

TURNING

INSERT STANDARDS INSERT GRADES

IDENTIFICATION	B002
COATED CBN-SERIES FOR HARDENED STEEL TURNING ...	B006
PCD GRADE MD220 (SINTERED DIAMOND)	B018
CLASSIFICATION OF CBN & PCD INSERTS	B020

STANDARD OF CBN TURNING INSERTS

● NEGATIVE INSERTS WITH HOLE

CN $\circ\circ$ TYPE ... RHOMBIC 80°	B026
DN $\circ\circ$ TYPE ... RHOMBIC 55°	B029
SN $\circ\circ$ TYPE ... SQUARE 90°	B033
TN $\circ\circ$ TYPE ... TRIANGULAR 60°	B034
VN $\circ\circ$ TYPE ... RHOMBIC 35°	B036
WN $\circ\circ$ TYPE ... TRIGON 80°	B038

● NEGATIVE INSERTS WITHOUT HOLE

CN $\circ\circ$ TYPE ... RHOMBIC 80°	B039
DN $\circ\circ$ TYPE ... RHOMBIC 55°	B039
RN $\circ\circ$ TYPE ... ROUND	B040
SN $\circ\circ$ TYPE ... SQUARE 90°	B040
TN $\circ\circ$ TYPE ... TRIANGULAR 60°	B041

● POSITIVE INSERTS WITH HOLE

CC $\circ\circ$ TYPE ... RHOMBIC 80°	B042
CP $\circ\circ$ TYPE ... RHOMBIC 80°	B045
DC $\circ\circ$ TYPE ... RHOMBIC 55°	B046
TC $\circ\circ$ TYPE ... TRIANGULAR 60°	B048
TP $\circ\circ$ TYPE ... TRIANGULAR 60°	B049
VB $\circ\circ$ TYPE ... RHOMBIC 35°	B051
VC $\circ\circ$ TYPE ... RHOMBIC 35°	B052
WC $\circ\circ$ TYPE ... TRIGON 80°	B053

● POSITIVE INSERTS WITHOUT HOLE

RTG $\circ\circ$ TYPE	B054
SP $\circ\circ$ TYPE ... SQUARE 90°	B055
TB $\circ\circ$ TYPE ... TRIANGULAR 60°	B056
GY $\circ\circ$ TYPE	B057
TP $\circ\circ$ TYPE ... TRIANGULAR 60°	B058

STANDARD OF PCD TURNING INSERTS

● NEGATIVE INSERTS WITH HOLE

CN $\circ\circ$ TYPE ... RHOMBIC 80°	B059
DN $\circ\circ$ TYPE ... RHOMBIC 55°	B059
SN $\circ\circ$ TYPE ... SQUARE 90°	B060
TN $\circ\circ$ TYPE ... TRIANGULAR 60°	B060
VN $\circ\circ$ TYPE ... RHOMBIC 35°	B061

● NEGATIVE INSERTS WITHOUT HOLE

SN $\circ\circ$ TYPE ... SQUARE 90°	B062
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● POSITIVE INSERTS WITH HOLE

CC $\circ\circ$ TYPE ... RHOMBIC 80°	B063
CP $\circ\circ$ TYPE ... RHOMBIC 80°	B063
DC $\circ\circ$ TYPE ... RHOMBIC 55°	B064
SP $\circ\circ$ TYPE ... SQUARE 90°	B064
TC $\circ\circ$ TYPE ... TRIANGULAR 60°	B065
TP $\circ\circ$ TYPE ... TRIANGULAR 60°	B066
VB $\circ\circ$ TYPE ... RHOMBIC 35°	B068
VC $\circ\circ$ TYPE ... RHOMBIC 35°	B068
WC $\circ\circ$ TYPE ... TRIGON 80°	B069
WP $\circ\circ$ TYPE ... TRIGON 80°	B069
DE $\circ\circ$ TYPE ... RHOMBIC 55°	B070
TE $\circ\circ$ TYPE ... TRIANGULAR 60°	B070
VD $\circ\circ$ TYPE ... RHOMBIC 35°	B071

● POSITIVE INSERTS WITHOUT HOLE

SP $\circ\circ$ TYPE ... SQUARE 90°	B072
TP $\circ\circ$ TYPE ... TRIANGULAR 60°	B072

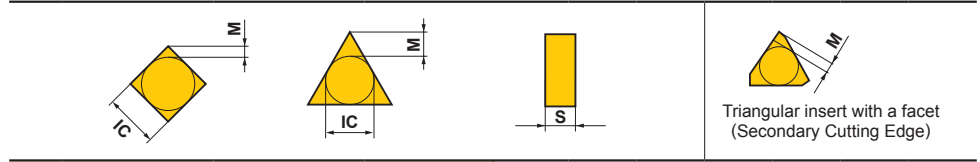
IDENTIFICATION

Symbol	Insert Shape	
S	Square	
T	Triangular	
C	Rhombic 80°	
D	Rhombic 55°	
V	Rhombic 35°	
W	Trigon	
R	Round	

② Symbol for Insert Shape

BM	With Breaker
BF	With Breaker
NP	Petit Tip
No mark	Standard Type

① Insert Geometry

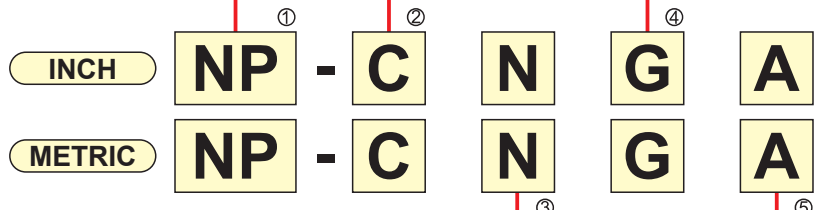


④ Symbol for Tolerance Class				Detail of M Class Insert Tolerance							
Symbol	Tolerance of Nose Height M (inch)	Tolerance of Inscribed Circle IC (inch)	Tolerance of Thickness S (inch)	● Tolerance of Nose Height M (inch)							
				I.C.	Triangular	Square	Rhombic 80°	Rhombic 55°	Rhombic 35°	Round	
G	±.001	±.001	±.005	.250	±.003	±.003	±.003	±.003	±.004	±.0063	—
M*	±.003 – ±.0063	±.002 – ±.003	±.005	.375	±.003	±.003	±.003	±.003	±.004	±.0063	—
				.500	±.005	±.005	±.005	±.005	±.006	—	—

*As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size. For the accuracy of class M, refer to the table on the right.

● Tolerance of Inscribed Circle IC (inch)							
I.C.	Triangular	Square	Rhombic 80°	Rhombic 55°	Rhombic 35°	Round	
.250	±.002	±.002	±.002	±.002	±.002	—	
.375	±.002	±.002	±.002	±.002	±.002	±.002	
.500	±.003	±.003	±.003	±.003	—	±.003	

④ Symbol for Tolerance Class



③ Symbol for Relief Angle	
Symbol	Relief Angle
B	5°
C	7°
D	15°
E	20°
N	0°
P	11°

⑤ Symbol for Chipbreaker and Clamping System												
Inch			Metric									
Figure	I.C. .250" and over	I.C. under .250"	Symbol	Hole	Hole Configuration	Chip Breaker	Figure	Symbol	Hole	Hole Configuration	Chip Breaker	Figure
	A	D	W	With Hole	Cylindrical Hole + One Countersink (40–60°)	No		A	With Hole	Cylindrical Hole	No	
	M	P	T	With Hole	Cylindrical Hole + One Countersink (70–90°)	One Sided		M	With Hole	Cylindrical Hole	One Sided	
	N	E	B	With Hole	Cylindrical Hole + One Countersink (70–90°)	No		N	Without Hole	—	No	
Special Design	X	X	H	With Hole	Cylindrical Hole + One Countersink (70–90°)	One Sided		X	—	—	—	Special Design

Note: Dimension symbols conforming to ISO 13399. See pages PR5-PR8 for details.



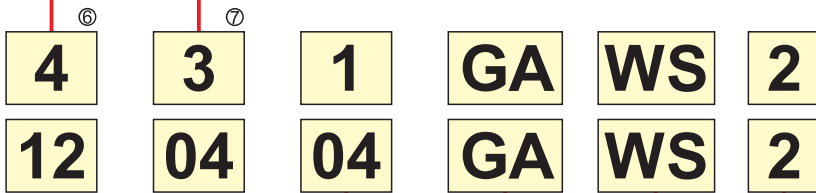
Thickness is from the bottom of the insert to the top of the cutting edge.

Inch		Diameter of Inscribed Circle (inch)	Metric						
I.C. .250" and over	I.C. under .250"								
	1.2 (5)	.156		02		04	03	03	06
	1.5 (6)	.187		L3	08	05	04	04	08
	1.8 (7)	.219		03	09	06	05	05	09
2		.250		04	11	07	06	06	11
2.5		.313		05	13	09	08	07	13
3		.375	09	06	16	11	09	09	16
4		.500	12	08	22	15	12	12	22

Inch		Thickness (inch)	Metric
I.C. .250" and over	I.C. under .250"		
–	0.9	.055	S1
–	1	.063	01
–	1.1	.070	T0
–	1.5	.094	02
–	1.8	.109	T2
2	–	.125	03
2.5	–	.156	T3
3	–	.187	04

⑥ Symbol for Insert Size

⑦ Symbol for Insert Thickness



⑧ Symbol for Insert Corner Configuration

Inch	Corner Radius (inch)	Metric
0.5	.008	02
1	.016	04
2	.031	08
3	.047	12
4	.063	16

⑨ Application (Honing)

F FA FS FN	Continuous Cutting
G GA GH GS GN	General Cutting
T TA TH TS TN	Interrupted Cutting
SF SE	Edge Treatment for Sintered Alloy

⑩ Wiper

WS	For High Rigidity Work Material
WL	For Deflection and Vibration Prevention
No mark	Without Wiper

⑪ Number of Tips

2	2
3	3
⋮	⋮
No mark	1

Please refer to page B014 for further information.

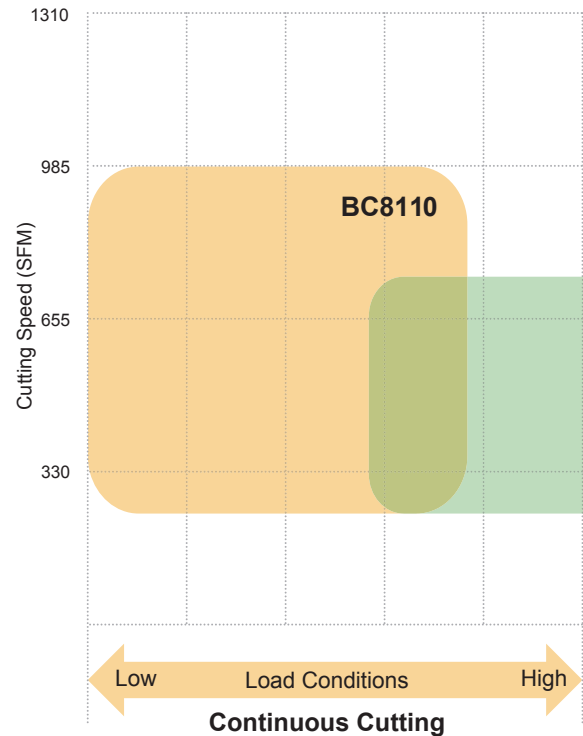
Coated CBN-Series for Hardened Steel Turning

BC8100 Series

CBN & PCD TURNING INSERTS

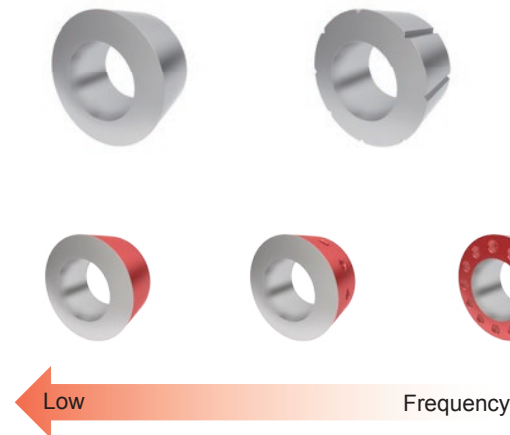
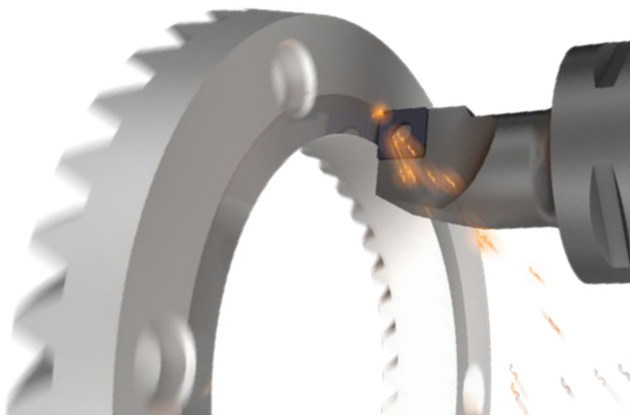
BC8110 High Speed Turning

For Continuous Cutting



BC8120 General Applications

For Continuous to Medium Interrupted Cutting
1st choice for roughing and pre-finishing



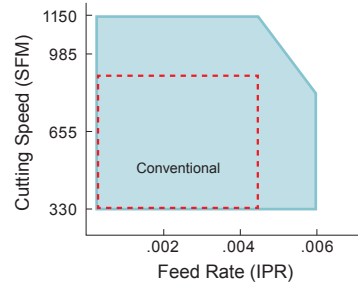
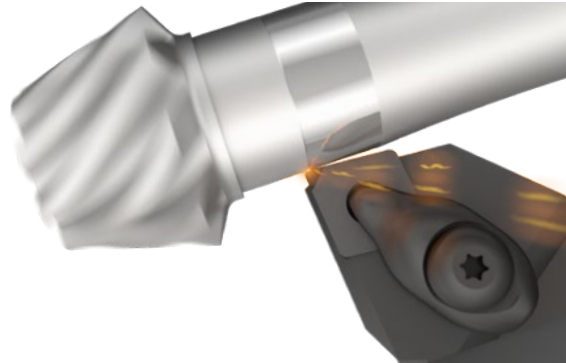
For Excellent Surface Finishes

NEW **BC8105** Highest Accuracy

For Super Finish Cutting

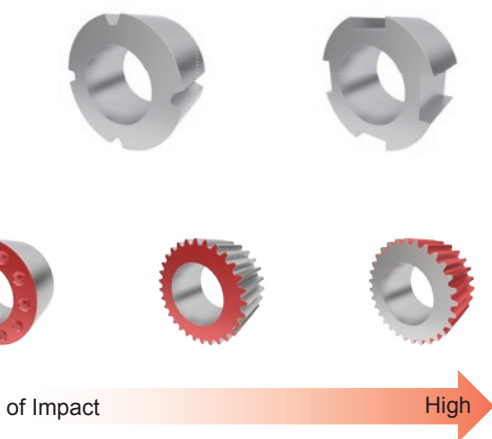
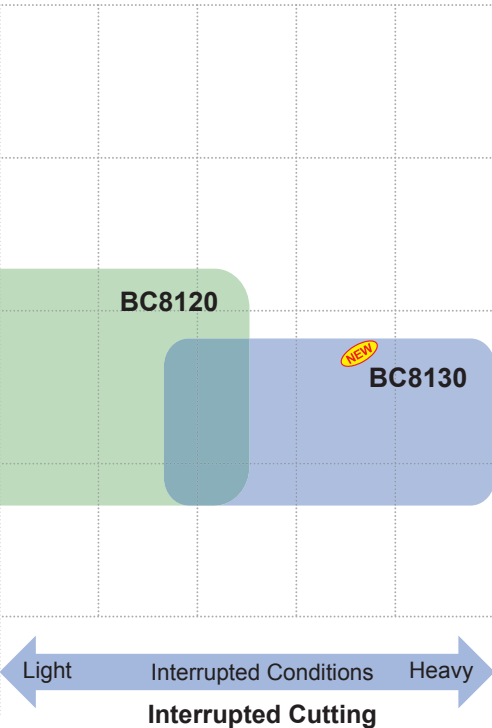
Excellent surface finishes and close tolerances with long tool life

For surface finishes up to Rz 94.5 μ -inch (Ra 23.6 μ -inch)



*BC8110 is recommended to improve wear resistance.

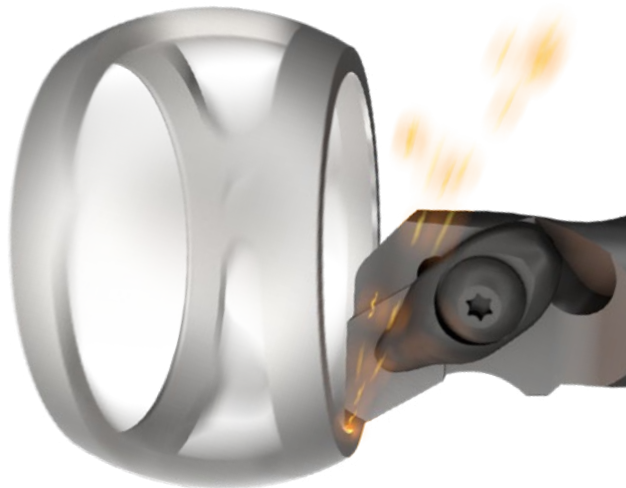
CBN & PCD TURNING INSERTS



NEW **BC8130** Tough Machining

For Unstable Applications and Heavy Interrupted Cutting

Tolerance accuracy held over a high number of impacts



COATED CBN-SERIES FOR HARDENED STEEL TURNING

FEATURES OF THE GRADE

New Advanced Ceramic Coating

NEW BC8105

CrAlN-base Coating
TiAlN-base Coating
CBN Sintered Body

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

BC8110

TiAlSiN-base Coating
TiAlN-base Coating
CBN Sintered Body

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

BC8120

TiAlN-base Coating
CBN Sintered Body

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.

