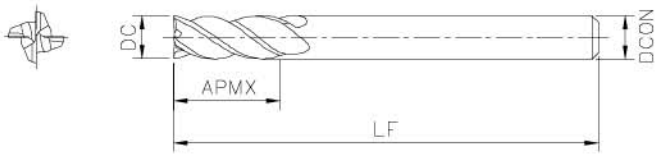


- 고성능 WS코팅이 적용된 4날 롱넥 스퀘어 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.

주문번호 EDP No.	외경 X 유효장 DC X LU	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W10010030K	1 X 3	50	1.5	4	0.95
W10010040K	1 X 4	50	1.5	4	0.95
W10010060K	1 X 6	50	1.5	4	0.95
W10010080K	1 X 8	50	1.5	4	0.95
W10010100K	1 X 10	50	1.5	4	0.95
W10010120K	1 X 12	50	1.5	4	0.95
W10015040K	1.5 X 4	50	2.3	4	1.45
W10015060K	1.5 X 6	50	2.3	4	1.45
W10015080K	1.5 X 8	50	2.3	4	1.45
W10015100K	1.5 X 10	50	2.3	4	1.45
W10015120K	1.5 X 12	50	2.3	4	1.45
W10020060K	2 X 6	50	3	4	1.95
W10020080K	2 X 8	50	3	4	1.95
W10020100K	2 X 10	50	3	4	1.95
W10020120K	2 X 12	50	3	4	1.95
W10020160K	2 X 16	50	3	4	1.95
W10020200K	2 X 20	50	3	4	1.95
W10030100K	3 X 10	55	5.5	6	2.85
W10030120K	3 X 12	55	5.5	6	2.85
W10030160K	3 X 16	55	5.5	6	2.85
W10030200K	3 X 20	60	5.5	6	2.85
W10040120K	4 X 12	55	6	6	3.85
W10040160K	4 X 16	55	6	6	3.85
W10040200K	4 X 20	60	6	6	3.85
W10040250K	4 X 25	60	6	6	3.85
W10060200K	6 X 20	80	9	6	5.8
W10060300K	8 X 30	80	12	8	7.8
W10080400K	8 X 40	100	12	8	7.8
W10100350K	10 X 35	80	15	10	9.7
W10100450K	10 X 45	100	15	10	9.7
W10120400K	12 X 40	100	18	12	11.7

WS-PHS / 4날 45도 플랫

ULTRA FINE CARBIDE | WS | 0~-0.02 | SHRINK FIT | 45° | SPEED FEED P150~P151

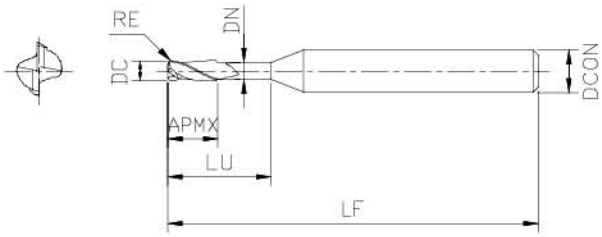


- 고성능 WS코팅이 적용된 중절삭용 4날 스퀘어 엔드밀입니다.
- 칩 배출성과 강성을 높인 강비틀림 엔드밀로서 측면절삭은 물론 홈절삭에도 고능률 중절삭이 가능합니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.

주문번호 EDP No.	외경 DC	전장 LF	날길이 APMX	자루경 DCON
W07030K	3	60	8	6
W07040K	4	60	11	6
W07050K	5	60	13	6
W07060K	6	60	13	6
W07080K	8	80	19	8
W07100K	10	80	22	10
W07120K	12	100	26	12
W07160K	16	115	32	16
W07200K	20	125	38	20

WS-LN-CR-EDS / 2날 롱넥 코너R

ULTRA FINE CARBIDE | WS | R ±0.015 | 0~-0.012 DC≤6 | 0~-0.015 6<DC | SHRINK FIT | 30° | SPEED FEED P140~P149

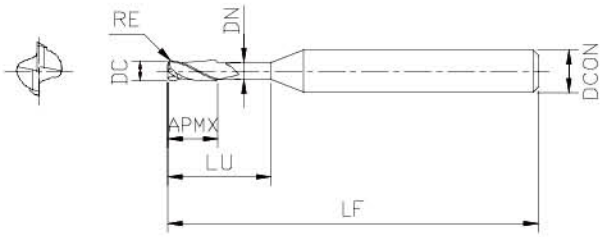


- 고성능 WS코팅이 적용된 2날 롱넥 코너R 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.
- 소경(ϕ 10이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W05004010005K	0.4 X 1 X R0.05	45	0.6	4	0.37
W05004015005K	0.4 X 1.5 X R0.05	45	0.6	4	0.37
W05004025005K	0.4 X 2.5 X R0.05	45	0.6	4	0.37
W05004030005K	0.4 X 3 X R0.05	45	0.6	4	0.37
W05004040005K	0.4 X 4 X R0.05	45	0.6	4	0.37
W05005010005K	0.5 X 1 X R0.05	45	0.7	4	0.45
W05005015005K	0.5 X 1.5 X R0.05	45	0.7	4	0.45
W05005025005K	0.5 X 2.5 X R0.05	45	0.7	4	0.45
W05005030005K	0.5 X 3 X R0.05	45	0.7	4	0.45
W05005040005K	0.5 X 4 X R0.05	45	0.7	4	0.45
W05006020005K	0.6 X 2 X R0.05	45	0.9	4	0.55
W05006020010K	0.6 X 2 X R0.1	45	0.9	4	0.55
W05006020020K	0.6 X 2 X R0.2	45	0.9	4	0.55
W05006040005K	0.6 X 4 X R0.05	45	0.9	4	0.55
W05006040010K	0.6 X 4 X R0.1	45	0.9	4	0.55
W05006040020K	0.6 X 4 X R0.2	45	0.9	4	0.55
W05006060005K	0.6 X 6 X R0.05	45	0.9	4	0.55
W05006060010K	0.6 X 6 X R0.1	45	0.9	4	0.55
W05006060020K	0.6 X 6 X R0.2	45	0.9	4	0.55
W05008020005K	0.8 X 2 X R0.05	45	1.2	4	0.75
W05008020010K	0.8 X 2 X R0.1	45	1.2	4	0.75
W05008020020K	0.8 X 2 X R0.2	45	1.2	4	0.75
W05008040005K	0.8 X 4 X R0.05	45	1.2	4	0.75
W05008040010K	0.8 X 4 X R0.1	45	1.2	4	0.75
W05008040020K	0.8 X 4 X R0.2	45	1.2	4	0.75
W05008060005K	0.8 X 6 X R0.05	45	1.2	4	0.75
W05008060010K	0.8 X 6 X R0.1	45	1.2	4	0.75
W05008060020K	0.8 X 6 X R0.2	45	1.2	4	0.75
W05008080005K	0.8 X 8 X R0.05	45	1.2	4	0.75
W05008080010K	0.8 X 8 X R0.1	45	1.2	4	0.75
W05008080020K	0.8 X 8 X R0.2	45	1.2	4	0.75
W05010030005K	1 X 3 X R0.05	50	2	4	0.95
W05010030010K	1 X 3 X R0.1	50	2	4	0.95
W05010030020K	1 X 3 X R0.2	50	2	4	0.95
W05010030030K	1 X 3 X R0.3	50	2	4	0.95
W05010040005K	1 X 4 X R0.05	50	2	4	0.95
W05010040010K	1 X 4 X R0.1	50	2	4	0.95
W05010040020K	1 X 4 X R0.2	50	2	4	0.95
W05010040030K	1 X 4 X R0.3	50	2	4	0.95
W05010060005K	1 X 6 X R0.05	50	2	4	0.95

WS-LN-CR-EDS / 2날 롱넥 코너R

ULTRA FINE CARBIDE | WS | R ±0.015 | 0~-0.012 DC≤6 | 0~-0.015 6<DC | SHRINK FIT | 30° | SPEED FEED P140~P149

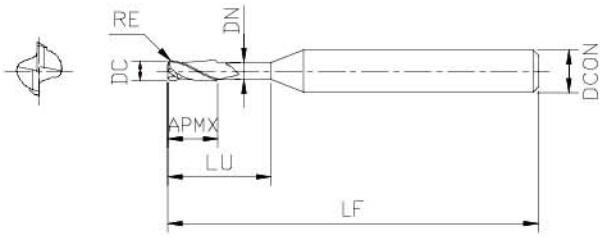


- 고성능 WS코팅이 적용된 2날 롱넥 코너R 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.
- 소경(ϕ 10이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W05010060010K	1 X 6 X R0.1	50	2	4	0.95
W05010060020K	1 X 6 X R0.2	50	2	4	0.95
W05010060030K	1 X 6 X R0.3	50	2	4	0.95
W05010080005K	1 X 8 X R0.05	50	2	4	0.95
W05010080010K	1 X 8 X R0.1	50	2	4	0.95
W05010080020K	1 X 8 X R0.2	50	2	4	0.95
W05010080030K	1 X 8 X R0.3	50	2	4	0.95
W05010100005K	1 X 10 X R0.05	50	2	4	0.95
W05010100010K	1 X 10 X R0.1	50	2	4	0.95
W05010100020K	1 X 10 X R0.2	50	2	4	0.95
W05010100030K	1 X 10 X R0.3	50	2	4	0.95
W05015040005K	1.5 X 4 X R0.05	50	2.5	4	1.45
W05015040010K	1.5 X 4 X R0.1	50	2.5	4	1.45
W05015040020K	1.5 X 4 X R0.2	50	2.5	4	1.45
W05015040030K	1.5 X 4 X R0.3	50	2.5	4	1.45
W05015040050K	1.5 X 4 X R0.5	50	2.5	4	1.45
W05015060005K	1.5 X 6 X R0.05	50	2.5	4	1.45
W05015060010K	1.5 X 6 X R0.1	50	2.5	4	1.45
W05015060020K	1.5 X 6 X R0.2	50	2.5	4	1.45
W05015060030K	1.5 X 6 X R0.3	50	2.5	4	1.45
W05015060050K	1.5 X 6 X R0.5	50	2.5	4	1.45
W05015080005K	1.5 X 8 X R0.05	50	2.5	4	1.45
W05015080010K	1.5 X 8 X R0.1	50	2.5	4	1.45
W05015080020K	1.5 X 8 X R0.2	50	2.5	4	1.45
W05015080030K	1.5 X 8 X R0.3	50	2.5	4	1.45
W05015080050K	1.5 X 8 X R0.5	50	2.5	4	1.45
W05015100005K	1.5 X 10 X R0.05	50	2.5	4	1.45
W05015100010K	1.5 X 10 X R0.1	50	2.5	4	1.45
W05015100020K	1.5 X 10 X R0.2	50	2.5	4	1.45
W05015100030K	1.5 X 10 X R0.3	50	2.5	4	1.45
W05015100050K	1.5 X 10 X R0.5	50	2.5	4	1.45
W05015120005K	1.5 X 12 X R0.05	50	2.5	4	1.45
W05015120010K	1.5 X 12 X R0.1	50	2.5	4	1.45
W05015120020K	1.5 X 12 X R0.2	50	2.5	4	1.45
W05015120030K	1.5 X 12 X R0.3	50	2.5	4	1.45
W05015120050K	1.5 X 12 X R0.5	50	2.5	4	1.45
W05020060010K	2 X 6 X R0.1	50	3	4	1.95
W05020060020K	2 X 6 X R0.2	50	3	4	1.95
W05020060030K	2 X 6 X R0.3	50	3	4	1.95
W05020060050K	2 X 6 X R0.5	50	3	4	1.95

WS-LN-CR-EDS / 2날 롱넥 코너R

ULTRA FINE CARBIDE | WS | R ±0.015 | 0~-0.012 DC≤6 | 0~-0.015 6<DC | SHRINK FIT | 30° | SPEED FEED P140~P149

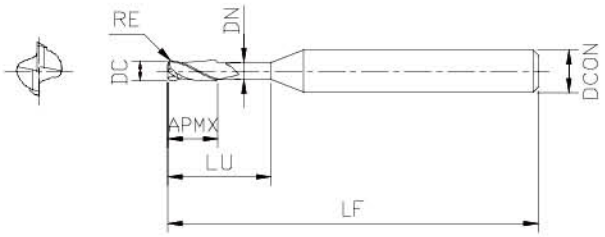


- 고성능 WS코팅이 적용된 2날 롱넥 코너R 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.
- 소경(ϕ 10이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W05020080010K	2 X 8 X R0.1	50	3	4	1.95
W05020080020K	2 X 8 X R0.2	50	3	4	1.95
W05020080030K	2 X 8 X R0.3	50	3	4	1.95
W05020080050K	2 X 8 X R0.5	50	3	4	1.95
W05020100010K	2 X 10 X R0.1	50	3	4	1.95
W05020100020K	2 X 10 X R0.2	50	3	4	1.95
W05020100030K	2 X 10 X R0.3	50	3	4	1.95
W05020100050K	2 X 10 X R0.5	50	3	4	1.95
W05020120010K	2 X 12 X R0.1	50	3	4	1.95
W05020120020K	2 X 12 X R0.2	50	3	4	1.95
W05020120030K	2 X 12 X R0.3	50	3	4	1.95
W05020120050K	2 X 12 X R0.5	50	3	4	1.95
W05020160010K	2 X 16 X R0.1	50	3	4	1.95
W05020160020K	2 X 16 X R0.2	50	3	4	1.95
W05020160030K	2 X 16 X R0.3	50	3	4	1.95
W05020160050K	2 X 16 X R0.5	50	3	4	1.95
W05020200010K	2 X 20 X R0.1	50	3	4	1.95
W05020200020K	2 X 20 X R0.2	50	3	4	1.95
W05020200030K	2 X 20 X R0.3	50	3	4	1.95
W05020200050K	2 X 20 X R0.5	50	3	4	1.95
W05025080020K	2.5 X 8 X R0.2	55	3.5	4	2.45
W05025080030K	2.5 X 8 X R0.3	55	3.5	4	2.45
W05025080050K	2.5 X 8 X R0.5	55	3.5	4	2.45
W05025100020K	2.5 X 10 X R0.2	55	3.5	4	2.45
W05025100030K	2.5 X 10 X R0.3	55	3.5	4	2.45
W05025100050K	2.5 X 10 X R0.5	55	3.5	4	2.45
W05025120020K	2.5 X 12 X R0.2	55	3.5	4	2.45
W05025120030K	2.5 X 12 X R0.3	55	3.5	4	2.45
W05025120050K	2.5 X 12 X R0.5	55	3.5	4	2.45
W05025160020K	2.5 X 16 X R0.2	55	3.5	4	2.45
W05025160030K	2.5 X 16 X R0.3	55	3.5	4	2.45
W05025160050K	2.5 X 16 X R0.5	55	3.5	4	2.45
W05030080010K	3 X 8 X R0.1	55	4.5	6	2.85
W05030080020K	3 X 8 X R0.2	55	4.5	6	2.85
W05030080030K	3 X 8 X R0.3	55	4.5	6	2.85
W05030080050K	3 X 8 X R0.5	55	4.5	6	2.85
W05030080100K	3 X 8 X R1	55	4.5	6	2.85
W05030100010K	3 X 10 X R0.1	55	4.5	6	2.85
W05030100020K	3 X 10 X R0.2	55	4.5	6	2.85
W05030100030K	3 X 10 X R0.3	55	4.5	6	2.85

WS-LN-CR-EDS / 2날 롱넥 코너R

ULTRA FINE CARBIDE | WS | R ±0.015 | 0~-0.012 DC≤6 | 0~-0.015 6<DC | SHRINK FIT | 30° | SPEED FEED P140~P149

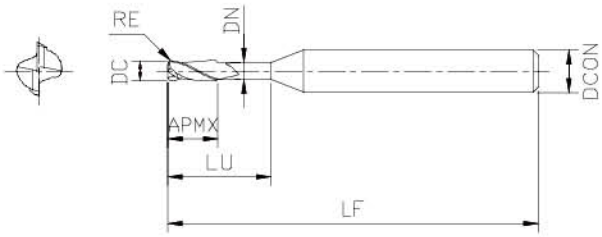


- 고성능 WS코팅이 적용된 2날 롱넥 코너R 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.
- 소경(ϕ 10이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W05030100050K	3 X 10 X R0.5	55	4.5	6	2.85
W05030100100K	3 X 10 X R1	55	4.5	6	2.85
W05030120010K	3 X 12 X R0.1	55	4.5	6	2.85
W05030120020K	3 X 12 X R0.2	55	4.5	6	2.85
W05030120030K	3 X 12 X R0.3	55	4.5	6	2.85
W05030120050K	3 X 12 X R0.5	55	4.5	6	2.85
W05030120100K	3 X 12 X R1	55	4.5	6	2.85
W05030160010K	3 X 16 X R0.1	55	4.5	6	2.85
W05030160020K	3 X 16 X R0.2	55	4.5	6	2.85
W05030160030K	3 X 16 X R0.3	55	4.5	6	2.85
W05030160050K	3 X 16 X R0.5	55	4.5	6	2.85
W05030160100K	3 X 16 X R1	55	4.5	6	2.85
W05030200010K	3 X 20 X R0.1	60	4.5	6	2.85
W05030200020K	3 X 20 X R0.2	60	4.5	6	2.85
W05030200030K	3 X 20 X R0.3	60	4.5	6	2.85
W05030200050K	3 X 20 X R0.5	60	4.5	6	2.85
W05030200100K	3 X 20 X R1	60	4.5	6	2.85
W05040100010K	4 X 10 X R0.1	55	6	6	3.85
W05040100020K	4 X 10 X R0.2	55	6	6	3.85
W05040100030K	4 X 10 X R0.3	55	6	6	3.85
W05040100050K	4 X 10 X R0.5	55	6	6	3.85
W05040100100K	4 X 10 X R1	55	6	6	3.85
W05040120010K	4 X 12 X R0.1	55	6	6	3.85
W05040120020K	4 X 12 X R0.2	55	6	6	3.85
W05040120030K	4 X 12 X R0.3	55	6	6	3.85
W05040120050K	4 X 12 X R0.5	55	6	6	3.85
W05040120100K	4 X 12 X R1	55	6	6	3.85
W05040160010K	4 X 16 X R0.1	55	6	6	3.85
W05040160020K	4 X 16 X R0.2	55	6	6	3.85
W05040160030K	4 X 16 X R0.3	55	6	6	3.85
W05040160050K	4 X 16 X R0.5	55	6	6	3.85
W05040160100K	4 X 16 X R1	55	6	6	3.85
W05040200010K	4 X 20 X R0.1	60	6	6	3.85
W05040200020K	4 X 20 X R0.2	60	6	6	3.85
W05040200030K	4 X 20 X R0.3	60	6	6	3.85
W05040200050K	4 X 20 X R0.5	60	6	6	3.85
W05040200100K	4 X 20 X R1	60	6	6	3.85
W05040250010K	4 X 25 X R0.1	60	6	6	3.85
W05040250020K	4 X 25 X R0.2	60	6	6	3.85
W05040250030K	4 X 25 X R0.3	60	6	6	3.85

WS-LN-CR-EDS / 2날 롱넥 코너R

ULTRA FINE CARBIDE | WS | R ±0.015 | 0~-0.012 DC≤6 | 0~-0.015 6<DC | SHRINK FIT | 30° | SPEED FEED P140~P149

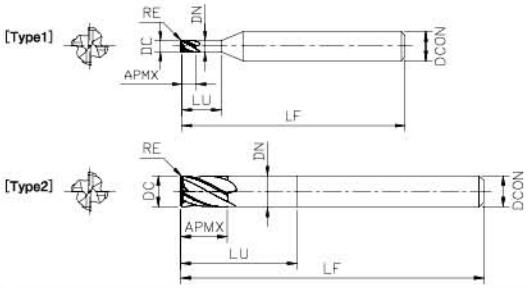


- 고성능 WS코팅이 적용된 2날 롱넥 코너R 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.
- 소경(ϕ 10이하)은 목부 강성증대를 위해 2단 목부를 적용하였습니다.

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W05040250050K	4 X 25 X R0.5	60	6	6	3.85
W05040250100K	4 X 25 X R1	60	6	6	3.85
W05060150020K	6 X 15 X R0.2	60	9	6	5.8
W05060150030K	6 X 15 X R0.3	60	9	6	5.8
W05060150050K	6 X 15 X R0.5	60	9	6	5.8
W05060150100K	6 X 15 X R1	60	9	6	5.8
W05060150150K	6 X 15 X R1.5	60	9	6	5.8
W05060150200K	6 X 15 X R2	60	9	6	5.8
W05080200020K	8 X 20 X R0.2	65	12	8	7.8
W05080200030K	8 X 20 X R0.3	65	12	8	7.8
W05080200050K	8 X 20 X R0.5	65	12	8	7.8
W05080200100K	8 X 20 X R1	65	12	8	7.8
W05080200150K	8 X 20 X R1.5	65	12	8	7.8
W05100250020K	10 X 25 X R0.2	70	15	10	9.7
W05100250030K	10 X 25 X R0.3	70	15	10	9.7
W05100250050K	10 X 25 X R0.5	70	15	10	9.7
W05100250100K	10 X 25 X R1	70	15	10	9.7
W05100250150K	10 X 25 X R1.5	70	15	10	9.7
W05100250200K	10 X 25 X R2	70	15	10	9.7
W05120300030K	12 X 30 X R0.3	80	18	12	11.7
W05120300050K	12 X 30 X R0.5	80	18	12	11.7
W05120300100K	12 X 30 X R1	80	18	12	11.7
W05120300150K	12 X 30 X R1.5	80	18	12	11.7
W05120300200K	12 X 30 X R2	80	18	12	11.7

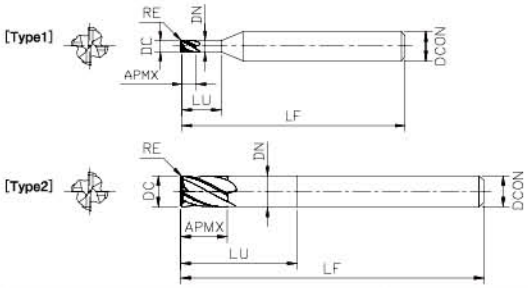
WS-LN-CR-EMS / 4날 롱넥 코너R

- 고성능 WS코팅이 적용된 4날 롱넥 코너R 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.



주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W06020060010K	2 X 6 X R0.1	50	3	4	1.95
W06020060020K	2 X 6 X R0.2	50	3	4	1.95
W06020060030K	2 X 6 X R0.3	50	3	4	1.95
W06020060050K	2 X 6 X R0.5	50	3	4	1.95
W06020080010K	2 X 8 X R0.1	50	3	4	1.95
W06020080020K	2 X 8 X R0.2	50	3	4	1.95
W06020080030K	2 X 8 X R0.3	50	3	4	1.95
W06020080050K	2 X 8 X R0.5	50	3	4	1.95
W06030080020K	3 X 8 X R0.2	55	4	6	2.85
W06030080030K	3 X 8 X R0.3	55	4	6	2.85
W06030080050K	3 X 8 X R0.5	55	4	6	2.85
W06030100020K	3 X 10 X R0.2	55	4	6	2.85
W06030100030K	3 X 10 X R0.3	55	4	6	2.85
W06030100050K	3 X 10 X R0.5	55	4	6	2.85
W06030100100K	3 X 10 X R1	55	4	6	2.85
W06030120020K	3 X 12 X R0.2	55	4	6	2.85
W06030120030K	3 X 12 X R0.3	55	4	6	2.85
W06030120050K	3 X 12 X R0.5	55	4	6	2.85
W06030120100K	3 X 12 X R1	55	4	6	2.85
W06030160020K	3 X 16 X R0.2	55	4	6	2.85
W06030160030K	3 X 16 X R0.3	55	4	6	2.85
W06030160050K	3 X 16 X R0.5	55	4	6	2.85
W06030160100K	3 X 16 X R1	55	4	6	2.85
W06030200020K	3 X 20 X R0.2	60	4	6	2.85
W06030200030K	3 X 20 X R0.3	60	4	6	2.85
W06030200050K	3 X 20 X R0.5	60	4	6	2.85
W06040100010K	4 X 10 X R0.1	55	6	6	3.85
W06040100020K	4 X 10 X R0.2	55	6	6	3.85
W06040100030K	4 X 10 X R0.3	55	6	6	3.85
W06040100100K	4 X 10 X R1	55	6	6	3.85
W06040120010K	4 X 12 X R0.1	55	6	6	3.85
W06040120020K	4 X 12 X R0.2	55	6	6	3.85
W06040120030K	4 X 12 X R0.3	55	6	6	3.85
W06040120050K	4 X 12 X R0.5	55	6	6	3.85
W06040120100K	4 X 12 X R1	55	6	6	3.85
W06040160010K	4 X 16 X R0.1	55	6	6	3.85
W06040160020K	4 X 16 X R0.2	55	6	6	3.85
W06040160030K	4 X 16 X R0.3	55	6	6	3.85
W06040160050K	4 X 16 X R0.5	55	6	6	3.85
W06040160100K	4 X 16 X R1	55	6	6	3.85

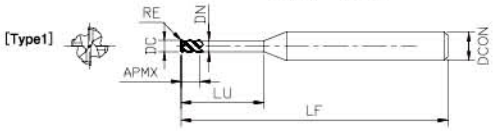
WS-LN-CR-EMS / 4날 롱넥 코너R

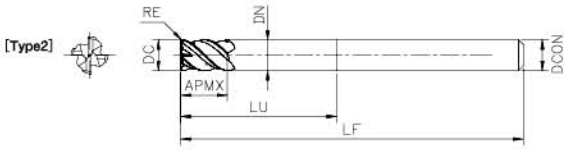


- 고성능 WS코팅이 적용된 4날 롱넥 코너R 엔드밀입니다.
- 초정밀 가공으로 가공오차를 최소화 하였습니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.

