

PC6510 ^{New}



주철 밀링 가공용 인서트

주철 범용 가공에 최적화된 밀링 재증

- ▣ 우수한 가공 면조도
표면처리 기술 적용으로 우수한 가공 품위 제공
- ▣ 균일한 공구 수명
주철 가공에 최적화된 PVD 코팅 적용으로 수명편차 최소화
- ▣ 고속, 고이송 가공으로 생산성 향상



주철 밀링 가공에 최적화된 PVD 코팅 인서트 New PC6510



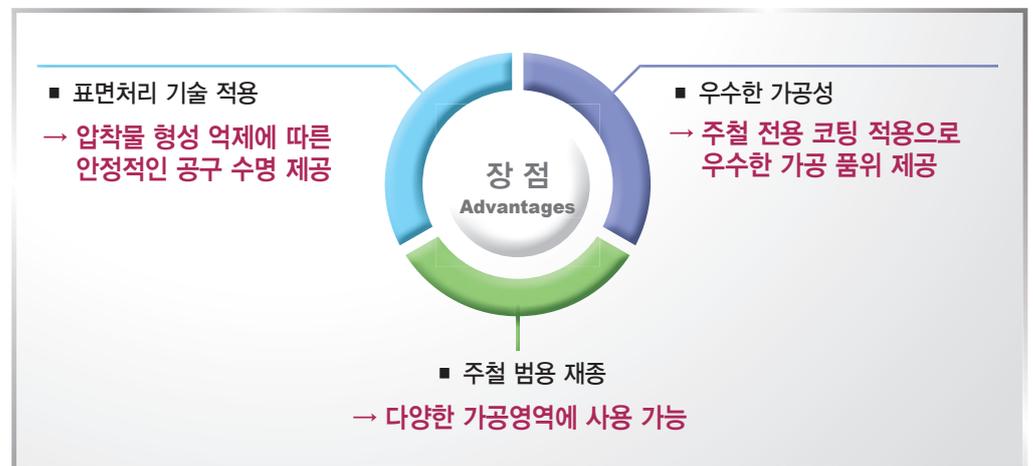
New PC6510

주철 범용
가공

주철은 밀링 가공 시 칩이 부서지는 특징이 있습니다. 따라서 경사면이 받는 부하가 적으며 상대적으로는 피삭재와 접촉 시간이 긴 여유면 마모가 빠르게 진행되어지는 특징이 있습니다. 특히 주철은 흑연을 포함하고 있어 절삭 가공 시 분진이 많이 발생하여 주로 습식 가공을 하게 되며, 절삭 시 절삭유는 가열된 인서트에 열 충격을 가하여 인서트 인선에 열균열을 발생시킵니다. 또한 인서트의 표면에 발생하는 칩의 용착 및 압착은 불균일한 치핑을 발생시켜 안정적인 수명을 기대하기 어렵습니다.

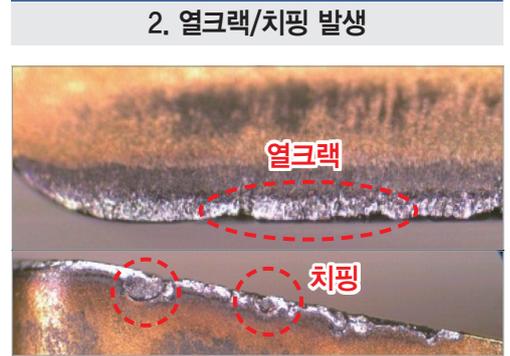
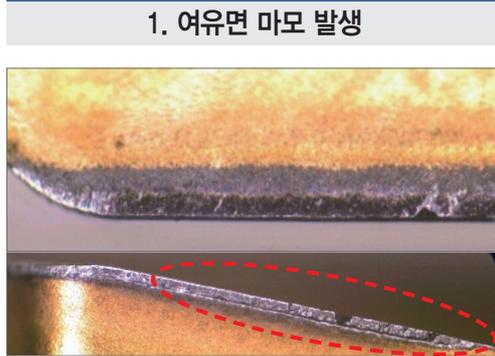
KORLOY는 안정적인 주철 가공을 위한 새로운 밀링 재종을 제공합니다.

NEW PC6510은 주철 범용 가공에 최적화된 PVD코팅 적용으로 열균열에 의한 파손을 억제하고, 표면처리 기술 적용으로 인서트 표면의 칩 용착 및 압착 형성을 억제함으로써 우수한 가공 품위 및 안정된 공구 수명을 발휘합니다.



