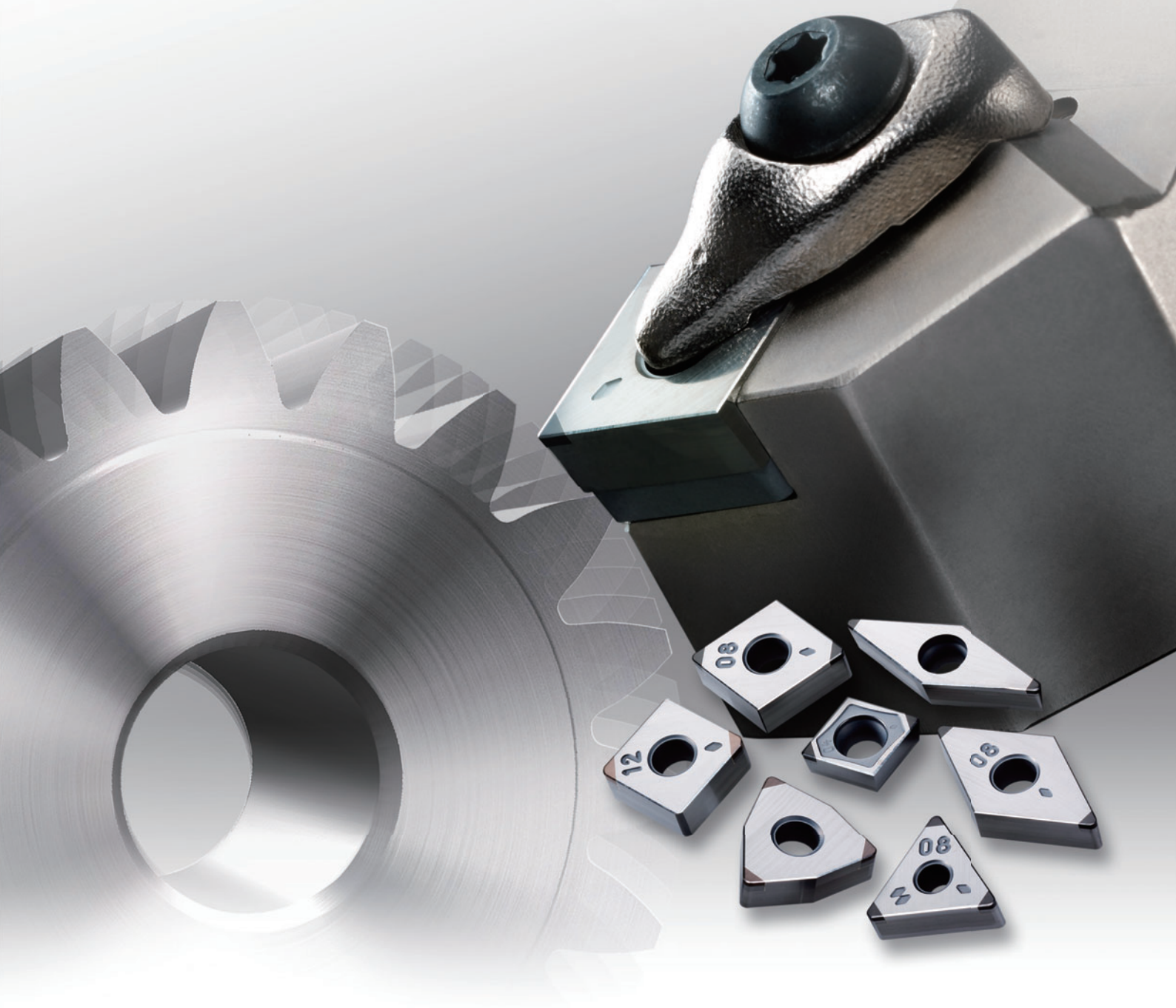


CBN Grade for Sintered Alloys and Cast Irons

MB4120New
Product

Excellent Fracture Resistance and Stable Cutting Improves Productivity



CBN Grade for Sintered Alloys and Cast Irons

MB4120

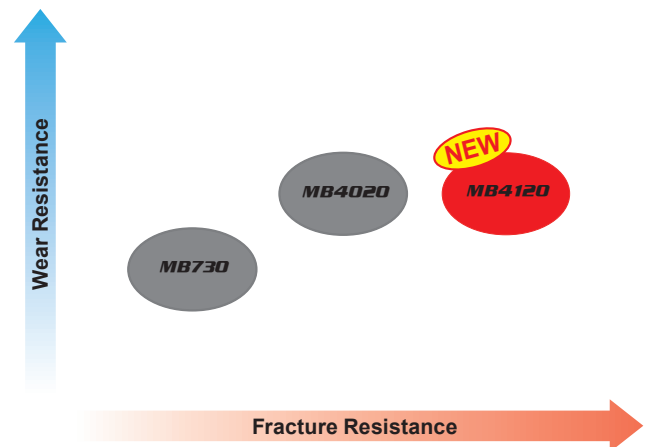
Increasing the CBN particle content and bonding strength makes it suitable for machining various sintered materials.

