MITSUBISHI MATERIALS

BC8100/MB8100 Series

CBN-SERIES FOR HARDENED STEEL TURNING

TOOL NEWS B215A

BC8100 Series

CBN-SERIES FOR HARDENED STEEL TURNING

HIGH SPEED TURNING

BC8110

For Continous Cutting

BC8120

For Continuous to Medium Interrupted Cutting

1st choice for roughing and pre-finishing.

GENERAL APPLICATIONS

For Excellent Surface Finishes

BC8105

For Super Finish Cutting

Excellent surface finishes and close tolerances with long tool life. For surface finishes up to Rz 94.5 μ-inch (Ra 23.6 μ-inch).

HIGHEST ACCURACY

⁎BC8110 is recommended to improve wear resistance.

BC8130

For Unstable Applications and Heavy Interrupted Cutting

Tolerance accuracy held over a high no. of impacts.

TOUGH MACHINING

BC8100 Series

CBN-SERIES FOR HARDENED STEEL TURNING

Features of the Grade

Newly Developed Special PVD Coating

BC8105

Offers excellent surface finishes. Peeling resistance and adhesion strength are improved by having both lubricity and wear resistance.

BC8110

Chipping caused by built up edge is prevented with improved welding resistance.
Improved wear and adhesion strength to the CBN surface.

BC8120

Chipping caused by built up edge is prevented with improved welding resistance.
Improved adhesion to the coating to the CBN surface enhances peeling resistance.
The CBN is also improved in toughness by adopting new binder and sintering method.

BC8130

Peeling caused by severe impact and chipping are prevented with high fracture resistances.
Improved adhesion strength to the CBN surface.

*Graphical representation.

Optimized Substrate Technology

The new ultra micro-particle binder prevents linear crack development to avoid sudden fracturing.

MB8100 Series

CBN-SERIES FOR HARDENED STEEL TURNING
NON-COATED CBN GRADES APPLIED ULTRA MICRO-PARTICLE BINDER TECHNOLOGY

MB8110 For Continuous Cutting

MB8100 having a most excellent wear resistance on this is ideal for continuous cutting.

MB8120 For General Cutting

MB8120 provides excellent wear and fracture resistance and is suitable for wider range of applications.

MB8130 For Heavy Interrupted Cutting

MB8130 having a most excellent fracture resistance on this series is ideal for heavy interrupted machining and in an unstable cutting condition.

Recommended Cutting Conditions

Grade	Workpiece Material	Machining Methods	Cutting Speed vc (SFM) 165 330 490 655 985	f (IPR)	ap (inch)	Cutting Mode
MB8110	Hardened Steels (Heat Treated Steels etc)	External Continuous Cutting		.008	.012	Dry, Wet
MB8120	Hardened Steels (Heat Treated Steels etc)	External Continuous Cutting		.008	.020	Dry, Wet
		External Interrupted Cutting		.008	.012	Dry, Wet
MB8130	Hardened Steels (Heat Treated Steels etc)	External Interrupted Cutting		.008	.012	Dry, Wet

Features of the Insert

Edge Preparation (Honing)

A variety of cutting edge preparations for all application.

Chip Breaker

BM
Removal of Carburized Layer
For Deep Depth of Cut

BF
Finishing Applications

Chip breaker system for excellent chip control when finishing, removing carburized layers and hard-soft cutting.

Wiper Insert

Improving Surface Finish

Under the same machining conditions as conventional chip breakers, but with the feed rate increased, the surface finish of the workpiece can be improved.

Improving Efficiency

High feed rates not only shorten machining times but also make it possible to combine roughing and finishing operations.

Increased Tool Life

When using at high feed conditions, the time required to cut one component is decreased, thus more parts can be machined with each insert. In addition, the high feed rate prevents rubbing, therefore, delaying the progression of wear and increasing tool life.

Improving Chip Control

Under high feed conditions, the chips generated become thicker and are more easily broken, thus, chip control is improved.

Recommended Cutting Conditions and Performance

High Precision Finishing

Cutting Speed: vc=330 SFM Feed per Rev.: f=.004 IPR
Depth of Cut: ap=.004 inch Cutting Mode: Dry Cutting

Without Wiper

Ry=126.0 μ-inch

With Wiper

Ry=39.4 μ-inch

High Feed Machining

Cutting Speed: vc=330 SFM Feed per Rev.: f=.012 IPR
Depth of Cut: ap=.004 inch Cutting Mode: Dry Cutting

Without Wiper

Ry=480.3 μ-inch

With Wiper

Ry=47.2 μ-inch

Cutting Performance

Insert	NP-CNGA432
Workpiece Material	Hardened Steel (60 HRC)
Machining Methods	Continuous
Cutting Speed **vc** (SFM)	395
Depth of Cut **ap** (inch)	.004
Cutting Mode	Dry Cutting

WL Wiper Insert

Preventing the cutting edge from vibration during boring and turning of small diameter workpiece materials as well as providing excellent finish surface roughness.

The Optimum Wiper Width

Applying slight slope on the wiper cutting edge reduces cutting resistance.

Application of Wiper Inserts

Identification

NP-CNGA431- FB WL 2

Edge Preparation	
Symbol	Application
GS GA GH GB	General Cutting
FS FB	Continuous Cutting
TS TA TH	Interrupted Cutting

Wiper	
WS	For High Rigidity Workpiece Material
WL	For Deflection and Vibration Prevention
No Mark	Without Wiper

CBN-Series for Hardened Steel Turning

Negative Inserts (With Hole)

G Class

CNGA, CNGM

4 corner EPSR

2 corner EPSR

NEW PETIT CUT	NEW PETIT CUT	NEW PETIT CUT	NEW PETIT CUT
NP_○○4	NP_○○WS4	NP_○○2	NP_○○W○2
	(With Wiper)		(With Wiper)
NEW PETIT CUT			
BF_, BM_			
(With Breaker)			

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-CNGA431-GA4			★	★		●		4	.500	.187	.016	.203	.075
NP-CNGA432-GA4			★	★		●		4	.500	.187	.031	.203	.083
NP-CNGA433-GA4			★	★		●		4	.500	.187	.047	.203	.091
NP-CNGA431-GS4	●	★						4	.500	.187	.016	.203	.075
NP-CNGA432-GS4	●	★						4	.500	.187	.031	.203	.083
NP-CNGA433-GS4	●	★						4	.500	.187	.047	.203	.091
NP-CNGA431-GH4		●	●	●				4	.500	.187	.016	.203	.075
NP-CNGA432-GH4		●	●	●				4	.500	.187	.031	.203	.083
NP-CNGA433-GH4		●	●	●				4	.500	.187	.047	.203	.091
NP-CNGA431-FS4	●	★	★		●			4	.500	.187	.016	.203	.075
NP-CNGA432-FS4	●	★	★		●			4	.500	.187	.031	.203	.083
NP-CNGA433-FS4	●	★	★		●			4	.500	.187	.047	.203	.091
NP-CNGA431-TA4			★	★		●	●	4	.500	.187	.016	.203	.075
NP-CNGA432-TA4			★	★		●	●	4	.500	.187	.031	.203	.083
NP-CNGA433-TA4			★	★		●	●	4	.500	.187	.047	.203	.091
NP-CNGA431-TS4		★						4	.500	.187	.016	.203	.075
NP-CNGA432-TS4		★						4	.500	.187	.031	.203	.083
NP-CNGA433-TS4		★						4	.500	.187	.047	.203	.091
NP-CNGA431-TH4			●	★			●	4	.500	.187	.016	.203	.075
NP-CNGA432-TH4			●	★			●	4	.500	.187	.031	.203	.083
NP-CNGA433-TH4			●	★			●	4	.500	.187	.047	.203	.091
NP-CNGA431-FSWS4	●	●	●		●			4	.500	.187	.016	.203	.075
NP-CNGA432-FSWS4	●	●	●		●			4	.500	.187	.031	.203	.083
NP-CNGA433-FSWS4	●	●	●		●			4	.500	.187	.047	.203	.091
NP-CNGA431-GAWS4			★	★		●		4	.500	.187	.016	.203	.075
NP-CNGA432-GAWS4			★	★		●		4	.500	.187	.031	.203	.083
NP-CNGA433-GAWS4			★	★		●		4	.500	.187	.047	.203	.091
NP-CNGA431-GSWS4	●	★						4	.500	.187	.016	.203	.075
NP-CNGA432-GSWS4	●	★						4	.500	.187	.031	.203	.083
NP-CNGA433-GSWS4	●	★						4	.500	.187	.047	.203	.091
NP-CNGA430.5-GA2			●			●		2	.500	.187	.008	.203	.071
NP-CNGA431-GA2			●	●		●		2	.500	.187	.016	.203	.075
NP-CNGA432-GA2			●	●		●		2	.500	.187	.031	.203	.083
NP-CNGA433-GA2			●	●		●		2	.500	.187	.047	.203	.091
NP-CNGA430.5-GS2		●						2	.500	.187	.008	.203	.071
NP-CNGA431-GS2	●	●						2	.500	.187	.016	.203	.075
NP-CNGA432-GS2	●	●						2	.500	.187	.031	.203	.083
NP-CNGA433-GS2	●	●						2	.500	.187	.047	.203	.091
NP-CNGA431-GH2		●	●	●				2	.500	.187	.016	.203	.075
NP-CNGA432-GH2		●	●	●				2	.500	.187	.031	.203	.083
NP-CNGA433-GH2		●	●	●				2	.500	.187	.047	.203	.091
NP-CNGA430.5-FS2		●			●			2	.500	.187	.008	.203	.071