주문번호 EDP No.	외경 X 유효장 X 코너R DC X LU X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W06040200010K	4 X 20 X R0.1	60	6	6	3.85
W06040200020K	4 X 20 X R0.2	60	6	6	3.85
W06040200030K	4 X 20 X R0.3	60	6	6	3.85
W06040200050K	4 X 20 X R0.5	60	6	6	3.85
W06040200100K	4 X 20 X R1	60	6	6	3.85
W06040250030K	4 X 25 X R0.3	60	6	6	3.85
W06040250050K	4 X 25 X R0.5	60	6	6	3.85
W06060150020K	6 X 15 X R0.2	60	9	6	5.8
W06060150030K	6 X 15 X R0.3	60	9	6	5.8
W06060150050K	6 X 15 X R0.5	60	9	6	5.8
W06060150100K	6 X 15 X R1	60	9	6	5.8
W06080200020K	8 X 20 X R0.2	70	12	8	7.8
W06080200030K	8 X 20 X R0.3	70	12	8	7.8
W06080200050K	8 X 20 X R0.5	70	12	8	7.8
W06080200100K	8 X 20 X R1	70	12	8	7.8
W06100250020K	10 X 25 X R0.2	70	15	10	9.7
W06100250030K	10 X 25 X R0.3	70	15	10	9.7
W06100250050K	10 X 25 X R0.5	70	15	10	9.7
W06100250100K	10 X 25 X R1	70	15	10	9.7
W06120300050K	12 X 30 X R0.5	80	18	12	11.7
W06120300100K	12 X 30 X R1	80	18	12	11.7

WS-PKE / 4날 45도 코너R

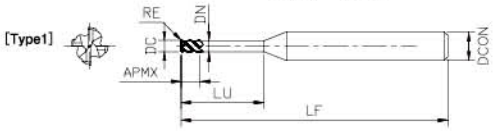


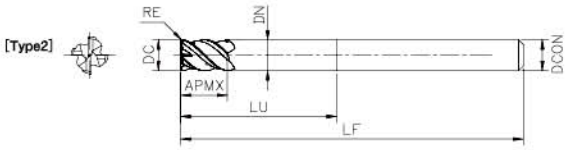


- 고성능 WS코팅이 적용된 중절삭용 4날 코너R 엔드밀입니다.
- 필요 최소의 날장과 강비틀림으로 포켓 가공시 고능률 가공이 가능한 최적의 엔드밀입니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.

주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W13030020K	3 X R0.2	50	5	6	2.85
W13030050K	3 X R0.5	50	5	6	2.85
W13040020K	4 X R0.2	50	6	6	3.8
W13040050K	4 X R0.5	50	6	6	3.8
W13050020K	5 X R0.2	50	8	6	4.8
W13050050K	5 X R0.5	50	8	6	4.8
W13060050K	6 X R0.5	50	9	6	5.8
W13060100K	6 X R1	50	9	6	5.8
W13080050K	8 X R0.5	60	12	8	7.8
W13080100K	8 X R1	60	12	8	7.8
W13100050K	10 X R0.5	70	15	10	9.7
W13100100K	10 X R1	70	15	10	9.7
W13120050K	12 X R0.5	80	18	12	11.7
W13120100K	12 X R1	80	18	12	11.7

WS-LS-PKE / 4날 45도 코너R (롱생크)



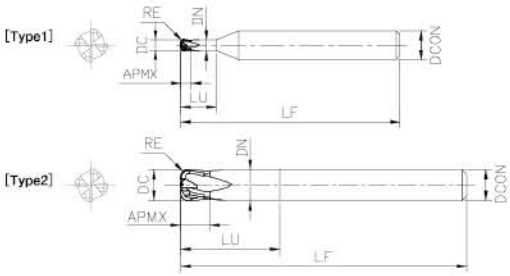


- 고성능 WS코팅이 적용된 중절삭용 롱생크 4날 코너R 엔드밀입니다.
- 필요 최소의 날장과 강비틀림으로 포켓 가공시 고능률 가공이 가능한 최적의 엔드밀입니다.
- 롱 생크로 공구돌출길이를 크게 할 수 있습니다.

주문번호 EDP No.	외경 X 코너R DC X RE			전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W14040020K	4	X	R0.2	70	6	6	3.8
W14040050K	4	X	R0.5	70	6	6	3.8
W14050020K	5	X	R0.2	80	8	6	4.8
W14050050K	5	X	R0.5	80	8	6	4.8
W14060050K	6	X	R0.5	90	9	6	5.8
W14060100K	6	X	R1	90	9	6	5.8
W14080050K	8	X	R0.5	100	12	8	7.8
W14080100K	8	X	R1	100	12	8	7.8
W14100050K	10	X	R0.5	100	15	10	9.7
W14100100K	10	X	R1	100	15	10	9.7
W14120050K	12	X	R0.5	110	18	12	11.7
W14120100K	12	X	R1	110	18	12	11.7

WS-CRE / 4날 고이송용 코너R

ULTRA FINE CARBIDE | WS | R ±0.015 | 0~-0.02 | SHRINK FIT | 15° | SPEED FEED P154



- 고성능 WS코팅이 적용된 고이송용 4날 코너R 엔드밀입니다.
- 신개념 코너R 형상을 적용하여 금형가공 황삭 및 중삭용으로 고능률 가공이 가능합니다.
- 피삭재 경도 HRC35~HRC60까지 폭넓은 피삭재에 적용가능 합니다.

주문번호 EDP No.	외경 X 코너R DC X RE	전장 LF	날길이 APMX	자루경 DCON	목부경 DN
W12020050K	2 X R0.5	50	2	6	1.9
W12030050K	3 X R0.5	50	3	6	2.9
W12040050K	4 X R0.5	50	4	6	3.9
W12040100K	4 X R1	50	4	6	3.9
W12050100K	5 X R1	50	5	6	4.9
W12050150K	5 X R1.5	50	5	6	4.9
W12060100K	6 X R1	50	6	6	5.85
W12060150K	6 X R1.5	50	6	6	5.85
W12080100K	8 X R1	60	8	8	7.85
W12080150K	8 X R2	60	8	8	7.85
W12100100K	10 X R1	70	10	10	9.7
W12100200K	10 X R2	70	10	10	9.7
W12120200K	12 X R2	75	12	12	11.7
W12120300K	12 X R3	75	12	12	11.7

절삭조건 Cutting Condition

절삭조건 계산법

1. 절삭속도 V(m/min)

$$V = \frac{\pi \times D \times N}{1000}$$

π : 원주율
D : 공구외경(직경)(mm)
N : 주축회전수 (min^{-1})

2. 회전수 N(min^{-1})

$$N = \frac{1000 \times V}{\pi \times D}$$

π : 원주율
D : 공구외경(직경)(mm)
N : 주축회전수 (min^{-1})

3. 이송속도 F(mm/min)

$$F = N \times Z \times S_z$$

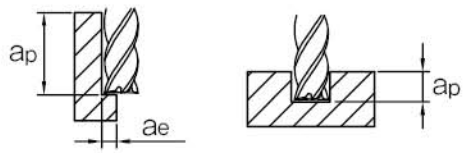
Z : 날수
Sz : 한날당 이송량
N : 주축회전수(min^{-1})

4. 1날당 이송량 Sz(mm/날)

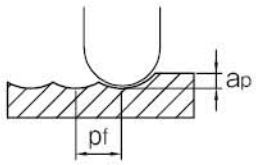
$$Sz = \frac{F}{N \times Z}$$

F : 이송속도(mm/min)
N : 주축회전수 (min^{-1})
Z : 날수

절입량 기호



플랫, 코너R 엔드밀 절입기호
ap : 축방향절입량
ae : 측면절입량



볼 엔드밀 절입기호
ap : 축방향절입량
pf : 피크피드 이송량

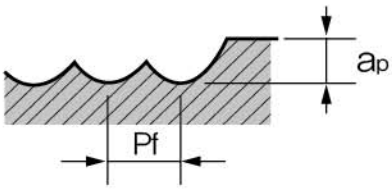
SP2B / 2날 볼

- 일반절삭조건

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 (HRC)	~32 HRC				33~41 HRC				42~50 HRC			
반지름 RE	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	Pf	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	Pf	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	Pf
R 0.05	32,000	80	0.005	0.005	32,000	50	0.005	0.005	32,000	35	0.005	0.005
R 0.075	32,000	130	0.0075	0.0075	32,000	130	0.0075	0.0075	32,000	130	0.005	0.005
R 0.1	32,000	210	0.010	0.010	32,000	210	0.010	0.010	32,000	210	0.005	0.005
R 0.15	32,000	330	0.015	0.015	32,000	290	0.015	0.015	32,000	215	0.015	0.005
R 0.2	32,000	430	0.02	0.08	32,000	350	0.020	0.080	32,000	215	0.02	0.04
R 0.25	32,000	480	0.025	0.10	32,000	400	0.025	0.10	32,000	240	0.025	0.05
R 0.3	32,000	520	0.03	0.12	32,000	440	0.030	0.12	32,000	280	0.03	0.06
R 0.35	32,000	530	0.035	0.14	32,000	440	0.035	0.14	32,000	285	0.035	0.07
R 0.4	32,000	580	0.04	0.16	27,500	440	0.040	0.16	19,000	305	0.04	0.08
R 0.45	28,500	620	0.045	0.18	24,000	430	0.045	0.18	16,500	295	0.045	0.09
R 0.5	27,000	650	0.05	0.20	21,000	420	0.050	0.20	15,000	300	0.05	0.10
R 0.6	22,600	650	0.06	0.24	17,500	420	0.060	0.24	12,500	300	0.06	0.12
R 0.75	18,100	650	0.075	0.30	14,000	420	0.075	0.30	10,100	305	0.075	0.15
R 1	13,500	650	0.20	0.40	10,500	420	0.20	0.40	7,600	305	0.10	0.20
R 1.25	11,000	655	0.25	0.50	8,500	420	0.25	0.50	6,100	305	0.125	0.25
R 1.5	9,200	660	0.30	0.60	7,100	425	0.30	0.60	5,100	305	0.15	0.30
R 1.75	7,900	660	0.35	0.70	6,300	440	0.35	0.70	4,900	345	0.175	0.35
R 2	6,900	660	0.40	0.80	5,850	465	0.40	0.80	4,800	390	0.20	0.40
R 2.25	6,400	690	0.45	0.90	5,250	470	0.45	0.90	4,400	395	0.225	0.45
R 2.5	5,800	700	0.50	1.0	4,800	480	0.50	1.0	4,000	400	0.25	0.50
R 2.75	5,300	700	0.55	1.1	4,400	480	0.55	1.1	3,700	405	0.275	0.55
R 3	4,900	705	0.60	1.2	4,100	490	0.60	1.2	3,400	410	0.30	0.60
R 3.25	4,850	755	0.65	1.3	4,000	520	0.65	1.3	3,250	425	0.325	0.65
R 3.5	4,600	775	0.70	1.4	3,950	550	0.70	1.4	3,100	435	0.35	0.70
R 4	4,300	830	0.80	1.6	3,650	580	0.80	1.6	3,000	480	0.40	0.80
R 4.25	4,000	815	0.85	1.7	3,400	580	0.85	1.7	2,750	470	0.425	0.85
R 4.5	3,750	815	0.90	1.8	3,200	580	0.9	1.8	2,600	470	0.45	0.9
R 5	3,250	780	1.0	2.0	2,750	550	1.0	2.0	2,300	460	0.5	1.0
R 5.5	2,900	770	1.1	2.2	2,450	540	1.1	2.2	2,100	465	0.55	1.1
R 6	2,800	735	1.2	2.4	2,150	515	1.2	2.4	1,900	445	0.6	1.2
R 6.5	2,600	680	1.3	2.6	2,000	480	1.3	2.6	1,800	420	0.65	1.3
R 7	2,400	635	1.4	2.8	1,850	445	1.4	2.8	1,700	395	0.7	1.4
R 7.5	2,250	590	1.5	3.0	1,750	415	1.5	3.0	1,550	365	0.75	1.5
R 8	2,100	550	1.6	3.2	1,600	390	1.6	3.2	1,500	340	0.8	1.6
R 9	1,850	490	1.8	3.6	1,400	340	1.8	3.6	1,300	300	0.9	1.8
R 10	1,650	440	2.0	4.0	1,250	305	2.0	4.0	1,150	270	1.0	2.0
R 12.5	1,350	350	2.5	5.0	1,000	240	2.5	5.0	920	215	1.25	2.5

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



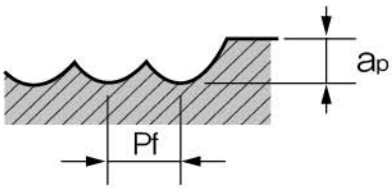
SP2BN / 2날 롱넥 볼

- 일반절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 (HRC)		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	Pf	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	Pf	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	Pf
R0.1	0.5	32,000	200	0.010	0.010	32,000	200	0.010	0.010	32,000	200	0.005	0.005
	1	32,000	100	0.010	0.010	32,000	100	0.010	0.010	32,000	80	0.005	0.005
	1.5	32,000	100	0.010	0.010	32,000	100	0.010	0.010	32,000	80	0.005	0.005
	2	32,000	100	0.005	0.005	32,000	100	0.005	0.005	32,000	80	0.005	0.005
R0.15	1	32,000	300	0.010	0.015	32,000	200	0.010	0.015	32,000	200	0.005	0.005
	1.5	32,000	300	0.010	0.015	32,000	200	0.010	0.015	32,000	200	0.005	0.005
	2	32,000	300	0.010	0.015	32,000	200	0.010	0.015	32,000	200	0.005	0.005
	2.5	32,000	300	0.010	0.010	32,000	200	0.010	0.010	32,000	200	0.010	0.010
	3	32,000	300	0.010	0.010	32,000	200	0.010	0.010	32,000	200	0.005	0.010
	4	32,000	180	0.010	0.010	32,000	120	0.010	0.010	32,000	120	0.005	0.005
	5	32,000	100	0.005	0.010	32,000	70	0.005	0.010	32,000	70	0.003	0.005
R0.2	1	32,000	400	0.015	0.025	32,000	300	0.015	0.020	32,000	300	0.010	0.010
	1.5	32,000	400	0.015	0.025	32,000	300	0.015	0.020	32,000	300	0.010	0.010
	2	27,000	300	0.015	0.025	27,000	200	0.015	0.020	27,000	200	0.010	0.010
	2.5	27,000	300	0.015	0.025	27,000	200	0.015	0.020	27,000	200	0.010	0.010
	3	27,000	300	0.015	0.025	27,000	200	0.015	0.020	27,000	200	0.010	0.010
	4	27,000	300	0.005	0.015	27,000	200	0.005	0.012	27,000	200	0.005	0.010
	5	27,000	200	0.005	0.015	27,000	100	0.005	0.012	27,000	100	0.005	0.010
	6	27,000	100	0.005	0.008	27,000	80	0.005	0.006	27,000	80	0.003	0.005
	8	27,000	80	0.005	0.008	27,000	60	0.005	0.006	27,000	60	0.003	0.005
	10	27,000	80	0.005	0.008	27,000	60	0.005	0.006	27,000	60	0.003	0.005
R0.25	1	32,000	500	0.020	0.025	32,000	400	0.020	0.020	32,000	400	0.010	0.010
	2	32,000	400	0.020	0.025	32,000	300	0.020	0.020	32,000	300	0.010	0.010
	3	27,000	300	0.020	0.025	27,000	200	0.020	0.020	27,000	200	0.010	0.010
	4	27,000	300	0.020	0.025	27,000	200	0.020	0.020	27,000	200	0.010	0.010
	5	20,000	200	0.020	0.025	20,000	150	0.020	0.020	20,000	150	0.010	0.010
	6	20,000	200	0.010	0.015	20,000	150	0.010	0.010	20,000	150	0.010	0.010
	8	15,000	200	0.010	0.015	15,000	150	0.010	0.010	15,000	150	0.005	0.010
	10	15,000	100	0.005	0.005	15,000	80	0.005	0.005	15,000	80	0.003	0.005
	12	15,000	80	0.005	0.005	15,000	70	0.005	0.005	15,000	60	0.003	0.005
R0.3	1	32,000	600	0.030	0.030	32,000	500	0.030	0.050	32,000	500	0.030	0.030
	2	32,000	450	0.030	0.030	32,000	300	0.030	0.050	32,000	300	0.030	0.030
	3	25,000	250	0.030	0.030	24,000	200	0.030	0.050	24,000	200	0.030	0.030
	4	25,000	250	0.030	0.030	24,000	200	0.030	0.040	24,000	200	0.030	0.030
	5	25,000	250	0.030	0.030	24,000	200	0.030	0.040	24,000	200	0.020	0.020
	6	20,000	150	0.030	0.030	20,000	150	0.030	0.040	20,000	150	0.020	0.020
	8	20,000	150	0.030	0.030	20,000	150	0.030	0.040	20,000	150	0.020	0.020

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



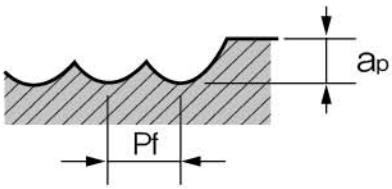
SP2BN / 2날 롱넥 볼

- 일반절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 HARDNESS		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF
R0.3	10	17,000	100	0.015	0.025	17,000	100	0.015	0.020	17,000	100	0.005	0.005
	12	17,000	80	0.015	0.025	17,000	80	0.010	0.012	17,000	80	0.005	0.005
	14	17,000	60	0.010	0.025	17,000	60	0.010	0.012	17,000	60	0.005	0.005
R0.35	2	28,000	450	0.040	0.035	27,500	350	0.030	0.050	27,500	350	0.030	0.035
	4	28,000	450	0.040	0.035	27,500	300	0.030	0.050	27,500	300	0.030	0.035
R0.3	10	17,000	100	0.02	0.03	17,000	100	0.02	0.02	17,000	100	0.01	0.01
	12	17,000	80	0.02	0.03	17,000	80	0.01	0.01	17,000	80	0.01	0.01
	14	17,000	60	0.01	0.03	17,000	60	0.01	0.01	17,000	60	0.01	0.01
R0.35	2	28,000	450	0.04	0.04	27,500	350	0.03	0.05	27,500	350	0.03	0.04
	4	28,000	450	0.04	0.04	27,500	300	0.03	0.05	27,500	300	0.03	0.04
	6	20,000	400	0.03	0.04	25,000	250	0.03	0.05	25,000	250	0.03	0.04
	8	17,000	250	0.03	0.04	23,000	200	0.03	0.05	23,000	200	0.03	0.04
	10	15,000	200	0.02	0.04	21,000	150	0.02	0.05	21,000	150	0.02	0.04
R0.4	2	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	3	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	4	23,000	450	0.04	0.08	21,000	300	0.04	0.06	21,000	300	0.04	0.04
	5	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.03
	6	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.03
	7	21,000	250	0.04	0.06	19,000	200	0.04	0.05	19,000	200	0.02	0.03
	8	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.03
	10	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.03
	12	19,000	150	0.04	0.06	17,000	150	0.04	0.05	17,000	150	0.02	0.03
	14	17,000	100	0.03	0.06	15,000	100	0.03	0.05	15,000	100	0.02	0.03
R0.45	4	23,000	450	0.04	0.07	21,000	300	0.04	0.07	21,000	300	0.04	0.05
	8	19,000	250	0.04	0.07	17,000	200	0.04	0.07	17,000	250	0.04	0.05
R0.5	2	25,000	600	0.05	0.10	21,000	400	0.05	0.08	21,000	400	0.05	0.05
	2.5	25,000	600	0.05	0.10	21,000	400	0.05	0.08	21,000	400	0.05	0.05
	3	25,000	500	0.05	0.10	21,000	300	0.05	0.08	21,000	300	0.05	0.05
	4	25,000	500	0.05	0.10	21,000	300	0.05	0.08	21,000	300	0.05	0.05
	5	19,000	300	0.05	0.10	16,000	200	0.05	0.08	16,000	200	0.05	0.05
	6	19,000	300	0.05	0.10	16,000	200	0.05	0.08	16,000	200	0.05	0.05
	7	19,000	300	0.05	0.08	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	8	19,000	300	0.05	0.08	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	9	19,000	300	0.05	0.08	16,000	200	0.05	0.06	16,000	200	0.03	0.03
	10	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.02
	12	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.02
	14	17,000	200	0.03	0.05	14,000	150	0.03	0.04	14,000	150	0.01	0.02

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



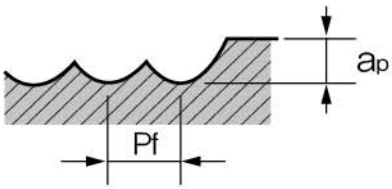
SP2BN / 2날 롱넥 볼

- 일반절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 HARDNESS		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF
R0.5	16	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.02
	20	13,000	200	0.03	0.05	10,000	150	0.03	0.04	10,000	150	0.01	0.02
R0.6	4	17,000	500	0.06	0.12	14,000	300	0.06	0.10	14,000	300	0.06	0.06
	6	17,000	300	0.06	0.12	14,000	200	0.06	0.10	14,000	200	0.06	0.06
	8	17,000	300	0.06	0.12	14,000	200	0.06	0.10	14,000	200	0.06	0.06
R0.6	10	17,000	300	0.06	0.09	14,000	200	0.06	0.07	14,000	200	0.03	0.03
	12	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.03	0.03
	14	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	16	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
	20	14,000	200	0.06	0.09	11,000	150	0.06	0.07	11,000	150	0.01	0.03
R0.7	6	15,500	300	0.07	0.14	12,000	250	0.07	0.10	12,000	250	0.07	0.07
	8	15,500	300	0.07	0.14	12,000	250	0.07	0.10	12,000	250	0.07	0.07
	12	15,500	300	0.07	0.10	12,000	250	0.07	0.08	12,000	250	0.07	0.07
	16	12,000	200	0.06	0.09	9,000	150	0.04	0.07	9,000	150	0.01	0.03
R0.75	3	15,000	600	0.08	0.15	12,000	500	0.08	0.12	12,000	300	0.08	0.10
	4	15,000	600	0.08	0.15	12,000	500	0.08	0.12	12,000	300	0.08	0.10
	6	15,000	500	0.08	0.15	12,000	350	0.08	0.12	12,000	300	0.08	0.10
	8	15,000	300	0.08	0.15	12,000	250	0.08	0.12	12,000	250	0.08	0.10
	10	15,000	300	0.08	0.15	12,000	250	0.08	0.12	12,000	250	0.08	0.10
	12	15,000	300	0.08	0.12	12,000	250	0.08	0.09	12,000	250	0.05	0.06
	14	15,000	300	0.08	0.12	12,000	250	0.08	0.09	12,000	250	0.05	0.06
	16	12,000	200	0.06	0.10	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	18	12,000	200	0.06	0.10	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	20	12,000	200	0.06	0.10	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	22	12,000	200	0.06	0.10	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	25	12,000	200	0.06	0.10	9,500	150	0.06	0.07	9,500	150	0.01	0.03
	30	12,000	200	0.06	0.10	9,500	150	0.06	0.07	9,500	150	0.01	0.03
R1	4	16,500	700	0.10	0.28	13,500	500	0.10	0.28	13,500	500	0.10	0.20
	5	16,500	700	0.10	0.28	13,500	500	0.10	0.28	13,500	500	0.10	0.20
	6	16,500	700	0.10	0.28	13,500	500	0.10	0.28	13,500	500	0.10	0.20
	8	16,500	700	0.10	0.28	13,500	500	0.10	0.28	13,500	500	0.10	0.20
	10	13,000	500	0.10	0.28	10,000	300	0.10	0.28	10,000	300	0.10	0.20
	12	13,000	500	0.10	0.28	10,000	300	0.10	0.28	10,000	300	0.10	0.20
	14	13,000	500	0.10	0.28	10,000	300	0.10	0.28	10,000	300	0.10	0.20
	16	13,000	500	0.10	0.21	10,000	300	0.10	0.18	10,000	300	0.06	0.10
	18	13,000	500	0.10	0.21	10,000	300	0.10	0.18	10,000	300	0.06	0.10
	20	10,000	250	0.10	0.21	8,000	200	0.10	0.18	8,000	200	0.06	0.10

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



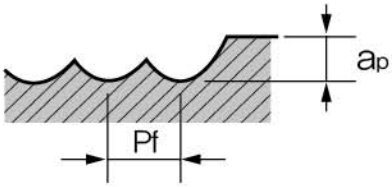
SP2BN / 2날 롱넥 볼

- 일반절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 HARDNESS		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF
R1	22	10,000	250	0.10	0.21	8,000	200	0.10	0.18	8,000	200	0.06	0.10
	25	10,000	250	0.10	0.21	8,000	200	0.10	0.18	8,000	200	0.06	0.10
	30	10,000	250	0.10	0.21	8,000	200	0.10	0.18	8,000	200	0.06	0.10
R1.25	10	12,000	700	0.12	0.35	10,000	600	0.12	0.30	10,000	600	0.10	0.25
	12	12,000	600	0.12	0.35	9,500	500	0.12	0.30	9,500	500	0.10	0.25
	16	12,000	500	0.12	0.28	9,000	400	0.12	0.30	9,000	400	0.08	0.25
	20	12,000	400	0.12	0.28	8,500	300	0.12	0.30	8,500	300	0.08	0.15
R1.5	6	9,500	800	0.15	0.42	7,500	600	0.15	0.42	7,500	600	0.15	0.30
	8	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.30
	10	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.30
	12	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.30
	14	9,500	600	0.15	0.42	7,500	400	0.15	0.36	7,500	400	0.15	0.30
	16	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.30
	18	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.30
	20	8,500	300	0.15	0.42	6,500	250	0.15	0.36	6,500	250	0.15	0.30
	26	7,500	250	0.15	0.42	6,000	200	0.15	0.36	6,000	200	0.09	0.30
	30	7,500	250	0.15	0.42	6,000	200	0.15	0.30	6,000	200	0.09	0.15
	35	7,500	250	0.15	0.42	6,000	200	0.15	0.30	6,000	200	0.09	0.15
	40	7,500	250	0.15	0.42	6,000	200	0.15	0.30	6,000	200	0.09	0.15
	45	6,500	200	0.10	0.42	5,500	150	0.10	0.30	5,500	150	0.08	0.15
	50	6,500	200	0.10	0.42	5,500	150	0.10	0.30	5,500	150	0.08	0.15
R2	8	7,500	800	0.20	0.64	6,000	700	0.20	0.60	6,000	700	0.20	0.40
	10	7,500	600	0.20	0.64	6,000	400	0.20	0.60	6,000	400	0.20	0.40
	12	7,500	600	0.20	0.64	6,000	400	0.20	0.60	6,000	400	0.20	0.40
	14	7,500	600	0.20	0.64	6,000	400	0.20	0.60	6,000	400	0.20	0.40
	16	7,500	600	0.20	0.64	6,000	400	0.20	0.60	6,000	400	0.20	0.40
	20	6,000	400	0.20	0.64	5,000	250	0.20	0.60	5,000	250	0.20	0.40
	25	6,000	400	0.20	0.64	5,000	250	0.20	0.60	5,000	250	0.20	0.40
	30	6,000	400	0.20	0.64	5,000	250	0.20	0.56	5,000	250	0.12	0.20
	35	6,000	400	0.20	0.64	5,000	250	0.20	0.56	5,000	250	0.12	0.20
	40	5,000	250	0.20	0.64	4,000	200	0.20	0.56	4,000	200	0.12	0.20
	45	5,000	250	0.20	0.64	4,000	200	0.20	0.56	4,000	200	0.12	0.20
	50	5,000	250	0.20	0.64	4,000	200	0.20	0.56	4,000	200	0.12	0.20
R2.5	16	6,500	500	0.25	0.90	5,000	400	0.25	0.70	5,000	400	0.25	0.50
	20	6,500	500	0.25	0.90	5,000	400	0.25	0.70	5,000	400	0.25	0.50
	26	5,000	500	0.25	0.90	4,000	250	0.25	0.70	4,000	250	0.25	0.50
	30	5,000	500	0.25	0.90	4,000	250	0.25	0.70	4,000	250	0.25	0.50

