THE NEW VALUE FRONTIER

KYOCERA

CERATIP®
KYOCERA Cutting Tools

CA55 05/15/25/35 시리즈 Series

강가공용 혁신적인 CVD 코팅 Innovative CVD Coated Carbides for Steel Machining

CA55 05/15/25/35 시리즈 Series

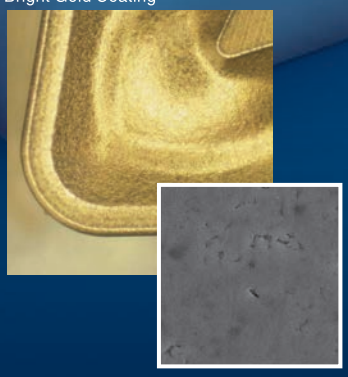
강가공용 혁신적인 CVD 코팅 Innovative CVD Coated Carbides for Steel Machining

1 Bright Gold 코팅
Bright Gold Coating

특수 표면처리(PICA기술:Physical Innovation for Coating Advantage)에 의해 초평활 표면 실현
Super Smooth Surface Finishing Technology

- 강가공시의 용착, 돌발 결손 방지
  Prevents Adhesion and Sudden Fracture when Machining Steel
- 고품위 정삭면과 고신뢰성 모두 만족
  High Quality Surface Finish and High Reliability
- 어두운 현장에서도 사용한 코너의 식별이 용이
  Easy to Identify Used Cutting Edges Even in Dim Light

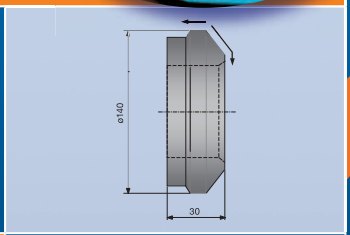
Bright Gold 코팅
Bright Gold Coating



기존 코팅
Conventional Coating

SCM420

- 링기어 Ring Gear
- V=400m/min
- d=1 ~ 1.5mm
- f=0.35mm/rev
- 습식 Wet
- CNMG120412CQ



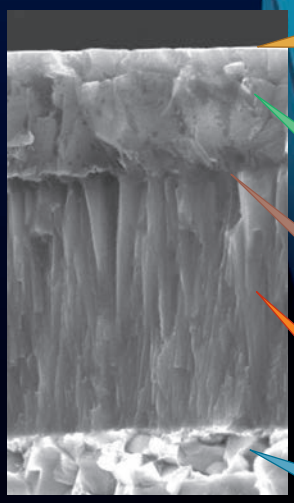
CA55^{05}	120개 / 코너 120 pcs/edge
타사 코팅A Comp. A (Coated)	100개 / 코너 100 pcs/edge

- CQ브레이커(CA55^{05}) 에 의해 칩처리가 개선 되었고 가공 개수도 타사 코팅A에 비해 1.2배 향상
- With the CQ chipbreaker (CA5505), chip control is improved and machined 1.2 times as many workpieces as Competitor A.

(유저평가에 의해) Evaluation from the user

2 높은 ASPECT비 「울트라 파인TiCN」
High Aspect Ratio "Ultra Fine TiCN"

높은 ASPECT비의 울트라 파인TiCN + 강인Al_2O_3에 의해 고속 고능률 가공을 실현
High-speed & High-efficiency Steel Machining is Possible Due to the High Aspect Ratio Ultra Fine TiCN + Tough Al_2O_3 Coating



TiN층 TiN
Surface Smoothness / Welding Resistance

α-Al_2O_3층 α-Al_2O_3
High Temperature Stability / Crater Wear Resistance

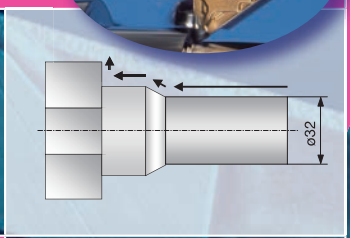
특수 중간층 Special Interlayer
High Binding Force / Prevents Peeling

TiCN층 TiCN
Improved Fracture Resistance and Wear Resistance due to the High Aspect Ratio and Fine Columnar Structure

강인 초경모재 Special Carbide Substrate

S35C

- 볼트 Bolt
- V=230m/min
- d=1~1.5mm
- f=0.22mm/rev
- 습식 Wet
- TNMG160408PS



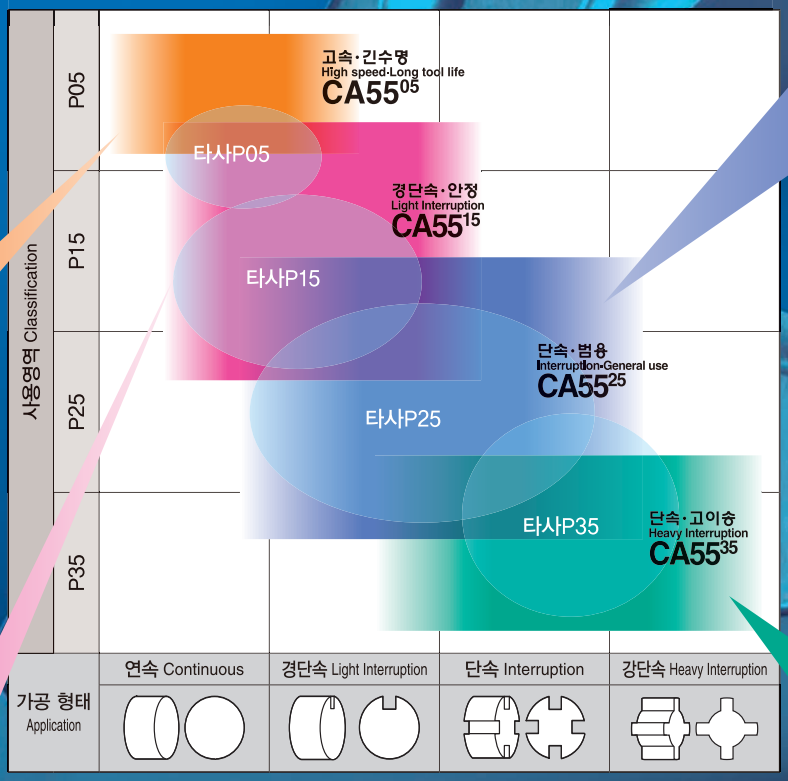
CA55^{15}	500개 / 코너 500 pcs/edge
타사 코팅B Comp. B (Coated)	350개 / 코너 350 pcs/edge

- CA55^{15}는 타사코팅B에 비해 가공수가 1.4배로 향상
- CA55^{15}는 절삭속도를 V=200→230m/min으로 올렸지만 칩핑없이 안정가공이 가능
- CA5515 machined 1.4 times as many workpieces as Competitor B.
- CA5515 enabled stable machining without chipping even with increased cutting velocity V=200→230m/min.