● : USA Stock ★ : Stocked in Japan
(1 insert in one case)

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-CNGA431-FS2	●	●	●		●			2	.500	.187	.016	.203	.075
NP-CNGA432-FS2	●	●	●		●			2	.500	.187	.031	.203	.083
NP-CNGA433-FS2	●	●	●		●			2	.500	.187	.047	.203	.091
NP-CNGA431-TA2			●	●		●	●	2	.500	.187	.016	.203	.075
NP-CNGA432-TA2			●	●		●	●	2	.500	.187	.031	.203	.083
NP-CNGA433-TA2			●	●		●	●	2	.500	.187	.047	.203	.091
NP-CNGA431-TS2		★						2	.500	.187	.016	.203	.075
NP-CNGA432-TS2		★						2	.500	.187	.031	.203	.083
NP-CNGA433-TS2		★						2	.500	.187	.047	.203	.091
NP-CNGA431-TH2			●	●			●	2	.500	.187	.016	.203	.075
NP-CNGA432-TH2			●	●			●	2	.500	.187	.031	.203	.083
NP-CNGA433-TH2			●	●			●	2	.500	.187	.047	.203	.091
NP-CNGA431-FBWL2	●	●	●		●			2	.500	.187	.016	.203	.075
NP-CNGA432-FBWL2	●	●	●		●			2	.500	.187	.031	.203	.083
NP-CNGA433-FBWL2	●	●	●		●			2	.500	.187	.047	.203	.091
NP-CNGA431-FSWS2	●	●	●		●			2	.500	.187	.016	.203	.075
NP-CNGA432-FSWS2	●	●	●		●			2	.500	.187	.031	.203	.083
NP-CNGA433-FSWS2	●	●	●		●			2	.500	.187	.047	.203	.091
NP-CNGA431-GAWS2			●	●		●		2	.500	.187	.016	.203	.075
NP-CNGA432-GAWS2			●	●		●		2	.500	.187	.031	.203	.083
NP-CNGA433-GAWS2			●	●		●		2	.500	.187	.047	.203	.091
NP-CNGA431-GBWL2	●	●	●			●		2	.500	.187	.016	.203	.075
NP-CNGA432-GBWL2	●	●	●			●		2	.500	.187	.031	.203	.083
NP-CNGA433-GBWL2	●	●	●			●		2	.500	.187	.047	.203	.091
NP-CNGA431-GSWS2	●	●						2	.500	.187	.016	.203	.075
NP-CNGA432-GSWS2	●	●						2	.500	.187	.031	.203	.083
NP-CNGA433-GSWS2	●	●						2	.500	.187	.047	.203	.091
BF-CNGM431-TS2		★						2	.500	.187	.016	.203	.075
BF-CNGM432-TS2		★						2	.500	.187	.031	.203	.083
BF-CNGM433-TS2		★						2	.500	.187	.047	.203	.091
BM-CNGM431-TA2			●					2	.500	.187	.016	.203	.075
BM-CNGM432-TA2			●					2	.500	.187	.031	.203	.083
BM-CNGM433-TA2			●					2	.500	.187	.047	.203	.091

CBN-Series for Hardened Steel Turning

Negative Inserts (With Hole)

G Class

DNGA, DNGM

NEW PETIT CUT	NEW PETIT CUT
NP_○○4	NP_○○2
NEW PETIT CUT	NEW PETIT CUT
NP_ GAWS2JR/L	BF_, BM_
(With Wiper)	(With Breaker)

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-DNGA431-GA4			★	★		●		4	.500	.187	.016	.203	.083
NP-DNGA432-GA4			★	★		●		4	.500	.187	.031	.203	.079
NP-DNGA433-GA4			★	★		●		4	.500	.187	.047	.203	.075
NP-DNGA441-GA4			★	★		●		4	.500	.250	.016	.203	.083
NP-DNGA442-GA4			★	★		●		4	.500	.250	.031	.203	.079
NP-DNGA443-GA4			★	★		●		4	.500	.250	.047	.203	.075
NP-DNGA431-GS4	●	★						4	.500	.187	.016	.203	.083
NP-DNGA432-GS4	●	★						4	.500	.187	.031	.203	.079
NP-DNGA433-GS4	●	★						4	.500	.187	.047	.203	.075
NP-DNGA441-GS4	★	★						4	.500	.250	.016	.203	.083
NP-DNGA442-GS4	★	★						4	.500	.250	.031	.203	.079
NP-DNGA443-GS4	★	★						4	.500	.250	.047	.203	.075
NP-DNGA431-GH4		●	●	●				4	.500	.187	.016	.203	.083
NP-DNGA432-GH4		●	●	●				4	.500	.187	.031	.203	.079
NP-DNGA433-GH4		●	●	●				4	.500	.187	.047	.203	.075
NP-DNGA441-GH4		★	★	★				4	.500	.250	.016	.203	.083
NP-DNGA442-GH4		★	★	★				4	.500	.250	.031	.203	.079
NP-DNGA443-GH4		★	★	★				4	.500	.250	.047	.203	.075
NP-DNGA431-FS4	●	★	★		●			4	.500	.187	.016	.203	.083
NP-DNGA432-FS4	●	★	★		●			4	.500	.187	.031	.203	.079
NP-DNGA433-FS4	●	★	★		●			4	.500	.187	.047	.203	.075
NP-DNGA441-FS4	★	★			●			4	.500	.250	.016	.203	.083
NP-DNGA442-FS4	★	★			●			4	.500	.250	.031	.203	.079
NP-DNGA443-FS4	★	★			●			4	.500	.250	.047	.203	.075
NP-DNGA431-TA4			★	★		●	●	4	.500	.187	.016	.203	.083
NP-DNGA432-TA4			★	★		●	●	4	.500	.187	.031	.203	.079
NP-DNGA433-TA4			★	★		●	●	4	.500	.187	.047	.203	.075
NP-DNGA441-TA4			★	★		●		4	.500	.250	.016	.203	.083
NP-DNGA442-TA4			★	★		●		4	.500	.250	.031	.203	.079
NP-DNGA443-TA4			★	★		●		4	.500	.250	.047	.203	.075
NP-DNGA431-TS4		★						4	.500	.187	.016	.203	.083
NP-DNGA432-TS4		★						4	.500	.187	.031	.203	.079
NP-DNGA433-TS4		★						4	.500	.187	.047	.203	.075
NP-DNGA441-TS4		★						4	.500	.250	.016	.203	.083
NP-DNGA442-TS4		★						4	.500	.250	.031	.203	.079
NP-DNGA443-TS4		★						4	.500	.250	.047	.203	.075
NP-DNGA431-TH4			●	★			●	4	.500	.187	.016	.203	.083
NP-DNGA432-TH4			●	★			●	4	.500	.187	.031	.203	.079
NP-DNGA433-TH4			●	★			●	4	.500	.187	.047	.203	.075
NP-DNGA441-TH4			★	★				4	.500	.250	.016	.203	.083
NP-DNGA442-TH4			★	★				4	.500	.250	.031	.203	.079
NP-DNGA443-TH4			★	★				4	.500	.250	.047	.203	.075

● : USA Stock ★ : Stocked in Japan

(1 insert in one case)