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



SP2BN / 2날 롱넥 볼

- 일반절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 HARDNESS		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF
R2.5	35	5,000	500	0.25	0.90	4,000	250	0.25	0.70	4,000	250	0.25	0.50
	40	4,000	400	0.25	0.90	4,000	200	0.25	0.60	4,000	200	0.20	0.25
	45	4,000	400	0.25	0.90	4,000	200	0.25	0.60	4,000	200	0.20	0.25
	50	4,000	300	0.25	0.90	4,000	200	0.25	0.60	4,000	200	0.20	0.25
	55	4,000	200	0.20	0.90	3,500	150	0.20	0.60	3,500	150	0.15	0.25
	60	4,000	200	0.20	0.90	3,500	150	0.20	0.60	3,500	150	0.15	0.25
R3	20	5,500	800	0.30	1.20	4,500	600	0.30	0.96	4,500	600	0.30	0.60
	30	4,000	400	0.30	1.20	4,000	300	0.30	0.96	4,000	300	0.30	0.60
R4	25	4,000	500	0.40	1.60	3,500	400	0.40	1.60	3,500	500	0.30	1.60
	35	4,000	450	0.40	1.60	3,500	350	0.30	1.60	3,500	500	0.25	1.60
R5	30	3,500	400	0.50	2.00	3,500	350	0.50	2.00	3,500	400	0.30	2.00
	40	3,500	350	0.50	2.00	3,000	300	0.40	2.00	3,500	400	0.25	2.00
R6	32	3,000	300	0.60	2.40	2,800	300	0.60	2.40	2,800	300	0.30	2.40
	45	3,000	250	0.60	2.40	2,500	250	0.50	2.40	2,500	250	0.25	2.40

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

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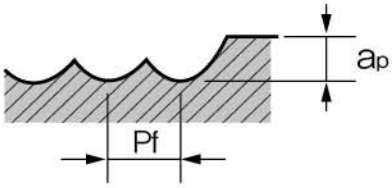
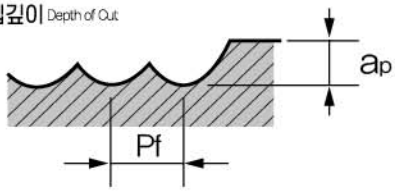


SP2BN / 2날 롱넥 볼
- 고속절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 HARDNESS		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF
R0.1	0.5	50,000	400	0.005	0.005	50,000	380	0.005	0.005	50,000	380	0.005	0.005
	1	50,000	360	0.005	0.005	50,000	340	0.005	0.005	50,000	340	0.005	0.005
	1.5	45,000	300	0.005	0.005	45,000	280	0.005	0.005	45,000	280	0.005	0.005
	2	38,000	230	0.005	0.005	38,000	210	0.005	0.005	37,000	200	0.005	0.005
R0.15	1	50,000	600	0.005	0.010	50,000	570	0.005	0.010	50,000	570	0.005	0.010
	1.5	50,000	600	0.005	0.010	50,000	570	0.005	0.010	50,000	570	0.005	0.010
	2	45,000	480	0.005	0.005	45,000	450	0.005	0.005	45,000	450	0.005	0.005
	2.5	40,000	300	0.005	0.005	40,000	280	0.005	0.005	40,000	280	0.005	0.005
	3	38,000	250	0.005	0.005	38,000	230	0.005	0.005	37,000	230	0.005	0.005
R0.2	1	50,000	900	0.010	0.020	50,000	850	0.010	0.020	50,000	850	0.010	0.020
	1.5	50,000	800	0.010	0.020	50,000	760	0.010	0.020	50,000	760	0.010	0.020
	2	50,000	700	0.010	0.020	50,000	680	0.010	0.020	50,000	660	0.010	0.020
	2.5	45,000	550	0.008	0.015	45,000	520	0.008	0.015	45,000	520	0.008	0.015
	3	43,000	500	0.005	0.010	43,000	470	0.005	0.010	43,000	470	0.005	0.010
	4	36,000	370	0.005	0.005	36,000	350	0.005	0.005	35,000	340	0.005	0.005
R0.25	1	50,000	1,100	0.015	0.030	50,000	1,050	0.015	0.030	50,000	1,050	0.015	0.030
	2	50,000	1,000	0.015	0.030	50,000	950	0.015	0.030	50,000	950	0.015	0.030
	3	48,000	900	0.010	0.020	48,000	850	0.010	0.020	48,000	850	0.010	0.020
	4	43,000	600	0.010	0.010	43,000	570	0.010	0.010	43,000	570	0.010	0.010
	5	30,000	400	0.005	0.010	30,000	380	0.005	0.010	29,000	360	0.005	0.010
R0.3	1	50,000	1,400	0.030	0.050	50,000	1,300	0.030	0.050	50,000	1,300	0.030	0.050
	2	50,000	1,300	0.030	0.050	50,000	1,200	0.030	0.050	50,000	1,200	0.030	0.050
	3	50,000	1,200	0.020	0.030	50,000	1,100	0.020	0.030	50,000	1,100	0.020	0.030
	4	40,000	900	0.010	0.020	40,000	850	0.010	0.020	40,000	850	0.010	0.020
	5	30,000	680	0.010	0.020	30,000	640	0.010	0.020	30,000	640	0.010	0.020
	6	26,000	600	0.010	0.020	26,000	570	0.010	0.020	25,000	540	0.010	0.020
R0.35	2	50,000	1,600	0.030	0.060	50,000	1,500	0.030	0.060	50,000	1,500	0.030	0.060
	4	48,000	1,000	0.020	0.050	45,000	1,000	0.020	0.050	45,000	1,000	0.020	0.050
	6	30,000	600	0.010	0.030	28,000	650	0.010	0.030	28,000	650	0.010	0.030
R0.4	2	50,000	2,000	0.040	0.080	50,000	1,900	0.040	0.080	50,000	1,900	0.040	0.080
	3	48,000	1,600	0.040	0.080	48,000	1,500	0.040	0.080	48,000	1,500	0.040	0.080
	4	40,000	1,200	0.040	0.080	40,000	1,100	0.040	0.080	40,000	1,100	0.040	0.080
	5	34,000	950	0.030	0.050	34,000	900	0.030	0.050	34,000	900	0.030	0.050
	6	30,000	800	0.030	0.050	30,000	760	0.030	0.050	30,000	760	0.030	0.050
	7	25,000	600	0.010	0.020	25,000	570	0.010	0.020	25,000	570	0.010	0.020
	8	23,000	450	0.005	0.010	23,000	420	0.005	0.010	23,000	420	0.005	0.010
R0.45	4	40,000	2,700	0.040	0.080	40,000	2,700	0.040	0.080	40,000	2,700	0.040	0.080

1. 고속 고정도의 머시닝센터를 이용할 때의 절삭속도와 이송속도 기준표입니다.
2. 마모가 진행되면 불꽃이 발생 할 수 있으므로 발화성이 있는 절삭유는 사용하지 마십시오.
3. 에어 블로우를 사용하시고, 만약 절삭유를 사용시, 발화성이 적은 것으로 선정 하십시오.

• **절입깊이** Depth of Cut



SP2BN / 2날 롱넥 볼
- 고속절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 HARDNESS		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF
R0.45	8	25,000	1,200	0.030	0.050	25,000	1,200	0.030	0.050	25,000	1,200	0.030	0.050
R0.5	2	50,000	3,400	0.050	0.100	50,000	3,200	0.050	0.100	50,000	3,200	0.050	0.100
	2.5	50,000	3,400	0.050	0.100	50,000	3,200	0.050	0.100	50,000	3,200	0.050	0.100
	3	45,000	3,200	0.050	0.100	45,000	3,000	0.050	0.100	45,000	3,000	0.050	0.100
	4	40,000	3,000	0.050	0.100	40,000	2,850	0.050	0.100	40,000	2,850	0.050	0.100
	5	36,000	2,300	0.050	0.100	36,000	2,100	0.050	0.100	36,000	2,100	0.050	0.100
	6	30,000	2,000	0.050	0.100	30,000	1,900	0.050	0.100	30,000	1,900	0.050	0.100
	7	27,000	1,700	0.050	0.100	27,000	1,600	0.050	0.100	27,000	1,600	0.050	0.100
	8	26,000	1,600	0.050	0.100	26,000	1,500	0.050	0.100	26,000	1,500	0.050	0.100
	9	24,000	1,200	0.030	0.050	24,000	1,100	0.030	0.050	24,000	1,100	0.030	0.050
	10	22,000	1,100	0.010	0.020	22,000	1,000	0.010	0.020	21,000	950	0.010	0.020
R0.6	4	40,000	3,000	0.060	0.120	40,000	2,850	0.060	0.120	40,000	2,850	0.060	0.120
	6	32,000	2,100	0.060	0.120	32,000	2,000	0.060	0.120	32,000	2,000	0.060	0.120
	8	25,000	1,700	0.060	0.120	25,000	1,600	0.060	0.120	25,000	1,600	0.060	0.120
	10	20,000	1,200	0.050	0.100	20,000	1,100	0.050	0.100	18,000	990	0.050	0.100
	12	19,000	900	0.030	0.050	17,000	850	0.030	0.050	16,000	800	0.030	0.050
R0.7	6	25,000	1,700	0.070	0.140	25,000	1,600	0.070	0.140	25,000	1,600	0.070	0.140
	8	25,000	1,700	0.070	0.140	25,000	1,600	0.070	0.140	25,000	1,600	0.070	0.140
	12	19,000	1,000	0.030	0.070	19,000	950	0.030	0.070	19,000	950	0.030	0.070
R0.75	3	50,000	4,800	0.075	0.150	50,000	4,800	0.075	0.150	50,000	4,800	0.075	0.150
	4	40,000	3,900	0.075	0.150	40,000	3,700	0.075	0.150	40,000	3,700	0.075	0.150
	6	30,000	2,900	0.075	0.150	30,000	2,700	0.075	0.150	30,000	2,700	0.075	0.150
	8	24,000	2,300	0.075	0.150	24,000	2,100	0.075	0.150	24,000	2,100	0.075	0.150
	10	24,000	2,000	0.075	0.150	24,000	1,900	0.075	0.150	24,000	1,900	0.075	0.150
	12	21,000	1,400	0.075	0.100	21,000	1,300	0.075	0.100	21,000	1,300	0.075	0.100
	14	18,000	1,200	0.050	0.100	18,000	1,100	0.050	0.100	17,000	1,100	0.050	0.100
R1	4	50,000	5,600	0.100	0.200	50,000	5,600	0.100	0.200	47,000	5,300	0.100	0.200
	5	40,000	4,000	0.100	0.200	40,000	3,800	0.100	0.200	37,000	3,600	0.100	0.200
	6	36,000	3,000	0.100	0.200	36,000	2,800	0.100	0.200	34,000	2,600	0.100	0.200
	8	25,000	2,600	0.100	0.200	25,000	2,400	0.100	0.200	23,000	2,200	0.100	0.200
	10	20,000	2,400	0.100	0.200	20,000	2,200	0.100	0.200	19,000	2,000	0.100	0.200
	12	16,000	2,000	0.100	0.200	16,000	1,900	0.100	0.200	15,000	1,700	0.100	0.200
	14	15,000	1,800	0.100	0.200	15,000	1,700	0.100	0.200	14,000	1,500	0.100	0.200
	16	14,000	1,700	0.100	0.100	14,000	1,600	0.100	0.100	13,000	1,400	0.100	0.100
	18	13,000	1,600	0.100	0.100	13,000	1,500	0.100	0.100	12,000	1,300	0.100	0.100
	20	12,000	1,200	0.050	0.100	11,000	1,100	0.050	0.100	10,000	1,000	0.050	0.100
R1.25	10	20,000	3,300	0.100	0.200	20,000	3,100	0.100	0.200	18,000	2,700	0.100	0.200

1. 고속 고정도의 머시닝센터를 이용할 때의 절삭속도와 이송속도 기준표입니다.
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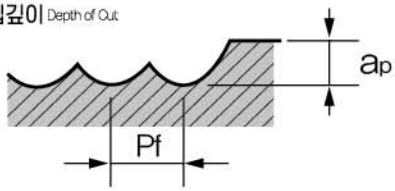
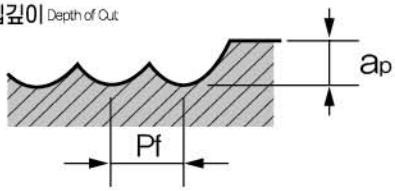


SP2BN / 2날 롱넥 볼
- 고속절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 HARDNESS		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF
R1.25	12	18,000	2,600	0.100	0.200	18,000	2,400	0.100	0.200	16,000	2,300	0.100	0.200
	16	16,000	2,000	0.100	0.200	16,000	1,900	0.100	0.200	14,000	1,800	0.100	0.200
	20	15,000	1,800	0.100	0.200	15,000	1,700	0.100	0.200	14,000	1,500	0.100	0.200
R1.5	6	41,500	6,200	0.150	0.300	41,500	6,200	0.150	0.300	32,000	4,800	0.150	0.300
	8	30,000	4,500	0.150	0.300	30,000	4,200	0.150	0.300	25,000	3,500	0.150	0.300
	10	25,000	3,800	0.150	0.300	25,000	3,600	0.150	0.300	20,000	2,800	0.150	0.300
	12	20,000	3,000	0.150	0.300	20,000	2,800	0.150	0.300	18,000	2,500	0.150	0.300
	14	18,000	2,700	0.150	0.300	18,000	2,500	0.150	0.300	15,000	2,000	0.150	0.300
	16	16,000	2,000	0.100	0.200	16,000	1,900	0.100	0.200	13,000	1,500	0.100	0.200
	18	15,000	1,900	0.100	0.200	15,000	1,800	0.100	0.200	12,000	1,400	0.100	0.200
	20	14,000	1,800	0.100	0.200	14,000	1,700	0.100	0.200	11,000	1,300	0.100	0.200
	26	12,000	1,400	0.030	0.050	11,000	1,400	0.030	0.050	8,500	700	0.030	0.050
	30	10,000	800	0.030	0.050	9,000	760	0.030	0.050	7,800	590	0.030	0.050
R2	8	31,000	5,700	0.200	0.500	31,000	5,700	0.200	0.500	24,000	4,400	0.200	0.500
	10	25,000	4,500	0.200	0.500	25,000	4,200	0.200	0.500	20,000	3,300	0.200	0.500
	12	20,000	3,600	0.200	0.500	20,000	3,400	0.200	0.500	16,000	2,700	0.200	0.500
	14	20,000	3,600	0.200	0.500	20,000	3,400	0.200	0.500	16,000	2,700	0.200	0.500
	16	18,000	3,200	0.200	0.500	18,000	3,000	0.200	0.500	14,000	2,300	0.200	0.500
	20	16,000	2,800	0.200	0.400	16,000	2,600	0.200	0.400	12,000	1,900	0.200	0.400
	25	16,000	2,800	0.100	0.300	16,000	2,600	0.100	0.300	12,000	1,900	0.100	0.300
	30	14,000	2,400	0.100	0.200	14,000	2,200	0.100	0.200	11,000	1,700	0.100	0.200
	35	12,000	1,800	0.100	0.200	12,000	1,700	0.100	0.200	9,000	1,700	0.100	0.200
	40	10,000	1,300	0.050	0.100	10,000	1,200	0.050	0.100	7,000	840	0.050	0.100
R2.5	16	18,000	4,000	0.250	0.500	18,000	3,800	0.250	0.500	14,000	2,800	0.250	0.500
	20	16,000	3,500	0.250	0.500	16,000	3,300	0.250	0.500	12,000	2,400	0.250	0.500
	26	15,000	3,000	0.250	0.300	15,000	2,800	0.100	0.300	11,000	1,800	0.100	0.300
	30	14,000	2,500	0.100	0.300	14,000	2,300	0.100	0.300	11,000	1,800	0.100	0.300
	35	12,000	1,600	0.100	0.300	12,000	1,500	0.100	0.300	9,000	1,100	0.100	0.300
	40	10,000	1,200	0.100	0.200	10,000	1,100	0.100	0.200	8,000	880	0.100	0.200
	45	9,000	900	0.100	0.100	9,000	850	0.100	0.100	7,000	660	0.100	0.100
	50	8,000	800	0.100	0.100	8,000	760	0.100	0.100	6,000	570	0.100	0.100
R3	20	16,000	4,200	0.300	0.500	16,000	3,900	0.300	0.500	12,000	2,900	0.300	0.500
	30	10,000	2,600	0.300	0.500	10,000	2,400	0.300	0.500	8,000	1,900	0.300	0.500
R4	25	13,000	3,600	0.300	0.500	13,000	3,600	0.300	0.500	11,000	2,600	0.300	0.500
	35	8,000	2,100	0.300	0.400	8,000	2,100	0.300	0.400	7,000	1,600	0.300	0.400
R5	30	10,000	2,600	0.400	0.500	10,000	2,600	0.400	0.500	9,000	1,900	0.400	0.500
	40	6,000	1,600	0.400	0.400	6,000	1,600	0.400	0.400	5,500	1,300	0.400	0.400

1. 고속 고정도의 머시닝센터를 이용할 때의 절삭속도와 이송속도 기준표입니다.
2. 마모가 진행되면 불꽃이 발생 할 수 있으므로 발화성이 있는 절삭유는 사용하지 마십시오.
3. 에어 블로우를 사용하시고, 만약 절삭유를 사용시, 발화성이 적은 것으로 선정 하십시오.

• **절입깊이** Depth of Cut

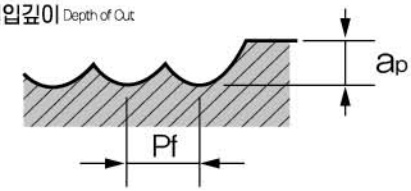


SP2BN / 2날 롱넥 볼
- 고속절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]				조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]							
경도 HARDNESS		~32HRC				33~41 HRC				42~50 HRC			
반지름 RE	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	PF
R6	32	7,500	2,000	0.500	0.600	7,500	2,000	0.500	0.600	5,500	1,300	0.500	0.600
	45	4,000	1,100	0.500	0.500	4,000	1,100	0.500	0.500	3,500	700	0.500	0.500

1. 고속 고정도의 머시닝센터를 이용할 때의 절삭속도와 이송속도 기준표입니다.
2. 마모가 진행되면 불꽃이 발생 할 수 있으므로 발화성이 있는 절삭유는 사용하지 마십시오.
3. 에어 블로우를 사용하시고, 만약 절삭유를 사용시, 발화성이 적은 것으로 선정 하십시오.

• **절입깊이** Depth of Cut



SP2F / 2날 플랫

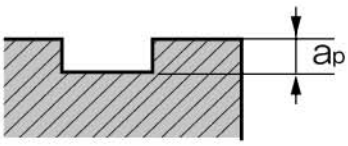
홈 절삭 (SLOTTING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]			
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
0.1	32,000	70	32,000	60	32,000	30
0.15	32,000	80	32,000	60	32,000	30
0.2	32,000	90	32,000	80	32,000	35
0.25	32,000	100	32,000	90	32,000	40
0.3	32,000	110	32,000	90	32,000	55
0.35	32,000	110	32,000	90	29,000	55
0.4	32,000	120	32,000	100	27,500	60
0.45	32,000	120	28,000	100	25,000	60
0.5	31,000	120	25,000	100	22,000	60
0.55	29,000	120	22,000	100	19,000	60
0.6	27,000	120	19,500	100	17,000	60
0.65	26,000	120	18,000	100	16,000	60
0.7	24,000	120	17,000	100	15,000	60
0.75	23,000	120	16,000	100	14,000	60
0.8	21,500	120	15,500	100	13,500	65
0.85	20,000	120	14,500	100	12,500	65
0.9	19,000	120	13,500	100	12,000	65
0.95	18,000	120	11,500	100	11,500	65
1	17,500	120	12,500	100	11,000	65
1.2	15,000	120	10,500	100	9,300	65
1.5	12,500	120	8,900	100	7,900	65
2	9,700	140	7,000	100	6,300	70
2.5	8,200	160	6,100	100	5,300	70
3	6,900	170	5,300	110	4,400	65
3.5	6,000	200	4,600	130	3,800	70
4	5,600	220	4,200	130	3,500	80
4.5	5,300	250	3,900	140	3,200	80
5	5,200	280	3,500	140	3,100	85
5.5	4,700	280	3,200	140	2,700	85
6	4,300	280	2,900	140	2,500	85
6.5	3,900	280	2,700	140	2,300	85
7	3,600	280	2,500	140	2,100	85
7.5	3,400	280	2,300	140	2,000	85
8	3,200	270	2,200	130	1,900	85
8.5	3,000	270	2,000	130	1,800	85
9	2,900	270	1,900	130	1,700	85
9.5	2,800	270	1,800	130	1,550	80

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

Dc 〈 Ø1	0.1D
Ø1 ≤ Dc ≤ Ø3	0.3D
Ø3 〈 Dc	0.5D



SP2F / 2날 플랫

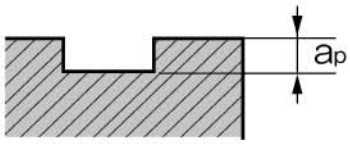
홈 절삭 (SLOTTING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]			
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
10	2,700	270	1,700	130	1,500	80
10.5	2,650	270	1,650	130	1,450	80
11	2,600	270	1,600	130	1,400	80
12	2,450	260	1,550	130	1,250	75
13	2,350	250	1,430	120	1,170	70
14	2,260	240	1,430	120	1,080	65
15	2,070	220	1,310	110	1,080	65
16	1,970	210	1,250	105	1,000	60
17	1,880	200	1,190	100	1,000	60
18	1,690	180	1,130	95	1,000	60
19	1,600	170	1,070	90	1,000	60
20	1,500	160	1,010	85	920	55
21	1,410	150	950	80	830	50
22	1,310	140	890	75	770	46
23	1,220	130	890	75	700	42
24	1,130	120	830	70	630	38
25	1,030	110	830	70	580	35

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

Dc 〈 Ø1	0.1D
Ø1 ≤ Dc ≤ Ø3	0.3D
Ø3 〈 Dc	0.5D



SP2F / 2날 롱 플랫

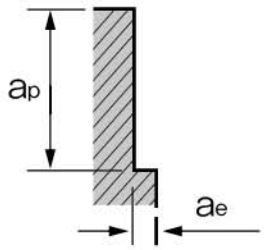
측면절삭 (SIDE MILLING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]			
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	11,000	80	9,500	60	6,350	30
1.5	8,000	80	7,000	60	4,500	30
2	5,550	80	4,750	60	3,150	30
2.5	4,500	80	3,850	60	2,550	30
3	3,700	80	3,150	60	2,100	30
4	2,750	80	2,350	60	1,550	30
5	2,200	80	1,900	60	1,250	30
6	1,850	80	1,550	60	1,050	30
8	1,550	90	1,350	70	995	40
10	1,250	90	1,100	70	795	40
12	1,050	90	925	70	660	40
16	795	70	695	60	495	30
20	635	55	555	50	395	25

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

$a_p = 2.5D$
$a_e = 0.05d$



※ 롱타입 엔드밀은 아래 표를 참고해 절삭조건을 수정하십시오.