High Fracture Resistance

Fine CBN particles increase cutting edge toughness. The high fracture resistance allows stable performance even during interrupted machining.

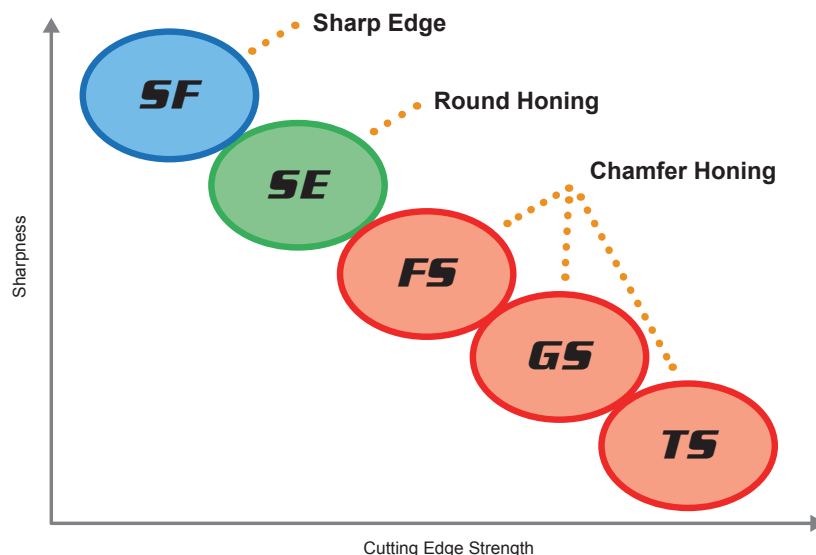
High Adhesion Strength of Fine CBN Particles

Optimization of the sintering conditions strengthens adhesion between fine CBN particles. This increases both fracture resistance and wear resistance.



A Wide Range of Edge Preparation (Honing) are Available

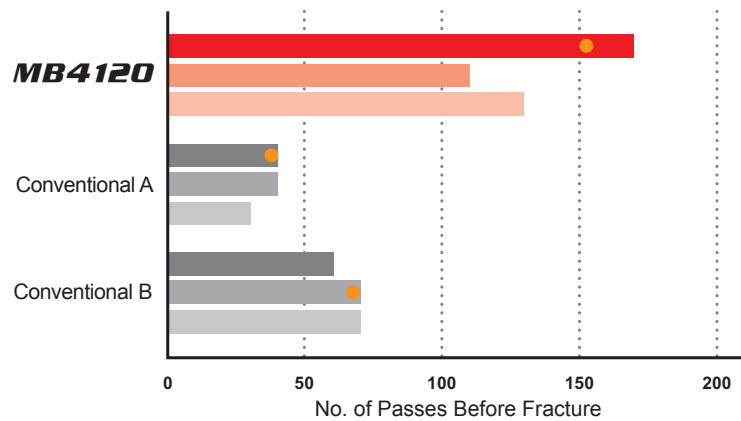
The SF type offers a sharper cutting edge, leading to the reduction in cutting resistance and burr development and an increase in surface finishes. The SF type is the first recommendation but, to increase cutting edge strength and chipping resistance there are also the SE, FS, GS and TS edge preparations.



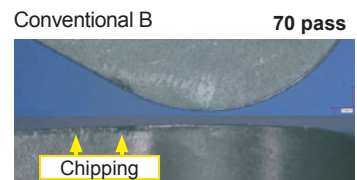
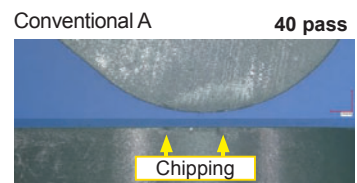
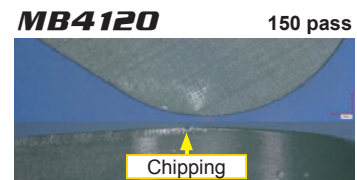
Cutting Performance

Fracture Resistance Comparison During Interrupted Facing of High Strength Sintered Alloy

Increased fracture resistance even during heavy interrupted machining.

