THE NEW VALUE FRONTIER

KYOCERA

강가공용 CVD코팅

CA5시리즈

CVD Coated Carbide Grade for Steel

긴수명·안정가공을 실현
NEW 코팅 CA5시리즈 완성

New Coated Carbide Grade CA5 series for longer tool life and stable machining

CA5 series
생산성 혁신 코팅

고속 · 긴수명
High speed and longer tool life
NEW
CA510

연속 ~ 경단속
Continuous to light interrupted machining
CA515

범용
General use
CA525

강단속 · 고이송
Heavy interrupted and high feed rate machining
NEW
CA530

NEW
중~황삭용 For Medium-Roughing
PG 브레이커
PG chipbreaker

NEW
포지티브 타입 Positive type
PP 브레이커
PP chipbreaker

ADVANCING PRODUCTIVITY
생산성 향상에 기여하는 교세라

CA5 시리즈

생산성 혁신 코팅

CA5 시리즈와 강가공용 스마트 브레이커 P 시리즈로 강가공의 생산성을 혁신!!

Productivity innovation in steel machining by CA5 series and P series chipbreaker

1 높은 피막 밀착성 ~울트라 파인 인터페이스(경계면)~

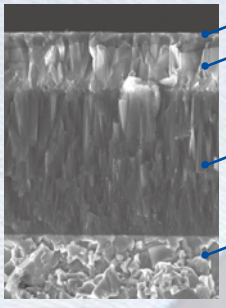
High adhesion strength of coating layer
Ultra fine interface

- 피막 경계면 강화에 의해 긴수명·안정가공을 실현
  Long tool life and stable machining by improved adhesion strength
- 경계면 강도 기존대비 40% UP
  40% improved adhesion strength

2 고경도·고인성 α-Al_2O_3 피막

High hardness and toughness α-Al_2O_3-layer

- 특수 결정 제어 기술
  Special crystal control technology
- 높은 종횡비의 α-Al_2O_3피막을 채용해, 긴수명화를 달성
  Long tool life by High-aspect ratio of α-Al_2O_3-layer



폭 넓은 가공영역에 대응!
Wide application range

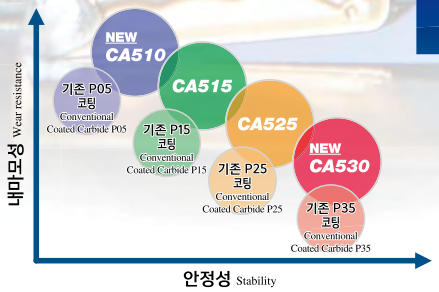
CA5 시리즈 완성 !!

CA5 series completed

3 저저항을 실현하는 평활 표면

Smooth and flat surface provides low cutting force

- 강가공시의 저저항·안정가공을 실현
  Sharp cutting and stable machining
- 높은 표면 평활성으로 용착·돌발적인 결손을 억제
  Smooth and flat surface prevents sudden breakage due to material welding on the cutting edge



4 신개발 전용 초경모재

New carbide substrate

- 내고온 변형성에 우수한 전용 초경 모재를 채용
  Special carbide substrate with deformation resistance at high temperature
  고온 경도 기존대비 10% UP
  10% improved hardness at high temperature
- 고능률 가공에 대응
  Suitable for high efficiency machining

전용 초경 모재
Special carbide substrate

5 스마트 브레이커 P 시리즈 PP/PQ/PG 브레이커

Smart chipbreaker PP / PQ / PG

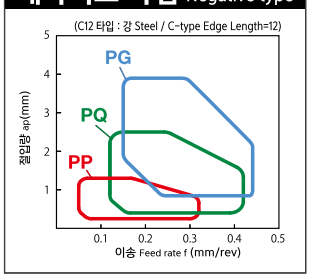
NEW

중~황삭용 For Medium-Roughing
PG 브레이커
PG chipbreaker

넓은 칩처리 영역 Wide chip control range

- 인선의 절삭성과 강도의 밸런스를 확보하여 안정가공을 실현
  Stable machining with good balance of edge sharpness and strength
- 고이송 가송시의 칩 엉킴을 개선 , 저이송 영역에서도 칩처리가 우수하여 폭 넓은 영역을 확보
  Prevent chip compacting at high feed rate. Good chip control at low feed rate.

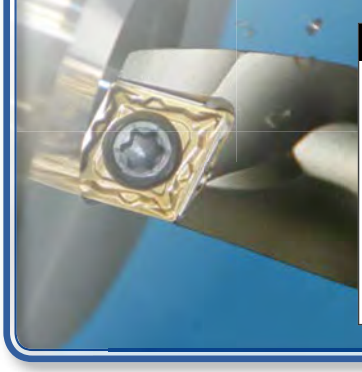
네가티브 타입 Negative type



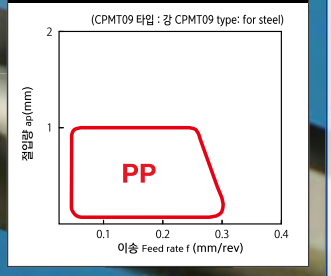
NEW

포지티브 타입 Positive type
PP 브레이커
PP chipbreaker

높은 신뢰성으로 정삭 가공의 생산성 향상
Productivity improvement at finishing with high reliability



포지티브 타입 Positive type



고속 · 긴수명 CA510

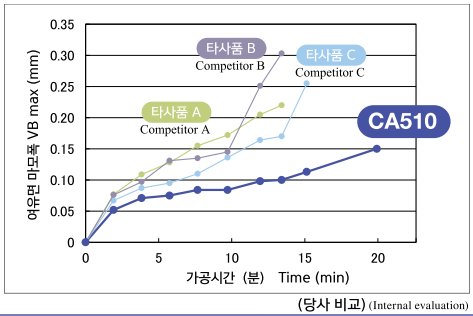
●내고온 변형성이 높은 특수 모재에 내마모성이 우수한 후막 강인 코팅

Special substrate with thermal deformation resistance along with a thick and tough coating film providing high wear resistance

용도 : 강가공의 고속 · 고능률 가공

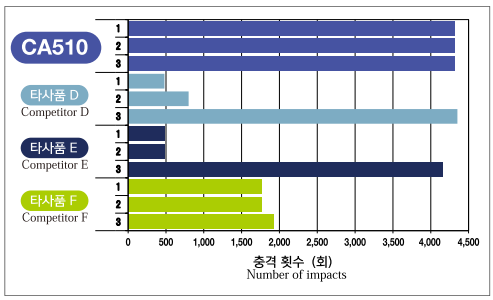
Application: High speed and high efficiency steel machining

■ 내마모성 비교 SCM435 Vc=350m/min, ap=2.0mm, f=0.3mm/rev, wet
Wear resistance comparison



(당사 비교) (Internal evaluation)

■ 내결손성 비교 SCM440(4 개 홈 with 4 slots) Vc=300m/min, ap=1.5mm, f=0.25mm/rev, wet
Fracture resistance comparison



(당사 비교) (Internal evaluation)

제1추천 범용 CA525

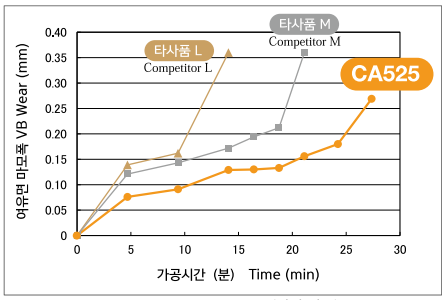
●내마모성과 내결손성에 우수한 특수 모재에 내마모성이 우수한 강인 코팅

Special substrate and tough coating film provides high wear and fracture resistance

용도 : 강가공의 범용 가공【제1추천】

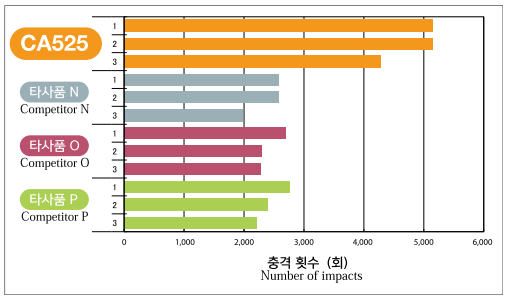
Application: 1st recommendation for steel machining

■ 내마모성 비교 SCM435 Vc=300m/min, ap=2.0mm, f=0.3mm/rev, wet
Wear resistance comparison



(당사 비교) (Internal evaluation)

■ 내결손성 비교 SCM440(4 개 홈 with 4 slots) Vc=300m/min, ap=1.5mm, f=0.3mm/rev, wet
Fracture resistance comparison



(당사 비교) (Internal evaluation)

연속 ~ 경단속 CA515

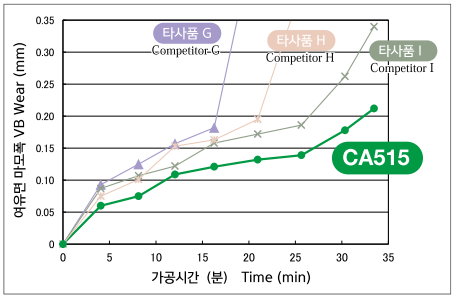
●내고온 변형성이 높은 특수 모재에 내마모성이 우수한 강인 코팅

Special substrate and tough coating film providing thermal deformation and high wear resistance