NEW BC8130

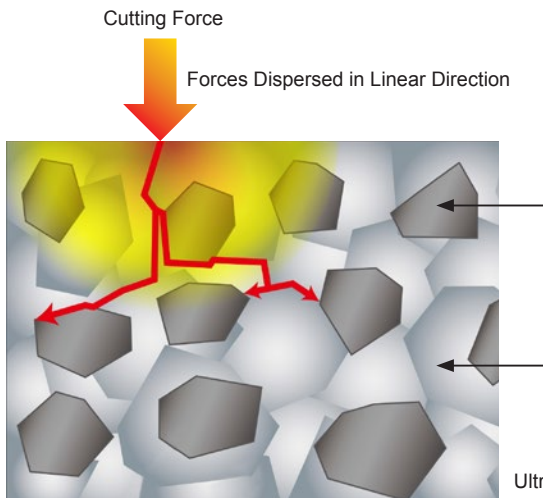
AlCrN-base Coating
TiAlN-base Coating
CBN Sintered Body

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

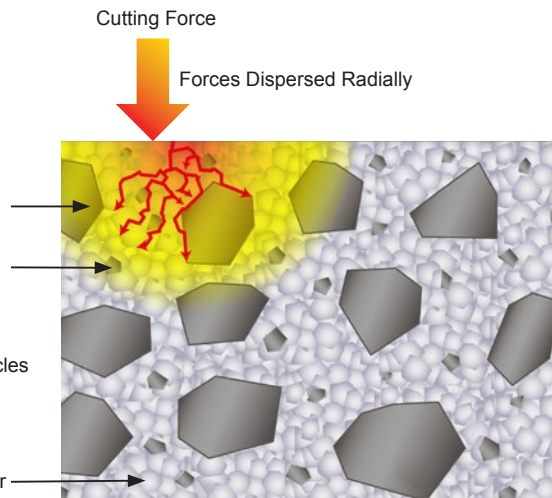
*Graphical representation.

Optimised Substrate Technology

Conventional



BC8100 Series



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

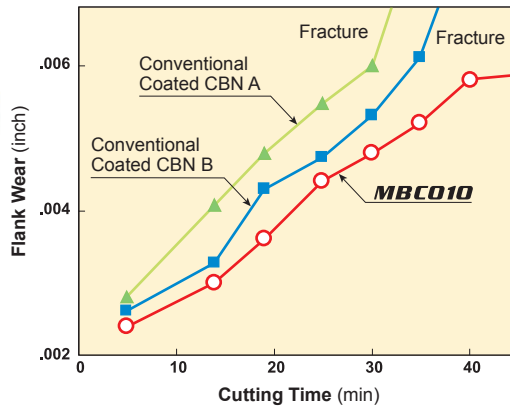
MBC010 / MBC020

Grade	Grade Features and Application	Main Component	Coating Layer
MBC010	Coated CBN for High Speed Continuous Cutting MBC010 makes the best use of special ceramic binder structure, resulting in high wear resistance. This enables continuous machining at high speed of over 985 SFM.	CBN (Micro Grain) TiN Al ₂ O ₃	TiN
MBC020	Coated CBN for general cutting Uses a CBN substrate that has high cutting edge toughness. The TiAlN based coating delivers superb wear resistance. It covers a wide range of applications from continuous to light interrupted cutting.	CBN (Micro Grain) TiN Al ₂ O ₃	TiAlN

MBC010



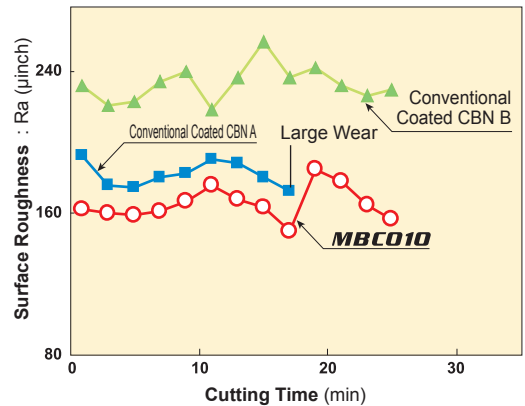
WEAR RESISTANCE



<Cutting Conditions>

Workpiece : Hardened Steel (60HRC)
 Insert : NP-CNGA432-GS2
 Cutting speed : 985 SFM
 Feed : .002 IPR
 Depth of Cut : .004 inch
 Dry Continuous Cutting

SURFACE ROUGHNESS



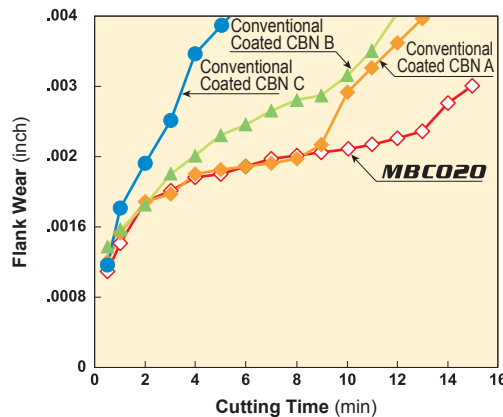
<Cutting Conditions>

Workpiece : Hardened Steel (60HRC)
 Insert : NP-CNGA432-GS2
 Cutting speed : 490 SFM
 Feed : .006 IPR
 Depth of Cut : .008 inch
 Dry Continuous Cutting

MBC020



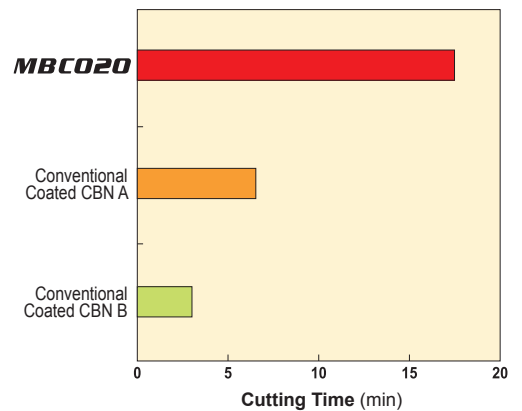
WEAR RESISTANCE



<Cutting Conditions>

Workpiece : Hardened Steel (60HRC)
 Insert : NP-CNGA432-GA4
 Cutting speed : 720 SFM
 Feed : .004 IPR
 Depth of Cut : .004 inch
 Dry Continuous Cutting

TOUGHNESS



<Cutting Conditions>

Workpiece : Hardened Steel (60HRC)
 Insert : NP-CNGA432-GA2
 Cutting speed : 390 SFM
 Feed : .006 IPR
 Depth of Cut : .006 inch
 Dry Interrupted Cutting

UNCOATED CBN SERIES

CBN & PCD TURNING INSERTS

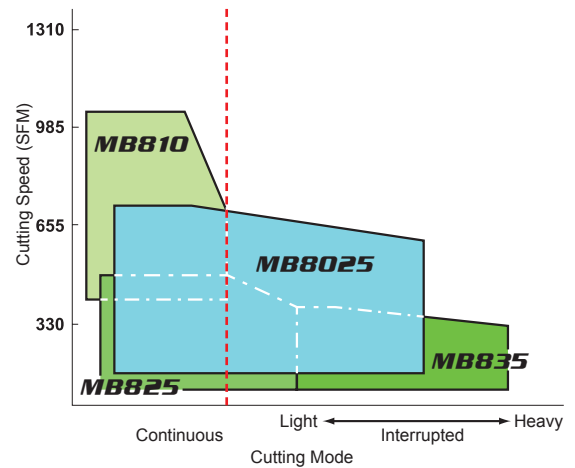
FEATURES

- CBN tool material is produced by mixing the primary component CBN (cubic boron nitride), which has a hardness second only to diamond, with a special ceramic or metal binder. It is then sintered at a pressure of over 5GPa and at a temperature of 2192°F or higher.
- CBN has lower affinity to iron than diamond. The low affinity and high hardness properties means that sintered CBN delivers superior cutting performance especially during high speed machining of materials such as hardened steel, cast iron and sintered alloys.



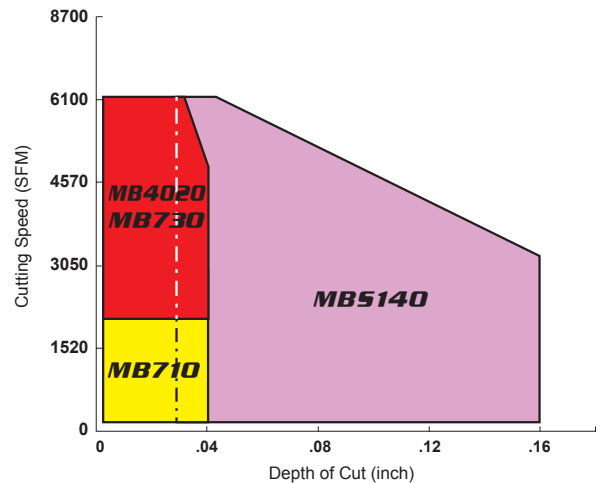
HARDENED STEEL MACHINING

Grade	Grade Features and Application	Main Component
MB8025	General Purpose Turning By employing a "Particle-activated Sintering Method", the new sintered CBN technology is recommended for continuous cutting from medium to high speeds.	CBN (Coarse grain) TiN Al ₂ O ₃
MB810	For High Speed Continuous Cutting It features improved wear resistance due to impregnation with larger CBN particles.	CBN (Micro Grain) TiN Al ₂ O ₃
MB825	For Continuous to Medium Interrupted Cutting Excellent balance of wear resistance and fracture resistance due to introduction of micro-grain CBN particles.	CBN (Micro Grain) TiN Al ₂ O ₃
MB835	For Heavy Interrupted Cutting Improved grade employing micro-grain CBN particles. Excellent fracture resistance for use in heavy interrupted cutting.	CBN (Micro Grain) TiN Al ₂ O ₃



CAST IRON MACHINING

Grade	Grade Features and Application	Main Component
MB710	For General Cutting General purpose grade with well balanced wear and fracture resistance.	CBN TiC Al ₂ O ₃
MB730	For Continuous Through Interrupted Cutting Uses a metallic binder improving the overall fracture resistance.	CBN Co Base Alloy
MB4020	For High Speed Continuous Through Interrupted Cutting Has the larger CBN content and therefore displays good thermal conductivity. From high-speed cutting to interrupted cutting are possible.	CBN (High Content) Co Base Alloy
MB5140	Large Depth of Cutting High Efficiency Solid CBN therefore no restriction on depth of cut enabling high machining efficiency.	CBN AlN (Solid)
MB5015	MB5015 is exclusive grade for boring of Centrifugal casting Cylinder liners in semi finishing or finishing applications with high with high wear resistance.	



MBS140 Solid CBN grade for machining cast iron and sintered alloys

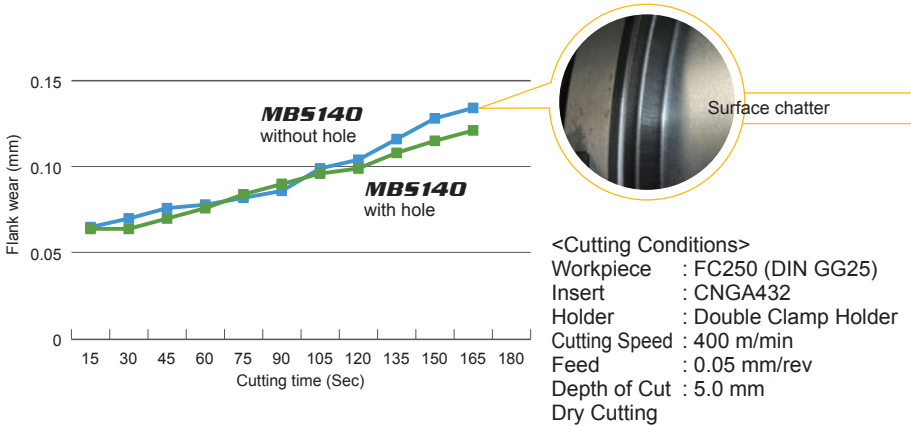
FEATURES

Supports high-efficiency machining with large depths of cut.

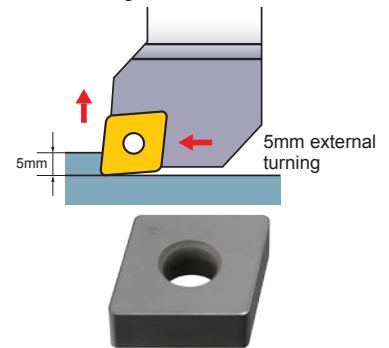
- Since all inserts are CBN sintered bodies, there are no limits to the depths of cut as with CBN brazing tools, allowing machining with large depths of cut.
- For rough machining of cast iron, high-speed, high-efficiency machining, which is a characteristic of CBN tools, can be achieved.

Combines wear resistance and fracture resistance

- Use of micro-grain CBN with a newly-developed special binder provides high wear resistance.
- Use of Mitsubishi's original high-efficiency sintering technology provides high fracture resistance and supports machining with large depths of cut.



Addition of insert series equipped with holes Comparison of depth of cut 5mm face turning



MB5015 For Cylinder liners

※ Produced to order only

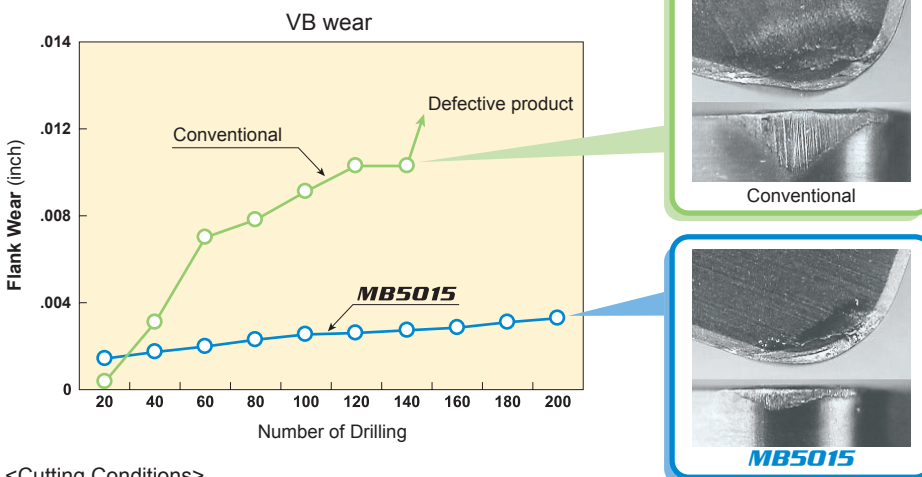
FEATURES

- MB5015 is exclusive grade for boring of Centrifugal casting Cylinder liners in semi finishing or finishing applications with high wear resistance.

RECOMMENDED CUTTING CONDITIONS

Work Material	Cutting Mode	Cutting Speed (SFM)				Feed (inch/rev)	Depth of Cut (inch)	Coolant
		330	1640	3280	4920			
Centrifugal casting	Cast Iron					0-.012(Finishing) 0-.031(Semi-finishing)	0-.002(Finishing) 0-.008(Semi-finishing)	Wet

CUTTING PERFORMANCE



<Cutting Conditions>
 Workpiece : FC200(Centrifugal casting)φ63.0
 Cutting Speed : 2625 SFM Feed : .014 IPR Depth of Cut : .0012 inch
 Work : Centrifugal casting Cylinder liner Hole Depth : 4 inch

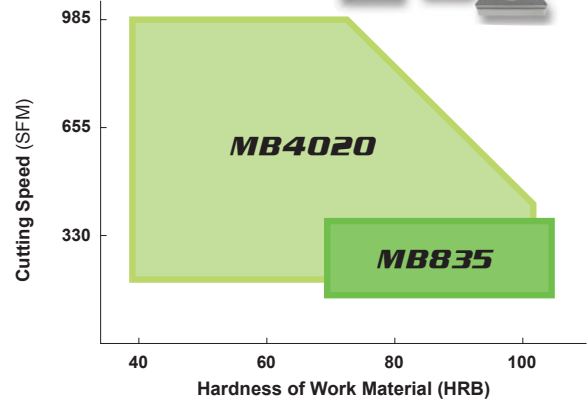
MB4020 SINTERED ALLOY MACHINING



CBN & PCD TURNING INSERTS

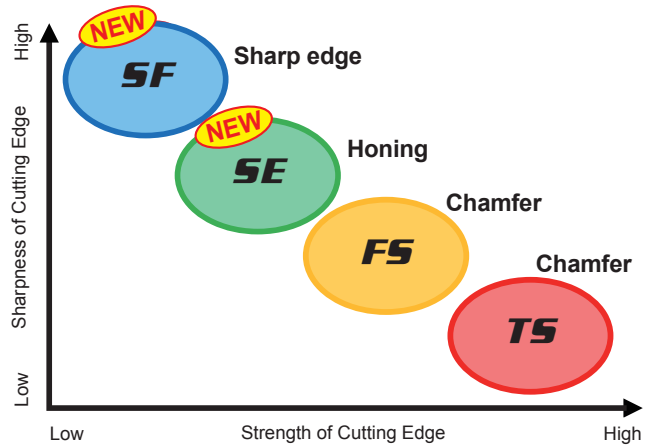
FEATURES

- High cutting edge strength**
 Newly developed special binder provides high cutting edge strength. Burrs and plasticity characteristics must be suppressed in interrupted cutting of sintered alloy machining. Extremely superior work accuracy is realized because MB4020 allows selection of a sharper cutting shape to perform its high cutting edge strength.
- Excellent welding resistance**
 There is almost no welding to the cutting edge because the stable CBN contents is high. Work cutting dimensional accuracy is stable.
- New Edge Treatment**
 Expansion SF and SE to edge treatment system of MB4020. SF and SE suppresses burr of work piece and achieves good surface roughness, because SF and SE are sharper than conventional edge preparation and low cutting resistance. Recommend SE, when chipping cutting edge occur using SF.