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-DNGA332-GA2			●	●		●		2	.375	.187	.031	.150	.079
NP-DNGA430.5-GA2			●					2	.500	.187	.008	.203	.091
NP-DNGA431-GA2			●	●		●		2	.500	.187	.016	.203	.083
NP-DNGA432-GA2			●	●		●		2	.500	.187	.031	.203	.079
NP-DNGA433-GA2			●	●		●		2	.500	.187	.047	.203	.075
NP-DNGA440.5-GA2			★					2	.500	.250	.008	.203	.091
NP-DNGA441-GA2			★	★		●		2	.500	.250	.016	.203	.083
NP-DNGA442-GA2			★	★		●		2	.500	.250	.031	.203	.079
NP-DNGA443-GA2			★	★		●		2	.500	.250	.047	.203	.075
NP-DNGA430.5-GS2		●						2	.500	.187	.008	.203	.091
NP-DNGA431-GS2	●	●						2	.500	.187	.016	.203	.083
NP-DNGA432-GS2	●	●						2	.500	.187	.031	.203	.079
NP-DNGA433-GS2	●	●						2	.500	.187	.047	.203	.075
NP-DNGA441-GS2	★	●						2	.500	.250	.016	.203	.083
NP-DNGA442-GS2	★	●						2	.500	.250	.031	.203	.079
NP-DNGA443-GS2	★	●						2	.500	.250	.047	.203	.075
NP-DNGA431-GH2		●	●	●				2	.500	.187	.016	.203	.083
NP-DNGA432-GH2		●	●	●				2	.500	.187	.031	.203	.079
NP-DNGA433-GH2		●	●	●				2	.500	.187	.047	.203	.075
NP-DNGA441-GH2		★	★	★				2	.500	.250	.016	.203	.083
NP-DNGA442-GH2		★	★	★				2	.500	.250	.031	.203	.079
NP-DNGA443-GH2		★	★	★				2	.500	.250	.047	.203	.075
NP-DNGA430.5-FS2		●			●			2	.500	.187	.008	.203	.091
NP-DNGA431-FS2	●	●	●		●			2	.500	.187	.016	.203	.083
NP-DNGA432-FS2	●	●	●		●			2	.500	.187	.031	.203	.079
NP-DNGA433-FS2	●	●	●		●			2	.500	.187	.047	.203	.075
NP-DNGA441-FS2	★	★	★		●			2	.500	.250	.016	.203	.083
NP-DNGA442-FS2	★	★	★		●			2	.500	.250	.031	.203	.079
NP-DNGA443-FS2	★	★	★		●			2	.500	.250	.047	.203	.075
NP-DNGA431-TA2			●	●		●	●	2	.500	.187	.016	.203	.083
NP-DNGA432-TA2			●	●		●	●	2	.500	.187	.031	.203	.079
NP-DNGA433-TA2			●	●		●	●	2	.500	.187	.047	.203	.075
NP-DNGA441-TA2			★	★		●		2	.500	.250	.016	.203	.083
NP-DNGA442-TA2			★	★		●		2	.500	.250	.031	.203	.079
NP-DNGA443-TA2			★	★		●		2	.500	.250	.047	.203	.075
NP-DNGA431-TS2		★						2	.500	.187	.016	.203	.083
NP-DNGA432-TS2		★						2	.500	.187	.031	.203	.079
NP-DNGA433-TS2		★						2	.500	.187	.047	.203	.075
NP-DNGA441-TS2		★						2	.500	.250	.016	.203	.083
NP-DNGA442-TS2		★						2	.500	.250	.031	.203	.079
NP-DNGA443-TS2		★						2	.500	.250	.047	.203	.075
NP-DNGA431-TH2			●	●			●	2	.500	.187	.016	.203	.083
NP-DNGA432-TH2			●	●			●	2	.500	.187	.031	.203	.079
NP-DNGA433-TH2			●	●			●	2	.500	.187	.047	.203	.075
NP-DNGA441-TH2			★	★				2	.500	.250	.016	.203	.083
NP-DNGA442-TH2			★	★				2	.500	.250	.031	.203	.079
NP-DNGA443-TH2			★	★				2	.500	.250	.047	.203	.075
NP-DNGA431-GAWS2JR			●			●		2	.500	.187	.016	.203	.075
NP-DNGA431-GAWS2JL			●			●		2	.500	.187	.016	.203	.075
NP-DNGA432-GAWS2JR			●			●		2	.500	.187	.031	.203	.067
NP-DNGA432-GAWS2JL			●			●		2	.500	.187	.031	.203	.067
NP-DNGA441-GAWS2JR			★			●		2	.500	.250	.016	.203	.075
NP-DNGA441-GAWS2JL			★			●		2	.500	.250	.016	.203	.075
NP-DNGA442-GAWS2JR			★			●		2	.500	.250	.031	.203	.067
NP-DNGA442-GAWS2JL			●			●		2	.500	.250	.031	.203	.067

Negative Inserts (With Hole)
G Class
DNGA, DNGM

NEW PETIT CUT	NEW PETIT CUT
NP_○○4	NP_○○2

NEW PETIT CUT	NEW PETIT CUT
NP_ GAWS2JR/L	BF_, BM_
(With Wiper)	(With Breaker)

4 corner

2 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
BF-DNGM431-TS2		★						2	.500	.187	.016	.203	.083
BF-DNGM432-TS2		★						2	.500	.187	.031	.203	.079
BF-DNGM433-TS2		★						2	.500	.187	.047	.203	.075
BM-DNGM431-TA2			●					2	.500	.187	.016	.203	.083
BM-DNGM432-TA2			●					2	.500	.187	.031	.203	.079
BM-DNGM433-TA2			●					2	.500	.187	.047	.203	.075
BM-DNGM441-TA2			★					2	.500	.250	.016	.203	.083
BM-DNGM442-TA2			★					2	.500	.250	.031	.203	.079
BM-DNGM443-TA2			★					2	.500	.250	.047	.203	.075

Negative Inserts (With Hole)
G Class
SNGA

NEW PETIT CUT
NP_○○2

2 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-SNGA432-GA2			●	●		●		2	.500	.187	.031	.203	.091
NP-SNGA433-GA2			●	●		●		2	.500	.187	.047	.203	.098

● : USA Stock ★ : Stocked in Japan
(1 insert in one case)

Negative Inserts (With Hole)
G Class
TNGA, TNGM

NEW PETIT CUT	NEW PETIT CUT	NEW PETIT CUT
NP_○○6	NP_○○3	BM_○○3
		(With Breaker)

6 corner

3 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-TNGA331-GA6			★	★		●		6	.375	.187	.016	.150	.063
NP-TNGA332-GA6			★	★		●		6	.375	.187	.031	.150	.071
NP-TNGA333-GA6			★	★		●		6	.375	.187	.047	.150	.075
NP-TNGA331-GS6	●	★						6	.375	.187	.016	.150	.063
NP-TNGA332-GS6	●	★						6	.375	.187	.031	.150	.071
NP-TNGA333-GS6	●	★						6	.375	.187	.047	.150	.075
NP-TNGA331-GH6		●	●	●				6	.375	.187	.016	.150	.063
NP-TNGA332-GH6		●	●	●				6	.375	.187	.031	.150	.071
NP-TNGA333-GH6		●	●	●				6	.375	.187	.047	.150	.075
NP-TNGA331-FS6	●	★	★		●			6	.375	.187	.016	.150	.063
NP-TNGA332-FS6	●	★	★		●			6	.375	.187	.031	.150	.071
NP-TNGA333-FS6	●	★	★		●			6	.375	.187	.047	.150	.075
NP-TNGA331-TA6			★	★		●	●	6	.375	.187	.016	.150	.063
NP-TNGA332-TA6			★	★		●	●	6	.375	.187	.031	.150	.071
NP-TNGA333-TA6			★	★		●	●	6	.375	.187	.047	.150	.075
NP-TNGA331-TS6		★						6	.375	.187	.016	.150	.063
NP-TNGA332-TS6		★						6	.375	.187	.031	.150	.071
NP-TNGA333-TS6		★						6	.375	.187	.047	.150	.075
NP-TNGA331-TH6			●	★			●	6	.375	.187	.016	.150	.063
NP-TNGA332-TH6			●	★			●	6	.375	.187	.031	.150	.071
NP-TNGA333-TH6			●	★			●	6	.375	.187	.047	.150	.075
NP-TNGA330.5-GA3			●			●		3	.375	.187	.008	.150	.059
NP-TNGA331-GA3			●	●		●		3	.375	.187	.016	.150	.063
NP-TNGA332-GA3			●	●		●		3	.375	.187	.031	.150	.071
NP-TNGA333-GA3			●	●		●		3	.375	.187	.047	.150	.075
NP-TNGA330.5-GS3		●						3	.375	.187	.008	.150	.059
NP-TNGA331-GS3	●	●						3	.375	.187	.016	.150	.063
NP-TNGA332-GS3	●	●						3	.375	.187	.031	.150	.071
NP-TNGA333-GS3	●	●						3	.375	.187	.047	.150	.075
NP-TNGA331-GH3		●	●	●				3	.375	.187	.016	.150	.063
NP-TNGA332-GH3		●	●	●				3	.375	.187	.031	.150	.071
NP-TNGA333-GH3		●	●	●				3	.375	.187	.047	.150	.075
NP-TNGA330.5-FS3		●			●			3	.375	.187	.008	.150	.059
NP-TNGA331-FS3	●	●	●		●			3	.375	.187	.016	.150	.063
NP-TNGA332-FS3	●	●	●		●			3	.375	.187	.031	.150	.071
NP-TNGA333-FS3	●	●	●		●			3	.375	.187	.047	.150	.075
NP-TNGA331-TA3			●	●		●	●	3	.375	.187	.016	.150	.063
NP-TNGA332-TA3			●	●		●	●	3	.375	.187	.031	.150	.071
NP-TNGA333-TA3			●	●		●	●	3	.375	.187	.047	.150	.075
NP-TNGA331-TS3		★						3	.375	.187	.016	.150	.063
NP-TNGA332-TS3		★						3	.375	.187	.031	.150	.071
NP-TNGA333-TS3		★						3	.375	.187	.047	.150	.075