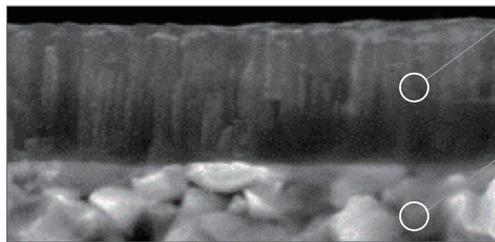
⇒ 주철 가공 시 문제점

- 흑연 입자와 공구 여유면 마찰에 의한 과대 여유면 마모 발생



⇒ New PC6510 개발

주철 전용 PVD 코팅 적용



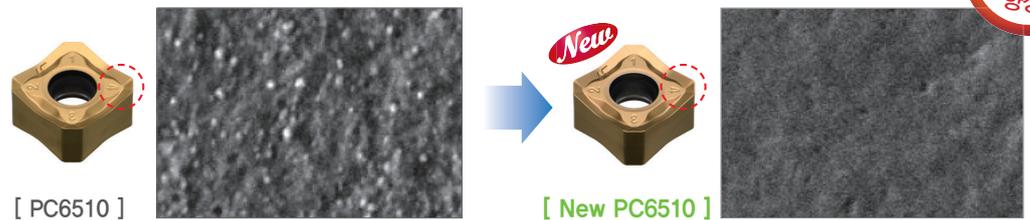
- 내마모성과 인성이 뛰어난 TiAlN 코팅을 적용하여 가공 안정성 우수

- 주철 가공에 최적의 내마모성, 내충격성 소재 적용으로 수명 편차 최소화

내마모성
수명편차
우수

- 코팅 표면 처리 기술 적용으로 표면 면조도 개선
→ 내용착성, 내치핑성 향상

코팅 표면 처리 기술 적용



[PC6510]

[New PC6510]

내용착성
내치핑성
향상

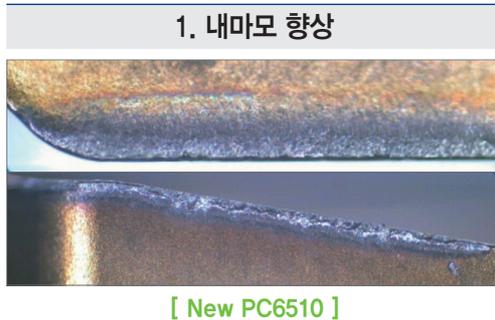
⇒ 개발 효과

[내마모 평가]

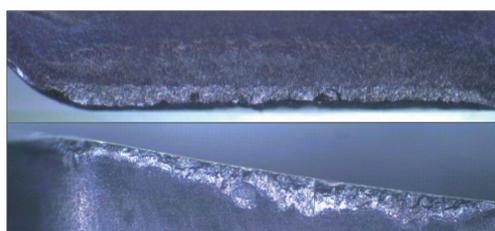
- 피삭재 GCD500
- 절삭조건 $vc(m/min)=200$
 $fz(mm/t)=0.2$
 $ap(mm)=1.0$
 $ae(mm)=120, wet$
- 공구 SNMX1206ANN-MF
RM8ACM4125HR-M

[열크랙 평가]

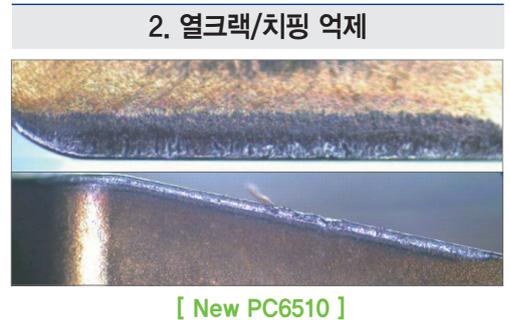
- 피삭재 GCD600
- 절삭조건 $vc(m/min)=180$
 $fz(mm/t)=0.2$
 $ap(mm)=1.0$
 $ae(mm)=20, wet$
- 공구 SNMX1206ANN-MF
RM8ACM4063HR-M



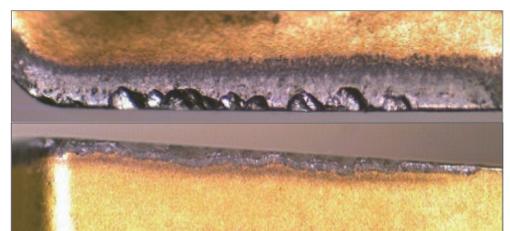
[New PC6510]



[타사]



[New PC6510]



[타사]