$L/D = \frac{\text{날길이 (L)}}{\text{외경 (D)}}$	ap	ae	회전속도 (min-1)	이동속도 (mm/min)
L/D ≤ 4	100%	100%	100%	100%
4 〈 L/D ≤ 6	50~70%	50~70%	50~70%	60~80%
6 〈 L/D	30~50%	30~50%	30~50%	50~70%

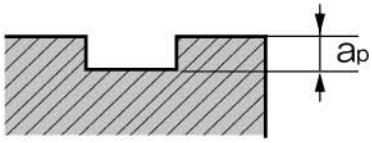
SP2FN / 2날 롱넥 플랫 · S2 / 2날 롱넥 코너R

홈 절삭 (SLOTTING)

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]			조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]					
경도 HARDNESS		~32HRC			33~41 HRC			42~50 HRC		
외경 DC	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap
0.2	0.5	32,000	450	0.018	32,000	450	0.015	29,000	250	0.012
	1	32,000	350	0.013	32,000	350	0.011	29,000	200	0.009
	1.5	28,000	250	0.008	28,000	250	0.007	25,000	150	0.005
	2	22,000	200	0.005	22,000	200	0.004	20,000	120	0.003
0.3	1	32,000	400	0.027	32,000	350	0.023	29,000	300	0.018
	1.5	32,000	360	0.023	32,000	300	0.02	29,000	250	0.015
	2	28,000	300	0.02	28,000	250	0.017	25,000	200	0.013
	2.5	28,000	280	0.014	28,000	230	0.012	25,000	190	0.008
	3	22,000	250	0.009	22,000	160	0.007	20,000	150	0.005
	4	20,000	190	0.007	20,000	150	0.005	20,000	130	0.003
	5	20,000	160	0.005	20,000	140	0.003	18,000	120	0.002
0.4	1	32,000	460	0.03	32,000	400	0.024	29,000	350	0.018
	1.5	32,000	440	0.027	32,000	380	0.023	29,000	330	0.018
	2	32,000	400	0.026	32,000	350	0.022	29,000	300	0.018
	2.5	30,000	350	0.022	30,000	300	0.02	27,000	250	0.011
	3	28,000	300	0.017	28,000	250	0.014	25,000	200	0.011
	4	22,000	250	0.012	22,000	200	0.01	20,000	150	0.008
	5	20,000	200	0.006	20,000	160	0.005	20,000	130	0.003
	6	20,000	180	0.005	20,000	140	0.004	20,000	120	0.002
	8	20,000	130	0.002	20,000	110	0.002	20,000	100	0.002
	10	20,000	110	0.002	20,000	85	0.002	18,000	70	0.002
0.5	1	32,000	600	0.045	32,000	450	0.038	29,000	350	0.03
	1.5	32,000	550	0.045	32,000	420	0.038	29,000	330	0.03
	2	32,000	500	0.045	32,000	400	0.038	29,000	300	0.03
	2.5	30,000	450	0.04	30,000	380	0.028	28,000	300	0.022
	3	30,000	450	0.03	30,000	360	0.028	27,000	280	0.022
	4	28,000	400	0.021	28,000	320	0.018	25,000	250	0.014
	5	28,000	380	0.014	25,000	300	0.01	22,000	230	0.008
	6	22,000	350	0.006	22,000	220	0.005	20,000	180	0.004
	8	20,000	270	0.005	20,000	180	0.003	20,000	150	0.003
	10	20,000	200	0.002	18,000	150	0.002	1,000	130	0.002
	12	20,000	160	0.002	18,000	120	0.002	18,000	100	0.002
0.6	2	32,000	600	0.054	32,000	400	0.045	27,000	300	0.036
	3	32,000	550	0.05	32,000	360	0.04	27,000	280	0.03
	4	28,000	450	0.04	28,000	300	0.033	25,000	200	0.026
	5	28,000	400	0.03	25,000	220	0.02	22,000	180	0.02
	6	22,000	250	0.018	22,000	200	0.015	20,000	150	0.012

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



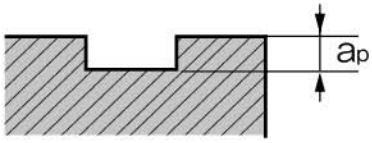
SP2FN / 2날 롱넥 플랫 · S2 / 2날 롱넥 코너R

홈 절삭 (SLOTTING)

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]			조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]					
경도 HARDNESS		~32HRC			33~41 HRC			42~50 HRC		
외경 DC	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap
0.6	8	22,000	250	0.007	22,000	200	0.006	20,000	150	0.005
	10	20,000	200	0.005	18,000	150	0.004	18,000	130	0.003
	12	18,000	190	0.002	18,000	150	0.002	18,000	120	0.002
	14	18,000	130	0.002	16,000	110	0.002	16,000	100	0.002
0.7	2	32,000	600	0.063	32,000	500	0.053	26,000	400	0.042
	4	28,000	450	0.046	28,000	300	0.039	22,000	300	0.031
	6	28,000	450	0.029	28,000	200	0.025	22,000	200	0.02
	8	22,000	250	0.017	22,000	200	0.014	20,000	150	0.011
	10	22,000	250	0.008	22,000	200	0.007	20,000	150	0.006
	12	22,000	250	0.005	22,000	200	0.004	20,000	150	0.003
0.8	2	32,000	700	0.07	32,000	600	0.06	25,000	500	0.05
	3	32,000	650	0.06	32,000	550	0.05	25,000	450	0.04
	4	32,000	600	0.053	32,000	500	0.044	25,000	400	0.035
	5	28,000	500	0.04	26,000	450	0.04	23,000	350	0.022
	6	26,000	450	0.034	26,000	400	0.028	21,000	300	0.022
	8	22,000	350	0.024	22,000	300	0.02	18,000	250	0.016
	10	22,000	350	0.01	22,000	300	0.008	18,000	240	0.006
	12	17,000	300	0.007	17,000	300	0.006	15,000	200	0.004
	14	17,000	270	0.003	17,000	250	0.003	13,000	170	0.002
1	2	30,000	1,300	0.09	30,000	1,200	0.08	22,000	850	0.06
	3	30,000	1,200	0.09	30,000	1,100	0.08	22,000	800	0.06
	4	30,000	1,150	0.08	30,000	1,100	0.07	22,000	650	0.05
	5	30,000	1,100	0.08	28,000	950	0.07	20,000	600	0.045
	6	27,000	1,000	0.07	26,000	900	0.06	20,000	600	0.04
	8	23,000	800	0.04	22,000	700	0.04	18,000	400	0.03
	10	19,000	600	0.03	18,000	500	0.028	15,000	300	0.02
	12	19,000	600	0.02	18,000	500	0.019	15,000	300	0.01
	14	15,000	400	0.01	15,000	400	0.009	12,000	200	0.008
	16	15,000	300	0.008	15,000	300	0.007	12,000	200	0.006
	20	12,000	190	0.004	11,000	180	0.004	10,000	130	0.003
1.2	4	24,000	1,100	0.09	23,000	1,000	0.08	18,000	700	0.06
	6	23,000	1,000	0.08	22,000	900	0.07	17,000	600	0.05
	8	20,000	700	0.07	19,000	700	0.05	14,000	400	0.04
	10	20,000	700	0.05	19,000	700	0.04	14,000	400	0.03
	12	17,000	600	0.04	16,000	500	0.03	11,000	300	0.02
1.5	4	18,000	1,000	0.14	18,000	900	0.11	14,000	600	0.09
	6	18,000	1,000	0.14	18,000	900	0.11	14,000	600	0.09

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



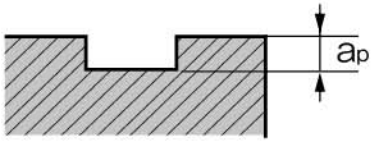
SP2FN / 2날 롱넥 플랫 · S2 / 2날 롱넥 코너R

홈 절삭 (SLOTTING)

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]			조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]					
경도 HARDNESS		~32HRC			33~41 HRC			42~50 HRC		
외경 DC	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap
1.5	8	16,000	800	0.1	15,000	700	0.08	12,000	400	0.07
	10	16,000	800	0.08	15,000	700	0.07	12,000	400	0.05
	12	16,000	800	0.06	15,000	700	0.05	12,000	400	0.04
	14	16,000	800	0.05	15,000	700	0.045	12,000	400	0.035
	16	14,000	600	0.05	13,000	500	0.04	10,000	300	0.03
	18	14,000	600	0.03	13,000	500	0.02	10,000	300	0.02
	20	12,000	420	0.02	11,000	380	0.015	10,000	300	0.01
1.8	8	16,000	1,100	0.21	15,000	1,000	0.17	12,000	700	0.13
2	6	15,000	1,100	0.31	14,000	1,000	0.26	11,000	700	0.21
	8	15,000	1,100	0.26	14,000	1,000	0.22	11,000	700	0.18
	10	13,000	800	0.24	12,000	700	0.2	9,000	500	0.16
	12	13,000	800	0.13	12,000	700	0.11	9,000	500	0.09
	14	13,000	800	0.11	12,000	700	0.09	9,000	500	0.07
	16	13,000	800	0.08	12,000	700	0.07	9,000	500	0.06
	18	13,000	800	0.07	12,000	700	0.06	9,000	500	0.05
	20	11,000	600	0.05	10,000	500	0.05	7,000	400	0.04
	26	11,000	600	0.03	10,000	500	0.02	7,000	400	0.02
	30	11,000	600	0.02	10,000	500	0.01	7,000	400	0.01
	35	9,000	390	0.009	8,000	380	0.008	6,000	270	0.007
	40	6,500	200	0.005	6,000	180	0.004	6,000	140	0.003
	50	5,800	100	0.002	5,700	95	0.002	5,000	80	0.002
2.5	8	12,000	1,100	0.39	11,000	1,000	0.33	9,000	700	0.26
	10	12,000	1,100	0.33	11,000	1,000	0.28	9,000	700	0.22
	12	12,000	1,100	0.23	11,000	1,000	0.19	9,000	700	0.15
	14	10,000	800	0.17	9,000	700	0.14	7,000	500	0.11
	16	10,000	800	0.12	9,000	700	0.1	7,000	500	0.08
	18	10,000	800	0.11	9,000	700	0.09	7,000	500	0.07
	20	10,000	800	0.09	9,000	700	0.08	7,000	500	0.06
	26	8,000	600	0.08	8,000	500	0.06	6,000	400	0.05
	30	8,000	600	0.03	8,000	500	0.03	6,000	400	0.02
	35	7,500	400	0.01	7,500	350	0.008	6,000	300	0.005
	40	6,500	280	0.007	6,000	270	0.005	6,000	240	0.005
	50	5,800	170	0.002	5,700	160	0.002	5,000	130	0.002
3	8	10,000	1,100	0.36	10,000	1,000	0.3	8,000	700	0.24
	10	10,000	1,100	0.29	10,000	1,000	0.24	8,000	700	0.19
	12	10,000	1,100	0.27	10,000	1,000	0.23	8,000	700	0.18
	14	10,000	1,100	0.25	10,000	1,000	0.21	8,000	700	0.17

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



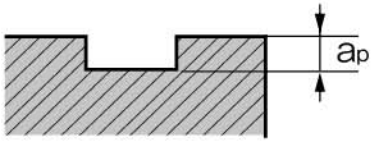
SP2FN / 2날 롱넥 플랫 · S2 / 2날 롱넥 코너R

홈 절삭 (SLOTTING)

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]			조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]					
경도 HARDNESS		~32HRC			33~41 HRC			42~50 HRC		
외경 DC	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap
3	16	10,000	800	0.2	9,000	700	0.17	6,000	500	0.13
	18	10,000	800	0.14	9,000	700	0.12	6,000	500	0.1
	20	10,000	800	0.13	9,000	700	0.11	6,000	500	0.08
	26	10,000	800	0.11	9,000	700	0.09	6,000	500	0.07
	30	8,000	600	0.09	7,000	500	0.08	5,000	400	0.06
	35	8,000	600	0.07	7,000	500	0.06	5,000	400	0.05
	40	8,000	600	0.04	7,000	500	0.03	5,000	400	0.02
	45	6,500	400	0.01	6,200	350	0.008	5,000	300	0.006
	50	5,800	270	0.009	5,700	240	0.005	5,000	200	0.004
4	10	7,000	1,100	0.4	7,000	1,000	0.34	6,000	700	0.28
	12	7,000	1,100	0.38	7,000	1,000	0.32	6,000	700	0.26
	14	7,000	1,100	0.36	7,000	1,000	0.3	6,000	700	0.24
	16	7,000	1,100	0.36	7,000	1,000	0.3	6,000	700	0.24
	18	7,000	950	0.34	7,000	700	0.3	5,000	500	0.22
	20	7,000	800	0.34	6,000	700	0.28	5,000	500	0.22
	26	7,000	800	0.26	6,000	700	0.22	5,000	500	0.18
	30	7,000	800	0.19	6,000	700	0.16	5,000	500	0.13
	35	7,000	800	0.17	6,000	700	0.14	5,000	500	0.11
	40	6,000	600	0.14	5,000	600	0.12	4,000	400	0.1
	45	6,000	600	0.12	5,000	600	0.1	4,000	400	0.08
	50	6,000	600	0.05	5,000	600	0.04	4,000	400	0.03
	60	5,000	280	0.02	5,000	270	0.02	4,000	250	0.01
5	16	6,000	1,100	0.45	5,000	900	0.38	5,000	600	0.3
	20	6,000	950	0.43	5,000	780	0.36	5,000	600	0.29
	26	5,000	800	0.42	5,000	700	0.35	5,000	600	0.28
	30	5,000	800	0.38	5,000	700	0.3	5,000	600	0.25
	35	5,000	800	0.33	5,000	700	0.28	5,000	600	0.22
	40	5,000	600	0.28	4,000	580	0.2	4,000	500	0.18
	50	4,000	500	0.15	3,000	400	0.13	3,000	400	0.1
	60	4,000	350	0.06	3,000	330	0.06	3,000	300	0.04
6	15	5,000	1,200	0.5	4,200	800	0.4	4,200	600	0.3
	20	5,000	1,000	0.5	4,200	780	0.4	4,200	600	0.3
	30	5,000	800	0.43	4,200	700	0.35	4,200	600	0.26
	32	4,800	600	0.3	4,000	600	0.3	4,000	500	0.2
8	25	5,000	750	0.8	4,800	700	0.7	4,600	600	0.55
	30	4,500	600	0.7	4,000	600	0.6	3,800	500	0.5
	42	3,800	450	0.68	3,200	540	0.54	3,200	450	0.43

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



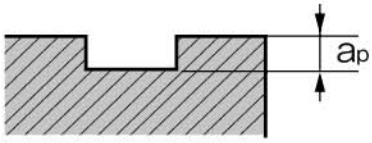
SP2FN / 2날 롱넥 플랫 • S2 / 2날 롱넥 코너R

홈 절삭 (SLOTTING)

피삭재 Work Material		일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]			조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]					
경도 HARDNESS		~32HRC			33~41 HRC			42~50 HRC		
외경 DC	유효길이 LU	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap
10	30	4,000	600	1	3,500	550	0.8	3,500	460	0.7
	35	3,500	500	0.9	3,000	450	0.7	3,000	390	0.6
	45	3,000	360	0.85	2,500	400	0.68	2,500	350	0.54
12	35	3,500	500	1.2	3,200	460	1	3,200	420	0.8
	40	3,000	400	1.1	2,700	360	0.9	2,700	350	0.7
	50	2,500	300	1.02	2,100	340	0.81	2,100	300	0.64

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



SP4F / 4날 플랫

홈절삭 (SLOTTING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]				스테인레스 · 티타늄 · 인코넬 Stainless Steel – Titanium – Inconel	
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC			
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
3	7,200	600	6,500	450	4,800	150	5,900	350
4	5,400	610	4,700	450	3,600	160	4,500	400
5	4,300	640	4,200	520	2,900	170	3,600	400
6	3,600	670	3,600	570	2,300	170	2,900	420
8	2,700	600	2,600	540	1,800	170	2,200	340
10	2,200	570	1,930	470	1,450	170	1,700	320
12	1,800	540	1,700	470	1,200	150	1,500	300
16	1,300	390	1,300	360	810	110	1,000	250
20	1,000	300	1,050	290	650	100	700	200
25	800	240	800	220	450	80	500	140

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

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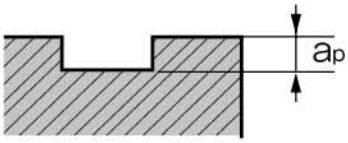


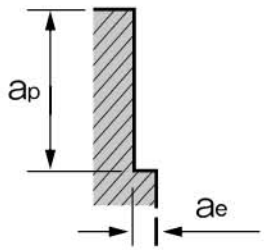
측면절삭 (SIDE MILLING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]				스테인레스 · 티타늄 · 인코넬 Stainless Steel – Titanium – Inconel	
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC			
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
3	9,500	950	8,000	480	5,400	300	6,000	370
4	7,200	1000	6,000	620	4,000	320	4,500	400
5	5,700	1100	4,800	730	3,200	340	3,600	430
6	4,800	1210	4,000	760	2,800	380	3,100	470
8	3,600	1120	3,000	720	2,200	380	2,400	470
10	2,800	1060	2,400	670	1,600	330	1,800	420
12	2,400	1100	2,000	680	1,400	320	1,500	380
16	1,800	830	1,500	510	900	250	1,000	310
20	1,400	650	1,200	410	700	210	800	270
25	1,100	500	1,000	340	550	170	600	210

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

a_p	a_e
1.5D	0.2D



SP4F / 4날 롱 플랫

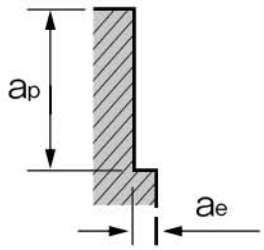
측면절삭 (SIDE MILLING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]			
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	7900	150	7200	130	5600	75
1.5	6100	150	5400	130	3800	75
2	5200	150	4600	130	3000	75
2.5	4700	150	4100	130	2500	75
3	4200	150	3700	130	2100	75
4	3150	150	2750	130	1550	75
5	2500	150	2200	130	1250	75
6	2100	150	1850	130	1050	75
8	1550	150	1350	130	995	70
10	1250	150	1100	130	795	60
12	1050	125	925	110	660	50
16	795	95	695	80	495	40
20	635	75	555	65	395	30

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

$a_p = 2.5D$
$a_e = 0.05d$



※ 롱타입 엔드밀은 아래 표를 참고해 절삭조건을 수정하십시오.

$L/D = \frac{\text{날길이 (L)}}{\text{외경 (D)}}$	a_p	a_e	회전속도 (min-1)	이동속도 (mm/min)
L/D ≤ 4	100%	100%	100%	100%
4 〈 L/D ≤ 6	50~70%	50~70%	50~70%	60~80%
6 〈 L/D	30~50%	30~50%	30~50%	50~70%

SP4FN / 4날 롱넥 플랫 • S4 / 4날 롱넥 코너R

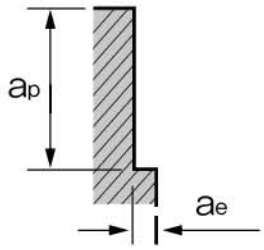
측면절삭 (SIDE MILLING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]				스테인레스 · 티타늄 · 인코넬 Stainless Steel – Titanium – Inconel	
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC			
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	19,600	390	17,300	350	10,600	170	12,400	150
1.5	15,500	560	13,700	490	8,500	240	9,800	210
2	12,200	730	10,800	650	6,800	330	7,800	280
2.5	9,600	840	8,500	750	5,400	380	6,100	320
3	7,600	910	6,400	770	4,300	410	4,800	350
4	5,800	1,040	4,800	860	3,200	460	3,600	490
5	4,600	1,200	3,800	990	2,600	540	2,900	450
6	3,800	1,140	3,200	960	2,200	530	2,500	450
8	2,900	990	2,400	820	1,800	190	1,900	390
10	2,200	880	1,900	760	1,300	420	1,400	240
12	1,900	760	1,600	640	1,100	350	1,200	290

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

a_p	a_e
1.5D	0.02D



SP2C / 2날 코너R

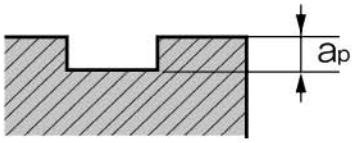
홈절삭 (SLOTTING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 · 스테인레스 Hardened Steel – Prehardened Steel – Stainless Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]			
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	17,500	112	12,500	72	11,000	53
1.5	12,500	112	8,900	72	7,900	53
2	9,700	121	7,000	72	6,300	57
2.5	8,200	149	6,100	72	5,300	57
3	6,900	158	5,300	80	4,400	61
4	5,400	195	4,200	100	3,500	72
5	4,800	251	3,500	104	3,000	80
6	4,000	251	2,900	116	2,500	89
8	3,000	242	2,200	113	1,900	89
10	2,400	233	1,700	114	1,500	87
12	2,000	233	1,400	111	1,200	86
16	1,500	175	1,100	87	800	57
20	1,200	140	800	63	600	43

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

Dc 〈 Ø1	0.1D
Ø1 ≤ Dc ≤ Ø3	0.3D
Ø3 ≤ Dc	0.5D



SP4C / 4날 코너R

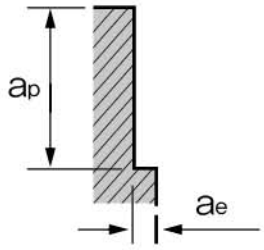
측면절삭 (SIDE MILLING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]				스테인레스 · 티타늄 · 인코넬 Stainless Steel – Titanium – Inconel	
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC			
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	28,500	700	24,000	600	16,400	420	18,000	160
1.5	19,100	920	16,000	700	10,800	500	12,000	120
2	14,300	1,000	12,000	800	8,100	550	9,000	150
2.5	11,500	1,400	9,500	980	6,500	650	7,300	200
3	9,500	1,660	8,000	1,070	5,400	760	6,000	220
4	7,200	1,830	6,000	1,150	4,000	800	4,500	240
5	5,700	1,990	4,800	1,220	3,200	900	3,600	250
6	4,800	2,070	4,000	1,540	2,800	1,060	3,100	250
8	3,600	1,770	3,000	1,540	2,200	1,040	2,400	230
10	2,800	1,640	2,400	1,370	1,600	900	1,800	220
12	2,400	1,400	2,000	1,280	1,400	760	1,500	210
16	1,800	1,050	1,500	960	900	640	1,000	140
20	1,400	820	1,200	770	700	510	800	110

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut

a_p	a_e
1.5D	0.2D



SP3R.4R.5R / 3날.4날.5날 라핑

홈절삭(SLOTTING)

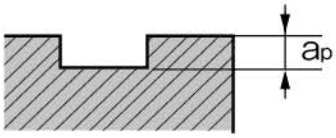
피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]				스테인레스 · 티타늄 · 인코넬 Stainless Steel – Titanium – Inconel	
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC			
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
3	9,000	480	7,000	250	4,000	100	3,000	80
4	8,500	510	6,400	280	3,500	120	2,700	90
5	7,000	600	4,800	300	3,000	150	1,900	100
6	5,850	620	4,200	350	2,400	180	1,700	120
7	5,000	650	3,800	380	2,000	190	1,300	120
8	4,420	700	3,200	390	1,700	190	1,200	135
9	4,000	730	3,000	400	1,400	170	1,150	135
10	3,510	730	2,600	410	1,200	160	1,100	145
11	3,200	730	2,300	400	1,200	180	950	140
12	2,925	700	2,100	380	1,100	190	820	140
13	2,700	700	1,900	370	1,100	220	700	140
14	2,535	700	1,700	370	1,000	230	620	145
16	2,210	700	1,500	370	900	230	550	140
18	1,950	700	1,300	360	800	230	480	135
20	1,755	670	1,200	360	700	220	420	130
25	1,430	680	1,060	400	780	310	470	180

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• 절입깊이 Depth of Cut

a_p
1D

a_{pMAX} = 12mm



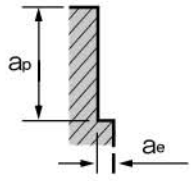
측면절삭(SIDE MILLING)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]				스테인레스 · 티타늄 · 인코넬 Stainless Steel – Titanium – Inconel	
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC			
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
3	10,000	500	8,000	280	5,000	180	3,200	100
4	8,880	600	6,000	300	4,000	190	3,000	120
5	7,000	700	5,500	400	3,200	220	2,500	150
6	5,500	780	5,000	440	3,100	260	2,350	180
7	5,000	900	4,500	600	2,600	280	2,400	250
8	5,200	1100	4,000	670	2,400	300	2,200	270
9	4,940	1100	3,500	680	2,000	300	1,800	270
10	4,160	1100	3,200	680	1,900	320	1,600	270
11	3,900	1100	2,850	650	1,700	320	1,400	260
12	3,500	1090	2,600	610	1,750	360	1,300	260
13	3,120	1050	2,400	600	1,600	360	1,200	260
14	2,925	1050	2,200	600	1,500	370	1,100	260
16	2,600	1050	1,950	590	1,280	360	920	240
18	2,275	1000	1,800	570	1,150	350	780	230
20	2,080	970	1,550	550	1,000	330	690	220
25	1,690	980	1,300	580	820	340	620	250

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• 절입깊이 Depth of Cut

a_p	a_e
1.5D	0.3D

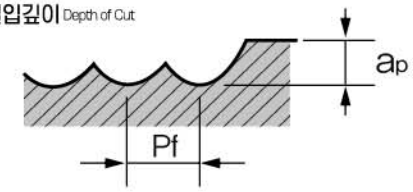


SPP2B / 2날 고경도용 볼

피삭재 Work Material	공구강 · 조질강 · 프리하든강 Tool Steel – Hardened Steel – Prehardened Steel [SKD – NAK80 – HPM50]				조질강 · 초내열합금강 Hardened Steel – Heat Resisting Alloys															
경도 HARDNESS	~45HRC				46~55 HRC				56~60 HRC				61~65 HRC				66~70 HRC			
반지름 RE	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	절입깊이 (mm) Pf	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	절입깊이 (mm) Pf	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	절입깊이 (mm) Pf	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	절입깊이 (mm) Pf	회전속도 (min-1)	이송속도 (mm/min)	절입깊이 (mm) ap	절입깊이 (mm) Pf
R 1	32,000	3,600	0.1	0.2	32,000	3,550	0.1	0.2	24,000	2,200	0.1	0.2	20,000	1,750	0.04	0.1	16,000	1,250	0.04	0.1
R 1.25	29,000	3,800	0.13	0.25	26,000	3,400	0.13	0.25	195,000	2,100	0.13	0.25	15,500	1,600	0.05	0.125	13,000	1,200	0.05	0.125
R 1.5	26,500	4,000	0.15	0.3	21,000	3,200	0.15	0.3	16,000	2,000	0.15	0.3	13,500	1,600	0.06	0.15	10,500	1,200	0.06	0.15
R 1.75	23,000	3,700	0.13	0.35	18,000	3,000	0.13	0.35	14,000	1,900	0.13	0.35	11,000	1,500	0.07	0.175	9,000	1,150	0.07	0.175
R 2	20,000	3,650	0.2	0.4	16,000	2,950	0.2	0.4	12,000	1,900	0.2	0.4	9,950	1,500	0.08	0.2	7,950	1,150	0.08	0.2
R 2.5	16,000	3,500	0.25	0.5	12,500	2,650	0.25	0.5	9,550	1,700	0.25	0.5	7,950	1,350	0.1	0.25	6,350	1,000	0.1	0.25
R 3	13,500	3,350	0.3	0.6	10,500	2,300	0.3	0.6	7,950	1,550	0.3	0.6	6,650	1,250	0.12	0.3	5,300	955	0.12	0.3
R 4	9,950	2,850	0.4	0.8	7,950	2,050	0.4	0.8	5,950	1,350	0.4	0.8	4,950	1,050	0.16	0.4	4,000	830	0.16	0.4
R 5	7,950	2,550	0.5	1.0	6,350	1,800	0.5	1.0	4,800	1,150	0.5	1.0	4,000	875	0.2	0.5	3,200	700	0.2	0.5
R 6	6,650	2,400	0.6	1.2	5,300	1,650	0.6	1.2	4,000	955	0.5	1.2	3,300	795	0.24	0.6	2,650	635	0.24	0.6

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

• **절입깊이** Depth of Cut



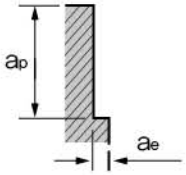
SPP4FH / 4날 45도 플랫

일반 측면절삭 (SIDE MILLING - REGULAR)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]				조질강 · 초내열합금강 Hardened Steel – Heat Resisting Alloys		스테인레스 · 티타늄 · 인코넬 Stainless Steel – Titanium – Inconel	
경도 HARDNESS	~32HRC		33~41 HRC		42~55 HRC		56~70 HRC			
외경 DC	회전속도 (rev/min)	이송속도 (mm/min)	회전속도 (rev/min)	이송속도 (mm/min)	회전속도 (rev/min)	이송속도 (mm/min)	회전속도 (rev/min)	이송속도 (mm/min)	회전속도 (rev/min)	이송속도 (mm/min)
3	8,300	760	7,000	560	6,350	485	3,200	190	6,600	555
4	6,200	820	5,250	565	4,750	515	2,400	190	4,950	590
5	4,950	845	4,200	590	3,800	535	1,900	190	3,950	630
6	4,150	945	3,500	700	3,200	545	1,600	190	3,300	660
8	3,100	895	2,650	660	2,450	555	1,200	175	2,450	640
10	2,500	855	2,100	605	1,900	525	955	160	1,950	590
12	2,050	850	1,750	565	1,600	475	795	160	1,650	535
16	1,500	745	1,300	500	1,200	400	595	160	1,250	445
20	1,250	595	1,050	455	955	355	475	160	985	395

• 절입깊이 Depth of Cut

ap	ae
1.5D	0.2D



• 절입깊이 Depth of Cut

ap	ae
1D	0.05D

1. 기계, 홀더는 강성과 정도가 높은 것을 사용해 주십시오.
2. 채터링 발생시, 회전속도, 이송속도를 같이 낮추어 사용해 주십시오.
3. 절삭유는 발화성이 적은 것으로 선정해 주십시오.