Negative Inserts (With Hole)
G Class
TNGA, TNGM

NEW PETIT CUT	NEW PETIT CUT	NEW PETIT CUT
NP_○○6	NP_○○3	BM_○○3

(With Breaker)

6 corner

3 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-TNGA331-TH3			●	●			●	3	.375	.187	.016	.150	.063
NP-TNGA332-TH3			●	●			●	3	.375	.187	.031	.150	.071
NP-TNGA333-TH3			●	●			●	3	.375	.187	.047	.150	.075
BM-TNGM332-TA3			●					3	.375	.187	.031	.150	.071
BM-TNGM333-TA3			●					3	.375	.187	.047	.150	.075

● : USA Stock ★ : Stocked in Japan
(1 insert in one case)

Negative Inserts (With Hole)
G Class
VNGA

NEW PETIT CUT
NP_○○4

NEW PETIT CUT
NP_○○2

4 corner

2 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-VNGA331-GA4			★	★		●		4	.375	.187	.016	.150	.098
NP-VNGA332-GA4			★	★		●		4	.375	.187	.031	.150	.079
NP-VNGA333-GA4			★	★		●		4	.375	.187	.047	.150	.063
NP-VNGA331-GS4	●	★						4	.375	.187	.016	.150	.098
NP-VNGA332-GS4	●	★						4	.375	.187	.031	.150	.079
NP-VNGA333-GS4		★						4	.375	.187	.047	.150	.063
NP-VNGA331-GH4		●	●	●				4	.375	.187	.016	.150	.098
NP-VNGA332-GH4		●	●	●				4	.375	.187	.031	.150	.079
NP-VNGA333-GH4		●	●	●				4	.375	.187	.047	.150	.063
NP-VNGA331-FS4	●	★	★		●			4	.375	.187	.016	.150	.098
NP-VNGA332-FS4	●	★	★		●			4	.375	.187	.031	.150	.079
NP-VNGA333-FS4			★					4	.375	.187	.047	.150	.063
NP-VNGA331-TA4			★	★		●		4	.375	.187	.016	.150	.098
NP-VNGA332-TA4			★	★		●		4	.375	.187	.031	.150	.079
NP-VNGA333-TA4			★	★		●		4	.375	.187	.047	.150	.063
NP-VNGA331-TS4		★						4	.375	.187	.016	.150	.098
NP-VNGA332-TS4		★						4	.375	.187	.031	.150	.079
NP-VNGA331-TH4			●	★				4	.375	.187	.016	.150	.098
NP-VNGA332-TH4			●	★				4	.375	.187	.031	.150	.079
NP-VNGA333-TH4			●	★				4	.375	.187	.047	.150	.063
NP-VNGA330.5-GA2			●			●		2	.375	.187	.008	.150	.098
NP-VNGA331-GA2			●	●		●		2	.375	.187	.016	.150	.098
NP-VNGA332-GA2			●	●		●		2	.375	.187	.031	.150	.079
NP-VNGA333-GA2			●	●		●		2	.375	.187	.047	.150	.063
NP-VNGA330.5-GS2		●						2	.375	.187	.008	.150	.098
NP-VNGA331-GS2	●	●						2	.375	.187	.016	.150	.098
NP-VNGA332-GS2	●	●						2	.375	.187	.031	.150	.079
NP-VNGA333-GS2		●						2	.375	.187	.047	.150	.063
NP-VNGA331-GH2		●	●	●				2	.375	.187	.016	.150	.098
NP-VNGA332-GH2		●	●	●				2	.375	.187	.031	.150	.079
NP-VNGA333-GH2		●	●	●				2	.375	.187	.047	.150	.063
NP-VNGA330.5-FS2		●			●			2	.375	.187	.008	.150	.098
NP-VNGA331-FS2	●	●	●		●			2	.375	.187	.016	.150	.098
NP-VNGA332-FS2	●	●	●		●			2	.375	.187	.031	.150	.079
NP-VNGA333-FS2			●					2	.375	.187	.047	.150	.063
NP-VNGA331-TA2			●	●		●		2	.375	.187	.016	.150	.098
NP-VNGA332-TA2			●	●		●		2	.375	.187	.031	.150	.079
NP-VNGA333-TA2			●	●		●		2	.375	.187	.047	.150	.063
NP-VNGA331-TS2		★						2	.375	.187	.016	.150	.098
NP-VNGA332-TS2		★						2	.375	.187	.031	.150	.079
NP-VNGA331-TH2			●	●				2	.375	.187	.016	.150	.098
NP-VNGA332-TH2			●	●				2	.375	.187	.031	.150	.079
NP-VNGA333-TH2			●	●				2	.375	.187	.047	.150	.063

CBN-Series for Hardened Steel Turning

Negative Inserts (With Hole)

G Class

WNGA

NEW PETIT CUT	NEW PETIT CUT
NP_○○6	NP_○○3
NEW PETIT CUT	
NP_GSWS3	
(With Wiper)	

6 corner

3 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-WNGA432-GS6	●	★						6	.500	.187	.031	.203	.083
NP-WNGA432-FS6	●	★						6	.500	.187	.031	.203	.083
NP-WNGA432-TS6		★						6	.500	.187	.031	.203	.083
NP-WNGA432-GA3			●	●				3	.500	.187	.031	.203	.083
NP-WNGA432-GS3	●	★						3	.500	.187	.031	.203	.083
NP-WNGA432-GH3		●	●	●				3	.500	.187	.031	.203	.083
NP-WNGA432-FS3	●	★	●					3	.500	.187	.031	.203	.083
NP-WNGA432-TA3			●	●				3	.500	.187	.031	.203	.083
NP-WNGA432-TS3		★						3	.500	.187	.031	.203	.083
NP-WNGA432-TH3			●	●				3	.500	.187	.031	.203	.083
NP-WNGA432-GSWS3		★						3	.500	.187	.031	.203	.083

● : USA Stock ★ : Stocked in Japan
(1 insert in one case)

Positive Inserts (With Hole)

G Class

CCGW 7°, CCGT 7°, CPGB 11°

NEW PETIT CUT	NEW PETIT CUT	NEW PETIT CUT	NEW PETIT CUT
NP_○○2	NP_○○W○2	BF_, BM_	NP
			*
	(With Wiper)	(With Breaker)	(Non-ISO)
NEW PETIT CUT			
NP_○○2			