(유저평가에 의해) Evaluation from the user

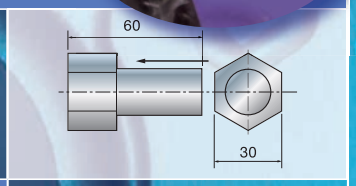
3 적용 영역
Applicable Cutting Range

기존 타사 코팅의 영역을 뛰어넘는 범위의 CA55시리즈
The CA55 series has proven to outperform competitor's coated carbides in a wide range of applications



SS400

- 육각봉 Hex Stock
- V=150~180m/min
- d=1.5mm
- f=0.2~0.3mm/rev
- 습식 Wet
- CNMG120408GS



CA55^25	60개 / 코너 60 pcs/edge
타사 코팅C Comp. C (Coated)	20~30개 / 코너 20-30 pcs/edge

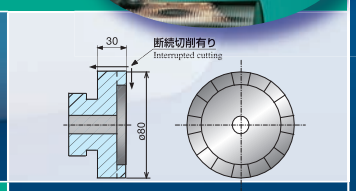
- 육각봉의 절삭
- CA55^25는 타사 코팅C에 비해 가공수가 2~3배 향상
- 60개/ 코너 가공 후에도 CA55^25의 인선상태는 타사 코팅 C보다 양호하여 가공수 UP이 가능

- Hex Stock Cutting.
- CA5525 machined 2-3 times as many workpieces as Competitor C.
- Cutting edge condition of CA5525 was better than Competitor C and still good for further machining even after cutting 60 pcs /edge.

(유저평가에 의해) Evaluation from the user

S43C

- 쉬프트기어 Sifter Gear
- V=120m/min
- d=1.8mm
- f=0.2mm/rev
- 습식 Wet
- CNMG120408PT

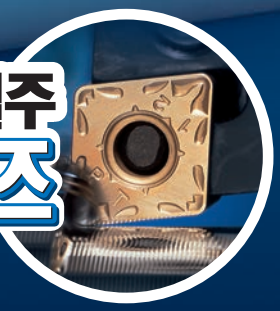


CA55^35	300개 / 코너 300 pcs/edge
타사 코팅D Comp D. (Coated)	200개 / 코너 200 pcs/edge

- CA55^35는 타사코팅d에 비해 가공수가 1.5배 향상

- CA5535 machined 1.5 times as many workpieces as Competitor D.

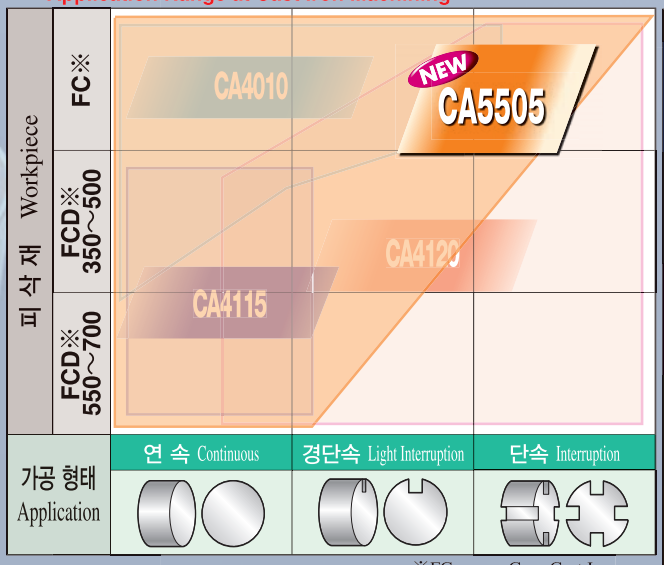
(유저평가에 의해) Evaluation from the user



멈추지 않는 질주 CA55시리즈
TRY New Grade! The CA55 Series.

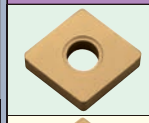
CA5505는 주철가공에도 뛰어난 성능을 발휘 !!
CA5505 has Suitable Performance for Cast Iron Machining

주철가공의 적용영역
Application Range at Cast Iron Machining



※FC means Gray Cast Iron
FCD means Nodular Cast Iron

주철용 브레이커 레파토리
Chipbreaker Series for Cast Iron

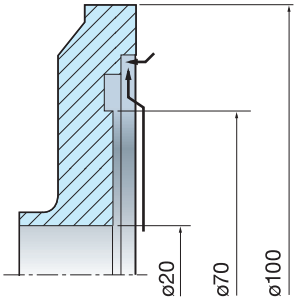
Name and Shape		특 징 Features
	전주 브레이커 (무기호) Molded Chipbreaker	주철의 연속~경단속가공의 기본 브레이커 (저저항 중시) Standard Chipbreaker for Continuous to Light Interrupted Machining of Cast Iron. (Low Cutting Force)
	C브레이커 C Chipbreaker	주철의 연속~경단속가공의 고이송용 브레이커 High Feed Rate Chipbreaker for Continuous to Light Interrupted Machining of Cast Iron.
	ZS 브레이커 ZS Chipbreaker	주철의 경단속~단속가공의 기본 브레이커 (안정성 중시) Standard Chipbreaker for Light Interrupted to Interrupted Machining of Cast Iron. (High Stability)
	브레이커 없음 No Chipbreaker	주철의 경단속~단속가공의 고이송용 브레이커 High Feed Rate Chipbreaker for Light Interrupted to Interrupted Machining of Cast Iron.
	GC 브레이커 GC Chipbreaker	주철의 강단속 가공용 브레이커 (인선강화형 브레이커) Chipbreaker for Heavy Interrupted Machining of Cast Iron. (Strong Cutting Edge)

절삭성중시 Sharp Cutting Oriented
안정성 중시 Stability Oriented

■ 가공 실예 Case Studies

S45C

- 플런지 Flange
- V=220m/min
- d=0.8~1.5mm
- f=0.15~0.35mm/rev
- 습식 Wet
- DNMG150412HQ



CA5515	300개 / 코너 300 pcs/edge
타사 코팅E Comp. E(Coated)	200~250개 / 코너 200-250 pcs/edge

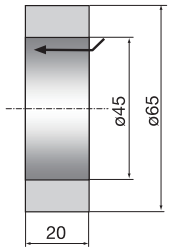
- CA5515는 타사 코팅E에 비해 가공수가 최대 1.5배 향상
- CA5515는 타사 코팅E에 비해 칩핑의 발생없이 안정적

- CA5515 machined 1.5 times as many workpieces as Competitor E.
- CA5515 had stable tool life without chipping compared to Competitor E.