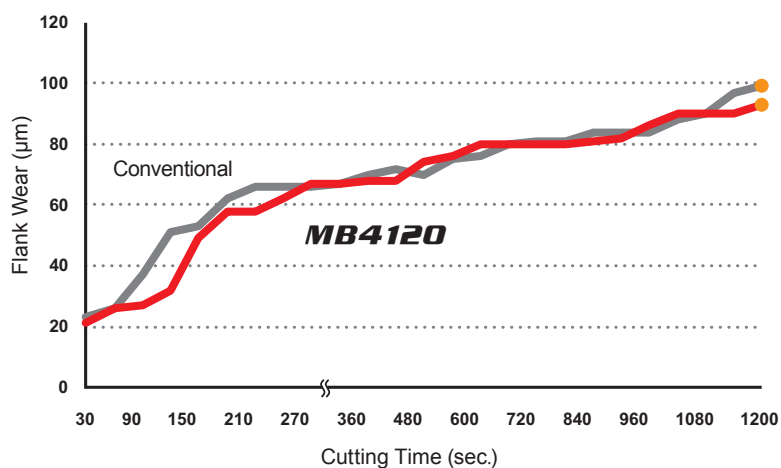


<Cutting Conditions>
 Work Material : High Strength Sintered Alloy
 Insert : NP-TNGA160408SE3
 Cutting Speed : $v_c = 150 \text{ m/min}$
 Feed per Rev. : $f = 0.15 \text{ mm/rev}$
 Depth of Cut : $a_p = 0.1 \text{ mm}$
 Cutting Mode : Wet Cutting

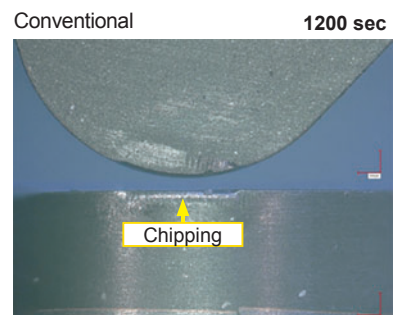
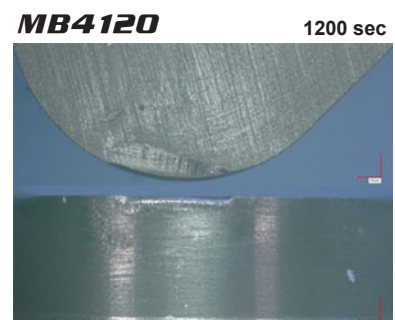


Comparison in Continuous Machining of AISI No 35 B

Excellent fracture resistance compared to conventional products.



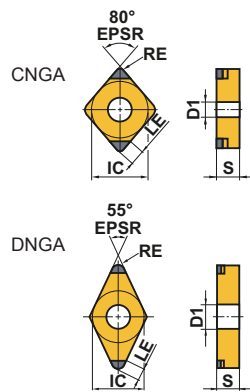
<Cutting Conditions>
 Work Material : AISI No 35 B (Pearlite)
 Insert : NP-TNGA160408SF3
 Cutting Speed : $v_c = 800 \text{ m/min}$
 Feed per Rev. : $f = 0.1 \text{ mm/rev}$
 Depth of Cut : $a_p = 0.2 \text{ mm}$
 Cutting Mode : Dry Cutting



CBN Grade for Sintered Alloys and Cast Irons

Negative Inserts (With Hole)

G Class



NEW PETIT CUT			
NP_002			
NEW PETIT CUT			
NP_002			

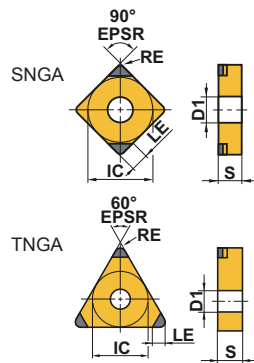
(mm)