용도 : 강가공의 연속 ~ 경단속 (범용) 가공

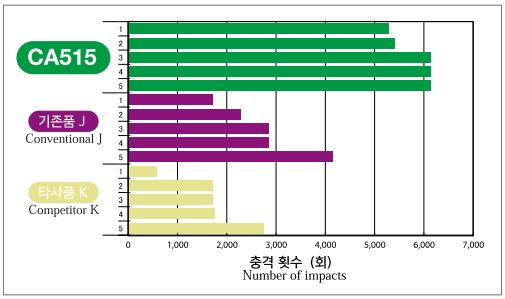
Application: For continuous to light interrupted steel machining (general use)

■ 내마모성 비교 SCM435 Vc=300m/min, ap=2.0mm, f=0.3mm/rev, wet
Wear resistance comparison



(당사 비교) (Internal evaluation)

■ 내결손성 비교 SCM440(4 개 홈 with 4 slots) Vc=300m/min, ap=1.5mm, f=0.27mm/rev, wet
Fracture resistance comparison



(당사 비교) (Internal evaluation)

강단속 · 고이송 CA530

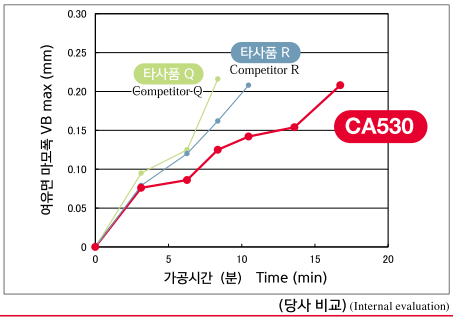
●안전성이 높은 특수 고인성 모재에 내마모성이 우수한 강인 코팅

Special tough substrate and tough coating film providing high stability and wear resistance

용도 : 강가공의 범용 ~ 강단속 가공 (안정성 중시)

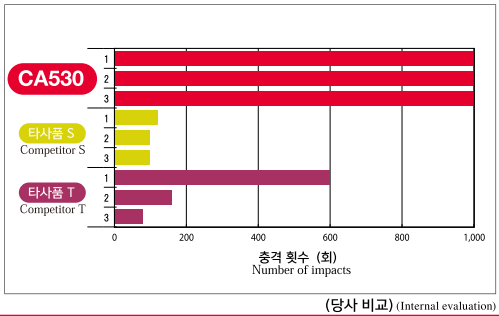
Application: General to heavy interrupted machining (stability oriented)

■ 내마모성 비교 SCM435 Vc=300m/min, ap=1.5mm, f=0.3mm/rev, wet
Wear resistance comparison



(당사 비교) (Internal evaluation)

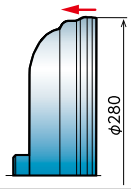
■ 내결손성 비교 SCM440(4 개 홈 with 4 slots) Vc=100m/min, ap=1.5mm, f=0.25mm/rev, wet
Fracture resistance comparison



(당사 비교) (Internal evaluation)

압연 강판 (Hot rolled steel)

·자동차 부품 Automotive parts
·Vc=500m/min
·ap=0.7mm
·f=0.3mm/rev
·습식 Wet
·CNMG120408PG



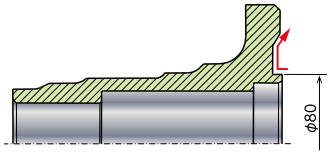
CA510	100개/코너 100 pcs/edge
타사 CVD코팅 U Competitor U (CVD Coated Carbide)	75개/코너 75pcs/edge

·CA510는 타사 CVD코팅 U에 비해 가공수가 1.3배로 향상됨.
CA510 shows 1.3 times longer tool life compare to Competitor U's CVD.

(고객 평가) Evaluation by the user

S35C 상당 (Carbon steel)

·자동차 부품 Automotive parts
·Vc=300m/min
·ap=1.0mm
·f=0.3mm/rev
·습식 Wet
·DNMG150408PQ



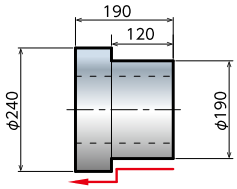
CA510	200개/코너 200 pcs/edge
타사 CVD코팅 V Competitor V (CVD Coated Carbide)	150개/코너 150 pcs/edge

·CA510은 타사 CVD코팅 V에 비해 가공수가 약 1.3배로 향상됨.
CA510 shows 1.3 times longer tool life compare to Competitor V's CVD.

(고객 평가) Evaluation by the user

SCM440 (Alloy steel)

·커버 Cover
·Vc=140~150m/min
·ap=3.0~3.5mm
·f=0.35~0.4mm/rev
·습식 Wet
·CNMG120408PT



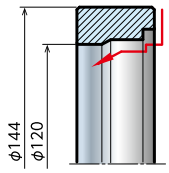
CA515	10/코너 10pcs/edge
타사 CVD코팅 W Competitor W (CVD Coated Carbide)	7개/코너 7pcs/edge

·CA515는 타사 CVD코팅 W에 비해 가공수가 1.4배 이상 향상됨.
CA515 shows 1.4 times longer tool life compare to Competitor W's CVD.

(고객 평가) Evaluation by the user

SCr415H (Alloy steel)

·기어 Gear
·Vc=380m/min
·ap=1.5~2.0mm
·f=0.3~0.4mm/rev
·습식 Wet
·WNMG080408PQ



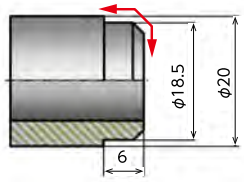
CA515	430/코너 430pcs/edge
타사 CVD코팅 X Competitor X (CVD Coated Carbide)	380개/코너 380pcs/edge

·CA515는 타사 CVD코팅 X에 비해 가공수가 향상됨.
CA515 shows longer tool life compare to Competitor X's CVD.

(고객 평가) Evaluation by the user

SS400 (Rolled steel)

·기계 부품 Machine part
·Vc=170m/min
·ap=0.8mm
·f=0.2mm/rev
·습식 Wet
·CNMG120408PQ



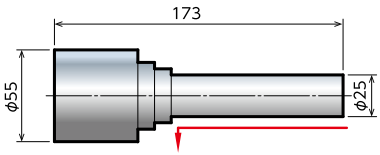
CA525	1,400개 이상/코너 1,400 pcs/edge and more
타사 CVD코팅 Y Competitor Y (CVD Coated Carbide) (3차원 브레이커) Molded chipbreaker	800~1,000개/코너 800-1,000pcs/edge

·CA525는 타사 CVD코팅 Y에 비해 공구수명이 안정되고 가공수가 1.4배 이상 향상됨.
CA525 shows 1.4 times longer tool life compare to Competitor Y's CVD.
·칩처리도 우수. Smooth chip control.

(고객 평가) Evaluation by the user

SCM420 (Alloy steel)

·샤프트 Shaft
·Vc=120m/min
·ap=2.0mm
·f=0.25mm/rev
·건식 Dry
·TNMG160408R-ST



CA525	10개/코너 10pcs/edge
타사 CVD코팅 Z Competitor Z (CVD Coated Carbide)	2개/코너 2pcs/edge

·CA525는 타사 CVD코팅 Z에 비해 가공수가 5배로 향상됨.
CA525 shows 5 times longer tool life compare to Competitor Z's CVD.

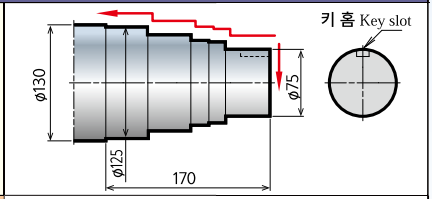
(고객 평가) Evaluation by the user

CA5시리즈의 능력!!

of Various case Studies !!

S45C (Carbon steel)

·샤프트 Shaft
·Vc=250m/min
·ap=3.0mm
·f=0.3mm/rev
·습식 Wet
·CNMG120408PS



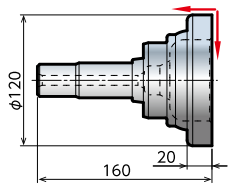
CA525	10개/코너 10pcs/edge	
타사 CVD코팅 a Competitor a (CVD Coated Carbide) 타사 PVD코팅 b Competitor b (PVD Coated Carbide)	a 6개/코너 6pcs/edge	b × 1개도 가공하지 못하고 결손 Instant breakage

·CA525는 타사 CVD코팅 a에 비해 가공수가 1.6배 이상 향상됨.
CA525 shows 1.6 times longer tool life compare to Competitor a's CVD.
·타사 PVD코팅 b는 1개도 가공하지 못하고 결손.
Competitor b's PVD carbide could not complete 1 piece before brakage.

(고객 평가) Evaluation by the user

SCM420 (Alloy steel)

·플런지 축 Flange shaft
·Vc=260~280m/min
·ap=0.6mm
·f=0.3~0.5mm/rev
·습식 Wet
·CNMG120408PQ



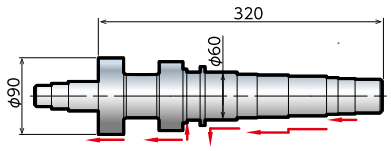
CA525	180개/코너 180 pcs/edge
타사 CVD코팅 c Competitor c (CVD Coated Carbide)	150개/코너 150pcs/edge

·CA525는 타사 CVD코팅 c에 비해 가공수가 1.2배로 향상됨.
CA525 shows 1.2 times longer tool life compare to Competitor c's CVD.