(유저평가에 의해) Evaluation from the user

S55C

- 인너 레이스 Inner Race
- V=150m/min
- d=1mm
- f=0.3mm/rev
- 건식 Dry
- CNMG120408CQ



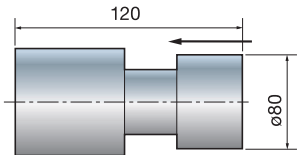
CA5515	400개 / 코너 400 pcs/edge
타사 코팅F Comp. F (Coated)	200개 / 코너 200 pcs/edge

- CA5515는 타사 코팅F에 비해 가공수가 2배로 향상
- CA5515 machined 2 times as many workpieces as Competitor F.

(유저평가에 의해) Evaluation from the user

SNCM420H

- 허브 터빈 Shaft
- V=~170m/min
- d=1.0mm
- f=0.25mm/rev
- 습식 Wet
- CNMG120408GS



CA5525	1500개 / 코너 1500 pcs/edge
타사 코팅 G Comp.G (Coated)	1000개 / 코너 1000 pcs/edge

- CA5525는 타사 코팅G에 비해 최대 1.5배 향상

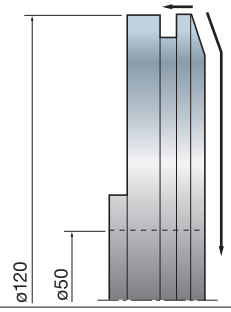
- 인선 상태도 타사 코팅G보다 대단히 양호

- CA5525 machined 1.5 times as many workpieces as Competitor G.
- Cutting edge condition of CA5525 was better than Competitor G and still good for further machining.

(유저평가에 의해) Evaluation from the user

S35C (단조품) Forged

- 플런지 부품 Clutch Parts
- V=150m/min
- d=1~1.8mm
- f=0.15mm/rev
- 습식 Wet
- WNMG080408CQ



CA5525	450개 / 코너 over 450 pcs/edge
타사 코팅 H Comp.H (Coated)	300개 / 코너 300 pcs/edge

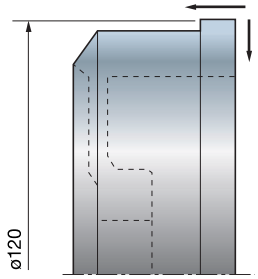
- CA5525는 타사 코팅 H에 비해 가공수가 최대 1.5배로 향상
  (CA5525는 6코너 전부 450개/코너의 가공이 가능)

- CA5525 machined 1.5 times as many workpieces as Competitor H.
  (All 6 of CA5525's cutting edges were able to machine 450 pcs/edge)

(유저평가에 의해) Evaluation from the user

SPHD

- 풀리 Pulley
- V=800m/min
- d=0.8mm~
- f=0.15~0.2mm/rev
- 습식 Wet
- DNMG150408CQ



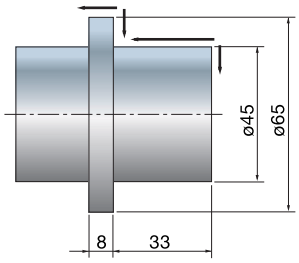
CA55^{25}	900개이상／코너 over 900 pcs/edge
타사 코팅K Comp. I (Coated)	400~500개 / 코너 400-500 pcs/edge

- 이공정은 절입량의 변동이 크고 절삭속도가 높아 내결손성 및 내마모성이 모두 요구되는 공정
- CA55^{25}는 타사 코팅K에 비해 가공수가 2배로 향상
- CA55^{25}는 타사 코팅K에 비해 내마모성, 내결손성 모두 우수
- This process required both fracture resistance and wear resistance because of variable machining parameters and high cutting speed.
- CA5525 machined about 2 times as many workpieces as Competitor I.
- CA5525 showed superior wear resistance and fracture resistance compared with Competitor I.

(유저평가에 의해) Evaluation from the user

S35C

- 클러치 Clutch
- V=220m/min
- d=0.2~1.5mm
- f=0.1~0.28mm/rev
- 습식 Wet
- WNMG080408HQ



CA55^{25}	225개 / 코너 225 pcs/edge
타사 코팅J Comp. J (Coated)	100~120개 / 코너 100-120 pcs/edge

- CA55^{25}는 타사 코팅J에 비해 가공수가1.8배로 향상
- CA5525 machined 1.8 times or more as many workpieces as CompetitorJ.

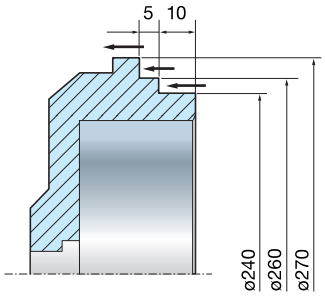
(유저평가에 의해) Evaluation from the user

CA5505는 주철가공에도 뛰어난 성능을 발휘 !!

CA5505 has Suitable Performance for Cast Iron Machining

FC230

- 브레이크 드럼 Brake Drum
- V=700m/min
- d=1.5mm
- f=0.4mm/rev
- 습식 Wet
- SNMG120412PT (CA5505)



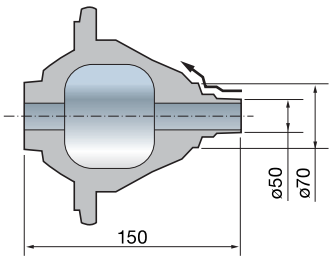
CA55^{05}	55개 / 코너 55 pcs/edge
타사 질화규소 세라믹K Comp. K (Si_3N_4)	55개 / 코너 55 pcs/edge

- CA55^{05}는 타사 질화규소 세라믹에 비해 같은수량 가공에서 마모량이 적고 안정가공이 가능
- CA5505 showed superior wear resistance and machining stability compared with Competitor K.

(유저평가에 의해) Evaluation from the user

FCD450

- 디프 케이스 Differential Case
- V=180m/min
- d=1~3mm
- f=0.4mm/rev
- 건식 Dry
- CNMG160612PT (CA5505)



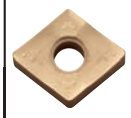
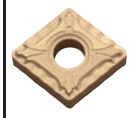
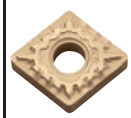
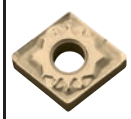
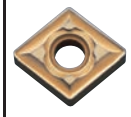
CA55^{05}	200개 / 코너 200 pcs/edge
타사 코팅L Comp. L(Coated)	150개 / 코너 150 pcs/edge

- CA55^{05}는 타사코팅 L에 비해 공구수명이 향상됨 또한 치수변화량도 안정적임
- CA5505 improved the tool life compared with Competitor L. Stable dimensional variation.