재종 적용 영역

• New PC6510

- 인서트 상면에 표면처리 적용
- 우수한 내열크랙성
- 고속, 단속영역 가공 가능
- 압착물에 의한 미세치핑 감소



적용 재종 가이드라인(실린더 블럭)

• New PC6510

- 주철 범용가공
- 일반가공

• PC5300

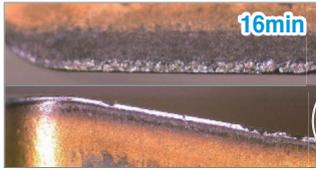
- 단속빈도 많은 가공
- 불안정한 가공

구분	일반가공	범용	강 단속용
재종	New PC6510	New PC6510	PC5300
피삭재 재질	회주철, 구상흑연주철 (덕타일 주철)	회주철, 구상흑연주철 (덕타일 주철)	회주철, 구상흑연주철 (덕타일 주철)
가공형태	면적이 넓은 일반 가공	다양한 가공형태 범용 가공	단속빈도가 많고 불안정한 가공
가공부위	Top & Bottom face 	Front & Rear face 	Bosses 

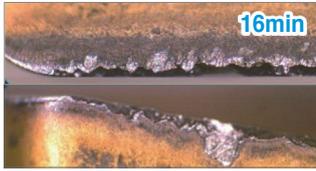
적용 재종 가이드라인(크랭크샤프트)

구분	황삭 (핀밀러)		사상 (핀밀러)	
	New PC6510	PC5300	New PC6510	PC5300
재종	New PC6510	PC5300	New PC6510	PC5300
피삭재 재질	주철	주철, 강	주철, 강	강
마모유형	여유면마모 열크랙, 치핑	인선부 치핑 열크랙, 파손	여유면 마모	여유면 마모 치핑
가공부위	Pin & Journal 		Pin-Grooving 	

성능평가



[New PC6510]

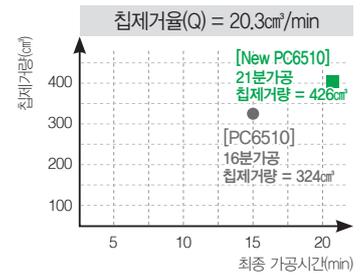


[PC6510]



New PC6510 성능평가 (Rich Mill)

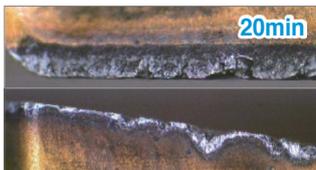
- 피삭재 GCD600
- 절삭조건
vc(m/min) = 200
fz(mm/t) = 0.2
ap(mm) = 2.0
ae(mm) = 100
- 공구 인서트 SNMX1206ANN-MF
홀더 RM8AC4125HR-M



➔ 기존 PC6510 대비 30% 가공량 향상



[New PC6510]



[타사]

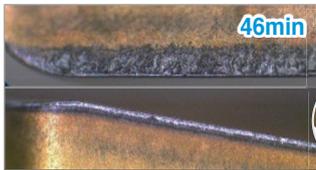


New PC6510 성능평가 (Rich Mill)

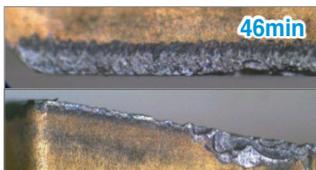
- 피삭재 GCD700
- 절삭조건
vc(m/min) = 180
fz(mm/t) = 0.2
ap(mm) = 2.0
ae(mm) = 100
- 공구 인서트 SNMX1206ANN-MF
홀더 RM8AC4125HR-M



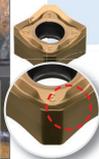
➔ 타사 대비 60% 가공량 향상



[New PC6510]



[타사]

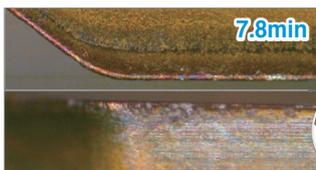


New PC6510 성능평가 (Rich Mill)

- 피삭재 GCD700
- 절삭조건
vc(m/min) = 200
fz(mm/t) = 0.2
ap(mm) = 2.0
ae(mm) = 20
- 공구 인서트 SNMX1206ANN-MF
홀더 RM8AC4063HR-H



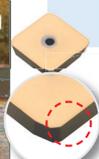
➔ 타사 대비 56% 가공량 향상



[New PC6510]