(고객 평가) Evaluation by the user

S45C (Carbon steel)

·샤프트 Shaft
·Vc=100m/min
·ap=2.0~4.0mm
·f=0.4mm/rev
·습식 Wet
·WNMG080408PS



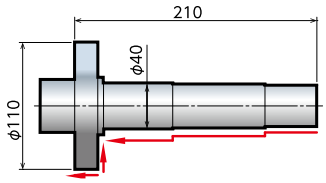
CA525	70개/코너 70 pcs/edge
기존 CVD코팅 d Conventional d (CVD Coated Carbide)	40개/코너 40pcs/edge

·CA525는 기존 CVD코팅 d에 비해 가공수가 1.7배 이상 향상됨.
CA525 shows 1.7 times longer tool life compare to Conventional d's CVD.

(고객 평가) Evaluation by the user

SCr420 (Alloy steel)

·샤프트 Shaft
·Vc=90m/min
·ap=2.0~3.0mm
·f=0.32mm/rev
·습식 Wet
·WNMG080408PS



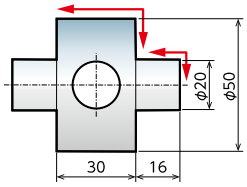
CA525	260개/코너 260 pcs/edge
기존 CVD코팅 e Conventional e (CVD Coated Carbide)	190개/코너 190pcs/edge

·CA525는 기존 CVD코팅 e에 비해 가공수가 1.3배 이상 향상됨.
CA525 shows 1.3 times longer tool life compare to Conventional e's CVD.

(고객 평가) Evaluation by the user

SCr420H (Alloy steel)

·기어 Gear
·Vc=180m/min
·ap=2.0mm
·f=0.2mm/rev
·습식 Wet
·DNMG150404CQ



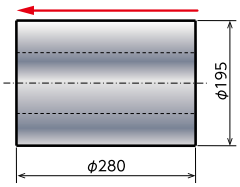
CA530	10개/코너 10 pcs/edge
타사 CVD코팅 f Competitor f (CVD Coated Carbide)	3~8개/코너 3-8 pcs/edge

·CA530는 타사 CVD코팅 f에 비해 가공수가 평균 1.25배 향상됨.
CA530 shows avelage1.25 times longer tool life compare to Competitor f's CVD.

(고객 평가) Evaluation by the user

13Cr (Stainless steel)

·기계 부품 Machine parts
·Vc=100m/min
·ap=2.0mm
·f=0.4mm/rev
·습식 Wet
·SNMG120412PH



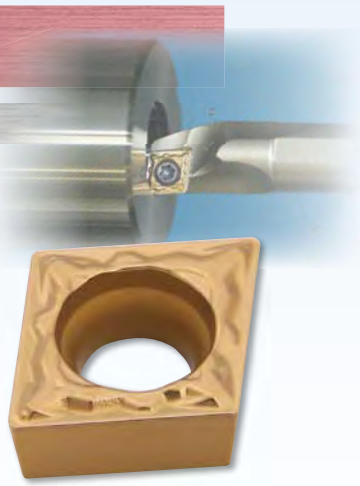
CA530	9개/코너 9 pcs/edge
타사 CVD코팅 g Competitor g (CVD Coated Carbide)	5개/코너 5pcs/edge

·CA530는 타사 CVD코팅 g에 비해 가공수가 약 1.8배로 향상됨.
CA530 shows 1.8 times longer tool life compare to Competitor g's CVD.
·가공 능률도 11% 향상
Improved machining efficiency by 1.1 times.

(고객 평가) Evaluation by the user

NEW 정삭용 For Finishing 높은 신뢰성으로 강의 정삭가공에서 생산성을 향상 Productivity improvement at steel finishing with high reliability

PP 브레이커 PP chipbreaker



칩 엉킴에 의한 생산성 저하 등, 내경 가공의 문제를 해결하고 안정가공을 실현

Stable machining by resolving problems at boring, such as productivity decrease caused by chip entanglement

특징 Features

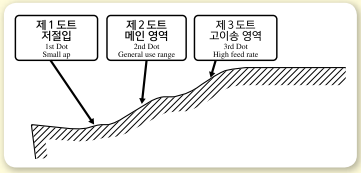
- 강의 정삭가공에 있어서 안정된 칩 컨트롤
  Stable chip control at steel finishing
- 절삭성을 저하시키지 않고 강도를 개선한 인선 설계로 고이송 가공에 의해 고능률화와 안정된 공구수명을 실현
  High efficiency and stable tool life at high feed machining due to special edge design with sharpness and improved strength

높은 안정 절삭날 형상
High-stability cutting edge design

⇒인선의 응력 · 온도저하를 생각한 형상
높은 인선강도에 의해 안정된 성능을 발휘
Suitable shape for controlling the edge stress and heat generation
Stable performance with superior edge strength

복합 도트 브레이커
Composite-dot chipbreaker

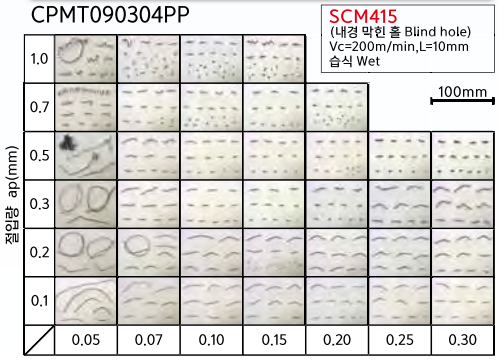
⇒다른 기능을 가진 복수의 도트를 배치
⇒절삭조건 · 피삭재의 변화에 따라 다양하게 변화하는 칩의 컬 형태와 방향을 제어
이송 , 피삭재를 가리지 않고 안정된 칩처리 성능을 발휘
Multi-dot design with different functions
Controls chip's curling condition and flow direction that varies depending on the cutting conditions and work materials
Stable chip control regardless of feed rate and work materials

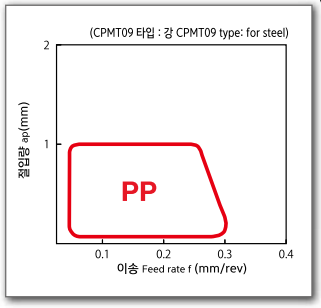


PP

CPMT090304PP

SCM415
(내경 막힌 홀 Blind hole)
Vc=200m/min,L=10mm
습식 Wet

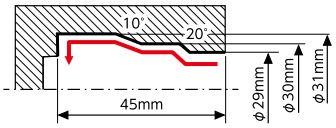




칩 배출 성능 비교 Chip Evacuation Comparison

PP브레이커는 칩을 세단하여 칩 엉킴을 억제 PP chipbreaker breaks chips short and controls chip entanglement

SCM415 Vc=200m/min,
ap=0.3mm, f=0.15mm/rev
DCMT11T304 タイプ Type
A20R-SDUCR11-27AE
습식 Wet (내부급유 Internal coolant)



PP 브레이커 PP chipbreaker

칩이 세단되어 워크 홀에 남지 않음
No chip remains after machining

타사 3차원 브레이커 h Competitor h

워크 홀에 칩이 남음
Chips remain behind in the hole after machining

(당사 비교 Internal evaluation)

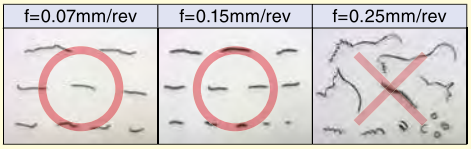
칩처리 성능 Chip Control Performance

폭 넓은 이송에 대응 PP chipbreaker covers wide range of feed rate

PP 브레이커 PP chipbreaker

이송을 올려도 칩이 안정
PP chipbreaker controls chips stable at high feed rate

타사 3차원 브레이커 i Competitor i



이송을 올리면 칩이 불안정
Competitor i cannot control chips stable when increasing feed rate

SCM415 (내경 막힌 홀 Blind hole) ,
습식 Wet (내부급유 Internal coolant)
Vc=200m/min, ap=0.3mm,
f=0.07-0.25mm/rev
CCMT09T304 타입 Type

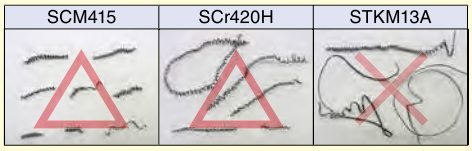
○ :Good △ :OK × :Bad

폭 넓은 피삭재에 대응 PP chipbreaker covers wide range of work material

PP 브레이커 PP chipbreaker

일반강부터 연강까지 안정된 칩처리 성능
PP chipbreaker controls chips stable from general steel to soft steel

타사 3차원 브레이커 j Competitor j



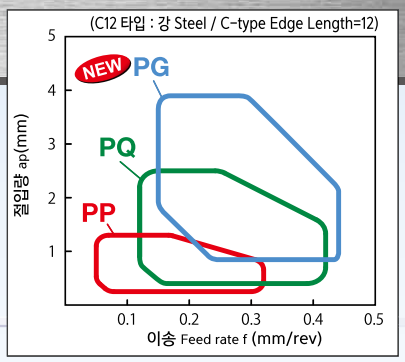
연강 가공시에 불안정한 칩이 발생
Competitor j generates unstable chips at soft steel machining

각종 피삭재 Various work materials,
습식 Wet (내부급유 Internal coolant)
Vc=200m/min, ap=0.3mm,
f=0.20mm/rev
CCMT09T304 타입 Type