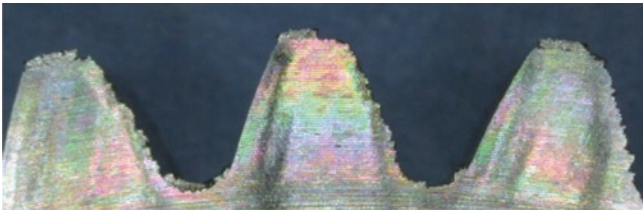


Application example

<Cutting Conditions>
 Insert : MB4020 NP-TNGA331
 Workpiece : General Sintered Alloy
 Cutting Mode : Interrupted face cutting
 Cutting Speed : 985 SFM
 Feed : .0024 IRP
 Depth of Cut : .008 inch
 Wet Cutting

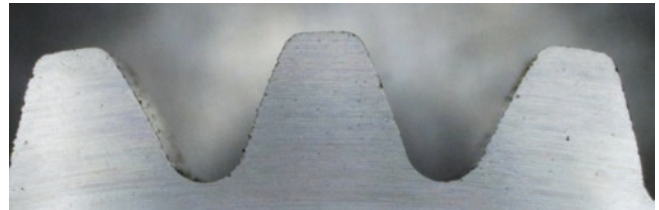


FS honing

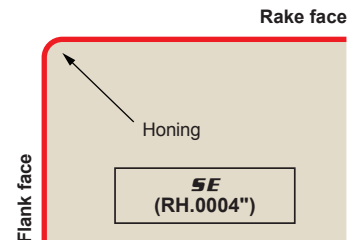
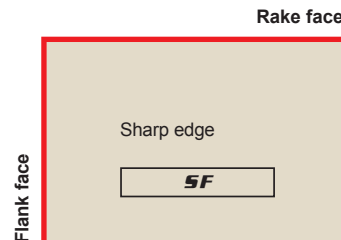
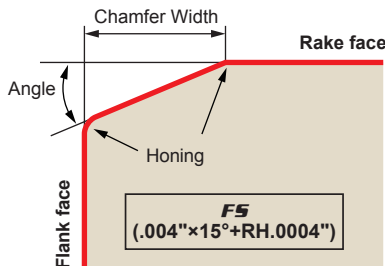


Burr and Edge Chipping

SF honing, SE honing



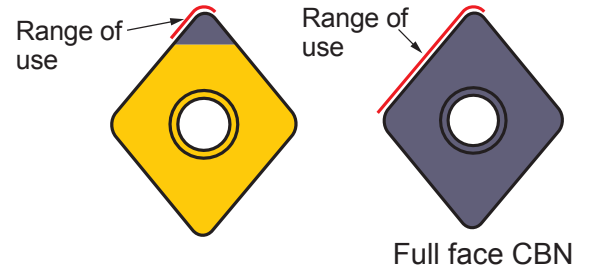
Excellent Cutting Accuracy



*Recommend SE, when chipping cutting edge occur using SF.

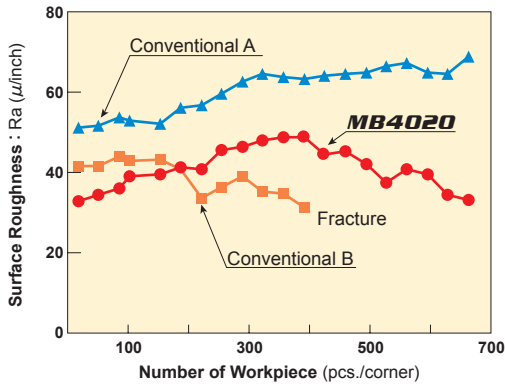
Full face CBN

Full face CBN insert can be used for chamfering that use higher depth of cut



CUTTING PERFORMANCE

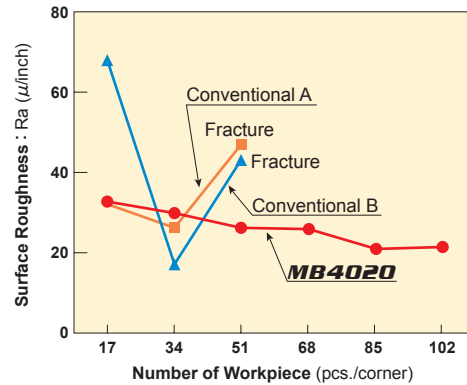
Continuous Cutting of High Density Sintered Alloy



<Cutting Conditions>

Workpiece : High Strength Sintered Alloy Insert : NP-CNGA432-FS2
 Cutting Speed : 620 SFM Feed : .006 IPR
 Depth of Cut : .004 inch
 Wet Cutting

Continuous Cutting of Sintered Alloy



<Cutting Conditions>

Workpiece : Sintered Alloy Insert : NP-CNGA432-FS2
 Cutting Speed : 330 SFM Feed : .006 IPR
 Depth of Cut : .004 inch
 Wet Cutting

APPLICATION EXAMPLE

Insert		NP-TNGA331-FS3	NP-CNGA431-SE2	CCGW060204FS
Workpiece		 Carburized and quenched alloy	 Carburized and quenched alloy	 Gray Cast Iron No 35 B
Component		Variable valve parts	Variable valve parts	Crankcase
Cutting Conditions	Cutting Speed (SFM)	820	820	1220→1370
	Feed (IPR)	.004	.005	.0012→.0146
	Depth of Cut (inch)	.008	.008	.0051
	Coolant	Wet cutting	Wet cutting	Wet cutting
Results				

● **Roll**

Work Material	Grade	Recommended Cutting Condition		
		Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
Cast Steel Adamite Cast Steel	MB825, MB8025	260 (100–425)	.012 (.004–.020)	.008–.118
Ductile Cast Iron Granular Cast Iron Chilled Cast Iron	MB710	260 (100–425)	.012 (.004–.020)	.008–.118
High Chromium Steel High Alloy Steel	MB825, MB8025	260 (100–425)	.012 (.004–.020)	.008–.118
High Speed Steel	MB730	165 (65–230)	.010 (.004–.020)	.004–.118
Cemented Carbide	MB730, MBS140	65 (30–100)	0–.020	0–.008

● **Heat Resistant Alloy**

Work Material	Grade	Recommended Cutting Condition		
		Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
Ni Base Heat Resistant Alloy (e.g. Inconel)	MB730, MB8025	390 (330–490)	0–.008	0–.020
Co Base Heat Resistant Alloy (e.g. Stellite)	MB730, MB8025	230 (165–330)	0–.008	0–.020

HONING

CBN & PCD TURNING INSERTS

NEW HONING TYPES

For the CBN **BC8020**, **MBC010** and **MBC020** coated grades, **MB4020** and **MB710/MB730** a wide range of edge honing styles are available to cover a large range of applications and to represent Mitsubishi Materials' unique cutting tool technology.



● General cutting

- GA honing is the first recommendation.
- GS honing if the depth of cut is .004 inch or more.
- GN honing if crater wear is too large.

● Continuous cutting, stable cutting

- FA honing to improve the initial machining performance.
- FS honing is the first recommendation.
- FN honing if crater wear is too large.

● Medium and heavy interrupted cutting, unstable cutting

- TA honing is the first recommendation.
- TS honing if the depth of cut is .004 inch or more.
- TN honing if crater wear is too large.

NP-CNGA431-**G****S**2

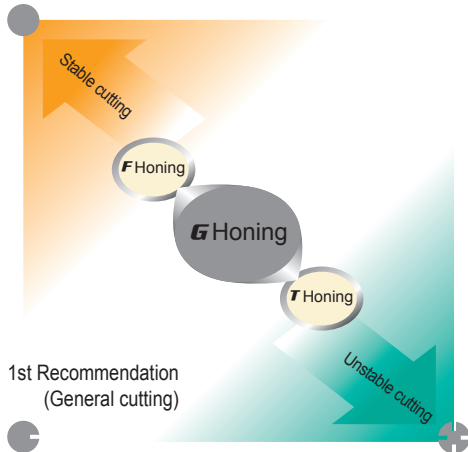
Main Application **G** Edge Honing Type **S**

EDGE HONING TYPE	A	S	N
MAIN APPLICATION	For General Purpose Machining (1st recommendation)	For Anti Chatter (Sharp anti-burr type)	For Small Depth of Cut (Crater wear resistant)
F For Continuous Machining	FA Honing 15° .004" R0	FS Honing 15° .004" R.0006"	FN Honing 15° .002" R.0006"
G For Continuous – Light Interrupted Machining	GA Honing 25° .005" R.0012"	GS Honing 25° .005" R.0006"	GN Honing 25° .002" R.0006"
T For Interrupted Machining	TA Honing 35° .005" R.0012"	TS Honing 35° .005" R.0006"	TN Honing 35° .002" R.0006"

(Note) First, select the insert edge type from the main application area (F,G,T) then choose honing (A,S,N) that compliments the machining requirement.

CONVENTIONAL HONING TYPES

Other than the new honing types, the three conventional honing types, F, G and T types are available for use in accordance to the machining application.



NP-CNMA431-**G**2

Honing Type

F HONING For stable continuous cutting.	15° .004" R0
G HONING For general purpose cutting. (Including light to medium interrupted cutting).	25° .005" R.0012"
T HONING For medium to heavy interrupted cutting.	35° .005" R.0012"

CBN GROOVING SERIES

(GY)



FEATURES

- **Combined with a High-rigidity Holder Ensures High Accuracy and Long Tool Life.**

Holder rigidity is essential when grooving hardened steel.

The GY series Tri Lock system offers high rigidity equivalent to a 1-piece type tool holder despite being a modular system.

CBN GRADE

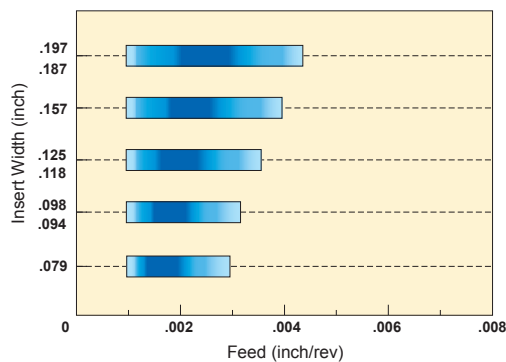
- **BC8110**

A CBN coated grade for continuous cutting, which provides longer life when machining hardened steel.

- **MB8025**

MB8025 is a sintered CBN grade for hardened steel.

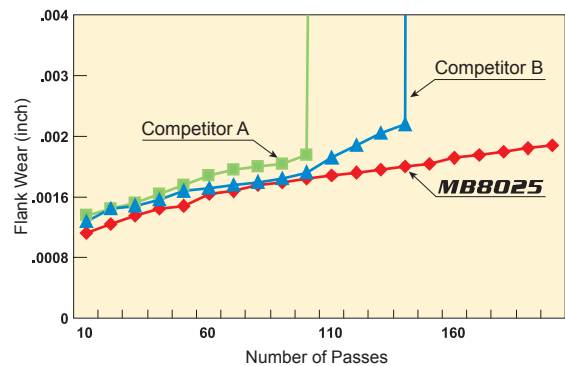
RECOMMENDED CUTTING CONDITIONS



Work Material	Hardness	Grade	Cutting Speed (SFM)	Coolant
H Hardened Steel	35—65HRC	MB8025	330 (195—390)	Dry,Wet

CUTTING PERFORMANCE

Tool life



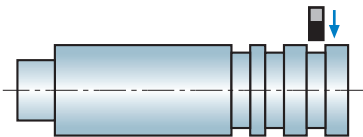
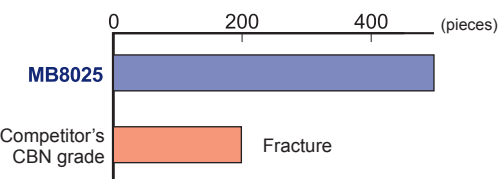
<Cutting Conditions>

Workpiece : Hardened Steel (HRC60)

Depth of Cut : .014 inch
Dry Cutting

Cutting Speed : 390 SFM
Feed : .004 IPR

APPLICATION EXAMPLE

Insert	GY1G0300F020N-GFGS (Grade : MB8025)	
Workpiece	Transmission shaft (AISI 8620 (HRC58—62)) 	
Cutting Conditions	Cutting Speed (SFM)	420
	Feed (IPR)	.004
Result	 <p>Competitor's CBN grade Fracture</p> <p>GY achieves longer tool life without fracturing.</p>	

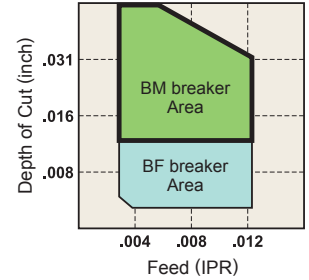
CBN BREAKER INSERT

(BM/BF BREAKER)

FEATURES

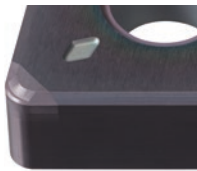
- **Chip breaker geometry designed for excellent chip control**
Radial chip breaker ensures optimization of the cutting point and the chip breaker position.
Enables effective chip discharge even when copy machining and prevents the chips from wrapping around the holder under finish cutting conditions.
- **Long life coated CBN grade**
Combination of Coating grade & Breaker, high efficiency and long tool life in wide variety of applications.

APPLICATION AREA



DEEP CUTTING DEPTH

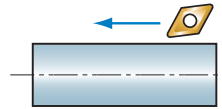
BM Breaker



Good for deep depth cutting of carburized layer.
Recommend and under $ap = .024$ inch

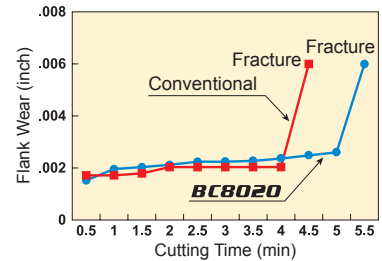
※ Available in BC8020 grade.

Cutting Performance



<Cutting Conditions>

Workpiece : Hardened Steel(60HRC)
Insert : BM-CNGM432-TA2
Cutting Speed : 590 SFM
Feed : .008 IPR
Depth of Cut : .020 inch
Dry Cutting



LIGHT CUTTING DEPTH

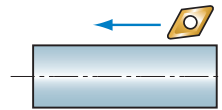
BF Breaker



Good for chip removal under light depth and feed cutting.
Recommend and under $ap = .012$ inch

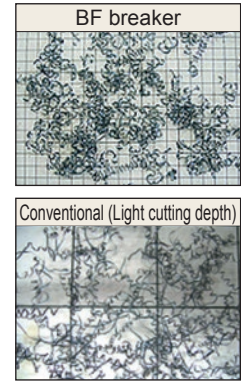
※ Available in MBC020 grade.

Cutting Performance



<Cutting Conditions>

Workpiece : Hardened Steel(55HRC)
Insert : BF-CNGG432-TA4
Cutting Speed : 330 SFM
Feed : .008 IPR
Depth of Cut : .004 inch
Dry Cutting



MULTI-CORNER TYPE INSERTS

- A single sided, multi-corner type insert has no cutting edges on the 2nd side.
The type of grade is stamped on the 1st side.

Double Sided, multi-corner type insert, ex.

NP-CNGA432-GA4

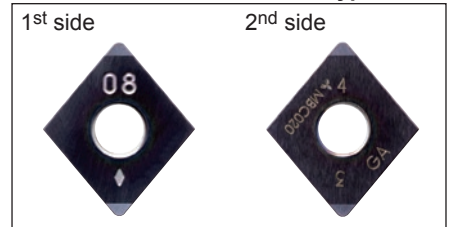
No. of Cutting Edges

Single Sided, multi-corner type insert, ex.

NP-CNGA432-GA2

No. of Cutting Edges

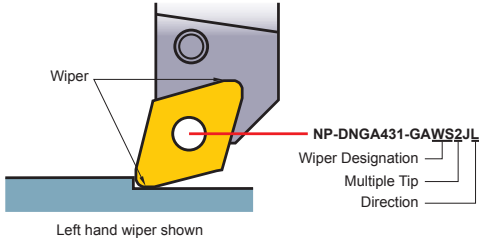
Double sided, multi-corner type insert



WIPER INSERT

What is a Wiper Insert?

- The wiper insert is designed with a wiper edge that is situated where the straight edge meets the corner radius.
- In comparison to conventional inserts, the surface finish does not deteriorate even if the feed rate is doubled.
- Machining at high feed rates improves machining efficiency.