(유저평가에 의해) Evaluation from the user

■ 표준 재고규격 Stock Items

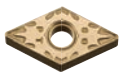
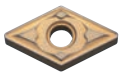
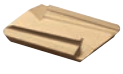
형상 Shape (승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
정삭 와이퍼	CNMG 120404WP	12.70	4.76	5.16	0.4	–	●	●	●	
	CNMG 120408WP				0.8		●	●	●	
정삭~중삭 와이퍼	CNMG 120404WQ	12.70	4.76	5.16	0.4	–	●	●	●	
	CNMG 120408WQ				0.8		●	●	●	
	CNMG 120412WQ				1.2		●	●	●	
정삭	CNMG 120402GP	12.70	4.76	5.16	0.2	–		●	●	
	CNMG 120404GP				0.4		●	●	●	
	CNMG 120408GP				0.8		●	●	●	
정삭~중삭	NEW CNMG 090404HQ	9.525	4.76	3.81	0.4	–		●	●	
	090408HQ				0.8			●	●	
	CNMG 120404HQ	12.70	4.76	5.16	0.4	–	●	●	●	●
	120408HQ				0.8		●	●	●	●
	120412HQ				1.2		●	●	●	●
	CNGG 120408HQ	12.70	4.76	5.16	0.8	–		●	●	
	120412HQ				1.2			●	●	
정삭~중삭 · 끌기	CNMG 120404CQ	12.70	4.76	5.16	0.4	–	●	●	●	●
	120408CQ				0.8		●	●	●	●
	120412CQ				1.2		●	●	●	●
	CNMG 160608CQ	15.875	6.35	6.35	0.8	–		●	●	
	160612CQ				1.2			●	●	
NEW 정삭~중삭 · 끌기	CNMG 120408CJ	12.70	4.76	5.16	0.8	–	●	●	●	●
	120412CJ				1.2		●	●	●	●
	CNMG 160612CJ	15.875	6.35	6.35	1.2	–	●	●	●	●
	160616CJ				1.6		●	●	●	●
중삭~황삭	CNMG 120404CS	12.70	4.76	5.16	0.4	–		●	●	
	120408CS				0.8			●	●	
	120412CS				1.2			●	●	
중삭~황삭	NEW CNMG 090404GS	9.525	4.76	3.81	0.4	–		●	●	
	090408GS				0.8			●	●	
	CNMG 120404GS	12.70	4.76	5.16	0.4	–		●	●	
	120408GS				0.8			●	●	
	120412GS				1.2			●	●	
중삭~황삭	CNMG 120404PS	12.70	4.76	5.16	0.4	–	●	●	●	●
	120408PS				0.8		●	●	●	●
	120412PS				1.2		●	●	●	●
	120416PS				1.6			●	●	●
	CNMG 160612PS	15.875	6.35	6.35	1.2	–	●	●	●	●
	160616PS				1.6		●	●	●	●
중삭~황삭	CNMG 120404HS	12.70	4.76	5.16	0.4	–		●	●	
	120408HS				0.8			●	●	
	120412HS				1.2			●	●	
	120416HS				1.6			●	●	

형상 Shape (승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
중삭~황삭 · 고이송	CNMG 120408PT	12.70	4.76	5.16	0.8	–	●	●	●	●
	120412PT				1.2		●	●	●	●
	CNMG 160608PT	15.875	6.35	6.35	0.8	–	●	●	●	●
	160612PT				1.2		●	●	●	●
	160616PT				1.6		●	●	●	●
중삭~황삭 · 고이송	CNMG 120408GT	12.70	4.76	5.16	0.8	–		●	●	
	120412GT				1.2			●	●	
중삭~황삭 · 고이송	CNMG 120408HT	12.70	4.76	5.16	0.8	–		●	●	
	120412HT				1.2			●	●	
황삭	CNMG 120404	12.70	4.76	5.16	0.4	NEW –	●			
	120408				0.8		●	●	●	●
	120412				1.2		●	●	●	●
	120416				1.6		●			
	CNMG 160608	15.875	6.35	6.35	0.8	NEW –	●	●	●	
	160612				1.2		●	●	●	●
	160616				1.6		●			●
	CNMG 190608	19.05	6.35	7.94	0.8	NEW –	●			
	190612				1.2		●	●	●	●
	190616				1.6		●	●	●	●
 편연/황삭	CNMM 120408HX	12.70	4.76	5.16	0.8	–		●	●	
	CNMM 190612HX	19.05	6.35	7.94	1.2	–		●	●	
 연강 정삭	CNMG 120404XP	12.70	4.76	5.16	0.4	–	●	●	●	
	120408XP				0.8		●	●	●	
연강 중삭	CNMG 120404XQ	12.70	4.76	5.16	0.4	–	●	●	●	
	120408XQ				0.8		●	●	●	
 연강 황삭	CNMG 120408XS	12.70	4.76	5.16	0.8	–	●	●	●	
 중삭~황삭	CNMG 120408HU	12.70	4.76	5.16	0.8	–			●	
 주철 황삭	CNMG 120404C	12.70	4.76	5.16	0.4	NEW –	●			
	120408C				0.8		●			
	120412C				1.2		●			
	120416C				1.6		●			
	CNMG 160612C	15.875	6.35	6.35	1.2	NEW	●			
주철 황삭	CNMG 120408ZS	12.70	4.76	5.16	0.8	NEW –	●			
	120412ZS				1.2		●			

● : 표준 재고 ● : Standard Stock

■ 표준 재고규격 Stock Items

형상 Shape (승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
주철 황삭	CNMG 120408GC	12.70	4.76	5.16	0.8	NEW –	●			
	CNMG 120412GC				1.2		●			
브레이커 없음	CNMA 120404	12.70	4.76	5.16	0.4	NEW –	●			
	CNMA 120408				0.8		●			
	CNMA 120412				1.2		●			
	CNMA 120416				1.6		●			
NEW 정삭	DNMG 110404GP	9.525	4.76	3.81	0.4	–		●	●	
	DNMG 110408GP				0.8				●	
	DNMG 150402GP	12.70	4.76	5.16	0.2	–		●	●	
	DNMG 150404GP				0.4		●	●	●	
	DNMG 150408GP				0.8		●	●	●	
NEW 정삭~중삭	DNMG 110402HQ	9.525	4.76	3.81	0.2	–		●	●	
	DNMG 110404HQ				0.4			●	●	
	DNMG 150404HQ	12.70	4.76	5.16	0.4	–	●	●	●	●
	DNMG 150408HQ				0.8		●	●	●	●
	DNMG 150412HQ				1.2		●	●	●	●
	DNMG 150604HQ	12.70	6.35	5.16	0.4	–	●	●	●	●
	DNMG 150608HQ				0.8		●	●	●	●
	DNMG 150612HQ				1.2		●	●	●	●
정삭~중삭·끌기	DNMG 150404CQ	12.70	4.76	5.16	0.4	–	●	●	●	●
	DNMG 150408CQ				0.8		●	●	●	●
	DNMG 150412CQ				1.2		●	●	●	●
	DNMG 150604CQ	12.70	6.35	5.16	0.4	–	●	●	●	●
	DNMG 150608CQ				0.8		●	●	●	●
	DNMG 150612CQ				1.2		●	●	●	●
NEW 정삭~중삭·끌기	DNMG 150408CJ	12.70	4.76	5.16	0.8	–	●	●	●	●
	DNMG 150412CJ				1.2		●	●	●	●
	DNMG 150608CJ	12.70	6.35	5.16	0.8	–	●	●	●	●
	DNMG 150612CJ				1.2		●	●	●	●
중삭~황삭	DNMG 150404CS	12.70	4.76	5.16	0.4	–		●	●	
	DNMG 150408CS				0.8			●	●	
NEW 중삭~황삭	DNMG 110404GS	9.525	4.76	3.81	0.4	–		●	●	
	DNMG 110408GS				0.8			●	●	
	DNMG 150404GS	12.70	4.76	5.16	0.4	–		●	●	
	DNMG 150408GS				0.8			●	●	
	DNMG 150412GS				1.2			●	●	
중삭~황삭	DNMG 150404PS	12.70	4.76	5.16	0.4	–	●	●	●	●
	DNMG 150408PS				0.8		●	●	●	●
	DNMG 150412PS				1.2		●	●	●	●
	DNMG 150416PS				1.6			●	●	
	DNMG 150604PS	12.70	6.35	5.16	0.4	–		●	●	
	DNMG 150608PS				0.8	–	●	●	●	●
	DNMG 150612PS				1.2	–	●	●	●	●
	DNMG 150616PS				1.6			●	●	
중삭~황삭	DNMG 150404HS	12.70	4.76	5.16	0.4	–		●	●	
	DNMG 150408HS				0.8			●	●	
	DNMG 150412HS				1.2			●	●	
	DNMG 150604HS	12.70	6.35	5.16	0.4	–		●	●	
	DNMG 150608HS				0.8			●	●	
	DNMG 150612HS				1.2			●	●	