○ :Good △ :OK × :Bad

강 가 공 용 스마트 브레이커 P 퍼펙트 시리즈

P Series Chipbreaker for steel machining



PP/PQ/PG 트리오가 강가공에 위력을 발휘

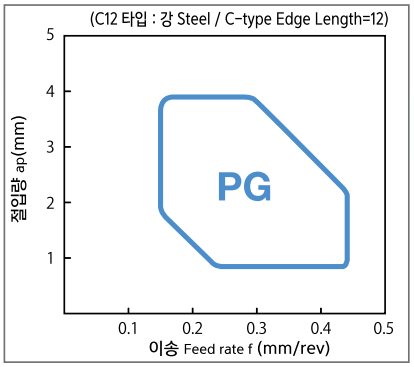
PP / PQ / PG chipbreaker improves steel machining

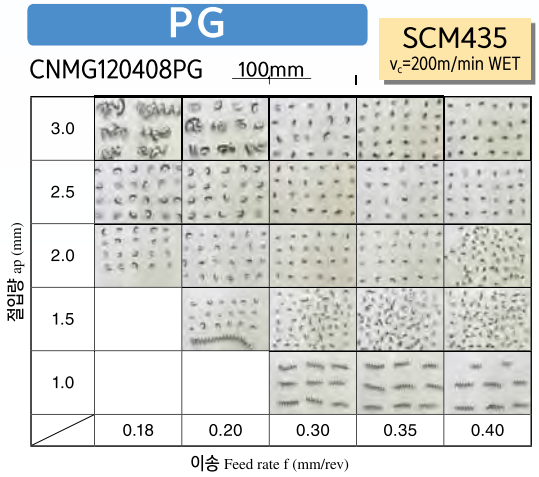
NEW 중삭 ~ 황삭용 For Medium - Roughing 넓은 칩처리 영역으로 안정가공을 실현 Stable machining with wide chip control range

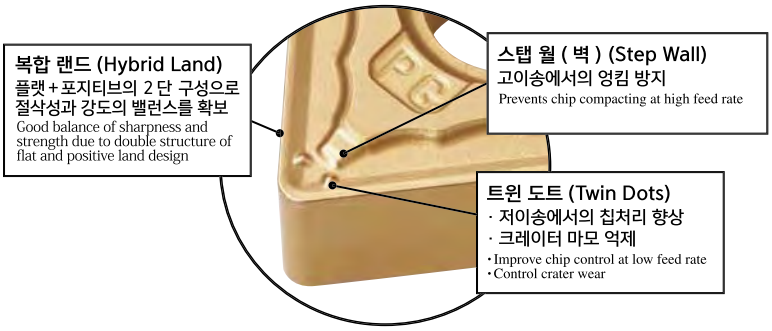
PG 브레이커 PG chipbreaker

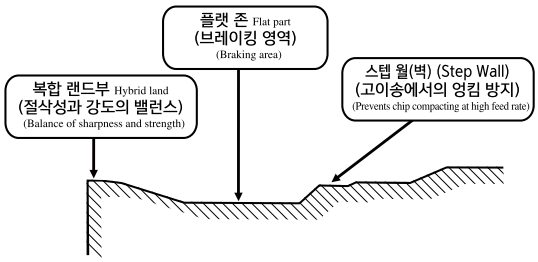
특징 Features

- 인선의 절삭성과 강도의 밸런스를 확보하여 안정가공을 실현
  Stable machining with good balance of edge sharpness and strength
- 고이송 가공시의 칩 엉킴을 개선
  저이송 영역에서도 칩처리가 우수하여 넓은 영역을 확보
  Prevent chip compacting at high feed rate. Good chip control at low feed rate.





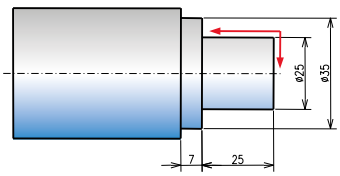




가공 실예 Case Studies

SCM435 (Alloy steel)

- ·조인트 Joint
- ·Vc=280m/min
- ·ap=3.0mm
- ·f=0.25mm/rev
- ·습식 Wet
- ·CNMG120408PG



CA525	400개 이상/코너 400 more than pcs/edge
타사 CVD코팅 k Competitor k (CVD Coated)	350개/코너 350 pcs/edge

·CA525는 타사 CVD코팅 k에 비해 가공수가 1.2배로 향상.
CA525 shows 1.2 times longer tool life compare to Competitor k's CVD.
·칩이 안정되어 버도억제. 가공면도 우수.
PG Chipbreaker stabilized the chip condition and prevented burr formation. Good surface finish.
(고객 평가) Evaluation by the user

내마모성 비교 Wear resistance comparison

<절삭조건> Cutting conditions
SCM435 Vc=300m/min ap=2.0 mm
f=0.3mm/rev Wet

가공시간 (분) Time(min)	14 분 min	20 분 min	26 분 min
CNMG120408PG (CA525)			
타사품 l Competitor l			결손으로인해 지속사용 불가 Stop cutting due to facture
타사품 m Competitor m			결손으로인해 지속사용 불가 Stop cutting due to facture

(당사 비교) (Internal evaluation)

정삭용 ~ 중삭용
For Finishing-Medium

고이송시의 칩 엉킴이나 저항의 증대를 억제 Prevents chip entanglement and reduces cutting force at high feed cutting

PQ 브레이커 PQ chipbreaker

특징 Features

- 신발상의 플랫존 (브레이킹 영역) 과 완만하게 솟은 2단계 스마트 월 (벽) 효과에 의해 정삭~중삭의 넓은 이송 영역에서도 안정된 칩처리를 실현

  Stable chip control in a wide range of applications of medium to finishing due to newly developed "Flat Zone" (Braking Area) and 2-step rising smooth Smart Wall effect

- 인선의 트윈 도트에 의해 외경 / 단면의 저절입 / 고이송 가공시의 칩을 컨트롤

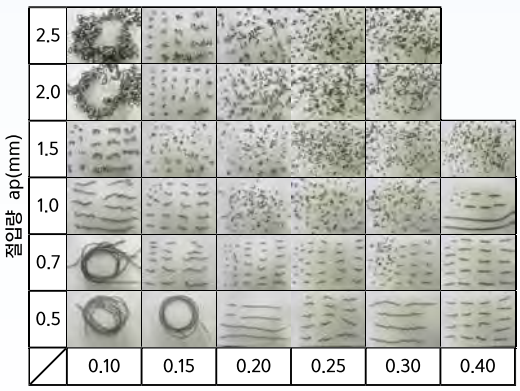
  Twin dots on the edge tip provide smooth chip control at low ap/high feed turning and facing

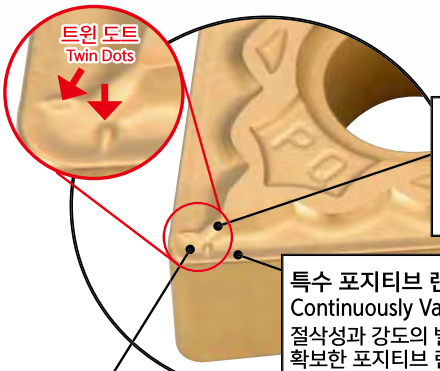
- 절삭성과 강도의 밸런스를 확보한 특수 포지티브 랜드 (CVL)

  Specially Designed Positive Land with the well-balanced edge sharpness and toughness (CVL)

PQ | SCM435 Vc=200m/min WET

CNMG120408PQ



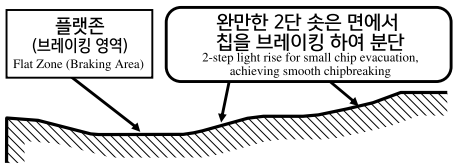


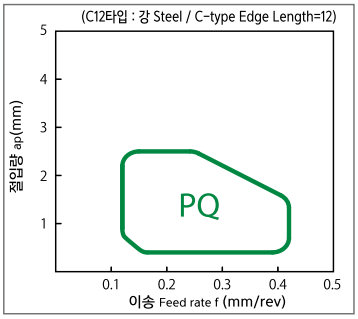
2 단계 스마트 월 (2 단 솟은 면)
넓은 영역에서의 칩처리와 고이송시의 도트 결손을 억제
2-step Smart Wall (2-step rising smooth surface)
Excellent chip control in a wide range of applications, preventing the dots from being damaged at high feed cuttings

특수 포지티브 랜드 (CVL)
Continuously Variable Land
절삭성과 강도의 밸런스를 확보한 포지티브 랜드
Specially Designed Positive Land
Positive land with the well-balanced combination of sharpness and toughness

플랫존 (브레이킹 영역)
Flat Zone (Braking Area)

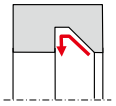
· 브레이킹 효과로 폭넓은 영역에 대응
Chipbraking efficiency for a wide range of applications





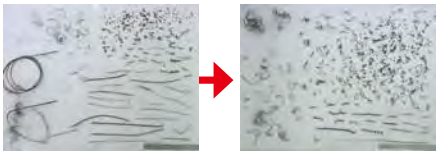
가공 실예 (칩처리 비교)
Case Studies (Chip Control Comparison)

자동차 부품 (S45C)
Automotive part



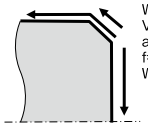
DNMG150408PQ
Vc=200m/min
ap=0.5-1.2mm
f=0.3mm/rev
Wet