Order Number	MB4120	Cutting Edges	IC	S	RE	D1	LE
NP-CNGA120404SF2	●	2	12.7	4.76	0.4	5.16	1.9
NP-CNGA120408SF2	●	2	12.7	4.76	0.8	5.16	2.1
NP-CNGA120412SF2	●	2	12.7	4.76	1.2	5.16	2.3
NP-CNGA120404SE2	●	2	12.7	4.76	0.4	5.16	1.9
NP-CNGA120408SE2	●	2	12.7	4.76	0.8	5.16	2.1
NP-CNGA120412SE2	●	2	12.7	4.76	1.2	5.16	2.3
NP-CNGA120404FS2	●	2	12.7	4.76	0.4	5.16	1.9
NP-CNGA120408FS2	●	2	12.7	4.76	0.8	5.16	2.1
NP-CNGA120412FS2	●	2	12.7	4.76	1.2	5.16	2.3
NP-CNGA120404GS2	●	2	12.7	4.76	0.4	5.16	1.9
NP-CNGA120408GS2	●	2	12.7	4.76	0.8	5.16	2.1
NP-CNGA120412GS2	●	2	12.7	4.76	1.2	5.16	2.3
NP-CNGA120404TS2	●	2	12.7	4.76	0.4	5.16	1.9
NP-CNGA120408TS2	●	2	12.7	4.76	0.8	5.16	2.1
NP-CNGA120412TS2	●	2	12.7	4.76	1.2	5.16	2.3
NP-DNGA150404SF2	●	2	12.7	4.76	0.4	5.16	2.1
NP-DNGA150408SF2	●	2	12.7	4.76	0.8	5.16	2.0
NP-DNGA150412SF2	●	2	12.7	4.76	1.2	5.16	1.9
NP-DNGA150604SF2	●	2	12.7	6.35	0.4	5.16	2.1
NP-DNGA150608SF2	●	2	12.7	6.35	0.8	5.16	2.0
NP-DNGA150612SF2	●	2	12.7	6.35	1.2	5.16	1.9
NP-DNGA150404SE2	●	2	12.7	4.76	0.4	5.16	2.1
NP-DNGA150408SE2	●	2	12.7	4.76	0.8	5.16	2.0
NP-DNGA150412SE2	●	2	12.7	4.76	1.2	5.16	1.9
NP-DNGA150604SE2	●	2	12.7	6.35	0.4	5.16	2.1
NP-DNGA150608SE2	●	2	12.7	6.35	0.8	5.16	2.0
NP-DNGA150612SE2	●	2	12.7	6.35	1.2	5.16	1.9
NP-DNGA150404FS2	●	2	12.7	4.76	0.4	5.16	2.1
NP-DNGA150408FS2	●	2	12.7	4.76	0.8	5.16	2.0
NP-DNGA150412FS2	●	2	12.7	4.76	1.2	5.16	1.9
NP-DNGA150604FS2	●	2	12.7	6.35	0.4	5.16	2.1
NP-DNGA150608FS2	●	2	12.7	6.35	0.8	5.16	2.0
NP-DNGA150612FS2	●	2	12.7	6.35	1.2	5.16	1.9
NP-DNGA150404GS2	●	2	12.7	4.76	0.4	5.16	2.1
NP-DNGA150408GS2	●	2	12.7	4.76	0.8	5.16	2.0
NP-DNGA150412GS2	●	2	12.7	4.76	1.2	5.16	1.9
NP-DNGA150604GS2	●	2	12.7	6.35	0.4	5.16	2.1
NP-DNGA150608GS2	●	2	12.7	6.35	0.8	5.16	2.0
NP-DNGA150612GS2	●	2	12.7	6.35	1.2	5.16	1.9
NP-DNGA150404TS2	●	2	12.7	4.76	0.4	5.16	2.1
NP-DNGA150408TS2	●	2	12.7	4.76	0.8	5.16	2.0
NP-DNGA150412TS2	●	2	12.7	4.76	1.2	5.16	1.9
NP-DNGA150604TS2	●	2	12.7	6.35	0.4	5.16	2.1
NP-DNGA150608TS2	●	2	12.7	6.35	0.8	5.16	2.0
NP-DNGA150612TS2	●	2	12.7	6.35	1.2	5.16	1.9

● : Inventory maintained in Japan. (1 insert in one case.)

Negative Inserts (With Hole)

G Class



NEW PETIT CUT			
NP_002			
			
NEW PETIT CUT			
NP_003			
			

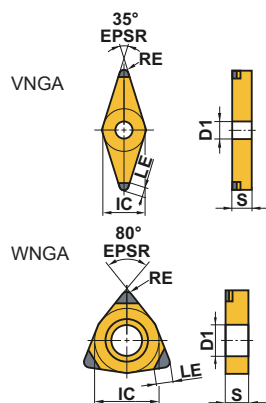
(mm)