형상 Shape (승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
 중삭~황삭·고이송	DNMG 150408PT	12.70	4.76	5.16	0.8	–	●	●	●	●
	DNMG 150412PT				1.2		●	●	●	●
	DNMG 150608PT	12.70	6.35	5.16	0.8	–	●	●	●	●
	DNMG 150612PT				1.2		●	●	●	●
중삭~황삭·고이송	DNMG 150408GT	12.70	4.76	5.16	0.8	–		●	●	
	DNMG 150412GT				1.2			●	●	
	DNMG 150608GT	12.70	6.35	5.16	0.8	–		●	●	
	DNMG 150612GT				1.2			●	●	
중삭~황삭·고이송	DNMG 150408HT	12.70	4.76	5.16	0.8	–		●	●	
	DNMG 150412HT				1.2			●	●	
	DNMG 150612HT	12.70	6.35	5.16	1.2	–		●	●	
황삭	DNMG 150404	12.70	4.76	5.16	0.4	NEW –	●	●	●	
	DNMG 150408				0.8		●	●	●	●
	DNMG 150412				1.2		●			●
	DNMG 150604	12.70	6.35	5.16	0.4	NEW –	●			
	DNMG 150608				0.8		●	●	●	●
	DNMG 150612				1.2			●	●	●
연강 정삭	DNMG 150404XP	12.70	4.76	5.16	0.4	–	●	●	●	
	DNMG 150408XP				0.8		●	●	●	
연강 중삭	DNMG 150404XQ	12.70	4.76	5.16	0.4	–	●	●	●	
	DNMG 150408XQ				0.8		●	●	●	
연강 황삭	DNMG 150408XS	12.70	4.76	5.16	0.8	–	●	●	●	
중삭~황삭	DNMG 150408HU	12.70	4.76	5.16	0.8	–			●	
 주철 황삭	DNMG 150608C	12.70	6.35	5.16	0.8	NEW –	●			
	DNMG 150612C				1.2		●			
주철 황삭	DNMG 150408ZS	12.70	4.76	5.16	0.8	NEW –	●			
	DNMG 150412ZS				1.2		●			
	DNMG 150608ZS	12.70	6.35	5.16	0.8	NEW –	●			
	DNMG 150612ZS				1.2		●			
주철 황삭	DNMG 150408GC	12.70	4.76	5.16	0.8	NEW –	●			
	DNMG 150412GC				1.2		●			
	DNMG 150608GC	12.70	6.35	5.16	0.8	NEW –	●			
	DNMG 150612GC				1.2		●			
브레이커 없음	DNMA 150404	12.70	4.76	5.16	0.4	NEW –	●			
	DNMA 150408				0.8		●			
 중삭~황삭	KNMX 160405R/L-1	9.525	4.76	–	0.5	–		●	●	
	KNMX 160410R/L-1				1.0			●	●	

● : 표준 재고 ● : Standard Stock

■ 표준 재고규격 Stock Items

형상 Shape (승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
중삭~황삭	RNMG 090300	9.525	3.18	3.81	–	–		●	●	
	RNMG 120400	12.70	4.76	5.16	–	–		●	●	
	RNMG 150600	15.875	6.35	6.35	–	–		●	●	
정삭~중삭	SNMG 120404HQ	12.70	4.76	5.16	0.4	–	●	●	●	
	SNMG 120408HQ				0.8			●	●	●
	SNMG 120412HQ				1.2			●	●	●
중삭~황삭	SNMG 120408PS	12.70	4.76	5.16	0.8	–	●	●	●	●
	SNMG 120412PS				1.2		●	●	●	●
	SNMG 120416PS				1.6			●	●	●
중삭~황삭	SNMG 120408HS	12.70	4.76	5.16	0.8	–		●	●	
	SNMG 120412HS				1.2			●	●	
	SNMG 120416HS				1.6			●	●	
중삭~황삭 · 고이송	SNMG 120408PT	12.70	4.76	5.16	0.8	–	●	●	●	●
	SNMG 120412PT				1.2		●	●	●	●
중삭~황삭 · 고이송	SNMG 120408HT	12.70	4.76	5.16	0.8	–		●	●	
황삭	SNMG 120404 (NEW)	12.70	4.76	5.16	0.4	–	●			
	SNMG 120408				0.8		●	●	●	●
	SNMG 120412				1.2		●	●	●	●
	SNMG 120416				1.6		●	●	●	●
	SNMG 120420				2.0		●			
	SNMG 190612 (NEW)	19.05	6.35	7.94	1.2	–	●			●
	SNMG 190616				1.6		●			●
연강 정삭	SNMG 120408XP	12.70	4.76	5.16	0.8	–		●	●	
연강 중삭	SNMG 120408XQ	12.70	4.76	5.16	0.8	–		●	●	
연강 황삭	SNMG 120408XS	12.70	4.76	5.16	0.8	–		●	●	
주철 황삭	SNMG 120408C (NEW)	12.70	4.76	5.16	0.8	–	●			
	SNMG 120412C				1.2		●			
주철 황삭	SNMG 120408ZS (NEW)	12.70	4.76	5.16	0.8	–	●			
	SNMG 120412ZS				1.2		●			