타사품 n Competitor n | PQ 브레이커 PQ Chipbreaker



칩의 절입량에 의한 결손이 개선
Mimimized fracture caused by chip entanglement
(고객 평가) Evaluation by the user

자동차 부품 (S45C)
Automotive part

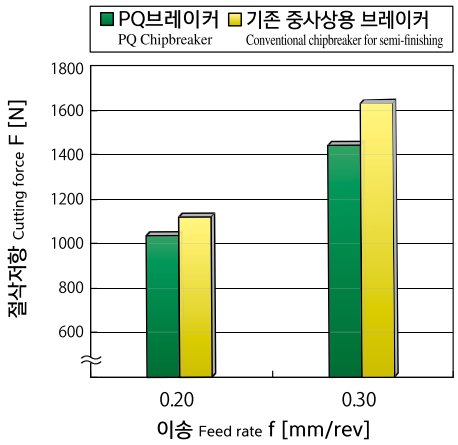


WNMG080408PQ
Vc=250m/min
ap=1.0mm
f=0.3mm/rev
Wet

타사품 o Competitor o | PQ 브레이커 PQ Chipbreaker

터렛에 엉켜 생산 능률 저하가 발생하였지만 , 칩이 세단되어 가동률 UP
With Competitor o, chips were entangled in the turret and the process was poused frecuently, but PQ Chipbreaker can chop chips into small pieces, improving the productivity
(고객 평가) Evaluation by the user

절삭 저항
Cutting Force



Vc=200m/min, ap=2.0mm, CNMG120408 타입 type

PQ브레이커는 이송을 높여도 저저항
PQ Chipbreaker provides low cutting force in high feed cuttings
(당사비교) (Internal evaluation)

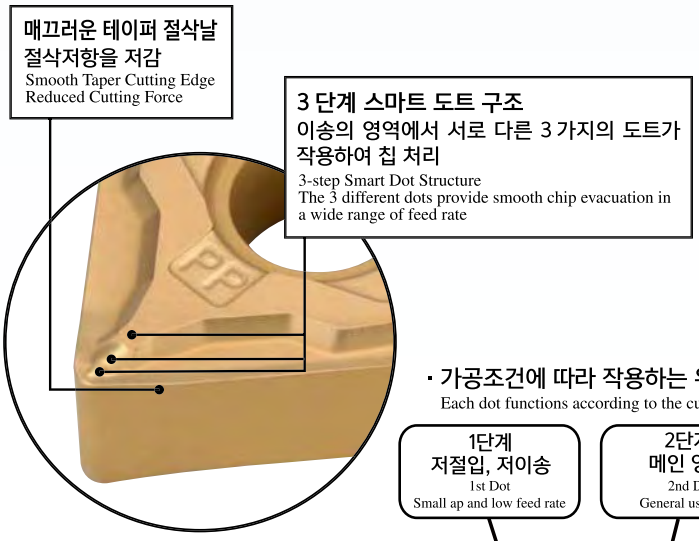
정삭용 For Finishing

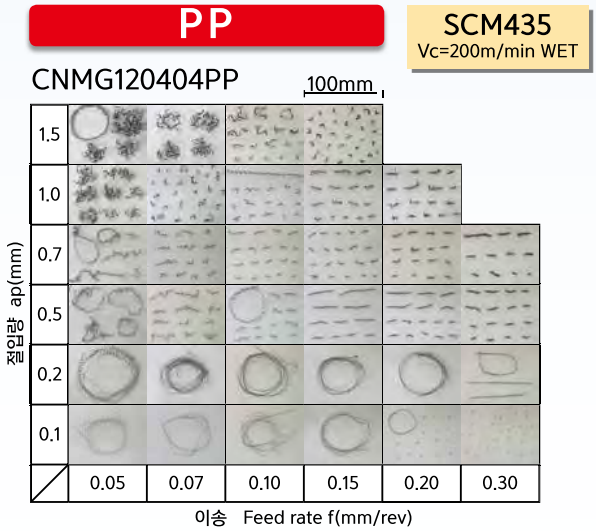
저절입 · 고이송 가공시의 칩 엉킴을 개선 Solution for chip entanglement in small ap or high feed machining

PP 브레이커 PP chipbreaker

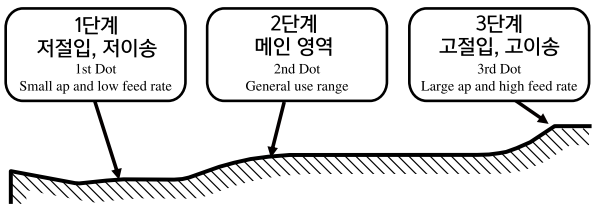
특징 Features

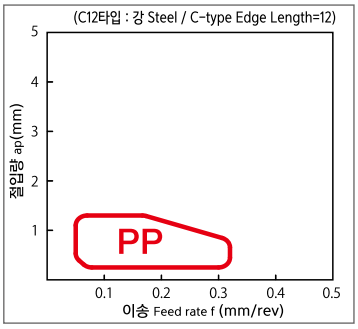
- 3단계 스마트 도트 구조로 강의 정삭가공에서 저이송~고이송까지 넓은 이송 영역에서의 대응이 가능
  3-step Smart Dot Structure applicable to a wide range of feed rate in steel finishing
- 매끄러운 테이퍼 절삭날에 의해 절삭저항을 저감
  Smooth Taper Cutting Edge reduces cutting force
- 코너 R(rε) 0.2~1.2를 레파토리
  Corner-R(rε)0.2mm-1.2mm are available





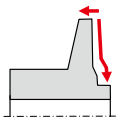
· 가공조건에 따라 작용하는 위치가 변화
Each dot functions according to the cutting conditions





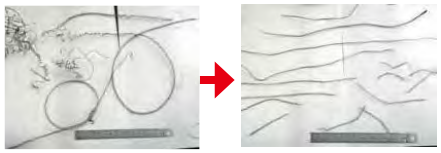
가공 실예 (칩처리 비교)
Case Studies (Chip Control Comparison)

자동차 부품 (SCM420)
Automotive part



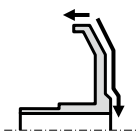
CNMG120408PP
Vc=350m/min
ap=0.3mm
f=0.3mm/rev
Wet

타사품 p Competitor p → PP 브레이커 PP Chipbreaker



워크의 칩 엉킴을 개선해 안정가공을 실현
Reduced defective rate and stable cutting due to less chip entanglement
(고객 평가) Evaluation by the user

자동차 부품 (SCr420H)
Automotive part

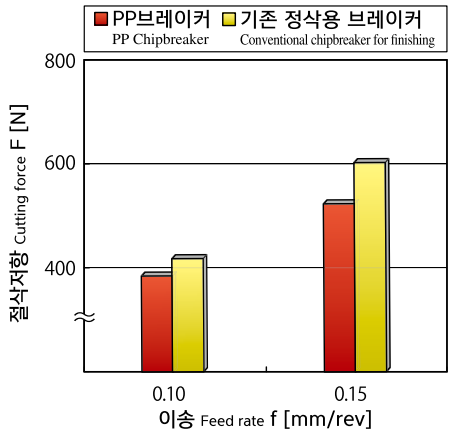


CNMG120408PP
Vc=200m/min
ap=0.2-0.3mm
f=0.2-0.3mm/rev
Wet

타사품 q Competitor q → PP 브레이커 PP Chipbreaker

워크의 칩 엉킴을 개선해 안정가공을 실현
Reduced defective rate and stable cutting due to less chip entanglement
(고객 평가) Evaluation by the user

절삭저항
Cutting Force

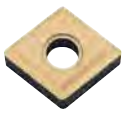


Vc=200m/min, ap=1mm, CNMG120404 타입 type

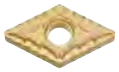
PP브레이커는 이송을 올려도 저저항
PP Chipbreaker provides low cutting force in high feed cuttings
(당사비교) (Internal evaluation)

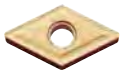
■ 표준 재고 규격(네가티브) Stock Items (Negative)