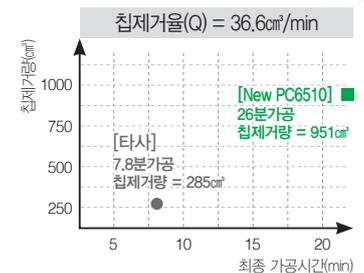


[타사]



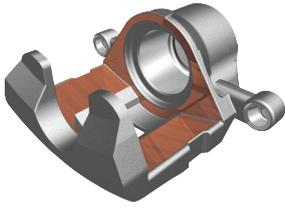
New PC6510 성능평가 (ISO)

- 피삭재 GC250
- 절삭조건
vc(m/min) = 200
fz(mm/t) = 0.2
ap(mm) = 3.0
ae(mm) = 120
- 공구 인서트 SPCN1203EDSR-RH
홀더 EPNM4125R



➔ 타사 대비 233% 가공량 향상

절삭평가 사례



자동차 부품 (브레이크 하우스)

- 피삭재 주철 (GCD500)
- 절삭조건 $vc(m/min) = 238$, $fz(mm/t) = 0.1$, $ap(mm) = 2.0$, $ae(mm) = 100$, 습식(wet)
- 공구 인서트 CNHQ1305-C1.0-HG (NEW PC6510)
홀더 HSG300R-T62,5R3,5-MDL

New PC6510 3000개/코너 가공
타사 2400개/코너 가공



➔ 타사 대비 25% 가공 수명 향상



자동차 부품 (너클)

- 피삭재 주철 (GCD700)
- 절삭조건 $vc(m/min) = 210$, $fz(mm/t) = 0.16$, $ap(mm) = 2.5$, $ae(mm) = 100$, 습식(wet)
- 공구 인서트 SNEX150712N (NEW PC6510)
홀더 KSFCB1303R-D31,75-D46

New PC6510 200개/코너 가공
타사 160개/코너 가공



➔ 타사 대비 25% 가공 수명 향상



자동차 부품 (배기플러)

- 피삭재 주철 (GCD400)
- 절삭조건 $vc(m/min) = 188$, $fz(mm/t) = 0.2$, $ap(mm) = 2.0$, $ae(mm) = 20$, 습식(wet)
- 공구 인서트 SDXT09M405R-MM (NEW PC6510)
홀더 FMPCM3100HS

New PC6510 190개/코너 가공
타사 150개/코너 가공



➔ 타사 대비 26% 가공 수명 향상



자동차 부품 (베어링 캡)

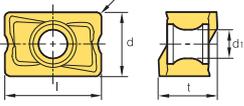
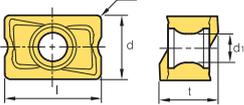
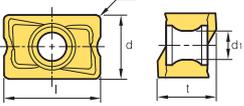
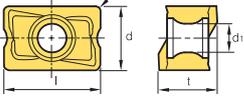
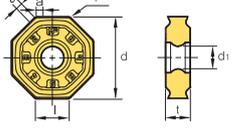
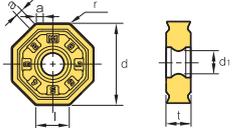
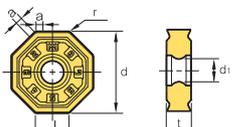
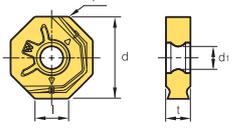
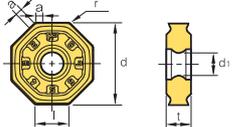
- 피삭재 주철 (GCD500)
- 절삭조건 $vc(m/min) = 250$, $fz(mm/t) = 0.15$, $ap(mm) = 1.0$, $ae(mm) = 120$, 습식(wet)
- 공구 인서트 SNCF1206QNN-MF (NEW PC6510)
홀더 RMT8Q4100R-M

New PC6510 200개/코너 가공
타사 160개/코너 가공



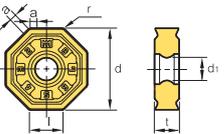
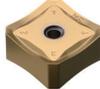
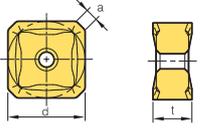
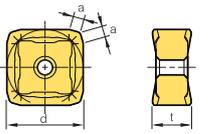
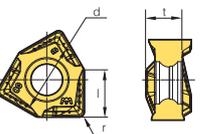
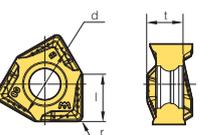
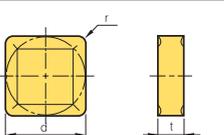
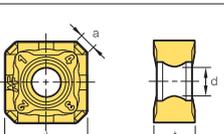
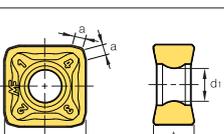
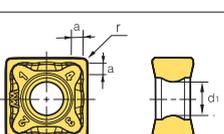
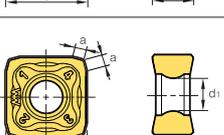
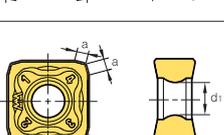
➔ 타사 대비 25% 가공 수명 향상