2 corner

2 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-CCGW21.50.5-GA2			●			●		2	.250	.094	.008	.110	.071
NP-CCGW21.51-GA2			●	●		●		2	.250	.094	.016	.110	.075
NP-CCGW21.52-GA2			●	●		●		2	.250	.094	.031	.110	.083
NP-CCGW32.50.5-GA2			●			●		2	.375	.156	.008	.173	.071
NP-CCGW32.51-GA2			●	●		●		2	.375	.156	.016	.173	.075
NP-CCGW32.52-GA2			●	●		●		2	.375	.156	.031	.173	.083
NP-CCGW21.50.5-GS2	●	●						2	.250	.094	.008	.110	.071
NP-CCGW21.51-GS2	●	●						2	.250	.094	.016	.110	.075
NP-CCGW21.52-GS2	●	●						2	.250	.094	.031	.110	.083
NP-CCGW32.50.5-GS2	●	●						2	.375	.156	.008	.173	.071
NP-CCGW32.51-GS2	●	●						2	.375	.156	.016	.173	.075
NP-CCGW32.52-GS2	●	●						2	.375	.156	.031	.173	.083
NP-CCGW32.51-GH2		●	●	●				2	.375	.156	.016	.173	.075
NP-CCGW32.52-GH2		●	●	●				2	.375	.156	.031	.173	.083
NP-CCGW21.50.5-FS2		●			●			2	.250	.094	.008	.110	.071
NP-CCGW21.51-FS2		●			●			2	.250	.094	.016	.110	.075
NP-CCGW21.52-FS2		●			●			2	.250	.094	.031	.110	.083
NP-CCGW32.50.5-FS2	●	●			●			2	.375	.156	.008	.173	.071
NP-CCGW32.51-FS2	●	●	●		●			2	.375	.156	.016	.173	.075
NP-CCGW32.52-FS2	●	●	●		●			2	.375	.156	.031	.173	.083
NP-CCGW21.51-TA2				●			●	2	.250	.094	.016	.110	.075
NP-CCGW21.52-TA2				●			●	2	.250	.094	.031	.110	.083
NP-CCGW32.51-TA2			●	●		●	●	2	.375	.156	.016	.173	.075
NP-CCGW32.52-TA2			●	●		●	●	2	.375	.156	.031	.173	.083
NP-CCGW32.51-TH2			●	●			●	2	.375	.156	.016	.173	.075
NP-CCGW32.52-TH2			●	●			●	2	.375	.156	.031	.173	.083
NP-CCGW32.51-FBWL2	●	●	●		●			2	.375	.156	.016	.173	.075
NP-CCGW32.52-FBWL2	●	●	●		●			2	.375	.156	.031	.173	.083
NP-CCGW32.51-FSWS2	●	●	●		●			2	.375	.156	.016	.173	.075
NP-CCGW32.52-FSWS2	●	●	●		●			2	.375	.156	.031	.173	.083
NP-CCGW32.51-GAWS2			●	●		●		2	.375	.156	.016	.173	.075
NP-CCGW32.52-GAWS2			●	●		●		2	.375	.156	.031	.173	.083
NP-CCGW32.51-GBWL2	●	●	●			●		2	.375	.156	.016	.173	.075
NP-CCGW32.52-GBWL2	●	●	●			●		2	.375	.156	.031	.173	.083
NP-CCGW32.51-GSWS2	●	●						2	.375	.156	.016	.173	.075
NP-CCGW32.52-GSWS2	●	●						2	.375	.156	.031	.173	.083
BF-CCGT32.51-TS2		★						2	.375	.156	.016	.173	.075
BF-CCGT32.52-TS2		★						2	.375	.156	.031	.173	.083
BM-CCGT32.51-TA2			●					2	.375	.156	.016	.173	.075
BM-CCGT32.52-TA2			●					2	.375	.156	.031	.173	.083
NP-CCGW03S102GS	●							1	.156*	.055	.008	.079	.043
NP-CCGW03S104GS	●							1	.156*	.055	.016	.079	.043

* Diameter of inscribed circle is non-ISO standard. (For SCLC type)

Positive Inserts (With Hole)

G Class

CCGW 7°, CCGT 7°, CPGB 11°

2 corner EPSR 80°

2 corner EPSR 80°

NEW PETIT CUT	NEW PETIT CUT	NEW PETIT CUT	NEW PETIT CUT
NP_○○2	NP_○○W○2	BF_, BM_	NP
			*
	(With Wiper)	(With Breaker)	(Non-ISO)
NEW PETIT CUT			
NP_○○2			

(inch)

Order Number	Coated CBN BC8105	Coated CBN BC8110	Coated CBN BC8120	Coated CBN BC8130	CBN MB8110	CBN MB8120	CBN MB8130	Cutting Edges	IC	S	RE	D1	LE
NP-CCGW04T002GS	●							1	.187*	.070	.008	.094	.059
NP-CCGW04T004GS	●							1	.187*	.070	.016	.094	.059
NP-CCGW03S102FS		●			●			1	.156*	.055	.008	.079	.043
NP-CCGW03S104FS		●			●			1	.156*	.055	.016	.079	.043
NP-CCGW04T002FS		●			●			1	.187*	.070	.008	.094	.059
NP-CCGW04T004FS		●			●			1	.187*	.070	.016	.094	.059
NP-CPGB2.51.51-GA2			★	●				2	.313	.094	.016	.138	.075
NP-CPGB2.51.52-GA2			★	●				2	.313	.094	.031	.138	.083
NP-CPGB2.51.53-GA2			★	●				2	.313	.094	.047	.138	.091
NP-CPGB320.5-GA2			●					2	.375	.125	.008	.177	.071
NP-CPGB321-GA2			●	●				2	.375	.125	.016	.177	.075
MP-CPGB322-GA2			●	●				2	.375	.125	.031	.177	.083
NP-CPGB323-GA2			●	●				2	.375	.125	.047	.177	.091
NP-CPGB2.51.51-GS2	●	★						2	.313	.094	.016	.138	.075
NP-CPGB2.51.52-GS2	●	★						2	.313	.094	.031	.138	.083
NP-CPGB320.5-GS2	●	●						2	.375	.125	.008	.177	.071
NP-CPGB321-GS2	●	★						2	.375	.125	.016	.177	.075
NP-CPGB322-GS2	●	★						2	.375	.125	.031	.177	.083
NP-CPGB2.51.51-FS2		★						2	.313	.094	.016	.138	.075
NP-CPGB2.51.52-FS2		★						2	.313	.094	.031	.138	.083
NP-CPGB320.5-FS2	●	●						2	.375	.125	.008	.177	.071
NP-CPGB321-FS2	●		●					2	.375	.125	.016	.177	.075
NP-CPGB322-FS2	●		●					2	.375	.125	.031	.177	.083
NP-CPGB323-FS2			●					2	.375	.125	.047	.177	.091
NP-CPGB2.51.51-TA2				●				2	.313	.094	.016	.138	.075
NP-CPGB2.51.52-TA2				●				2	.313	.094	.031	.138	.083
NP-CPGB2.51.53-TA2				●				2	.313	.094	.047	.138	.091
NP-CPGB321-TA2			●	●				2	.375	.125	.016	.177	.075
NP-CPGB322-TA2			●	●				2	.375	.125	.031	.177	.083
NP-CPGB323-TA2			●	●				2	.375	.125	.047	.177	.091

* Diameter of inscribed circle is non-ISO standard. (For SCLC type)

● : USA Stock ★ : Stocked in Japan
(1 insert in one case)

Positive Inserts (With Hole)

G Class

DCGW 7°, DCGT 7°

2 corner EPSR 55°

NEW PETIT CUT
NP_○○2
NEW PETIT CUT
BF_, BM_
(With Breaker)

(inch)

Order Number	Coated CBN BC8105	Coated CBN BC8110	Coated CBN BC8120	Coated CBN BC8130	CBN MB8110	CBN MB8120	CBN MB8130	Cutting Edges	IC	S	RE	D1	LE
NP-DCGW21.50.5-GA2			●			●		2	.250	.094	.008	.110	.091
NP-DCGW21.51-GA2			●	●		●		2	.250	.094	.016	.110	.083
NP-DCGW21.52-GA2				●				2	.250	.094	.031	.110	.079
NP-DCGW32.50.5-GA2			●			●		2	.375	.156	.008	.173	.091
NP-DCGW32.51-GA2			●	●		●		2	.375	.156	.016	.173	.083
NP-DCGW32.52-GA2			●	●		●		2	.375	.156	.031	.173	.079
NP-DCGW21.50.5-GS2	●	●						2	.250	.094	.008	.110	.091
NP-DCGW21.51-GS2	●	●						2	.250	.094	.016	.110	.083
NP-DCGW21.52-GS2	●	●						2	.250	.094	.031	.110	.079
NP-DCGW32.50.5-GS2	●	●						2	.375	.156	.008	.173	.091
NP-DCGW32.51-GS2	●	●						2	.375	.156	.016	.173	.083
NP-DCGW32.52-GS2	●	●						2	.375	.156	.031	.173	.079
NP-DCGW32.51-GH2		●	●	●				2	.375	.156	.016	.173	.083
NP-DCGW32.52-GH2		●	●	●				2	.375	.156	.031	.173	.079
NP-DCGW21.50.5-FS2		●			●			2	.250	.094	.008	.110	.091
NP-DCGW21.51-FS2		●	●		●			2	.250	.094	.016	.110	.083
NP-DCGW21.52-FS2		●			●			2	.250	.094	.031	.110	.079
NP-DCGW32.50.5-FS2	●	●			●			2	.375	.156	.008	.173	.091
NP-DCGW32.51-FS2	●	●	●		●			2	.375	.156	.016	.173	.083
NP-DCGW32.52-FS2	●	●	●		●			2	.375	.156	.031	.173	.079
NP-DCGW21.51-TA2			●	●		●	●	2	.250	.094	.016	.110	.083
NP-DCGW21.52-TA2				●			●	2	.250	.094	.031	.110	.079
NP-DCGW32.51-TA2			●	●		●	●	2	.375	.156	.016	.173	.083
NP-DCGW32.52-TA2			●	●		●	●	2	.375	.156	.031	.173	.079
NP-DCGW32.51-TH2			●	●			●	2	.375	.156	.016	.173	.083
NP-DCGW32.52-TH2			●	●			●	2	.375	.156	.031	.173	.079
BF-DCGT32.51-TS2		★						2	.375	.156	.016	.173	.083
BF-DCGT32.52-TS2		★						2	.375	.156	.031	.173	.079
BM-DCGT32.51-TA2			●					2	.375	.156	.016	.173	.083
BM-DCGT32.52-TA2			●					2	.375	.156	.031	.173	.079