Order Number	MB4120	Cutting Edges	IC	S	RE	D1	LE
NP-SNGA120404SF2	●	2	12.7	4.76	0.4	5.16	2.1
NP-SNGA120408SF2	●	2	12.7	4.76	0.8	5.16	2.3
NP-SNGA120412SF2	●	2	12.7	4.76	1.2	5.16	2.5
NP-SNGA120404SE2	●	2	12.7	4.76	0.4	5.16	2.1
NP-SNGA120408SE2	●	2	12.7	4.76	0.8	5.16	2.3
NP-SNGA120412SE2	●	2	12.7	4.76	1.2	5.16	2.5
NP-SNGA120404FS2	●	2	12.7	4.76	0.4	5.16	2.1
NP-SNGA120408FS2	●	2	12.7	4.76	0.8	5.16	2.3
NP-SNGA120412FS2	●	2	12.7	4.76	1.2	5.16	2.5
NP-SNGA120404GS2	●	2	12.7	4.76	0.4	5.16	2.1
NP-SNGA120408GS2	●	2	12.7	4.76	0.8	5.16	2.3
NP-SNGA120412GS2	●	2	12.7	4.76	1.2	5.16	2.5
NP-SNGA120404TS2	●	2	12.7	4.76	0.4	5.16	2.1
NP-SNGA120408TS2	●	2	12.7	4.76	0.8	5.16	2.3
NP-SNGA120412TS2	●	2	12.7	4.76	1.2	5.16	2.5
NP-TNGA160404SF3	●	3	9.525	4.76	0.4	3.81	1.6
NP-TNGA160408SF3	●	3	9.525	4.76	0.8	3.81	1.8
NP-TNGA160412SF3	●	3	9.525	4.76	1.2	3.81	1.9
NP-TNGA160404SE3	●	3	9.525	4.76	0.4	3.81	1.6
NP-TNGA160408SE3	●	3	9.525	4.76	0.8	3.81	1.8
NP-TNGA160412SE3	●	3	9.525	4.76	1.2	3.81	1.9
NP-TNGA160404FS3	●	3	9.525	4.76	0.4	3.81	1.6
NP-TNGA160408FS3	●	3	9.525	4.76	0.8	3.81	1.8
NP-TNGA160412FS3	●	3	9.525	4.76	1.2	3.81	1.9
NP-TNGA160404GS3	●	3	9.525	4.76	0.4	3.81	1.6
NP-TNGA160408GS3	●	3	9.525	4.76	0.8	3.81	1.8
NP-TNGA160412GS3	●	3	9.525	4.76	1.2	3.81	1.9
NP-TNGA160404TS3	●	3	9.525	4.76	0.4	3.81	1.6
NP-TNGA160408TS3	●	3	9.525	4.76	0.8	3.81	1.8
NP-TNGA160412TS3	●	3	9.525	4.76	1.2	3.81	1.9

CBN Grade for Sintered Alloys and Cast Irons

Positive Inserts (With Hole)

G Class



NEW PETIT CUT			
NP_002			
			
NEW PETIT CUT			
NP_003			
			

(mm)

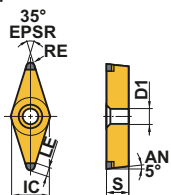
Order Number	MB4120	Cutting Edges	IC	S	RE	D1	LE
NP-VNGA160404SF2	●	2	9.525	4.76	0.4	3.81	2.5
NP-VNGA160408SF2	●	2	9.525	4.76	0.8	3.81	2.0
NP-VNGA160404SE2	●	2	9.525	4.76	0.4	3.81	2.5
NP-VNGA160408SE2	●	2	9.525	4.76	0.8	3.81	2.0
NP-VNGA160404FS2	●	2	9.525	4.76	0.4	3.81	2.5
NP-VNGA160408FS2	●	2	9.525	4.76	0.8	3.81	2.0
NP-VNGA160404GS2	●	2	9.525	4.76	0.4	3.81	2.5
NP-VNGA160408GS2	●	2	9.525	4.76	0.8	3.81	2.0
NP-VNGA160404TS2	●	2	9.525	4.76	0.4	3.81	2.5
NP-VNGA160408TS2	●	2	9.525	4.76	0.8	3.81	2.0
NP-WNGA080408SF3	●	3	12.7	4.76	0.8	5.16	2.1
NP-WNGA080408SE3	●	3	12.7	4.76	0.8	5.16	2.1
NP-WNGA080408FS3	●	3	12.7	4.76	0.8	5.16	2.1
NP-WNGA080408GS3	●	3	12.7	4.76	0.8	5.16	2.1
NP-WNGA080408TS3	●	3	12.7	4.76	0.8	5.16	2.1

● : Inventory maintained in Japan. (1 insert in one case.)

Positive Inserts (With Hole)

G Class

VBGW



NEW PETIT CUT			
NP_002			

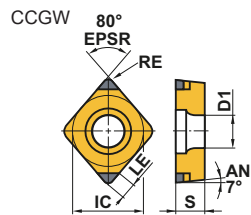
(mm)

