

2007-2008



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NTK

CUTTING TOOLS



NGK | **NTK**
SPARK PLUGS | TECHNICAL CERAMICS

NGK SPARK PLUG EUROPE GMBH
NGK SPARK PLUGS(U.K.), LTD

2007
2008
NTK
CUTTING TOOLS

Interrupted Cutting of High-Hardness Materials **B36**

Feature

- Optimized in CBN content with a special ceramic binder and based on strong and rigid brazing technology
- Improved damage resistance and thermal shock resistance for interrupted cutting
- Double-sided multi-corner piece excellent in cost performance
- Combination with the NTK ceramic ZC7 for continuous cutting



Strong and rigid brazing

B36
(Double-sided multi-corner type)

Cost reduction by switching to multi-corner type

Conventional CBN tool
(One-corner type)

Recommended Cutting Conditions

Work material	Hardness	Cutting speed (m/min)	Feed (mm/rev)	Cutting depth (mm)
Hardened steel	45~62	50~200	~0.2	~0.5

Carburized-layer Removal Cutting

Material	Competitor's CBN tool	B36
Part number	CNGA 120408 (2-corner type)	← (4-corner type)
Cutting speed	130 (m/min)	←
Feed rate	0.14 (mm/rev)	←
Cutting depth	0.1 (mm)	←
Coolant	Dry	←
Tool life	20~50 (pcs/corner)	50 (pcs/corner)



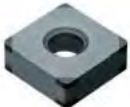

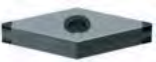
Machined part name	Gear
Material	20Cr4(H) (HRc 61~65)



Compared to a competitor's CBN tool, **B36** does not suffer from abrupt notching or other damage, is stable in life, and leads to the improvement of productivity.

B36

NEW

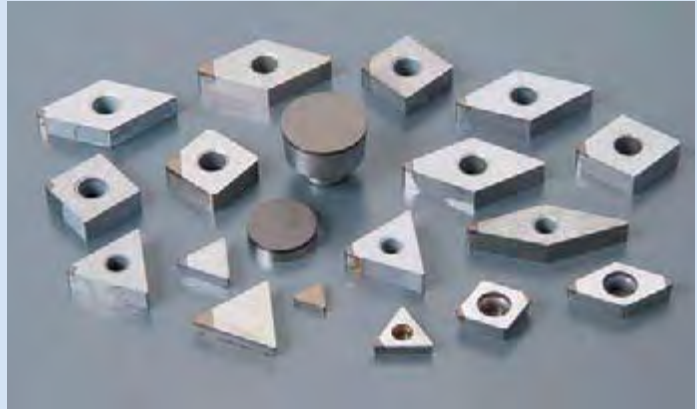
Shape	Item-No. IC ₁ T ₁ R	B36	CBN dimension a
 4-corner specs.	CNGA 120404 PQ	●	2.0
	120408 PQ	●	2.0
	CNMA 120412 PQ	●	2.4
 4-corner specs.	DNGA 150404 PQ	●	1.8
	150408 PQ	●	1.5
	DNMA 150412 PQ	●	2.2
 8-corner specs.	SNGA 120408 PE	●	2.0
	SNMA 120412 PE	●	2.5
 6-corner specs.	TNGA 160404 PH	●	1.7
	160408 PH	●	1.4
	TNMA 160412 PH	●	2.0
 4-corner specs.	VNGA 160404 PQ	●	2.0
	160408 PQ	●	1.1

※The product with a nose radius of R1.2 is an M-grade product.