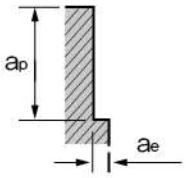
고속 측면절삭 (SIDE MILLING - HIGH-SPEED LIGHT)

피삭재 Work Material	일반구조용강 · 탄소강 Mild Steel – Carbon Steel [FC250 – SS400 – S45C]		조질강 · 프리하든강 Hardened Steel – Prehardened Steel [SKT – SKD61 – NAK55 – NAK80 – HPM1 – DH]				조질강 · 초내열합금강 Hardened Steel – Heat Resisting Alloys		스테인레스 · 티타늄 · 인코넬 Stainless Steel – Titanium – Inconel	
경도 HARDNESS	~32HRC		33~41 HRC		42~50 HRC		56~70 HRC			
외경 DC	회전속도 (rev/min)	이송속도 (mm/min)	회전속도 (rev/min)	이송속도 (mm/min)	회전속도 (rev/min)	이송속도 (mm/min)	회전속도 (rev/min)	이송속도 (mm/min)	회전속도 (rev/min)	이송속도 (mm/min)
3	21,200	2,400	21,200	1,300	10,600	680	8,500	440	15,900	1,150
4	15,900	2,300	15,900	1,300	7,950	795	6,350	460	11,900	1,250
5	12,700	2,150	12,700	1,250	6,350	840	5,100	510	9,550	1,350
6	10,600	2,650	10,600	2,000	5,300	910	4,250	610	7,950	1,450
8	7,950	2,400	7,950	1,900	4,000	860	3,200	575	5,950	1,400
10	6,350	2,200	6,350	1,850	3,200	830	2,550	510	4,750	1,350
12	5,300	2,200	5,300	1,800	2,650	830	2,100	510	4,000	1,350
16	4,000	1,900	4,000	1,700	2,000	830	1,600	510	3,000	1,350
20	3,200	1,550	3,200	1,550	1,600	730	1,250	510	3,200	1,150

• 절입깊이 Depth of Cut

	ap	ae
Dc 〈 Ø6	1.5D	0.02D
Ø6 ≤ D	1.5D	0.05D

ae Max = 0.5mm



• 절입깊이 Depth of Cut

	ap	ae
Dc 〈 ∮6	1D	0.01D
Ø6 ≤ D	1D	0.02D

ae Max = 0.5mm

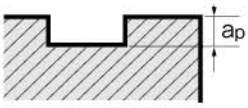
1. 고속 고정도의 머시닝센터를 이용할 때의 절삭속도와 이송속도 기준표입니다.
2. 마모가 진행되면 불꽃이 발생 할 수 있으므로 발화성이 있는 절삭유는 사용하지 마십시오.
3. 에어 블로우를 사용하시고, 만약 절삭유를 사용시, 발화성이 적은 것으로 선정 하십시오.

SUS3F / 3날 플랫

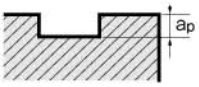
홈절삭(SLOTTING)

피삭재 Work Material	일반구조용강 · 탄소강 · 주철 Mild Steel, Carbon Steel SS400, S50C (~750N/㎟)		합금강 · 공구강 Alloy Steel, Tool Steel SCM, SKT, SKS, SKD (30~38HRC)		조질강 · 프리하든강 Hardened Steel, Prehardened Steel SKT, SKD, NAK55, HPM1 (38~45HRC)		스테인리스강 · 조질강 Stainless Steel, Hardened Steel SUS304, SKD (38~45HRC)		티탄합금 Titanium Alloy Ti-6Al-4V	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	28,650	1,720	22,280	1,340	19,100	860	15,910	720	11,140	340
2	14,320	1,290	11,140	840	9,550	570	7,960	480	5,570	250
3	10,080	1,210	7,960	720	6,900	520	5,840	440	4,250	190
4	7,960	1,190	6,370	760	5,170	470	4,380	390	3,180	190
5	6,200	735	5,090	760	4,140	500	3,500	420	2,550	230
6	5,150	740	4,240	760	3,450	520	2,920	440	2,120	260
8	3,850	600	3,180	670	2,590	470	2,190	390	1,590	240
10	3,100	580	2,550	610	2,070	430	1,750	370	1,270	230
12	2,600	560	2,120	570	1,720	410	1,460	350	1,030	220

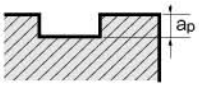
절입량 Depth of Cut



ap ≤ 1D



ap ≤ 0.5D

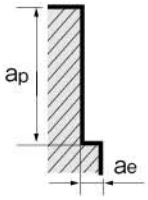


ap ≤ 0.2D

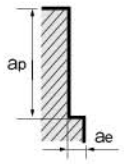
측면절삭(SIDE MILLING)

피삭재 Work Material	일반구조용강 · 탄소강 · 주철 Mild Steel, Carbon Steel SS400, S50C (~750N/㎟)		합금강 · 공구강 Alloy Steel, Tool Steel SCM, SKT, SKS, SKD (30~38HRC)		조질강 · 프리하든강 Hardened Steel, Prehardened Steel SKT, SKD, NAK55, HPM1 (38~45HRC)		스테인리스강 · 조질강 Stainless Steel, Hardened Steel SUS304, SKD (38~45HRC)		티탄합금 Titanium Alloy Ti-6Al-4V	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	31,830	1,910	25,470	1,530	19,100	970	15,910	480	12,730	380
2	15,910	1,430	13,530	1,020	10,350	560	8,750	340	7,160	280
3	11,140	1,340	9,020	810	6,890	410	5,840	260	4,770	220
4	8,750	1,310	7,160	860	5,570	500	4,770	290	3,980	240
5	7,000	1260	5,730	860	4,450	530	3,820	340	3,180	290
6	5,840	1,220	4,770	860	3,710	560	3,180	380	2,650	280
8	4,380	1,050	3,580	750	2,780	500	2,390	360	1,990	240
10	3,500	950	2,860	690	2,230	470	1,910	340	1,590	240
12	2,920	880	2,390	650	1,860	450	1,590	330	1,330	240

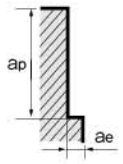
절입량 Depth of Cut



ap	ae
≤ 1.5	≤ 0.2



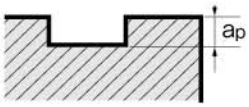
ap	ae
≤ 1.5	≤ 0.1



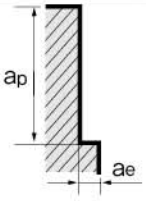
ap	ae
≤ 1.5	≤ 0.05

T4P · T4PC / 4날 플랫, 4날 코너R

홈절삭(SLOTTING)

피삭재 Work Material	일반구조용강, 탄소강 SS400, S55C, FC250 (~750N/㎟)		합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)		조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38HRC)		스테인리스강 · 조질강 SUS304, SKD (38~45HRC)		조질강 · 티탄합금 (45~55HRC)		초내열합금강,인코넬	
외경	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	5,500	570	4,500	530	4,000	400	3,700	340	3,500	290	1,800	140
1.2	6,500	630	5,400	580	4,750	460	4,300	390	4,050	330	2,020	165
1.5	7,500	705	6,300	645	5,550	525	4,950	450	4,650	390	2,250	195
2	9,000	760	7,600	680	6,600	560	6,200	480	6,000	420	2,800	180
2.5	10,000	750	8,750	675	7,500	525	7,250	475	7,000	413	3,000	138
3	10,500	730	8,550	680	7,850	520	7,450	460	7,200	440	2,500	125
3.5	9,130	730	7,480	730	6,880	520	6,500	490	6,300	470	2,200	130
4	7,750	730	6,400	775	5,900	520	5,550	515	5,400	495	1,900	135
4.5	6,980	730	5,750	765	5,300	530	5,000	530	4,850	515	1,700	140
5	6,200	735	5,100	755	4,700	545	4,450	545	4,300	535	1,500	145
5.5	5,680	735	4,680	695	4,320	560	4,080	560	3,950	540	1,375	145
6	5,150	740	4,250	635	3,950	575	3,700	570	3,600	545	1,250	145
7	4,500	670	3,725	593	3,450	563	3,250	548	3,150	528	1,098	150
8	3,850	600	3,200	550	2,950	550	2,800	525	2,700	510	945	155
10	3,100	580	2,550	540	2,350	480	2,250	475	2,150	455	760	145
12	2,600	560	2,150	475	1,950	460	1,850	440	1,800	435	630	145
16	1,950	555	1,600	430	1,500	370	1,400	370	1,350	365	475	110
20	1,550	475	1,300	380	1,200	355	1,100	330	1,100	330	380	110
절입량			ap / ≤ 1D apMAX = 12mm				ap / ≤ 0.5D		ap / ≤ 0.2D			

측면절삭(SIDE MILLING)

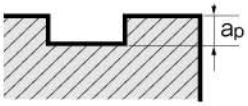
피삭재 Work Material	일반구조용강, 탄소강 SS400, S55C, FC250 (~750N/㎟)		합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)		조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38HRC)		스테인리스강 · 조질강 SUS304, SKD (38~45HRC)		조질강 · 티탄합금 (45~55HRC)		초내열합금강,인코넬	
외경	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	5,610	627	4,725	541	4,000	400	3,700	340	3,500	305	1,980	189
1.2	6,750	730	5,700	580	4,750	460	4,300	380	4,000	350	2,340	230
1.5	7,875	846	6,741	677	5,550	525	4,950	473	4,650	429	2,700	283
2	9,900	988	8,284	748	6,666	616	6,200	528	6,000	483	3,920	279
2.5	11,500	1,050	9,625	776	7,650	604	7,323	570	7,000	495	4,350	227
3	12,500	1,100	9,550	840	8,100	625	7,650	615	7,400	545	3,800	220
3.5	11,100	1,150	8,550	910	7,250	650	6,850	660	6,620	580	3,400	230
4	9,750	1,200	7,550	985	6,400	680	6,050	710	5,850	630	3,000	240
4.5	8,850	1,250	6,850	1,020	5,825	700	5,500	740	5,320	650	2,725	240
5	7,950	1,300	6,150	1,050	5,250	725	4,950	775	4,800	670	2,450	245
5.5	7,350	1,450	5,700	1,125	4,850	800	4,575	800	4,420	680	2,270	245
6	6,750	1,600	5,250	1,200	4,450	890	4,200	835	4,050	695	2,100	250
7	5,900	1,575	4,600	1,150	3,900	853	3,675	823	3,550	685	1,850	238
8	5,050	1,550	3,950	1,100	3,350	815	3,150	810	3,050	675	1,600	225
10	4,100	1,450	3,200	1,050	2,700	725	2,550	715	2,450	635	1,250	215
12	3,400	1,400	2,650	1,000	2,250	720	2,100	675	2,050	605	1,050	210
16	2,550	1,200	2,000	940	1,700	635	1,600	555	1,550	505	765	210
20	2,050	985	1,600	755	1,350	590	1,250	515	1,250	460	635	200
절입량			ap ≤ 1.5D, ae ≤ 0.2D				ap ≤ 1.5D, ae ≤ 0.1D		ap ≤ 1.5D, ae ≤ 0.05D			

S3R · S4RN / 3날, 4날 라핑

홈절삭(SLOTTING)

피삭재 Work Material	주철 Cast Iron FC250		일반구조용강 · 탄소강 Mild Steel, Carbon Steel SS400, S50C		합금강 · 공구강 Alloy Steel, Tool Steel SCM, SKT, SKS, SKD (~30HRC)		조질강 · 프리하든강 Hardened Steel, Prehardened Steel SKD, NAK80 (~45HRC)		스테인리스강 Stainless Steel SUS304		티탄합금 Titanium Steel Ti-6Al-4V	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
3	6,000	300	9,000	420	6,800	240	6,000	180	5,500	150	4,000	80
4	5,570	340	8,750	470	6,360	260	5,570	210	4,770	170	3,180	100
6	3,710	430	5,840	580	4,240	320	3,710	260	3,180	220	2,120	130
8	2,790	470	4,380	650	3,180	350	2,790	290	2,390	250	1,590	140
10	2,230	510	3,500	700	2,550	380	2,230	310	1,910	270	1,270	150
12	1,860	470	2,920	640	2,120	350	1,860	290	1,590	240	1,060	140
16	1,390	460	2,190	630	1,590	340	1,390	280	1,190	240	800	140
20	1,110	440	1,750	610	1,270	330	1,110	270	950	230	640	130

절입량 Depth of Cut



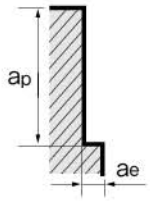
ap
≤ 1D

apMAX = 12mm

측면절삭(SIDE MILLING)

피삭재 Work Material	주철 Cast Iron FC250		일반구조용강 · 탄소강 Mild Steel, Carbon Steel SS400, S50C		합금강 · 공구강 Alloy Steel, Tool Steel SCM, SKT, SKS, SKD (~30HRC)		조질강 · 프리하든강 Hardened Steel, Prehardened Steel SKD, NAK80 (~45HRC)		스테인리스강 Stainless Steel SUS304		티탄합금 Titanium Steel Ti-6Al-4V	
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
3	8,000	500	8,500	480	6,500	250	5,500	210	5,000	170	3,500	100
4	7,160	540	7,960	520	5,960	280	5,300	240	4,640	210	3,310	130
6	4,770	610	6,370	710	4,770	400	4,240	330	3,710	290	2,650	180
8	3,580	940	4,770	1,090	3,580	610	3,180	510	2,970	450	1,990	270
10	2,860	950	3,820	1,100	2,860	620	2,550	510	2,230	450	1,590	270
12	2,390	860	3,180	990	2,390	560	2,120	460	1,860	410	1,330	250
16	1,790	820	2,390	960	1,790	540	1,590	450	1,390	390	990	240
20	1,430	770	1,910	890	1,430	500	1,270	420	1,110	360	800	220

절입량 Depth of Cut



ap	ae
≤ 1.5D	≤ 0.3D

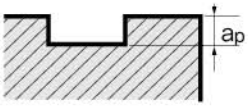
A2F / 2날 플랫

홈절삭(SLOTTING)

피삭재 Work Material	알루미늄합금 (A7075)		동합금 (C1100)	
외경	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	32000	220	23500	220
1.2	32000	220	21000	220
1.5	27750	270	15500	215
2	23500	310	11500	215
2.5	21000	490	9500	230
3	15500	515	7950	250
4	11500	540	5950	280
5	9500	575	4750	295
6	7950	630	3950	310
7	6350	640	3450	330
8	5950	665	2950	350
10	4750	745	2350	365
12	3950	790	1950	390
14	3400	795	1700	395
16	2950	795	1450	390
18	2650	795	1300	390
20	2350	785	1150	385

절입량 Depth of Cut

ap
1D

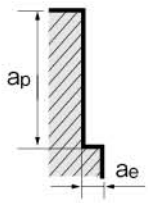


측면절삭(SIDE MILLING)

피삭재 Work Material	알루미늄합금 (A7075)		동합금 (C1100)	
외경	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	32000	220	23500	220
1.2	32000	220	21000	220
1.5	32000	320	15500	215
2	32000	420	11500	215
2.5	23500	550	9500	230
3	21000	700	7950	250
4	15500	725	5950	280
5	12500	760	4750	295
6	10500	830	3950	310
7	9500	850	3450	330
8	7950	890	2950	350
10	6350	995	2350	365
12	5300	1050	1950	390
14	4500	1050	1700	395
16	3950	1050	1450	390
18	3500	1050	1300	390
20	3150	1050	1150	385

절입량 Depth of Cut

ap	ae
1.5D	0.1D



*롱 타입 엔드밀 사용 시 이상 떨림이 발생한 경우에는 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.

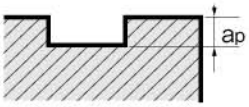
A3F / 3날 플랫

홈절삭(SLOTTING)

피삭재	알루미늄합금 (A7075)		알루미늄합금주물 (Si 13% 미만)		동합금	
외경	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	18700	567	18700	567	7000	280
1.2	19200	623	19200	623	7200	310
1.5	18200	650	18200	650	6800	320
2	16000	580	16000	580	5900	290
2.5	15300	455	15300	455	5700	230
3	12600	532	12600	532	4700	260
3.5	10500	532	10500	532	3900	260
4	9300	616	9300	616	3400	300
4.5	8400	616	8400	616	3100	300
5	7500	616	7500	616	2800	300
5.5	6900	644	6900	644	2500	320
6	6300	672	6300	672	2300	330
7	5700	700	5700	700	2050	340
8	4770	728	4770	728	1700	360
9	4230	784	4230	784	1500	380
10	4445	840	4445	840	1550	410
12	3710	868	3710	868	1300	425
14	3600	868	3600	868	1260	425
16	3555	868	3555	868	1250	425
18	2800	868	2800	868	960	425
20	2835	868	2835	868	970	425

절입량 Depth of Cut

$a_p \leq 0.5D$



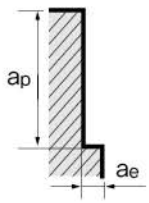
측면절삭(SIDE MILLING)

피삭재	알루미늄합금 (A7075)		알루미늄합금주물 (Si 13% 미만)		동합금	
외경	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	18700	810	18700	810	7100	270
1.2	19200	890	19200	890	7300	300
1.5	18200	935	18200	935	6900	310
2	16000	832	16000	832	6000	280
2.5	15300	650	15300	650	5800	220
3	12600	760	12600	760	4800	250
3.5	10500	760	10500	760	4000	250
4	9300	880	9300	880	3500	290
4.5	8400	880	8400	880	3200	290
5	7500	880	7500	880	2850	290
5.5	6900	920	6900	920	2600	310
6	6300	960	6300	960	2380	320
7	5700	1000	5700	1000	2150	330
8	4770	1040	4770	1040	1800	350
9	4230	1120	4230	1120	1600	370
10	4445	1200	4445	1200	1650	400
12	3710	1240	3710	1240	1400	415
14	3600	1240	3600	1240	1360	415
16	3555	1240	3555	1240	1350	415
18	2800	1240	2800	1240	1060	415
20	2835	1240	2835	1240	1070	415

절입량 Depth of Cut

$a_p \leq 1.5D$

$a_e \leq 0.4D$



* 롱 타입 엔드밀 사용 시 이상 떨림이 발생한 경우에는 회전속도와 이송속도를 같은 비율로 내려서 사용해 주십시오.

A3R / 3날 라핑

홈절삭(SLOTTING)

피삭재 Work Material	알루미늄합금 (A7075)	
외경	회전속도 (min-1)	이송속도 (mm/min)
4	8000	3000
5	7500	3000
6	6000	2500
8	5400	2300
10	4500	2000
12	3700	1700
14	3200	1550
16	2800	1400
18	2700	1350
20	2600	1300

절입량 Depth of Cut

$a_p \leq 1.5D$

측면절삭(SIDE MILLING)

피삭재 Work Material	알루미늄합금 (A7075)	
외경	회전속도 (min-1)	이송속도 (mm/min)
4	10000	3000
5	10000	3000
6	10000	3500
8	10000	3800
10	8000	3500
12	6500	3100
14	5700	2800
16	5100	2500
18	4700	2300
20	5300	2100

절입량 Depth of Cut

$a_p \leq 1.5D$

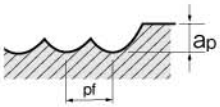
$a_e \leq 0.5D$

WS-EBD · WS-EBDS

표준절삭조건

피삭재 Work Material		공구강 · 조질강 · 프리하든강 SKD, NAK80, KP4M (~45HRC)		조질강 (45~55HRC)		조질강 (55~60HRC)		조질강 (60~65HRC)		조질강 (65~70HRC)	
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
R0.05	0.2	40,000	100	40,000	100	40,000	100	40,000	100	40,000	80
R0.1	0.4	40,000	160	40,000	160	40,000	160	40,000	160	40,000	100
R0.15	0.6	40,000	400	40,000	400	40,000	400	40,000	400	40,000	300
R0.2	0.8	40,000	1,000	40,000	1,000	40,000	1,000	40,000	800	40,000	600
R0.25	1	40,000	1,100	40,000	1,100	40,000	1,100	40,000	900	40,000	700
R0.3	1.2	40,000	1,200	40,000	1,200	40,000	1,200	40,000	1,000	40,000	800
R0.35	1.4	40,000	1,400	40,000	1,400	40,000	1,400	40,000	1,100	40,000	950
R0.4	1.6	40,000	1,600	40,000	1,600	40,000	1,600	40,000	1,200	40,000	1,000
R0.45	1.8	32,000	2,000	32,000	2,000	32,000	2,000	32,000	1,400	32,000	1,200
R0.5	2.5	32,000	2,350	32,000	2,350	32,000	2,000	32,000	1,600	32,000	1,450
		32,000	2,350	32,000	2,350	32,000	2,000	32,000	1,600	32,000	1,450
R0.75	4	32,000	3,050	32,000	3,050	32,000	2,500	26,500	1,900	21,000	1,400
R1	5	32,000	3,600	32,000	3,550	24,000	2,200	20,000	1,750	16,000	1,250
R1.25	7	29,000	3,800	26,000	3,400	19,500	2,100	15,500	1,600	13,000	1,200
R1.5	8	26,500	4,000	21,000	3,200	16,000	2,000	13,500	1,600	10,500	1,200
R1.75		23,000	3,700	18,000	3,000	14,000	1,900	11,000	1,500	9,000	1,150
R2		20,000	3,650	16,000	2,950	12,000	1,900	9,950	1,500	7,950	1,150
R2.25	10	18,000	3,500	14,000	3,750	10,500	1,800	8,500	1,400	7,300	1,050
R2.5		16,000	3,500	12,500	2,650	9,550	1,700	7,950	1,350	6,350	1,000
R3	12	13,500	3,350	10,500	2,300	7,950	1,550	6,650	1,250	5,300	955
R4	14	9,950	2,850	7,950	2,050	5,950	1,350	4,950	1,050	4,000	830
R5	18	7,950	2,550	6,350	1,800	4,800	1,150	4,000	875	3,200	700
R6	22	6,650	2,400	5,300	1,650	4,000	955	3,300	795	2,650	635

절입량
Depth of Cut



ap	Pf
0.05D	0.1D

apMAX = 0.6mm이하

ap	Pf
0.03D	0.1D

apMAX = 0.5mm이하

ap	Pf
0.02D	0.05D

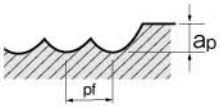
apMAX = 0.3mm이하

WS-EBD · WS-EBDS

고속절삭조건

피삭재 Work Material		공구강 · 조질강 · 프리하든강 SKD, NAK80, KP4M (~45HRC)		조질강 (45~55HRC)		조질강 (55~60HRC)		조질강 (60~65HRC)		조질강 (65~70HRC)	
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
R0.05	0.2	50,000	350	50,000	300	50,000	300	50,000	300	50,000	200
R0.1	0.4	50,000	440	50,000	360	50,000	340	50,000	340	50,000	320
R0.15	0.6	50,000	730	50,000	600	50,000	570	50,000	570	50,000	500
R0.2	0.8	50,000	970	50,000	800	50,000	760	50,000	760	50,000	700
R0.25	1	50,000	1,200	50,000	900	50,000	850	50,000	850	50,000	800
R0.3	1.2	50,000	1,550	50,000	1,200	50,000	1,100	50,000	1,100	50,000	1,000
R0.35	1.4	50,000	1,700	50,000	1,600	50,000	1,400	50,000	1,400	50,000	1,200
R0.4	1.6	50,000	2,200	50,000	1,800	50,000	1,700	50,000	1,700	50,000	1,500
R0.45	1.8	50,000	3,500	50,000	2,800	50,000	2,200	50,000	2,200	50,000	1,900
R0.5	2.5	50,000	3,700	50,000	3,700	50,000	3,100	50,000	2,600	47,500	2,400
		50,000	3,700	50,000	3,700	50,000	3,100	50,000	2,600	47,500	2,400
R0.75	4	50,000	4,800	50,000	4,800	50,000	3,900	42,500	3,050	32,000	2,300
R1	5	50,000	5,600	47,500	5,350	40,000	3,650	32,000	2,800	24,000	2,100
R1.25	7	45,000	5,800	49,000	5,100	31,000	3,400	26,000	2,700	20,000	2,000
R1.5	8	41,500	6,200	32,000	4,800	26,500	3,350	21,000	2,550	16,000	1,900
R1.75		36,000	5,900	28,000	4,600	22,000	3,250	18,000	2,400	14,000	1,800
R2		31,000	5,700	24,000	4,400	20,000	3,200	16,000	2,400	12,000	1,800
R2.25	10	28,000	5,500	21,000	4,000	18,000	3,000	14,500	2,200	1,050	1,650
R2.5		25,000	5,450	19,000	4,000	16,000	2,850	13,000	2,150	9,550	1,600
R3	12	20,500	5,200	16,000	3,450	13,500	2,550	10,500	2,050	7,950	1,550
R4	14	15,500	4,450	12,000	3,050	9,950	2,250	7,950	1,800	5,950	1,350
R5	18	12,500	3,950	9,550	2,650	7,950	1,900	6,350	1,550	4,800	1,150
R6	22	10,500	3,700	7,950	2,500	6,650	1,600	5,300	1,350	4,000	995