Positive Inserts (With Hole)

G Class

TCGW 7°, TPGB 11°

NEW PETIT CUT
NP_TCGW

NEW PETIT CUT
NP-TPGB

3 corner

3 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-TCGW1.81.51-GS3		★						3	.219	.094	.016	.098	.063
NP-TCGW1.81.52-GS3		★						3	.219	.094	.031	.098	.071
NP-TCGW21.50.5-GS3		●						3	.250	.094	.008	.110	.059
NP-TCGW21.51-GS3		●						3	.250	.094	.016	.110	.063
NP-TCGW21.52-GS3		●						3	.250	.094	.031	.110	.071
NP-TCGW2.521-GS3		★						3	.313	.125	.016	.134	.063
NP-TCGW2.522-GS3		★						3	.313	.125	.031	.134	.071
NP-TCGW32.51-GS3		●						3	.375	.156	.016	.173	.063
NP-TCGW32.52-GS3		●						3	.375	.156	.031	.173	.071
NP-TPGB1.51.51-GA3				●				3	.187	.094	.016	.094	.063
NP-TPGB1.51.52-GA3				●				3	.187	.094	.031	.094	.071
NP-TPGB1.81.51-GA3			★	●		●		3	.219	.094	.016	.114	.063
NP-TPGB1.81.52-GA3			★	●		●		3	.219	.094	.031	.114	.071
NP-TPGB220.5-GA3			★			●		3	.250	.125	.008	.134	.059
NP-TPGB221-GA3			★	●		●		3	.250	.125	.016	.134	.063
NP-TPGB222-GA3			★	●		●		3	.250	.125	.031	.134	.071
NP-TPGB321-GA3			★	●		●		3	.375	.125	.016	.173	.063
NP-TPGB322-GA3			★	●		●		3	.375	.125	.031	.173	.071
NP-TPGB1.51.51-GS3	●	★						3	.187	.094	.016	.094	.063
NP-TPGB1.51.52-GS3	●	★						3	.187	.094	.031	.094	.071
NP-TPGB1.81.51-GS3	●	★						3	.219	.094	.016	.114	.063
NP-TPGB1.81.52-GS3	●	★						3	.219	.094	.031	.114	.071
NP-TPGB220.5-GS3	●	●						3	.250	.125	.008	.134	.059
NP-TPGB221-GS3	●	★						3	.250	.125	.016	.134	.063
NP-TPGB222-GS3	●	★						3	.250	.125	.031	.134	.071
NP-TPGB321-GS3	●	★						3	.375	.125	.016	.173	.063
NP-TPGB322-GS3	●	★						3	.375	.125	.031	.173	.071
NP-TPGB321-GH3		●	●	●				3	.375	.125	.016	.173	.063
NP-TPGB322-GH3		●	●	●				3	.375	.125	.031	.173	.071
NP-TPGB220.5-FS3	●	●			●			3	.250	.125	.008	.134	.059
NP-TPGB221-FS3	●	★	★		●			3	.250	.125	.016	.134	.063
NP-TPGB222-FS3	●	★	★		●			3	.250	.125	.031	.134	.071
NP-TPGB321-FS3			★					3	.375	.125	.016	.173	.063
NP-TPGB322-FS3			★					3	.375	.125	.031	.173	.071
NP-TPGB1.51.51-TA3				●			●	3	.187	.094	.016	.094	.063
NP-TPGB1.51.52-TA3				●			●	3	.187	.094	.031	.094	.071
NP-TPGB1.81.51-TA3				●			●	3	.219	.094	.016	.114	.063
NP-TPGB1.81.52-TA3				●			●	3	.219	.094	.031	.114	.071
NP-TPGB221-TA3			★	●		●	●	3	.250	.125	.016	.134	.063
NP-TPGB222-TA3			★	●		●	●	3	.250	.125	.031	.134	.071
NP-TPGB321-TA3			★	●		●	●	3	.375	.125	.016	.173	.063
NP-TPGB322-TA3			★	●		●	●	3	.375	.125	.031	.173	.071
NP-TPGB321-TH3			●	●			●	3	.375	.125	.016	.173	.063
NP-TPGB322-TH3			●	●			●	3	.375	.125	.031	.173	.071

● : USA Stock ★ : Stocked in Japan
(1 insert in one case)

Positive Inserts (With Hole)

G Class

VBGW 5°, VCGW 7°

NEW PETIT CUT
NP_VBGW

NEW PETIT CUT
NP-VCGW

2 corner

2 corner

(inch)

Order Number	Coated CBN				CBN			Cutting Edges	IC	S	RE	D1	LE
	BC8105	BC8110	BC8120	BC8130	MB8110	MB8120	MB8130						
NP-VBGW220.5-GA2			●			●		2	.250	.125	.008	.114	.098
NP-VBGW221-GA2			●	●		●		2	.250	.125	.016	.114	.098
NP-VBGW222-GA2			●	●		●		2	.250	.125	.031	.114	.079
NP-VBGW330.5-GA2			●			●		2	.375	.187	.008	.173	.098
NP-VBGW331-GA2			●	●		●		2	.375	.187	.016	.173	.098
NP-VBGW332-GA2			●	●		●		2	.375	.187	.031	.173	.079
NP-VBGW220.5-GS2	●	●						2	.250	.125	.008	.114	.098
NP-VBGW221-GS2	●	●						2	.250	.125	.016	.114	.098
NP-VBGW222-GS2	●	●						2	.250	.125	.031	.114	.079
NP-VBGW330.5-GS2	●	●						2	.375	.187	.008	.173	.098
NP-VBGW331-GS2	●	●						2	.375	.187	.016	.173	.098
NP-VBGW332-GS2	●	●						2	.375	.187	.031	.173	.079
NP-VBGW331-GH2		●	●	●				2	.375	.187	.016	.173	.098
NP-VBGW332-GH2		●	●	●				2	.375	.187	.031	.173	.079
NP-VBGW220.5-FS2		●			●			2	.250	.125	.008	.114	.098
NP-VBGW221-FS2		●			●			2	.250	.125	.016	.114	.098
NP-VBGW222-FS2		●			●			2	.250	.125	.031	.114	.079
NP-VBGW330.5-FS2		●			●			2	.375	.187	.008	.173	.098
NP-VBGW331-FS2			●					2	.375	.187	.016	.173	.098
NP-VBGW332-FS2			●					2	.375	.187	.031	.173	.079
NP-VBGW221-TA2				●				2	.250	.125	.016	.114	.098
NP-VBGW222-TA2				●				2	.250	.125	.031	.114	.079
NP-VBGW331-TA2			●	●		●		2	.375	.187	.016	.173	.098
NP-VBGW332-TA2			●	●		●		2	.375	.187	.031	.173	.079
NP-VBGW331-TH2			●	●				2	.375	.187	.016	.173	.098
NP-VBGW332-TH2			●	●				2	.375	.187	.031	.173	.079
NP-VCGW331-GA2			●	●				2	.375	.187	.016	.173	.098
NP-VCGW332-GA2			●	●				2	.375	.187	.031	.173	.079
NP-VCGW331-GS2	●	●						2	.375	.187	.016	.173	.098
NP-VCGW332-GS2	●	●						2	.375	.187	.031	.173	.079
NP-VCGW331-GH2		●	●	●				2	.375	.187	.016	.173	.098
NP-VCGW332-GH2		●	●	●				2	.375	.187	.031	.173	.079
NP-VCGW331-FS2		●	●		●			2	.375	.187	.016	.173	.098
NP-VCGW332-FS2		●	●		●			2	.375	.187	.031	.173	.079
NP-VCGW331-TA2			●	●				2	.375	.187	.016	.173	.098
NP-VCGW332-TA2			●	●				2	.375	.187	.031	.173	.079
NP-VCGW331-TS2		●						2	.375	.187	.016	.173	.098
NP-VCGW332-TS2		●						2	.375	.187	.031	.173	.079
NP-VCGW331-TH2			●	●				2	.375	.187	.016	.173	.098
NP-VCGW332-TH2			●	●				2	.375	.187	.031	.173	.079