재고관리 형번

구분	형상	형번		재종 PC6510 <i>New</i>	치수(mm)						도면			
					l	d	t	r	d ₁	a				
Rich Mill		LNM(E)X	LNMX	100605PNR-MF	●	10.0	6.5	6.5	0.5	3.5	-			
					100608PNR-MF	●	10.0	6.5	6.5	0.8	3.5		-	
		LNEX		100605PNR-MF	●	10.0	6.5	6.5	0.5	3.5	-			
				100608PNR-MF	●	10.0	6.5	6.5	0.8	3.5	-			
		LNM(E)X	LNMX		151004PNR-MF	●	15.0	10.0	10.0	0.4	4.5	-		
						151008PNR-MF	●	15.0	10.0	10.0	0.8	4.5		-
						151016PNR-MF	●	15.0	10.0	10.0	1.6	4.5		-
			LNEX		151004PNR-MF	●	15.0	10.0	10.0	0.4	4.5	-		
					151008PNR-MF	●	15.0	10.0	10.0	0.8	4.5	-		
					151016PNR-MF	●	15.0	10.0	10.0	1.6	4.5	-		
		LNM(E)X	LNMX		100605PNR-MM	●	10.0	6.5	6.5	0.5	3.5	-		
						100608PNR-MM	●	10.0	6.5	6.5	0.8	3.5		-
					100605PNL-MM	●	10.0	6.5	6.5	0.5	3.5	-		
LNEX				100605PNR-MM	●	10.0	6.5	6.5	0.5	3.5	-			
				100608PNR-MM	●	10.0	6.5	6.5	0.8	3.5	-			
				100605PNL-MM	●	10.0	6.5	6.5	0.5	3.5	-			
	LNM(E)X	LNMX		151004PNR-MM	●	15.0	10.0	10.0	0.4	4.5	-			
					151008PNR-MM	●	15.0	10.0	10.0	0.8	4.5		-	
					151016PNR-MM	●	15.0	10.0	10.0	1.6	4.5		-	
		LNEX		151004PNR-MM	●	15.0	10.0	10.0	0.4	4.5	-			
				151008PNR-MM	●	15.0	10.0	10.0	0.8	4.5	-			
				151016PNR-MM	●	15.0	10.0	10.0	1.6	4.5	-			
	ONHX		060608-MF	●	6.6	16.0	6.0	0.8	5.6	-				
			080608-MF	●	8.4	20.2	6.0	0.8	5.6	-				
			0606ANN-MF	●	6.6	16.0	6.0	0.8	5.6	1.03				
			0806ANN-MF	●	8.4	20.2	6.0	0.8	5.6	1.53				
	ONHX		060608-MM	●	6.6	16.0	6.0	0.8	5.6	-				
			080608-MM	●	8.4	20.2	6.0	0.8	5.6	-				
			0606ANN-MM	●	6.6	16.0	6.0	0.8	5.6	1.03				
			0806ANN-MM	●	8.4	20.2	6.0	0.8	5.6	1.53				
	ONHX		060608-MA	●	6.6	16.0	6.0	0.8	5.6	-				
			080608-MA	●	8.4	20.2	6.0	0.8	5.6	-				
	ONHX		060608-W	●	6.5	16.0	6.0	0.8	5.6	-				
			080608-W	●	8.2	20.2	6.0	0.8	5.6	-				
	ONMX		060608-MF	●	6.6	16.0	6.0	0.8	5.6	-				
			080608-MF	●	8.4	20.2	6.0	0.8	5.6	-				
			0606ANN-MF	●	6.6	16.0	6.0	0.8	5.6	1.03				
			0806ANN-MF	●	8.4	20.2	6.0	0.8	5.6	1.53				