절입량
Depth of Cut



ap	Pf
0.02D	0.05D

apMAX = 0.3mm이하

ap	Pf
0.02D	0.05D

apMAX = 0.2mm이하

ap	Pf
0.01D	0.05D

apMAX = 0.1mm이하

WS-LN-EBD · WS-LN-EBD-6

- 절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철(~750N/㎟) SS400, S55C, FC250				합금강 · 공구강(~30HRC) SCM, SKT, SKS, SKD				조질강 · 프리하든강 (30~38HRC) SKT, SKD, NAK55, HPM1			
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf
R0.05	0.2	50,000	70	0.003	0.003	50,000	70	0.003	0.003	50,000	70	0.003	0.003
	0.3	50,000	70	0.003	0.003	50,000	70	0.003	0.003	50,000	70	0.003	0.003
	0.5	50,000	50	0.003	0.003	50,000	50	0.003	0.003	50,000	50	0.003	0.003
R0.1	0.6	50,000	380	0.005	0.005	50,000	380	0.005	0.005	50,000	360	0.005	0.005
	1	50,000	360	0.005	0.005	50,000	360	0.005	0.005	50,000	340	0.005	0.005
	1.5	45,000	300	0.005	0.005	45,000	300	0.005	0.005	45,000	280	0.005	0.005
R0.15	1	50,000	600	0.005	0.01	50,000	600	0.005	0.01	50,000	570	0.005	0.01
	1.5	50,000	600	0.005	0.01	50,000	600	0.005	0.01	50,000	570	0.005	0.01
	2	45,000	480	0.005	0.005	45,000	480	0.005	0.005	45,000	450	0.005	0.005
	3	38,000	250	0.005	0.005	38,000	250	0.005	0.005	38,000	230	0.005	0.005
R0.2	1	50,000	900	0.01	0.02	50,000	900	0.01	0.02	50,000	850	0.01	0.02
	1.5	50,000	800	0.01	0.02	50,000	800	0.01	0.02	50,000	760	0.01	0.02
	2	50,000	700	0.01	0.02	50,000	700	0.01	0.02	50,000	660	0.01	0.02
	2.5	45,000	550	0.008	0.015	45,000	550	0.008	0.015	45,000	520	0.008	0.015
	3	43,000	500	0.005	0.01	43,000	500	0.005	0.01	43,000	470	0.005	0.01
	4	36,000	370	0.005	0.005	36,000	370	0.005	0.005	36,000	350	0.005	0.005
	5	32,000	280	0.004	0.005	32,000	280	0.004	0.005	32,000	260	0.004	0.005
R0.25	1	50,000	1,100	0.015	0.03	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03
	1.5	50,000	1,100	0.015	0.03	50,000	1,100	0.015	0.03	50,000	1,050	0.015	0.03
	2	50,000	1,000	0.015	0.03	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03
	2.5	50,000	1,000	0.015	0.03	50,000	1,000	0.015	0.03	50,000	950	0.015	0.03
	4	43,000	600	0.01	0.01	43,000	600	0.01	0.01	43,000	570	0.01	0.01
	5	30,000	400	0.005	0.01	30,000	400	0.005	0.01	30,000	380	0.005	0.01
	6	26,000	250	0.004	0.005	26,000	250	0.004	0.005	26,000	230	0.004	0.005
	8	22,000	160	0.004	0.005	22,000	160	0.004	0.005	22,000	150	0.004	0.005
R0.3	2	50,000	1,300	0.03	0.05	50,000	1,300	0.03	0.05	50,000	1,200	0.03	0.05
	3	50,000	1,200	0.02	0.03	50,000	1,200	0.02	0.03	50,000	1,100	0.02	0.03
	4	40,000	900	0.01	0.02	40,000	900	0.01	0.02	40,000	850	0.01	0.02
	5	30,000	680	0.01	0.02	30,000	680	0.01	0.02	30,000	640	0.01	0.02
	6	26,000	600	0.01	0.02	26,000	600	0.01	0.02	26,000	570	0.01	0.02
	8	20,000	320	0.005	0.01	20,000	320	0.005	0.01	20,000	300	0.005	0.01
	10	20,000	200	0.005	0.008	20,000	200	0.005	0.008	20,000	190	0.005	0.008
R0.4	2	50,000	2,000	0.04	0.08	50,000	2,000	0.04	0.08	50,000	1,900	0.04	0.08
	3	48,000	1,600	0.04	0.08	48,000	1,600	0.04	0.08	48,000	1,500	0.04	0.08
	4	40,000	1,200	0.04	0.08	40,000	1,200	0.04	0.08	40,000	1,100	0.04	0.08
	5	34,000	950	0.03	0.05	34,000	950	0.03	0.05	34,000	900	0.03	0.05
	6	30,000	800	0.03	0.05	30,000	800	0.03	0.05	30,000	760	0.03	0.05
	8	23,000	450	0.005	0.01	23,000	450	0.005	0.01	23,000	420	0.005	0.01
	10	18,000	320	0.005	0.008	18,000	320	0.005	0.008	18,000	300	0.005	0.008
	12	17,000	250	0.005	0.005	17,000	250	0.005	0.005	17,000	230	0.005	0.005
R0.5	3	45,000	3,200	0.05	0.1	45,000	3,200	0.05	0.1	45,000	3,000	0.05	0.1
	4	40,000	3,000	0.05	0.1	40,000	3,000	0.05	0.1	40,000	2,850	0.05	0.1
	5	36,000	2,300	0.05	0.1	36,000	2,300	0.05	0.1	36,000	2,100	0.05	0.1

WS-LN-EBD · WS-LN-EBD-6

- 절삭조건

피삭재 Work Material		스텐레스강 · 조질강 · 프리하든강 (38~45 HRC)				조질강 (45~55HRC)				조질강 (55~70HRC)			
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf
R0.05	0.2	50,000	70	0.003	0.003	50,000	60	0.003	0.003	50,000	60	0.003	0.003
	0.3	50,000	70	0.003	0.003	50,000	60	0.003	0.003	50,000	60	0.003	0.003
	0.5	50,000	50	0.003	0.003	50,000	40	0.003	0.003	50,000	40	0.003	0.003
R0.1	0.6	50,000	360	0.005	0.005	50,000	250	0.005	0.005	50,000	180	0.004	0.005
	1	50,000	340	0.005	0.005	50,000	230	0.005	0.005	50,000	180	0.004	0.005
	1.5	40,000	280	0.005	0.005	45,000	190	0.005	0.005	41,000	130	0.004	0.005
R0.15	1	50,000	570	0.005	0.01	50,000	390	0.005	0.01	50,000	310	0.005	0.01
	1.5	50,000	570	0.005	0.01	50,000	370	0.005	0.01	50,000	290	0.005	0.01
	2	45,000	450	0.005	0.005	45,000	290	0.005	0.005	41,000	210	0.004	0.005
	3	38,000	230	0.005	0.005	37,000	150	0.005	0.005	33,000	100	0.004	0.005
R0.2	1	50,000	850	0.01	0.02	50,000	550	0.01	0.02	50,000	440	0.008	0.015
	1.5	50,000	760	0.01	0.02	50,000	520	0.01	0.02	50,000	410	0.008	0.015
	2	50,000	660	0.01	0.02	50,000	460	0.01	0.02	45,000	330	0.008	0.015
	2.5	45,000	520	0.008	0.015	45,000	360	0.008	0.015	41,000	260	0.008	0.015
	3	43,000	470	0.005	0.01	43,000	320	0.005	0.01	38,000	220	0.005	0.1
	4	36,000	350	0.005	0.005	35,000	230	0.005	0.005	31,000	160	0.005	0.005
	5	32,000	260	0.004	0.005	31,000	170	0.004	0.005	28,000	120	0.004	0.005
R0.25	1	50,000	1,050	0.015	0.03	50,000	730	0.015	0.03	50,000	580	0.01	0.02
	1.5	50,000	1,050	0.015	0.03	50,000	700	0.015	0.03	50,000	560	0.01	0.02
	2	50,000	950	0.015	0.03	50,000	650	0.015	0.03	50,000	520	0.01	0.02
	2.5	50,000	950	0.015	0.03	50,000	600	0.015	0.03	45,000	430	0.01	0.02
	4	43,000	570	0.01	0.01	43,000	390	0.1	0.01	38,000	270	0.01	0.01
	5	30,000	380	0.005	0.01	29,000	250	0.005	0.01	26,000	170	0.005	0.01
	6	26,000	230	0.004	0.005	25,000	150	0.004	0.005	22,000	100	0.004	0.005
	8	22,000	150	0.004	0.005	21,000	110	0.004	0.005	20,000	100	0.004	0.005
R0.3	2	50,000	1,200	0.03	0.05	50,000	820	0.03	0.05	50,000	650	0.01	0.02
	3	50,000	1,100	0.02	0.03	50,000	750	0.02	0.03	45,000	540	0.01	0.02
	4	40,000	850	0.01	0.02	40,000	590	0.01	0.02	36,000	420	0.01	0.02
	5	30,000	640	0.01	0.02	30,000	440	0.01	0.02	27,000	310	0.01	0.02
	6	26,000	570	0.01	0.02	25,000	380	0.01	0.02	22,000	260	0.01	0.02
	8	20,000	300	0.005	0.01	19,000	200	0.005	0.01	17,000	140	0.005	0.01
	10	20,000	190	0.005	0.008	19,000	120	0.005	0.008	17,000	100	0.005	0.008
R0.4	2	50,000	1,900	0.04	0.08	50,000	1,600	0.04	0.08	50,000	1,200	0.015	0.03
	3	48,000	1,500	0.04	0.08	48,000	1,100	0.04	0.08	45,000	820	0.015	0.03
	4	40,000	1,100	0.04	0.08	40,000	1,000	0.04	0.08	38,000	760	0.015	0.03
	5	34,000	900	0.03	0.05	34,000	800	0.03	0.05	31,000	580	0.015	0.03
	6	30,000	760	0.03	0.05	30,000	650	0.03	0.05	27,000	460	0.015	0.03
	8	23,000	420	0.005	0.1	23,000	300	0.005	0.01	20,000	200	0.005	0.01
	10	18,000	300	0.005	0.008	17,000	200	0.005	0.008	17,000	170	0.005	0.008
	12	17,000	230	0.005	0.005	16,000	160	0.005	0.005	16,000	110	0.005	0.005
R0.5	3	45,000	3,000	0.05	0.1	45,000	2,400	0.05	0.1	45,000	1,900	0.02	0.05
	4	40,000	2,850	0.05	0.1	40,000	2,200	0.05	0.1	40,000	1,700	0.02	0.05
	5	36,000	2,100	0.05	0.1	36,000	1,600	0.05	0.1	36,000	1,200	0.02	0.05

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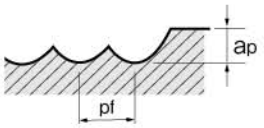
- 절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철(~750N/㎟) SS400, S55C, FC250				합금강 · 공구강(~30HRC) SCM, SKT, SKS, SKD				조질강 · 프리하든강 (30~38HRC) SKT, SKD, NAK55, HPM1			
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf
R0.5	6	30,000	2,000	0.05	0.1	30,000	2,000	0.05	0.1	30,000	1,900	0.05	0.1
	7	27,000	1,700	0.05	0.1	27,000	1,700	0.05	0.1	27,000	1,600	0.05	0.1
	8	26,000	1,600	0.05	0.1	26,000	1,600	0.05	0.1	26,000	1,500	0.05	0.1
	9	24,000	1,200	0.03	0.05	24,000	1,200	0.03	0.05	24,000	1,100	0.03	0.05
	10	22,000	1,100	0.01	0.02	22,000	1,100	0.01	0.02	22,000	1,000	0.01	0.02
	12	20,000	800	0.01	0.01	20,000	800	0.01	0.01	20,000	760	0.01	0.01
	14	18,000	600	0.005	0.01	18,000	600	0.005	0.1	18,000	570	0.005	0.01
	16	16,000	420	0.005	0.01	16,000	420	0.005	0.1	16,000	400	0.005	0.01
	20	13,000	300	0.005	0.005	13,000	300	0.005	0.005	13,000	285	0.005	0.005
R0.6	4	40,000	3,000	0.06	0.12	40,000	3,000	0.06	0.12	40,000	2,850	0.06	0.12
	6	32,000	2,100	0.06	0.12	32,000	2,100	0.06	0.12	32,000	2,000	0.06	0.12
	8	25,000	1,700	0.06	0.12	25,000	1,700	0.06	0.12	25,000	1,600	0.06	0.12
	10	20,000	1,200	0.05	0.1	20,000	2,200	0.05	0.1	20,000	1,100	0.05	0.1
	12	19,000	900	0.03	0.05	19,000	900	0.03	0.05	19,000	850	0.03	0.05
R0.75	4	40,000	3,900	0.075	0.15	40,000	3,900	0.075	0.15	40,000	3,700	0.075	0.15
	6	30,000	2,900	0.075	0.15	30,000	2,900	0.075	0.15	30,000	2,700	0.075	0.15
	8	24,000	2,300	0.075	0.15	24,000	2,300	0.075	0.15	24,000	2,100	0.075	0.15
	10	24,000	2,000	0.075	0.15	24,000	2,000	0.075	0.15	24,000	1,900	0.075	0.15
	12	21,000	1,400	0.075	0.1	21,000	1,400	0.075	0.1	21,000	1,300	0.075	0.1
	14	18,000	1,200	0.05	0.1	18,000	1,200	0.05	0.1	18,000	1,100	0.05	0.1
	16	16,000	800	0.05	0.1	16,000	800	0.05	0.1	16,000	760	0.05	0.1
	20	13,000	360	0.02	0.05	13,000	360	0.02	0.05	13,000	340	0.02	0.05
R1.0	6	36,000	3,000	0.1	0.2	36,000	3,000	0.1	0.2	36,000	2,800	0.1	0.2
	8	25,000	2,600	0.1	0.2	25,000	2,600	0.1	0.2	25,000	2,400	0.1	0.2
	10	20,000	2,400	0.1	0.2	20,000	2,400	0.1	0.2	20,000	2,200	0.1	0.2
	12	16,000	2,000	0.1	0.2	16,000	2,000	0.1	0.2	16,000	1.9	0.1	0.2
	14	15,000	1,800	0.1	0.2	15,000	1,800	0.1	0.2	15,000	1,700	0.1	0.2
	16	14,000	1,700	0.1	0.1	14,000	1,700	0.1	0.1	14,000	1,600	0.1	0.1

절입량 Depth of Cut

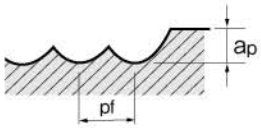


WS-LN-EBD · WS-LN-EBD-6

- 절삭조건

피삭재 Work Material		스텐레스강 · 조질강 · 프리하든강 (38~45 HRC)				조질강 (45~55HRC)				조질강 (55~70HRC)			
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf
R0.5	6	30,000	1,900	0.05	0.1	30,000	1,500	0.05	0.1	30,000	1,200	0.02	0.05
	7	27,000	1,600	0.05	0.1	27,000	1,300	0.05	0.1	27,000	1,000	0.02	0.05
	8	26,000	1,500	0.05	0.1	26,000	1,200	0.05	0.1	26,000	960	0.02	0.05
	9	24,000	1,100	0.03	0.05	24,000	880	0.03	0.05	24,000	700	0.02	0.05
	10	22,000	1,000	0.01	0.02	21,000	760	0.01	0.02	18,000	520	0.01	0.02
	12	20,000	760	0.01	0.01	19,000	570	0.01	0.01	17,000	400	0.01	0.01
	14	18,000	570	0.005	0.01	17,000	430	0.005	0.01	15,000	.300	0.005	0.01
	16	16,000	400	0.005	0.01	15,000	300	0.005	0.01	13,000	200	0.005	0.01
	20	13,000	285	0.005	0.005	12,000	180	0.005	0.005	12,000	140	0.004	0.005
R0.6	4	40,000	2,850	0.06	0.12	40,000	2,300	0.06	0.12	38,000	1,750	0.02	0.05
	6	32,000	2,000	0.06	0.12	32,000	1,600	0.06	0.12	30,000	1,200	0.02	0.05
	8	25,000	1,600	0.06	0.12	25,000	1,200	0.06	0.12	25,000	960	0.02	0.05
	10	20,000	1,100	0.05	0.1	18,000	800	0.05	0.1	16,000	560	0.02	0.05
	12	17,000	850	0.03	0.05	16,000	640	0.03	0.05	14,000	440	0.02	0.05
R0.75	4	40,000	3,700	0.075	0.15	40,000	2,900	0.075	0.15	38,000	2,200	0.03	0.06
	6	30,000	2,700	0.075	0.15	30,000	2,200	0.075	0.15	27,000	1,500	0.03	0.06
	8	24,000	2,100	0.075	0.15	24,000	1,700	0.075	0.15	21,000	1,100	0.03	0.06
	10	24,000	1,900	0.075	0.15	24,000	1,500	0.075	0.15	21,000	1	0.03	0.06
	12	21,000	1,300	0.075	0.1	21,000	1,000	0.075	0.1	18,000	680	0.03	0.06
	14	17,000	1,100	0.05	0.1	17,000	900	0.05	0.1	15,000	630	0.03	0.06
	16	14,000	760	0.05	0.1	13,000	560	0.05	0.1	10,000	340	0.03	0.05
	20	12,000	340	0.02	0.05	11,000	240	0.02	0.05	9,000	150	0.02	0.05
R1.0	6	36,000	2,800	0.1	0.2	35,000	2,700	0.1	0.2	30,000	1,800	0.05	0.1
	8	25,000	2,400	0.1	0.2	24,000	2,300	0.1	0.2	20,000	1,500	0.05	0.1
	10	20,000	2,200	0.1	0.2	19,000	2,000	0.1	0.2	17,000	1,400	0.05	0.1
	12	16,000	1,900	0.1	0.2	15,000	1,700	0.1	0.2	13,000	1,100	0.05	0.1
	14	15,000	1,700	0.1	0.2	14,000	1,500	0.1	0.2	12,000	1,000	0.05	0.1
	16	14,000	1,600	0.1	0.1	13,000	1,400	0.1	0.1	11,000	950	0.05	0.1

절입량 Depth of Cut



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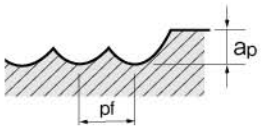
- 절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400, S55C, FC250 (~750N/㎟)				합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)				조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38HRC)			
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf
R1.0	18	13,000	1,600	0.1	0.1	13,000	1,600	0.1	0.1	13,000	1,5	0.1	0.1
	20	12,000	1,200	0.05	0.1	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1
	25	10,000	800	0.03	0.05	10,000	800	0.03	0.05	10,000	760	0.03	0.05
	30	10,000	500	0.02	0.05	10,000	500	0.02	0.05	10,000	470	0.02	0.05
R1.25	8	20,000	3,300	0.1	0.2	20,000	3,300	0.1	0.2	20,000	3,100	0.1	0.2
	10	20,000	3,300	0.1	0.2	20,000	3,300	0.1	0.2	20,000	3,100	0.1	0.2
R1.5	8	30,000	4,500	0.15	0.3	20,000	4,500	0.15	0.3	30,000	4,200	0.15	0.3
	10	25,000	3,800	0.15	0.3	25,000	3,800	0.15	0.3	25,000	3,600	0.15	0.3
	12	20,000	3,000	0.15	0.3	20,000	3,000	0.15	0.3	20,000	2,800	0.15	0.3
	14	18,000	2,700	0.15	0.3	18,000	2,700	0.15	0.3	28,000	2,500	0.15	0.3
	16	16,000	2,200	0.1	0.3	16,000	2,400	0.1	0.3	16,000	2,200	0.1	0.3
	18	16,000	2,000	0.1	0.2	16,000	2,000	0.1	0.2	16,000	1,900	0.1	0.2
	20	14,000	1,800	0.1	0.2	14,000	1,800	0.1	0.2	14,000	1,700	0.1	0.2
	25	12,000	1,200	0.05	0.1	12,000	1,200	0.05	0.1	12,000	1,100	0.05	0.1
	30	10,000	800	0.03	0.05	10,000	800	0.03	0.05	10,000	760	0.03	0.05
	35	8,000	600	0.02	0.05	8,000	600	0.02	0.05	8,000	570	0.02	0.05
R2.0	10	25,000	4,500	0.2	0.5	25,000	4,500	0.2	0.5	25,000	4,200	0.2	0.5
	12	20,000	3,600	0.2	0.5	20,000	3,600	0.2	0.5	20,000	3,400	0.2	0.5
	16	18,000	3,200	0.2	0.5	18,000	3,200	0.2	0.5	18,000	3,000	0.2	0.5
	20	16,000	2,800	0.2	0.4	16,000	2,800	0.2	0.4	16,000	2,600	0.2	0.4
	25	16,000	2,800	0.1	0.3	16,000	2,800	0.1	0.3	16,000	2,600	0.1	0.3
	30	14,000	2,400	0.1	0.2	14,000	2,400	0.1	0.2	14,000	2,200	0.1	0.2
	35	12,000	1,800	0.1	0.2	12,000	1,800	0.1	0.2	12,000	1,700	0.1	0.2
	40	10,000	1,300	0.05	0.1	10,000	1,300	0.05	0.1	10,000	1,200	0.05	0.1
R3	15	13,500	4,300	0.3	0.6	11,500	2,750	0.3	0.6	9,500	2,250	0.12	0.3
	30	13,500	4,300	0.3	0.6	11,500	2,750	0.3	0.6	9,500	2,250	0.12	0.3
R4	15	10,000	3,200	0.4	0.8	8,950	2,100	0.4	0.8	7,150	1,700	0.16	0.4
	20	10,000	3,200	0.4	0.8	8,950	2,100	0.4	0.8	7,150	1,700	0.16	0.4
R5	20	8,250	2,600	0.5	1	7,150	1,700	0.5	11	5,700	1,350	0.2	0.5
	25	8,250	2,600	0.5	1	7,150	1,700	0.5	2.4	5,700	1,350	0.2	0.5
R6	25	6,850	2,150	0.5	2.4	5,950	1,400	0.5	0.03	4,750	1,100	0.24	0.6
	40	6,850	2,150	0.5	2.4	5,950	1,400	0.5	0.01	4,750	1,100	0.24	0.6

절입량 Depth of Cut

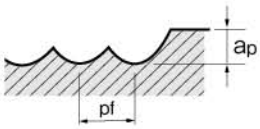


WS-LN-EBD · WS-LN-EBD-6

- 절삭조건

피삭재 Work Material		스텐레스강 · 조질강 · 프리하든강 (38~45 HRC)				조질강 (45~55HRC)				조질강 (55~70HRC)			
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf	회전속도 (min-1)	이송속도 (mm/min)	ap	pf
R1.0	18	13,000	1,500	0.1	0.1	12,000	1,200	0.1	0.1	10,000	800	0.05	0.1
	20	11,000	1,100	0.05	0.1	10,000	890	0.05	0.1	9,000	640	0.05	0.1
	25	9,000	760	0.03	0.05	9,000	680	0.03	0.05	7,500	450	0.03	0.05
	30	9,000	470	0.02	0.05	9,000	360	0.02	0.05	7,500	240	0.02	0.05
R1.25	8	20,000	3.1	0.1	0.2	19,000	2,900	0.1	0.2	16,000	1,900	0.05	0.1
	10	20,000	3,100	0.1	0.2	19,000	2,900	0.1	0.2	16,000	1,900	0.05	0.1
R1.5	8	30,000	4,200	0.15	0.3	25,000	3,500	0.15	0.3	22,000	2,400	0.06	0.15
	10	25,000	3,600	0.15	0.3	20,000	2,800	0.15	0.3	18,000	2,000	0.06	0.15
	12	20,000	2,800	0.15	0.3	18,000	2,500	0.15	0.3	16,000	1,700	0.06	0.15
	14	18,000	2,500	0.15	0.3	15,000	2,000	0.15	0.3	13,000	1,300	0.06	0.15
	16	16,000	2,200	0.1	0.3	13,000	1,800	0.1	0.3	11,000	1,200	0.06	0.15
	18	16,000	1,900	0.1	0.2	13,000	1,500	0.1	0.2	11,000	1,100	0.06	0.15
	20	14,000	1,700	0.1	0.2	11,000	1,600	0.1	0.2	10,000	1,000	0.06	0.15
	25	12,000	1,100	0.05	0.1	9,000	820	0.05	0.1	8,000	580	0.05	0.1
	30	9,000	760	0.03	0.05	7,000	590	0.03	0.05	6,000	400	0.03	0.05
	35	7,500	570	0.02	0.05	6,000	460	0.02	0.05	5,000	300	0.02	0.05
R2.0	10	25,000	4,200	0.2	0.5	20,000	3,300	0.2	0.5	18,000	2,300	0.08	0.2
	12	20,000	3,400	0.2	0.5	17,000	2,900	0.2	0.5	14,000	1,900	0.08	0.2
	16	18,000	3,000	0.2	0.5	15,000	2,500	0.2	0.5	10,000	1,300	0.08	0.2
	20	16,000	2,600	0.2	0.4	14,000	2,300	0.2	0.4	8,000	1,000	0.08	0.2
	25	16,000	2,600	0.1	0.3	13,000	2,200	0.1	0.3	6,000	810	0.08	0.2
	30	14,000	2,200	0.1	0.2	12,000	1,900	0.1	0.2	5,000	630	0.08	0.2
	35	12,000	1,700	0.1	0.2	9,000	1,200	0.1	0.2	4,000	420	0.08	0.2
	40	9,000	1,200	0.05	0.1	8,000	1,000	0.05	0.1	4,000	400	0.05	0.1
R3	15	20,500	5,200	0.12	0.3	16,000	3,450	0.12	0.3	13.5	2,550	0.12	0.3
	30	20,500	5,200	0.12	0.3	16,000	3,450	0.12	0.3	13,500	2,550	0.12	0.3
R4	15	15,500	4,450	0.16	0.4	12,000	3,050	0.16	0.4	9,950	2,250	0.16	0.4
	20	15,500	4,450	0.16	0.4	12,000	3,050	0.16	0.4	9,950	2,250	0.16	0.4
R5	20	12,500	3,950	0.2	0.5	9.55	2,650	0.2	0.5	7,950	1,900	0.2	0.5
	25	12,500	3,950	0.2	0.5	9,550	2,650	0.2	0.5	7,950	1,900	0.2	0.5
R6	25	10,500	3,700	0.24	0.6	7,950	2,500	0.24	0.6	6,650	1,600	0.24	0.6
	40	10,500	3,700	0.24	0.6	7,950	2,500	0.24	0.6	6,650	1,600	0.24	0.6