Improving Surface Finish

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

Improving Efficiency

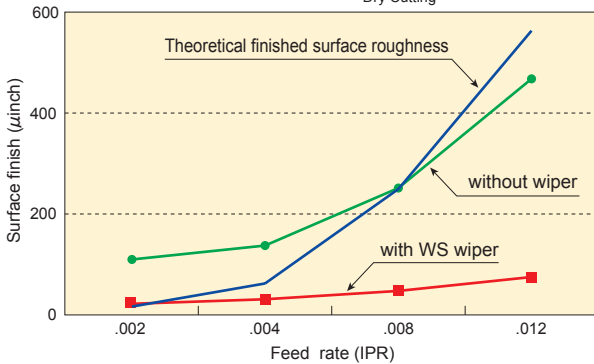
High feed rates not only shorten machining times but also make it possible to combine roughing and finishing operations.

Increased Tool Life

When changing to 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 the tool life of the insert.

Cutting Performance

<Cutting Conditions>
Workpiece : Hardened steel (HRC60)
Insert : NP-CNGA432-
Cutting Speed : 390 SFM
Depth of Cut : .004 inch
Dry Cutting



Wiper insert + machining at high feed rates

- Reduced machining time
- Increased production rate
- Improved chip control

Wiper insert + machining at conventional feed rates

- Eliminating the finishing step
(Combine roughing and finishing into single pass.)



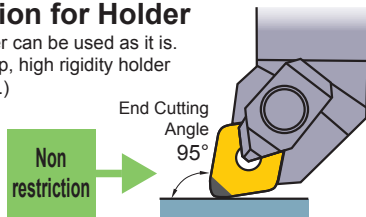
- Reducing cost
- Increased productivity
- Reduced machine down time

<Real cost reduction!!>

Special attention is not necessary when using C-style and W-style inserts

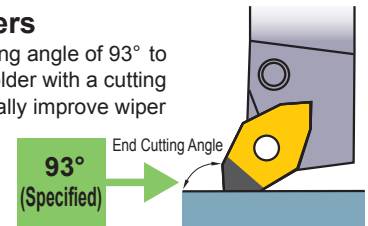
No Restriction for Holder

The standard holder can be used as it is.
(*The double clamp, high rigidity holder is recommended.)



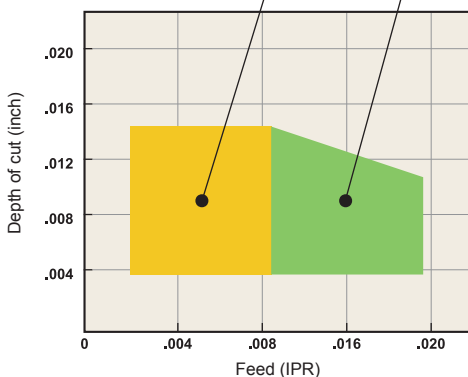
Restriction for Holders

Use a holder with an end cutting angle of 93° to improve wiper efficiency. A holder with a cutting edge angle of 91° can marginally improve wiper efficiency (see the figure below), however, there is no wiper efficiency with other end cutting angles (60°, 90°, 107° etc.).



Cutting Conditions and Performance

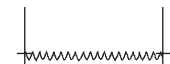
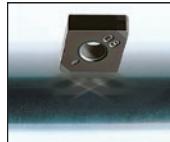
High feed, high efficient cutting
High precision finishing



High precision finishing

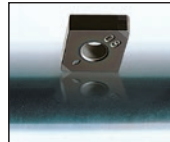
Cutting speed : 330 SFM Feed : .004 IPR
Depth of cut : .004 inch Dry cutting

Without Wiper



Ry=126 μ inch

With Wiper

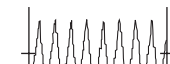
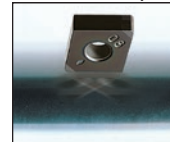


Ry=40 μ inch

High feed, highly efficient cutting

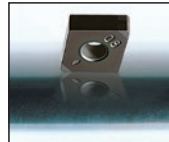
Cutting speed : 330 SFM Feed : .012 IPR
Depth of cut : .004 inch Dry cutting

Without Wiper



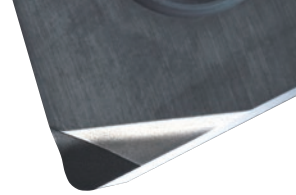
Ry=480 μ inch

With Wiper



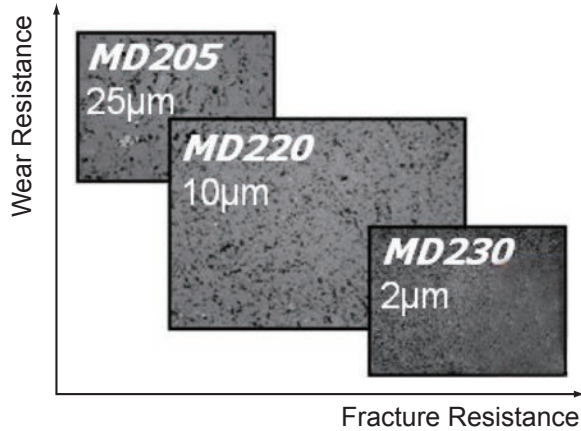
Ry=47 μ inch

PCD (SINTERED DIAMOND)



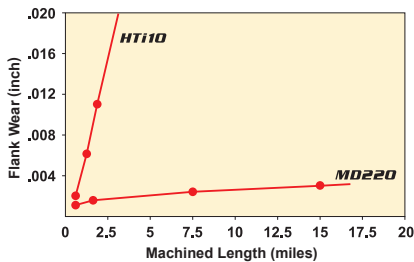
- Suitable for materials such as aluminum alloy, non-ferrous metals, and fiber reinforced plastics.
- Suitable for extremely high speed finishing.

FEATURES



Grade	Features
MD205	Materials focused on wear resistance Coarse grain diamond particles are sintered and wear resistance is excellent. Use when wear resistance with MD220 is insufficient.
MD220	Materials for general machining Sintered medium grain diamond particles. Wear resistance and fracture resistance are superbly balanced. Applicable to general finishing of non-ferrous metals, non-metal cutting, and similar machining.
MD230	Materials focused on fracture resistance Fine grain diamond particles are used. Fracture resistance and cutting edge sharpness are excellent. Use when fracture and a high quality finished surface is demanded with MD220.

CUTTING PERFORMANCE



<Cutting Conditions>
 Workpiece : High Si Aluminum Alloy
 Insert : SPG422
 vc=655 SFM
 ap=.059 inch
 f=.006 IPR
 Coolant : W.S.O

Sintered diamond tool wear for high Si aluminum alloy cutting

APPLICATION

Grade		
MD205	MD220	MD230
Please use when there is insufficient resistance to wear with the MD220.	Apply for general finishing of non-ferrous metals and non-metal cutting.	Please use when a fracture has occurred with the MD220 and you desire a high-quality finished surface.

SELECTION STANDARD

●TURNING

Work Material	Recommended Grade			Recommended Cutting Condition		
	MD205	MD220	MD230	Recommended Cutting Speed (SFM)	Feed (IPR)	Depth of Cut (inch)
Aluminum		◎		3280 (650-4920)	0-.008	0-.200
Aluminum Alloy (Si ≤ 16%)		◎		2630 (650-3940)	0-.008	0-.200
Aluminum Alloy (Si ≤ 16%)		○		1970 (650-3280)	0-.008	0-.118
Copper Alloy		◎		2300 (650-3940)	0-.008	0-.118
Reinforced Plastic		◎		1970 (330-3280)	0-.016	0-.079
Glass Fiber Reinforced Plastic		◎		1640 (330-2630)	0-.010	0-.079
Carbon	○	◎		1210 (330-1970)	0-.012	0-.079
Ceramics		○		165 (100-260)	0-.004	0-.079
Hard Rubber		◎		1970 (980-2630)	0-.006	0-.039
Wood Inorganic Board		◎		4260 (980-12100)	0-.016	-
Tungsten Carbide		○		15 (16-65)	0-.008	0-.020

(Note 1) ◎ : 1st recommendation. ○ : 2nd recommendation.
 (Note 2) Not suitable for steel.

NEW PETIT CUT PCD INSERTS

■ FEATURES

- **Economical inserts** The small PCD delivers long tool life. Eliminates the need for regrinding, making tool management easier and economical.
- **PCD with chip breaker** Chip breaker formed directly on the PCD portion delivers superior chip control.
- **Corner R.002 inch inserts** are available, making it suitable for the machining of small work corner radii.


























Memo

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
















CLASSIFICATION

CBN & PCD TURNING INSERTS





NEGATIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°	
NEW PETIT CUT	Multi-corner Type Double Sided	G Class	Flat Top	NP-CNGA_04  ➔ B026	NP-DNGA_04  ➔ B029	NP-SNGA_04  ➔ B033	NP-TNGA_06  ➔ B034	NP-VNGA_04  ➔ B036	NP-WNGA_06  ➔ B038	
	Multi-corner Type Double Sided With Wiper		Flat Top	NP-CNGA_0WS4  ➔ B026						
	Multi-corner Type Double Sided With Breaker		BF	BF-CNGG_04  ➔ B026	BF-DNGG_04  ➔ B030					
	Multi-corner Type Single Sided		Flat Top	NP-CNGA_02  ➔ B027	NP-DNGA_02  ➔ B030, B031	NP-SNGA_02  ➔ B033	NP-TNGA_03  ➔ B034, B035	NP-VNGA_02  ➔ B036	NP-WNGA_03  ➔ B038	
	Multi-corner Type Single Sided With Wiper		Flat Top	NP-CNGA_0WS2  ➔ B027	NP-DNGA_0WS2JR/L  ➔ B031			NP-TNGA_0WS3JR/L  ➔ B029		NP-WNGA_0WS3  ➔ B038
	Multi-corner Type Single Sided With Breaker		BF			BF-DNGA_02  ➔ B025				
	Multi-corner Type Single Sided With Breaker		BF		BF-CNGM_02  ➔ B028	BF-DNGM_02  ➔ B032				
	Multi-corner Type Single Sided With Breaker		BM		BM-CNGM_02  ➔ B028	BM-DNGM_02  ➔ B032		BM-TNGM_03  ➔ B035		

NEGATIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°
NEW PETIT CUT	One-corner Type Single Sided	M Class	Flat Top 					NP-VNMA_0 	
	One-corner Type Single Sided With Breaker		R/L F 	NP-CNMM_RF 	NP-DNMM_RF 	NP-SNMM_RF 	NP-TNMM_RF 	NP-VNMM_RF 	
STANDARD	Multi-corner Type Double Sided	G Class	Flat Top 	CNGA 		SNGA 	TNGA 		
	One-corner Type Single Sided		Flat Top 	CNGA 	DNGA 	SNGA 	TNGA 	VNGA 	
	One-corner Type Single Sided	M Class	Flat Top 	CNMA 					









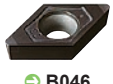
























5° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°
NEW PETIT CUT	Multi-corner Type	G Class	Flat Top 					NP-VBGW_02 	
	One-corner Type With Breaker		RF 					NP-VBGT_RF 	


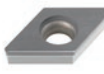

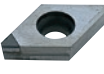


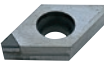


CLASSIFICATION

CBN & PCD TURNING INSERTS








7° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 80° 	Rhombic 55° 	Square 90° 	Triangular 60° 	Rhombic 35° 	Trigon 80° 	
NEW PETIT CUT	Multi-corner Type	G Class	Flat Top 	NP-CCGW/B_02  ↻ B042	NP-DCGW_02  ↻ B046		NP-TCGW_03  ↻ B048	NP-VCGW_02  ↻ B052	NP-WCGW_03  ↻ B053	
	Multi-corner Type With Wiper		Flat Top 	NP-CCGW_0WS2  ↻ B043						
	Multi-corner Type With Breaker		BF 	BF-CCGT_02  ↻ B043	BF-DCGT_02  ↻ B047					
	Multi-corner Type With Breaker		BF 	BF-CCGW_02  ↻ B043	BF-DCGW_02  ↻ B047					
	Multi-corner Type With Breaker		BM 	BM-CCGT_02  ↻ B044	BM-DCGT_02  ↻ B047					
	One-corner Type		Flat Top 	NP-CCGW/B_0  ↻ B044						
	One-corner Type		Flat Top 	NP-CCMW  ↻ B063						
	One-corner Type With Breaker		Breaker 	NP-CCMH  ↻ B063						
	One-corner Type With Breaker		RF 						NP-VCGT_RF  ↻ B068	
	One-corner Type With Breaker		R/L F 			NP-DCMT_R/LF  ↻ B064				

7° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°
STANDARD	Multi-corner Type	G Class	Flat Top	CCGW  ↪ B044	DCGW  ↪ B047				
			Flat Top	CCGW  ↪ B044	DCGW  ↪ B047	TCGW  ↪ B048, B065			
	One-corner Type	M Class	Flat Top	CCMW  ↪ B063	DCMW  ↪ B064		TCMW  ↪ B065		WCMW  ↪ B069
			Flat Top						









11° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°
NEW PETIT CUT	Multi-corner Type	G Class	Flat Top	NP-CPGB_02  ↪ B045			NP-TPGB_03  ↪ B049		
			Flat Top			NP-TPGX_03  ↪ B050			
	One-corner Type	M Class	Flat Top				NP-TPGX_0F  ↪ B050		
			Breaker	NP-CPMH  ↪ B063					
	One-corner Type With Breaker	M Class	R/L F				NP-TPMH_R/LF  ↪ B066		
			R/L F				NP-TPMX_R/LF  ↪ B066		



CLASSIFICATION

CBN & PCD TURNING INSERTS







11° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Rhombic 35°	Trigon 80°
STANDARD	One-corner Type With Breaker	G Class	Breaker 	CPGT  ↪ B063					WPGT  ↪ B069
	One-corner Type		Flat Top 			SPGX  ↪ B064	TPGX  ↪ B050, B067		
	One-corner Type With Breaker		R/L F 				TPGT/V_R/LF  ↪ B066, B067		















15° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 35°
FOR ALUMINUM	One-corner Type With Breaker	G Class	R/L 	VDXG_R/LF  ↪ B071




20° POSITIVE INSERTS WITH HOLE

Product Name	Type	Tolerance	Breaker and Cross Section	Rhombic 55°	Triangular 60°
FOR ALUMINUM	One-corner Type With Breaker	G Class	R/L 		TEGX_R/L  ↪ B070
	One-corner Type With Breaker		R/L F 	DEGX_R/LF  ↪ B070	
	One-corner Type		Flat Top 		TEGX  ↪ B070






NEGATIVE INSERTS WITHOUT HOLE

Product Name	Tolerance	Breaker and Cross Section	Rhombic 80°	Rhombic 55°	Square 90°	Triangular 60°	Round
STANDARD	G Class	Flat Top					
					SNG  ↻ B040, B062	TNG  ↻ B041	
STANDARD	G Class	Flat Top	CNG  ↻ B039	DNG  ↻ B039	SNG  ↻ B040	TNG  ↻ B041	RNG  ↻ B040
							


5° POSITIVE INSERTS WITHOUT HOLE

Product Name	Tolerance	Breaker and Cross Section	Triangular 60°	
STANDARD	G Class	Flat Top		
			TBG  ↻ B056	

11° POSITIVE INSERTS WITHOUT HOLE

Product Name	Tolerance	Breaker and Cross Section	Square 90°	Triangular 60°
STANDARD	G Class	Flat Top		
			SPG  ↻ B055, B072	TPG  ↻ B058, B072

SPECIAL PURPOSE INSERTS

Tool Holder Type	Tolerance	Inserts
TL Type	G Class	RTG_A  ↻ B054

CBN TURNING INSERTS [NEGATIVE]

80° CN TYPE INSERTS WITH HOLE

NP-CNGA 4 3 1 GA4

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials		●		●		●		●		●		●		●		●		●		Applicable Holder Page	
	K	Cast Iron		●		●		●		●		●		●		●		●		●			
Shape	S	Heat-resistant Alloy, Titanium Alloy		●		●		●		●		●		●		●		●		●		Applicable Holder Page	
		Sintered Alloy		●		●		●		●		●		●		●		●		●			
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN			CBN						Solid CBN	Applicable Holder Page									
				MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025	MB825		MB835	MB710	MB730	MB4020	MBS140				
NEW PETIT CUT	NP-CNGA431-GA4	NP-CNGA120404GA4	.016	●	●			★	★														
	NP-CNGA432-GA4	NP-CNGA120408GA4	.031	●	●			★	★														
	NP-CNGA433-GA4	NP-CNGA120412GA4	.047	●	★			★	★														
	NP-CNGA431-GS4	NP-CNGA120404GS4	.016				●	★															
	NP-CNGA432-GS4	NP-CNGA120408GS4	.031				●	★															
	NP-CNGA433-GS4	NP-CNGA120412GS4	.047				●	★															
	NP-CNGA431-GN4	NP-CNGA120404GN4	.016	★																			
	NP-CNGA432-GN4	NP-CNGA120408GN4	.031	★																			
	NP-CNGA433-GN4	NP-CNGA120412GN4	.047	★																			
	NEW NP-CNGA431-GH4	NP-CNGA120404GH4	.016				●	●	●														
	NEW NP-CNGA432-GH4	NP-CNGA120408GH4	.031				●	●	●														
	NEW NP-CNGA433-GH4	NP-CNGA120412GH4	.047				●	●	●														
	NP-CNGA431-FS4	NP-CNGA120404FS4	.016		★	●	★	★															E024
	NP-CNGA432-FS4	NP-CNGA120408FS4	.031		★	●	★	★															H006
	NP-CNGA433-FS4	NP-CNGA120412FS4	.047		★	●	★	★															-008
	NP-CNGA431-TA4	NP-CNGA120404TA4	.016	★	★				★	★													
	NP-CNGA432-TA4	NP-CNGA120408TA4	.031	★	★				★	★													
	NP-CNGA433-TA4	NP-CNGA120412TA4	.047	★	★				★	★													
	NP-CNGA431-TS4	NP-CNGA120404TS4	.016					★															
	NP-CNGA432-TS4	NP-CNGA120408TS4	.031					★															
NP-CNGA433-TS4	NP-CNGA120412TS4	.047					★																
NEW NP-CNGA431-TH4	NP-CNGA120404TH4	.016						●	★														
NEW NP-CNGA432-TH4	NP-CNGA120408TH4	.031						●	★														
NEW NP-CNGA433-TH4	NP-CNGA120412TH4	.047						●	★														
NEW PETIT CUT (With Wiper)	NEW *1 NP-CNGA431-FSWS4	NP-CNGA120404FSWS4	.016				●	●	●														
	NEW *1 NP-CNGA432-FSWS4	NP-CNGA120408FSWS4	.031				●	●	●														
	NEW *1 NP-CNGA433-FSWS4	NP-CNGA120412FSWS4	.047				●	●	●														
	*1 NP-CNGA431-GAWS4	NP-CNGA120404GAWS4	.016		★				★	★													
	*1 NP-CNGA432-GAWS4	NP-CNGA120408GAWS4	.031		●				★	★													
	*1 NP-CNGA433-GAWS4	NP-CNGA120412GAWS4	.047		●				★	★													
	*1 NP-CNGA431-GSWS4	NP-CNGA120404GSWS4	.016				●	★															
	*1 NP-CNGA432-GSWS4	NP-CNGA120408GSWS4	.031				●	★															
*1 NP-CNGA433-GSWS4	NP-CNGA120412GSWS4	.047				●	★																
NEW PETIT CUT (With breaker)	BF-CNGG431-TA4	BF-CNGG120404TA4	.016	★																			
	BF-CNGG432-TA4	BF-CNGG120408TA4	.031	★																			
	BF-CNGG433-TA4	BF-CNGG120412TA4	.047	★																			

*1 Please refer to page B017 before using the wiper insert.