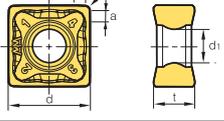
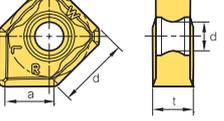
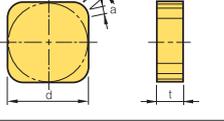
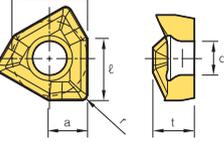
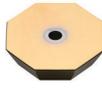
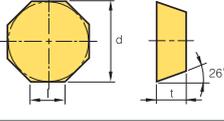
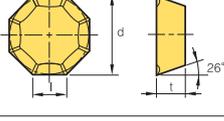
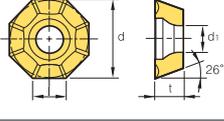
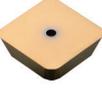
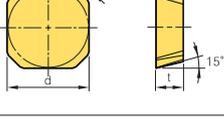
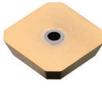
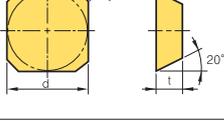
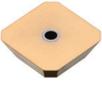
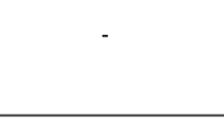
● : 재고 관리 형번

재고관리 형번

구분	형상	형번		재종 PC6510 <i>New</i>	치수(mm)						도면	
					l	d	t	r	d ₁	a		
Rich Mill		ONMX	060608-MM	●	6.6	16.0	6.0	0.8	5.6	-		
			080608-MM	●	8.4	20.2	6.0	0.8	5.6	-		
			0606ANN-MM	●	6.6	16.0	6.0	0.8	5.6	1.03		
			0806ANN-MM	●	8.4	20.2	6.0	0.8	5.6	1.53		
		SNCF	1507ANN-MF	●	-	15.875	7.35	-	-	2.1		
			1206ENN-MF	●	-	12.7	6.6	-	-	1.8		
			1507ENN-MF	●	-	15.875	7.35	-	-	1.8		
			1206QNN-MF	●	-	12.7	6.6	0.8	-	1		
		SNCF	1206QNN-MM	●	-	12.7	6.6	0.8	-	1		
		WNGX	040304PNER-ML		4.3	7.0	3.46	0.4	-	-		
			040308PNER-ML		4.3	7.0	3.46	0.8	-	-		
			080604PNER-ML		8.2	13.0	6.4	0.4	-	-		
			080608PNER-ML		8.2	13.0	6.4	0.8	-	-		
		WNGX	040304PNSR-MM		4.3	7.0	3.46	0.4	-	-		
			040308PNSR-MM		4.3	7.0	3.46	0.8	-	-		
			080604PNSR-MM		8.2	13.0	6.4	0.4	-	-		
			080608PNSR-MM		8.2	13.0	6.4	0.8	-	-		
		SNEF	435	●	-	12.7	4.76	2.0	-	-		
		SNM(E)X	SNMX	1206ANN-MF	●	-	12.7	6.35	-	4.5	2.36	
				1507ANN-MF	●	-	15.875	7.94	-	5.6	3.15	
			SNEX	1206ANN-MF	●	-	12.7	6.35	-	4.5	2.36	
				1507ANN-MF	●	-	15.875	7.94	-	5.6	3.15	
		SNM(E)X	SNMX	1206ENN-MF	●	-	12.7	6.35	-	4.5	1.82	
				1507ENN-MF	●	-	15.875	7.94	-	5.6	2.66	
			SNEX	1206ENN-MF	●	-	12.7	6.35	-	4.5	1.82	
				1507ENN-MF	●	-	15.875	7.94	-	5.6	2.66	
		SNM(E)X	SNMX	1206QNN-MF	●	-	12.7	6.35	-	5.2	2.36	
				120612-MF	●	-	12.7	6.35	1.2	5.2	-	
SNEX			1206QNN-MF	●	-	12.7	6.35	-	5.2	2.36		
			120612-MF	●	-	12.7	6.35	1.2	5.2	-		
	SNM(E)X	SNMX	1206ANN-MM	●	-	12.7	6.35	-	4.5	2.36		
			1507ANN-MM	●	-	15.875	7.94	-	5.6	3.15		
		SNEX	1206ANN-MM	●	-	12.7	6.35	-	4.5	2.36		
			1507ANN-MM	●	-	15.875	7.94	-	5.6	3.15		
	SNM(E)X	SNMX	1206ENN-MM	●	-	12.7	6.35	-	5.2	1.82		
			1507ENN-MM	●	-	15.875	7.94	-	5.6	2.66		
		SNEX	1206ENN-MM	●	-	12.7	6.35	-	5.2	1.82		
			1507ENN-MM	●	-	15.875	7.94	-	5.6	2.66		