NTK CBN series **B20, B22, B24 and B26**

Feature

- B20**
High-speed finishing for gray cast iron
- B22**
For high-hardend mill rolls
- B24 / B26 multi corner**
For hardened steel after sintering



• Features and Applications

Grade	Size of CBN		Number of corner(s)	Features and applications	Application of NTK CBN Series for each purpose			
	Normal Size	QT-One			Quenched steel	Interrupted cutting	Gray cast iron	Mill Rolls
B20	●	●	1	High-speed finishing	◎		○	
B22	●		1	Hardened Mill rolls			○	◎
B24 / B26		●	1 / multi	sintered steel	◎	○		
B36	●		multi			◎		

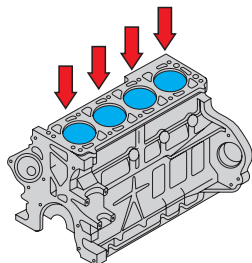
Recommended Cutting Conditions

Work piece		Grade	Recommended conditions			
Material and others	Hardness		Cutting speed (m/min)	Feed (mm/rev)	Cutting depth (mm)	Coolant
Sintered steel	HRC 50~68	B20	60~150	~0.2	~0.4	Wet and dry
		B24 / B26	70~170	~0.3	~0.5	
	Interrupted	B36	60~150	~0.2	~0.4	Dry
Gray cast iron	HB ~250	B22	Turning 300~1000	~0.2	~0.5	Wet
			Milling 300~500			Wet and Dry
Mill Rolls	HS 50~80	B22	40~140	~0.5	~3.0	Wet and Dry
		B20	80~150	~0.5	~2.0	

● Case Study

Cylinder block for automobile

Work material: 250 (Gray Cast Iron)
 Insert: SNMA 120408 PTR



Cutting speed (m/min)	500
Feed (mm/rev)	0.2
Depth of cut (mm)	0.2
Coolant	WET

B20

2300 pcs



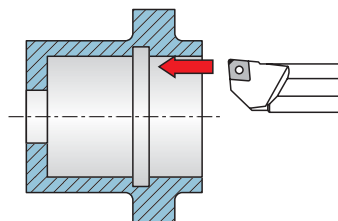
Competitor's CBN

1000 pcs



Housing for automobile

Work material: 15CrMo4 (HRC 62)
 Insert: CNMA 120404 PTR



Cutting speed (m/min)	70~80
Feed (mm/rev)	0.15
Depth of cut (mm)	0.15
Coolant	DRY

B20

85 pcs



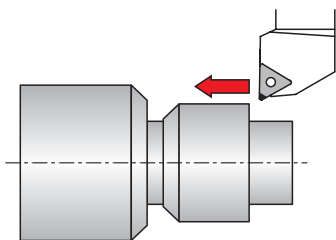
Competitor's CBN

70 pcs



Shaft for automobile

Work material: 20CrS4 (HRC 63)
 Insert: TNMA 160408 P



Cutting speed (m/min)	160
Feed (mm/rev)	0.13
Depth of cut (mm)	0.25
Coolant	DRY

B24

500 pcs



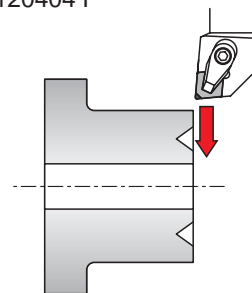
Competitor's CBN

300 pcs



Gear for automobile

Work material: 15CrMo4 (Hv720~860)
 Insert: CNMA 120404 P



Cutting speed (m/min)	140
Feed (mm/rev)	0.18
Depth of cut (mm)	0.15
Coolant	WET

B24

800 pcs



Competitor's CBN

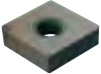

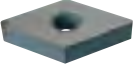


500 pcs



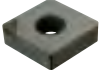

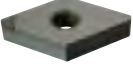

● **QT-One**

QT-One has a minimized CBN size for improving cost performance.