Order Number	MB4120	Cutting Edges	IC	S	RE	D1	LE
NP-VBGW110304SF2	●	2	6.35	3.18	0.4	2.85	2.5
NP-VBGW110308SF2	●	2	6.35	3.18	0.8	2.85	2.0
NP-VBGW160404SF2	●	2	9.525	4.76	0.4	4.43	2.5
NP-VBGW160408SF2	●	2	9.525	4.76	0.8	4.43	2.0
NP-VBGW110304SE2	●	2	6.35	3.18	0.4	2.85	2.5
NP-VBGW110308SE2	●	2	6.35	3.18	0.8	2.85	2.0
NP-VBGW160404SE2	●	2	9.525	4.76	0.4	4.43	2.5
NP-VBGW160408SE2	●	2	9.525	4.76	0.8	4.43	2.0
NP-VBGW110304FS2	●	2	6.35	3.18	0.4	2.85	2.5
NP-VBGW110308FS2	●	2	6.35	3.18	0.8	2.85	2.0
NP-VBGW160404FS2	●	2	9.525	4.76	0.4	4.43	2.5
NP-VBGW160408FS2	●	2	9.525	4.76	0.8	4.43	2.0
NP-VBGW110304GS2	●	2	6.35	3.18	0.4	2.85	2.5
NP-VBGW110308GS2	●	2	6.35	3.18	0.8	2.85	2.0
NP-VBGW160404GS2	●	2	9.525	4.76	0.4	4.43	2.5
NP-VBGW160408GS2	●	2	9.525	4.76	0.8	4.43	2.0

CBN Grade for Sintered Alloys and Cast Irons

Positive Inserts (With Hole)

G Class



NEW PETIT CUT			
NP_002			

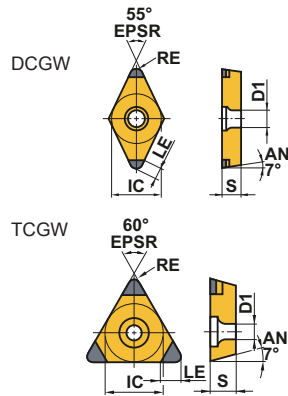
(mm)

Order Number	MB4120	Cutting Edges	IC	S	RE	D1	LE
NP-CCGW060202SF2	●	2	6.35	2.38	0.2	2.8	1.8
NP-CCGW060204SF2	●	2	6.35	2.38	0.4	2.8	1.9
NP-CCGW060208SF2	●	2	6.35	2.38	0.8	2.8	2.1
NP-CCGW09T302SF2	●	2	9.525	3.97	0.2	4.4	1.8
NP-CCGW09T304SF2	●	2	9.525	3.97	0.4	4.4	1.9
NP-CCGW09T308SF2	●	2	9.525	3.97	0.8	4.4	2.1
NP-CCGW060202SE2	●	2	6.35	2.38	0.2	2.8	1.8
NP-CCGW060204SE2	●	2	6.35	2.38	0.4	2.8	1.9
NP-CCGW060208SE2	●	2	6.35	2.38	0.8	2.8	2.1
NP-CCGW09T302SE2	●	2	9.525	3.97	0.2	4.4	1.8
NP-CCGW09T304SE2	●	2	9.525	3.97	0.4	4.4	1.9
NP-CCGW09T308SE2	●	2	9.525	3.97	0.8	4.4	2.1
NP-CCGW060202FS2	●	2	6.35	2.38	0.2	2.8	1.8
NP-CCGW060204FS2	●	2	6.35	2.38	0.4	2.8	1.9
NP-CCGW060208FS2	●	2	6.35	2.38	0.8	2.8	2.1
NP-CCGW09T302FS2	●	2	9.525	3.97	0.2	4.4	1.8
NP-CCGW09T304FS2	●	2	9.525	3.97	0.4	4.4	1.9
NP-CCGW09T308FS2	●	2	9.525	3.97	0.8	4.4	2.1
NP-CCGW060202GS2	●	2	6.35	2.38	0.2	2.8	1.8
NP-CCGW060204GS2	●	2	6.35	2.38	0.4	2.8	1.9
NP-CCGW060208GS2	●	2	6.35	2.38	0.8	2.8	2.1
NP-CCGW09T302GS2	●	2	9.525	3.97	0.2	4.4	1.8
NP-CCGW09T304GS2	●	2	9.525	3.97	0.4	4.4	1.9
NP-CCGW09T308GS2	●	2	9.525	3.97	0.8	4.4	2.1
NP-CCGW060208TS2	●	2	6.35	2.38	0.8	2.8	2.1
NP-CCGW09T308TS2	●	2	9.525	3.97	0.8	4.4	2.1

● : Inventory maintained in Japan. (1 insert in one case.)