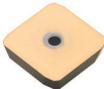
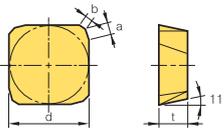
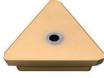
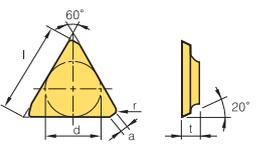
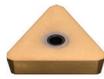
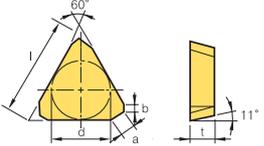
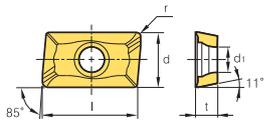
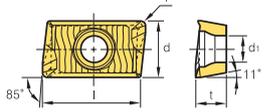
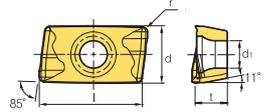
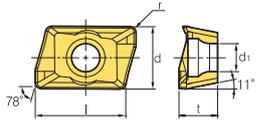
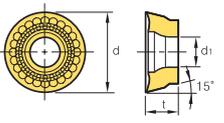
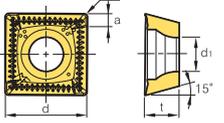
● : 재고 관리 형번

재고관리 형번

구분	형상	형번		재종 PC6510	치수(mm)								도면
					l	d	t	r	d ₁	a	b		
Rich Mill		SNM(E)X	SNMX 1206QNN-MM	●	-	12.7	6.35	-	4.5	2.36	-		
			120612-MM	●	-	12.7	6.35	1.2	4.5	-	-		
		SNEX	1206QNN-MM	●	-	12.7	6.35	-	4.5	2.36	-		
			120612-MM	●	-	12.7	6.35	1.2	4.5	-	-		
		SNEX	1206ANN-W	●	-	12.7	6.35	-	4.5	7.6	-		
		SNKN	1204ENN	●	-	12.7	4.76	-	-	1.4	1.0		
		XNKT	060405PNER-ML	●	5.7	6.5	4.0	0.5	3.4	1.8	-		
			060408PNER-ML	●	5.7	6.5	4.0	0.8	3.4	1.8	-		
080508PNER-ML			●	8.2	10.0	5.5	0.8	4.5	2.9	-			
120608PNER-ML			●	12.0	13.0	6.5	0.8	5.5	3.5	-			
XNKT		060405PNSR-MM	●	5.7	6.5	4.0	0.5	3.4	1.8	-			
		060408PNSR-MM	●	5.7	6.5	4.0	0.8	3.4	1.8	-			
		080508PNSR-MM	●	8.2	10.0	5.5	0.8	4.5	2.9	-			
		120608PNSR-MM	●	12.0	13.0	6.5	0.8	5.5	3.5	-			
	OFCN	0704SN	●	7.4	18	4.86	0.5	-	-	-			
	OFKR	0704SN-MM	●	19/64	45/64	3/16	3/128	-	-	-			
	OFKT	05T3SN-MF	●	5.2	12.7	3.97	0.5	4.4	-	-			
	SDCN	1504AEEN-RH	●	-	15.875	4.76	-	-	1.5	-			
		1504AESN-RH	●	-	15.875	4.76	-	-	1.43	-			
	SECN	1203AFEN-RH	●	-	12.7	3.18	-	-	2.36	-			
		1504AFSN-RH	●	-	15.875	4.76	-	-	2.4	-			
	SFKN	12T3AZEN	●	-	12.7	3.97	-	-	2.2	-			

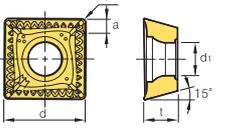
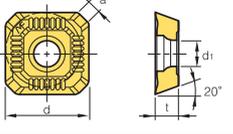
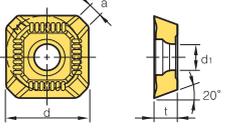
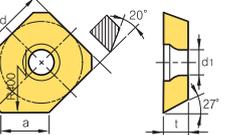
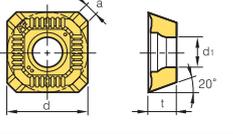
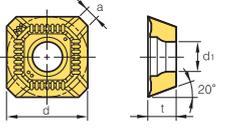
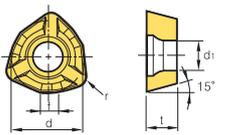
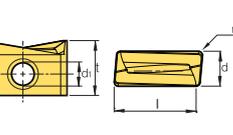
● : 재고 관리 형번