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
정삭 와이퍼 Finishing with Wiper Edge	CNMG 120404WP	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408WP				0.8	●	●	●	●
정삭~중삭 와이퍼 Finishing-Medium with Wiper Edge	CNMG 120404WQ	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408WQ				0.8	●	●	●	●
	CNMG 120412WQ				1.2	●	●	●	●
정삭 Finishing	CNMG 120402PP	12.70	4.76	5.16	0.2	●	●	●	●
	CNMG 120404PP				0.4	●	●	●	●
	CNMG 120408PP				0.8	●	●	●	●
	CNMG 120412PP				1.2	●	●	●	●
정삭 Finishing	CNMG 120402GP	12.70	4.76	5.16	0.2	●	●	●	●
	CNMG 120404GP				0.4	●	●	●	●
	CNMG 120408GP				0.8	●	●	●	●
정삭~중삭 Finishing-Medium	CNMG 120404PQ	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408PQ				0.8	●	●	●	●
	CNMG 120412PQ				1.2	●	●	●	●
정삭~중삭 Finishing-Medium	CNMG 090404HQ	9.525	4.76	3.81	0.4	●	●	●	●
	CNMG 090408HQ				0.8	●	●	●	●
	CNMG 120404HQ	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408HQ				0.8	●	●	●	●
	CNMG 120412HQ				1.2	●	●	●	●
정삭~중삭·끌기 Finishing-Medium · Up facing	CNMG 120404CQ	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408CQ				0.8	●	●	●	●
	CNMG 120412CQ				1.2	●	●	●	●
	CNMG 160608CQ	15.875	6.35	6.35	0.8	●	●	●	●
	CNMG 160612CQ				1.2	●	●	●	●
정삭~중삭·끌기 Finishing-Medium · Up facing	CNMG 120408CJ	12.70	4.76	5.16	0.8	●	●	●	●
	CNMG 120412CJ				1.2	●	●	●	●
	CNMG 160612CJ	15.875	6.35	6.35	1.2	●	●	●	●
	CNMG 160616CJ				1.6	●	●	●	●
중삭~황삭 Medium-Roughing	CNMG 090404GS	9.525	4.76	3.81	0.4	●	●	●	●
	CNMG 090408GS				0.8	●	●	●	●
	CNMG 120404GS	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408GS				0.8	●	●	●	●
	CNMG 120412GS				1.2	●	●	●	●
NEW 중삭~황삭 Medium-Roughing	CNMG 120404PG	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408PG				0.8	●	●	●	●
	CNMG 120412PG				1.2	●	●	●	●
	CNMG 120416PG				1.6	●	●	●	●

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
중삭~황삭 Medium-Roughing	CNMG 120404PS	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408PS				0.8	●	●	●	●
	CNMG 120412PS				1.2	●	●	●	●
	CNMG 120416PS				1.6	●	●	●	●
	CNMG 160612PS	15.875	6.35	6.35	1.2	●	●	●	●
	CNMG 160616PS				1.6	●	●	●	●
중삭~황삭·고이송 Medium-Roughing · High Feed	CNMG 120408PT	12.70	4.76	5.16	0.8	●	●	●	●
	CNMG 120412PT				1.2	●	●	●	●
	CNMG 160608PT	15.875	6.35	6.35	0.8	●	●	●	●
	CNMG 160612PT				1.2	●	●	●	●
	CNMG 160616PT				1.6	●	●	●	●
중삭~황삭·고이송 Medium-Roughing · High Feed	CNMG 120408GT	12.70	4.76	5.16	0.8	●	●	●	●
	CNMG 120412GT				1.2	●	●	●	●
 황삭 Roughing	CNMG 120404	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408				0.8	●	●	●	●
	CNMG 120412				1.2	●	●	●	●
	CNMG 160608	15.875	6.35	6.35	0.8			●	●
	CNMG 160612				1.2			●	●
	CNMG 190612	19.05	6.35	7.94	1.2	●	●	●	●
	CNMG 190616				1.6	●	●	●	●
황삭 Roughing	CNMG 120408PH	12.70	4.76	5.16	0.8	●	●	●	●
	CNMG 120412PH				1.2	●	●	●	●
	CNMG 120416PH				1.6	●	●	●	●
	CNMG 160608PH	15.875	6.35	6.35	0.8	●	●	●	●
	CNMG 160612PH				1.2	●	●	●	●
	CNMG 160616PH				1.6	●	●	●	●
	CNMG 190608PH	19.05	6.35	7.94	0.8	●	●	●	●
	CNMG 190612PH				1.2	●	●	●	●
	CNMG 190616PH				1.6	●	●	●	●
	CNMG 190624PH				2.4	●	●	●	●
편면/황삭·고이송 Single Sided Roughing · High Feed	CNMM 120408PX	12.70	4.76	5.16	0.8	●	●	●	●
	CNMM 120412PX				1.2	●	●	●	●
	CNMM 120416PX				1.6			●	●
	CNMM 160608PX	15.875	6.35	6.35	0.8	●	●	●	●
	CNMM 160612PX				1.2	●	●	●	●
	CNMM 160616PX				1.6	●	●	●	●
	CNMM 190608PX	19.05	6.35	7.94	0.8			●	●
	CNMM 190612PX				1.2	●	●	●	●
	CNMM 190616PX				1.6	●	●	●	●
	CNMM 190624PX				2.4			●	●
연강 정삭 Low Carbon Steel Finishing	CNMG 120404XP	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408XP				0.8	●	●	●	●

● : 표준재고
● : Standard Stock

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
연강 중삭 Low Carbon Steel Medium cutting	CNMG 120404XQ	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408XQ				0.8	●	●	●	●
연강 황삭 Low Carbon Steel Roughing	CNMG 120408XS	12.70	4.76	5.16	0.8	●	●	●	●
정삭 Finishing	DNMG 150402PP	12.70	4.76	5.16	0.2	●	●	●	●
	DNMG 150404PP				0.4	●	●	●	●
	DNMG 150408PP				0.8	●	●	●	●
	DNMG 150412PP				1.2	●	●	●	●
	DNMG 150602PP	12.70	6.35	5.16	0.2	●	●	●	●
	DNMG 150604PP				0.4	●	●	●	●
	DNMG 150608PP				0.8	●	●	●	●
	DNMG 150612PP				1.2	●	●	●	●
정삭 Finishing	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	●	●	●	●
정삭~중삭 Finishing-Medium	DNMG 150404PQ	12.70	4.76	5.16	0.4	●	●	●	●
	DNMG 150408PQ				0.8	●	●	●	●
	DNMG 150412PQ				1.2	●	●	●	●
	DNMG 150604PQ	12.70	6.35	5.16	0.4	●	●	●	●
	DNMG 150608PQ				0.8	●	●	●	●
	DNMG 150612PQ				1.2	●	●	●	●
정삭~중삭 Finishing-Medium	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 Finishing-Medium · Up facing	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	●	●	●	●

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
정삭~중삭·끌기 Finishing-Medium · Up facing	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 Medium-Roughing	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	●	●	●	●
	DNMG 150604GS	12.70	6.35	5.16	0.4			●	●
	DNMG 150608GS				0.8			●	●
NEW 중삭~황삭 Medium-Roughing	DNMG 150404PG	12.70	4.76	5.16	0.4	●	●	●	●
	DNMG 150408PG				0.8	●	●	●	●
	DNMG 150412PG				1.2	●	●	●	●
	DNMG 150416PG				1.6	●	●	●	●
	DNMG 150604PG	12.70	6.35	5.16	0.4	●	●	●	●
	DNMG 150608PG				0.8	●	●	●	●
	DNMG 150612PG				1.2	●	●	●	●
	DNMG 150616PG				1.6	●	●	●	●
중삭~황삭 Medium-Roughing	DNMG 150404PS	12.70	4.76	5.16	0.4	●	●	●	●
	DNMG 150408PS				0.8	●	●	●	●
	DNMG 150412PS				1.2	●	●	●	●
	DNMG 150604PS	12.70	6.35	5.16	0.4	●	●	●	●
	DNMG 150608PS				0.8	●	●	●	●
	DNMG 150612PS				1.2	●	●	●	●
	DNMG 150616PS				1.6	●	●	●	●
중삭~황삭·고이송 Medium-Roughing · High Feed	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 Medium-Roughing · High Feed	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	●	●	●	●
 황삭 Roughing	DNMG 150404	12.70	4.76	5.16	0.4	●	●	●	●
	DNMG 150408				0.8	●	●	●	●
	DNMG 150608	12.70	6.35	5.16	0.8	●	●	●	●
	DNMG 150612				1.2	●	●	●	●

● : 표준재고
● : Standard Stock

■ 표준 재고 규격(네가티브) Stock Items (Negative)

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
황삭 Roughing	DNMG 150408PH	12.70	4.76	5.16	0.8	●	●	●	●
	DNMG 150412PH				1.2	●	●	●	●
	DNMG 150416PH				1.6			●	●
	DNMG 150608PH	12.70	6.35	5.16	0.8	●	●	●	●
	DNMG 150612PH				1.2	●	●	●	●
	DNMG 150616PH				1.6	●	●	●	●
편면/황삭·고이송 Single Sided Roughing · High Feed	DNMM 150408PX	12.70	4.76	5.16	0.8			●	●
	DNMM 150412PX				1.2			●	●
	DNMM 150416PX				1.6			●	●
	DNMM 150608PX	12.70	6.35	5.16	0.8	●	●	●	●
	DNMM 150612PX				1.2	●	●	●	●
	DNMM 150616PX				1.6			●	●
연강 정삭 Low Carbon Steel Finishing	DNMG 150404XP	12.70	4.76	5.16	0.4	●	●	●	●
	DNMG 150408XP				0.8	●	●	●	●
연강 중삭 Low Carbon Steel Medium cutting	DNMG 150404XQ	12.70	4.76	5.16	0.4	●	●	●	●
	DNMG 150408XQ				0.8	●	●	●	●
연강 황삭 Low Carbon Steel Roughing	DNMG 150408XS	12.70	4.76	5.16	0.8	●	●	●	●
중삭~황삭 Medium-Roughing	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 Finishing-Medium	SNMG 120404PQ	12.70	4.76	5.16	0.4	●	●	●	●
	SNMG 120408PQ				0.8	●	●	●	●
	SNMG 120412PQ				1.2	●	●	●	●
정삭~중삭 Finishing-Medium	SNMG 120404HQ	12.70	4.76	5.16	0.4	●	●	●	●
	SNMG 120408HQ				0.8	●	●	●	●
	SNMG 120412HQ				1.2	●	●	●	●
NEW 중삭~황삭 Medium-Roughing	SNMG 120408PG	12.70	4.76	5.16	0.8	●	●	●	●
	SNMG 120412PG				1.2	●	●	●	●
	SNMG 120416PG				1.6	●	●	●	●
중삭~황삭 Medium-Roughing	SNMG 120408PS	12.70	4.76	5.16	0.8	●	●	●	●
	SNMG 120412PS				1.2	●	●	●	●
	SNMG 120416PS				1.6	●	●	●	●
중삭~황삭·고이송 Medium-Roughing · High Feed	SNMG 120408PT	12.70	4.76	5.16	0.8	●	●	●	●
	SNMG 120412PT				1.2	●	●	●	●