Positive Inserts (With Hole)

G Class



NEW PETIT CUT			
NP_002			
NEW PETIT CUT			
NP_003			

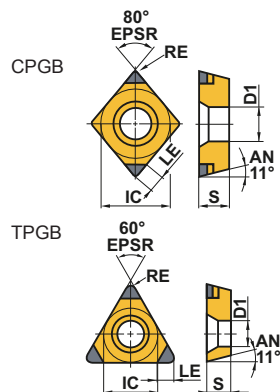
(mm)

Order Number	MB4120	Cutting Edges	IC	S	RE	D1	LE
NP-DCGW070204SF2	●	2	6.35	2.38	0.4	2.8	2.1
NP-DCGW070208SF2	●	2	6.35	2.38	0.8	2.8	2.0
NP-DCGW11T302SF2	●	2	9.525	3.97	0.2	4.4	1.5
NP-DCGW11T304SF2	●	2	9.525	3.97	0.4	4.4	2.1
NP-DCGW11T308SF2	●	2	9.525	3.97	0.8	4.4	2.0
NP-DCGW070204SE2	●	2	6.35	2.38	0.4	2.8	2.1
NP-DCGW070208SE2	●	2	6.35	2.38	0.8	2.8	2.0
NP-DCGW11T302SE2	●	2	9.525	3.97	0.2	4.4	1.5
NP-DCGW11T304SE2	●	2	9.525	3.97	0.4	4.4	2.1
NP-DCGW11T308SE2	●	2	9.525	3.97	0.8	4.4	2.0
NP-DCGW070204FS2	●	2	6.35	2.38	0.4	2.8	2.1
NP-DCGW070208FS2	●	2	6.35	2.38	0.8	2.8	2.0
NP-DCGW11T302FS2	●	2	9.525	3.97	0.2	4.4	1.5
NP-DCGW11T304FS2	●	2	9.525	3.97	0.4	4.4	2.1
NP-DCGW11T308FS2	●	2	9.525	3.97	0.8	4.4	2.0
NP-DCGW070204GS2	●	2	6.35	2.38	0.4	2.8	2.1
NP-DCGW070208GS2	●	2	6.35	2.38	0.8	2.8	2.0
NP-DCGW11T302GS2	●	2	9.525	3.97	0.2	4.4	1.5
NP-DCGW11T304GS2	●	2	9.525	3.97	0.4	4.4	2.1
NP-DCGW11T308GS2	●	2	9.525	3.97	0.8	4.4	2.0
NP-TCGW110204SF3	●	3	6.35	2.38	0.4	2.8	1.6
NP-TCGW110208SF3	●	3	6.35	2.38	0.8	2.8	1.8
NP-TCGW110204SE3	●	3	6.35	2.38	0.4	2.8	1.6
NP-TCGW110208SE3	●	3	6.35	2.38	0.8	2.8	1.8
NP-TCGW110204FS3	●	3	6.35	2.38	0.4	2.8	1.6
NP-TCGW110208FS3	●	3	6.35	2.38	0.8	2.8	1.8
NP-TCGW110204GS3	●	3	6.35	2.38	0.4	2.8	1.6
NP-TCGW110208GS3	●	3	6.35	2.38	0.8	2.8	1.8

CBN Grade for Sintered Alloys and Cast Irons

Positive Inserts (With Hole)

G Class



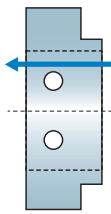
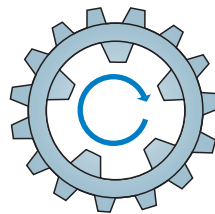
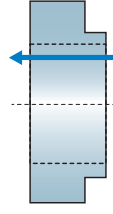
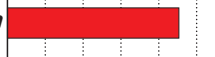
NEW PETIT CUT			
NP_002			
NEW PETIT CUT			
NP_003			

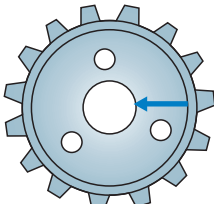
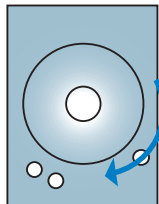
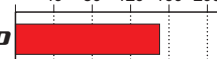
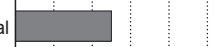
(mm)