CBN TURNING INSERTS [NEGATIVE]

80° CN TYPE INSERTS WITH HOLE

BF-CNGM 4 3 1 TA2

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

C

D

R







S

T

V

W

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN					CBN					Solid CBN	Applicable Holder Page				
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025	MB825	MB835		MB710	MB730	MB4020	MBS140
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	
		Sintered Alloy																	NEW
 NEW PETIT CUT (With breaker)			BF-CNGM431-TA2	BF-CNGM120404TA2	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	
			BF-CNGM432-TA2	BF-CNGM120408TA2	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	C006-009
			BF-CNGM433-TA2	BF-CNGM120412TA2	.047	●	●	●	●	●	●	●	●	●	●	●	●	●	E021
			BF-CNGM431-TS2	BF-CNGM120404TS2	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	E024
			BF-CNGM432-TS2	BF-CNGM120408TS2	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	H006-008
 NEW PETIT CUT (With breaker)			BF-CNGM433-TS2	BF-CNGM120412TS2	.047	●	●	●	●	●	●	●	●	●	●	●	●		
			BM-CNGM431-TA2	BM-CNGM120404TA2	.016	●	●	●	●	●	●	●	●	●	●	●	●	●	C006-009
			BM-CNGM432-TA2	BM-CNGM120408TA2	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	E021
 NEW PETIT CUT (With breaker)			BM-CNGM433-TA2	BM-CNGM120412TA2	.047	●	●	●	●	●	●	●	●	●	●	●	●	E024	
			CNGA432	CNGA120408	.031	●	●	●	●	●	●	●	●	●	●	●	●	●	H006-008
			CNGA433	CNGA120412	.047	●	●	●	●	●	●	●	●	●	●	●	●	●	
 NEW PETIT CUT (With breaker)			CNGA432	CNGA120408	.031	●	●	●	●	●	●	●	●	●	●	●	●	C006-009	
			CNGA433	CNGA120412	.047	●	●	●	●	●	●	●	●	●	●	●	●	●	E021
							●	●	●	●	●	●	●	●	●	●	●	E024	
 NEW PETIT CUT (With breaker)			CNGA432	CNGA120408	.031	●	●	●	●	●	●	●	●	●	●	●	●	H006-008	
			CNGA433	CNGA120412	.047	●	●	●	●	●	●	●	●	●	●	●	●	●	
 NEW PETIT CUT (With breaker)			CNMA431	CNMA120404	.016	●	●	●	●	●	●	●	●	●	●	●	●	C006-009	
							●	●	●	●	●	●	●	●	●	●	●	E021	
						●	●	●	●	●	●	●	●	●	●	●	●	E024	
						●	●	●	●	●	●	●	●	●	●	●	●	H006-008	



55° DN TYPE INSERTS WITH HOLE

NP-DNGA 4 3 1 GA4

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN			CBN					Solid CBN	Applicable Holder Page						
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB825	MB835	MB710	MB730	MB4020	MBS140
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	
		Sintered Alloy																	
NEW PETIT CUT			NP-DNGA431-GA4	NP-DNGA150404GA4	.016	●	★		★	★									
			NP-DNGA432-GA4	NP-DNGA150408GA4	.031	●	★		★	★									
			NP-DNGA433-GA4	NP-DNGA150412GA4	.047	●	★		★	★									
			NP-DNGA441-GA4	NP-DNGA150604GA4	.016				★	★									
			NP-DNGA442-GA4	NP-DNGA150608GA4	.031				★	★									
			NP-DNGA443-GA4	NP-DNGA150612GA4	.047				★	★									
		NEW		NP-DNGA431-GH4	NP-DNGA150404GH4	.016				●	●	●							
		NEW		NP-DNGA432-GH4	NP-DNGA150408GH4	.031				●	●	●							
		NEW		NP-DNGA433-GH4	NP-DNGA150412GH4	.047				●	●	●							
		NEW		NP-DNGA441-GH4	NP-DNGA150604GH4	.016				★	★	★							
		NEW		NP-DNGA442-GH4	NP-DNGA150608GH4	.031				★	★	★							
		NEW		NP-DNGA443-GH4	NP-DNGA150612GH4	.047				★	★	★							
				NP-DNGA431-GS4	NP-DNGA150404GS4	.016				●	★								
				NP-DNGA432-GS4	NP-DNGA150408GS4	.031				●	★								
				NP-DNGA433-GS4	NP-DNGA150412GS4	.047				●	★								
				NP-DNGA441-GS4	NP-DNGA150604GS4	.016				★	★								
				NP-DNGA442-GS4	NP-DNGA150608GS4	.031				★	★								
				NP-DNGA443-GS4	NP-DNGA150612GS4	.047				★	★								
				NP-DNGA431-GN4	NP-DNGA150404GN4	.016	★												
				NP-DNGA432-GN4	NP-DNGA150408GN4	.031	★												
				NP-DNGA433-GN4	NP-DNGA150412GN4	.047	★												
				NP-DNGA431-FS4	NP-DNGA150404FS4	.016		★	●	★	★								
				NP-DNGA432-FS4	NP-DNGA150408FS4	.031		★	●	★	★								
				NP-DNGA433-FS4	NP-DNGA150412FS4	.047		★	●	★	★								
				NP-DNGA441-FS4	NP-DNGA150604FS4	.016				★	★								
				NP-DNGA442-FS4	NP-DNGA150608FS4	.031				★	★								
				NP-DNGA443-FS4	NP-DNGA150612FS4	.047				★	★								
				NP-DNGA431-TA4	NP-DNGA150404TA4	.016	★	★		★	★								
				NP-DNGA432-TA4	NP-DNGA150408TA4	.031	★	★		★	★								
				NP-DNGA433-TA4	NP-DNGA150412TA4	.047	★	★		★	★								
		NEW		NP-DNGA441-TA4	NP-DNGA150604TA4	.016				★	★								
		NEW		NP-DNGA442-TA4	NP-DNGA150608TA4	.031				★	★								
		NEW		NP-DNGA443-TA4	NP-DNGA150612TA4	.047				★	★								
		NEW		NP-DNGA431-TH4	NP-DNGA150404TH4	.016				●	★								
		NEW		NP-DNGA432-TH4	NP-DNGA150408TH4	.031				●	★								
		NEW		NP-DNGA433-TH4	NP-DNGA150412TH4	.047				●	★								
		NEW		NP-DNGA441-TH4	NP-DNGA150604TH4	.016				★	★								
		NEW		NP-DNGA442-TH4	NP-DNGA150608TH4	.031				★	★								
		NEW		NP-DNGA443-TH4	NP-DNGA150612TH4	.047				★	★								



C010
-012
E021
E024
H009
-011



IDENTIFICATION > B002
HONING > B014

B029

CBN

CBN & PCD TURNING INSERTS

NEG

WITH HOLE



CBN TURNING INSERTS [NEGATIVE]

55° DN TYPE INSERTS WITH HOLE

NP-DNGA 4 3 1 TS4

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials		●		●		●		●		●		●		●		●		●		Applicable Holder Page
	K	Cast Iron		●		●		●		●		●		●		●		●		●		
Shape	S	Heat-resistant Alloy, Titanium Alloy		●		●		●		●		●		●		●		●		●		Applicable Holder Page
		Sintered Alloy		●		●		●		●		●		●		●		●		●		
Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN			CBN						Solid CBN		Applicable Holder Page								
			MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025	MB825	MB835		MB710	MB730	MB4020	MBS140				
NEW PETIT CUT	NP-DNGA431-TS4	NP-DNGA150404TS4	.016																			
	NP-DNGA432-TS4	NP-DNGA150408TS4	.031																			C010
	NP-DNGA433-TS4	NP-DNGA150412TS4	.047																			-012
	NP-DNGA441-TS4	NP-DNGA150604TS4	.016																			E021
	NP-DNGA442-TS4	NP-DNGA150608TS4	.031																			E024
	NP-DNGA443-TS4	NP-DNGA150612TS4	.047																			H009
																						-011
NEW PETIT CUT	BF-DNGG431-TA4	BF-DNGG150404TA4	.016	★																		C010
	BF-DNGG432-TA4	BF-DNGG150408TA4	.031	★																		-012
	BF-DNGG433-TA4	BF-DNGG150412TA4	.047	★																		E021
																						E024
																						H009
																						-011
(With breaker)																						
NEW PETIT CUT	NP-DNGA332-GA2	NP-DNGA110408GA2	.031	●	●			●	●													
	NP-DNGA430.5-GA2	NP-DNGA150402GA2	.008					●														
	NP-DNGA431-GA2	NP-DNGA150404GA2	.016	●	●			●	●		●											
	NP-DNGA432-GA2	NP-DNGA150408GA2	.031	●	●			●	●		●											
	NP-DNGA433-GA2	NP-DNGA150412GA2	.047	●	●			●	●		●											
	NEW NP-DNGA440.5-GA2	NP-DNGA150602GA2	.008					★														
	NEW NP-DNGA441-GA2	NP-DNGA150604GA2	.016					★	★													
	NEW NP-DNGA442-GA2	NP-DNGA150608GA2	.031					★	★													
	NEW NP-DNGA443-GA2	NP-DNGA150612GA2	.047					★	★													
	NEW NP-DNGA431-GH2	NP-DNGA150404GH2	.016					●	●	●												
	NEW NP-DNGA432-GH2	NP-DNGA150408GH2	.031					●	●	●												
	NEW NP-DNGA433-GH2	NP-DNGA150412GH2	.047					●	●	●												
	NEW NP-DNGA441-GH2	NP-DNGA150604GH2	.016					★	★	★												
	NEW NP-DNGA442-GH2	NP-DNGA150608GH2	.031					★	★	★												
	NEW NP-DNGA443-GH2	NP-DNGA150612GH2	.047					★	★	★												
	NP-DNGA332-GS2	NP-DNGA110408GS2	.031	●																		
	NP-DNGA430.5-GS2	NP-DNGA150402GS2	.008					●														
	NP-DNGA431-GS2	NP-DNGA150404GS2	.016	●				●	●					●	●							
	NP-DNGA432-GS2	NP-DNGA150408GS2	.031	●				●	●					●	●							
	NP-DNGA433-GS2	NP-DNGA150412GS2	.047	●				●	●					●	●							
	NP-DNGA441-GS2	NP-DNGA150604GS2	.016					★	★													
	NP-DNGA442-GS2	NP-DNGA150608GS2	.031					★	★													
	NP-DNGA443-GS2	NP-DNGA150612GS2	.047					★	★													
	NEW NP-DNGA431-SE2	NP-DNGA150404SE2	.016																			
	NEW NP-DNGA432-SE2	NP-DNGA150408SE2	.031																			
	NEW NP-DNGA433-SE2	NP-DNGA150412SE2	.047																			
	NEW NP-DNGA431-SF2	NP-DNGA150404SF2	.016																			
	NEW NP-DNGA432-SF2	NP-DNGA150408SF2	.031																			
	NEW NP-DNGA433-SF2	NP-DNGA150412SF2	.047																			



CBN TURNING INSERTS [NEGATIVE]

55° DN TYPE INSERTS WITH HOLE

BF-DNGM 4 3 1 TA2

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

C

D

R



S

T

V

W

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN			CBN					Solid CBN	Applicable Holder Page							
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB825	MB835	MB710	MB730	MB4020	MBS140	
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN			CBN					Solid CBN	Applicable Holder Page					
		Sintered Alloy				MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB825	MB835	MB710	MB730	MB4020
NEW PETIT CUT 			BF-DNGM431-TA2	BF-DNGM150404TA2	.016	●	●	●	●	●	●	●	●	●	●	●	●			
			BF-DNGM432-TA2	BF-DNGM150408TA2	.031	●	●	●	●	●	●	●	●	●	●	●	●	●		C010
			BF-DNGM433-TA2	BF-DNGM150412TA2	.047	●	●	●	●	●	●	●	●	●	●	●	●	●		-012
			BF-DNGM431-TS2	BF-DNGM150404TS2	.016				★											E021
			BF-DNGM432-TS2	BF-DNGM150408TS2	.031				★											E024
	(With breaker)			BF-DNGM433-TS2	BF-DNGM150412TS2	.047				★										H009
NEW PETIT CUT 			BM-DNGM431-TA2	BM-DNGM150404TA2	.016				●											
			BM-DNGM432-TA2	BM-DNGM150408TA2	.031		★		●											C010
			BM-DNGM433-TA2	BM-DNGM150412TA2	.047		★		●											-012
			BM-DNGM441-TA2	BM-DNGM150604TA2	.016					★										E021
			BM-DNGM442-TA2	BM-DNGM150608TA2	.031					★										E024
	(With breaker)			BM-DNGM443-TA2	BM-DNGM150612TA2	.047					★									H009

● = MIRACLE SIGMA

CBN TURNING INSERTS [NEGATIVE]

60° TN TYPE INSERTS WITH HOLE

NP-TNGA 3 3 1 GA6

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials		Corner Radius RE (inch)	Coated CBN			CBN				Solid CBN	Applicable Holder Page						
	K	Cast Iron			MBC010	MBC020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB825	MB835	MB710	MB730	MB4020	MBS140
Work Material	S	Heat-resistant Alloy, Titanium Alloy																	
Shape		Order Number	(ISO) Number																
NEW PETIT CUT		NP-TNGA331-GA6	NP-TNGA160404GA6	.016	●	★		★	★										
		NP-TNGA332-GA6	NP-TNGA160408GA6	.031	●	★		★	★										
		NP-TNGA333-GA6	NP-TNGA160412GA6	.047	●	★		★	★										
		NP-TNGA331-GS6	NP-TNGA160404GS6	.016			●	★											
		NP-TNGA332-GS6	NP-TNGA160408GS6	.031			●	★											
		NP-TNGA333-GS6	NP-TNGA160412GS6	.047			●	★											
		NEW NP-TNGA331-GH6	NP-TNGA160404GH6	.016				●	●	●									
		NEW NP-TNGA332-GH6	NP-TNGA160408GH6	.031				●	●	●									
		NEW NP-TNGA333-GH6	NP-TNGA160412GH6	.047				●	●	●									
		NP-TNGA331-GN6	NP-TNGA160404GN6	.016	★														
		NP-TNGA332-GN6	NP-TNGA160408GN6	.031	★														
		NP-TNGA333-GN6	NP-TNGA160412GN6	.047	★														
		NP-TNGA331-FS6	NP-TNGA160404FS6	.016		★	●	★	★										C018
		NP-TNGA332-FS6	NP-TNGA160408FS6	.031		★	●	★	★										-023
		NP-TNGA333-FS6	NP-TNGA160412FS6	.047		★	●	★	★										E022
		NP-TNGA331-TA6	NP-TNGA160404TA6	.016	★	★		★	★										E025
		NP-TNGA332-TA6	NP-TNGA160408TA6	.031	★	★		★	★										
		NP-TNGA333-TA6	NP-TNGA160412TA6	.047	★	★		★	★										
		NEW NP-TNGA331-TH6	NP-TNGA160404TH6	.016				●	★										
		NEW NP-TNGA332-TH6	NP-TNGA160408TH6	.031				●	★										
	NEW NP-TNGA333-TH6	NP-TNGA160412TH6	.047				●	★											
	NP-TNGA331-TS6	NP-TNGA160404TS6	.016				★												
	NP-TNGA332-TS6	NP-TNGA160408TS6	.031				★												
	NP-TNGA333-TS6	NP-TNGA160412TS6	.047				★												
NEW PETIT CUT		NP-TNGA330.5-GA3	NP-TNGA160402GA3	.008	●			●											
		NP-TNGA331-GA3	NP-TNGA160404GA3	.016	●	●		●	●	●									
		NP-TNGA332-GA3	NP-TNGA160408GA3	.031	●	●		●	●	●									
		NP-TNGA333-GA3	NP-TNGA160412GA3	.047	●	●		●	●	●									
		NP-TNGA330.5-GS3	NP-TNGA160402GS3	.008				●											
		NP-TNGA331-GS3	NP-TNGA160404GS3	.016	●		●	●	●					●	●				
		NP-TNGA332-GS3	NP-TNGA160408GS3	.031	●		●	●	●					●	●				
		NP-TNGA333-GS3	NP-TNGA160412GS3	.047	●		●	●	●					●	●				
		NEW NP-TNGA331-GH3	NP-TNGA160404GH3	.016				●	●	●									
		NEW NP-TNGA332-GH3	NP-TNGA160408GH3	.031				●	●	●									
		NEW NP-TNGA333-GH3	NP-TNGA160412GH3	.047				●	●	●									
		NEW NP-TNGA331-SE3	NP-TNGA160404SE3	.016													●		
	NEW NP-TNGA332-SE3	NP-TNGA160408SE3	.031													●			
	NEW NP-TNGA333-SE3	NP-TNGA160412SE3	.047													●			