CBN-Series for Hardened Steel Turning

Inserts

(inch)

Applications	Geometry	Order Number	Stock CBN BC8110	Seat Size	CW Grooving Width	CW Tolerance	RER/L	L	LE
For Grooving	**Flat Top** (For Hardened Material)	**GY1G0200D020N-GFGS**	●	**D**	.079	±.0012	.008	.815	.106
		GY1G0239E020N-GFGS	●	**E**	.094	±.0012	.008	.815	.106
		GY1G0250E020N-GFGS	●	**E**	.098	±.0012	.008	.815	.106
		GY1G0300F020N-GFGS	●	**F**	.118	±.0012	.008	.815	.106
		GY1G0318F020N-GFGS	●	**F**	.125	±.0012	.008	.815	.106
		GY1G0400G020N-GFGS	●	**G**	.157	±.0012	.008	1.010	.106
		GY1G0475H020N-GFGS	●	**H**	.187	±.0012	.008	1.010	.106
		GY1G0500H020N-GFGS	●	**H**	.197	±.0012	.008	1.010	.106
		GY1G0600J020N-GFGS	●	**J**	.236	±.0012	.008	1.010	.106

Recommended Cutting Conditions

● For External Grooving
Recommended Cutting Speed **vc** (SFM)

	Workpiece Material	Properties	Cutting Speed **vc** (SFM) 165 330 490
H	Hardened Steels	Hardness ≥50HRC	**260 395**

● For Face Grooving
Recommended Cutting Speed **vc** (SFM)

	Workpiece Material	Properties	Cutting Speed **vc** (SFM) 165 330 490
H	Hardened Steels	Hardness ≥50HRC	**195 330**

● For Internal Grooving
Recommended Cutting Speed **vc** (SFM)

	Workpiece Material	Properties	Cutting Speed **vc** (SFM) 165 330 490
H	Hardened Steels	Hardness ≥50HRC	**195 330**

● : USA Stock
(1 insert in one case)

BC8105 Highest Accuracy

Application Range

Excellent surface finishes and close tolerances with long tool life
For surface finishes up to Rz 94.5 μ-inch (Ra 23.6 μ-inch).

Surface Finish

Insert	NP-DNGA442-GS2
Workpiece Material	AISI 1534 (60HRC)
Machining Methods	External Continuous Cutting
Cutting Speed **vc** (SFM)	575
Feed per Rev. **f** (IPR)	.004
Depth of Cut **ap** (inch)	.006
Cutting Mode	Wet Cutting (Emulsion)

BC8105 is first choice for superior surface finishes.

Surface Finish

Insert	NP-CNGA432-GS2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Continuous Cutting
Cutting Speed **vc** (SFM)	655
Feed per Rev. **f** (IPR)	.002
Depth of Cut **ap** (inch)	.002
Cutting Mode	Dry Cutting

BC8105 reduces the notch wear and provides an excellent surface finish.

Recommended Cutting Conditions

Workpiece Material	Machining Methods	Cutting Speed vc (SFM) 165 330 655 985 1310	f (IPR)	ap (inch)	Cutting Mode
Hardened Steels (Heat Treated Steels etc)	External Continuous Cutting		≤ .006	≤ .008	Dry, Wet

BC8110 High Speed Turning

For Continuous Cutting
Covers a wide application range for continuous cutting.

Tool Life (Flank Wear)

Insert	NP-CNGA432-GS2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Continuous Cutting
Cutting Speed **vc** (SFM)	820
Feed per Rev. **f** (IPR)	.004
Depth of Cut **ap** (inch)	.008
Cutting Mode	Dry Cutting

BC8110 is first choice for high speed finishing.

Surface Finish

Insert	NP-CNGA432-GS2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Continuous Cutting
Cutting Speed **vc** (SFM)	820
Feed per Rev. **f** (IPR)	.004
Depth of Cut **ap** (inch)	.008
Cutting Mode	Dry Cutting

Excellent surface finishes maintained during long continuous cutting.

Recommended Cutting Conditions

Workpiece Material	Machining Methods	Cutting Speed vc (SFM) 165 330 655 985 1310	f (IPR)	ap (inch)	Cutting Mode
Hardened Steels (Heat Treated Steels etc)	External Continuous Cutting		≤ .008	≤ .014	Dry, Wet

BC8120 General Application

For Continuous and Light Interrupted Cutting
1st choice for roughing and pre-finishing. Covers a wide application range between continuous and light-interrupted machining.

Test of Interrupted Cutting

Insert	NP-CNGA432-GA2
Workpiece Material	AISI 5120 (60HRC)
Machining Methods	External Interrupted Cutting
Cutting Speed **vc** (SFM)	820
Feed per Rev. **f** (IPR)	.006
Depth of Cut **ap** (inch)	.004
Cutting Mode	Dry Cutting

Cutting Edge Condition after 8000 Impacts

BC8120 Conventional

Tool Life (Flank Wear)

Insert	NP-CNGA432-GA2
Workpiece Material	AISI 5120 (60 HRC)
Machining Methods	External Continuous Cutting
Cutting Speed **vc** (SFM)	490
Feed per Rev. **f** (IPR)	.004
Depth of Cut **ap** (inch)	.008
Cutting Mode	Dry Cutting

Cutting edge after 15 min.

BC8120 Conventional

Recommended Cutting Conditions

Workpiece Material	Machining Methods	Cutting Speed vc (SFM) 165 330 655 985	f (IPR)	ap (inch)	Cutting Mode
Hardened Steels (Heat Treated Steels etc)	External Continuous Cutting		≤ .012	≤ .020	Dry, Wet
	External Interrupted Cutting		≤ .008	≤ .012	Dry, Wet

BC8130 Tough Machining

For Unstable Applications and Heavy Interrupted Cutting
Tolerance accuracy maintained over a high number of impacts.

Heavy Interrupted Cutting (Laboratory Test)

Insert	NP-CNGA432-GA2
Workpiece Material	AISI 5120 (60 HRC)
Machining Methods	External Heavy Interrupted Cutting
Cutting Speed **vc** (SFM)	820
Feed per Rev. **f** (IPR)	.002
Depth of Cut **ap** (inch)	.004
Cutting Mode	Wet Cutting

BC8130 provides stability up to 30000 impacts.

Heavy Cutting

Insert	NP-CNGA432-TH2
Workpiece Material	AISI 1045 (58HRC)
Machining Methods	External Heavy Interrupted Cutting
Cutting Speed **vc** (SFM)	425
Feed per Rev. **f** (IPR)	.003
Depth of Cut **ap** (inch)	.006
Cutting Mode	Wet Cutting

No fracturing after machining 70 pcs.

Recommended Cutting Conditions

Workpiece Material	Machining Methods	Cutting Speed vc (SFM) 0 165 330 490 655	f (IPR)	ap (inch)	Cutting Mode
Hardened Steels (Heat Treated Steels etc)	External Interrupted Cutting		≤ .008	≤ .012	Dry, Wet

MB8100 Series

Non-coated CBN Grades Applied Ultra Micro-particle Binder Technology

Tool Life (Flank Wear)

Insert	NP-CNGA432-GA2
Workpiece Material	AISI 5120 (60 HRC)
Machining Methods	External Continuous Cutting
Cutting Speed **vc** (SFM)	820
Feed per Rev. **f** (IPR)	.004
Depth of Cut **ap** (inch)	.008
Cutting Mode	Dry Cutting

Cutting Edge after 180 sec.