절입량 Depth of Cut

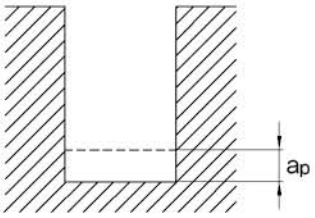


WS-EDS

- 홈가공절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400, S55C, FC250 (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38 HRC)		
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
0.1	0.1	32,000	120	0.005	32,000	80	0.005	32,000	70	0.004
0.2	0.2	32,000	700	0.02	32,000	450	0.018	32,000	450	0.015
0.3	0.3	32,000	600	0.029	32,000	400	0.027	32,000	350	0.023
0.5	1	32,000	750	0.005	32,000	550	0.045	32,000	420	0.038
0.6	1.2	32,000	700	0.059	32,000	600	0.054	32,000	400	0.045
0.7	1.4	32,000	800	0.068	32,000	600	0.063	32,000	500	0.053
0.8	1.6	32,000	900	0.057	32,000	600	0.053	32,000	600	0.044
0.9	1.8	32,000	1,300	0.07	32,000	1,200	0.06	30,000	860	0.06
1	2	32,000	1,350	0.09	30,000	1,200	0.09	30,000	1,100	0.08
1.5	3	20,000	1,200	0.14	18,000	1,000	0.14	18,000	900	0.11
2	4	16,000	1,300	0.31	15,000	1,100	0.31	14,000	1,000	0.26
	6	16,000	1,300	0.26	15,000	1,100	0.26	14,000	1,000	0.22
2.5	7	13,000	1,300	0.39	12,000	1,100	0.39	11,000	1,000	0.33
	6	11,000	1,300	0.36	10,000	1,100	0.36	10,000	1,000	0.3
3	8	11,000	1,300	0.29	10,000	1,100	0.29	10,000	1,000	0.24
	10	11,000	1,300	0.27	10,000	1,100	0.27	10,000	1,000	0.23
	12	11,000	1,300	0.25	10,000	1,100	0.25	10,000	1,000	0.21
4	8	8,000	1,300	0.38	7,000	1,100	0.38	7,000	1,000	0.32
	10	8,000	1,300	0.36	7,000	1,100	0.36	7,000	1,000	0.3
	12	7,000	900	0.34	7,000	800	0.34	6,000	700	0.28
5	13	6,000	1,200	0.45	6,000	1,100	0.45	5,000	900	0.38
6	15	5,000	1,000	0.6	5,000	950	0.5	4,200	780	0.4
8	19	4,000	800	1.2	3,500	652	1.2	3,000	180	1
10	25	4,000	420	1.8	3,500	600	1.8	2,700	180	1.6
12	30	3,500	420	2	3,200	550	2	2,500	160	1.8

절입량 Depth of Cut



WS-EDS

- 홈가공절삭조건

피삭재 Work Material		스텐레스강 · 조질강 · 프리하든강 SUS304 · SKD (38~45HRC)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38 HRC)		
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
0.1	0.1	32,000	45	0.002	32,000	40	0.002	28,000	30	0.002
0.2	0.2	29,000	250	0.012	24,000	150	0.008	18,000	100	0.002
0.3	0.3	29,000	300	0.018	24,000	100	0.011	18,000	50	0.004
0.5	1	29,000	330	0.03	24,000	160	0.019	17,000	50	0.009
0.6	1.2	27,000	300	0.036	23,000	200	0.023	16,000	100	0.011
0.7	1.4	26,000	400	0.042	21,000	200	0.026	15,000	100	0.011
0.8	1.6	25,000	400	0.035	20,000	200	0.022	14,000	100	0.011
0.9	1.8	23,000	650	0.04	18,000	360	0.025	13,000	100	0.012
1	2	22,000	800	0.06	20,000	500	0.04	12,000	100	0.015
1.5	3	14,000	600	0.09	12,000	400	0.06	8,000	200	0.03
2	4	11,000	700	0.21	9,000	400	0.13	6,000	300	0.035
	6	11,000	700	0.18	9,000	400	0.11	6,000	300	0.03
2.5	7	9,000	700	0.26	8,000	400	0.16	5,000	300	0.035
	6	8,000	700	0.24	7,000	400	0.15	5,000	300	0.05
3	8	8,000	700	0.19	7,000	400	0.12	5,000	300	0.05
	10	8,000	700	0.18	7,000	400	0.11	5,000	300	0.04
	12	8,000	700	0.17	7,000	400	0.1	5,000	300	0.035
4	8	6,000	700	0.26	4,500	400	0.16	4,000	300	0.05
	10	6,000	700	0.24	4,500	400	0.15	4,000	300	0.04
	12	5,000	500	0.22	4,000	300	0.14	4,000	300	0.035
5	13	5,000	600	0.3	4,000	400	0.19	3,000	300	0.06
6	15	4,200	600	0.3	3,400	400	0.18	2,600	300	0.06
8	19	2,800	140	1	2,300	100	0.8	1,900	100	0.6
10	25	2,500	130	1.6	2,000	100	1.4	1,500	95	1
12	30	2,000	120	1.8	1,600	90	1.6	1,250	85	0.8

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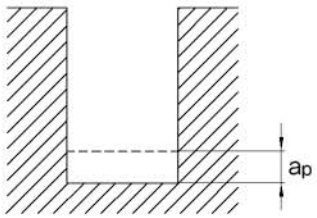


WS-LN-EDS · WS-LN-CR-EDS

- 홈절삭조건

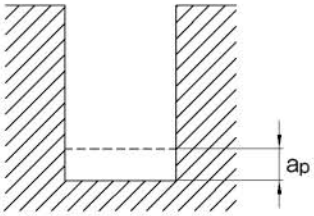
피삭재 Work Material		일반구조용강 · 탄소강 · 주철 (~750N/㎟) SS400, S55C, FC250			합금강 · 공구강 (~30HRC) SCM, SKT, SKS, SKD			조질강 · 프리하든강 (30~38HRC) SKT, SKD, NAK55, HPM1		
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
0.1	0.3	32,000	120	0.005	32,000	80	0.005	32,000	70	0.004
	0.5	32,000	100	0.004	32,000	65	0.004	32,000	60	0.003
0.2	0.5	32,000	700	0.02	32,000	450	0.018	32,000	450	0.015
	1	32,000	500	0.014	32,000	350	0.013	32,000	350	0.011
	1.5	28	400	0.009	28,000	250	0.008	28,000	250	0.007
0.3	1	32,000	600	0.029	32,000	400	0.027	32,000	350	0.023
	1.5	32	520	0.025	32,000	360	0.023	32,000	300	0.02
	2	28,000	450	0.021	28,000	300	0.02	28,000	250	0.017
	2.5	28,000	450	0.021	28,000	300	0.02	28,000	250	0.017
	3	22,000	350	0.01	22,000	250	0.009	22,000	160	0.007
	4	20,000	280	0.008	20,000	190	0.007	20,000	150	0.005
	5	20,000	240	0.006	20,000	160	0.005	20,000	140	0.003
0.4	1	32,000	700	0.03	32,000	500	0.027	32,000	420	0.023
	1.5	32,000	650	0.03	32,000	440	0.027	32,000	380	0.023
	2	32,000	600	0.029	32,000	400	0.026	32,000	350	0.022
	2.5	32,000	550	0.022	30,000	350	0.02	30,000	300	0.018
	3	28,000	450	0.018	28,000	300	0.017	28,000	250	0.014
	4	22,000	350	0.013	22,000	250	0.012	22,000	150	0.01
	5	20,000	300	0.007	20,000	200	0.006	20,000	160	0.005
	6	20,000	250	0.005	20,000	180	0.005	20,000	140	0.004
0.5	1	32,000	750	0.06	32,000	550	0.055	32,000	420	0.045
	1.5	32,000	750	0.05	32,000	550	0.045	32,000	420	0.038
	2	32,000	700	0.049	32,000	500	0.045	32,000	350	0.038
	2.5	30,000	600	0.035	30,000	450	0.03	30,000	360	0.028
	4	28,000	500	0.023	28,000	400	0.021	28,000	250	0.018
	5	28,000	450	0.015	28,000	380	0.014	25,000	300	0.01
	6	22,000	400	0.007	22,000	350	0.006	22,000	150	0.005
	8	18,000	300	0.005	18,000	300	0.005	18,000	150	0.004
0.6	2	32,000	700	0.059	32,000	600	0.054	32,000	400	0.045
	3	32,000	600	0.05	32	550	0.05	32,000	360	0.04
	4	28,000	500	0.043	28,000	450	0.04	28,000	300	0.033
	5	28,000	450	0.038	28,000	400	0.03	25,000	220	0.02
	6	22,000	400	0.02	22,000	250	0.018	22,000	200	0.015
	8	22,000	400	0.008	22,000	250	0.007	22,000	200	0.006
	10	18,000	300	0.005	18,000	200	0.005	18,000	150	0.004
0.7	4	28,000	600	0.05	28,000	450	0.046	28,000	300	0.039
	6	28,000	600	0.032	28,000	450	0.029	28,000	200	0.025
0.8	2	32,000	1,100	0.06	32,000	800	0.065	32,000	800	0.06
	3	32,000	1,000	0.06	32,000	700	0.06	32,000	700	0.053
	4	32,000	900	0.057	32,000	600	0.053	32,000	600	0.044
	5	28,000	800	0.045	28,000	500	0.04	28	450	0.035
	6	26,000	700	0.036	26,000	450	0.034	26,000	400	0.028
	8	22,000	500	0.026	22,000	350	0.024	22,000	300	0.02

WS-LN-EDS · WS-LN-CR-EDS

- 홈절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 (~750N/㎟) SS400, S55C, FC250			합금강 · 공구강 (~30HRC) SCM, SKT, SKS, SKD			조질강 · 프리하든강 (30~38HRC) SKT, SKD, NAK55, HPM1		
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
0.8	10	22,000	500	0.01	22,000	350	0.01	22,000	300	0.008
	12	22,000	500	0.007	17,000	300	0.007	17,000	300	0.006
1	3	32,000	1,350	0.09	30,000	1,200	0.09	30,000	1,100	0.08
	4	32,000	1,320	0.08	30,000	1,150	0.08	30,000	1,100	0.07
	5	32,000	1,300	0.08	30	1,100	0.08	28,000	950	0.07
	6	29,000	1,300	0.07	27,000	1,000	0.07	26,000	900	0.06
	8	24,000	900	0.05	23,000	800	0.04	22,000	700	0.04
	10	20,000	700	0.03	19,000	600	0.03	18,000	500	0.03
	12	20,000	700	0.02	19,000	600	0.02	18,000	400	0.02
	14	18,000	500	0.015	15,000	400	0.01	15	400	0.02
	16	18,000	300	0.01	15,000	300	0.008	15,000	300	0.01
	20	16,000	250	0.01	14,000	200	0.008	14,000	200	0.008
1.2	4	26,000	1,200	0.09	24,000	1,100	0.09	23,000	1,000	0.08
	6	25,000	1,100	0.09	23,000	1,000	0.08	22,000	900	0.07
	8	21,000	900	0.07	20,000	700	0.07	19,000	700	0.05
	10	21,000	900	0.06	20,000	700	0.05	19,000	700	0.04
	12	18,000	700	0.04	17,000	600	0.04	16,000	500	0.03
1.5	4	20,000	1,200	0.15	18,000	1,000	0.14	18,000	900	0.11
	6	20,000	1,200	0.15	18,000	1,000	0.14	18,000	900	0.11
	8	19,000	900	0.11	16,000	800	0.1	15,000	700	0.08
	10	19,000	900	0.09	16,000	800	0.08	15,000	700	0.07
	12	19,000	900	0.07	16,000	800	0.06	15,000	700	0.05
	14	19,000	900	0.06	16,000	800	0.05	15,000	700	0.045
	16	16,000	700	0.05	14,000	600	0.05	13,000	500	0.04
	18	16,000	700	0.03	14,000	600	0.03	13,000	500	0.02
	20	16,000	700	0.02	14,000	600	0.02	13,000	500	0.015
2	6	16,000	1,300	0.34	15,000	1,100	0.31	14,000	1,000	0.26
	8	16,000	1,300	0.29	15,000	1,100	0.26	14,000	1,000	0.22

절입량 Depth of Cut



WS-LN-EDS · WS-LN-CR-EDS

- 홈절삭조건

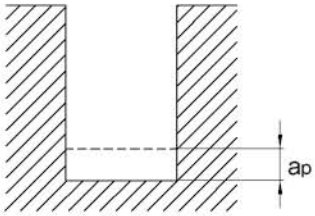
피삭재 Work Material		스텐레스강 · 조질강 · 프리하든강 (~30HRC)			조질강 (45~55HRC)			조질강 (55~70HRC)		
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
0.1	0.3	32,000	45	0.002	32,000	40	0.002	32,000	35	0.002
	0.5	32,000	35	0.002	32,000	30	0.002	32,000	25	0.002
0.2	0.5	29,000	250	0.012	24,000	150	0.008	18,000	100	0.002
	1	29,000	200	0.009	24,000	100	0.006	18,000	50	0.002
	1.5	25,000	150	0.005	21,000	80	0.003	18,000	50	0.002
0.3	1	29,000	300	0.018	24,000	100	0.011	18,000	50	0.004
	1.5	29,000	250	0.015	24,000	90	0.01	18,000	40	0.004
	2	25,000	200	0.013	21,000	80	0.008	16,000	40	0.003
	2.5	25,000	200	0.013	21,000	80	0.008	16,000	40	0.003
	3	20,000	150	0.005	18,000	50	0.004	14,000	35	0.003
	4	20,000	130	0.003	18,000	40	0.002	14,000	30	0.003
	5	18,000	120	0.002	16,000	40	0.002	14,000	25	0.003
0.4	1	29,000	340	0.018	24,000	170	0.011	18,000	55	0.006
	1.5	29,000	330	0.018	24,000	160	0.011	18,000	50	0.006
	2	29,000	300	0.018	24,000	150	0.011	18,000	50	0.004
	2.5	29,000	250	0.014	22,000	125	0.009	16,000	60	0.003
	3	25,000	200	0.011	21,000	100	0.007	15,000	80	0.003
	4	20,000	150	0.008	18,000	80	0.005	13,000	50	0.003
	5	20,000	130	0.003	16,000	70	0.003	11,000	40	0.002
	6	18,000	80	0.003	14,500	55	0.003	8,500	35	0.002
0.5	1	29,000	330	0.04	24,000	160	0.025	17,000	50	0.012
	1.5	29,000	330	0.03	24,000	160	0.019	17,000	50	0.009
	2	29,000	300	0.03	24,000	150	0.019	17,000	50	0.007
	2.5	27,000	280	0.022	22,000	120	0.014	15,000	40	0.005
	4	25,000	200	0.014	21,000	100	0.009	14,000	40	0.004
	5	22,000	230	0.008	20,000	80	0.006	13,000	35	0.003
	6	20,000	150	0.004	18,000	70	0.005	16,000	25	0.003
	8	20,000	150	0.003	16,000	60	0.005	14,000	20	0.003
0.6	2	27,000	300	0.036	23,000	200	0.023	16,000	100	0.011
	3	27,000	280	0.03	22,000	180	0.02	14,000	80	0.009
	4	25,000	200	0.026	20,000	150	0.017	13,000	60	0.007
	5	22,000	180	0.02	20,000	130	0.015	12,000	50	0.005
	6	20,000	150	0.012	18,000	120	0.015	11,000	40	0.005
	8	20,000	150	0.005	18,000	110	0.01	9,500	25	0.004
	10	20,000	150	0.003	16,000	110	0.01	7,500	25	0.004
0.7	4	22,000	300	0.031	19,000	150	0.019	13,000	80	0.01
	6	22,000	200	0.02	19,000	100	0.012	11,000	60	0.008
0.8	2	30,000	600	0.05	28,000	400	0.04	20,000	300	0.03
	3	28,000	500	0.04	24,000	300	0.03	16,500	200	0.025
	4	25,000	400	0.035	20,000	200	0.022	14,000	100	0.011
	5	23,000	350	0.03	18,000	150	0.02	12,000	80	0.08
	6	21,000	300	0.022	18,000	150	0.014	10,000	80	0.07
	8	18,000	200	0.016	16,000	120	0.01	8,500	70	0.06

WS-LN-EDS · WS-LN-CR-EDS

- 홈절삭조건

피삭재 Work Material		스텐레스강 · 조질강 · 프리하든강 (~30HRC)			조질강 (45~55HRC)			조질강 (55~70HRC)		
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
0.8	10	18,000	200	0.006	16,000	110	0.008	8,000	65	0.06
	12	18,000	200	0.004	16,000	100	0.008	8,000	65	0.05
1	3	22,000	800	0.06	20,000	500	0.04	12,000	100	0.015
	4	22,000	650	0.05	20,000	500	0.03	12,000	100	0.014
	5	20,000	600	0.045	18,000	450	0.03	12,000	100	0.014
	6	20,000	600	0.04	17,000	400	0.03	12,000	100	0.014
	8	18,000	400	0.03	15,000	300	0.02	11,000	90	0.012
	10	15,000	300	0.02	13,000	250	0.02	11,000	80	0.01
	12	15,000	300	0.01	13,000	250	0.015	10,000	80	0.01
	14	12,000	200	0.008	10,000	200	0.01	8,000	70	0.008
	16	12,000	200	0.006	9,000	150	0.008	6,000	60	0.007
	20	10,000	150	0.005	7,000	100	0.005	6,000	60	0.005
1.2	4	18,000	700	0.06	15,000	450	0.03	10,000	100	0.02
	6	17,000	600	0.05	14,000	400	0.03	10,000	100	0.017
	8	14,000	400	0.04	12,000	300	0.03	10,000	100	0.014
	10	14,000	400	0.03	12,000	300	0.02	9,000	80	0.012
	12	11,000	300	0.02	10,000	200	0.015	8,000	75	0.01
1.5	4	14,000	600	0.09	12,000	400	0.06	8,000	200	0.03
	6	14,000	600	0.09	12,000	400	0.06	8,000	200	0.028
	8	12,000	400	0.07	10,000	300	0.04	7,000	150	0.021
	10	12,000	400	0.05	10,000	300	0.03	7,000	150	0.017
	12	12,000	400	0.04	10,000	300	0.025	6,500	120	0.015
	14	12,000	400	0.035	10,000	300	0.02	6,500	100	0.012
	16	10,000	300	0.03	8,000	200	0.02	5,500	80	0.01
	18	10,000	300	0.02	8,000	150	0.015	5,000	60	0.01
	20	10,000	300	0.01	7,500	120	0.012	4,500	40	0.008
2	6	11,000	700	0.21	9,000	400	0.13	6,000	300	0.07
	8	11,000	700	0.18	9,000	400	0.11	6,000	300	0.06

절입량 Depth of Cut

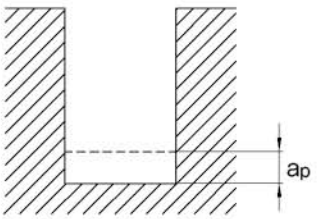


WS-LN-EDS · WS-LN-CR-EDS

- 홈절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 (~750N/㎟) SS400, S55C, FC250			합금강 · 공구강 (~30HRC) SCM, SKT, SKS, SKD			조질강 · 프리하든강 (30~38HRC) SKT, SKD, NAK55, HPM1		
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
2	10	14,000	900	0.26	13,000	800	0.24	12,000	700	0.2
	12	14,000	900	0.14	13,000	800	0.13	12,000	700	0.11
	14	14,000	900	0.1	13,000	800	0.11	12,000	700	0.09
	16	14,000	900	0.09	13,000	800	0.08	12,000	700	0.07
	18	14,000	900	0.08	13,000	800	0.07	12,000	700	0.06
	20	12,000	700	0.07	11,000	600	0.06	10,000	500	0.05
	25	12,000	700	0.03	11,000	600	0.03	10,000	500	0.02
	30	12,000	700	0.02	11,000	600	0.02	10,000	500	0.01
2.5	8	13,000	1,300	0.39	12,000	1,100	0.39	11,000	1,000	0.33
	10	13,000	1,300	0.33	12,000	1,100	0.33	11,000	1,000	0.28
3	8	11,000	1,300	0.39	10,000	1,100	0.36	10,000	1,000	0.3
	10	11,000	1,300	0.31	10,000	1,100	0.29	10,000	1,000	0.24
	12	11,000	1,300	0.29	10,000	1,100	0.27	10,000	1,000	0.23
	14	11,000	1,300	0.27	10,000	1,100	0.25	10,000	1,000	0.21
	16	10,000	900	0.22	10,000	800	0.2	9,000	700	0.17
	18	10,000	900	0.16	10,000	800	0.14	9,000	700	0.12
	20	10,000	900	0.14	10,000	800	0.13	9,000	700	0.11
	25	10,000	900	0.17	10,000	800	0.11	9,000	700	0.09
	30	8,000	700	0.01	8,000	600	0.09	7,000	500	0.08
	35	8,000	700	0.08	8,000	600	0.07	7,000	500	0.06
	40	8,000	700	0.04	8,000	600	0.04	7,000	500	0.03
4	10	8,000	1,500	0.42	7,000	1,200	0.38	7,000	1,200	0.32
	12	8,000	1,300	0.42	7,000	1,100	0.38	7,000	1,000	0.32
	16	8,000	1,300	0.39	7,000	1,100	0.36	7,000	1,000	0.3
	20	7,000	900	0.36	7,000	800	0.34	6,000	700	0.28
	25	7,000	900	0.29	7,000	800	0.26	6,000	700	0.22
	30	7,000	900	0.21	7,000	800	0.19	6,000	700	0.16
	35	7,000	900	0.18	7,000	800	0.17	6,000	700	0.14
	40	6,000	700	0.16	6,000	600	0.14	5,000	600	0.12

절입량 Depth of Cut

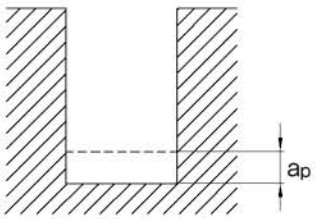


WS-LN-EDS · WS-LN-CR-EDS

- 홈절삭조건

피삭재 Work Material		스텐레스강 · 조질강 · 프리하든강 (~30HRC)			조질강 (45~55HRC)			조질강 (55~70HRC)		
외경 DC	유효장 L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
2	10	9,000	500	0.16	7,000	300	0.1	6,000	200	0.05
	12	9,000	500	0.09	7,000	300	0.06	6,000	200	0.03
	14	9,000	500	0.07	7,000	300	0.04	5,000	200	0.03
	16	9,000	500	0.06	7,000	300	0.035	5,000	150	0.025
	18	9,000	500	0.05	7,000	300	0.03	5,000	150	0.02
	20	7,000	400	0.04	6,000	200	0.03	4,500	120	0.02
	25	7,000	400	0.02	6,000	200	0.02	4,000	120	0.015
	30	7,000	400	0.01	6,000	150	0.02	4,000	100	0.01
2.5	8	9,000	700	0.26	8,000	400	0.16	5,000	300	0.035
	10	9,000	700	0.22	8,000	400	0.14	5,000	300	0.03
3	8	8,000	700	0.24	7,000	400	0.15	5,000	300	0.08
	10	8,000	700	0.19	7,000	400	0.12	5,000	300	0.06
	12	8,000	700	0.18	7,000	400	0.11	5,000	300	0.055
	14	8,000	700	0.17	7,000	400	0.1	5,000	300	0.05
	16	6,000	500	0.13	6,000	300	0.08	5,000	200	0.04
	18	6,000	500	0.1	6,000	300	0.06	5,000	200	0.03
	20	6,000	500	0.08	6,000	300	0.05	5,000	200	0.025
	25	6,000	500	0.07	6,000	300	0.045	5,000	200	0.025
	30	5,000	400	0.06	5,000	250	0.045	4,500	150	0.02
	35	5,000	400	0.05	4,500	200	0.04	4,000	150	0.02
	40	5,000	400	0.025	4,000	200	0.02	4,000	120	0.015
4	10	6,000	800	0.26	5,000	500	0.16	4,500	400	0.08
	12	6,000	700	0.26	4,500	400	0.16	4,000	300	0.08
	16	6,000	700	0.24	4,500	400	0.15	4,000	300	0.075
	20	5,000	500	0.22	4,000	300	0.14	4,000	300	0.07
	25	5,000	500	0.18	4,000	300	0.11	4,000	300	0.055
	30	5,000	500	0.13	4,000	300	0.08	4,000	300	0.04
	35	5,000	500	0.11	4,000	300	0.07	4,000	300	0.035
	40	4,000	400	0.1	4,000	300	0.07	4,000	300	0.04

절입량 Depth of Cut

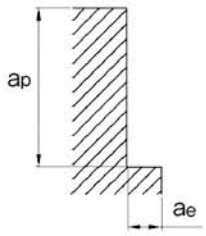


WS-EMS

- 측면절삭조건

피삭재 Work Material		주철 FC · FCD		일반구소용강 · 탄소강 · 주철 SS400, S55C,FC250 (~750N/㎟)		합금강 · 공구강 SCM, SKT, SKS, SKD (~33HRC)		조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38HRC)	
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	2.5	26,000	220	26,000	220	24,000	180	14,000	100
1.2	3	22,000	250	22,000	250	21,000	200	12,000	100
1.5	4	19,000	300	19,000	280	16,000	310	9,250	115
2	6	15,500	370	13,000	310	11,000	280	7,000	110
2.5	7	13,500	420	9,800	420	8,500	310	6,000	115
3	8	10,500	595	8,900	505	7,400	355	5,300	125
3.5	9	9,000	610	7,200	515	6,800	360	4,700	130
4	10	7,950	635	6,650	530	5,550	370	4,250	135
5	13	6,350	740	5,300	620	4,450	425	3,550	140
6	15	5,300	735	4,450	615	3,700	425	2,950	145
8	19	3,950	710	3,300	590	2,750	420	2,200	145
10	25	3,150	710	2,650	590	2,200	420	1,750	145
12	30	2,650	710	2,200	590	1,850	420	1,450	145

절입량 Depth of Cut



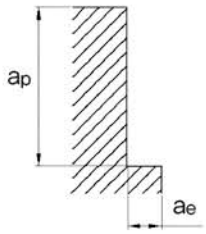
	ap	ae
Dc < Ø3	1.5D	0.05D
Ø3 ≤ Dc	1.5D	0.1D