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
황삭 Roughing	SNMG 090304	9.525	3.18	3.81	0.4			●	●
	SNMG 090308				0.8			●	●
	SNMG 120408	12.70	4.76	5.16	0.8	●	●	●	●
	SNMG 120412				1.2	●	●	●	●
	SNMG 120416				1.6			●	●
황삭 Roughing	SNMG 120408PH	12.70	4.76	5.16	0.8	●	●	●	●
	SNMG 120412PH				1.2	●	●	●	●
	SNMG 120416PH				1.6	●	●	●	●
	SNMG 150612PH	15.875	6.35	6.35	1.2	●	●	●	●
	SNMG 150616PH				1.6	●	●	●	●
	SNMG 190612PH	19.05	6.35	7.94	1.2			●	●
	SNMG 190616PH				1.6			●	●
편면/황삭·고이송 Single Sided Roughing · High Feed	SNMM 120408PX	12.70	4.76	5.16	0.8	●	●	●	●
	SNMM 120412PX				1.2	●	●	●	●
	SNMM 120416PX				1.6			●	●
	SNMM 150612PX	15.875	6.35	6.35	1.2			●	●
	SNMM 150616PX				1.6			●	●
	SNMM 190612PX	19.05	6.35	7.94	1.2	●	●	●	●
	SNMM 190616PX				1.6	●	●	●	●
	SNMM 190624PX				2.4			●	●
연강 정삭 Low Carbon Steel Finishing	SNMG 120408XP	12.70	4.76	5.16	0.8	●	●	●	●
연강 중삭 Low Carbon Steel Medium cutting	SNMG 120408XQ	12.70	4.76	5.16	0.8	●	●	●	●
연강 황삭 Low Carbon Steel Roughing	SNMG 120408XS	12.70	4.76	5.16	0.8	●	●	●	●
정삭 Finishing	TNMG 160402PP	9.525	4.76	3.81	0.2	●	●	●	●
	TNMG 160404PP				0.4	●	●	●	●
	TNMG 160408PP				0.8	●	●	●	●
	TNMG 160412PP				1.2	●	●	●	●
정삭 Finishing	TNMG 160402GP	9.525	4.76	3.81	0.2	●	●	●	●
	TNMG 160404GP				0.4	●	●	●	●
	TNMG 160408GP				0.8	●	●	●	●
정삭~중삭 Finishing-Medium	TNMG 160404PQ	9.525	4.76	3.81	0.4	●	●	●	●
	TNMG 160408PQ				0.8	●	●	●	●
	TNMG 160412PQ				1.2	●	●	●	●
정삭~중삭 Finishing-Medium	TNMG 110404HQ	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	●	●	●	●

● : 표준재고
● : Standard Stock

형 상 Shape 승수 있는 팁은 우승수(R)를 나타냅니다. Right-hand shown	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
 정삭~중삭·끌기 Finishing-Medium · Up facing	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 Medium-Roughing	TNMG 110404GS	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	●	●	●	●
NEW 중삭~황삭 Medium-Roughing	TNMG 160404PG	9.525	4.76	3.81	0.4	●	●	●	●
	TNMG 160408PG				0.8	●	●	●	●
	TNMG 160412PG				1.2	●	●	●	●
 중삭~황삭 Medium-Roughing	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·고이송 Medium-Roughing · High Feed	TNMG 160408PT	9.525	4.76	3.81	0.8	●	●	●	●
	TNMG 160412PT				1.2	●	●	●	●
 중삭~황삭·고이송 Medium-Roughing · High Feed	TNMG 160408GT	9.525	4.76	3.81	0.8	●	●	●	●
	TNMG 160412GT				1.2	●	●	●	●
 황삭 Roughing	TNMG 160404	9.525	4.76	3.81	0.4	●	●	●	●
	TNMG 160408				0.8	●	●	●	●
	TNMG 160412				1.2	●	●	●	●
	TNMG 220408	12.70	4.76	5.16	0.8	●	●	●	●
	TNMG 220412				1.2	●	●	●	●
 황삭 Roughing	TNMG 160408PH	9.525	4.76	3.81	0.8	●	●	●	●
	TNMG 160412PH				1.2	●	●	●	●
	TNMG 220408PH	12.70	4.76	5.16	0.8	●	●	●	●
	TNMG 220412PH				1.2	●	●	●	●
	TNMG 220416PH				1.6	●	●	●	●
 편면/황삭·고이송 Single Sided Roughing · High Feed	TNMM 160408PX	9.525	4.76	3.81	0.8			●	●
	TNMM 160412PX				1.2			●	●
	TNMM 220408PX	12.70	4.76	5.16	0.8			●	●
	TNMM 220412PX				1.2			●	●
	TNMM 220416PX				1.6			●	●

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
 연강 정삭 Low Carbon Steel Finishing	TNMG 160404XP	9.525	4.76	3.81	0.4	●	●	●	●
	TNMG 160408XP				0.8	●	●	●	●
 연강 중삭 Low Carbon Steel Medium cutting	TNMG 160404XQ	9.525	4.76	3.81	0.4	●	●	●	●
	TNMG 160408XQ				0.8	●	●	●	●
 연강 황삭 Low Carbon Steel Roughing	TNMG 160408XS	9.525	4.76	3.81	0.8	●	●	●	●
 중삭~황삭 Medium-Roughing	TNMG 160404&-ST	9.525	4.76	3.81	0.4	●	●	●	●
	TNMG 160408&-ST				0.8	●	●	●	●
 정삭 Finishing	VNMG 160402PP	9.525	4.76	3.81	0.2	●	●	●	●
	VNMG 160404PP				0.4	●	●	●	●
	VNMG 160408PP				0.8	●	●	●	●
	VNMG 160412PP				1.2	●	●	●	●
 정삭 Finishing	VNMG 160402GP	9.525	4.76	3.81	0.2	●	●	●	●
	VNMG 160404GP				0.4	●	●	●	●
	VNMG 160408GP				0.8	●	●	●	●
 정삭~중삭 Finishing-Mediu	VNMG 160404VF	9.525	4.76	3.81	0.4	●	●	●	●
	VNMG 160408VF				0.8	●	●	●	●
	VNMG 160412VF				1.2	●	●	●	●
 정삭~중삭 Finishing-Mediu	VNMG 160404PQ	9.525	4.76	3.81	0.4	●	●	●	●
	VNMG 160408PQ				0.8	●	●	●	●
	VNMG 160412PQ				1.2	●	●	●	●
 정삭~중삭 Finishing-Medium	VNMG 160404HQ	9.525	4.76	3.81	0.4	●	●	●	●
	VNMG 160408HQ				0.8	●	●	●	●
	VNMG 160412HQ				1.2	●	●	●	●
 황삭 Roughing	VNMG 160404	9.525	4.76	3.81	0.4	●	●	●	●
	VNMG 160408				0.8	●	●	●	●
 정삭 와이퍼 Finishing With Wiper Edge	WNMG 080404WP	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408WP				0.8	●	●	●	●
 정삭~중삭 와이퍼 Finishing-Medium With Wiper Edge	WNMG 080404WQ	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408WQ				0.8	●	●	●	●
	WNMG 080412WQ				1.2	●	●	●	●

● : 표준재고
● : Standard Stock

■ 표준 재고 규격(네가티브) Stock Items (Negative)

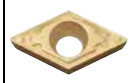
형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
정삭 Finishing	WNMG 080402PP	12.70	4.76	5.16	0.2	●	●	●	●
	WNMG 080404PP				0.4	●	●	●	●
	WNMG 080408PP				0.8	●	●	●	●
	WNMG 080412PP				1.2	●	●	●	●
정삭~중삭 Finishing-Medium	WNMG 080404PQ	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408PQ				0.8	●	●	●	●
	WNMG 080412PQ				1.2	●	●	●	●
정삭~중삭 Finishing-Medium	WNMG 06T304HQ	9.525	3.97	3.81	0.4			●	●
	WNMG 06T308HQ				0.8			●	●
	WNMG 060404HQ	9.525	4.76	3.81	0.4	●	●	●	●
	WNMG 060408HQ				0.8	●	●	●	●
	WNMG 080404HQ	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408HQ				0.8	●	●	●	●
	WNMG 080412HQ				1.2	●	●	●	●
정삭~중삭·끌기 Finishing-Medium · Up facing	WNMG 080404CQ	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408CQ				0.8	●	●	●	●
	WNMG 080412CQ				1.2	●	●	●	●
정삭~중삭·끌기 Finishing-Medium · Up facing	WNMG 080408CJ	12.70	4.76	5.16	0.8	●	●	●	●
	WNMG 080412CJ				1.2	●	●	●	●
중삭~황삭 Medium-Roughing	WNMG 060404GS	9.525	4.76	3.81	0.4	●	●	●	●
	WNMG 060408GS				0.8	●	●	●	●
	WNMG 080404GS	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408GS				0.8	●	●	●	●
	WNMG 080412GS				1.2	●	●	●	●
NEW 중삭~황삭 Medium-Roughing	WNMG 080404PG	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408PG				0.8	●	●	●	●
	WNMG 080412PG				1.2	●	●	●	●
	WNMG 080416PG				1.6	●	●	●	●
중삭~황삭 Medium-Roughing	WNMG 080404PS	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408PS				0.8	●	●	●	●
	WNMG 080412PS				1.2	●	●	●	●
	WNMG 080416PS				1.6	●	●	●	●
중삭~황삭·고이송 Medium-Roughing · High Feed	WNMG 080408PT	12.70	4.76	5.16	0.8	●	●	●	●
	WNMG 080412PT				1.2	●	●	●	●
중삭~황삭·고이송 Medium-Roughing · High Feed	WNMG 080408GT	12.70	4.76	5.16	0.8	●	●	●	●
	WNMG 080412GT				1.2	●	●	●	●