형상 Shape (승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
주철 황삭	SNMG 120408GC (NEW)	12.70	4.76	5.16	0.8	–	●			
	SNMG 120412GC				1.2		●			
브레이커 없음	SNMA 120404 (NEW)	12.70	4.76	5.16	0.4	–	●			
	SNMA 120408				0.8		●			
	SNMA 120412				1.2		●			
	SNMA 120416				1.6		●			
	SNMA 120420				2.0		●			
정삭	TNMG 160402GP	9.525	4.76	3.81	0.2	–	●	●	●	
	TNMG 160404GP				0.4		●	●	●	
	TNMG 160408GP				0.8		●	●	●	
정삭~중삭	TNMG 110404HQ (NEW)	6.35	4.76	2.26	0.4	–		●	●	
	TNMG 110408HQ				0.8			●	●	
	TNMG 160404HQ	9.525	4.76	3.81	0.4	–	●	●	●	●
	TNMG 160408HQ				0.8		●	●	●	●
	TNMG 160412HQ				1.2			●	●	
정삭~중삭 · 끌기	TNMG 160404CQ	9.525	4.76	3.81	0.4	–	●	●	●	●
	TNMG 160408CQ				0.8		●	●	●	●
	TNMG 160412CQ				1.2		●	●	●	●
	TNMG 220408CQ	12.70	4.76	5.16	0.8	–		●	●	
	TNMG 220412CQ				1.2			●	●	
중삭~황삭	TNMG 160404CS	9.525	4.76	3.81	0.4	–		●	●	
	TNMG 160408CS				0.8			●	●	
중삭~황삭	TNMG 110404GS (NEW)	6.35	4.76	2.26	0.4	–			●	
	TNMG 110408GS				0.8				●	
	TNMG 160404GS	9.525	4.76	3.81	0.4	–		●	●	
	TNMG 160408GS				0.8			●	●	
중삭~황삭	TNMG 160404PS	9.525	4.76	3.81	0.4	–	●	●	●	●
	TNMG 160408PS				0.8		●	●	●	●
	TNMG 160412PS				1.2			●	●	●
	TNMG 220404PS	12.70	4.76	5.16	0.4	–		●	●	●
	TNMG 220408PS				0.8		●	●	●	●
	TNMG 220412PS				1.2		●	●	●	●
	TNMG 220416PS				1.6			●	●	
중삭~황삭	TNMG 160404HS	9.525	4.76	3.81	0.4	–		●	●	
	TNMG 160408HS				0.8			●	●	
	TNMG 160412HS				1.2			●	●	
중삭~황삭 · 고이송	TNMG 160408PT	9.525	4.76	3.81	0.8	–	●	●	●	●
	TNMG 160412PT				1.2		●	●	●	●
중삭~황삭 · 고이송	TNMG 160408GT	9.525	4.76	3.81	0.8	–		●	●	
	TNMG 160412GT				1.2			●	●	
중삭~황삭 · 고이송	TNMG 160408HT	9.525	4.76	3.81	0.8	–		●	●	

● : 표준 재고 ● : Standard Stock

■ 표준 재고규격 Stock Items

형상 Shape (승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
황삭	TNMG 160404	9.525	4.76	3.81	0.4	–		●	●	
	TNMG 160408				0.8			●	●	
	TNMG 160412				1.2			●	●	
	TNMG 220404	12.70	4.76	5.16	0.4	–	NEW ●			
	TNMG 220408				0.8		●	●	●	
	TNMG 220412				1.2		●	●	●	
연강 정삭	TNMG 160404XP	9.525	4.76	3.81	0.4	–	●	●	●	
	TNMG 160408XP				0.8		●	●	●	
연강 중삭	TNMG 160404XQ	9.525	4.76	3.81	0.4	–	●	●	●	
	TNMG 160408XQ				0.8		●	●	●	
연강 황삭	TNMG 160408XS	9.525	4.76	3.81	0.8	–	●	●	●	
중삭~황삭	TNMG 160408HU	9.525	4.76	3.81	0.8	–			●	
중삭~황삭	TNMG 160404R/L-ST	9.525	4.76	3.81	0.4	–		●	●	
	TNMG 160408R/L-ST				0.8			●	●	
주철 황삭	TNMG 160404C	9.525	4.76	3.81	0.4	–	NEW ●			
	TNMG 160408C				0.8		●			
	TNMG 160412C				1.2		●			
주철 황삭	TNMG 160408ZS	9.525	4.76	3.81	0.8	–	NEW ●			
	TNMG 160412ZS				1.2		●			
주철 황삭	TNMG 160408GC	9.525	4.76	3.81	0.8	–	NEW ●			
	TNMG 160412GC				1.2		●			
브레이커 없음	TNMA 160404	12.70	4.76	3.81	0.4	–	NEW ●			
	TNMA 160408				0.8		●			
	TNMA 160412				1.2		●			
	TNMA 160416				1.6		●			
	TNMA 160420				2.0		●			
홀 없음 • 브레이커 없음	TNMN 160404	12.70	4.76	–	0.4	–	NEW ●			
	TNMN 160408				0.8		●			
	TNMN 160412				1.2		●			
	TNMN 160416				1.6		●			
	TNMN 160420				2.0		●			

형상 Shape (승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
정삭	VNMG 160402GP	9.525	4.76	3.81	0.2	–		●	●	
	VNMG 160404GP				0.4			●	●	
	VNMG 160408GP				0.8			●	●	
정삭	VNMG 160404VF	9.525	4.76	3.81	0.4	–		●	●	
	VNMG 160408VF				0.8			●	●	
	VNMG 160412VF				1.2			●	●	
정삭~중삭	VNMG 160404HQ	9.525	4.76	3.81	0.4	–	●	●	●	●
	VNMG 160408HQ				0.8		●	●	●	●
	VNMG 160412HQ				1.2		●	●	●	●
황삭	VNMG 160404	9.525	4.76	3.81	0.4	–	NEW ●	●	●	●
	VNMG 160408				0.8		●	●	●	●
정삭 와이퍼	WNMG 080404WP	12.70	4.76	5.16	0.4	–	●	●	●	
	WNMG 080408WP				0.8		●	●	●	
정삭~중삭 와이퍼	WNMG 080404WQ	12.70	4.76	5.16	0.4	–	●	●	●	
	WNMG 080408WQ				0.8		●	●	●	
	WNMG 080412WQ				1.2	–	●	●	●	
정삭~중삭	NEW WNMG 06T304HQ	9.525	3.97	3.81	0.4	–			●	
					0.8				●	
	NEW WNMG 060404HQ	9.525	4.76	3.81	0.4	–		●	●	
					0.8			●	●	
	WNMG 080404HQ	12.70	4.76	5.16	0.4	–	●	●	●	●
	WNMG 080408HQ				0.8		●	●	●	●
	WNMG 080412HQ				1.2		●	●	●	●
정삭~중삭 · 끌기	WNMG 080404CQ	12.70	4.76	5.16	0.4	–	●	●	●	
	WNMG 080408CQ				0.8		●	●	●	●
	WNMG 080412CQ				1.2		●	●	●	●
정삭~중삭 · 끌기	NEW WNMG 080408CJ	12.70	4.76	5.16	0.8	–	●	●	●	●
	WNMG 080412CJ				1.2		●	●	●	●
중삭~황삭	WNMG 080408CS	12.70	4.76	5.16	0.8	–		●	●	