WS-EMS

- 측면절삭조건

피삭재 Work Material		스텐레스강 · 조질강 · 프리하든강 SUS304 · SKD (38~45HRC)		조질강 초내열합금강 (45~55HRC)		조질강 (55~70HRC)	
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
1	2.5	14,000	95	12,500	60	11,000	55
1.2	3	10,000	95	9,500	55	8,000	40
1.5	4	8,400	105	8,000	90	7,500	50
2	6	6,350	100	3,950	60	2,750	40
2.5	7	6,000	100	3,450	60	2,400	40
3	8	4,750	110	2,750	60	2,000	45
3.5	9	4,200	110	2,450	65	1,700	45
4	10	3,700	115	2,200	70	1,550	45
5	13	3,150	125	1,900	75	1,250	40
6	15	2,650	130	1,550	70	1,050	40
8	19	1,950	130	1,150	65	795	35
10	25	1,550	130	955	65	635	35
12	30	1,300	130	795	60	1,450	30

절입량 Depth of Cut



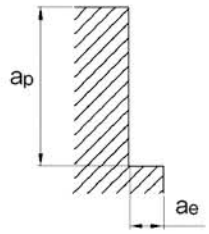
ap	ae
1D	0.02D

WS-EMS

- 고속측면절삭조건

피삭재 Work Material		일반구조용 강 · 탄소강 · 주철 SS400, S55C, FC250 (~750N/㎟)		합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)		조질강 · 프리하든강 SKT, SKD, NAK55 HPM1 (30~38 HRC)		스텐레스강 · 조질강 · 프리하든강 SUS304 · SKD (38~45 HRC)		조질강 초내열합금강 (45~55 HRC)	
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
6	15	21,000	2,450	18,500	2,150	13,000	1,500	7,950	795	4,200	420
8	19	15,500	2,450	13,500	2,100	9,900	1,450	5,950	795	3,150	420
10	25	12,500	2,450	11,000	2,100	7,950	1,450	4,750	795	2,500	420
12	30	10,500	2,450	9,250	2,100	6,600	1,450	3,950	790	2,100	410

절입량
Depth of Cut



	ap	ae
Dc < Ø8	1.5D	0.01D
Ø8 ≤ Dc	1.5D	0.02D

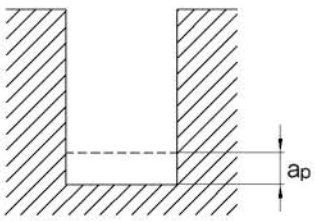
	ap	ae
Dc < Ø8	1D	0.01D
Ø8 ≤ Dc	1D	0.02D

WS-LN-EMS, WS-LN-CR-EMS SLOTTING

- 절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400,S45C,FC250 (~32HRC)			합금강 · 공구강 SCM, SKT, SKD, KP4M, NAK80 (33~50HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (50~70 HRC)		
외경 DC	유효장L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
1	3	30,000	1,900	0.07	30,000	1,650	0.07	22,000	980	0.05
	4	30,000	1,900	0.07	30,000	1,650	0.07	22,000	980	0.05
	6	27,000	1,600	0.07	26,000	1,350	0.06	20,000	900	0.04
	8	25,000	1,500	0.07	24,000	1,250	0.06	16,000	800	0.04
	10	22,000	1,350	0.06	21,000	1,100	0.05	14,500	650	0.03
	12	20,000	1,200	0.06	19,000	1,000	0.05	13,000	550	0.03
1.5	4	18,000	1,700	0.12	18,000	1,350	0.11	14,000	900	0.09
	6	18,000	1,700	0.12	18,000	1,350	0.11	14,000	900	0.09
	8	16,000	1,200	0.1	15,000	1,050	0.08	12,000	600	0.07
	10	16,000	1,200	0.08	15,000	1,050	0.07	12,000	600	0.05
	12	16,000	1,200	0.06	15,000	1,050	0.05	12,000	600	0.04
2	6	15,000	1,900	0.28	14,000	1,500	0.26	11,000	1,050	0.21
	8	15,000	1,900	0.26	14,000	1,500	0.22	11,000	1,050	0.18
	10	13,000	1,300	0.24	12,000	1,050	0.2	9,000	750	0.16
	12	13,000	1,200	0.13	12,000	1,050	0.11	9,000	750	0.09
	16	13,000	1,200	0.08	12,000	1,050	0.07	9,000	750	0.06
	20	11,000	940	0.05	10,000	750	0.05	7,000	600	0.04
3	10	11,000	1,950	0.32	10,000	1,870	0.32	10,000	1,500	0.3
	12	10,000	1,750	0.27	10,000	1,500	0.23	8,000	1,050	0.18
	16	10,000	1,200	0.2	9,000	1,050	0.17	6,000	750	0.13
	20	10,000	1,200	0.13	9,000	1,050	0.11	6,000	750	0.08
4	12	8,000	1,950	0.34	7,000	1,870	0.34	7,000	1,500	0.32
	16	8,000	1,950	0.32	7,000	1,870	0.32	7,000	1,500	0.3
	20	7,000	1,350	0.3	7,000	1,290	0.3	6,000	1,050	0.28
	25	7,000	1,350	0.3	7,000	1,290	0.3	6,000	1,050	0.28
6	20	5,000	1,400	0.45	5,000	1,340	0.45	4,200	1,170	0.4
8	30	3,800	1,100	0.65	3,800	1,050	0.65	3,600	900	0.56
	40	3,800	1,100	0.65	3,800	1,050	0.65	3,600	900	0.56
10	35	3,000	1,100	0.8	3,000	1,050	0.8	2,900	800	0.64
	45	3,000	1,100	0.8	3,000	1,050	0.8	2,900	800	0.64
12	40	2,500	800	1	2,500	700	1	2,300	500	0.8

절입량 Depth of Cut

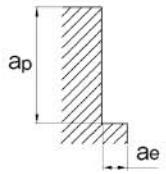


WS-PHS

측면절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400, S55C (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~39HRC)			스텐레스강 · 조질강 · 프리하든강 SUS304, SKD (38~45HRC)			조질강 · 티탄합금강 (40~55HRC)			조질강 · 초내열합금강 (55~70HRC)		
외경 DC	유효장 L (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
3	8	10,600	975	4.5	8,300	760	4.5	7,000	560	4.5	6,600	555	4.5	6,350	485	3	3,200	190	3
4	11	7,950	1,000	6.0	6,200	820	6.0	5,250	565	6.0	4,950	590	6.0	4,750	515	4	2,400	190	4
5	13	6,350	1,050	7.5	4,950	845	7.5	4,200	590	7.5	3,950	630	7.5	3,800	535	5	1,900	190	5
6	13	5,300	1,250	9.0	4,150	945	9.0	3,500	700	9.0	3,300	660	9.0	3,200	545	6	1,600	190	6
8	19	4,000	1,250	12.0	3,100	895	12.0	2,650	660	12.0	2,450	640	12.0	2,450	555	8	1,200	175	8
10	22	3,200	1,100	15.0	2,500	855	15.0	2,100	605	15.0	1,950	590	15.0	1,900	525	10	955	160	10
12	26	2,650	1,100	18.0	2,050	850	18.0	1,750	565	18.0	1,650	535	18.0	1,600	475	12	795	160	12
16	32	2,000	955	24.0	1,500	745	24.0	1,300	500	24.0	1,250	445	24.0	1,200	400	16	595	160	16
20	38	1,600	765	30.0	1,250	595	30.0	1,050	455	30.0	985	395	30.0	955	355	20	475	160	20

절입량
Depth of Cut



ap	ae
1.5D	0.2D

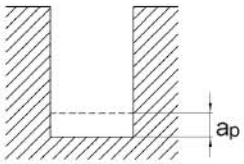
ap	ae
1.5D	0.5D

ap	ae
1D	0.05D

홈 절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400, S55C (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~39HRC)			스텐레스강 · 조질강 · 프리하든강 SUS304, SKD (38~45HRC)			조질강 · 티탄합금강 (40~55HRC)			조질강 · 초내열합금강 (55~70HRC)		
외경 DC	유효장 L (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
3	8	8,500	705	1.5	6,350	595	1.5	5,850	455	1.5	5,500	400	1.5	4,450	320	0.2	2,100	110	0.15
4	11	6,350	705	2.0	4,750	675	2.0	4,400	455	2.0	4,150	450	2.0	3,350	360	0.2	1,600	120	0.20
5	13	5,100	715	2.5	3,800	660	2.5	3,500	475	2.5	3,300	475	2.5	2,650	385	0.3	1,250	125	0.25
6	13	4,250	715	3.0	3,200	560	3.0	2,900	500	3.0	2,750	495	3.0	2,250	400	0.3	1,050	125	0.30
8	19	3,200	660	4.0	2,400	550	4.0	2,200	545	4.0	2,050	515	4.0	1,650	415	0.4	795	125	0.40
10	22	2,550	610	5.0	1,900	535	5.0	1,750	475	5.0	1,650	470	5.0	1,350	380	0.5	635	115	0.50
12	26	2,100	610	6.0	1,600	475	6.0	1,450	450	6.0	1,400	440	6.0	1,100	355	0.6	530	115	0.60
16	32	1,600	610	8.0	1,200	430	8.0	1,100	370	8.0	1,050	370	8.0	835	300	0.8	400	88	0.80
20	38	1,250	510	10.0	955	380	10.0	875	350	10.0	830	330	10.0	670	265	1.0	320	89	1.00

절입량
Depth of Cut



ap
0.5D

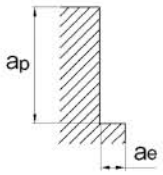
ap
0.05D

WS-PHS

고속측면절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400, S55C (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38HRC)			스텐레스강 · 조질강 SUS304, SKD (38~45HRC)			조질강 (40~55HRC)			조질강 (55~70HRC)		
외경 DC	유효장 L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
3	8	21,200	2,150	4.5	21,200	2,400	4.5	21,200	1,300	4.5	15,900	1,150	4.5	10,600	680	3	8,500	440	3
4	11	15,900	2,050	6.0	15,900	2,300	6.0	15,900	1,300	6.0	11,900	1,250	6.0	7,950	795	4	6,350	460	4
5	13	12,700	1,900	7.5	12,700	2,150	7.5	12,700	1,250	7.5	9,550	1,350	7.5	6,350	840	5	5,100	510	5
6	13	10,600	3,050	9.0	10,600	2,650	9.0	10,600	2,000	9.0	7,950	1,450	9.0	5,300	910	6	4,250	610	6
8	19	7,950	2,800	12.0	7,950	2,400	12.0	7,950	1,900	12.0	5,950	1,400	12.0	4,000	860	8	3,200	575	8
10	22	6,350	2,550	15.0	6,350	2,200	15.0	6,350	1,850	15.0	4,750	1,350	15.0	3,200	830	10	2,550	510	10
12	26	5,300	2,550	18.0	5,300	2,200	18.0	5,300	1,800	18.0	4,000	1,350	18.0	2,650	830	12	2,100	510	12
16	32	4,000	1,900	24.0	4,000	1,900	24.0	4,000	1,700	24.0	3,000	1,350	24.0	2,000	830	16	1,600	510	16
20	38	3,200	1,550	30.0	3,200	1,550	30.0	3,20	1,550	30.0	3,200	1,150	30.0	1,600	730	20	1,250	510	20

절입량
Depth of Cut



	ap	ae
D< ∮6	1.5D	0.02D
Ø6≤D	1.5D	0.05D

aeMAX = 0.5mm

	ap	ae
D< ∮6	1.5D	0.01D
Ø6≤D	1.5D	0.02D

aeMAX = 0.5mm

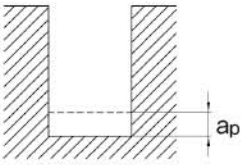
	ap	ae
D< ∮6	1D	0.01D
Ø6≤D	1D	0.02D

aeMAX = 0.5mm

고속홈절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400, S55C (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38HRC)			스텐레스강 · 조질강 · 프리하든강 SUS304, SKD (38~45HRC)		
외경 DC	유효장 L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
3	8	12,700	1,050	0.6	1,060	935	0.6	9,550	745	0.6	6,350	460	0.6
4	11	9,550	1,150	0.8	7,950	1,000	0.8	7,150	745	0.8	5,150	560	0.8
5	13	7,650	1,200	1.0	7,000	1,100	1.0	6,350	865	1.0	4,150	595	1.0
6	13	6,350	1,550	1.2	5,850	1,150	1.2	5,300	910	1.2	3,700	670	1.2
8	19	4,750	1,450	1.6	4,400	1,300	1.6	4,000	985	1.6	2,800	690	1.6
10	22	3,800	1,400	2.0	3,500	1,200	2.0	3,200	865	2.0	2,250	635	2.0
12	26	3,200	1,250	2.4	2,900	1,150	2.4	2,650	815	2.4	1,850	595	2.4
16	32	2,400	1,050	3.0	2,200	965	3.0	2,000	675	3.0	1,400	500	3.0
20	38	1,900	840	3.0	1,750	770	3.0	1,600	635	3.0	1,100	445	3.0

절입량
Depth of Cut



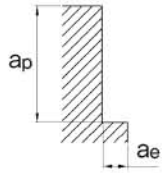
ap
0.2D

WS-PKE, WS-LS-PKE

측면절삭조건

피삭재 Work Material	일반구조용강 · 탄소강 · 주철 SS400, S55C, FC250 (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38 HRC)			스텐레스강 · 조질강 SUS304, SKD (38~45 HRC)			조질강 (45~55 HRC)			조질강 (55~70 HRC)		
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
3	8,900	890	3.6	6,650	795	3.6	5,900	470	3.6	3,800	120	3	3,400	80	3	2,000	40	3
	8,900	890	3.6	6,650	795	3.6	5,900	470	3.6	3,800	120	3	3,400	80	3	2,000	40	3
4	6,650	930	4.8	5,000	900	4.8	4,450	530	4.8	2,850	135	4	2,650	100	4	1,550	50	4
	6,650	930	4.8	5,000	900	4.8	4,450	530	4.8	2,850	135	4	2,650	100	4	1,550	50	4
5	5,300	950	6	4,000	880	6	3,550	480	6	2,250	140	5	2,150	110	5	1,250	50	5
	5,300	950	6	4,000	880	6	3,550	480	6	2,250	140	5	2,150	110	5	1,250	50	5
6	5,300	900	7.2	4,000	800	7.2	3,550	220	7.2	2,200	175	6	2,100	130	6	1,250	50	6
	5,300	900	7.2	4,000	800	7.2	3,550	220	7.2	2,200	175	6	2,100	130	6	1,250	50	6
8	3,950	835	9.6	3,000	710	9.6	2,650	445	9.6	1,650	185	8	1,600	140	8	955	55	8
	3,950	835	9.6	3,000	710	9.6	2,650	445	9.6	1,650	185	8	1,600	140	8	955	55	8
10	3,150	760	12	2,400	680	12	2,100	310	12	1,300	165	10	1,300	135	10	760	55	10
	3,150	760	12	2,400	680	12	2,100	310	12	1,300	165	10	1,300	135	10	760	55	10
12	2,650	730	14.4	2,000	620	14.4	1,750	285	14.4	1,100	145	12	1,000	125	12	635	45	12
	2,650	730	14.4	2,000	620	14.4	1,750	285	14.4	1,100	145	12	1,000	125	12	635	45	12

절입량
Depth of Cut



ap	ae
1.2D	0.2D

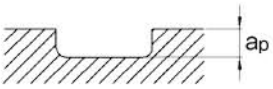
ap	ae
1D	0.1D

ap	ae
1D	0.05D

홈절삭조건

피삭재 Work Material	일반구조용강 · 탄소강 · 주철 SS400, S55C, FC250 (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38 HRC)			스텐레스강 · 조질강 SUS304, SKD (38~45 HRC)			조질강 (45~55 HRC)			조질강 (55~70 HRC)		
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
3	8,900	665	1.5	6,650	595	1.5	5,900	350	1.5	5,900	350	1.5	3,150	55	1.5	2,000	30	1.5
	8,900	665	1.5	6,650	595	1.5	5,900	350	1.5	5,900	350	1.5	3,150	55	1.5	2,000	30	1.5
4	6,650	695	2	5,000	675	2	4,450	400	2	4,450	400	2	2,350	70	2	1,550	35	2
	6,650	695	2	5,000	675	2	4,450	400	2	4,450	400	2	2,350	70	2	1,550	35	2
5	5,300	715	2.5	4,000	660	2	3,550	360	2.5	3,550	360	2.5	1,900	70	2.5	1,250	35	2.5
	5,300	715	2.5	4,000	660	2.5	3,550	360	2.5	3,550	360	2.5	1,900	70	2.5	1,250	35	2.5
6	4,450	740	3	3,300	550	2.5	2,950	345	3	2,950	345	3	1,600	90	3	1,050	35	3
	4,450	740	3	3,300	550	3	2,950	345	3	2,950	345	3	1,600	90	3	1,050	35	3
8	3,300	660	4	2,500	500	3	2,200	360	4	2,200	360	4	1,200	95	4	795	35	4
	3,300	660	4	2,500	500	4	2,200	360	4	2,200	360	4	1,200	95	4	795	35	4
10	2,650	630	5	2,000	475	4	1,750	325	5	1,750	325	5	955	95	5	636	35	5
	2,650	630	5	2,000	475	5	1,750	325	5	1,750	325	5	955	95	5	636	35	5
12	2,200	590	6	1,650	440	5	1,450	300	6	1,450	300	6	800	95	6	530	35	6
	2,200	590	6	1,650	440	6	1,450	300	6	1,450	300	6	800	95	6	530	35	6

절입량
Depth of Cut



ap
0.5D

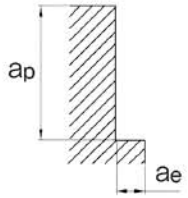
ap
0.05D

WS-PKE, WS-LS-PKE

고속측면절삭가공

피삭재 Work Material	일반구조용강 · 탄소강 · 주철 SS400, S55C, FC250 (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38 HRC)			스텐레스강 · 조질강 SUS304, SKD (38~45 HRC)			조질강 (45~55 HRC)			조질강 (55~60 HRC)		
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
6	10,600	2,650	6	10,600	2,200	6	10,600	1,350	6	8,000	1,000	6	8,000	800	6	5,300	535	6
	10,600	2,650	6	10,600	2,200	6	10,600	1,350	6	8,000	1,000	6	8,000	800	6	5,300	535	6
8	8,000	2,650	8	8,000	2,200	8	8,000	1,350	8	6,000	1,000	8	6,000	800	8	4,000	535	8
	8,000	2,650	8	8,000	2,200	8	8,000	1,350	8	6,000	1,000	8	6,000	800	8	4,000	535	8
10	6,400	2,100	10	6,400	1,700	10	6,400	1,050	10	4,800	800	10	4,800	640	10	3,200	420	10
	6,400	2,100	10	6,400	1,700	10	6,400	1,050	10	4,000	800	10	4,000	640	10	3,200	420	10
12	5,300	2,100	12	5,300	1,700	12	5,300	1,050	12	4,000	800	12	4,000	640	12	2,650	420	12
	5,300	2,100	12	5,300	1,700	12	5,300	1,050	12	4,000	800	12	4,000	640	12	2,650	420	12

절입량 Depth of Cut



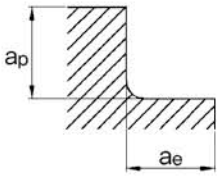
ap	ae
1D	0.1D

ap	ae
1D	0.02D

고속포켓가공

피삭재 Work Material	일반구조용강 · 탄소강 · 주철 SS400, S55C, FC250 (~750N/㎟)			합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)			조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38 HRC)			스텐레스강 · 조질강 SUS304, SKD (38~45 HRC)			조질강 (45~55 HRC)			조질강 (55~60 HRC)		
외경 DC	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap	회전속도 (min-1)	이송속도 (mm/min)	ap
6	10,600	1,600	0.6	10,600	1,300	0.6	10,600	1,000	0.6	8,000	1,000	0.6	8,000	500	0.3	5,300	310	0.3
	10,600	1,600	0.6	10,600	1,300	0.6	10,600	1,000	0.6	8,000	1,000	0.6	8,000	500	0.3	5,300	310	0.3
8	8,000	1,600	0.8	8,000	1,300	0.8	8,000	1,000	0.8	6,000	1,000	0.8	6,000	500	0.4	4,000	310	0.4
	8,000	1,600	0.8	8,000	1,300	0.8	8,000	1,000	0.8	6,000	1,000	0.8	6,000	500	0.4	4,000	310	0.4
10	6,400	1,300	1	6,400	1,000	1	6,400	800	1	4,800	700	1	4,800	400	0.5	3,200	250	0.5
	6,400	1,300	1	6,400	1,000	1	6,400	800	1	4,800	700	1	4,800	400	0.5	3,200	250	0.5
12	5,300	1,300	1.2	5,300	1,000	1.2	5,300	800	1.2	4,000	700	1.2	4,000	400	0.6	2,650	250	0.6
	5,300	1,300	1.2	5,300	1,000	1.2	5,300	800	1.2	4,000	700	1.2	4,000	400	0.6	2,650	250	0.6

절입량 Depth of Cut



ap	ae
0.1D	0.3D~0.5D

ap	ae
0.05D	0.2D~0.3D

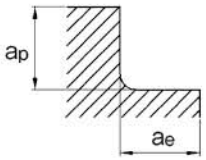
ap	ae
0.05D	0.2D~0.3D

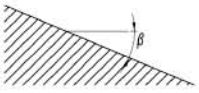
WS-CRE

표준가공 절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400, S55C (~750N/㎟)		합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)		조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38 HRC)		스텐레스강 · 조질강 · 프리하든강 SUS304, SKD (38~45 HRC)		조질강 · 티탄합금강 (45~55 HRC)		조질강 · 초내열합금강 (55~60 HRC)	
외경 DC	유효장 L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
2	6	16,000	5,250	16,000	4,750	12,500	3,800	11,000	3,350	7,950	2,150	4,750	860
3	7.5	10,500	6,250	10,500	5,600	8,500	4,500	7,450	3,900	5,300	2,600	3,200	995
4	10	7,950	6,600	7,950	6,000	6,350	4,800	5,550	4,200	4,000	2,750	2,400	1,050
		7,950	6,600	7,950	6,000	6,350	4,800	5,550	4,200	4,000	2,750	2,400	1,050
5	10	6,350	7,000	6,350	6,350	5,100	5,100	4,450	4,450	3,200	2,850	1,900	1,150
		6,350	7,000	6,350	6,350	5,100	5,100	4,450	4,450	3,200	2,850	1,900	1,150
6	12	5,300	7,000	5,300	6,350	4,250	5,100	3,700	4,450	2,650	2,850	1,600	1,150
		5,300	7,000	5,300	6,350	4,250	5,100	3,700	4,450	2,650	2,850	1,600	1,150
8	16	4,000	7,000	4,000	6,350	3,200	5,100	2,800	4,450	2,000	2,850	1,200	1,150
		4,000	7,000	4,000	6,350	3,200	5,100	2,800	4,450	2,000	2,850	1,200	1,150
10	20	3,200	7,000	3,200	6,350	2,550	5,100	2,250	4,450	1,600	2,850	955	1,150
		3,200	7,000	3,200	6,350	2,550	5,100	2,250	4,450	1,600	2,850	955	1,150
12	24	2,650	7,000	2,650	6,350	2,100	5,100	1,850	4,450	1,350	2,850	795	1,150
		2,650	7,000	2,650	6,350	2,100	5,100	1,850	4,450	1,350	2,850	795	1,150

절입량
Depth of Cut





	ap	ae
r≤2	0.2xr	0.5D
2<r	0.5mm	0.5D

	ap	ae
r≤2	0.2xr	0.5D
2<r	0.4mm	0.5D

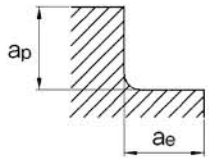
	ap	ae
r≤2	0.1xr	0.5D
2<r	0.2mm	0.5D

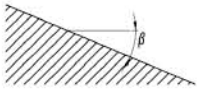
WS-CRE

고속가공 절삭조건

피삭재 Work Material		일반구조용강 · 탄소강 · 주철 SS400, S55C (~750N/㎟)		합금강 · 공구강 SCM, SKT, SKS, SKD (~30HRC)		조질강 · 프리하든강 SKT, SKD, NAK55, HPM1 (30~38 HRC)		스텐레스강 · 조질강 · 프리하든강 SUS304, SKD (38~45 HRC)		조질강 · 티탄합금강 (45~55 HRC)		조질강 · 초내열합금강 (55~60 HRC)	
외경 DC	유효장 L_1 (mm)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)	회전속도 (min-1)	이송속도 (mm/min)
2	6	31,850	10,500	32,000	9,550	32,000	9,550	24,000	7,150	24,000	6,450	16,000	2,850
3	7.5	21,000	12,500	21,000	11,000	21,000	12,000	16,000	8,400	16,000	7,850	10,500	3,300
4	10	16,000	13,000	16,000	12,000	16,000	12,000	12,000	9,000	12,000	8,200	7,950	3,550
		16,000	13,000	16,000	12,000	16,000	12,000	12,000	9,000	12,000	8,200	7,950	3,550
5	10	12,500	14,000	12,500	12,500	12,500	12,500	9,550	9,550	9,550	8,600	6,350	3,800
		12,500	14,000	12,500	12,500	12,500	12,500	9,550	9,550	9,550	8,600	6,350	3,800
6	12	10,600	14,000	10,600	12,700	10,600	12,700	7,950	9,550	7,950	8,600	5,300	3,800
		10,600	14,000	10,600	12,700	10,600	12,700	7,950	9,550	7,950	8,600	5,300	3,800
8	16	7,950	14,000	7,950	12,700	7,950	12,700	5,950	9,550	5,950	8,600	4,000	3,800
		7,950	14,000	7,950	12,700	7,950	12,700	5,950	9,550	5,950	8,600	4,000	3,800
10	20	6,350	14,000	6,350	12,700	6,350	12,700	4,750	9,550	4,750	8,600	3,200	3,800
		6,350	14,000	6,350	12,700	6,350	12,700	4,750	9,550	4,750	8,600	3,200	3,800
12	24	5,300	14,000	5,300	12,700	5,300	12,700	4,000	9,550	4,000	8,600	2,650	3,800
		5,300	14,000	5,300	12,700	5,300	12,700	4,000	9,550	4,000	8,600	2,650	3,800

절입량
Depth of Cut





ap	ae
0.1 x r	0.3

	ap	ae
r≤2	0.1xr	0.3D
2<r	0.2mm	0.3D

	ap	ae
r≤2	0.05xr	0.3D
2<r	0.1mm	0.3D

shaping your dreams

안전하게 사용하기 위해서…

- 공구를 사용하실 때에는 파손될 위험이 있으므로 반드시 커버, 보호안경, 안전화 등을 착용해 주시기 바랍니다.
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