■ **B20 QT-One**

Shape	Item-No. I C T R	B20	CBN dimension	
				a
	CNMA 120404 PTR	●		1.9
	120408 PTR	●		1.8
	DNMA 150404 PTR	●		1.9
	150408 PTR	●		1.6
	SNMA 120404 PTR	●		1.9
	120408 PTR	●		1.9
	TNMA 160404 PTR	●		1.9
	160408 PTR	●		1.6

■ **B20**

Shape	Item-No. I C T R	B20	CBN dimension	
				a
	CNGA 120404	●		4.7
	120408	●		4.6
	120412	●		4.5
	DNGA 150404	●		4.1
	150408	●		3.8
	150412	●		3.4
	SNGA 120408	●		4.7
	TNGA 160404	●		4.3
	160408	●		4.0
	TPGN 160304	●		4.3
	160308	●		4.0
	TBGN 060104S	●		


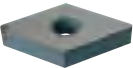
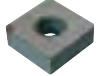

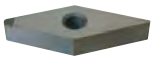
■ **B22**

Shape	Item-No. I C T R	B22
	RBGX 16S	
	20S	
	RNGN 120300S	
	120400S	

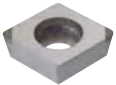

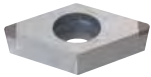

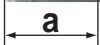
● QT-One

QT-One has a minimized CBN size for improving cost performance.

■ B24

Shape	Item-No. IC, T, R	B24	CBN dimension	
				a
	CNMA 120404 P	●		2.5
	120408 P	●		2.4
	120412 P	●		2.3
	DNMA 150404 P	●		2.5
	150408 P	●		2.1
	SNMA 120408 P	●		2.5
	120412 P	●		2.5
	TNMA 160404 P	●		2.3
	160408 P	●		2.0
	160412 P	●		2.0
	VNMA 160404 P	●		2.8
	160408 P	●		2.0
	TPGN 110304 P	●	2.3	
	160304 P	●	2.3	
	160308 P	●	2.0	

■ B26

Shape	Item-No. IC, T, R	Corner	B26	CBN dimension			
					a		
	CCGW 09T304 PD	2	●		2.5		
	09T308 PD	2			2.4		
	CPGW 09T304 PD	2			2.3		
	09T308 PD	2			2.5		
	090304 PD	2			2.1		
	090308 PD	2			2.5		
	DCGW 11T301 PD	2			●	2.5	
	11T304 PD	2			●	2.3	
	11T308 PD	2			●	2.0	
	TCGW 110202 P	1			●		2.0
	110204 P	1					2.8
	110208 P	1					2.0
	16T302 PT	3	2.3				
	16T304 PT	3	2.3				
	16T308 PT	3	2.0				

Solid CBN for Gray Cast Iron **B16**

Feature

- Multi-corner specification
- Easy to find a used corner in gold color
- Long cutting edge



Recommended Cutting

Work piece			Recommended conditions			
Material	Hardness (HB)	Use	Cutting speed (m/min)	Feed (mm/rev)	Cutting depth (mm)	Coolant
Gray cast iron	230	Roughing	150~1000	~0.7	~3.0	Wet type (*)
		Finishing	300~1500	~0.6	~0.5	Dry type


※A dry type can also be used for parts short in cutting distance (about 10 mm).

● Case Study

Cylinder bore		250 (Gray Cast Iron)
Insert: SNMN 090312S TN (T01025)		
Cutting speed (m/min)		560
Feed (mm/rev)		0.6
Depth of cut (mm)		0.7
Coolant		WET
B16		800 pcs
Competitor's CBN		600 pcs

Disc brake		250 (Gray Cast Iron)
Insert: SNMN 120420S TN (T01025)		
Cutting speed (m/min)		1000
Feed (mm/rev)		0.7
Depth of cut (mm)		1.0
Coolant		WET
B16		800 pcs
Competitor's CBN		65 pcs

B16

Shape	Item-No. IC, T, R	B16
	SNMN 090308S TNB	●
	090312S TN	●
	120308S TN	
	120312S TN	
	120408S TN	
	120412S TNF	●
	120416S TNF	
	TNMN 110308S TN	
	110312S TNC	
	160308S TN	
	160312S TN	
	160408S TN	
	160412S TNF	
	RNMN 120300S TN	
	120400STN	

Edge-Preparation

Description	ISO	T
TN	T01025	03, 04
	T02025	07
TNB	T00525	—
TNC	T01025	—
TNF	T02025	—