● : 표준 재고 ● : Standard Stock

■ 표준 재고규격 Stock Items

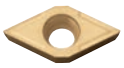
형상 Shape 승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
중삭~황삭	NEW WNMG 060404GS	9.525	4.76	3.81	0.4	–		●	●	
	060408GS				0.8			●	●	
	WNMG 080404GS	12.70	4.76	5.16	0.4	–		●	●	
	080408GS				0.8			●	●	
	080412GS				1.2			●	●	
중삭~황삭	WNMG 080404PS	12.70	4.76	5.16	0.4	–	●	●	●	●
	080408PS				0.8		●	●	●	●
	080412PS				1.2		●	●	●	●
	080416PS				1.6			●	●	
중삭~황삭	WNMG 080404HS	12.70	4.76	5.16	0.4	–		●	●	
	080408HS				0.8			●	●	
	080412HS				1.2			●	●	
중삭~황삭 · 고이송	WNMG 080408PT	12.70	4.76	5.16	0.8	–	●	●	●	●
	080412PT				1.2		●	●	●	●
중삭~황삭 · 고이송	WNMG 080408GT	12.70	4.76	5.16	0.8	–		●	●	
	080412GT				1.2			●	●	
중삭~황삭 · 고이송	WNMG 080408HT	12.70	4.76	5.16	0.8	–		●	●	
	080412HT				1.2			●	●	
황삭	WNMG 080404	12.70	4.76	5.16	0.4	NEW	●	●	●	
	080408				0.8	–	●	●	●	●
	080412				1.2		●	●	●	●
연강 정삭	WNMG 080404XP	12.70	4.76	5.16	0.4	–	●	●	●	
	080408XP				0.8		●	●	●	
연강 중삭	WNMG 080404XQ	12.70	4.76	5.16	0.4	–	●	●	●	
	080408XQ				0.8		●	●	●	
연강 황삭	WNMG 080408XS	12.70	4.76	5.16	0.8	–	●	●	●	
중삭~황삭	WNMG 080408HU	12.70	4.76	5.16	0.8	–			●	

형상 Shape 승수있는 팁은 우승수(R)를 나타냅니다 Right-hand shown	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
주철 황삭	WNMG 080404C	12.70	4.76	5.16	0.4	NEW –	●			
	080408C				0.8		●			
	080412C				1.2		●			
주철 황삭	WNMG 080408ZS	12.70	4.76	5.16	0.8	NEW –	●			
	080412ZS				1.2		●			
주철 황삭	WNMG 080408GC	12.70	4.76	5.16	0.8	NEW –	●			
	080412GC				1.2		●			
브레이커 없음	WNMA 080408	12.70	4.76	5.16	0.8	NEW –	●			
	080412				1.2		●			

● : 표준 재고 ● : Standard Stock

표준 재고규격 Stock Items

형상 Shape (승수있는 팁은 좌승수(L)를 나타냅니다 Left-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
정삭~중삭	CCMT 060202GK	6.35	2.38	2.8	0.2	7°		●	●	●
	CCMT 060204GK				0.4			●	●	●
	CCMT 09T302GK	9.525	3.97	4.4	0.2	7°		●	●	●
	CCMT 09T304GK				0.4			●	●	●
	CCMT 120404GK	12.70	4.76	5.5	0.4	7°		●	●	●
	CCMT 120408GK				0.8			●	●	●
	CCMT 120412GK				1.2			●	●	●
정삭~중삭	CCMT 060202HQ	6.35	2.38	2.8	0.2	7°		●	●	●
	CCMT 060204HQ				0.4			●	●	●
	CCMT 09T302HQ	9.525	3.97	4.4	0.2	7°		●	●	●
	CCMT 09T304HQ				0.4			●	●	●
	CCMT 09T308HQ				0.8			●	●	●
중삭	CCMT 09T308	9.525	3.97	4.4	0.8	7° NEW	●	●	●	
정삭	CPMT 080204GP	7.94	2.38	3.3	0.4	11°		●	●	
	CPMT 090304GP	9.525	3.18	4.5	0.4	11°		●	●	
	CPMT 090308GP				0.8			●	●	
정삭~중삭	CPMH 080204HQ	7.94	2.38	3.5	0.4	11°		●	●	●
	CPMH 080208HQ				0.8			●	●	●
	CPMH 090304HQ	9.525	3.18	4.5	0.4	11°		●	●	●
	CPMH 090308HQ				0.8			●	●	●
중삭	CPMH 080204	7.94	2.38	3.5	0.4	11° NEW	●	●	●	
	CPMH 080208				0.8		●	●	●	
	CPMH 090304	9.525	3.18	4.5	0.4	11° NEW	●	●	●	
	CPMH 090308				0.8		●	●	●	
연강 정삭	CPMT 080204XP	7.94	2.38	3.3	0.4	11°		●	●	
	CPMT 090304XP	9.525	3.18	4.5	0.4	11°		●	●	
	CPMT 090308XP				0.8			●	●	
연강 정삭~중삭	CPMT 090304XQ	9.525	3.18	4.5	0.4	11°		●	●	
	CPMT 090308XQ				0.8			●	●	
정삭	DCMT 070202GP	6.35	2.38	2.8	0.2	7°		●	●	
	DCMT 070204GP				0.4			●	●	
	DCMT 11T304GP	9.525	3.97	4.4	0.4	7°		●	●	
	DCMT 11T308GP				0.8			●	●	
정삭~중삭	DCMT 070202GK	6.35	2.38	2.8	0.2	7°		●	●	●
	DCMT 070204GK				0.4			●	●	●
	DCMT 070208GK				0.8			●	●	●
	DCMT 11T302GK	9.525	3.97	4.4	0.2	7°		●	●	●
	DCMT 11T304GK				0.4			●	●	●
	DCMT 11T308GK				0.8			●	●	●
정삭~중삭	DCMT 070202HQ	6.35	2.38	2.8	0.2	7°		●	●	●
	DCMT 070204HQ				0.4			●	●	●
	DCMT 070208HQ				0.8			●	●	●
	DCMT 11T302HQ	9.525	3.97	4.4	0.2	7°		●	●	●
	DCMT 11T304HQ				0.4			●	●	●
	DCMT 11T308HQ				0.8			●	●	●