Heavy Cutting

Insert	NP-CNGA432-GA2
Workpiece Material	AISI 5120 (60 HRC)
Machining Methods	External Interrupted Cutting
Cutting Speed **vc** (SFM)	820
Feed per Rev. **f** (IPR)	.006
Depth of Cut **ap** (inch)	.004
Cutting Mode	Dry Cutting

17000 Impacts 11000 Impacts

Heavy Cutting

Insert	NP-CNGA432-GA2
Workpiece Material	AISI 5120 (60 HRC)
Machining Methods	External Heavy Interrupted Cutting
Cutting Speed **vc** (SFM)	490
Feed per Rev. **f** (IPR)	.002
Depth of Cut **ap** (inch)	.004
Cutting Mode	Wet Cutting

77000 Impacts 54000 Impacts

Application Examples

Insert	NP-CNGA432-GSWS2	NP-DCGW32.52-GS2	NP-CNGA432-FBWL2
Workpiece	AISI 5120H (58-60HRC)	AISI 4419 (58-60HRC)	JIS 19CrNi5 (58-62HRC)
Component	Pinion Gear	Shaft (Internal Continuous Cutting)	Differential Pinion Gear(Continuous Facing)
Cutting Conditions: Cutting Speed **vc** (SFM)	525	540	510
Cutting Conditions: Feed per Rev. **f** (IPR)	.014	.003	.005
Cutting Conditions: Depth of Cut **ap** (inch)	.006	.004	.006
Cutting Mode	Dry Cutting	Dry Cutting	Dry Cutting
Results	Due to excellent surfaces, number of workpieces per cutting edge increased 1.5X compared to conventional product. Rz max : 185.0 μ-inch	BC8105 achieved 1.1X longer tool life compared to conventional product.	The surface roughness is more stable compared to conventional products, achieving 1.5X longer tool life. Ra<31.5 μ-inch

Insert	NP-CNGA432-GS2	NP-DNGA431-FS2	NP-CCGW32.52-GS2
Workpiece	AISI 1049 (55-65HRC)	AISI 1049 (55-65HRC)	AISI 5115 (60-65HRC)
Component	Shaft (External Continuous Cutting)	Shaft (External Continuous Cutting)	Gear (Internal Continuous Cutting)
Cutting Conditions: Cutting Speed **vc** (SFM)	820	525	360
Cutting Conditions: Feed per Rev. **f** (IPR)	.006	.008	.006
Cutting Conditions: Depth of Cut **ap** (inch)	.012	.008	.008
Cutting Mode	Wet Cutting	Wet Cutting	Dry Cutting
Results	Increased efficiency with BC8110 due to fewer tool changes required.	BC8110 achieved 2.5X longer tool life and could continue machining.	Longer tool life meant reduced insert indexing.

Insert	NP-CNGA432-GBWL2	NP-CNGA432-TH2	NP-DNGA432-GH2
Workpiece	Alloy Steel (60-63HRC)	AISI 1045 (58HRC)	JIS SCM815
Component	Pinion Drive (External Continuous Cutting)	Gear (Interrupted Facing)	Shaft (Tough Machining)
Cutting Conditions: Cutting Speed **vc** (SFM)	260	425	490
Cutting Conditions: Feed per Rev. **f** (IPR)	.008–.009	.003	.006
Cutting Conditions: Depth of Cut **ap** (inch)	.006	.006	.006
Cutting Mode	Wet Cutting	Wet Cutting	Dry Cutting
Results	A tool life of Rz<248.0 μ-inch enables 1.2X the processing possible for conventional product.	BC8120 prevented fracturing and extended 1.4X longer tool life when high-load interrupted cutting.	BC8130 achieved stable machining without fracture even under heavy interrupted cutting when machining big workpiece.

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

Insert	BF-DNGM431-TS2	NP-CNGA432-FS2	NP-CCGW32.52-GS2
Workpiece	AISI 5120 (61-65HRC)	AISI 5120H (60HRC)	Forged (60HRC) Steel
Component	Input Shaft (Continuous Facing)	Gear (Internal Continuous Cutting)	Locker Arm (Internal Continuous Cutting)
Cutting Conditions: Cutting Speed **vc** (SFM)	490	655	460
Cutting Conditions: Feed per Rev. **f** (IPR)	.005	.003	.001
Cutting Conditions: Depth of Cut **ap** (inch)	.006	.006	.006
Cutting Mode	Wet Cutting	Dry Cutting	Dry Cutting
Results	BC8110 achieved 1.3X longer tool life.	Surface finish tolerance was maintained even when 3X the number of components were machined.	BC8110 with excellent wear resistance achieved 1.2X longer tool life compared to conventional product.

Insert	GY1G0200D020N-GFGS	NP-CNGA432-TA2	NP-CNGA433-TA2
Workpiece	AISI 4118 (60HRC)	ASTM (50HRC)	AISI 5120 (60HRC)
Component	Input Shaft (Grooving)	Clamp Cylinder (Interrupted Facing)	Automobile Parts (Internal Continuous)
Cutting Conditions: Cutting Speed **vc** (SFM)	425	425	590
Cutting Conditions: Feed per Rev. **f** (IPR)	.004	.003	.009
Cutting Conditions: Depth of Cut **ap** (inch)	.005	.020	.002 – .004
Cutting Mode	Wet Cutting	Wet Cutting	Wet Cutting
Results	BC8110 600pcs Conventional 270pcs	BC8120 achieved 1.5X longer tool life.	BC8120 achieved stable machining due to improved surfaces.

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

Application Examples

Insert	NP-CNGA432-GA2	BM-DNGM442-TA2	NP-CNGA432-TH2
Workpiece	ASTM C90500 (55-58HRC)	AISI 4142 (56-59HRC)	AISI 1045 (58HRC)
Component	Automobile Parts (Interrupted Facing)	Shaft (External Interrupted Cutting)	Gear (Interrupted Facing)
Cutting Conditions: Cutting Speed **vc** (SFM)	490	560	425
Cutting Conditions: Feed per Rev. **f** (IPR)	.006	.006	.003
Cutting Conditions: Depth of Cut **ap** (inch)	.004	.003 – .004	.006
Cutting Mode	Dry Cutting	Dry Cutting	Wet Cutting
Results	Tool life was 2X and no sudden fracturing occurred.	BC8120 achieved 1.5X longer tool life.	BC8130 achieved 1.5X longer tool life without abnormal damage.

Insert	NP-CCGW32.52-TA2	NP-DNGA432-TA2	NP-CNGA433-TA2
Workpiece	AISI 5115 (58-60HRC)	AISI 5120H (60HRC)	AISI 431 (58-60HRC)
Component	Gear (Internal Interrupted Cutting)	Shaft	Automobile Parts
Cutting Conditions: Cutting Speed **vc** (SFM)	520 – 575	520	330
Cutting Conditions: Feed per Rev. **f** (IPR)	.004	.004	.004
Cutting Conditions: Depth of Cut **ap** (inch)	.005	.007	.006
Cutting Mode	Dry Cutting	Dry Cutting	Dry Cutting
Results	BC8130 increased 1.5X number of workpieces per cutting edge.	BC8130 achieved 2X longer tool life without any cutting edge chipping.	BC8130 achieved 1.5X longer tool life without abnormal damage.

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

Memo

MTEC

MACHINING TECHNOLOGY AND EDUCATION CENTER

Welcome to our new world-class Machining Technology and Education Center (MTEC) in Mooresville, NC providing year round support and services to North America.

ABOUT MTEC

TOOLING PROPOSALS & EVALUATION

We will review your current processes or outline a new process. From this review, we will improve productivity, analyze programming methods and output a solution with programming, tooling and time savings.

MACHINING SIMULATION

Using the latest CAD/CAM software and our cutting tool experience, we will outline a new process using proper machining techniques to maximize tool life and productivity.

TECHNICAL SUPPORT

Dedicated local professionals to answer any of your order, product or technical questions.

TRAINING

We are excited to offer several levels of training with goals to reach our highest level--Craftsman Machining Technology. At MTEC NC, we will train using a combination of classroom and hands-on machine time to develop skills and real-world understanding of materials, tools and applications. In addition to multi-day courses, we will have Machining Technology skills seminars, as well as seminars from our partners to complement our apprentice level courses, our journeyman courses, and up to our craftsman level courses.

PROCESS IMPROVEMENTS

Review of the complete part processing and recommend changes of speed, feed, new tooling, reduction of passes, modifying programming and other solutions to reduce cycle time, save money and be proactive.

WEBINARS

Our FREE online webinar series is available anytime on-demand. Narrated by the MTEC training staff, you will receive in-depth knowledge of the topic. Simply register online at the link below for access. You will receive a certificate upon completion of each course.

mmusnewsstand.com/register

ONLINE TRAINING

Our FREE e-learning program offers 11 courses in drilling, milling, turning, threading, tool grades and workpiece materials. Once each course is completed, you will be given the opportunity to print a certificate.

- Basic Drilling
- Basic Milling
- Basic Turning
- Advanced Drilling
- Advanced End Milling
- Advanced Turning
- Basic Threading
- Advanced Face Milling
- Basic Workpiece Materials
- Tool Grades
- Advanced Workpiece Materials

TRAINING COURSES

Programs are designed for several levels of skill development – from basic understanding to advance manufacturing with digital solutions, complementing to your valued experience in CNC machining environment. Participate in machining demonstrations with Mitsubishi Materials' skilled engineers. Discover methods to reduce setup and cycle time, optimize programs and enhance your knowledge base.

Information on course schedule, course description, and accommodations

MTECTRAINING.INFO

Follow the QR Code for a virtual facility tour

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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.
- When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

www.mmc-carbide.com/us

Tools specifications subject to change without notice.

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