Order Number	MB4120	Cutting Edges	IC	S	RE	D1	LE
NP-CPGB080202SE2	●	2	7.94	2.38	0.2	3.5	1.8
NP-CPGB080204SE2	●	2	7.94	2.38	0.4	3.5	1.9
NP-CPGB090302SE2	●	2	9.525	3.18	0.2	4.5	1.8
NP-CPGB090304SE2	●	2	9.525	3.18	0.4	4.5	1.9
NP-CPGB090308SE2	●	2	9.525	3.18	0.8	4.5	2.1
NP-CPGB080202FS2	●	2	7.94	2.38	0.2	3.5	1.8
NP-CPGB080204FS2	●	2	7.94	2.38	0.4	3.5	1.9
NP-CPGB090302FS2	●	2	9.525	3.18	0.2	4.5	1.8
NP-CPGB090304FS2	●	2	9.525	3.18	0.4	4.5	1.9
NP-CPGB090308FS2	●	2	9.525	3.18	0.8	4.5	2.1
NP-TPGB090202SF3	●	3	5.56	2.38	0.2	2.9	1.5
NP-TPGB090204SF3	●	3	5.56	2.38	0.4	2.9	1.6
NP-TPGB110302SF3	●	3	6.35	3.18	0.2	3.4	1.5
NP-TPGB110304SF3	●	3	6.35	3.18	0.4	3.4	1.6
NP-TPGB110308SF3	●	3	6.35	3.18	0.8	3.4	1.8
NP-TPGB090202SE3	●	3	5.56	2.38	0.2	2.9	1.5
NP-TPGB090204SE3	●	3	5.56	2.38	0.4	2.9	1.6
NP-TPGB110302SE3	●	3	6.35	3.18	0.2	3.4	1.5
NP-TPGB110304SE3	●	3	6.35	3.18	0.4	3.4	1.6
NP-TPGB110308SE3	●	3	6.35	3.18	0.8	3.4	1.8
NP-TPGB090202FS3	●	3	5.56	2.38	0.2	2.9	1.5
NP-TPGB090204FS3	●	3	5.56	2.38	0.4	2.9	1.6
NP-TPGB110302FS3	●	3	6.35	3.18	0.2	3.4	1.5
NP-TPGB110304FS3	●	3	6.35	3.18	0.4	3.4	1.6
NP-TPGB110308FS3	●	3	6.35	3.18	0.8	3.4	1.8
NP-TPGB090202GS3	●	3	5.56	2.38	0.2	2.9	1.5
NP-TPGB090204GS3	●	3	5.56	2.38	0.4	2.9	1.6
NP-TPGB110302GS3	●	3	6.35	3.18	0.2	3.4	1.5
NP-TPGB110304GS3	●	3	6.35	3.18	0.4	3.4	1.6
NP-TPGB110308GS3	●	3	6.35	3.18	0.8	3.4	1.8

● : Inventory maintained in Japan. (1 insert in one case.)

Application Examples

Insert		NP-DCGW11T308SF2	NP-DCGW11T308SF2	NP-TNGA160408SF3
Workpiece		General Sintered Alloy 	General Sintered Alloy 	High Strength Sintered Alloy 
Component		Auto Parts(Interrupted Boring)	Case(Interrupted Boring)	Sprocket(Continuous Boring)
Cutting Conditions	Cutting Speed vc (m/min)	200	180	250
	Feed per Rev. f (mm/rev)	0.07	0.25	0.1
	Depth of Cut ap (mm)	0.2	0.2 – 0.3	0.1
Cutting Mode		Wet Cutting	Wet Cutting	Wet Cutting
Results		Number of Workpieces 100 300 500 MB4120  Conventional  Double the tool life of the conventional product.	Number of Workpieces 100 200 300 MB4120  Conventional  Double the tool life of the conventional product.	Number of Workpieces 200 600 1000 MB4120  Conventional  When comparing with the conventional product after machining the same number of workpieces, flank wear was smaller and further tool life extension can be expected.

Insert		NP-TNGA160408SE3	NP-CNGA120408SF2
Workpiece		General Sintered Alloy 	Cast Iron 
Component		Sprocket(Interrupted Facing)	Mechanical Parts(Interrupted Facing)
Cutting Conditions	Cutting Speed vc (m/min)	240	600
	Feed per Rev. f (mm/rev)	0.12	0.175 – 0.25
	Depth of Cut ap (mm)	0.05	0.15 – 0.2
Cutting Mode		Wet Cutting	Dry Cutting
Results		Number of Workpieces 20 60 100 MB4120  Conventional  As compared with the conventional cermet product, higher surface quality and more than 4 times longer tool life was achieved.	Number of Workpieces 40 80 120 160 200 MB4120  Conventional  There is no abnormal damage and more than 1.5 times longer tool life was achieved.

The above application examples are customer's applications, so it can be different from the recommended conditions.

Recommended Cutting Conditions

Sintered Alloys

Work Material	Grade	Cutting Conditions	vc (m/min)					f (mm/rev)	ap	Cutting Mode
			100	150	200	250	300			
General Sintered Alloys	MB4120	Turning						≤0.2	≤0.3	Dry, Wet
High Strength Sintered Alloys	MB4120	Turning						≤0.2	≤0.3	Dry, Wet
Hardened Sintered Alloys	MB4120	Turning						≤0.2	≤0.3	Dry, Wet

Cast Irons

Work Material	Grade	Cutting Conditions	vc (m/min)					f (mm/rev)	ap	Cutting Mode
			250	500	750	1000	1250			
Gray Cast Irons	MB4120	Turning						≤0.2	≤0.3	Dry, Wet

For Your Safety

●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When attaching inserts or spare parts, please use only the correct wrench or driver.



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(Tools specifications subject to change without notice.)