형상 Shape (승수있는 팁은 좌승수(L)를 나타냅니다 Left-hand shown)	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
 중삭	DCMT 11T308	9.525	3.97	4.4	0.8	7° NEW	●			
연강 정삭	DCMT 070204XP	6.35	2.38	2.8	0.4	7°		●	●	
	DCMT 11T302XP	9.525	3.97	4.4	0.2	7°		●	●	
	DCMT 11T304XP				0.4			●	●	
	DCMT 11T308XP				0.8			●	●	
연강 정삭~중삭	DCMT 11T304XQ	9.525	3.97	4.4	0.4	7°		●	●	
	DCMT 11T308XQ				0.8			●	●	
중삭	RCMX 1003M0	10.0	3.18	3.6	–	7° NEW	●	●	●	
	RCMX 1204M0	12.0	4.76	4.2	–	7° NEW	●	●	●	
정삭~중삭	SCMT 09T304HQ	9.525	3.97	4.4	0.4	7°		●	●	●
	SCMT 09T308HQ				0.8			●	●	●
중삭	SPMR 090304	9.525	3.18	–	0.4	11°		●	●	
	SPMR 090308				0.8			●	●	
	SPMR 120304	12.70	3.18	–	0.4	11°		●	●	
	SPMR 120308				0.8			●	●	
브레이커 없음	SPMN 120304	12.7	3.18	–	0.4	11° NEW	●			
	SPMN 120308				0.8		●			
정삭	TBMT 060102DP	3.97	1.59	2.3	0.2	5°		●	●	
	TBMT 060104DP				0.4			●	●	
정삭~중삭	TCMT 110204HQ	6.35	2.38	2.8	0.4	7°		●	●	●
	TCMT 110208HQ				0.8			●	●	●
정삭	TPMT 090204GP	5.56	2.38	2.8	0.4	11°		●	●	
	TPMT 110304GP	6.35	3.18	3.3	0.4	11°		●	●	
	TPMT 110308GP				0.8			●	●	
	TPMT 160304GP	9.525	3.18	4.4	0.4	11°		●	●	
정삭~중삭	TPMT 090202HQ	5.56	2.38	2.8	0.2	11°		●	●	
	TPMT 090204HQ				0.4			●	●	●
	TPMT 110302HQ	6.35	3.18	3.3	0.2	11°		●	●	
	TPMT 110304HQ				0.4			●	●	●
	TPMT 110308HQ				0.8			●	●	●
	TPMT 160304HQ	9.525	3.18	4.4	0.4	11°		●	●	●
	TPMT 160308HQ				0.8			●	●	●

● : 표준 재고 ● : Standard Stock

■ 표준 재고규격 Stock Items

형상 Shape 승수있는 팁은 좌승수(L)를 나타냅니다 Left-hand shown	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
연강 정삭	TPMT 090204XP	5.56	2.38	2.8	0.4	11°		●	●	
	TPMT 110304XP 110308XP	6.35	3.18	3.3	0.4 0.8	11°		● ●	● ●	
	TPMT 160304XP 160308XP	9.525	3.18	4.4	0.4 0.8	11°		● ●	● ●	
연강 정삭~중삭	TPMT 110304XQ 110308XQ	6.35	3.18	3.3	0.4 0.8	11°		● ●	● ●	
	TPMT 160304XQ 160308XQ	9.525	3.18	4.4	0.4 0.8	11°		● ●	● ●	
정삭	TPMR 160304GP	9.525	3.18	–	0.4	11°		●	●	
정삭~중삭	TPMR 110304HQ 110308HQ	6.35	3.18	–	0.4 0.8	11°		● ●	● ●	● ●
	TPMR 160304HQ 160308HQ	9.525	3.18	–	0.4 0.8	11°		● ●	● ●	● ●
중삭	TPMR 090204G	5.56	2.38	–	0.4	11°		●	●	
중삭	TPMR 110304 110308	6.35	3.18	–	0.4 0.8	11°	NEW ● ●	● ●	● ●	
	TPMR 160304 160308	9.525	3.18	–	0.4 0.8	11°	NEW ● ●	● ●	● ●	
브레이커 없음	TPMN 110304 110308	6.35	3.18	–	0.4 0.8	11°	NEW ● ●			
	TPMN 160304 160308	9.525	3.18	–	0.4 0.8	11°	NEW ● ●			
정삭	VBMT 110304GP	6.35	3.18	2.8	0.4	5°		●	●	
	VBMT 160404GP 160408GP	9.525	4.76	4.4	0.4 0.8	5°		● ●	● ●	

형상 Shape 승수있는 팁은 좌승수(L)를 나타냅니다 Left-hand shown	규격 Description	치수 (mm) Dimension 내접원경 I.C.	두께 Thickness	홀경 Hole	코너 R Corner-R	여유각 Relief Angle	재고 재종 Stock Grades CVD코팅 CVD Coated CA 5505	CA 5515	CA 5525	CA 5535
NEW 정삭	VBMT 110302VF 110304VF 110308VF	6.35	3.18	2.8	0.2 0.4 0.8	5°	● ● ●	● ● ●	● ● ●	 ● ●
	VBMT 160402VF 160404VF 160408VF 160412VF	9.525	4.76	4.4	0.2 0.4 0.8 1.2	5°	● ● ● ●	● ● ● ●	● ● ● ●	 ● ● ●
정삭~중삭	VBMT 110304HQ 110308HQ	6.35	3.18	2.8	0.4 0.8	5°		● ●	● ●	● ●
	VBMT 160404HQ 160408HQ 160412HQ	9.525	4.76	4.4	0.4 0.8 1.2	5°		● ● ●	● ● ●	● ● ●
NEW 정삭	VCMT 080202VF 080204VF	4.76	2.38	2.3	0.2 0.4	7°	● ●	● ●	● ●	 ●
정삭~중삭	VCMT 080202HQ 080204HQ	4.76	2.38	2.3	0.2 0.4	7°		● ●	● ●	 ●
정삭	WBMT 060102R/L-DP 060104R/L-DP	3.97	1.59	2.3	0.2 0.4	5°		L L	L L	
	WBMT 080202R/L-DP 080204R/L-DP	4.76	2.38	2.3	0.2 0.4	5°		● ●	● ●	
정삭	WPMT 110204GP	6.35	2.38	2.8	0.4	11°		●	●	
	WPMT 160304GP	9.525	3.18	4.4	0.4	11°		●	●	
정삭~중삭	WPMT 110202HQ 110204HQ	6.35	2.38	2.8	0.2 0.4	11°		● ●	● ●	 ●
	WPMT 160304HQ 160308HQ	9.525	3.18	4.4	0.4 0.8	11°		● ●	● ●	● ●

● : 표준 재고 ● : Standard Stock L : 좌승수(L)만 재고 L : L-hand Only