CBN TURNING INSERTS [NEGATIVE]



35° VN TYPE INSERTS WITH HOLE

VNGA 3 3 1 GA4

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

C

D

R

S

T

V

W

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials		●		●		●		●		●		●		●		●		Applicable Holder Page
	K	Cast Iron		●		●		●		●		●		●		●		●		
Shape	S	Heat-resistant Alloy, Titanium Alloy		●		●		●		●		●		●		●		●		
		Sintered Alloy		●		●		●		●		●		●		●		●		
Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN				CBN				Solid CBN									
			MBC010	MBC020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025	MB825	MB835		MB710	MB730	MB4020	MBS140			
NEW PETIT CUT	NP-VNGA331-GA4	NP-VNGA160404GA4	.016	●	★		★	★												
	NP-VNGA332-GA4	NP-VNGA160408GA4	.031	●	★		★	★												
	NP-VNGA333-GA4	NP-VNGA160412GA4	.047		★		★	★												
	NEW NP-VNGA331-GH4	NP-VNGA160404GH4	.016				●	●	●											
	NEW NP-VNGA332-GH4	NP-VNGA160408GH4	.031				●	●	●											
	NEW NP-VNGA333-GH4	NP-VNGA160412GH4	.047				●	●	●											
	NP-VNGA331-GS4	NP-VNGA160404GS4	.016				●	★												
	NP-VNGA332-GS4	NP-VNGA160408GS4	.031				●	★												
	NP-VNGA333-GS4	NP-VNGA160412GS4	.047					★												
	NP-VNGA331-FS4	NP-VNGA160404FS4	.016		★		●	★	★											C024
	NP-VNGA332-FS4	NP-VNGA160408FS4	.031		★		●	★	★											C025
	NP-VNGA333-FS4	NP-VNGA160412FS4	.047		★			★												E023
	NP-VNGA331-TA4	NP-VNGA160404TA4	.016		★			★	★											E026
	NP-VNGA332-TA4	NP-VNGA160408TA4	.031		★			★	★											
	NP-VNGA333-TA4	NP-VNGA160412TA4	.047		★			★	★											
	NEW NP-VNGA331-TH4	NP-VNGA160404TH4	.016					●	★											
	NEW NP-VNGA332-TH4	NP-VNGA160408TH4	.031					●	★											
	NEW NP-VNGA333-TH4	NP-VNGA160412TH4	.047					●	★											
	NP-VNGA331-TS4	NP-VNGA160404TS4	.016					★												
	NP-VNGA332-TS4	NP-VNGA160408TS4	.031					★												
NEW PETIT CUT	NP-VNGA330.5-GA2	NP-VNGA160402GA2	.008		●			●		●										
	NP-VNGA331-GA2	NP-VNGA160404GA2	.016		●	●		●	●	●	●									
	NP-VNGA332-GA2	NP-VNGA160408GA2	.031		●	●		●	●	●	●									
	NP-VNGA333-GA2	NP-VNGA160412GA2	.047					●	●	●										
	NEW NP-VNGA331-GH2	NP-VNGA160404GH2	.016					●	●	●										
	NEW NP-VNGA332-GH2	NP-VNGA160408GH2	.031					●	●	●										
	NEW NP-VNGA333-GH2	NP-VNGA160412GH2	.047					●	●	●										
	NP-VNGA330.5-GS2	NP-VNGA160402GS2	.008					●												
	NP-VNGA331-GS2	NP-VNGA160404GS2	.016					●	●	●										
	NP-VNGA332-GS2	NP-VNGA160408GS2	.031					●	●	●										
	NP-VNGA333-GS2	NP-VNGA160412GS2	.047					●												
	NEW NP-VNGA331-SE2	NP-VNGA160404SE2	.016																	
	NEW NP-VNGA332-SE2	NP-VNGA160408SE2	.031																	
	NEW NP-VNGA331-SF2	NP-VNGA160404SF2	.016																	
	NEW NP-VNGA332-SF2	NP-VNGA160408SF2	.031																	
	NP-VNGA330.5-GN2	NP-VNGA160402GN2	.008		●															
	NP-VNGA330.5-FS2	NP-VNGA160402FS2	.008					●												
	NP-VNGA331-FS2	NP-VNGA160404FS2	.016		★		●	●	●											
	NP-VNGA332-FS2	NP-VNGA160408FS2	.031		★		●	●	●											
	NP-VNGA333-FS2	NP-VNGA160412FS2	.047					●												



CBN TURNING INSERTS [NEGATIVE]

80° WN TYPE INSERTS WITH HOLE

NP-WNGA 4 3 2 GA6

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

C

D

R




S

T

V

W

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials		●		●		●		●		●		●		●		●		●	
	K	Cast Iron		●		●		●		●		●		●		●		●		●	
Shape	S	Heat-resistant Alloy, Titanium Alloy		●		●		●		●		●		●		●		●		●	
		Sintered Alloy		●		●		●		●		●		●		●		●		●	
Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN					CBN					Solid CBN		Applicable Holder Page						
			MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025	MB825	MB835	MB710		MB730	MB4020	MBS140			
NEW PETIT CUT	NP-WNGA432-GA6	NP-WNGA080408GA6	.031	★																	
	NP-WNGA432-GS6	NP-WNGA080408GS6	.031			●	★														C027
	NP-WNGA432-FS6	NP-WNGA080408FS6	.031			●	★														E023
	NP-WNGA432-TS6	NP-WNGA080408TS6	.031				★														E026
				.031																	
NEW PETIT CUT	NP-WNGA432-GA3	NP-WNGA080408GA3	.031	●	●			●	●												
	NP-WNGA432-GS3	NP-WNGA080408GS3	.031			●	★														
	NEW NP-WNGA432-GH3	NP-WNGA080408GH3	.031					●	●												
	NEW NP-WNGA432-SE3	NP-WNGA080408SE3	.031																		
	NEW NP-WNGA432-SF3	NP-WNGA080408SF3	.031																		
	NP-WNGA432-FS3	NP-WNGA080408FS3	.031			●	★	●													
	NP-WNGA432-TA3	NP-WNGA080408TA3	.031						●	●											
	NEW NP-WNGA432-TH3	NP-WNGA080408TH3	.031							●	●										
	NP-WNGA432-TS3	NP-WNGA080408TS3	.031					★													
NEW PETIT CUT (With Wiper)	*1 NP-WNGA432-GAWS3	NP-WNGA080408GAWS3	.031	●						★											
	*1 NP-WNGA432-GSWS3	NP-WNGA080408GSWS3	.031	★			★														

*1 Please refer to page B017 before using the wiper insert.

■ = 

● : Inventory maintained. ★ : Inventory maintained in Japan.
□ : Non stock, produced to order only.
<1 insert in one case>

CBN TURNING INSERTS [POSITIVE]


80° CC TYPE INSERTS WITH HOLE

NP-CCGB 2 1.5 1 GA2

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN					CBN				Applicable Holder Page				
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB835	MB710	MB730	MB4020
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	
		Sintered Alloy															
NEW PETIT CUT			NP-CCGB21.51-GA2	NP-CCGB060204GA2	.016	★						●					C030 D012 E006 E012 E013 E040
																	
NEW PETIT CUT			NP-CCGW21.50.5-GA2	NP-CCGW060202GA2	.008		●	●		●							
			NP-CCGW21.51-GA2	NP-CCGW060204GA2	.016		●	●		●							
			NP-CCGW21.52-GA2	NP-CCGW060208GA2	.031		●	●		●							
			NP-CCGW32.50.5-GA2	NP-CCGW09T302GA2	.008		●	●		●							
			NP-CCGW32.51-GA2	NP-CCGW09T304GA2	.016		●	●		●							
			NP-CCGW32.52-GA2	NP-CCGW09T308GA2	.031		●	●		●							
			NEW NP-CCGW32.51-GH2	NP-CCGW09T304GH2	.016				●	●							
			NEW NP-CCGW32.52-GH2	NP-CCGW09T308GH2	.031				●	●							
			NP-CCGW21.50.5-GS2	NP-CCGW060202GS2	.008								●	●			
			NP-CCGW21.51-GS2	NP-CCGW060204GS2	.016		●						●	●			
			NP-CCGW21.52-GS2	NP-CCGW060208GS2	.031								●	●			
			NP-CCGW32.50.5-GS2	NP-CCGW09T302GS2	.008								●	●			
			NP-CCGW32.51-GS2	NP-CCGW09T304GS2	.016		●						●	●			
			NP-CCGW32.52-GS2	NP-CCGW09T308GS2	.031		●						●	●			
			NEW NP-CCGW21.50.5-SE2	NP-CCGW060202SE2	.008											●	
			NEW NP-CCGW21.51-SE2	NP-CCGW060204SE2	.016											●	C030 D008
			NEW NP-CCGW21.52-SE2	NP-CCGW060208SE2	.031											●	D012
			NEW NP-CCGW32.50.5-SE2	NP-CCGW09T302SE2	.008											●	E012
			NEW NP-CCGW32.51-SE2	NP-CCGW09T304SE2	.016											●	E013
			NEW NP-CCGW32.52-SE2	NP-CCGW09T308SE2	.031											●	E040
			NEW NP-CCGW21.50.5-SF2	NP-CCGW060202SF2	.008											●	
			NEW NP-CCGW21.51-SF2	NP-CCGW060204SF2	.016											●	
			NEW NP-CCGW21.52-SF2	NP-CCGW060208SF2	.031											●	
			NEW NP-CCGW32.50.5-SF2	NP-CCGW09T302SF2	.008											●	
			NEW NP-CCGW32.51-SF2	NP-CCGW09T304SF2	.016											●	
			NEW NP-CCGW32.52-SF2	NP-CCGW09T308SF2	.031											●	
			NP-CCGW32.50.5-GN2	NP-CCGW09T302GN2	.008		●										
			NP-CCGW32.51-GN2	NP-CCGW09T304GN2	.016		●										
			NP-CCGW32.52-GN2	NP-CCGW09T308GN2	.031		●										
			NP-CCGW21.50.5-FA2	NP-CCGW060202FA2	.008									●	●		
			NP-CCGW21.51-FA2	NP-CCGW060204FA2	.016									●	●		
			NP-CCGW21.52-FA2	NP-CCGW060208FA2	.031									●	●		
			NP-CCGW32.51-FA2	NP-CCGW09T304FA2	.016									●	●		
			NP-CCGW32.52-FA2	NP-CCGW09T308FA2	.031									●	●		



CBN TURNING INSERTS [POSITIVE]






80° CC TYPE INSERTS WITH HOLE

BM-CCGT 3 2.5 1 TA2

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN					CBN			Applicable Holder Page						
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810		MB8025	MB835	MB710	MB730	MB4020	
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW		
		Sintered Alloy																
NEW PETIT CUT  (With breaker)			BM-CCGT32.51-TA2	BM-CCGT09T304TA2													C030 D008 D012 E012 E013 E020	
			BM-CCGT32.52-TA2	BM-CCGT09T308TA2														
NEW PETIT CUT 			*1 NP-CCGW04T002GS	NP-CCGW04T002GS			●										E012 E029	
			*1 NP-CCGW04T004GS	NP-CCGW04T004GS			●											
NEW PETIT CUT 			NP-CCGW03S102FA	NP-CCGW03S102FA														
			NP-CCGW04T002FA	NP-CCGW04T002FA														
			NEW NP-CCGW03S102FS	NP-CCGW03S102FS				●										
			NEW NP-CCGW03S104FS	NP-CCGW03S104FS				●										
			NEW NP-CCGW03S102GS	NP-CCGW03S102GS				●										
			NEW NP-CCGW03S104GS	NP-CCGW03S104GS				●										E012 E029
			NEW NP-CCGW04T002FS	NP-CCGW04T002FS				●										
			NEW NP-CCGW04T004FS	NP-CCGW04T004FS				●										
			NP-CCGW03S102FS	NP-CCGW03S102FS				●										
			NP-CCGW03S104FS	NP-CCGW03S104FS				●										
			NP-CCGW04T002FS	NP-CCGW04T002FS				●										
NEW PETIT CUT 			CCGW21.50.5FS	CCGW060202FS													★	C030
			CCGW21.51FS	CCGW060204FS													★	D008
			CCGW21.52FS	CCGW060208FS													★	D012
			CCGW32.51FS	CCGW09T304FS													★	E012
			CCGW32.52FS	CCGW09T308FS													★	E013 E040
NEW PETIT CUT 			CCGW32.51	CCGW09T304														C030
			CCGW32.52	CCGW09T308														D008
			CCGW432	CCGW120408														D012 E012 E013 E040

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



● : Inventory maintained. ★ : Inventory maintained in Japan.
□ : Non stock, produced to order only.
<1 insert in one case>

CBN TURNING INSERTS [POSITIVE]

55° DC TYPE INSERTS WITH HOLE

NP-DCGW 2 1.5 0.5 GA2

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

POSI 7°

WITH HOLE

C

D

R

S

T

V

W

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN					CBN				Applicable Holder Page						
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB835	MB710	MB730	MB4020		
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number															
		Sintered Alloy																	
NEW PETIT CUT			NP-DCGW21.50.5-GA2	NP-DCGW070202GA2	.008	●	★												
			NP-DCGW21.51-GA2	NP-DCGW070204GA2	.016	●	●												
			NP-DCGW21.52-GA2	NP-DCGW070208GA2	.031	●	●												
			NP-DCGW32.50.5-GA2	NP-DCGW11T302GA2	.008	●	★												
			NP-DCGW32.51-GA2	NP-DCGW11T304GA2	.016	●	●												
			NP-DCGW32.52-GA2	NP-DCGW11T308GA2	.031	●	●												
			NEW NP-DCGW32.51-GH2	NP-DCGW11T304GH2	.016			●	●										
			NEW NP-DCGW32.52-GH2	NP-DCGW11T308GH2	.031			●	●										
			NP-DCGW21.50.5-GS2	NP-DCGW070202GS2	.008			●	●										
			NP-DCGW21.51-GS2	NP-DCGW070204GS2	.016	●		●	●										
			NP-DCGW21.52-GS2	NP-DCGW070208GS2	.031			●	●										
			NP-DCGW32.50.5-GS2	NP-DCGW11T302GS2	.008	★		●	●										
			NP-DCGW32.51-GS2	NP-DCGW11T304GS2	.016	●		●	●							●			
			NP-DCGW32.52-GS2	NP-DCGW11T308GS2	.031	●		●	●							●			
			NEW NP-DCGW21.51-SE2	NP-DCGW070204SE2	.016														●
			NEW NP-DCGW21.52-SE2	NP-DCGW070208SE2	.031														●
			NEW NP-DCGW32.50.5-SE2	NP-DCGW11T302SE2	.008														●
			NEW NP-DCGW32.51-SE2	NP-DCGW11T304SE2	.016														●
			NEW NP-DCGW32.52-SE2	NP-DCGW11T308SE2	.031														●
			NEW NP-DCGW21.51-SF2	NP-DCGW070204SF2	.016														●
			NEW NP-DCGW21.52-SF2	NP-DCGW070208SF2	.031														●
			NEW NP-DCGW32.50.5-SF2	NP-DCGW11T302SF2	.008														●
			NEW NP-DCGW32.51-SF2	NP-DCGW11T304SF2	.016														●
			NEW NP-DCGW32.52-SF2	NP-DCGW11T308SF2	.031														●
			NP-DCGW21.50.5-GN2	NP-DCGW070202GN2	.008	●													
			NP-DCGW21.51-GN2	NP-DCGW070204GN2	.016	●													
			NP-DCGW21.52-GN2	NP-DCGW070208GN2	.031	●													
			NP-DCGW32.50.5-GN2	NP-DCGW11T302GN2	.008	●													
			NP-DCGW32.51-GN2	NP-DCGW11T304GN2	.016	●													
			NP-DCGW32.52-GN2	NP-DCGW11T308GN2	.031	●													
			NP-DCGW32.51-FA2	NP-DCGW11T304FA2	.016											●	●		
			NP-DCGW32.52-FA2	NP-DCGW11T308FA2	.031											●	●		
			NP-DCGW21.50.5-FS2	NP-DCGW070202FS2	.008		★	●											●
		NP-DCGW21.51-FS2	NP-DCGW070204FS2	.016		★	●	●										●	
		NP-DCGW21.52-FS2	NP-DCGW070208FS2	.031			●											●	
		NP-DCGW32.50.5-FS2	NP-DCGW11T302FS2	.008		★	●	●										●	
		NP-DCGW32.51-FS2	NP-DCGW11T304FS2	.016		★	●	●	●									●	
		NP-DCGW32.52-FS2	NP-DCGW11T308FS2	.031		★	●	●	●									●	