재고관리 형번

구분	형상	형 번		재종 PC6510 <small>Ver.0</small>	치수(mm)						도면		
					l	d	t	r	d ₁	a		b	
ISO		SPCN	1203EDER-RH	●	-	12.7	3.18	-	-	1.63	0.8		
			1203EDSR-RH	●	-	12.7	3.18	-	-	1.63	0.8		
			1504EDL	●	-	15.875	4.76	-	-	1.4	1.0		
			1504EDER-RH	●	-	15.875	4.76	-	-	1.64	0.8		
			1504EDSR-RH	●	-	15.875	4.76	-	-	1.64	0.8		
		SPGN	090308	●	-	9.525	3.18	0.8	-	-	-	-	
		TEEN	43TR	●	22.0	12.7	4.76	0.8	-	1.5	-		
		TPCN	1603PPN	●	16.5	9.525	3.18	-	-	1.2	1.2		
			1603PDER-RH	●	16.5	9.525	3.18	0.8	-	1.5	-		
			1603PDSR-RH	●	16.5	9.525	3.18	0.8	-	1.5	-		
			2204PDER-RH	●	22.0	12.7	4.76	0.8	-	1.8	-		
			2204PDSR-RH	●	22.0	12.7	4.76	0.8	-	1.8	-		
	Alpha Mill		APKT	1604PDSR	●	16.4	9.525	4.76	0.8	4.4	-	-	
		APKT	1604PDSR-MM	●	16.4	9.525	5.2	0.8	4.4	-	-		
		APMT	11T3PDSR-MF	●	11.2	6.467	3.6	0.5	2.9	-	-		
			1604PDSR-MF	●	16.4	9.41	5.76	0.8	4.5	-	-		
			1806PDSR-MF	●	17.4	10.98	6.35	0.8	4.5	-	-		
		APMT	0602PDSR-MM	●	6	4.24	2.6	0.4	2.0	-	-		
			0903PDSR-MM	●	9.4	6.21	3.6	0.4	2.8	-	-		
			11T3PDSR-MM	●	11.2	6.467	3.6	0.5	2.85	-	-		
			1604PDSR-MM	●	16.4	9.41	5.76	0.8	4.5	-	-		
			1806PDSR-MM	●	17.4	10.98	6.35	0.8	4.5	-	-		
Future Mill			RDKT	10T3M0-MM	●	-	10	3.97	-	3.85	-	-	
				1204M0-MM	●	-	12	4.76	-	4.5	-	-	
			SDXT	09M405R-MF	●	-	9.525	4.0	0.5	4.0	1.2	-	
	130508R-MF			●	-	13.5	5.56	0.8	5.56	2.2	-		

● : 재고 관리 형번

재고관리 형번

구분	형상	형 번		재중	치 수(mm)							도 면	
				PC6510	l	d	t	r	d ₁	a	f		
Future Mill		SDXT	09M405R-MM	●	-	9.525	4.0	0.5	4.0	1.2	-		
			09M405L-MM	●	-	9.525	4.0	0.5	4.0	1.2	-		
			130508R-MM	●	-	13.5	5.56	0.8	5.56	2.2	-		
		SEET	0903AGSN-MF	●	-	9.525	3.18	-	3.4	2.11	-		
			14M4AGSN-MF	●	-	14.0	4.0	-	4.4	2.64	-		
		SEET	0903AGSN-MM	●	-	9.525	3.18	-	3.4	2.11	-		
			14M4AGSN-MM	●	-	14.0	4.0	-	4.4	2.64	-		
		SEEW	14M4AGTN-W	●	-	14.0	4.0	-	4.4	8.5	-		
		SEXT	0903AGSN-MF	●	-	9.525	3.18	-	3.4	2.11	-		
			14M4AGSN-MF	●	-	14.0	4.0	-	4.4	2.64	-		
		SEXT	0903AGSN-MM	●	-	9.525	3.18	-	3.4	2.11	-		
			14M4AGSN-MM	●	-	14.0	4.0	-	4.4	2.64	-		
	HRMD		WDKT	080316ZDSR-MH	●	-	8.0	3.18	1.6	3.3	-	1.8	
				10T320ZDSR-MH	●	-	10.0	3.97	2.0	4.3	-	2.3	
				130520ZDSR-MH	●	-	13.5	5.56	2.0	5.56	-	3.1	
				150625ZDSR-MH	●	-	15.0	6.35	2.5	5.56	-	3.4	
	TP2P		LNKT	170708PNR-ML	●	16.5	7.0	11.0	0.8	4.5	-	-	

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