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
황삭 Roughing	WNMG 080404	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408				0.8	●	●	●	●
	WNMG 080412				1.2	●	●	●	●
황삭 Roughing	WNMG 080408PH	12.70	4.76	5.16	0.8	●	●	●	●
	WNMG 080412PH				1.2	●	●	●	●
연강 정삭 Low Carbon Steel Finishing	WNMG 080404XP	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408XP				0.8	●	●	●	●
연강 중삭 Low Carbon Steel Medium cutting	WNMG 080404XQ	12.70	4.76	5.16	0.4	●	●	●	●
	WNMG 080408XQ				0.8	●	●	●	●
연강 황삭 Low Carbon Steel Roughing	WNMG 080408XS	12.70	4.76	5.16	0.8	●	●	●	●

● : 표준재고
● : Standard Stock

■ 표준 재고 규격(포지티브) Stock Items (Positive)

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	여유각 Relief Angle	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
NEW 정삭 Finishing	CCMT 060202PP	6.35	2.38	2.8	0.2	7°	●	●	●	●
	CCMT 060204PP				0.4		●	●	●	●
	CCMT 09T302PP	9.525	3.97	4.4	0.2	7°	●	●	●	●
	CCMT 09T304PP				0.4		●	●	●	●
	CCMT 09T308PP				0.8		●	●	●	●
정삭~중삭 Finishing-Medium	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 Finishing-Medium	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 Medium	CCMT 09T308	9.525	3.97	4.4	0.8	7°	●	●	●	●
NEW 정삭 Finishing	CPMT 080202PP	7.94	2.38	3.3	0.2	11°	●	●	●	●
	CPMT 080204PP				0.4		●	●	●	●
	CPMT 090302PP	9.525	3.18	4.4	0.2	11°	●	●	●	●
	CPMT 090304PP				0.4		●	●	●	●
	CPMT 090308PP				0.8		●	●	●	●
정삭 Finishing	CPMT 080204GP	7.94	2.38	3.3	0.4	11°	●	●	●	●
	CPMT 090304GP	9.525	3.18	4.4	0.4	11°	●	●	●	●
	CPMT 090308GP				0.8		●	●	●	●
정삭~중삭 Finishing-Medium	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 Medium	CPMH 080204	7.94	2.38	3.5	0.4	11°	●	●	●	●
	CPMH 080208				0.8		●	●	●	●
	CPMH 090304	9.525	3.18	4.5	0.4	11°	●	●	●	●
	CPMH 090308				0.8		●	●	●	●
연강 정삭 Low Carbon Steel Finishing	CPMT 080204XP	7.94	2.38	3.3	0.4	11°	●	●	●	●
	CPMT 090304XP	9.525	3.18	4.4	0.4	11°	●	●	●	●
	CPMT 090308XP				0.8		●	●	●	●
연강 정삭~중삭 Low Carbon Steel Medium cutting	CPMT 090304XQ	9.525	3.18	4.4	0.4	11°	●	●	●	●
	CPMT 090308XQ				0.8		●	●	●	●
NEW 정삭 Finishing	DCMT 070202PP	6.35	2.38	2.8	0.2	7°	●	●	●	●
	DCMT 070204PP				0.4		●	●	●	●
	DCMT 11T302PP	9.525	3.97	4.4	0.2	7°	●	●	●	●
	DCMT 11T304PP				0.4		●	●	●	●
	DCMT 11T308PP				0.8		●	●	●	●
정삭 Finishing	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		●	●	●	●

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	여유각 Relief Angle	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
정삭~중삭 Finishing-Medium	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 Finishing-Medium	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		●	●	●	●
연강 정삭 Low Carbon Steel Finishing	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 Low Carbon Steel Finishing-Medium	DCMT 11T304XQ	9.525	3.97	4.4	0.4	7°	●	●	●	●
	DCMT 11T308XQ				0.8		●	●	●	●
중삭 Medium	RCMX 1003M0	10.0	3.18	3.6	–	7°	●	●	●	●
	RCMX 1204M0	12.0	4.76	4.2	–	7°	●	●	●	●
정삭~중삭 Finishing-Medium	SCMT 09T304HQ	9.525	3.97	4.4	0.4	7°	●	●	●	●
	SCMT 09T308HQ				0.8		●	●	●	●
중삭 Medium	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		●	●	●	●
정삭 Finishing	TBMT 060102DP	3.97	1.59	2.3	0.2	5°	●	●	●	●
	TBMT 060104DP				0.4		●	●	●	●
정삭~중삭 Finishing-Medium	TCMT 110204HQ	6.35	2.38	2.8	0.4	7°	●	●	●	●
	TCMT 110208HQ				0.8		●	●	●	●
NEW 정삭 Finishing	TPMT 090202PP	5.56	2.38	2.8	0.2	11°	●	●	●	●
	TPMT 090204PP				0.4		●	●	●	●
	TPMT 110302PP	6.35	3.18	3.3	0.2	11°	●	●	●	●
	TPMT 110304PP				0.4		●	●	●	●
	TPMT 110308PP				0.8		●	●	●	●

● : 표준재고
● : Standard Stock

■ 표준 재고 규격(포지티브) Stock Items (Positive)

형 상 Shape	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	여유각 Relief Angle	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
정삭 Finishing	TPMT 090204GP	5.56	2.38	2.8	0.4	11°	●	●	●	●
	TPMT 110304GP 110308GP	6.35	3.18	3.3	0.4 0.8	11°	● ●	● ●	● ●	● ●
	TPMT 160304GP	9.525	3.18	4.4	0.4	11°	●	●	●	●
정삭~중삭 Finishing-Medium	TPMT 090202HQ 090204HQ	5.56	2.38	2.8	0.2 0.4	11°	● ●	● ●	● ●	● ●
	TPMT 110302HQ 110304HQ 110308HQ	6.35	3.18	3.3	0.2 0.4 0.8	11°	● ● ●	● ● ●	● ● ●	● ● ●
	TPMT 160304HQ 160308HQ	9.525	3.18	4.4	0.4 0.8	11°	● ●	● ●	● ●	● ●
연강 정삭 Low Carbon Steel Finishing	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 Low Carbon Steel Finishing-Medium	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 Finishing	TPMR 160304GP	9.525	3.18	–	0.4	11°	●	●	●	●
정삭~중삭 Finishing-Medium	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 Medium	TPMR 110304 110308	6.35	3.18	–	0.4 0.8	11°	● ●	● ●	● ●	● ●
	TPMR 160304 160308	9.525	3.18	–	0.4 0.8	11°	● ●	● ●	● ●	● ●

형 상 Shape 승수 있는 팁은 좌승수(L)를 나타냅니다. Left-hand shown	규 격 Description	치수(mm) Dimension 내접원 I.C.	두께 Thickness	홀경 Hole	코너R (rε) Corner-R (rε)	여유각 Relief Angle	CVD 코팅 CVD Coated Carbide CA510	CA515	CA525	CA530
정삭 Finishing	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°	● ●	● ●	● ●	● ●
정삭 Finishing	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 Finishing-Medium	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°	● ● ●	● ● ●	● ● ●	● ● ●
정삭 Finishing	VCMT 080202VF 080204VF	4.76	2.38	2.3	0.2 0.4	7°	● ●	● ●	● ●	● ●
정삭~중삭 Finishing-Medium	VCMT 080202HQ 080204HQ	4.76	2.38	2.3	0.2 0.4	7°	● ●	● ●	● ●	● ●
정삭 Finishing	WBMT 060102&-DP 060104&-DP	3.97	1.59	2.3	0.2 0.4	5°	L L	L L	L L	L L
	WBMT 080202&-DP 080204&-DP	4.76	2.38	2.3	0.2 0.4	5°	L L	L L	L L	L L
정삭 Finishing	WPMT 110204GP	6.35	2.38	2.8	0.4	11°	●	●	●	●
	WPMT 160304GP	9.525	3.18	4.4	0.4	11°	●	●	●	●
정삭~중삭 Finishing-Medium	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°	● ●	● ●	● ●	● ●

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

절삭공구에 관한 기술적인 상담은
032-821-8365
FAX:032-821-8369
●근무시간 9:00~12:30·13:30~17:30
●토요일·일요일·공휴일 등은 쉽니다.
한국교세라정공(주) 영업본부

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