C031
C032
D009
D013
D040
E008
E013
E014
E042
E043



CBN TURNING INSERTS [POSITIVE]



NP-TCGW 1.8 1.5 0.5 GA3

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN					CBN			Applicable Holder Page						
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810		MB8025	MB835	MB710	MB730	MB4020	
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	
NEW PETIT CUT	S	Sintered Alloy	Order Number	(ISO) Number	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	
			NP-TCGW1.81.50.5-GA3	NP-TCGW090202GA3	●													
			NP-TCGW1.81.51-GA3	NP-TCGW090204GA3	●													
			NP-TCGW1.81.52-GA3	NP-TCGW090208GA3	●													
			NP-TCGW21.50.5-GA3	NP-TCGW110202GA3	●													
			NP-TCGW21.51-GA3	NP-TCGW110204GA3	● ●													
			NP-TCGW21.52-GA3	NP-TCGW110208GA3	● ●													
			NP-TCGW2.521-GA3	NP-TCGW130304GA3	★													
			NP-TCGW2.522-GA3	NP-TCGW130308GA3	★													
			NP-TCGW32.51-GA3	NP-TCGW16T304GA3	● ●													
			NP-TCGW32.52-GA3	NP-TCGW16T308GA3	●													
			NP-TCGW1.81.51-GS3	NP-TCGW090204GS3				★										
			NP-TCGW1.81.52-GS3	NP-TCGW090208GS3				★										
			NP-TCGW21.50.5-GS3	NP-TCGW110202GS3				●										
			NP-TCGW21.51-GS3	NP-TCGW110204GS3				●										
			NP-TCGW21.52-GS3	NP-TCGW110208GS3				●										
			NP-TCGW2.521-GS3	NP-TCGW130304GS3				★										
			NP-TCGW2.522-GS3	NP-TCGW130308GS3				★										
			NP-TCGW32.51-GS3	NP-TCGW16T304GS3				●										
			NP-TCGW32.52-GS3	NP-TCGW16T308GS3				●										
			NEW NP-TCGW21.51-SE3	NP-TCGW110204SE3													●	
			NEW NP-TCGW21.52-SE3	NP-TCGW110208SE3														●
			NEW NP-TCGW21.51-SF3	NP-TCGW110204SF3														●
			NEW NP-TCGW21.52-SF3	NP-TCGW110208SF3														●
			NP-TCGW21.51-FA3	NP-TCGW110204FA3														● ●
			NP-TCGW21.52-FA3	NP-TCGW110208FA3														● ●
			NP-TCGW21.51-FS3	NP-TCGW110204FS3														●
			NP-TCGW21.52-FS3	NP-TCGW110208FS3														●
			NP-TCGW32.51-FS3	NP-TCGW16T304FS3														●
			NP-TCGW32.52-FS3	NP-TCGW16T308FS3														●
			NP-TCGW21.51-TS3	NP-TCGW110204TS3														●
			NP-TCGW21.52-TS3	NP-TCGW110208TS3														●
			TCGW1.81.51FS	TCGW090204FS														★
			TCGW1.81.52FS	TCGW090208FS														★
			TCGW21.51FS	TCGW110204FS														★
			TCGW21.52FS	TCGW110208FS														★

C035
E015
E016
E044

C035
E015
E016
E044



60° TP TYPE INSERTS WITH HOLE

NP-TPGB 1.5 1.5 1 GA3

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN					CBN				Applicable Holder Page					
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB835	MB710	MB730	MB4020	
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN					CBN				Applicable Holder Page			
		Sintered Alloy				MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB835	MB710	MB730
NEW PETIT CUT			NP-TPGB1.51.51-GA3	NP-TPGB080204GA3	.016	●	●	●	●	●	●	●	●	●	●			
			NP-TPGB1.51.52-GA3	NP-TPGB080208GA3	.031	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB1.81.51-GA3	NP-TPGB090204GA3	.016	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB1.81.52-GA3	NP-TPGB090208GA3	.031	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB220.5-GA3	NP-TPGB110302GA3	.008					●								
			NP-TPGB221-GA3	NP-TPGB110304GA3	.016	★	★		★	●								
			NP-TPGB222-GA3	NP-TPGB110308GA3	.031	★	★		★	●								
			NP-TPGB321-GA3	NP-TPGB160304GA3	.016	★	★		★	●	●							
			NP-TPGB322-GA3	NP-TPGB160308GA3	.031	★	●		★	●								
		NEW		NP-TPGB321-GH3	NP-TPGB160304GH3	.016			●	●	●							
		NEW		NP-TPGB322-GH3	NP-TPGB160308GH3	.031			●	●	●							
				NP-TPGB1.51.51-GS3	NP-TPGB080204GS3	.016			●	★								
				NP-TPGB1.51.52-GS3	NP-TPGB080208GS3	.031			●	★								
				NP-TPGB1.81.51-GS3	NP-TPGB090204GS3	.016			●	★								
				NP-TPGB1.81.52-GS3	NP-TPGB090208GS3	.031			●	★								
				NP-TPGB220.5-GS3	NP-TPGB110302GS3	.008			●	●								
				NP-TPGB221-GS3	NP-TPGB110304GS3	.016			●	★								
				NP-TPGB222-GS3	NP-TPGB110308GS3	.031			●	★								
				NP-TPGB321-GS3	NP-TPGB160304GS3	.016			●	★								
				NP-TPGB322-GS3	NP-TPGB160308GS3	.031			●	★								
		NEW		NP-TPGB1.81.50.5-SE3	NP-TPGB090202SE3	.008												●
		NEW		NP-TPGB1.81.51-SE3	NP-TPGB090204SE3	.016												●
		NEW		NP-TPGB220.5-SE3	NP-TPGB110302SE3	.008												●
		NEW		NP-TPGB221-SE3	NP-TPGB110304SE3	.016												●
		NEW		NP-TPGB222-SE3	NP-TPGB110308SE3	.031												●
		NEW		NP-TPGB1.81.50.5-SF3	NP-TPGB090202SF3	.008												●
		NEW		NP-TPGB1.81.51-SF3	NP-TPGB090204SF3	.016												●
		NEW		NP-TPGB220.5-SF3	NP-TPGB110302SF3	.008												●
		NEW		NP-TPGB221-SF3	NP-TPGB110304SF3	.016												●
		NEW		NP-TPGB222-SF3	NP-TPGB110308SF3	.031												●
				NP-TPGB1.81.50.5-FS3	NP-TPGB090202FS3	.008												●
				NP-TPGB1.81.51-FS3	NP-TPGB090204FS3	.016												●
			NP-TPGB220.5-FS3	NP-TPGB110302FS3	.008			●	●								●	
			NP-TPGB221-FS3	NP-TPGB110304FS3	.016			★	●	★	★						●	
			NP-TPGB222-FS3	NP-TPGB110308FS3	.031			★	●	★	★						●	
			NP-TPGB321-FS3	NP-TPGB160304FS3	.016			★		★							●	
			NP-TPGB322-FS3	NP-TPGB160308FS3	.031			★		★							●	



E007
E045

● = MIRACLE SIGMA

CBN

CBN & PCD TURNING INSERTS

POSI 11°

WITH HOLE



IDENTIFICATION > B002
HONING > B014

B049

CBN TURNING INSERTS [POSITIVE]



NP-TPGB 1.5 1.5 1 TA3

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

CBN

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN				CBN				Applicable Holder Page					
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810		MB8025	MB835	MB710	MB730	MB4020
Shape	S	Heat-resistant Alloy, Titanium Alloy	Order Number	(ISO) Number	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	NEW	
		Sintered Alloy															
NEW PETIT CUT 			NP-TPGB1.51.51-TA3	NP-TPGB080204TA3	●	●	●	●	●	●	●	●	●	●	●	E007 E045	
			NP-TPGB1.51.52-TA3	NP-TPGB080208TA3	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB1.81.51-TA3	NP-TPGB090204TA3	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB1.81.52-TA3	NP-TPGB090208TA3	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB221-TA3	NP-TPGB110304TA3	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB222-TA3	NP-TPGB110308TA3	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB321-TA3	NP-TPGB160304TA3	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB322-TA3	NP-TPGB160308TA3	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB321-TH3	NP-TPGB160304TH3	●	●	●	●	●	●	●	●	●	●	●		
			NP-TPGB322-TH3	NP-TPGB160308TH3	●	●	●	●	●	●	●	●	●	●	●		
NEW PETIT CUT 			NP-TPGX1.51.50.5-GS3	NP-TPGX080202GS3	★											E007 E045	
			NP-TPGX1.51.51-GS3	NP-TPGX080204GS3	★												
			NP-TPGX1.81.50.5-GS3	NP-TPGX090202GS3	★												
			NP-TPGX1.81.51-GS3	NP-TPGX090204GS3	★												
			NP-TPGX221-GS3	NP-TPGX110304GS3	★												
			NP-TPGX222-GS3	NP-TPGX110308GS3	★												
			NP-TPGX222-TA3	NP-TPGX110308TA3	●												
NEW PETIT CUT 			NP-TPGX1.51.50.5F	NP-TPGX080202F						★						E007 E045	
			NP-TPGX1.51.51F	NP-TPGX080204F						★							
			NP-TPGX1.81.50.5F	NP-TPGX090202F						★							
			NP-TPGX1.81.51F	NP-TPGX090204F						★							
			TPGX1.51.50.5	TPGX080202									★	★		E007 E045	
			TPGX1.51.51	TPGX080204							★			★	★		
			TPGX1.81.50.5	TPGX090202										★	★		
			TPGX1.81.51	TPGX090204								★		★	★		
			TPGX221	TPGX110304							●		●	●	●		
			TPGX222	TPGX110308							●		●	●	●		
			TPGX321	TPGX160304									●				
			TPGX322	TPGX160308									●				





35°

VB TYPE INSERTS WITH HOLE

NP-VBGW 3 3 1 GA2

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	Corner Radius RE (inch)	Coated CBN					CBN				Applicable Holder Page		
	K	Cast Iron		MBC010	MBC020	BC8020	BC8105	BC8110	BC8120	BC8130	MB810	MB8025		MB835	MB710
	S	Heat-resistant Alloy, Titanium Alloy													
Shape		Sintered Alloy													
NEW PETIT CUT		NP-VBGW220.5-GA2	NP-VBGW110302GA2	.008											
		NP-VBGW221-GA2	NP-VBGW110304GA2	.016											
		NP-VBGW222-GA2	NP-VBGW110308GA2	.031											
		NP-VBGW330.5-GA2	NP-VBGW160402GA2	.008											
		NP-VBGW331-GA2	NP-VBGW160404GA2	.016	●	●					●				
		NP-VBGW332-GA2	NP-VBGW160408GA2	.031	●	●					●				
		NEW NP-VBGW331-GH2	NP-VBGW160404GH2	.016											
		NEW NP-VBGW332-GH2	NP-VBGW160408GH2	.031											
		NP-VBGW220.5-GS2	NP-VBGW110302GS2	.008											
		NP-VBGW221-GS2	NP-VBGW110304GS2	.016											●
		NP-VBGW222-GS2	NP-VBGW110308GS2	.031											●
		NP-VBGW330.5-GS2	NP-VBGW160402GS2	.008											
		NP-VBGW331-GS2	NP-VBGW160404GS2	.016										●	●
		NP-VBGW332-GS2	NP-VBGW160408GS2	.031										●	●
		NEW NP-VBGW221-SE2	NP-VBGW110304SE2	.016											●
		NEW NP-VBGW222-SE2	NP-VBGW110308SE2	.031											●
		NEW NP-VBGW331-SE2	NP-VBGW160404SE2	.016											●
		NEW NP-VBGW332-SE2	NP-VBGW160408SE2	.031											●
		NEW NP-VBGW221-SF2	NP-VBGW110304SF2	.016											●
		NEW NP-VBGW222-SF2	NP-VBGW110308SF2	.031											●
		NEW NP-VBGW331-SF2	NP-VBGW160404SF2	.016											●
		NEW NP-VBGW332-SF2	NP-VBGW160408SF2	.031											●
		NP-VBGW220.5-FS2	NP-VBGW110302FS2	.008											●
		NP-VBGW221-FS2	NP-VBGW110304FS2	.016											●
		NP-VBGW222-FS2	NP-VBGW110308FS2	.031											●
		NP-VBGW330.5-FS2	NP-VBGW160402FS2	.008											●
		NP-VBGW331-FS2	NP-VBGW160404FS2	.016											●
		NP-VBGW332-FS2	NP-VBGW160408FS2	.031											●
		NP-VBGW221-TA2	NP-VBGW110304TA2	.016											●
		NP-VBGW222-TA2	NP-VBGW110308TA2	.031											●
		NP-VBGW331-TA2	NP-VBGW160404TA2	.016											●
		NP-VBGW332-TA2	NP-VBGW160408TA2	.031											●
	NEW NP-VBGW331-TH2	NP-VBGW160404TH2	.016											●	
	NEW NP-VBGW332-TH2	NP-VBGW160408TH2	.031											●	
	NP-VBGW221-TS2	NP-VBGW110304TS2	.016											●	
	NP-VBGW222-TS2	NP-VBGW110308TS2	.031											●	
	NP-VBGW331-TS2	NP-VBGW160404TS2	.016											●	
	NP-VBGW332-TS2	NP-VBGW160408TS2	.031											●	

C028
C029
D010
D011
D014
D015
E009
E010
H013



CBN

CBN & PCD TURNING INSERTS

POSI 5°

WITH HOLE



IDENTIFICATION > B002
HONING > B014

B051

CBN TURNING INSERTS [POSITIVE]

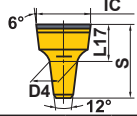

RTG TYPE INSERTS WITHOUT HOLE

CBN

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

CBN & PCD TURNING INSERTS

POSITIV
6°
WITHOUT
HOLE

Work Material	H	Hardened Materials	C					
	K	Cast Iron						
Work Material	S	Heat-resistant Alloy, Titanium Alloy						
	Shape	Order Number	(ISO) Number	CBN	Dimensions (inch)			
			MB825	IC	L17	S	D4	
	RTG05A	RTG05A	★	.197	.138	.295	.098	-
	RTG06A	RTG06A	★	.236	.138	.295	.138	
	RTG07A	RTG07A	★	.276	.197	.433	.138	
	RTG08A	RTG08A	★	.315	.197	.433	.177	
	RTG10A	RTG10A	★	.394	.256	.551	.217	

C

D

R

S

T

V

W


B054

● : Inventory maintained. ★ : Inventory maintained in Japan.
<1 insert in one case>

90° SP TYPE INSERTS WITHOUT HOLE

SPG **3** **2** **1**
 Size Thickness Corner Radius
 *Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials		●	●	●	●	⊕	●	●	●	●
	K	Cast Iron							●	●		
Work Material	S	Heat-resistant Alloy, Titanium Alloy							●	●		
		Sintered Alloy										●
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN			CBN			Applicable Holder Page		
				MBC010	MBC020	BC8020	MB8025	MB835	MB710		MB730	MB4020
	SPG321	SPGN090304	.016						●			
	SPG322	SPGN090308	.031						●			
	SPG421	SPGN120304	.016						●	★		
	SPG422	SPGN120308	.031						●	★		

CBN

CBN & PCD TURNING INSERTS

POSI 11°

WITHOUT HOLE

C

D

R

S

T

V

W

IDENTIFICATION > B002
 HONING > B014

B055

GY TYPE INSERTS WITHOUT HOLE

GY1G 0200 D 020 N GFGS

Size Thickness Corner Radius Honing & Wiper
*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials																		
	K	Cast Iron																		
Shape	S	Heat-resistant Alloy, Titanium Alloy																		
		Sintered Alloy																		
Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN				CBN				Applicable Holder Page									
			MBC010	MBC020	BC8020	BC8110	MB8025	MB835	MB710	MB730		MB4020								
GY1G0200D020N-GFGS	GY1G0200D020N-GFGS	.008				●	●													
GY1G0239E020N-GFGS	GY1G0239E020N-GFGS	.008				●	●													
GY1G0250E020N-GFGS	GY1G0250E020N-GFGS	.008				●	●													
GY1G0300F020N-GFGS	GY1G0300F020N-GFGS	.008				●	●													
GY1G0318F020N-GFGS	GY1G0318F020N-GFGS	.008				●	●													
GY1G0400G020N-GFGS	GY1G0400G020N-GFGS	.008				●	●													
GY1G0475H020N-GFGS	GY1G0475H020N-GFGS	.008				●	●													
GY1G0500H020N-GFGS	GY1G0500H020N-GFGS	.008				●	●													
GY1G0600J020N-GFGS	GY1G0600J020N-GFGS	.008				●	●													



■ = MIRACLE SIGMA

CBN

CBN & PCD TURNING INSERTS

POSI
7°

WITHOUT HOLE

C

D

R

S

T

V

W

CBN TURNING INSERTS [POSITIVE]

60° TP TYPE INSERTS WITHOUT HOLE


TPG **2** **2** **1**
 Size Thickness Corner Radius
 *Please refer to page B002.

CBN

CBN & PCD TURNING INSERTS

POSITIVE
 5°
 11°
 WITHOUT HOLE

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	H	Hardened Materials	●	●	●	●	⊕				
	K	Cast Iron						●	●		
Sintered Alloy	S	Heat-resistant Alloy, Titanium Alloy						●	●		
		Sintered Alloy								●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	Coated CBN			CBN			Applicable Holder Page	
				MBC010	MBC020	BC8020	MB8025	MB835	MB710		MB730
	TPG221	TPGN110304	.016						●	●	
	TPG321	TPGN160304	.016						●	●	
	TPG322	TPGN160308	.031				●		●	●	
											-

C

D

R

S

T

V

W



PCD TURNING INSERTS [NEGATIVE]

80° CN TYPE INSERTS WITH HOLE

NP-CNMM 4 3 0.5 RF

Size Thickness Corner Radius
*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting



Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
	NP-CNMM430.5RF	NP-CNMM120402R-F	.008	★	C006 -009 E021 E024 H006 -008
	NP-CNMM431RF	NP-CNMM120404R-F	.016	★	
	NP-CNMM432RF	NP-CNMM120408R-F	.031	★	
	CNMA431	CNMA120404	.016	★	C006 -009 E021 E024 H006 -008
	CNMA432	CNMA120408	.031	★	

55° DN TYPE INSERTS WITH HOLE

NP-DNMM 4 3 0.5 RF

Size Thickness Corner Radius
*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
	NP-DNMM430.5RF	NP-DNMM150402R-F	.008	★	C010 -012 E021 E024 H009 H010
	NP-DNMM431RF	NP-DNMM150404R-F	.016	★	
	NP-DNMM432RF	NP-DNMM150408R-F	.031	★	
	DNGA431	DNGA150404	.016	★	C010 -012 E021 E024 H009 -011
	DNGA432	DNGA150408	.031	★	

PCD

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

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PCD TURNING INSERTS [NEGATIVE]

90° SN TYPE INSERTS WITH HOLE

NP-SNMM 4 3 1 RF

Size Thickness Corner Radius

*Please refer to page B002.

PCD

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

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Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			PCD	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	MD220	Applicable Holder Page
NEW PETIT CUT 	NP-SNMM431RF	NP-SNMM120404R-F	.016	★	C014 -017 E022 E025
	NP-SNMM432RF	NP-SNMM120408R-F	.031	★	
	SNGA432	SNGA120408	.031	★	C014 -017 E022 E025



60° TN TYPE INSERTS WITH HOLE

NP-TNMM 3 3 0.5 RF

Size Thickness Corner Radius

*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			PCD	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	MD220	Applicable Holder Page
NEW PETIT CUT 	NP-TNMM330.5RF	NP-TNMM160402R-F	.008	★	C018 -023 E022 E025
	NP-TNMM331RF	NP-TNMM160404R-F	.016	★	
	NP-TNMM332RF	NP-TNMM160408R-F	.031	★	
	TNGA330.5	TNGA160402	.008	★	C018 -023 E022 E025
	TNGA331	TNGA160404	.016	★	
	TNGA332	TNGA160408	.031	★	

★ : Inventory maintained in Japan.

<1 insert in one case>



35°



VN TYPE INSERTS WITH HOLE

NP-VNMM 3 3 0.5 RF

Size Thickness Corner Radius

*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	NP-VNMM330.5RF	NP-VNMM160402R-F	.008	★	C024 C025 E023 E026
	NP-VNMM331RF	NP-VNMM160404R-F	.016	★	
	NP-VNMM332RF	NP-VNMM160408R-F	.031	★	
	VNGA331	VNGA160404	.016	★	C024 C025 E023 E026
	VNGA332	VNGA160408	.031	★	

PCD

CBN & PCD TURNING INSERTS

NEG

WITH HOLE

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PCD TURNING INSERTS [NEGATIVE]




90° SN TYPE INSERTS WITHOUT HOLE

SNG **4** **3** **1**
 Size Thickness Corner Radius
 *Please refer to page B002.

PCD

CBN & PCD TURNING INSERTS

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
	SNG432	SNGN120408	.031	★	-

NEG

WITHOUT HOLE

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PCD TURNING INSERTS [POSITIVE]




80° CC TYPE INSERTS WITH HOLE

NP-CCMH 2 1.5 0.5

Size Thickness Corner Radius

*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●		
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page	
NEW PETIT CUT 	NP-CCMH21.50.5	NP-CCMH060202	.008	●	C030 E006 E012 E013 E040	
	NP-CCMH21.51	NP-CCMH060204	.016	●		
NEW PETIT CUT 	NP-CCMW03S102	NP-CCMW03S102	.008	●		-
	NP-CCMW03S104	NP-CCMW03S104	.016	●		
	NP-CCMW04T002	NP-CCMW04T002	.008	●		
	NP-CCMW04T004	NP-CCMW04T004	.016	●		
	CCMW21.50.5	CCMW060202	.008	●	C030 D008 D012 E012 E013 E040	
	CCMW21.51	CCMW060204	.016	●		
	CCMW32.50.5	CCMW09T302	.008	●		
	CCMW32.51	CCMW09T304	.016	●		



80° CP TYPE INSERTS WITH HOLE

NP-CPMH 2.5 1.5 0.5

Size Thickness Corner Radius

*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
NEW PETIT CUT 	NP-CPMH2.51.50.5	NP-CPMH080202	.008	●	E006 E007 E041
	NP-CPMH2.51.51	NP-CPMH080204	.016	●	
	NP-CPMH320.5	NP-CPMH090302	.008	●	
	NP-CPMH321	NP-CPMH090304	.016	●	
	CPGT2.51.50.5	CPGT080202	.008	●	E041
	CPGT2.51.51	CPGT080204	.016	●	
	CPGT320.5	CPGT090302	.008	●	
	CPGT321	CPGT090304	.016	●	



PCD TURNING INSERTS [POSITIVE]

55° DC TYPE INSERTS WITH HOLE

NP-DCMT 2 1.5 0.5 RF
 Size Thickness Corner Radius
 *Please refer to page B002.

PCD


Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	NP-DCMT21.50.5RF	NP-DCMT070202R-F	.008	●	C031 C032 D009 D013 D040 E008 E013 E014 E042 E043
	NP-DCMT21.50.5LF	NP-DCMT070202L-F	.008	●	
	NP-DCMT21.51RF	NP-DCMT070204R-F	.016	●	
	NP-DCMT21.51LF	NP-DCMT070204L-F	.016	●	
	NP-DCMT32.50.5RF	NP-DCMT11T302R-F	.008	●	
	NP-DCMT32.50.5LF	NP-DCMT11T302L-F	.008	●	
	NP-DCMT32.51RF	NP-DCMT11T304R-F	.016	●	
	NP-DCMT32.51LF	NP-DCMT11T304L-F	.016	●	
	DCMW21.50.5	DCMW070202	.008	★	C031 C032 D009 D013 D040 E008 E013 E014 E042 E043
	DCMW21.51	DCMW070204	.016	●	
	DCMW32.50.5	DCMW11T302	.008	●	
	DCMW32.51	DCMW11T304	.016	●	

90° SP TYPE INSERTS WITH HOLE

SPGX 3 2 1
 Size Thickness Corner Radius
 *Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	SPGX321	SPGX090304	.016	★	-
	SPGX322	SPGX090308	.031	★	

60° TC TYPE INSERTS WITH HOLE

TCMW **2** **1.5** **0.5**

Size Thickness Corner Radius

*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	TCMW21.50.5	TCMW110202	.008	●	C035 E015 E016 E044
	TCMW21.51	TCMW110204	.016	★	
	TCGW1.210.5	TCGW060102	.008	★	-
	TCGW1.211	TCGW060104	.016	★	
	TCGW1.212	TCGW060108	.031	★	

PCD

CBN & PCD TURNING INSERTS

POSI 7°

WITH HOLE

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PCD TURNING INSERTS [POSITIVE]

60° TP TYPE INSERTS WITH HOLE

NP-TPMX 1.8 1.5 0.5 RF
 Size Thickness Corner Radius
 *Please refer to page B002.

PCD

Cutting Conditions : ● Stable Cutting ● General Cutting ✚ Unstable Cutting

CBN & PCD TURNING INSERTS

POSI 11°

WITH HOLE

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


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Work Material	N Non-Ferrous Metal			PCD	
Shape	Order Number	(ISO)Number	Corner Radius RE (inch)	MD220	Applicable Holder Page
NEW PETIT CUT 	NP-TPMX1.81.50.5RF	NP-TPMX090202R-F	.008	★	E007 E045
	NP-TPMX1.81.50.5LF	NP-TPMX090202L-F	.008	★	
	NP-TPMX1.81.51LF	NP-TPMX090204L-F	.016	★	
	NP-TPMX1.81.52LF	NP-TPMX090208L-F	.031	★	
	NP-TPMX220.5LF	NP-TPMX110302L-F	.008	★	
	NP-TPMX221LF	NP-TPMX110304L-F	.016	★	
	NP-TPMX222LF	NP-TPMX110308L-F	.031	★	
	NP-TPMX320.5LF	NP-TPMX160302L-F	.008	★	
	NP-TPMX321LF	NP-TPMX160304L-F	.016	★	
	NP-TPMX322LF	NP-TPMX160308L-F	.031	★	
NEW PETIT CUT 	NP-TPMH1.51.50.5RF	NP-TPMH080202R-F	.008	●	E007 E045
	NP-TPMH1.51.50.5LF	NP-TPMH080202L-F	.008	●	
	NP-TPMH1.51.51RF	NP-TPMH080204R-F	.016	●	
	NP-TPMH1.51.51LF	NP-TPMH080204L-F	.016	●	
	NP-TPMH1.81.50.5RF	NP-TPMH090202R-F	.008	●	
	NP-TPMH1.81.50.5LF	NP-TPMH090202L-F	.008	●	
	NP-TPMH1.81.51RF	NP-TPMH090204R-F	.016	●	
	NP-TPMH1.81.51LF	NP-TPMH090204L-F	.016	●	
	NP-TPMH220.5RF	NP-TPMH110302R-F	.008	●	
	NP-TPMH220.5LF	NP-TPMH110302L-F	.008	●	
	NP-TPMH221RF	NP-TPMH110304R-F	.016	●	
	NP-TPMH221LF	NP-TPMH110304L-F	.016	●	
	NP-TPMH320.5RF	NP-TPMH160302R-F	.008	★	
	NP-TPMH320.5LF	NP-TPMH160302L-F	.008	★	
	TPGT320.5RF	TPGT160302R-F	.008	★	-
	TPGT320.5LF	TPGT160302L-F	.008	★	
	TPGT321RF	TPGT160304R-F	.016	★	
	TPGT321LF	TPGT160304L-F	.016	★	

● : Inventory maintained. ★ : Inventory maintained in Japan.
 <1 insert in one case>

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
	TPGV1.81.50.5RF	TPGV090202R-F	.008	★	-
	TPGV1.81.50.5LF	TPGV090202L-F	.008	★	
	TPGV1.81.51RF	TPGV090204R-F	.016	★	
	TPGV1.81.51LF	TPGV090204L-F	.016	★	
	TPGV220.5RF	TPGV110302R-F	.008	★	
	TPGV220.5LF	TPGV110302L-F	.008	★	
	TPGV221RF	TPGV110304R-F	.016	★	
	TPGV221LF	TPGV110304L-F	.016	★	
	TPGX1.51.50.5	TPGX080202	.008	★	E07 E045
	TPGX1.51.51	TPGX080204	.016	★	
	TPGX1.51.52	TPGX080208	.031	★	
	TPGX1.81.50.5	TPGX090202	.008	★	
	TPGX1.81.51	TPGX090204	.016	★	
	TPGX1.81.52	TPGX090208	.031	★	
	TPGX220.5	TPGX110302	.008	★	
	TPGX221	TPGX110304	.016	★	
	TPGX222	TPGX110308	.031	★	
	TPGX321	TPGX160304	.016	★	
TPGX322	TPGX160308	.031	★		

PCD

CBN & PCD TURNING INSERTS

POSI 11°

WITH HOLE

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PCD TURNING INSERTS [POSITIVE]



35°

VB TYPE INSERTS WITH HOLE

NP-VBGT 2 2 V5 RF

Size Thickness Corner Radius

*Please refer to page B002.

PCD

CBN & PCD TURNING INSERTS

POSITIVE

WITH HOLE

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
	NP-VBGT22V5RF	NP-VBGT1103V5R-F	.002	★	C028
	NP-VBGT220.2RF	NP-VBGT110301R-F	.004	★	C029
	NP-VBGT220.5RF	NP-VBGT110302R-F	.008	★	D010
	NP-VBGT221RF	NP-VBGT110304R-F	.016	★	D011
					D014
					D015
					E009
					E010

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35°

VC TYPE INSERTS WITH HOLE

NP-VCGT 1.5 1.5 V5 RF

Size Thickness Corner Radius

*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
	NP-VCGT1.51.5V5RF	NP-VCGT0802V5R-F	.002	★	
	NP-VCGT1.51.50.2RF	NP-VCGT080201R-F	.004	★	C036
	NP-VCGT1.51.50.5RF	NP-VCGT080202R-F	.008	★	D048
	NP-VCGT1.51.51RF	NP-VCGT080204R-F	.016	★	D049
	NP-VCGT22V5RF	NP-VCGT1103V5R-F	.002	★	E009
	NP-VCGT220.2RF	NP-VCGT110301R-F	.004	★	E010
	NP-VCGT220.5RF	NP-VCGT110302R-F	.008	★	E016
	NP-VCGT221RF	NP-VCGT110304R-F	.016	★	E017
					E046

★ : Inventory maintained in Japan.

<1 insert in one case>



80° WC TYPE INSERTS WITH HOLE

WCMW 1.5 1.5 0.5

Size Thickness Corner Radius
*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	WCMW1.51.50.5	WCMWL30202	.008	★	C037 E017 -020 E047
	WCMW21.50.5	WCMW040202	.008	★	
	WCMW32.51	WCMW06T304	.016	★	



80° WP TYPE INSERTS WITH HOLE

WPGT 2 1.5 0.5

Size Thickness Corner Radius
*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	WPGT21.50.5	WPGT040202	.008	★	E009
	WPGT21.51	WPGT040204	.016	★	
	WPGT320.5	WPGT060302	.008	★	
	WPGT321	WPGT060304	.016	★	

PCD

CBN & PCD TURNING INSERTS

POSI 7° 11°

WITH HOLE

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PCD TURNING INSERTS [POSITIVE]

55° DE TYPE INSERTS WITH HOLE

DEGX 4 3 0.5 RF
Size Thickness Corner Radius
 *Please refer to page B002.

PCD

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	DEGX430.5RF	DEGX150402R-F	.008	★	C041
	DEGX430.5LF	DEGX150402L-F	.008	★	
	DEGX431RF	DEGX150404R-F	.016	★	
	DEGX431LF	DEGX150404L-F	.016	★	

CBN & PCD TURNING INSERTS

POSI 20°

WITH HOLE

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60° TE TYPE INSERTS WITH HOLE

TEGX 3 2 0.5 R
Size Thickness Corner Radius
 *Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	TEGX320.5R	TEGX160302R	.008	★	C042 E028
	TEGX320.5L	TEGX160302L	.008	★	
	TEGX321R	TEGX160304R	.016	★	
	TEGX321L	TEGX160304L	.016	★	
	TEGX320.5	TEGX160302	.008	★	C042 E028
	TEGX321	TEGX160304	.016	★	

★ : Inventory maintained in Japan.

<1 insert in one case>



35° VD TYPE INSERTS WITH HOLE

VDGX 3 2 0.5 RF

Size Thickness Corner Radius

*Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD	Applicable Holder Page
	VDGX320.5RF	VDGX160302R-F	.008	★	C043
	VDGX320.5LF	VDGX160302L-F	.008	★	
	VDGX321RF	VDGX160304R-F	.016	★	
	VDGX321LF	VDGX160304L-F	.016	★	

PCD

CBN & PCD TURNING INSERTS

POSI 15°

WITH HOLE




PCD TURNING INSERTS [POSITIVE]

90° SP TYPE INSERTS WITHOUT HOLE

SPG 3 2 0.5
 Size Thickness Corner Radius
 *Please refer to page B002.

PCD

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
	SPG320.5	SPGN090302	.008	★	-
	SPG321	SPGN090304	.016	★	
	SPG322	SPGN090308	.031	★	
	SPG421	SPGN120304	.016	★	
	SPG422	SPGN120308	.031	★	
	SPG423	SPGN120312	.047	★	

CBN & PCD TURNING INSERTS

POSI 11°

WITHOUT HOLE

C

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60° TP TYPE INSERTS WITHOUT HOLE

TPG 2 2 0.5
 Size Thickness Corner Radius
 *Please refer to page B002.

Cutting Conditions : ● Stable Cutting ● General Cutting ⊕ Unstable Cutting

Work Material	N Non-Ferrous Metal			●	
Shape	Order Number	(ISO) Number	Corner Radius RE (inch)	PCD MD220	Applicable Holder Page
	TPG220.5	TPGN110302	.008	★	-
	TPG221	TPGN110304	.016	★	
	TPG222	TPGN110308	.031	★	
	TPG320.5	TPGN160302	.008	★	
	TPG321	TPGN160304	.016	★	
	TPG322	TPGN160308	.031	★	

★ : Inventory maintained in Japan.

<1 insert in one case>

Memo

A series of horizontal dotted lines for writing, spanning the width of the page.